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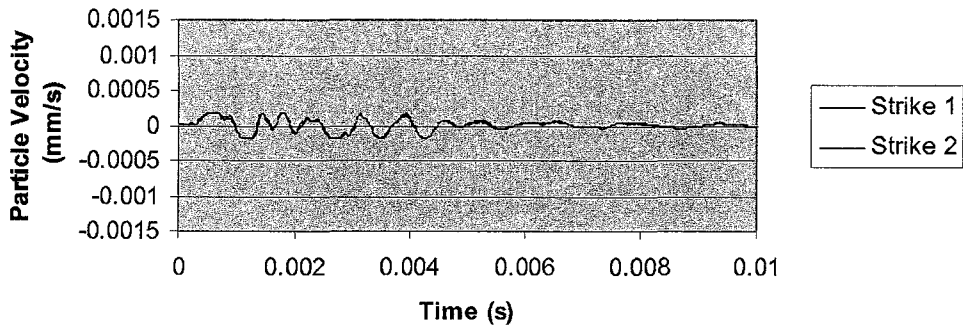
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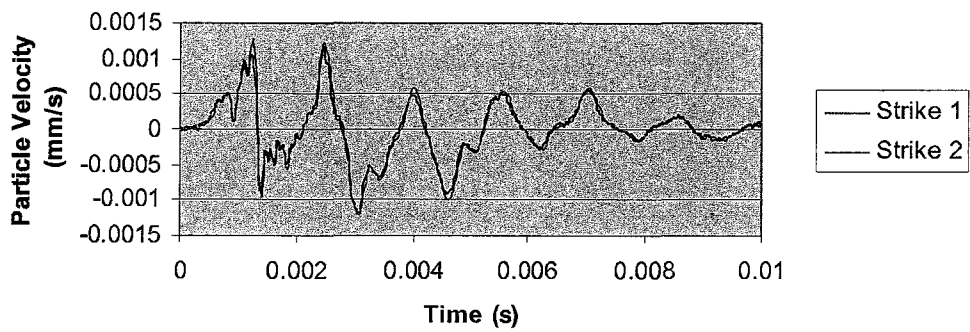


Appendix E – Waveforms Recorded in Laboratory Tests

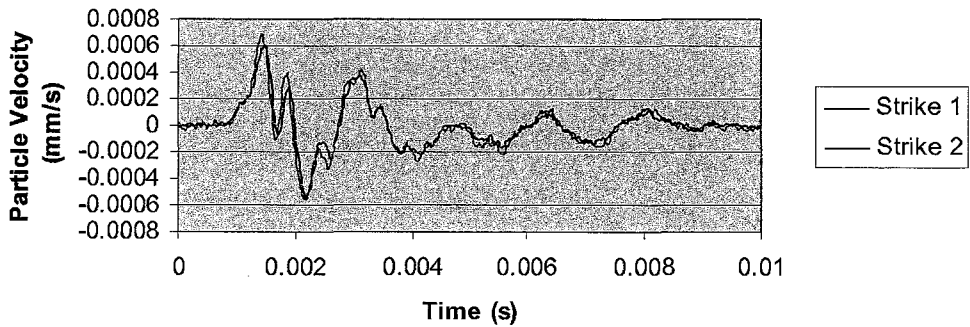
0.5 m from Hammer Strike



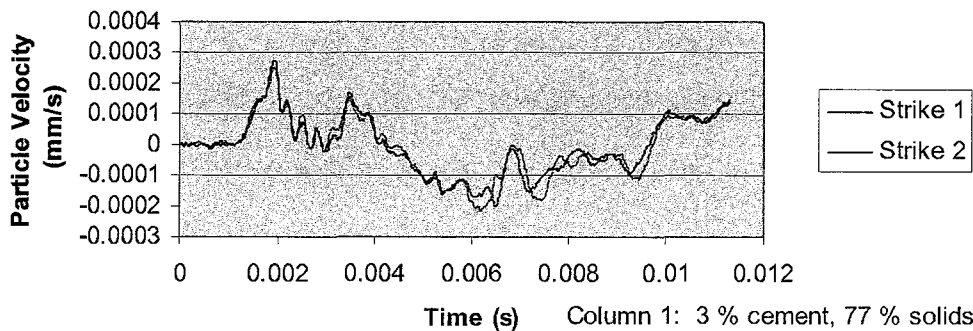
1.0 m from Hammer Strike



1.5 m from Hammer Strike



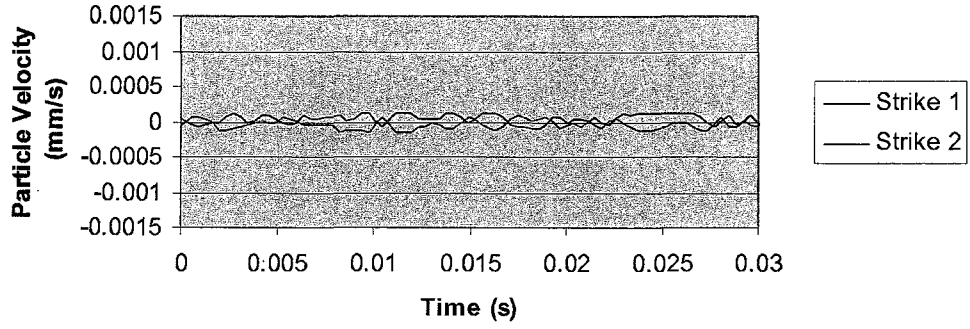
2.0 m from Hammer Strike



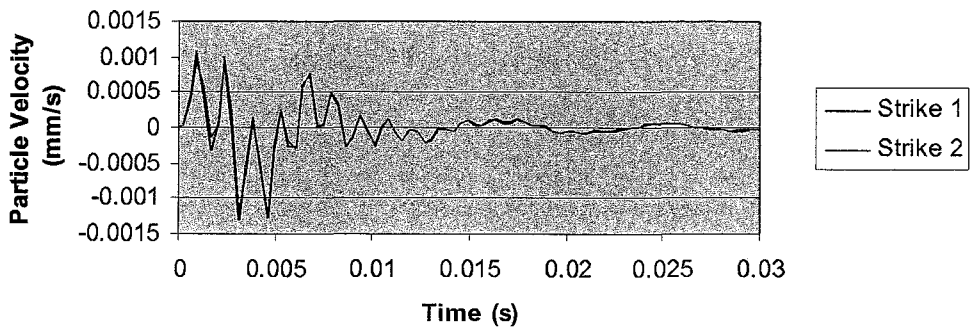
Column 1: 3 % cement, 77 % solids
Curing age: 7 days

Waveforms Recorded for Column 1 After 7 Days Curing Time

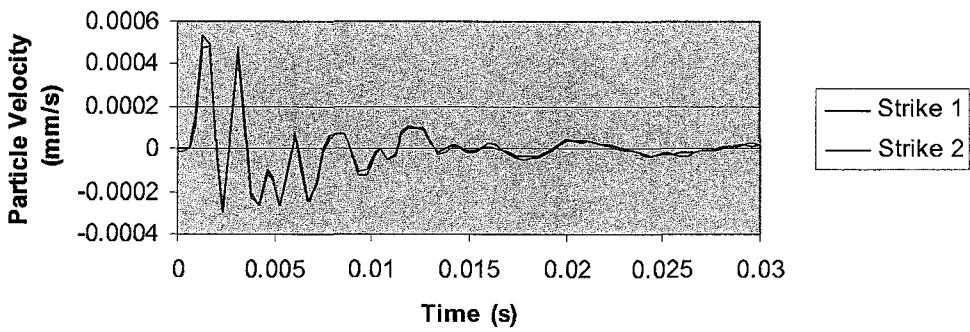
0.5 m from Hammer Strike



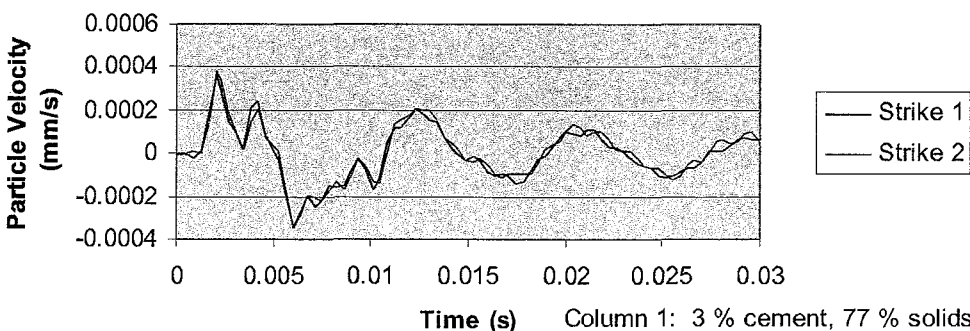
1.0 m from Hammer Strike



1.5 m from Hammer Strike



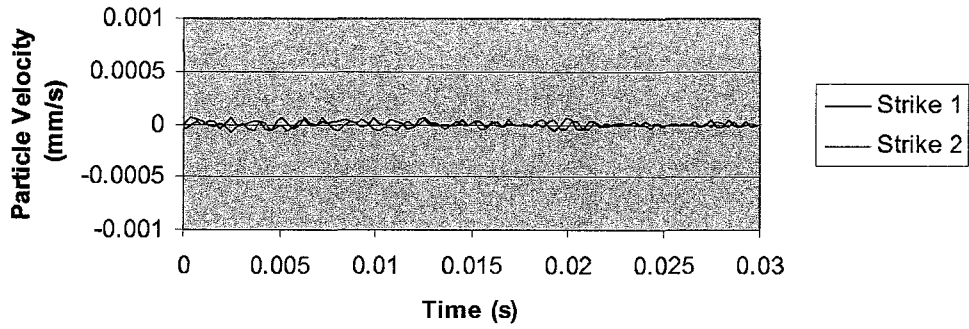
2.0 m from Hammer Strike



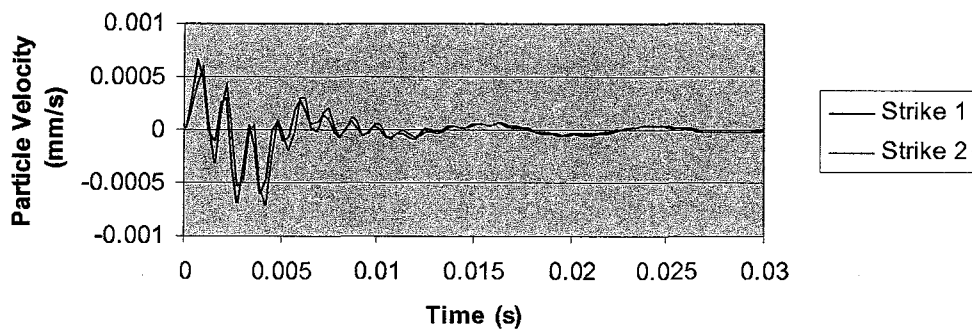
Column 1: 3 % cement, 77 % solids
Curing age: 14 days

