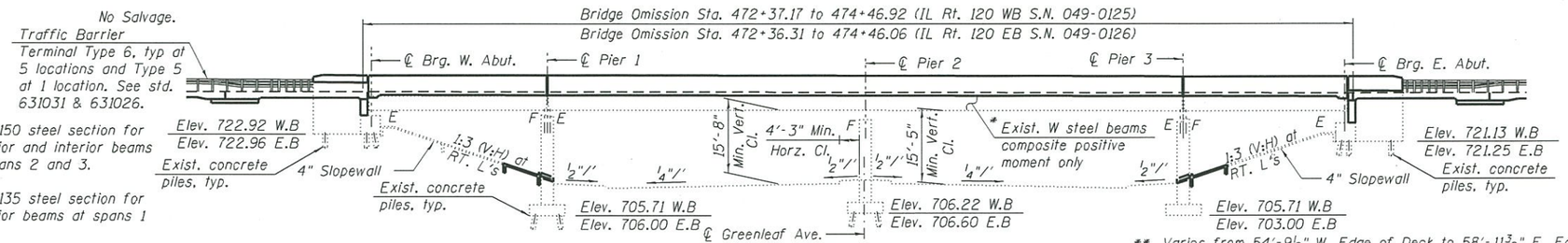
Benchmark BM #6: Chiseled "□" cut in East end of SE Wingwall of EB IL-120 (S.N. 049-0126) over Greenleaf Avenue. Elevation 731.86.

Existing Structure: S.N. 049-0125 (WB) and 049-0126 (EB) were originally constructed in 1977 as two structures carrying three lanes of eastbound and three lanes of westbound IL Route 120 over Greenleaf Avenue as F.A. Route 420 (IL Rt. 120) Project F-420-1(9), Section 12R-1HB-2 at Sta. 473+43.17. The existing dual structures each comprises of a four span (37'-4", 67'-4", 67'-4" and 34'-3") reinforced concrete deck on steel beams. The fascia beams supporting the Deck and all interior beams for spans 2 and 3 are steel W36 sections. The interior beams for span 1 are steel W33 sections. The interior beams for span 4 are steel W30 sections. The reinforced concrete deck is 8" thick in addition of a 2" bituminous concrete overlay which was placed in 2000. Spans 1 and 4 are simply supported non-composite spans. Spans 2 and 3 are continuous composite spans. S.N. 049-0125 (WB) measures length of 210'-9" back to back of abutments with an out-to-out width varying from 54'-9½" to 58'-11⅜". S.N. 049-0126 (EB) measures length of 210'-9" back to back of abutments with an out-to-out constant width of 58'-0". Both structures were built on a skew of 1°20'17". The substructures consist of open stub abutments founded on spread footing with staggered two lines of circular concrete piles. Piers 1 & 2 for both structures and Pier 3 for S.N. 049-0125 (WB) founded on spread footing with two lines of circular concrete piles while Pier 3 for S.N. 049-0126 (EB) founded on spread footing only. Traffic is to be maintained utilizing crossovers. However, the sidewalks for Greenleaf Avenue will be closed to pedestrian traffic during construction.



* - W36X150 steel section for exterior and interior beams at spans 2 and 3.

