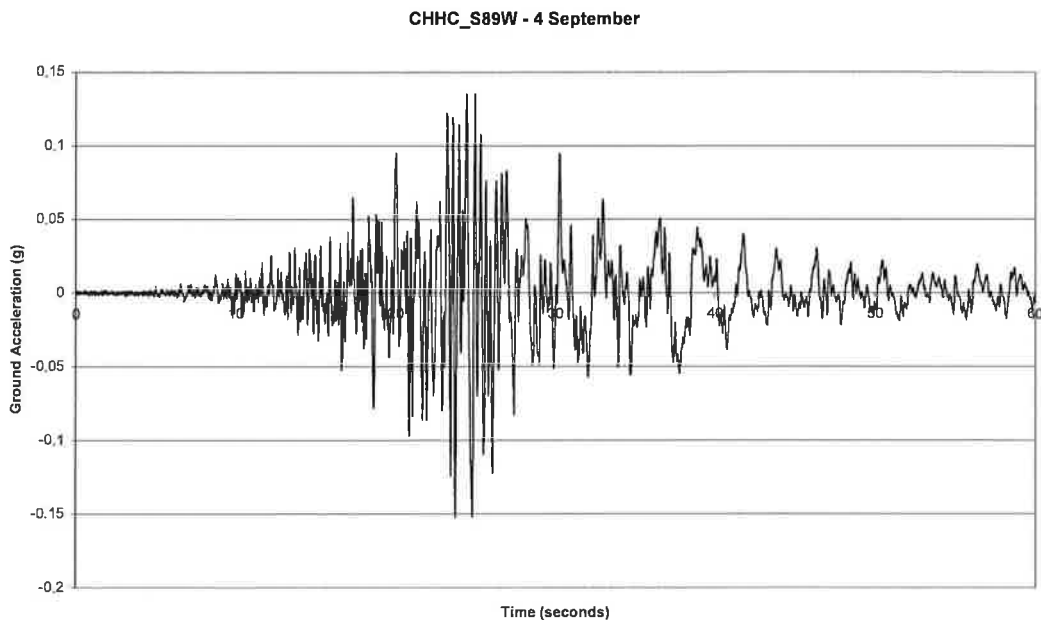
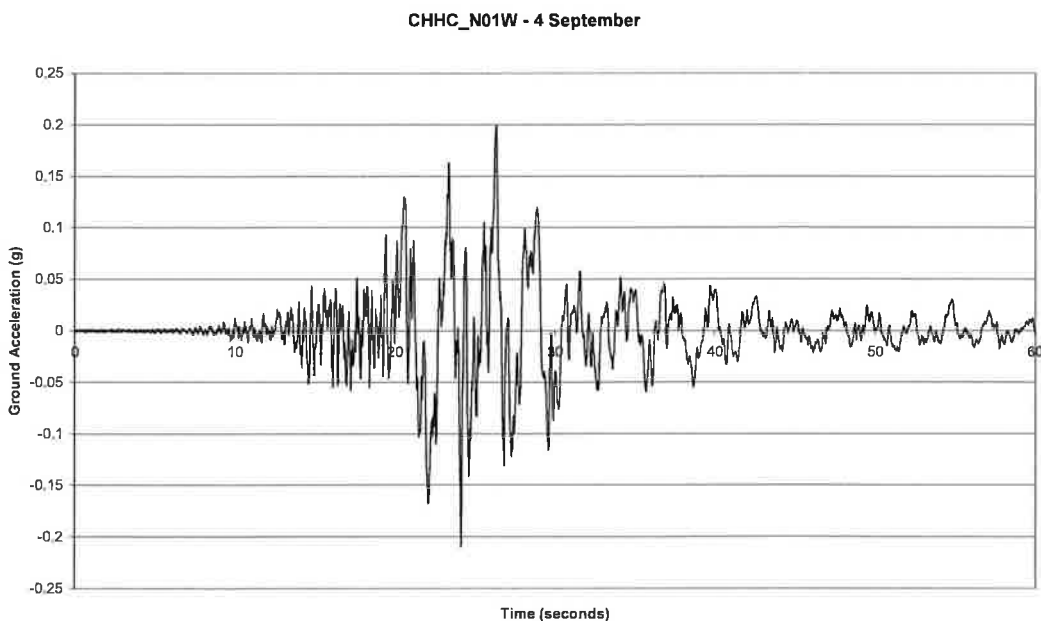


**Appendix A  
Ground Acceleration Records (accelerograms)**

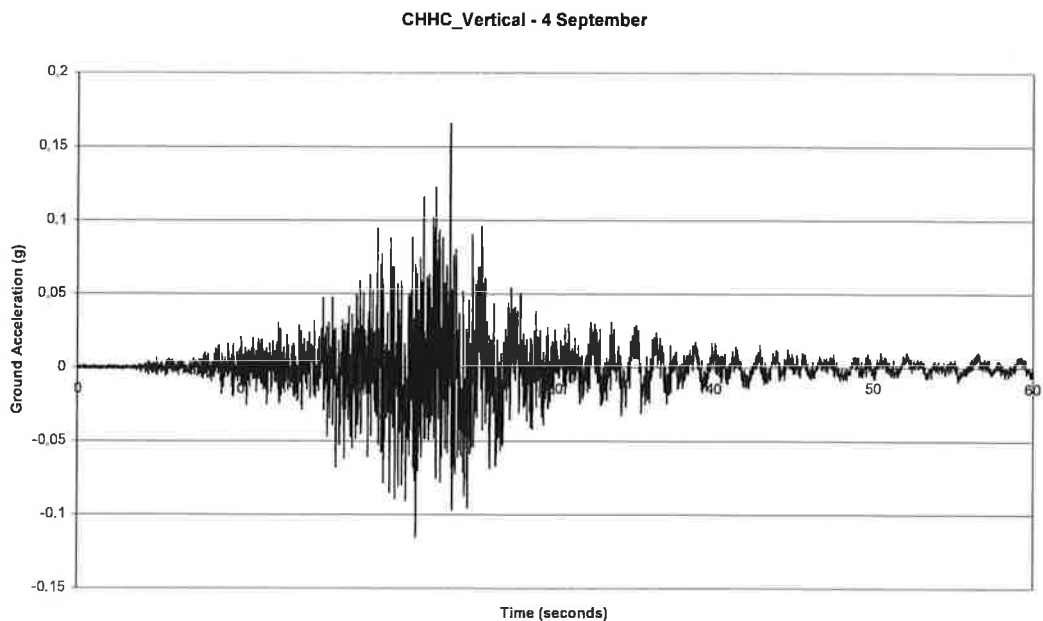
**4 September 2010 Acceleration records.**



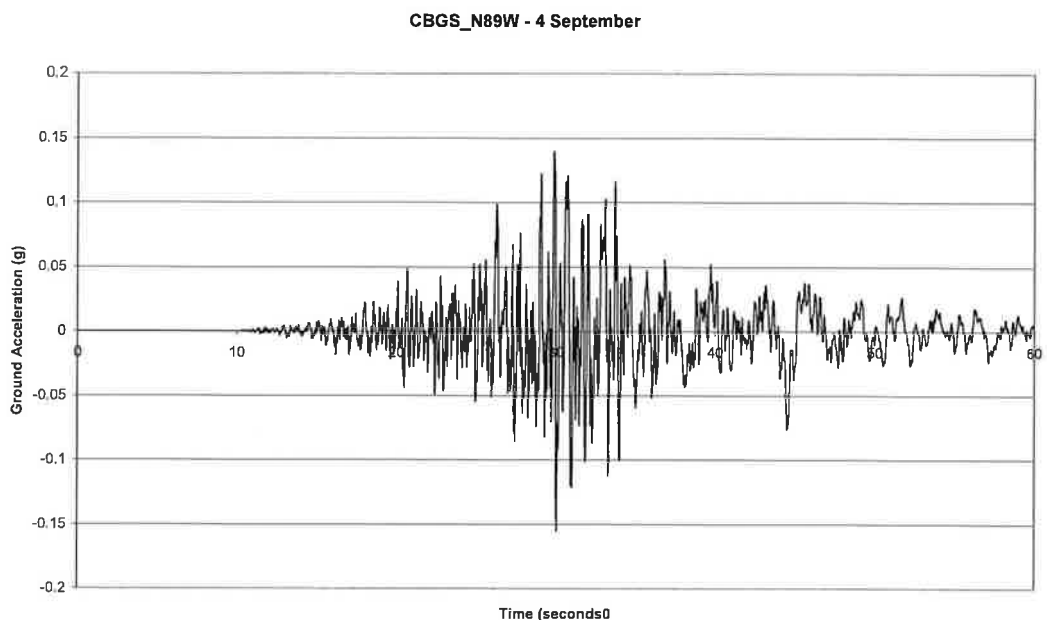
**.Figure A-1. Ground Acceleration History.  
Christchurch Hospital 4 September 2010- South 89° West Component**



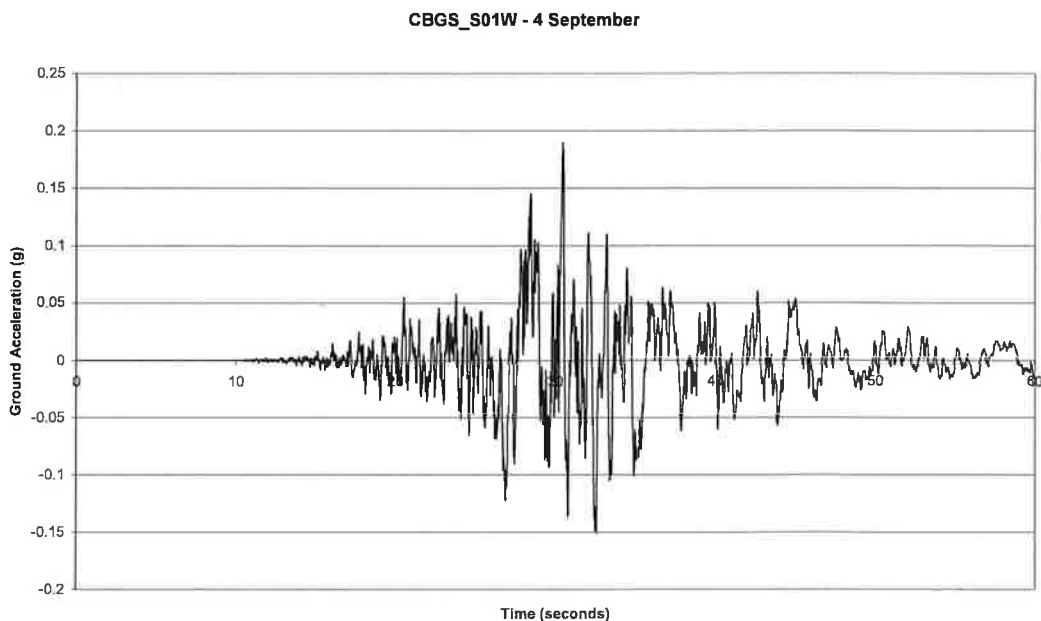
**Figure A-2. Ground Acceleration History.  
Christchurch Hospital 4 September 2010- North 01° West Component**



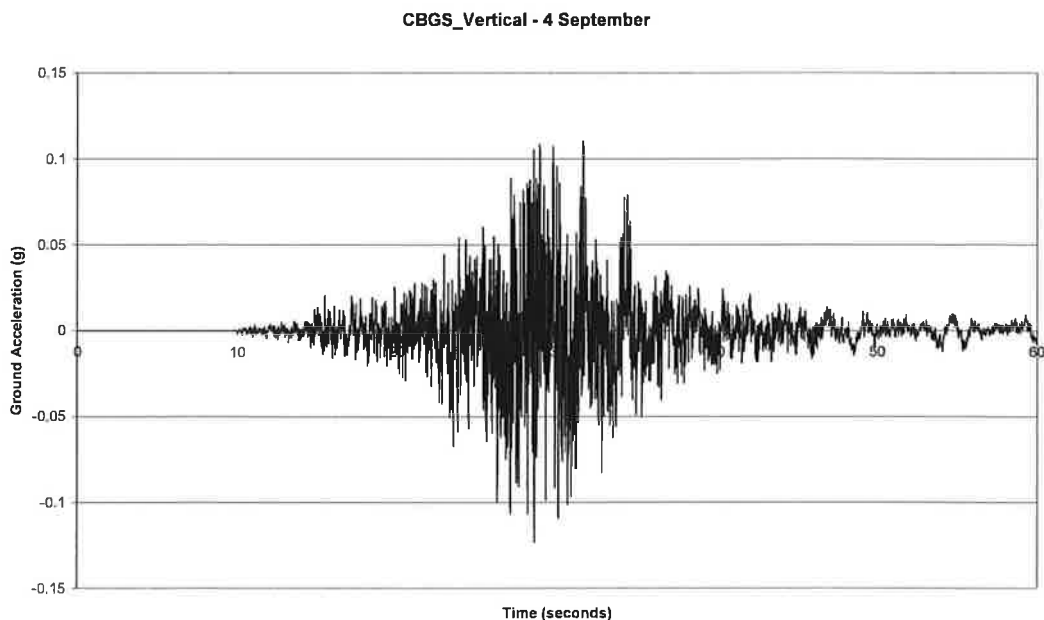
**Figure A-3. Ground Acceleration History.  
Christchurch Hospital 4 September 2010- Vertical Component**



