The largest PGA (601.6 cm/s²) of the Aug. 24th, 2014 M6.0 South Napa earthquake was measured by the USGS’s Northern California Seismic Network (NCSN) station N016 located at Joe’s Brewery on Main St. in Napa. Figure 1 marks the station location on the Google map. The instrument is located in a single-story wood-frame structure as shown in Figures 2 thru 5. Figures 6 and 7 display the instrument at the crawl space. It is mounted to the footing of the building, and oriented along north-south east-west direction.

Figure 1. Google map showing location of NCSN station N016 recorded the largest PGA during the M6.0 South Napa earthquake.
Figure 2. Photo taken from Main St. looking towards north-east.

Figure 3. Photo taken from Veterans Memorial Park looking towards north-west.
Figure 4. Photo taken from Veterans Memorial park looking towards north and north-west.

Figure 5. Photo taken from public parking lot looking towards south-east.
Figure 6. Photo taken from crawl space of Joe’s Brewery showing the GeoSIG accelerograph.

Figure 7. Close up view to the instrument, which is oriented to north-south and east-west direction.
Three-component raw acceleration record of N016 is processed by first removing the pre-event (between beginning of the signal and \( P \)-wave onset) mean from the signal, and then bandpass filtering with 4\(^{th}\)-order Butterworth filter with corner frequencies of 0.1 Hz and 30 Hz. Figures 8 thru 13 plot the acceleration, velocity and displacement waveforms as well as Fourier amplitude spectra of raw and processed acceleration time-series.

Next set of figures (Figs. 14 thru 16) compare the five-percent damped acceleration response spectra of three components of the record with the 2012 IBC design spectrum for SD site condition considering Napa Downtown. Also provided in Figures 17 thru 19 are the displacement spectra.

Figures 20 thru 22 demonstrate the tripartite spectra for three components; marked on these plots are the idealized spectra shown by red dash line; acceleration, velocity and displacement sensitive regions are identified. Note that the velocity-sensitive region, which is directly related to the peak strain energy stored in the system during the earthquake, is unusually narrow, as it is typical in near-fault ground motions.
Figure 8. Acceleration, velocity and displacement time series of east-west component.
Figure 9. Fourier amplitude spectrum of east-west component before and after processing.
Figure 10. Acceleration, velocity and displacement time series of north-south component.
Figure 11. Fourier amplitude spectrum of north-south component before and after processing.
Figure 12. Fourier amplitude spectrum of NC016 up-down component before and after processing.
Figure 13. Fourier amplitude spectrum of up-down component before and after processing.
Figure 14. Five-percent damped acceleration response spectrum of east-west component, and its comparison with the 2012 IBC design spectrum.
Figure 15. Five-percent damped response spectrum of north-south component, and its comparison with the 2012 IBC design spectrum.
Figure 16. Five-percent damped response spectrum of up-down component, and its comparison with the 2012 IBC design spectrum.
Figure 17. Five-percent damped displacement response spectrum of east-west component.
Figure 18. Five-percent damped displacement response spectrum of north-south component.
Figure 19. Five-percent damped displacement response spectrum of up-down component.
Figure 20. Tripartite spectrum of east-west component; together with its idealized version (dashed line); spectral regions are identified.
Figure 21. Tripartite spectrum of north-south component; together with its idealized version (dashed line); spectral regions are identified.
Figure 22. Tripartite spectrum of up-down component; together with its idealized version (dashed line); spectral regions are identified.