## Project Title:
Noninvasive Assessment of Existing Concrete

### PennDOT Technical Advisor:
Ronald Schreckengost

### Project Duration:
February 2015 – February 2016

### Project Purposes:

Project purposes are to:

The purpose of this project is to demonstrate the validity of the use of highly nonlinear solitary waves (HNSWs) as a nondestructive method of measurement of the early-age strength development in concrete pavement, and to verify if the same technology can be used for the determination of the compressive strength of existing concrete in a bridge deck.

### Anticipated Outcomes:

Anticipated project outcomes include: Currently the Department measures compressive strength of concrete by destructive methods at specified intervals during a curing period for fresh concrete. For aged concrete, concrete cores are obtained and tested by destructive methods as well to determine compressive strength. The anticipated outcome is the development of a non-destructive method to determine the compressive strength of concrete of fresh concrete and existing concrete. Knowing the rate of strength development at an early age may be beneficial in establishing timeframes for construction related activities, such as when to open a roadway to traffic on newly placed concrete. The District hopes the procedure could be used to map out concrete strengths across entire existing deck surfaces to identify strength deficiencies. This could be used to help determine the need for future maintenance of the bridge decks and programming of funds for rehab or preservation projects.

### Implementation Plan:

Project results were disseminated by posting the research project Final Report on the PennDOT Research Division website. Additionally, electronic copies of the Final Report were sent to all state DOT transportation libraries, PA Turnpike, and FHWA and other national repositories such as the National Transportation Library, National Technical Information Service, and the Transportation Research Board Library (TRID).

### Research Partner:
University of Pittsburgh

### Principal Investigator:
Piervincenzo Rizzo

### Project Cost:
$132,035.00