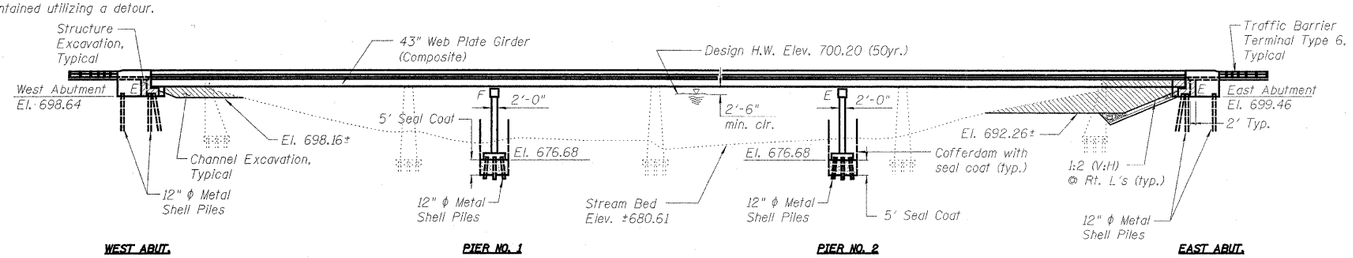
85432

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAU 5154	04-00343-00-BR	WINNEBAGO	92	47
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-BRM-5099(75)		

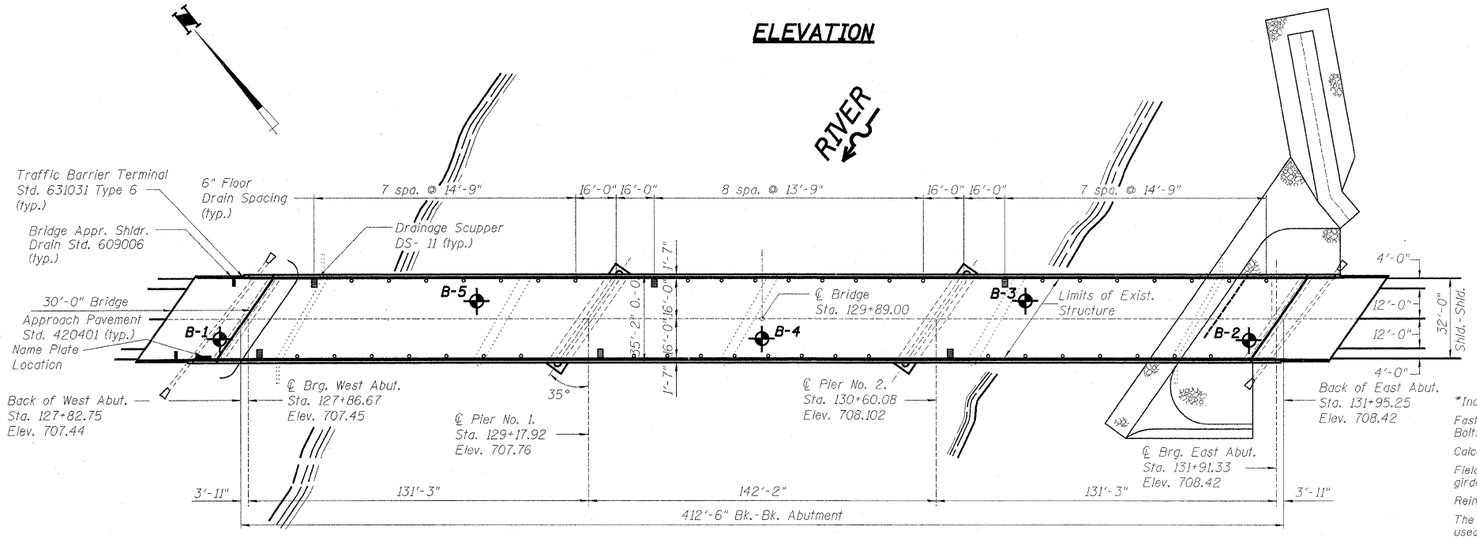
Structural Sheet 1B of 21B

EXISTING STRUCTURE: NO. 101-0026
A four span Steel Beam and RC Deck Bridge on Concrete Stub Abutments and Concrete Piers at Sta. 129+84, Skewed 35° Lt. Ahead.
Traffic to be maintained utilizing a detour.
No Salvage.

