Bench Mark: BM #670. Brass disk set on top of N.W. Parapet of S.N 050-0221, Elev. 604.71.

Existing Structures: Structure Numbers 050-0220 and 0221 were reconstructed in 1996 as FAI 80 (Interstate 80), under (Section 52-2) HBR, HB-1, BR. The existing structures consists of four span, reinforced concrete decks supported on continuous precast, prestressed concrete bulb-tee beams. The beams are supported on stub abutments supported on drilled caisson shafts at the West Abutments and on driven HP piles at the East Abutments. The piles are from the original 1961 construction of F.A. I-80 under Section 50-2B & 2F. The reinforced concrete piers are supported by spread footings. The back to back abutments measure is 442'-5½" along the CL with an out-to-out bridge deck dimension that varies from 52'-7½" at the West end of deck to 43'-10⅞" at the East end for SN 050-0220 in the existing conditions. The back to back abutments measure is 442'-8" along the CL with an out-to-out bridge deck dimension that varies from 67'-11½" at the West end of deck to 43'-2⅛" at the East end for SN 050-0221 in the existing conditions. The superstructure is to be removed and replaced. Traffic is to be maintained utilizing a median crossover and constructing each bridge under full closure, beginning with the Westbound Structure.
No salvage

SCOPE OF WORK

1. Remove and replace existing bridge superstructure.
2. Reconfigure existing abutment and wingwalls to semi-integral.
3. Construct bearing pedestals and complete substructure repairs at existing piers.
4. Remove and replace existing approach slabs.
5. Reconstruct embankment cone at abutments and place stone riprap slope protection near W. Abutment and between Piers 1 & 2.

HIGHWAY CLASSIFICATION

Rte: FAI-80 (Eastbound)
Functional Class: Interstate
ADT:16,450 (2017); 20,152 (2032)
DHV: 1,350
ADTT: 6,827
Design Speed: 70 m.p.h.
Posted Speed: 70 m.p.h.
One-Way Traffic

Rte: FAI-80 (Westbound)
Functional Class: Interstate
ADT:16,450 (2017); 20,152 (2032)
DHV: 1,350
ADTT: 6,827
Design Speed: 70 m.p.h.
Posted Speed: 70 m.p.h.
One-Way Traffic

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

DESIGN SPECIFICATIONS

New Construction:
2017 AASHTO LRFD Bridge Design Specifications, Customary U.S. Units, 8th Edition

DESIGN STRESSES

FIELD UNITS (New Construction)
f'c = 3,500 psi (Substructure)
f'c = 4,000 psi (Superstructure)
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (M270 Grade 50W)

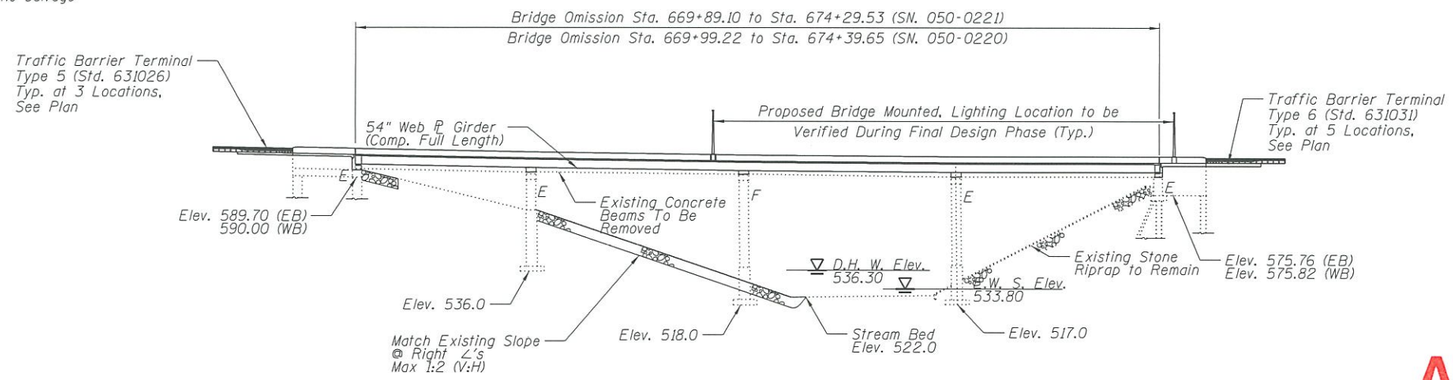
FIELD UNITS (Existing Construction)
f'c = 3,500 psi (Substructure)
fy = 60,000 psi (Reinforcement)
fy = 36,000 psi (M270 Grade 36, (Piles Only))

