

ROBERT J. DEMING
 062-057483
 LICENSED PROFESSIONAL ENGINEER
 ILLINOIS
 EXPIRES: 11/30/2021

PRIMERA ENGINEERS LTD.
 ROBERT J. DEMING, P.E.
 DATE: 02/07/2020
 SIGNATURE AND SEAL APPLY TO DRAWINGS:

ZAIDA MORILLO
 081-008252
 LICENSED STRUCTURAL ENGINEER
 STATE OF ILLINOIS
 EXPIRES: 11/30/2020

PRIMERA ENGINEERS LTD.
 ZAIDA MORILLO, P.E., S.E.
 DATE: 02/07/2020
 SIGNATURE AND SEAL APPLY TO DRAWINGS:

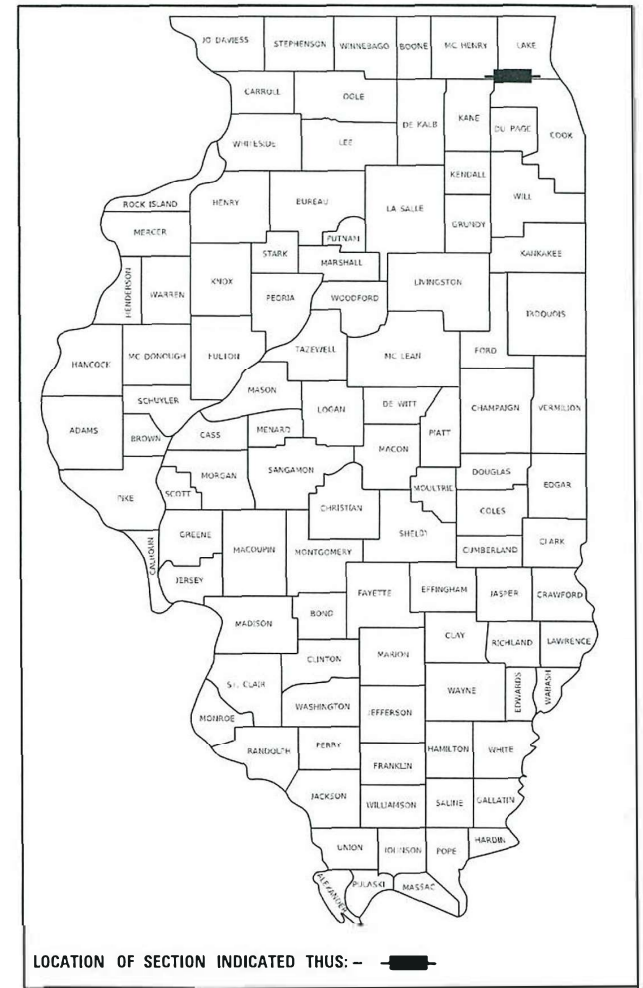
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

**PROPOSED
 HIGHWAY PLANS**

FAP 305 - US ROUTE 14 (NORTHWEST HWY)
 OVER FLINT CREEK
 SECTION 2019-088-BR
 PROJECT
 BRIDGE REPAIRS (S.N. 049-0003) LAKE
 COUNTY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0305	2019-088-BR	LAKE	9	1
FED. AID PROJECT		ILLINOIS	CONTRACT NO. 62K19	

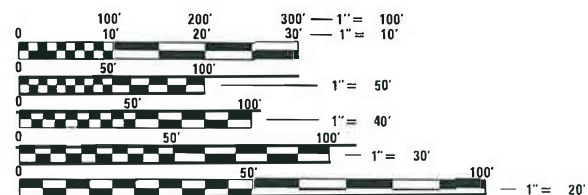
D-91-316-20



FOR INDEX OF SHEETS, SEE SHEET NO. 2

PROJECT IS LOCATED IN THE VILLAGE OF BARRINGTON IN LAKE COUNTY

TRAFFIC DATA:
 FUNCTIONAL CLASSIFICATION
 OTHER PRINCIPAL ARTERIAL
 2017 ADT = 25400
 P.V. = 96.7% S.U. = 2.3% M.U. = 1.0%
 POSTED SPEED LIMIT = 35 MPH



FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.
 JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS
 1-800-892-0123
 OR 811

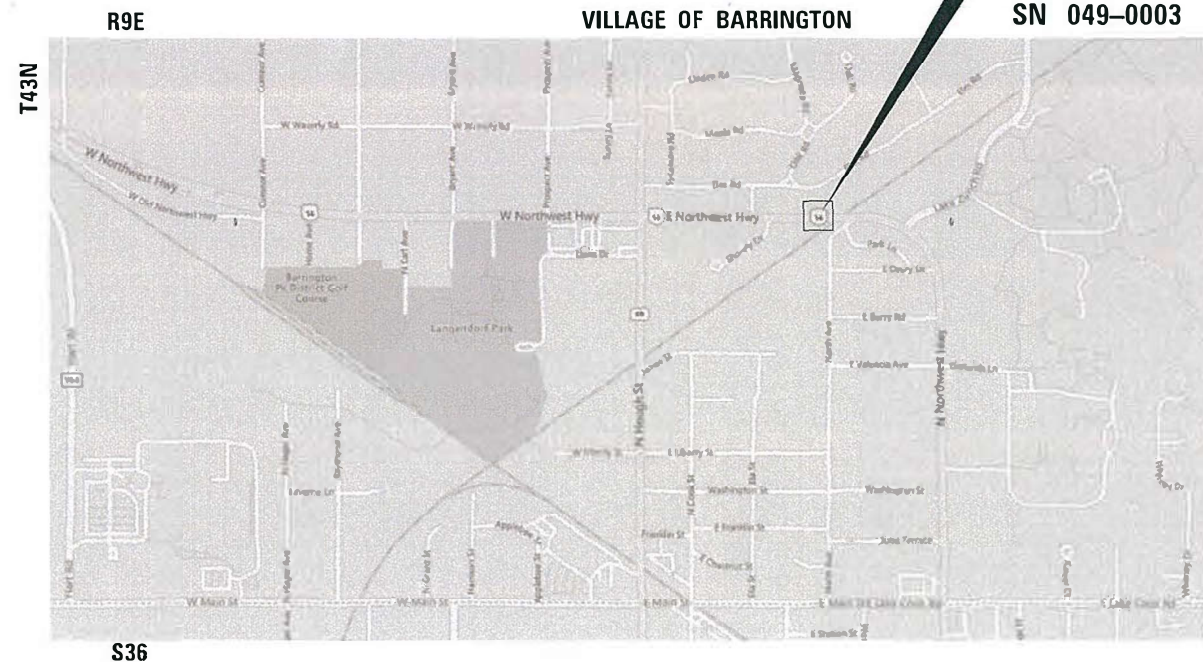
PROJECT ENGINEER PRAVEEN KAINI, PE
 (847) 705-4237

