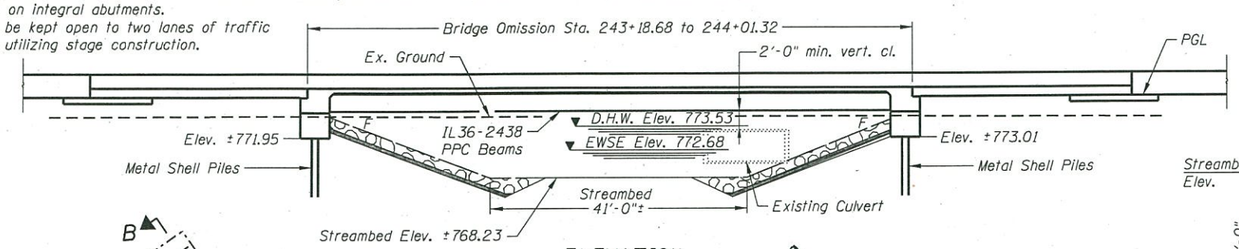
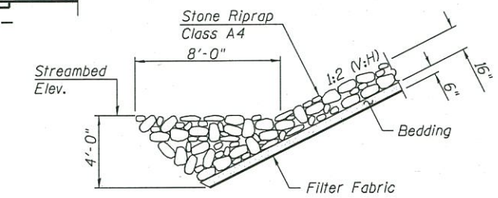
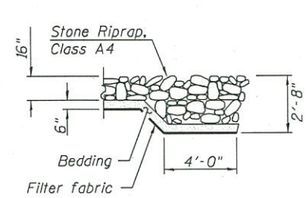
Bench Mark: IDOT brass survey marker in concrete pavement stamped F.A.P. 345 STA 303+49.45 Elev. 796.46.
Existing Structure: S.N. 022-0223, cast-in-place reinforced concrete box culvert with vertical cantilever wingwalls on each side. Built in 1930, the culvert plans show culvert length from outside face of headwall to outside face of headwall as ±75'-3". The contractor shall remove the existing structure and replace it with a single span wide flange superstructure on integral abutments.
The road shall be kept open to two lanes of traffic at all times by utilizing stage construction.
No Salvage