Waveforms Recorded for Column 1 After 14 Days Curing Time

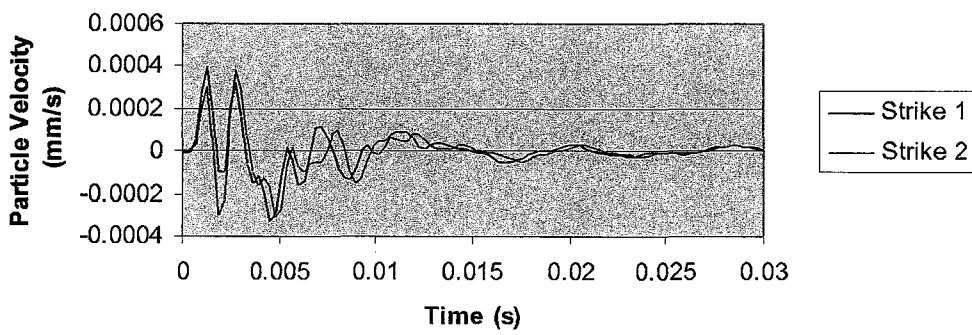
0.5 m from Hammer Strike



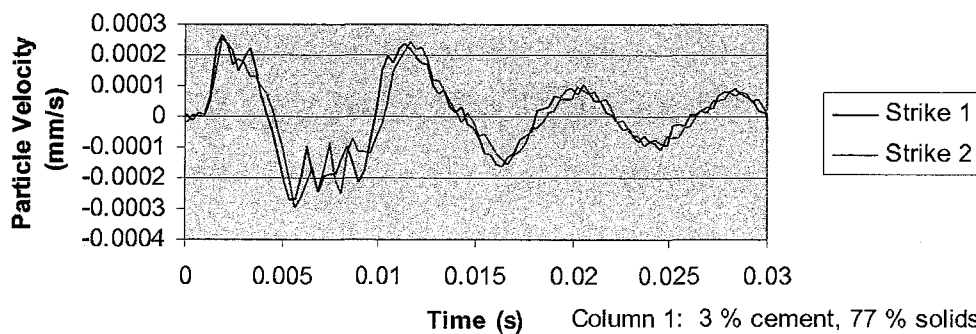
1.0 m from Hammer Strike



1.5 m from Hammer Strike



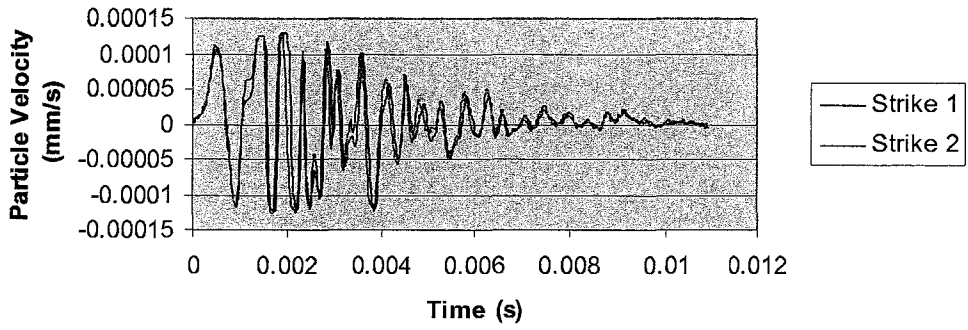
2.0 m from Hammer Strike



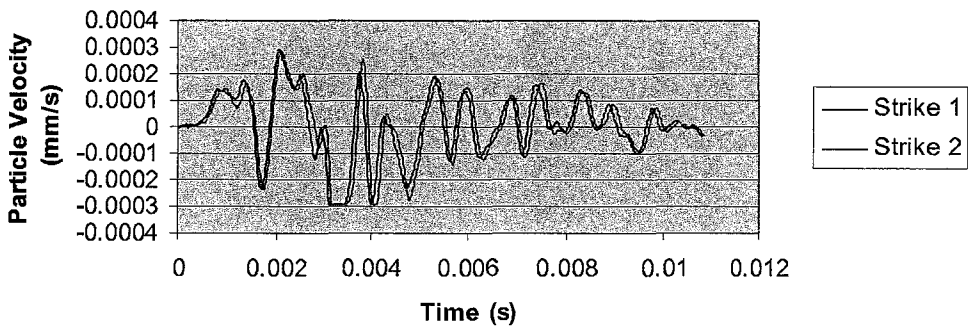
Column 1: 3 % cement, 77 % solids
Curing age: 28 days

Waveforms Recorded for Column 1 After 28 Days Curing Time

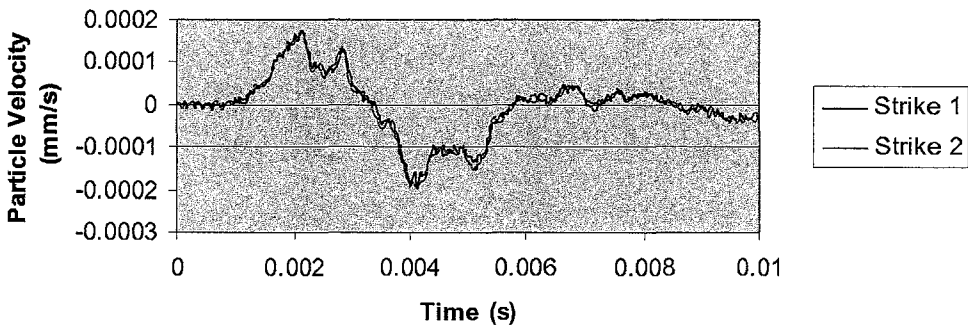
0.5 m from Hammer Strike



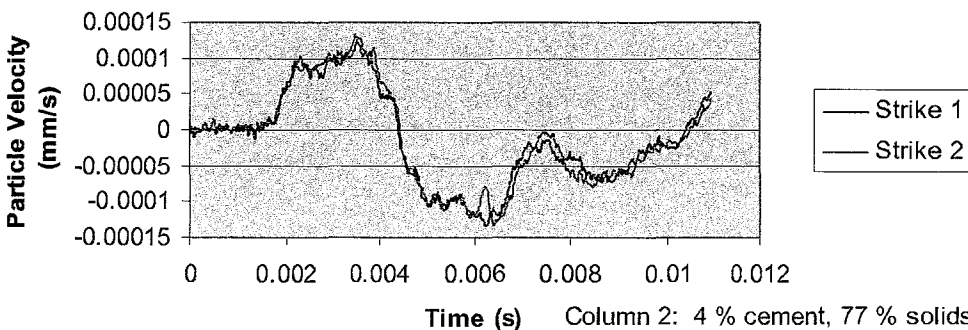
1.0 m from Hammer Strike



1.5 m from Hammer Strike



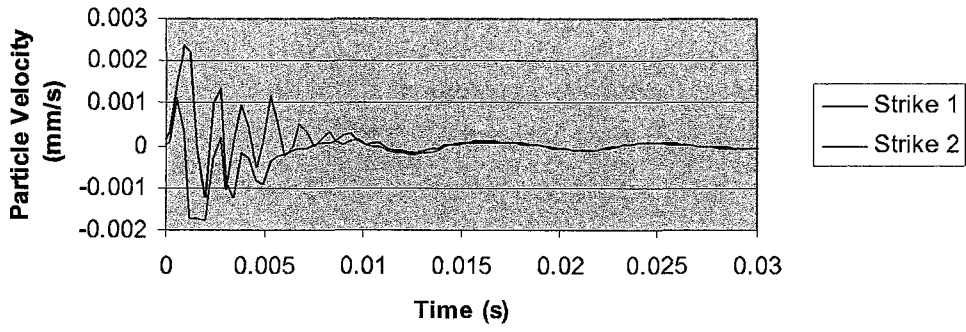
2.0 m from Hammer Strike



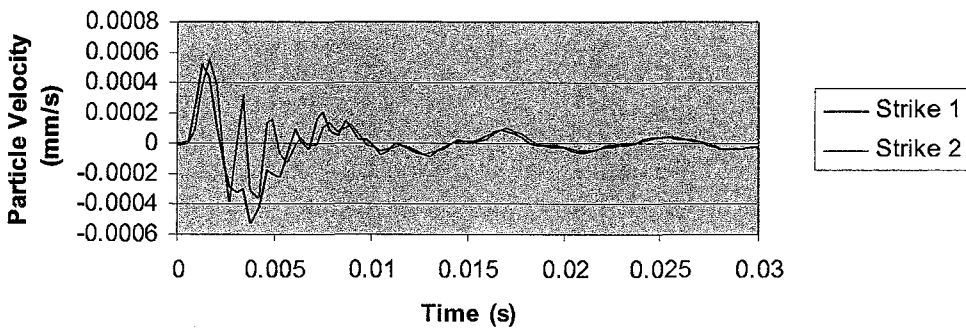
Column 2: 4 % cement, 77 % solids
Curing age: 7 days