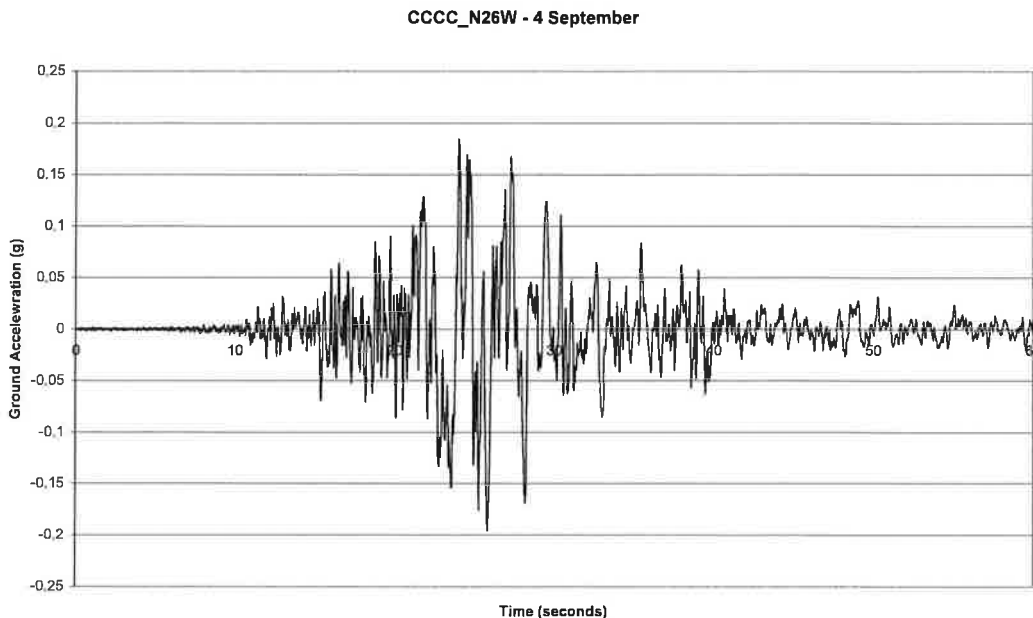
**Figure A-4. Ground Acceleration History.  
Christchurch Botanic Gardens. 4 September 2010- North 89° West Component**



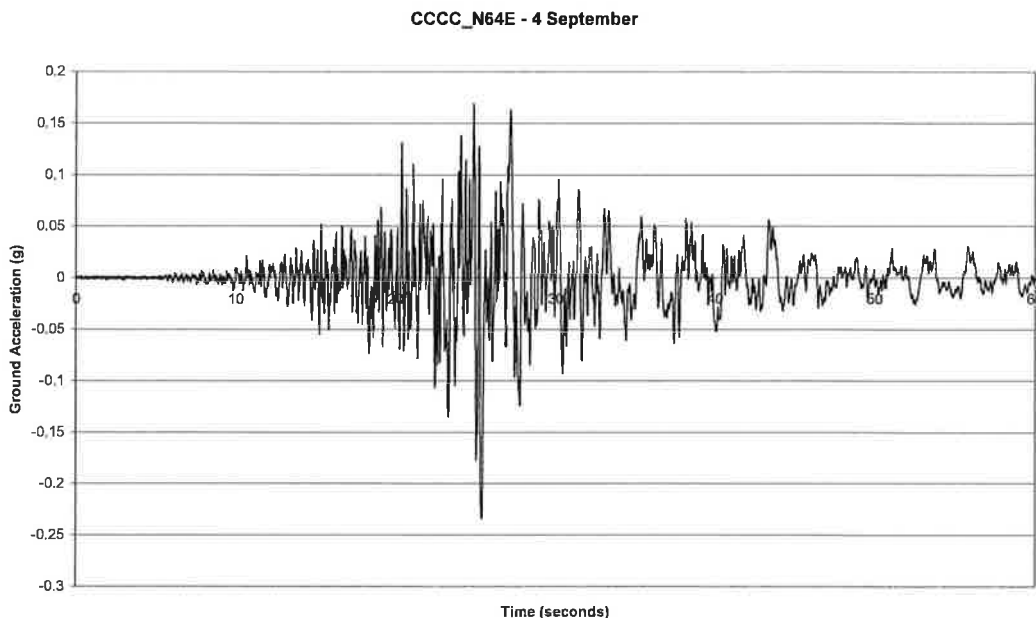
**Figure A-5. Ground Acceleration History.  
Christchurch Botanic Gardens. 4 September 2010- South 01° West Component**



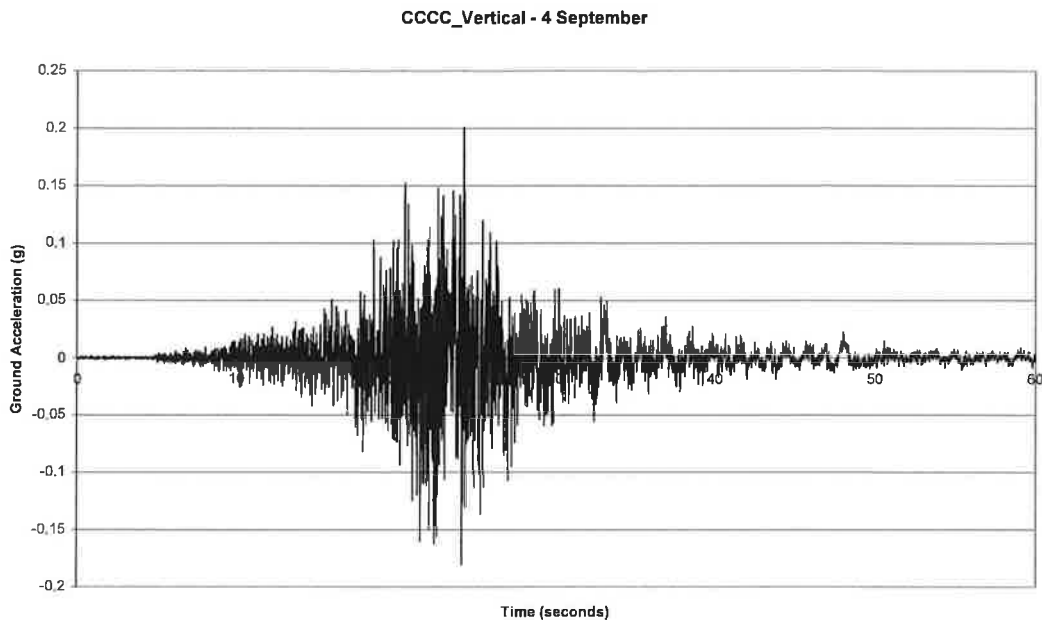
**Figure A-6. Ground Acceleration History.  
Christchurch Botanic Gardens. 4 September 2010- North 89° West Component**



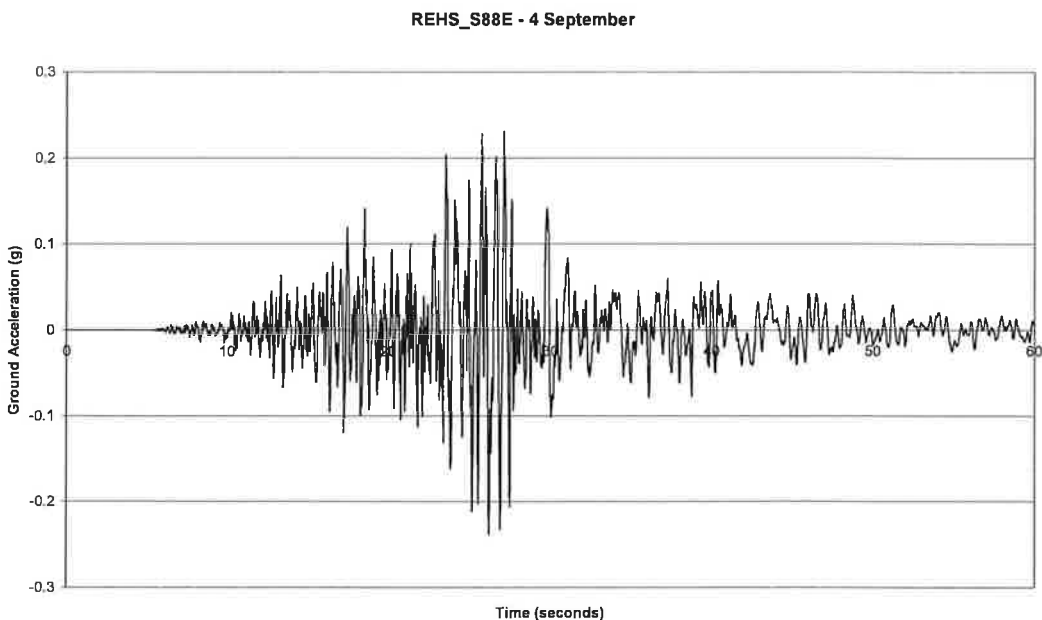
**Figure A-7. Ground Acceleration History.  
Christchurch Cathedral College. 4 September 2010- North 26° West Component**



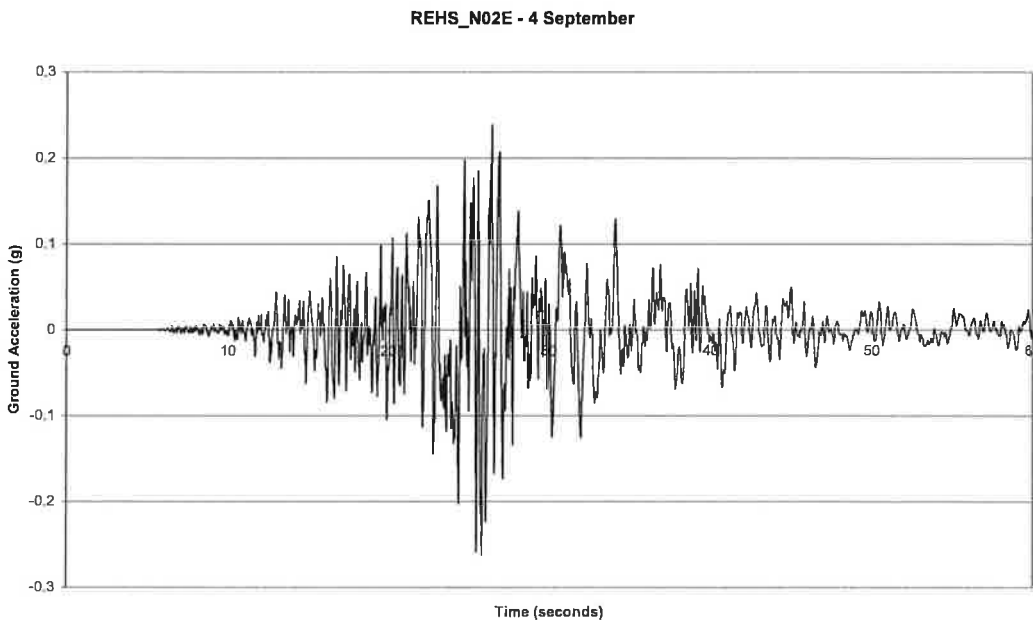
**Figure A-8. Ground Acceleration History.  
Christchurch Cathedral College. 4 September 2010- North 64° East Component**



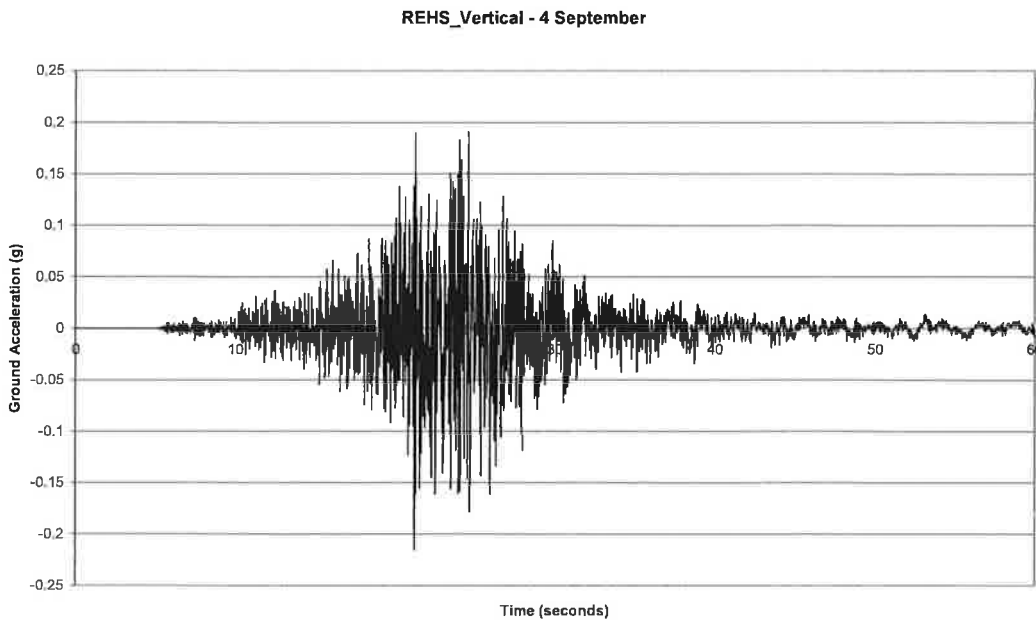
**Figure A-9. Ground Acceleration History.  
Christchurch Cathedral College. 4 September 2010- Vertical Component**



