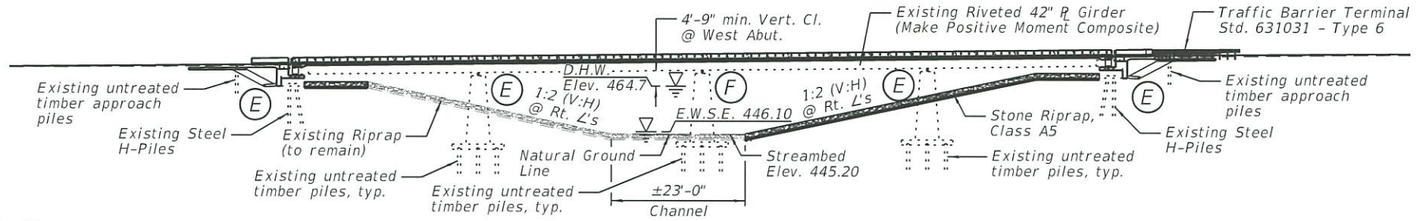
Benchmark: #5: Chiseled "□" on South end of Northeast wingwall of IL. Rte. 15 Westbound Bridge (S.N. 082-0049). Elev. = 477.29, Sta. 689+54.24, 51.02' LT.
#15-100: Chiseled "□" on Southwest corner of Northwest wingwall of IL. Rte. 15 Eastbound Bridge (S.N. 082-0050). Elev. = 474.94, Sta. 687+50.79, 13.98' RT.

Existing Structures: Structure No. 082-0049 & 082-0050 were originally constructed in 1956 as FA 14, Section 27-1-B. In 1986, deck repairs and a concrete overlay were performed as FA 103, Section 27(1BI & 1VHB-I). In 1999, the slope walls on the West side were removed from the stream to Pier No. 1 and replaced with RR-5 riprap. The superstructure consists of four-span continuous non-composite riveted plate girder bridge with a 7" reinforced concrete deck. The substructure consists of stub abutments supported by steel H-piles and solid wall piers on spread footings supported by untreated timber piles. The existing plans show the back-to-back of abutment lengths as 343'-0" and the out-to-out deck width as 35'-8". The existing plans show the span lengths as 73'-2", 93'-8", 93'-8" and 73'-2". The bridges are skewed ±65° right forward. One lane of traffic in each direction will be maintained using a median crossover. (11' lanes for Stage I, 11' lanes for Stage II).

No Salvage.