Waveforms Recorded for Column 2 After 7 Days Curing Time

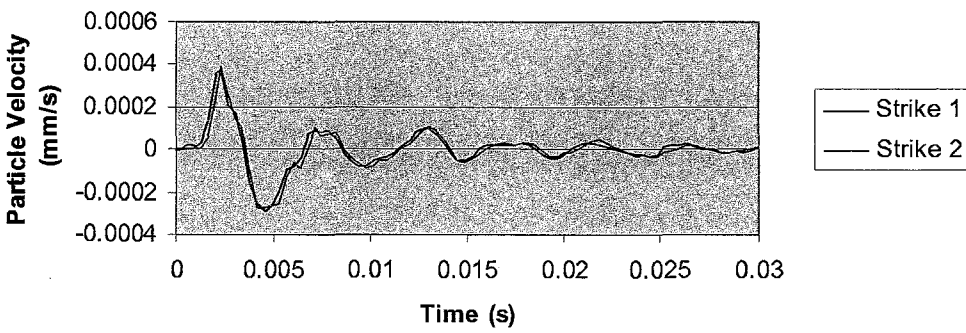
0.5 m from Hammer Strike



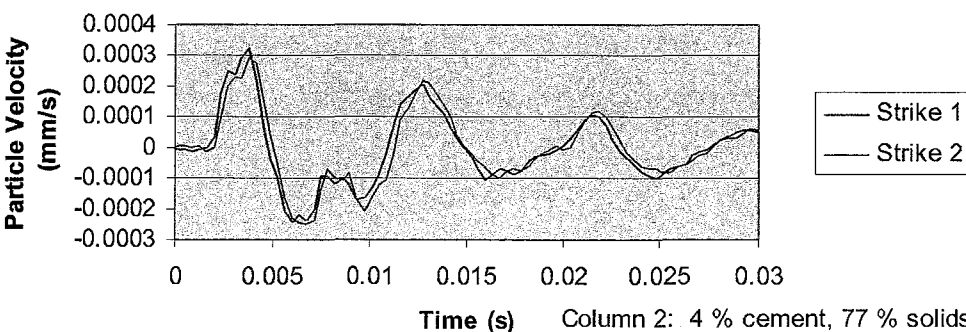
1.0 m from Hammer Strike



1.5 m from Hammer Strike



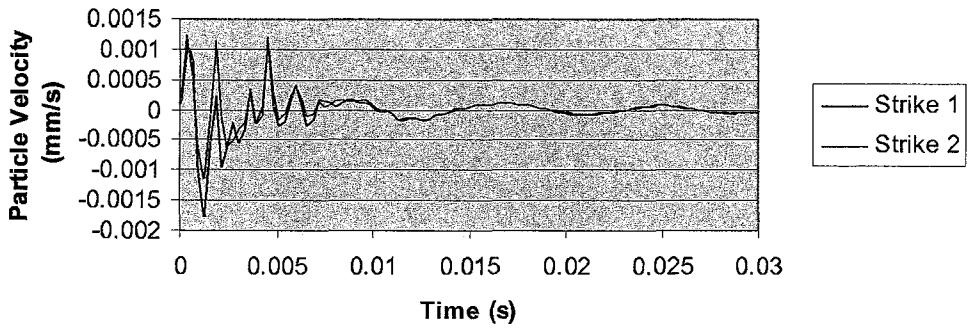
2.0 m from Hammer Strike



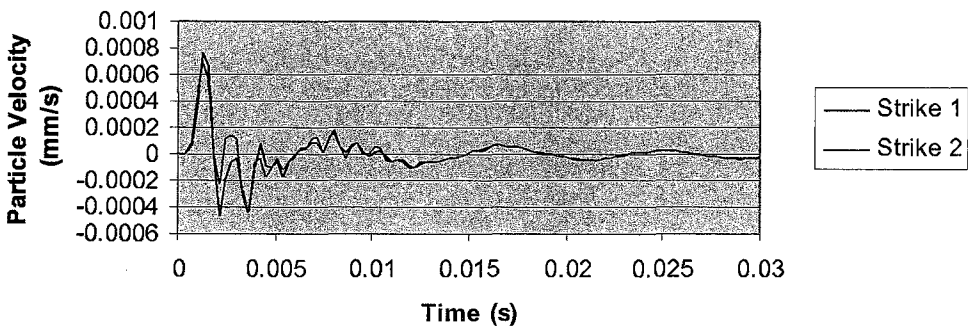
Column 2: 4 % cement, 77 % solids
Curing age: 14 days

Waveforms Recorded for Column 2 After 14 Days Curing Time

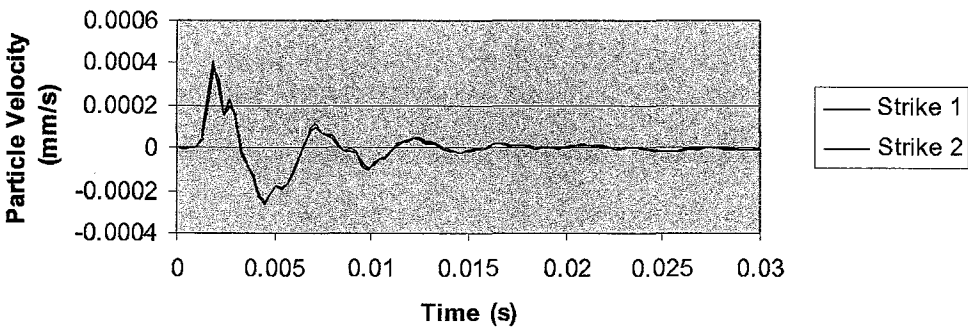
0.5 m from Hammer Strike



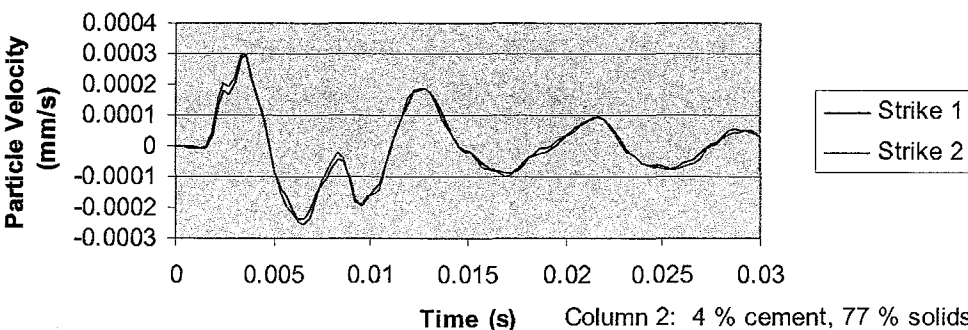
1.0 m from Hammer Strike



1.5 m from Hammer Strike



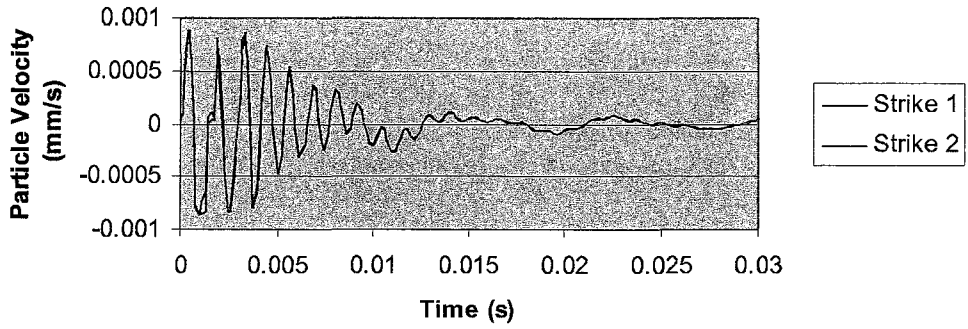
2.0 m from Hammer Strike



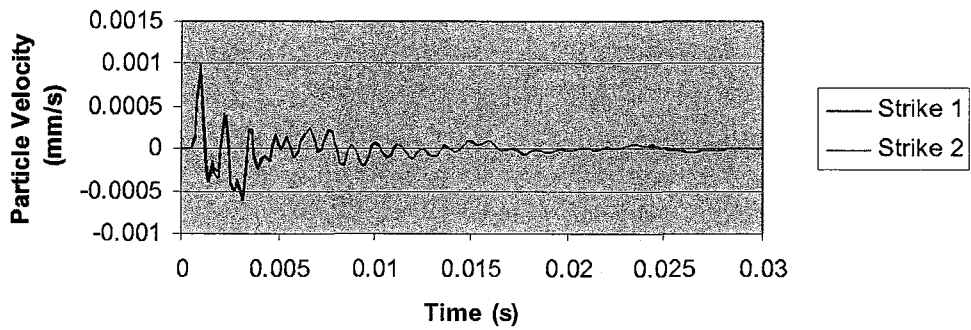
Column 2: 4 % cement, 77 % solids
Curing age: 28 days