PROJECT MANAGER FAWAD AQUEEL, PE, PTOE
 (847) 705-4247

CONTRACT NO. 62K19

C-91-108-20

BRIDGE IMPROVEMENT
 STA 212+17
 SN 049-0003



N
 LOCATION MAP NOT TO SCALE

GROSS LENGTH = 100 FT. = 0.019 MILE
 NET LENGTH = 100 FT. = 0.019 MILE



STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

SUBMITTED March 17 20 20
Claudia J. Quigley / OAS REGIONAL ENGINEER
 May 8, 2020
Scott A. Elk
 ENGINEER OF DESIGN AND ENVIRONMENT
 May 8, 2020
James J. ...
 DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

**PRINTED BY THE AUTHORITY
 OF THE STATE OF ILLINOIS**

INDEX OF SHEETS

- 1 COVER SHEET
- 2 INDEX OF SHEETS, HIGHWAY STANDARDS, GENERAL NOTES, AND COMMITMENTS
- 3 SUMMARY OF QUANTITIES
- 4 ALIGNMENT
- 5-7 STURCTURAL PLANS
- 8-9 DISTRICT 1 DETAILS

HIGHWAY STANDARDS

- 000001-07 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 001006 DECIMAL OF AN INCH AND OF A FOOT
- 664001-02 CHAIN LINK FENCE
- 701101-05 OFF-RD OPERATIONS, MULTILANE, 15' TO 24" FROM PAVEMENT EDGE
- 701106-02 OFF-RD OPERATIONS, MULTILANE, MORE THAN 15' AWAY
- 701602-10 URBAN LANE CLOSURE, MULTILANE, 2W WITH BIDIRECTIONAL LEFT TURN LANE
- 701801-06 SIDEWALK, CORNER OR CROSSWALK CLOSURE
- 701901-08 TRAFFIC CONTROL DEVICES

GENERAL NOTES

1. ANY REFERENCE TO A STANDARD IN THESE PLANS SHALL BE INTERPRETED TO MEAN THE LATEST EDITION.
2. THE CONTRACTOR SHALL CONTACT J.U.L.I.E. AT LEAST 48 HOURS PRIOR TO EXCAVATION TO DETERMINE WHICH UTILITIES ARE IN THE AREA.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTING AND MAINTAINING AN ELECTRONIC LOG OF ALL STAKEOUT SURVEY THAT IS PERFORMED ON THE JOB, EITHER BY HIM/HER OR ANY SUB-CONTRACTOR PERFORMING THE STAKEOUT. UPON REQUEST, ALL LOGS SHALL BE SUBMITTED TO THE DEPARTMENT. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THIS WORK, BUT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
4. THE CONTRACTOR SHALL USE CARE IN THEIR CONSTRUCTION OPERATIONS NEAR ANY EXISTING ITEMS THAT WILL NOT BE REMOVED. ANY DAMAGE DONE TO EXISTING ITEMS BY THE CONTRACTOR SHALL BE REPAIRED OR BE REPLACED AT THE CONTRACTOR'S OWN EXPENSE TO THE SATIFICATION OF THE ENGINEER.
5. THE CONTRACTOR SHALL REFER TO THE SPECIAL PROVISION FOR STRUCTURAL ASSESSMENT REPORTS FOR CONTRACTOR'S MEANS AND METHODS WHEN FORMULATING A WORK PLAN THAT INVOLVES LOADS ON THE DECK.
6. THE CONTRACTOR SHALL CONTACT THE DISTRICT ONE ARTERIAL TRAFFIC CONTROL SUPERVISOR AT KALPANA.KANNAN-HOSADURGA@ILLINOIS.GOV A MINIMUM OF 72 HOURS IN ADVANCE OF BEGINNING WORK.

COMMITMENTS:

NONE

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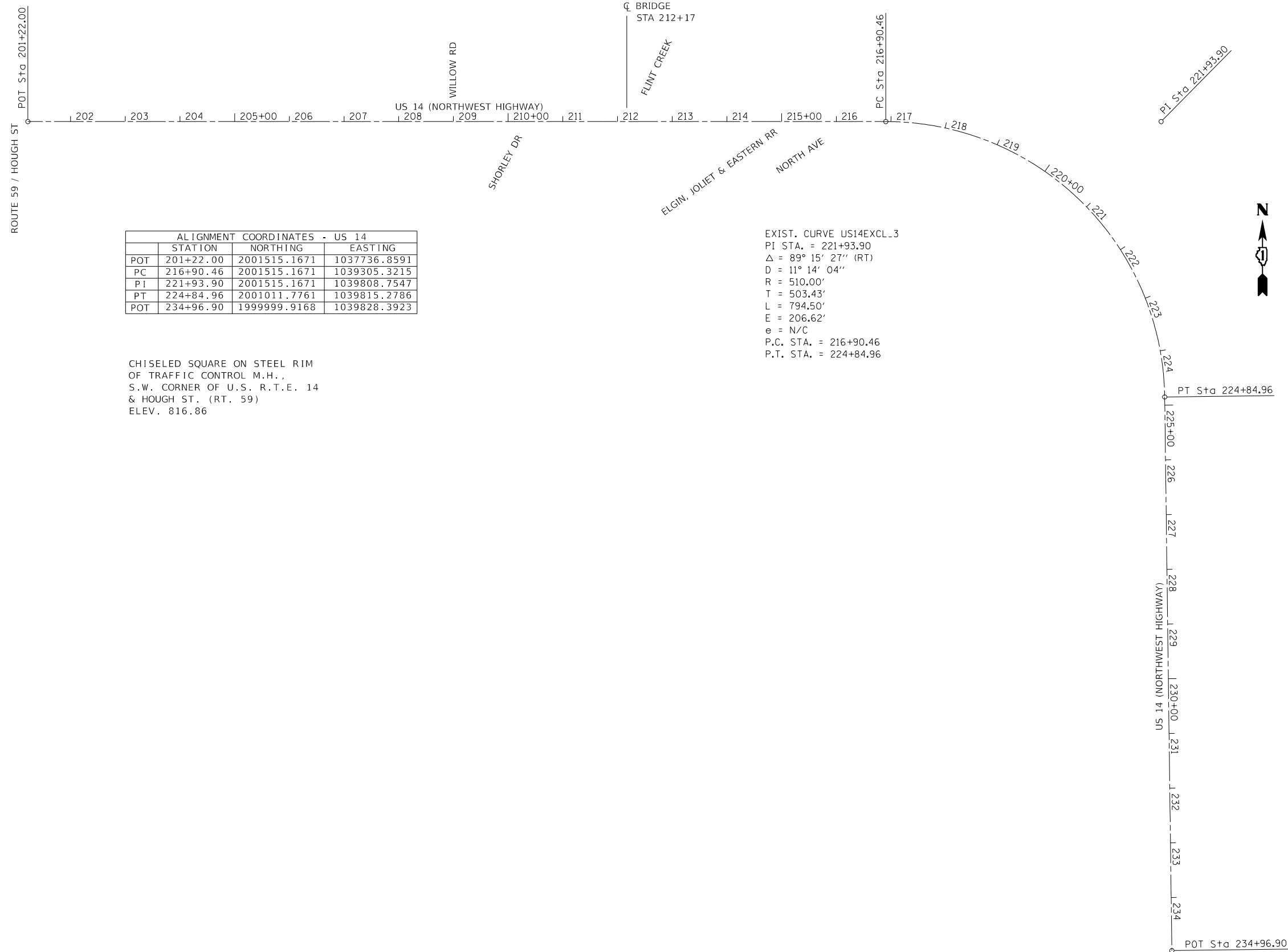
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**INDEX OF SHEETS, HIGHWAY STANDARDS,
GENERAL NOTES, AND COMMITMENTS**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0305	2019-008-BR	LAKE	9	2
CONTRACT NO. 62K19			ILLINOIS FED. AID PROJECT	

