

Bench Mark: **BM114**
 NE flange bolt on fire hydrant at approximately 180' north of Arlington Heights Road and Buffalo Creek.
 Elevation = 694.12

Existing Structure:
 S.N. 049-3040 (NB) & 049-3055 (SB) were originally constructed in 1969 and widened in 1980. The single span superstructure consists of 17"x36" PPC deck beams. The substructure consists of reinforced concrete closed abutments on spread footings. The NB superstructure was replaced in 2011. The existing SB structure measures 42'-6" Bk. to Bk. abutments and 39'-11" O. to. O. deck.

Salvage:
 None

PROPOSED SCOPE OF WORK

1. Remove existing SB superstructure, including bearing pads and partial backwalls, replace with new standard 17"x36" PPC deck beams with HMA wearing surface and waterproofing membrane system.
2. Replace existing sidewalk in-kind.
3. Remove existing 20'-0" approach slabs and replace with new IDOT standard 30'-0" bridge approach slabs with HMA wearing surface.
4. At existing abutments, repair cracks with Epoxy Crack Injection, and repair deteriorated concrete with Structural Repair of Concrete (Depth < 5").
5. Construction will be staged to maintain one lane of traffic in the SB direction.

DESIGN SPECIFICATIONS

AASHTO LFRD Bridge Design Specifications
 5th Edition with 2010 Interim

LOADING HL-93

No future wearing surface allowed

DESIGN STRESSES

FIELD UNITS (EXISTING)

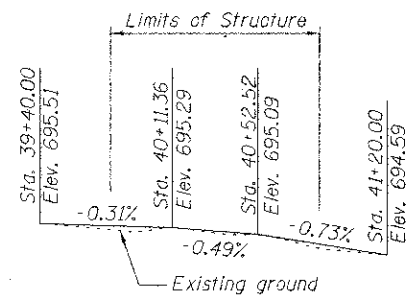
$f'_c = 3,500$ psi
 $f_s = 20,000$ psi

FIELD UNITS (PROPOSED)

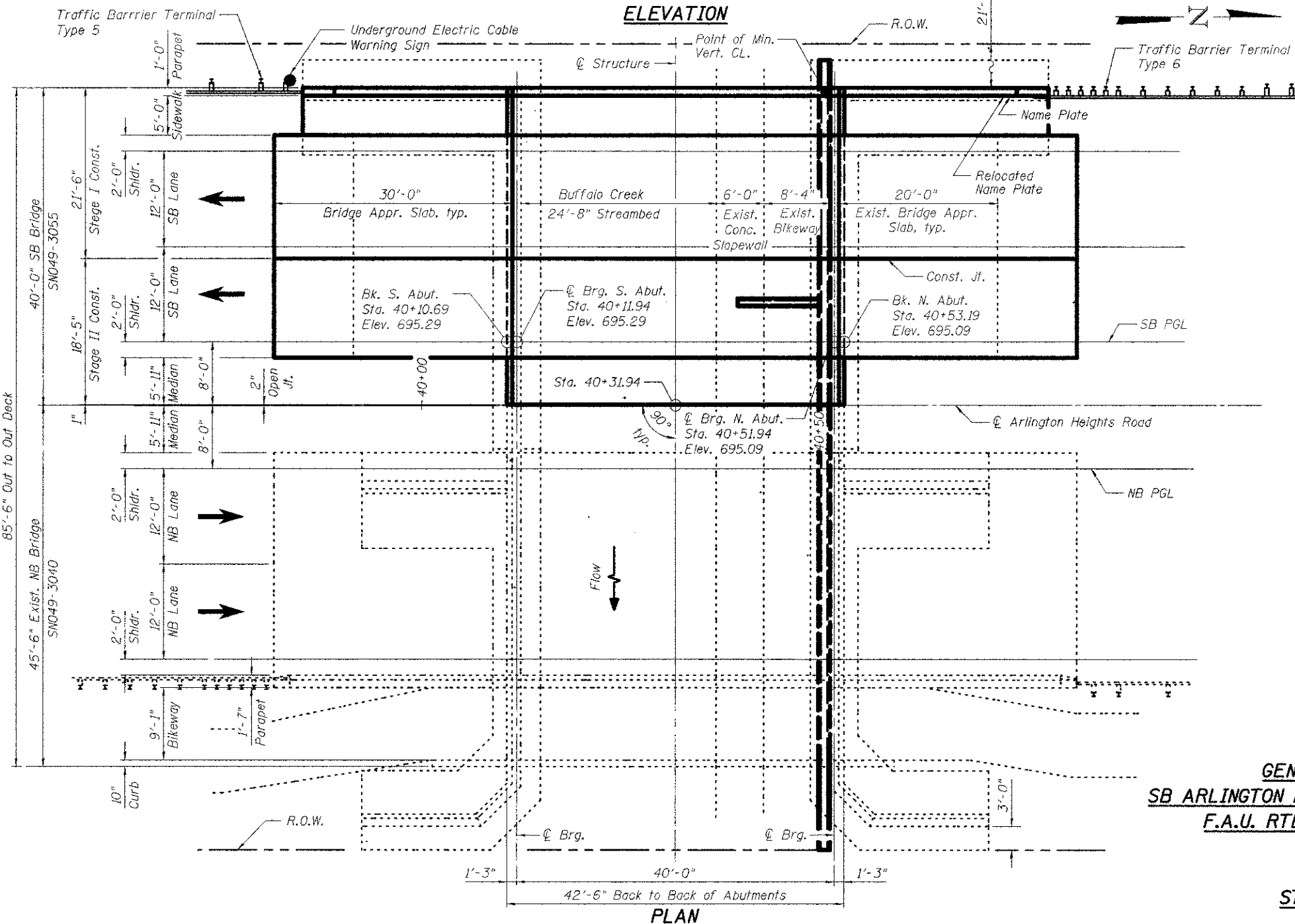
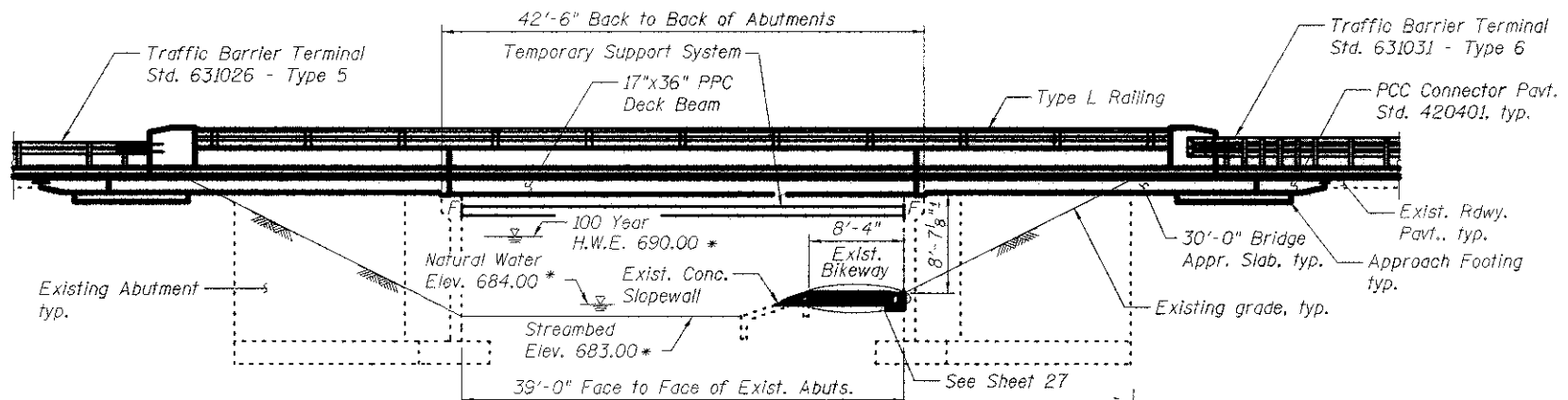
$f'_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)