SEISMIC DATA

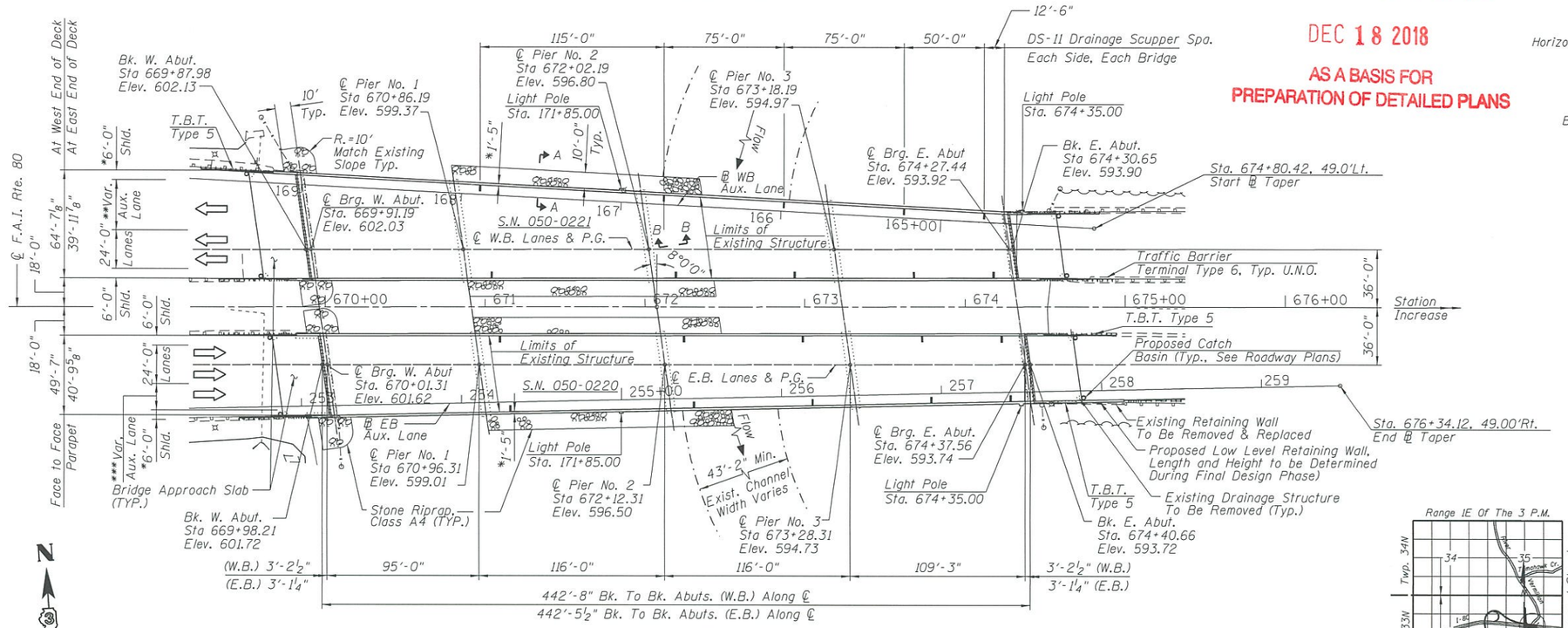
New Construction:
Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.077 g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.132 g
Soil Site Class = C