REV-SEP



ALIGNMENT COORDINATES - US 14			
	STATION	NORTHING	EASTING
POT	201+22.00	2001515.1671	1037736.8591
PC	216+90.46	2001515.1671	1039305.3215
PI	221+93.90	2001515.1671	1039808.7547
PT	224+84.96	2001011.7761	1039815.2786
POT	234+96.90	1999999.9168	1039828.3923

EXIST. CURVE US14EXCL.3
 PI STA. = 221+93.90
 $\Delta = 89^\circ 15' 27''$ (RT)
 $D = 11^\circ 14' 04''$
 $R = 510.00'$
 $T = 503.43'$
 $L = 794.50'$
 $E = 206.62'$
 $e = N/C$
 P.C. STA. = 216+90.46
 P.T. STA. = 224+84.96

CHISELED SQUARE ON STEEL RIM
 OF TRAFFIC CONTROL M.H.,
 S.W. CORNER OF U.S. R.T.E. 14
 & HOUGH ST. (RT. 59)
 ELEV. 816.86



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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

ALIGNMENT			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

F.A.P. RTE. 0305	SECTION 2019-008-BR	COUNTY LAKE	TOTAL SHEETS 9	SHEET NO. 4
ILLINOIS			FED. AID PROJECT	
CONTRACT NO. 62K19				

Benchmark: Chiseled square on steel rim of traffic control M.H., SW corner of U.S. Rte. 14 and Hough St. (Rt. 59), Elev. 816.76.

Existing Structure: Structure No. 049-0003 was built in 1937 with Section Number 24-B-1 on Route SBI-19 with the centerline of the structure at station 212+17. The bridge is 26'-0" long from back-to-back of abutments with an out-to-out width of deck of 63'-4" and at a 32°12'00" skew (left). The superstructure consists of a reinforced concrete cast-in-place slab with a depth of 13" and a concrete overlay of 2". The substructure consists of reinforced concrete high wall abutments and wingwalls supported on spread footings. Deck and abutment repairs were performed in 2003 under section number 24 B-1-BR and Route FAP 305. In 1983, the parapets were replaced, and sidewalks were added. Stage construction shall be utilized to maintain traffic at all times.

INDEX OF SHEETS

- 1. General Plan & Elevation
- 2. General Notes
- 3. Construction Details

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications for Highway Bridges, 17th Edition

IDOT Bridge Manual, January 2012

IDOT All Bridge Designers Memorandums

CONSTRUCTION SPECIFICATIONS

IDOT Guide Bridge Special Provisions

IDOT Supplemental Specifications and Recurring Special Provisions, January 2020

IDOT Standard Specifications for Road and Bridge Construction, April 2016

DESIGN STRESSES

Structural Steel:
fy = 50,000 psi (M270 Grade 50)

SCOPE OF WORK

Proposed repair consists of the installation of 14 steel beams at 3 ft. spacing, spanning over the limits of the spalled deck area with exposed, debonded reinforcement under the existing bridge deck, supported by brackets attached to the existing abutment walls. The proposed beams are designed to carry all the required loading assuming the deteriorated slab does not contribute to the capacity of the superstructure and improve the load rating of the bridge to maintain the current load posting. Delaminated deck repair is not included.

LEGEND

- Delaminated
- Spalled with bars exposed

WSE = Water Surface Elevation

* Contractor to verify beam lengths prior to ordering material. Other sections meeting the section modulus requirements shown may be allowed subject to approval by the Bureau of Bridges and Structures. Maximum girder depth = 12". No additional payment will be allowed if the contractor chooses a heavier steel section than the one specified in the plans. (Min. Sx = 79.1 in³).

** \bar{C} Transverse Tie Plates (2 per 2 beam). Place additional shim plates at midpoints between Tie Plates. Securely weld shims to top flange of support beam. Minimum shim plate size is 6" x flange width.