Waveforms Recorded for Column 2 After 28 Days Curing Time

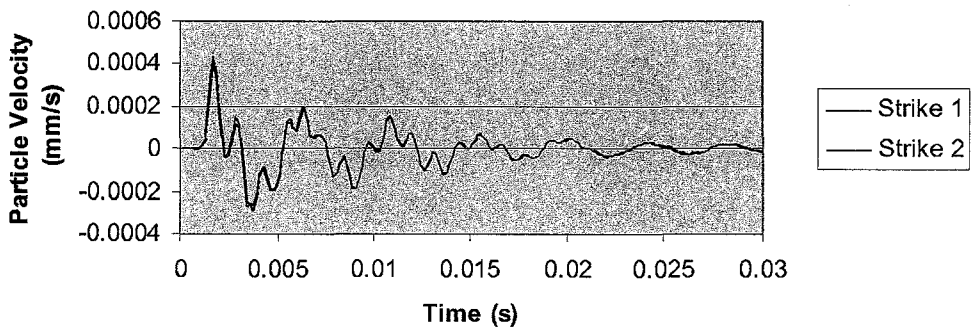
0.5 m from Hammer Strike



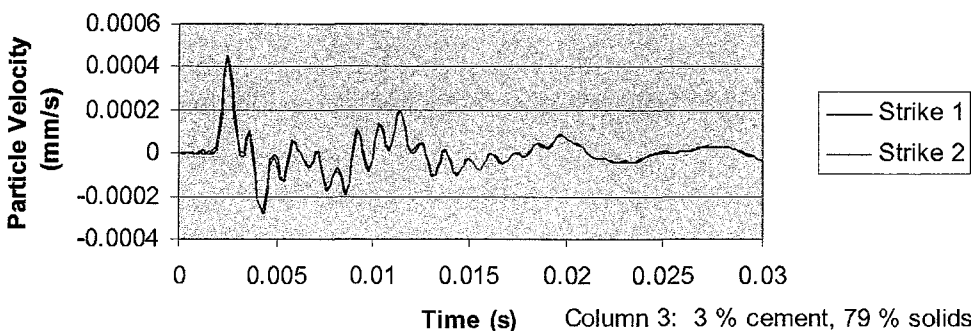
1.0 m from Hammer Strike



1.5 m from Hammer Strike



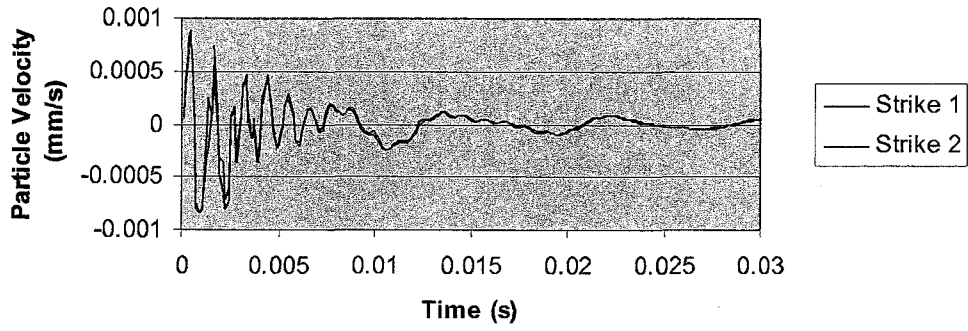
2.0 m from Hammer Strike



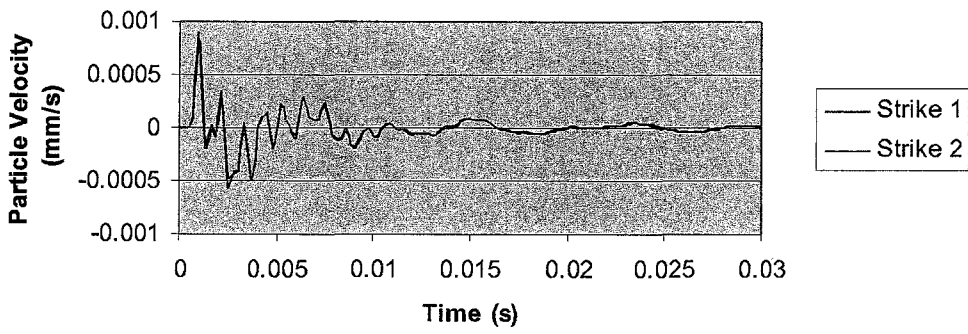
Column 3: 3 % cement, 79 % solids
Curing age: 7 days

Waveforms Recorded for Column 3 After 7 Days Curing Time

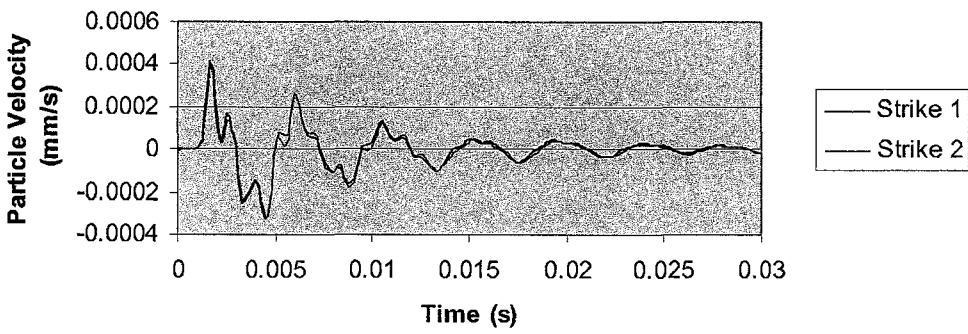
0.5 m from Hammer Strike



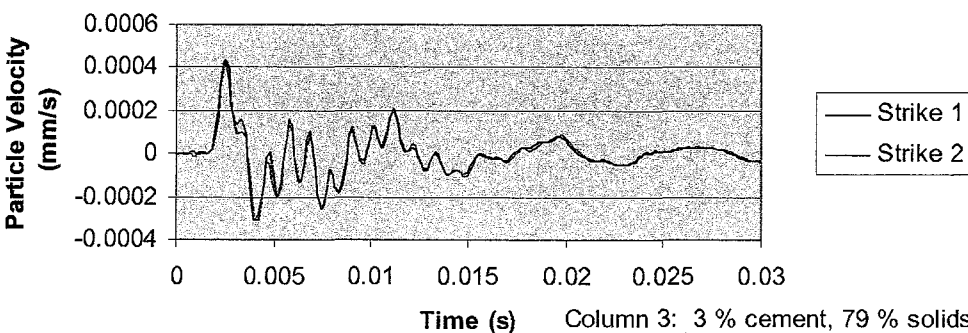
1.0 m from Hammer Strike



1.5 m from Hammer Strike



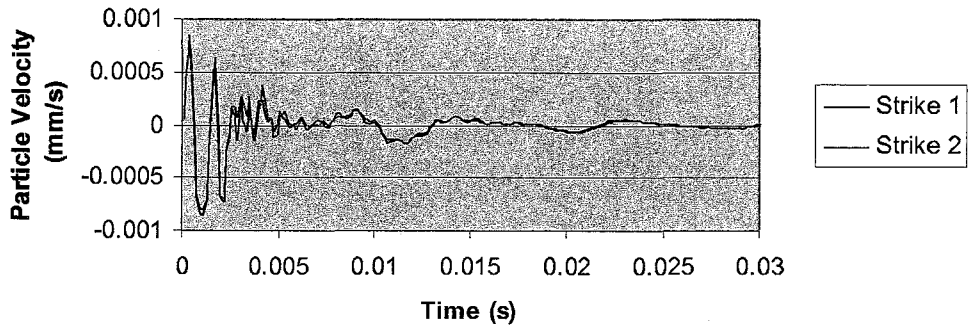
2.0 m from Hammer Strike



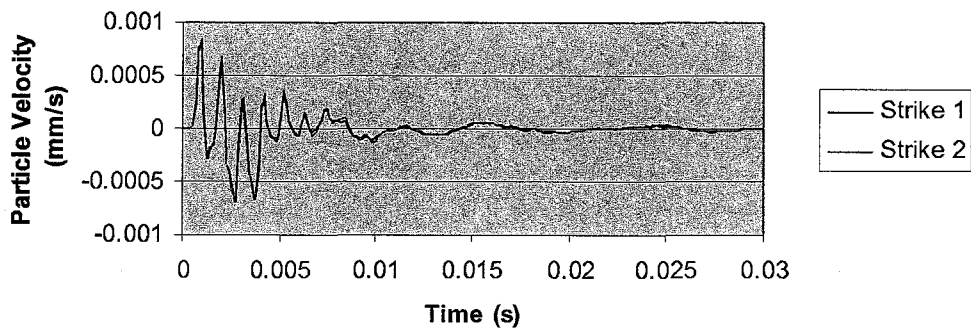
Column 3: 3 % cement, 79 % solids
Curing age: 14 days

Waveforms Recorded for Column 3 After 14 Days Curing Time

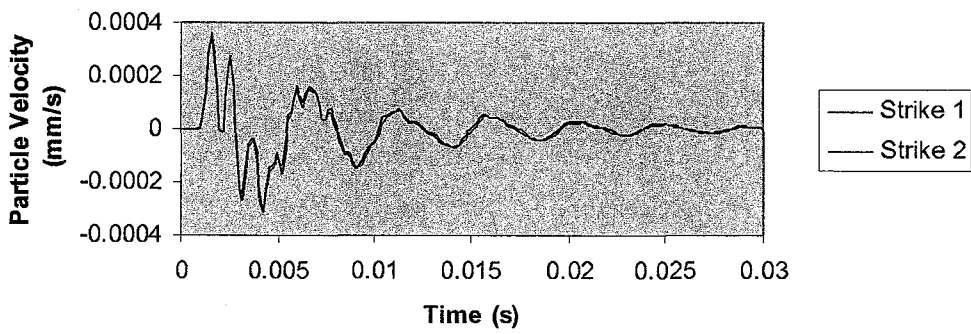
0.5 m from Hammer Strike



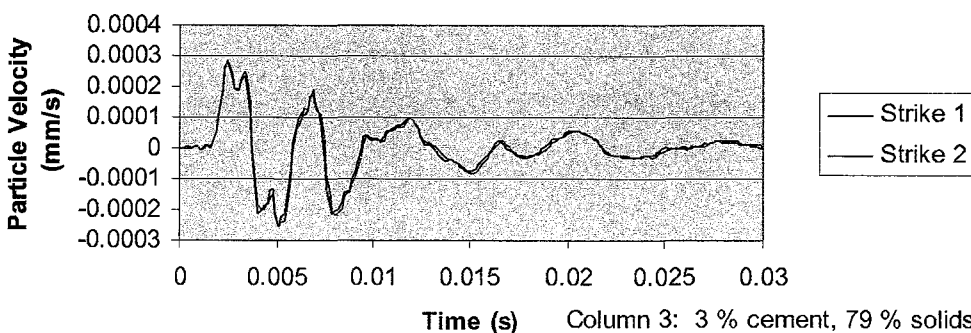
1.0 m from Hammer Strike



1.5 m from Hammer Strike



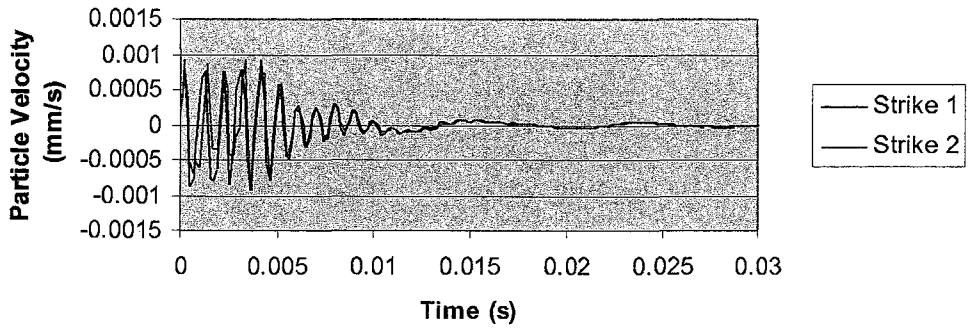
2.0 m from Hammer Strike



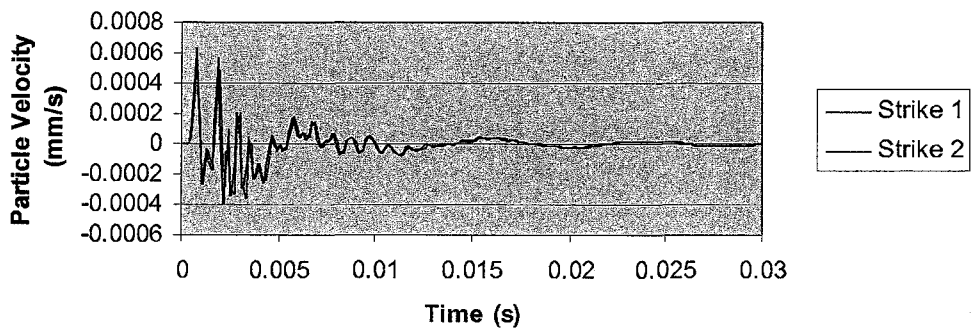
Column 3: 3 % cement, 79 % solids
Curing age: 28 days