Existing Pier:
Seismic Performance Category (SPC) = A
Horizontal Bedrock Acceleration Coefficient = 0.037 g
Soil Site Coefficients = 1.0

NOTE:
Up to ¼ inch May be Ground Off the Bridge Deck and the Bridge Approach Slabs

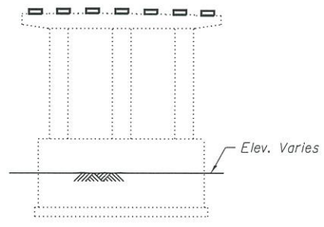


ELEVATION

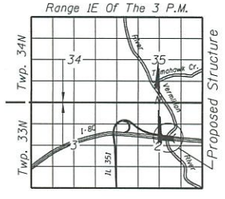


PLAN

*Dimension Perpendicular to ℄ Aux. Lane
**WB Aux. Lane Varies from 28'-7" At West End to 3'-11¾" At East End of Deck.
***EB Aux. Lane Varies from 13'-7" At West End to 4'-9⅝" At East End of Deck.



PIER SKETCH



LOCATION SKETCH

APPROVED
DEC 18 2018
AS A BASIS FOR PREPARATION OF DETAILED PLANS

GENERAL PLAN & ELEVATION
FAI 80 (I-80) OVER THE LITTLE VERMILION RIVER
SECTION (50-2BR)ES
LASALLE COUNTY
STATION 672+14.37
STRUCTURE NO. SN 050-0220 (EB)
STRUCTURE NO. SN 050-0221 (WB)

GRAEF
8501 W. Higgins Road Suite 280
Chicago, Illinois 60631: (773) 399-0112

USER NAME =	DESIGNED - NDR	REVISED -
	CHECKED - MC (DEI)	REVISED -
PLOT SCALE =	DRAWN - TCK	REVISED -
PLOT DATE = 12/18/2018	DATE - 12/18/2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION
SN 050-0220 (EB), SN 050-0221 (WB)
SHEET NO. S1 OF 3 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
80	(50-2BR)ES	LASALLE	3	1
		CONTRACT NO. 66H21		
	ILLINOIS FED. AID PROJECT			

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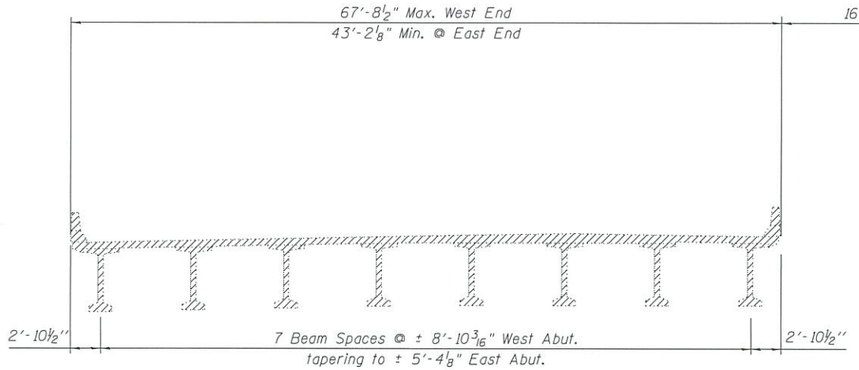
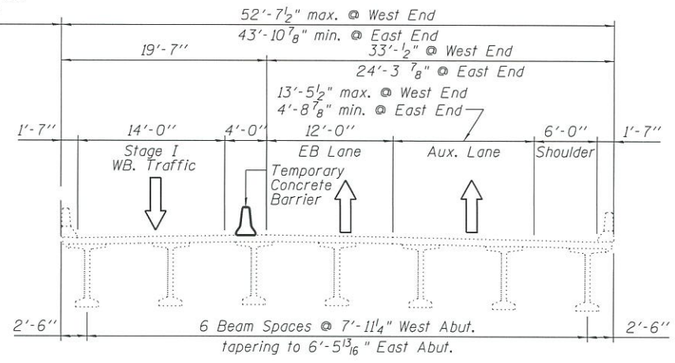
℄ F.A.I. Rte. I-80



