

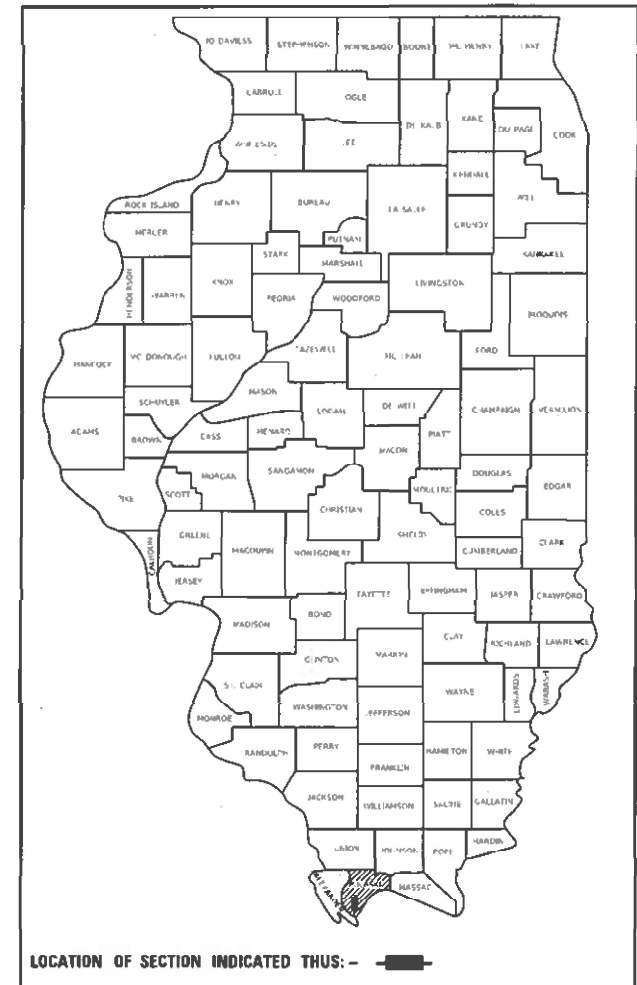
F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	1
		ILLINOIS	CONTRACT NO. 78A22	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**PROPOSED
HIGHWAY PLANS**

F.A.I. ROUTE 57 SB (I-57) OVER FAS 2936 (OLD RTE US 51)
SECTION D9 BRIDGE REPAIR 2024-1
PROJECT STP-KXAN(300)
PULASKI COUNTY
MAJOR BRIDGE PREVENTATIVE MAINTENANCE

D-99-056-23



LOCATION OF SECTION INDICATED THUS: - [shaded box] -

C-99-077-23

FOR INDEX OF SHEETS, SEE SHEET NO. 3
FOR SUMMARY OF QUANTITIES, SEE SHEET NO. 4

TRAFFIC DATA

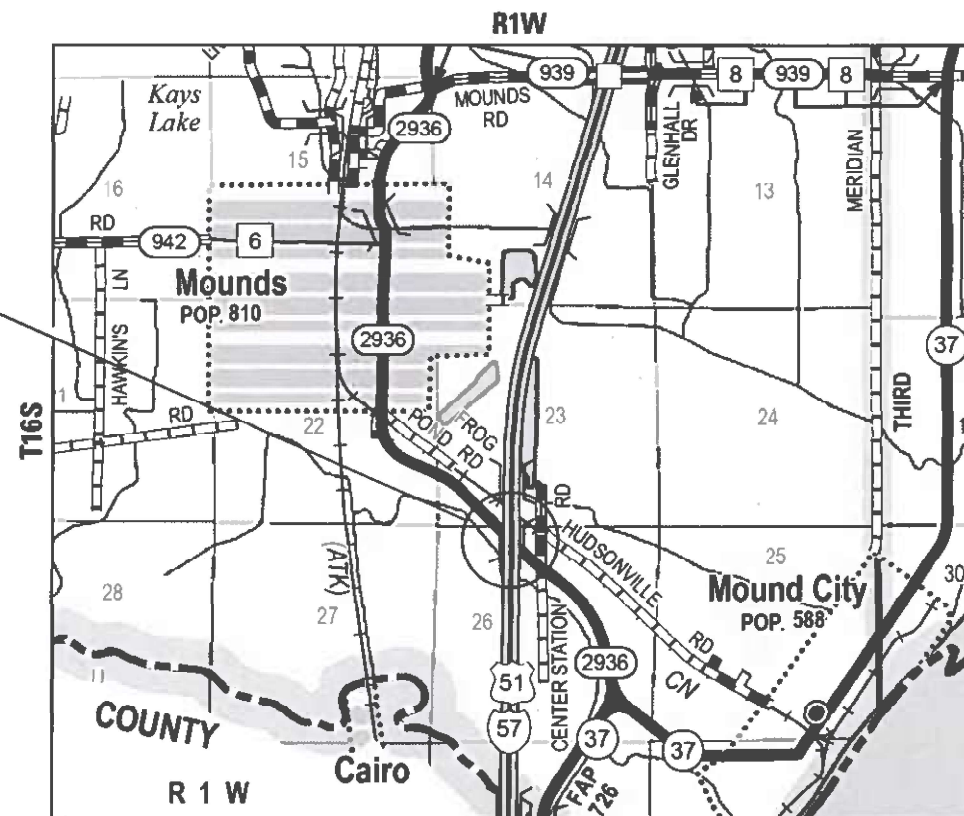
I-57 (SOUTHBOUND ONLY)

2024 ADT = 7,750
58% TRUCKS

TOWNSHIPS:

COUNTY UNIT ROAD DISTRICT

EXISTING STRUCTURE NO. 077-0002
FAI 57 (I-57) SB



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

PROJECT ENGINEER: Ehren Kirby
DESIGNER: Moshe Cohen, S.E. (618) 233-5877

CONTRACT NO. 78A22

SN 077-0002 (SB)
BRIDGE LENGTH = 1085.48 FT
NET LENGTH = 1085.48 FT



Signed: *Moshe L. Cohen*

Dated: 2024-01-25
Illinois Structural Engineer
No. 081-008104
License Expires: 11-30-2024

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBMITTED Jan 20 2024
Keith H. Brown *NEP*
REGION FIVE ENGINEER

March 22, 2024 *[Signature]*
ENGINEER OF DESIGN AND ENVIRONMENT

March 22, 2024 *[Signature]*
DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

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

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Kaskaskia
 Engineering Group, LLC
 477 South Third Street
 Suite 275
 Carbondale, Illinois 62901
 618.332.9177 phone
 www.kaskaskiaeng.com

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DRAWN	- MMC	REVISIONS	-	REVISIONS	-
CHECKED	- MLC	REVISIONS	-	REVISIONS	-
DATE	-	REVISIONS	-	REVISIONS	-
PLOT SCALE	= 2.0000" / 1"				
PLOT DATE	= 1/25/2024				

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

SCALE:	SHEET	OF	SHEETS	STA.	TO STA.
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SIGNATURES

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	2
				CONTRACT NO. 78A22
ILLINOIS FED. AID PROJECT				

Prepared By:

DISTRICT STUDIES & PLANS ENGINEER

Examined By:

Nancy Alce
 DISTRICT LAND ACQUISITION ENGINEER

Examined By:

Carmie Nelson
 DISTRICT PROGRAM DEVELOPMENT ENGINEER

Examined By:

[Signature]
 DISTRICT OPERATIONS ENGINEER

Examined By:

Douglas Melis
 DISTRICT PROJECT IMPLEMENTATION ENGINEER

Examined By:

Douglas Melis
 DISTRICT CONSTRUCTION ENGINEER

Examined By:

Aaron Wang
 DISTRICT MATERIALS ENGINEER

GENERAL NOTES

COMMITMENTS: NONE

INDEX OF SHEETS

- 1 COVER SHEET
- 2 SIGNATURES
- 3 GENERAL NOTES, INDEX OF SHEETS AND HIGHWAY STANDARDS
- 4 SUMMARY OF QUANTITIES
- 5-17 STRUCTURE PLANS

INDEX OF HIGHWAY STANDARDS

- 000001-08 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 001001-02 AREAS OF REINFORCEMENT BARS
- 001006 DECIMAL OF AN INCH AND OF A FOOT
- 420001-10 PAVEMENT JOINTS
- 701001-02 OFF-ROAD OPERATIONS 2L2W 15FT MIN FROM EOP
- 701006-05 OFF-ROAD OPERATIONS 2L2W 15FT TO EOP
- 701101-05 OFF-ROAD OPERATIONS MULTILANE LESS THAN 15FT TO EOP
- 701106-02 OFF-ROAD OPERATIONS MULTILANE MORE THAN 15FT AWAY
- 701400-12 APPROACH TO LANE CLOSURE FREEWAY EXPRESSWAY
- 701406-13 LANE CLOSURE FREEWAY EXPRESSWAY DAY OPERATIONS ONLY
- 701901-09 TRAFFIC CONTROL DEVICES

REV. - MS

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 <p>477 South Third Street Bldg. 210 Galesburg, Illinois 62404 618.333.3477 phone www.kaskaskia.com</p> <p>Professional Engineering Group Illinois Professional Design Firm 34-00713 28-108596</p>	USER NAME = mmc	DESIGNED - MMC	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL NOTES, INDEX OF SHEETS AND HIGHWAY STANDARDS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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PLOT DATE = 1/25/2024	CHECKED - MLC	REVISED +	CONTRACT NO. 78A22							
	DATE -	REVISED +	SCALE:		SHEET	OF	SHEETS	STA.	TO	STA.

COUNTY: PULASKI
 ROUTE: FAI 57
 FUNDING: 80% FEDERAL ; 20% STATE
 LOCATION: SN 077-0002

CODE NO.	ITEM	UNIT	CONSTRUCTION CODE
50300225	CONCRETE STRUCTURES	CU YD	60.0
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	11,110
58700300	CONCRETE SEALER	SQ FT	3,905
67000400	ENGINEER'S FIELD OFFICE, TYPE A	CAL MO	6
67100100	MOBILIZATION	L SUM	1
70100700	TRAFFIC CONTROL AND PROTECTION, STANDARD 701406	L SUM	1
70107025	CHANGEABLE MESSAGE SIGN	CAL DA	28
X0321778	SEISMIC RESTRAINER	EACH	108
Z0012754	STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES)	SQ FT	833
Z0073200	TEMPORARY SHORING AND CRIBBING	EACH	35

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47 South Third Street
 Suite 270
 Geneva, Illinois 60134
 630.232.8107 phone
 www.kaskaskiaeng.com
 10/27/2024 10:22:28 AM
 Illinois Professional Design Firm
 04-00713
 21-588536

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PLOT SCALE = 2.0000' / in.	DATE -	REVISED -
PLOT DATE = 1/25/2024		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES			
SCALE:	SHEET	OF	SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	4
CONTRACT NO. 78A22			ILLINOIS FED. AID PROJECT	

Existing Structure: SN 077-0002 was originally constructed in 1967 as one of two dual structures with simple span, P.P.C. I-Beam superstructures on open type abutments and combination of multi-column and hammerhead type piers on pile supported footings.

Structure to remain open to traffic during construction.

Salvage: None.

DESIGN STRESSES

Original Construction (1967)

Field Units
 $f_c = 1,400$ psi (Superstructure & Substructure)
 $f_s = 20,000$ psi (Reinforcement)
 $vc = 75$ psi (Footings)
 $n = 10$
 Precast Prestressed Units
 $f_c = 5,000$ psi
 $f_{ci} = 4,000$ psi
 $f_s = 248,000$ psi ($7/16"$ \emptyset Stress Relieved Strands)
 $f_{si} = 173,600$ psi ($7/16"$ \emptyset Stress Relieved Strands)

Existing Structure (1998 Rehab)

$f_c' = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 36,000$ psi (M270 Gr. 36)

Existing Structure (2011 Rehab)

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

Existing Structure (2015 Rehab)

$f_y = 36,000$ psi (M270 Gr. 36)

New Construction

$f_c' = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 36,000$ psi (M270 Gr. 36)

DESIGN SPECIFICATIONS

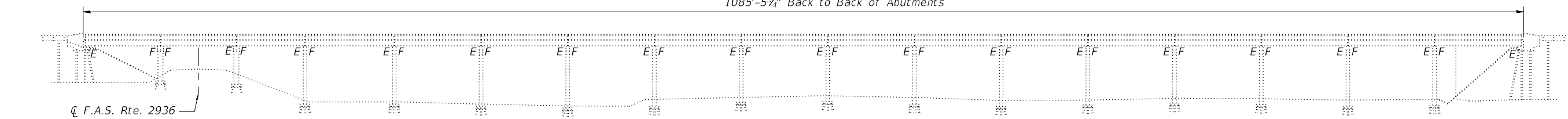
2002 AASHTO Standard Specifications for Highway Bridges, 17th Ed.