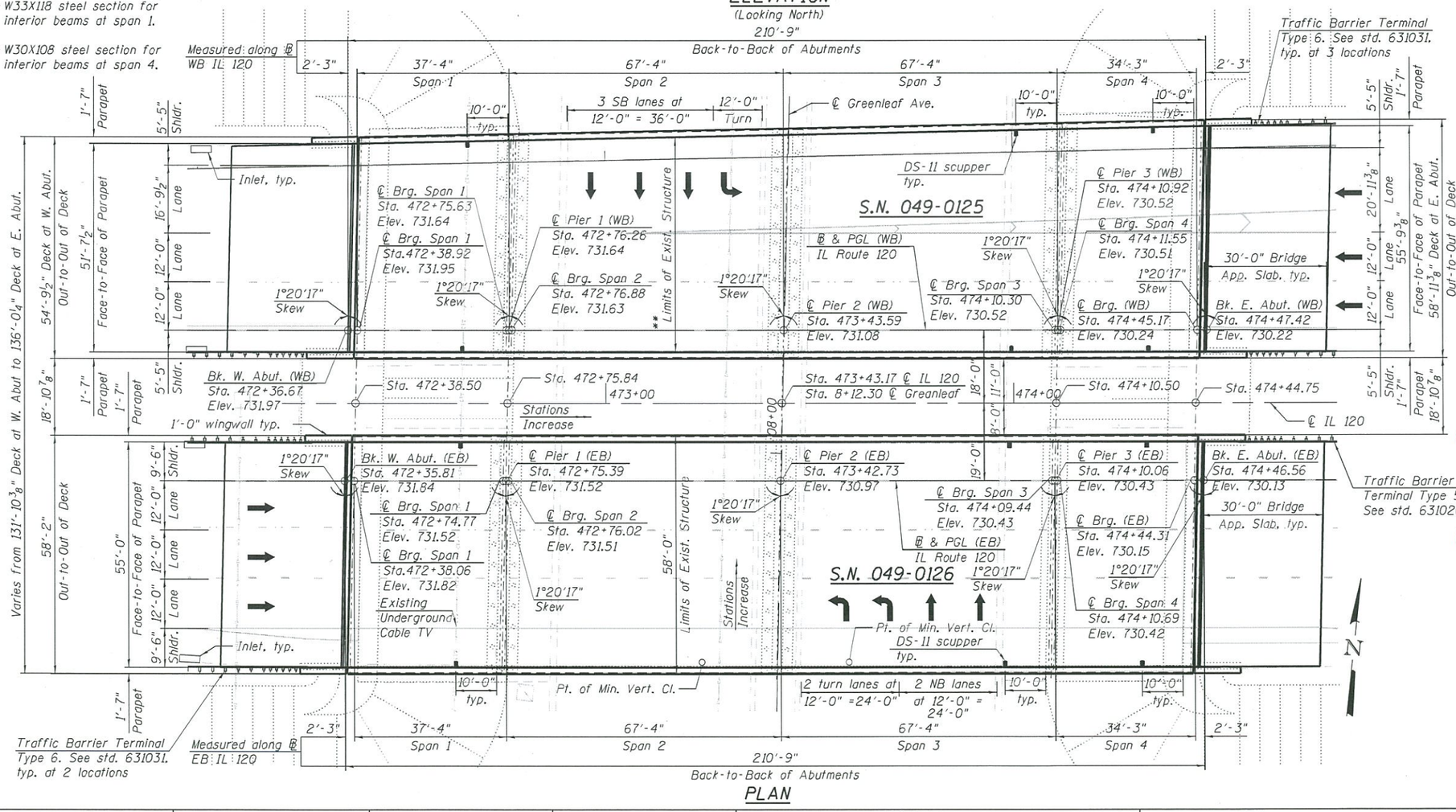
- W36X135 steel section for exterior beams at spans 1 & 4.

- W33X118 steel section for interior beams at span 1.

- W30X108 steel section for interior beams at span 4.

** Varies from 54'-9½" W. Edge of Deck to 58'-11⅜" E. Edge of Deck.

ELEVATION
(Looking North)



PLAN

HIGHWAY CLASSIFICATION

IL Route 120 EB
Functional Class: Other Principal Arterial
ADT: 16,350 (2013); 25,800 (2036)
ADTT: 1,600 (2013); 2,600 (2036)
DHV: 2,580
Design Speed: 50 m.p.h.
Posted Speed: 50 m.p.h.
One-Way Traffic
Directional Distribution: 100%

IL Route 120 WB
Functional Class: Other Principal Arterial
ADT: 16,350 (2013); 25,800 (2036)
ADTT: 1,600 (2013); 2,600 (2036)
DHV: 2,580
Design Speed: 50 m.p.h.
Posted Speed: 50 m.p.h.
One-Way Traffic
Directional Distribution: 100%