Waveforms Recorded for Column 3 After 28 Days Curing Time

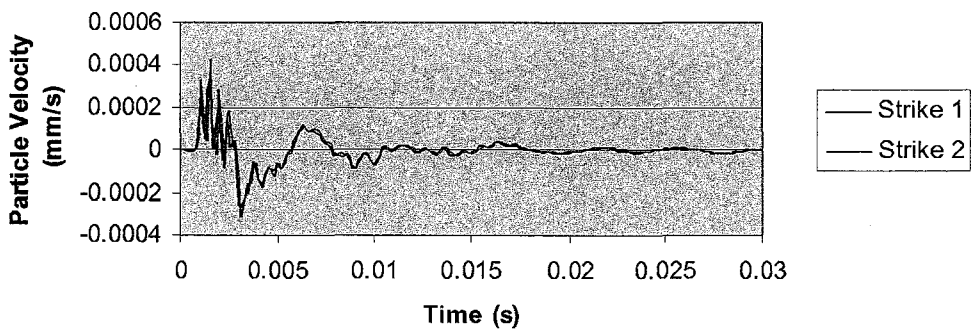
0.5 m from Hammer Strike



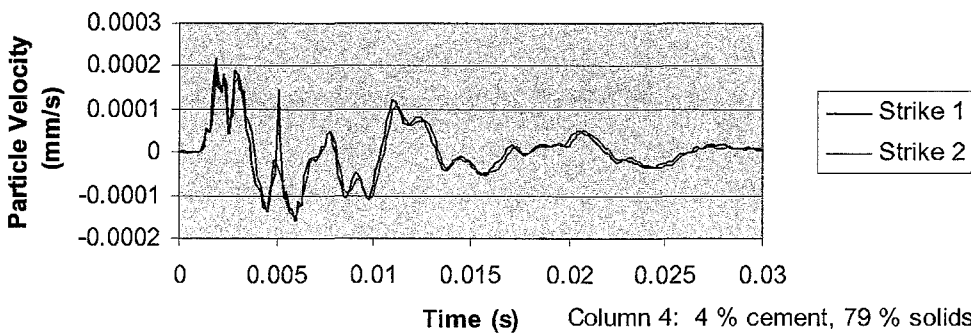
1.0 m from Hammer Strike



1.5 m from Hammer Strike



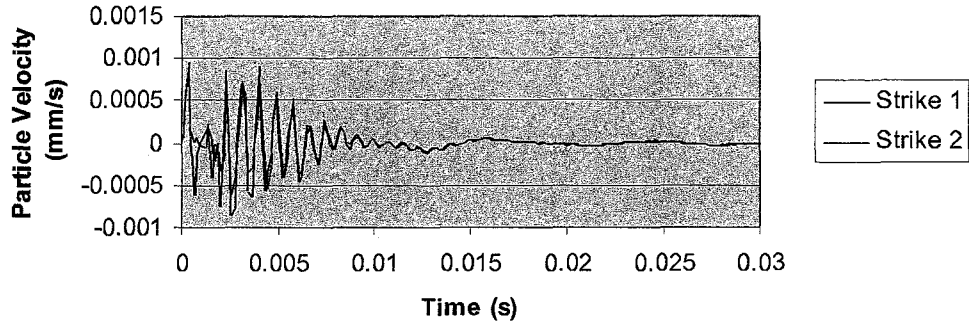
2.0 m from Hammer Strike



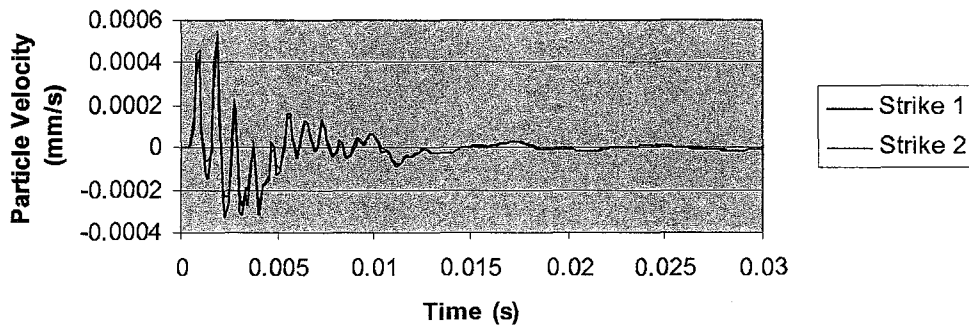
Column 4: 4 % cement, 79 % solids
Curing age: 7 days

Waveforms Recorded for Column 4 After 7 Days Curing Time

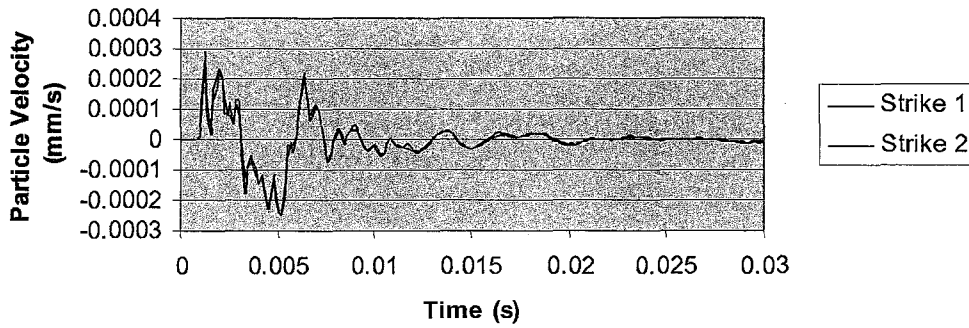
0.5 m from Hammer Strike



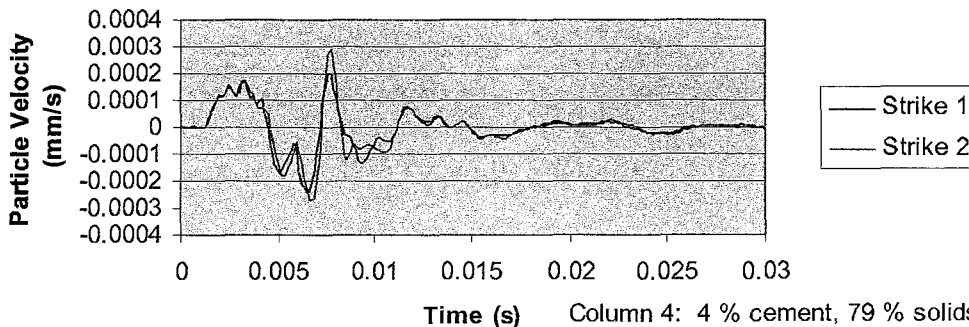
1.0 m from Hammer Strike



1.5 m from Hammer Strike



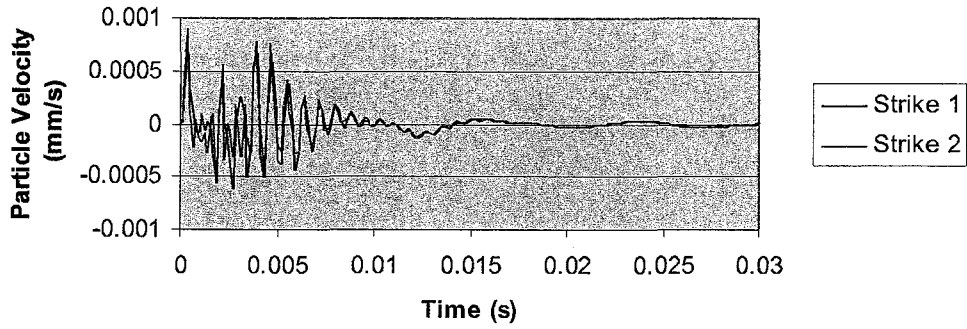
2.0 m from Hammer Strike



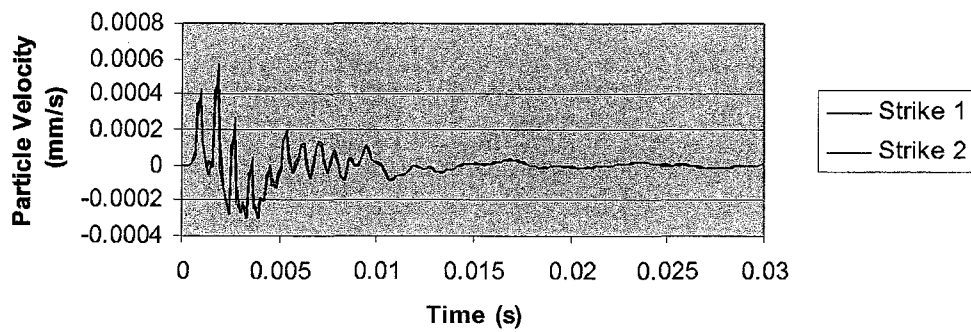
Column 4: 4 % cement, 79 % solids
Curing age: 14 days