**Figure A-10. Ground Acceleration History.  
Resthaven. 4 September 2010- South 88° East Component**

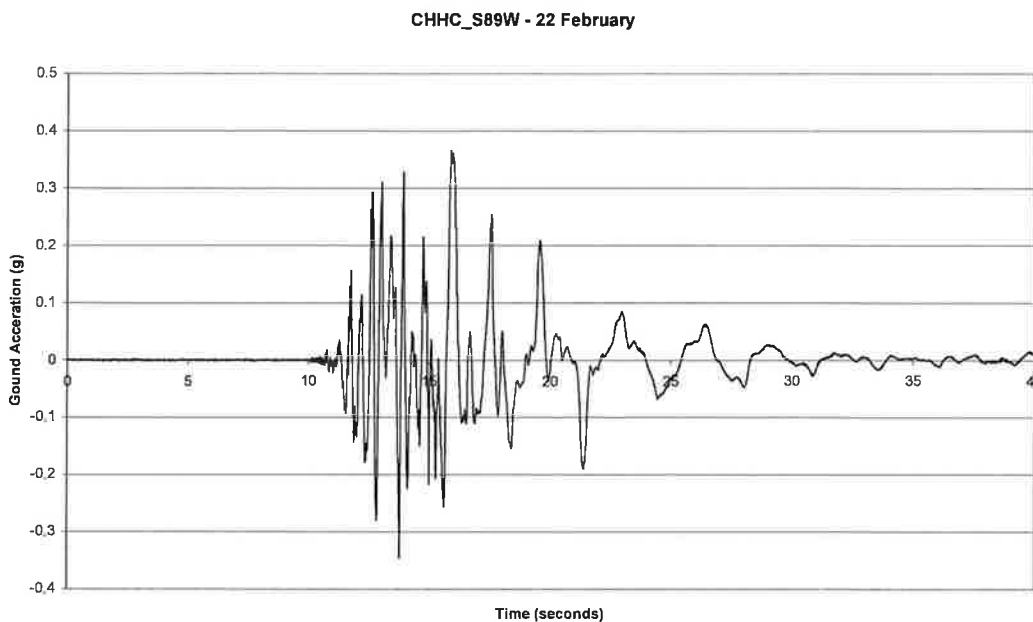


**Figure A-11. Ground Acceleration History.  
Resthaven. 4 September 2010- North 02° East Component**

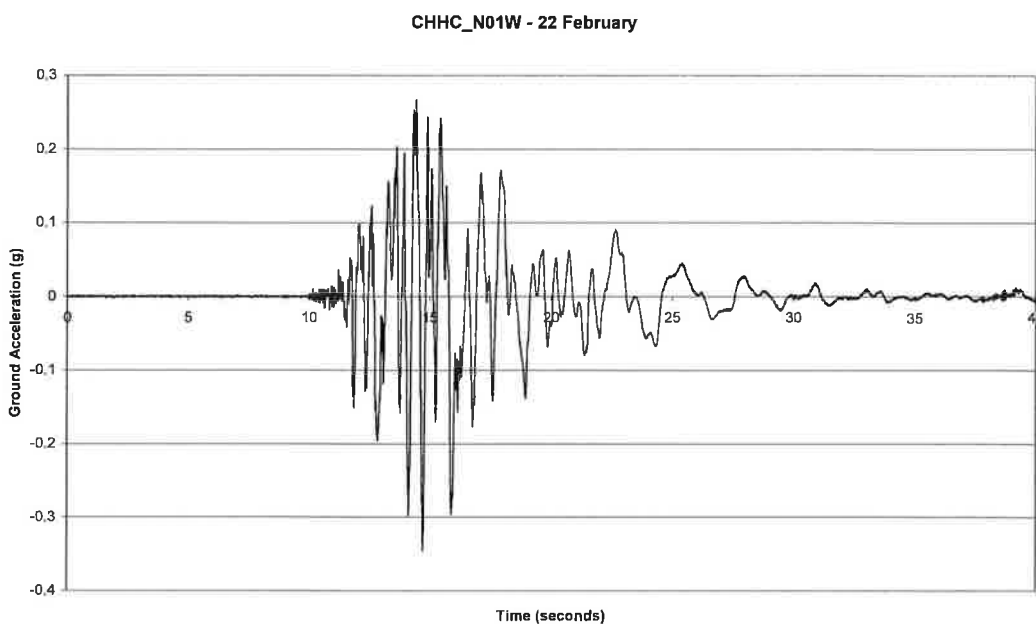


**Figure A-12. Ground Acceleration History.  
Resthaven. 4 September 2010- Vertical Component**

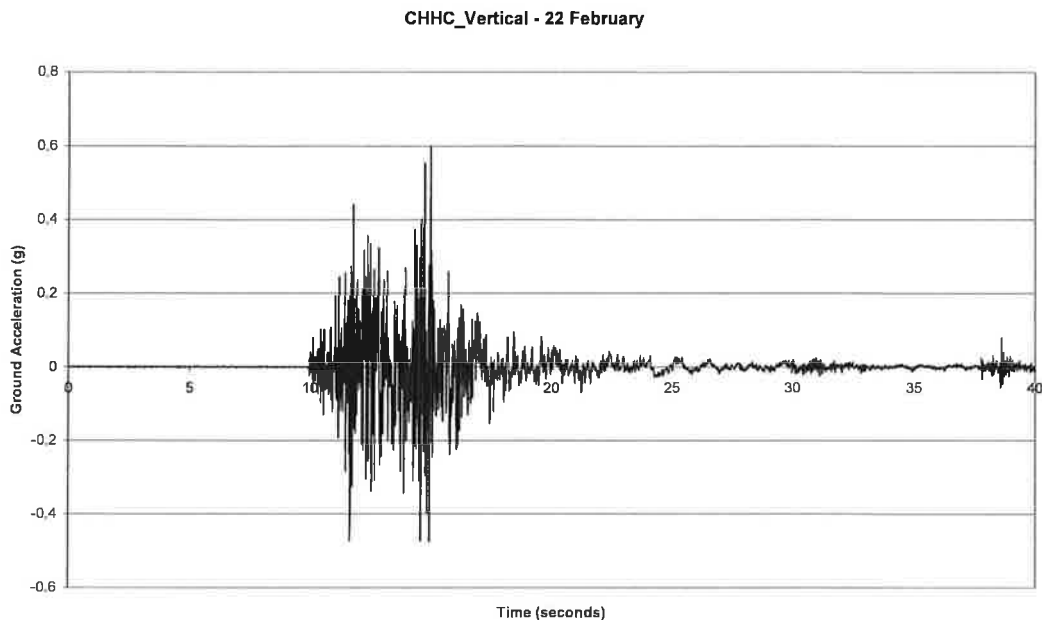
**22 February 2011 Earthquake Ground Acceleration Records**



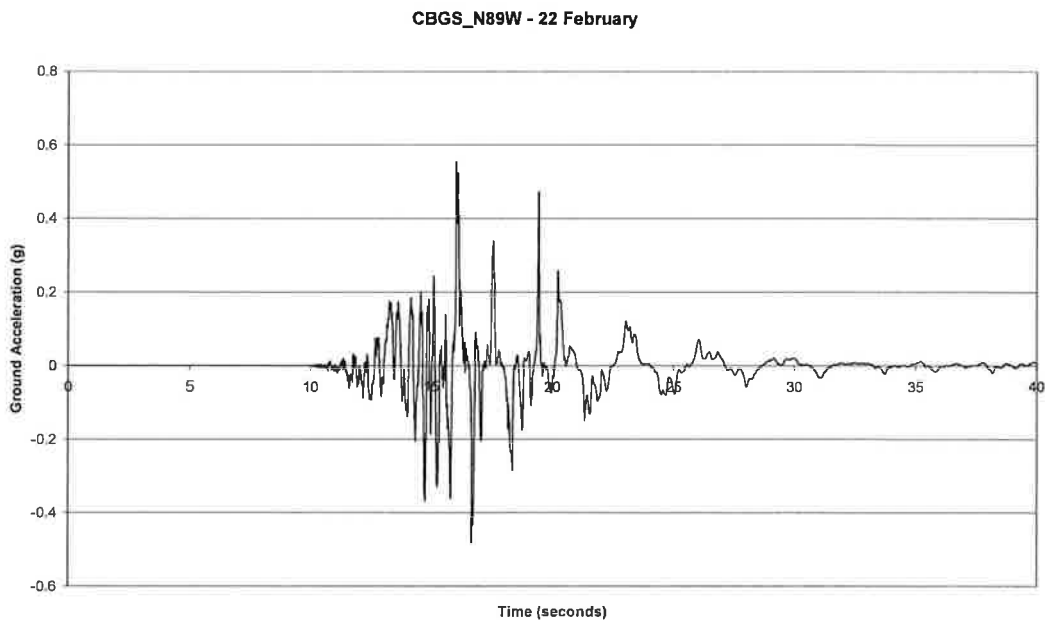
**.Figure A-13. Ground Acceleration History.  
Christchurch Hospital 22 February 2011- South 89° West Component**