Greenleaf Avenue NB
Functional Class: Collector (Urban)
ADT: 10,800 (2011); 17,700 (2036)
ADTT: 1%
DHV: 1,770
Design Speed: 40 m.p.h.
Posted Speed: 40 m.p.h.
Two-Way Traffic
Directional Distribution: 50:50

Greenleaf Avenue SB
Functional Class: Collector (Urban)
ADT: 10,800 (2011); 17,700 (2036)
ADTT: 1%
DHV: 1,770
Design Speed: 40 m.p.h.
Posted Speed: 40 m.p.h.
Two-Way Traffic
Directional Distribution: 50:50

SEISMIC DATA

Seismic Performance Category (SPC) = A
Horizontal Bedrock Acceleration Coefficient (A) = 0.035g
Site Coefficient (S) = 1.0

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications for Highway Bridges, 17th Edition

LOADING HS 20-44

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

DESIGN STRESSES

FIELD UNITS (Existing Construction)
f'_c = 3,500 psi (Substructure)
f_s = 20,000 psi (Reinforcement)
f_s = 20,000 psi (Structural Steel)

FIELD UNITS (New Construction)
f'_c = 3,500 psi
f_y = 60,000 psi (Reinforcement)
f_y = 50,000 psi (M270 Grade 50)

APPROVED
APR 21 2015
AS A BASIS FOR PREPARATION OF DETAILED PLANS

Proposed Structure
Range 11E. 3rd P.M.
Twp. 45N

LOCATION SKETCH

GENERAL PLAN
IL-120 OVER GREENLEAF AVENUE
F.A.P. ROUTE 342
SECTIONS 12(VB-1 & 2) & 12R-1HB-2(BR)
LAKE COUNTY
STATION 473+43.17
STRUCTURE NO. 049-0125 (WB)
STRUCTURE NO. 049-0126 (EB)

HBM ENGINEERING GROUP, LLC. CONSULTING & DESIGN INSPECTION & RATING RESEARCH & TESTING	4415 WEST HARRISON ST. SUITE 231 HILLSIDE, IL 60162 PHONE: (708) 236-0900 FAX: (708) 236-0901	TSL.001.dgn	DESIGNED - MA, JMG / DRAWN - MA / CHECKED - MAI, MI / DATE - 04/09/2015
		USER NAME = mustafa.alobaidi	REVISED
		PLOT SCALE = 30:0 '/ in.	REVISED
		PLOT DATE = 4/9/2015	REVISED

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SCALE: | SHEET 1 OF 3 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
342	12(VB-1&2) & 12R-1HB-2(BR)	LAKE	3	1
		CONTRACT NO. 60X40		
	ILLINOIS FED. AID PROJECT			

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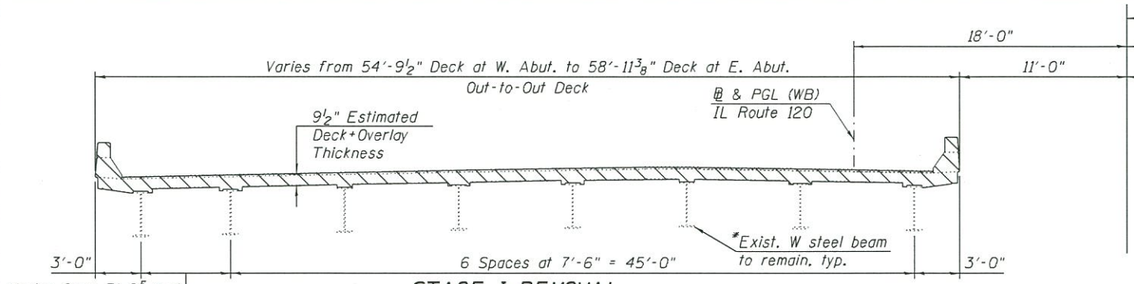
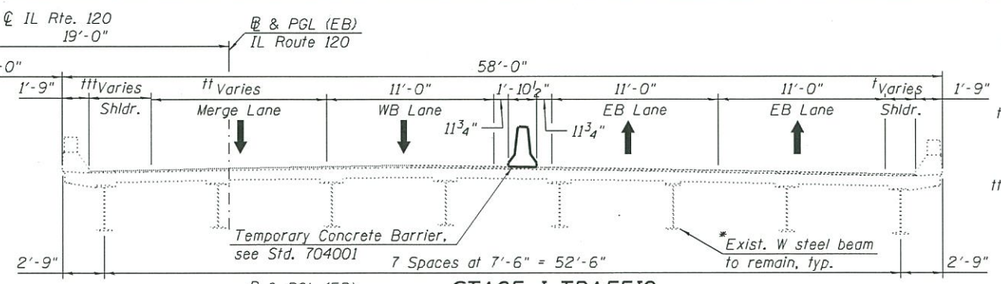




