# 50 ksi Steel H-Pile Capacity

## Project Title:
50 ksi Steel H-Pile Capacity

## PennDOT Technical Advisor:
Charles Carey

## Project Duration:
May 2014 – June 2015

## Project Purposes:

Project purposes are to:

- Re-evaluate the adoption, with the objective of potentially extending the utilization of $F_y = 50$ ksi for the structural capacity of steel H-piles (so-called HP sections) for bridge foundations. Specific consideration is given to the current capacity equations, $P_n = 0.66A_sF_y$ and $P_r = 0.33A_sF_y$, with the objective of their revision; potentially permitting fewer piles for a foundation and an associated cost savings. The impact of any revisions, particularly upon foundation settlement will be evaluated. Evaluation will be based on AASHTO 2007, 2010 and 2012 criteria.

## Anticipated Outcomes:

Anticipated project outcomes include:

- To evaluate the benefits and risks of increasing the current PennDOT structural capacity of $F_y = 50$ ksi steel H-piles for bridge foundations. Specific consideration is given to the current capacity equations, $P_n = 0.66A_sF_y$ and $P_r = 0.33A_sF_y$, with the objective of their revision; potentially permitting fewer piles per foundation and an associated cost savings. The risk potential of any revisions, particularly upon foundation settlement and long-term performance will be evaluated.

## Implementation Plan:

The utilization of $F_y = 50$ ksi for the structural capacity of steel H-piles for bridge foundations was implemented with PennDOT Strike-Off-Letter 483-13-12, dated September 16, 2013. Section 6.15.1 of our DM-4 Structure publication has been modified to eliminate the specified steel yield strength of 36 ksi for steel H-piles. The Bridge Construction Standard, BC-757M, has been revised to coincide with the changes in DM-4. Publication 408, Highway Specifications, have been revised to include General Notes that are to be added to the bridge design plans.

## Research Partner:
University of Pittsburgh

## Principal Investigator:
Kent Harries

## Project Cost:
$85,348.72