GENERAL PLAN AND ELEVATION

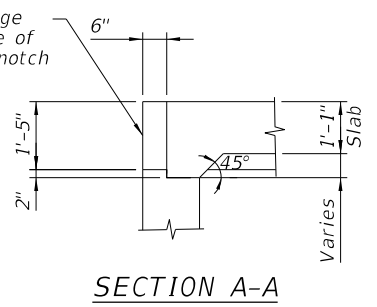
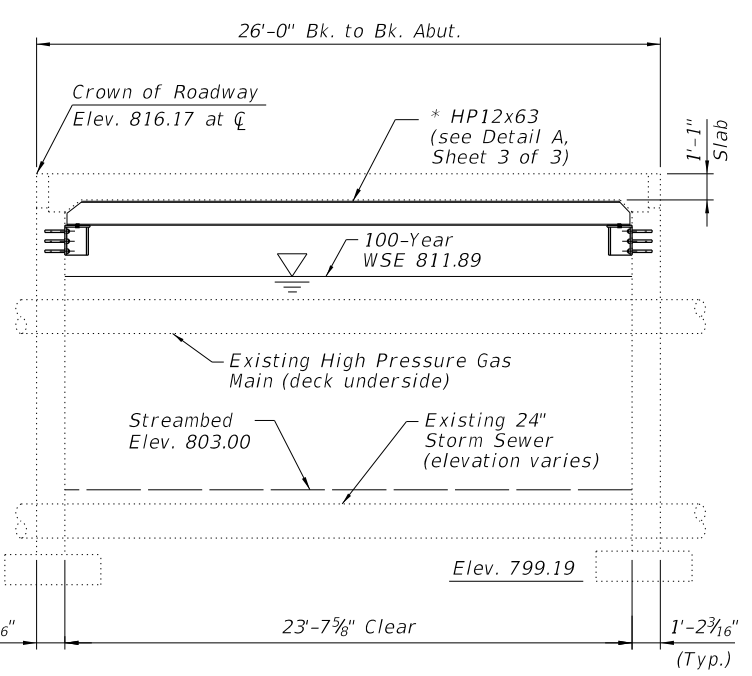
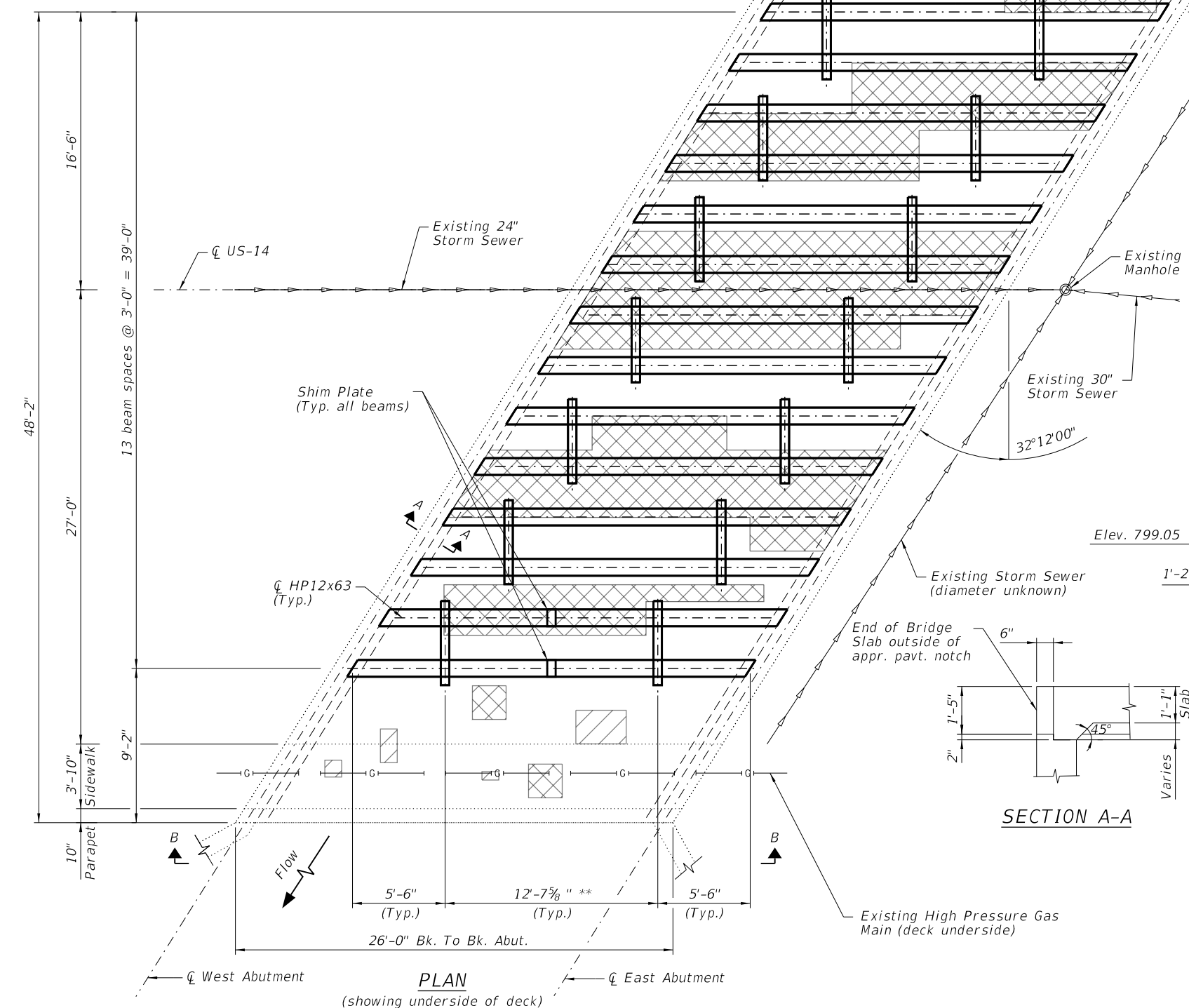
US HWY 14 (F.A.P. 305)

OVER FLINT CREEK

LAKE COUNTY

STATION 212 + 17

STRUCTURE NO. 049-0003



SECTION B-B
(Parallel to \bar{C} Roadway)

SECTION A-A

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Furnishing and Erecting Structural Steel	Pound	25,280
Anchor Bolts, 3/4"	Each	196

