E

Measurements Waddenzeedijk

E.1. Introduction

This appendix treats the results of the grass pull tests that are executed on the Waddenzeedijk. The coordinates of the location where the measurements took place are 53°14'33.6"N 5°29'30.9"E. The subsoil is characterised as clay with a low sand content. Four different types of tests have been conducted:

1. Direct pull tests

2. Shear tests

3. Stepwise increased constant load tests

4. Fatigue tests

The tests serve as a means to gain more insight into the physical characteristics of the grass cover, as explained in Chapter 3. Per test type the following graphs have been generated:

1. Direct pull tests

   - Force and displacement over time
   - Stress-strain diagram
   - Determination of E-modulus
   - Root profile (when performed)

2. Shear tests

   - Force and displacement over time
   - Stress-strain diagram
   - Determination of G-modulus
   - Root profile (when performed)

3. Stepwise increased constant load tests

   - Force and displacement over time
   - Stress-strain diagram
   - Root profile (when performed)

4. Fatigue tests

   - Force and displacement over time
   - Stress-strain diagram
   - Strain versus normalized cycles
   - Mean strain over time
   - E-modulus versus normalized cycles
   - Root profile (when performed)

The results for the root profiles may appear inconsistently throughout the results. The process of root counting was found to be time consuming and since measurements did not result in any correlations or trends, it was decided to stop counting. Additionally, note that erroneous tests have been excluded from this overview.

E.2. Direct pull tests - dry

E.2.1. Test01

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		09:27:00			
Weight	[kg]	95.8			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	90	10	0	
Sod thickness	[cm]	11	7	0	11
Root length	[cm]	2	4	0	2.2
Maximum stress	[kN/m^2]	7.71			
Strain at maximum stress	[-]	0.08			
$E_{50\%}$	[kN/m^2]	212.69			
E_{peak}	[kN/m^2]	97.23			
Comments		-			

Stress-strain relation
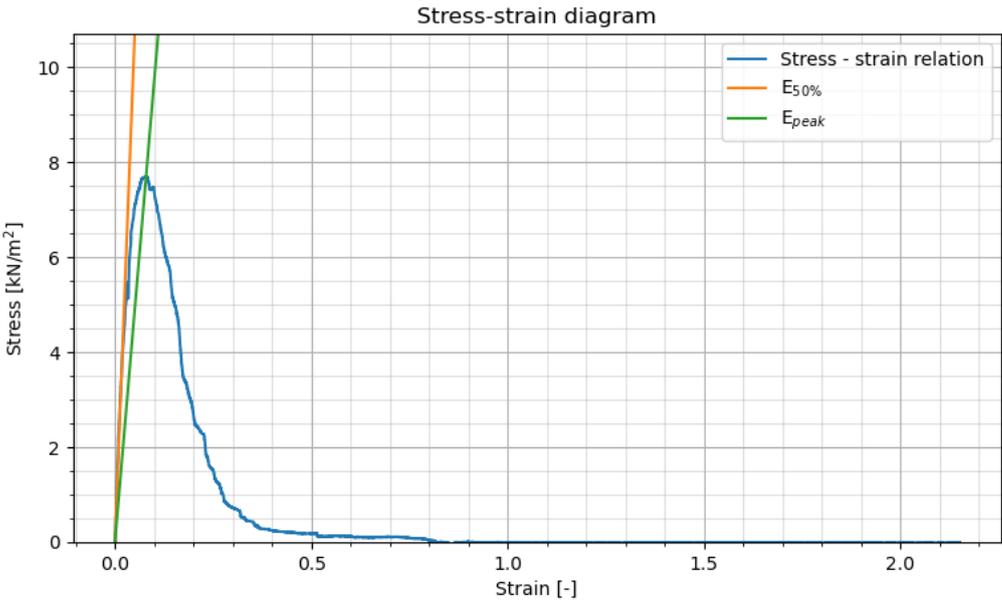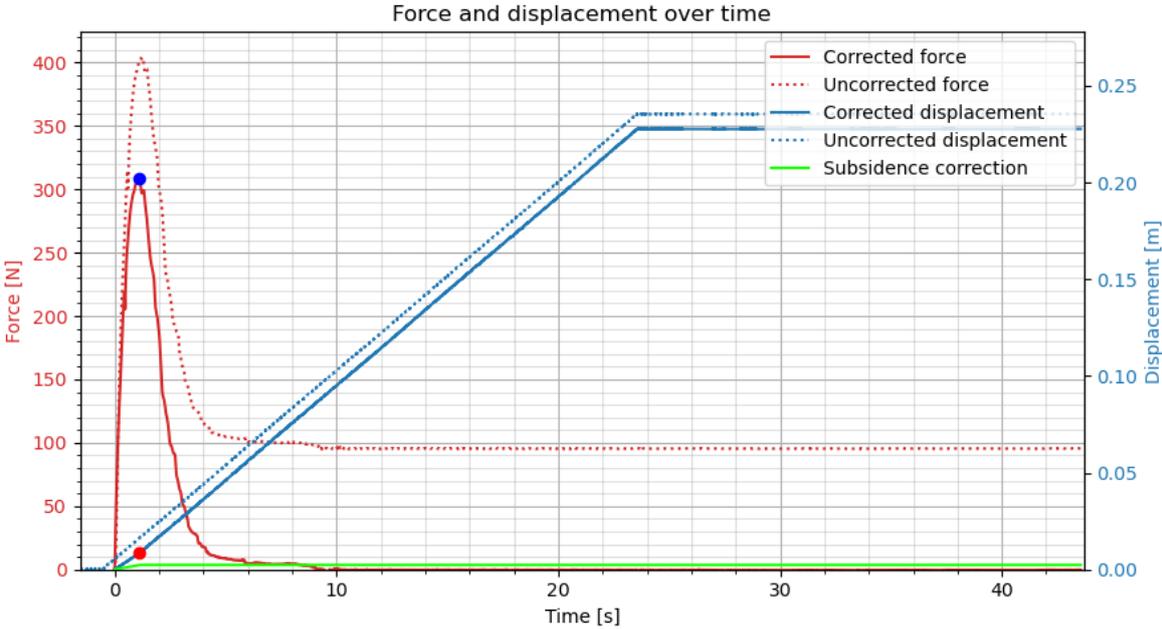
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.2. Test02

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		10:44:00			
Weight	[kg]	93.0			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	60	40	0	
Sod thickness	[cm]	11	8	0	10
Root length	[cm]	3	3	0	3.0
Maximum stress	[kN/m^2]	7.28			
Strain at maximum stress	[-]	0.07			
E$_{50\%}$	[kN/m^2]	151.43			
E$_{peak}$	[kN/m^2]	109.93			
Comments		-			

Stress-strain relation
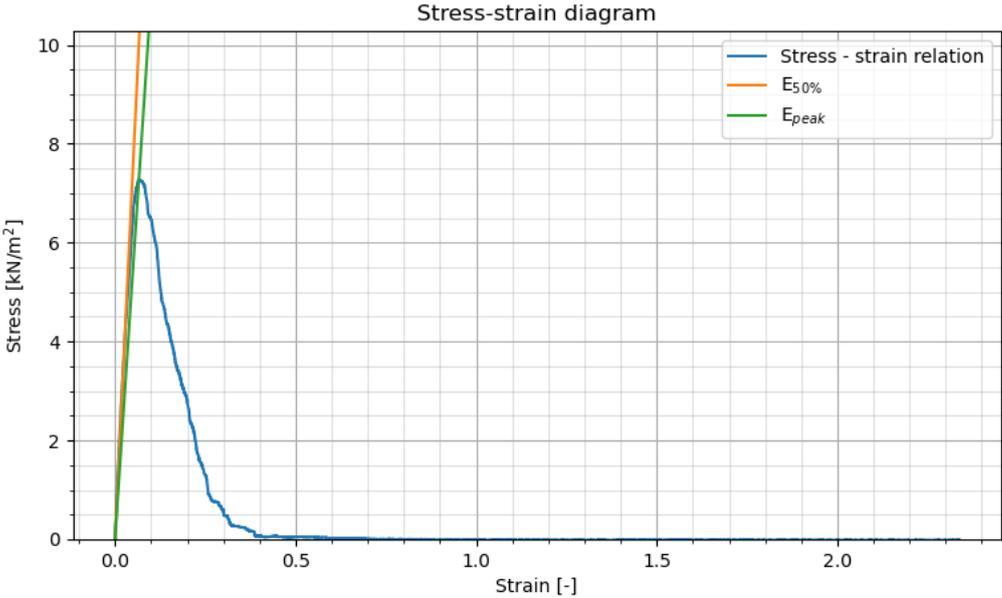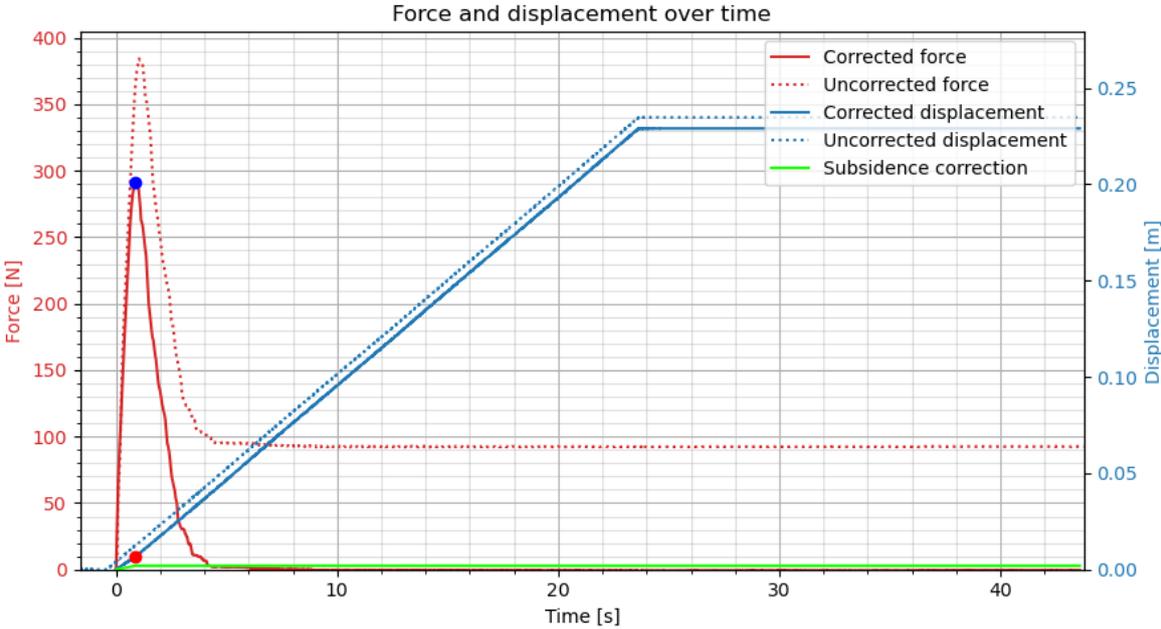
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile

Number of roots over the depth
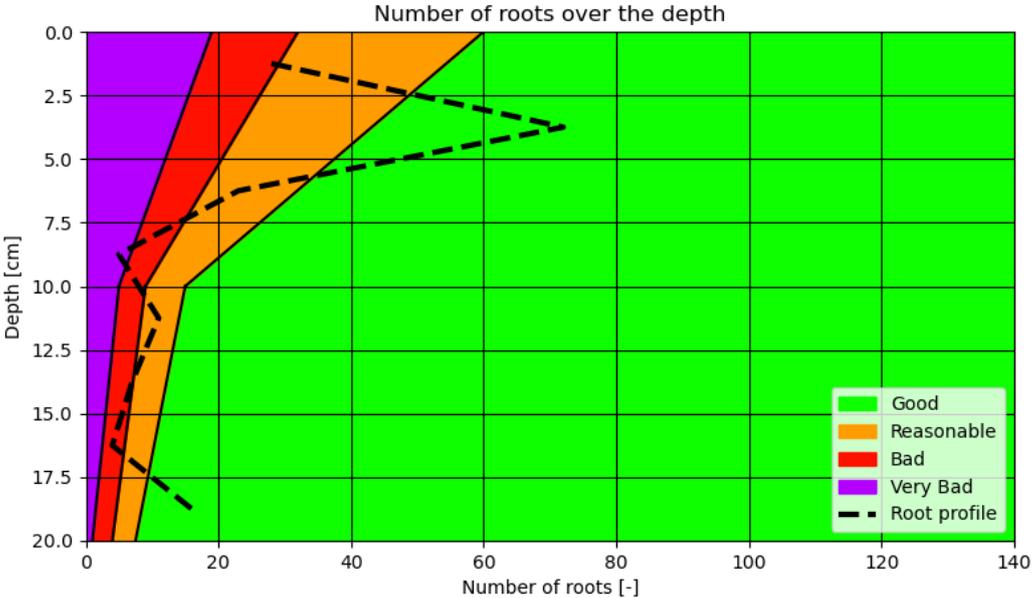
E.2.3. Test03

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		11:02:00			
Weight	[kg]	100.0			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	70	30	0	
Sod thickness	[cm]	13	9	0	12
Root length	[cm]	4	2	0	3.4
Maximum stress	[kN/m^2]	7.18			
Strain at maximum stress	[-]	0.05			
$E_{50\%}$	[kN/m^2]	339.44			
E_{peak}	[kN/m^2]	138.27			
Comments		-			

Stress-strain relation
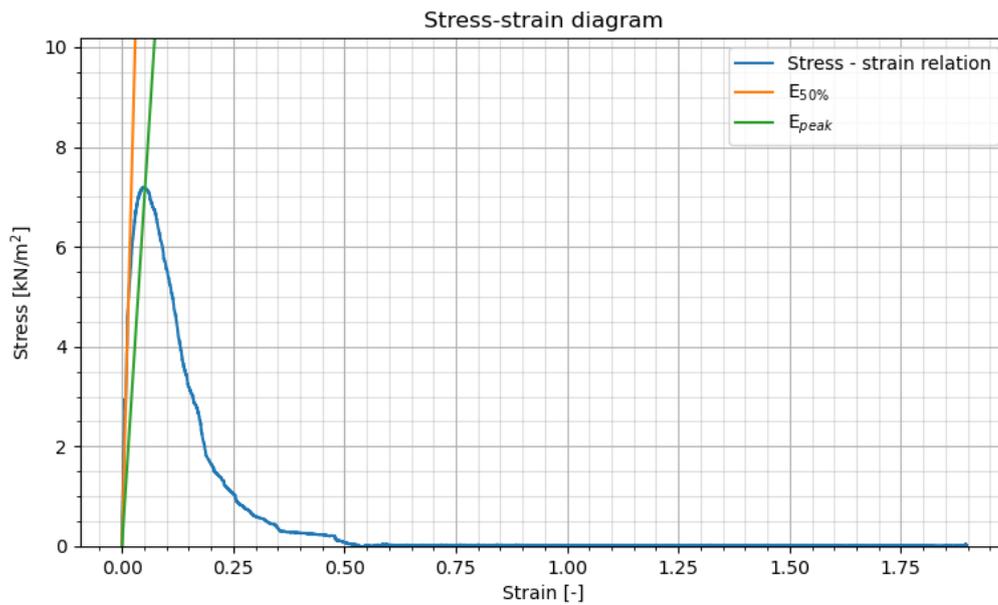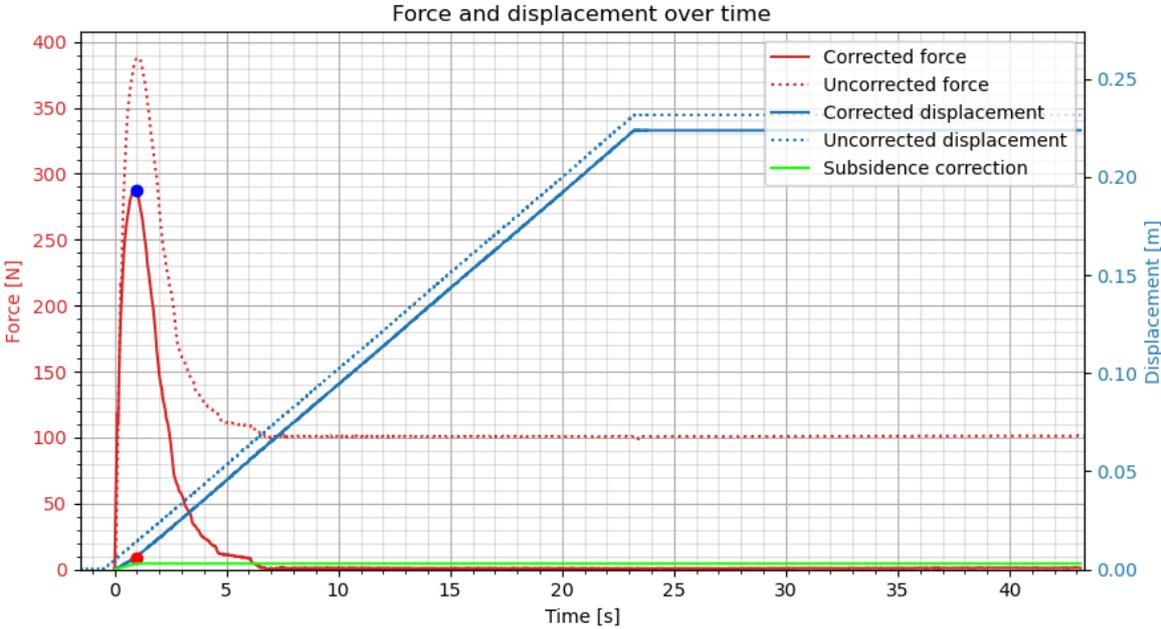
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.4. Test04

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		11:09:00			
Weight	[kg]	73.4			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	50	40	10	
Sod thickness	[cm]	9	7	6	8
Root length	[cm]	2	3	2	2.4
Maximum stress	[kN/m^2]	7.5			
Strain at maximum stress	[-]	0.07			
$E_{50\%}$	[kN/m^2]	129.02			
E_{peak}	[kN/m^2]	110.69			
Comments		-			

Stress-strain relation
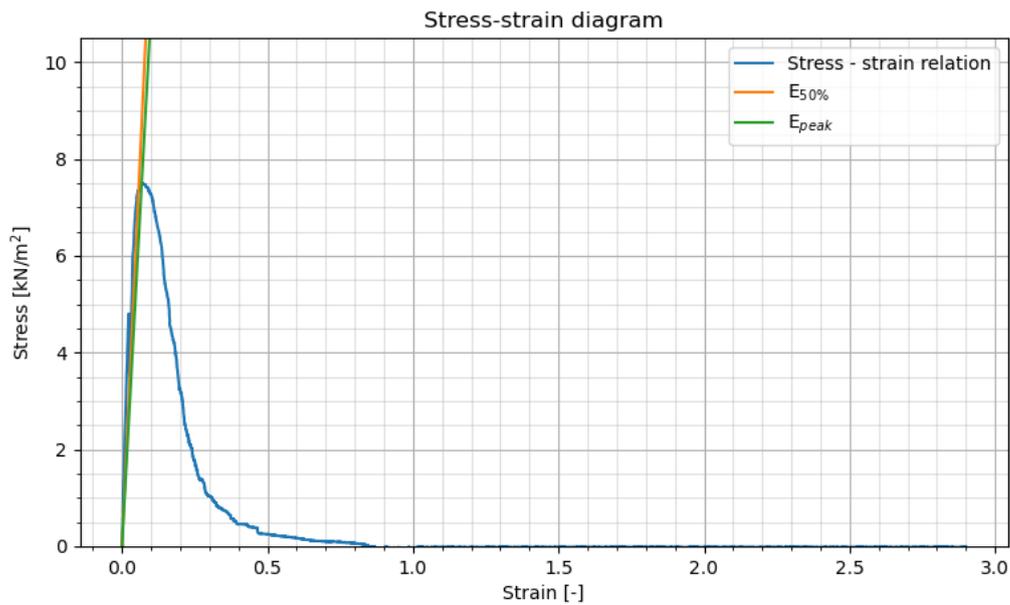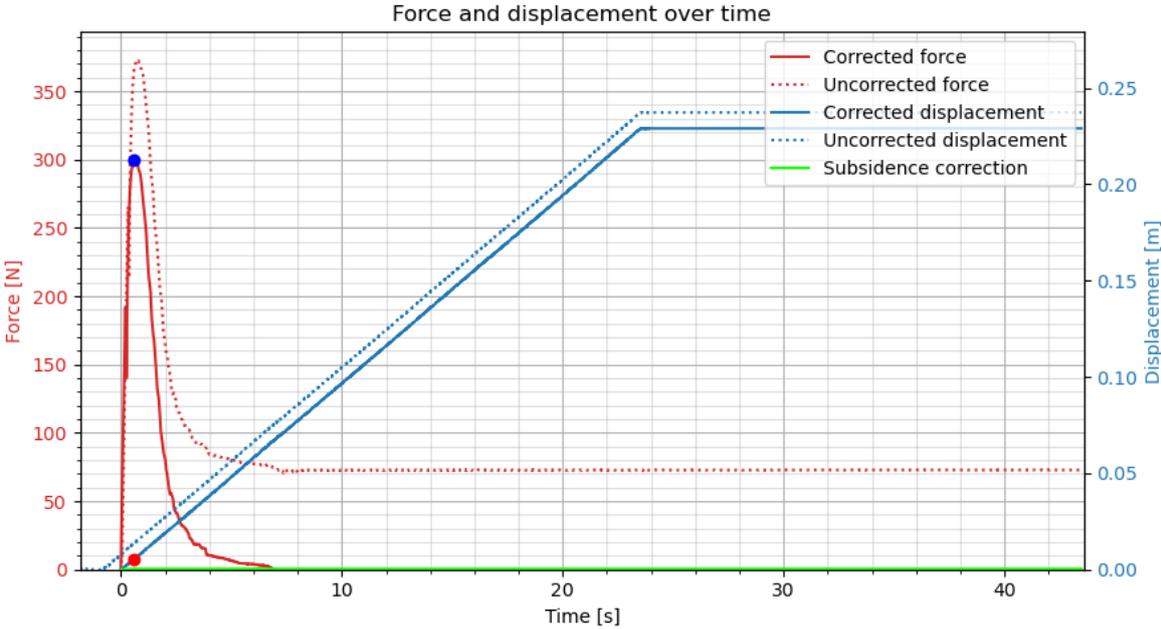
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile

Number of roots over the depth
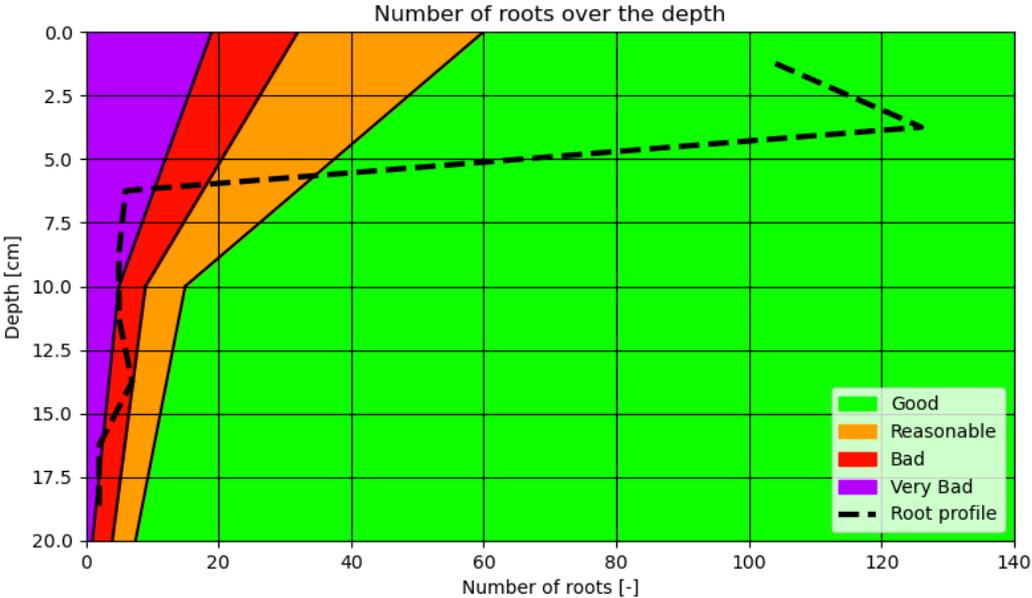
E.2.5. Test05

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		11:19:00			
Weight	[kg]	86.0			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	50	20	30	
Sod thickness	[cm]	11	9	8	10
Root length	[cm]	2	3	3	2.5
Maximum stress	[kN/m^2]	7.53			
Strain at maximum stress	[-]	0.1			
$E_{50\%}$	[kN/m^2]	130.51			
E_{peak}	[kN/m^2]	78.99			
Comments		-			

Stress-strain relation
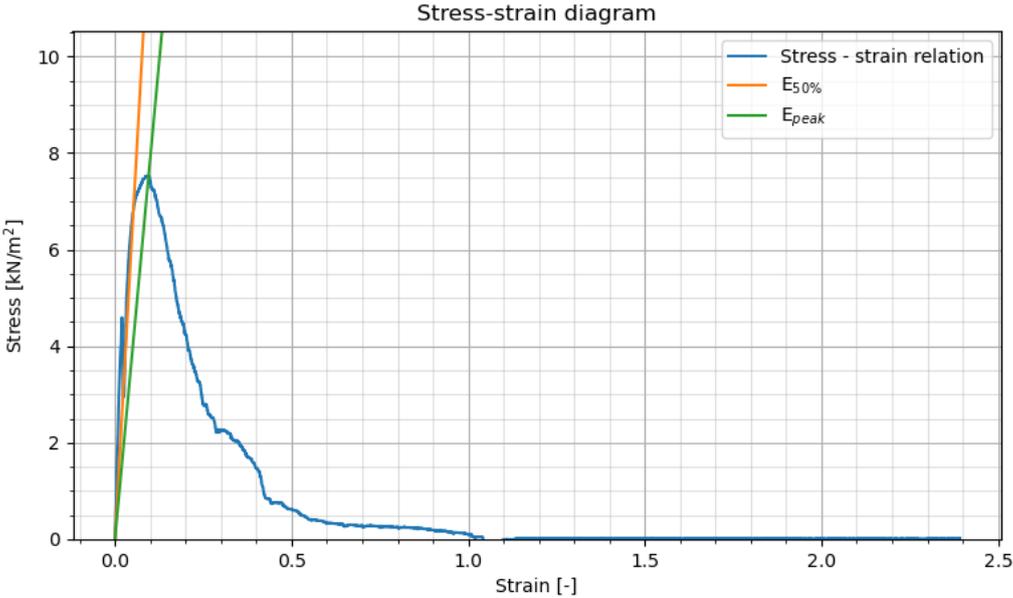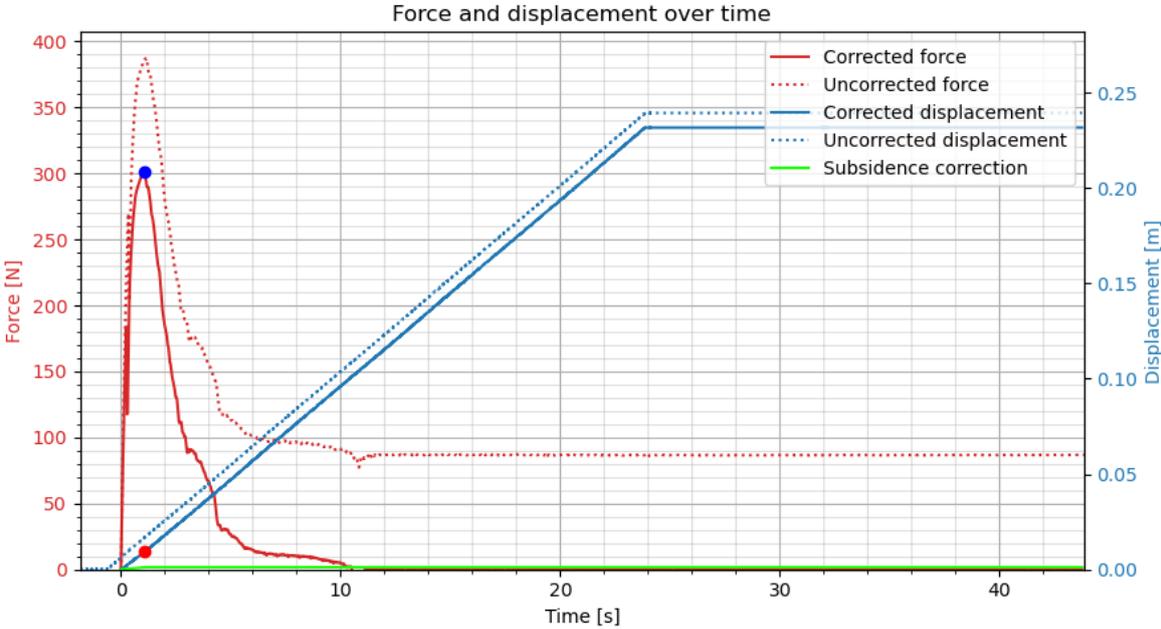
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.6. Test06

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		11:41:00			
Weight	[kg]	95.5			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	80	10	10	
Sod thickness	[cm]	11	8	7	10
Root length	[cm]	3	3	2	2.9
Maximum stress	[kN/m^2]	10.59			
Strain at maximum stress	[-]	0.04			
$E_{50\%}$	[kN/m^2]	339.8			
E_{peak}	[kN/m^2]	261.3			
Comments		-			

Stress-strain relation
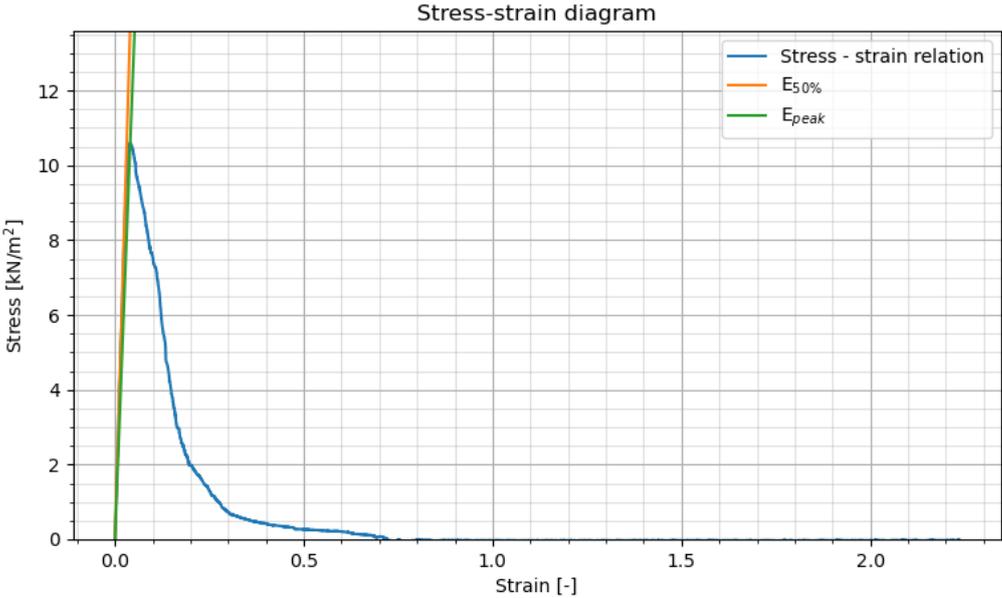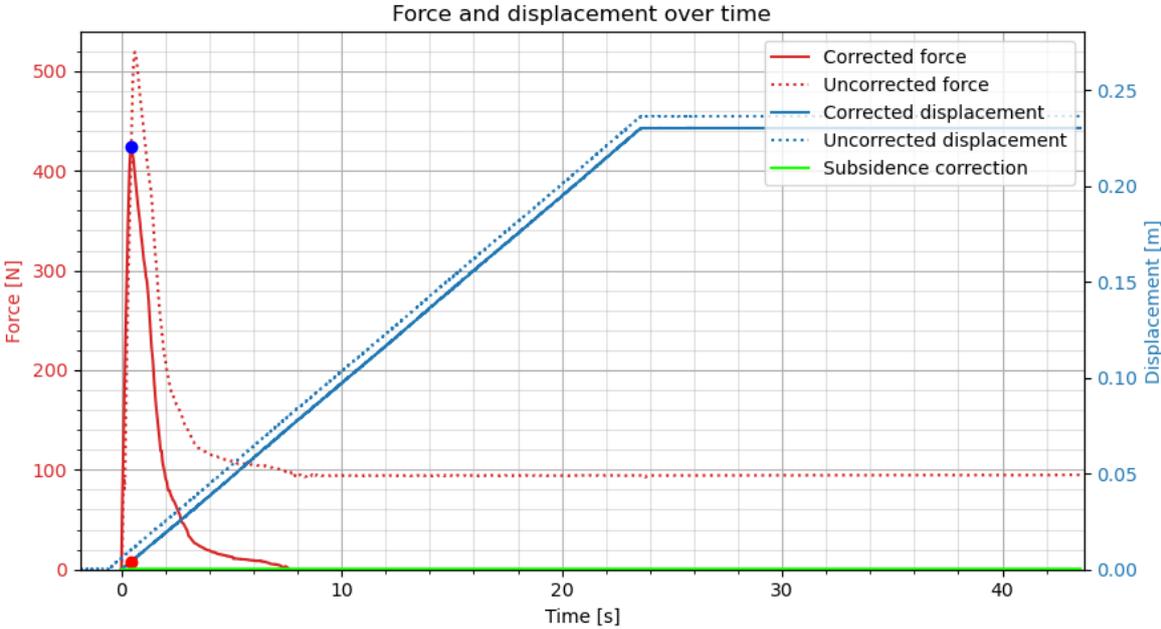
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.7. Test07

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		12:09:00			
Weight	[kg]	92.0			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	50	30	20	
Sod thickness	[cm]	12	9	7	10
Root length	[cm]	4	2	2	3.0
Maximum stress	[kN/m^2]	8.85			
Strain at maximum stress	[-]	0.07			
$E_{50\%}$	[kN/m^2]	240.1			
E_{peak}	[kN/m^2]	121.01			
Comments		-			

Stress-strain relation
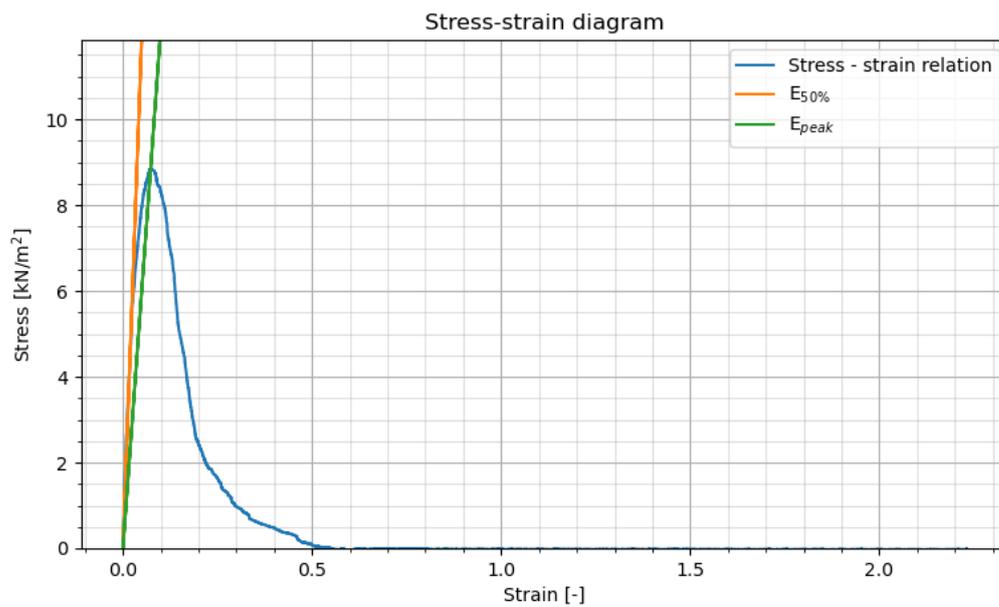
Force and displacement over time
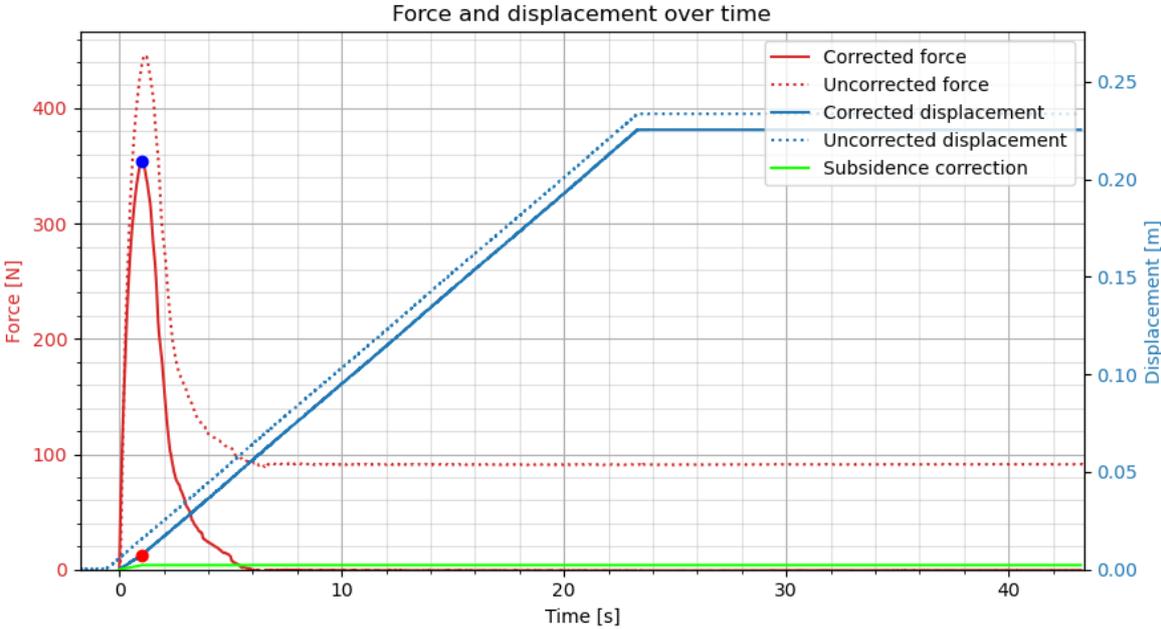
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile
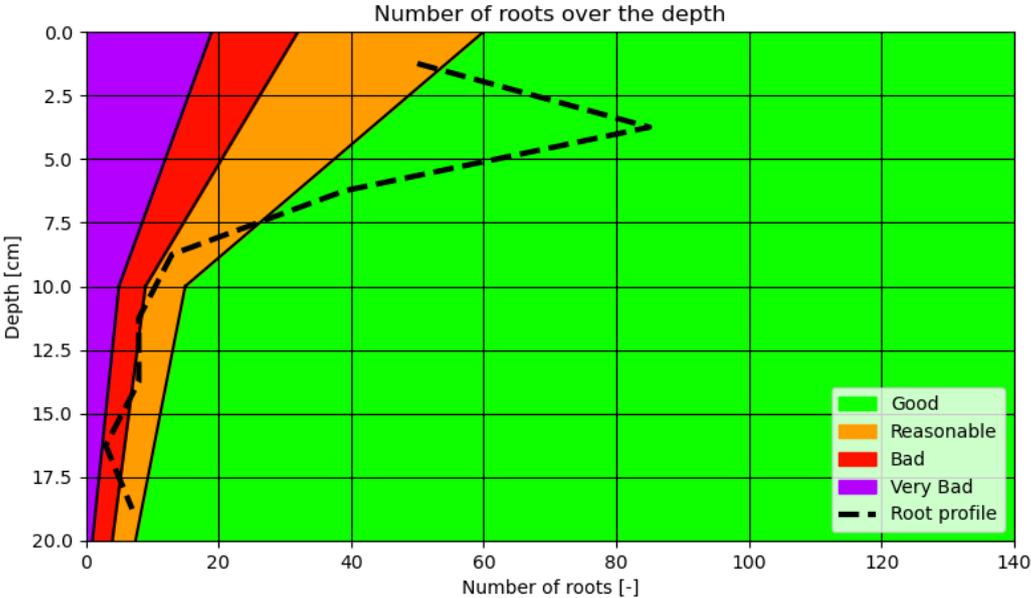
E.2.8. Test08

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		12:15:00			
Weight	[kg]	94.0			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	70	30	0	
Sod thickness	[cm]	11	8	0	10
Root length	[cm]	2	3	0	2.3
Maximum stress	[kN/m^2]	9.46			
Strain at maximum stress	[-]	0.06			
$E_{50\%}$	[kN/m^2]	236.13			
E_{peak}	[kN/m^2]	167.39			
Comments		-			

Stress-strain relation
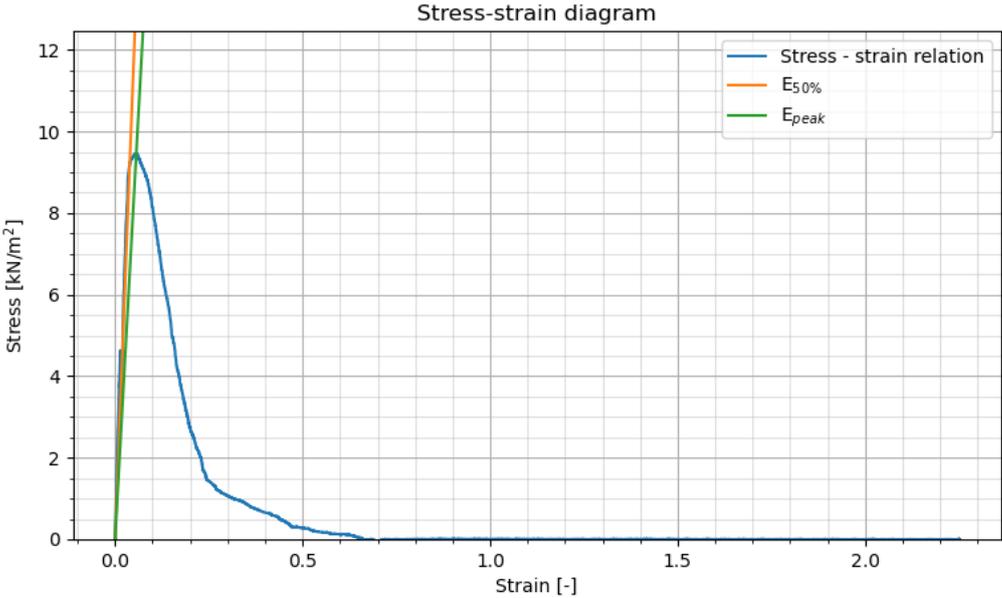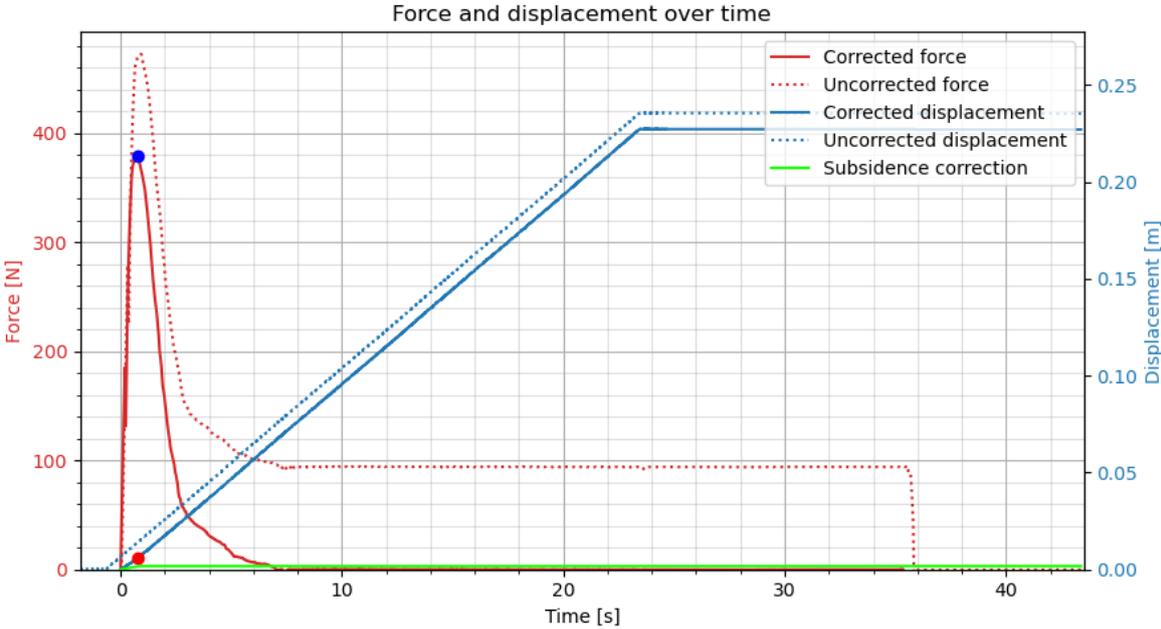
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile

Number of roots over the depth
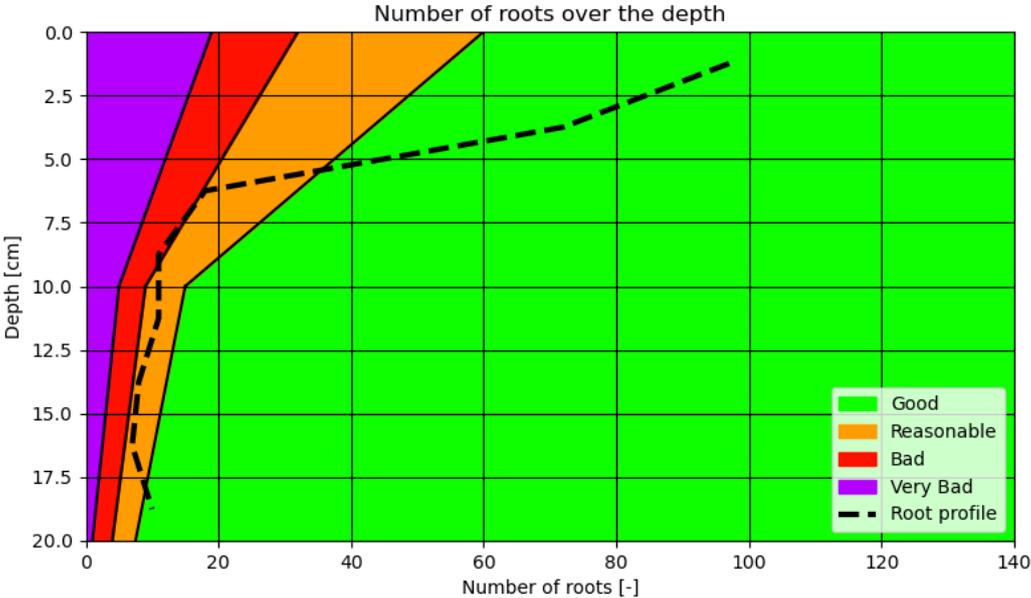
E.2.9. Test09

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		12:34:00			
Weight	[kg]	74.4			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	20	60	20	
Sod thickness	[cm]	9	7	6	7
Root length	[cm]	2	2	3	2.2
Maximum stress	[kN/m^2]	11.78			
Strain at maximum stress	[-]	0.09			
$E_{50\%}$	[kN/m^2]	267.55			
E_{peak}	[kN/m^2]	124.95			
Comments		-			

Stress-strain relation
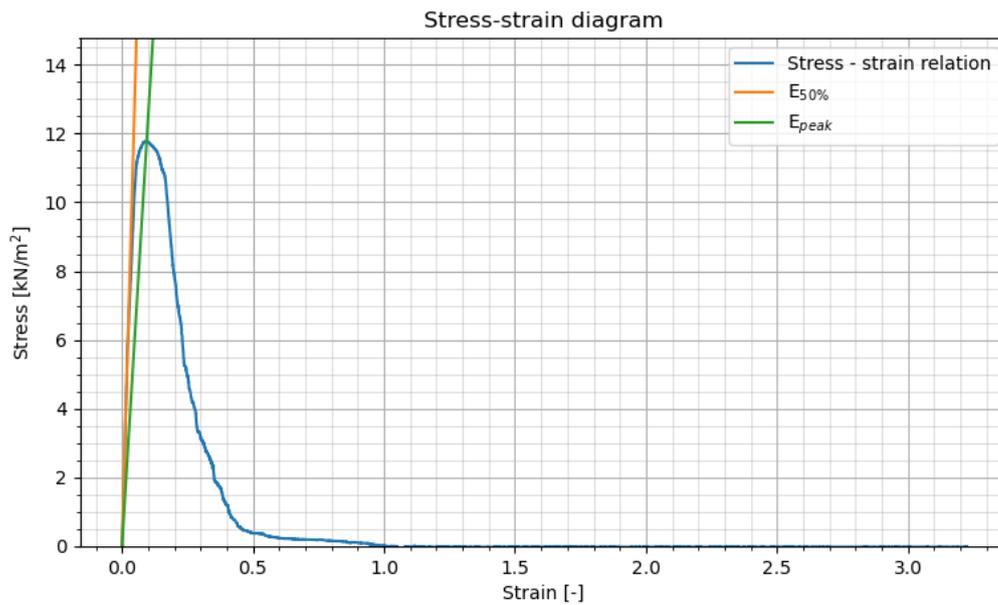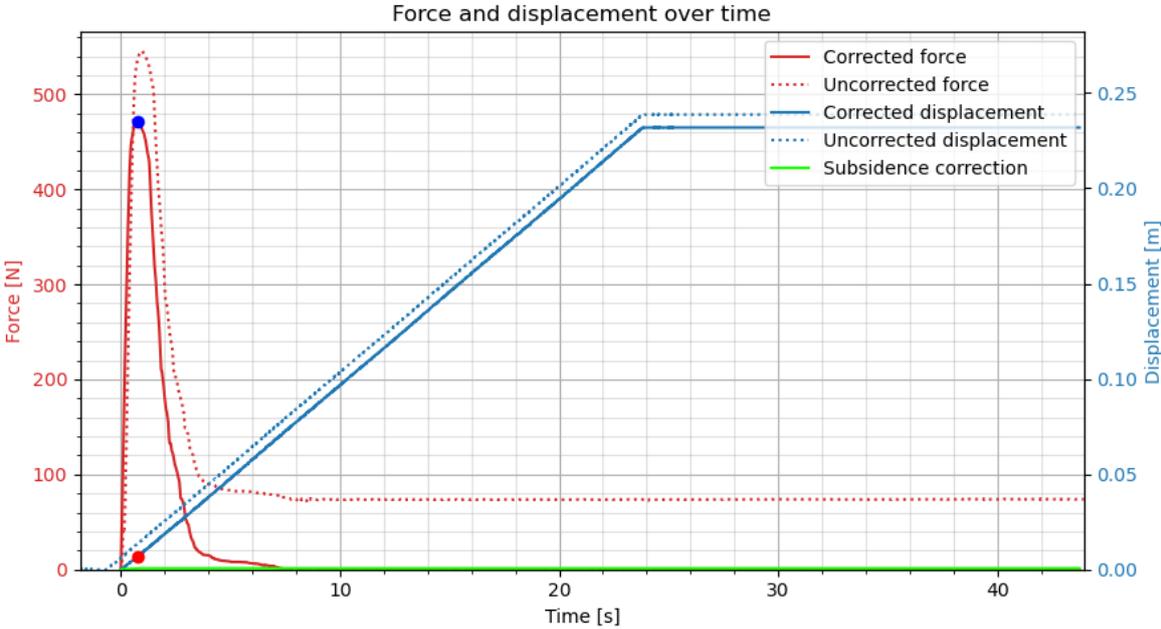
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile

Number of roots over the depth
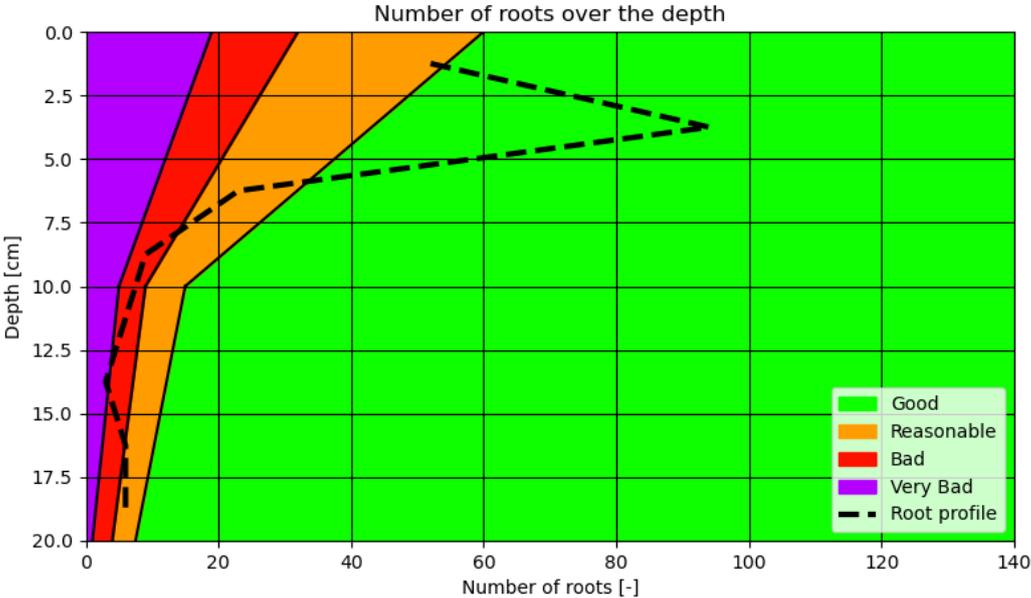
E.2.10. Test10

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		12:41:00			
Weight	[kg]	81.9			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	60	40	0	
Sod thickness	[cm]	10	7	0	9
Root length	[cm]	2	4	0	2.8
Maximum stress	[kN/m^2]	10.53			
Strain at maximum stress	[-]	0.05			
$E_{50\%}$	[kN/m^2]	329.59			
E_{peak}	[kN/m^2]	197.78			
Comments		-			

Stress-strain relation
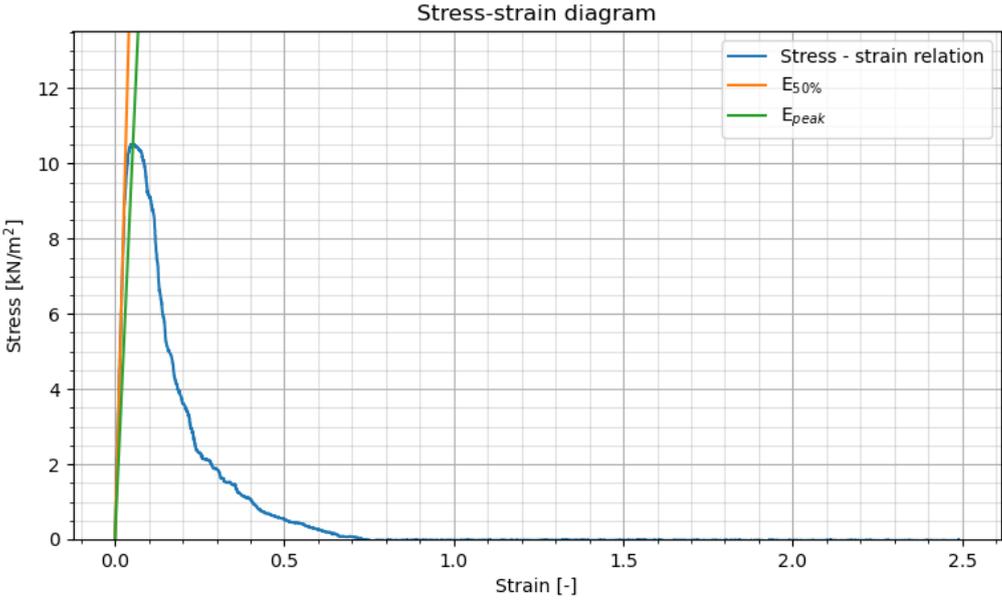
Force and displacement over time
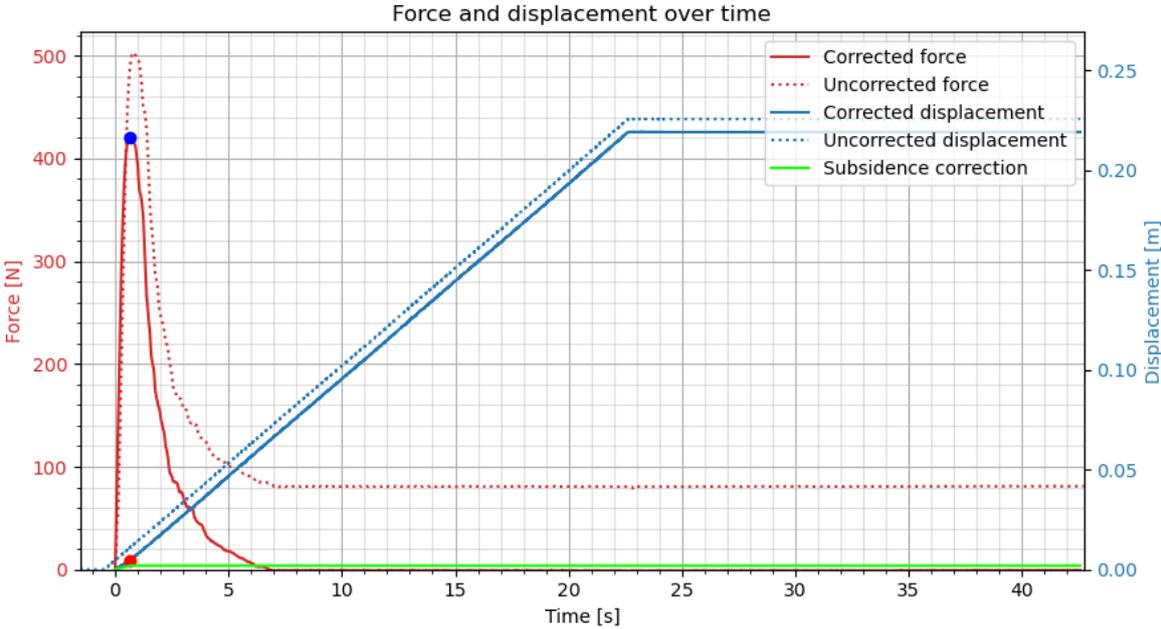
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.3. Direct pull tests - submerged
E.3.1. Test01

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		09:18:00			
Weight	[kg]	79.4			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	30	40	30	
Sod thickness	[cm]	9	7	6	7
Root length	[cm]	6	5	4	5.0
Maximum stress	[kN/m^2]	9.08			
Strain at maximum stress	[-]	0.11			
$E_{50\%}$	[kN/m^2]	147.28			
E_{peak}	[kN/m^2]	85.57			
Comments		-			

Stress-strain relation
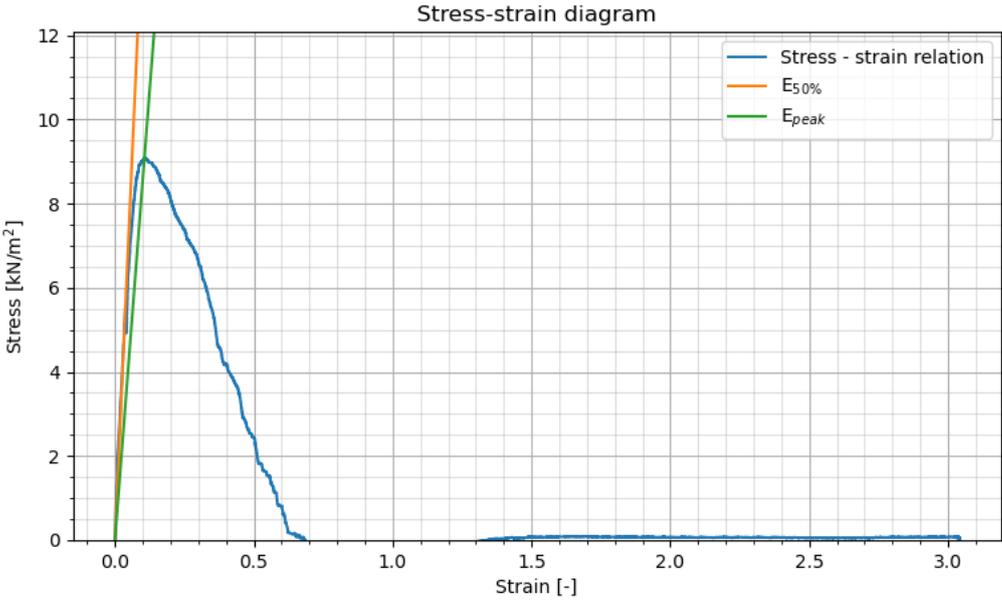
Force and displacement over time
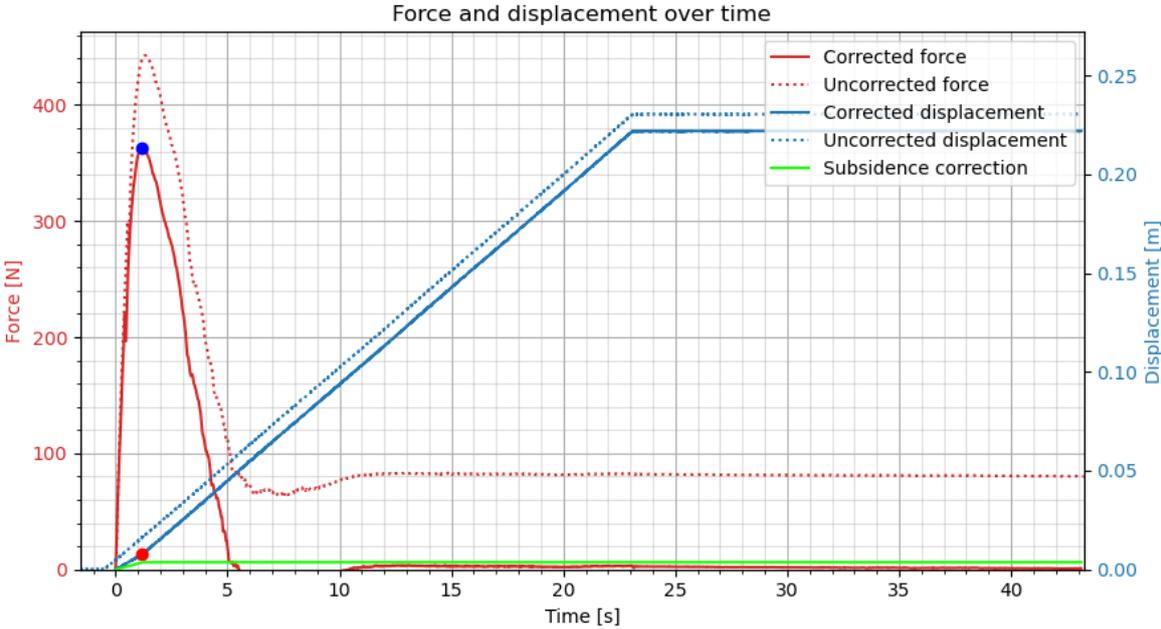
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.3.2. Test02

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		09:40:00			
Weight	[kg]	94.5			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	40	50	10	
Sod thickness	[cm]	11	10	8	10
Root length	[cm]	2	3	3	2.6
Maximum stress	[kN/m^2]	11.67			
Strain at maximum stress	[-]	0.05			
$E_{50\%}$	[kN/m^2]	331.71			
E_{peak}	[kN/m^2]	238.69			
Comments		One pin accidently placed in wrong spot, adjusted			

Stress-strain relation
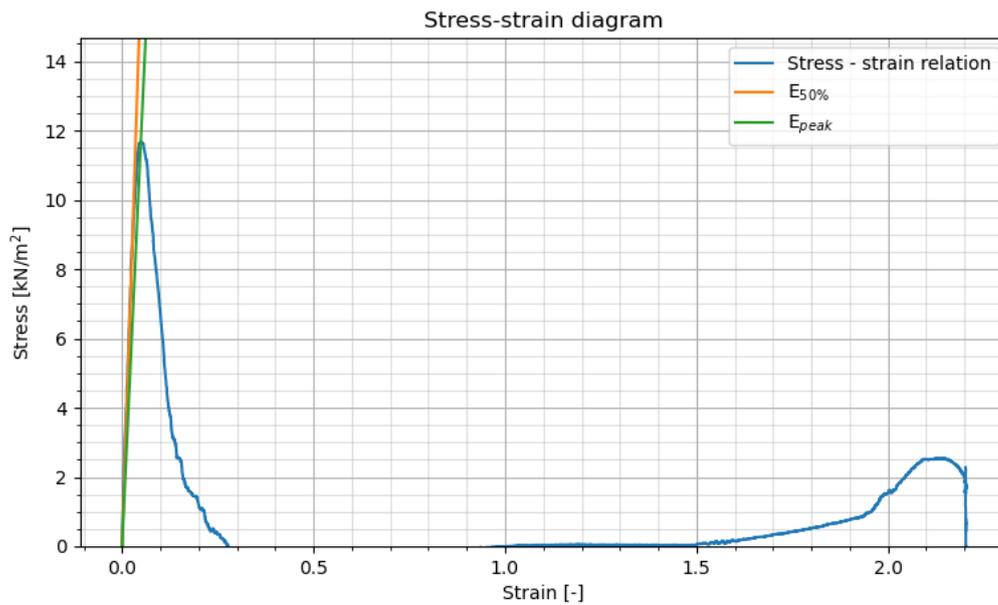
Force and displacement over time
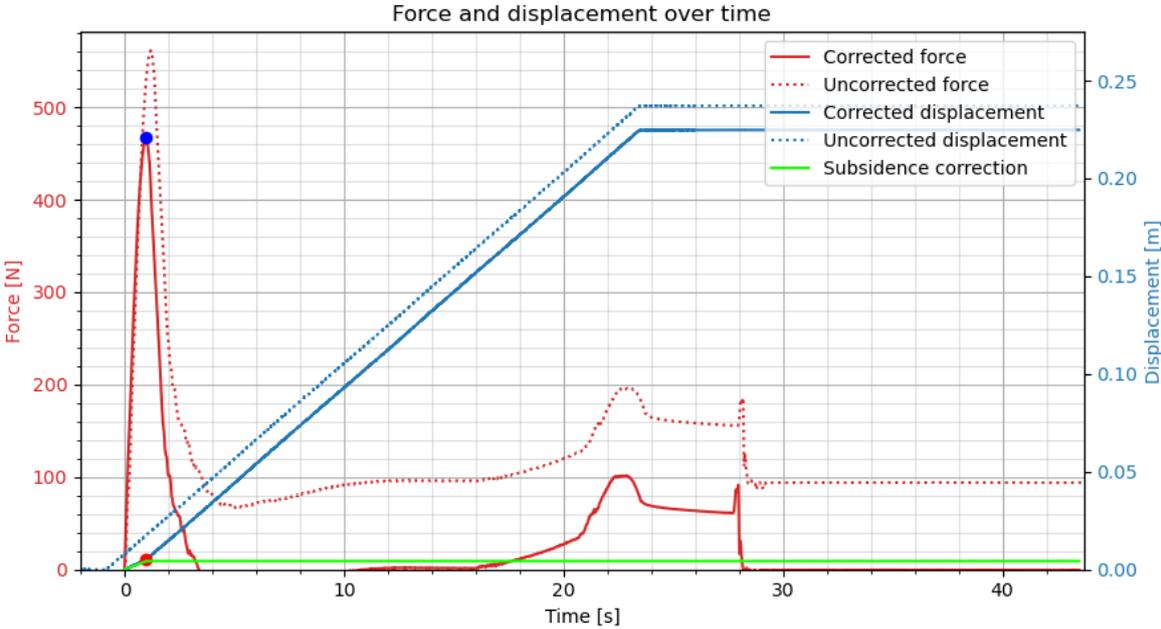
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile
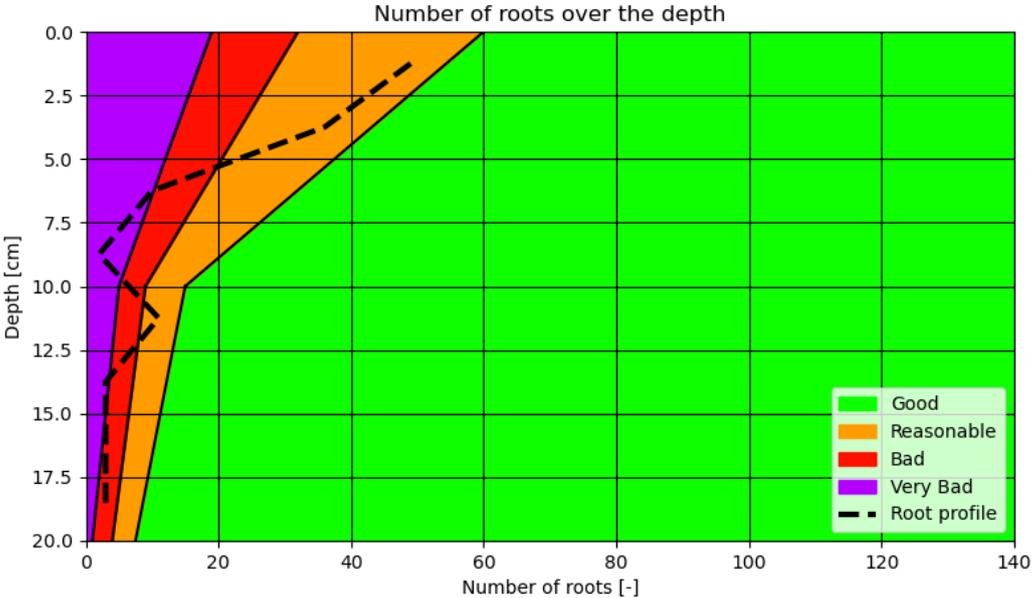
E.3.3. Test03

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		10:34:00			
Weight	[kg]	77.1			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	30	30	40	
Sod thickness	[cm]	9	8	6	8
Root length	[cm]	3	4	8	5.3
Maximum stress	[kN/m^2]	11.15			
Strain at maximum stress	[-]	0.11			
E$_{50\%}$	[kN/m^2]	217.58			
E$_{peak}$	[kN/m^2]	98.1			
Comments		-			

Stress-strain relation
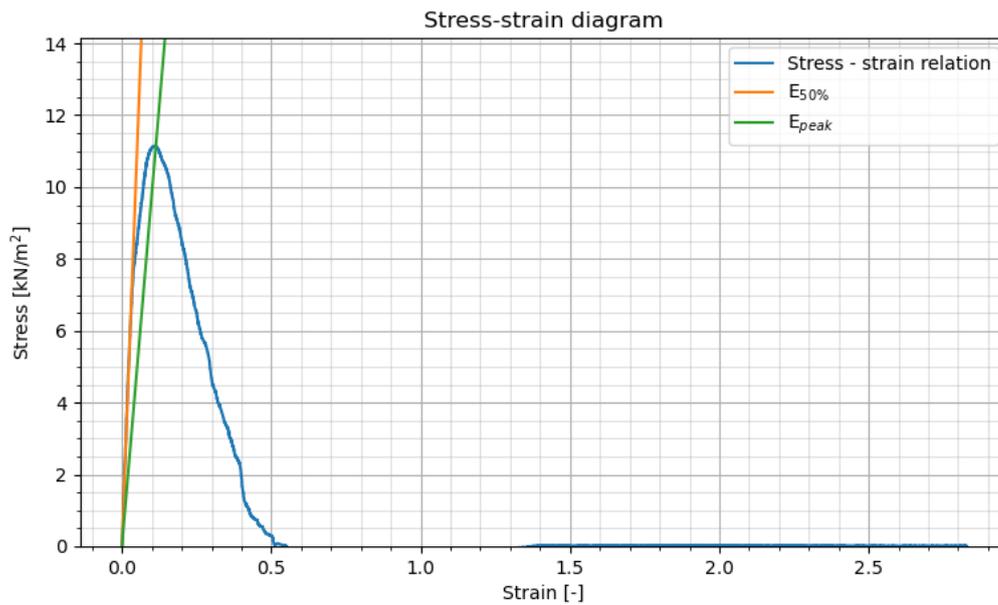
Force and displacement over time
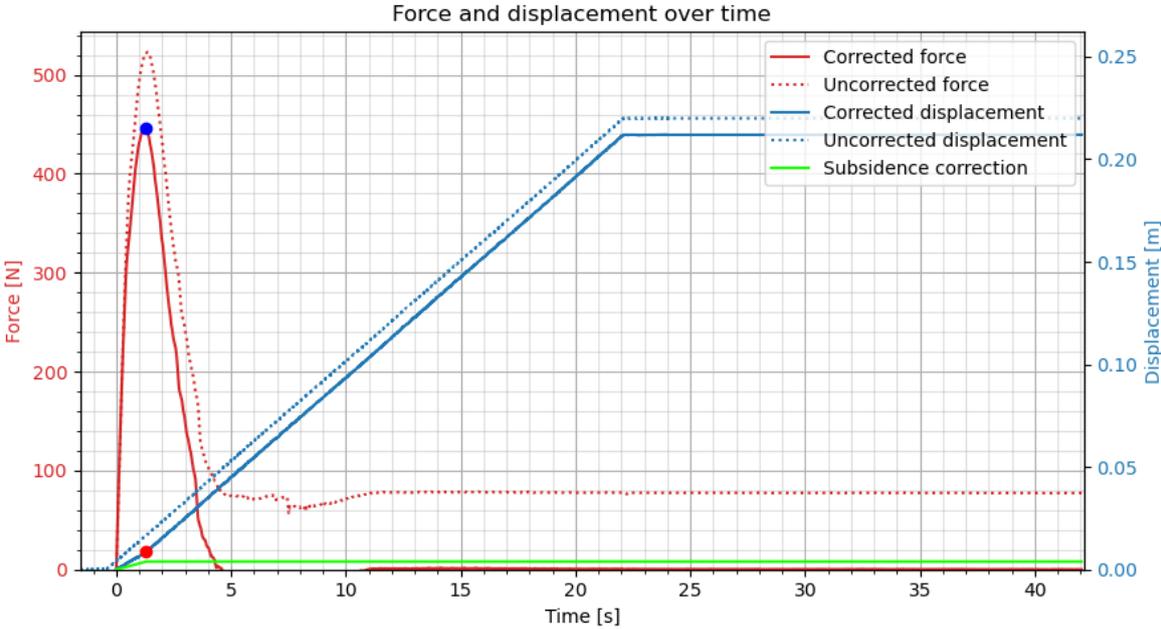
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile
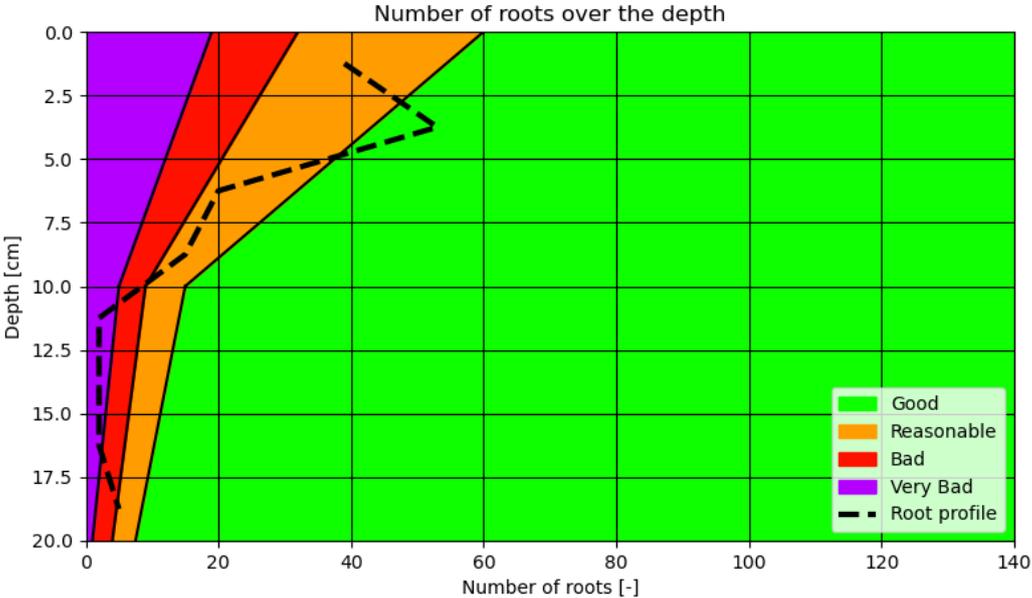
E.3.4. Test04

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		11:30:00			
Weight	[kg]	81.3			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	40	40	20	
Sod thickness	[cm]	9	8	6	8
Root length	[cm]	2	3	3	2.6
Maximum stress	[kN/m^2]	11.84			
Strain at maximum stress	[-]	0.12			
E$_{50\%}$	[kN/m^2]	160.4			
E$_{peak}$	[kN/m^2]	102.73			
Comments		-			

Stress-strain relation
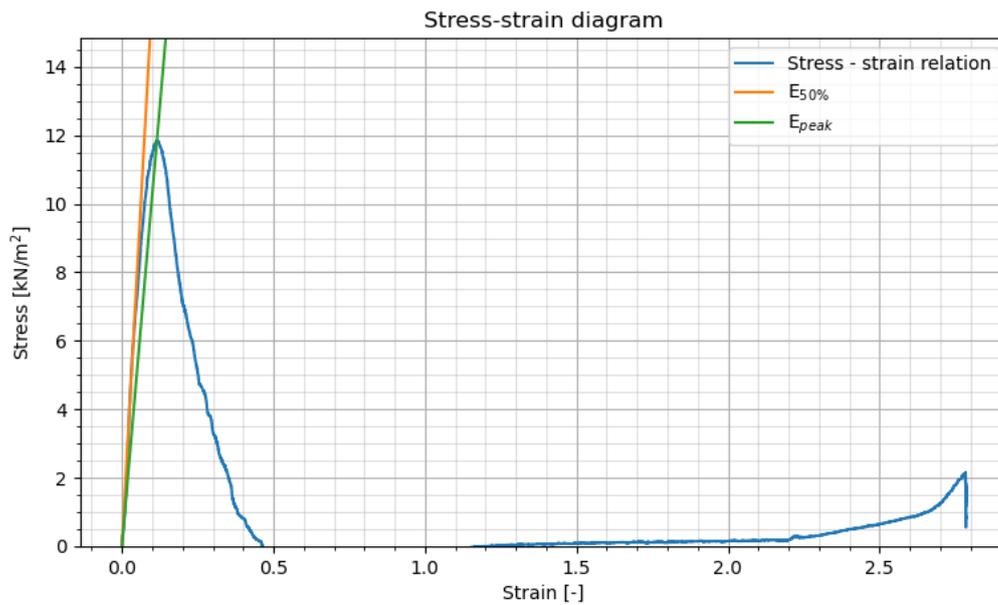
Force and displacement over time
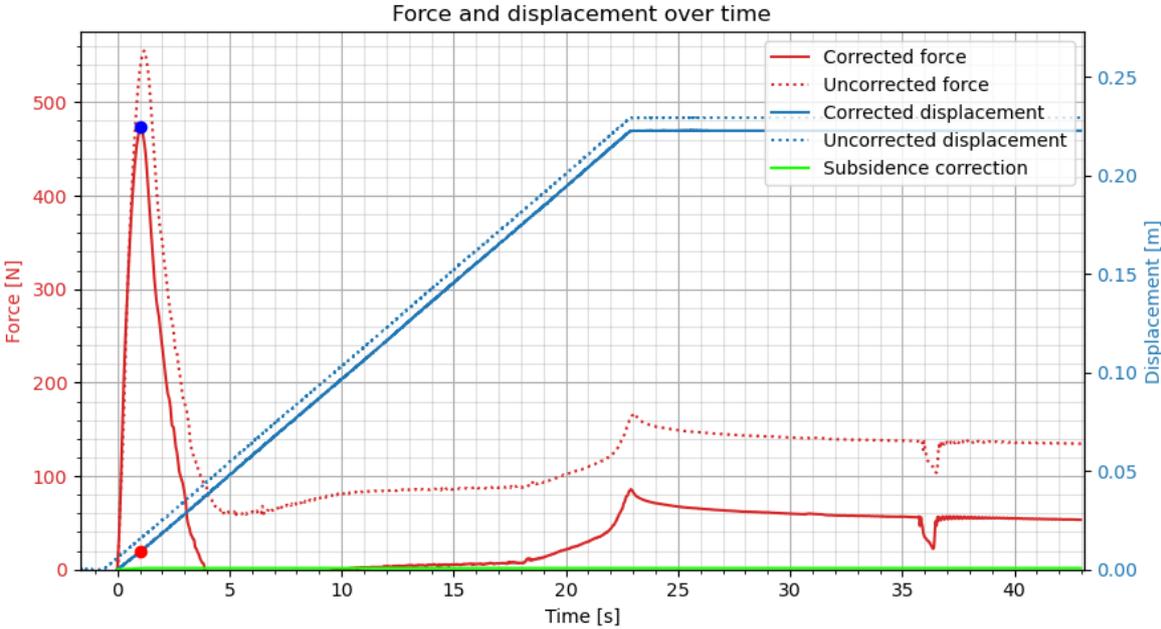
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.3.5. Test05

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		11:48:00			
Weight	[kg]	76.7			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	40	40	20	
Sod thickness	[cm]	8	7	5	7
Root length	[cm]	3	4	5	3.8
Maximum stress	[kN/m^2]	11.28			
Strain at maximum stress	[-]	0.08			
$E_{50\%}$	[kN/m^2]	237.7			
E_{peak}	[kN/m^2]	137.65			
Comments		-			

Stress-strain relation
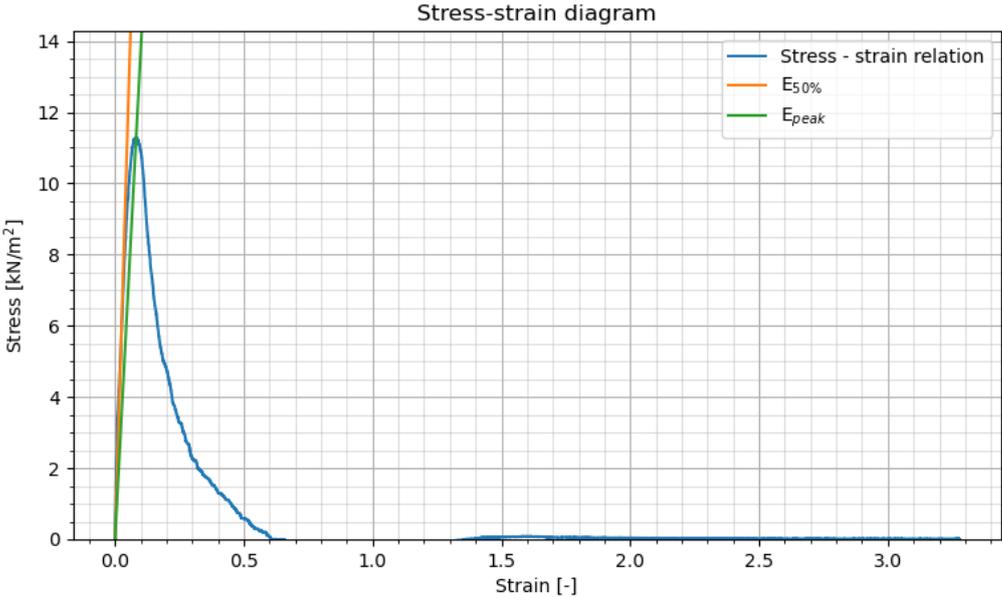
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile

Number of roots over the depth
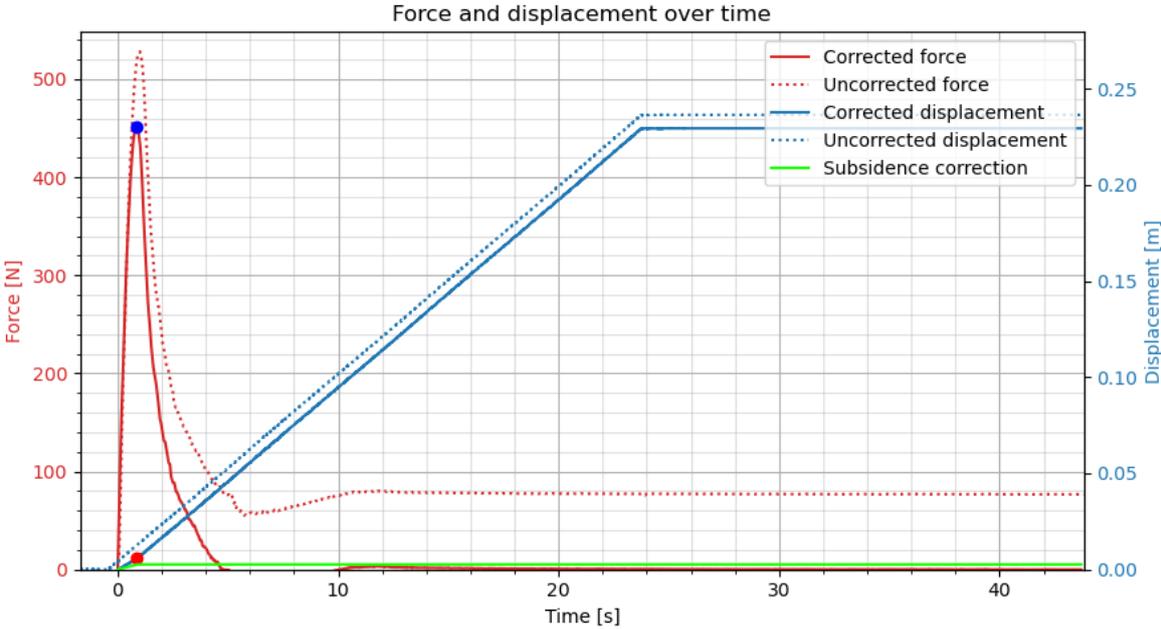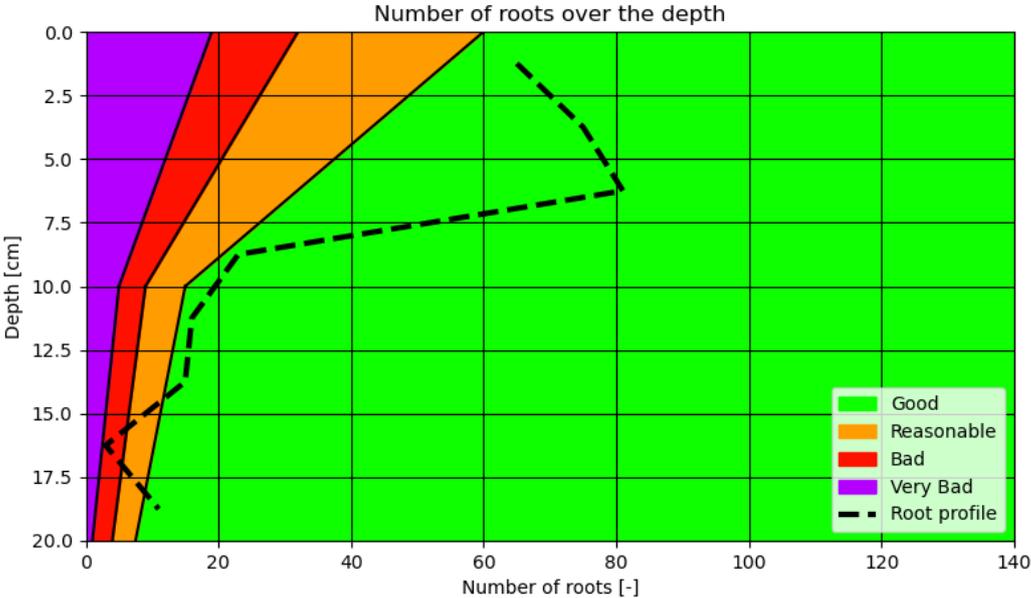
E.3.6. Test06

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		12:23:00			
Weight	[kg]	91.0			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	70	20	10	
Sod thickness	[cm]	10	8	6	9
Root length	[cm]	2	3	2	2.2
Maximum stress	[kN/m^2]	17.32			
Strain at maximum stress	[-]	0.07			
$E_{50\%}$	[kN/m^2]	451.47			
E_{peak}	[kN/m^2]	252.44			
Comments		-			

Stress-strain relation
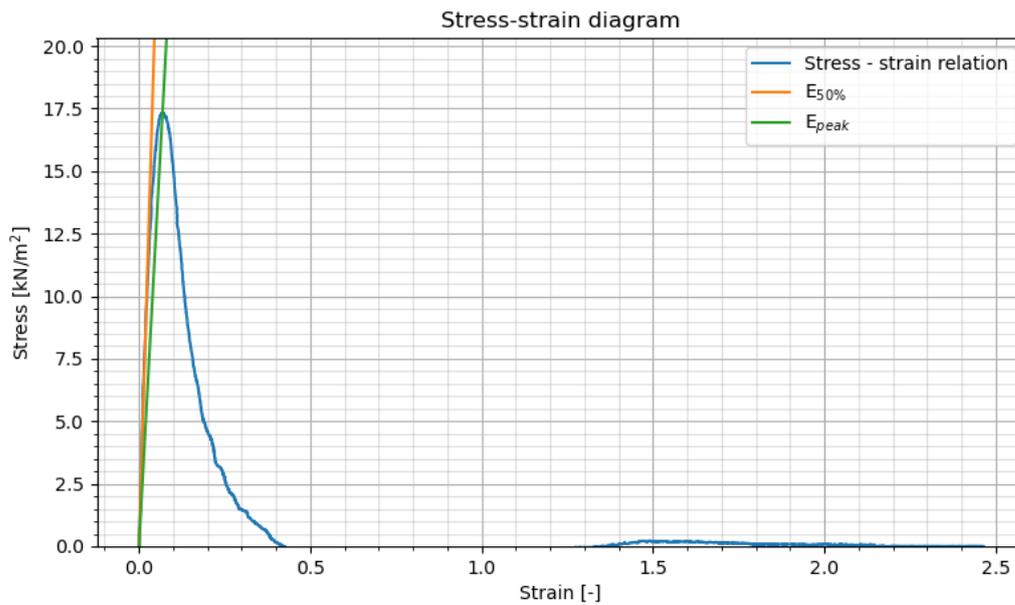
Force and displacement over time
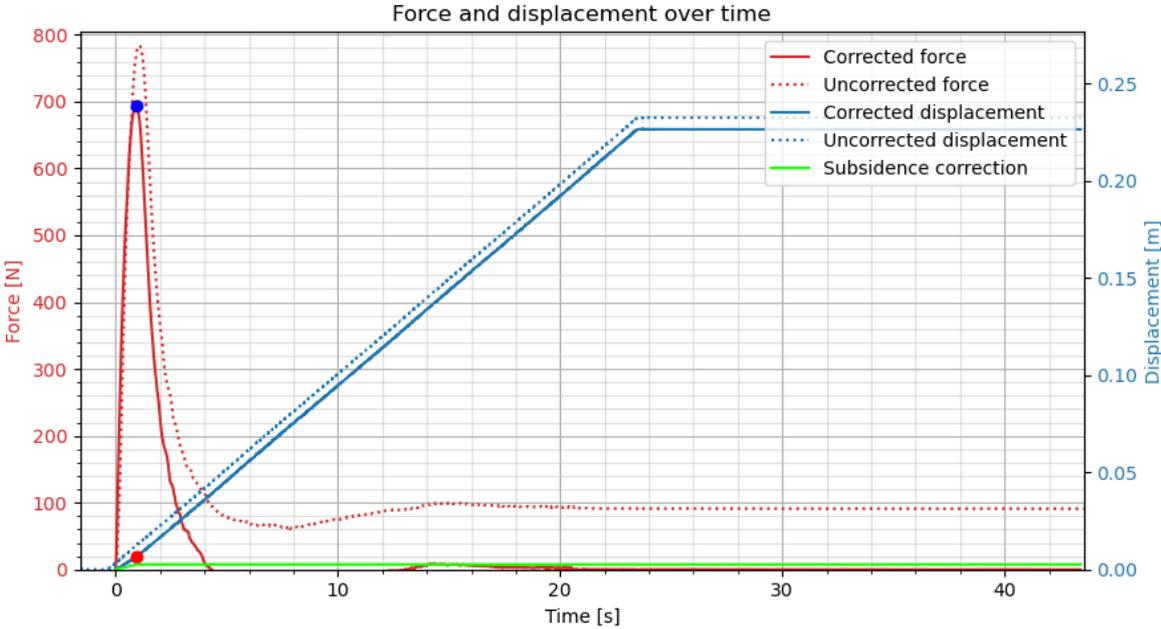
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.3.7. Test07

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		12:54:00			
Weight	[kg]	69.6			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	20	10	70	
Sod thickness	[cm]	8	7	5	6
Root length	[cm]	2	2	5	4.1
Maximum stress	[kN/m^2]	13.5			
Strain at maximum stress	[-]	0.1			
E$_{50\%}$	[kN/m^2]	296.22			
E$_{peak}$	[kN/m^2]	130.09			
Comments		-			

Stress-strain relation
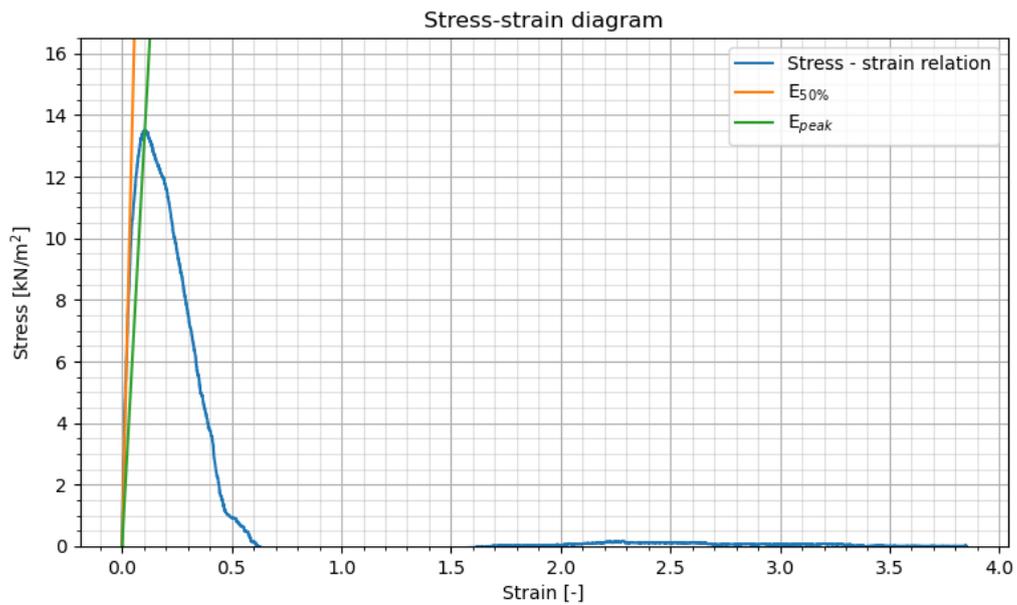
Force and displacement over time
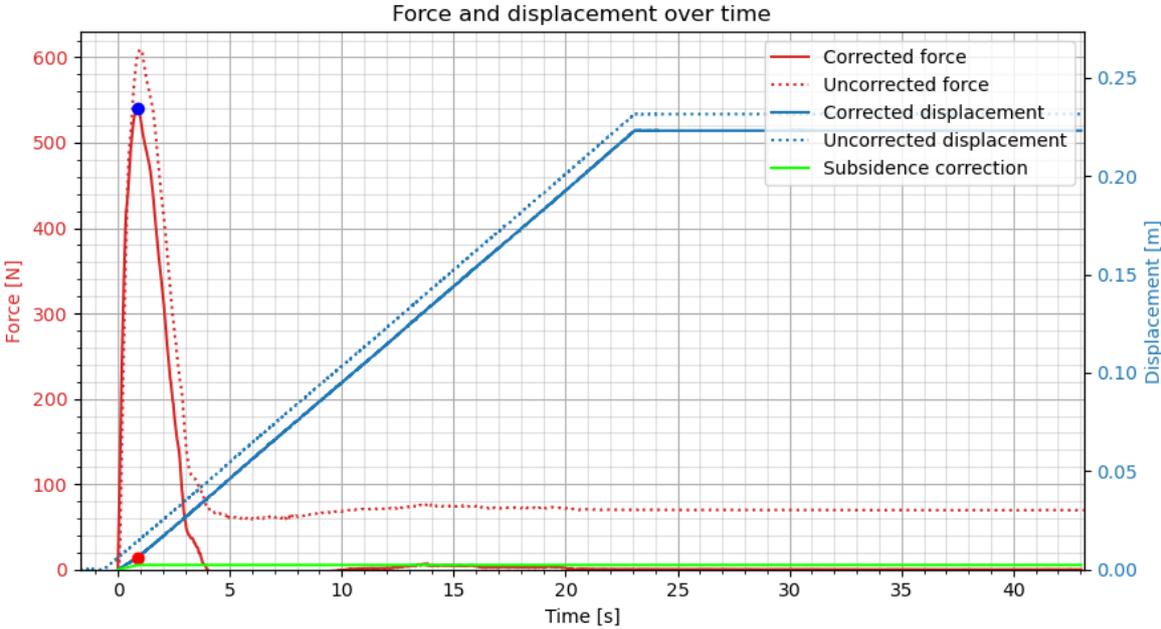
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.3.8. Test08

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		13:34:00			
Weight	[kg]	71.0			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	30	40	30	
Sod thickness	[cm]	7	6	5	6
Root length	[cm]	3	3	3	3.0
Maximum stress	[kN/m^2]	14.9			
Strain at maximum stress	[-]	0.1			
E$_{50\%}$	[kN/m^2]	222.63			
E$_{peak}$	[kN/m^2]	149.94			
Comments		-			

Stress-strain relation
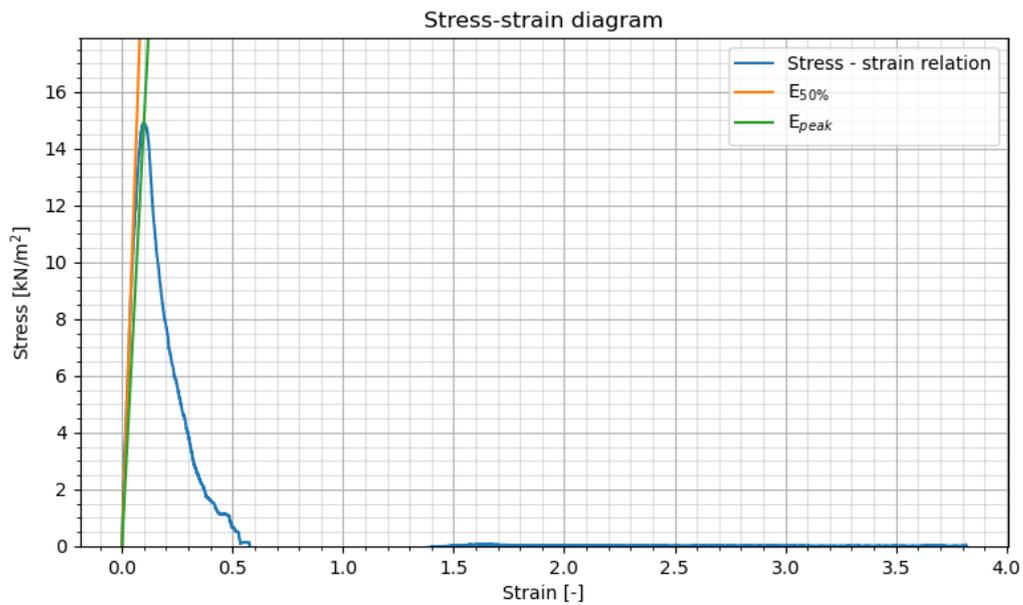
Force and displacement over time
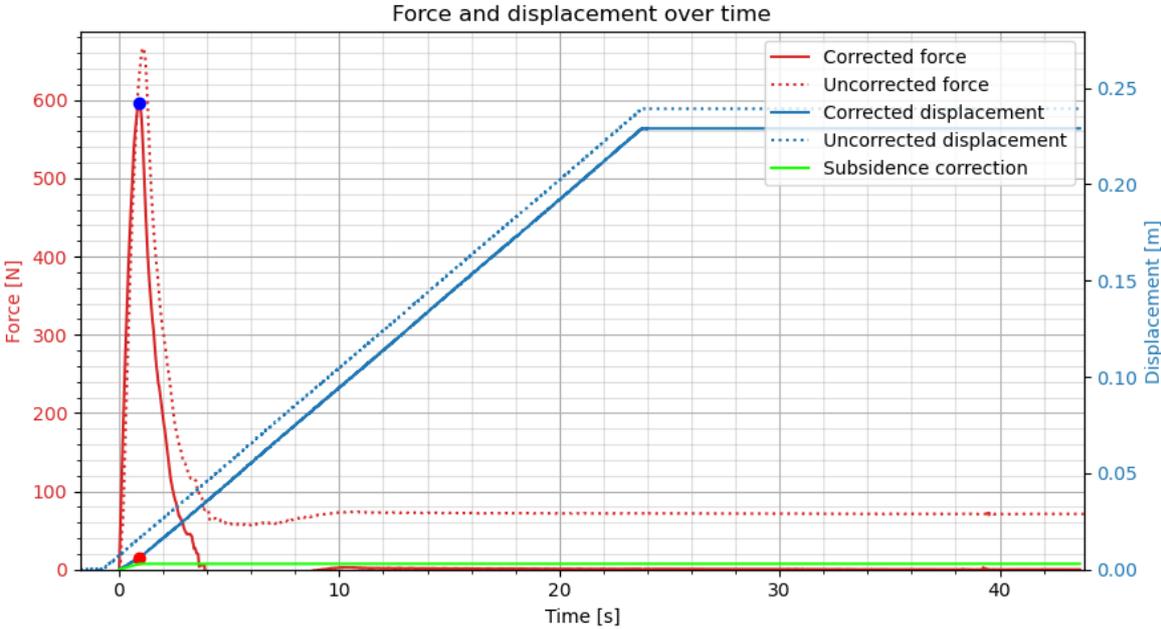
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile
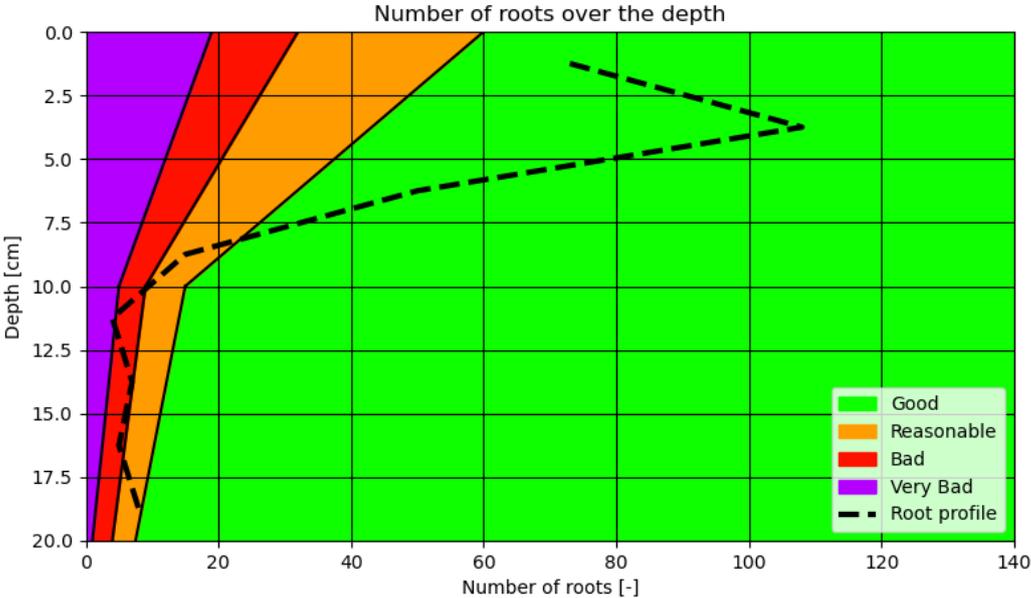
E.3.9. Test09