STAGE I REMOVAL
SN 050-0221
(Looking East)

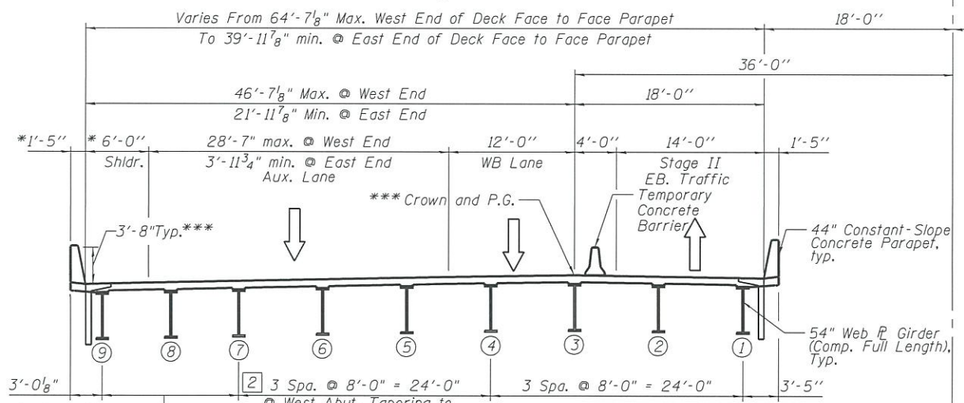


STAGE I TRAFFIC
SN 050-0220
(Looking East)

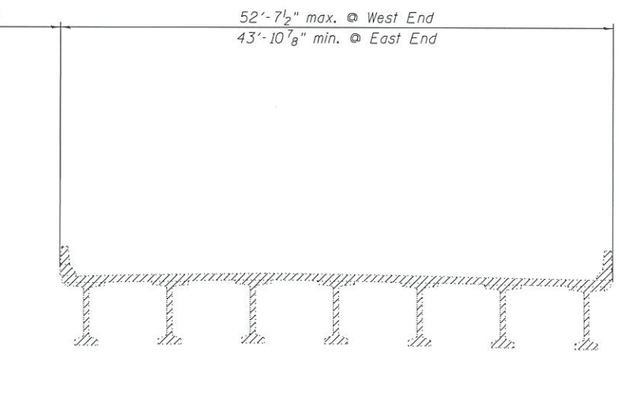
1 Beam (8), will terminate at steel bulkhead framed between Beams (7) and (9) near Span 3 contraflexure point, east of Pier 2.

2 Beam (7) will terminate at steel bulkhead framed between Beams (6) and (9) near Span 4 contraflexure point, east of Pier 3.

3 Beam (6) will terminate at steel bulkhead framed between Beams (5) and (7) near Span 3 contraflexure point, east of Pier 2.