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION
STRUCTURE NO. 049-0003

SHEET 1 OF 3 SHEETS

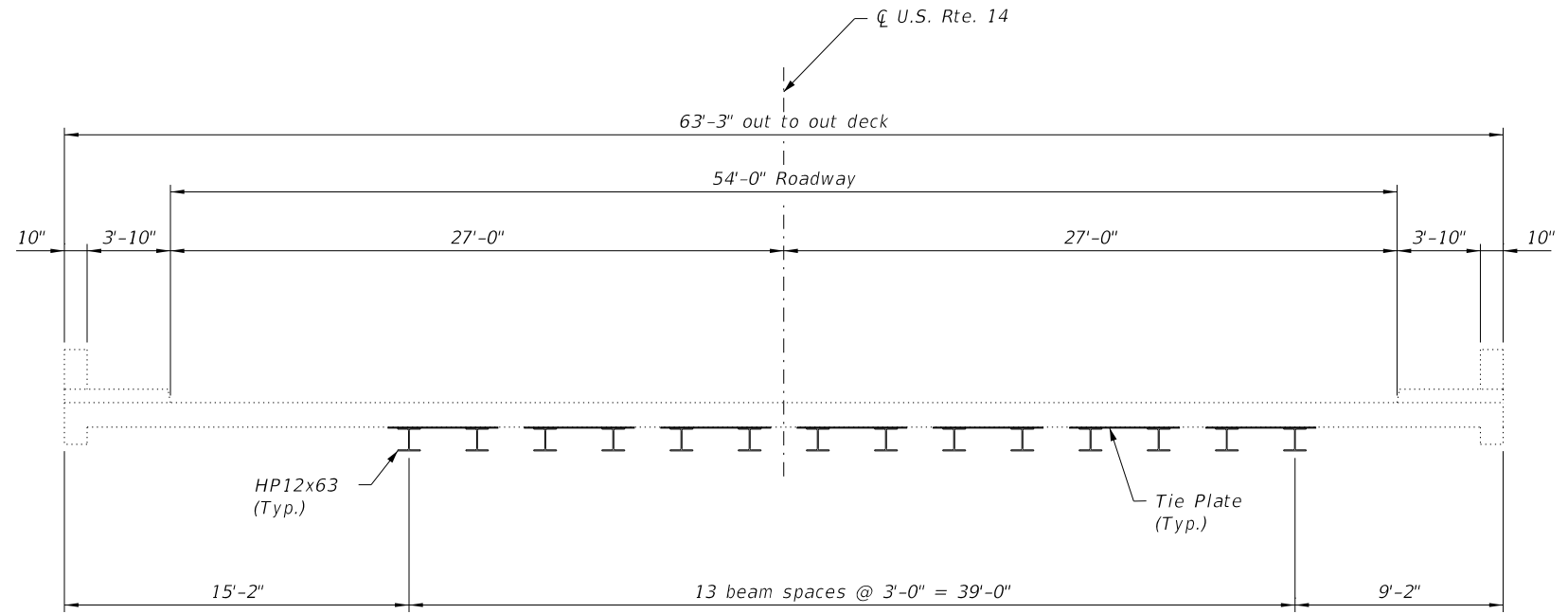
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305	2019-008-BR	LAKE	9	5
CONTRACT NO. 62K19				
ILLINOIS		FED. AID PROJECT		

100 S. WACKER DRIVE SUITE 700 CHICAGO IL 60606 P312-886-0910 P312-886-0415

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GENERAL NOTES

1. Calculated weight of Structural Steel = 25,280 lbs.
2. All structural steel shall conform to AASHTO Classification M-270 Gr. 50, unless otherwise noted.
3. Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.
4. No field welding is permitted except as specified in the contract documents.
5. The Contractor is advised that the existing deck slab is in a deteriorated condition with reduced load carrying capacity. It is the Contractor's responsibility to account for the condition of the deck slab when developing construction procedures.
6. See Section 584 of the Standard Specifications for epoxy grouting of anchor bolts. Minimum embedment = 10".
7. If the Contractor's procedure for placement of beams involves placement of cranes or other heavy equipment on the bridge, a detailed procedure shall be submitted to the Engineer for approval. The procedure shall include calculations, prepared and sealed by an Illinois Licensed Structural Engineer, verifying that the equipment and procedure used will not overstress the existing deck. To distribute load on deck and protect the existing surface, in all cases, a double layer mat of heavy timbers shall be used at all times under crane tracks or wheels and any outriggers in the down position. If necessary, shims shall be used under the crane mat to ensure uniform contact with the underlying deck.
8. The Contractor is advised of the presence of a high pressure Nicor gas main suspended from the underside of the bridge deck on the south side of the structure. While no conflicts are anticipated with the proposed beam locations, the Contractor shall exercise extreme caution when placing beams underneath the structure or working in proximity to the gas line.



PROPOSED TYPICAL SECTION
(looking East)