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		13:55:00			
Weight	[kg]	72.8			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	30	40	30	
Sod thickness	[cm]	8	7	5	7
Root length	[cm]	3	3	5	3.6
Maximum stress	[kN/m^2]	12.33			
Strain at maximum stress	[-]	0.11			
E$_{50\%}$	[kN/m^2]	189.59			
E$_{peak}$	[kN/m^2]	117.45			
Comments		-			

Stress-strain relation
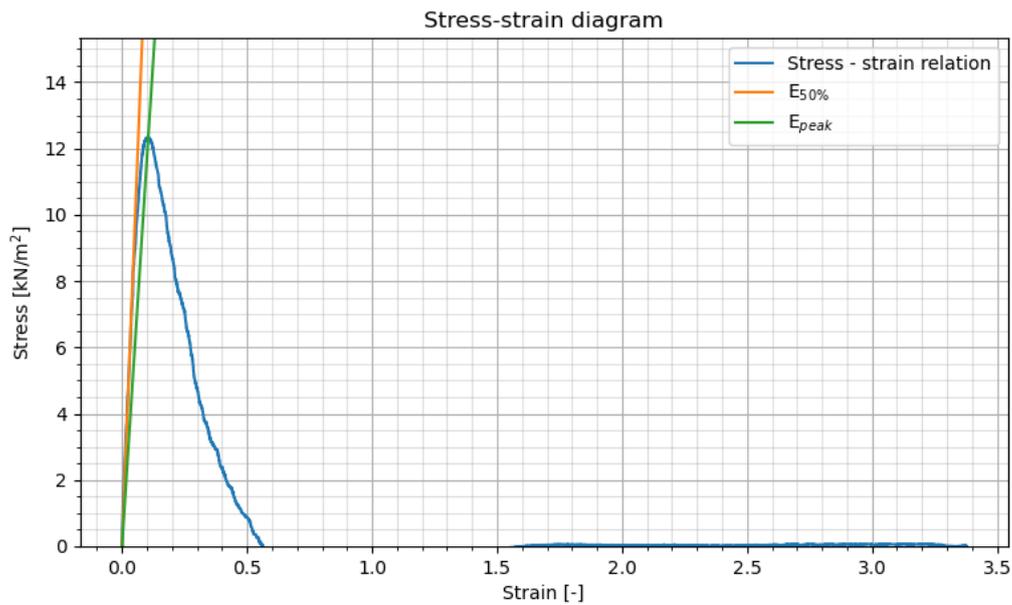
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile

Number of roots over the depth
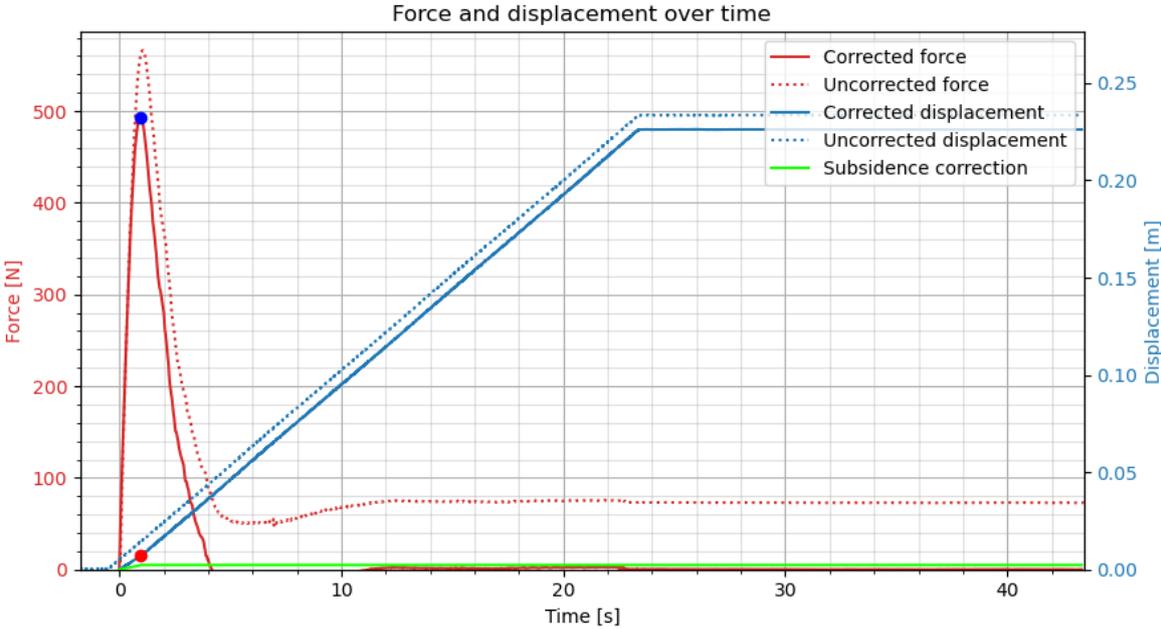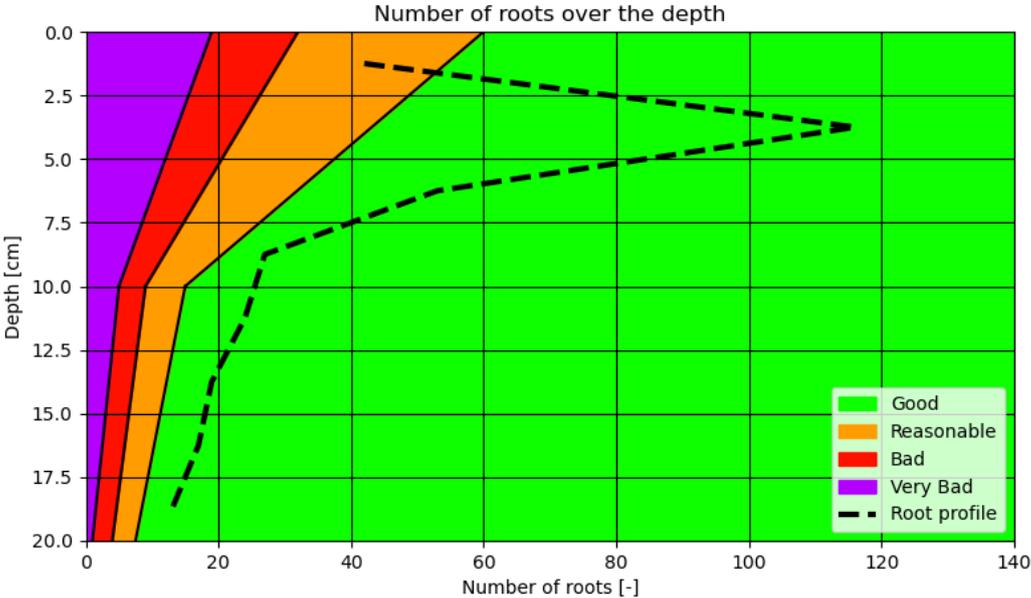
E.3.10. Test10

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		14:30:00			
Weight	[kg]	79.5			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	20	60	20	
Sod thickness	[cm]	9	8	6	8
Root length	[cm]	2	3	3	2.8
Maximum stress	[kN/m^2]	15.72			
Strain at maximum stress	[-]	0.12			
E$_{50\%}$	[kN/m^2]	196.62			
E$_{peak}$	[kN/m^2]	133.59			
Comments		-			

Stress-strain relation
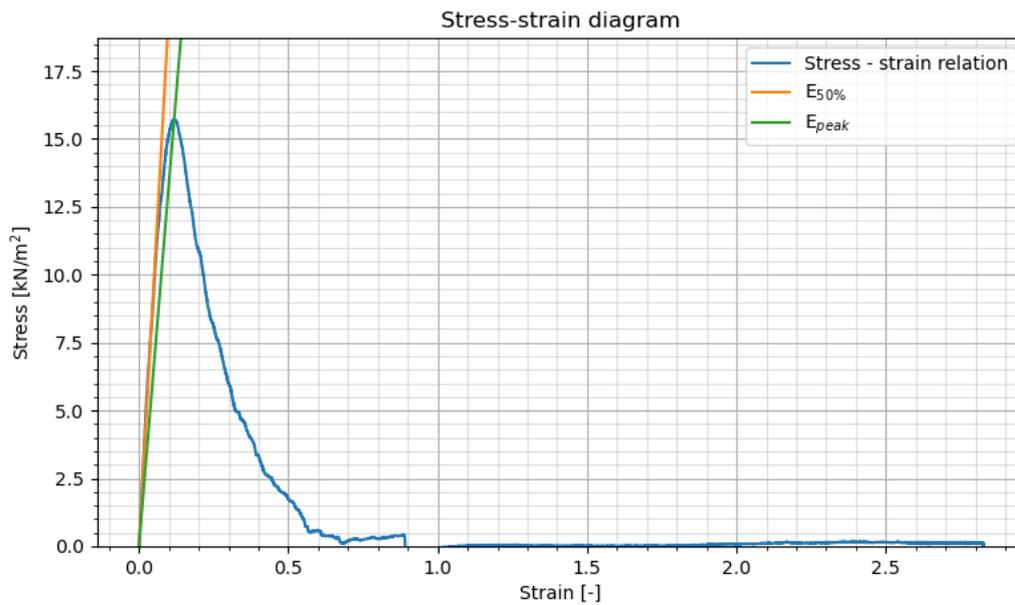
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

Root profile

Number of roots over the depth
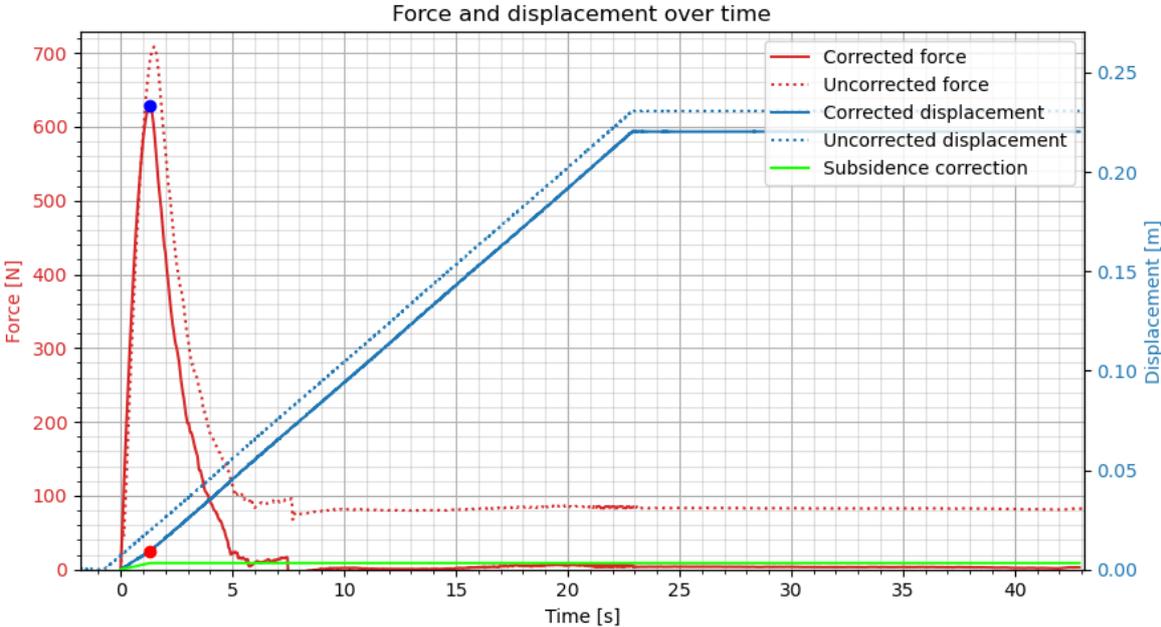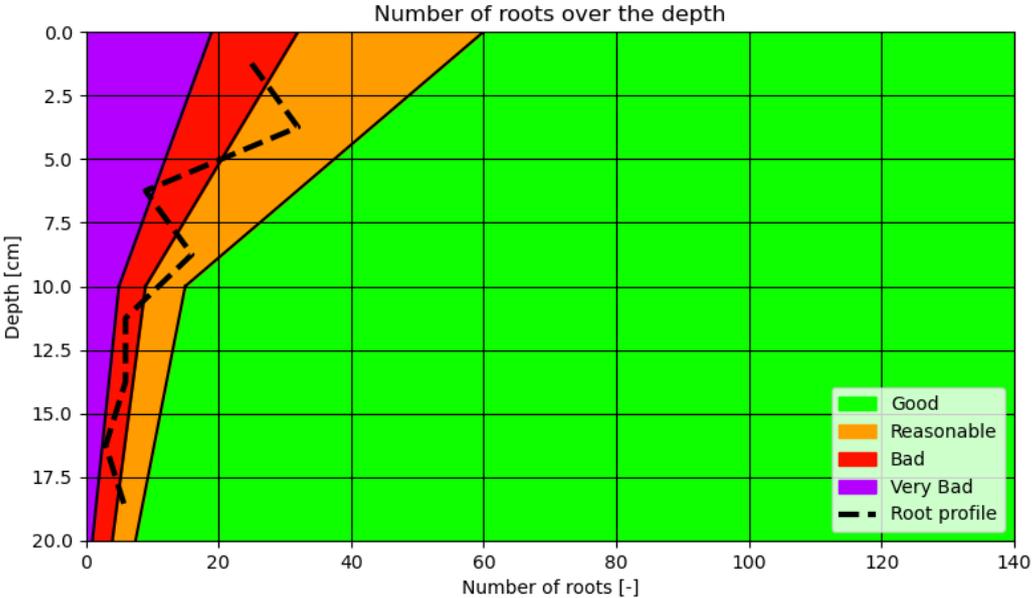
E.1. Shear tests - dry

E.1.1. Test01

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		12:30:00			
Weight	[kg]	70.9			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.4			
Percentage of occurance	[%]	100	0	0	
Sod thickness	[cm]	6	0	0	6
Maximum shear stress	[kN/m^2]	22.88			
Shear strain at maximum shear stress	[-]	1.46			
G	[kN/m^2]	15.71			
Comments		-			

Stress-strain relation
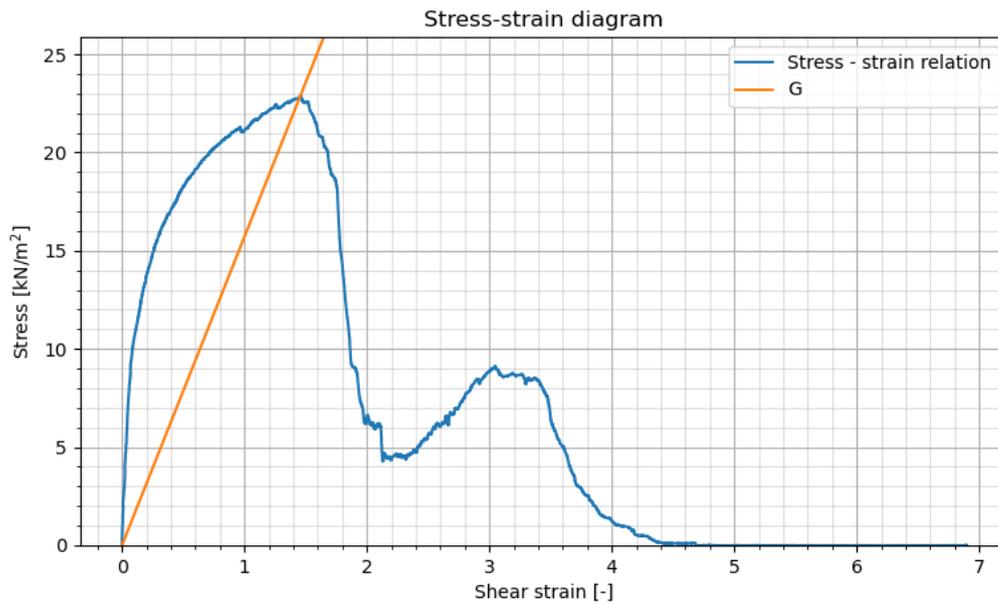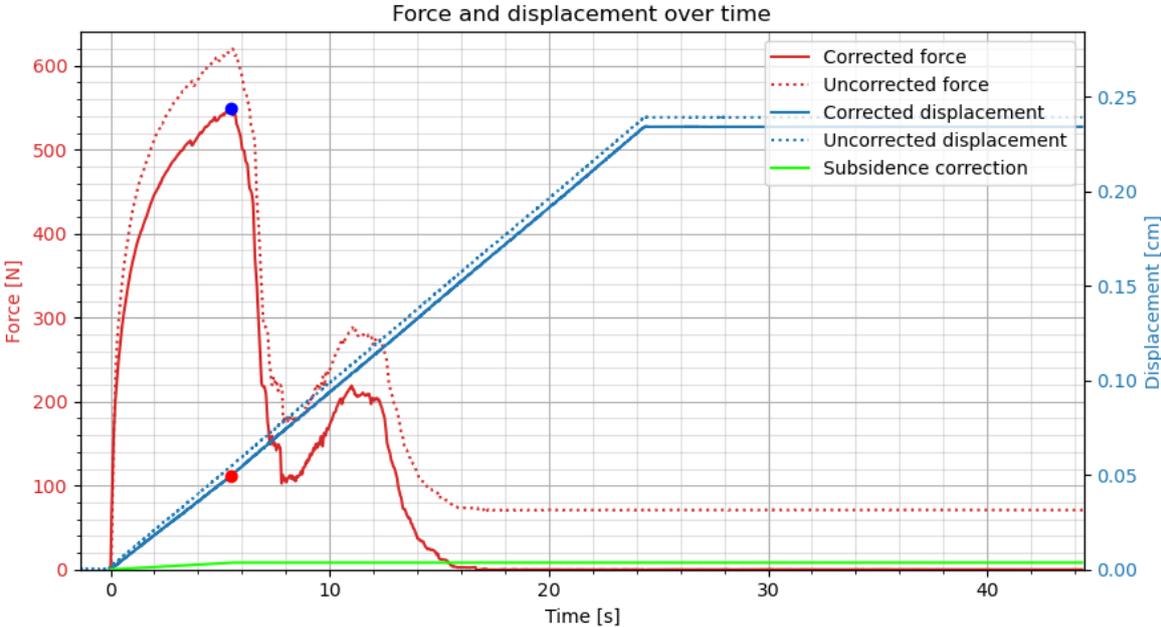
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.2. Test02

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		13:42:00			
Weight	[kg]	72.2			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.67			
Percentage of occurance	[%]	100	0	0	
Sod thickness	[cm]	7	0	0	7
Maximum shear stress	[kN/m^2]	22.95			
Shear strain at maximum shear stress	[-]	1.49			
G	[kN/m^2]	15.42			
Comments		-			

Stress-strain relation
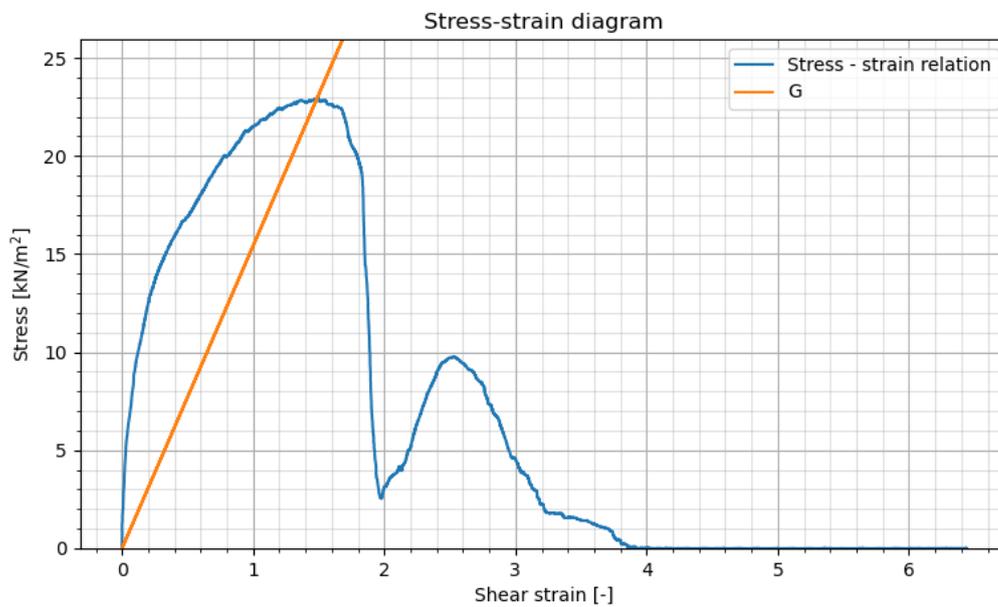
Force and displacement over time

Force and displacement over time
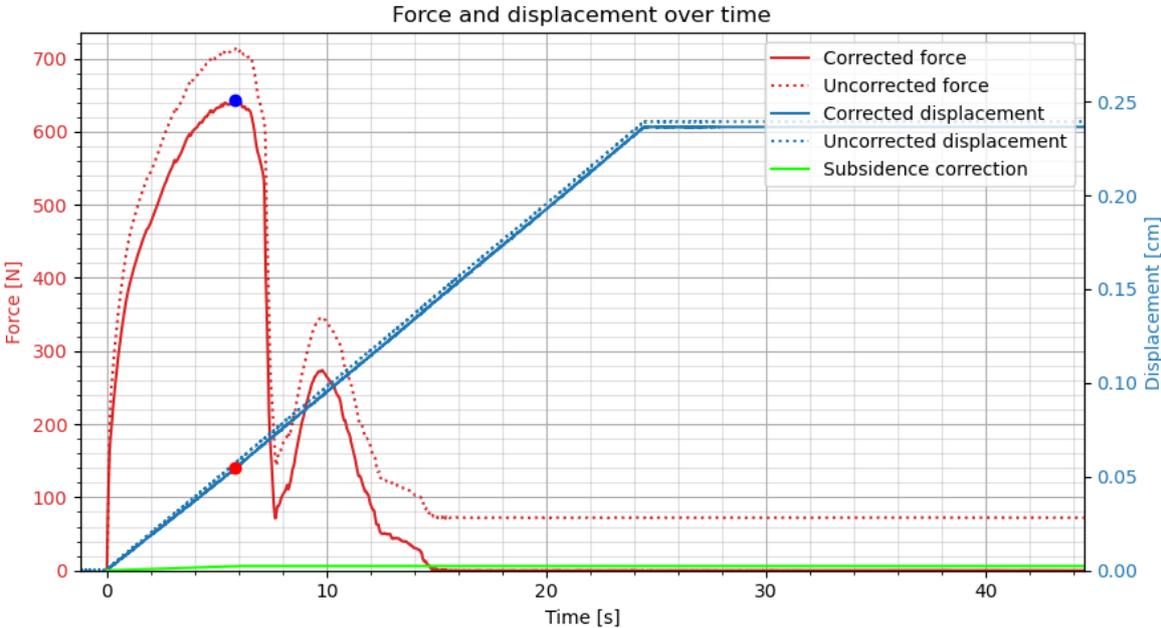
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.1.3. Test03

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		14:47:00			
Weight	[kg]	72.7			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.15			
Percentage of occurance	[%]	90	10	0	
Sod thickness	[cm]	7	5	0	7
Maximum shear stress	[kN/m^2]	21.49			
Shear strain at maximum shear stress	[-]	1.36			
G	[kN/m^2]	15.84			
Comments		-			

Stress-strain relation
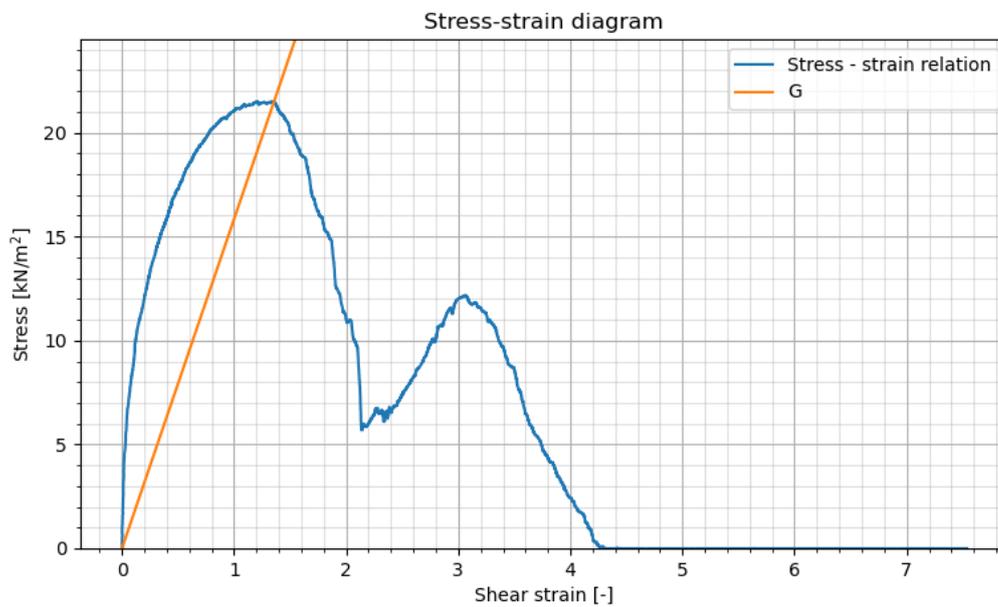
Force and displacement over time

Force and displacement over time
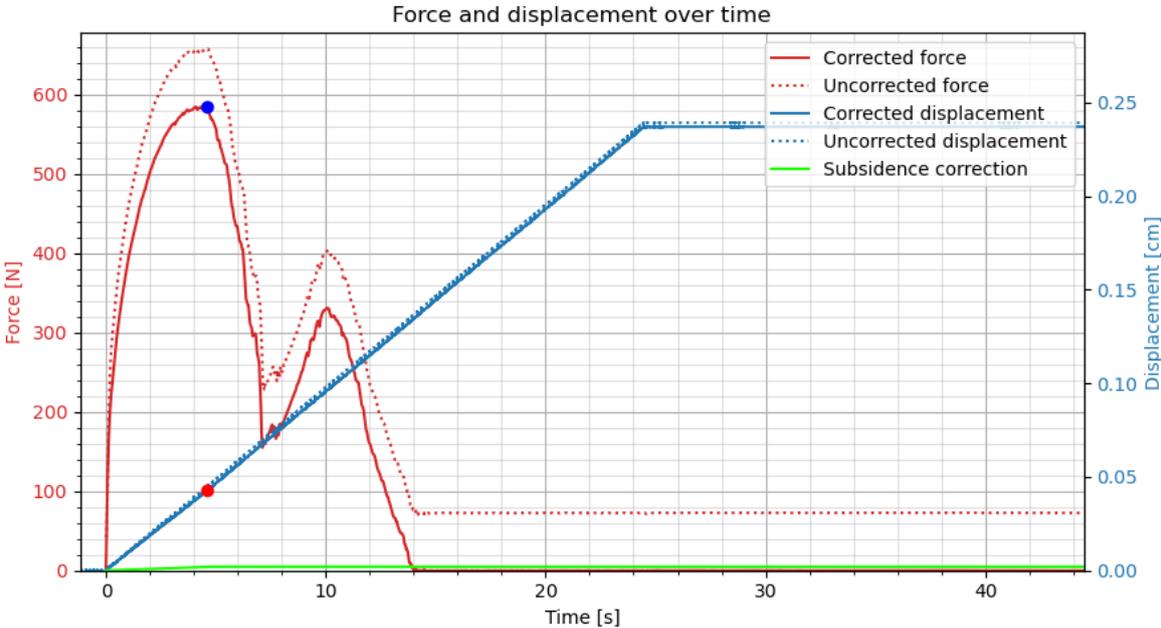
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.1.4. Test04

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		15:44:00			
Weight	[kg]	74.8			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	2.98			
Percentage of occurance	[%]	90	10	0	
Sod thickness	[cm]	7	5	0	7
Maximum shear stress	[kN/m^2]	24.31			
Shear strain at maximum shear stress	[-]	1.13			
G	[kN/m^2]	21.58			
Comments		-			

Stress-strain relation
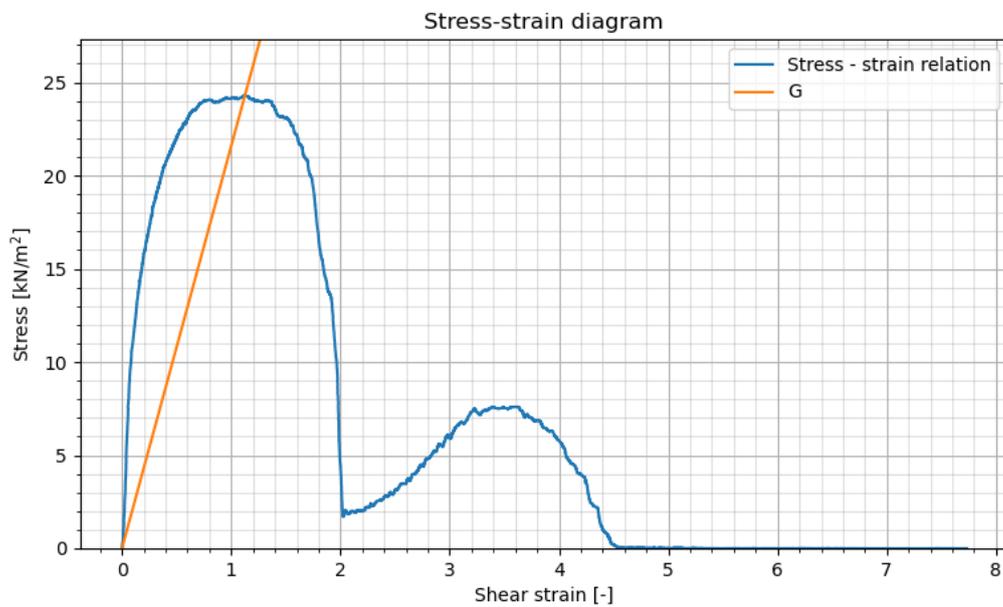
Force and displacement over time

Force and displacement over time
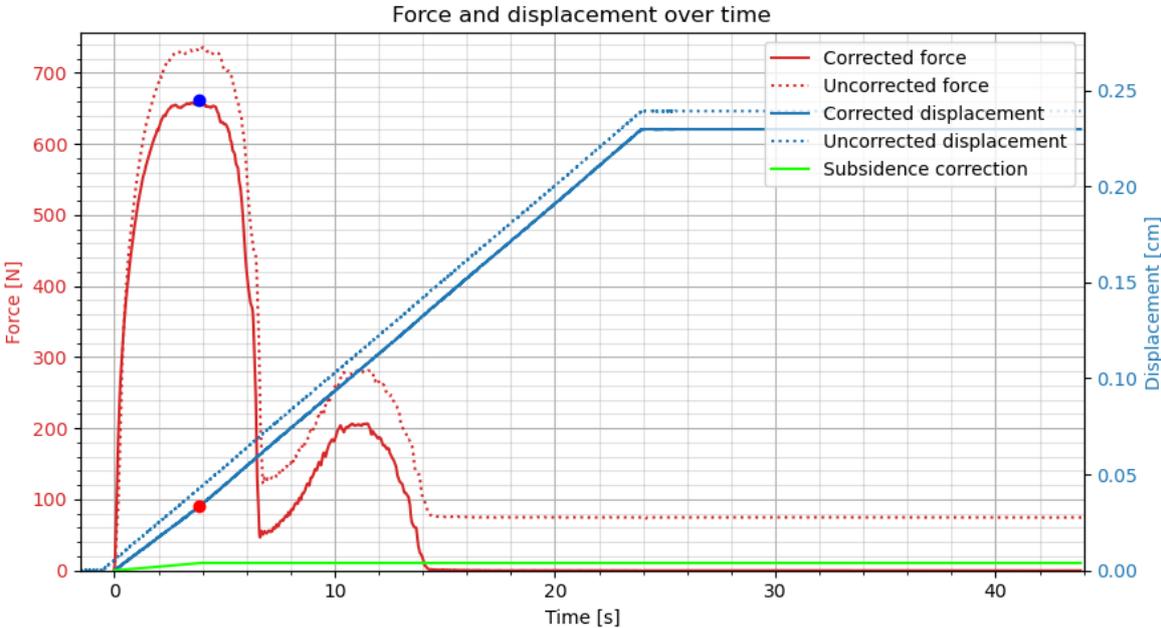
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.1.5. Test05

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		16:30:00			
Weight	[kg]	74.1			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.2			
Percentage of occurance	[%]	90	10	0	
Sod thickness	[cm]	7	5	0	7
Maximum shear stress	[kN/m^2]	24.52			
Shear strain at maximum shear stress	[-]	1.22			
G	[kN/m^2]	20.06			
Comments		-			

Stress-strain relation
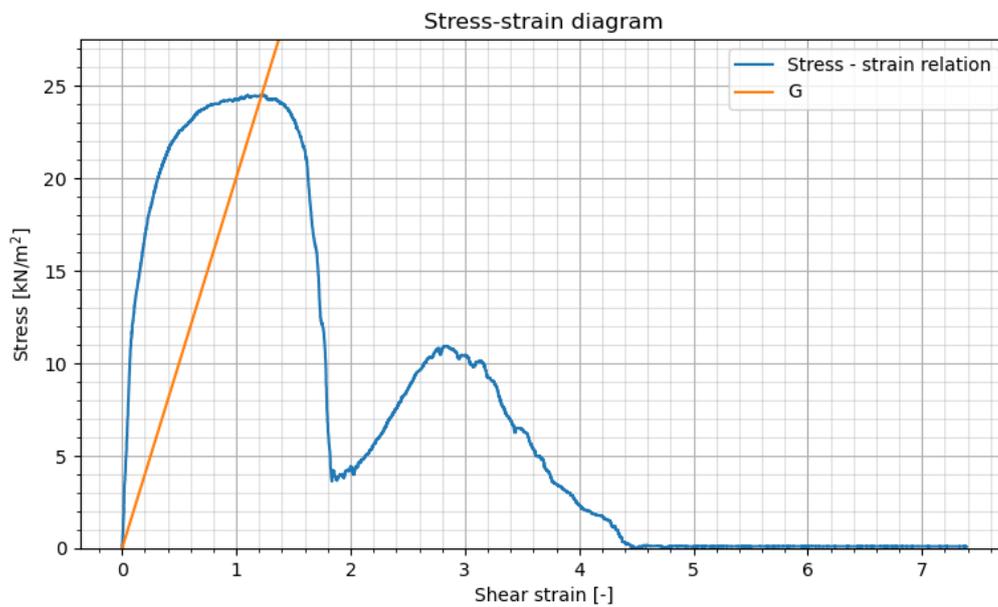
Force and displacement over time

Force and displacement over time
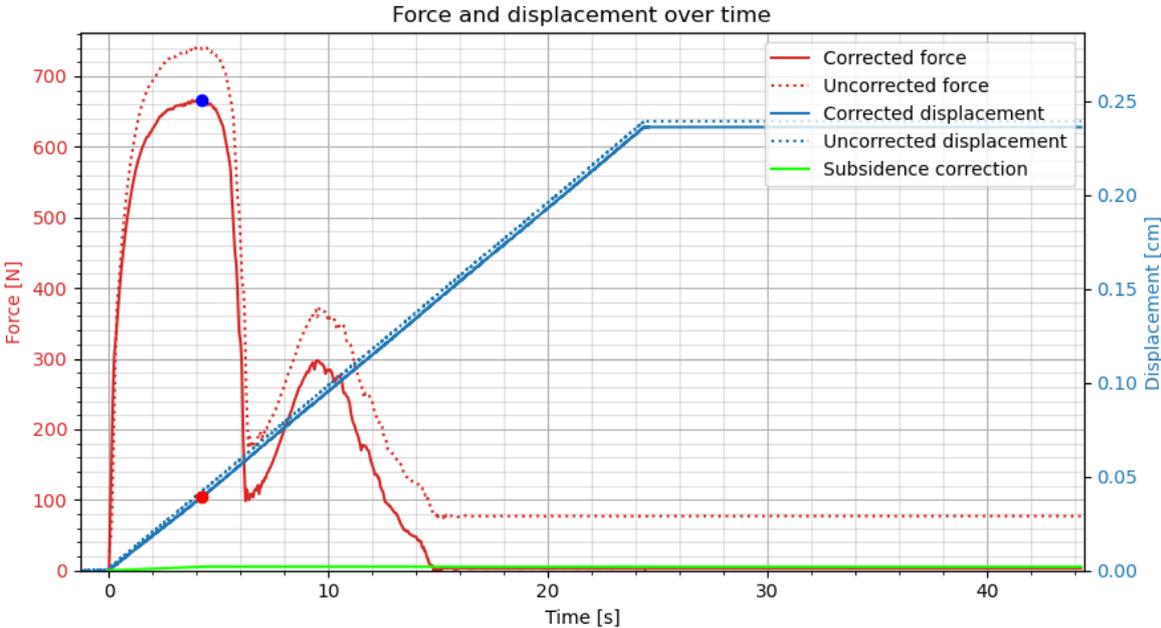
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.1.6. Test06

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		?			
Weight	[kg]	86.9			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.92			
Percentage of occurance	[%]	10	30	60	
Sod thickness	[cm]	9	8	7	8
Maximum shear stress	[kN/m^2]	19.97			
Shear strain at maximum shear stress	[-]	1.33			
G	[kN/m^2]	15.07			
Comments		-			

Stress-strain relation
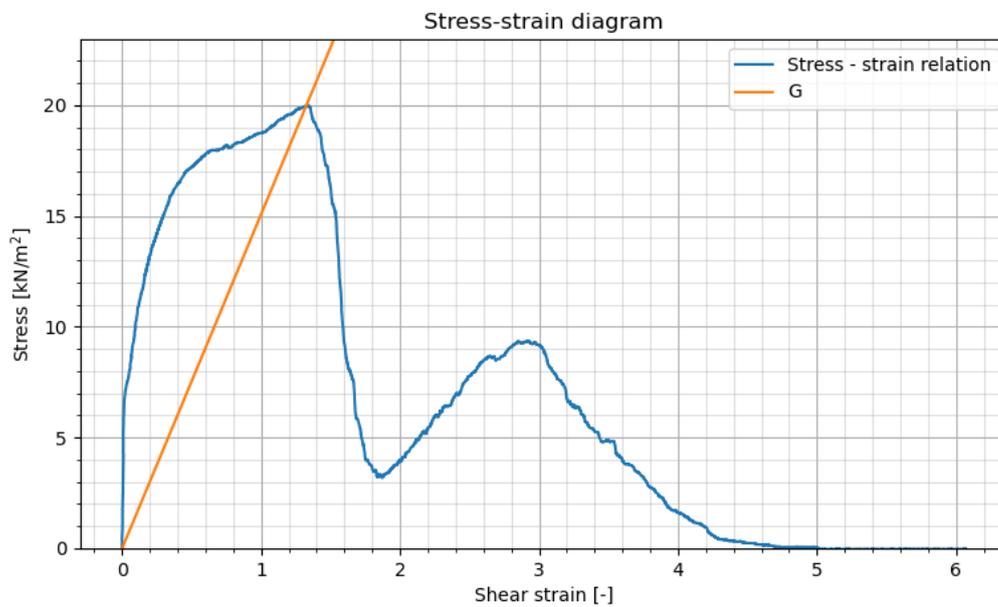
Force and displacement over time

Force and displacement over time
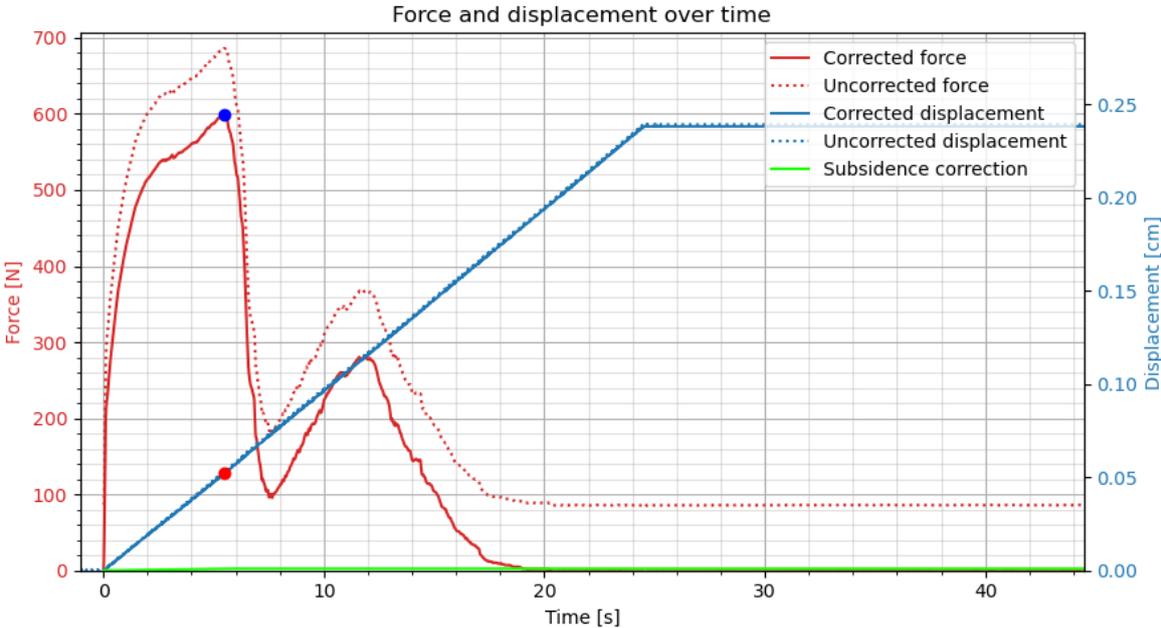
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.1.7. Test07

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		?			
Weight	[kg]	75.5			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.12			
Percentage of occurance	[%]	90	10	0	
Sod thickness	[cm]	7	5	0	7
Maximum shear stress	[kN/m^2]	23.64			
Shear strain at maximum shear stress	[-]	1.45			
G	[kN/m^2]	16.33			
Comments		-			

Stress-strain relation
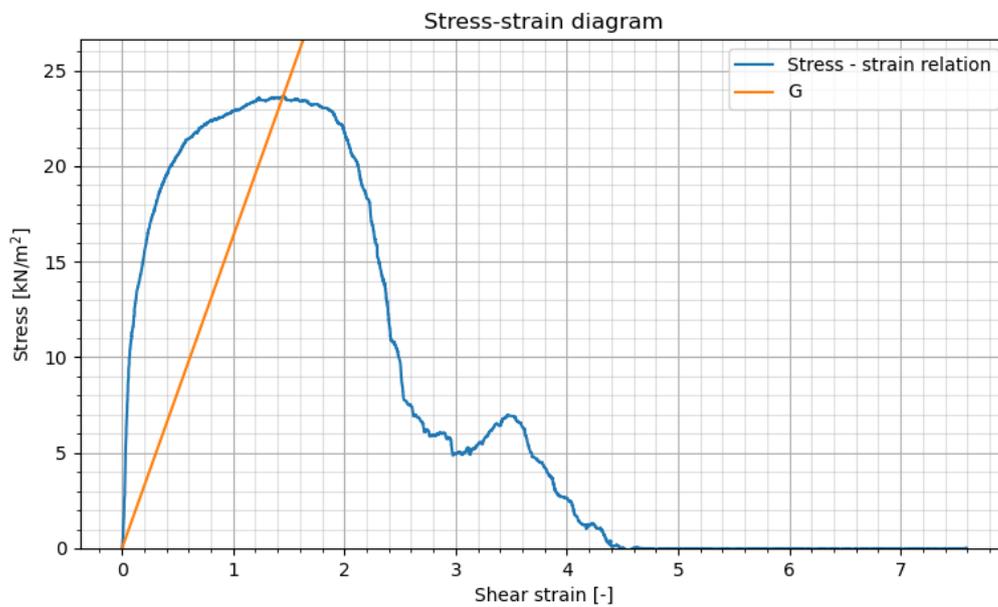
Force and displacement over time

Force and displacement over time
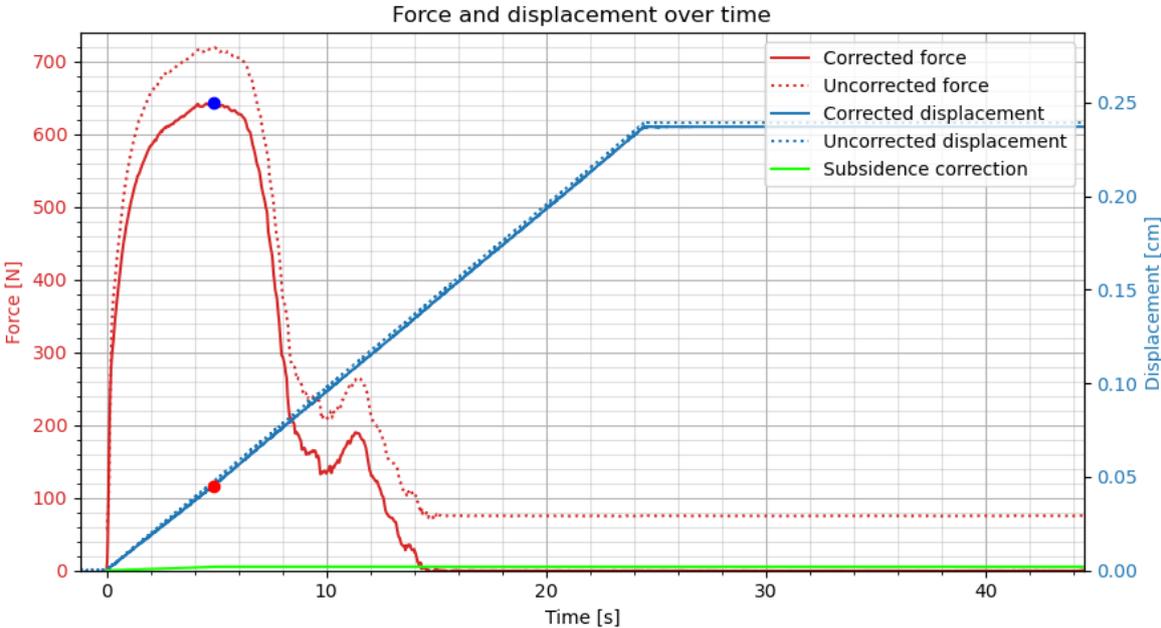
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.1.8. Test08

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		14:41:00			
Weight	[kg]	78.6			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.72			
Percentage of occurance	[%]	100	0	0	
Sod thickness	[cm]	7	0	0	7
Maximum shear stress	[kN/m^2]	18.39			
Shear strain at maximum shear stress	[-]	1.19			
G	[kN/m^2]	15.5			
Comments		-			

Stress-strain relation
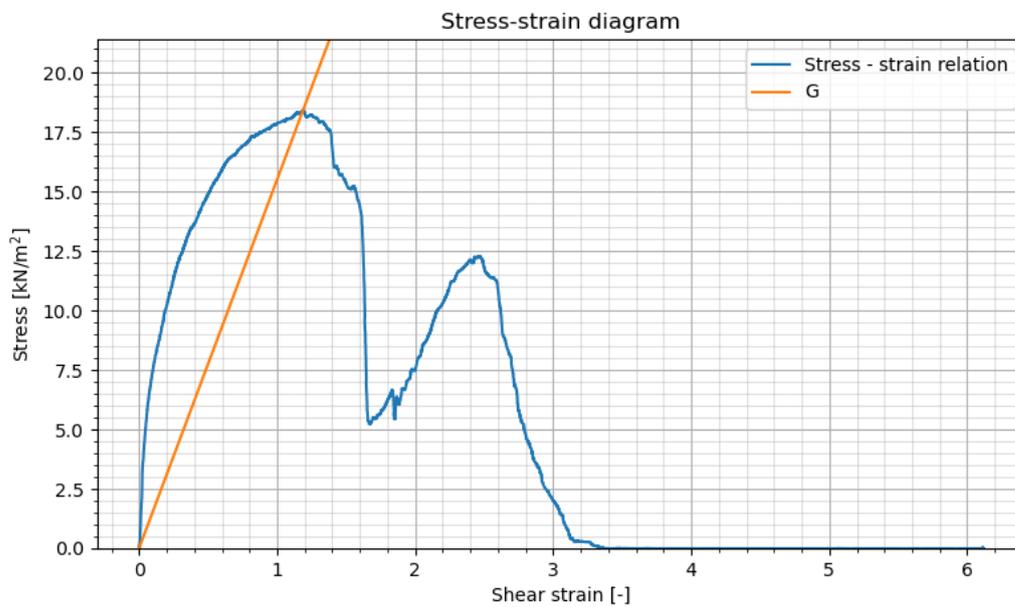
Force and displacement over time

Force and displacement over time
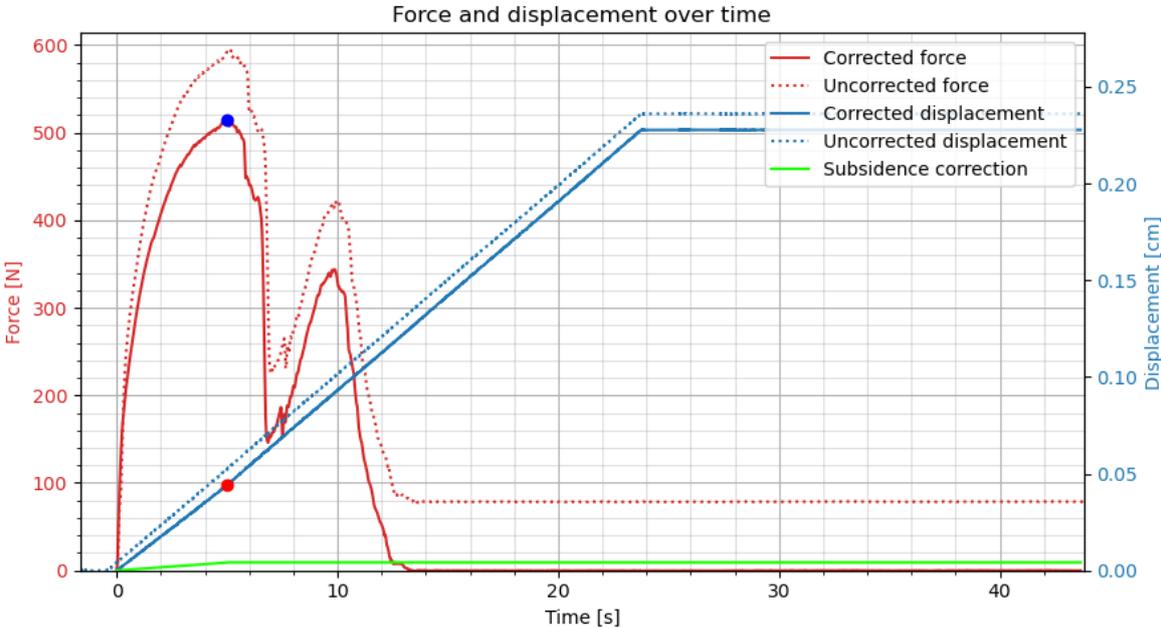
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.1.9. Test09