† Varies from 3'-6¾" Deck at W. Abut. to 3'-4⅜" Deck at E. Abut

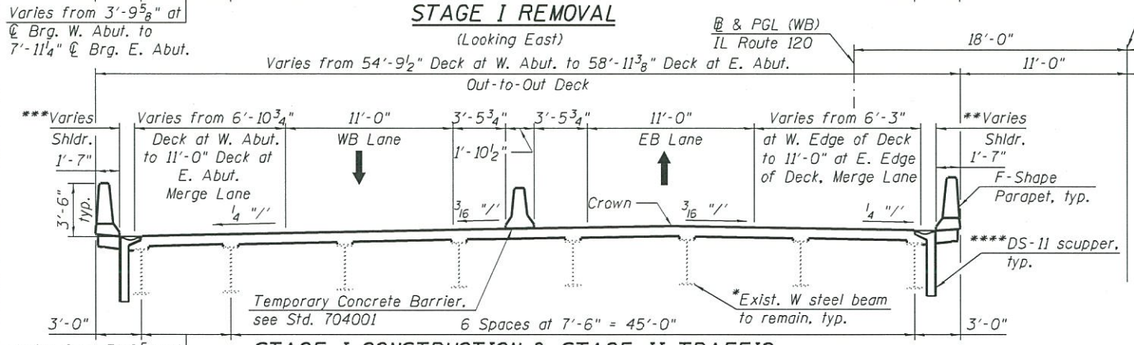
†† Varies from 4'-5" Deck at W. Abut. to 8'-10½" Deck at E. Abut.

††† Varies from 9'-8¼" Deck at W. Abut. to 5'-5⅛" Deck at E. Abut.

STAGE I REMOVAL

(Looking East)

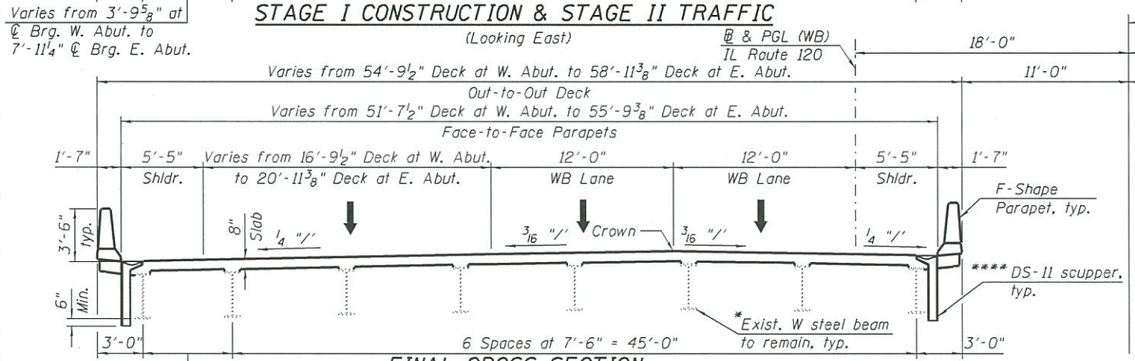
Varies from 3'-9⅝" at ℄ Brg. W. Abut. to 7'-11¼" ℄ Brg. E. Abut.



