

Appendix C. Specimens from AP14a

AP14a-DM1-6-A

Test Date	06.12/17			
Water Content (%)	Pre-test:	0.599	Post-test:	0.557
Initial measurements:	Diameter (mm)	50.1	Height (mm)	99.4
	Sample mass (g)	169.2	Effective stress (kPa):	52
Dry density	Initial (kg/m ³):	863	Consolidated (kg/m ³):	1047
B-value	End of Saturation	0.98	End of Consolidation:	0.94
Test Pressures:	Eff. Stress (kPa)	408.4	Back-Pressure (kPa)	200.8

Test Notes:

AP14a-DM1-6A was noted to feel more weathered (i.e. higher proportion of fine grained material) than the other specimens, though the material still appeared to be slightly cemented (trimmed easily with a sharp knife) and with less of the hard coarse sand material.

Following the end of cyclic loading, the “necked” zone of the specimen was relatively large and it was possible that the ultimate failure load would not be reached in the post-cyclic triaxial compression phase of the experiment. Hence, the initial stages of the triaxial compression loading were conducted under load control, before switching to displacement control once a load of 30N had been mobilised (around an axial strain of 4%).

Test Photos



(a) as extruded



(b) after trimming



(c) mounted in device

Figure C.1: AP14a-DM1-6A before testing



(a) after consolidation (400kPa)



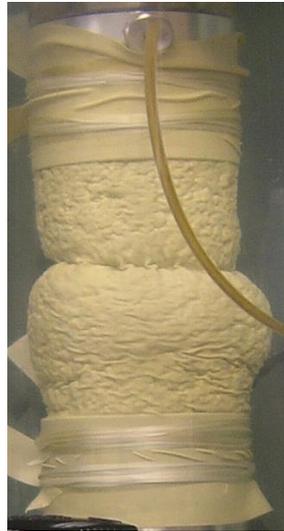
(b) after cyclic loading



(c) after 7hrs ($\epsilon_a \approx 12\%$)



(d) after 10hrs ($\epsilon_a \approx 17\%$)



(e) end of testing ($\epsilon_a \approx 25\%$)

Figure C.2: AP14a-DM1-6A during testing



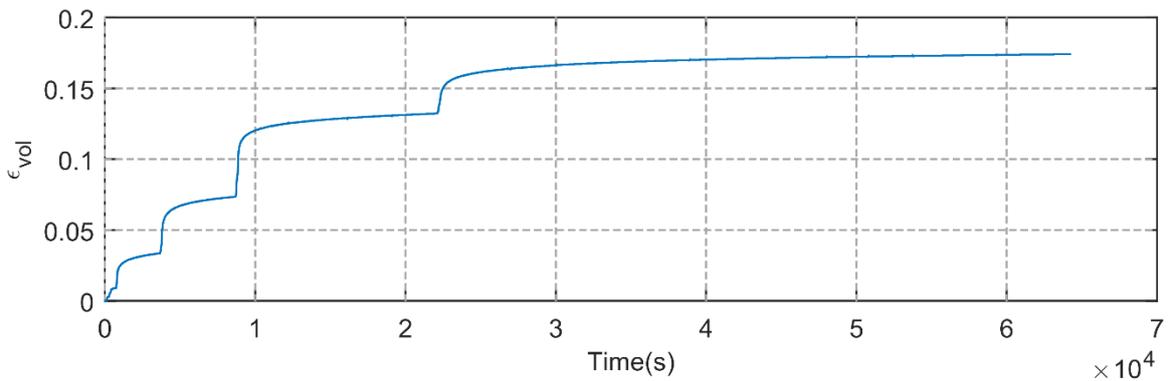
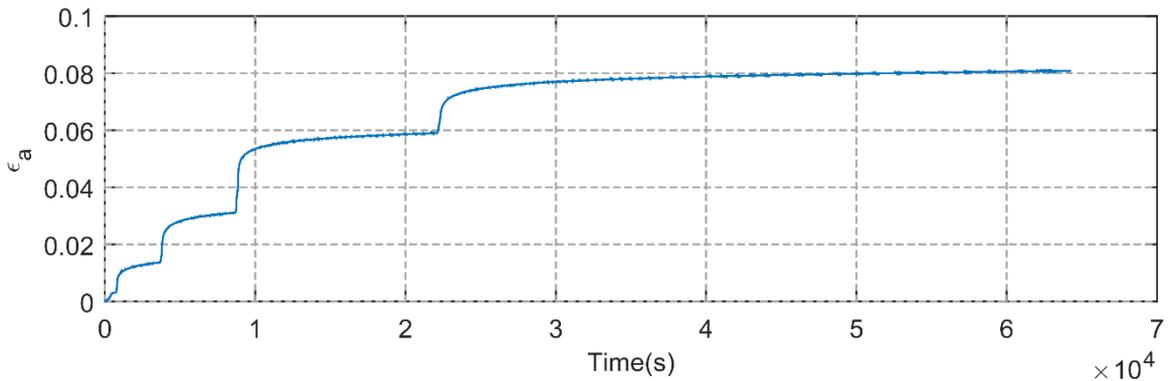
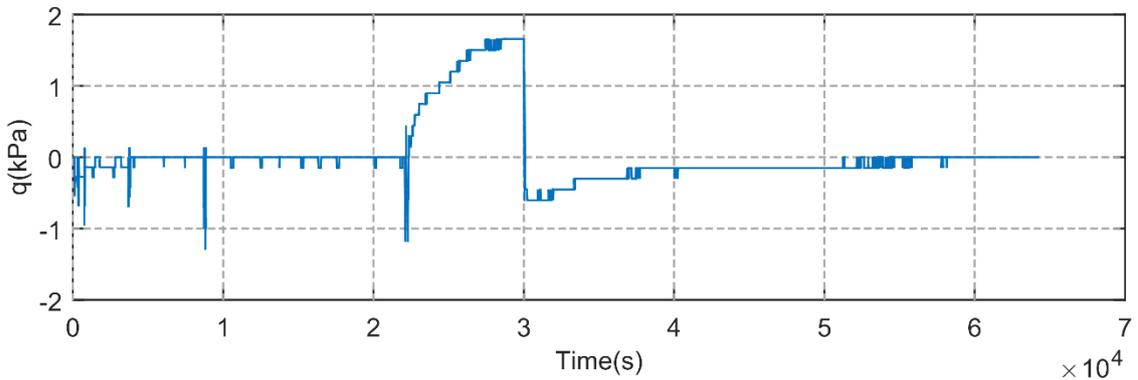
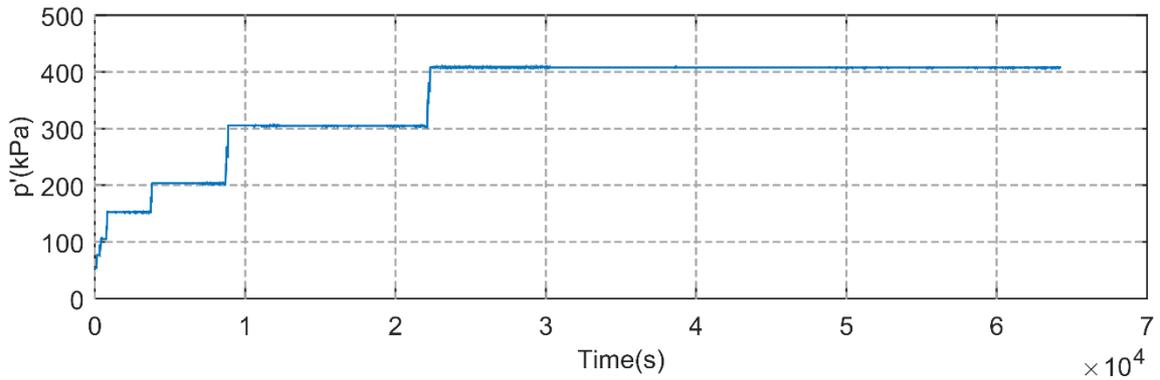
(a) exterior



