



ABC PEER-to-PEER EXCHANGE NEBRASKA EXPERIENCE

FOUAD JABER, PE

September 16, 2015



U.S. Department of Transportation
Federal Highway Administration

AMERICAN ASSOCIATION
OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS

AASHIO



Recent projects maybe considered ABC

- STEEL BOX GIRDER
- FOLDED PLATE ON GRS ABUTMENT
- NUDECK PRECAST SYSTEM



U.S. Department of Transportation
Federal Highway Administration

AMERICAN ASSOCIATION
OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS

AASHIO

Steel Box Girder



Pouring the Deck

Initial Profile



Hand Finishing



Placing Girder Units

Cranes in Position for First Lift

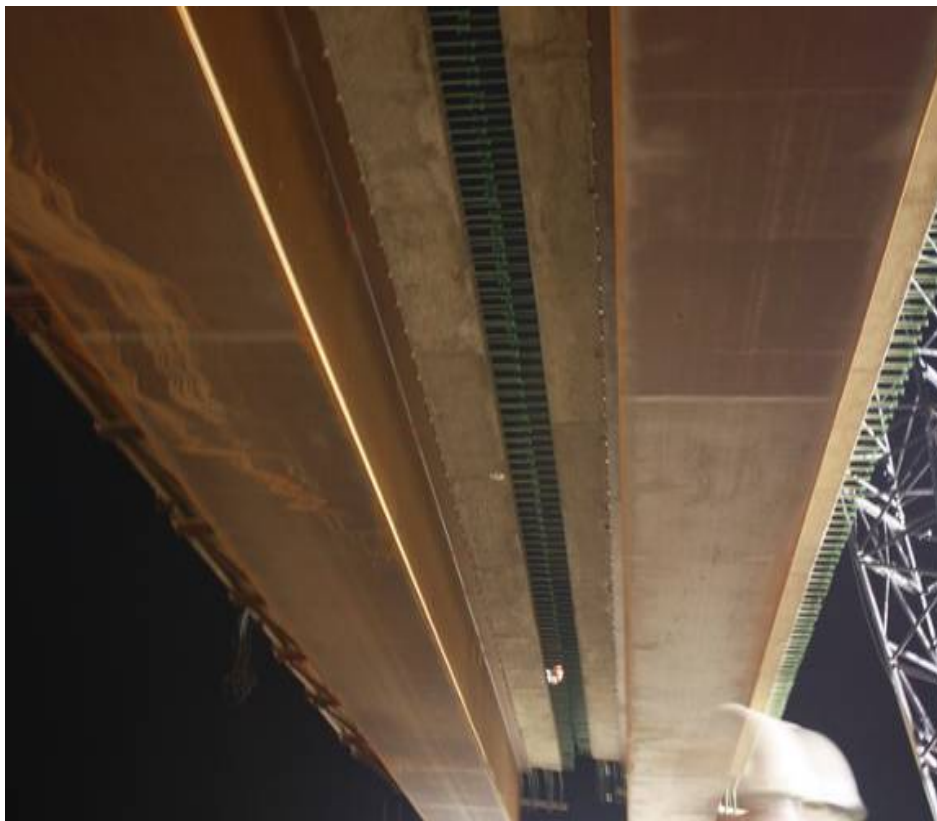


First Girder Approaching Pier



Placing Girder Units

**Underside showing
closure region**



**Headed Reinforcement
Detail**



CLOSURE POURS

Overview of Deck Closure Regions



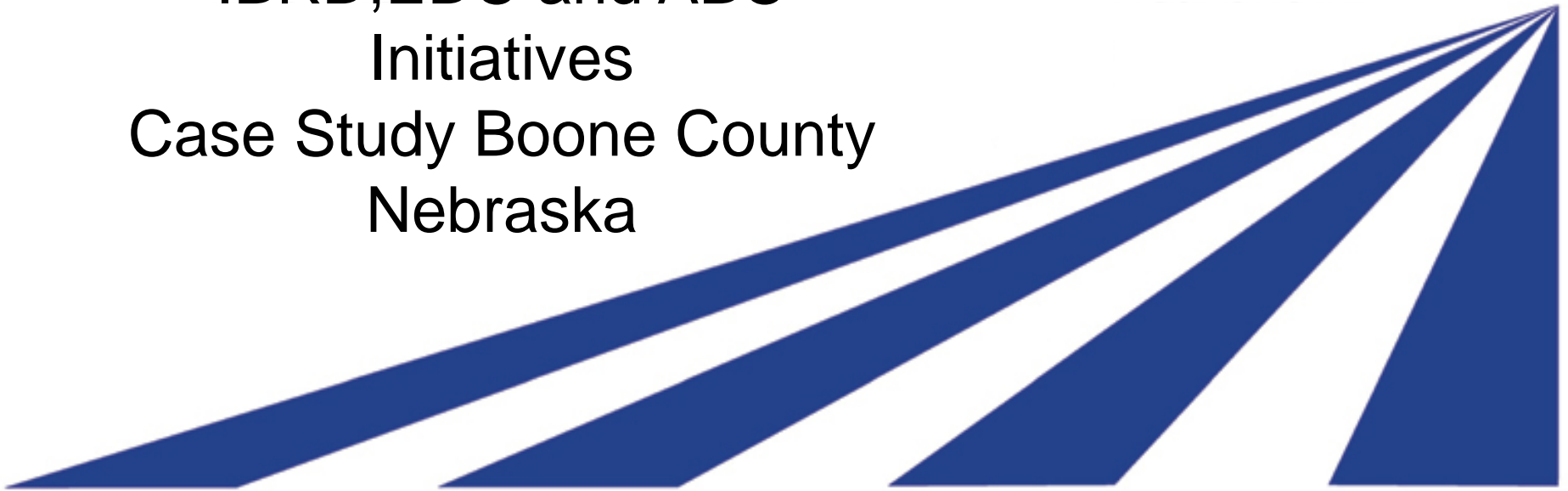
Finishing Diaphragm at Pier



Completed Bridge



IBRD, EDC and ABC
Initiatives
Case Study Boone County
Nebraska



Every Day Counts Initiatives



- Geosynthetic Reinforced Soil-Integrated Bridge System
- Folded Plate Girder
- Accelerated Bridge Construction
- Prefabricated Bridge Elements and Systems
- Ultra-High Performance Concrete Connections for Prefabricated Bridge Elements

Girders were delivered on July 1st

Girder were blocked to match final



Deck Units was formed to be poured at once



Deck Overhang Forming







GRS-IBS

completed first CMU Wall layer



Completed GRS Abutments



Completed Wall



Placing Girder/Deck Units.

Two cranes and four trucks were used



Placing Girder/Deck Units

It took about 2 1/2 hrs.