Varies from 3'-9⅝" at ℄ Brg. W. Abut. to 7'-11¼" ℄ Brg. E. Abut.

STAGE I CONSTRUCTION & STAGE II TRAFFIC

(Looking East)



Varies from 3'-9⅝" at ℄ Brg. W. Abut. to 7'-11¼" ℄ Brg. E. Abut.

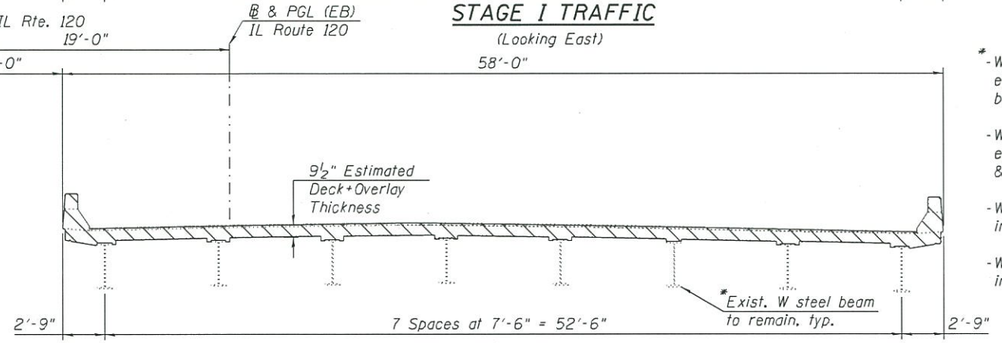
FINAL CROSS SECTION

(Looking East)

S.N. 049-0125

STAGE I TRAFFIC

(Looking East)



*- W36X150 steel section for exterior and interior beams at spans 2 and 3.

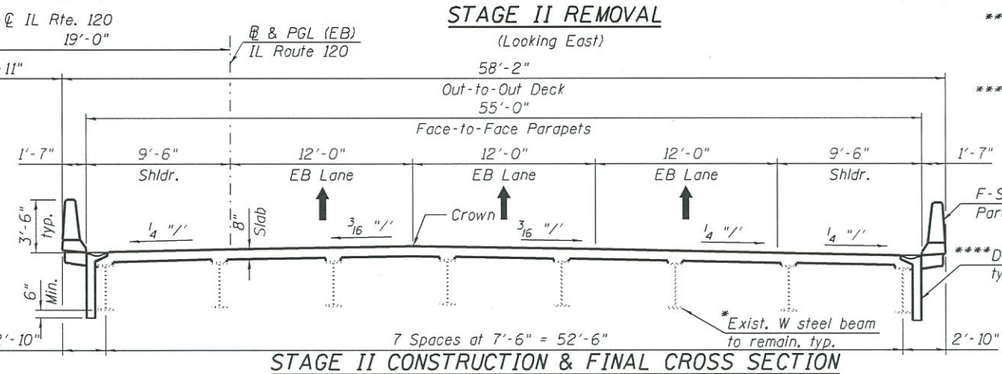
- W36X135 steel section for exterior beams at spans 1 & 4.

- W33X118 steel section for interior beams at span 1.

- W30X108 steel section for interior beams at span 4.