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		15:48:00			
Weight	[kg]	74.5			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.87			
Percentage of occurance	[%]	20	80	0	
Sod thickness	[cm]	8	7	0	7
Maximum shear stress	[kN/m^2]	17.46			
Shear strain at maximum shear stress	[-]	0.73			
G	[kN/m^2]	24.02			
Comments		-			

Stress-strain relation
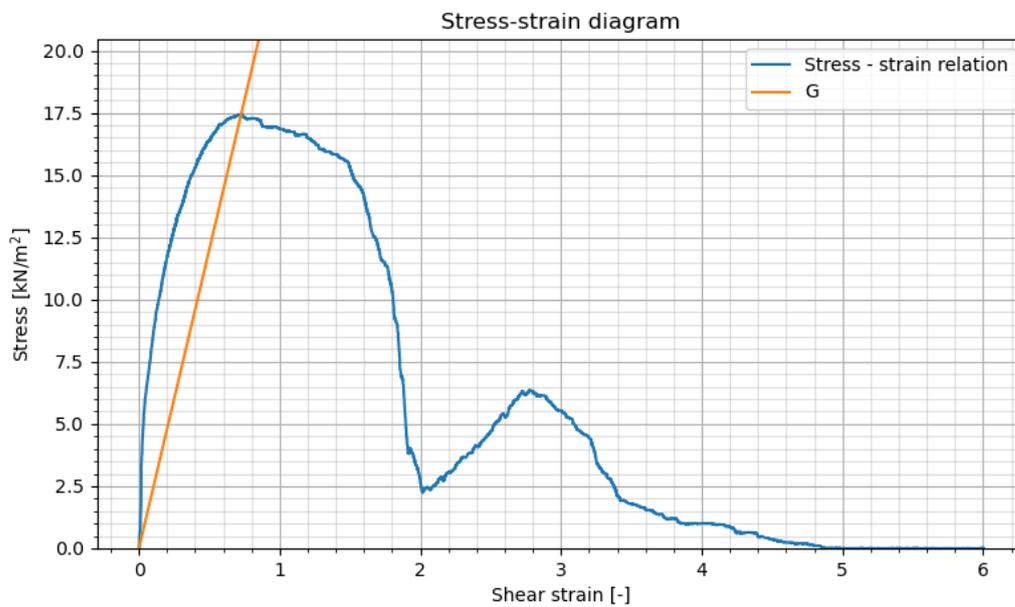
Force and displacement over time

Force and displacement over time
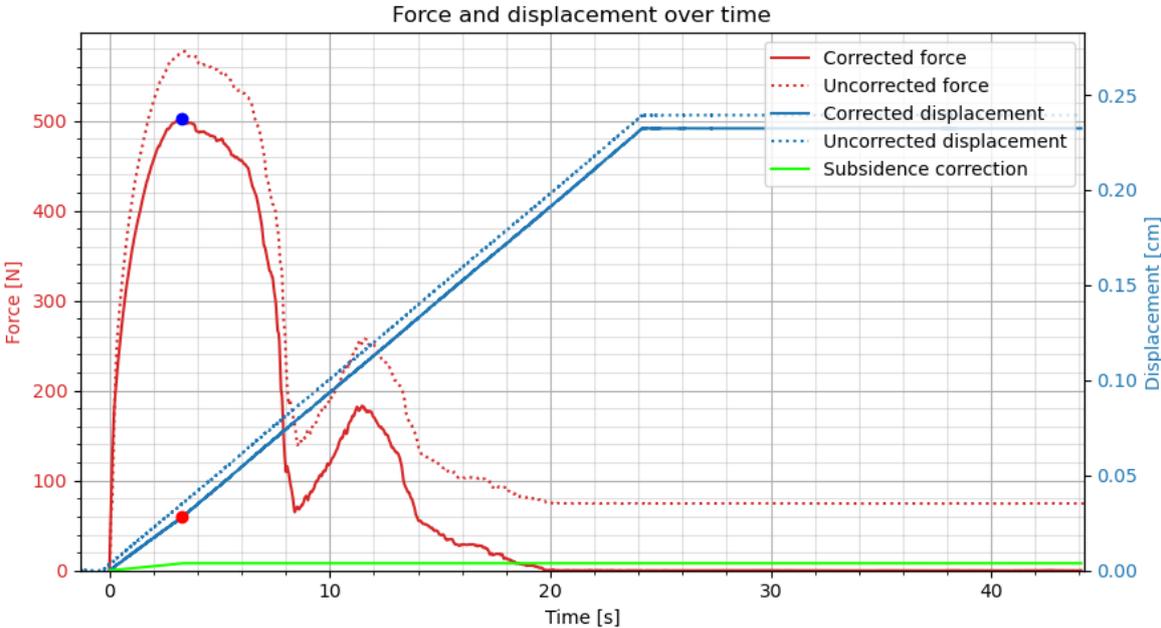
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.1.10. Test10

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		16:56:00			
Weight	[kg]	80.1			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	4.05			
Percentage of occurance	[%]	50	50	0	
Sod thickness	[cm]	8	7	0	8
Maximum shear stress	[kN/m^2]	18.0			
Shear strain at maximum shear stress	[-]	1.22			
G	[kN/m^2]	14.74			
Comments		-			

Stress-strain relation
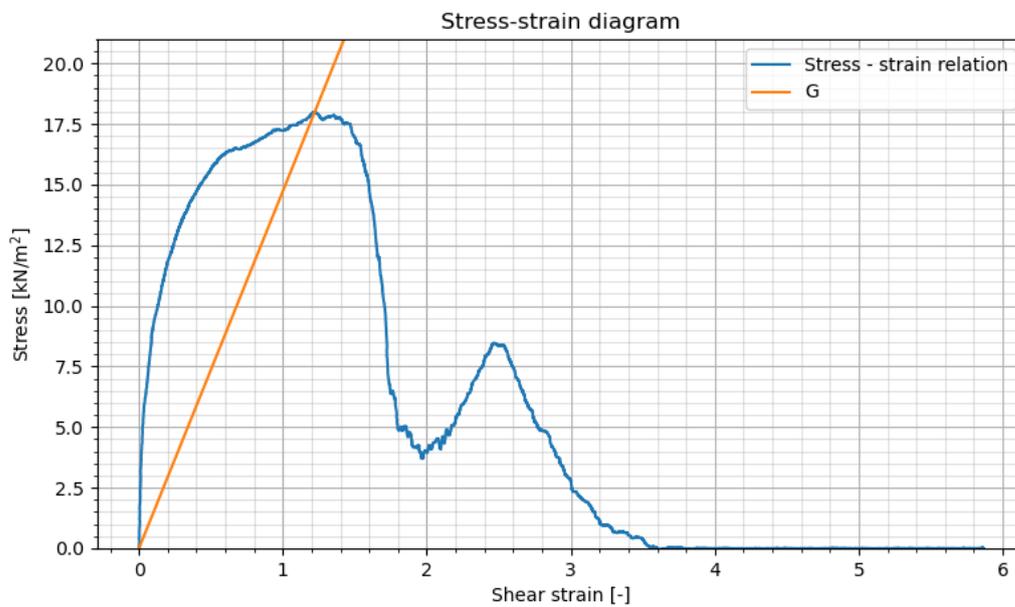
Force and displacement over time

Force and displacement over time
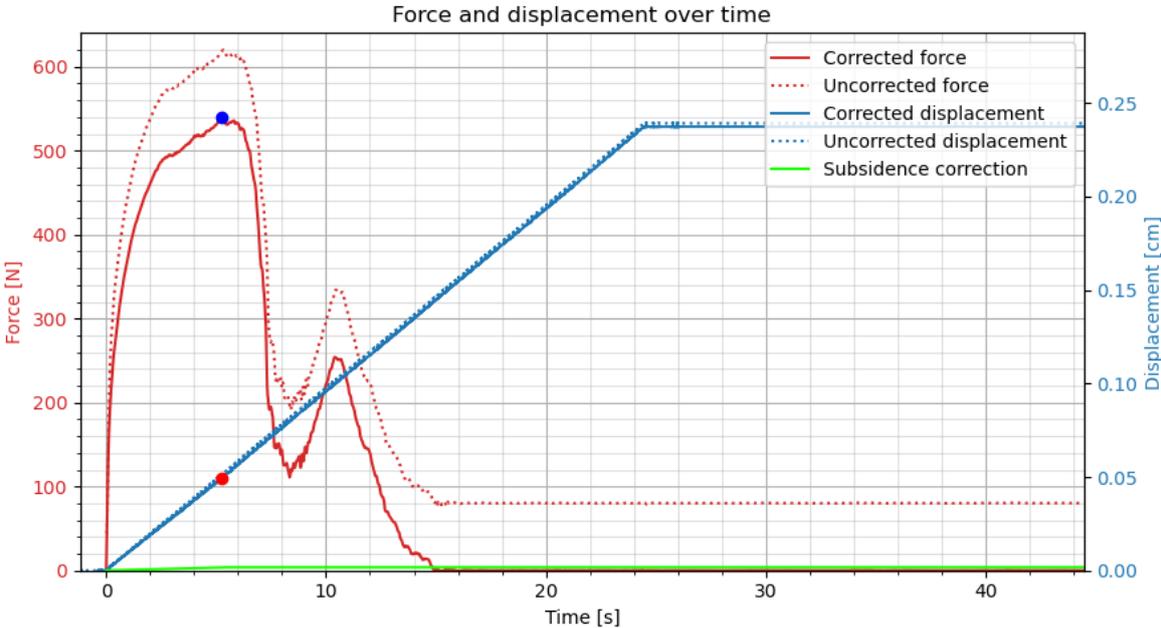
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.2. Shear tests - submerged

E.2.1. Test01

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		11:34:00			
Weight	[kg]	83.5			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.05			
Percentage of occurance	[%]	40	40	20	
Sod thickness	[cm]	8	7	6	7
Maximum shear stress	[kN/m^2]	20.61			
Shear strain at maximum shear stress	[-]	1.9			
G	[kN/m^2]	10.85			
Comments		-			

Stress-strain relation
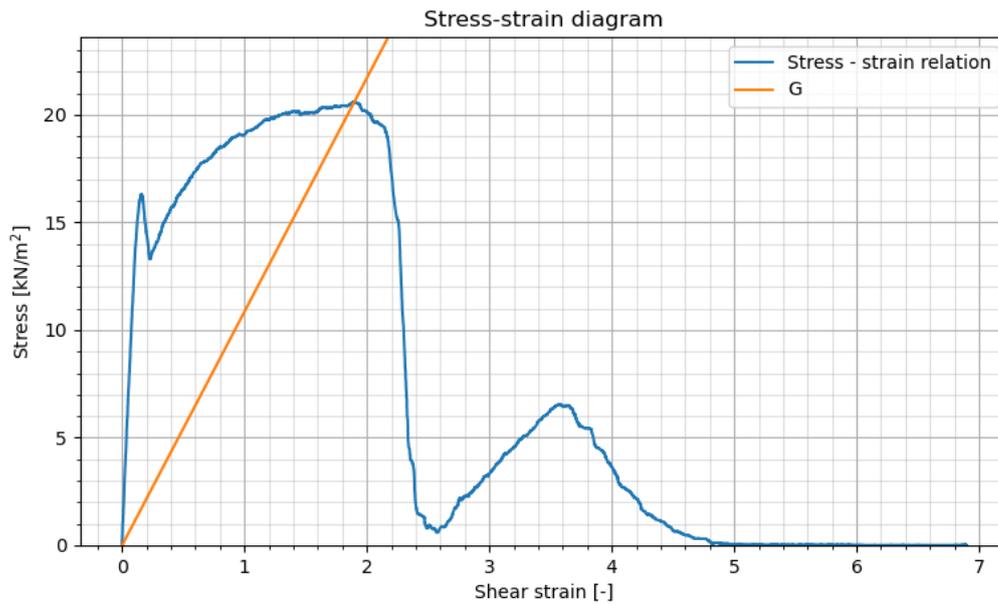
Force and displacement over time

Force and displacement over time
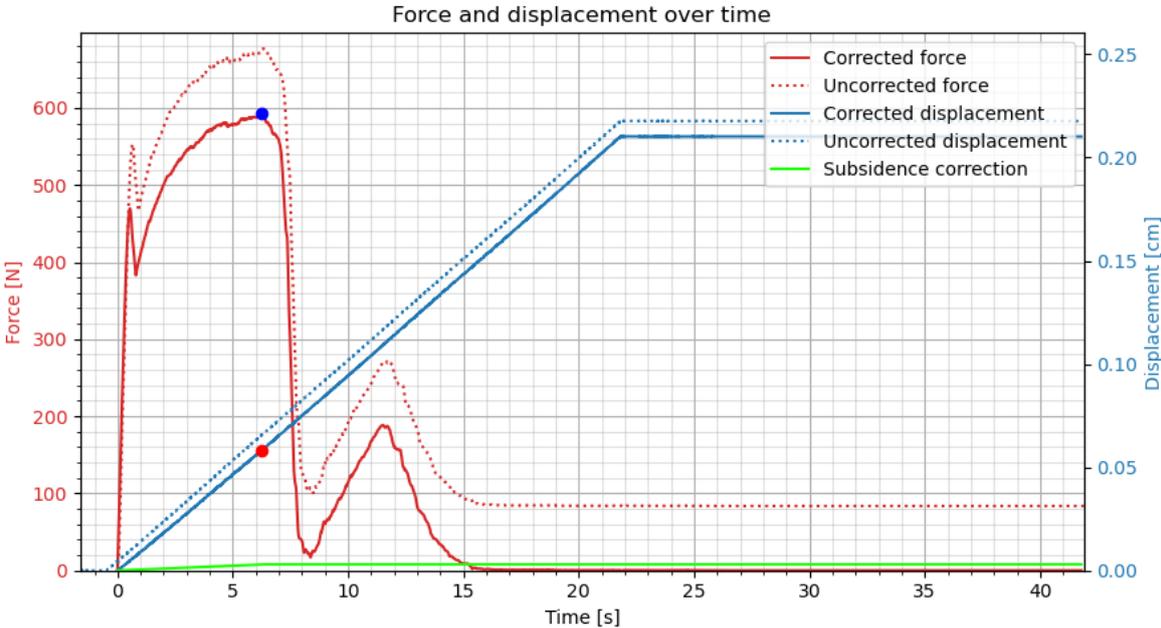
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.2.2. Test02

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		09:52:00			
Weight	[kg]	87.1			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	2.95			
Percentage of occurance	[%]	30	70	0	
Sod thickness	[cm]	8	7	0	7
Maximum shear stress	[kN/m^2]	19.87			
Shear strain at maximum shear stress	[-]	1.04			
G	[kN/m^2]	19.03			
Comments		-			

Stress-strain relation
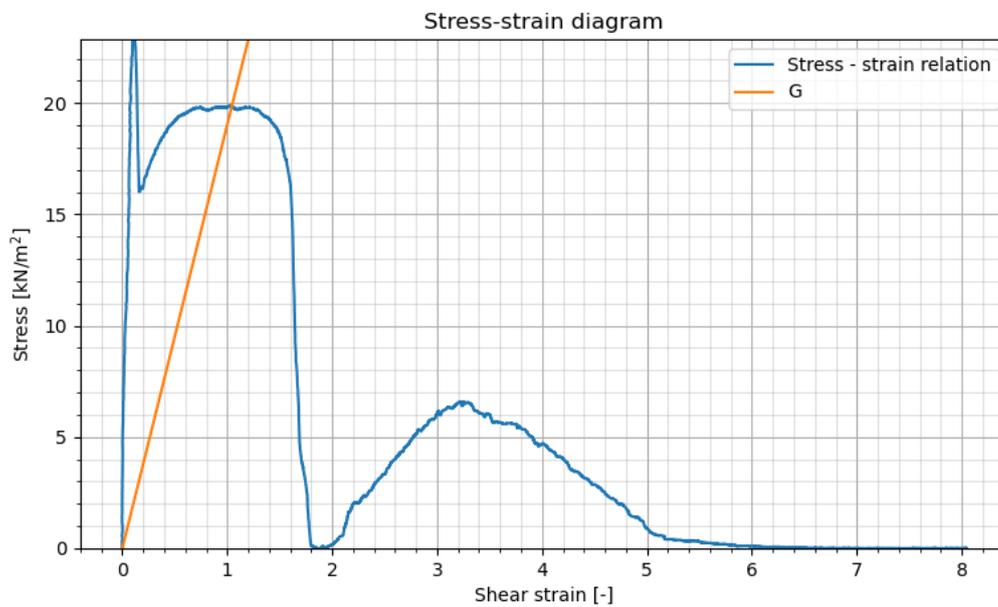
Force and displacement over time

Force and displacement over time
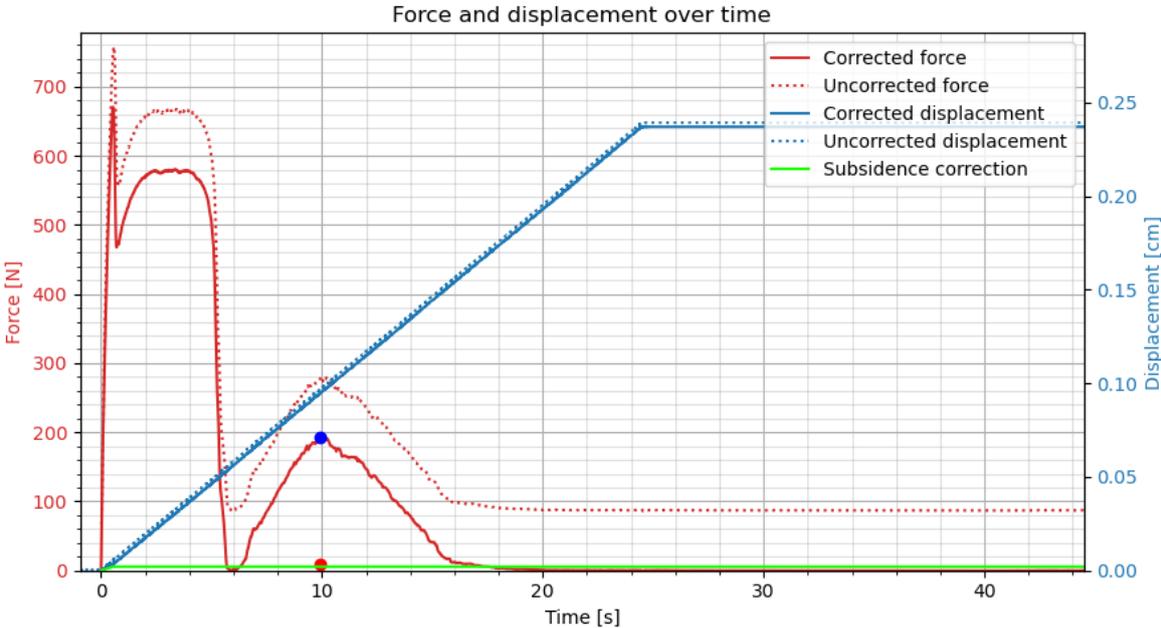
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.2.3. Test03

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		15:51:00			
Weight	[kg]	82.7			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.15			
Percentage of occurance	[%]	10	70	20	
Sod thickness	[cm]	8	7	5	7
Maximum shear stress	[kN/m^2]	17.84			
Shear strain at maximum shear stress	[-]	1.4			
G	[kN/m^2]	12.76			
Comments		-			

Stress-strain relation
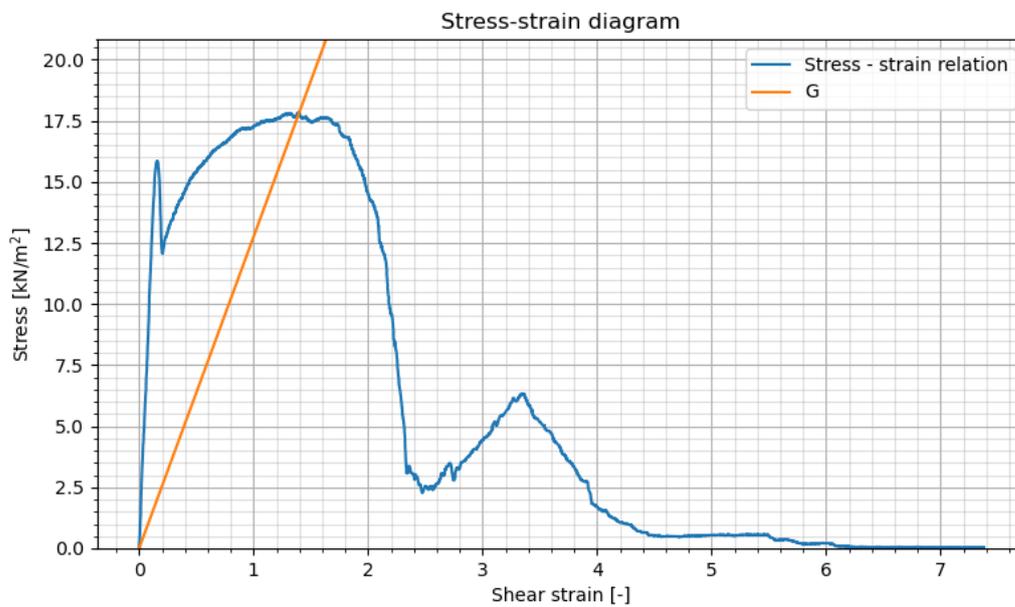
Force and displacement over time

Force and displacement over time
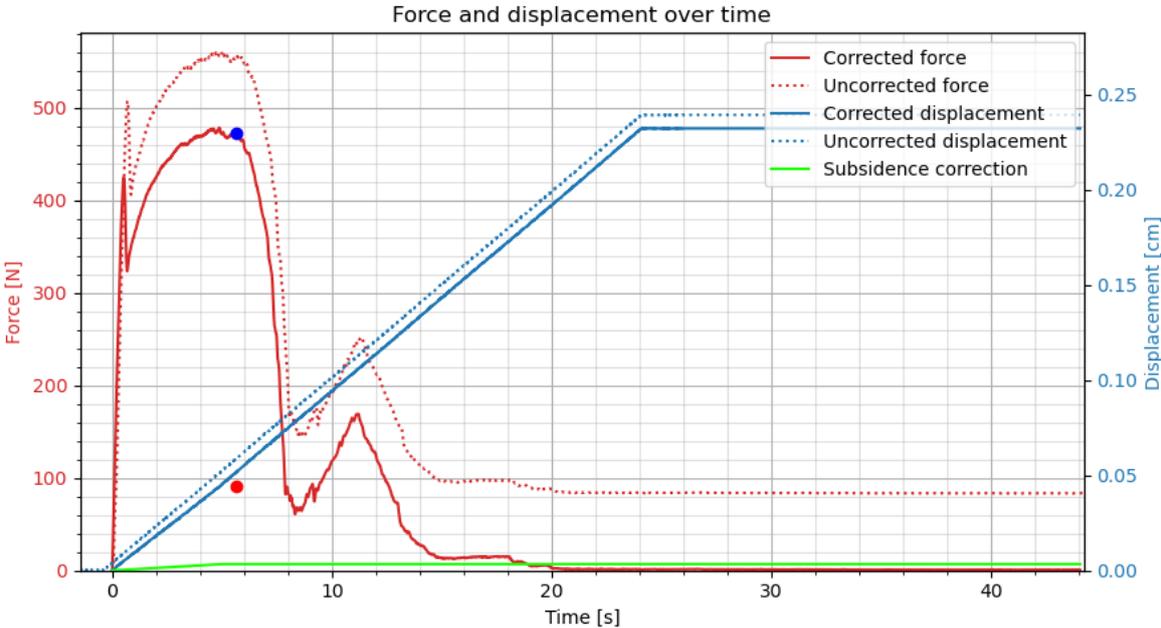
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.2.4. Test04

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		11:14:00			
Weight	[kg]	88.4			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.55			
Percentage of occurance	[%]	90	10	0	
Sod thickness	[cm]	7	5	0	7
Maximum shear stress	[kN/m^2]	18.67			
Shear strain at maximum shear stress	[-]	1.8			
G	[kN/m^2]	10.36			
Comments		-			

Stress-strain relation
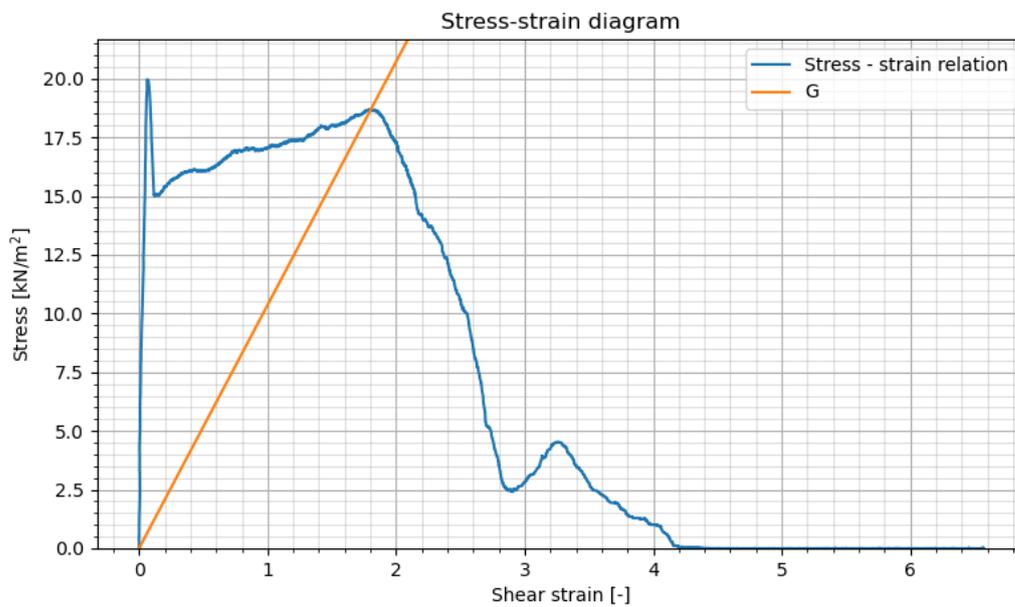
Force and displacement over time

Force and displacement over time
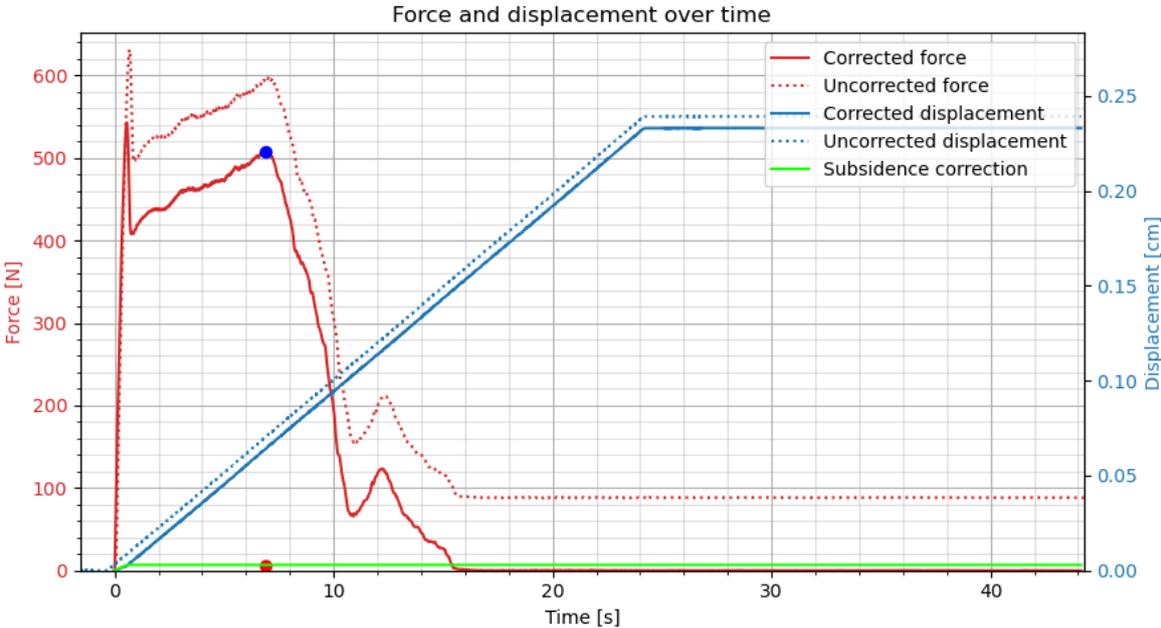
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.2.5. Test05

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		12:01:00			
Weight	[kg]	87.5			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.73			
Percentage of occurance	[%]	40	50	10	
Sod thickness	[cm]	8	7	5	7
Maximum shear stress	[kN/m^2]	20.74			
Shear strain at maximum shear stress	[-]	1.51			
G	[kN/m^2]	13.69			
Comments		-			

Stress-strain relation
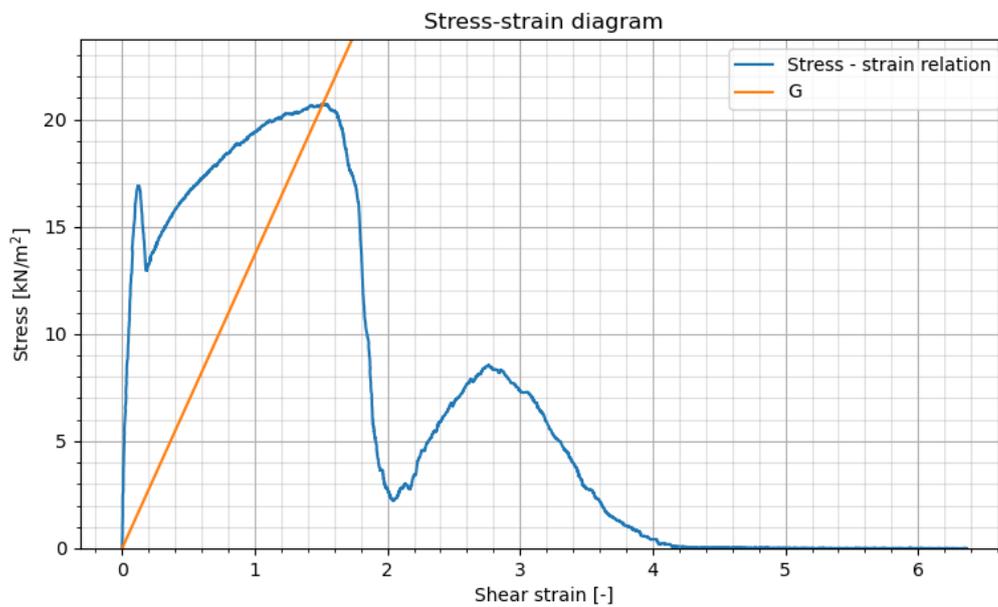
Force and displacement over time

Force and displacement over time
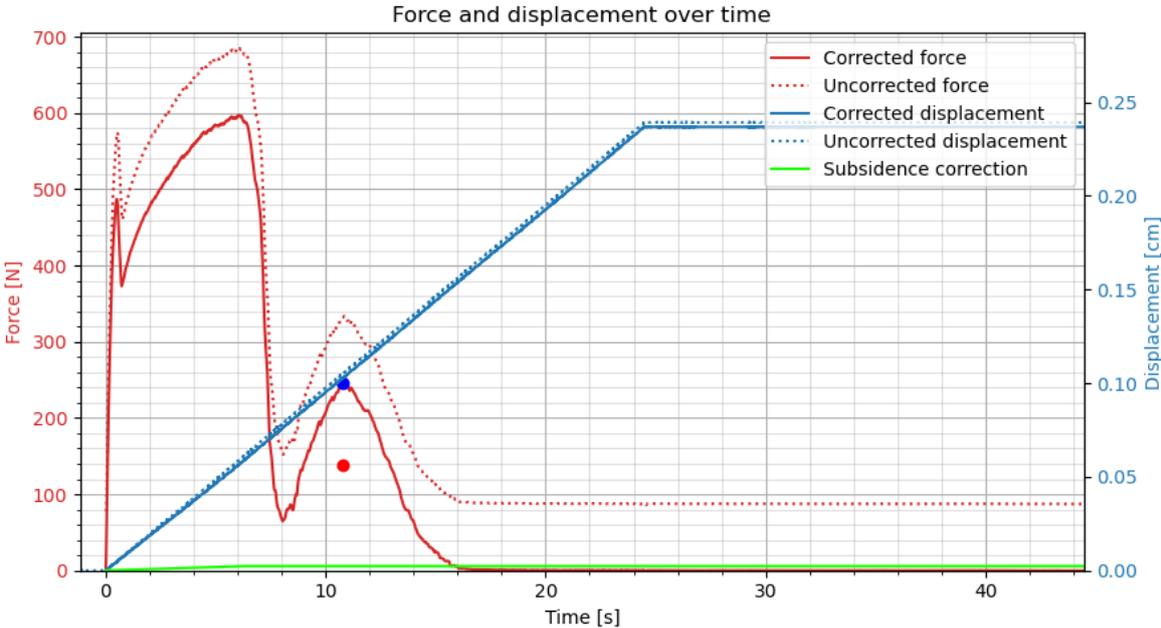
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.2.6. Test06

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		13:04:00			
Weight	[kg]	84.0			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.65			
Percentage of occurance	[%]	20	70	10	
Sod thickness	[cm]	8	7	5	7
Maximum shear stress	[kN/m^2]	13.68			
Shear strain at maximum shear stress	[-]	0.42			
G	[kN/m^2]	32.49			
Comments		-			

Stress-strain relation
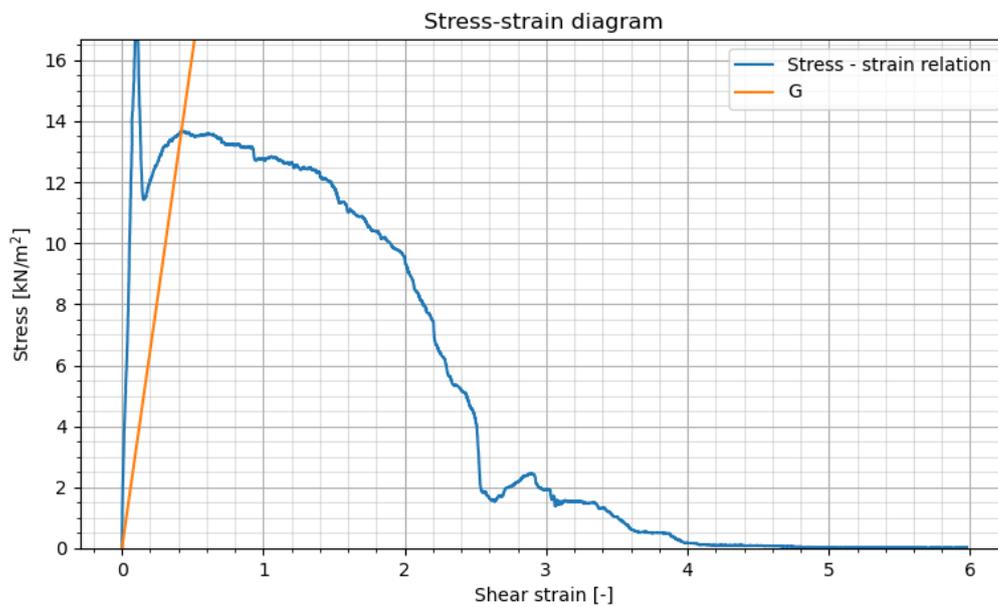
Force and displacement over time

Force and displacement over time
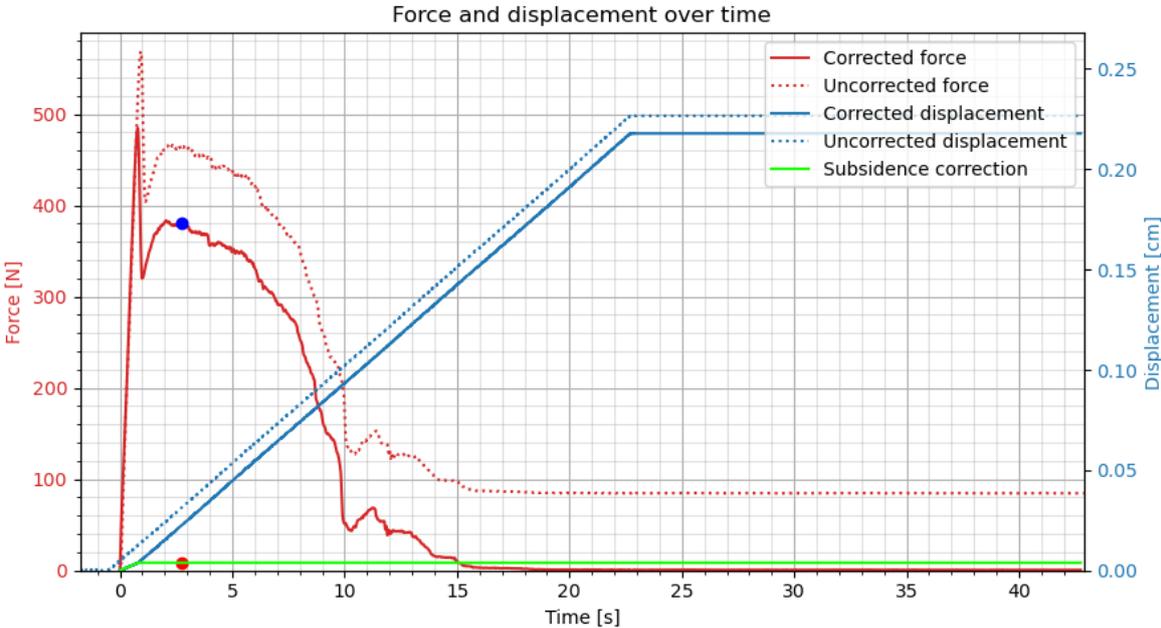
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.2.7. Test07

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		13:38:00			
Weight	[kg]	84.5			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.25			
Percentage of occurance	[%]	10	80	10	
Sod thickness	[cm]	8	7	5	7
Maximum shear stress	[kN/m^2]	17.35			
Shear strain at maximum shear stress	[-]	1.02			
G	[kN/m^2]	16.96			
Comments		-			

Stress-strain relation
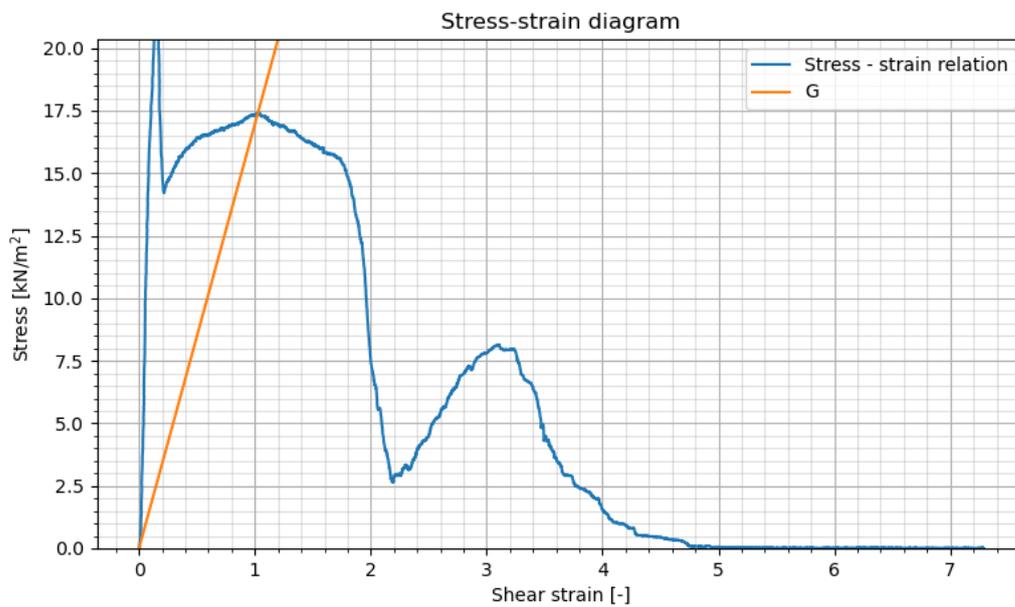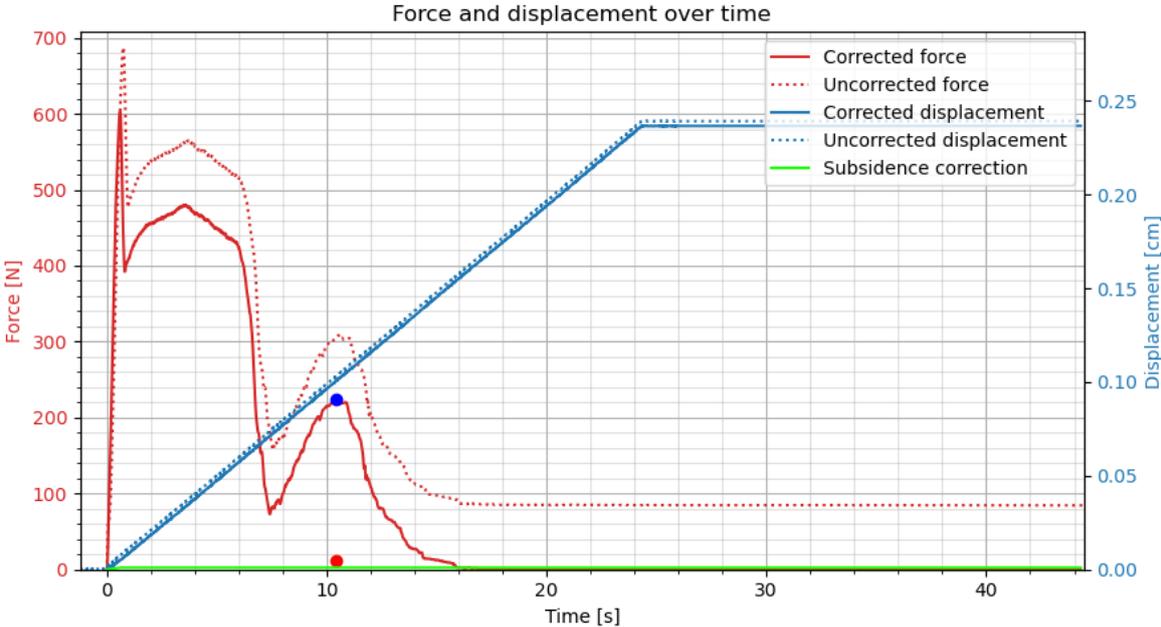
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.8. Test08

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		14:19:00			
Weight	[kg]	81.0			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.17			
Percentage of occurance	[%]	20	70	10	
Sod thickness	[cm]	8	7	4	7
Maximum shear stress	[kN/m^2]	20.14			
Shear strain at maximum shear stress	[-]	1.61			
G	[kN/m^2]	12.49			
Comments		-			

Stress-strain relation
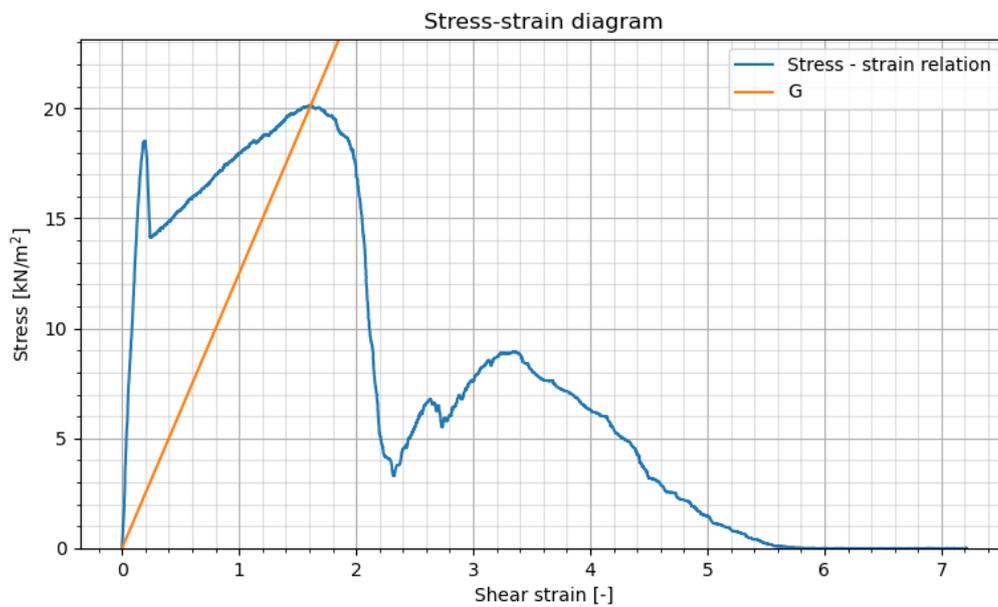
Force and displacement over time

Force and displacement over time
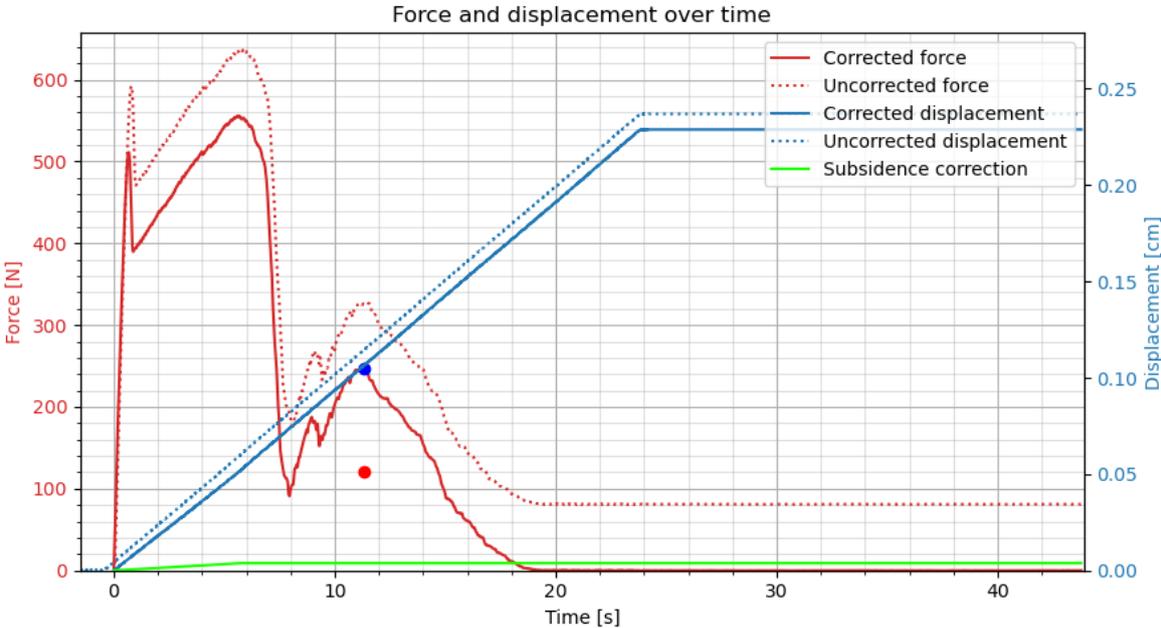
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.2.9. Test09

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		15:11:00			
Weight	[kg]	84.7			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.3			
Percentage of occurance	[%]	40	50	10	
Sod thickness	[cm]	8	7	5	7
Maximum shear stress	[kN/m^2]	15.15			
Shear strain at maximum shear stress	[-]	1.27			
G	[kN/m^2]	11.89			
Comments		-			

Stress-strain relation
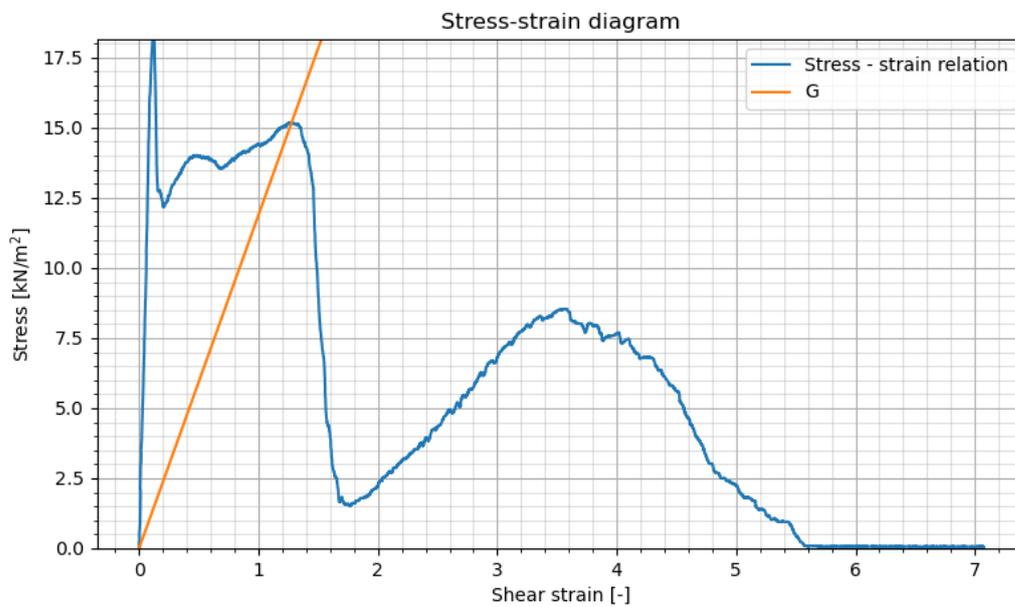
Force and displacement over time
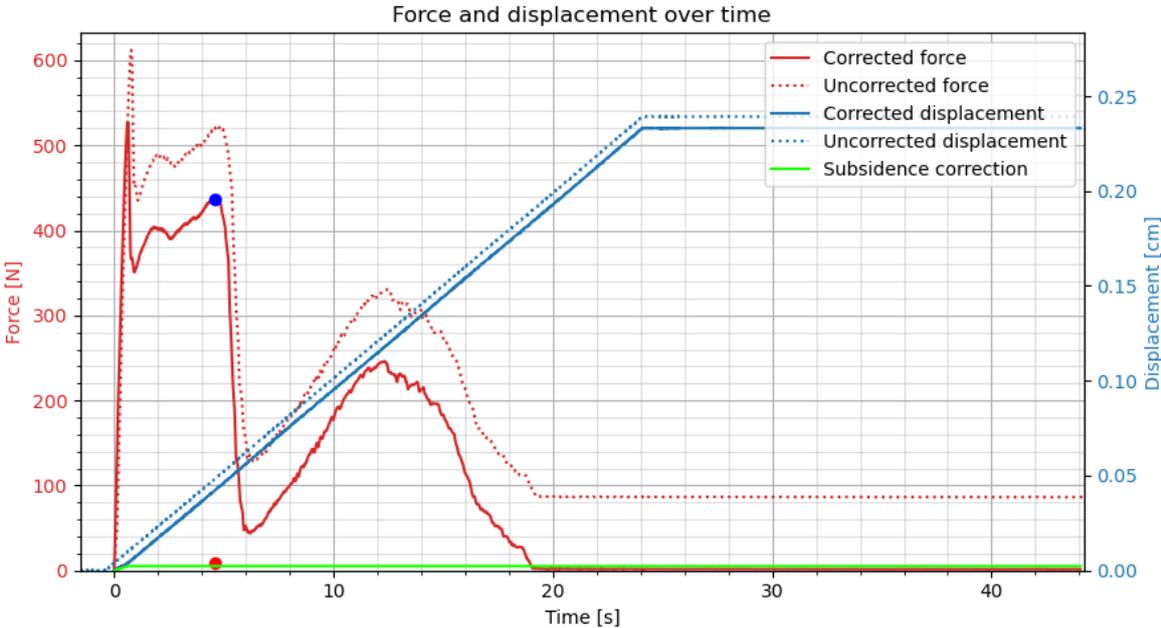
Test sample pictures