UHPC. Materials flows good. Bridge has 2" drop from end to end







**Open to traffic
November 19th, 2014**



NE LTAP for time lapse photos



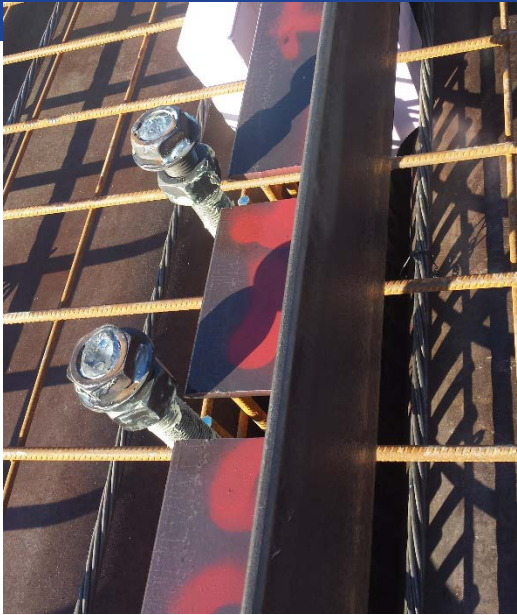
CONSTRUCTABILITY OF NU-PRECAST CONCRETE DECK SYSTEM



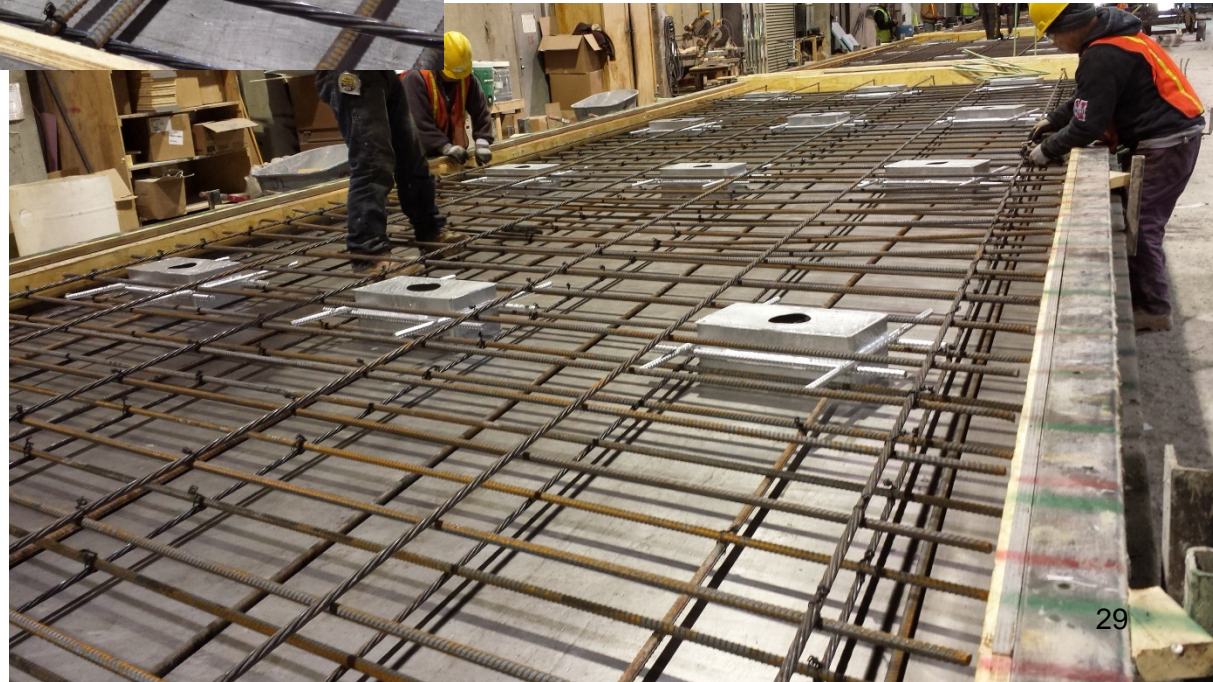
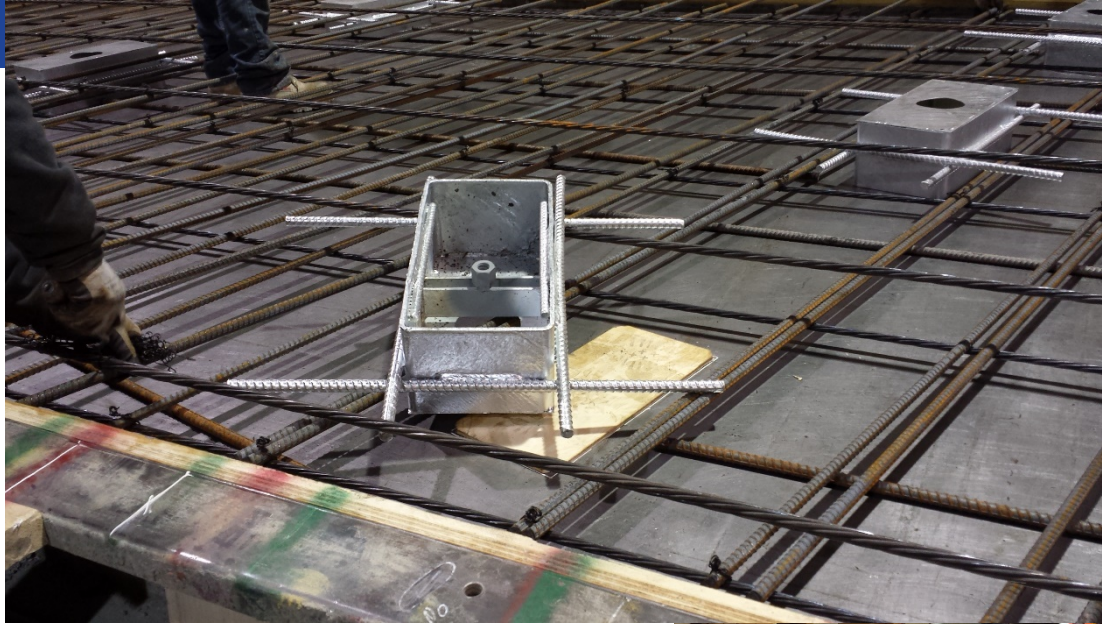
Background

- The newly developed full-depth full-width precast concrete deck system (2nd Generation NUDECK) has the following features:
 1. Large panels to minimize number of cast-in-place transverse joints
 2. Covered pockets for shear connectors to eliminate deck overlay
 3. Large spacing between shear connectors to simplify fabrication
 4. Prestressed in both direction to enhance durability
 5. Longitudinal post-tensioning is made simple to enhance constructability.

1- Girder Production



2- Panel Production



2- Panel Production



3- Girder Erection



3- Girder Erection



4- Panel Erection



4- Panel Erection



5- Transverse Joints Grouting



6- Deck Post-tensioning

Predicted deck elastic shortening = $\frac{1}{2}$ in.



Jacking End Movement = $\frac{5}{16}$ in.



Dead End Movement = $\frac{1}{4}$ in.

6- Deck Post-tensioning

Transverse Joint at the Pier



Before Post-tensioning
Crack width = 0.086
in.



Partial Post-tensioning



Full Post-tensioning

7- Haunch and Pockets Grouting



7- Haunch and Pockets Grouting



Thank you