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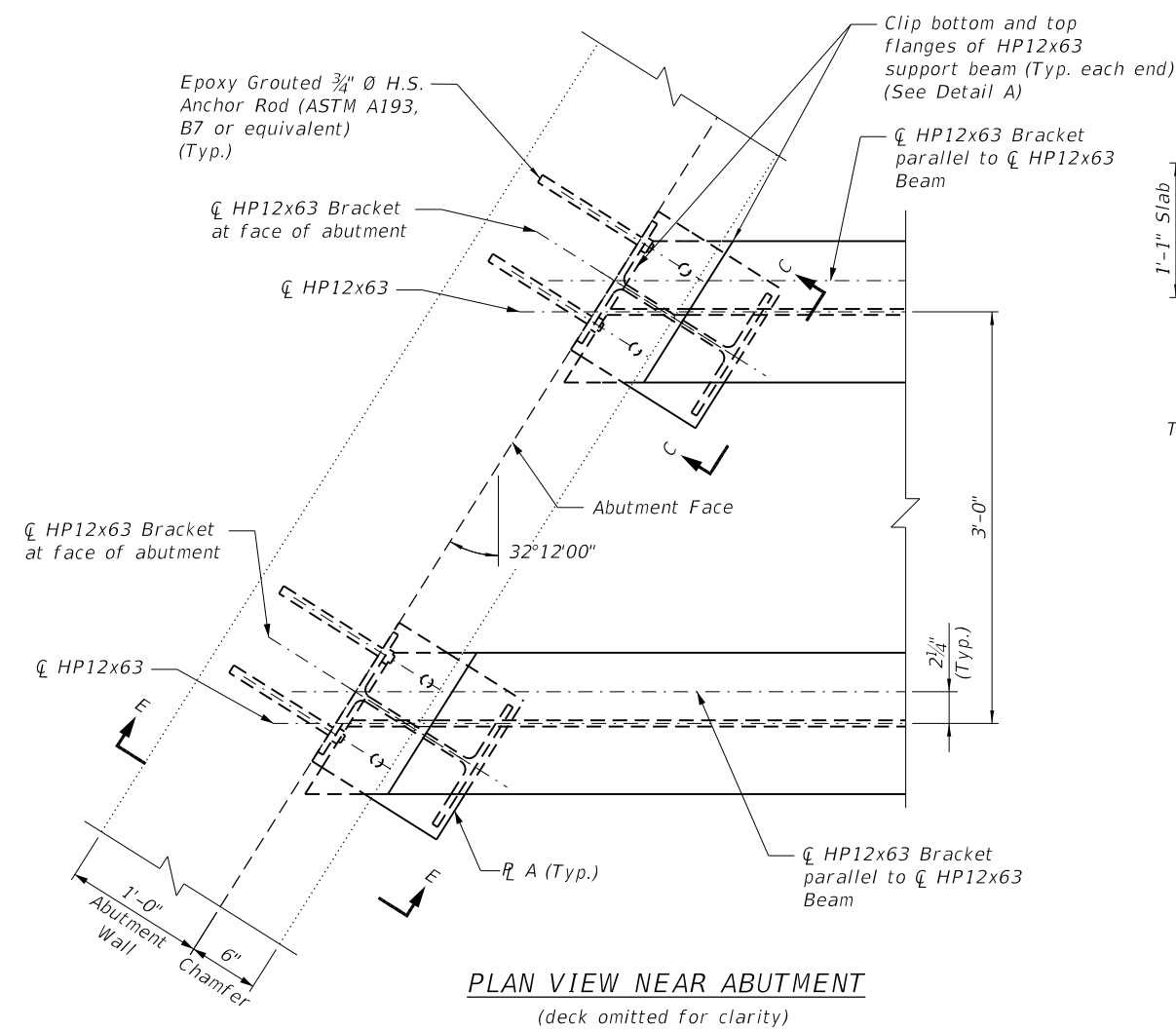
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

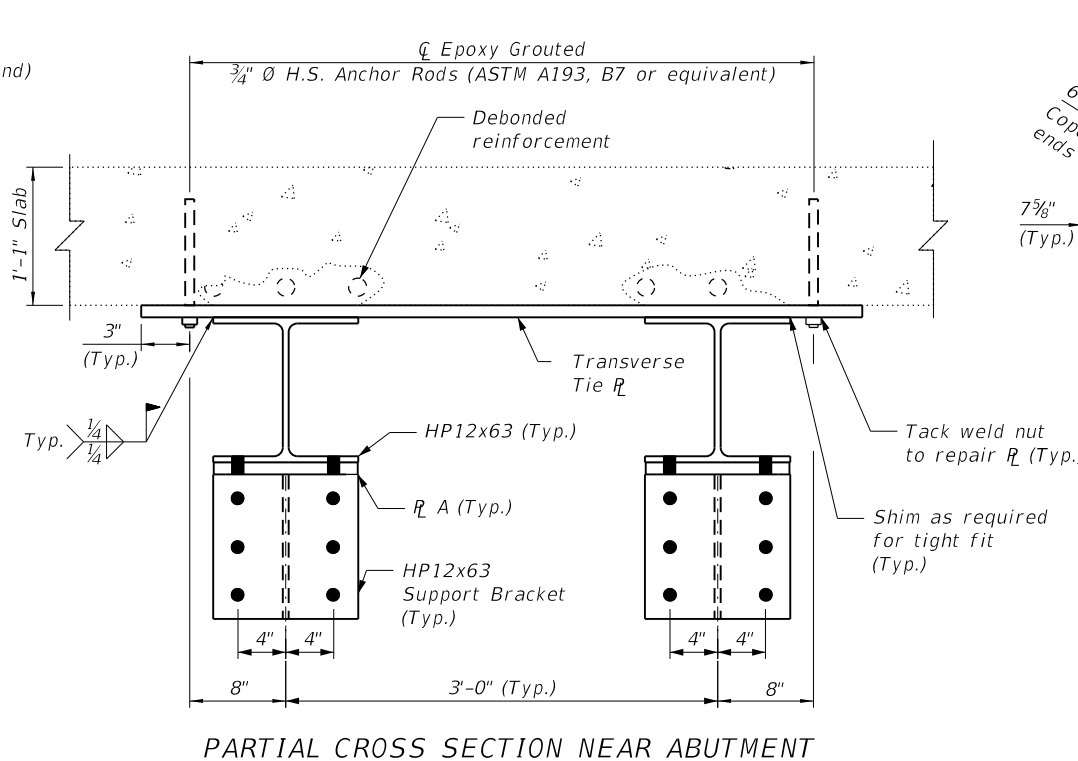
GENERAL NOTES
STRUCTURE NO. 049-0003

F.A.P. RTE. 305	SECTION 2019-008-BR	COUNTY LAKE	TOTAL SHEETS 9	SHEET NO. 6
CONTRACT NO. 62K19				
ILLINOIS FED. AID PROJECT				

