

# EVALUATION OF HEADLIGHT: AN E- CONSTRUCTION INSPECTION TECHNOLOGY

TTCC/NCC Fall Meeting  
September 18-20, 2018  
Saratoga Springs, NY

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# Outline

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- Background
- Scope
- Observations
- Documentation
- Initial findings
- Discussion



# Background

- Project delivery (Current)
  - Resource intensive
  - Valuable information
  - Heavily paper based
- Project delivery (future)
  - Leverage existing technologies
  - Accumulated project intelligence = asset intelligence



# Why do the study?

- ❑ Move Louisiana forward in state-of-the-art inspection procedures
- ❑ Potential for more timeliness submission of daily working reports (DWRs)
- ❑ Possibly lower the number of claims through more thorough inspection
- ❑ All leading to potential savings for the Department



# Why do the study?

- ❑ Reduced risk
- ❑ Accelerated delivery
- ❑ Increased accountability
- ❑ Increased efficiency

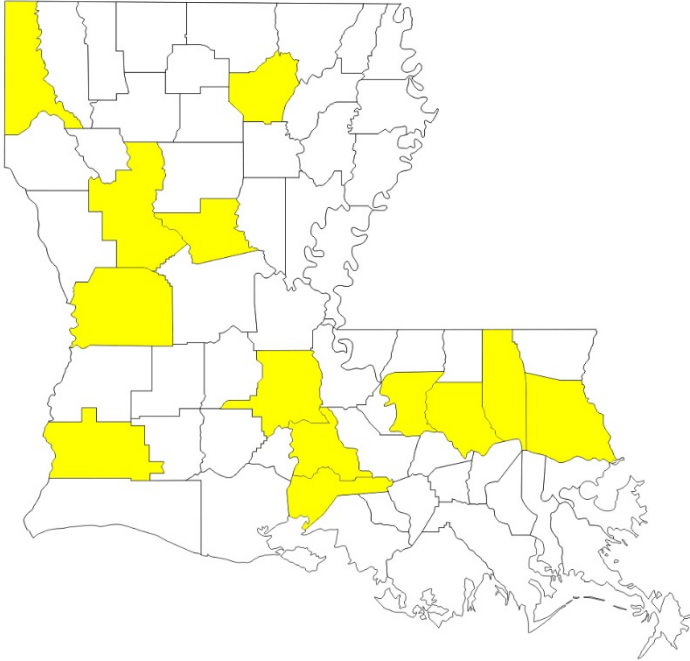


# Scope

- Pilot HeadLight on 12-18 projects across the state
  - Location
  - Size
  - Complexity
- 200 field inspectors



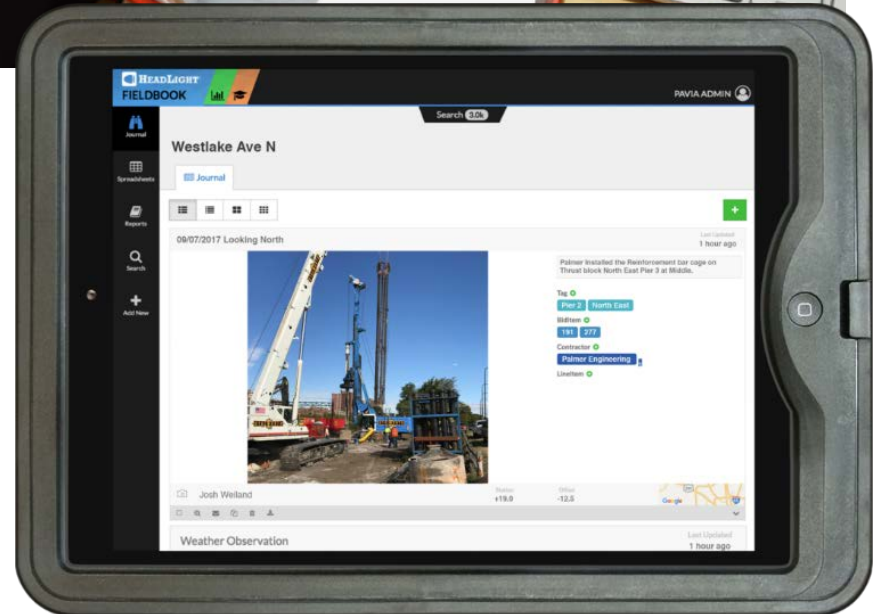
# Scope



- 18 projects across the state
- Over 42 projects ongoing / completed currently



# Equipment





# Observations



HEADLIGHT Fieldbook

Search

H.009012.6: LA 10 & LA 67 INTERSECTION WIDENING

Select +

Storm drain

Last Updated 3 months ago

Measurements for 15" concrete storm drain pipe. 28 feet

LineItems +

0014 Storm Drain Pipe (15" R...

Tags +

02-General Remarks

Concrete Drainage

Measurements

Equipment +

Contractors +

Barber Bros. Contracting Co....