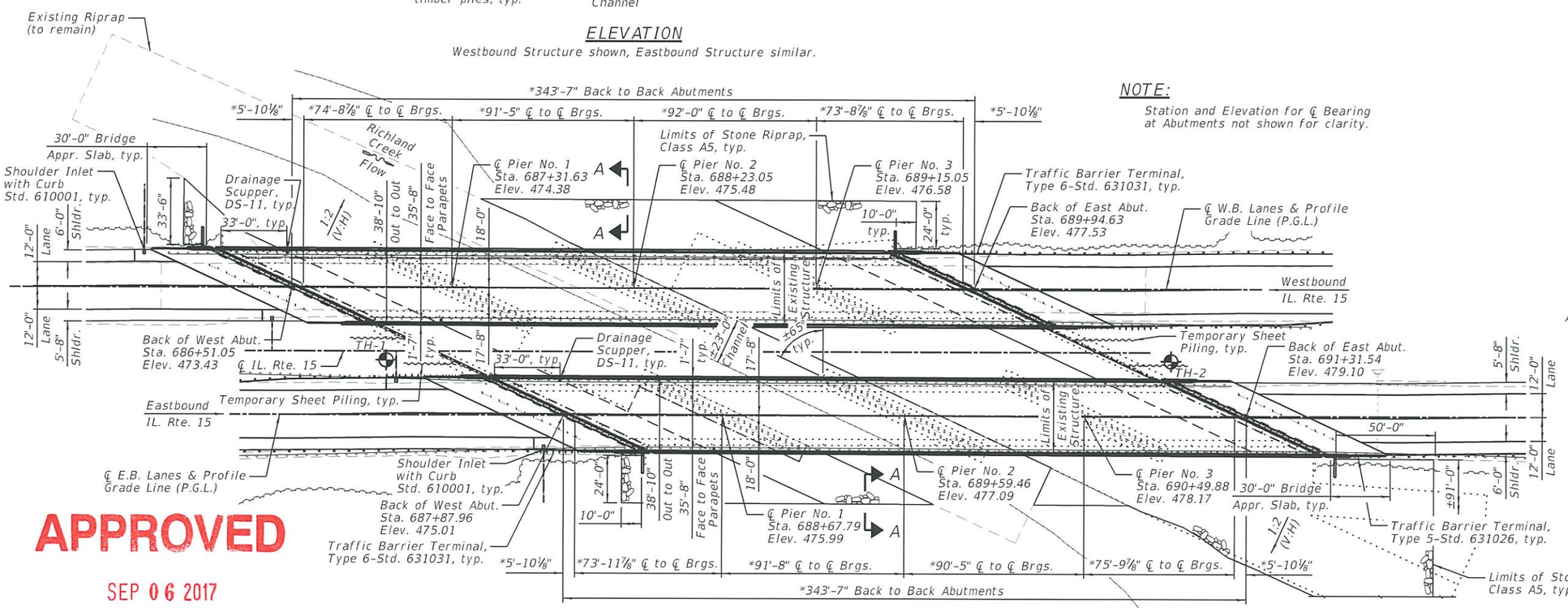
SCOPE OF WORK

1.) Maintain one lane of traffic in each direction, utilizing a median crossover. Rehabilitate each structure independently.
2.) Remove and replace the existing concrete deck.
3.) Remove and replace the existing concrete approach pavement.
4.) Repair structural steel as required, including new end cross frames and new bearing stiffeners. Zone clean and paint the existing structural steel at each abutment, up to but not including the first interior cross frames.
5.) Install stud shear connectors in the positive moment regions in order to make the existing riveted plate girders composite with the cast-in-place, reinforced concrete deck.
6.) Remove and replace the existing rocker bearings with elastomeric bearings at the abutments. Remove and replace a portion of the abutment to accommodate the new bearings and provide the necessary seismic seat width.
7.) Jack and reposition the existing pier rocker bearings.
8.) Remove and replace the existing abutment backwalls and the existing horizontal cantilever wingwalls. Remove portions of the existing retaining walls to accommodate the widened concrete deck.
9.) Stabilize the existing retaining walls with restraining anchors.
10.) Remove the existing slope wall and replace with stone riprap, class A5. Repair the channel banks as required.
11.) Concrete repair of the existing abutments and piers as required.



ELEVATION

Westbound Structure shown, Eastbound Structure similar.



PLAN

(*Dimension per field survey)

NOTE:

Station and Elevation for ℄ Bearing at Abutments not shown for clarity.

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications for Highway Bridges
1995 FHWA Seismic Retrofitting Manual for Highway Bridges

EXISTING DESIGN STRESSES

fc = 1,400 psi (Superstructure)
fc = 800 psi (Substructure)
fs = 20,000 psi (Reinforcement)
fs = 18,000 psi (Structural Steel)
n = 10

PROPOSED DESIGN STRESSES

FIELD UNITS:

f'c = 3,500 psi
f'c = 4,000 psi (Superstructure Concrete)
f'c = 4,000 psi (Restraining Anchor Grout)
fy = 60,000 psi (Reinforcement)
fy = 36,000 psi (Structural Steel)
fy = 60,000 psi (Restraining Anchors)

LOADING HS20-44

Allow 25#/sq. ft. for future wearing surface.

SEISMIC DATA

(Standard Bridge Importance)
Seismic Performance Zone (SPC) = B
Bedrock Acceleration Coefficient (A) = 0.113
Site Coefficient (S) = 1.0

HIGHWAY CLASSIFICATION

F.A.P. Route 103 (IL. 15)
Functional Class: Other Principal Arterial
A.D.T.: 13,500 (2015), 16,004 (2032)
D.H.V.: 1,350
A.D.T.T.: 1,620 (2015)
Design Speed: 55 M.P.H.
Posted Speed: 55 M.P.H.
Two Way Traffic
Directional Distribution: 50/50

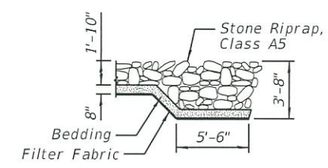
APPROVED
SEP 06 2017
AS A BASIS FOR PREPARATION OF DETAILED PLANS

DESIGN SCOUR ELEVATION TABLE
S.N. 082-0049 (WB)