LOADING HS20-44

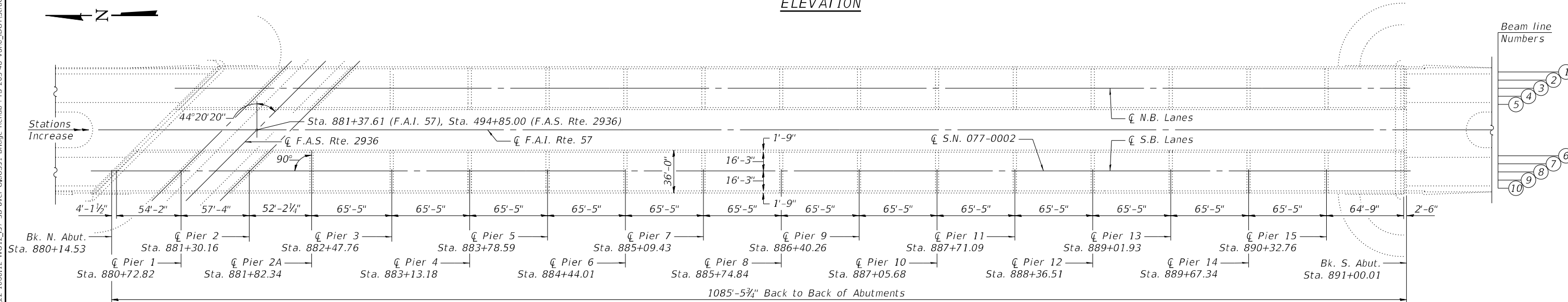
INDEX OF SHEETS

- 1 - General Plan & Elevation
- 2 - General Data
- 3 - Substructure Repair - Pier 7
- 4 - Substructure Repair - Pier 8
- 5 - Substructure Repair - Pier 9
- 6 - Substructure Repair - Pier 10
- 7 - Substructure Repair - Pier 11
- 8 - Substructure Repair - Pier 12
- 9 - Substructure Repair - Pier 13
- 10 - Substructure Repair - Pier 14
- 11 - Substructure Repair - Pier 15
- 12 - Pier Encasement Details (Piers 7 Through 15)
- 13 - Seismic Restrainer Details (Piers 7 Through 15)

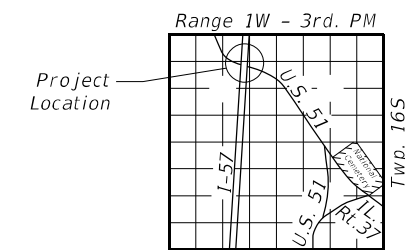
1085'-5 $\frac{3}{4}$ " Back to Back of Abutments



ELEVATION



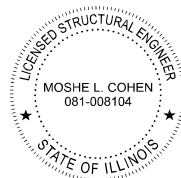
PLAN



LOCATION SKETCH

GENERAL PLAN & ELEVATION
I-57 (SOUTHBOUND) OVER F.A.S. 2936
F.A.I. RTE. 57 - SEC. D9 BRIDGE REPAIRS 2024-1
PULASKI COUNTY
STATION 881+37.61
STRUCTURE NO. 077-0002 (SB)

REV. - MS



Signed: *Moshe L. Cohen*
 Dated: 2024-01-25
 Illinois Structural Engineer
 No. 081-008104
 License Expires: 11-30-2024

USER NAME =	DESIGNED - MMC	REVISED -
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURE PLANS -
GENERAL PLANS AND ELEVATIONS

SHEET 1 OF 13 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	5
CONTRACT NO. 78A22				

ILLINOIS FED. AID PROJECT

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GENERAL NOTES

Reinforcement bars designated (E) shall be epoxy coated.
 All structural steel shall be AASHTO M 270 Grade 36 unless otherwise noted.
 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 of 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.
 All exposed concrete edges shall have a standard 3/4" chamfer unless otherwise noted.
 Concrete Sealer shall be placed over new pier cap encasement.

SCOPE OF WORK

1. Repair piers at designated locations or as directed by the Engineer and construct concrete pier encasement.
2. Replace Seismic Restrainer cable assemblies.

(Repairs are limited to Piers 7 through 15. No work shall be done on Piers 1 through 6.)

TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Concrete Structures	Cu. Yd.	60.0
Reinforcement Bars, Epoxy Coated	Pound	11,110
Concrete Sealer	Sq. Ft.	3,905
Seismic Restrainer	Each	108
Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)	Sq. Ft.	833
Temporary Shoring and Cribbing	Each	35

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 Engineering Group, LLC
 PROFESSIONAL ENGINEERING
 Illinois Professional Design Firm
 Professional Engineering Group

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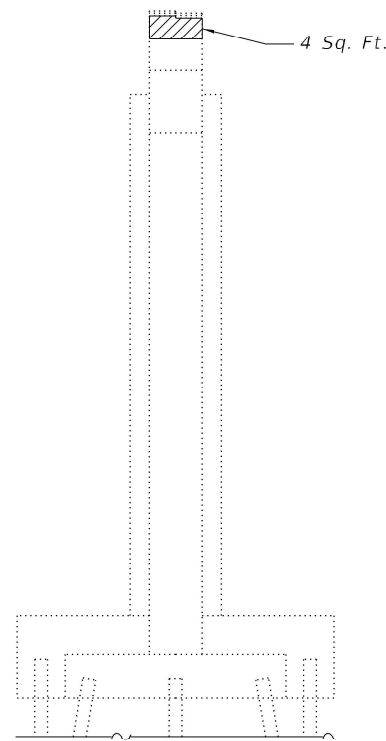
**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**GENERAL DATA
 STRUCTURE NO. 077-0002**

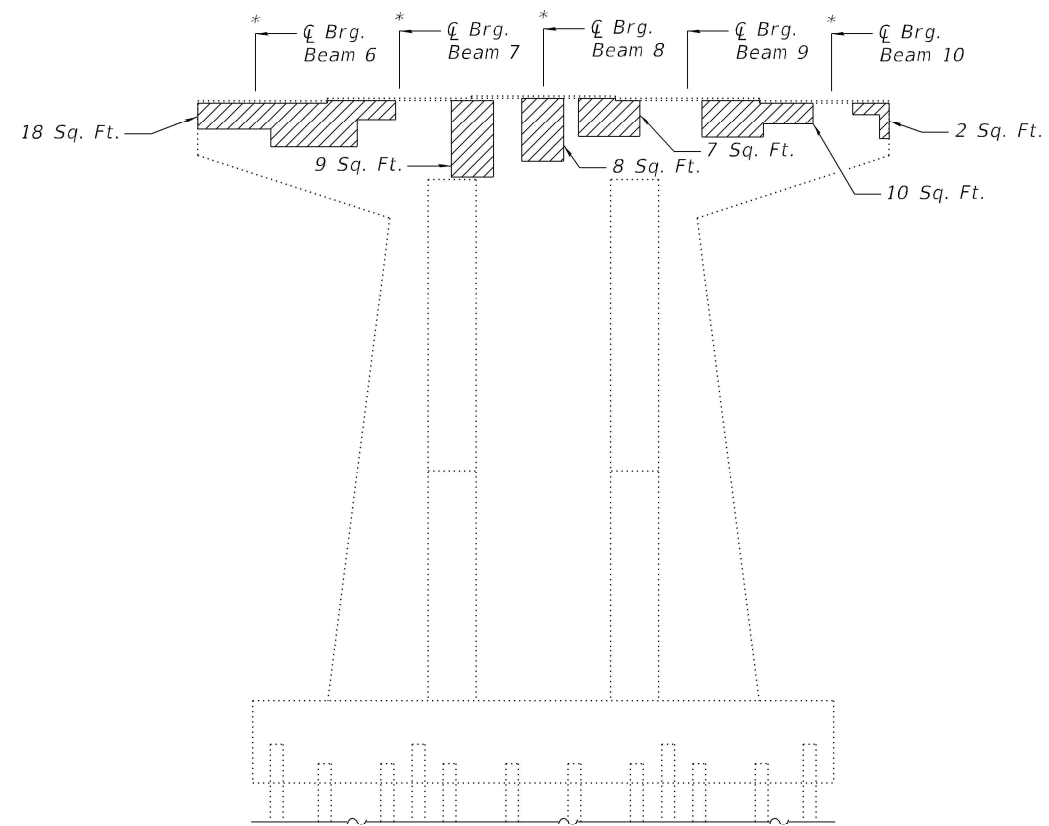
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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			CONTRACT NO. 78A22	
		ILLINOIS	FED. AID PROJECT	

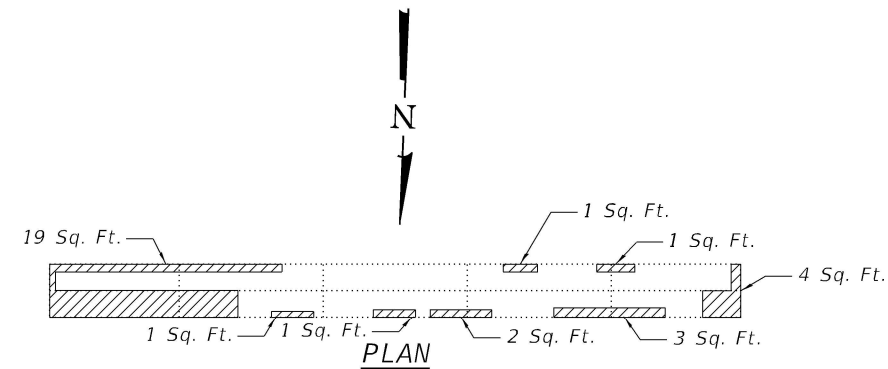
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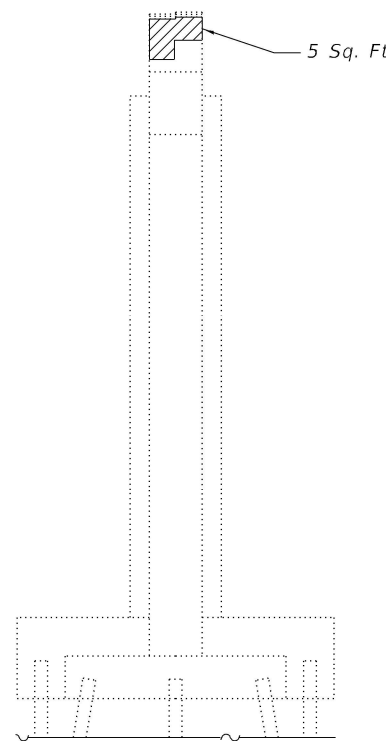
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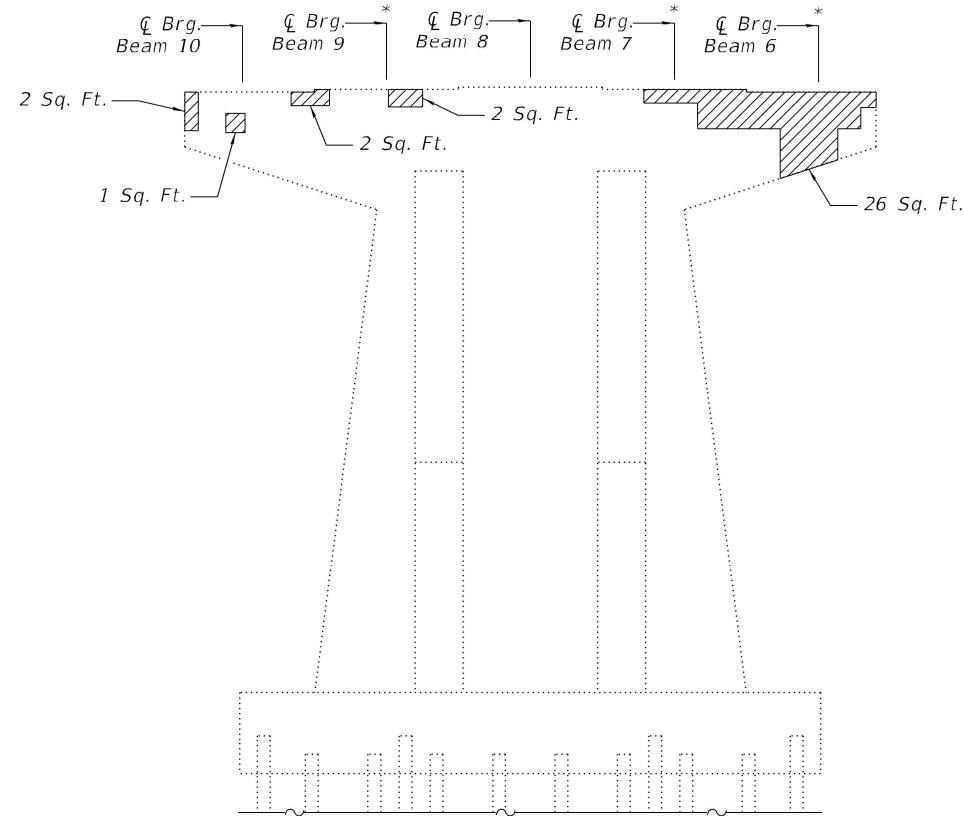
ELEVATION
 (North Face - Looking South)



PLAN



END ELEVATION
 (West Face - Looking East)



ELEVATION
 (South Face - Looking North)

BEAM REACTIONS

Reaction	Span 8	Span 9
R _v	(k) 59.3	59.3
R _h	(k) 42.2	42.2
R _{Imp.}	(k) 11.1	11.1
R (Total)	(k) 112.6	112.6

LEGEND

Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

Notes:

See sheet 12 of 13 for pier encasement details.

See sheet 13 of 13 for seismic restrainer details.

All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 12 of 13.

* Location of Temporary Shoring and Cribbing.