**Figure A-14. Ground Acceleration History.  
Christchurch Hospital 22 February 2011- North 01° West Component**

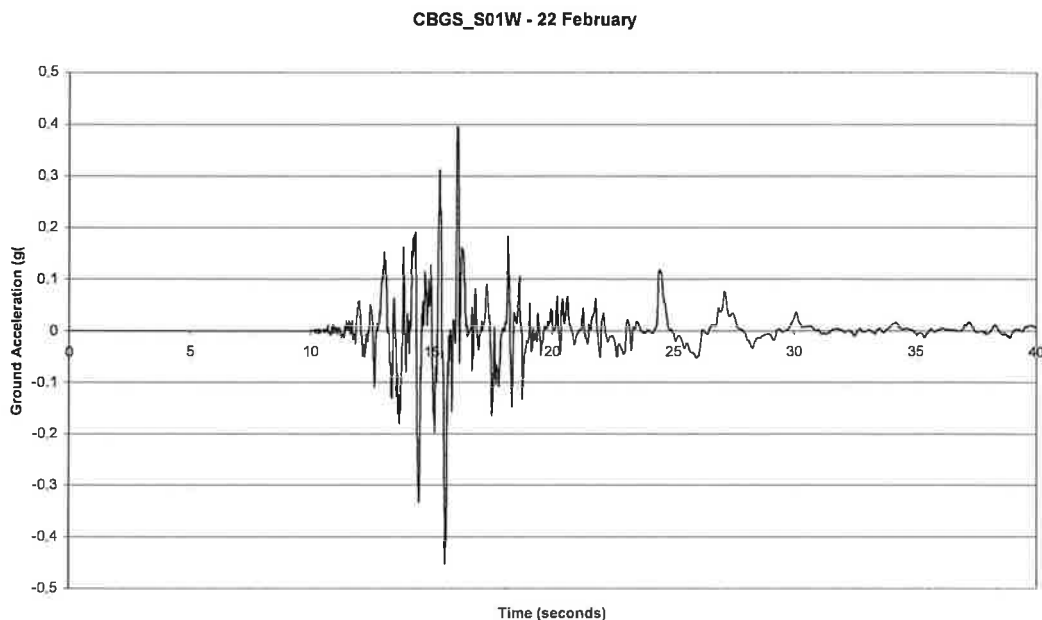


**Figure A-15. Ground Acceleration History.  
Christchurch Hospital 22 February 2011- Vertical Component**

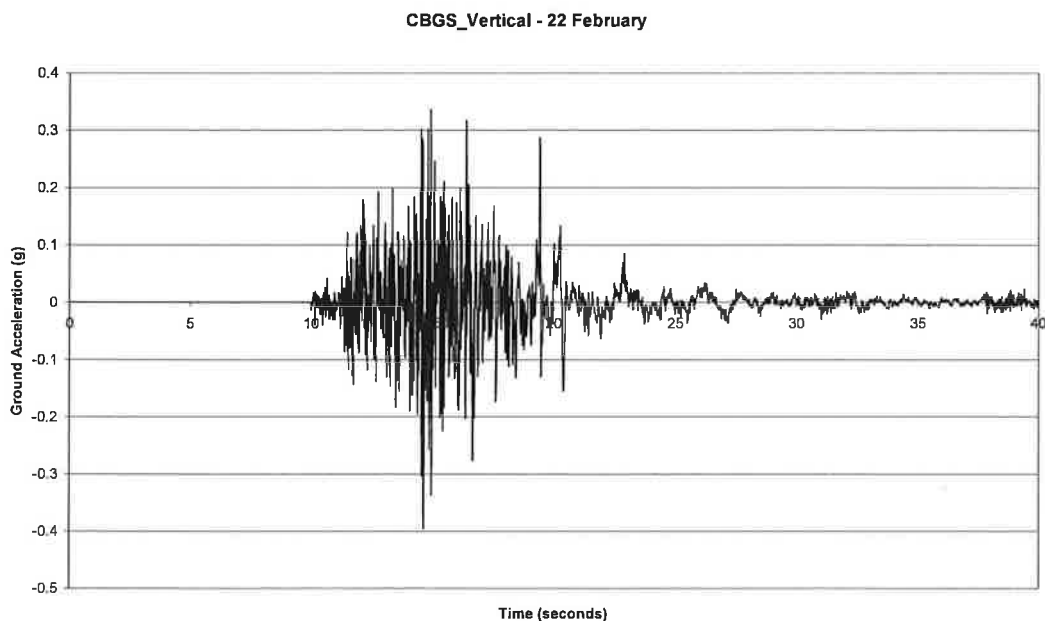


**Figure A-16. Ground Acceleration History.  
Christchurch Botanic Gardens. 22 February 2011- North 89° West Component**

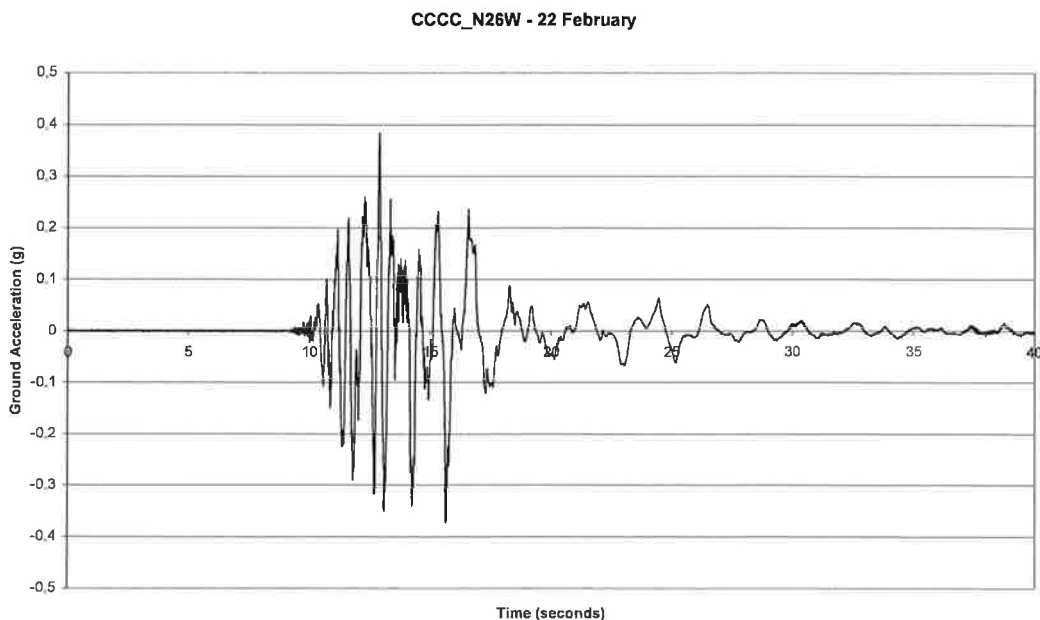




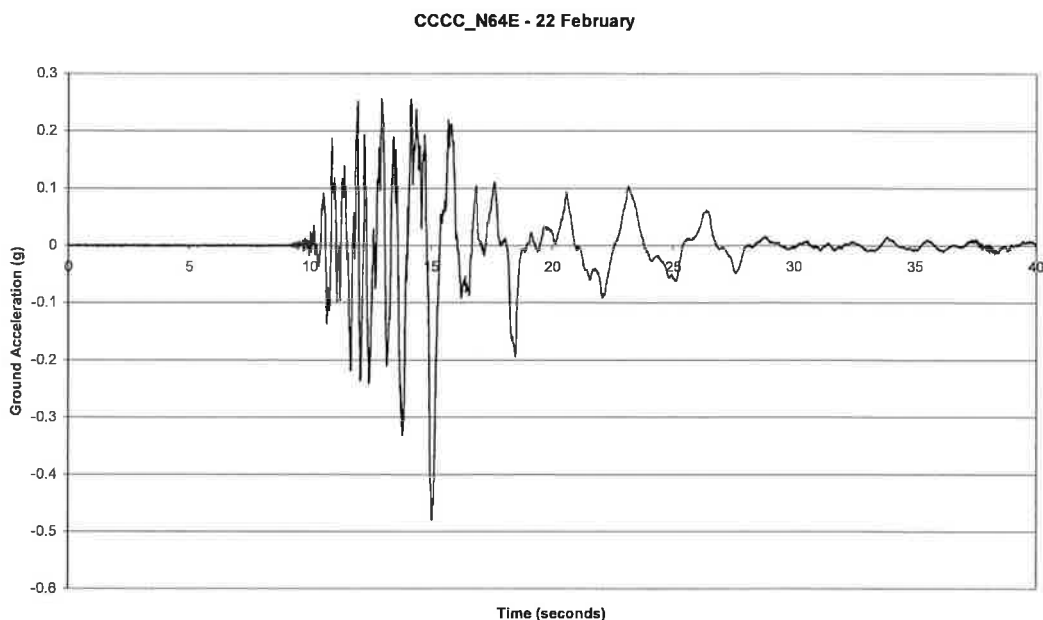
**Figure A-17. Ground Acceleration History.  
Christchurch Botanic Gardens. 22 February 2011- South 01° West Component**



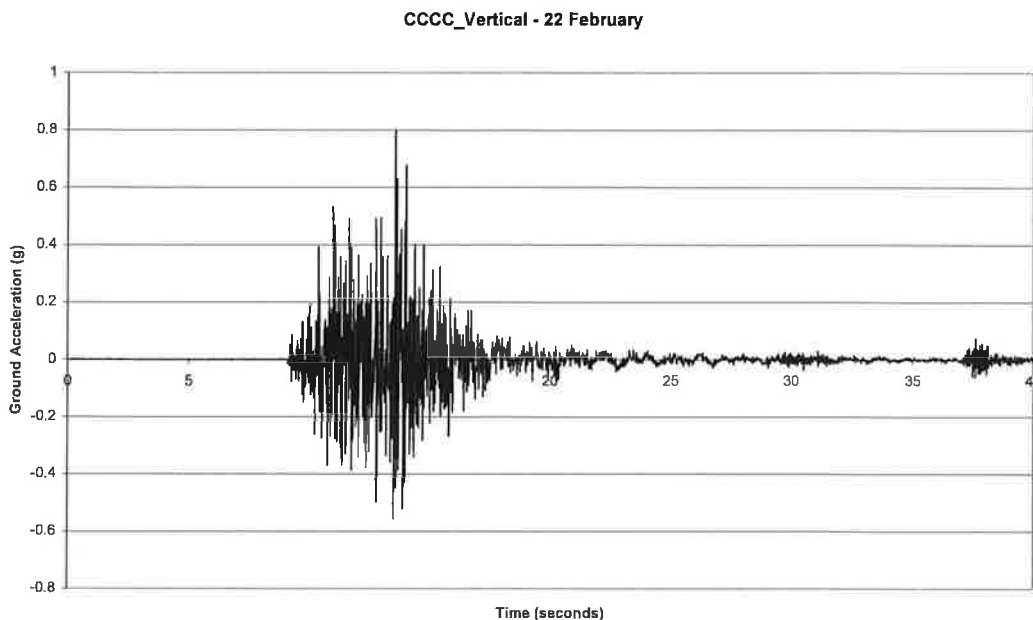
**Figure A-18. Ground Acceleration History.  
Christchurch Botanic Gardens. 22 February 2011- Vertical Component**



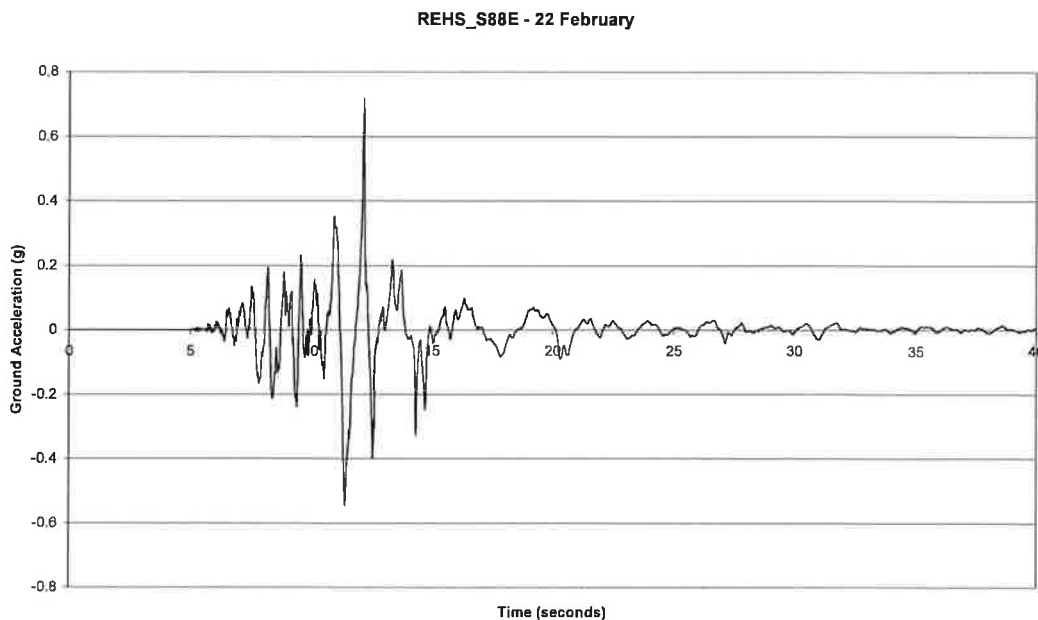
**Figure A-19. Ground Acceleration History.  
Christchurch Cathedral College. 22 February 2011- North 26° West Component**



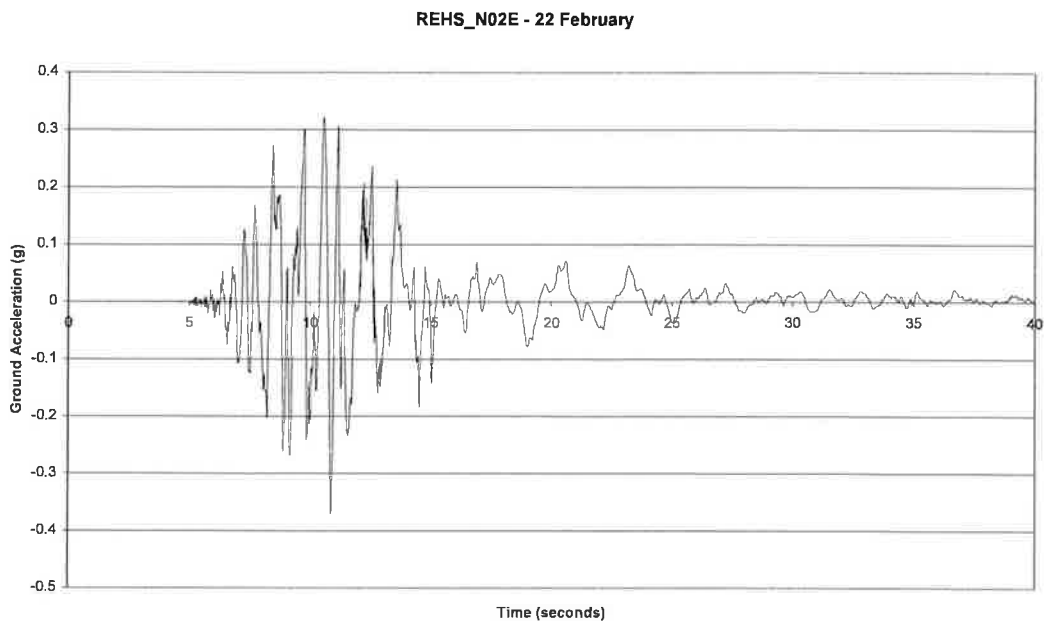
**Figure A-20. Ground Acceleration History.  
Christchurch Cathedral College. 22 February 2011- North 64° East Component**



