Buchanan County, Iowa State, USA
SUPER CONCRETE BRIDGE
DRAWINGS

AUGUST 2014
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SUPER CONCRETE BRIDGE
DRAWINGS

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GENERAL NOTES
1. The designed weight of one girder does not exceed 35,000 pounds so the girder can be transported by trailer.
2. The material properties are as follows:
   - UHPF Shear strength (in situ): 1,944 ksi (13,400 MPa)
   - UHPF Shear strength (cast): 1,944 ksi (13,400 MPa)
   - Curvature & Pave: 4.1 ksi (28 MPa)
   - Reinforcing Bar: 1.4 psi (9.6 MPa)
   - PT Strands: 3,500 psi (240 MPa)

3. If you change size of bearing pad, you should modify size of bearing pad seat of girder sofit.
4. Pavement thickness is designed by 3" (75mm) depth concrete, but it can be changed if needed.
5. All PT strands shall be 0.6" (15mm) low relaxation strands.
6. Units in ( ) is the SI unit.

SPECIFICATION AND DESIGN ASSUMPTIONS
1. High-performance concrete (UHPF) is applied to superstructure of this bridge. It is designed to satisfy UHPF design standards, and ultimate strength design is applied to other structure design.
2. This bridge is designed by load factors and load combinations of ASHTO-98. Service load stress checking is applied to PC structure and ultimate strength design is applied to girder deck and abutment.
3. Concrete cover of this bridge shall be the thicker than maximum value between 30mm and 1.5 times of rebar diameter according to UHPF specification.
4. Height of abutment and geological condition for piles are assumed, so it can be adjusted.
5. Support settlement is assumed as 0.4" (10mm) considering site condition.
6. The pre-camber is neglected in girder longitudinally.
ELEVATION

PLAN

PT TABLE

POST-TENSIONING NOTES

ANCHORAGE DETAILS

NOTES:
1. WHEN ORDER IS MANUFACTURED, PREINSTALL DUCT & ANCHORAGE.
2. THE DESIGN IS BASED ON 0.6" DIAMETER LOW RELAXATION STRANDS WITH A JANING LOAD FOR EACH ORDER AS SHOWN IN THE POST-TENSIONING TABLE, AN ANCHOR SET OF CURVATURE FRICTION COEFFICIENT 0.15 AND A ROBBLE FRICTION COEFFICIENT 1502.0041/130.0154/1, THE ACTUAL ANCHOR SET USED BY THE CONTRACTOR SHALL BE SPECIFIED IN THE SHOP PLANS AND INCLUDED IN THE TRANSFER FORCE CALCULATIONS.
3. THE MAXIMUM "DRAW-IN" ALLOWANCE ON ANY STRAND AT LINE END ANCHORAGE, ON RELEASE OF THE JACK IS TO BE 0.14" (3.5mm).

VIEW

ANCHORAGE DETAILS

SCALE: 1/795

PT J ACKING ANCHOR 7/5.586

PT STRANDS
7/5.586 x 12

PT STRANDS
0.6/17.28

PT STRANDS
0.6/17.28

PLAN

SCALE: 1/795

ANALYSIS DETAILS

SCALE: 1/795

PT J ACKING ANCHOR 7/5.586

PT STRANDS
7/5.586 x 12

PT STRANDS
0.6/17.28

PT STRANDS
0.6/17.28

POST-TENSIONING NOTES

1. THE MINIMUM COMPRESSION STRENGTH OF THE BARS AT THE TIME OF POST-TENSIONING SHALL BE 20,000.00 MPa.

2. THE DESIGN IS BASED ON 0.6" DIAMETER LOW RELAXATION STRANDS WITH A JANING LOAD FOR EACH ORDER AS SHOWN IN THE POST-TENSIONING TABLE, AN ANCHOR SET OF CURVATURE FRICTION COEFFICIENT 0.15 AND A ROBBLE FRICTION COEFFICIENT 1502.0041/130.0154/1, THE ACTUAL ANCHOR SET USED BY THE CONTRACTOR SHALL BE SPECIFIED IN THE SHOP PLANS AND INCLUDED IN THE TRANSFER FORCE CALCULATIONS.

3. THE MAXIMUM "DRAW-IN" ALLOWANCE ON ANY STRAND AT LINE END ANCHORAGE, ON RELEASE OF THE JACK IS TO BE 0.14" (3.5mm).
FRONT VIEW AT END CROSS BEAM

LONGITUDINAL PT ACHORAGE

SECTION A

KEY MAP

REINFORCEMENT OF CURB

REINFORCING BAR LIST

(REINFORCING BAR LIST
(G1, G6)

PER ORIENTATION

REINFORCING BAR LIST
(G2~G5)

PER ORIENTATION

CLIENT
SUPER CONCRETE BRIDGE

DESIGN PROJECT NAME

CONSULTANT
DN ENGINEERING Co., Ltd

ENGINEER

DATE
AUGUST 2014

SCALE
AS SHOWN

DRAWING NAME
REINFORCEMENT OF END CROSS BEAM

DRAWING NO.
D-007