Sheet 8

Structure 104

PIC-COLLAGE

Lester Fletcher

Station 110+95 Offset Rt Location 30.8657, -91.0151




# Observations



**H.009012.6: LA 10 & LA 67 INTERSECTION WIDENING**

Last Updated 3 weeks ago

Dip in curb grade



Noticed a dip in curb grade while inspecting forms. Informed superintendent of issue. He stated the grade was to plans. After review of plans, I informed the superintendent about the finished asphalt grades in this area (on sheet 16) indicate a steady rise in elevation. Barry shot the grade of the forms with a sight level and discovered a bad hub at the dip. Contractor adjusted the elevation and corrected forms.

LineItems  
0116 Combination Concrete...

Tags  
Does Not Meet Specifications

Equipment  
Contractors  
Barber Bros. Contracting Co...

Lester Fletcher Station 111+40 Offset Rt Location 30.8657, -91.0151



**Fieldbook**


Search

**H.009012.6: LA 10 & LA 67 INTERSECTION WIDENING**

Select +

Lester Fletcher 107+00 Rt 30.8657, -91.0172

Curb measurement/form corrected Last Updated 3 weeks ago



76 LNFT curb and gutter.

LineItems  
0116 Combination Concrete...

Tags  
Correction Made  
Measurements

Equipment  
Contractors  
Barber Bros. Contracting Co...

Lester Fletcher Station 111+00-111+76 Offset Rt Location 30.8658, -91.0151



# Observations

## PHOTOS



### Set up

Merrick setting up truck. Plan is to po

Contractors

**MERRICK, LLC**  
Tags  
Concrete Site 1



### Batch 1 slump

Batch one tested 3 gallons of water.

Contractors  
**MERRICK, LLC**



### Span 5 finishing

6:10 am  
06/22/2018

Span 5 after floating and burlap drag.

Contractors

**MERRICK, LLC**

Tags  
Concrete Site 1 Decks



Approximately 8" dip

### Steel issue

Merrick working to inconsistencies. W forms, and the dirt the cage not sitting

Contractors

**MERRICK, LLC**  
Tags  
Does Not Meet Spe



### Batch 1 temperatur

Contractors  
**MERRICK, LLC**



Lot 107 span 5

Lot 108 span 3

Lot 109 span 1

### Lots for 6/22/18

6:14 am  
06/22/2018

Tags

Lot



### First truck arrival

3:35 am

Contractors

**MERRICK, LLC**



### Batch 3 arrival

3:52 am

Contractors

**MERRICK, LLC**



### Span 1 placement

6:33 am  
06/22/2018

Crew completed concrete placement in span 1 at 6:28 am. 27 CUYD.

Contractors

**MERRICK, LLC**

Tags  
Concrete Site 1 Decks



### 2nd truck arrival

3:45 am

Contractors

**MERRICK, LLC**



### Batch 2 slump

Batch one tested 3 10 gallons of water

Contractors

**MERRICK, LLC**

Tags  
Concrete Site 1



### Span 5 finishing

6:45 am  
06/22/2018

Tine work completed for span 5.

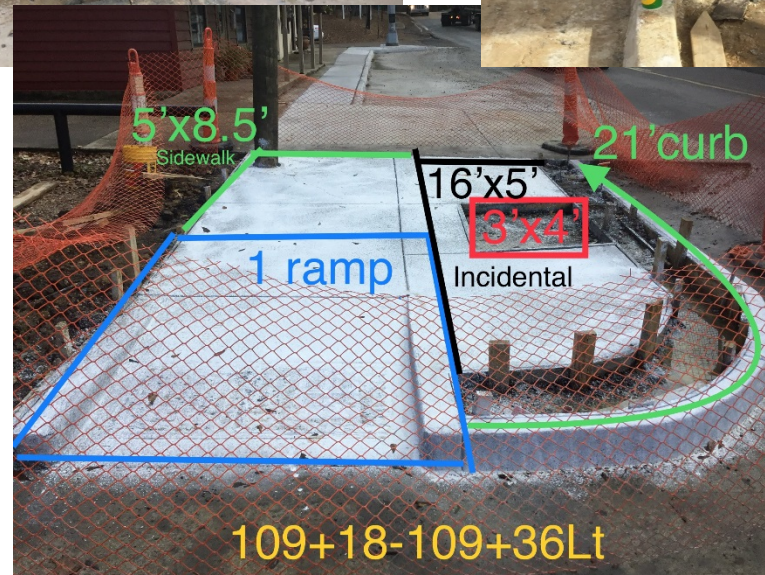
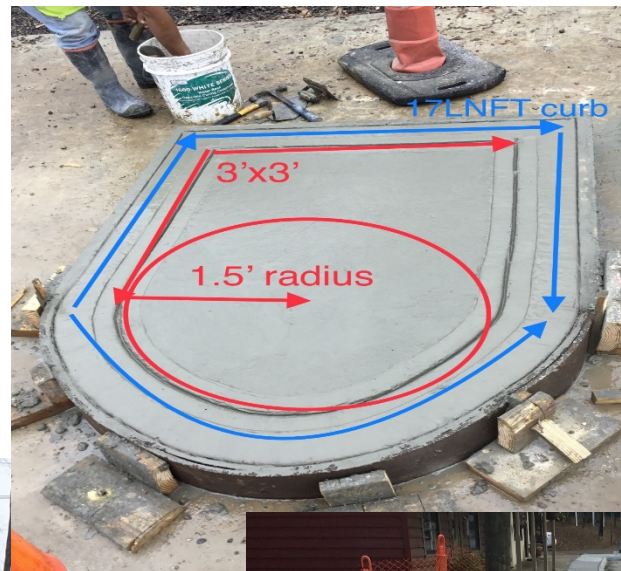
Contractors