(b) interior

Figure C.3: AP14a-DM1-6A after testing

AP14a-DM1-6 A - Consolidation

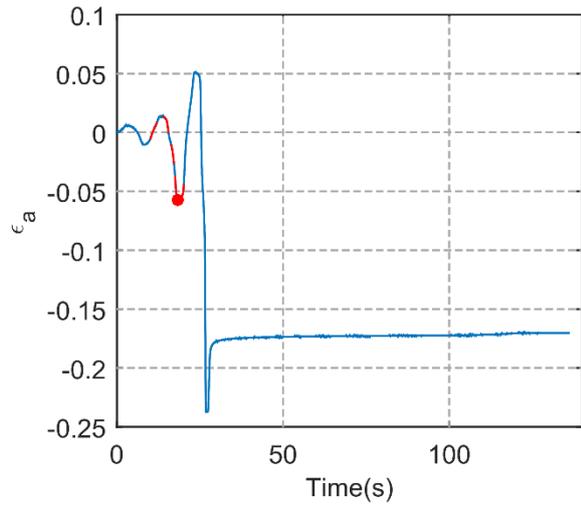
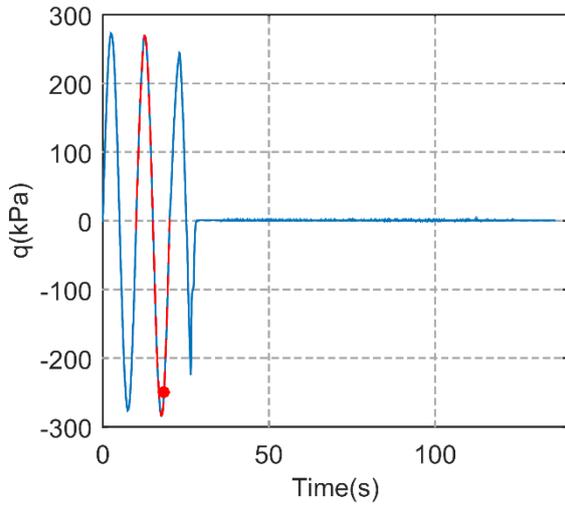
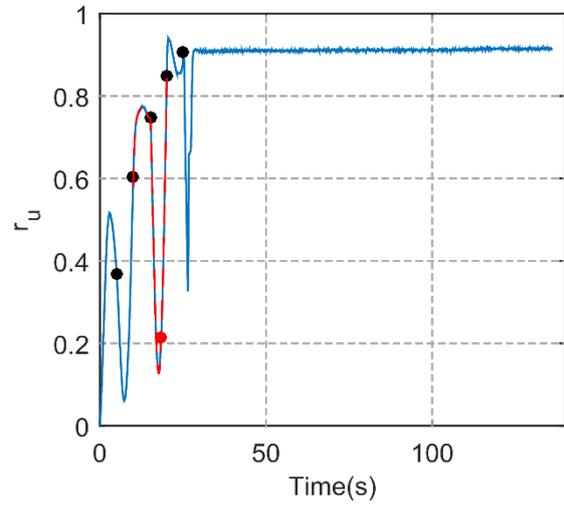
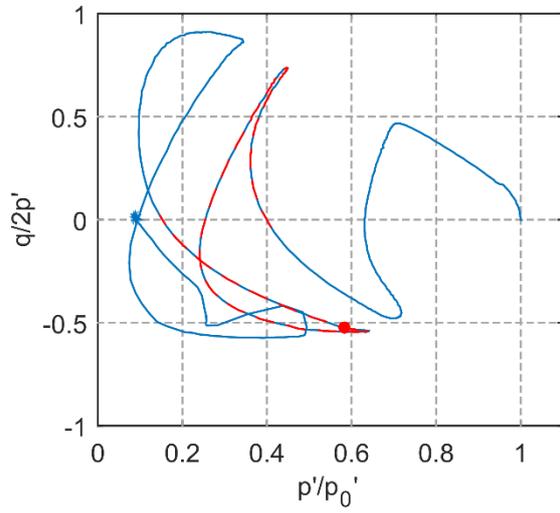
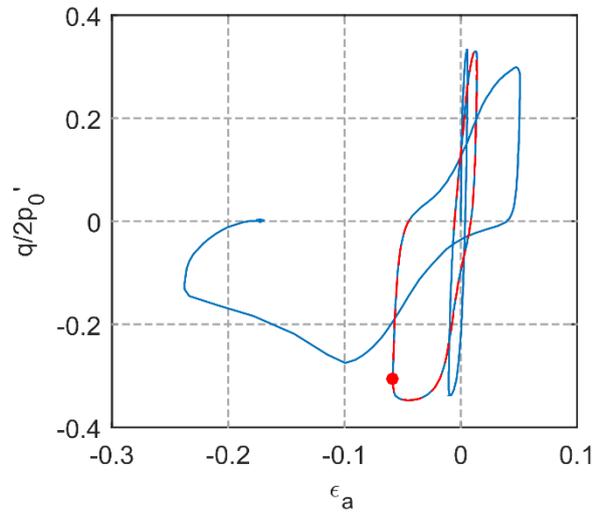
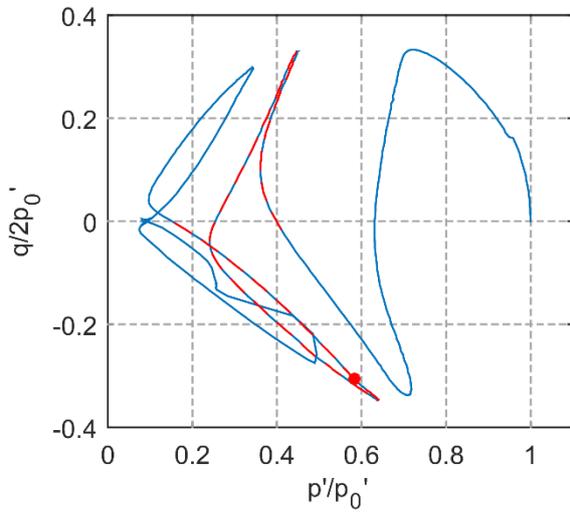


