Quick Start Guide for CSL using Olson Instruments System – June 2016

1. Equipment needed Computer and Associated accessories in 2 large pelican cases.
2. Spray paint, weight vinyl measuring tape (either 100 or 300 feet long) and cloth rags.
3. When you first get to the job confirm shaft name and number and the cast data (date concrete was placed for the shaft)
4. Next confirm that you have good, safe access for the testing. When standing next to the shaft the top of the CSL access tubes should be around the elevation of your waist or chest.
5. Next take the caps off the pipes and confirm that the water levels are at least above top of concrete. If not, the contractor will need the fill the tubes with the warmest water available.
6. With the hand-held steel measuring table measure the height in inches that each tube extends above top of shaft concrete. The value is call “tube stick up). Record these measurements on the handwritten field log.
7. Measure and record the horizontal spacing in inches using the steel tape for each tube combination.
8. Observe the cloth tape for tears near the weight and reinforce with additional tape if necessary. Also check that the tape has its full length intact. Place the tape in each tube and place the weight at the bottom of a given tube. Remove any slack and record the depth reading on the tape relative to the top of the pipe. This is the total tube length. Measure the total length of each tube and record values on the field sheet. Compute the difference between total tube length and stickup in order to record net embedded length. This is the length of tube that is below top of concrete.
9. Draw a sketch on the field sheet of how the relative tube positions appear on the shaft. Designate the northernmost tube as Tube 1 and spray paint the exposed portion. The remaining tubes are numbered in a clockwise direction from Tube 1.
10. Connect each probe to a cable using lithium grease on the connector thread if needed. The grease should be in the CSL case.
11. Lower each probe gently to the bottom of your first tube pair (1 and 2) being careful to avoid a hard impact that could damage the piezoelectric crystal in the probe. Pay out enough cable slack and set up the tripod outside the shaft perimeter. Next plug in the yellow cables between the CSL computer and the female connector on the hub of each cable reel. The transducers can function as either a transmitter or receiver (this is not the case for the PDI system) and is determined by how each cable reel is plugged into the field computer. The yellow cable with the 2 phono plugs connect between a reel and the pulse out port on the computer (lift the flap cover to expose the female connector), The other yellow cable will have only 1 phono plug for the reel. The other end is a 3 pin female that connects to the 3 pin male connector at the top right hand side of the computer (CSL Channel).
12. Spin the threaded base plate for the depth wheel onto the threaded bolt on top of the trippod. Orient the side of the depth when with the stainless steel guide prongs to the shaft (the open side of the wheel will be toward you).
13. Next plug the long yellow cable with the 2 female 3 pin connectors between the depth wheel (bottom of the housing that protrudes from one side of the wheel) and the computer (near the pulse out connector). Be sure to line up the pins properly to avoid damage and ensure proper function.
14. Turn on the computer by pressing and hold the flat on switch.
15. There should be an icon for the Olson CSL system on the desktop.
16. In the program enter the name of the shaft e.g. Pier 1 Shaft 2. You will also need to confirm the directory the file is being saved to and create a project director such at King Construction Osage County.
17. The values to be entered for tube length and stickup will be an average or typical value for the shaft. Hit “Tube Spacing” and enter your horizontal tube spacing measurements.
18. When all of your entries have been made hit “View Signal”. This should put you in the portion of the program where you see and empty data plots on the left hand side of the screen. Push the small vertical “test” switch in the lower right corner of the computer to generate a test signal. You will only need to hold this switch down for a few seconds and you should see a waveform in the middle right-hand side of the screen. If not, double check all of your cable connections. If this still does not work, take off all the cables and reconnect everything step by set. Make sure the each of the yellow cables go from a given reel to a different port on the computer from the other one. **Make sure also that the toggle switch near the test button stays on the “normal” position at all times.** Also check that the waveform fills about two thirds of the vertical plot scale. If the amplitude is too low (say less than 2 volts) the signal gain will need to be increased. If about one third or more of the waveform is off the plots (greater than +/- 10 volts) the signal gain will need to be decreased. It is best to pull the cables up from the bottom of the tubes a few feet and checking the test signal again before setting the gain at that point. This is because the shaft bottom is least likely to present the condition throughout most of the shaft. If you need to change the gain press F2 and changes the gain within the available increments (see drop down edit box in dialog). For shafts under 4 feet in diameter you would typically use a gain of 100 for perimeter combinations and 200 for diagonal combinations. For 5 or 6 foot diameter shafts you would likely use double these values. For larger shafts gains for the diagonal combinations might be 1,000. Avoid using this higher gain if possible and never exceed a gain of 2,000. Keep in mind that you can readjust or gain setting for each of the subsequent survey combinations.
19. Once your gain is set press “Start Recording”. Slowly (no faster than 2 feet per second) pull the pair of probes up for the bottom to top of shaft. Data should be populating the main plot window and the waveform plots will change from record to record. The system is set up to collect one record for every 2.2 inches of vertical distance that the cables are pulled through the depth wheel.
20. Avoid starting and stopping within the survey for a given survey combination if possible as extra signal noise can be generated. When you reach the top press the “finish and save” button. Review your main data plot to check for reasonableness and completeness. Record the number of data records for the tube pair on your field sheet. Then hit the “Next Tube Pair” button to get ready for data collection for the next combination.
21. Move the probes to the next survey combination. The next combination is 2-3 so you would only need to move the probe that is in tube 1 into tube 3. Repeat the previous steps to complete the data collection for all survey combinations.
22. After completing the data collection go back to the main menu to “Review” data. Confirm that you have a complete set of data for the full shaft length for all combinations. The total number of records should be within a few percentage points of each other assuming there was no large disparity in measured tube lengths.
23. Copy the data from the field computer. Post the data to the FTP site or email it to me and Justin along with a photo of your field log.