STAGE II REMOVAL

(Looking East)



** Varies from 5'-9" Deck at W. Abut. to 1'-0" Deck at E. Abut.

*** Varies from 1'-10¾" Deck at W. Abut. to 1'-11⅜" Deck at E. Abut.

STAGE II CONSTRUCTION & FINAL CROSS SECTION

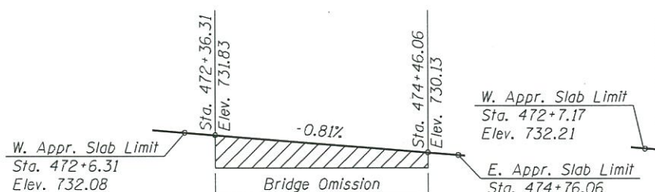
(Looking East)

S.N. 049-0126

SCOPE OF WORK:

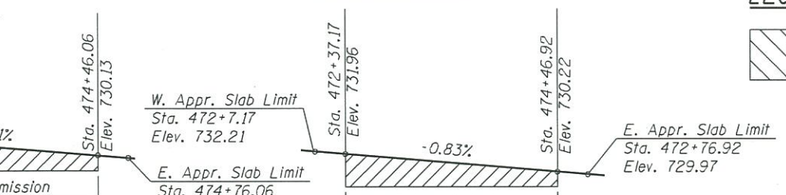
1. Remove existing concrete deck and bituminous concrete overlay and replace with new 8" reinforced concrete deck with 42" F-shape parapets.
2. Make new deck composite at the positive moment regions by adding shear studs to all existing beams where not already installed.
3. Remove and replace the west and east abutments' backwall.
4. Remove the top portion of wingwalls and replace with 42" F-shape parapets.
5. Remove existing expansion joints and replace with preformed joint strip seal.
6. Remove approach slabs and replace with 30'-0" approach slabs.
7. Repair spalls, delaminations and open cracks in substructures using formed concrete repair and epoxy crack injection.
8. Saw cut and replace in kind the portions of the slopewalls as shown in Sheet 3. Crack inject and repair as required the other portions using slope wall slurry pumping.
9. Jack and crib the existing beams to remove expansion bearings at the abutments and expansion and fixed bearings at piers 1 & 3 for both structures. Replace with elastomeric bearing assembly with fabricated steel extension to reach the desired elevation.
10. Relocate existing electrical conduits, mounted lighting and junction boxes attached to Pier 2.
11. Install DS-11 Drainage scuppers in spans 1, 3 & 4.

**** DS-11 Drainage scuppers in Span 3 shall be connected to a drainage pipe with a down fall in Span 4 located at 10'-0" to the east of Pier 3.



PROFILE GRADE

(Along ℄ EB IL 120)

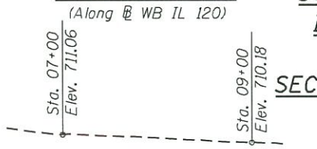


PROFILE GRADE

(Along ℄ WB IL 120)

PROFILE GRADE

(Along ℄ NB Greenleaf Avenue)



PROFILE GRADE

(Along ℄ SB Greenleaf Avenue)

LEGEND

Removal of Existing Deck

STAGE REMOVAL AND CONSTRUCTION
IL-120 OVER GREENLEAF AVENUE
F.A.P. ROUTE 342
SECTIONS 12(VB-1 & 2) & 12R-1HB-2(BR)
LAKE COUNTY
STATION 473+43.17
STRUCTURE NO. 049-0125 (WB)
STRUCTURE NO. 049-0126 (EB)

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PLOT DATE = 4/9/2015	DATE - 04/09/2015	REVISED

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SCALE: | SHEET 2 OF 3 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
342	12(VB-1&2) & 12R-1HB-2(BR)	LAKE	3	2
		CONTRACT NO. 60X40		
		ILLINOIS FED. AID PROJECT		

