



UHPC for repair of steel piles

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Background



Background



Steel HP piles used for abutment foundations

Background



Steel HP piles used in conjunction with sheet piles

(FL Turnpike – Deerfield Beach)

Corroded Piles

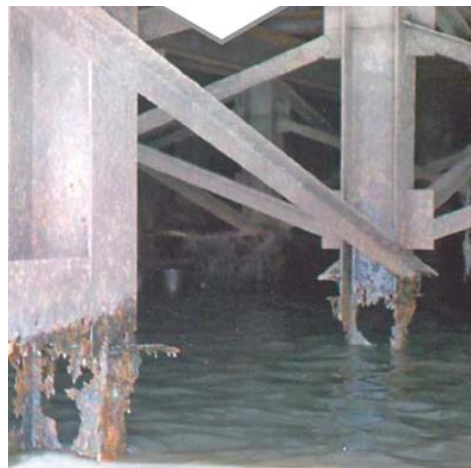


Corroded piles

- 700 bridges need pile maintenance
- 300 have pile section loss (80 severe to limit loads)



One of the 49 Corrosion-damaged piles in I-70/I-270 interchange (St. Louis, MO) that were repaired with this technique



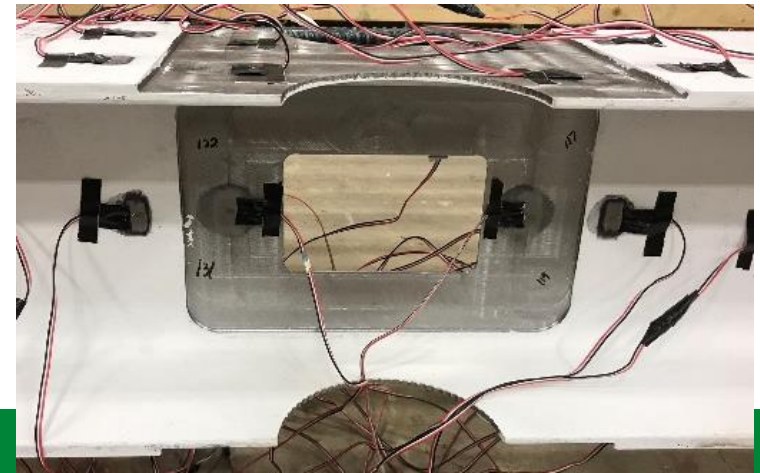
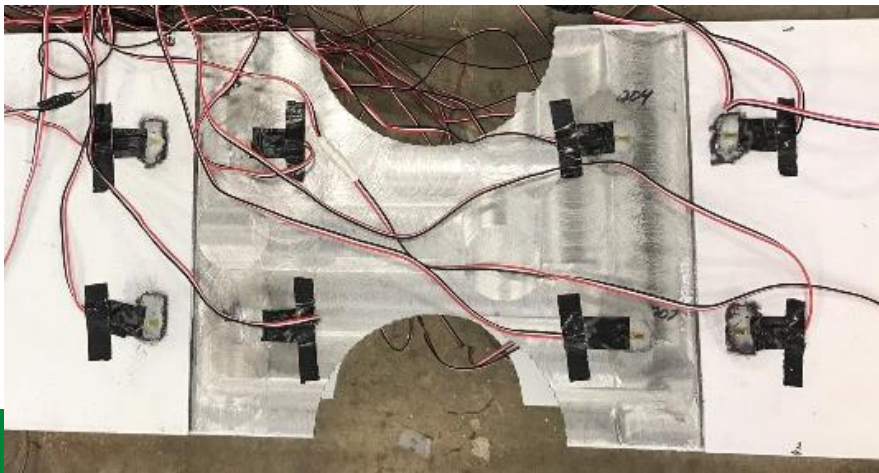
Failed piles