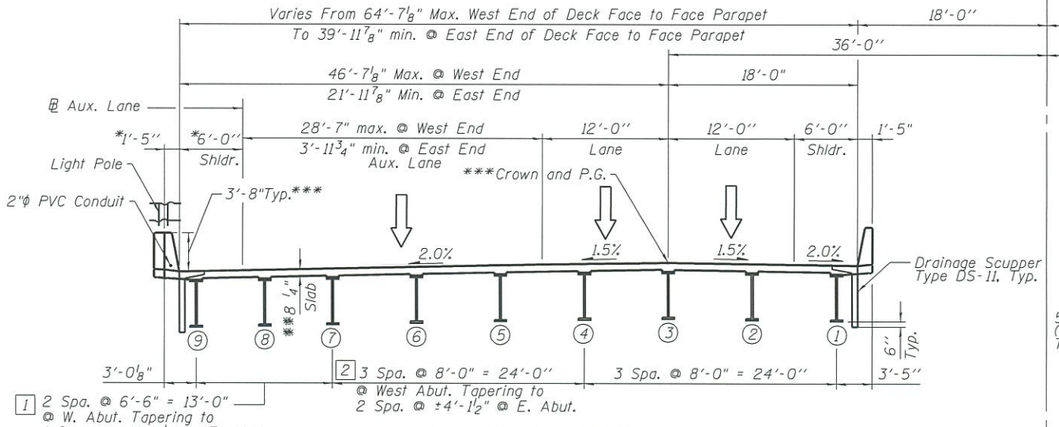


STAGE I CONSTRUCTION & STAGE II TRAFFIC
SN 050-0221
(Looking East)

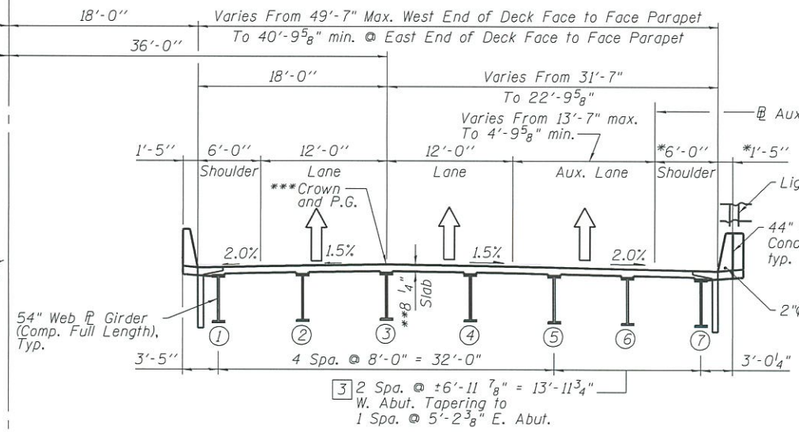


STAGE II REMOVAL
SN 050-0220
(Looking East)

* Dimension Perpendicular to ℄ Aux. Lane
** Prior to Grinding
*** After Grinding



FINAL CROSS SECTION
SN 050-0221
(Looking East)



STAGE II CONSTRUCTION & FINAL CROSS SECTION
SN 050-0220
(Looking East)

APPROVED

DEC 18 2018

AS A BASIS FOR
PREPARATION OF DETAILED PLANS

DECK CROSS SECTION
FAI 80 (I-80) OVER THE
LITTLE VERMILION RIVER
SECTION (50-2BR)ES
LASALLE COUNTY
STATION 672+14.37
STRUCTURE NO. SN 050-0220 (EB)
STRUCTURE NO. SN 050-0221 (WB)

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GRAEF
8501 W. Higgins Road; Suite 280
Chicago, Illinois 60631; (773) 399-0112

USER NAME =	DESIGNED - NDR	REVISED -
	CHECKED - MC (DEI)	REVISED -
PLOT SCALE =	DRAWN - TCK	REVISED -
PLOT DATE = 12/18/2018	DATE - 12/18/2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DECK CROSS SECTION
SN 050-0220 (EB), SN 050-0221 (WB)
SHEET NO. S2 OF 3 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
80	(50-2BR)ES	LASALLE	3	2
		CONTRACT NO. 66H21		
	ILLINOIS FED. AID PROJECT			