Waveforms Recorded for Column 4 After 14 Days Curing Time

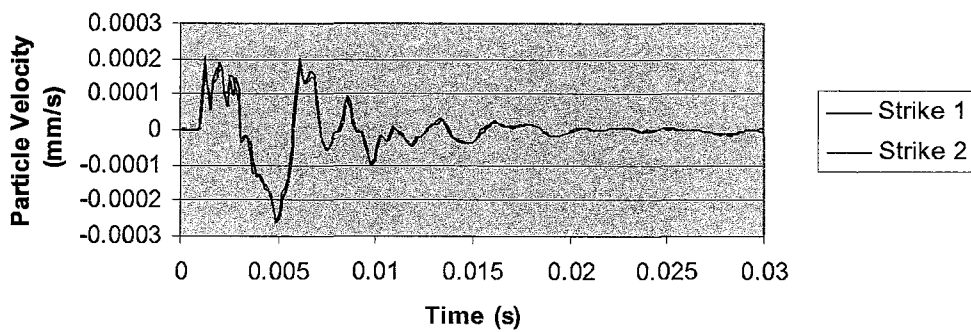
0.5 m from Hammer Strike



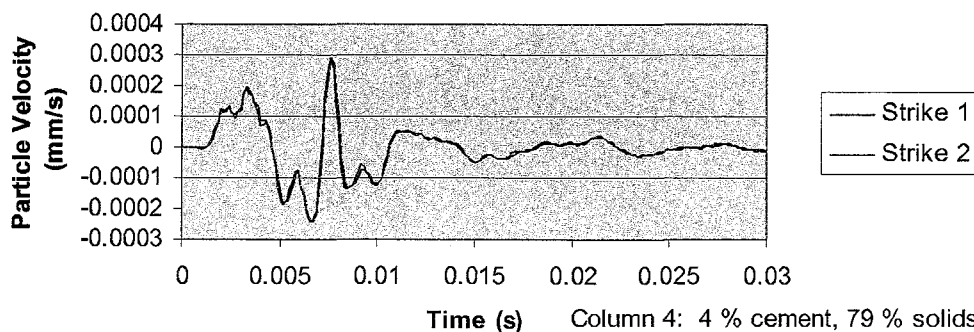
1.0 m from Hammer Strike



1.5 m from Hammer Strike



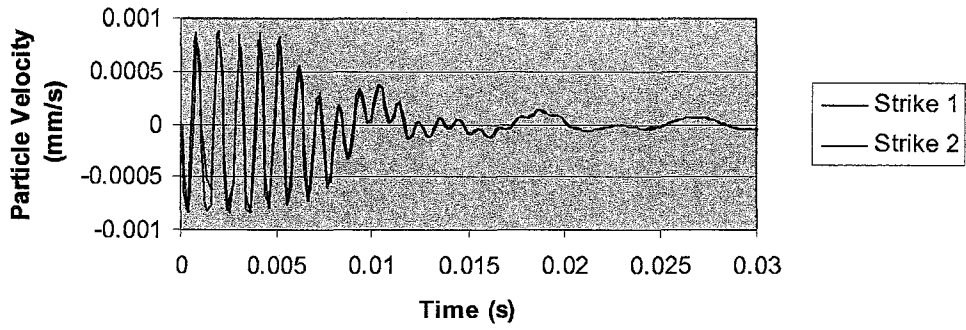
2.0 m from Hammer Strike



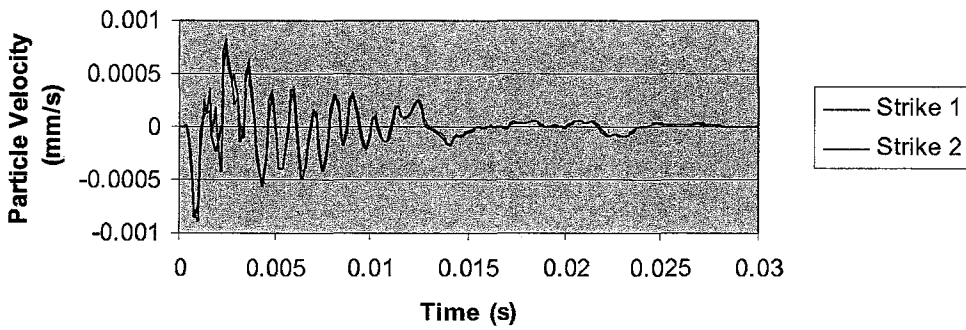
Column 4: 4 % cement, 79 % solids
Curing age: 28 days

Waveforms Recorded for Column 4 After 28 Days Curing Time

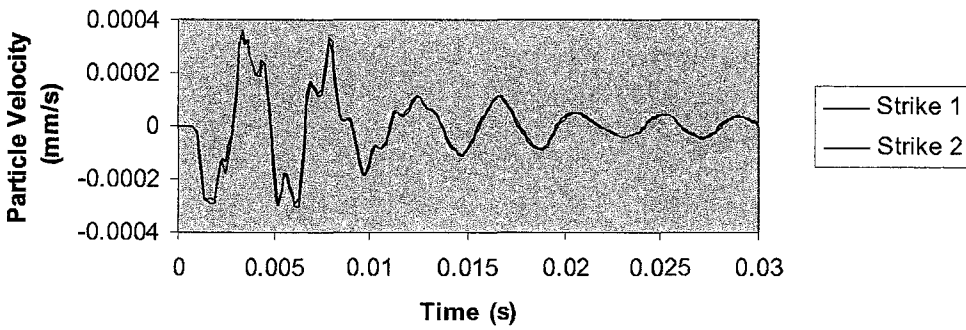
0.5 m from Hammer Strike



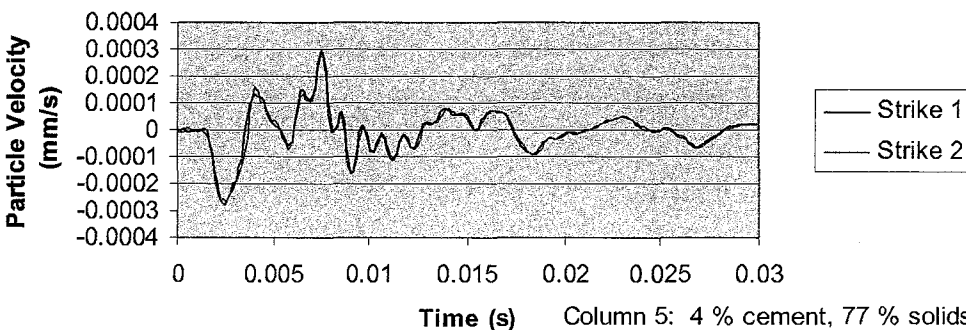
1.0 m from Hammer Strike



1.5 m from Hammer Strike



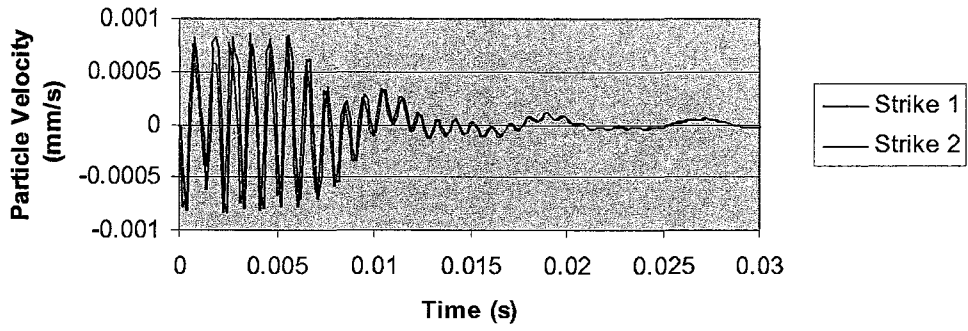
2.0 m from Hammer Strike



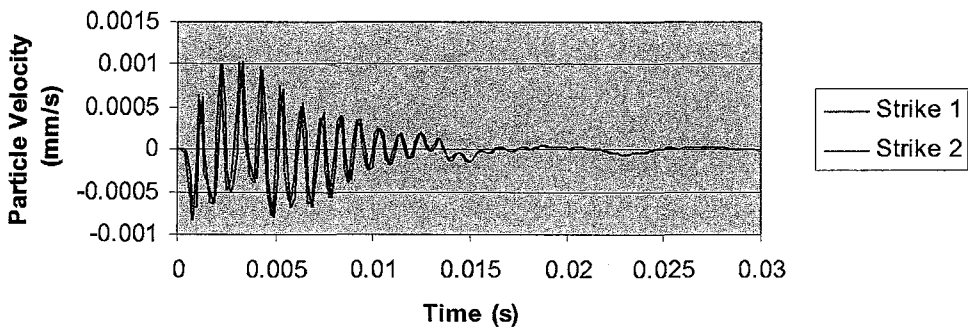
Column 5: 4 % cement, 77 % solids
Curing age: 7 days