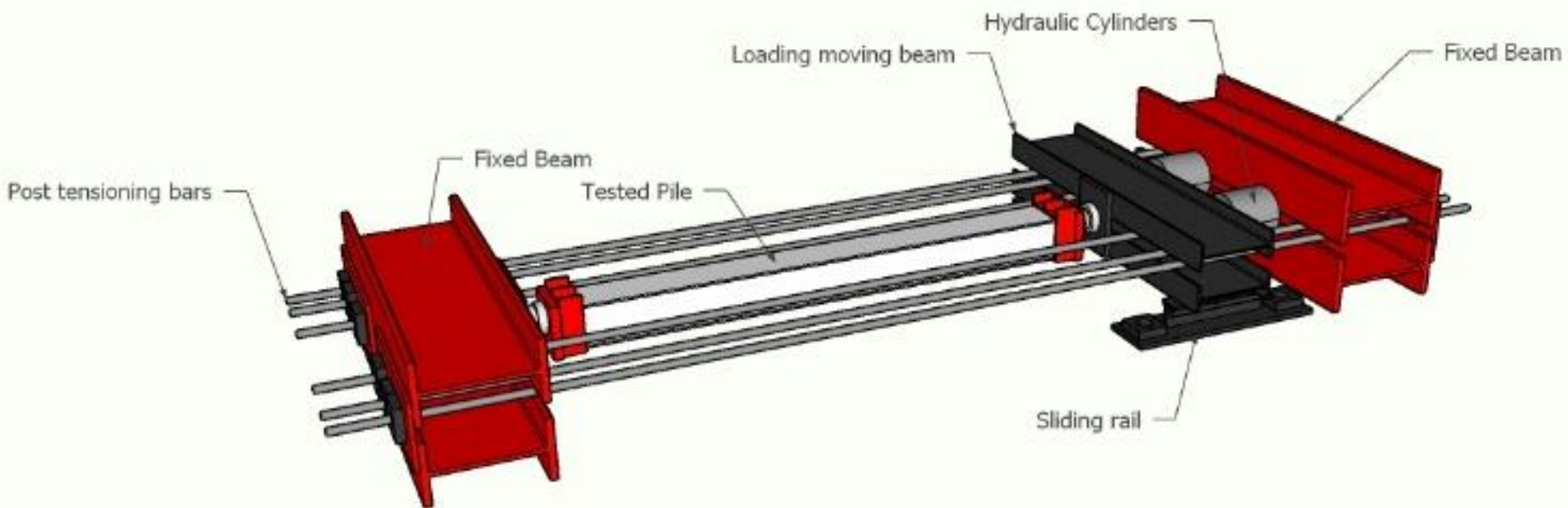
Assessment of corroded piles



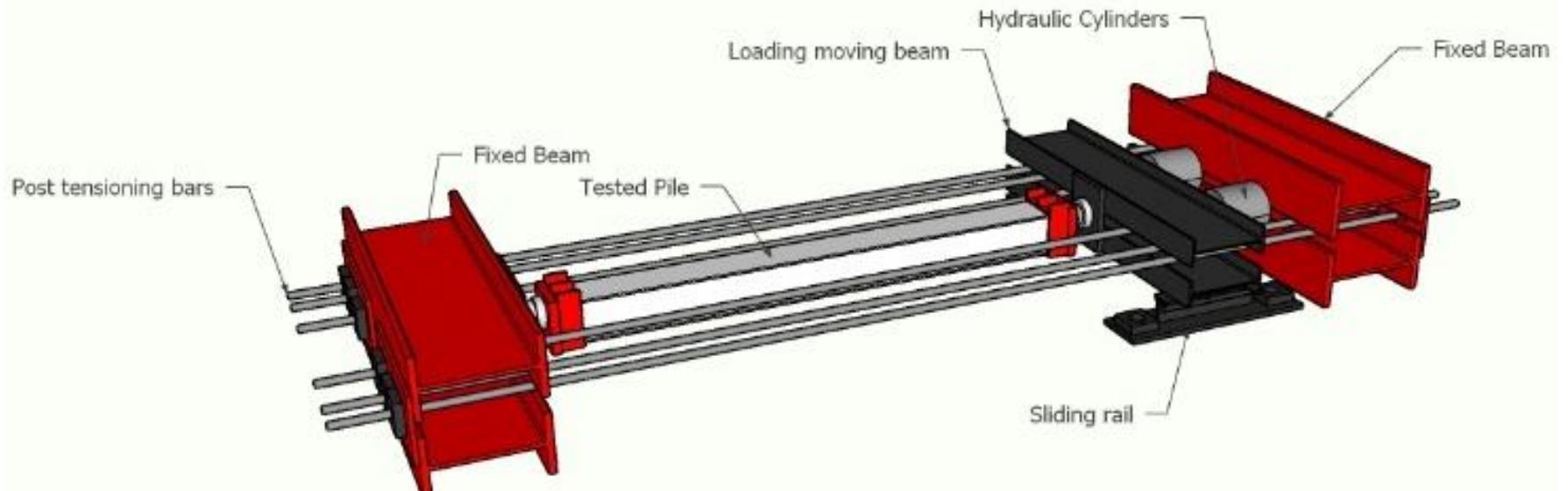
Assessment of corroded piles