BENCH MARK: Cut square on S.E. bridge headwall, Elevation 707.58'

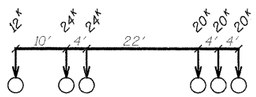


ELEVATION



PLAN

KISHWAUKEE



120ᵏ PERMIT TRUCK CONFIGURATION

BILL OF MATERIAL - BRIDGE

ITEM	UNIT	SUB	SUPER	TOTAL
Channel Excavation	Cu. Yd.	1,960	———	1,960
Porous Granular Embankment	Cu. Yd.	115	———	115
Stone Riprap, Class A5	Sq. Yd.	1,244	———	1,244
Filter Fabric	Sq. Yd.	1,244	———	1,244
Removal of Existing Structures	Each	1	———	1
Structure Excavation	Cu. Yd.	364	———	364
Cofferdam Excavation	Cu. Yd.	584	———	584
Cofferdams	Each	2	———	2
Floor Drains	Each	———	44	44
Concrete Structures	Cu. Yd.	372.2	———	372.2
Concrete Superstructure	Cu. Yd.	———	463.7	463.7
Bridge Deck Grooving	Sq. Yd.	———	1,357	1,357
Seal Coat Concrete	Cu. Yd.	326.7	———	326.7
*Protective Coat	Sq. Yd.	———	2,030	2,030
Furnishing and Erecting Structural Steel	L. Sum	———	0.8	0.8
Stud Shear Connectors	Each	———	6,840	6,840
Reinforcement Bars, Epoxy Coated	Pound	37,960	105,370	143,330
Bar Splicers	Each	66	———	66
Furnishing Metal Shell Piles 12"	Foot	3,488	———	3,488
Driving Piles	Foot	3,488	———	3,488
Test Pile Metal Shells	Each	4	———	4
Name Plates	Each	———	1	1
Preformed Joint Strip Seal	Foot	———	82.5	82.5
Elastomeric Bearing Assembly, Type I	Each	———	6	6
Elastomeric Bearing Assembly, Type II	Each	———	6	6
Anchor Bolts, 1¼"	Each	———	72	72
Concrete Sealer	Sq. Ft.	238	———	238
Geocomposite Wall Drain	Sq. Yd.	64	———	64
Concrete Headwalls for Pipe Drains	Each	4	———	4
Pipe Underdrains for Structures 4"	Foot	160	———	160
Permanent Survey Markers	Each	———	1	1
Drainage Scuppers, DS-11	Each	———	6	6
Floating Bearings, Guided Expansion - 250K	Each	———	6	6

*Includes Deck, Approach Pavement and Top & Inside Face of Parapet Only.

GENERAL NOTES

Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts. Bolts ⅞" ϕ, holes ¹⁵/₁₆" ϕ, unless otherwise noted.

Calculated weight of Structural Steel = 633,300 Pounds

Field welding of construction accessories will not be permitted to beams or girders.

Reinforcement bars designated (E) shall be epoxy coated.

The Inorganic Zinc Rich Primer / Acrylic / Acrylic Paint System shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the final finish coat for all interior steel surfaces shall be gray, Munsell No. 5B 7/1. The color of the final finish coat for the exterior and bottom flange of the fascia beams shall be gray, Munsell No. 5B 7/1. See Special Provision for "Cleaning and Painting New Metal Structures".

Anchor bolts shall be set before bolting diaphragms over supports.

The structural steel bearing plates of the Elastomeric Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50.

The main load carrying member components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These components are the wide flange beams and all splice plate material except fill plates.

Reinforcement bars shall conform to the requirements of ASTM A706, Grade 60 (IL. Modified). See Special Provisions.

Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two 1/8 " adjusting shims, of the dimensions of the bottom bearing plate, shall be provided for each bearing in addition to all other plates or shims. (For Type I Elastomeric Bearings, two 1/8 " adjusting shims shall be provided for each bearing and placed as detailed).

The Contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at substructures specified or approved by the Engineer before ordering the remainder of piles.

Concrete Sealer shall be applied to the seal area of the East and West Abutments.

The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.

All construction joints shall be bonded.

Layout of the Slope Protection System may be varied in the field to suit ground conditions as directed by the engineer.

COMMITMENTS

The Kishwaukee River is a Class 1 stream listed on the Illinois Natural Areas Inventory, is listed in the National Park Service's Nationwide Rivers Inventory, and is on the INHS list of Biological Significant Streams. Therefore, instream work must be minimized whenever possible.

The piers for the Kishwaukee River bridge will be built with cofferdams to minimize siltation. Drilled shafts will not be used.