AP14a-DM1-6 A - CTX

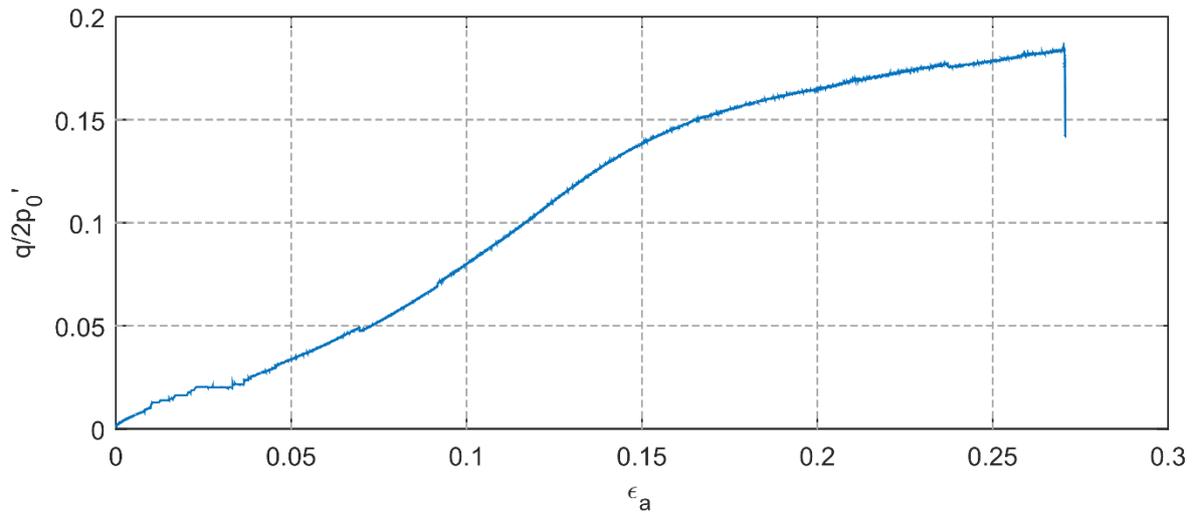
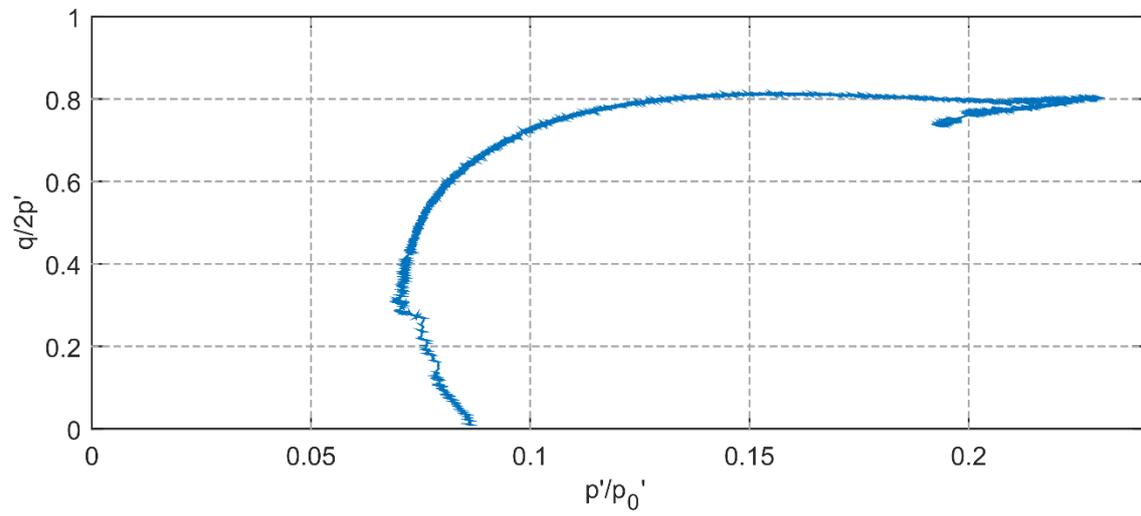
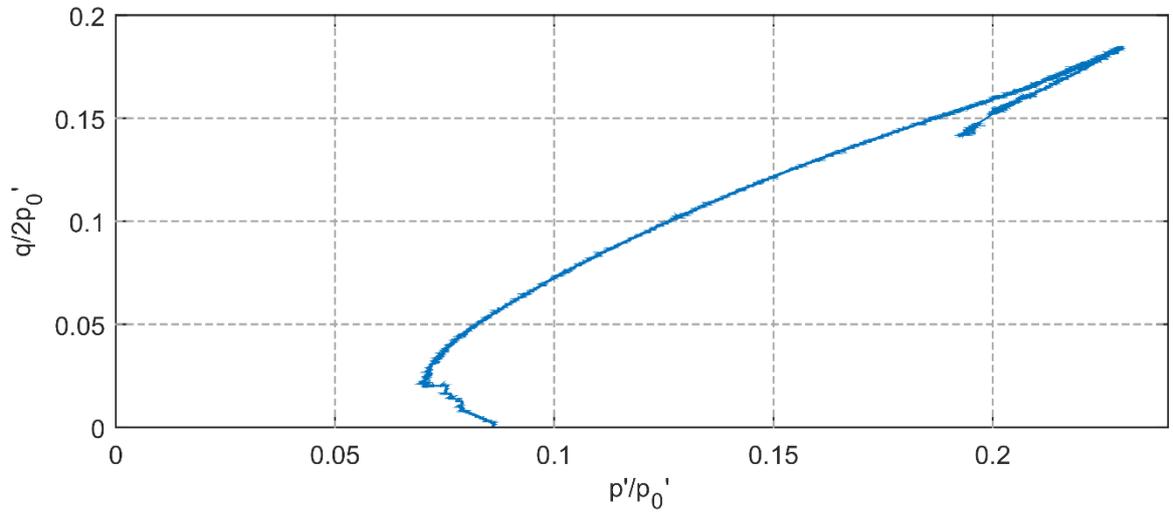
$N_{5\%DA} = 2$ cycles