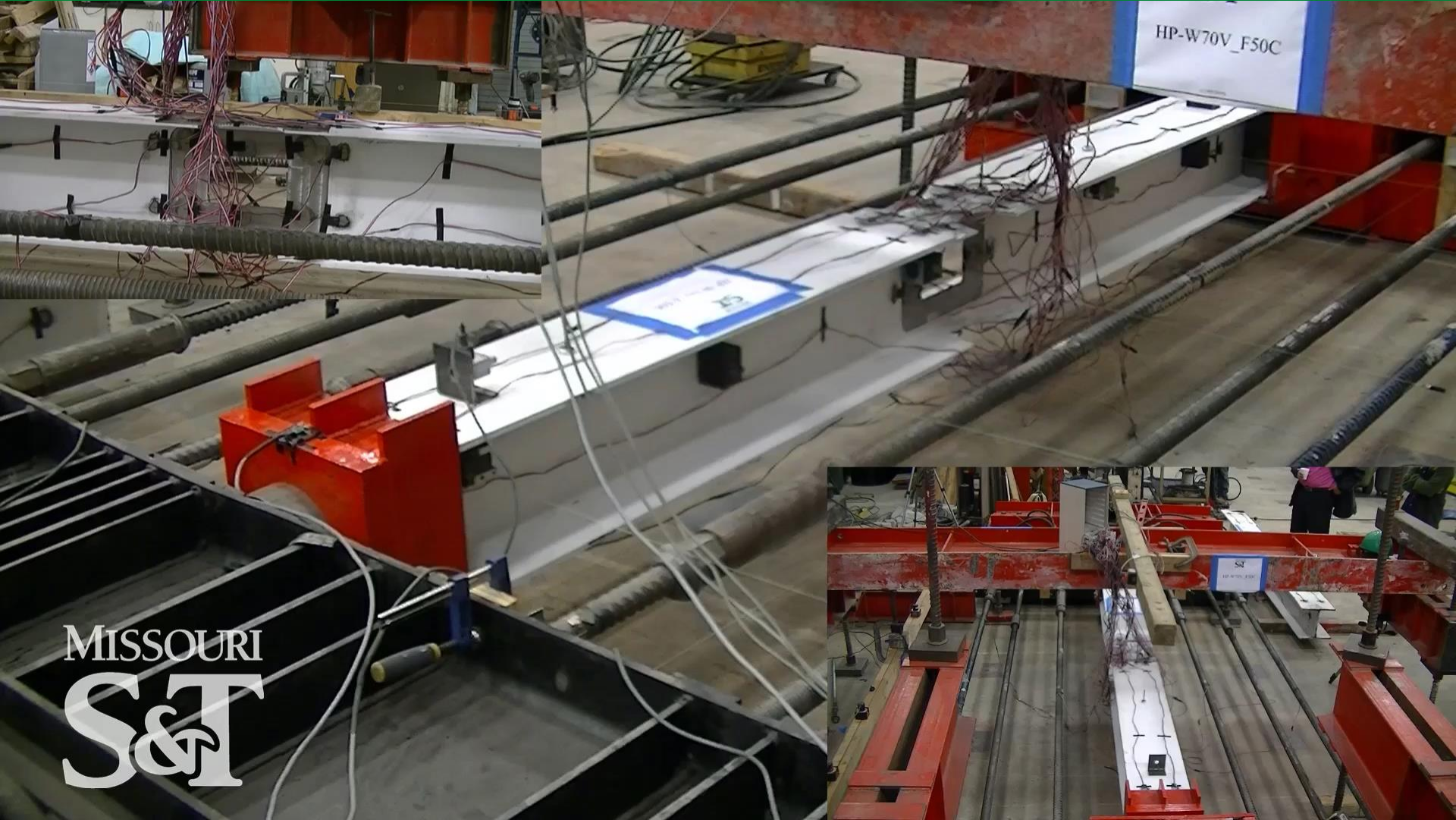
Assessment of corroded piles



Assessment of corroded piles



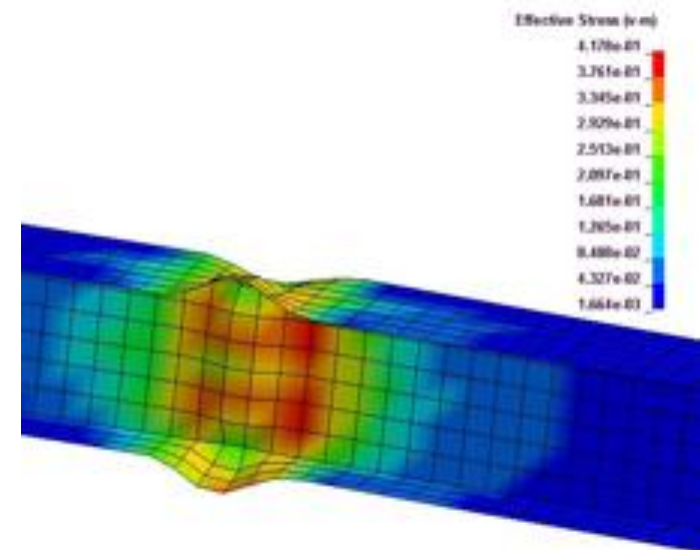
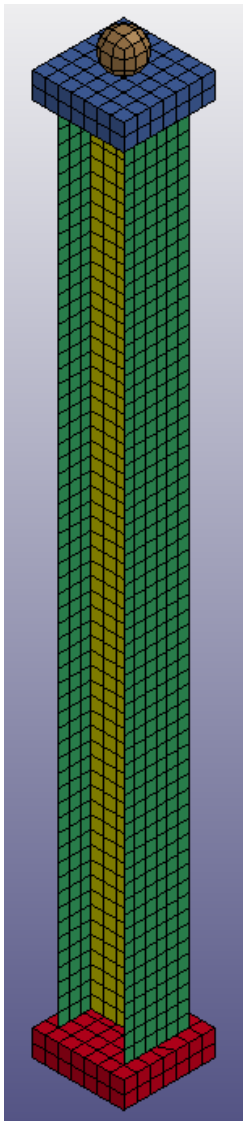