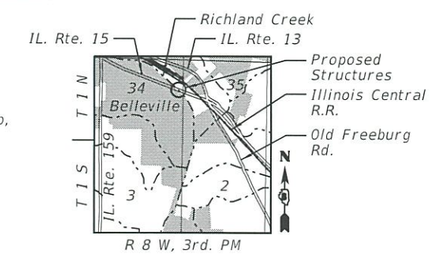
Event/Limit State	Design Scour Elevations (ft.) W. Abut.	Pier 1	Pier 2	Pier 3	E. Abut.	Item 113
Q100	464.7	445.6	433.1	450.2	468.8	7
Q500	464.7	443.3	431.6	448.0	468.8	
Design	464.7	439.0	440.2	441.2	468.8	
Check	464.7	439.0	440.2	441.2	468.8	

DESIGN SCOUR ELEVATION TABLE
S.N. 082-0050 (EB)

Event/Limit State	Design Scour Elevations (ft.) W. Abut.	Pier 1	Pier 2	Pier 3	E. Abut.	Item 113
Q100	466.4	445.6	433.1	450.2	470.4	7
Q500	466.4	443.3	431.6	448.0	470.4	
Design	466.4	440.6	441.8	442.8	470.4	
Check	466.4	440.6	441.8	442.8	470.4	



SECTION A-A



LOCATION SKETCH

IL. ROUTE 15 OVER RICHLAND CREEK
F.A.P. 103 - SECTION 27-1BR-1
ST. CLAIR COUNTY
STATION 688+91.30
STRUCTURE NO. 082-0049 (WB) AND 082-0050 (EB)

Farnsworth GROUP
2709 McGRAW DRIVE
BLOOMINGTON, ILLINOIS 61704
(309) 663-8435 / info@f-w.com

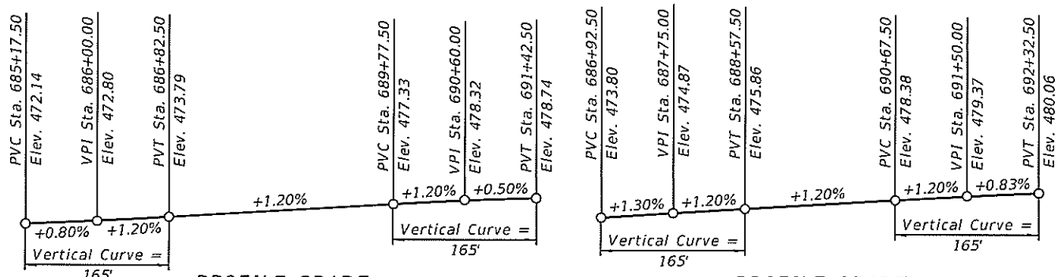
	DESIGNED - PMG	REVISED
	CHECKED - JCZ	REVISED
	DRAWN - DJM	REVISED
DATE - 09/06/17	CHECKED - JML	REVISED

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN
STRUCTURE NO. 082-0049 (WB) & 082-0050 (EB)
SHEET NO. 1 OF 3 SHEETS

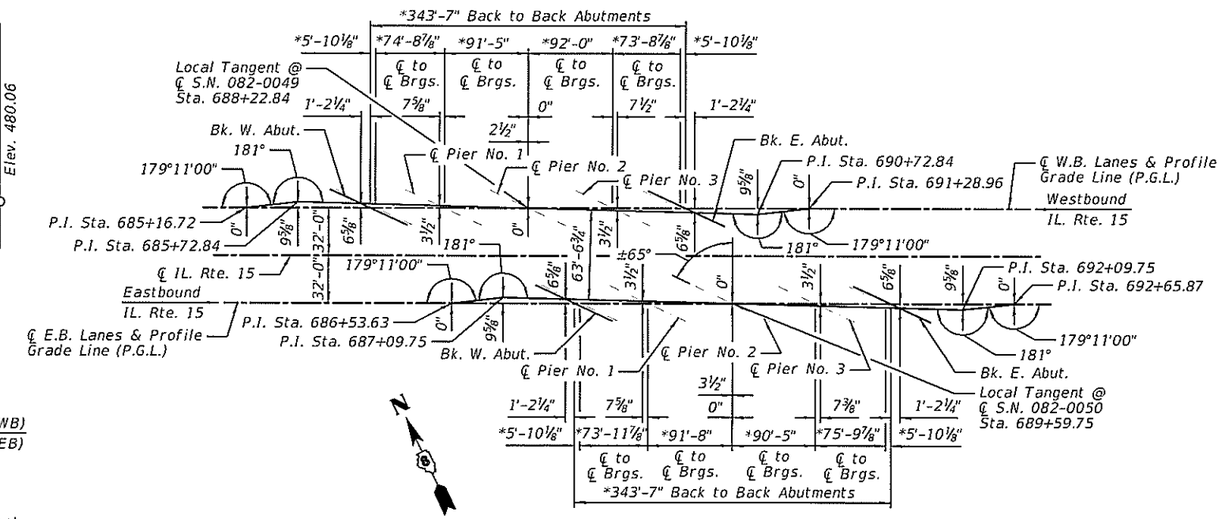
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
103	27-1BR-1	ST. CLAIR	3	1