$CSR' = 0.337$

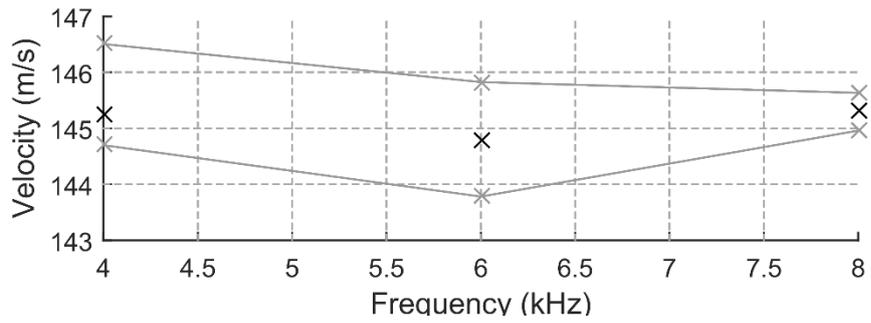
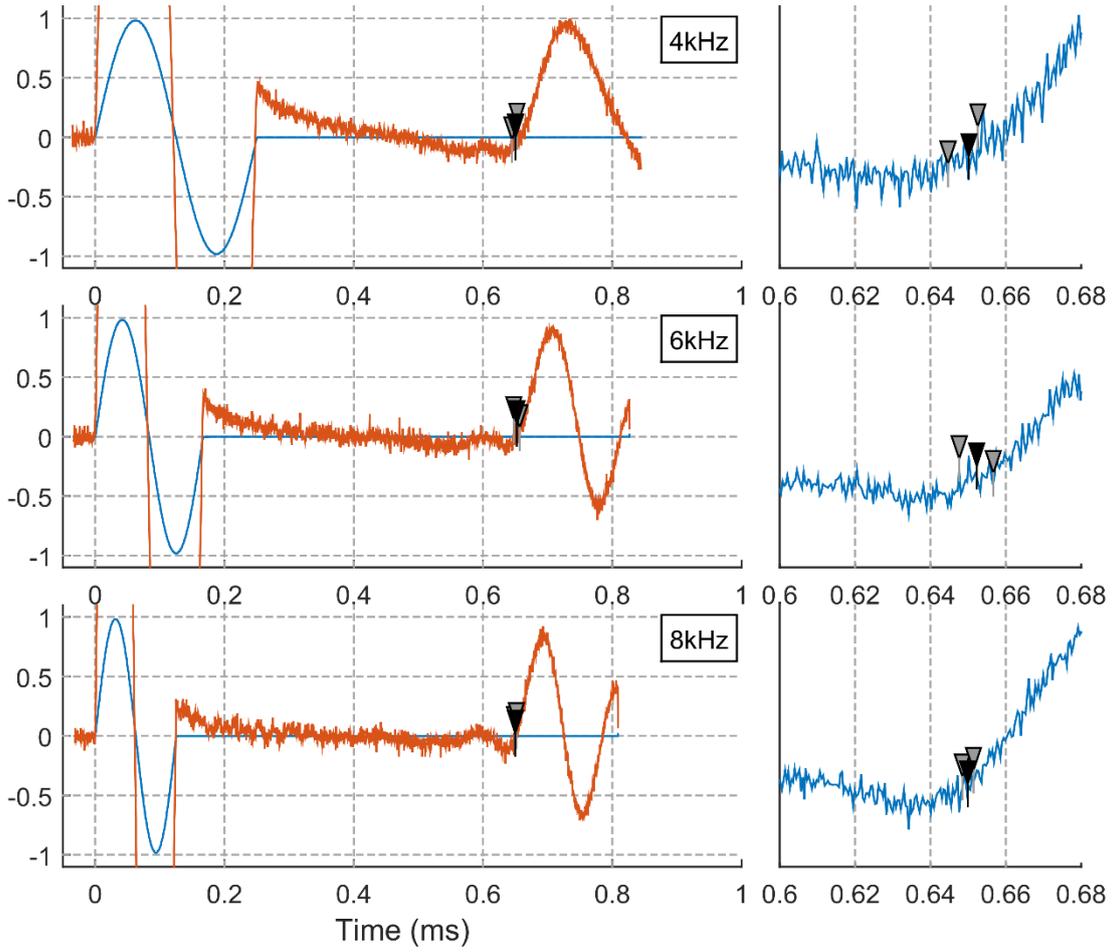
$p_0' = 408.4$ kPa