Assessment of corroded piles



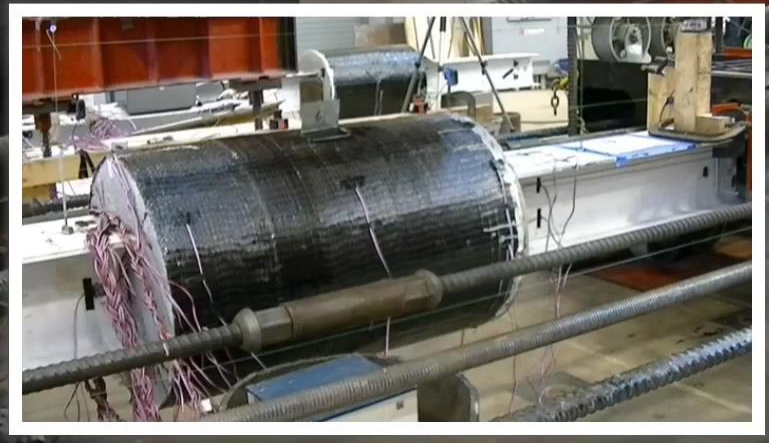
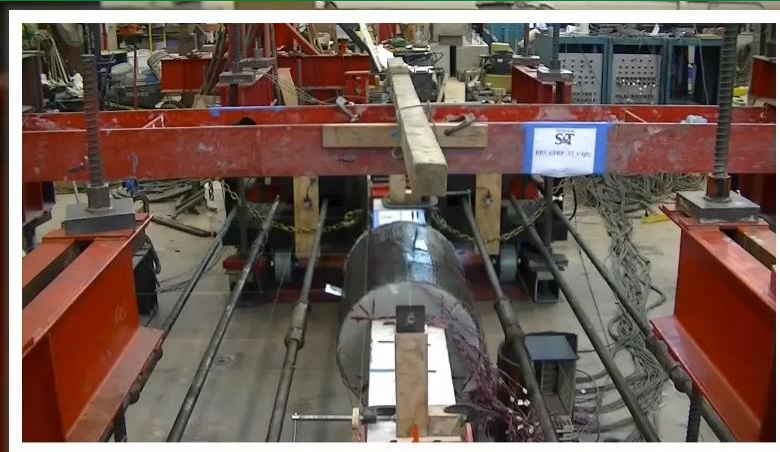
Assessment of corroded piles