BILL OF MATERIAL

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	128
Temporary Shoring and Cribbing	Each	7

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 Engineering Group, LLC
 1127 N. Main St., Suite 100
 Moline, IL 61401
 309.441.1111
 www.kaskaskiaeng.com

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PLOT DATE =	CHECKED - MLC	REVISED -

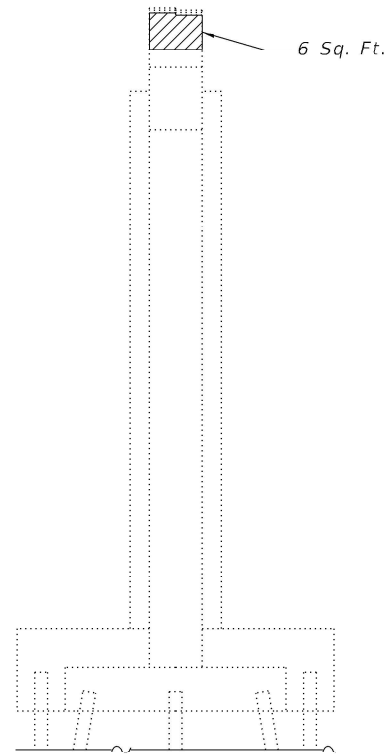
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE REPAIR - PIER 7
STRUCTURE NO. 077-0002

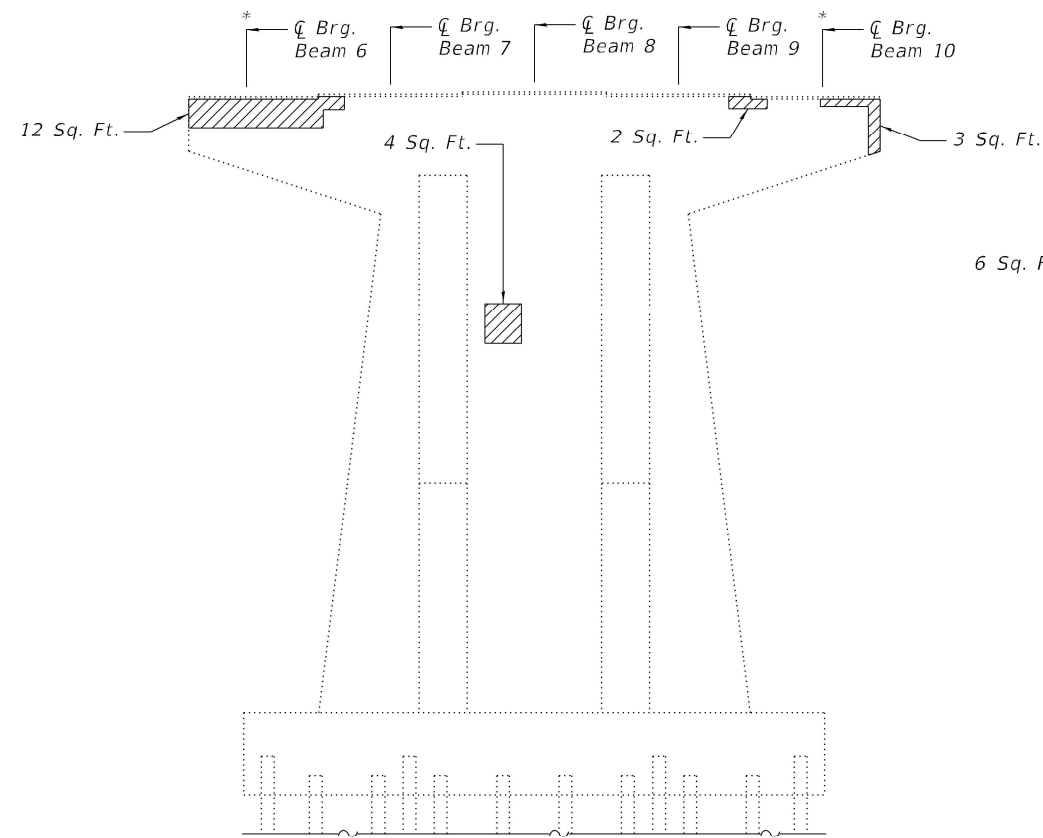
SHEET 3 OF 13 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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ILLINOIS			CONTRACT NO. 78A22	
FED. AID PROJECT				

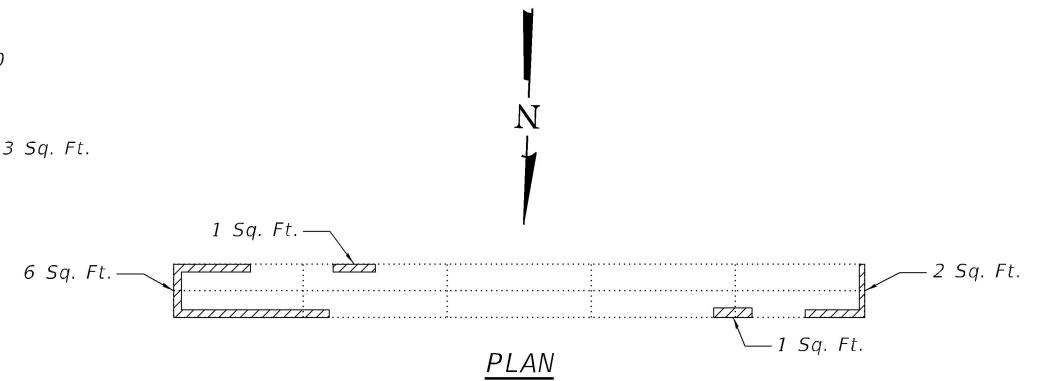
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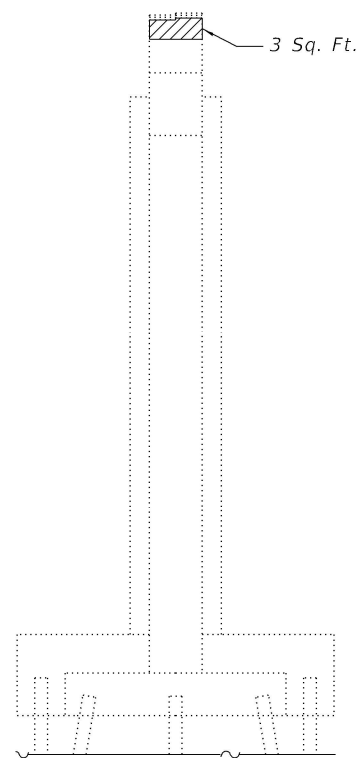
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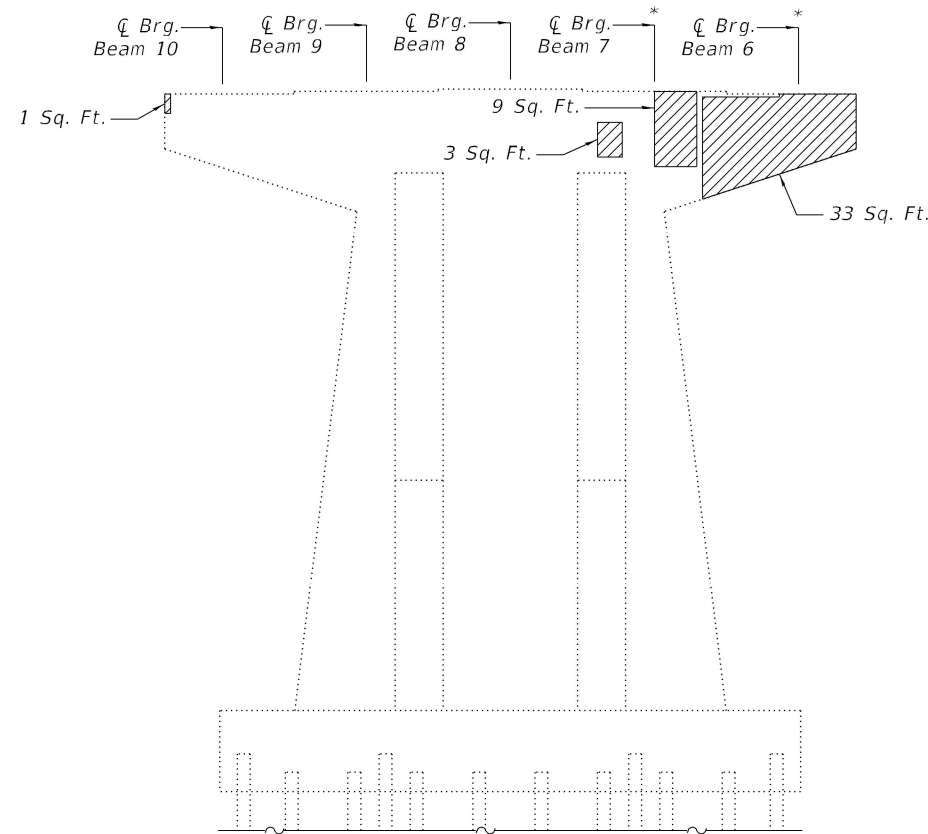
ELEVATION
(North Face - Looking South)



PLAN



END ELEVATION
(West Face - Looking East)



ELEVATION
(South Face - Looking North)

BEAM REACTIONS

Reaction	Span 9	Span 10
R _D	(k) 59.3	59.3
R _L	(k) 42.2	42.2
R _{Imp.}	(k) 11.1	11.1
R (Total)	(k) 112.6	112.6

LEGEND

Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

Notes:

See sheet 12 of 13 for pier encasement details.
 See sheet 13 of 13 for seismic restrainer details.
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 12 of 13.

* Location of Temporary Shoring and Cribbing.

BILL OF MATERIAL

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	86
Temporary Shoring and Cribbing	Each	4

USER NAME =	DESIGNED - MMC	REVISED -
CHECKED - MLC	REVISIONS -	
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PLOT DATE =	CHECKED - MLC	REVISED -

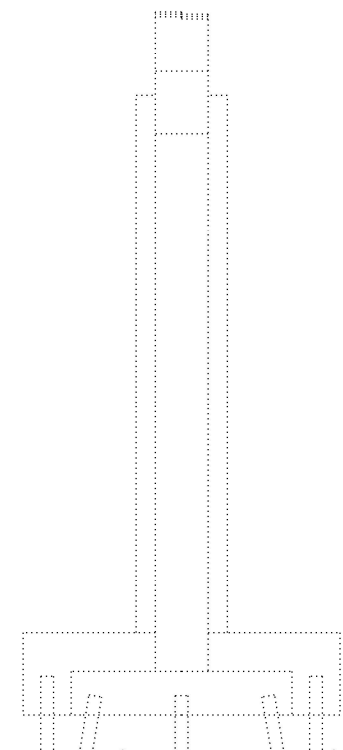
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 8
STRUCTURE NO. 077-0002**

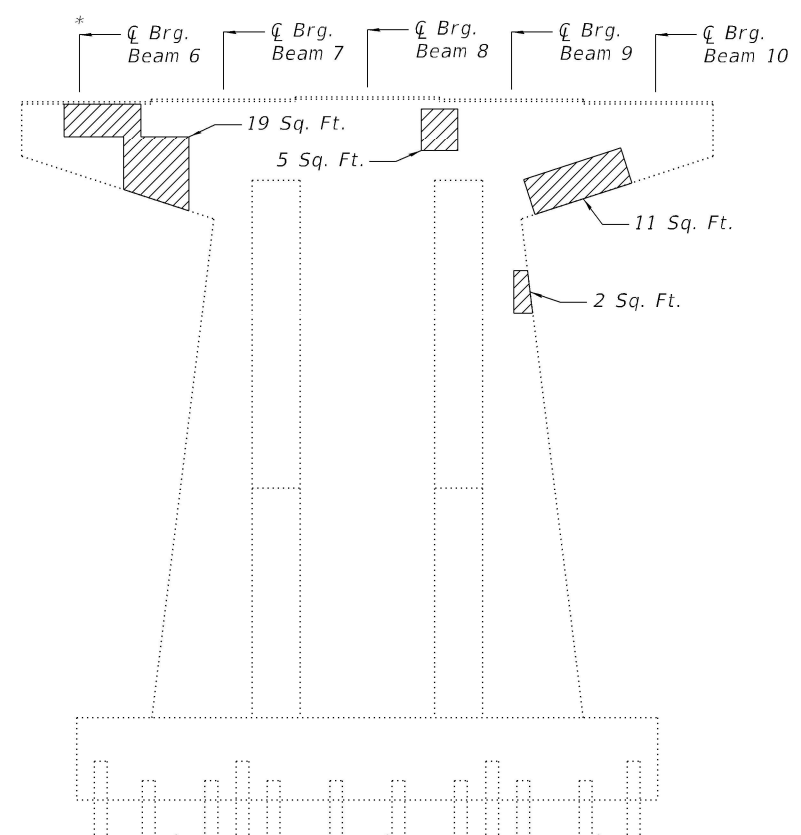
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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ILLINOIS FED. AID PROJECT			CONTRACT NO. 78A22	

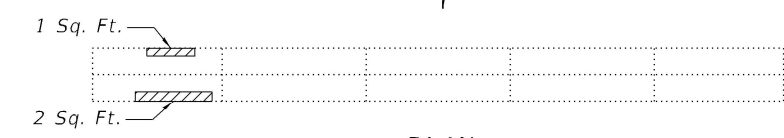
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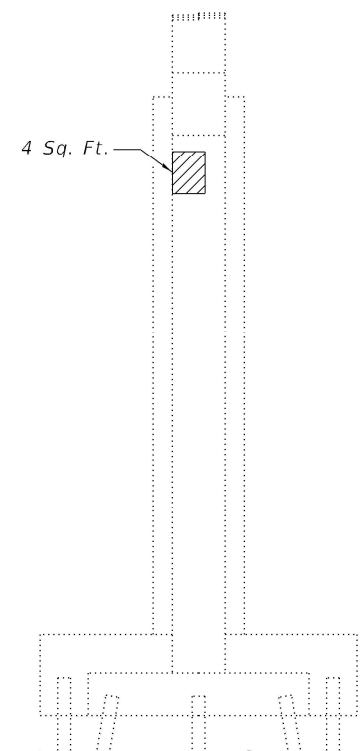
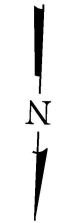
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 (East Face - Looking West)



