



# BUILDING A BETTER I-4

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## Pile Driving: Building a Foundation for I-4 Ultimate

Every large structure built in the I-4 Ultimate project needs to have a solid foundation to support its massive bulk.

Bridges that must bear the weight and pounding of large trucks and other vehicles for decades to come require a strong underground support structure. That, of course, must be deeper and much sturdier than the familiar concrete-block-foundation walls of a typical house.

Interstate structures rely, instead, on underground pillars made of concrete or steel – known as piles. Piles often need to be sunk more than 100 feet into the ground to ensure safe, stable foundations for bridges and overpasses.

The only way to get those support pillars deep into the ground is by pile driving. Fortunately, there are techniques that can lessen the noise and vibration caused by that activity.

### *Vibratory Pile Driving*

Wherever possible – especially in areas of soft or loose soils – pilings can be “vibrated” into the ground rather than driven using a hydraulic or diesel-powered hammer.

A special machine transmits vertical vibrations to a steel piling as it moves downward. While not an exact analogy, the method could be likened to shaking a butter knife while pressing it into packed sand. This lessens noise in the area and impact to the ground.

However, even when using vibratory technique, it often is necessary to switch to the pile-driver



hammer during the last few feet to set the piles solidly in place.

### *Precautions, Monitoring and Seismographs*

For the most part, pile driving will take place during daylight hours.

When it is impossible to perform those operations during the day, the nighttime activity will be monitored for noise levels. The Florida Department of Transportation has set a limit of no more than five decibels over the baseline, or typical, noise levels for the area for a cumulative period of two minutes over a 20-minute span.

Prior to pile driving, a structural survey of nearby buildings will be performed.

Seismographs, which measure ground vibrations, will be placed between the pile driver and homes and businesses in the area.

The seismographs have cellular connections that send out alerts to supervisors, if the vibrations rise above a predetermined level. Because people are very sensitive to ground vibrations, the seismographs are set to alert at levels that are much lower than those associated with structural damage.

For more information on this subject go to:  
[i4ultimate.com/pile-driving](http://i4ultimate.com/pile-driving)



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