Assessment of corroded piles



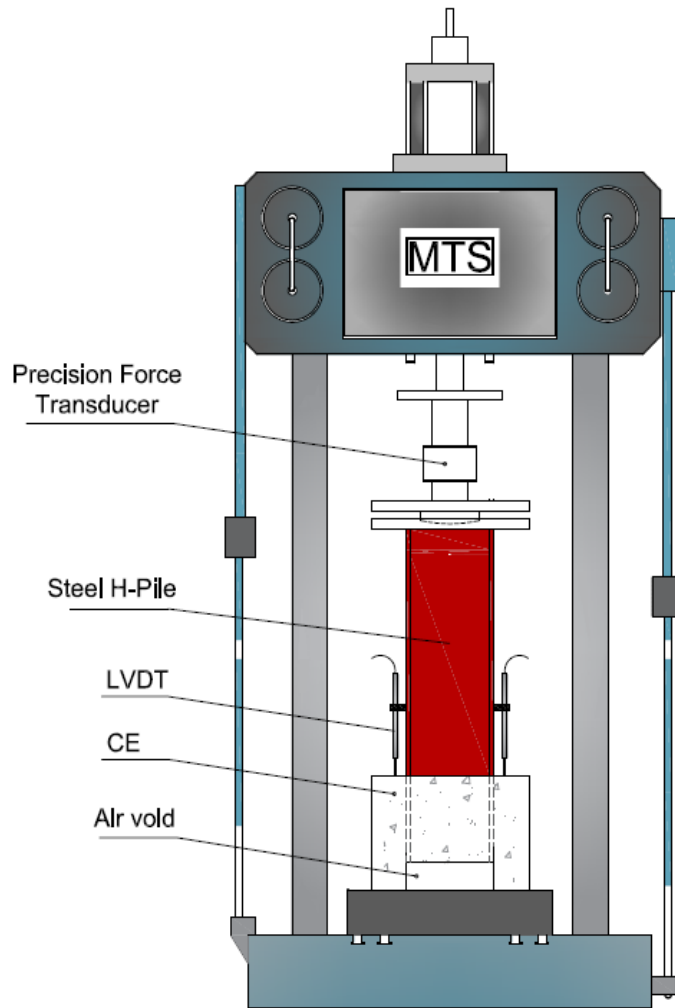
Repair of corroded piles



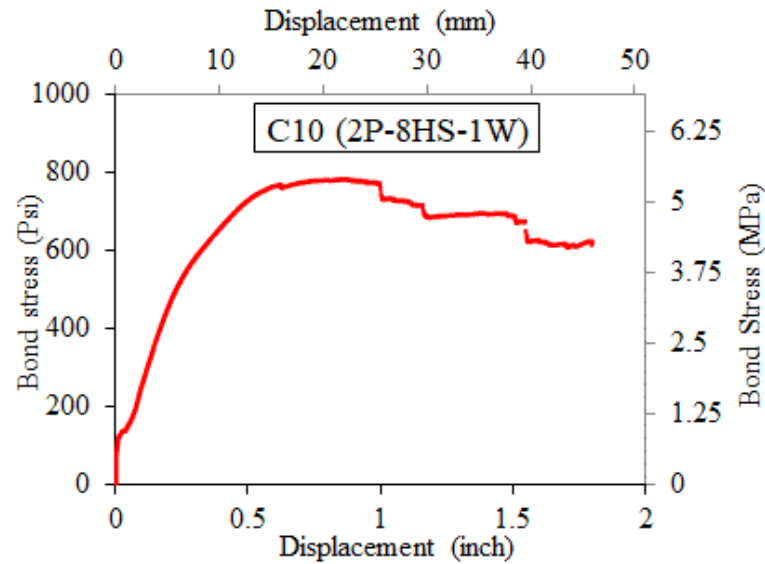
Repair of corroded piles



Repair of corroded piles



Repair of corroded piles