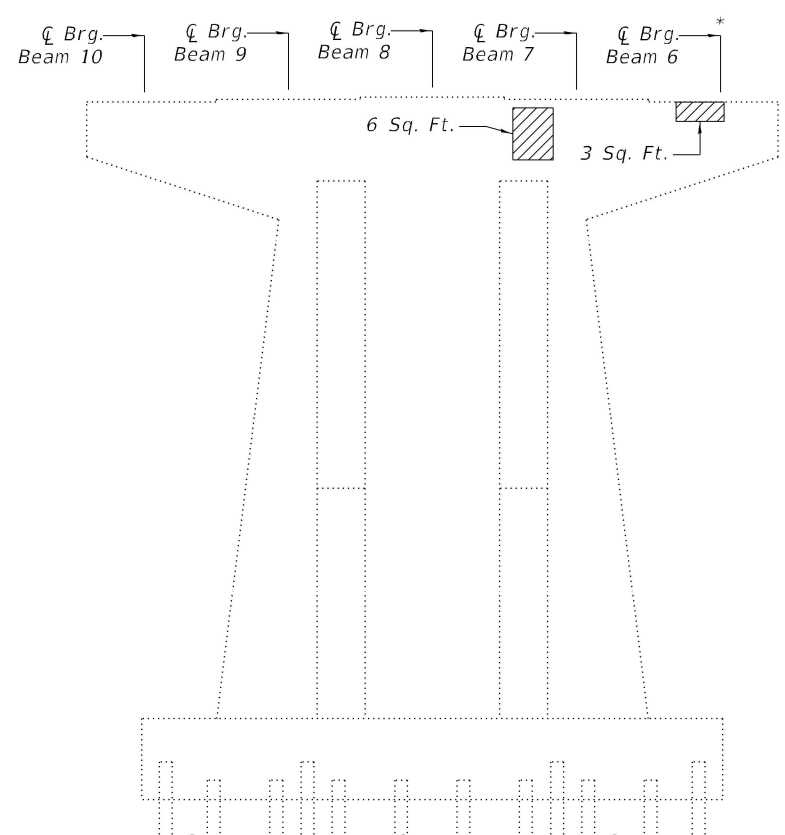
ELEVATION
 (North Face - Looking South)



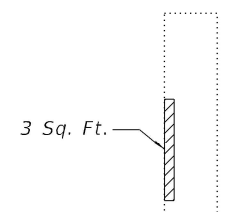
PLAN



END ELEVATION
 (West Face - Looking East)



ELEVATION
 (South Face - Looking North)



UNDERSIDE OF CAP
 (West End - Looking East)

BEAM REACTIONS

Reaction	Span 10	Span 11
R _∅	(k) 59.3	59.3
R _L	(k) 42.2	42.2
R _{Imp.}	(k) 11.1	11.1
R (Total)	(k) 112.6	112.6

LEGEND

Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

Notes:
 See sheet 12 of 13 for pier encasement details.
 See sheet 13 of 13 for seismic restrainer details.
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 12 of 13.

* Location of Temporary Shoring and Cribbing.

BILL OF MATERIAL

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	56
Temporary Shoring and Cribbing	Each	2



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	CHECKED - MLC	REVISED -
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PLOT DATE =	CHECKED - MLC	REVISED -

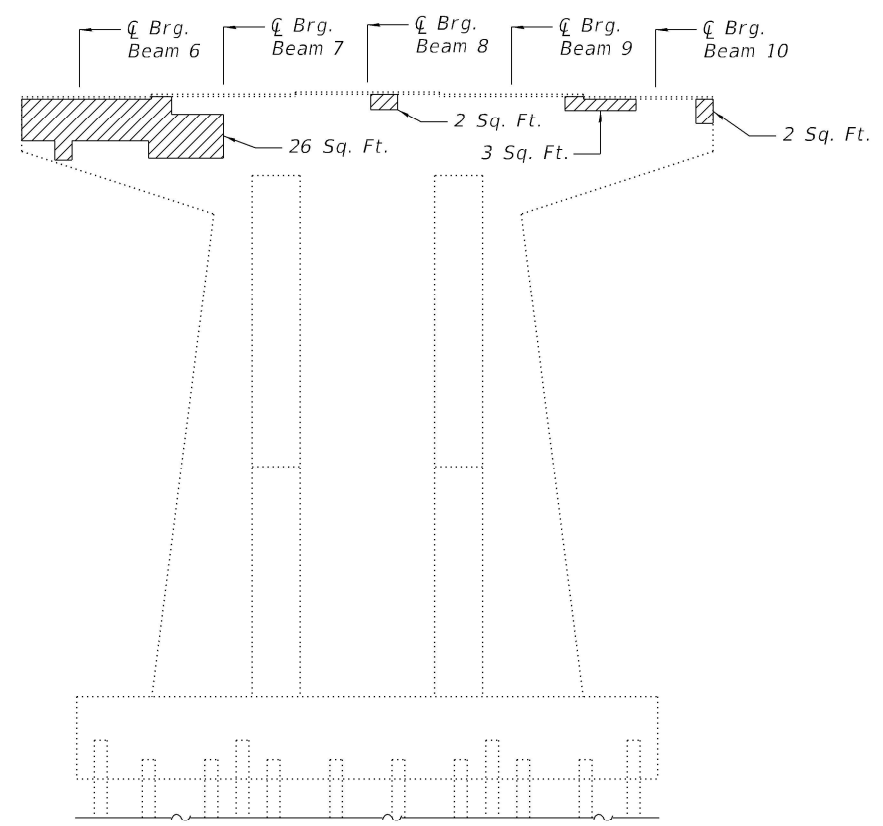
**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 9
 STRUCTURE NO. 077-0002**

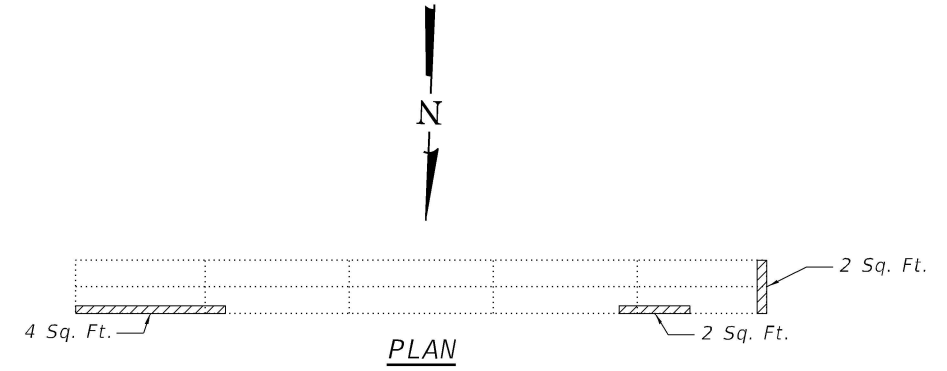
SHEET 5 OF 13 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	9
ILLINOIS			FED. AID PROJECT	

CONTRACT NO. 78A22



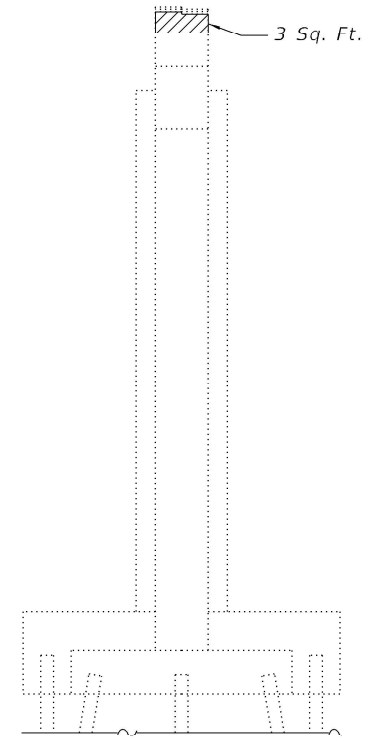
ELEVATION
(North Face - Looking South)



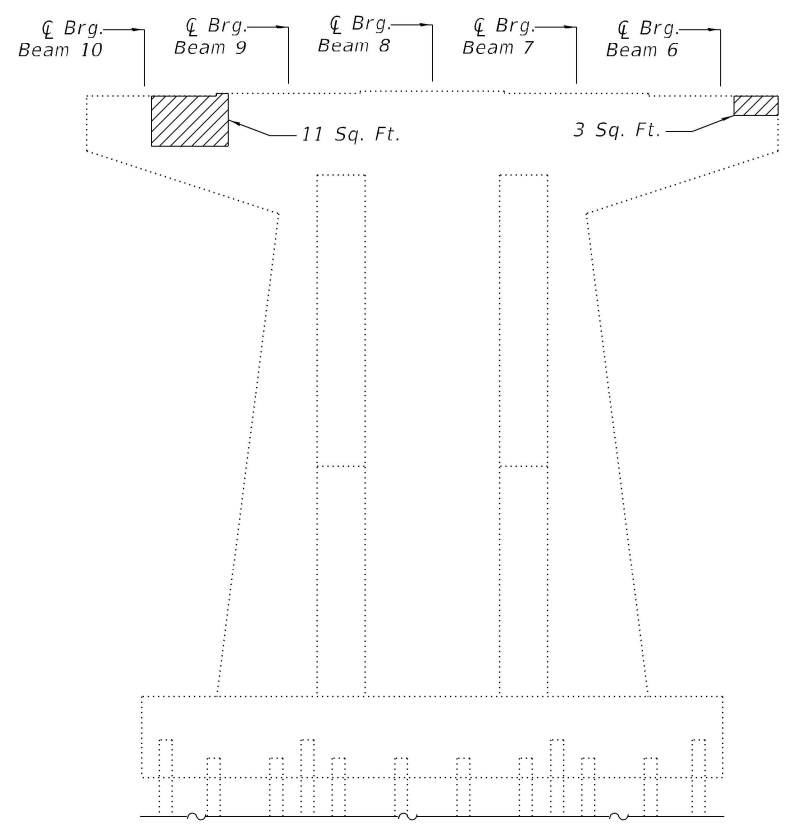
PLAN

BEAM REACTIONS

Reaction	Span 11	Span 12
R _∅	(k) 59.3	59.3
R _L	(k) 42.2	42.2
R _{Imp.}	(k) 11.1	11.1
R (Total)	(k) 112.6	112.6



END ELEVATION
(East Face - Looking West)



ELEVATION
(South Face - Looking North)

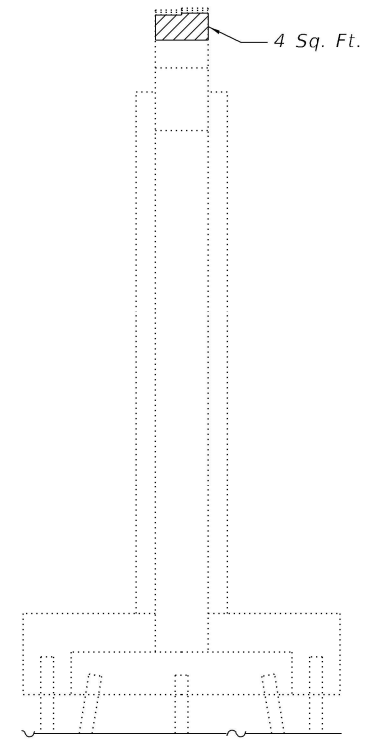
LEGEND

Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

Notes:
 See sheet 12 of 13 for pier encasement details.
 See sheet 13 of 13 for seismic restrainer details.
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 12 of 13.