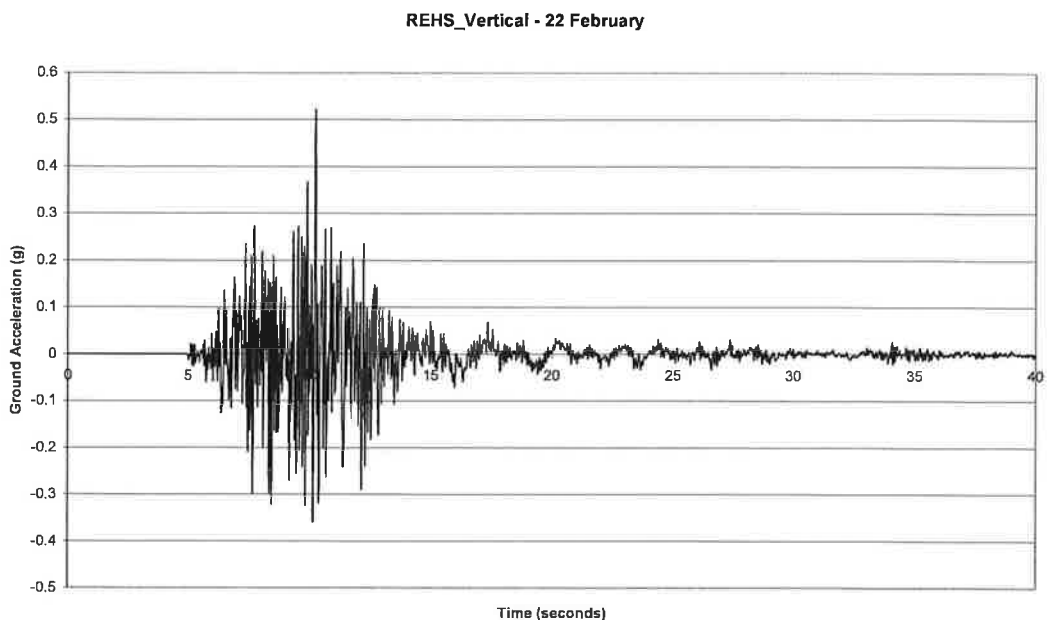
**Figure A-21. Ground Acceleration History.  
Christchurch Cathedral College. 22 February 2011-Vertical Component**



**Figure A-22. Ground Acceleration History.  
Resthaven. 22 February 2011- South 88° East Component**

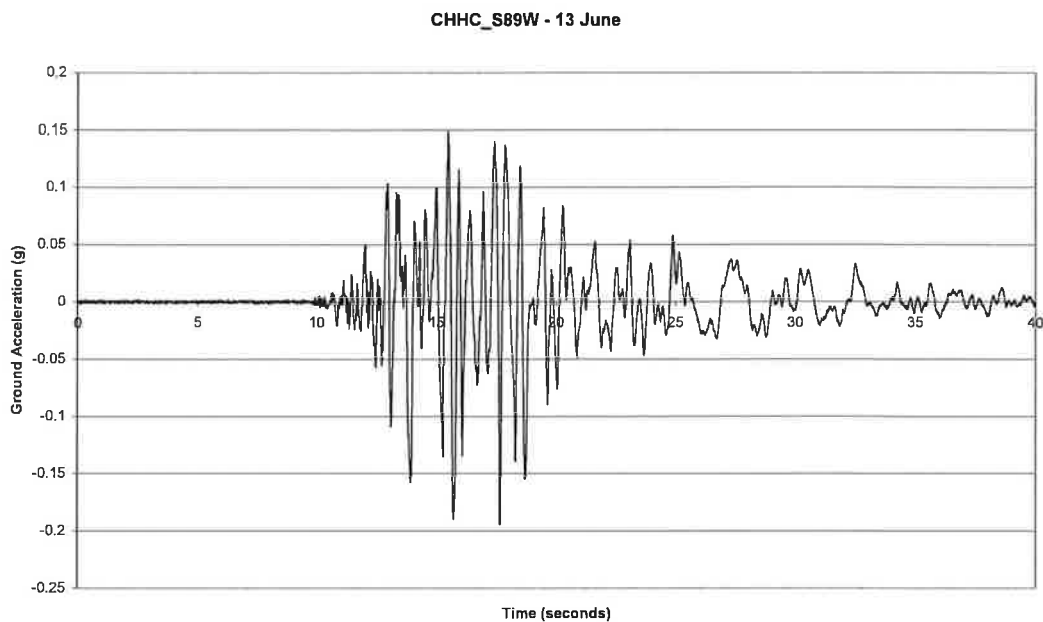


**Figure A-23. Ground Acceleration History.  
Resthaven. 22 February 2011- North 02° East Component**

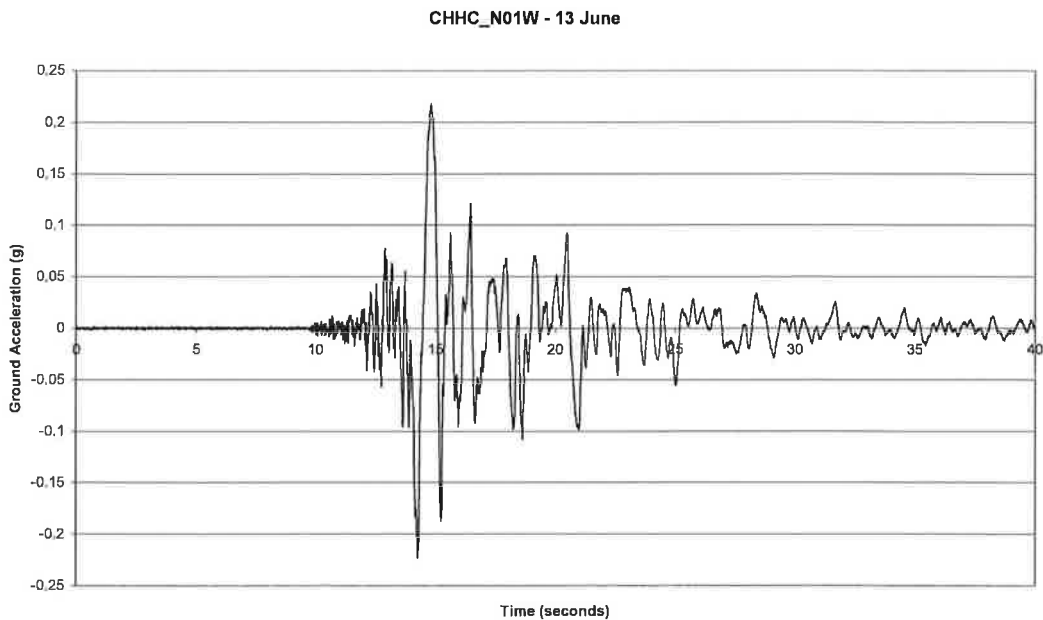


**Figure A-24. Ground Acceleration History.  
Resthaven. 22 February 2011- Vertical Component**

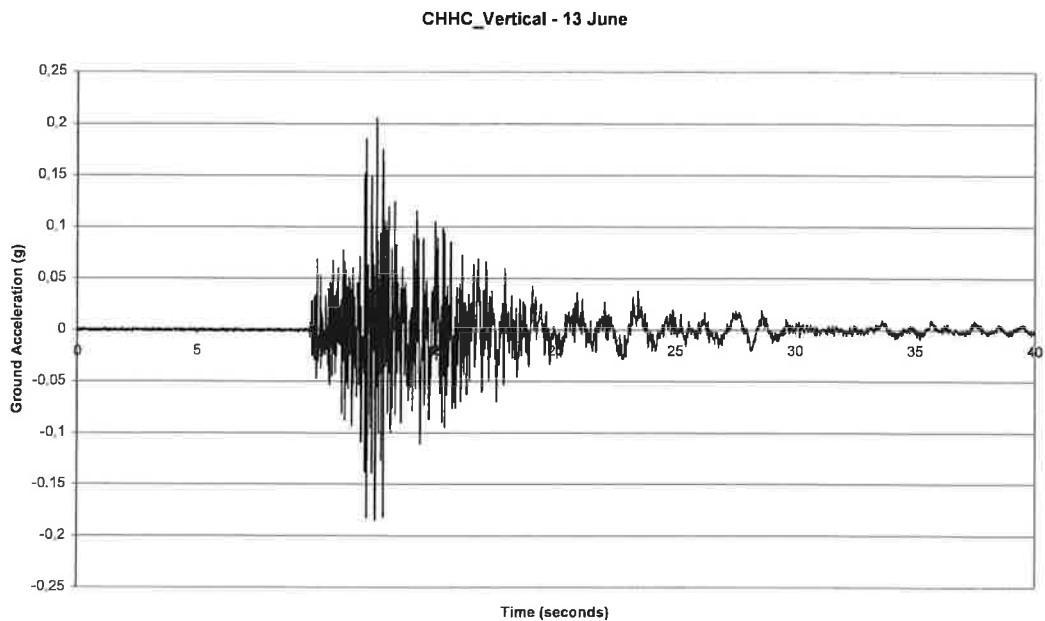
**13 June 2011 Acceleration records.**



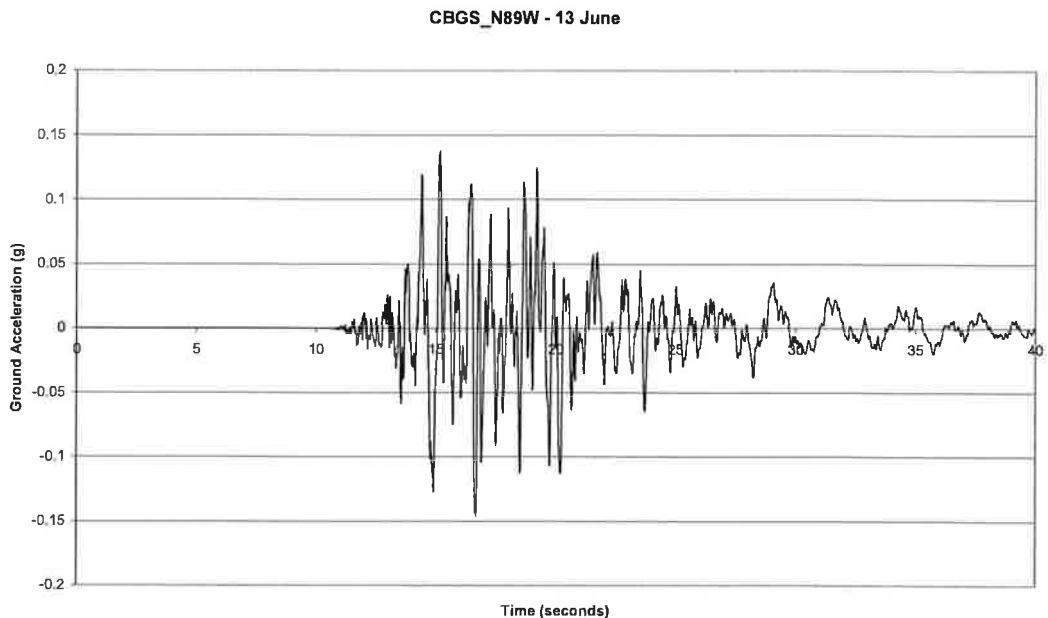
**Figure A-25. Ground Acceleration History.  
Christchurch Hospital 13 June 2011- South 89° West Component**



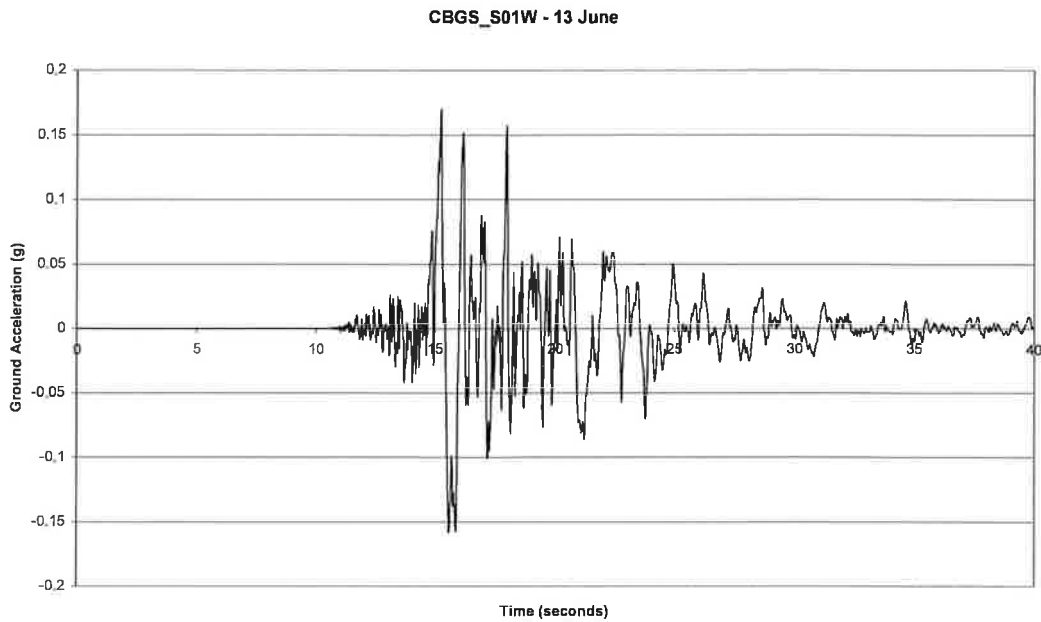
**Figure A-26. Ground Acceleration History.  
Christchurch Hospital 13 June 2011- North 01° West Component**