CONTRACT NO. 76J11
ILLINOIS FED. AID PROJECT

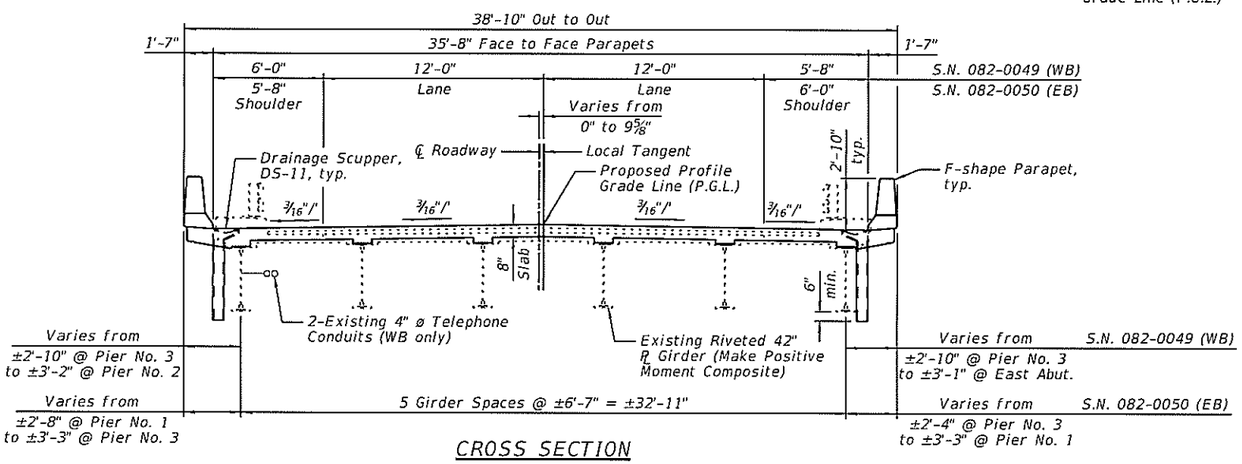


PROFILE GRADE
(Along ℄ Westbound Roadway)

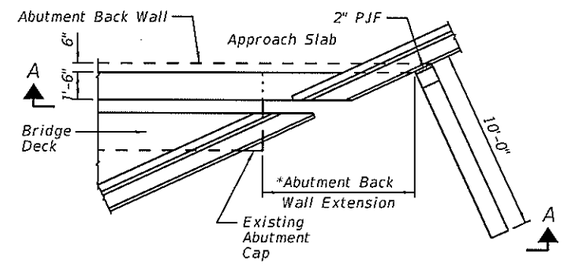
PROFILE GRADE
(Along ℄ Eastbound Roadway)



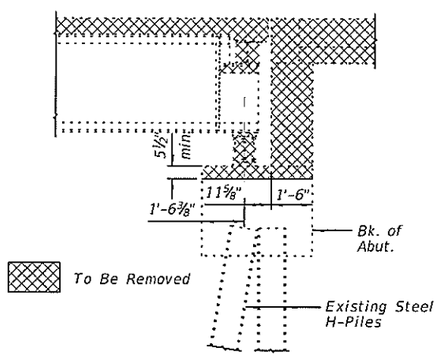
OFFSET SKETCH
(*Dimension per field survey)