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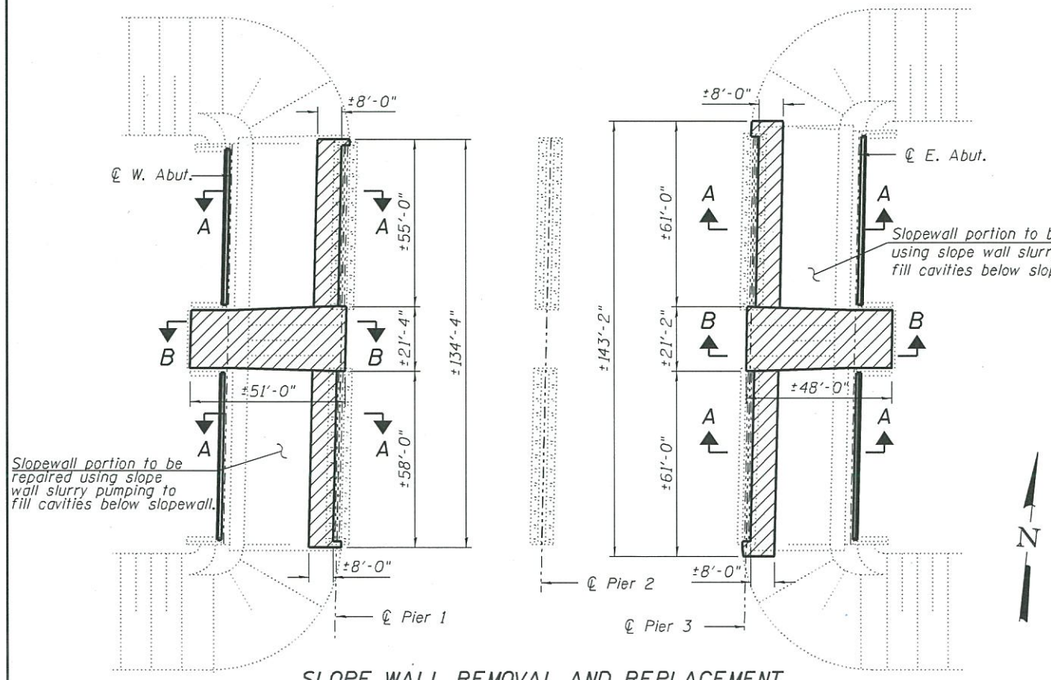
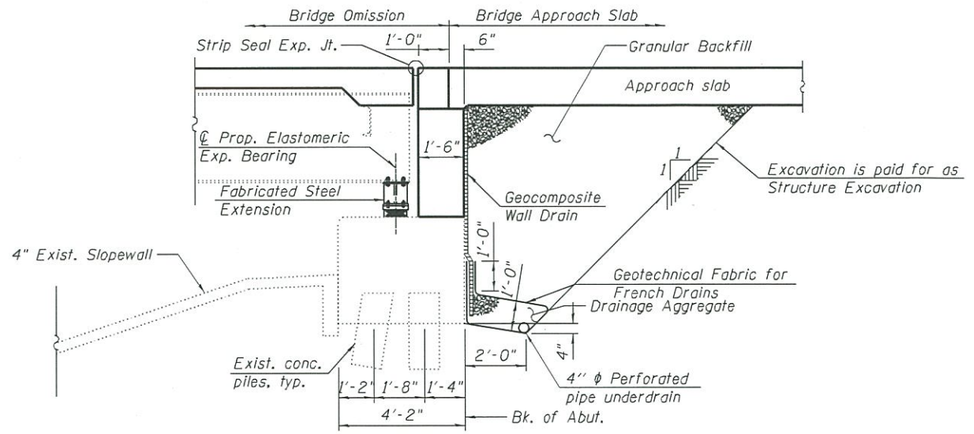
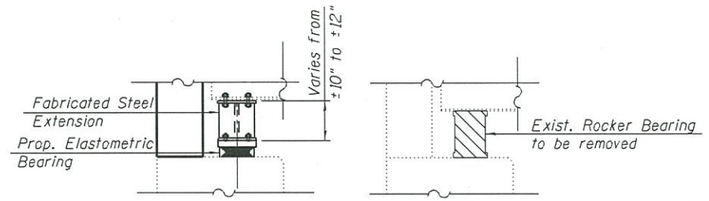