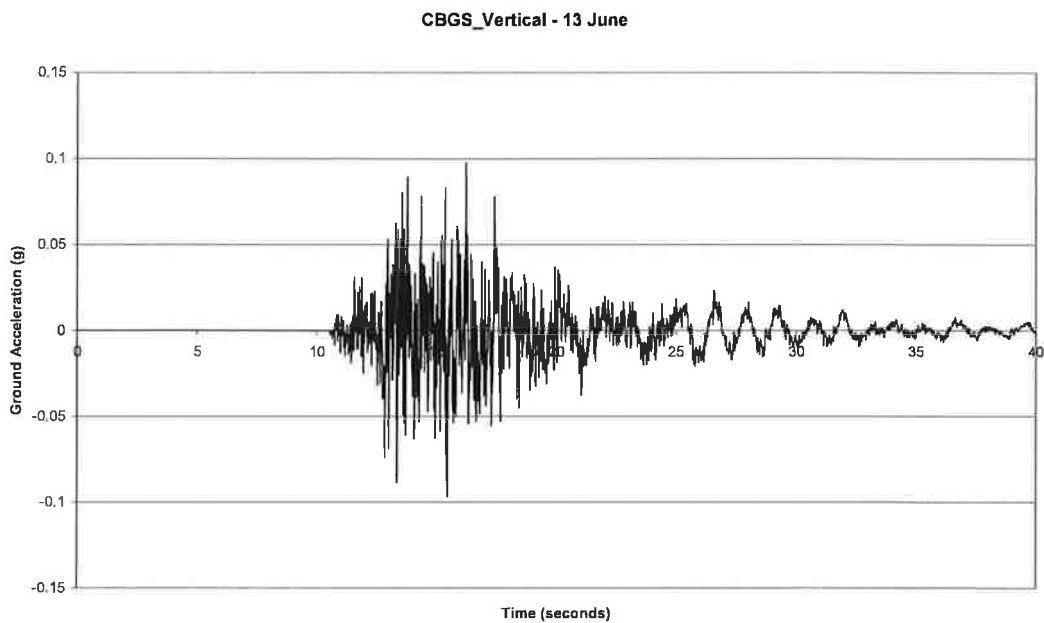
**Figure A-27. Ground Acceleration History.  
Christchurch Hospital 13 June 2011- Vertical Component**



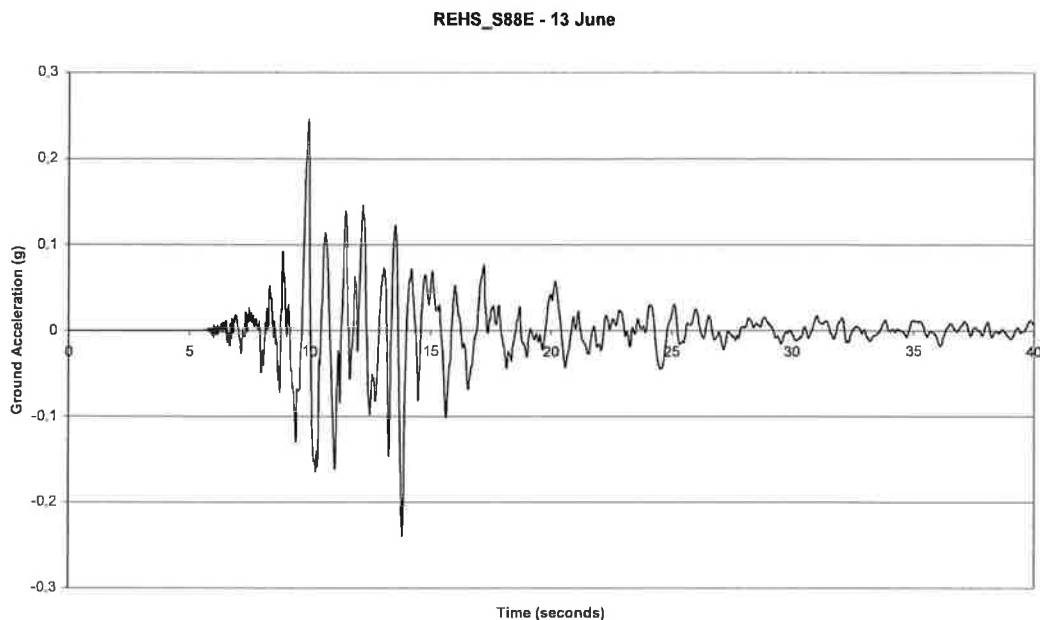
**Figure A-28. Ground Acceleration History.  
Christchurch Botanic Gardens. 13 June 2011- North 89° West Component**



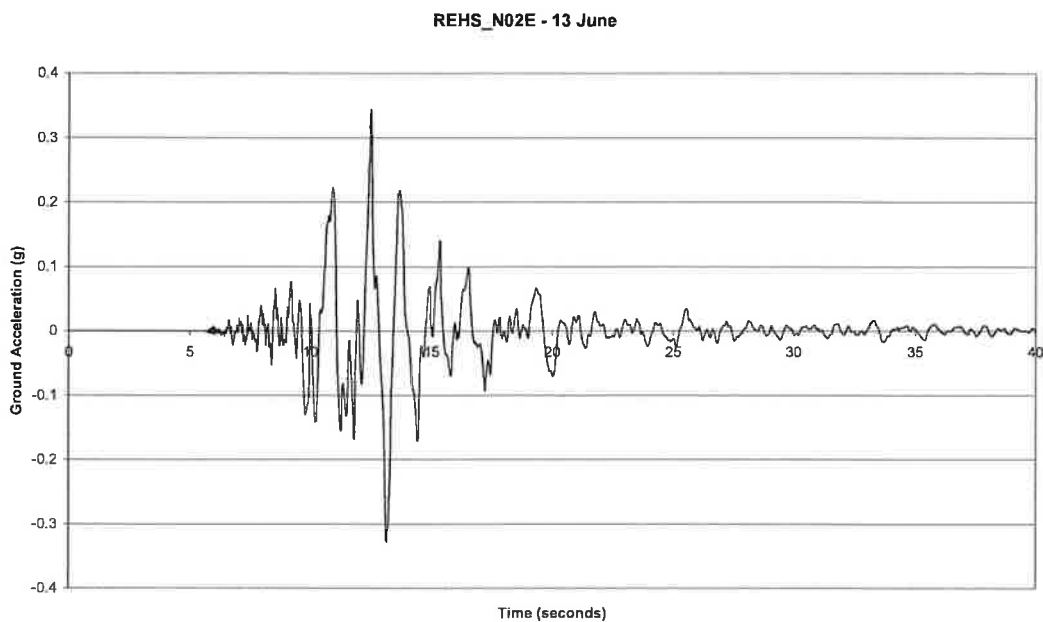
**Figure A-29. Ground Acceleration History.  
Christchurch Botanic Gardens. 13 June 2011- South 01° West Component**



**Figure A-30. Ground Acceleration History.  
Christchurch Botanic Gardens. 13 June 2011- Vertical Component**

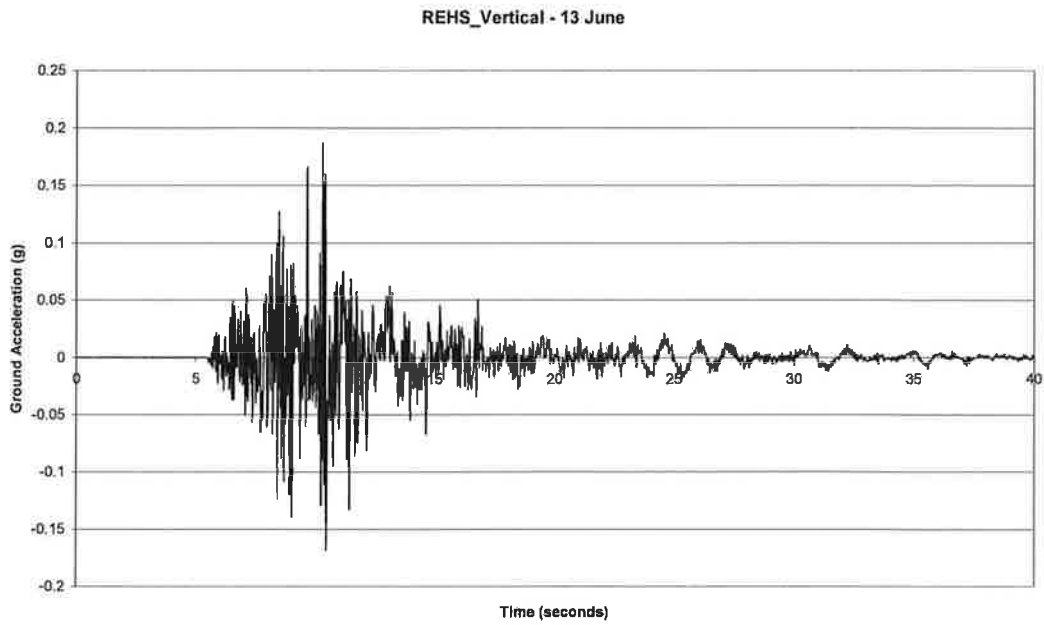


**Figure A-31. Ground Acceleration History.  
Resthaven. 13 June 2011- South 88° East Component**



**Figure A-32. Ground Acceleration History.  
Resthaven. 13 June 2011- North 02° East Component**



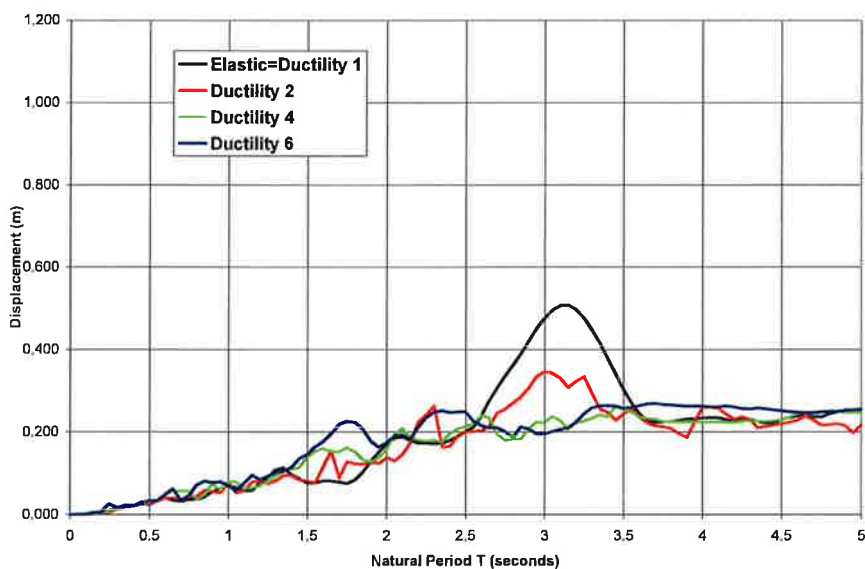


**Figure A-33. Ground Acceleration History.  
Resthaven. 13 June 2011- Vertical Component**

## Appendix B 4 September 2010 Earthquake Horizontal Components

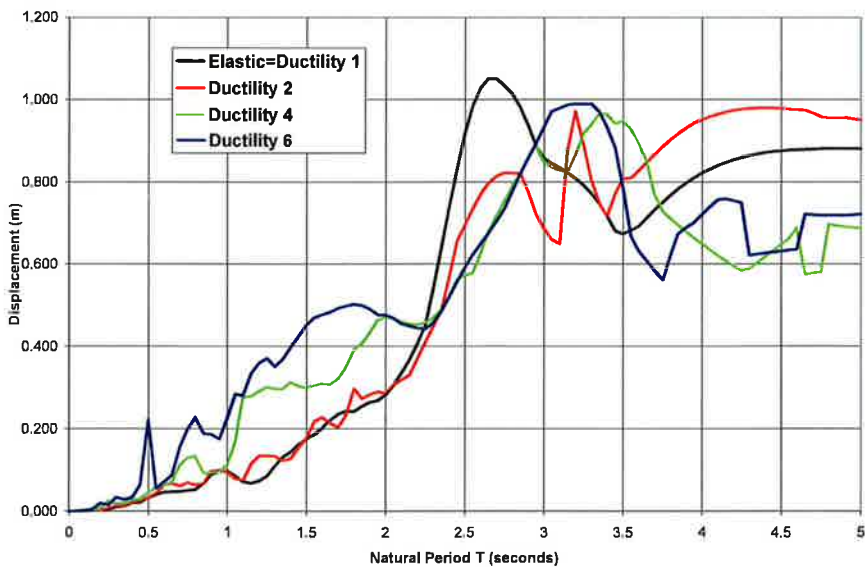
The inelastic displacement and acceleration spectra for the 4 September 2010 earthquake components are shown here.