Waveforms Recorded for Column 5 After 7 Days Curing Time

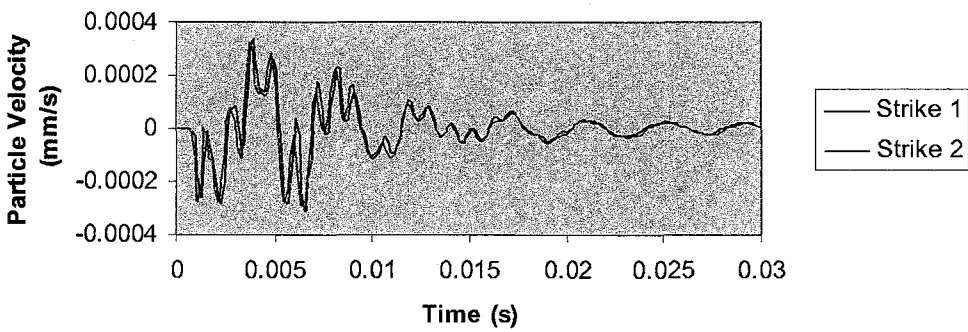
0.5 m from Hammer Strike



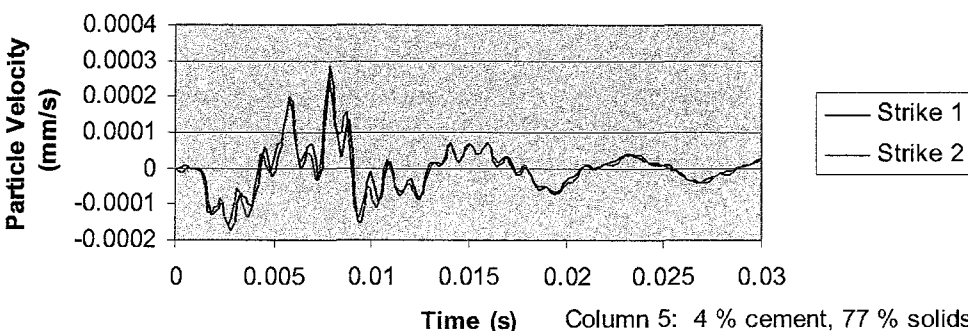
1.0 m from Hammer Strike



1.5 m from Hammer Strike



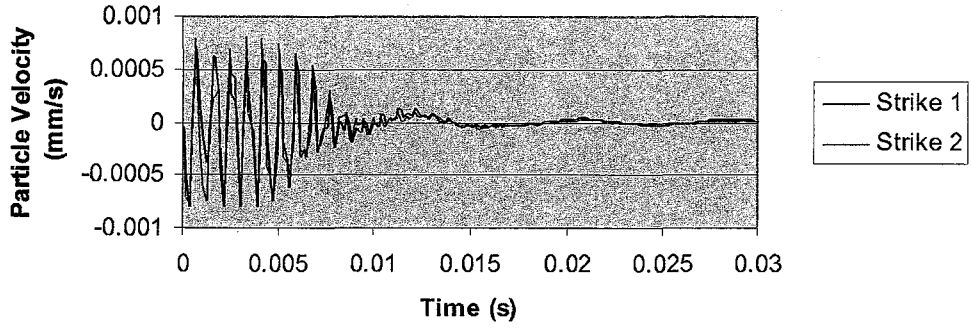
2.0 m from Hammer Strike



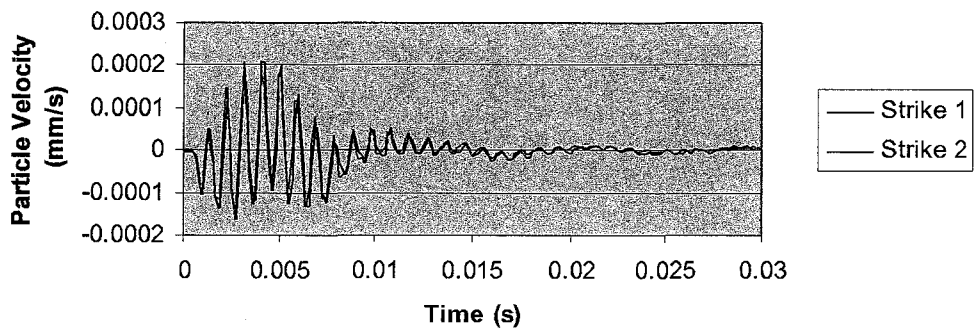
Column 5: 4 % cement, 77 % solids
Curing age: 2 weeks

Waveforms Recorded for Column 5 After 14 Days Curing Time

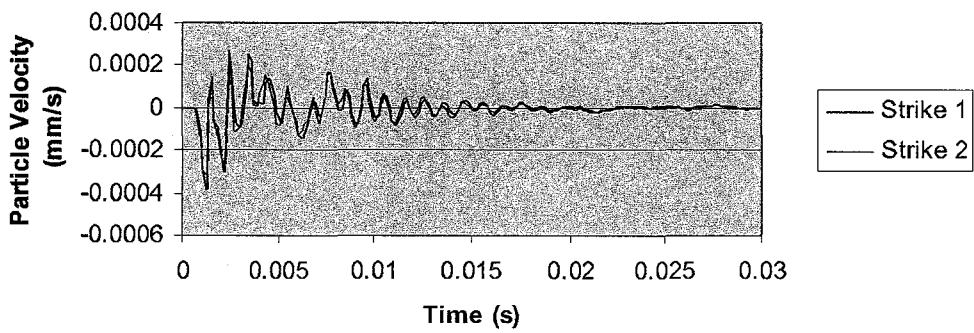
0.5 m from Hammer Strike



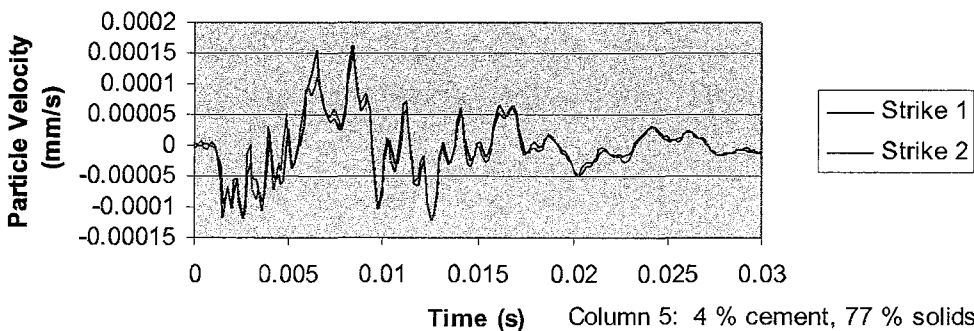
1.0 m from Hammer Strike



1.5 m from Hammer Strike



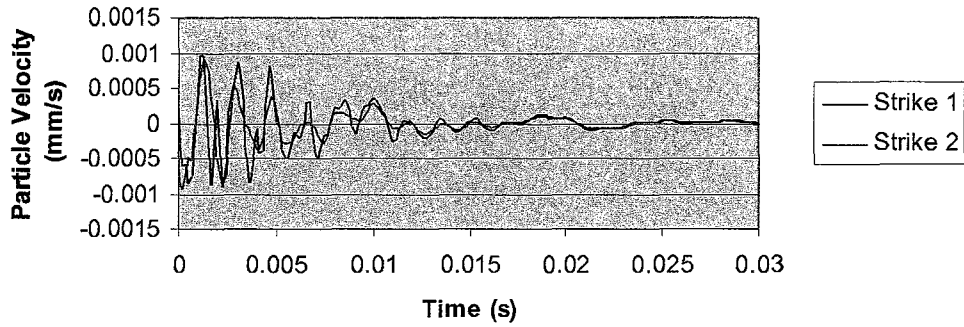
2.0 m from Hammer Strike



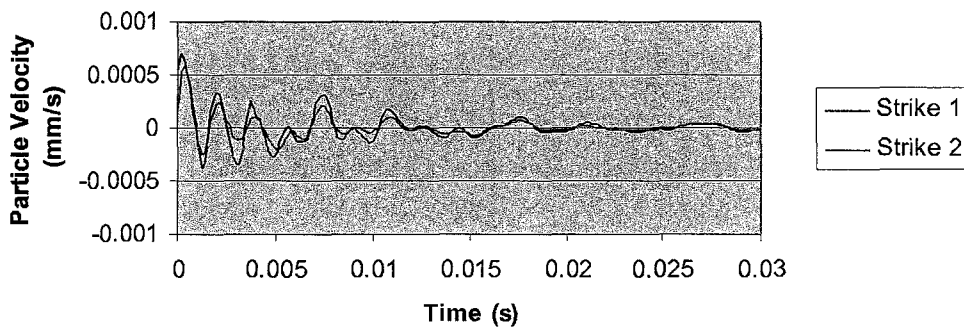
Column 5: 4 % cement, 77 % solids
Curing age: 28 days