PRECAST PRESTRESSED UNITS

$f'_c = 6,000$ psi
 $f'_ci = 5,000$ psi
 $f_{pu} = 270,000$ psi ($\frac{1}{2}$ " ϕ low lax. strands)
 $f_{pbt} = 201,960$ psi ($\frac{1}{2}$ " ϕ low lax. strands)



PROFILE GRADE
 (along SB PGL)

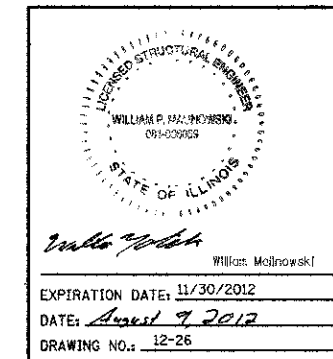


PLAN

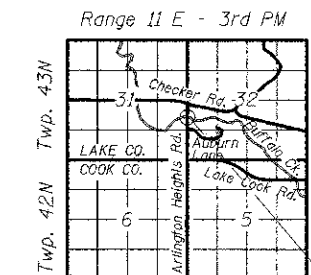
EXISTING WATERWAY INFORMATION

Drainage Area =	16.25 mi
Design Discharge (100 yr) =	1,000 c.f.s.
High Water Elevation (100 yr) =	690.0*
Existing Opening (below H.W.E.) =	273 ft ²
Proposed opening (below H.W.E.) =	250 ft ²
Created Head =	Negligible

* These elevations were taken off the existing Bridge Plans and may not coincide with the current profile. They were included for background purposes only.



I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on plans. The design is an economical one for the style of structure and complies with requirements of the current AASHTO LFRD Bridge Design Specifications.



LOCATION SKETCH

GENERAL PLAN & ELEVATION
SB ARLINGTON HEIGHTS ROAD OVER BUFFALO CREEK
F.A.U. RTE 2626 - SEC. 05-00193-04-BR
LAKE COUNTY
STATION 40+31.94
STRUCTURE NO. 049-3055



FILE NAME = 0493055-63531-001-GPE.dgn	USER NAME =	DESIGNED - JY	REVISÉ -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL PLAN & ELEVATION STRUCTURE NO. 049-3055	F.A.U. RTE: 2626	SECTION: 10-00193-07-BR	COUNTY: LAKE	TOTAL SHEETS: 36	SHEET NO.: 12
PLOT SCALE =	DRAWN - JY	REVISÉ -	S.N. 049-3055(SB)			CONTRACT NO. 63713				
PLOT DATE =	CHECKED - WPM	REVISÉ -	ILLINOIS FED. AID PROJECT							
SHEET NO. 1 OF 15 SHEETS										