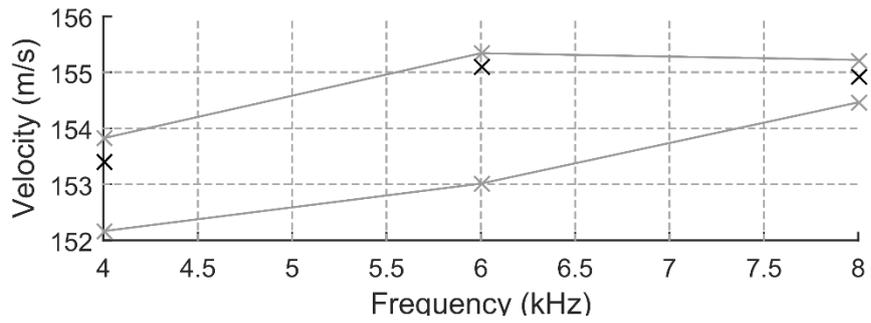
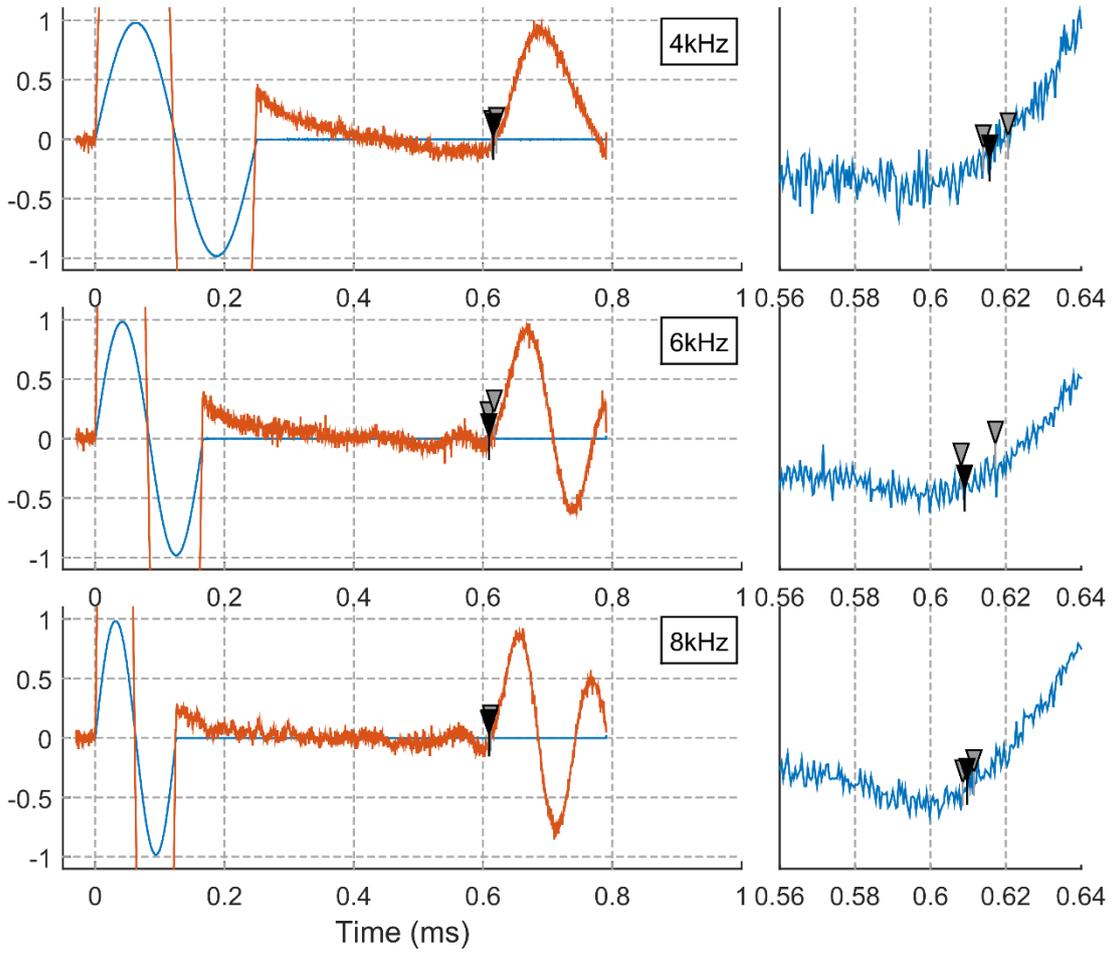
AP14a-DM1-6 A - CIU



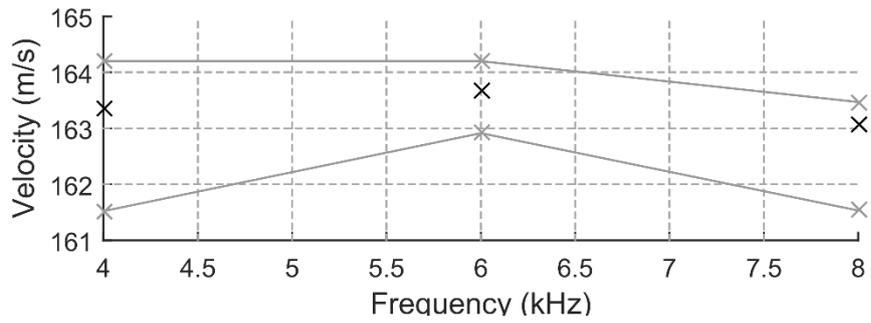
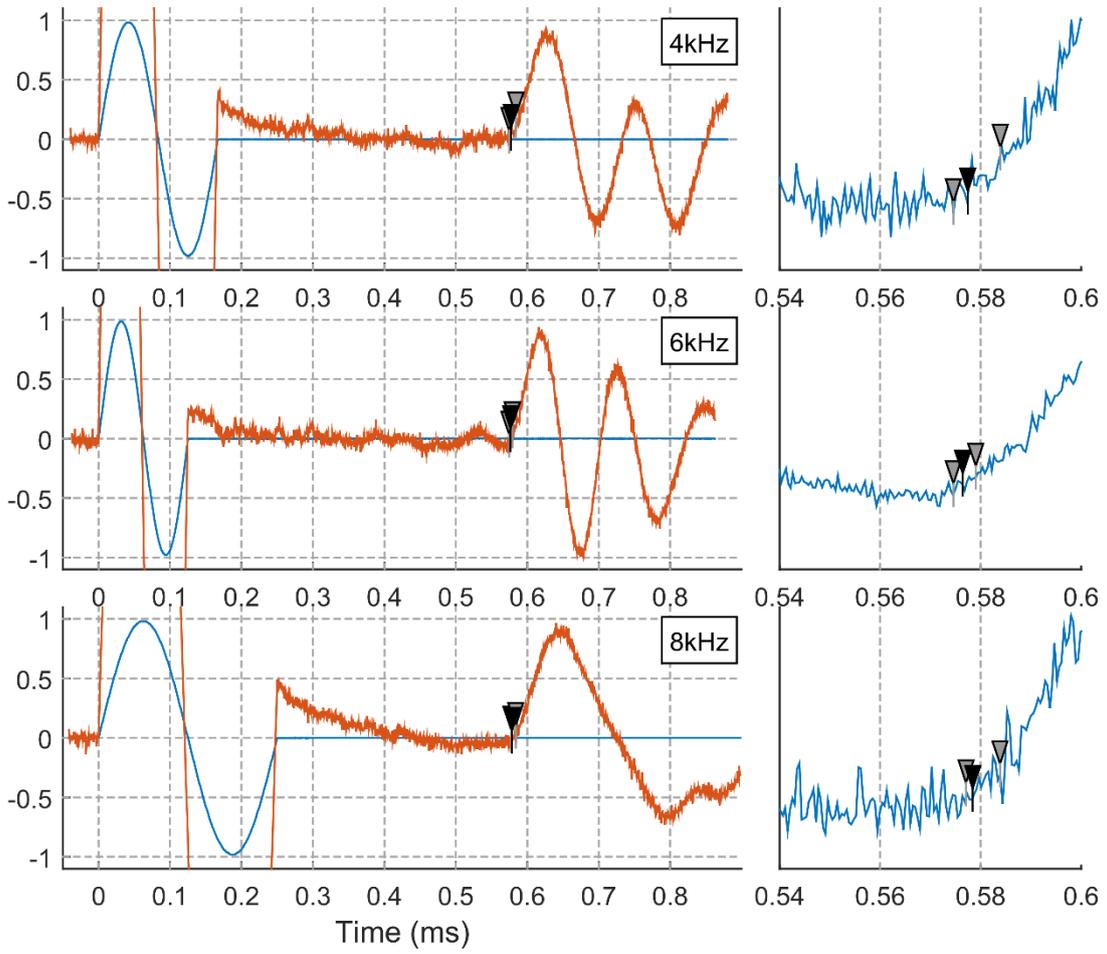
AP14a-DM1-6-A-52kPa