The existing bridge shall be dismantled by saw-cutting the structure and removing it a piece at a time without dropping it into the water. This will minimize any debris from falling into the river during the removal process. No explosives will be used during the demolition process.

Any asphalt base on the bridge shall be removed by a technique that would prevent this material from discharge into the river.

A causeway will not be permitted. A tramway may be used to provide access to the new structure.

Time and work in the stream shall be minimized.

After construction is completed, all trace of the existing bridge, equipment, and construction materials shall be removed from the river and the bridge site.

Seal coat thickness design is based on the Estimated Water Surface Elevation (EWSE). Cofferdam design details and proposed changes in seal coat thickness shall be submitted for approval with the cofferdam design to the Engineer.

WATERWAY INFORMATION

Drainage Area = 1099 mi² Low Grade Elev.=701.6 ft. @ Sta. 119+50

Flood	Freq. Yr.	Q ft³/s	Opening ft² Exist.	Opening ft² Prop.	Nat. H.W.E. ft	Head - ft Exist.	Head - ft Prop.	Headwater Elev. - ft Exist.	Headwater Elev. - ft Prop.
Design	50	26027	3757	3929	700.2	0.1	0.03	700.3	700.2
Base	100	31112	3940	4144	700.9	0.1	0.03	701.0	701.0
Overtopping	200±	35314	4080	4306	701.5	0.2	0.03	701.7	701.5
Max. Calc.	500	44426	-	-	-	-	-	-	-

DESIGN SPECIFICATIONS

Design in Accordance with 2002 AASHTO Specifications

LOADING HS20-44 & IDOT 120k PERMIT LOAD

Allow 50 lbs./ft.² for future wearing surface.

DESIGN STRESSES

FIELD UNITS

f'_c = 3,500 psi
f_y = 60,000 psi (Reinf.)
f_y = 50,000 psi (M270 GRADE 50)

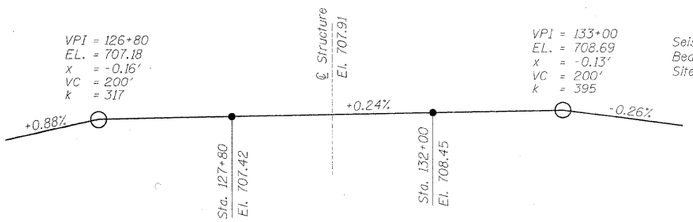
SEISMIC DATA

Seismic Performance Category (SPC) = A
Bedrock Acceleration Coefficient (A) = 0.033
Site Coefficient (s) = 1.0

KISHWAUKEE RIVER
BUILT 2009 BY
WINNEBAGO COUNTY
SECTION 04-00343-00-BR
F.A.U. ROUTE 5154 STA. 129+89
LOADING HS20 & IDOT 120k PERMIT LOAD
STR. NO. 101-0171

NAME PLATE LETTERING

Refer To Std. 515001



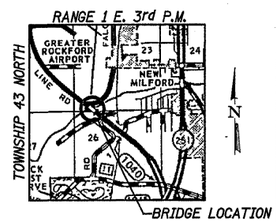
PROFILE GRADE

(along ℄ Roadway)

STATE OF ILLINOIS
BRIAN K. CONVERSE
061-005213
DIXON, IL
PROFESSIONAL STRUCTURAL ENGINEER

Brian K. Converse
DATE: 11/19/2008
EXPIRES 11/30/08

"I Certify That To The Best Of My Knowledge, Information And Belief, This Bridge Design Is Structurally Adequate For The Design Loading Shown On The Plans, The Design Is An Economical One Complies With Requirements Of The Current 'AASHTO Standard Specifications For Highway Bridges'."



LOCATION SKETCH

GENERAL PLAN AND ELEVATION
BELTLINE ROAD OVER KISHWAUKEE RIVER
FAU ROUTE 5154 SECTION 04-00343-00-BR
WINNEBAGO COUNTY
STA. 129+89 (S.N. 101-0171)

WILLETT, HOFMANN & ASSOCIATES, INC.
CONSULTING ENGINEERS
Land Surveying - Transportation - Structural
Environmental - Architecture
809 East Second Street Dixon, Illinois 61021
Phone 815.284.3381 Fax 815.284.3385
Design Firm #184-000918
www.willetthofmann.com

Designed By: M. R. Leslie Date: 10/05
Checked By: B. K. Converse Date: 10/05
Drawn By: R. D. Allen Date: 10/05

S.STRUCT.1124D04.KISHRIVER.BRIDGE DRAWINGS.1124GPE.DGN WHA # 1124D04