Repair of corroded piles



Repair of corroded piles

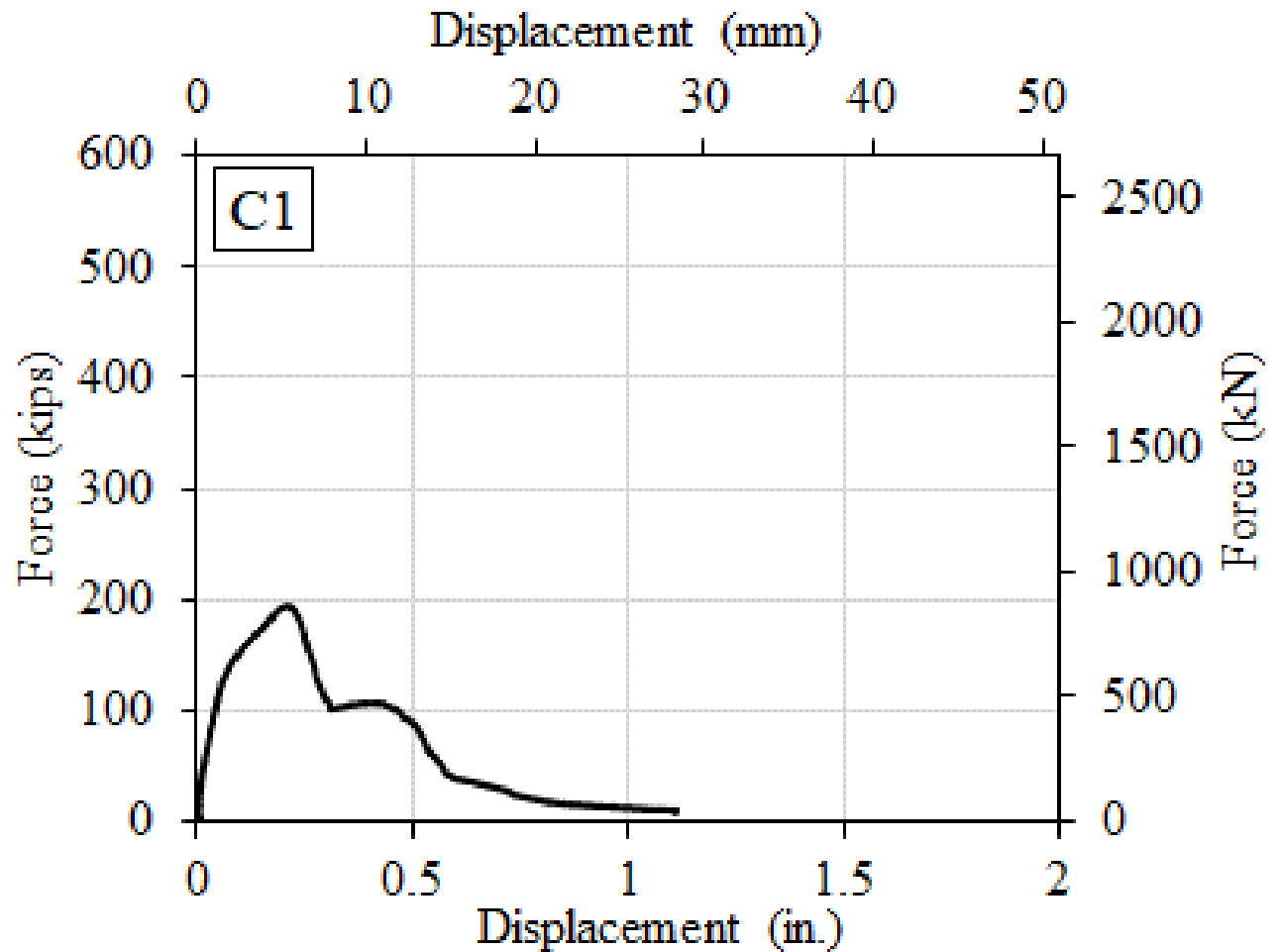
w/c*	Cement Type III	Slag	Fine Sand	HRWR	Water	Steel Fiber
0.2	945 (1,593)	220 (371)	1,008 (1,699)	43.8 (73.8)	200 (337)	157 (265)