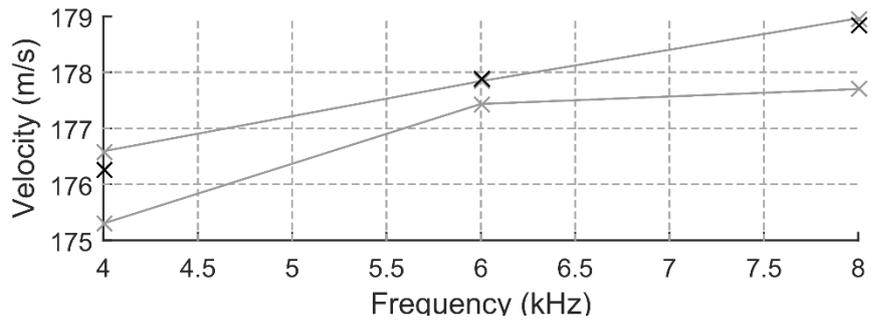
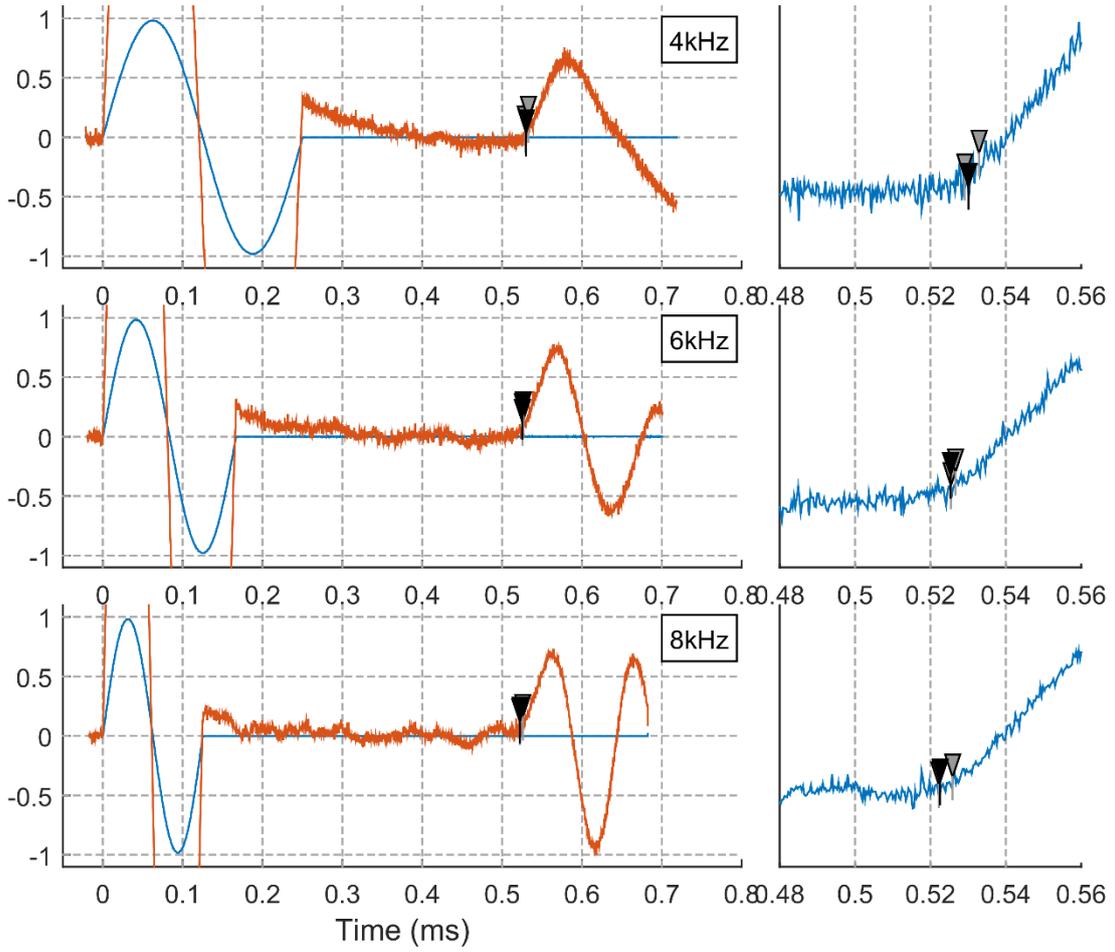
AP14a-DM1-6-A-75kPa