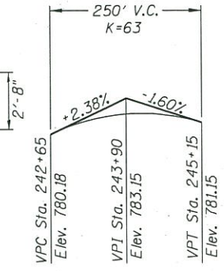
ELEVATION



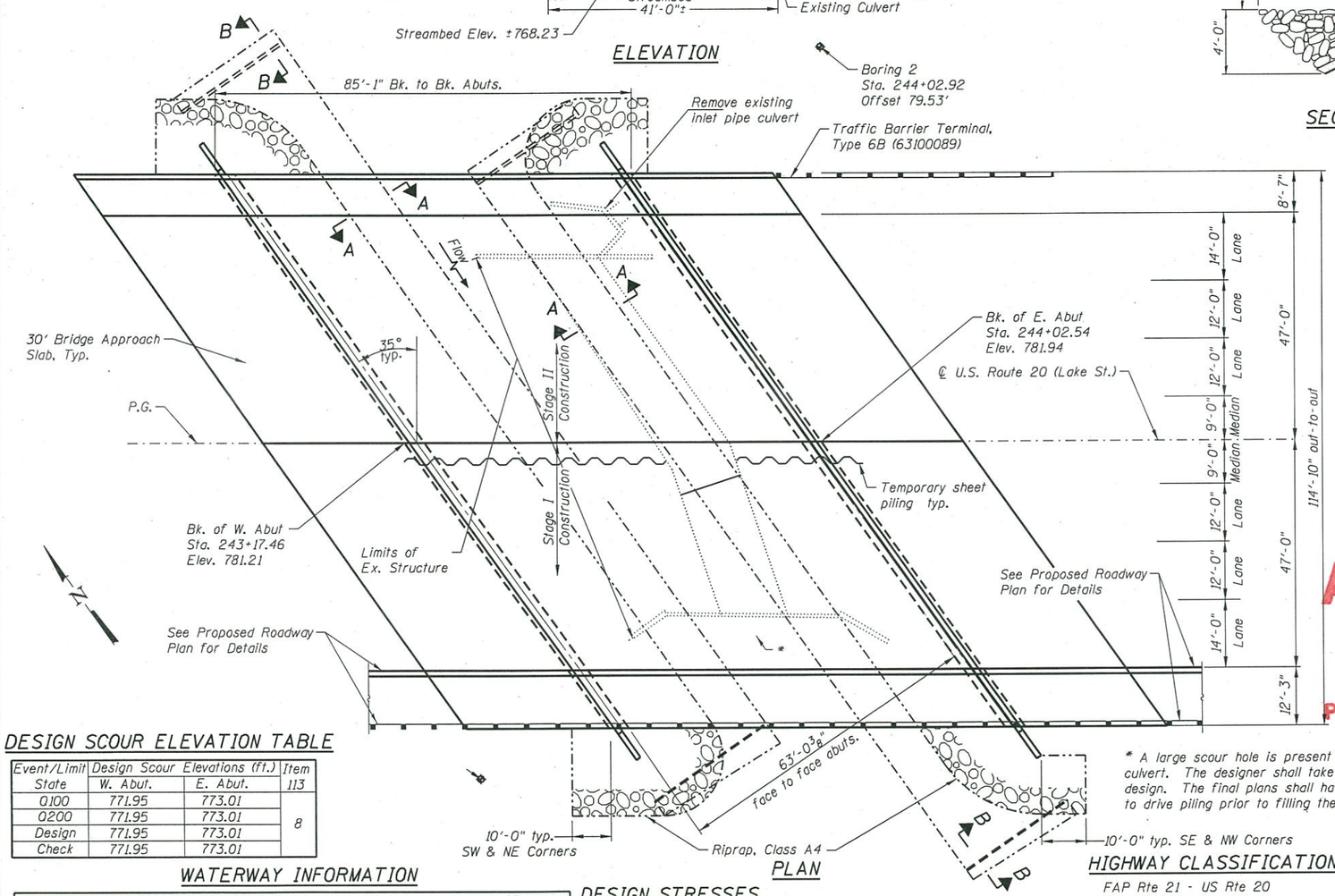
SECTION A-A



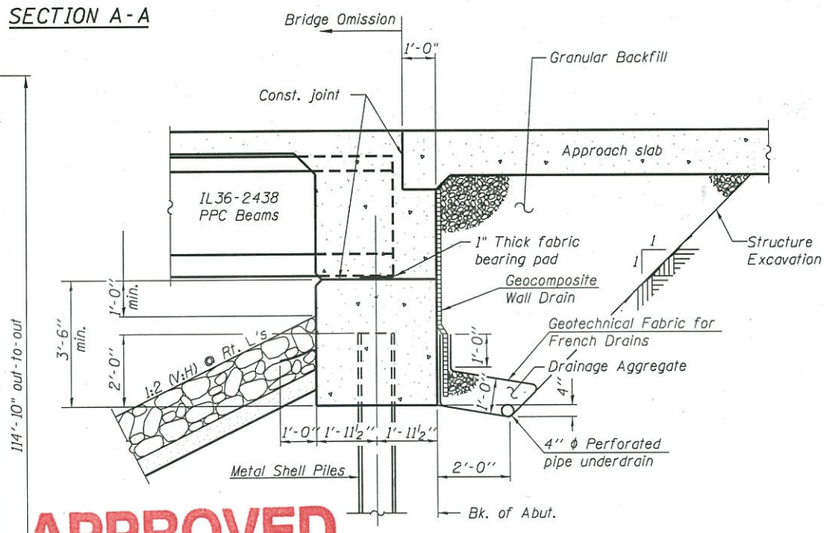
SECTION B-B



PROFILE GRADE
(along ℄ U.S. Route 20)



PLAN



SECTION THRU INTEGRAL ABUTMENT
(Horiz. dim. @ Rt. L's)

APPROVED
MAY 24 2016
AS A BASIS FOR
PREPARATION OF DETAILED PLANS

DESIGN SCOUR ELEVATION TABLE

Event/Limit State	Design Scour Elevations (ft.) W. Abut.	E. Abut.	Item 113
0.100	771.95	773.01	8
0.200	771.95	773.01	
Design	771.95	773.01	
Check	771.95	773.01	

WATERWAY INFORMATION

Drainage Area = 9.68 sq. mi. Low Grade Elev. 775.45 @ Sta. 240+00.87

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Prop.	Nat. H.W.E.	Head - Ft. Exist.	Prop.	Headwater El. Exist.	Prop.
	10	730	50	221	772.54	3.25	0.29	775.79	772.83
Design	50	1010	62	283	773.53	2.65	0.55	776.18	774.08
Base	100	1160	68	311	773.98	2.35	0.65	776.33	774.63
OVT (E)	<10								
OVT (P)	>500								
Max. Calc.	500	1460	75	362	774.78	1.77	0.81	776.55	775.59

DESIGN STRESSES

FIELD UNITS
f'c = 3,500 psi
f'c = 4,000 psi (superstructure concrete)
fy = 60,000 psi (Reinforcement)
PRECAST PRESTRESSED UNITS
f'c = 8,500 psi
f'ci = 7,000 psi
fpu = 270,000 psi (0.6" ϕ low lax strands)
fpbt = 202,300 psi (0.6" ϕ low lax strands)

DESIGN SPECIFICATIONS

2014 AASHTO LRFD Bridge Design Specifications, 7th Edition with 2015 and 2016 Interims

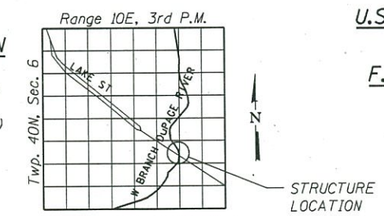
LOADING HL-93

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

* A large scour hole is present at the downstream end of the existing culvert. The designer shall take the scour hole into account during design. The final plans shall have a note requiring the contractor to drive piling prior to filling the hole.