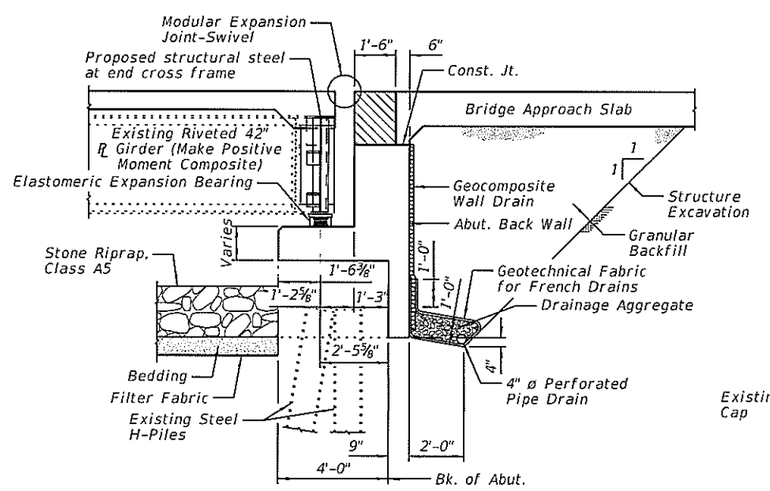
CROSS SECTION
(Looking East)



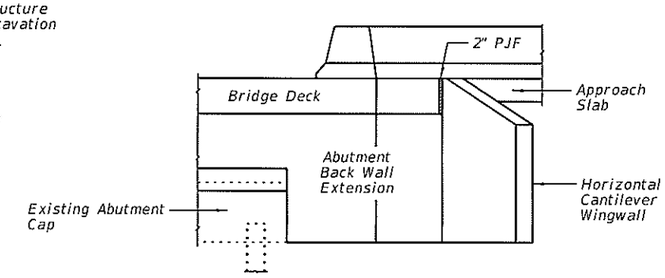
PLAN AT N.W. QUAD. S.N. 082-0049 (WB)
AND S.E. QUAD. S.N. 082-0050 (EB)
*8'-3" N.W. Quad. S.N. 082-0049 (WB)
9'-1" S.E. Quad. S.N. 082-0050 (EB)



SECTION THRU EXISTING ABUTMENT
(Horiz. dimensions @ Rt. L's)



SECTION THRU PROPOSED ABUTMENT
(Horiz. dimensions @ Rt. L's)



SECTION A-A

WINGWALL CORNER DETAIL

IL. ROUTE 15 OVER
RICHLAND CREEK
F.A.P. 103 - SECTION 27-1BR-1
ST. CLAIR COUNTY
STATION 688+91.30
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	DRAWN - DJM	REVISED
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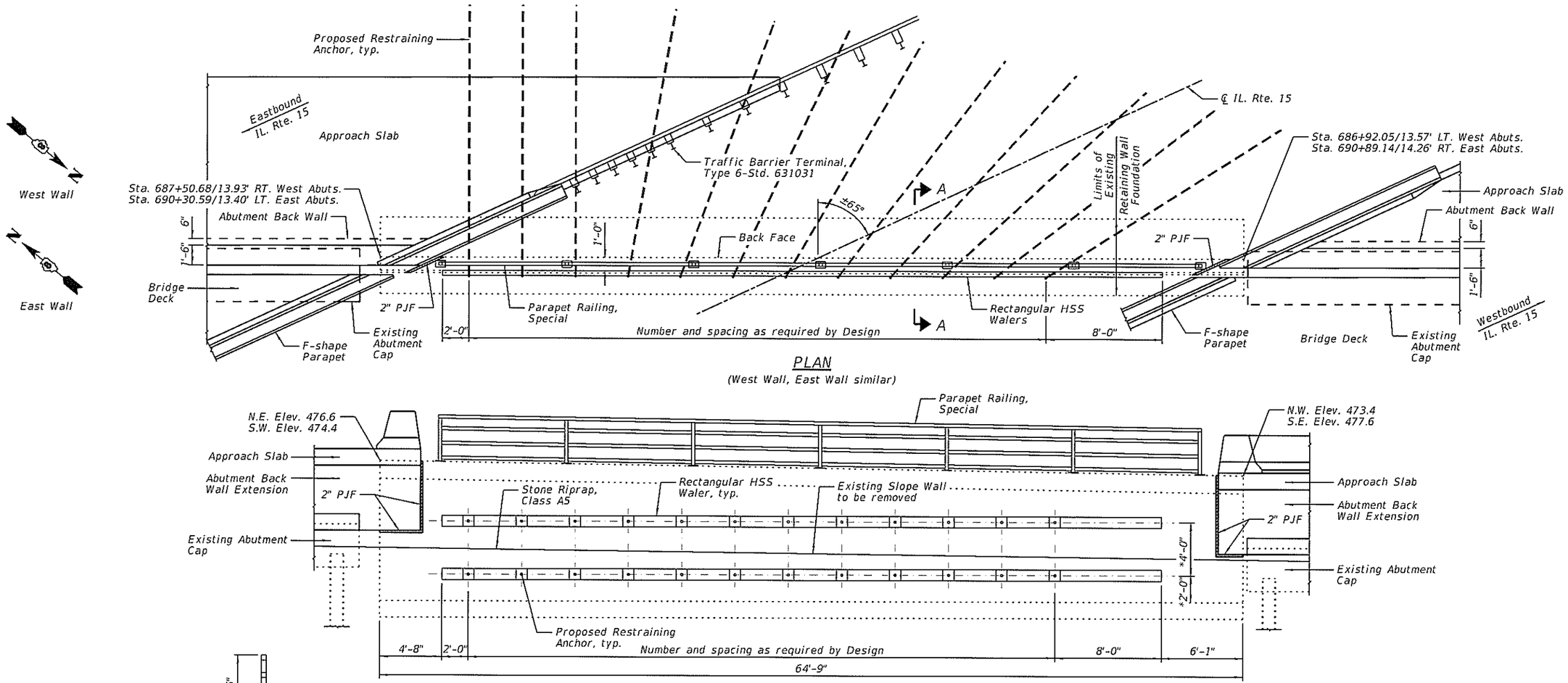
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DETAILS
STRUCTURE NO. 082-0049 (WB) & 082-0050 (EB)
SHEET NO. 2 OF 3 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
103	27-1BR-1	ST. CLAIR	3	2
		CONTRACT NO. 76J11		
		ILLINOIS FED. AID PROJECT		