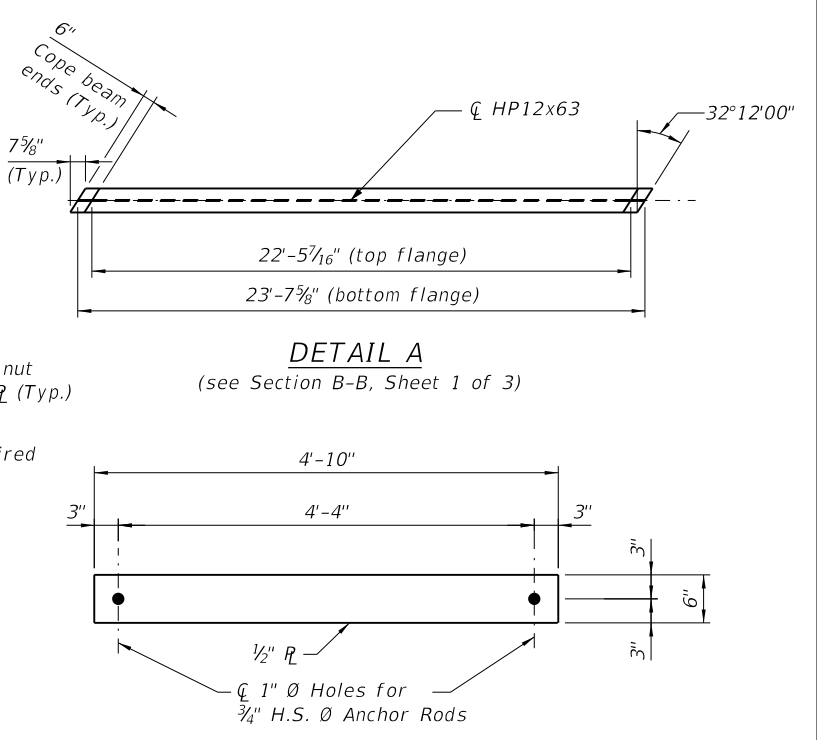
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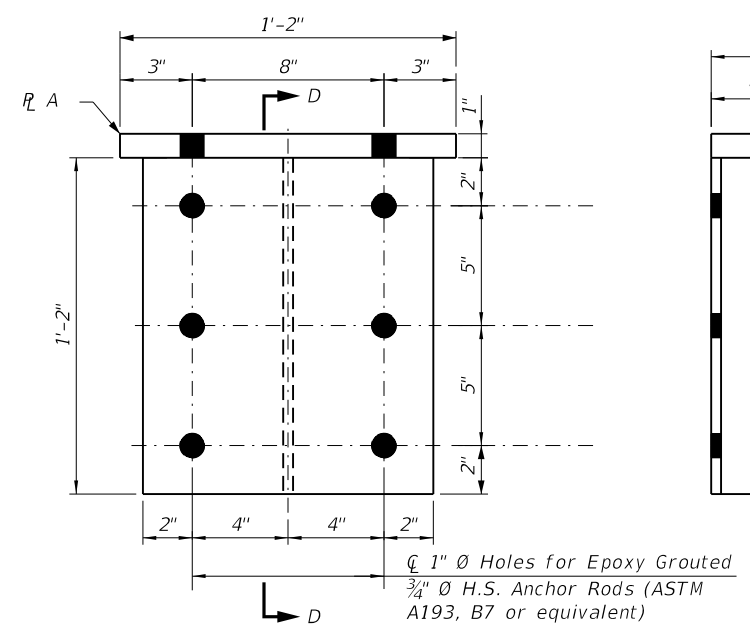
PLAN VIEW NEAR ABUTMENT
 (deck omitted for clarity)