BILL OF MATERIAL

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	62



END ELEVATION
(West Face - Looking East)

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Kaskaskia
 Engineering Group, LLC
 PROFESSIONAL ENGINEERING FIRM
 201 E. Main St., Suite 100
 Pekin, IL 61654
 815.233.8877
 www.kaskaskiaeng.com

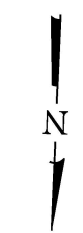
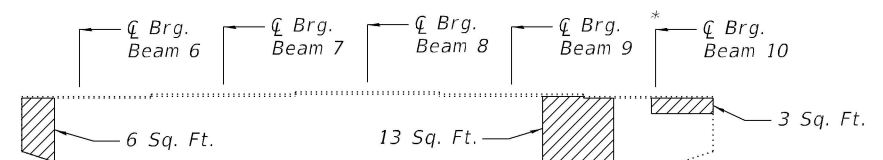
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	CHECKED - MLC	REVISED -
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PLOT DATE =	CHECKED - MLC	REVISED -

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SUBSTRUCTURE REPAIR - PIER 10
STRUCTURE NO. 077-0002

SHEET 6 OF 13 SHEETS

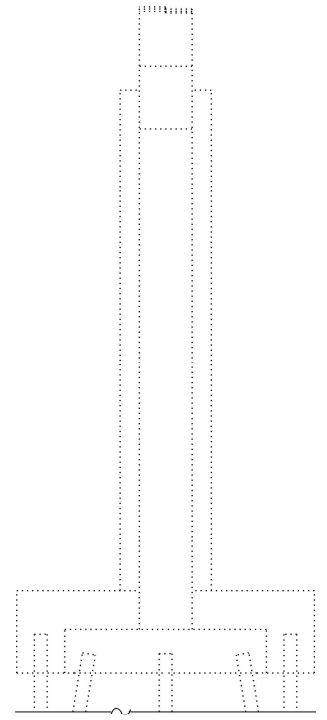
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	10
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78A22	



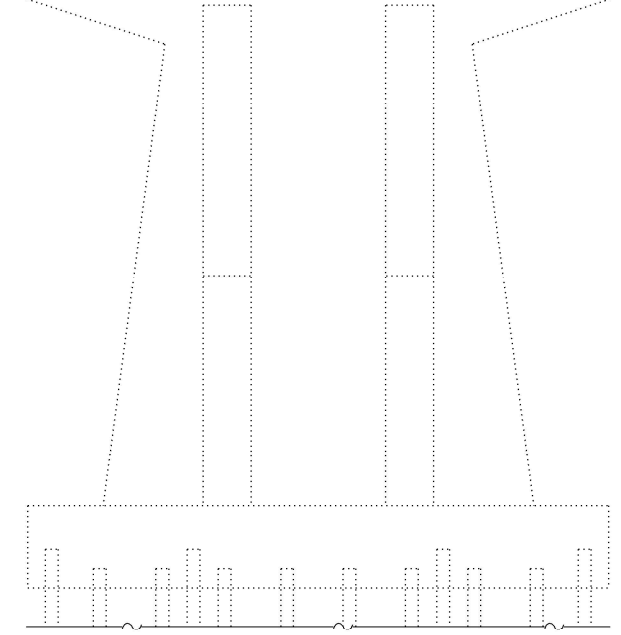
PLAN

BEAM REACTIONS

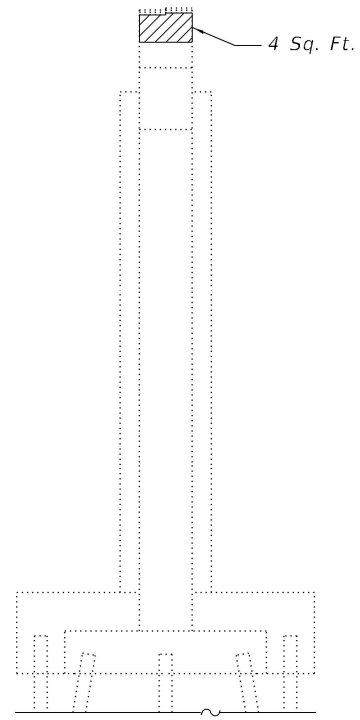
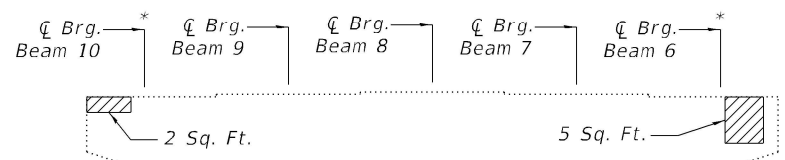
Reaction	Span 12	Span 13
R _∅	(k) 59.3	59.3
R _L	(k) 42.2	42.2
R _{Imp.}	(k) 11.1	11.1
R (Total)	(k) 112.6	112.6



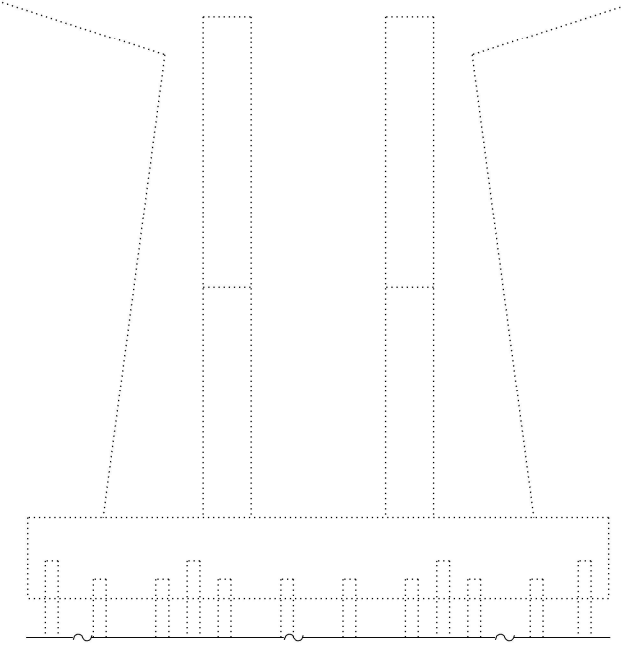
END ELEVATION
(East Face - Looking West)



ELEVATION
(North Face - Looking South)



END ELEVATION
(West Face - Looking East)



ELEVATION
(South Face - Looking North)

LEGEND

Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

Notes:
 See sheet 12 of 13 for pier encasement details.
 See sheet 13 of 13 for seismic restrainer details.
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 12 of 13.

* Location of Temporary Shoring and Cribbing.

BILL OF MATERIAL

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	34
Temporary Shoring and Cribbing	Each	3

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 Engineering Group, LLC
 PROFESSIONAL ENGINEERING FIRM
 1127 W. 10th St.
 Moline, IL 61704
 309-241-1111

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	CHECKED - MLC	REVISED -
PLOT SCALE =	DRAWN - MMC	REVISED -
PLOT DATE =	CHECKED - MLC	REVISED -

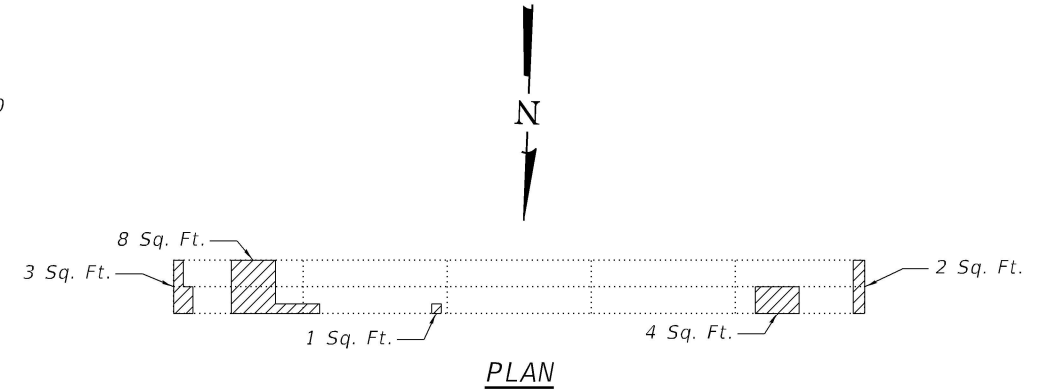
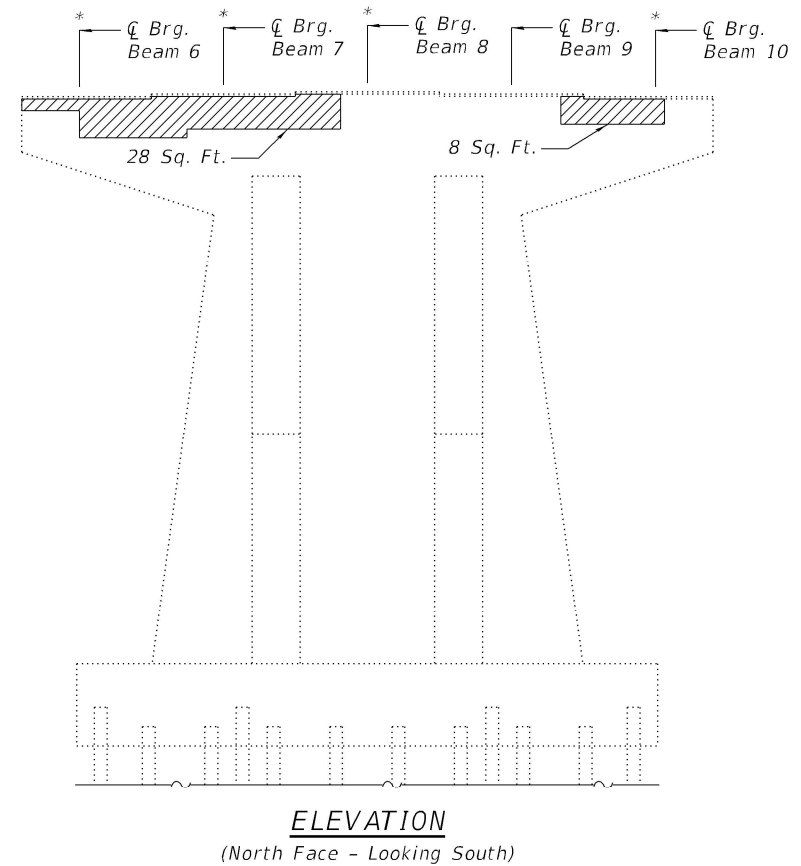
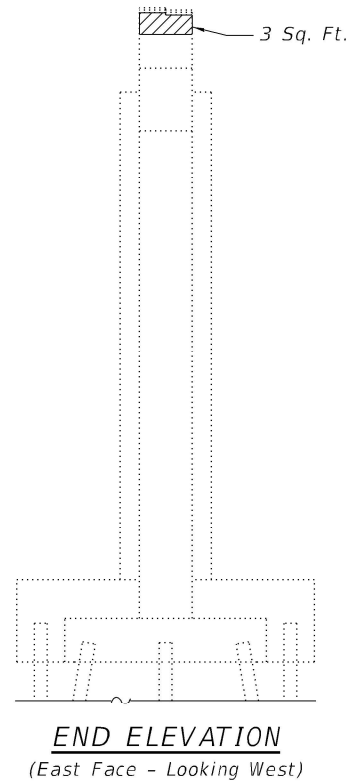
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE REPAIR - PIER 11
STRUCTURE NO. 077-0002

SHEET 7 OF 13 SHEETS

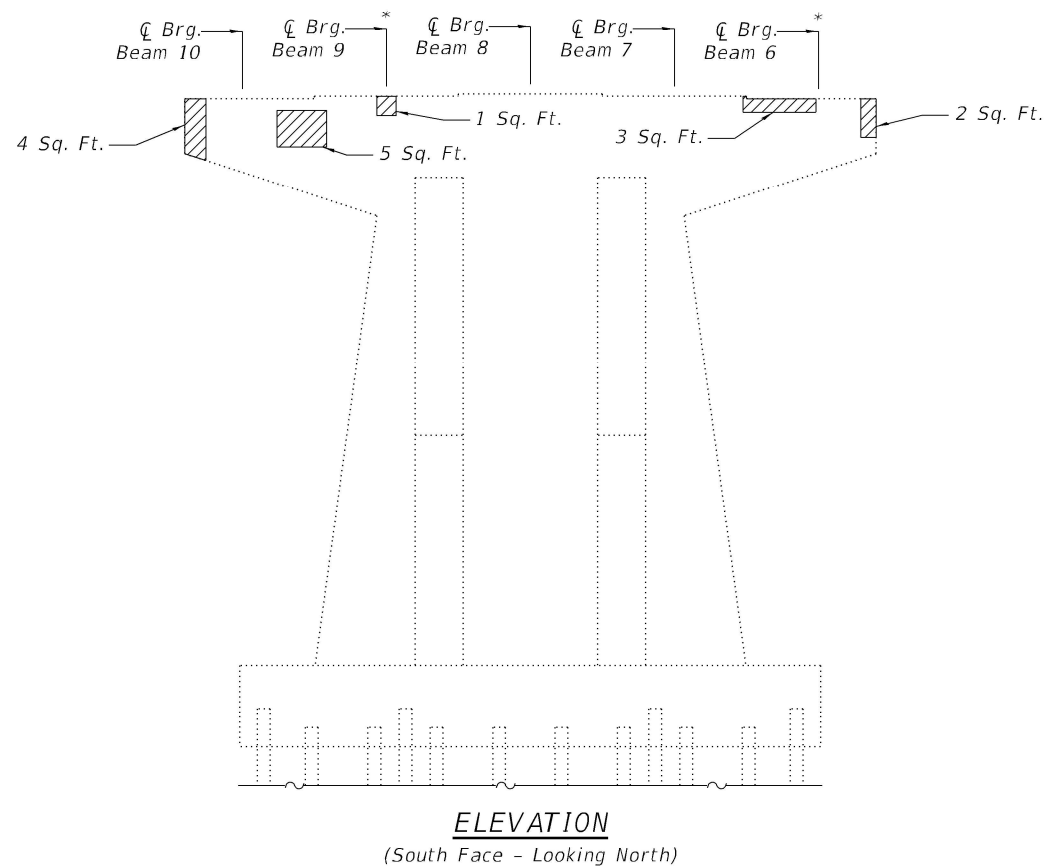
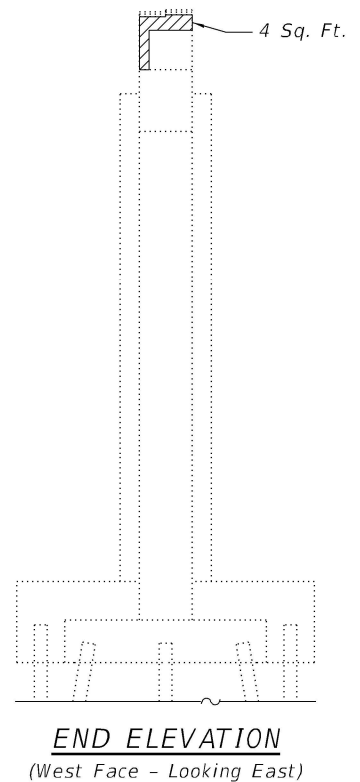
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	11
			CONTRACT NO. 78A22	
		ILLINOIS	FED. AID PROJECT	

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BEAM REACTIONS

Reaction	Span 13	Span 14
R _∅	(k) 59.3	59.3
R _L	(k) 42.2	42.2
R _{Imp.}	(k) 11.1	11.1
R (Total)	(k) 112.6	112.6



LEGEND

Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

Notes:

See sheet 12 of 13 for pier encasement details.
 See sheet 13 of 13 for seismic restrainer details.
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 12 of 13.