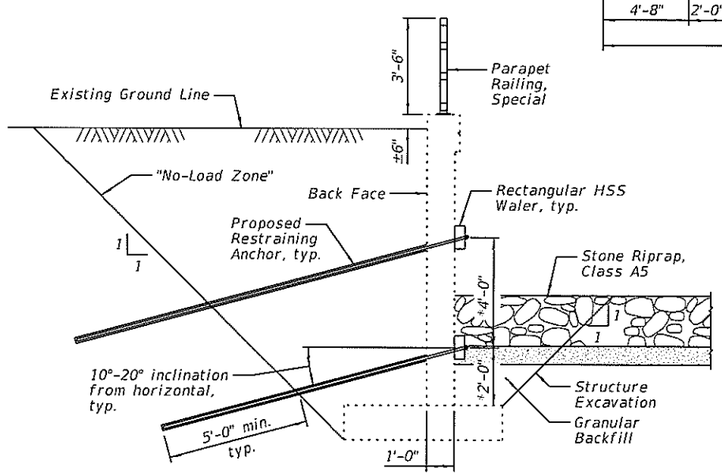
PLAN

(West Wall, East Wall similar)

ELEVATION

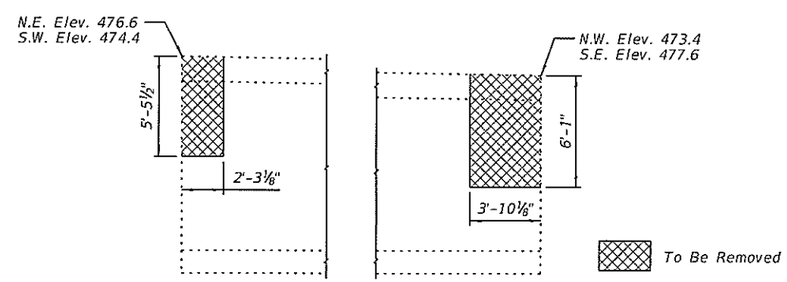
(West Wall, East Wall similar)

*As required by Design



SECTION A-A

*As required by Design



PARTIAL ELEVATION EXISTING RETAINING WALL

IL. ROUTE 15 OVER
RICHLAND CREEK
F.A.P. 103 - SECTION 27-1BR-1
ST. CLAIR COUNTY
STATION 688+91.30
STRUCTURE NO. 082-0049 (WB)
AND 082-0050 (EB)

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	DRAWN - OJM	REVISED
DATE - 09/06/17	CHECKED - JML	REVISED

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RETAINING WALL DETAILS
STRUCTURE NO. 082-0049 (WB) & 082-0050 (EB)
SHEET NO. 3 OF 3 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
103	27-1BR-1	ST. CLAIR	3	3
		CONTRACT NO. 76J11		
		ILLINOIS FED. AID PROJECT		