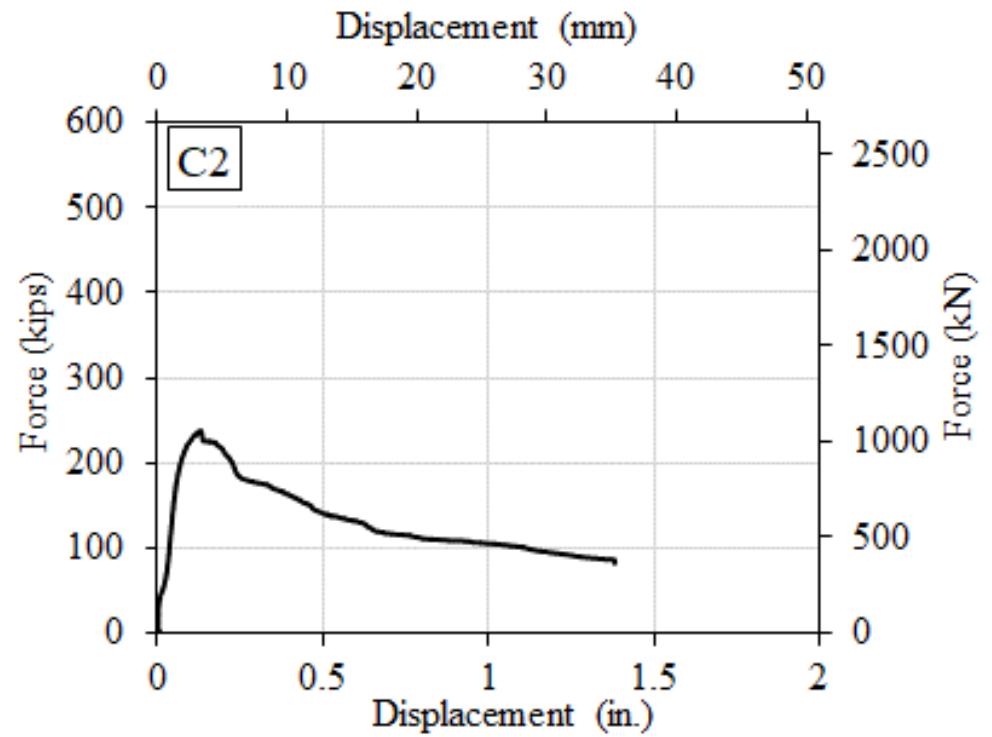
kg/m³ (lb/yd³)