CHHC\_S89W - 4 September 2010



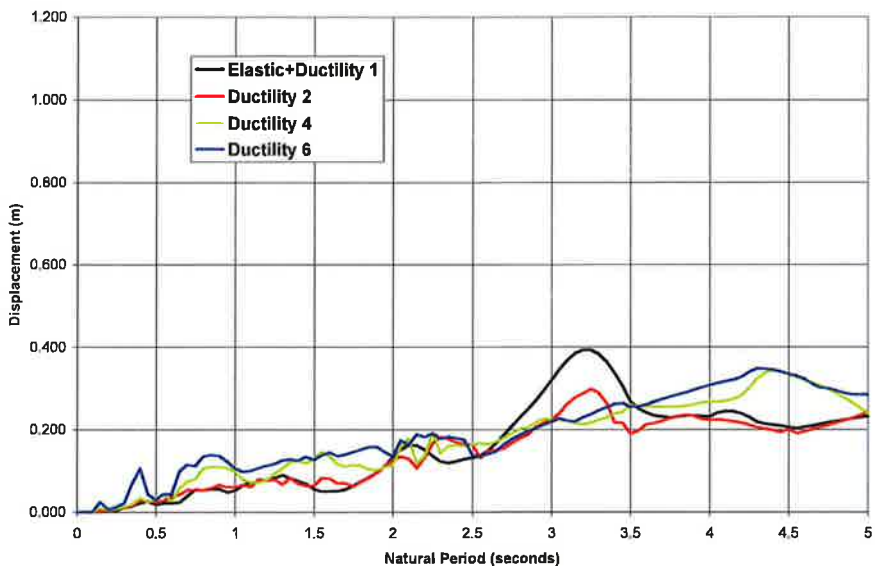
**Figure B-1. Displacement Response Spectra  
Christchurch Hospital, 4 September 2010- South 89° West Component**

CHHC\_N01W - 4 September 2010



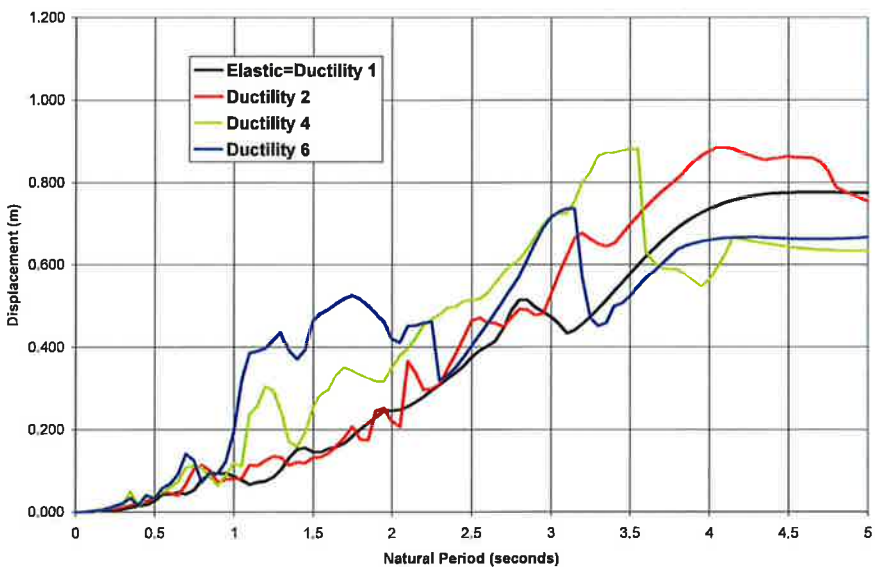
**Figure B-2. Displacement Response Spectra  
Christchurch Hospital, 4 September 2010- North 01° West Component**

CBGS\_N89W - 4 September 2010

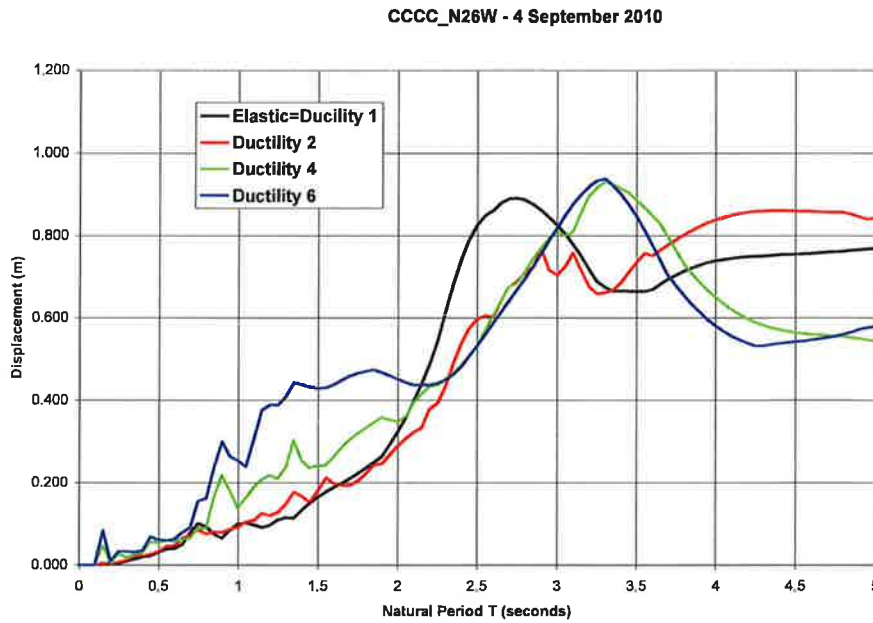


**Figure B-3. Displacement Response Spectra  
Christchurch Botanic Gardens. 4 September 2010- North 89° West Component**

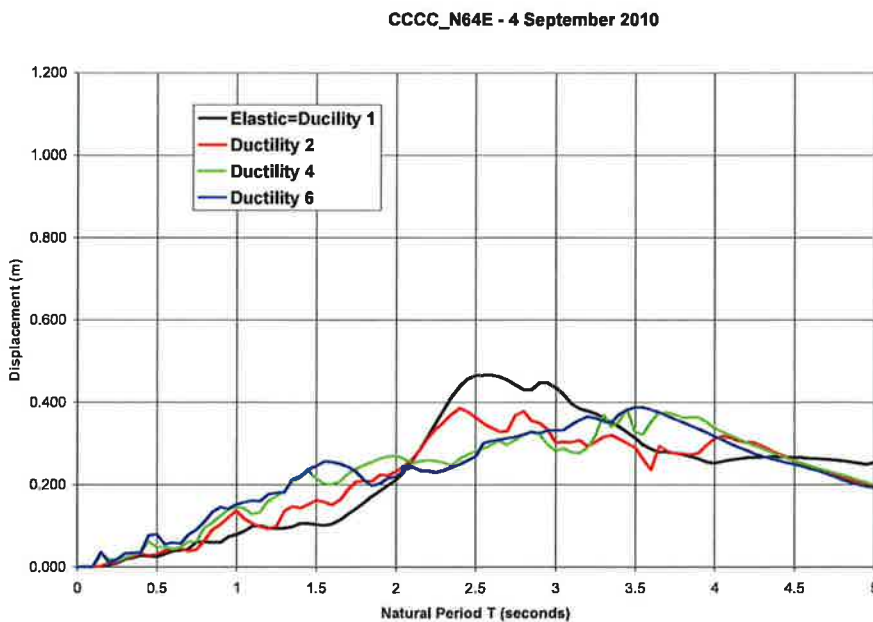
CBGS\_S01W - 4 September 2010



**Figure B-4. Displacement Response Spectra  
Christchurch Botanic Gardens. 4 September 2010- South 01° West Component**

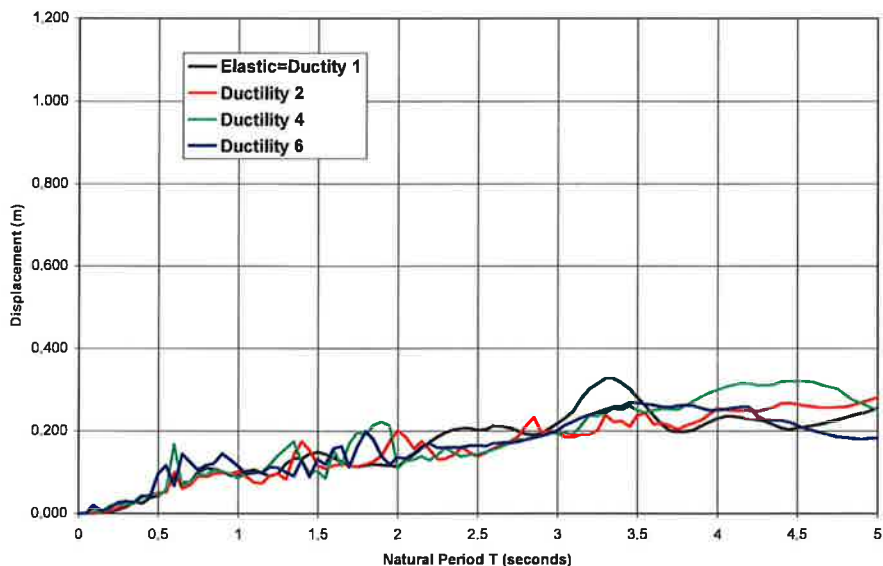


**Figure B-5. Displacement Response Spectra  
Christchurch Cathedral College. 4 September 2010- North 26° West Component**



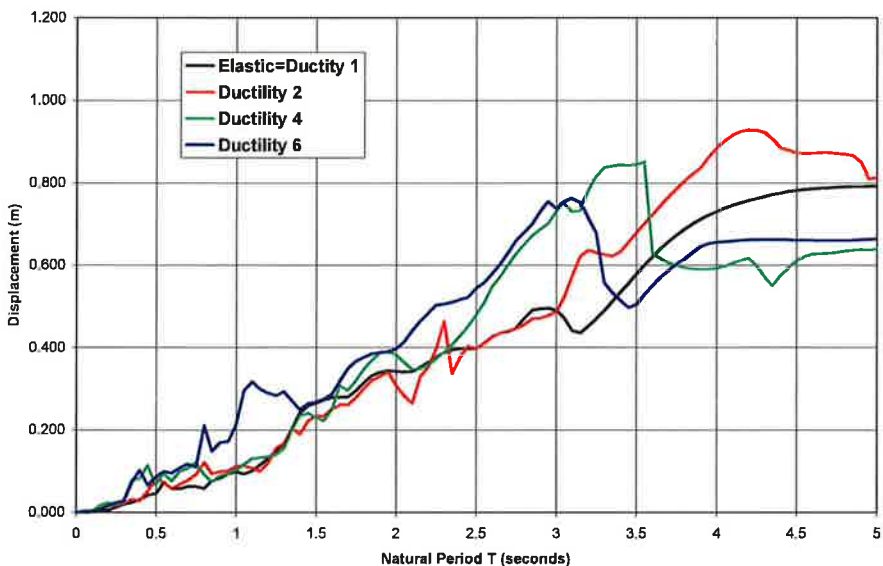
**Figure B-3. Displacement Response Spectra  
Christchurch Cathedral College. 4 September 2010- North 64° East Component**

REHS\_S88E - 4 September 2010



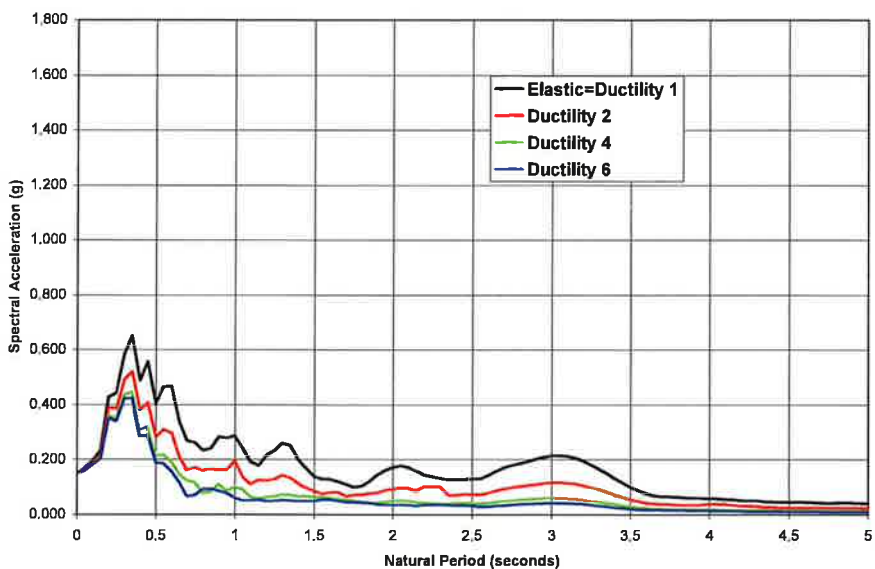
**Figure B-7. Displacement Response Spectra  
Resthaven. 4 September 2010- South 88° East Component**