WATERWAY INFORMATION

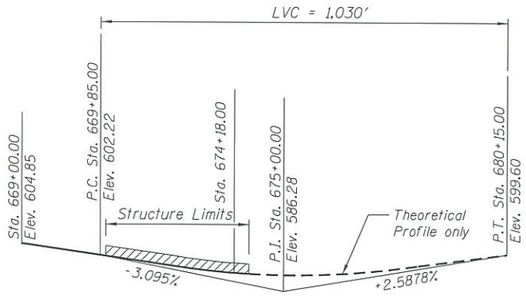
Drainage Area = 120.4 Sq. Mi. Low Grade Elevation =591.87 @ Sta. 675+00.00								
Flood	Freq.	Q	Opening Sq. Ft.		Nat.	Head - Ft.		Head Water El.	
	Yr.	C.F.S.	Exist.	Prop.	H.W.E.	Exist.	Prop.	Exist.	Prop.
	10	6,430	1,204	1,204	533.8	0.1	0.1	533.9	533.9
Design	50	10,100	1,571	1,571	536.3	0.2	0.2	536.5	536.5
Base	100	11,700	1,717	1,717	537.3	0.2	0.2	537.5	537.5
Scour	200	13,400	1,866	1,866	538.2	0.2	0.2	538.5	538.5
Max. Calc.	500	15,700	2,052	2,052	539.4	0.3	0.3	539.7	539.7

DESIGN SCOUR ELEVATION TABLE (SN 050-0220)

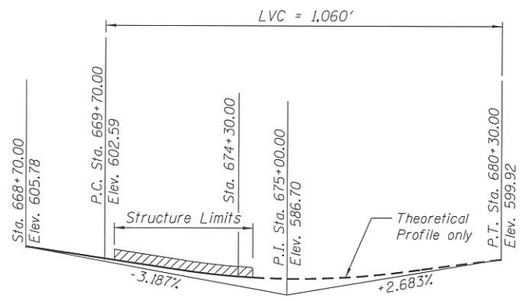
Event / Limit State	Design Scour Elevations (ft.)					
	W. Abut	Pier 1	Pier 2	Pier 3	E. Abut	Item 113
Q100	589.7	536.0	525.8	529.4	575.8	8
Q200	589.7	536.0	525.8	529.4	575.8	
Design	589.7	536.0	518.0	517.0	575.8	

DESIGN SCOUR ELEVATION TABLE (SN 050-0221)

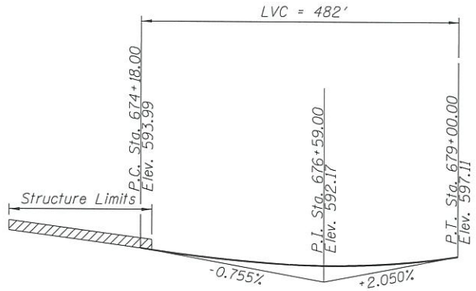
Event / Limit State	Design Scour Elevations (ft.)					
	W. Abut	Pier 1	Pier 2	Pier 3	E. Abut	Item 113
Q100	590.0	536.0	525.8	529.4	575.8	8
Q200	590.0	536.0	525.8	529.4	575.8	
Design	590.0	536.0	518.0	517.0	575.8	



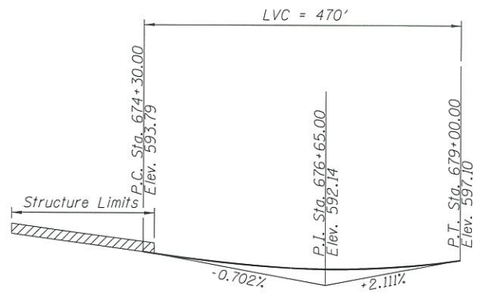
Profile Grade up to Sta. 674+18.00
WB I-80 (S.N. 050-0221)



Profile Grade up to Sta. 674+30.00
EB I-80 (S.N. 050-0220)



Profile Grade After Sta. 674+18.00
WB I-80 (S.N. 050-0221)