(a) Frame

E.2.10. Test10

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		16:25:00			
Weight	[kg]	82.6			
Width	[cm]	20.0			
Dike orientation		North			
Shear deformation length	[cm]	3.27			
Percentage of occurance	[%]	70	20	10	
Sod thickness	[cm]	8	7	5	8
Maximum shear stress	[kN/m^2]	21.77			
Shear strain at maximum shear stress	[-]	1.32			
G	[kN/m^2]	16.45			
Comments		-			

Stress-strain relation
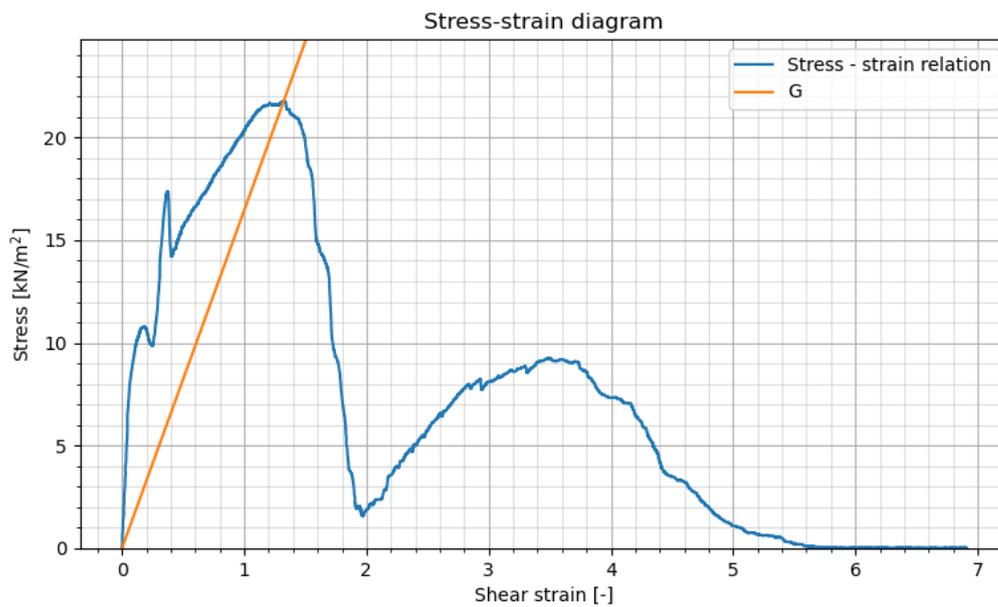
Force and displacement over time

Force and displacement over time
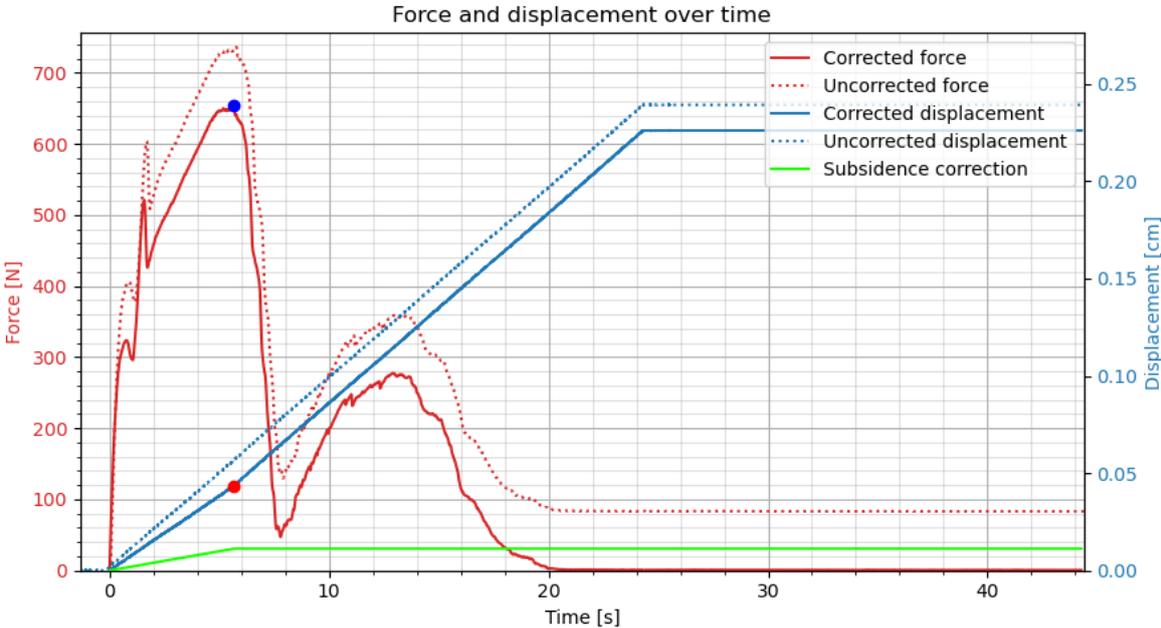
Test sample pictures

(a) Frame

(b) Top

(c) Left

(d) Bottom

(e) Right

E.1. Stepwise increased constant load tests - dry
E.1.1. Test01

		Value 1	Value 2	Value 3	Mean
Date		15-03-2021			
Time		12:54:00			
Weight	[kg]	98.8			
Width	[cm]	20.0			
Length	[cm]	27			
Dike orientation		South-West			
Percentage of occurance	[%]	60	30	10	
Sod thickness	[cm]	12	8	5	10
Root length	[cm]	3	3	5	3.2
Maximum stress	[kN/m^2]	8.38			
Strain at maximum stress	[-]	0.22			
Comments		-			
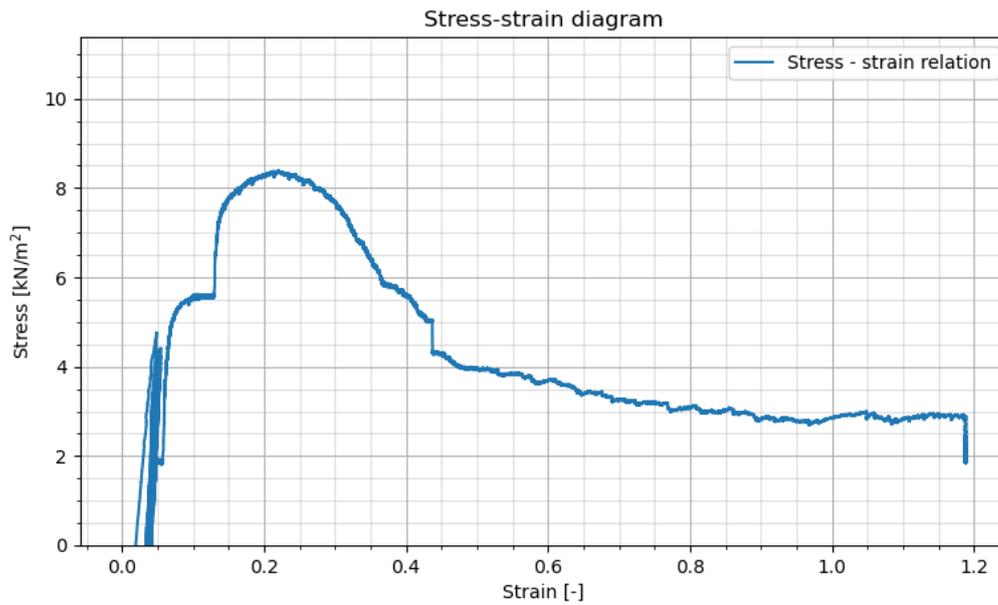
Stress-strain relation

Force and displacement over time
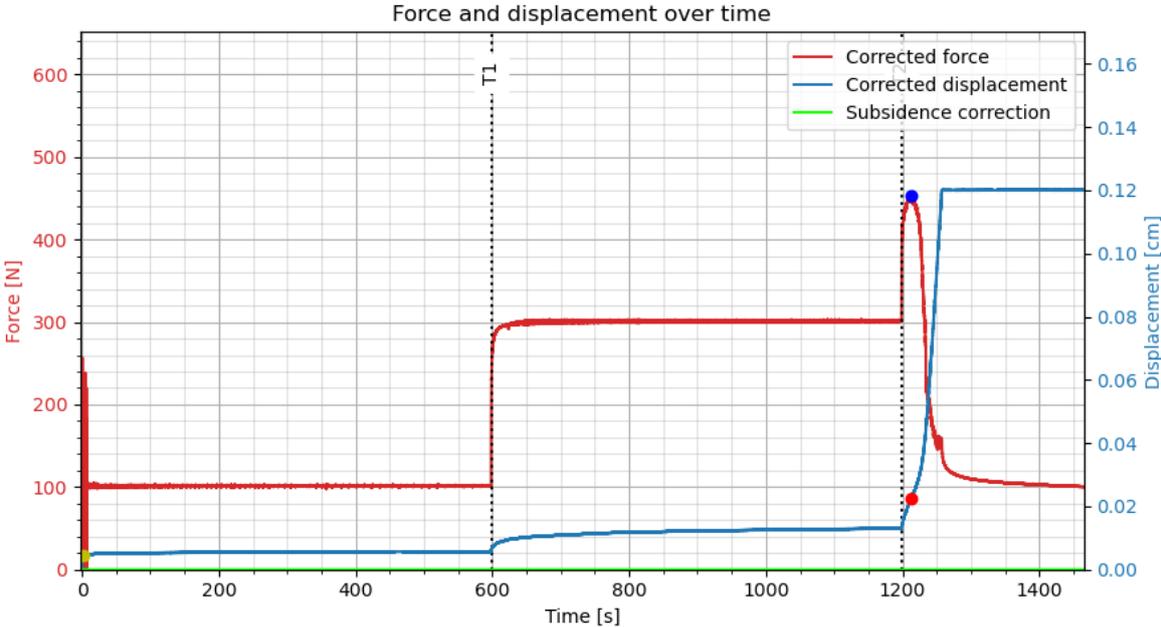
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.2. Test02

		Value 1	Value 2	Value 3	Mean
Date		16-03-2021			
Time		09:08:00			
Weight	[kg]	88.2			
Width	[cm]	20.0			
Length	[cm]	23			
Dike orientation		South-West			
Percentage of occurance	[%]	60	20	20	
Sod thickness	[cm]	12	8	5	10
Root length	[cm]	2	5	3	2.8
Maximum stress	[kN/m^2]	10.39			
Strain at maximum stress	[-]	0.42			
Comments		-			

Stress-strain relation
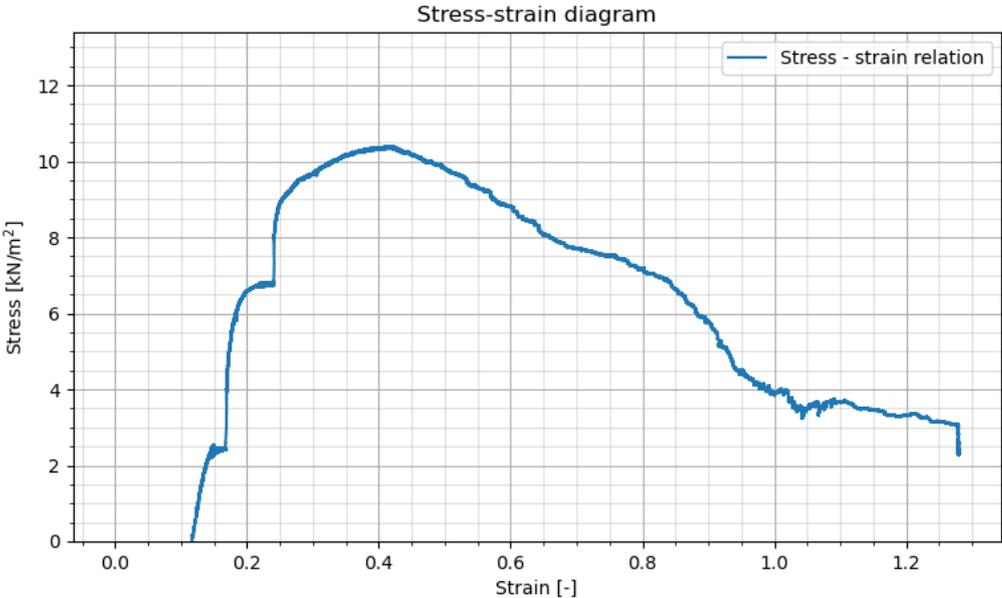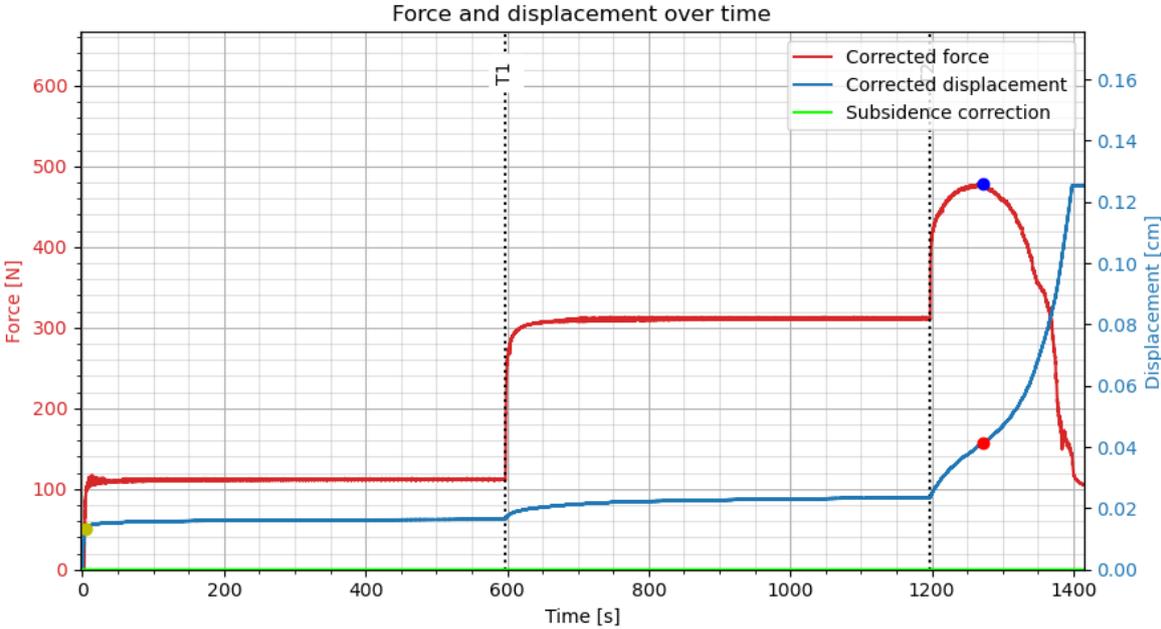
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.3. Test03

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		09:52:00			
Weight	[kg]	105.8			
Width	[cm]	20.0			
Length	[cm]	29			
Dike orientation		South-West			
Percentage of occurance	[%]	80	20	0	
Sod thickness	[cm]	11	7	0	10
Root length	[cm]	2	3	0	2.2
Maximum stress	[kN/m^2]	8.6			
Strain at maximum stress	[-]	0.23			
Comments		-			

Stress-strain relation
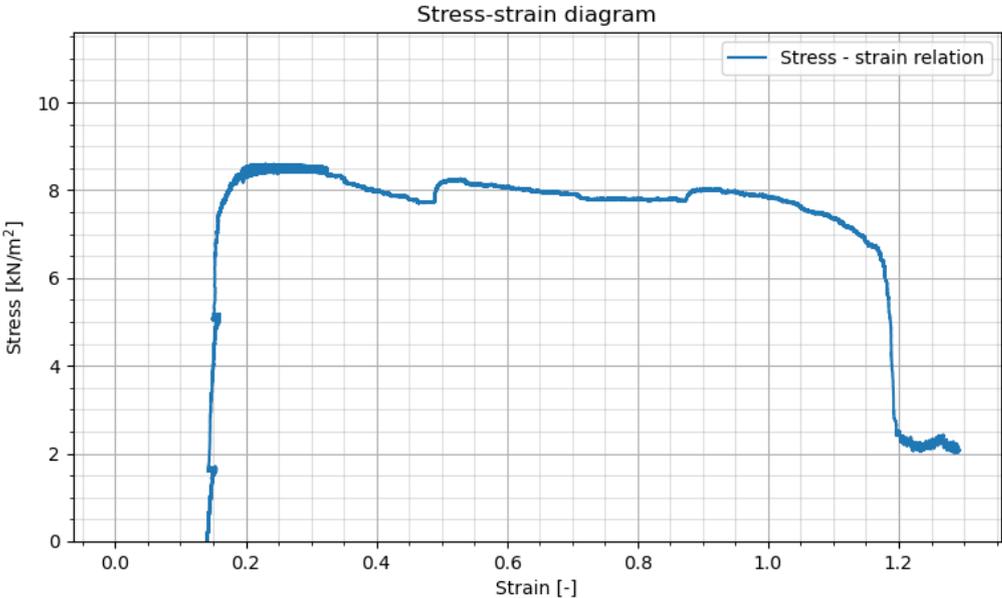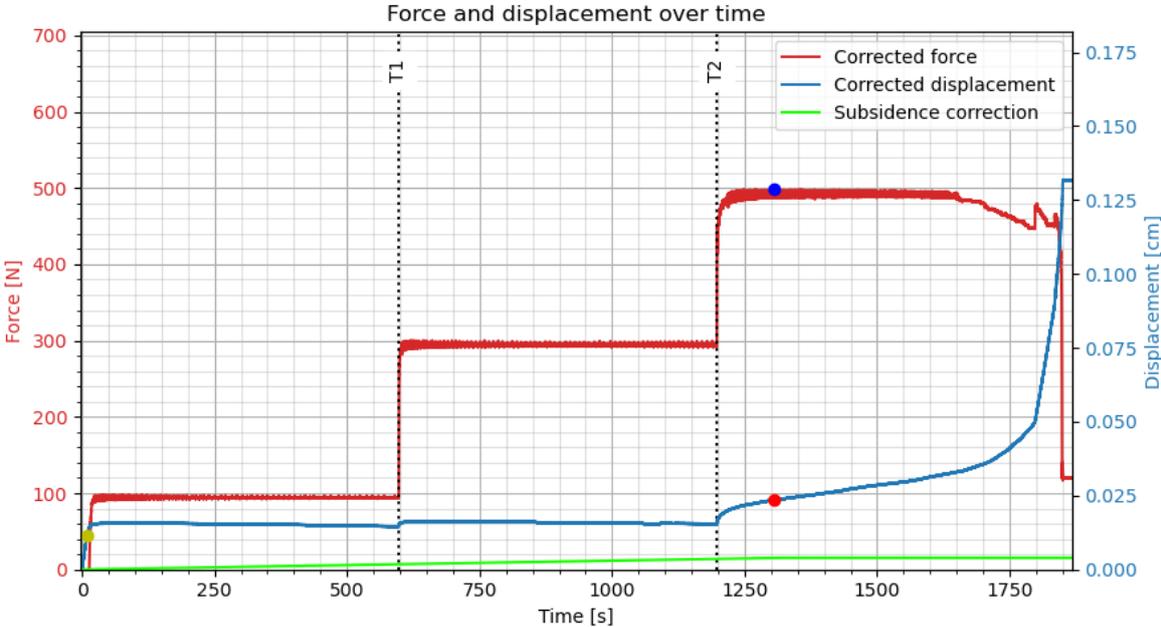
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.4. Test04

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		14:57:00			
Weight	[kg]	95.0			
Width	[cm]	20.0			
Length	[cm]	25			
Dike orientation		South-West			
Percentage of occurance	[%]	90	10	0	
Sod thickness	[cm]	10	8	0	10
Root length	[cm]	3	3	0	3.0
Maximum stress	[kN/m^2]	13.38			
Strain at maximum stress	[-]	0.14			
Comments		-			
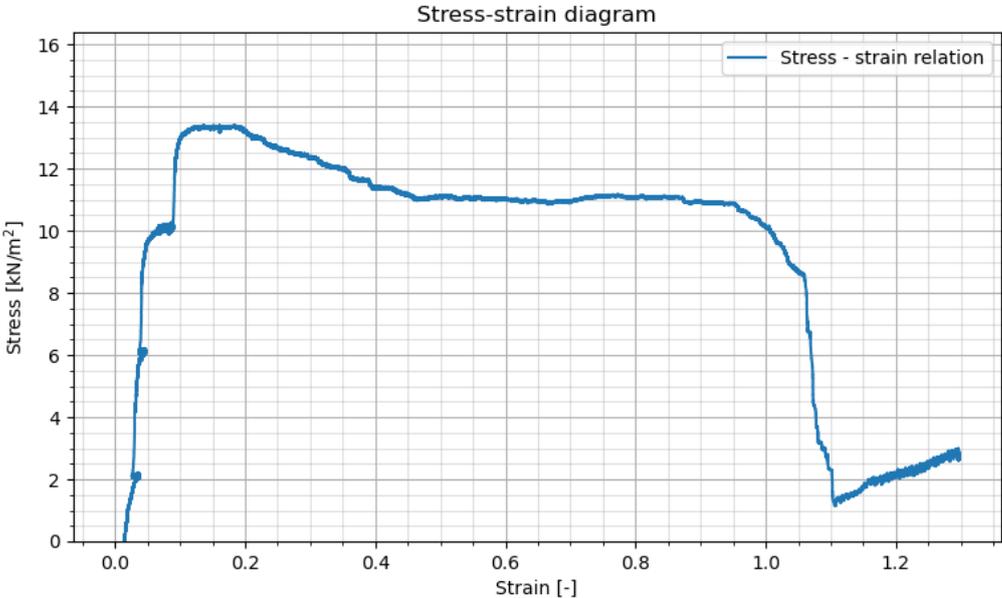
Stress-strain relation

Force and displacement over time
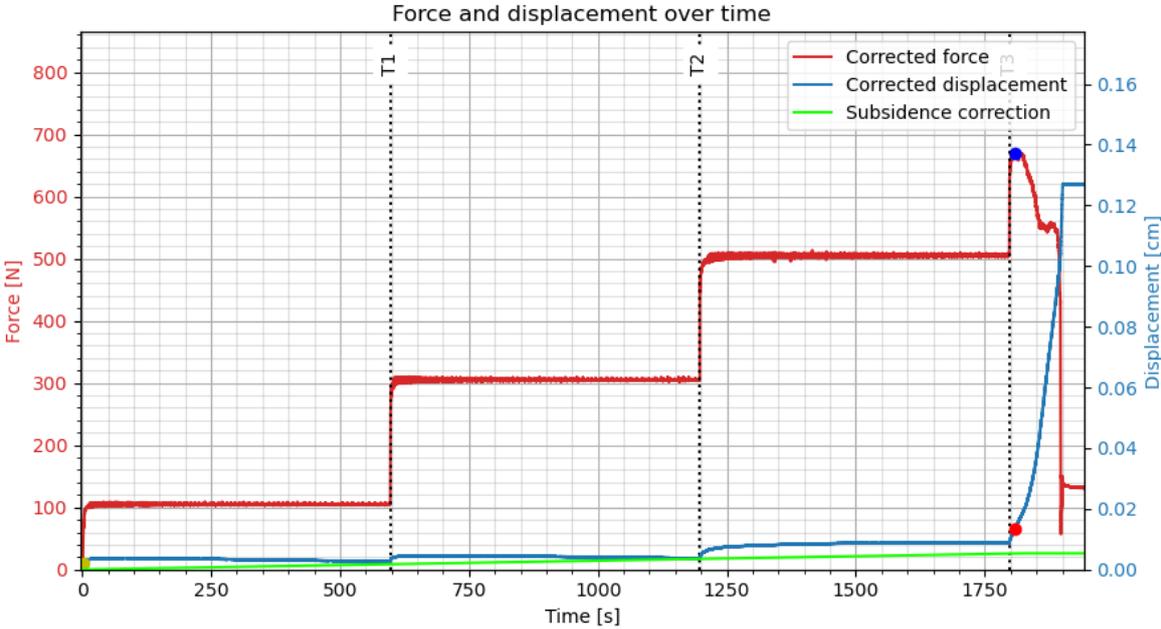
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.5. Test05

		Value 1	Value 2	Value 3	Mean
Date		19-03-2021			
Time		15:35:00			
Weight	[kg]	96.7			
Width	[cm]	20.0			
Length	[cm]	27			
Dike orientation		South-West			
Percentage of occurance	[%]	40	30	30	
Sod thickness	[cm]	12	10	7	10
Root length	[cm]	3	4	4	3.6
Maximum stress	[kN/m^2]	11.57			
Strain at maximum stress	[-]	0.3			
Comments		-			

Stress-strain relation
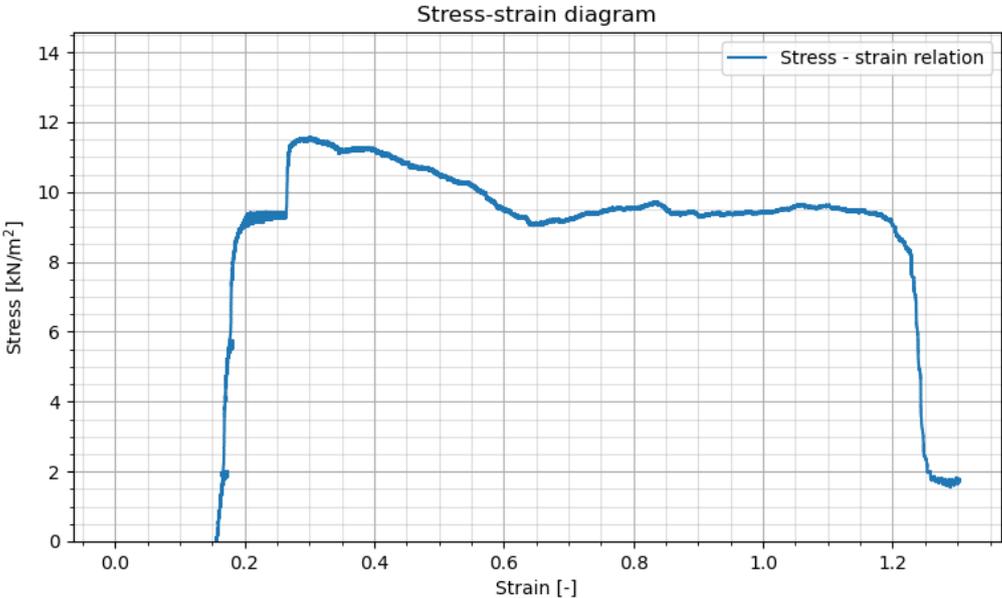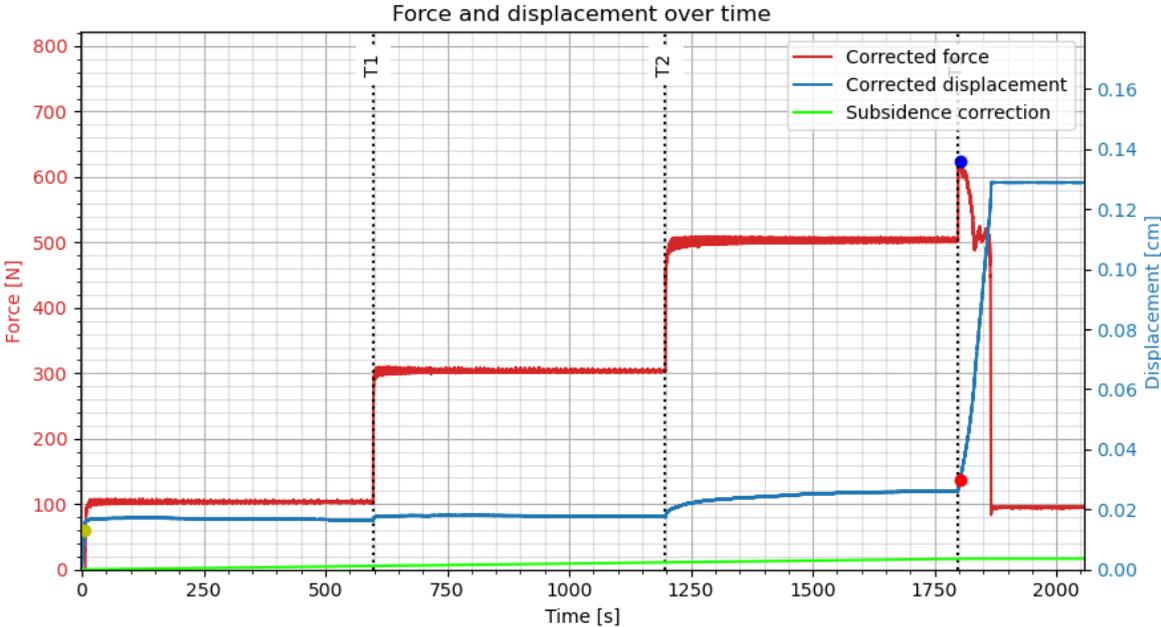
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.6. Test06

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		08:18:00			
Weight	[kg]	89.8			
Width	[cm]	20.0			
Length	[cm]	28			
Dike orientation		North			
Percentage of occurance	[%]	40	30	30	
Sod thickness	[cm]	9	8	7	8
Root length	[cm]	3	3	3	3.0
Maximum stress	[kN/m^2]	12.34			
Strain at maximum stress	[-]	0.17			
Comments		-			
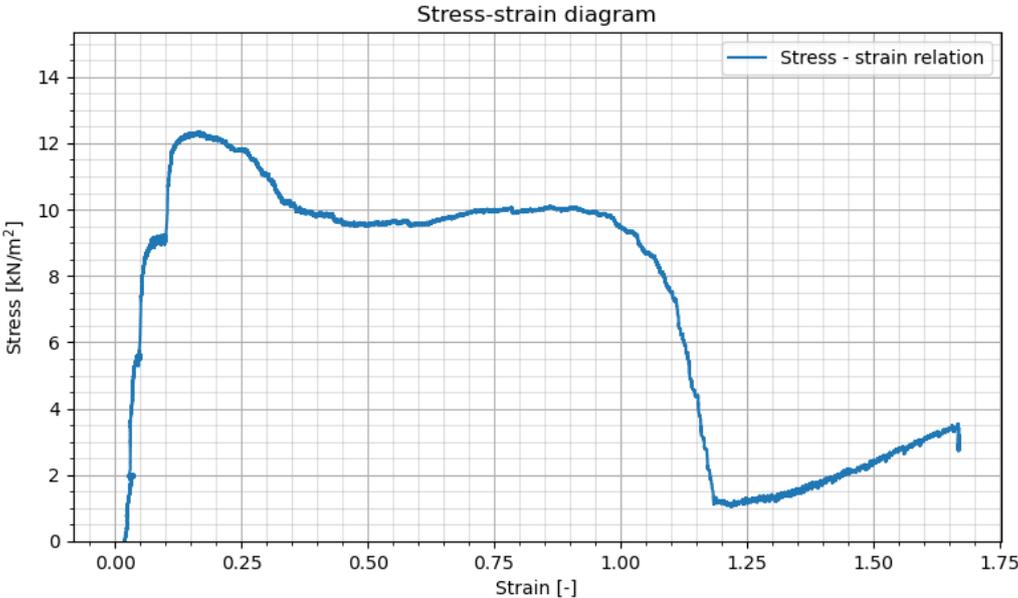
Stress-strain relation

Force and displacement over time
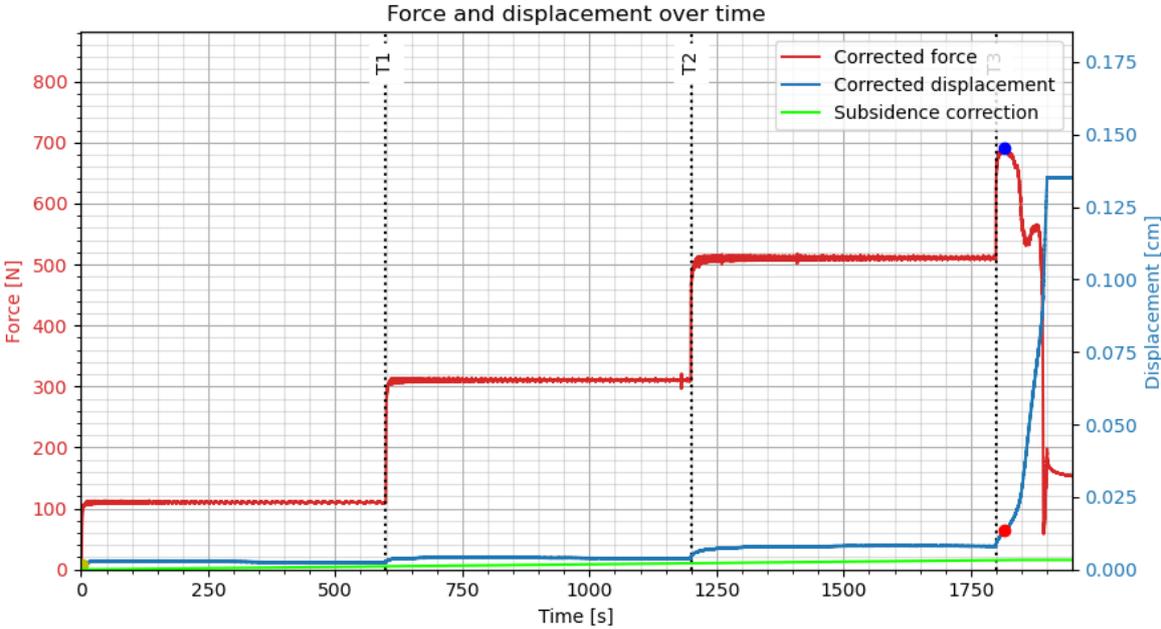
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.7. Test07

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		08:54:00			
Weight	[kg]	116.5			
Width	[cm]	20.0			
Length	[cm]	27			
Dike orientation		North			
Percentage of occurance	[%]	30	50	20	
Sod thickness	[cm]	13	12	10	12
Root length	[cm]	3	3	3	3.0
Maximum stress	[kN/m^2]	11.28			
Strain at maximum stress	[-]	0.09			
Comments		-			

Stress-strain relation
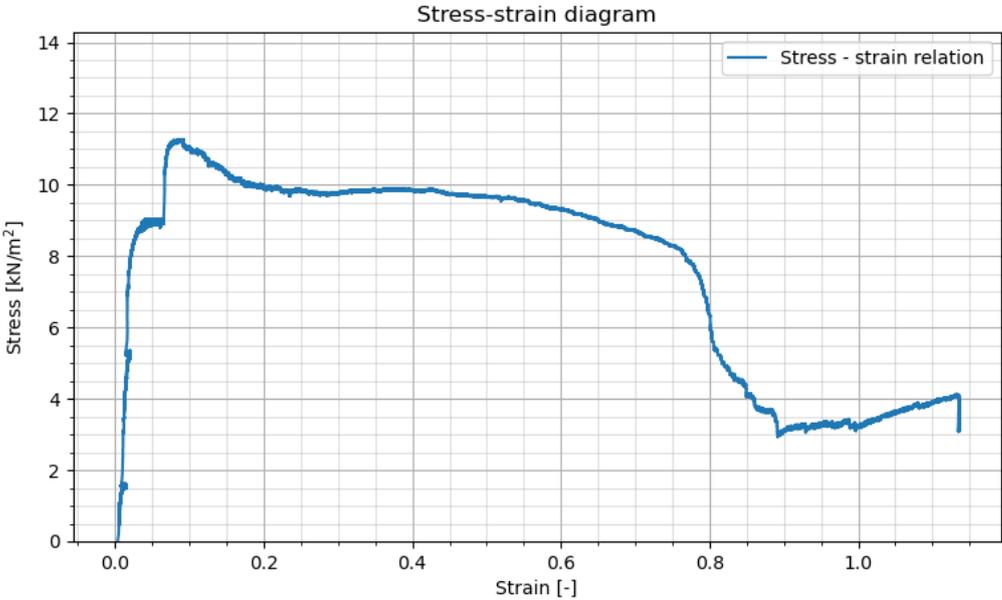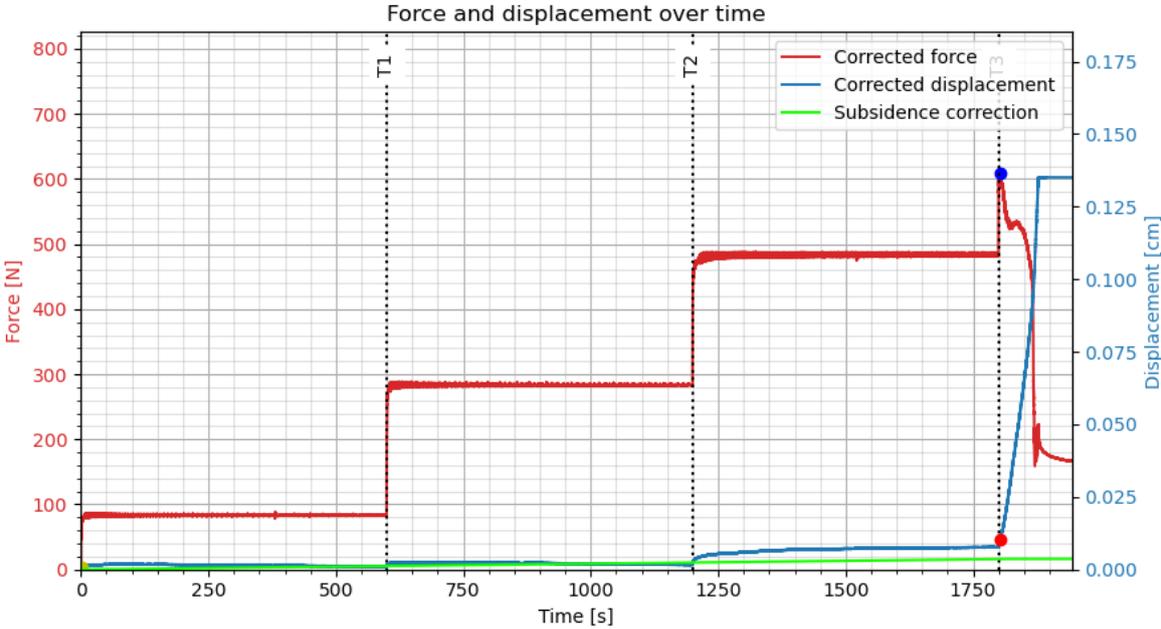
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.8. Test08

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		09:31:00			
Weight	[kg]	101.3			
Width	[cm]	20.0			
Length	[cm]	30			
Dike orientation		North			
Percentage of occurance	[%]	40	60	0	
Sod thickness	[cm]	10	9	0	9
Root length	[cm]	4	3	0	3.4
Maximum stress	[kN/m^2]	11.51			
Strain at maximum stress	[-]	0.15			
Comments		-			

Stress-strain relation
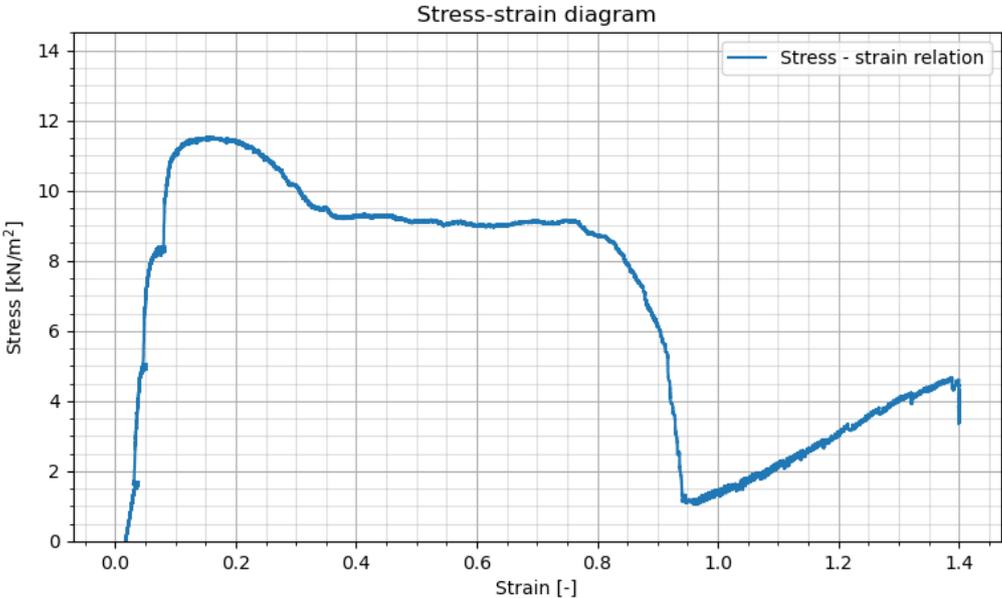
Force and displacement over time
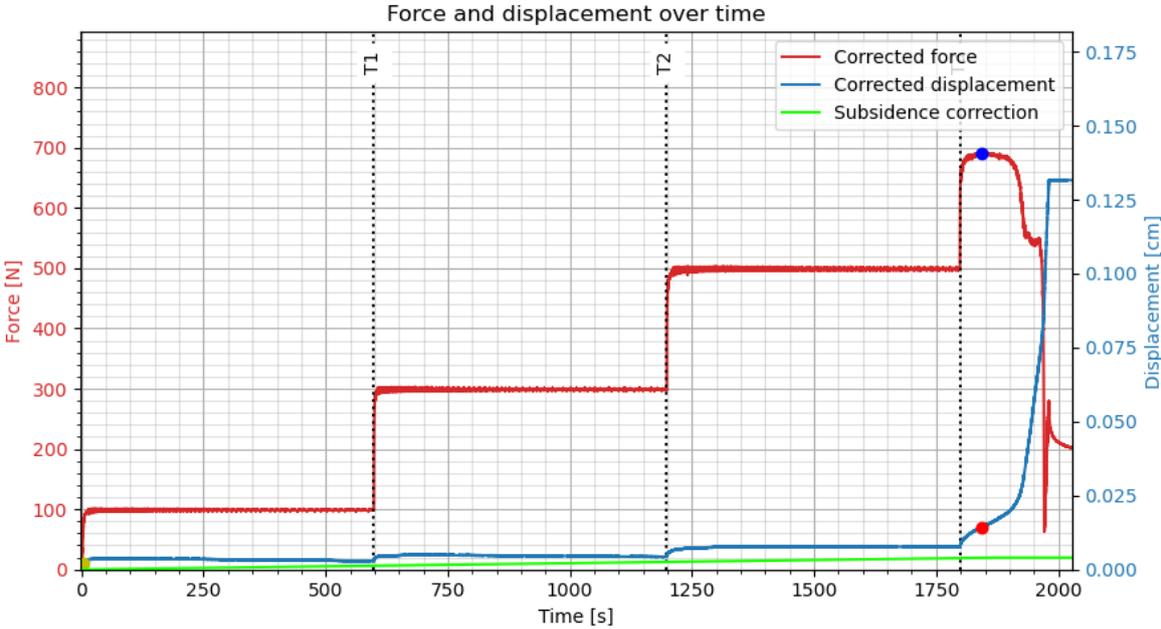
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.9. Test09

		Value 1	Value 2	V
Date		23-03-2021		
Time		10:10:00		
Weight	[kg]	112.6		
Width	[cm]	20.0		
Length	[cm]	34		
Dike orientation		North		
Percentage of occurance	[%]	20	40	
Sod thickness	[cm]	13	11	
Root length	[cm]	5	3	
Maximum stress	[kN/m^2]	8.63		
Strain at maximum stress	[-]	0.27		
Comments		Large stones / stone layer was found under the surface while excavating		

Stress-strain relation
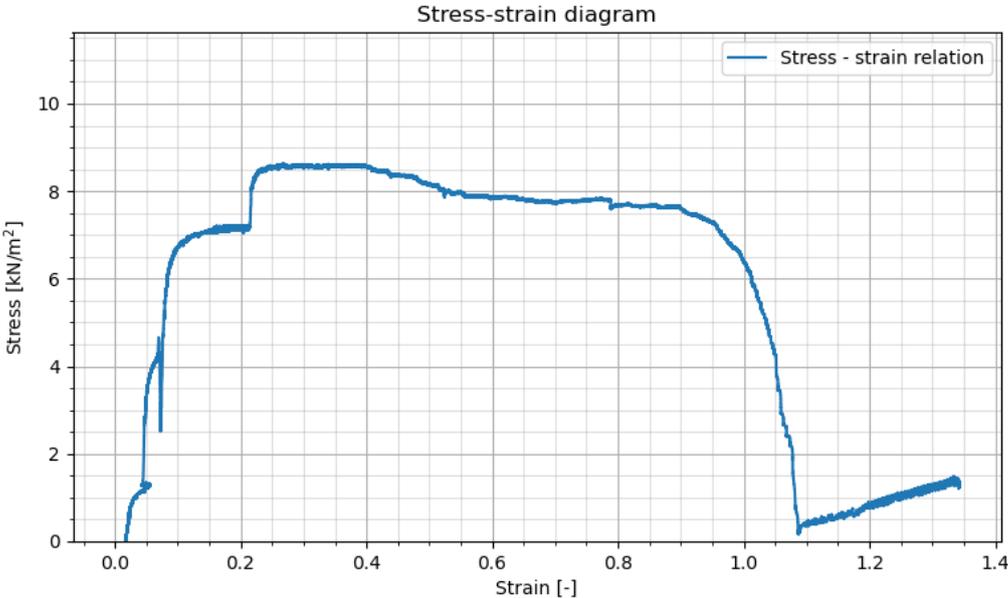
Force and displacement over time
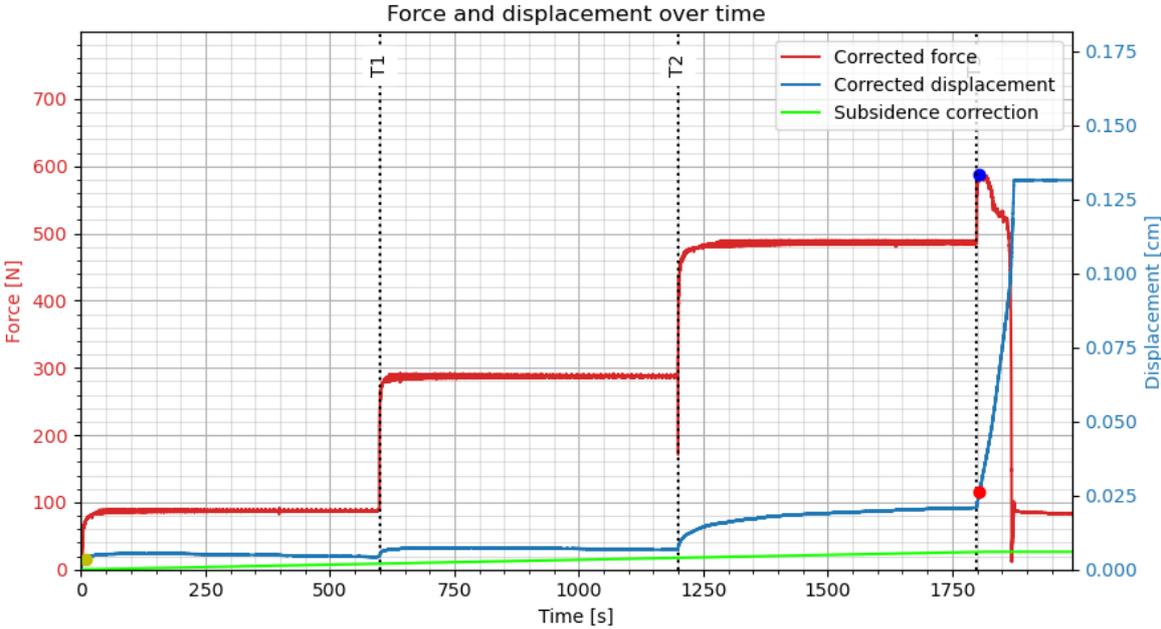
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.10. Test10

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		13:32:00			
Weight	[kg]	106.0			
Width	[cm]	20.0			
Length	[cm]	29			
Dike orientation		North			
Percentage of occurance	[%]	30	40	30	
Sod thickness	[cm]	13	10	8	10
Root length	[cm]	2	3	5	3.3
Maximum stress	[kN/m^2]	14.28			
Strain at maximum stress	[-]	0.14			
Comments		-			

Stress-strain relation
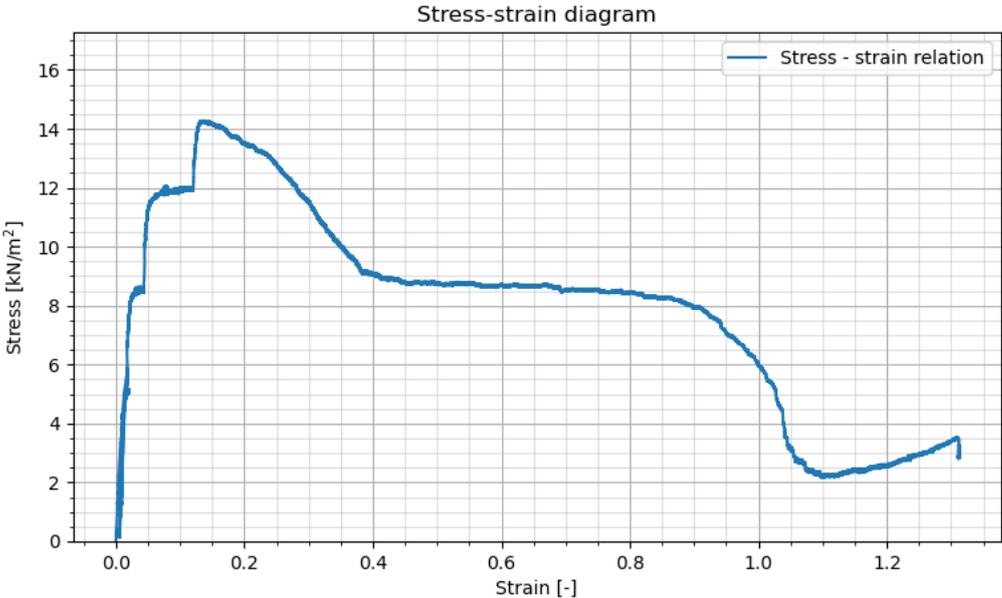
Force and displacement over time
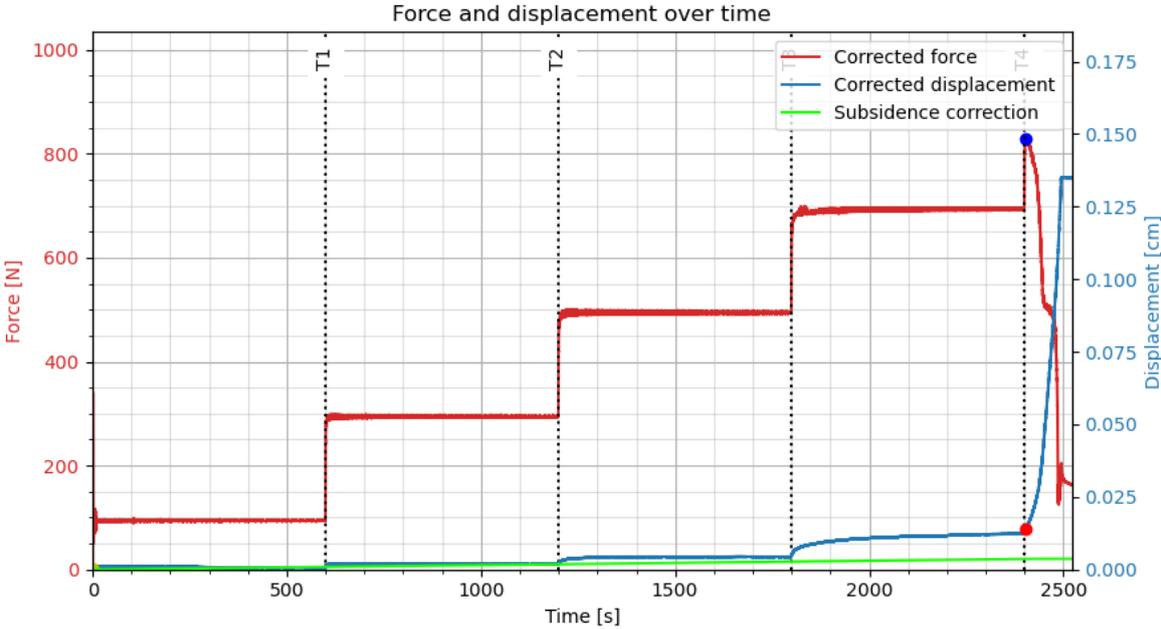
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2. Stepwise increased constant load tests - submerged
E.2.1. Test01