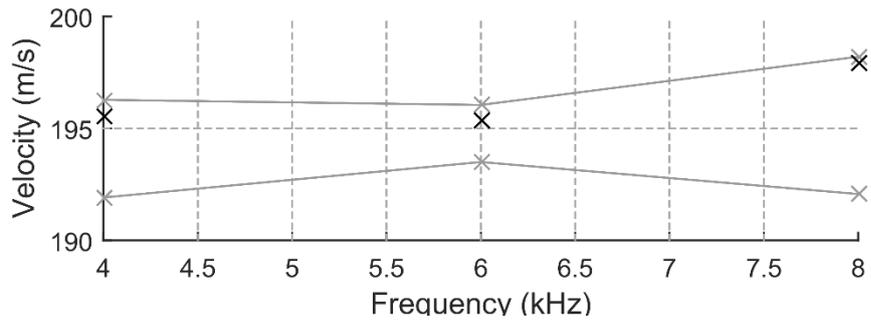
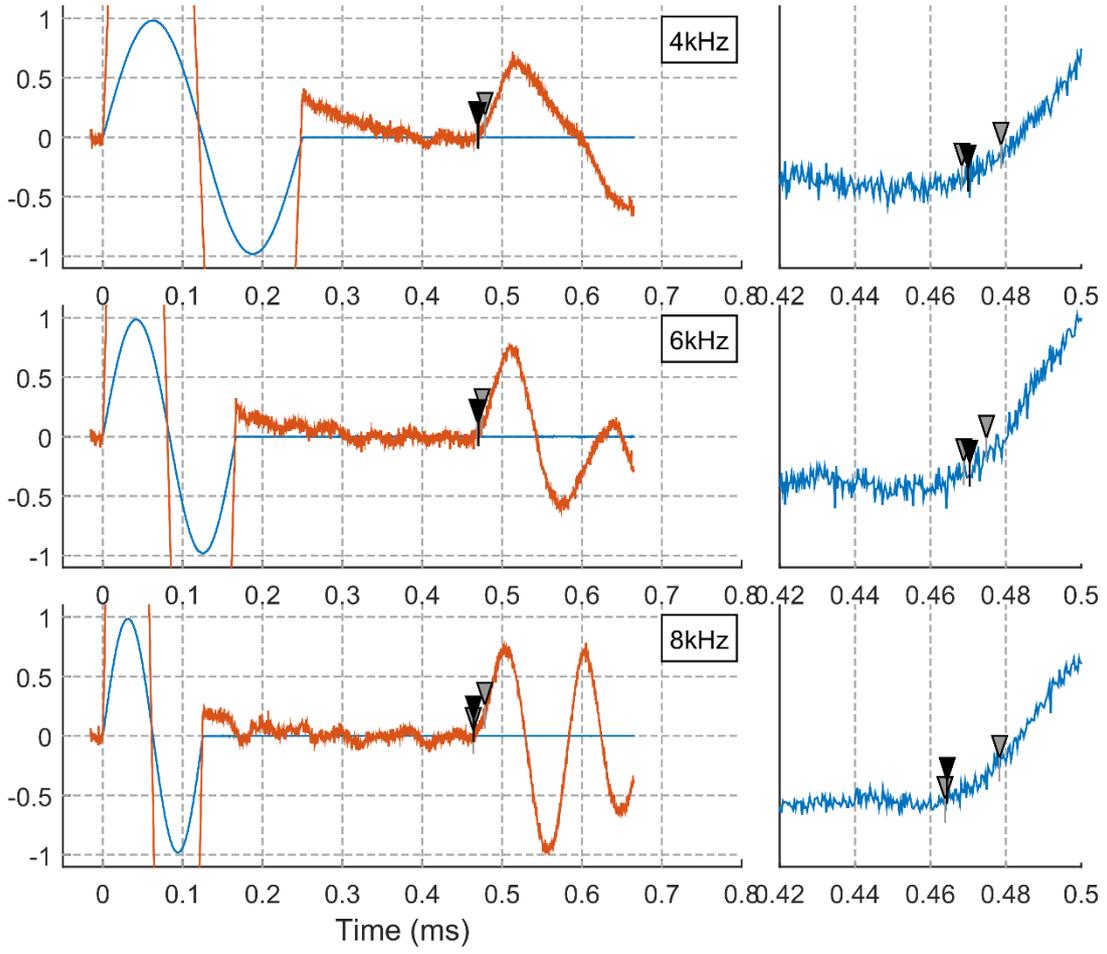
AP14a-DM1-6-A-103kPa



AP14a-DM1-6-A-149kPa



AP14a-DM1-6-A-200kPa



AP14a-DM1-6 B

Test Date	23/01/18			
Water Content (%)	Pre-test:	0.541	Post-test:	0.557
Initial measurements:	Diameter (mm)	49.46	Height (mm)	98.6
	Sample mass (g)	195.2	Effective stress (kPa):	50
Dry density	Initial (kg/m ³):	1030	Consolidated (kg/m ³):	1125
B-value	End of Saturation	0.98	End of Consolidation:	0.95
Test Pressures:	Eff. Stress (kPa)	406.2	Back-Pressure (kPa)	300

Test Notes:

The material captured in specimen AP14a-DM1-6-B consisted of two distinct materials, visible in Figure C.4b. The off-cream material at the top and bottom of the specimen appeared similar to that found in AP14a-DM1-6-A (and other specimens). The white band apparent in the middle of the specimen was an extremely soft material, more similar to a soft clay and is considered different to the majority of the material which has been tested.

At the end of the saturation of this specimen, an unintended consolidation step occurred due to a trapped vacuum within part of the triaxial testing device. At the time the cell pressure was equal to 275kPa, while back pressure was 200kPa. The back pressure dropped to approximately 50kPa, and consequently, primary consolidation to 225kPa occurred. On the basis that testing would be carried out at 400kPa and the yield stress of these soil samples has consistently been close to the level of primary consolidation, it was decided to continue the testing. Before continuing, the back pressure was re-established at 200kPa (mean effective confining stress = 75kPa). Cell and back pressure were reduced, to allow the cell to be opened, such that new measurements of the specimen diameter could be obtained. The specimen was re-saturated, and the sample consolidated to 400kPa. At the end of consolidation, the B-value was found to have dropped to approximately 0.93; The back pressure and cell pressure were therefore carefully raised by 100kPa to increase the B-value to 0.95. The minor volume change associated with the re-saturation has been accounted for in the data.