Waveforms Recorded for Column 5 After 28 Days Curing Time

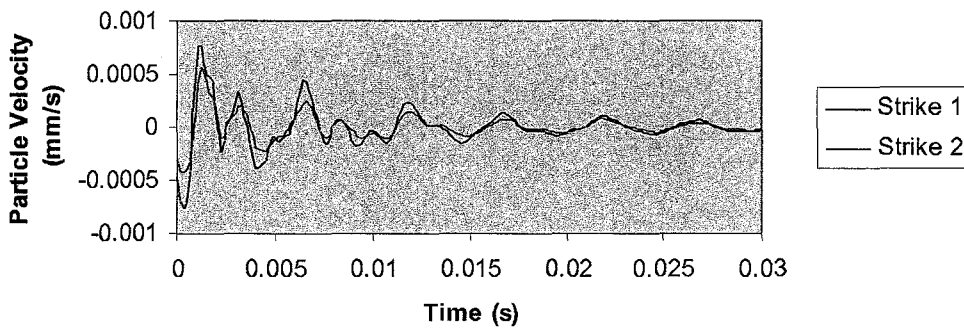
0.5 m from Hammer Strike



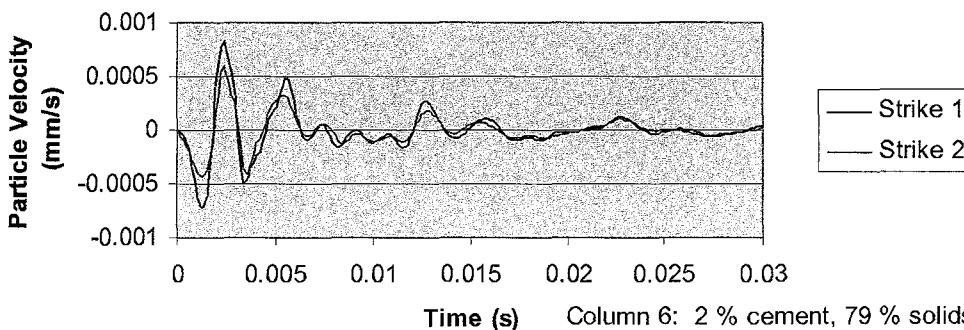
1.0 m from Hammer Strike



1.5 m from Hammer Strike



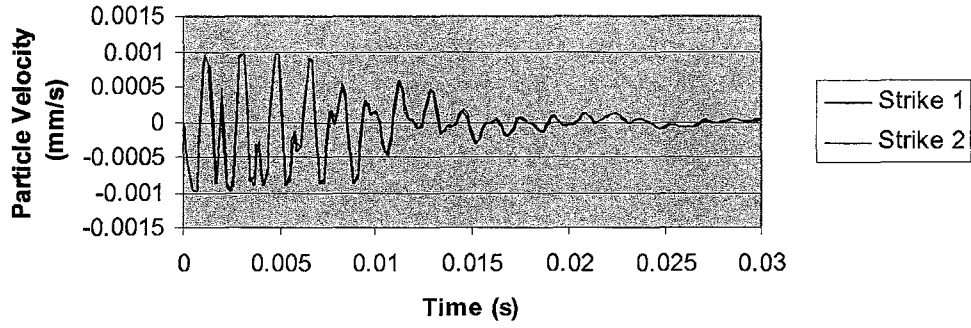
2.0 m from Hammer Strike



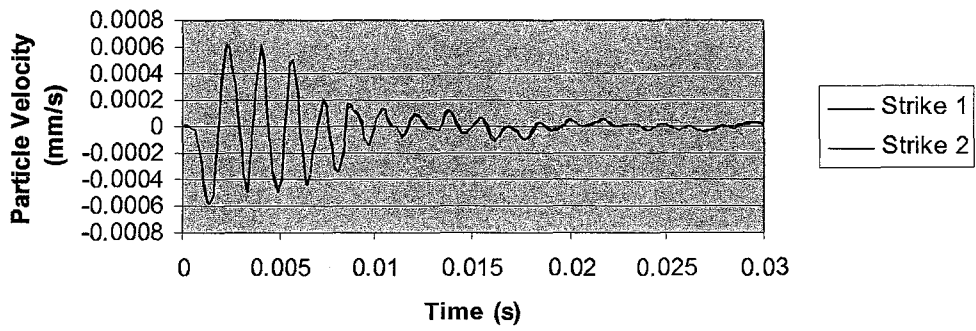
Column 6: 2 % cement, 79 % solids
Curing age: 7 days

Waveforms Recorded for Column 6 After 7 Days Curing Time

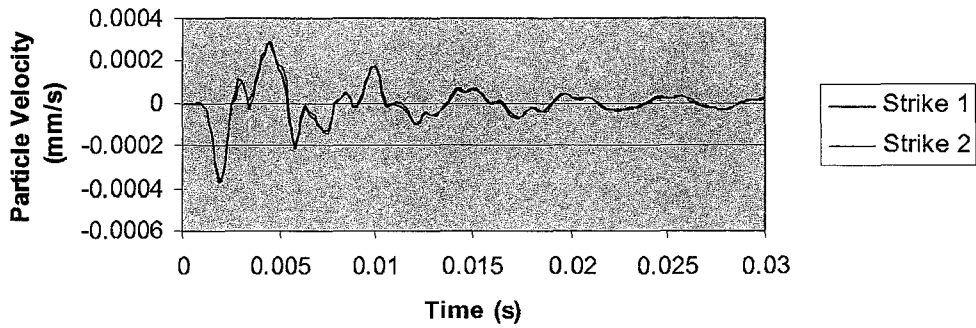
0.5 m from Hammer Strike



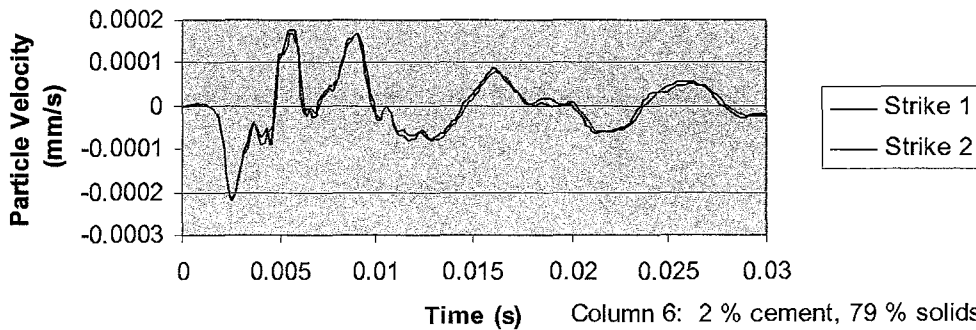
1.0 m from Hammer Strike



1.5 m from Hammer Strike



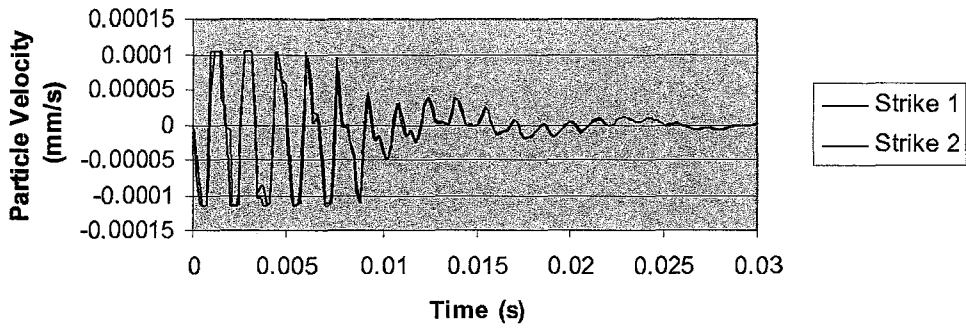
2.0 m from Hammer Strike



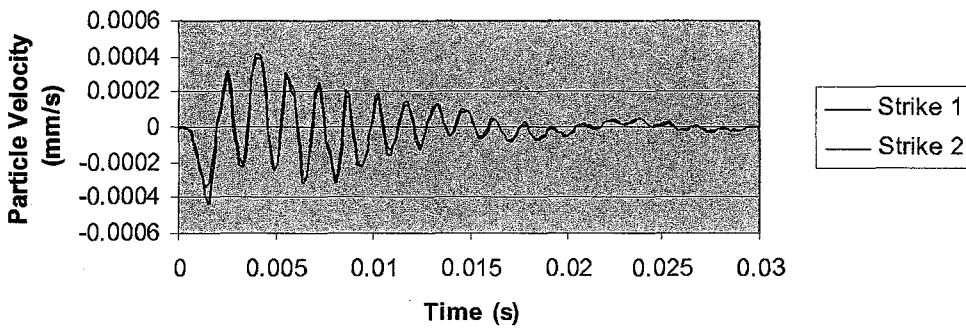
Column 6: 2 % cement, 79 % solids
Curing age: 14 days

Waveforms Recorded for Column 6 After 14 Days Curing Time

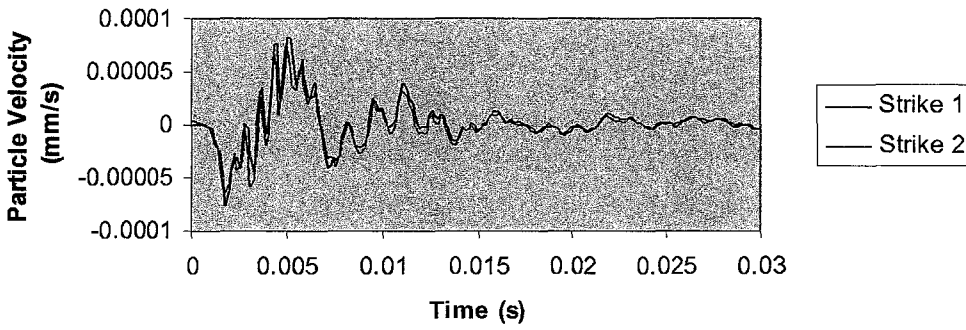
0.5 m from Hammer Strike



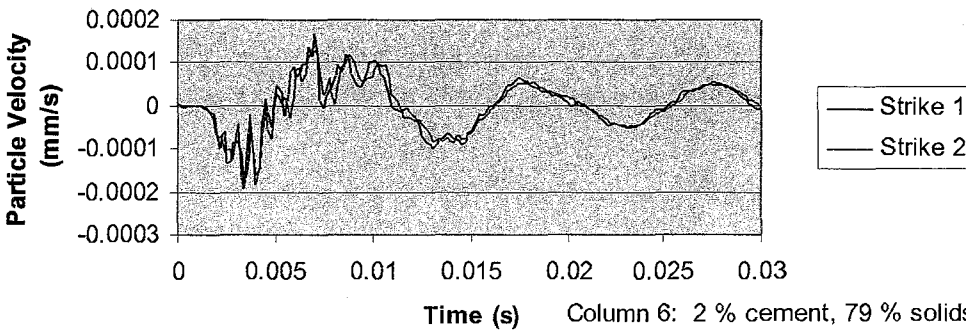
1.0 m from Hammer Strike



1.5 m from Hammer Strike



2.0 m from Hammer Strike



Column 6: 2 % cement, 79 % solids
Curing age: 28 days

Waveforms Recorded for Column 6 After 28 Days Curing Time

**Appendix F – Electronic Copy of Finite Element Model Input
Files**

The attached disc contains the following input files:

File Name	Stage	Description
stage1_764	Stage 1	Single column of explosive in paste fill. Paste fill mix of 76 % solids and 4 % cement
stage2kBL	Stage 2	Single column of explosive in rock. Broadlands rock type
stage3s1	Stage 3, Scenario 1	Single column of explosive in rock adjacent to the centerline of an adjacent paste fill stope. Blast hole located 2.5 m from paste fill
stage3s2	Stage 3, Scenario 2	Single column of explosive in rock offset from the centerline of an adjacent paste fill stope. Blast hole located 2.5 m from paste fill, offset 2.5 m.
st3s3bp1	Stage 3, Scenario 3	Multiple columns of explosive in rock adjacent to a paste fill stope. Blast holes located 2.5 m from paste fill. All blast holes detonated simultaneously.
st3s3bp2	Stage 3, Scenario 3	Multiple columns of explosive in rock adjacent to a paste fill stope. Blast holes located 2.5 m from paste fill. Detonation pattern 2.
st3s3bp3	Stage 3, Scenario 3	Multiple columns of explosive in rock adjacent to a paste fill stope. Blast holes located 2.5 m from paste fill. Detonation pattern 3.