* Location of Temporary Shoring and Cribbing.

BILL OF MATERIAL

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	76
Temporary Shoring and Cribbing	Each	6

USER NAME =	DESIGNED - MMC	REVISED -
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PLOT DATE =	CHECKED - MLC	REVISED -

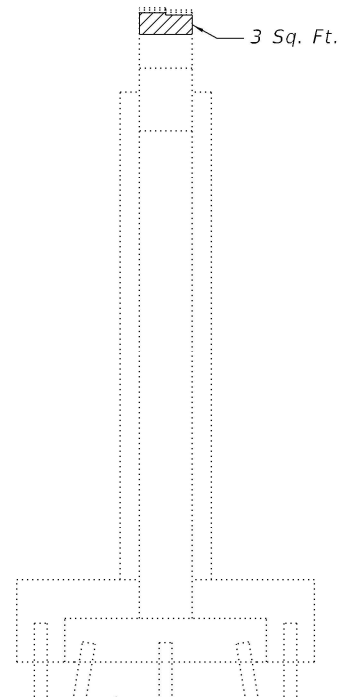
**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 12
 STRUCTURE NO. 077-0002**

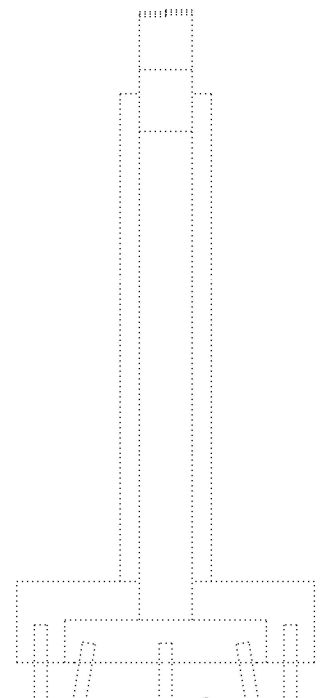
SHEET 8 OF 13 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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			CONTRACT NO. 78A22	
		ILLINOIS	FED. AID PROJECT	

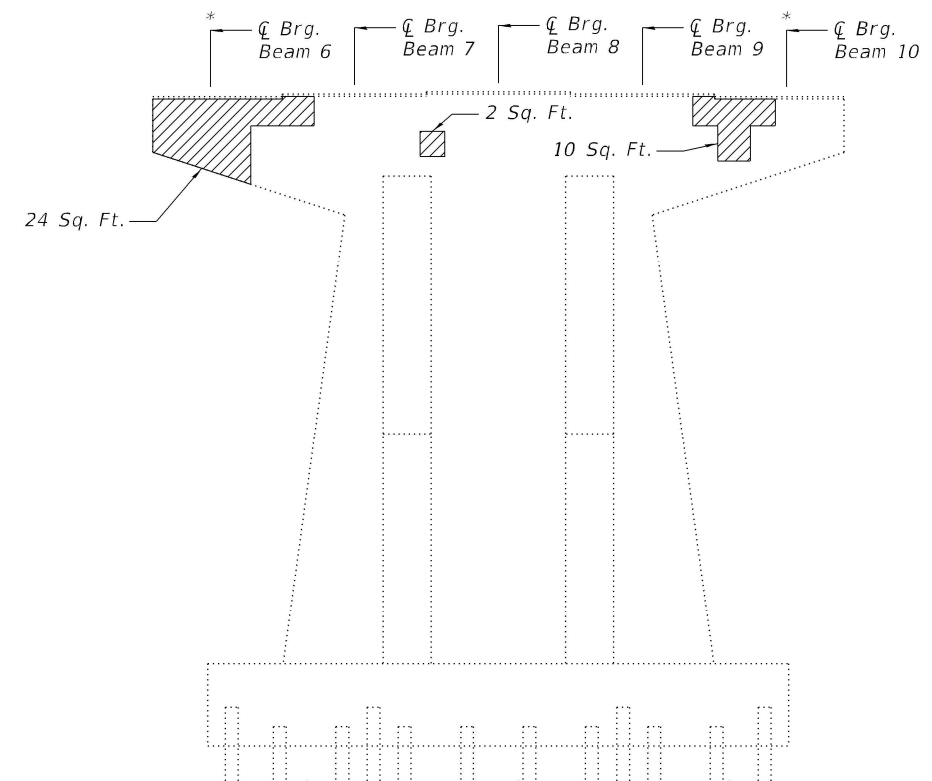
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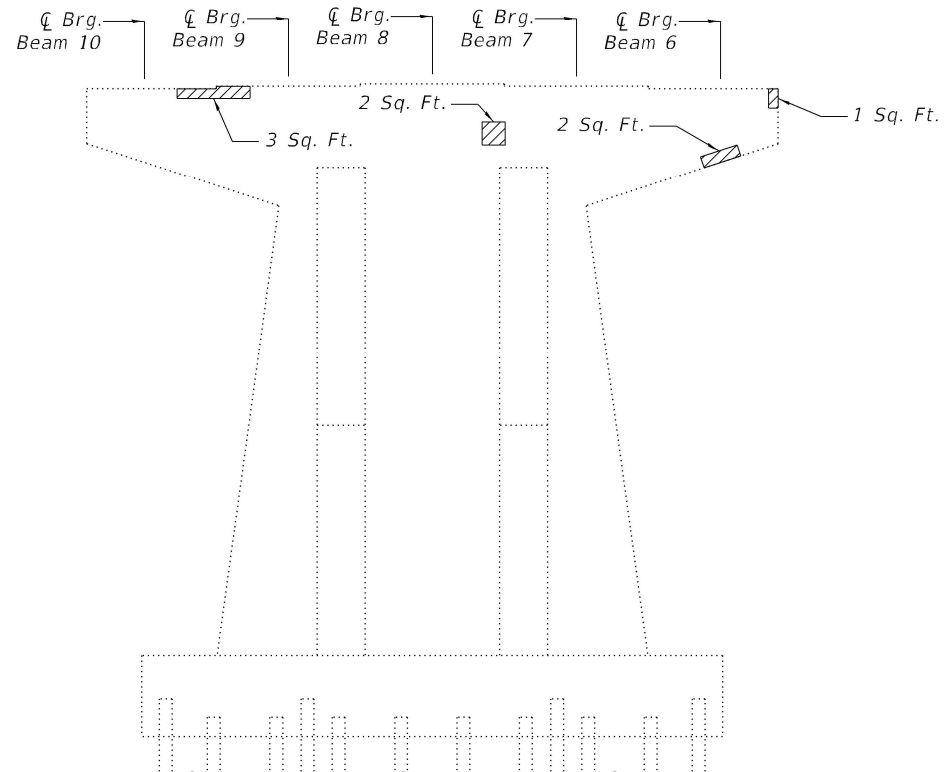
END ELEVATION
 (East Face - Looking West)



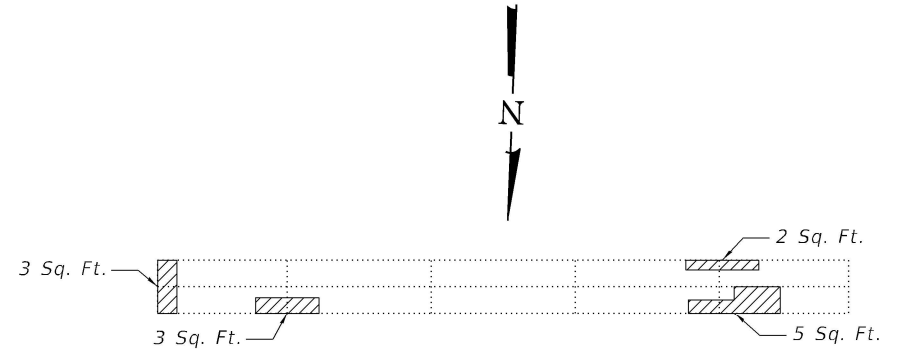
END ELEVATION
 (West Face - Looking East)



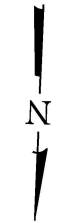
ELEVATION
 (North Face - Looking South)



ELEVATION
 (South Face - Looking North)



PLAN



BEAM REACTIONS

Reaction	Span 14	Span 15
R _∅	(k) 59.3	59.3
R _L	(k) 42.2	42.2
R _{Imp.}	(k) 11.1	11.1
R (Total)	(k) 112.6	112.6

LEGEND

Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

Notes:
 See sheet 12 of 13 for pier encasement details.
 See sheet 13 of 13 for seismic restrainer details.
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 12 of 13.

* Location of Temporary Shoring and Cribbing.

BILL OF MATERIAL

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	60
Temporary Shoring and Cribbing	Each	2

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 Engineering Group, LLC
 1827 W. 11th St.
 Moline, IL 61401
 309-243-8888
 www.kaskaskiaeng.com

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PLOT DATE =	DRAWN - MMC	REVISED -
	CHECKED - MLC	REVISED -

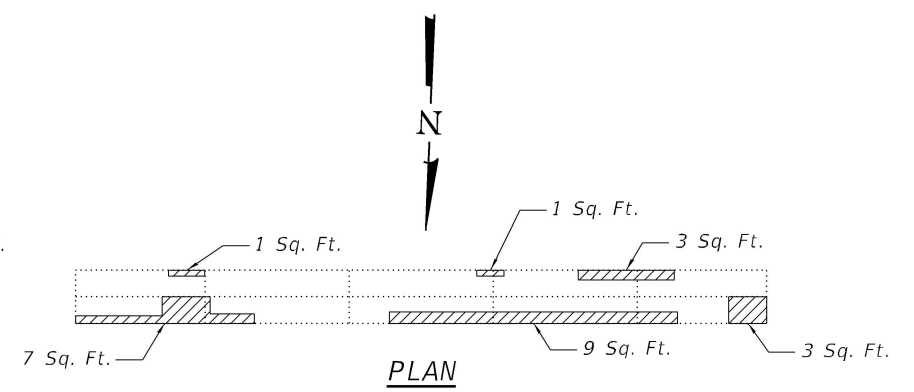
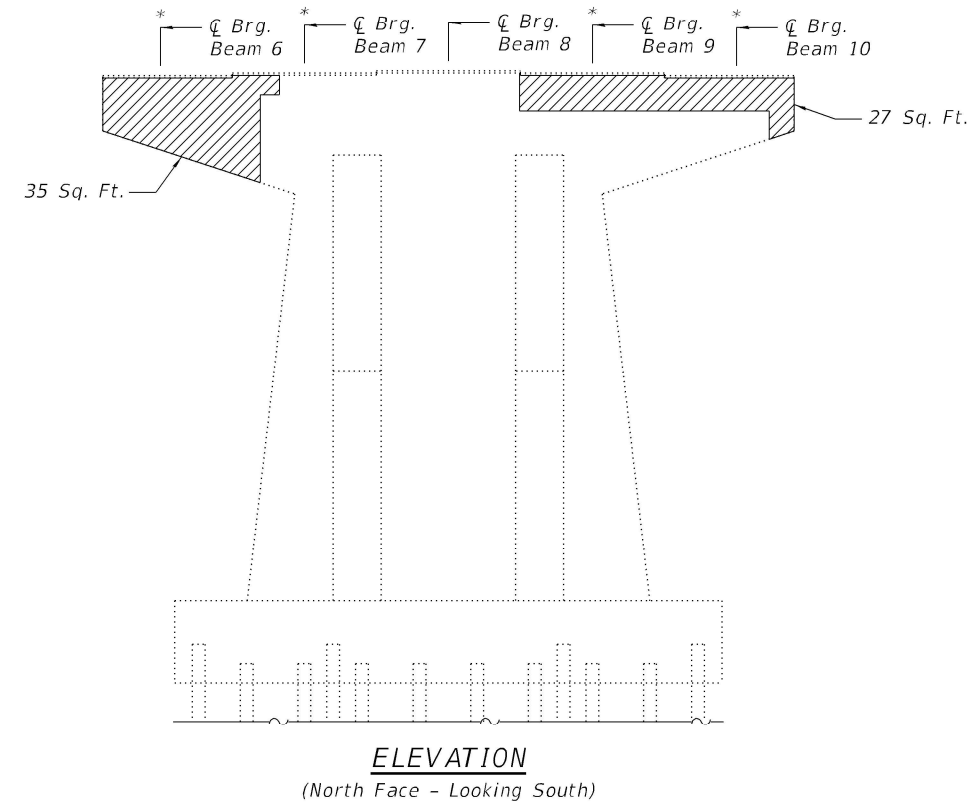
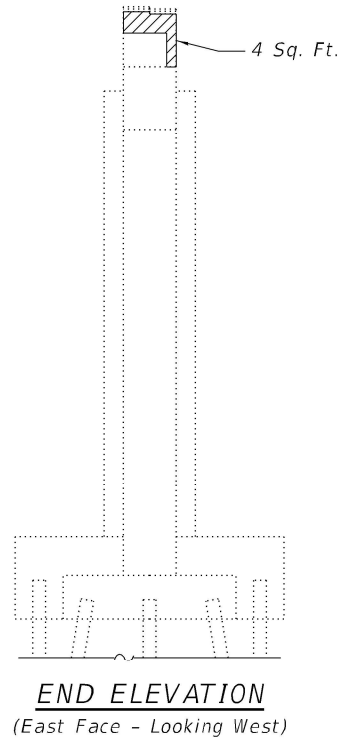
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE REPAIR - PIER 13
STRUCTURE NO. 077-0002