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		11:57:00			
Weight	[kg]	138.0			
Width	[cm]	20.0			
Length	[cm]	37			
Dike orientation		North			
Percentage of occurance	[%]	70	10	20	
Sod thickness	[cm]	12	9	8	11
Root length	[cm]	3	4	7	3.9
Maximum stress	[kN/m^2]	6.24			
Strain at maximum stress	[-]	0.2			
Comments		Sod failed at location where box cut through grass			

Stress-strain relation
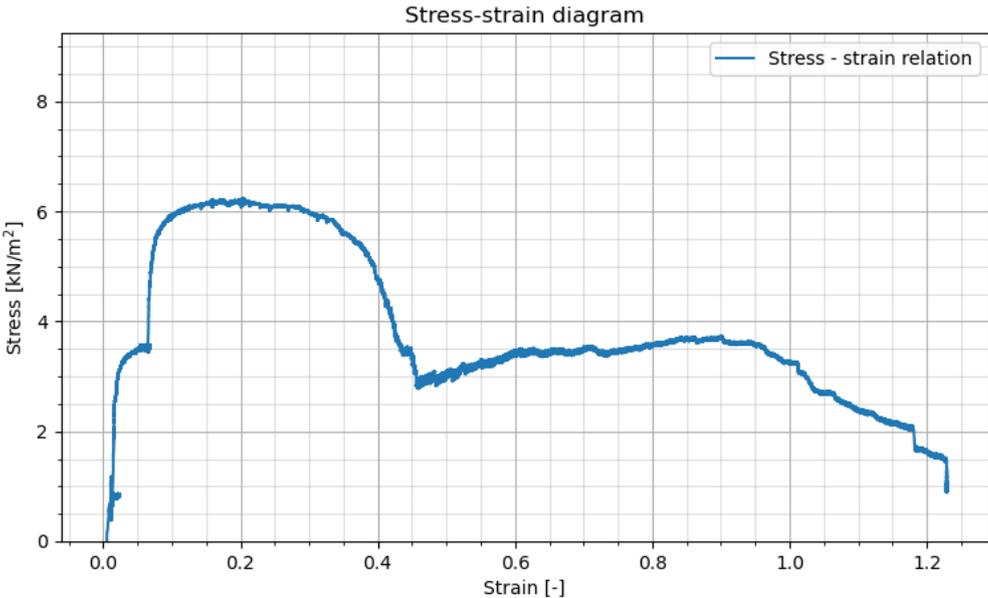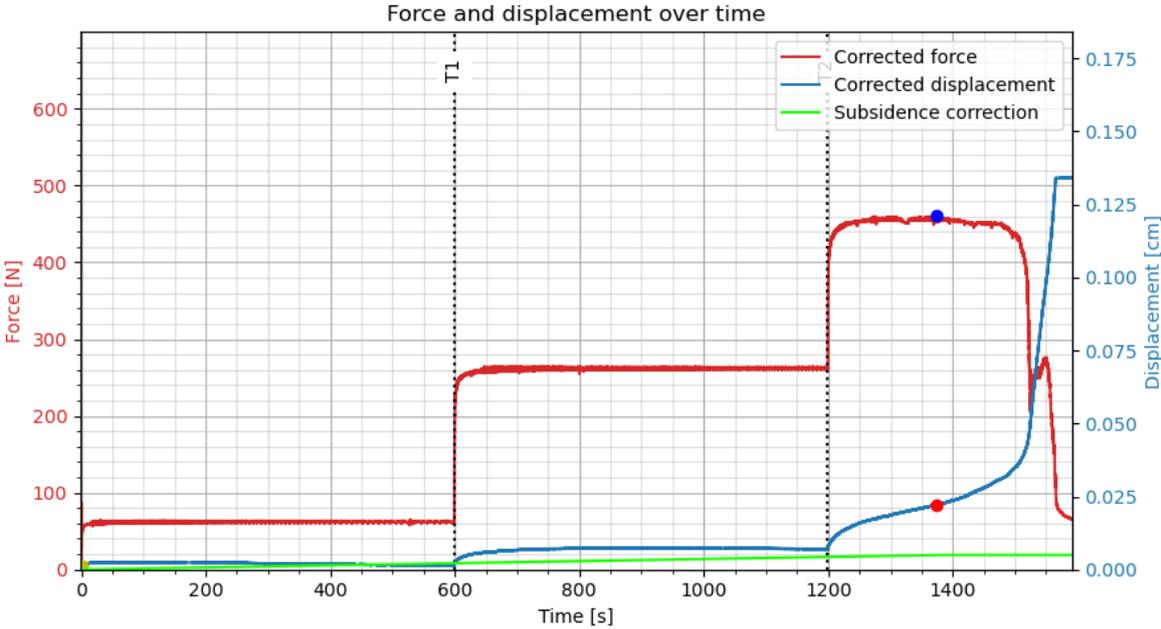
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.2. Test02

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		12:55:00			
Weight	[kg]	108.5			
Width	[cm]	20.0			
Length	[cm]	27			
Dike orientation		North			
Percentage of occurance	[%]	50	40	10	
Sod thickness	[cm]	13	8	5	10
Root length	[cm]	2	4	5	3.1
Maximum stress	[kN/m^2]	12.4			
Strain at maximum stress	[-]	0.26			
Comments		-			

Stress-strain relation
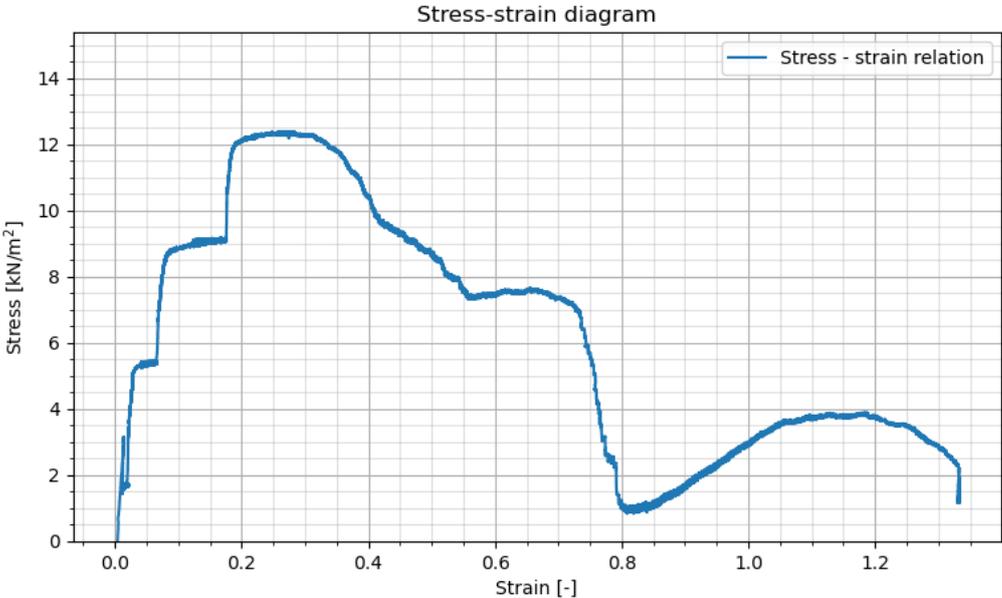
Force and displacement over time
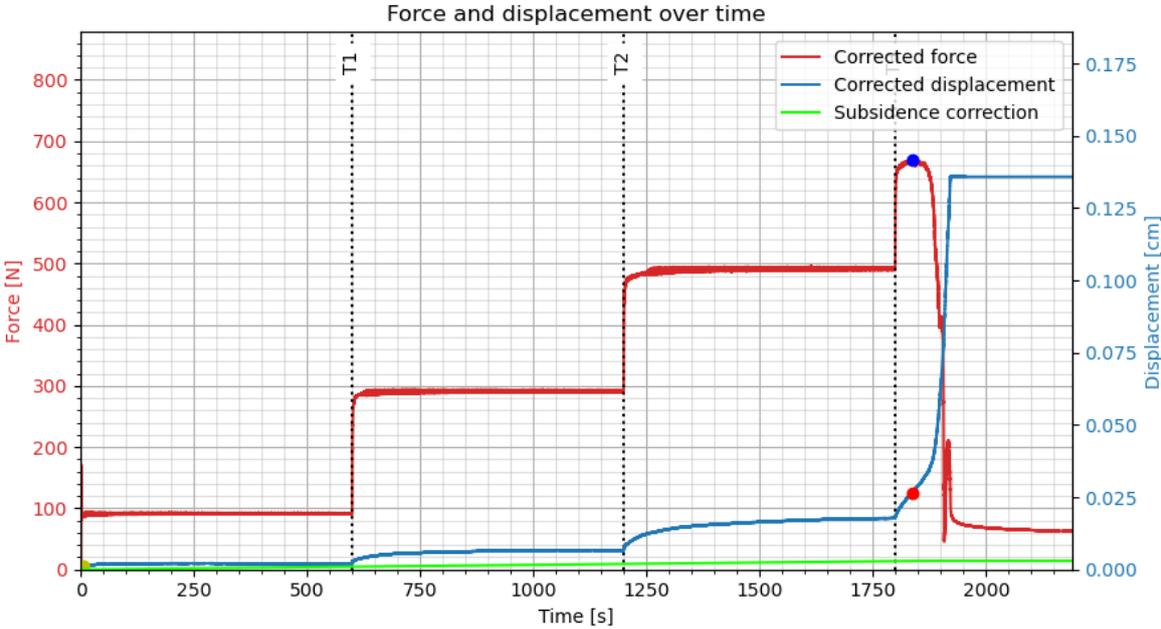
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.3. Test03

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		13:52:00			
Weight	[kg]	114.3			
Width	[cm]	20.0			
Length	[cm]	30			
Dike orientation		North			
Percentage of occurance	[%]	50	40	10	
Sod thickness	[cm]	12	8	5	10
Root length	[cm]	3	5	6	4.1
Maximum stress	[kN/m^2]	7.9			
Strain at maximum stress	[-]	0.2			
Comments		-			

Stress-strain relation
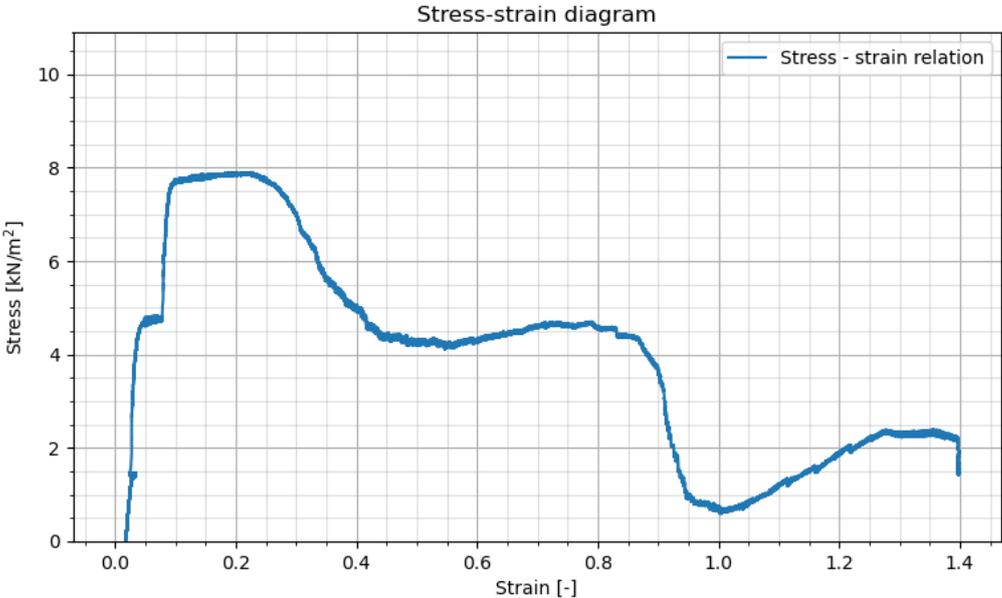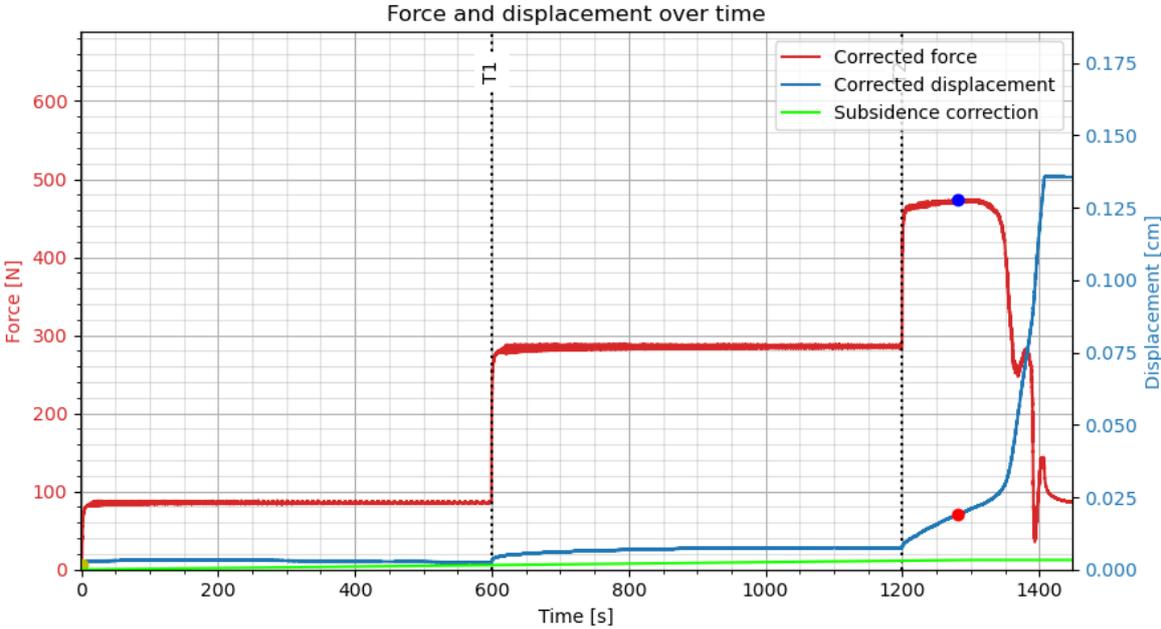
Force and displacement over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.4. Test04

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		14:51:00			
Weight	[kg]	104.2			
Width	[cm]	20.0			
Length	[cm]	26			
Dike orientation		North			
Percentage of occurance	[%]	60	20	20	
Sod thickness	[cm]	12	9	7	10
Root length	[cm]	5	3	6	4.8
Maximum stress	[kN/m^2]	7.46			
Strain at maximum stress	[-]	0.21			
Comments		-			

Stress-strain relation
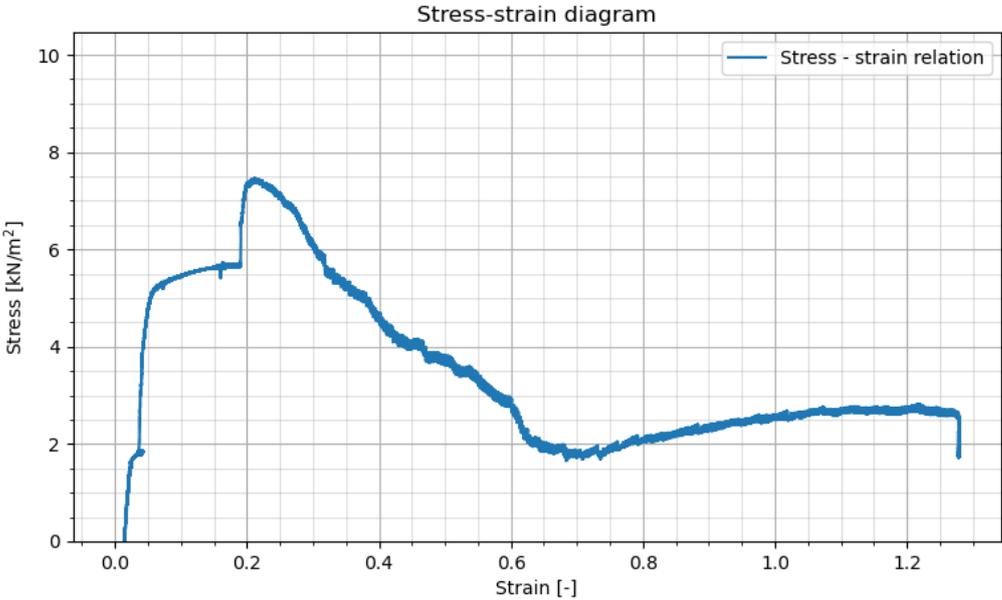
Force and displacement over time
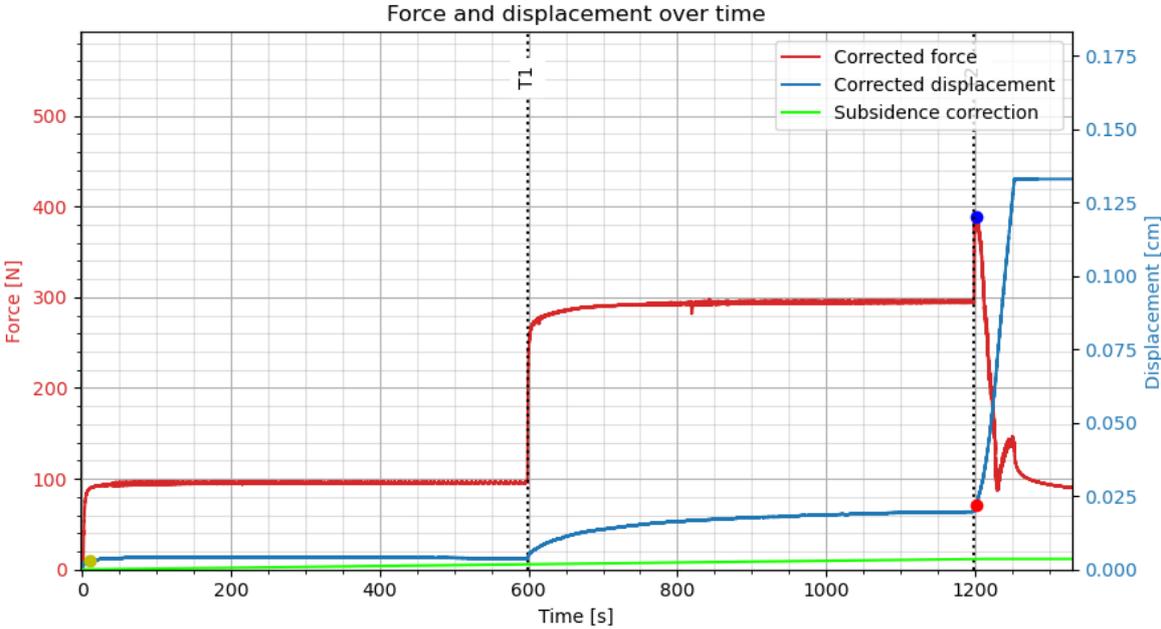
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.5. Test05

		Value 1	Value 2	Value 3	Mean
Date		22-03-2021			
Time		15:48:00			
Weight	[kg]	101.1			
Width	[cm]	20.0			
Length	[cm]	30			
Dike orientation		North			
Percentage of occurance	[%]	20	30	50	
Sod thickness	[cm]	11	10	6	8
Root length	[cm]	6	5	4	4.7
Maximum stress	[kN/m^2]	7.82			
Strain at maximum stress	[-]	0.22			
Comments		-			
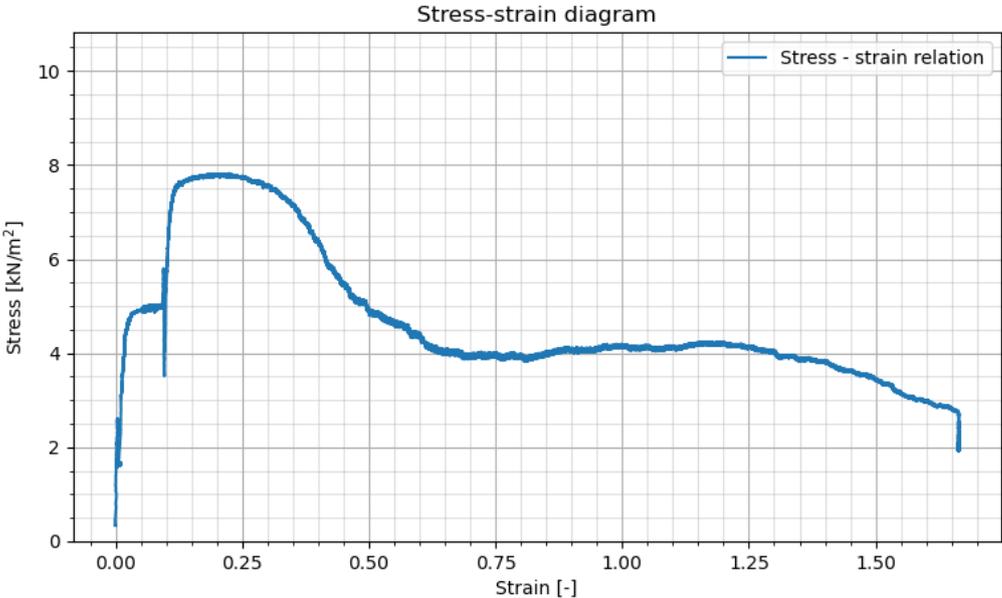
Stress-strain relation

Force and displacement over time
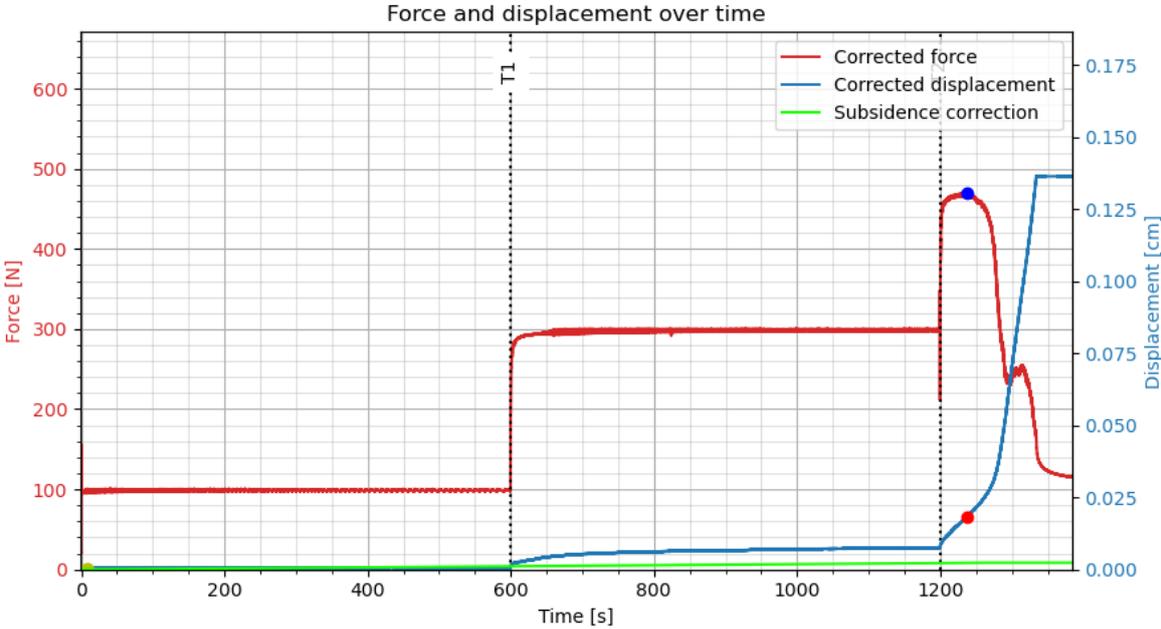
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.6. Test06

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		12:16:00			
Weight	[kg]	114.3			
Width	[cm]	20.0			
Length	[cm]	31			
Dike orientation		North			
Percentage of occurance	[%]	20	40	40	
Sod thickness	[cm]	11	9	8	9
Root length	[cm]	3	4	6	4.6
Maximum stress	[kN/m^2]	6.65			
Strain at maximum stress	[-]	0.22			
Comments		-			
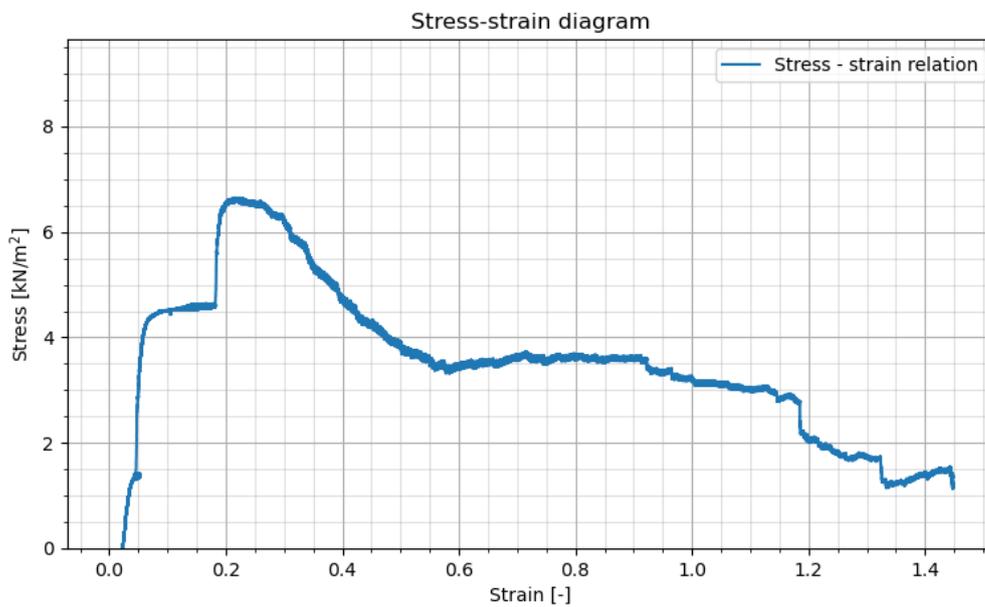
Stress-strain relation

Force and displacement over time
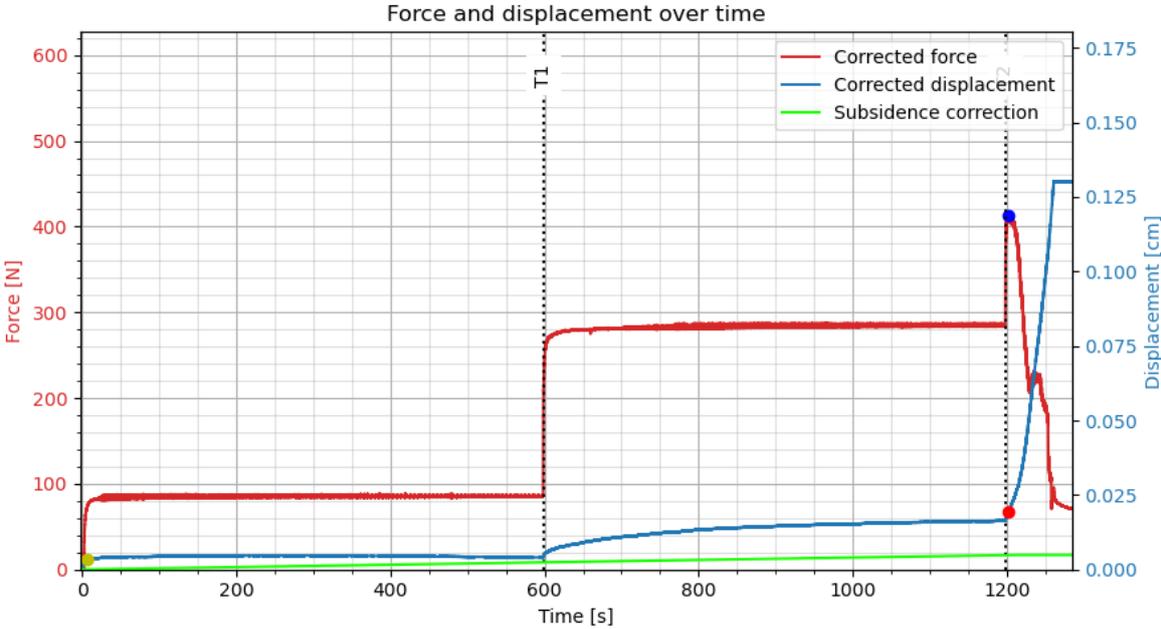
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.7. Test07

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		13:05:00			
Weight	[kg]	110.7			
Width	[cm]	20.0			
Length	[cm]	34			
Dike orientation		North			
Percentage of occurance	[%]	50	20	30	
Sod thickness	[cm]	11	9	7	9
Root length	[cm]	2	4	5	3.3
Maximum stress	[kN/m^2]	7.1			
Strain at maximum stress	[-]	0.17			
Comments		-			
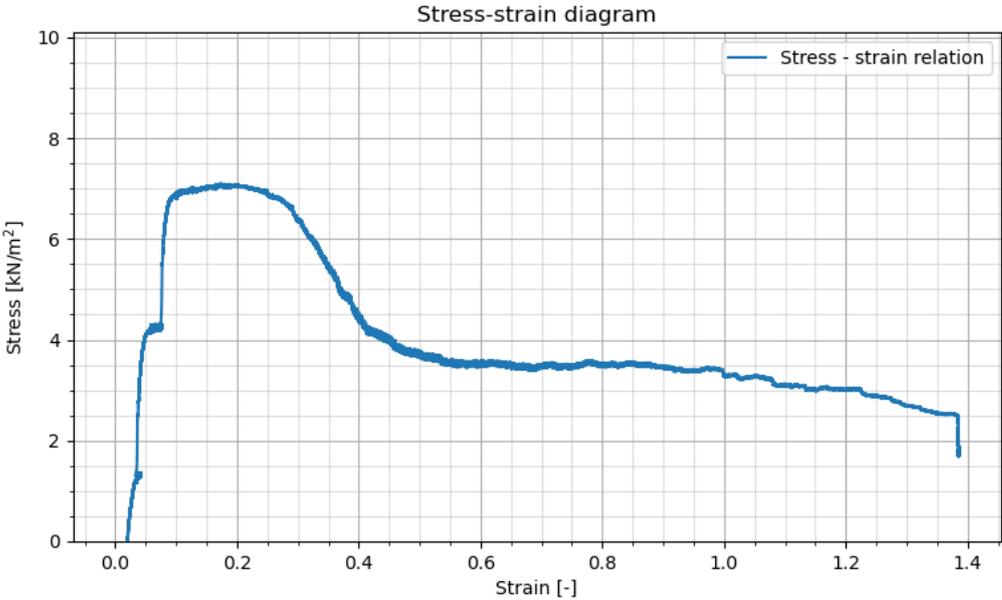
Stress-strain relation

Force and displacement over time
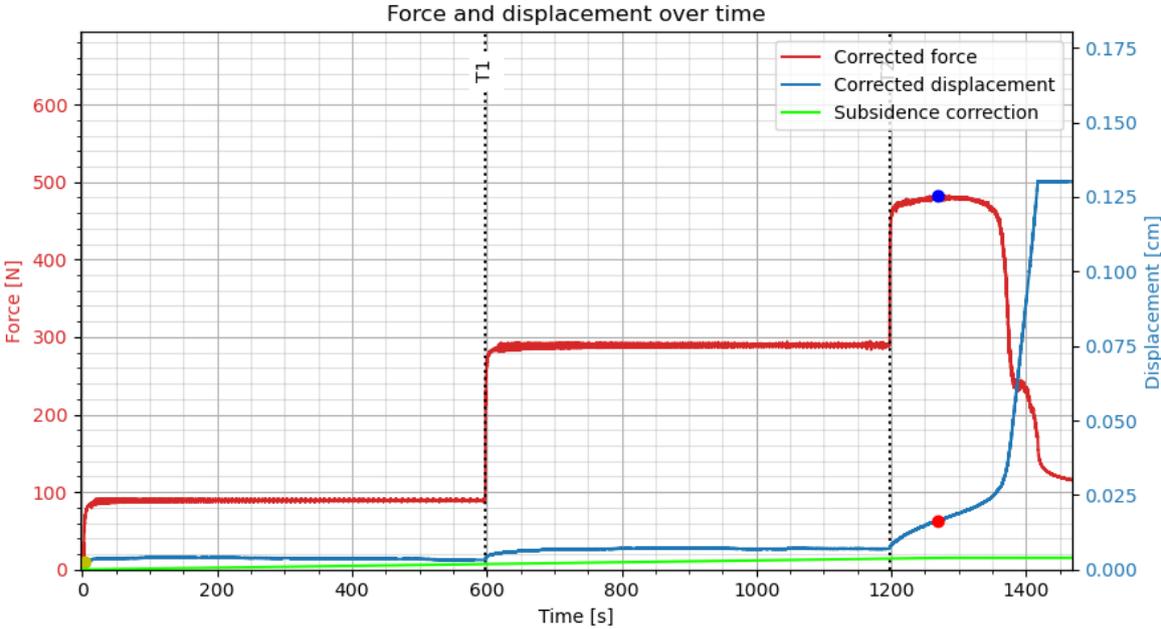
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.8. Test08

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		14:04:00			
Weight	[kg]	102.1			
Width	[cm]	20.0			
Length	[cm]	28			
Dike orientation		North			
Percentage of occurance	[%]	50	40	10	
Sod thickness	[cm]	11	9	5	10
Root length	[cm]	3	4	6	3.7
Maximum stress	[kN/m^2]	8.14			
Strain at maximum stress	[-]	0.21			
Comments		-			

Stress-strain relation
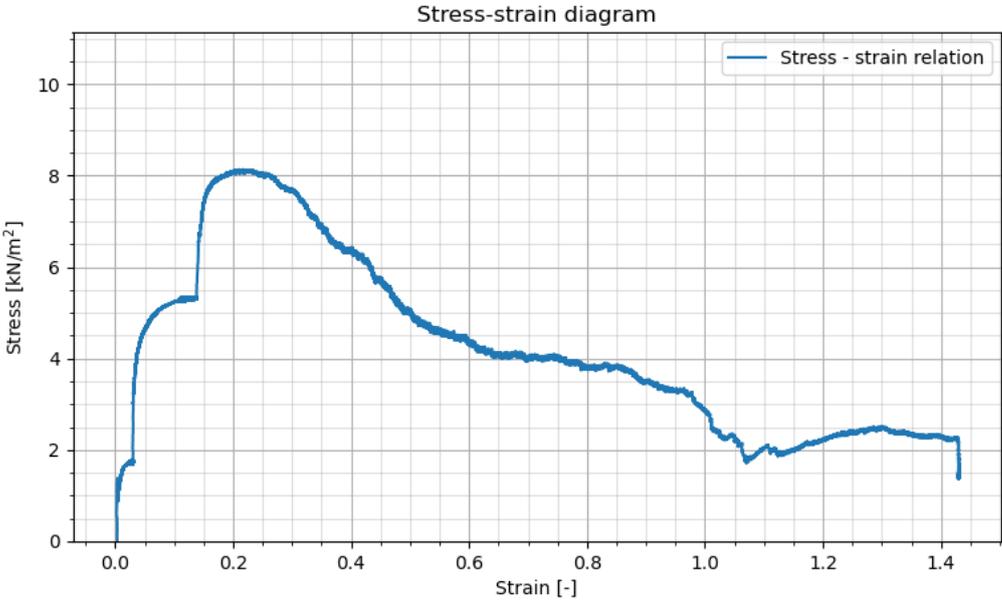
Force and displacement over time
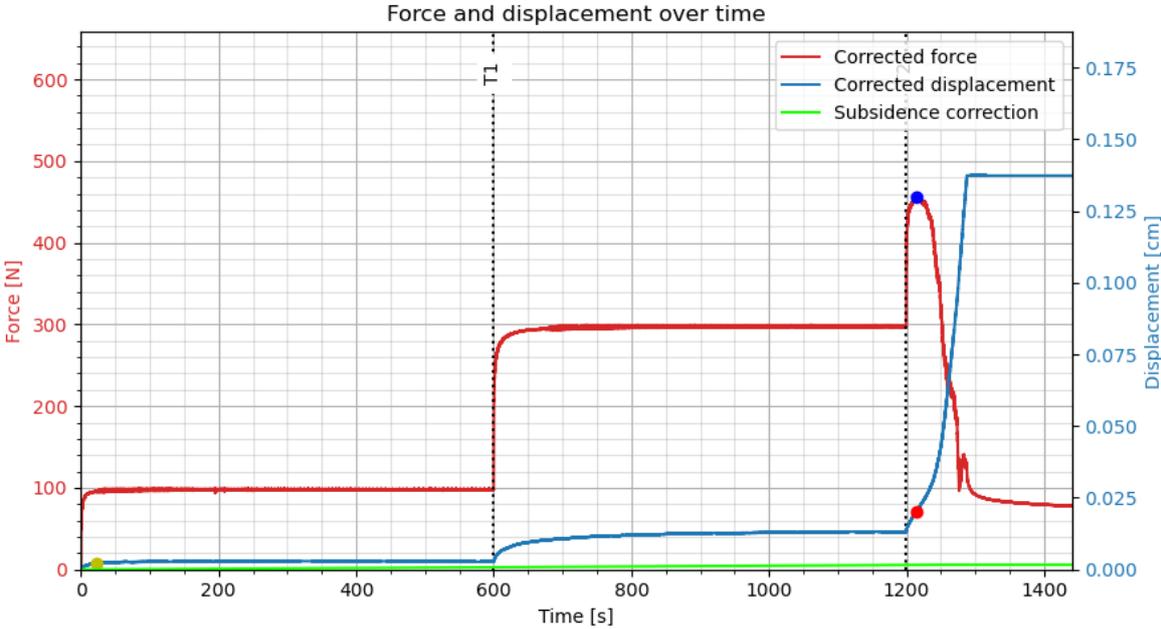
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.9. Test09

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		15:04:00			
Weight	[kg]	91.6			
Width	[cm]	20.0			
Length	[cm]	27			
Dike orientation		North			
Percentage of occurance	[%]	20	70	10	
Sod thickness	[cm]	10	8	5	8
Root length	[cm]	4	4	6	4.2
Maximum stress	[kN/m^2]	5.63			
Strain at maximum stress	[-]	0.15			
Comments		-			

Stress-strain relation
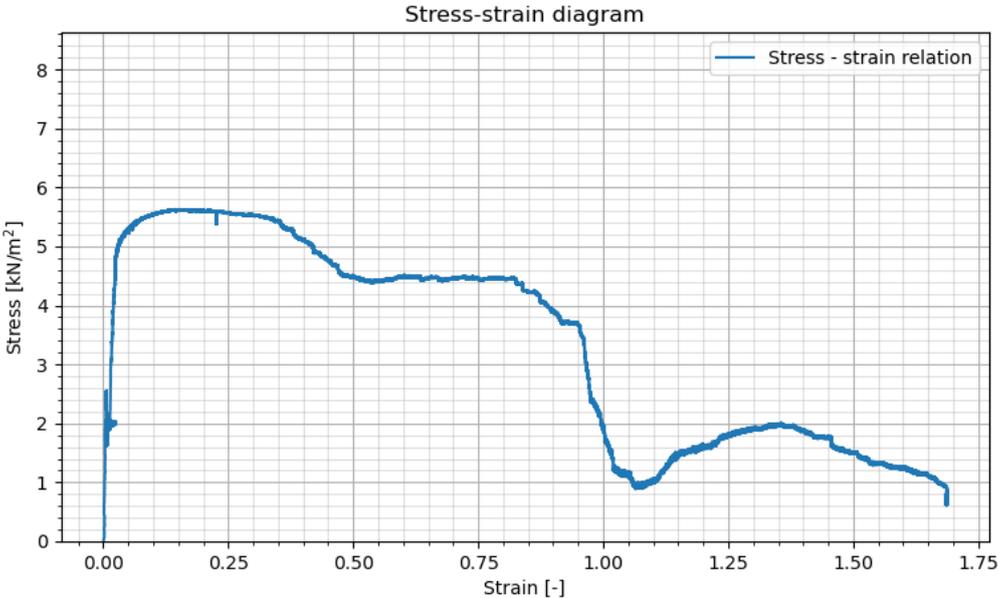
Force and displacement over time
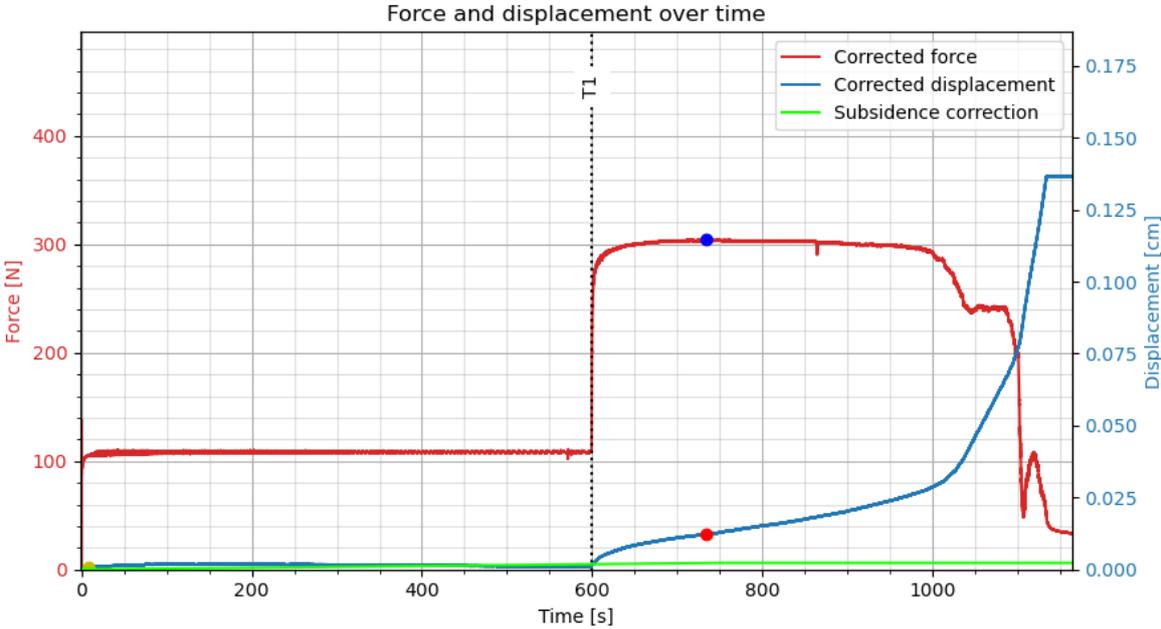
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.2.10. Test10

		Value 1	Value 2	Value 3	Mean
Date		23-03-2021			
Time		15:55:00			
Weight	[kg]	116.6			
Width	[cm]	20.0			
Length	[cm]	30			
Dike orientation		North			
Percentage of occurance	[%]	30	40	30	
Sod thickness	[cm]	13	11	7	10
Root length	[cm]	2	3	3	2.7
Maximum stress	[kN/m^2]	7.88			
Strain at maximum stress	[-]	0.12			
Comments		-			

Stress-strain relation
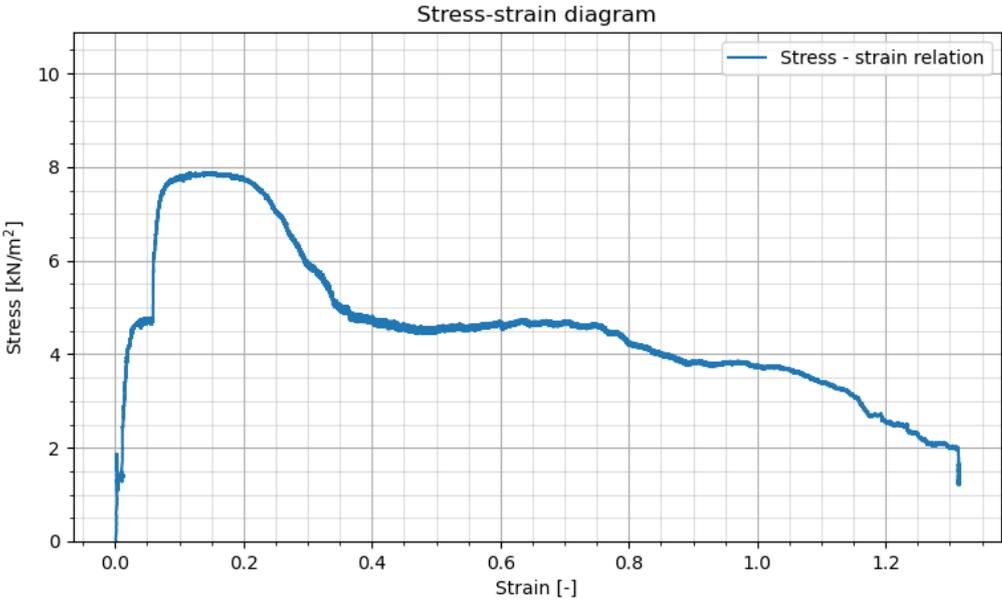
Force and displacement over time
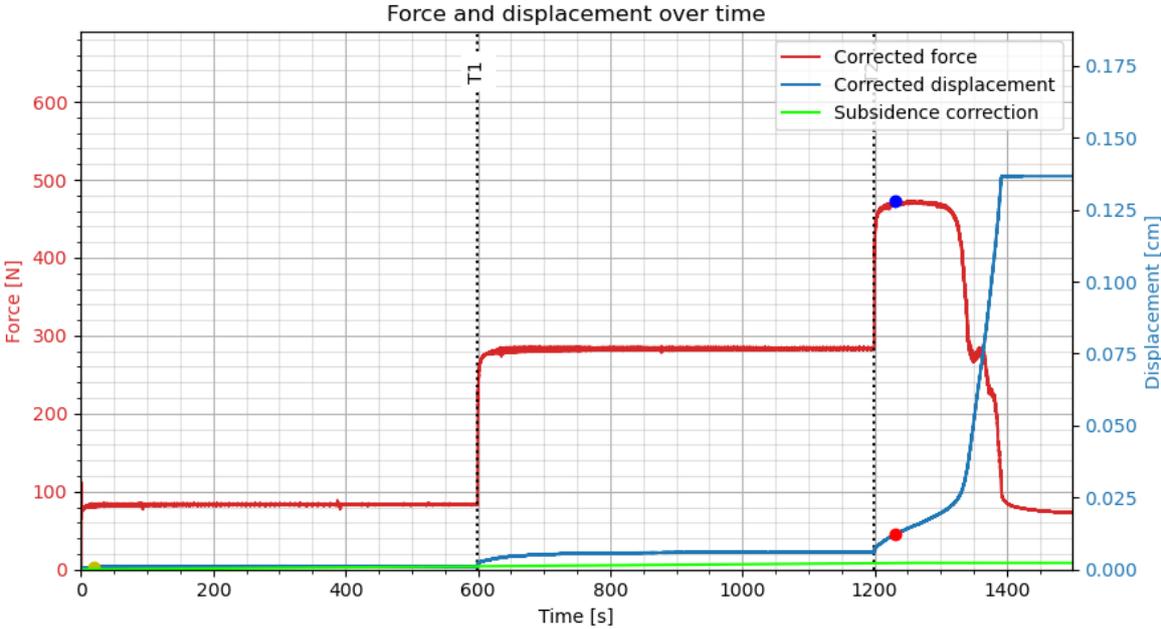
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1. Fatigue tests - condition 4 submerged

E.1.1. Test01

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		08:41:00			
Cyclic Load regime	[N]	300			
Weight	[kg]	13			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	30	40	30	
Sod thickness	[cm]	13	12	7	11
Root length	[cm]	5	3	5	4.2
Mean peak stress	[kN/m^2]	7.17			
Maximum number of cycles	[-]	703			
Comments		-			

Force and displacement over time
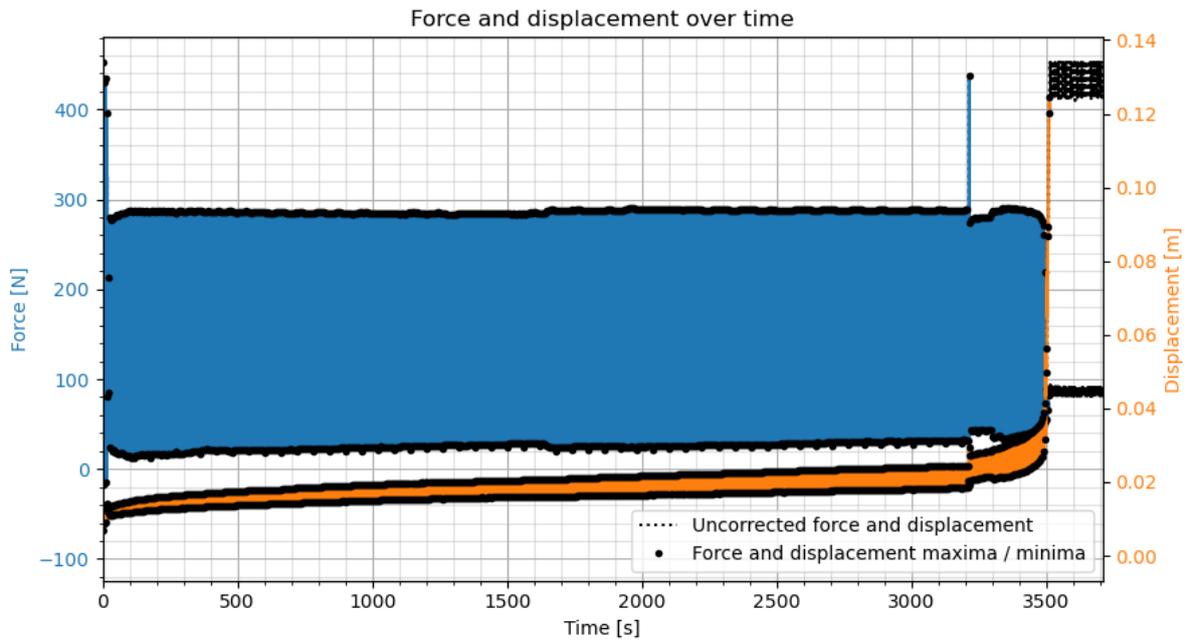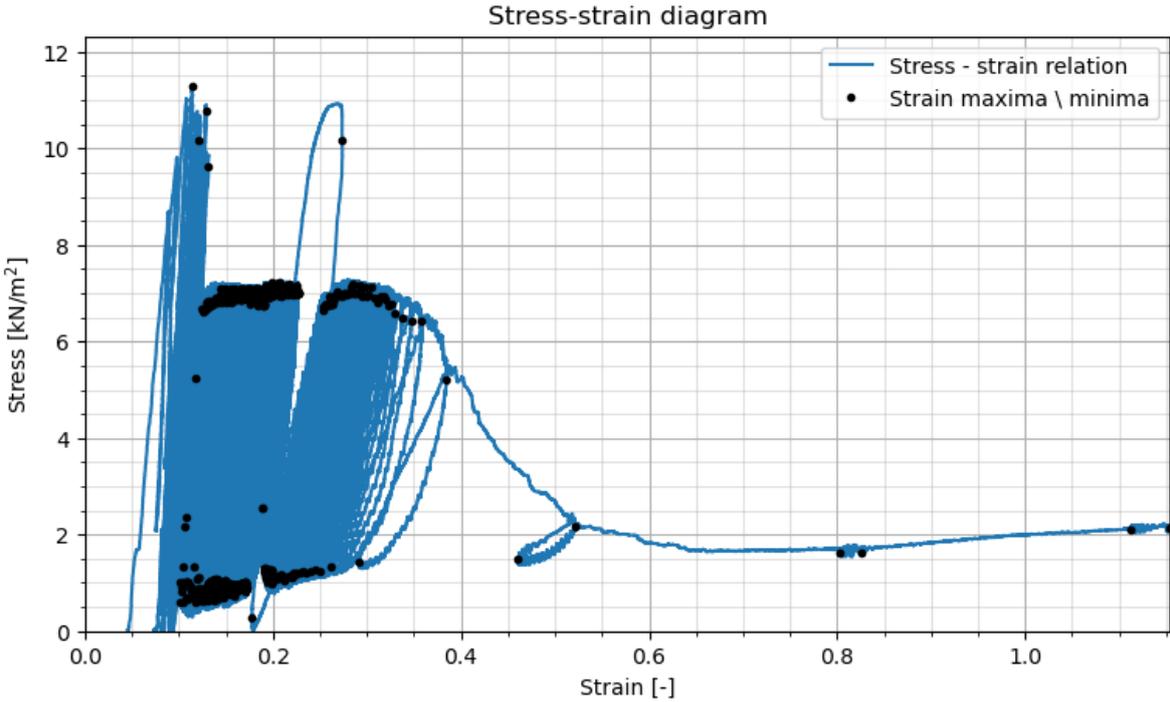
Stress-strain relation