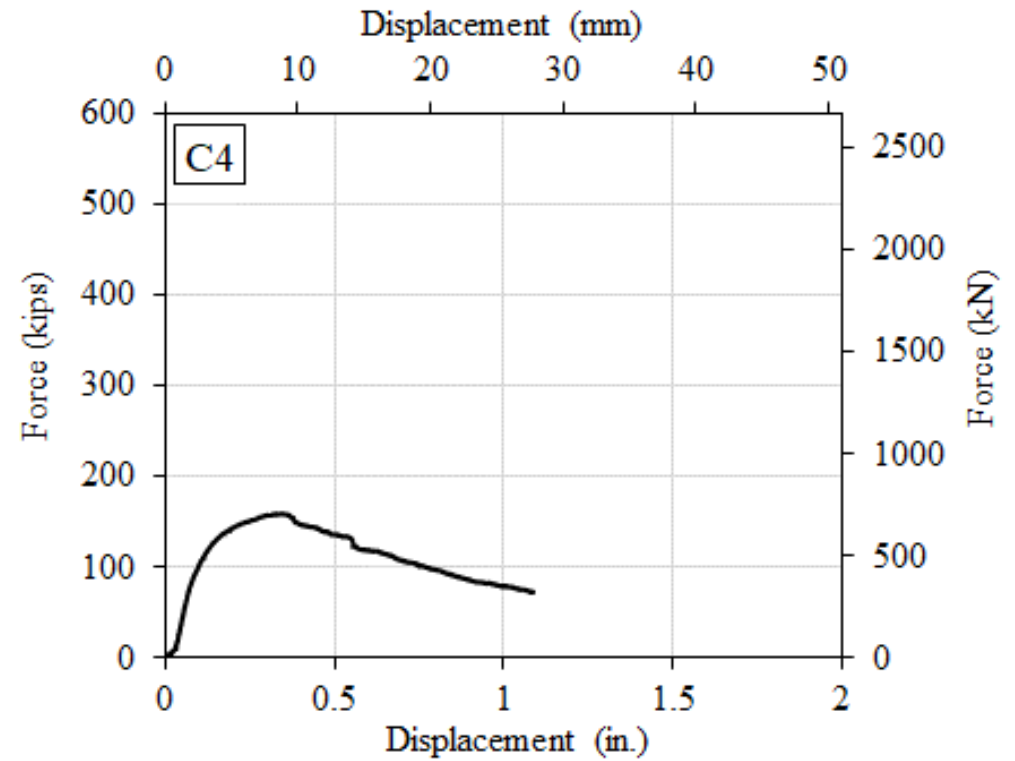


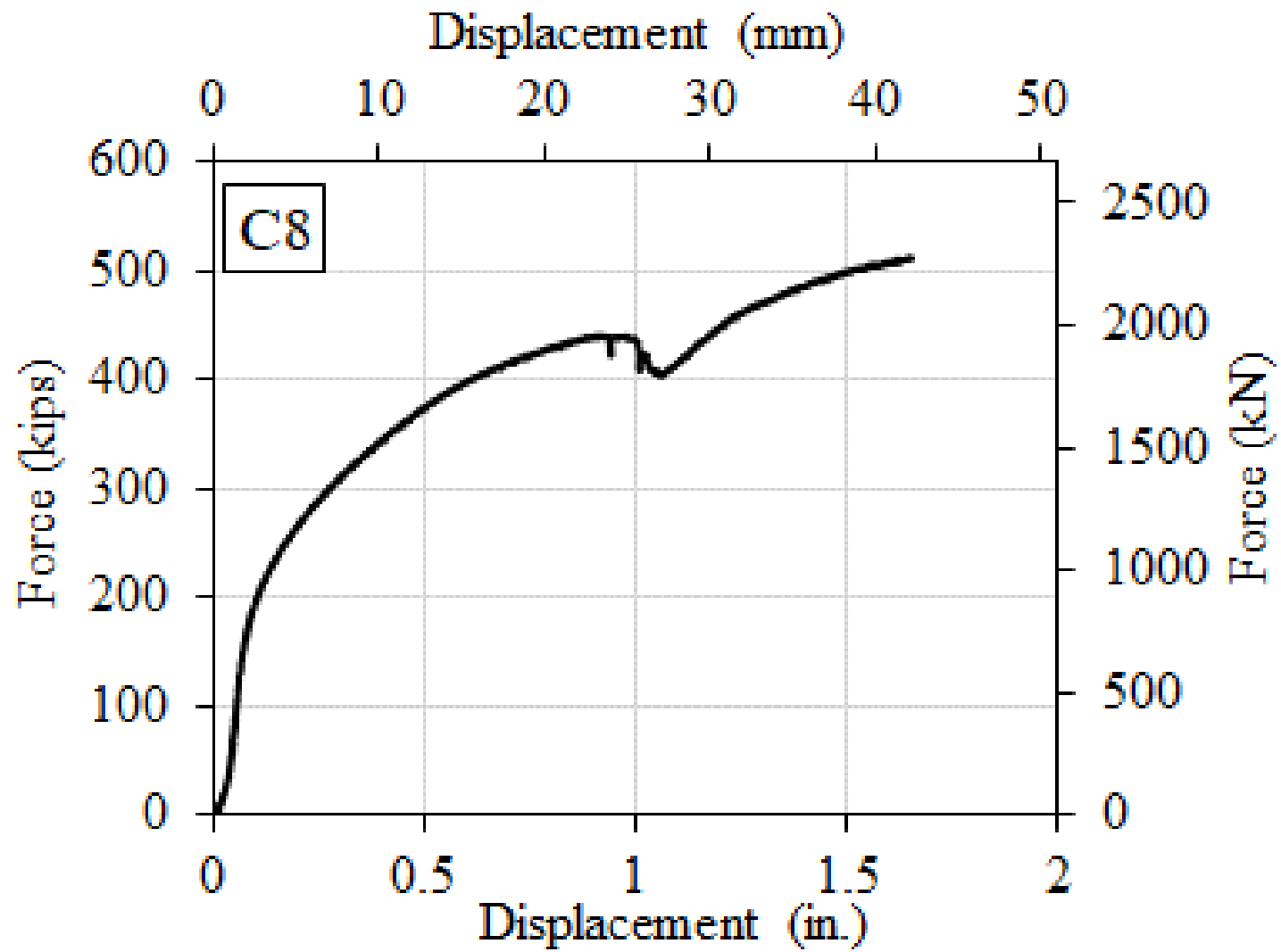












- UHPC was developed using locally available material in Missouri
- UHPC plates were able to provide the full strength of H-piles

Acknowledgement



THANK YOU