**MERRICK, LLC**

Tags  
Concrete Site 1 Decks



# Documentation





# Documentation





# Documentation



Projected electrical relocation

10/9

- Curb (Pm) 100+40 Rt  $\star 10.4$  ft
- (Line Item 22) (707-01-00000) 199-160
- Handicapped Ramp = 104+40 Lt  $\star (1)$
- Sidewalk 4"  $9.5 \times 4.5 = 4.75 \text{ yd}^2$ ,  $9.5 \times 17 = 17.94 \text{ yd}^2$
- Sidewalk 4"  $11' \times 4' = 11 \times 4 = 4.89 \text{ yd}^2$
- Sidewalk Removal 199-161  $99+84-10015$   $11 \times 29 = 35.44 \text{ yd}^2$
- Removal of Retaining Wall 301+33-301+34 Rt  $\star 130 \text{ yd}^2$
- Removal of Sidewalk  $\star 128.89 \text{ yd}^2$
- Removal of Curb  $\star 290 \text{ LF}$

10/12

- 301+33 Rt - 301+34 Rt
- 301+33 Rt - 301+34 Rt

Cont'd →

10/4

- Traffic Maint = 7 Loads @ 16.5 =  $\star 115.5 \text{ yd}^3$
- 101+75 Rt  $\star 9'$  Curb (Pm)
- $\star (1)$  Handicapped Ramp
- 103+50 - 104+25 Rt =  $\star 17.47 \text{ yd}^2$  (Base Course Asphalt)
- 102+10 - 102+31 Rt =  $\star 21'$  Curb (Pm)
- 102+60 Rt =  $\star 7'$  Curb (Pm)
- 102+60 Rt =  $\star (1)$  Handicapped Ramp
- 104+25 Lt  $\star (16 \text{ ft})$  Curb (Pm on)
- 106+60 Lt  $\star (1)$  Handicapped Ramp
- 107+65 Lt  $\star (1)$  Handicapped Ramp
- 107+39 - 107+61
- 19x9.75 = 21.0 yd<sup>2</sup>
- 6x3 = 2.0 yd<sup>2</sup>
- Sidewalk  $\star 23.0 \text{ yd}^2$



A cartoon illustration of Homer Simpson standing in a green yard with a brown fence in the background. He is wearing a white polo shirt and blue pants. The text "The Contractor" is overlaid on the left side of the image.

The  
Contractor

When I pull  
out my  
IPAD





[dashes/dots] | [b/w] | [hide menu]

Weather Elements	Fire Weather	Aviation Weather
<input checked="" type="checkbox"/> Temperature (°F)	<input type="checkbox"/> Mixing Height <input type="text" value="x100ft"/>	<input type="checkbox"/> Ceiling Height
<input checked="" type="checkbox"/> Dewpoint (°F)	<input type="checkbox"/> Lightning Activity Level	<input type="checkbox"/> Visibility
<input checked="" type="checkbox"/> Wind Chill (°F)	<input type="checkbox"/> Trans. Wind <input type="text" value="mph"/>	<input type="checkbox"/> Thunder Potential
<input checked="" type="checkbox"/> Surface Wind <input type="text" value="mph"/>	<input type="checkbox"/> 20ft Wind <input type="text" value="mph"/>	
<input checked="" type="checkbox"/> Sky Cover (%)	<input type="checkbox"/> Atmospheric Dispersion Index	
<input checked="" type="checkbox"/> Precipitation Potential (%)	<input type="checkbox"/> Low Visibility Occurrence Risk Index	
<input checked="" type="checkbox"/> Relative Humidity (%)		
<input checked="" type="checkbox"/> Rain		
<input checked="" type="checkbox"/> Thunder		
<input checked="" type="checkbox"/> Snow		
<input checked="" type="checkbox"/> Freezing Rain		
<input checked="" type="checkbox"/> Sleet		
<input type="checkbox"/> Fog		

Below 35 degrees

48-Hour Period Starting:





# Initial Findings

- More “eyes” on the work
  - 1.25 hours extra time on the jobsite per employee
- More complete documentation
  - Pictures and video
- Efficiencies
  - Problems and solutions conveyed more quickly
- Accountability
  - Contractor and DOTD personnel



# Initial Findings

- Reduced claims
- Future asset management
  - Geo-located
  - Time and date stamped
- Training opportunities
  - Use captured data (videos, pictures, etc.)



# Initial Findings

- Savings
  - Personnel efficiencies ~\$8M per year
  - Claims / litigation ~\$10M per year
  - Total ~\$20M per year
- Research cost
  - ~\$1.5M
- Recommendation to adopt



# Questions

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