SHEET 9 OF 13 SHEETS

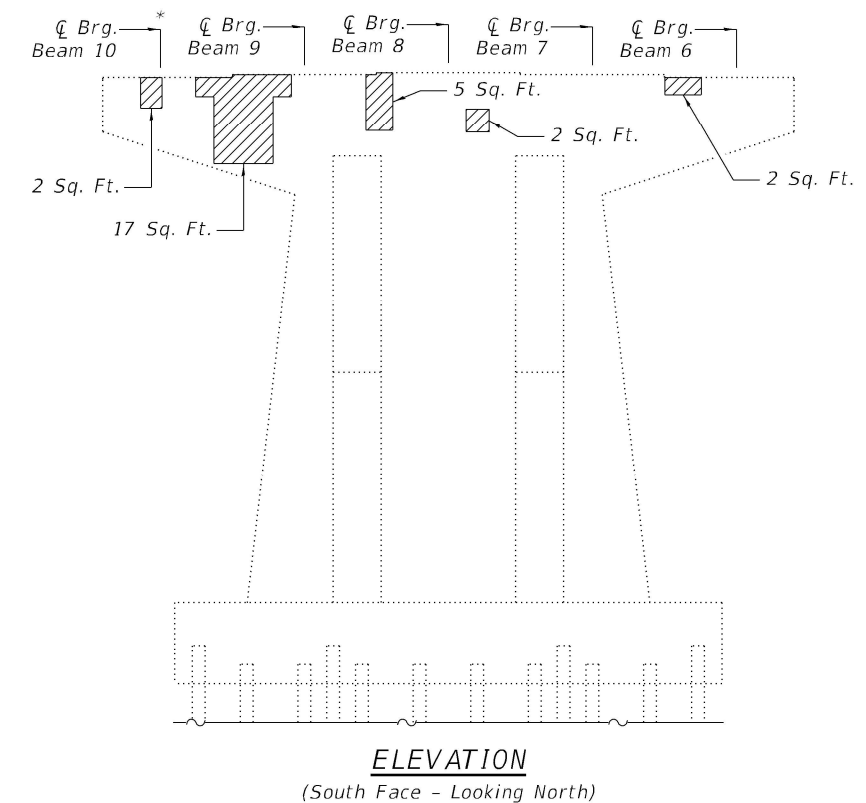
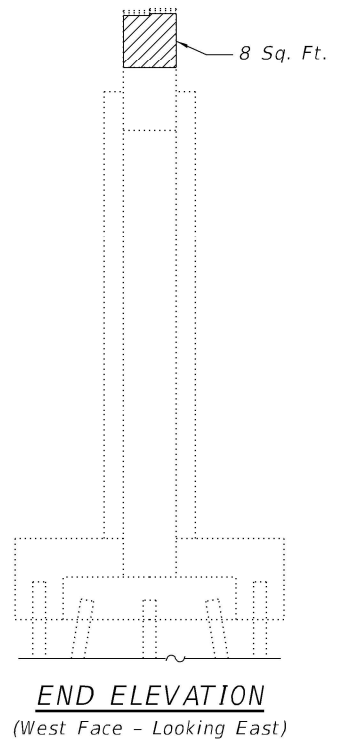
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	13
			CONTRACT NO. 78A22	
		ILLINOIS	FED. AID PROJECT	

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 2/26/2024 9:09:01 AM



BEAM REACTIONS

Reaction	Span 15	Span 16
R _v	(k) 59.3	59.3
R _h	(k) 42.2	42.2
R _{Imp.}	(k) 11.1	11.1
R (Total)	(k) 112.6	112.6



LEGEND

Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

Notes:

See sheet 12 of 13 for pier encasement details.
 See sheet 13 of 13 for seismic restrainer details.
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 12 of 13.

* Location of Temporary Shoring and Cribbing.

BILL OF MATERIAL

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	126
Temporary Shoring and Cribbing	Each	5

USER NAME =	DESIGNED - MMC	REVISED -
PLOT SCALE =	CHECKED - MLC	REVISED -
PLOT DATE =	DRAWN - MMC	REVISED -
	CHECKED - MLC	REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 14
 STRUCTURE NO. 077-0002**

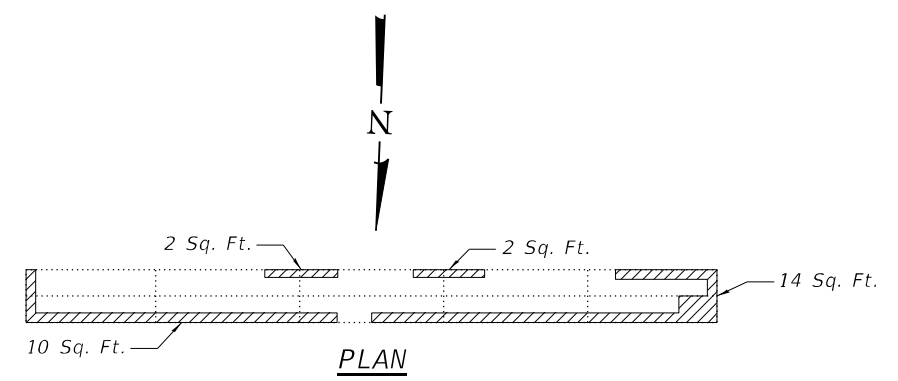
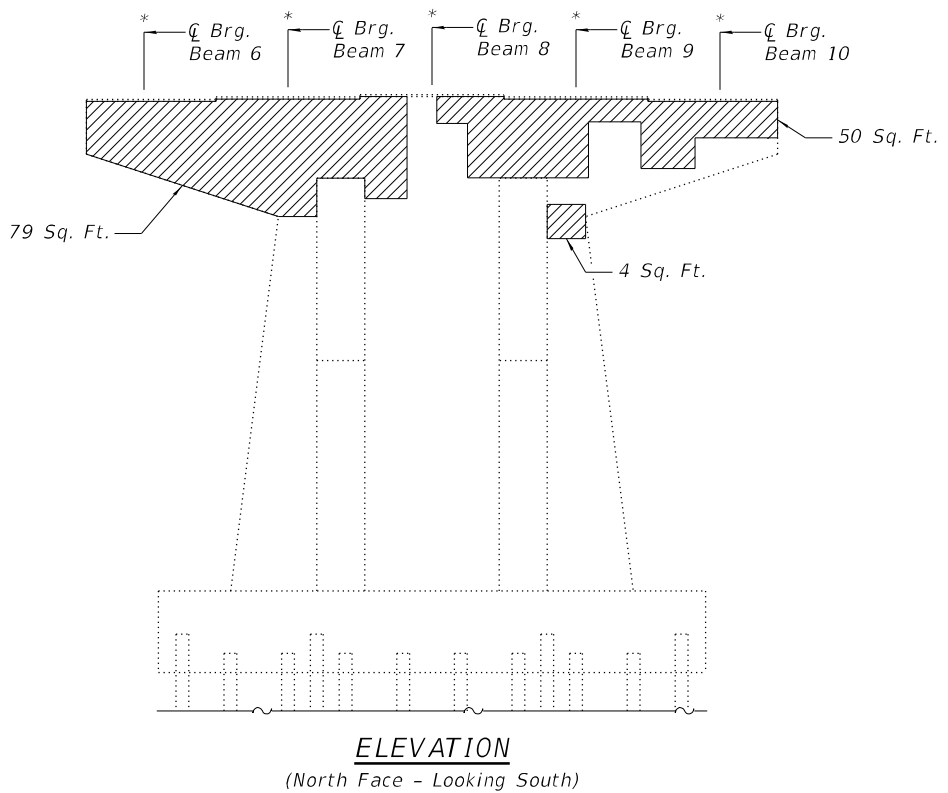
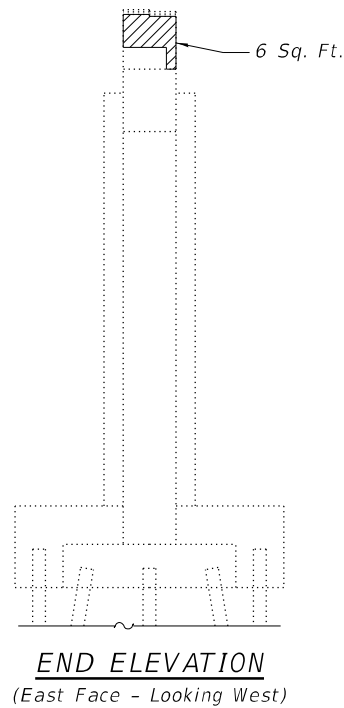
SHEET 10 OF 13 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	14

CONTRACT NO. 78A22

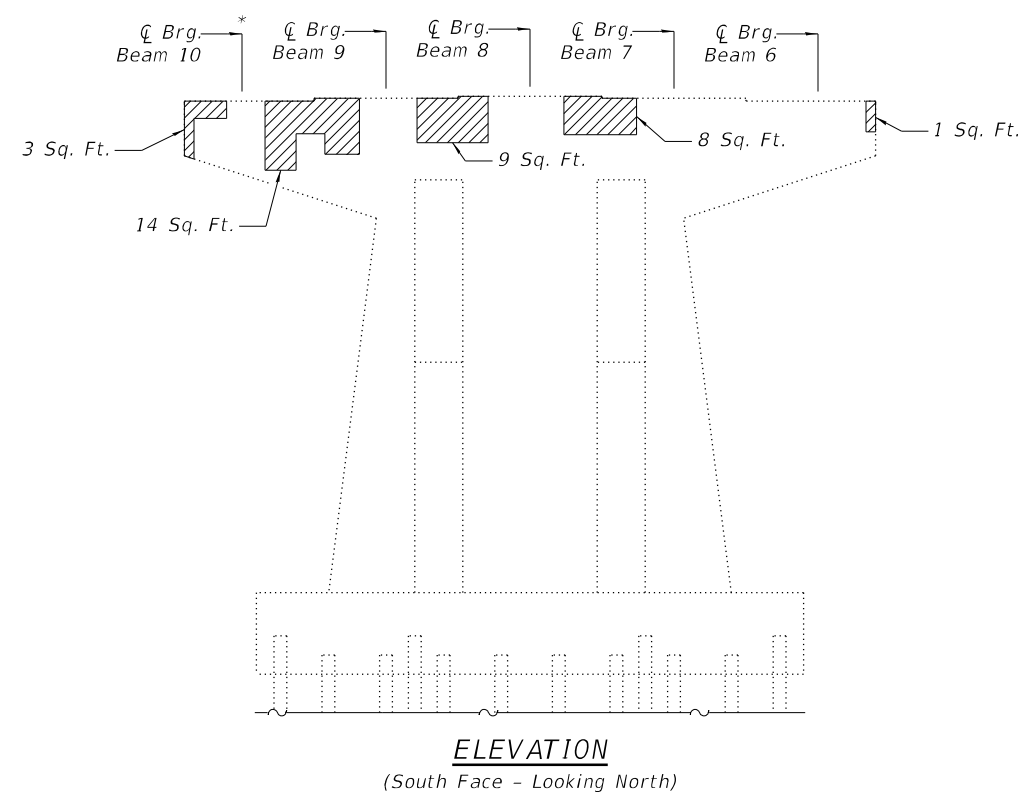
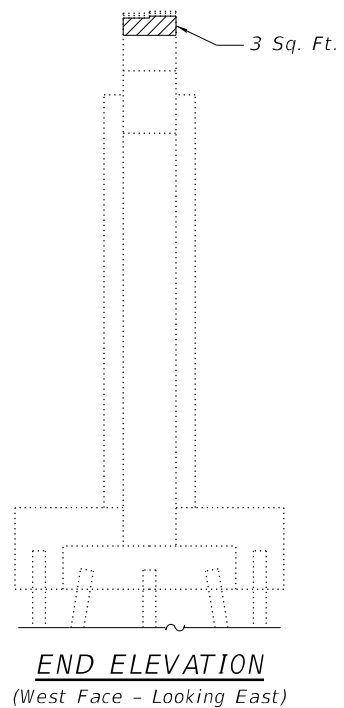
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BEAM REACTIONS

Reaction	Span 16	Span 17
R _v	(k) 59.3	58.7
R _h	(k) 42.2	42.2
R _{Imp.}	(k) 11.1	11.1
R (Total)	(k) 112.6	112.0



LEGEND

Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

Notes:

See sheet 12 of 13 for pier encasement details.
 See sheet 13 of 13 for seismic restrainer details.
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 12 of 13.

* Location of Temporary Shoring and Cribbing.