HIGHWAY CLASSIFICATION

FAP Rte 21 - US Rte 20
Functional Class: Strategic Regional Arterial Routes
ADT: 32,400 (2012); 41,000 (2040)
ADTT: 1,500 (2011); 1,800 (2040)
DHV: 4,200
Design Speed: 45 m.p.h.
Posted Speed: 40 m.p.h.
Two-Way Traffic
Directional Distribution: 50-50



LOCATION SKETCH

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = .084g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = .152g
Soil Site Class = D

GENERAL PLAN
U.S. ROUTE 20 (LAKE STREET) OVER WEST BRANCH DUPAGE RIVER
F.A.P. RT. 21 SECTION 6Y-TS&N(13)
DUPAGE COUNTY
STATION 243+60
STRUCTURE NO. 022-0548

TERRA ENGINEERING LTD.

USER NAME = ddb	DESIGNED - OY	REVISED -	
	DRAWN - BKR	REVISED -	
PLOT SCALE =	CHECKED - DDB	REVISED -	
PLOT DATE = 5/24/2016	DATE - 5-24-2016	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SCALE: SHEET 1 OF 2 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
21	6Y-TS&N(13)	DuPage	2	1

CONTRACT NO. 60W54
ILLINOIS FED. AID PROJECT

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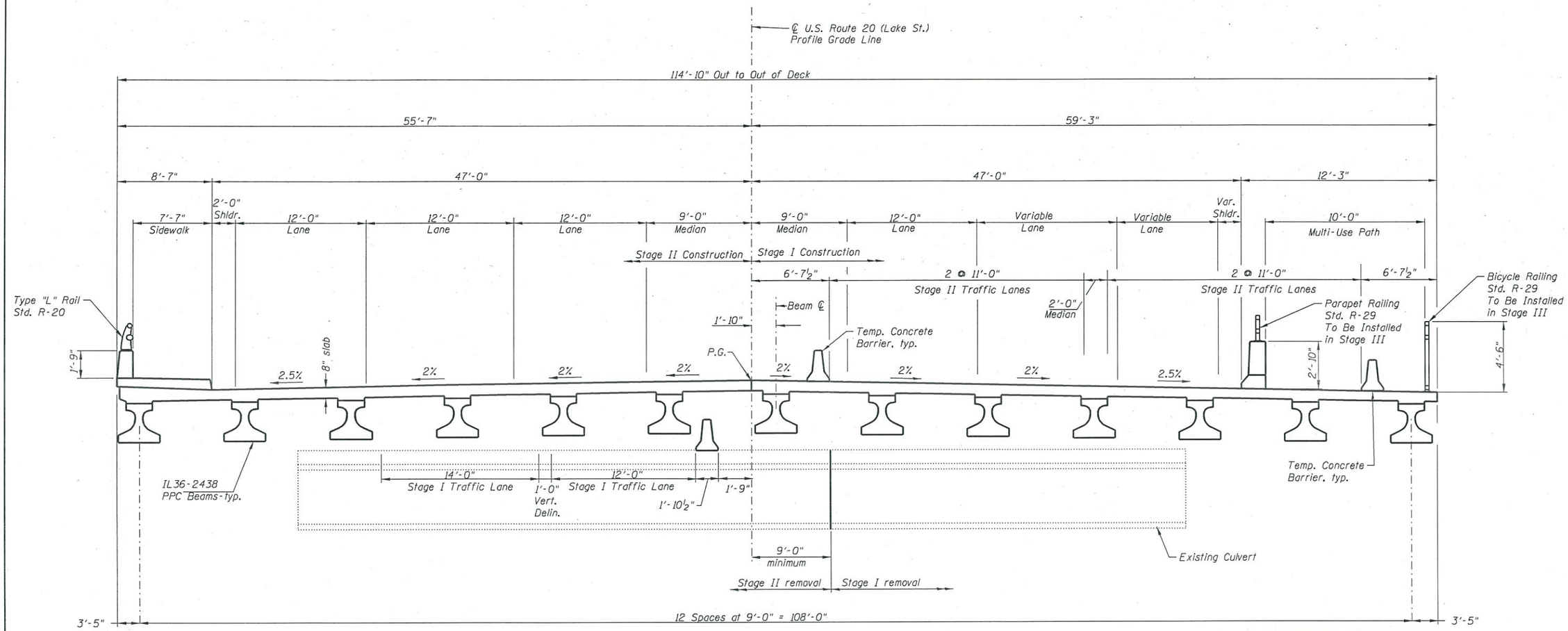

CROSS SECTION
(Looking East)

APPROVED
MAY 24 2016
AS A BASIS FOR
PREPARATION OF DETAILED PLANS

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TERRA ENGINEERING LTD.	USER NAME = ddb	DESIGNED - OY	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION		F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		DRAWN - BKR	REVISED -			21	6Y-TS&N(13)	DuPage	2	2
	PLOT SCALE =	CHECKED - DDB	REVISED -					CONTRACT NO. 60W54		
	PLOT DATE = 5/24/2016	DATE - 5-24-2016	REVISED -		SCALE: SHEET 2 OF 2 SHEETS STA. TO STA.			ILLINOIS FED. AID PROJECT		