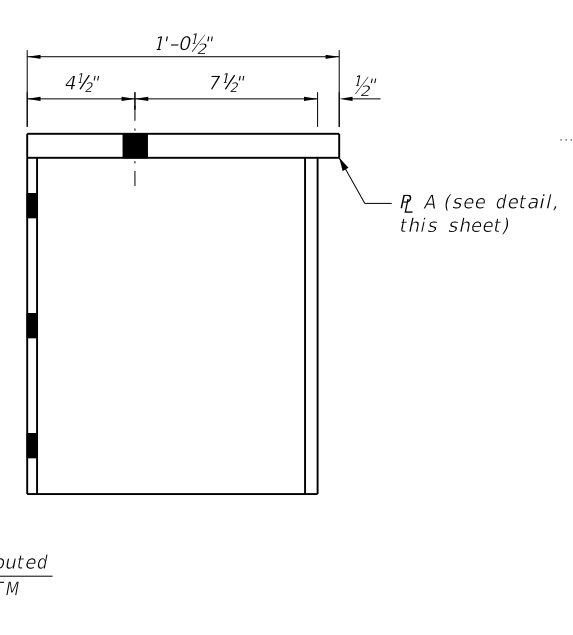
PARTIAL CROSS SECTION NEAR ABUTMENT



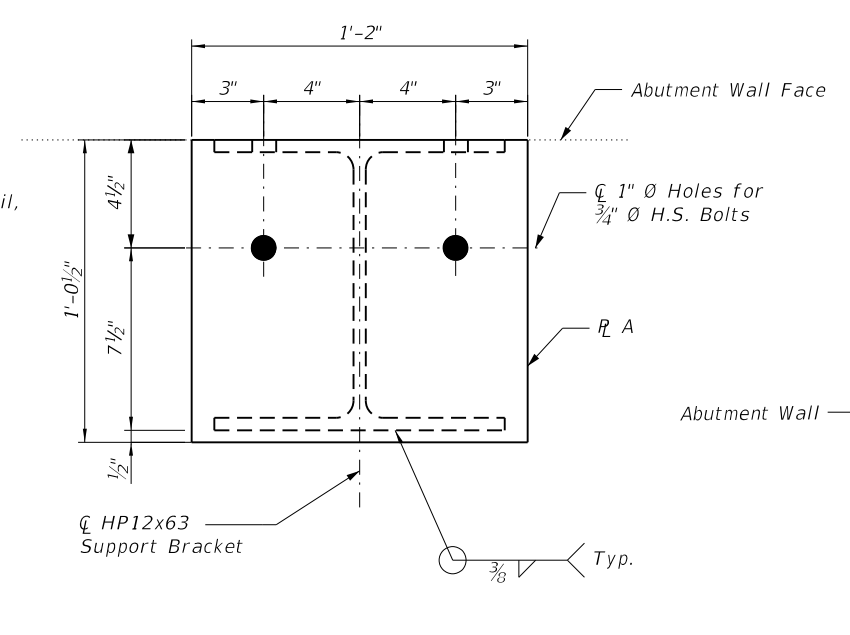
TRANSVERSE TIE PLATES



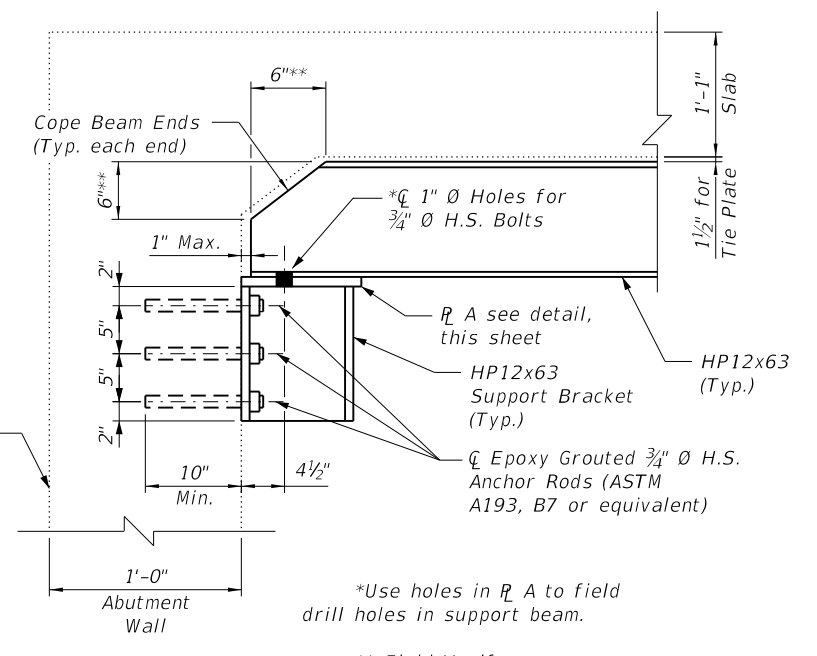
ELEVATION C-C



SECTION D-D



PLAN



SECTION E-E

HP12x63 SUPPORT BRACKET

PLATE A



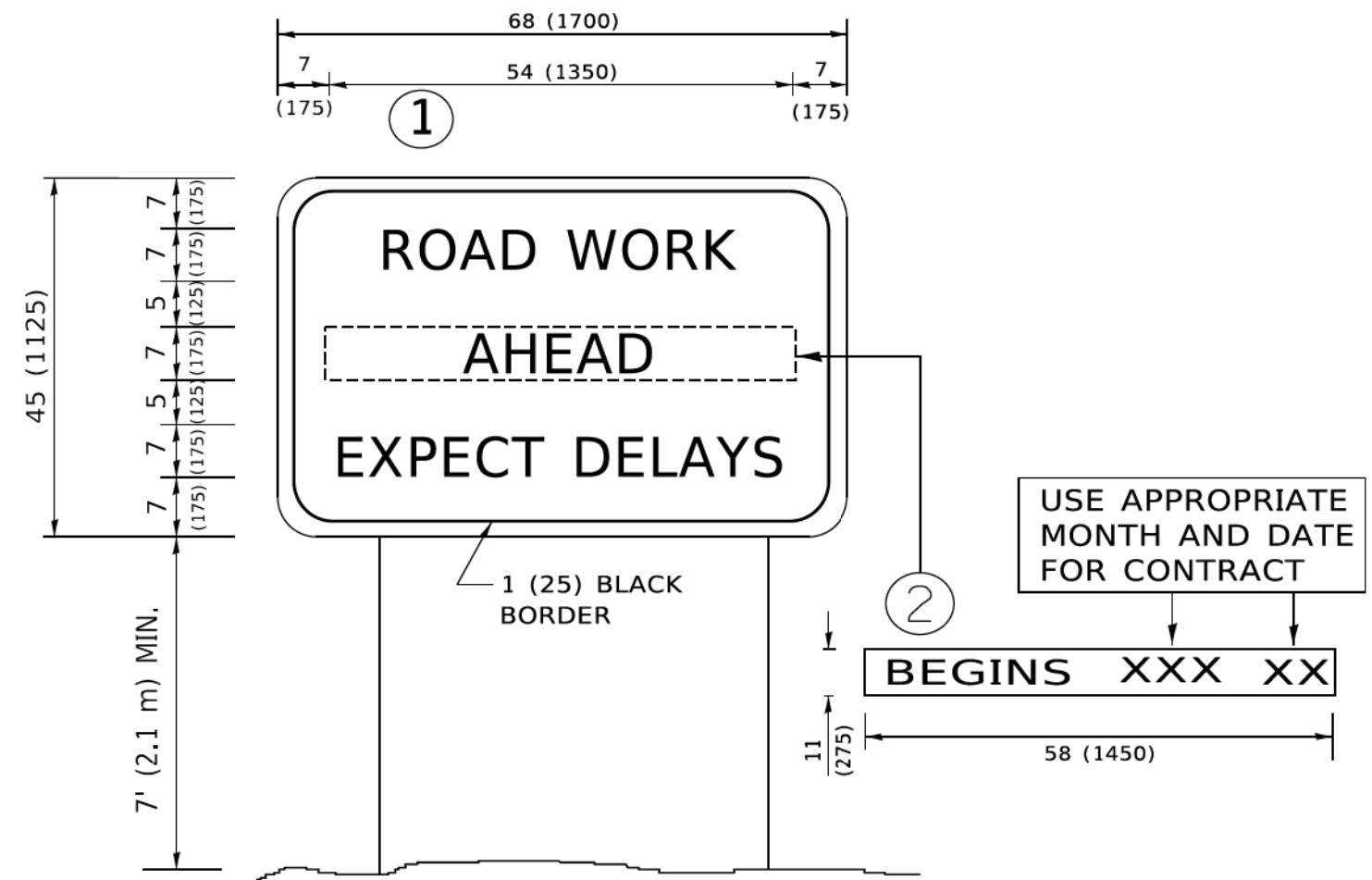
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**CONSTRUCTION DETAILS
 STRUCTURE NO. 049-0003**

SHEET 3 OF 3 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	2019-008-BR	LAKE	9	7
CONTRACT NO. 62K19				
ILLINOIS FED. AID PROJECT				



NOTES:

1. USE BLACK LETTERING ON ORANGE BACKGROUND.
2. ERECT SIGNS IN ADVANCE OF THE LOCATION FOR THE "ROAD CONSTRUCTION AHEAD" SIGN AT LOCATIONS AS DIRECTED BY THE ENGINEER.
3. ERECT SIGN ① WITH INSTALLED PANEL ② ONE WEEK PRIOR TO THE START OF CONSTRUCTION.
4. REMOVE PANEL ② SOON AFTER THE START OF CONSTRUCTION.
5. SEE SPECIAL PROVISION FOR "TEMPORARY INFORMATION SIGNING" FOR ADDITIONAL INFORMATION.
6. ONE SIGN ASSEMBLY EQUALS 25.70 SQ. FT. (2.3 SQ. M.)
7. SHALL BE PAID FOR AS TEMPORARY INFORMATION SIGNING.

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**ARTERIAL ROAD
INFORMATION SIGN**

SCALE: NONE SHEET 1 OF 1 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0305	2019-008-BR	LAKE	9	9
TC-22		CONTRACT NO. 62K19		
ILLINOIS FED. AID PROJECT				