Stress-strain diagram

Strain over normalized cycles

Strain as a function of normalized cycles

Mean strain over time

Mean strain vs time

E-modulus over time

E-modulus versus normalized cycles
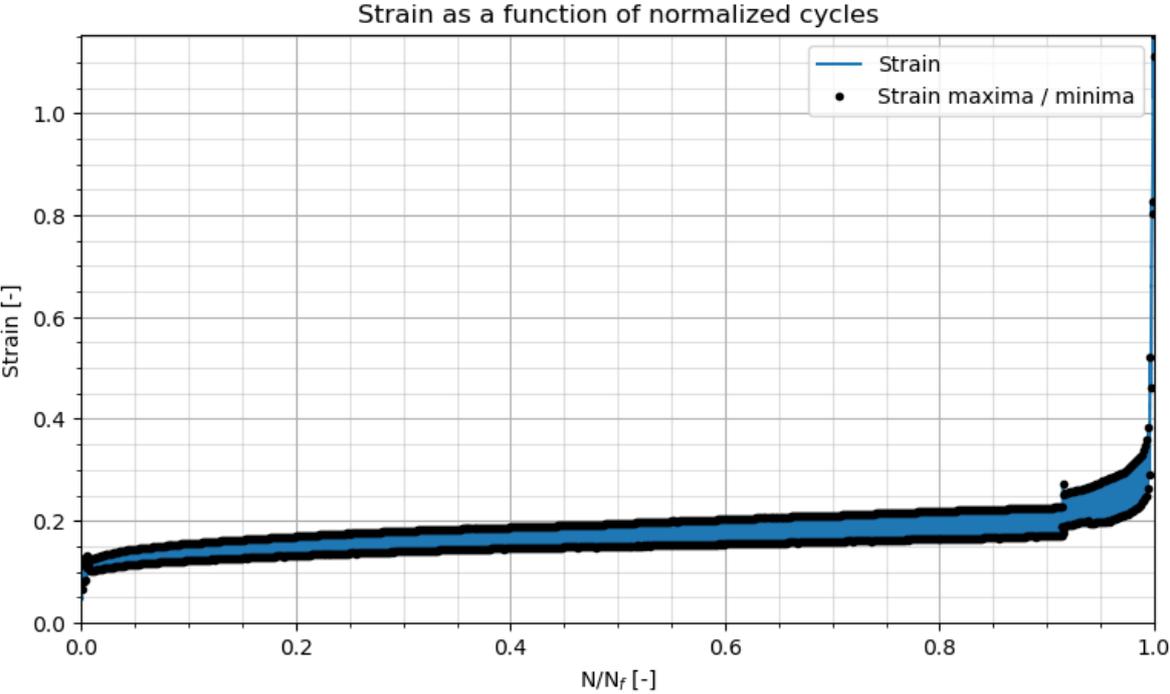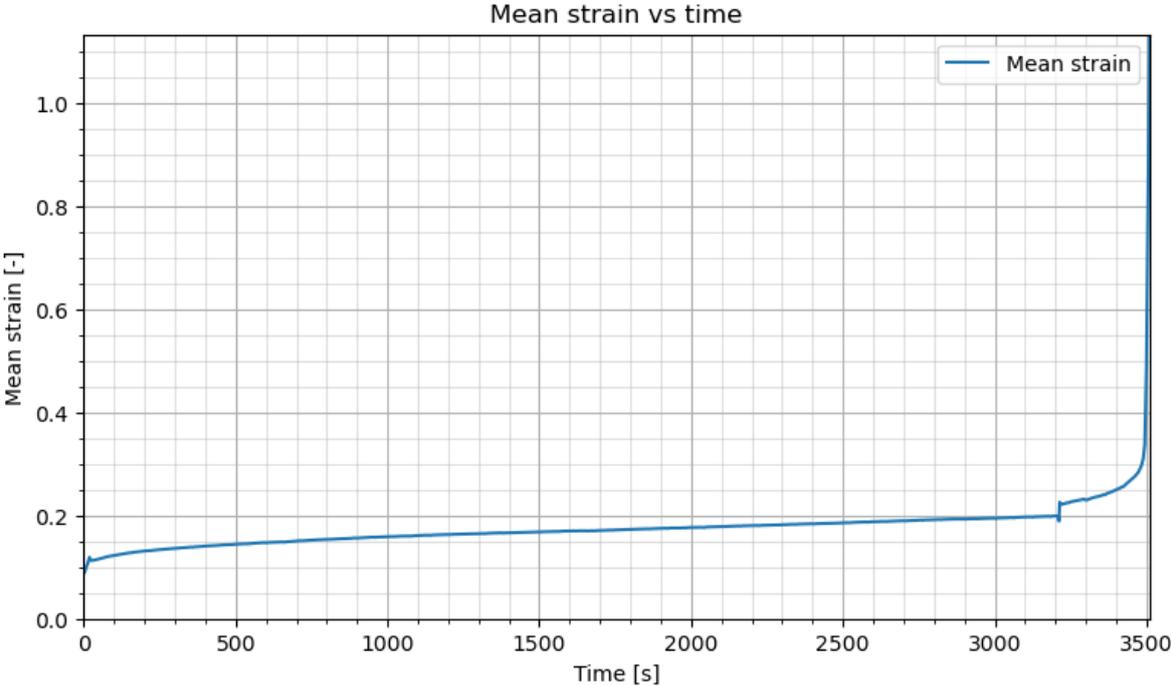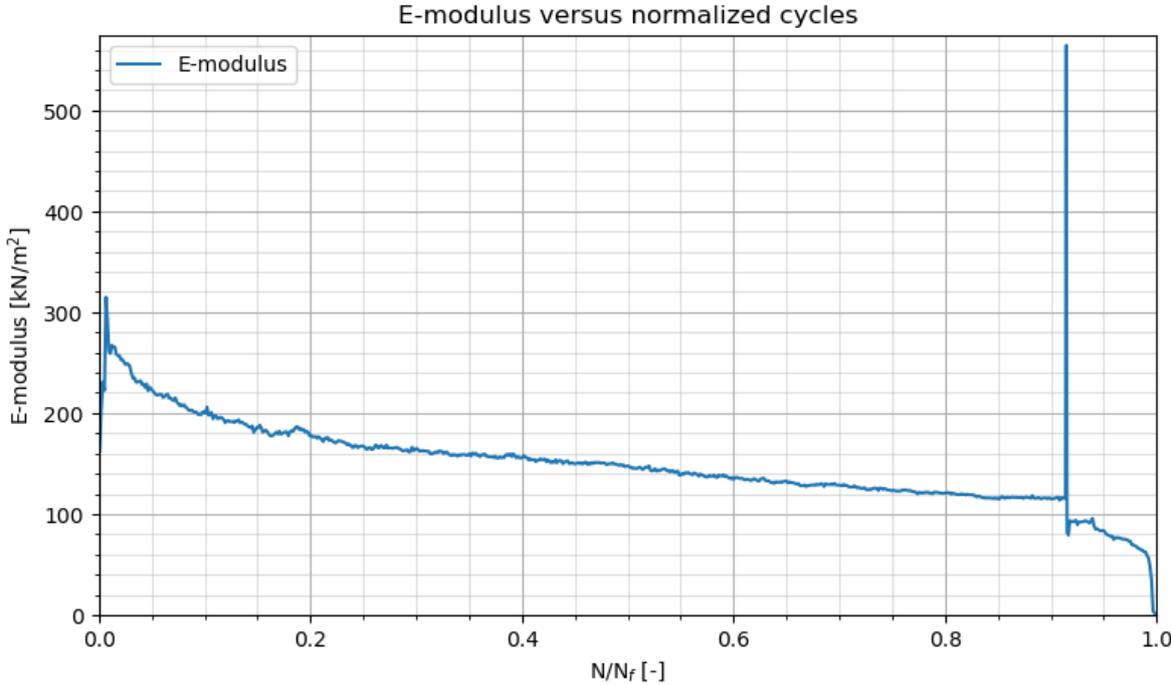
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.2. Test02

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		10:18:00			
Cyclic Load regime	[N]	300			
Weight	[kg]	9			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	30	60	10	
Sod thickness	[cm]	9	7	5	7
Root length	[cm]	3	3	4	3.1
Mean peak stress	[kN/m^2]	5.41			
Maximum number of cycles	[-]	17			
Comments		-			

Force and displacement over time
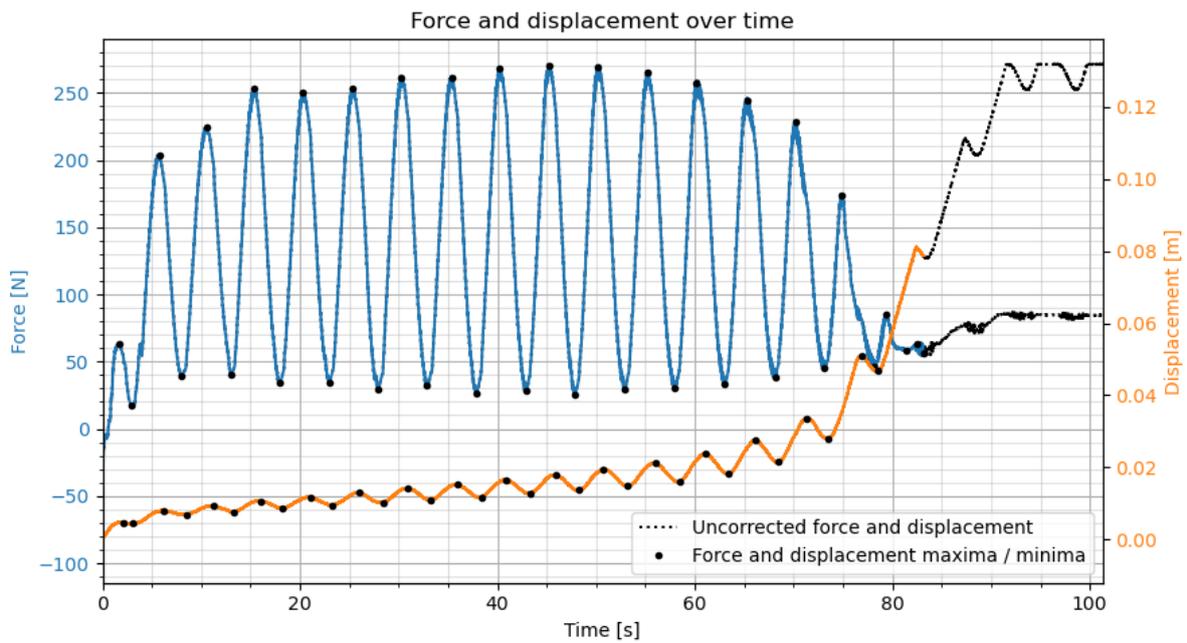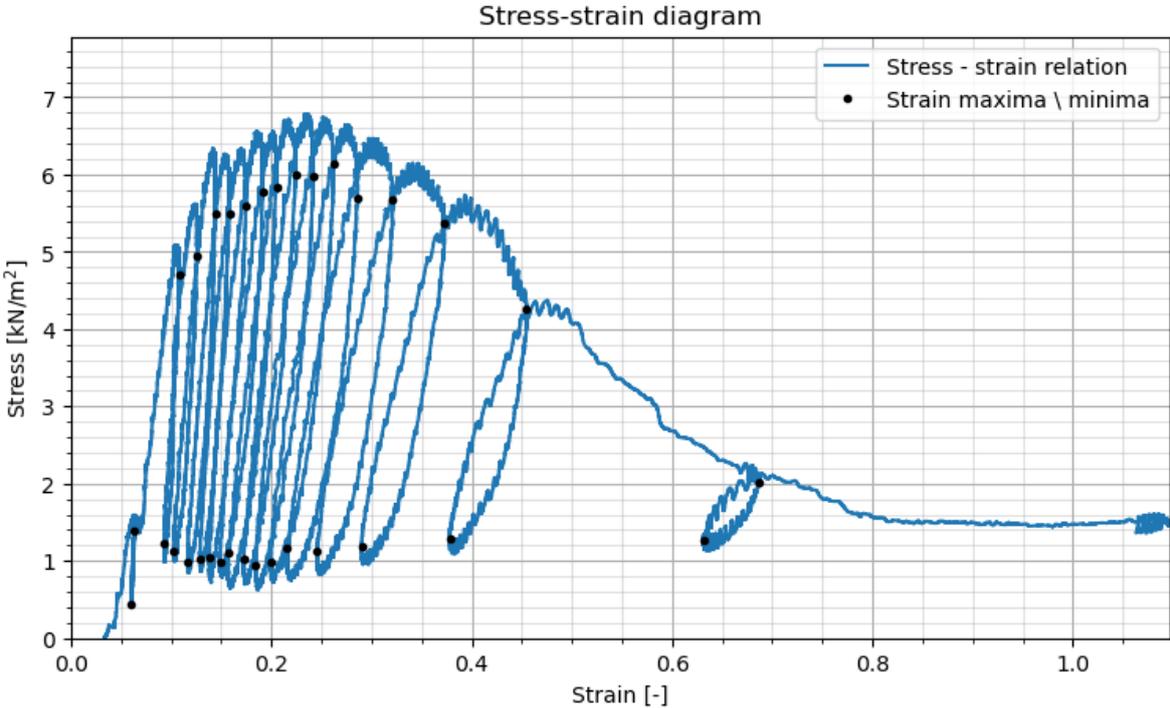
Stress-strain relation

Stress-strain diagram

Strain over normalized cycles

Strain as a function of normalized cycles

Mean strain over time

Mean strain vs time

E-modulus over time

E-modulus versus normalized cycles
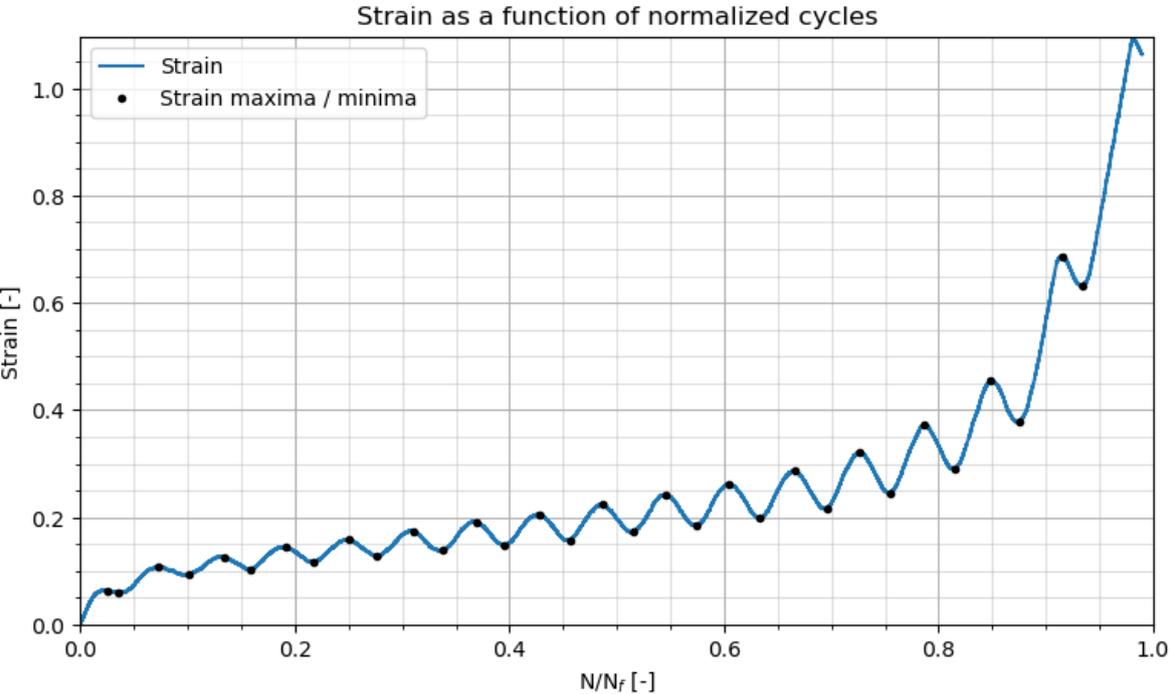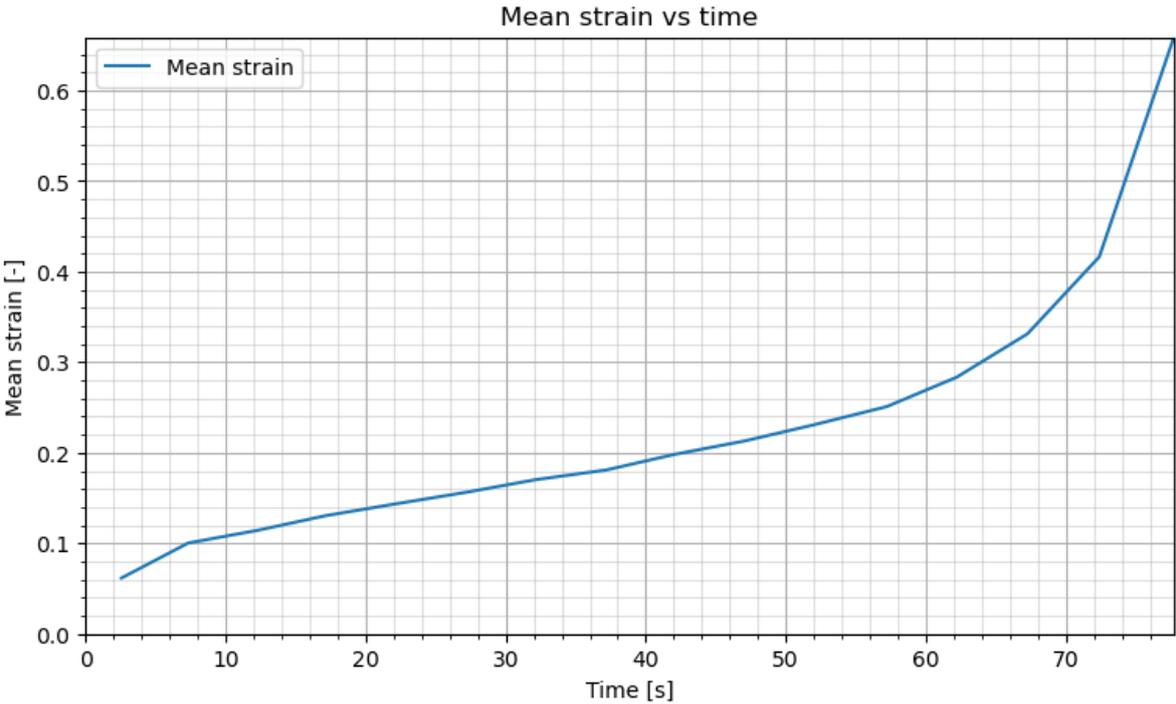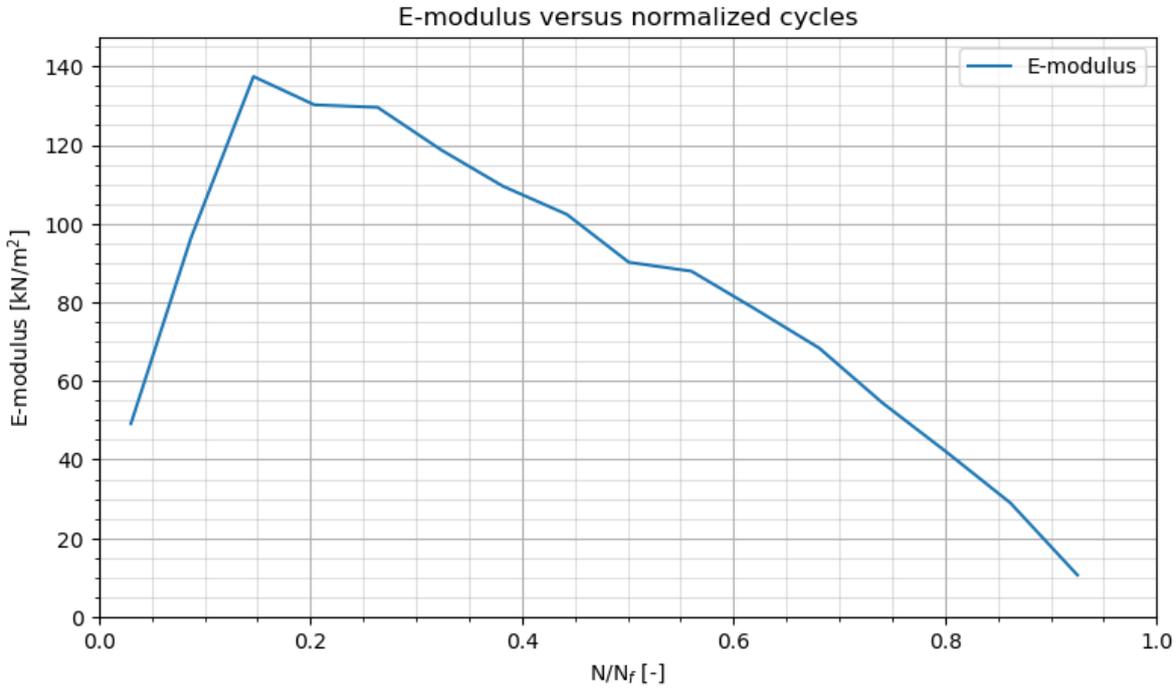
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.3. Test03

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		10:41:00			
Cyclic Load regime	[N]	300			
Weight	[kg]	9			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	30	30	40	
Sod thickness	[cm]	9	8	6	8
Root length	[cm]	3	4	5	4.1
Mean peak stress	[kN/m^2]	7.04			
Maximum number of cycles	[-]	464			
Comments		-			

Force and displacement over time
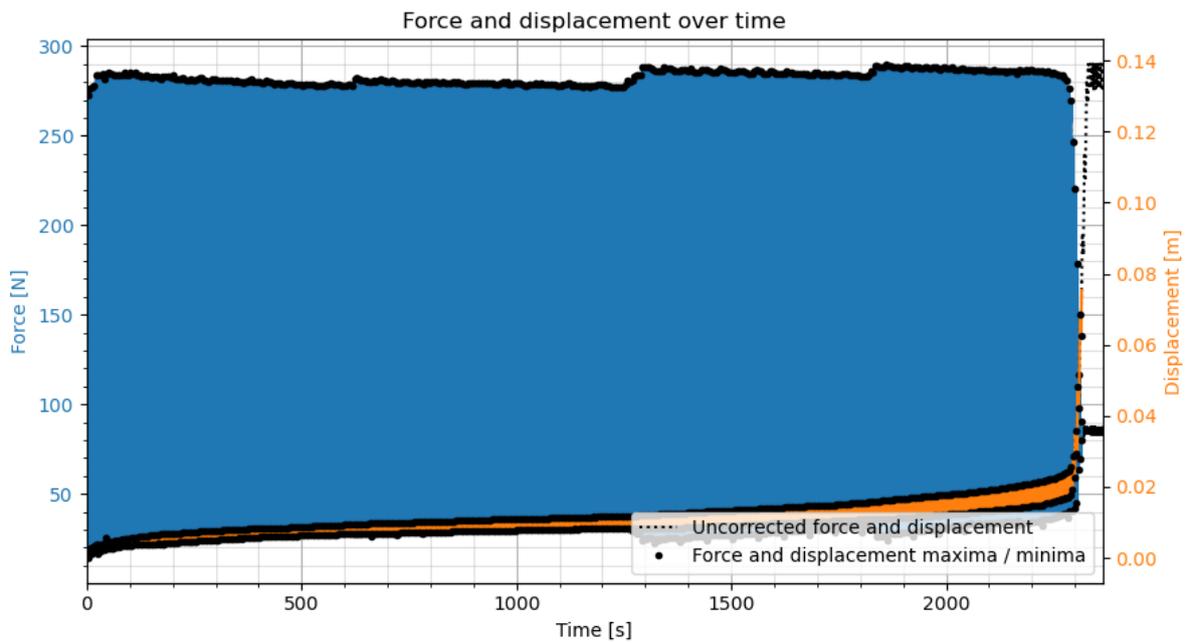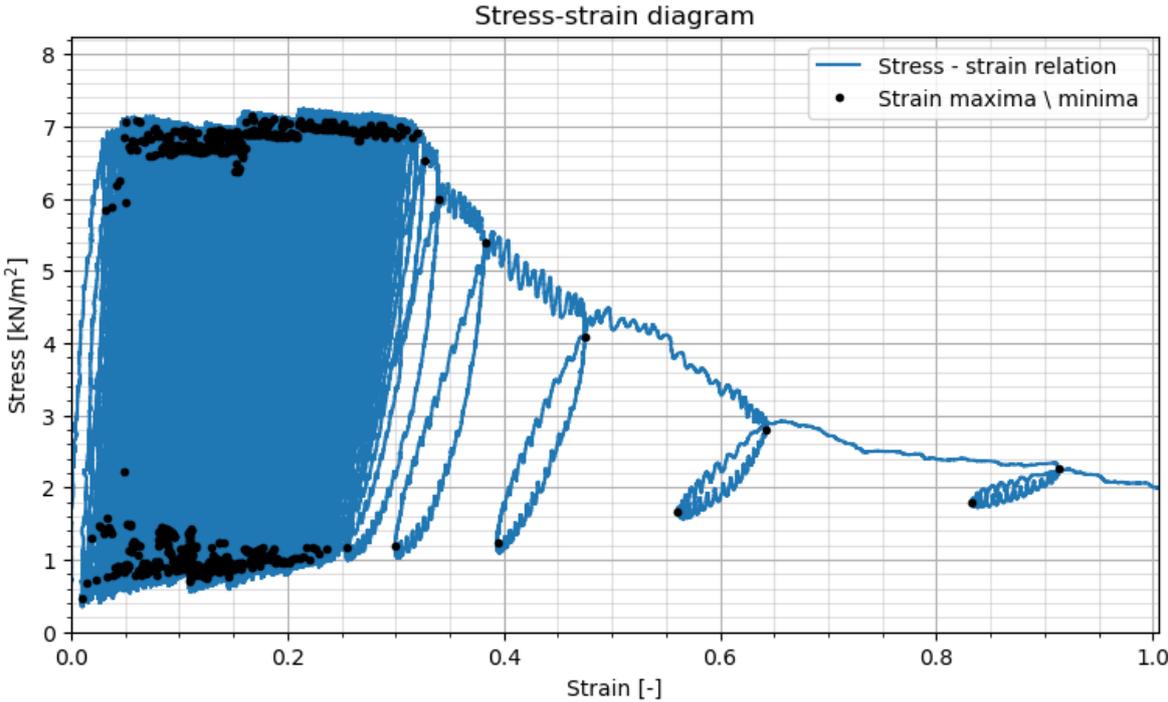
Force and displacement over time

Stress-strain relation

Strain over normalized cycles

Mean strain over time

Mean strain vs time

E-modulus over time

E-modulus versus normalized cycles
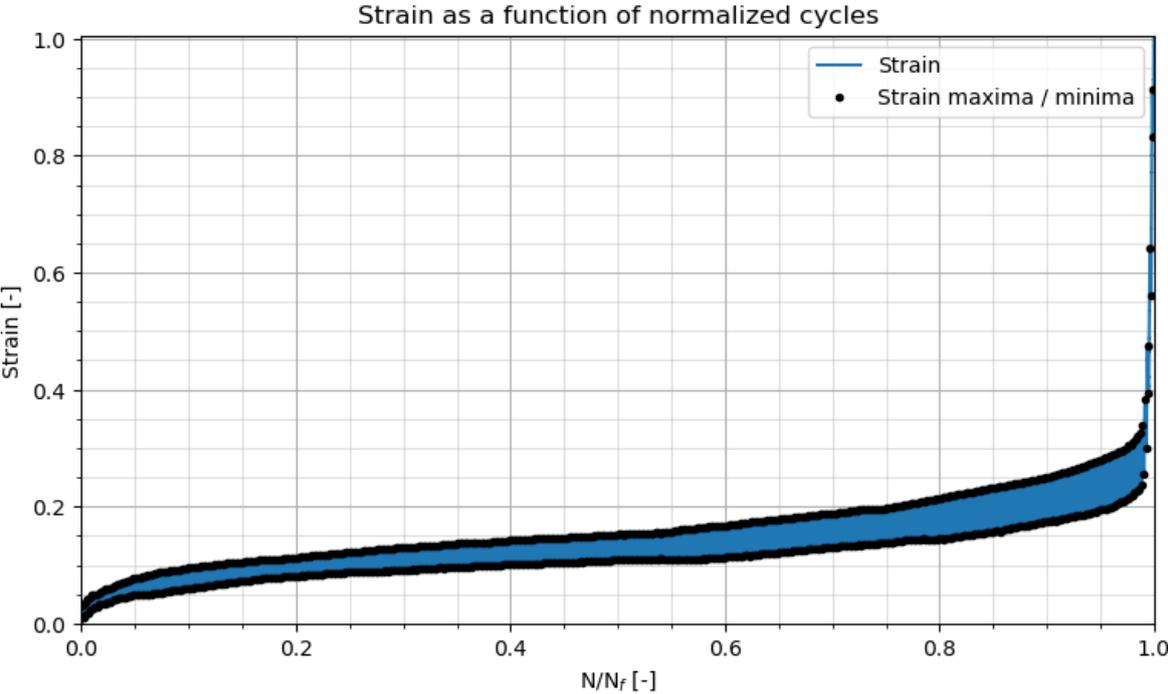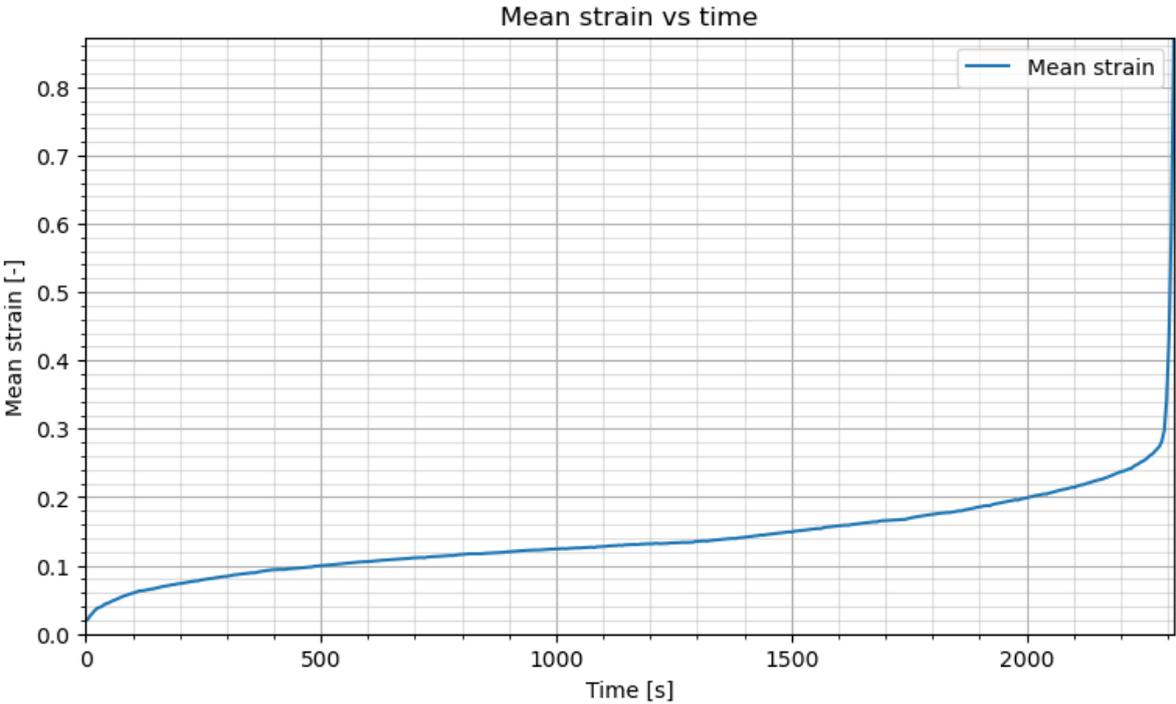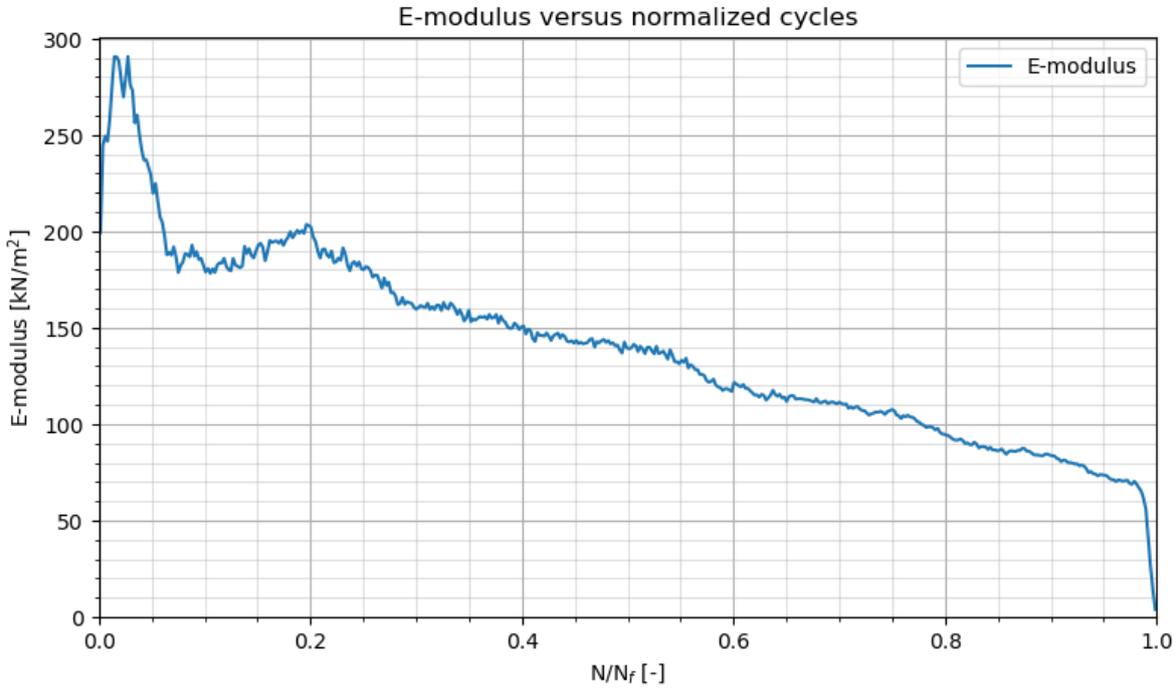
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.4. Test04

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		15:25:00			
Cyclic Load regime	[N]	300			
Weight	[kg]	10			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	30	50	20	
Sod thickness	[cm]	10	9	7	9
Root length	[cm]	4	7	5	5.7
Mean peak stress	[kN/m^2]	7.03			
Maximum number of cycles	[-]	199			
Comments		-			

Force and displacement over time
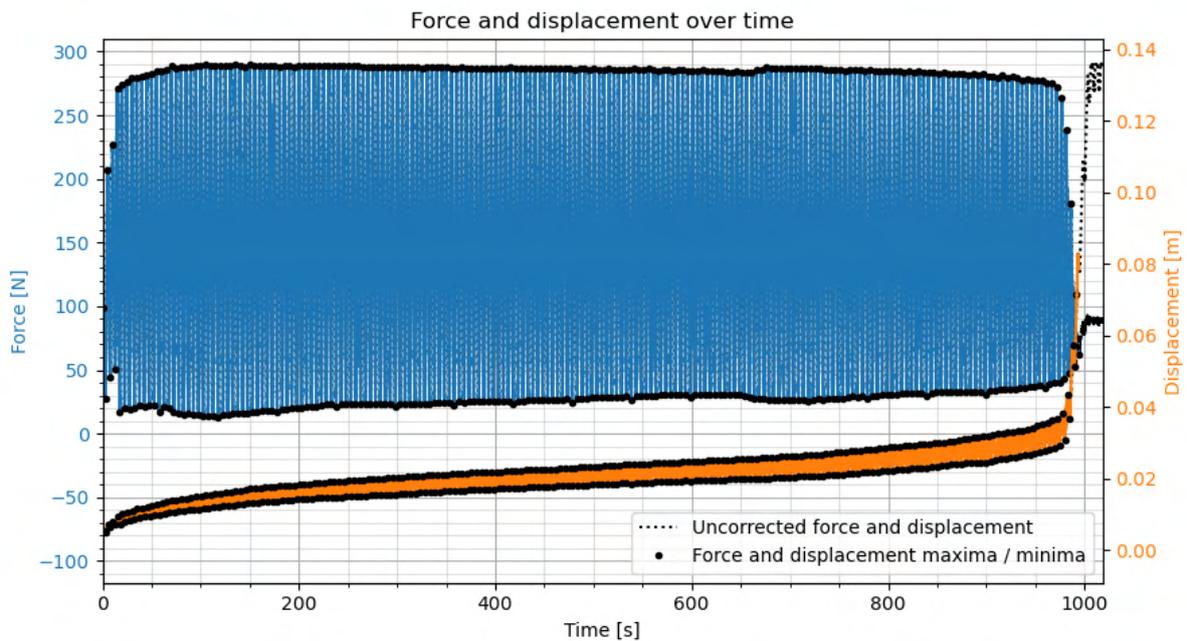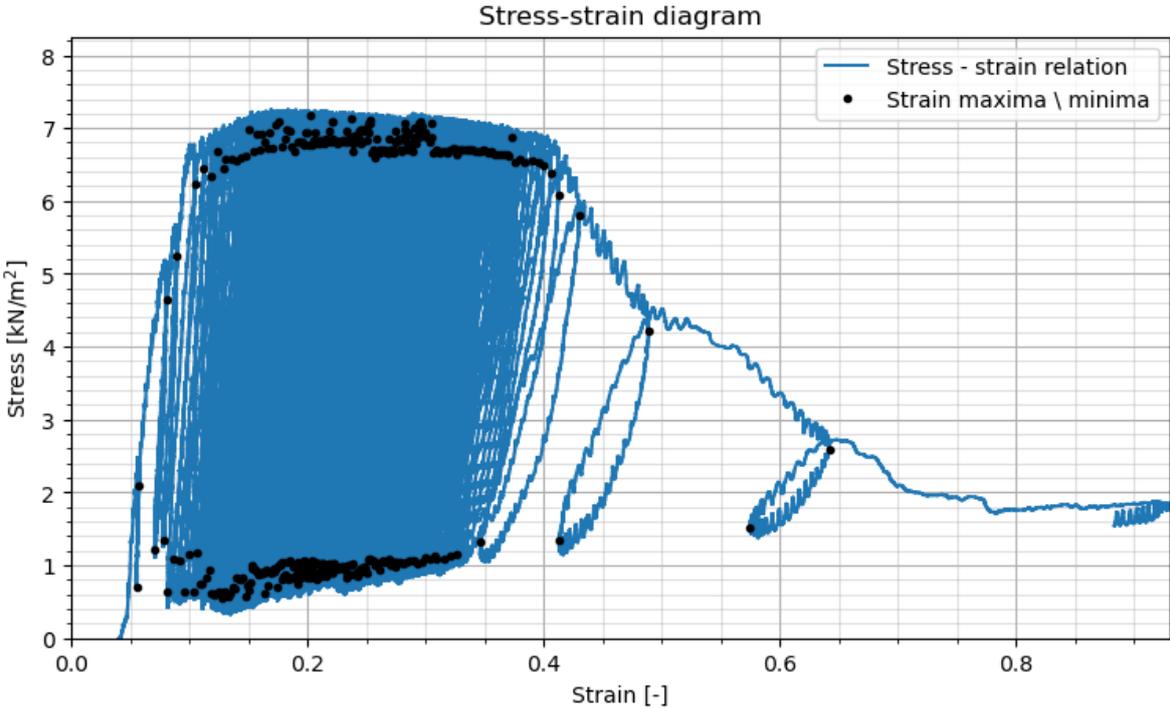
Force and displacement over time

Stress-strain relation

Strain over normalized cycles
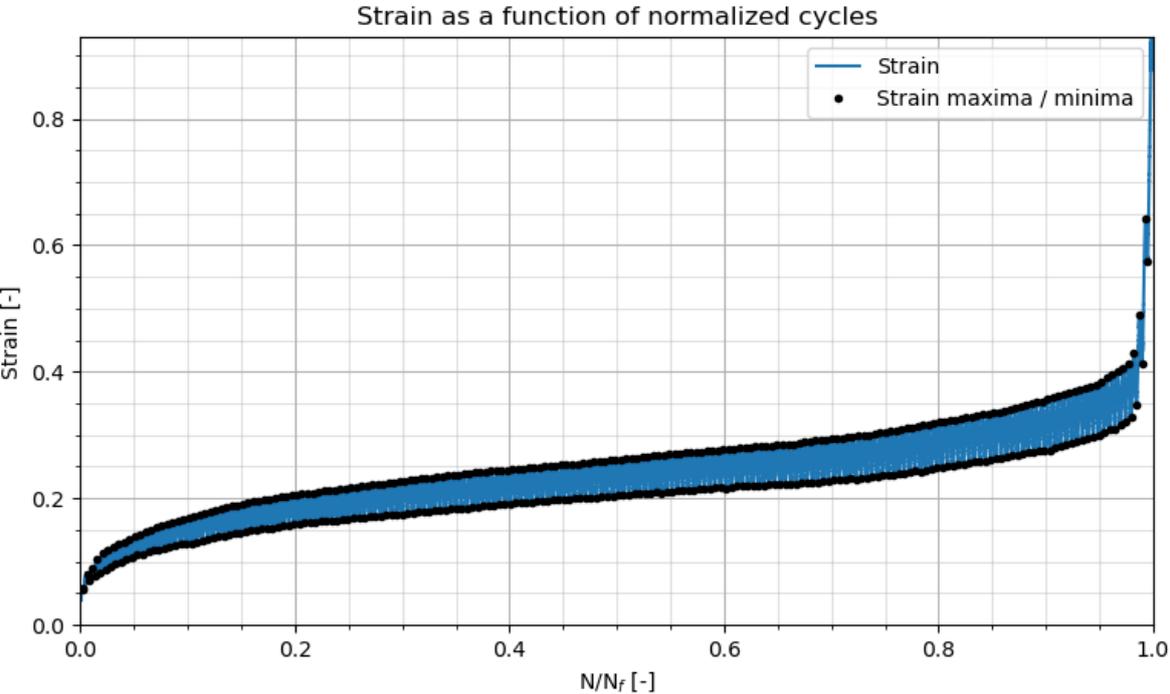
Mean strain over time
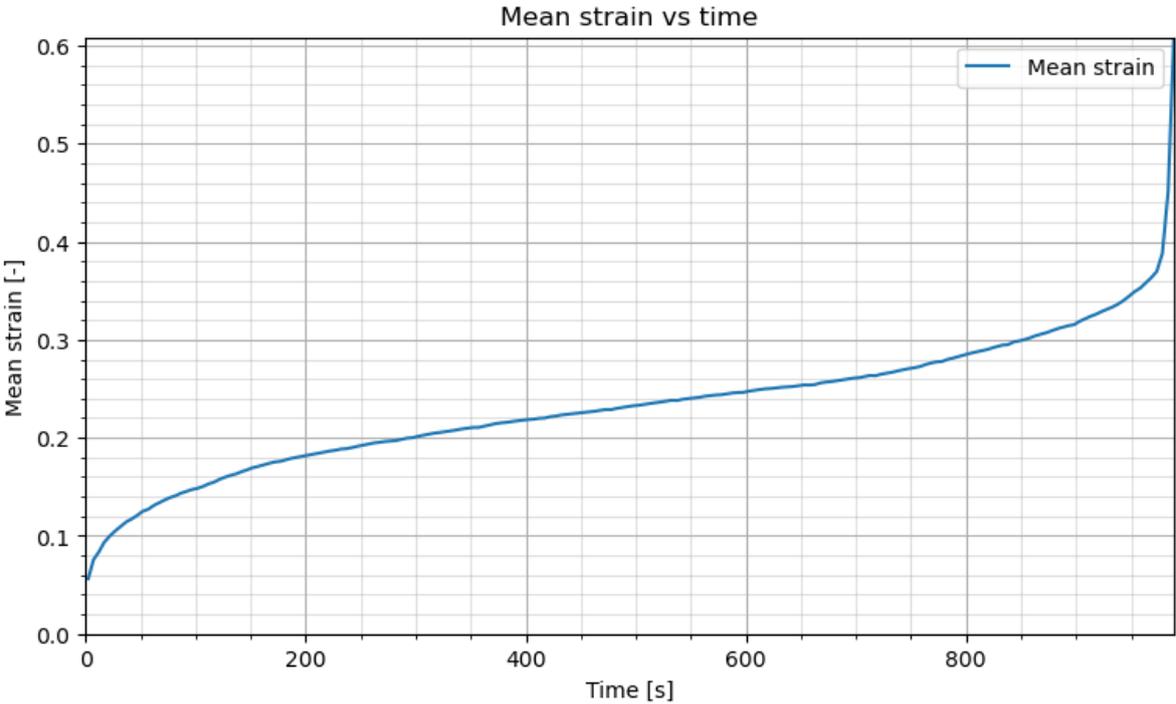
E-modulus over time
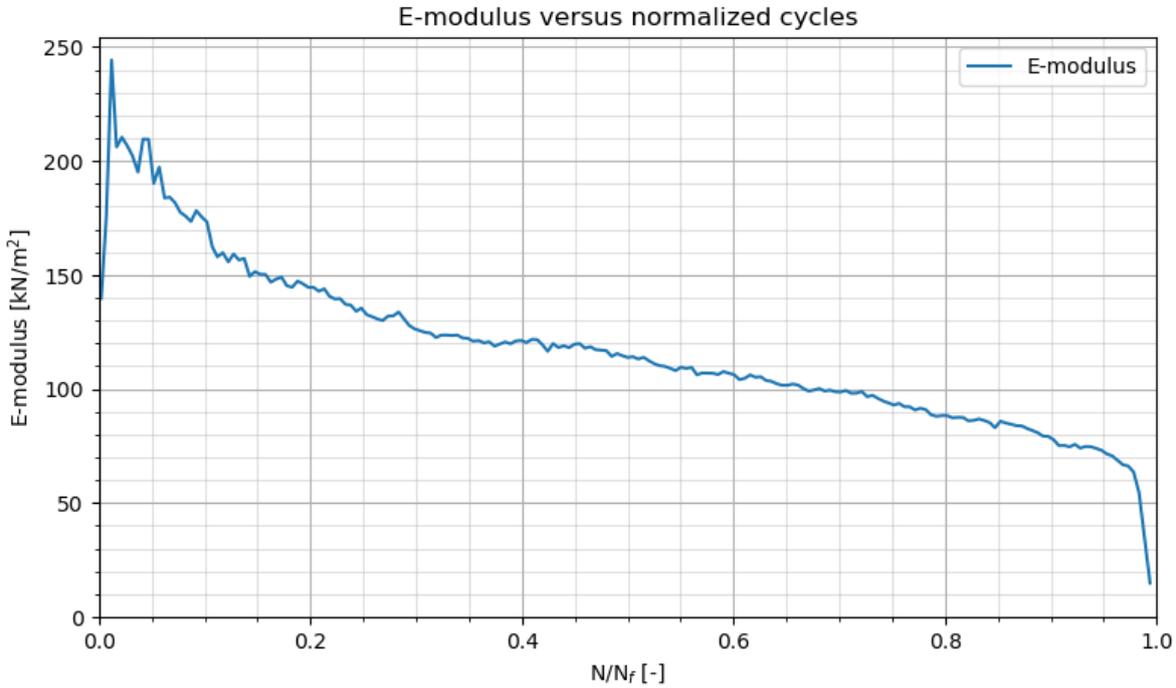
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.5. Test05