SLOPE WALL REMOVAL AND REPLACEMENT

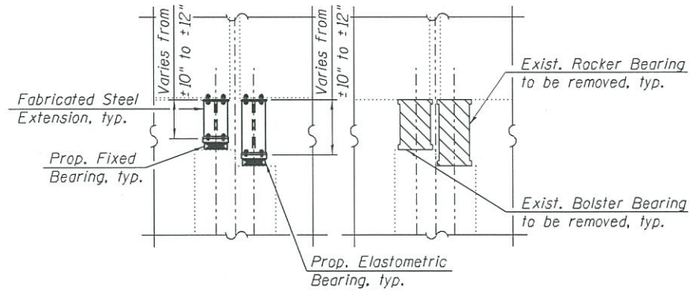


TYPICAL SECTION THRU ABUTMENT



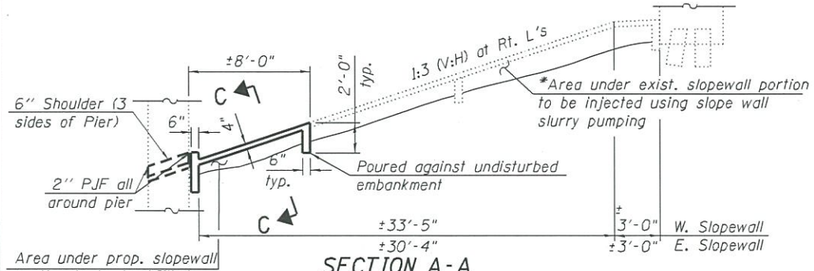
ROCKER BEARINGS REPLACEMENT WITH ELASTOMERIC BEARINGS

(Abutments' Bearings Replacement, 32 Locations)



BEARINGS REPLACEMENT AT PIERS 1 & 3

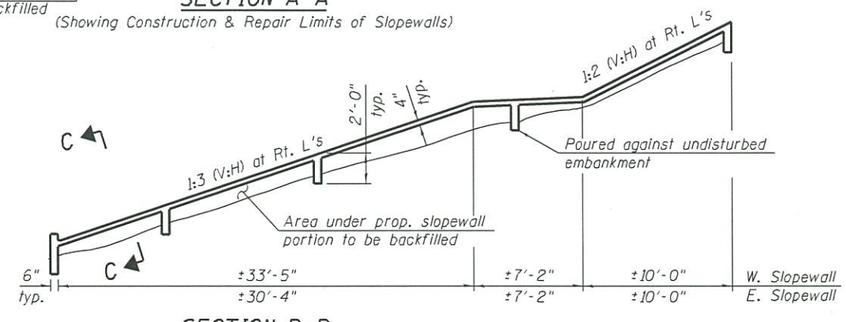
(Pier 1 Shown, Pier 3 Opposite Hand. 32 Locations
Elastomeric Bearing & 32 Locations Fixed Bearings)



* Limits and extent of erosion and embankment washout will be determined in the final design phase by coring the slope wall.

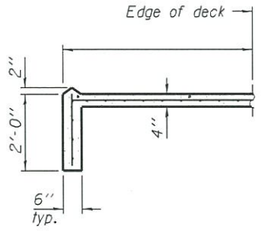
SECTION A-A

(Showing Construction & Repair Limits of Slopewalls)



SECTION B-B

(Showing Construction & Repair Limits of Slopewalls)



SECTION C-C

LEGEND

Slope Wall Removal and in Kind Replacement

Bearings Removal

SECTIONS AND DETAILS
IL-120 OVER GREENLEAF AVENUE
F.A.P. ROUTE 342
SECTIONS 12(VB-1 & 2) & 12R-1HB-2(BR)
LAKE COUNTY
STATION 473+43.17
STRUCTURE NO. 049-0125 (WB)
STRUCTURE NO. 049-0126 (EB)

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PLOT DATE = 4/9/2015	DATE - 04/09/2015	REVISED	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SCALE: | SHEET 3 OF 3 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
342	12(VB-1&2) & 12R-1HB-2(BR)	LAKE	3	3
		CONTRACT NO. 60X40		
		ILLINOIS FED. AID PROJECT		