Test Photos



(a) as extruded



(b) after trimming



(c) final specimen (after trimming in mitre box)

Figure C.4: View of specimen prior to testing



(a) after consolidation



(b) at end of testing

Figure C.5: During testing



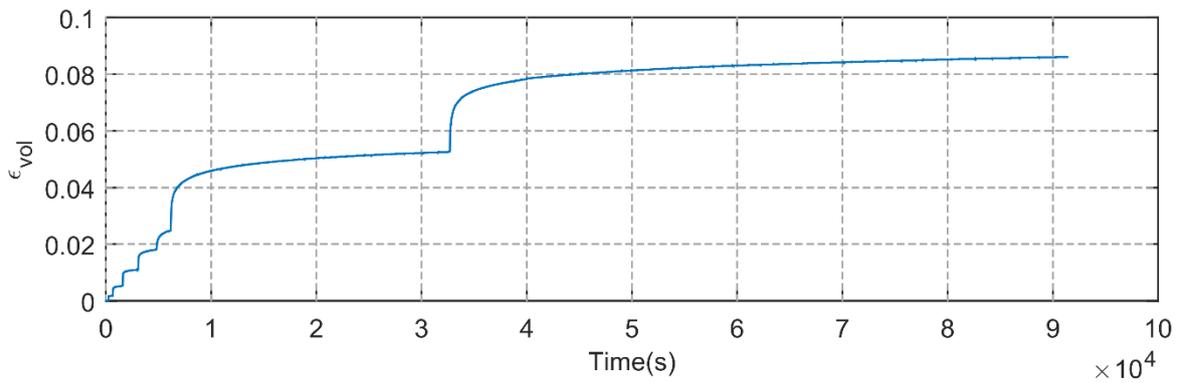
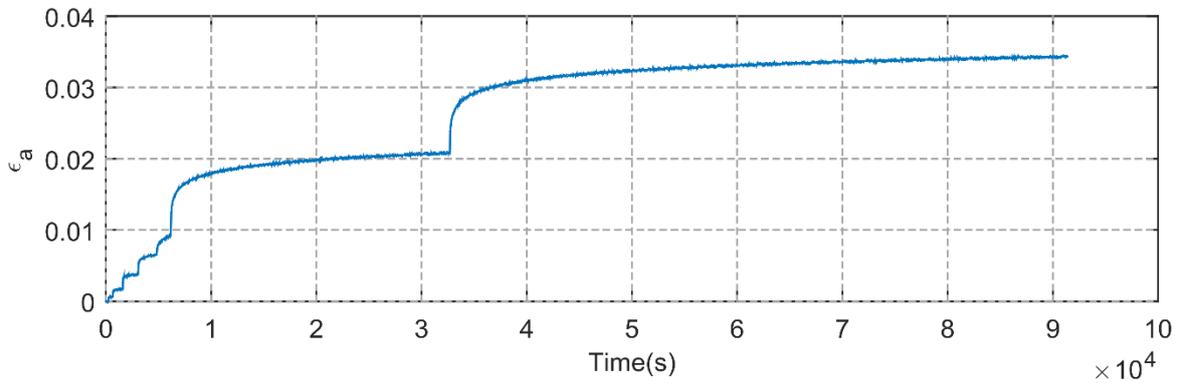
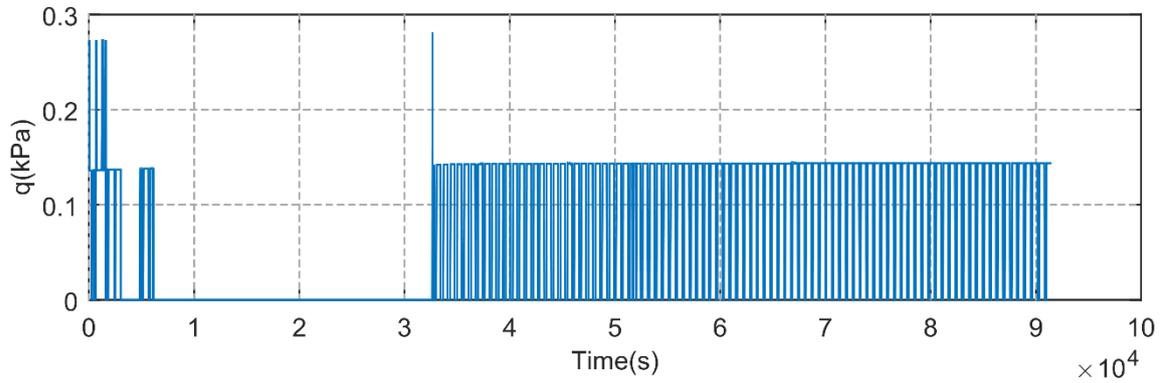
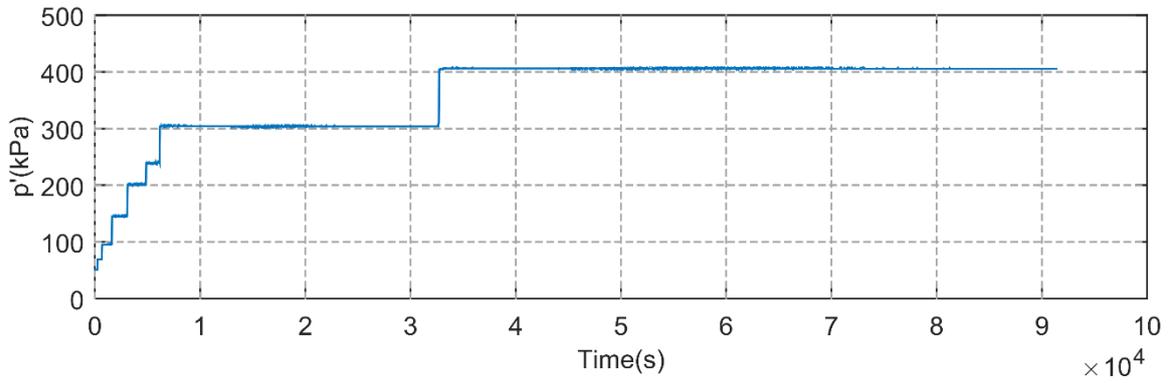
(a) whole specimen after testing



(b) view of specimen interior after testing

Figure C.6: After testing

AP14a-DM1-6 B - Consolidation



AP14a-DM1-6 B - CIU