		Value 1	Value 2	Value 3	Mean
Date		24-03-2021			
Time		16:17:00			
Cyclic Load regime	[N]	300			
Weight	[kg]	9			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	40	20	40	
Sod thickness	[cm]	9	8	7	8
Root length	[cm]	5	5	5	5.0
Mean peak stress	[kN/m^2]	7.2			
Maximum number of cycles	[-]	709			
Comments		Did not fail			
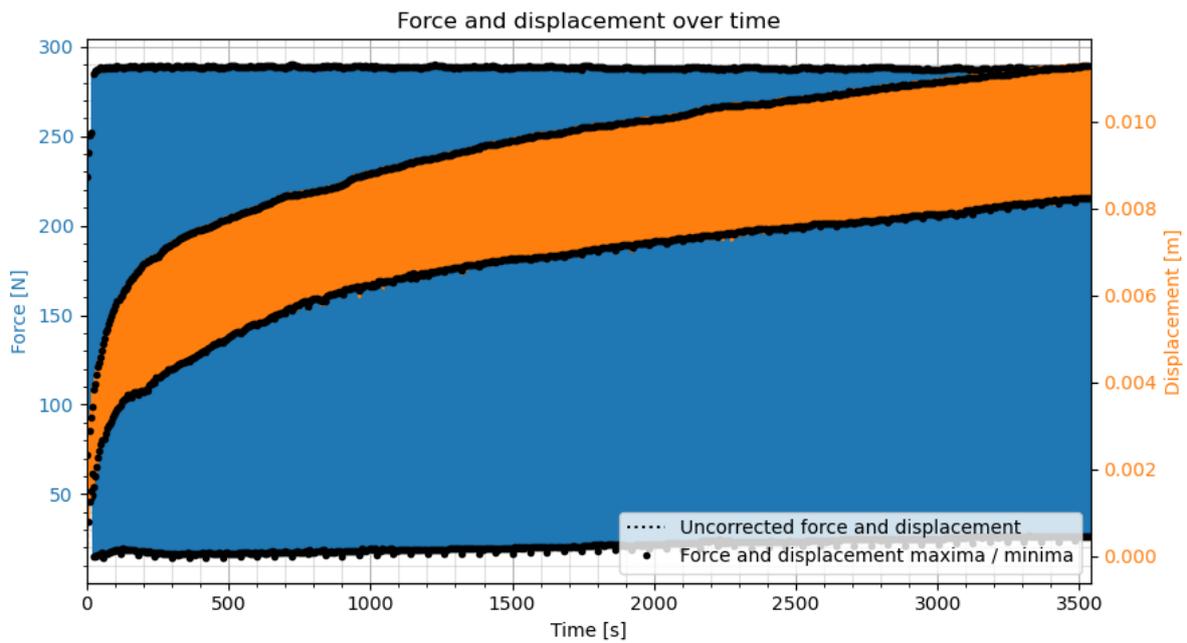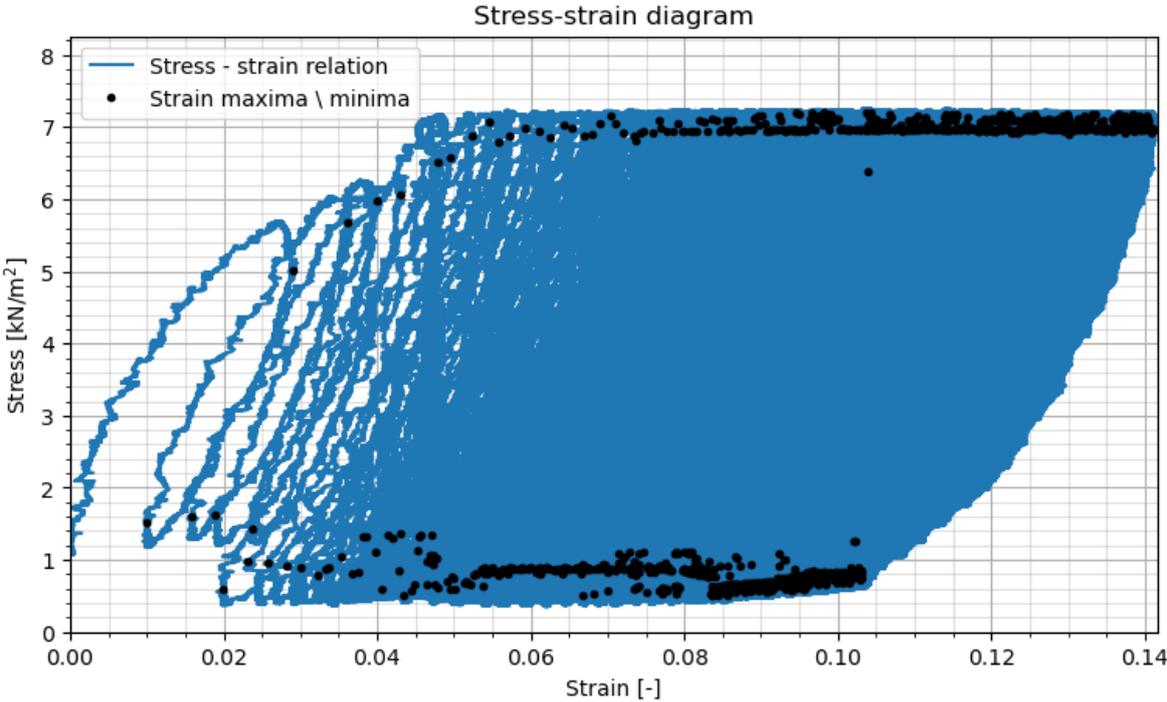
Force and displacement over time

Stress-strain relation

Strain over normalized cycles

Mean strain over time

Mean strain vs time

E-modulus over time

E-modulus versus normalized cycles
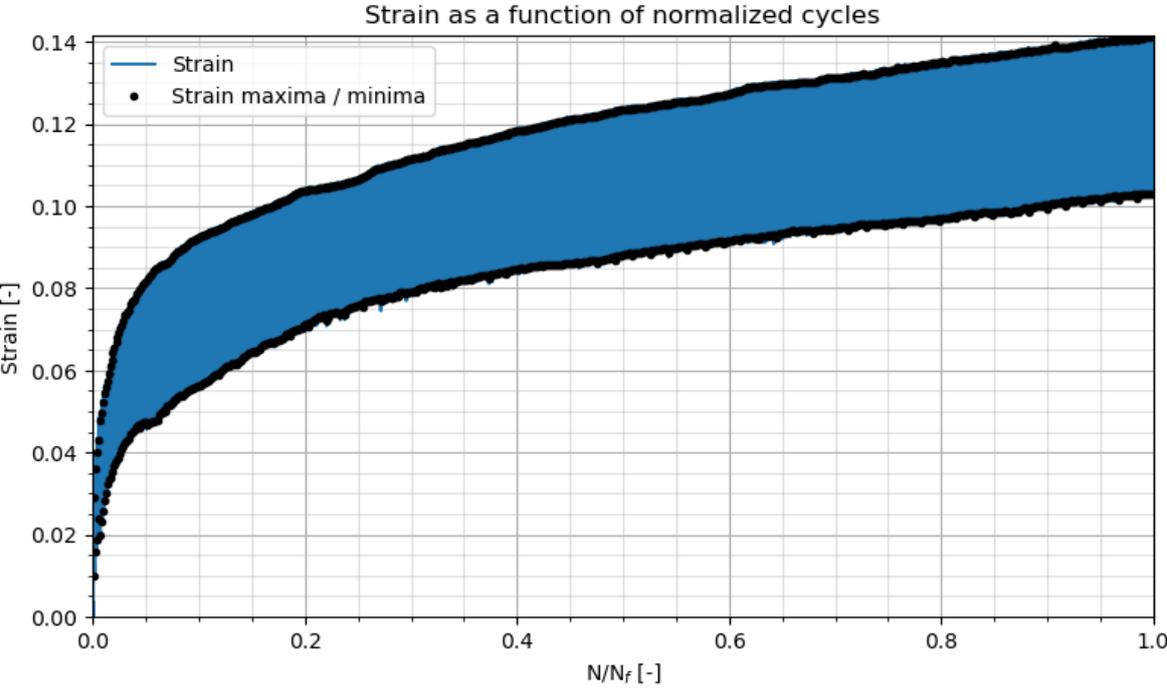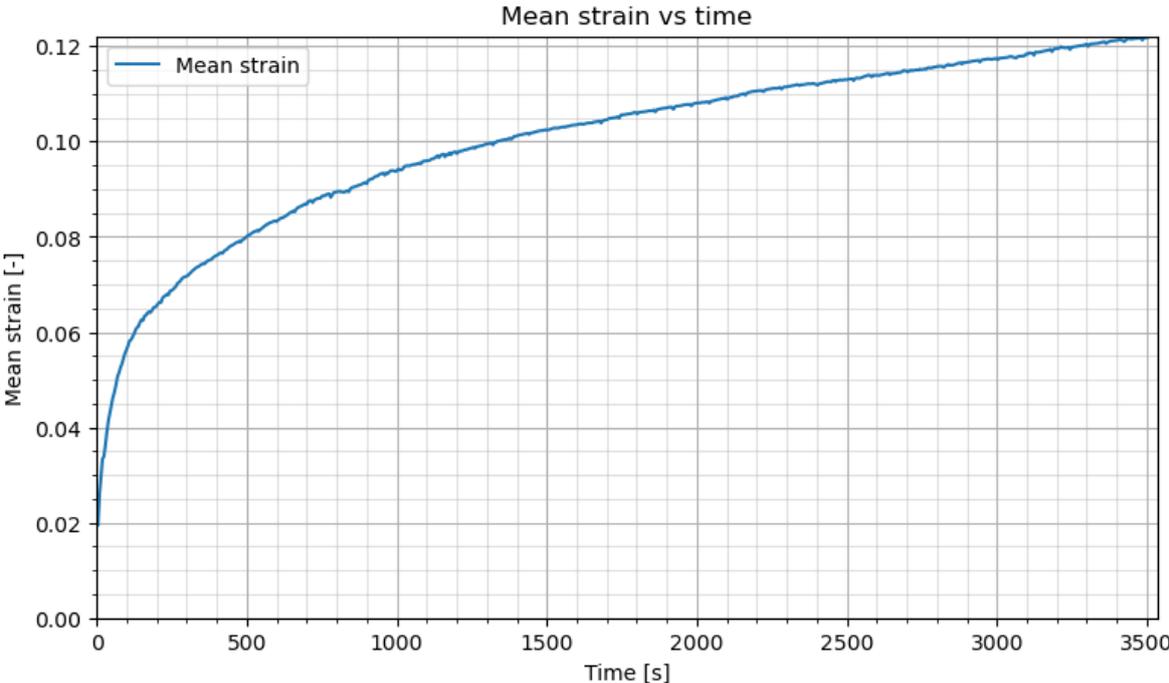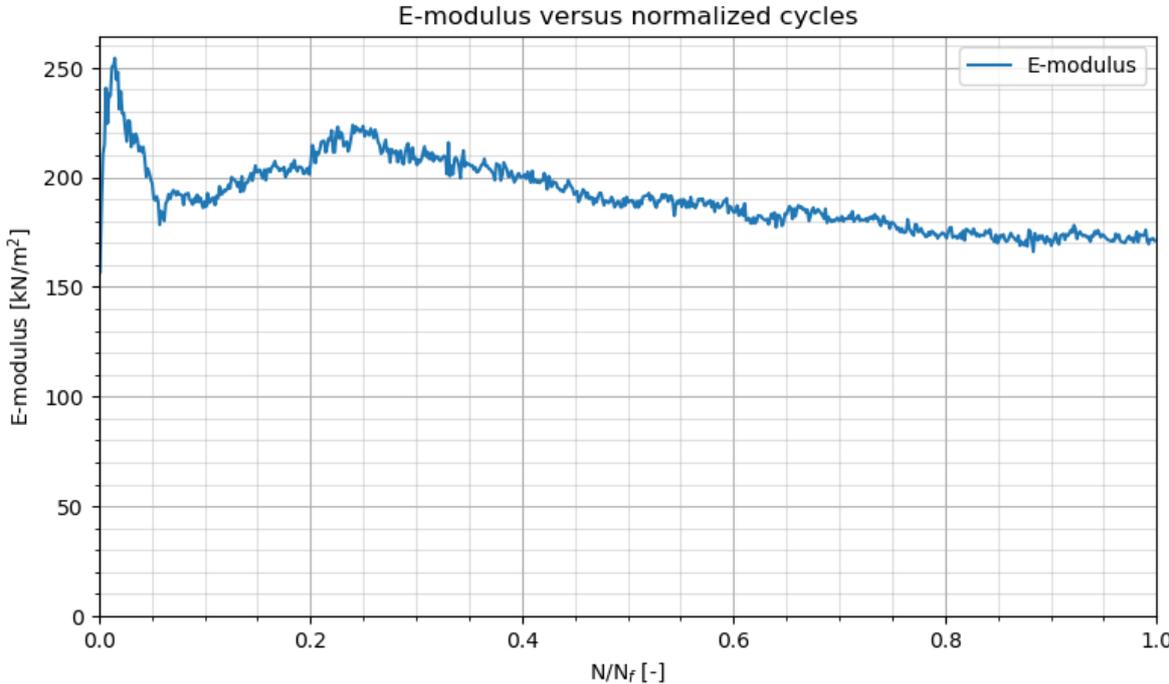
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.6. Test06

		Value 1	Value 2	Value 3	Mean
Date		25-03-2021			
Time		09:36:00			
Cyclic Load regime	[N]	200			
Weight	[kg]	9			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	20	60	20	
Sod thickness	[cm]	9	8	6	8
Root length	[cm]	3	2	5	2.8
Mean peak stress	[kN/m^2]	4.45			
Maximum number of cycles	[-]	691			
Comments		Did not fail			
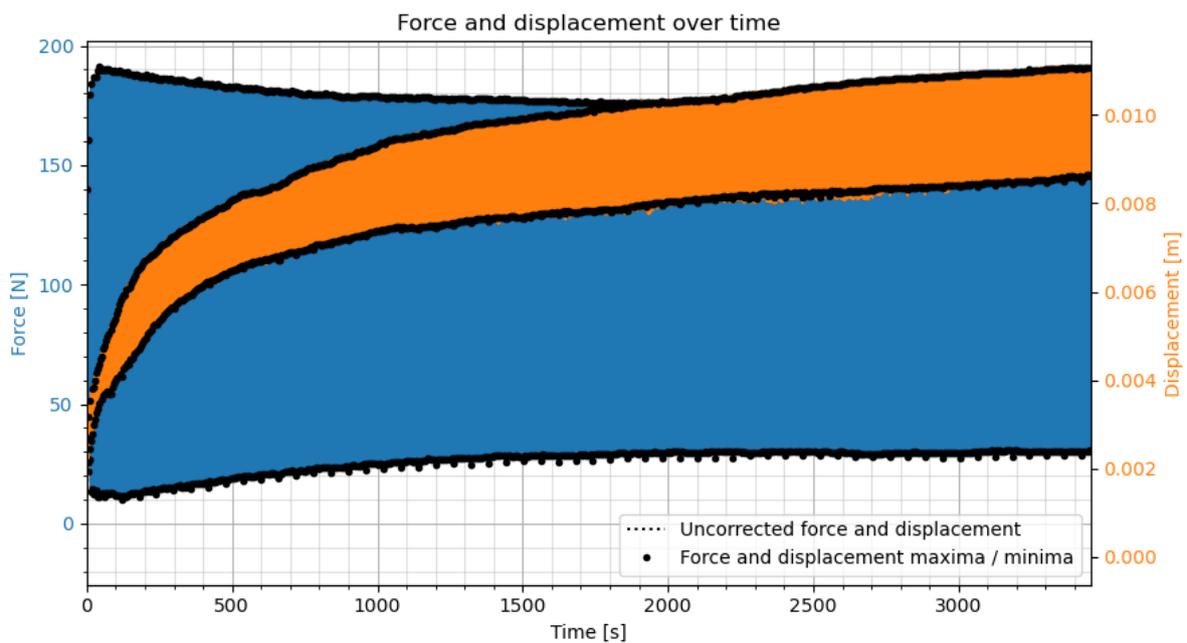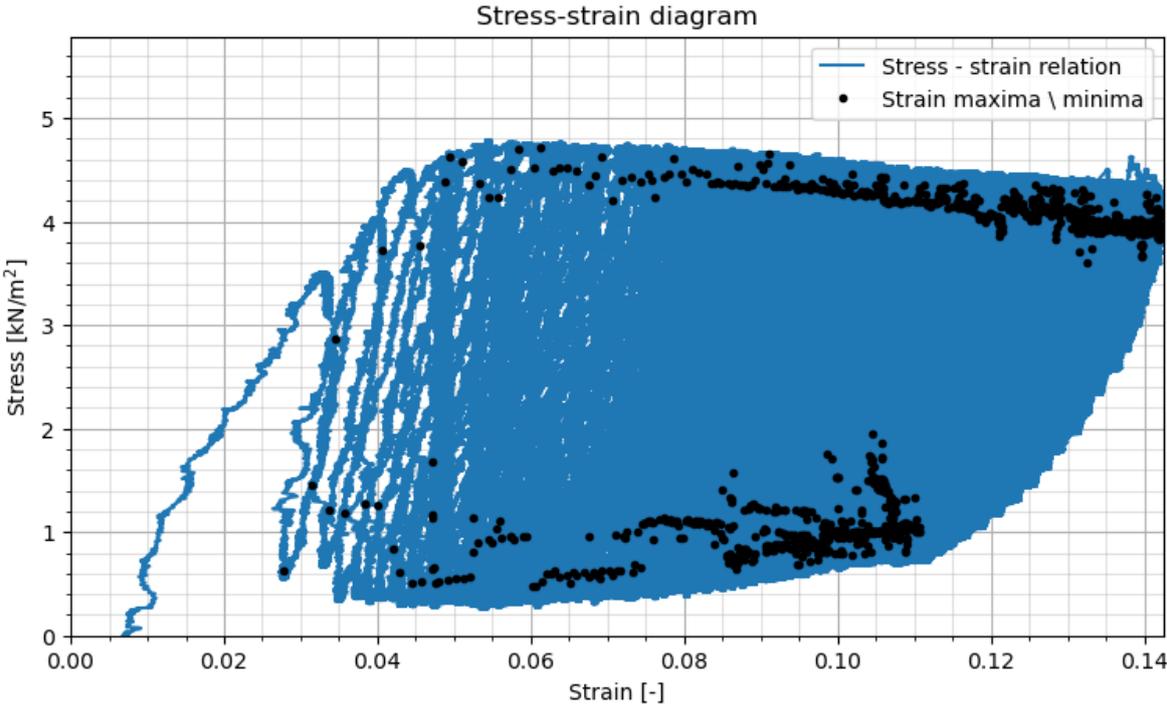
Force and displacement over time

Force and displacement over time

Stress-strain relation

Stress-strain diagram

Strain over normalized cycles

Strain as a function of normalized cycles
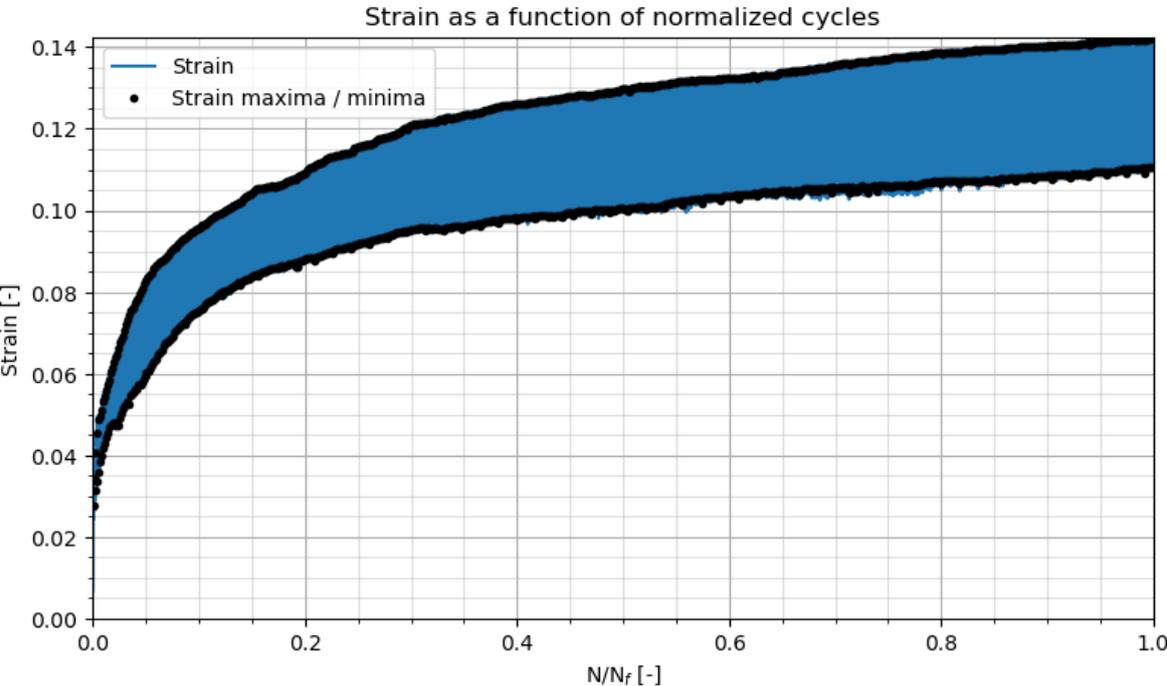
Mean strain over time
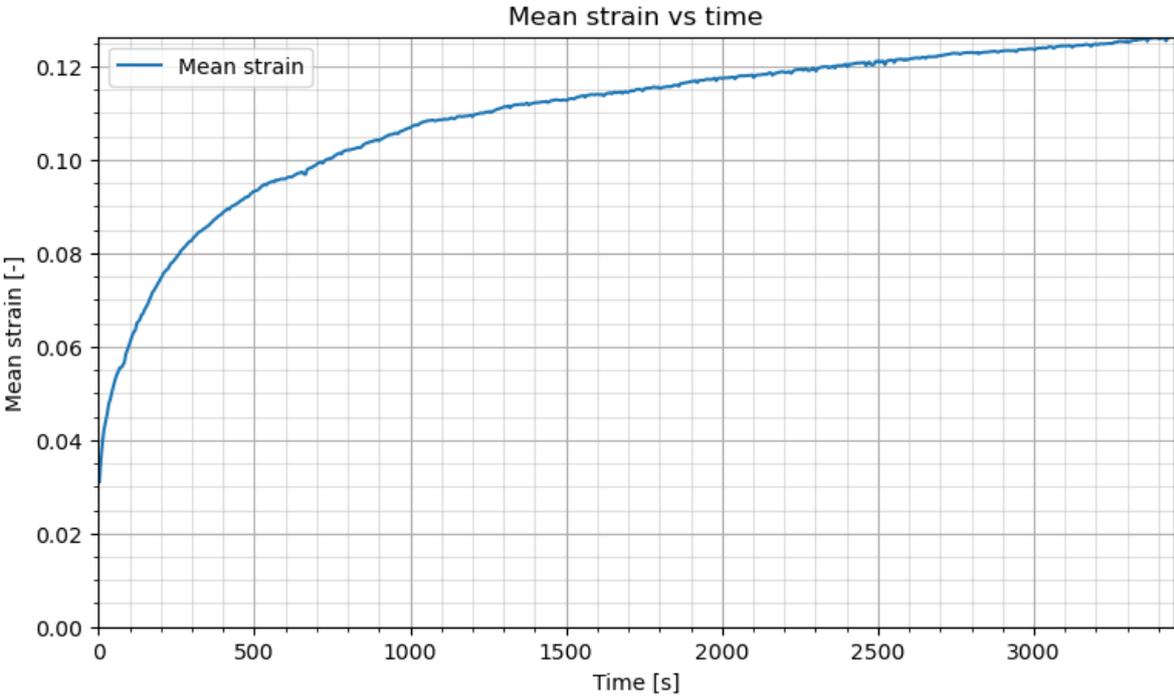
E-modulus over time
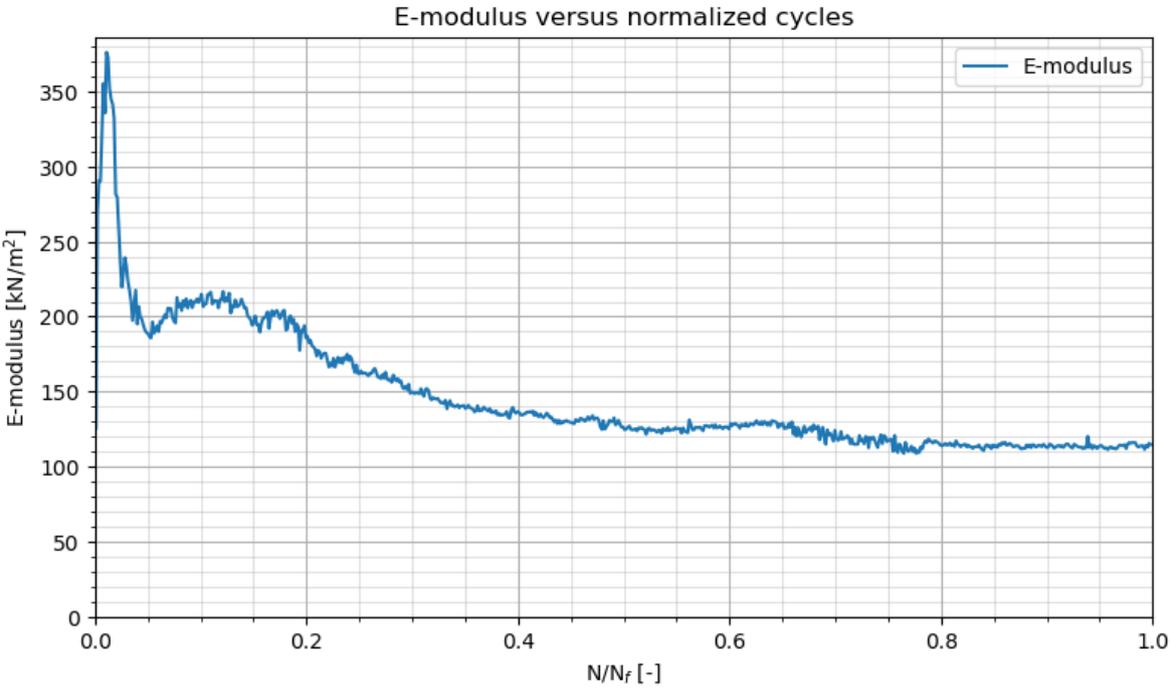
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.7. Test07

		Value 1	Value 2	Value 3	Mean
Date		26-03-2021			
Time		10:51:00			
Cyclic Load regime	[N]	200			
Weight	[kg]	10			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	50	30	20	
Sod thickness	[cm]	10	7	5	8
Root length	[cm]	3	5	3	3.6
Mean peak stress	[kN/m^2]	4.55			
Maximum number of cycles	[-]	180			
Comments		-			

Force and displacement over time
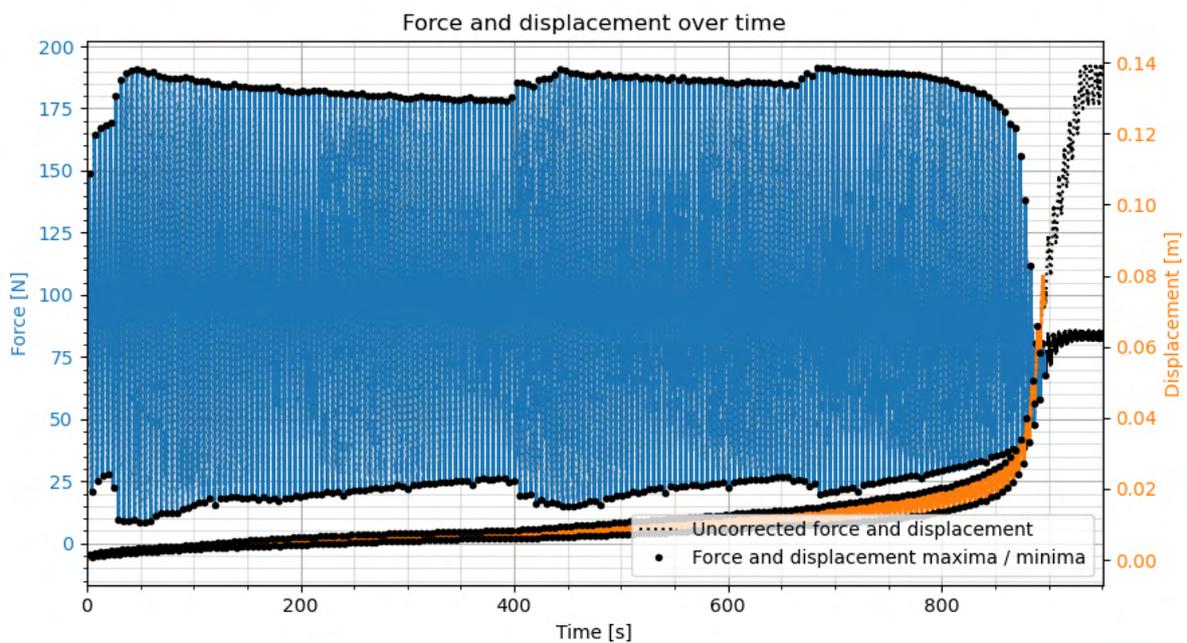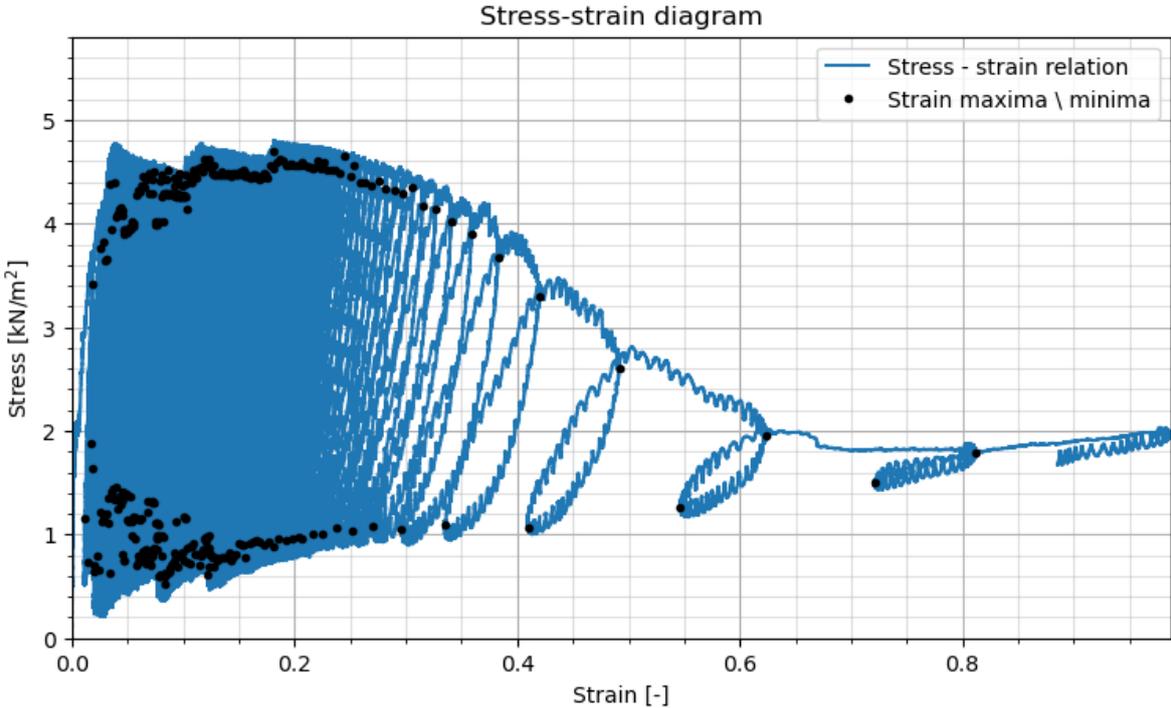
Stress-strain relation

Strain over normalized cycles
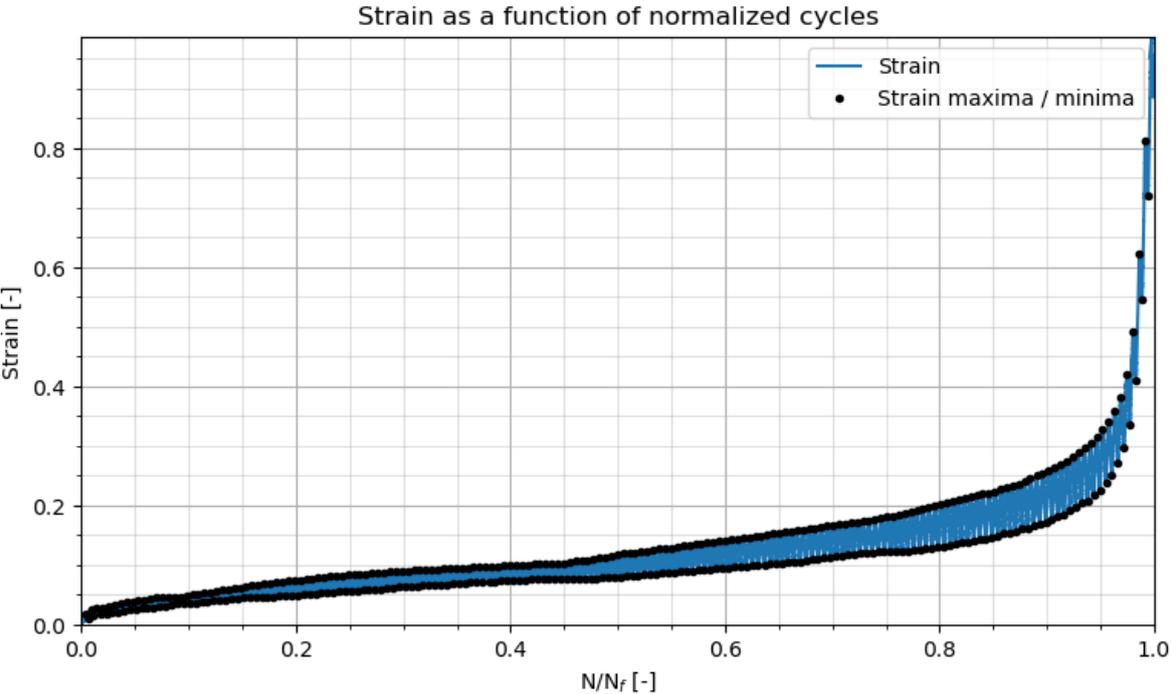
Mean strain over time
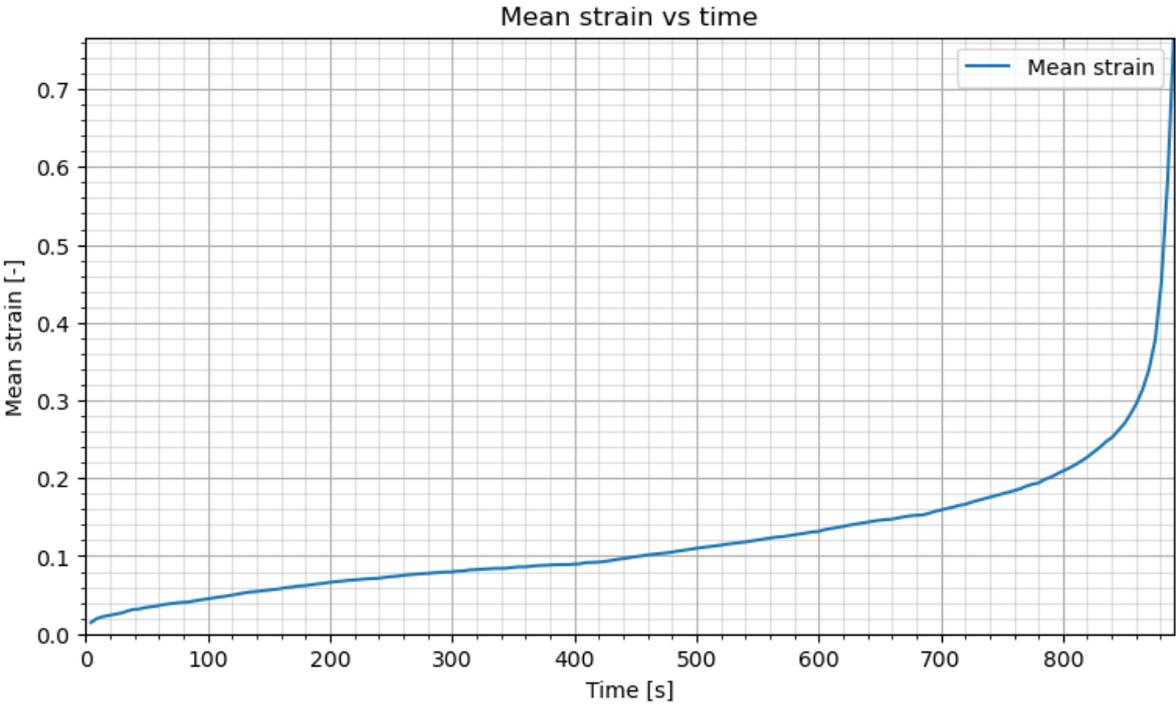
E-modulus over time
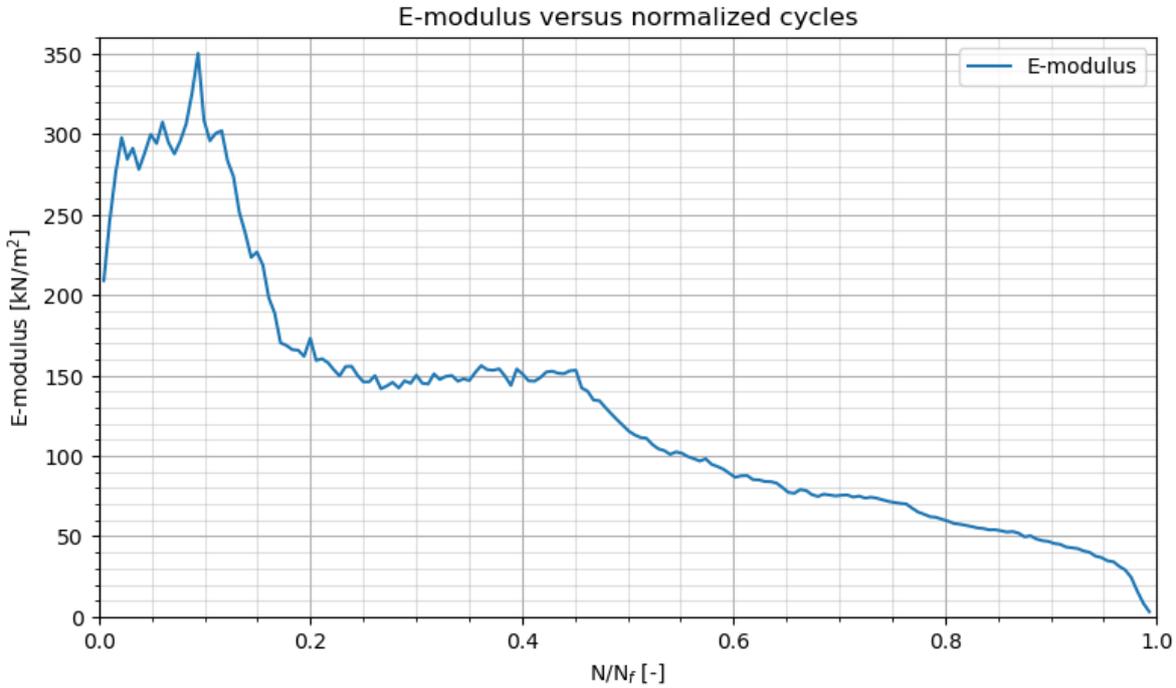
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.8. Test08

		Value 1	Value 2	Value 3	Mean
Date		26-03-2021			
Time		11:27:00			
Cyclic Load regime	[N]	200			
Weight	[kg]	9			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	40	30	30	
Sod thickness	[cm]	9	7	5	7
Root length	[cm]	3	5	7	4.8
Mean peak stress	[kN/m^2]	4.76			
Maximum number of cycles	[-]	674			
Comments		Did not fail			
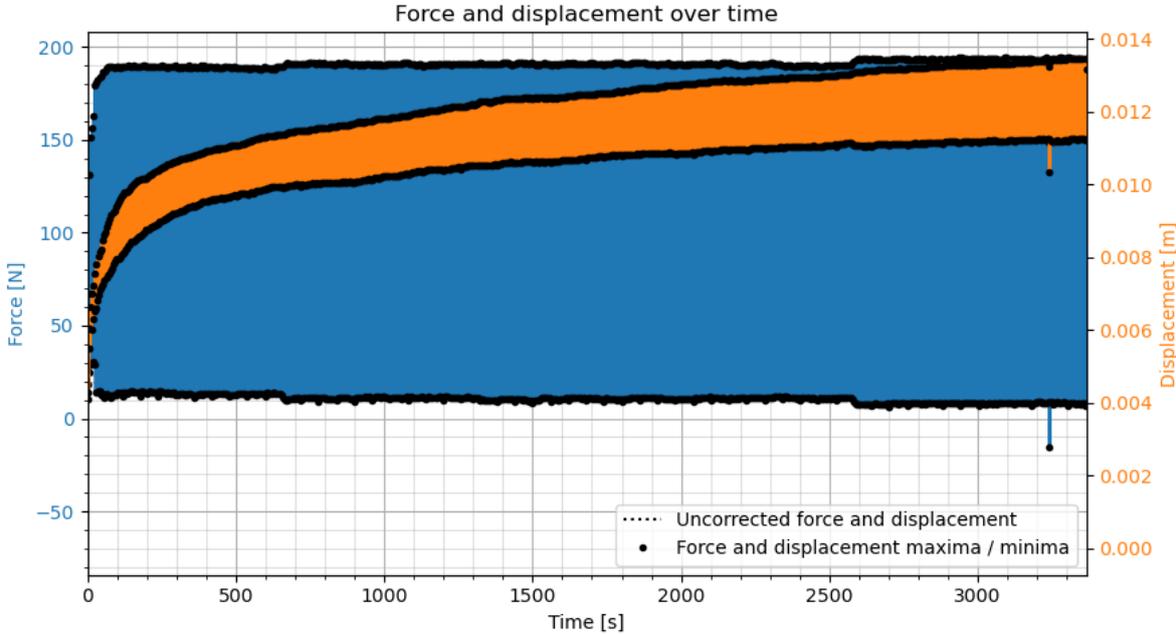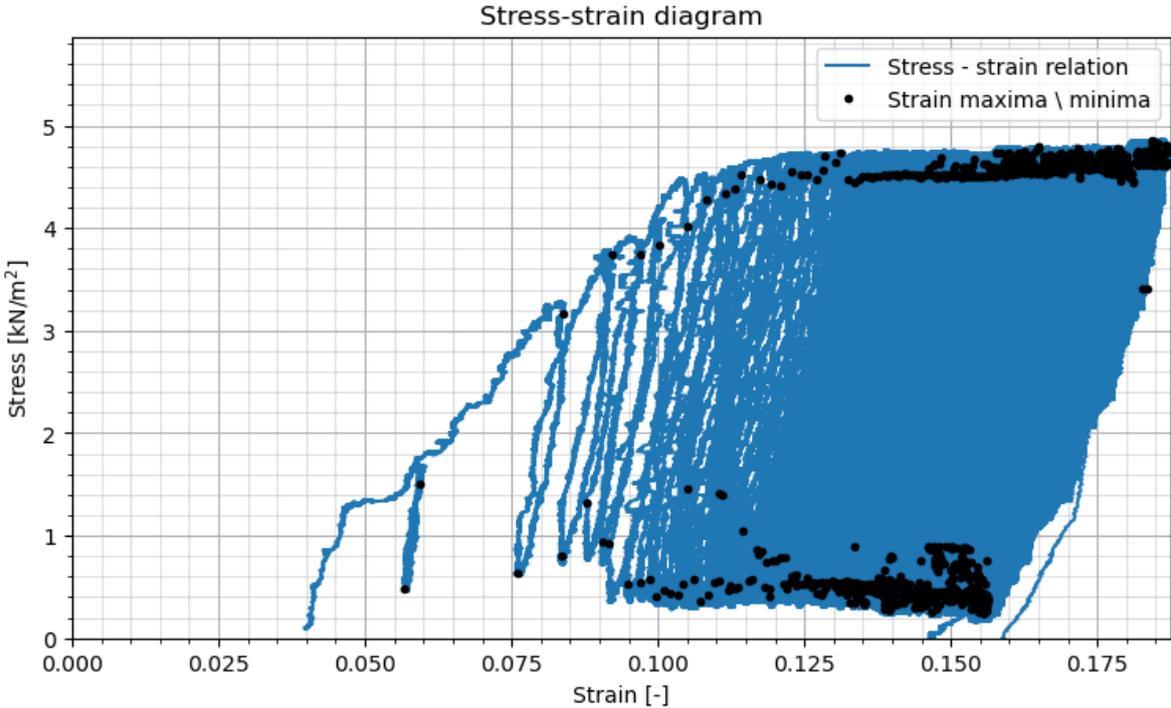
Force and displacement over time

Stress-strain relation

Strain over normalized cycles

Mean strain over time

Mean strain vs time

E-modulus over time

E-modulus versus normalized cycles
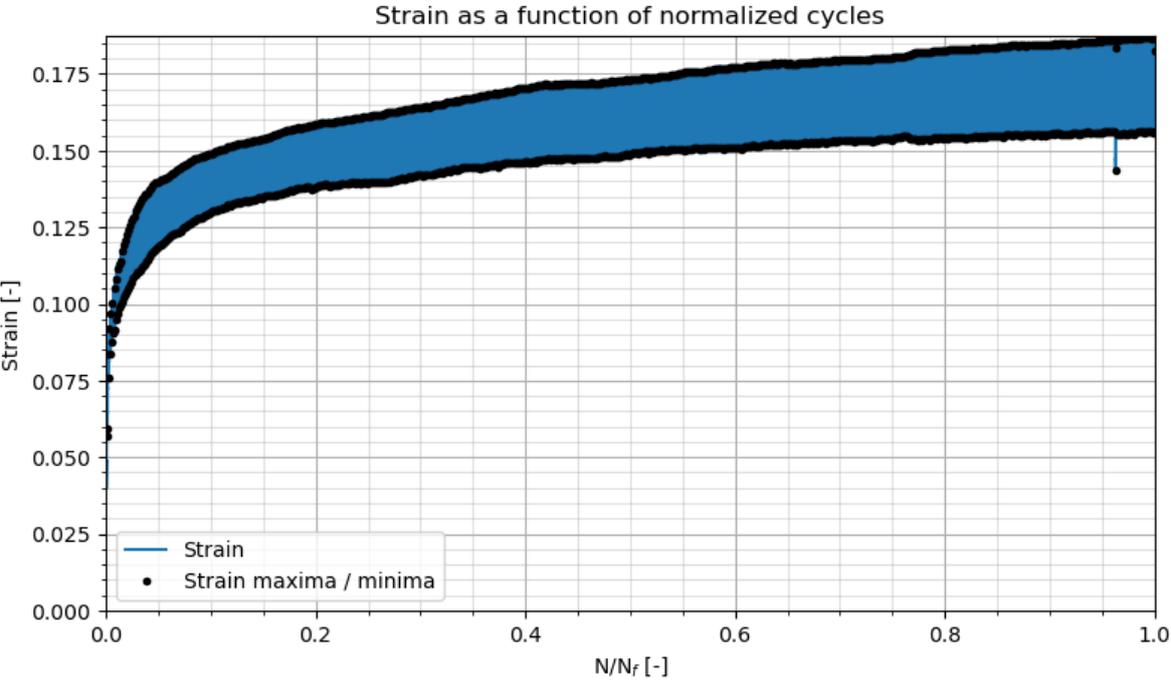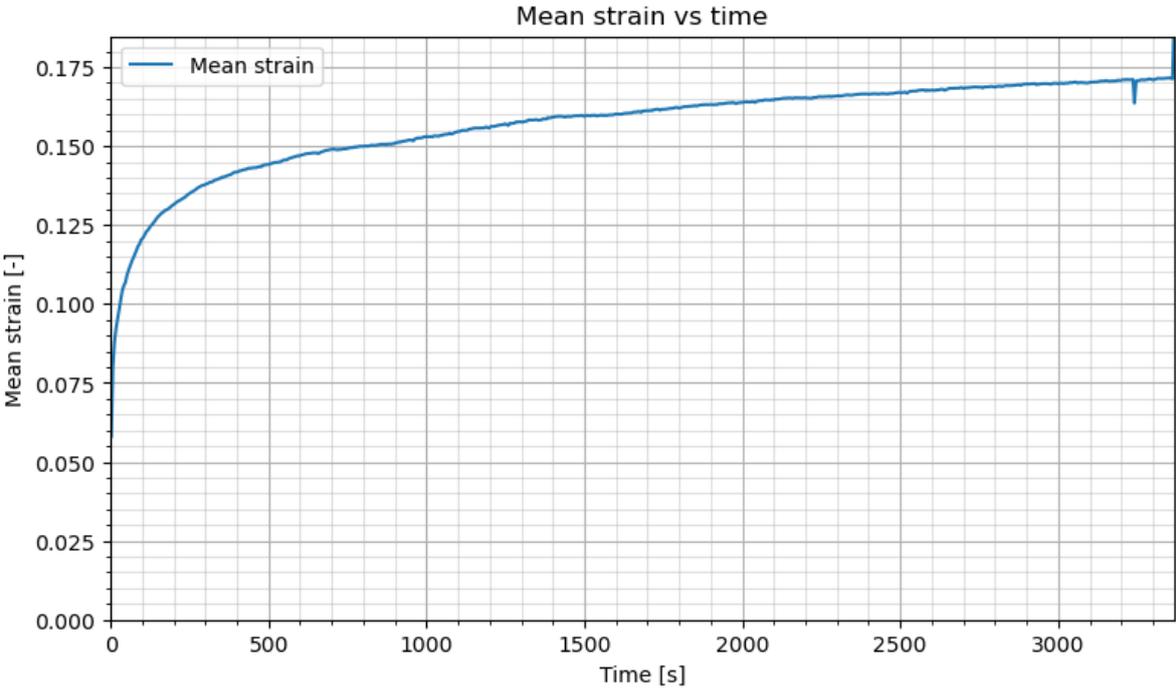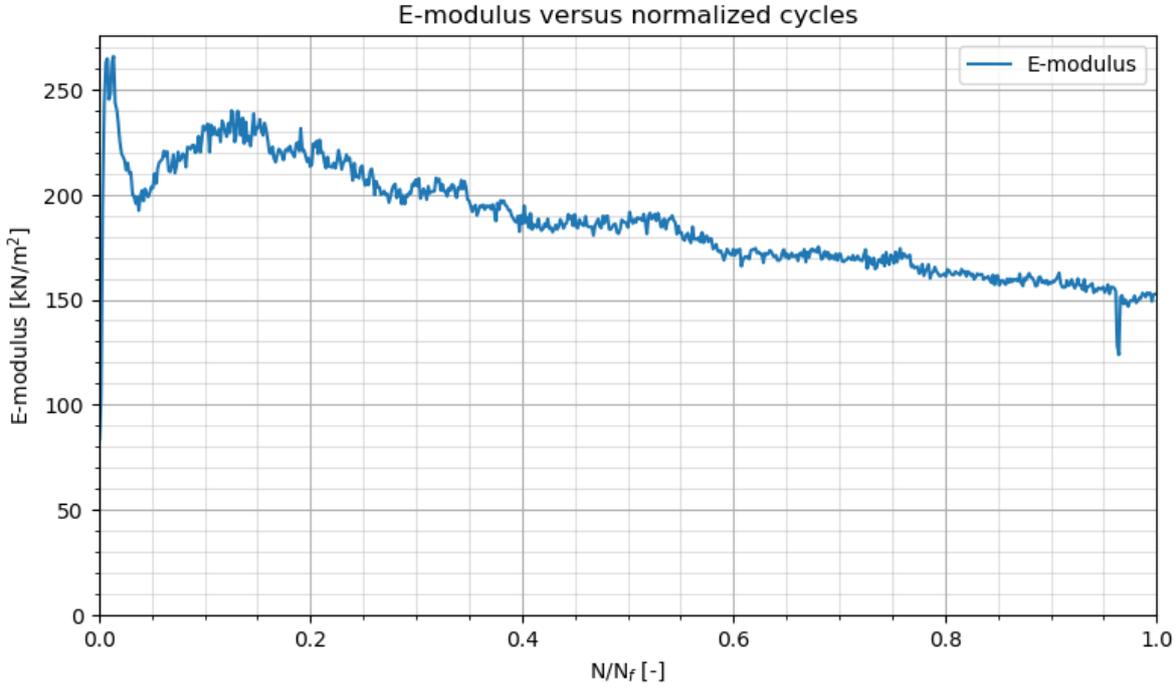
Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right

E.1.9. Test10

		Value 1	Value 2	Value 3	Mean
Date		26-03-2021			
Time		14:58:00			
Cyclic Load regime	[N]	200			
Weight	[kg]	8			
Width	[cm]	20.0			
Length	[cm]	20.0			
Dike orientation		North			
Percentage of occurance	[%]	30	60	10	
Sod thickness	[cm]	8	7	5	7
Root length	[cm]	3	3	3	3.0
Mean peak stress	[kN/m^2]	4.81			
Maximum number of cycles	[-]	751			
Comments		Did not fail			

Force and displacement over time

Force and displacement over time

Stress-strain relation

Strain over normalized cycles

Mean strain over time

E-modulus over time

Test sample pictures

(a) Top

(b) Left

(c) Bottom

(d) Right