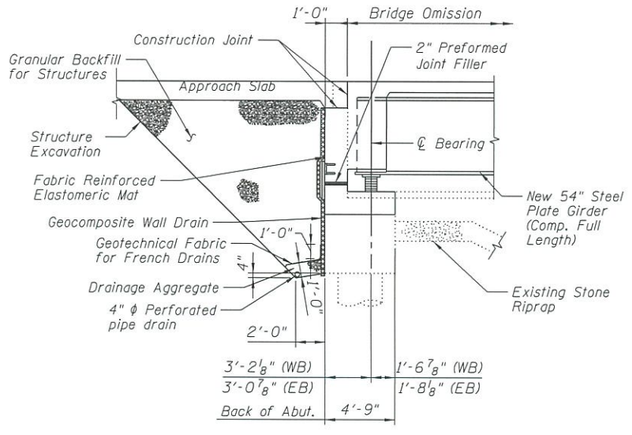


Profile Grade After Sta. 674+30.00
EB I-80 (S.N. 050-0220)

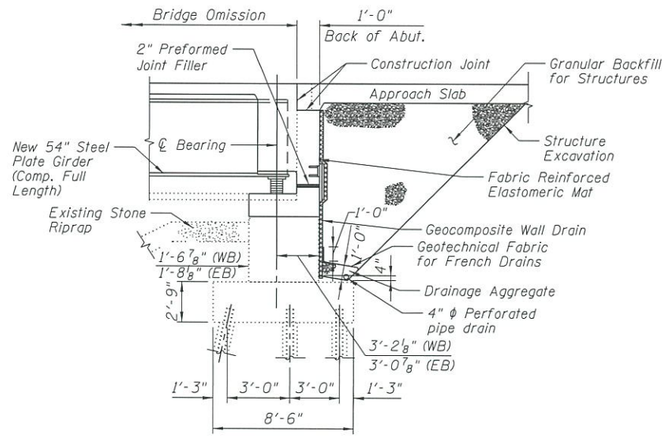
APPROVED

DEC 18 2018

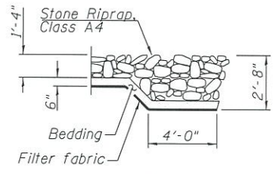
AS A BASIS FOR
PREPARATION OF DETAILED PLANS



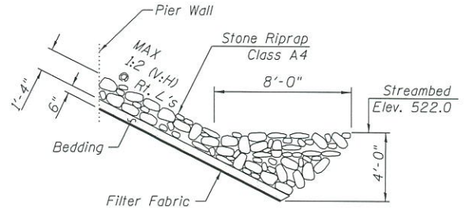
SECTION THRU SEMI-INTEGRAL ABUTMENT
(Horiz. Dimensions @ Rt. L's) (WEST)



SECTION THRU SEMI-INTEGRAL ABUTMENT
(Horiz. Dimensions @ Rt. L's) (EAST)



Section A-A



Section B-B

NOTE:
The Profile Grade Shows the Final Elevations after Grinding

DETAILS
FAI 80 (I-80) OVER THE LITTLE VERMILION RIVER
SECTION (50-2BR)ES
LASALLE COUNTY
STATION 672+14.37
STRUCTURE NO. SN 050-0220 (EB)
STRUCTURE NO. SN 050-0221 (WB)

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GRAEF
8501 W. Higgins Road Suite 280
Chicago, Illinois 60631; (773) 399-0112

USER NAME =	DESIGNED - NDR	REVISED -	
	CHECKED - MC (DEI)	REVISED -	
PLOT SCALE =	DRAWN - TCK	REVISED -	
PLOT DATE = 12/18/2018	DATE - 12/18/2018	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DETAILS
SN 050-0220 (EB), SN 050-0221 (WB)
SHEET NO. S3 OF 3 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
80	(50-2BR)ES	LASALLE	3	3
		CONTRACT NO. 66H21		
	ILLINOIS FED. AID PROJECT			