REHS\_N02E - 4 September 2010



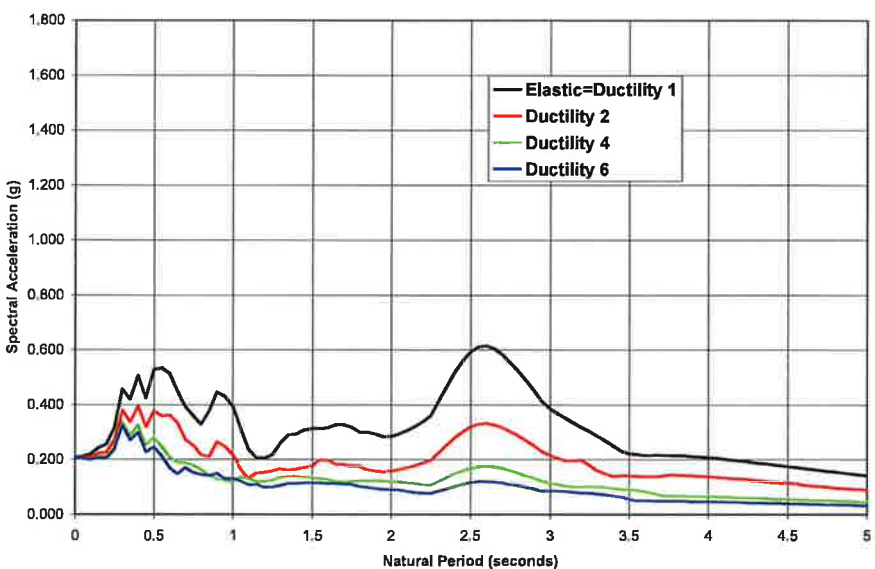
**Figure B-8. Displacement Response Spectra  
Resthaven. 4 September 2010- North 02° East Component**

CHHC\_S89W - 4 September 2010



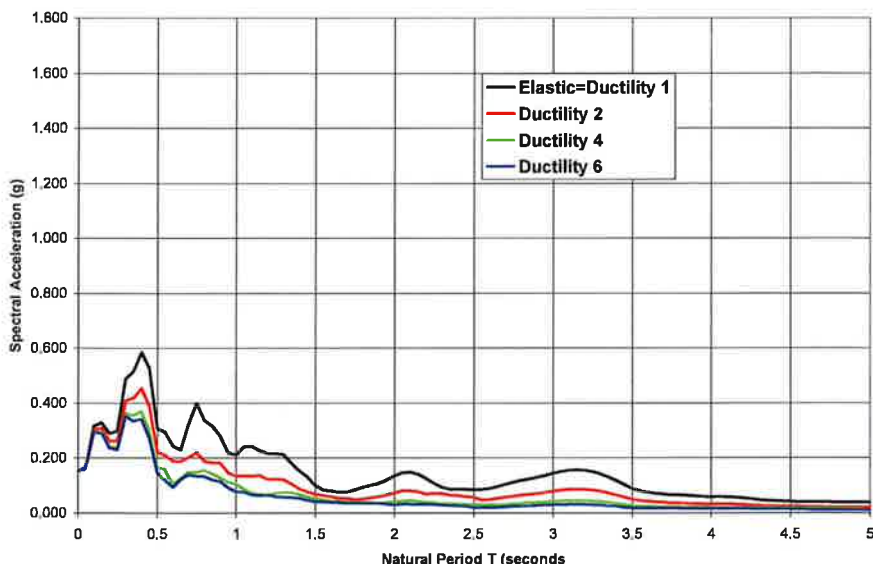
**Figure B-9. Acceleration Response Spectra  
Christchurch Hospital, 4 September 2010- South 89° West Component**

CHHC\_N01W - 4 September 2010



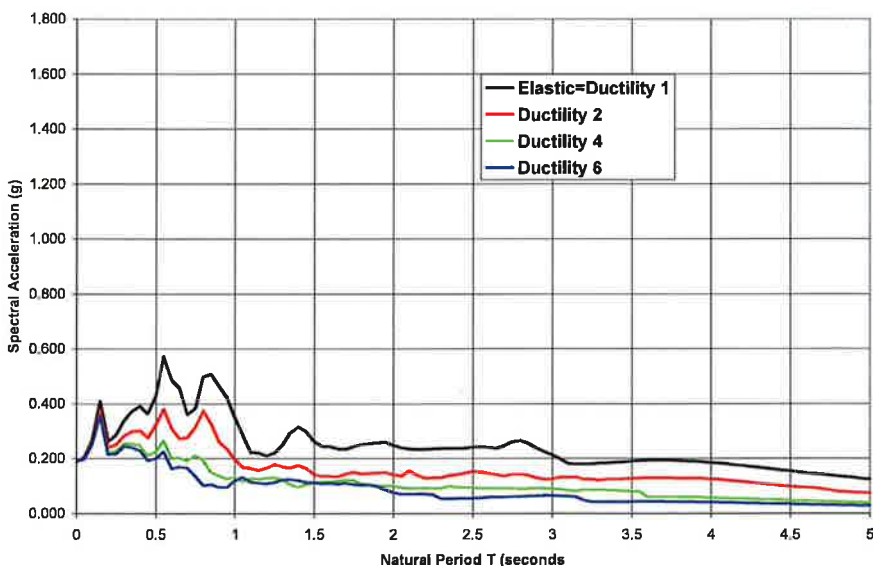
**Figure B-10. Acceleration Response Spectra  
Christchurch Hospital 4 September 2010- North 01° West Component.**

CBGS\_N89W - 4 September 2010



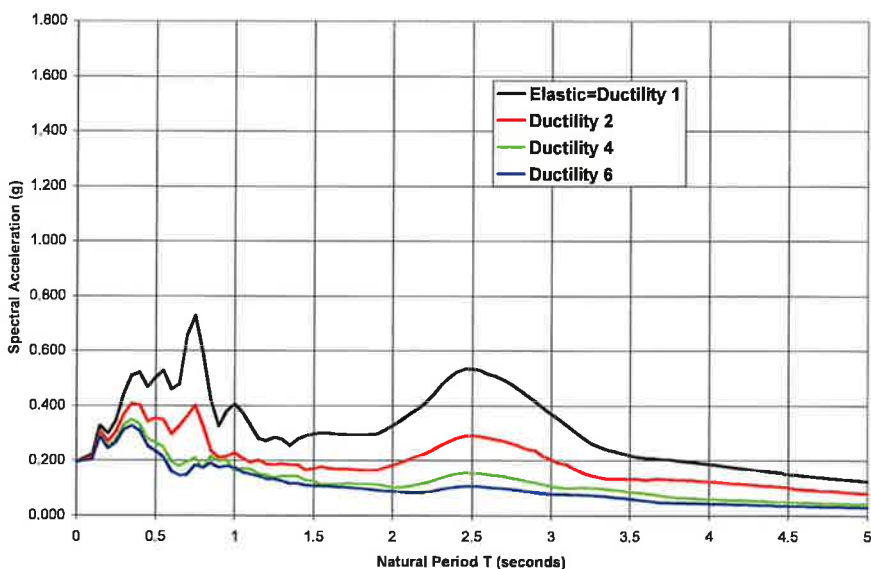
**Figure B-11. Acceleration Response Spectra  
Christchurch Botanic Gardens. 4 September 2010- North 89° West Component**

CBGS\_S01W - 4 September 2010



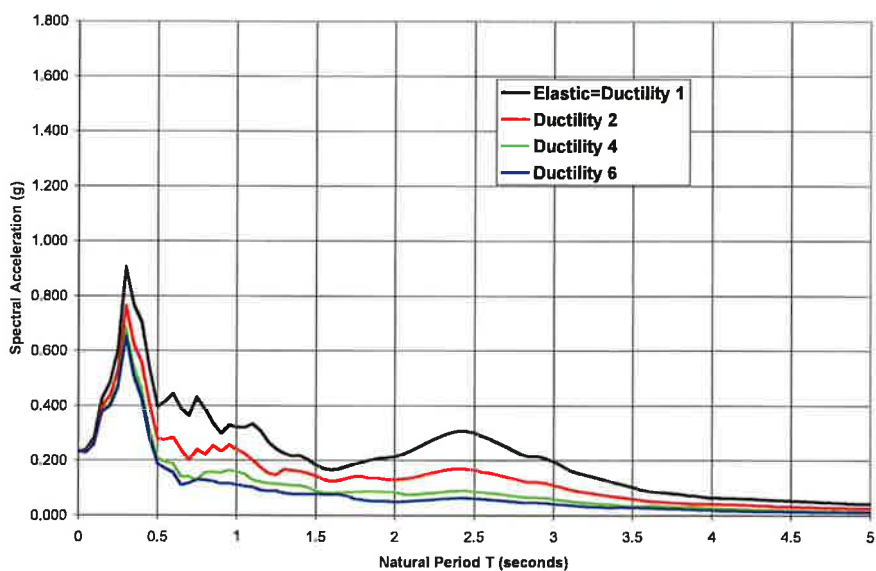
**Figure B-12. Acceleration Response Spectra  
Christchurch Botanic Gardens. 4 September 2010- South 01° West Component**

CCCC\_N26W - 4 September 2010



**Figure B-13. Acceleration Response Spectra  
Christchurch Cathedral College. 4 September 2010- North 26° West Component**

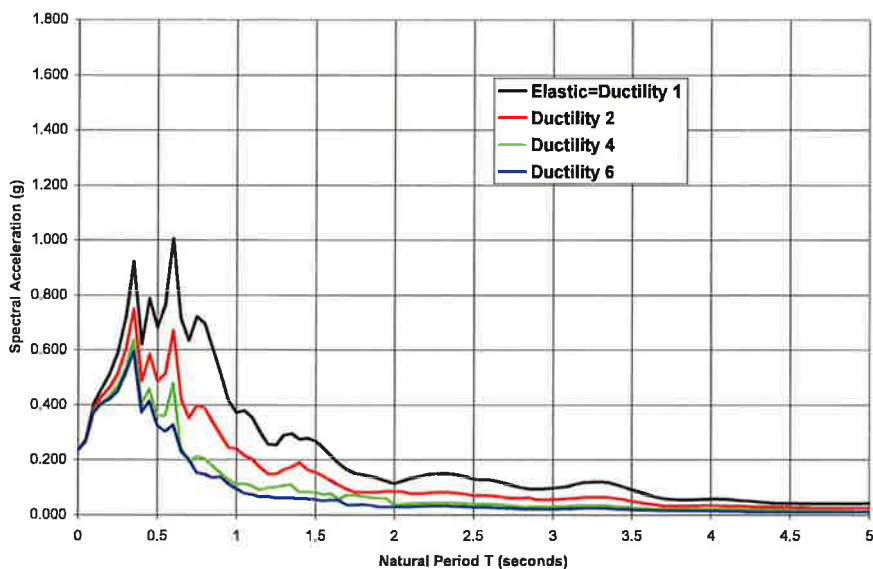
CCCC\_N64E - 4 September 2010



**Figure B-14. Acceleration Response Spectra  
Christchurch Cathedral College. 4 September 2010- North 64° East Component**

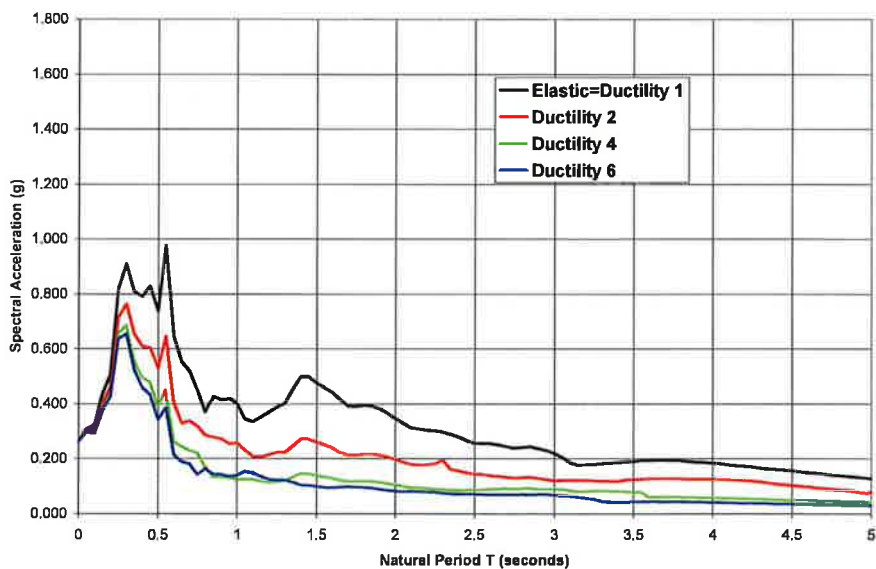


REHS\_S88E - 4 September 2010



**Figure B-15. Acceleration Response Spectra Resthaven. 4 September 2010- South 88° East Component**

REHS\_N02E - 4 September 2010



**Figure B-16. Acceleration Response Spectra Resthaven. 4 September 2010- North 02° East Component**