BILL OF MATERIAL

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	205
Temporary Shoring and Cribbing	Each	6

USER NAME =	DESIGNED - MMC	REVISED -
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PLOT DATE =	CHECKED - MLC	REVISED -

**STATE OF ILLINOIS
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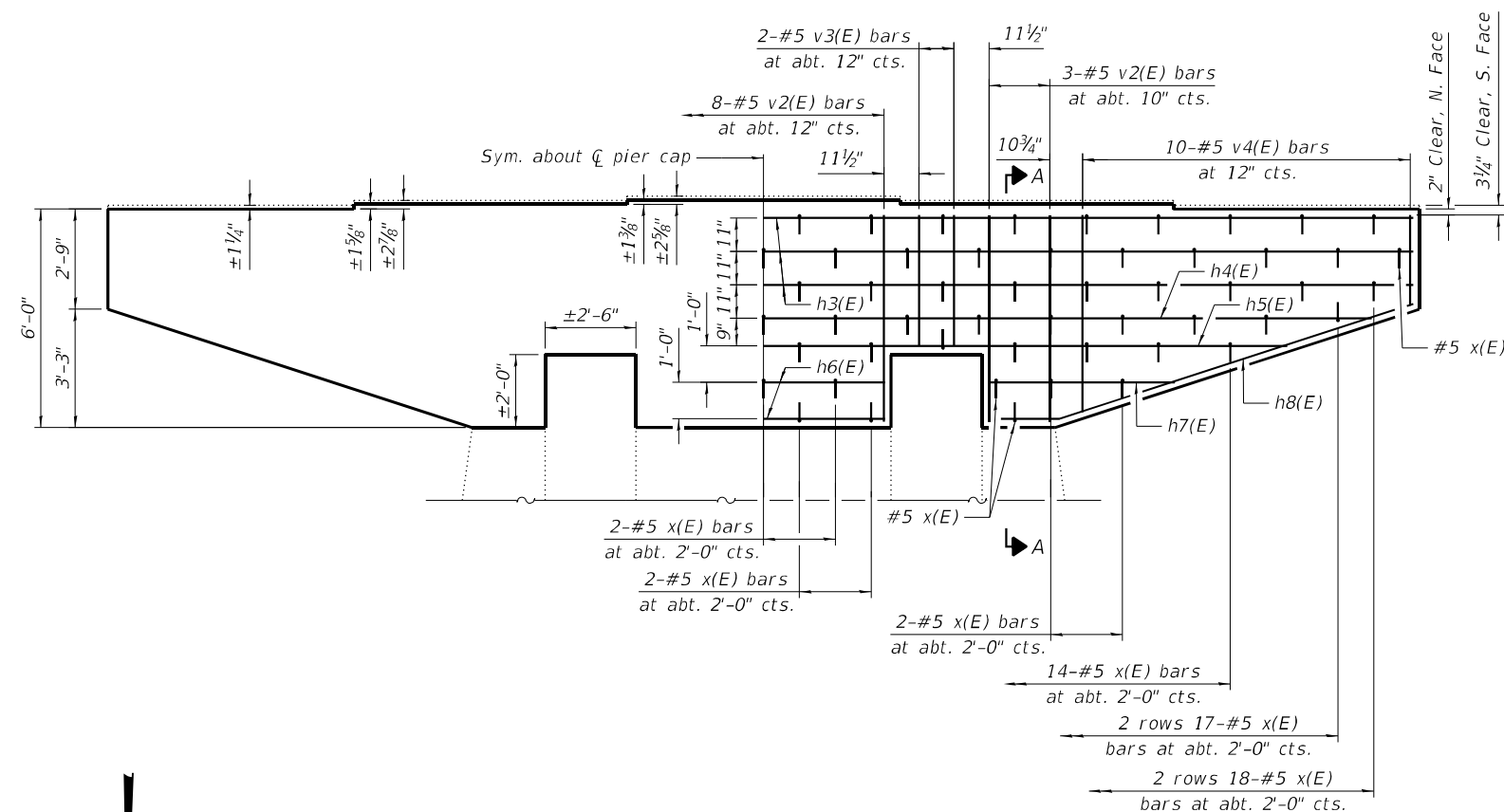
**SUBSTRUCTURE REPAIR - PIER 15
 STRUCTURE NO. 077-0002**

SHEET 11 OF 13 SHEETS

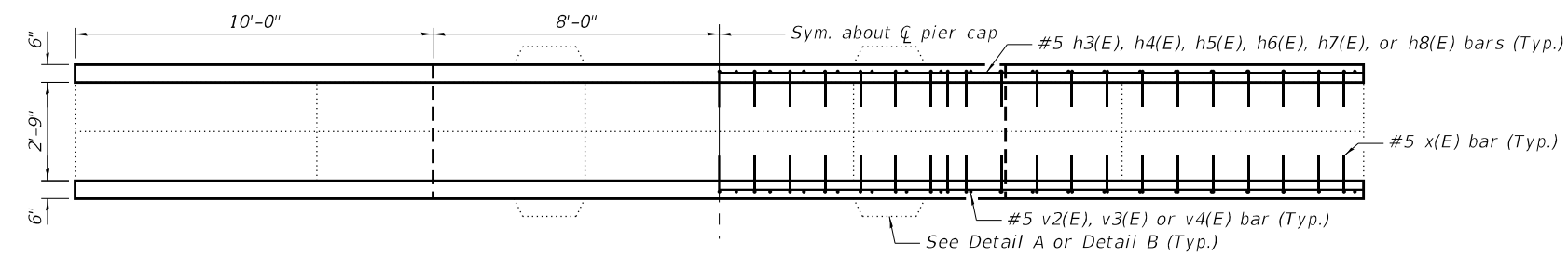
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	15
ILLINOIS			FED. AID PROJECT	

CONTRACT NO. 78A22

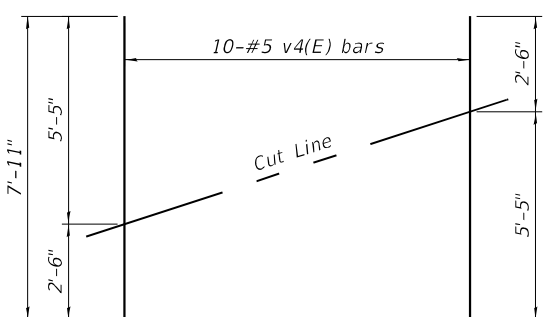
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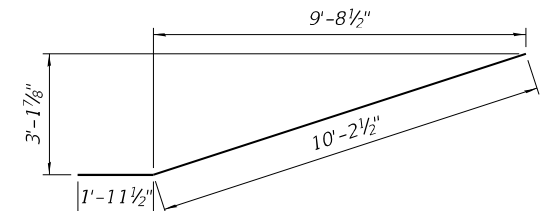
ELEVATION
 (North Face Shown - Looking South,
 South Face - Looking North Similar)



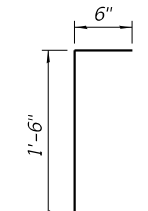
TOP OF CAP PLAN
 (Piers 13 & 14 Shown, Piers
 7 through 12 & 15 Similar)



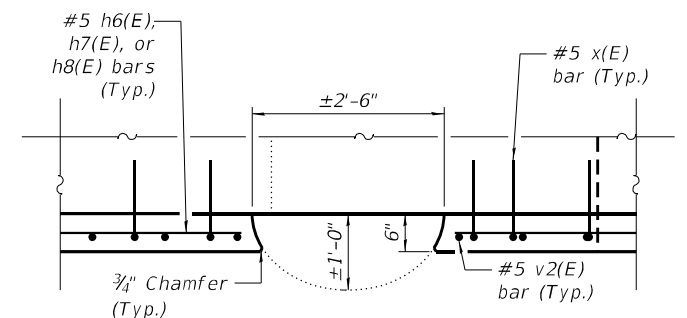
FIELD CUTTING DIAGRAM
 Order v4(E) full length. Cut as shown and
 use remainder of bars in opposite end.



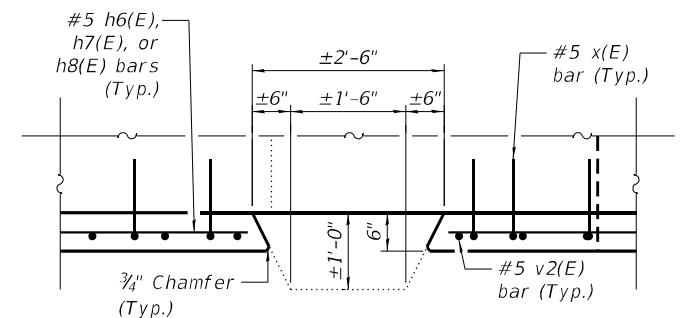
BAR h8(E)



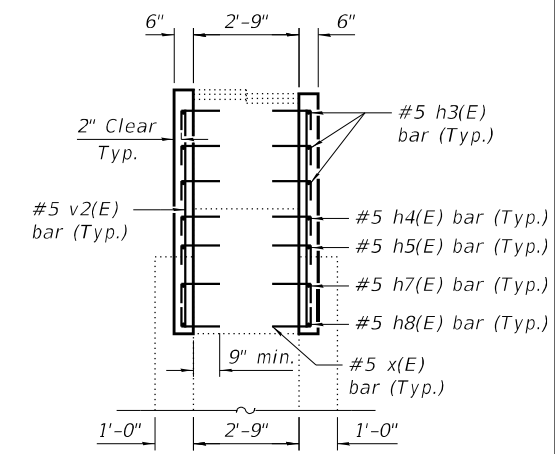
BAR x(E)



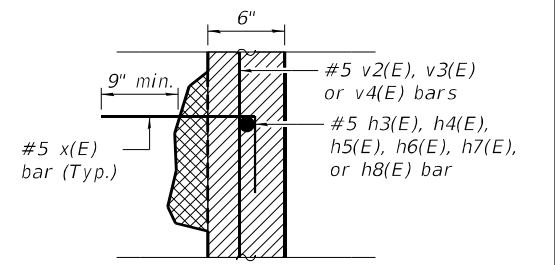
DETAIL A
 (Piers 7 Through 12 & 15)



DETAIL B
 (Piers 13 & 14)



SECTION A-A



REPAIR DETAIL

- * - Concrete in this area to be paid as Concrete Structures
- * - Concrete in this area is included with Structural Repair of Concrete (Depth Less Than or Equal to 5 Inches)
- * Concrete in these areas to be poured monolithically

BILL OF MATERIAL
 (PIERS 7 THROUGH 15)

Bar	No.	Size	Length	Shape
h3(E)	54	#5	35'-8"	—
h4(E)	18	#5	33'-4"	—
h5(E)	18	#5	28'-9"	—
h6(E)	36	#5	6'-8"	—
h7(E)	36	#5	5'-1"	—
h8(E)	36	#5	12'-2"	—
v2(E)	252	#5	5'-8"	—
v3(E)	72	#5	3'-7"	—
v4(E)	180	#5	7'-11"	—
x(E)	1,818	#5	2'-0"	└
Concrete Structures			Cu. Yd.	60.0
Reinforcement Bars, Epoxy Coated			Pound	11,110

NOTES:

Epoxy Grout x(E) bars in 9" min. holes according to Article 584 of the Standard Specifications. Bars are detailed to account for up to 5" of concrete repair depth. The Contractor may cut the x(E) bars to achieve the 2" clear cover on the face of the pier and the required 9" embedment. Locate holes to miss existing reinforcement bars, typ. Cost included with Reinforcement Bars, Epoxy Coated.



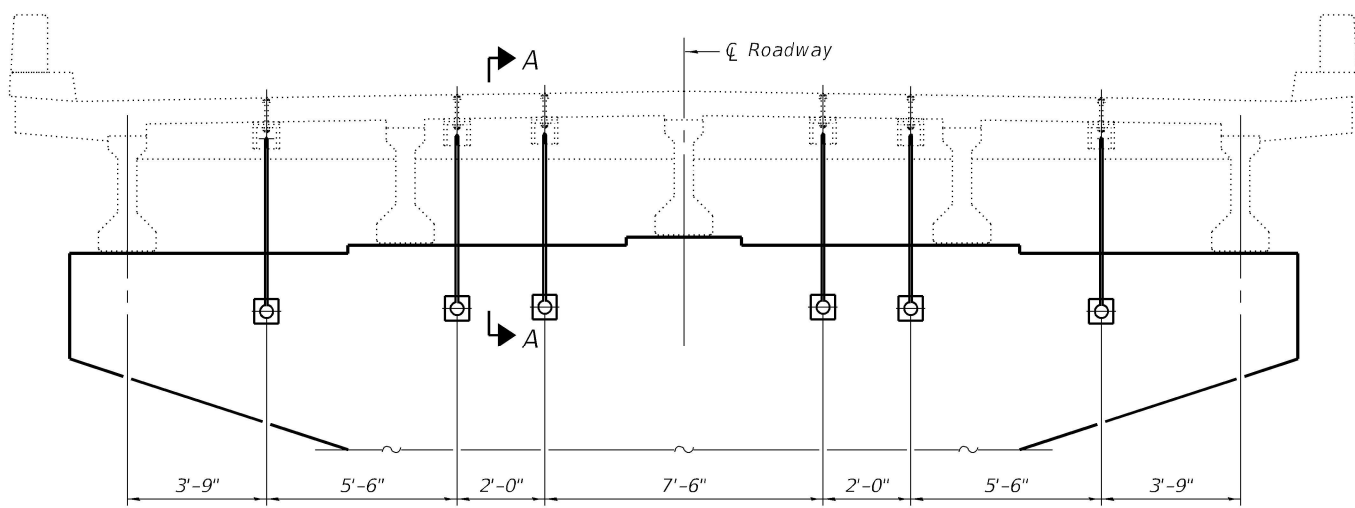
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DRAWN - MMC	REVISOR -	
CHECKED - MLC	REVISOR -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

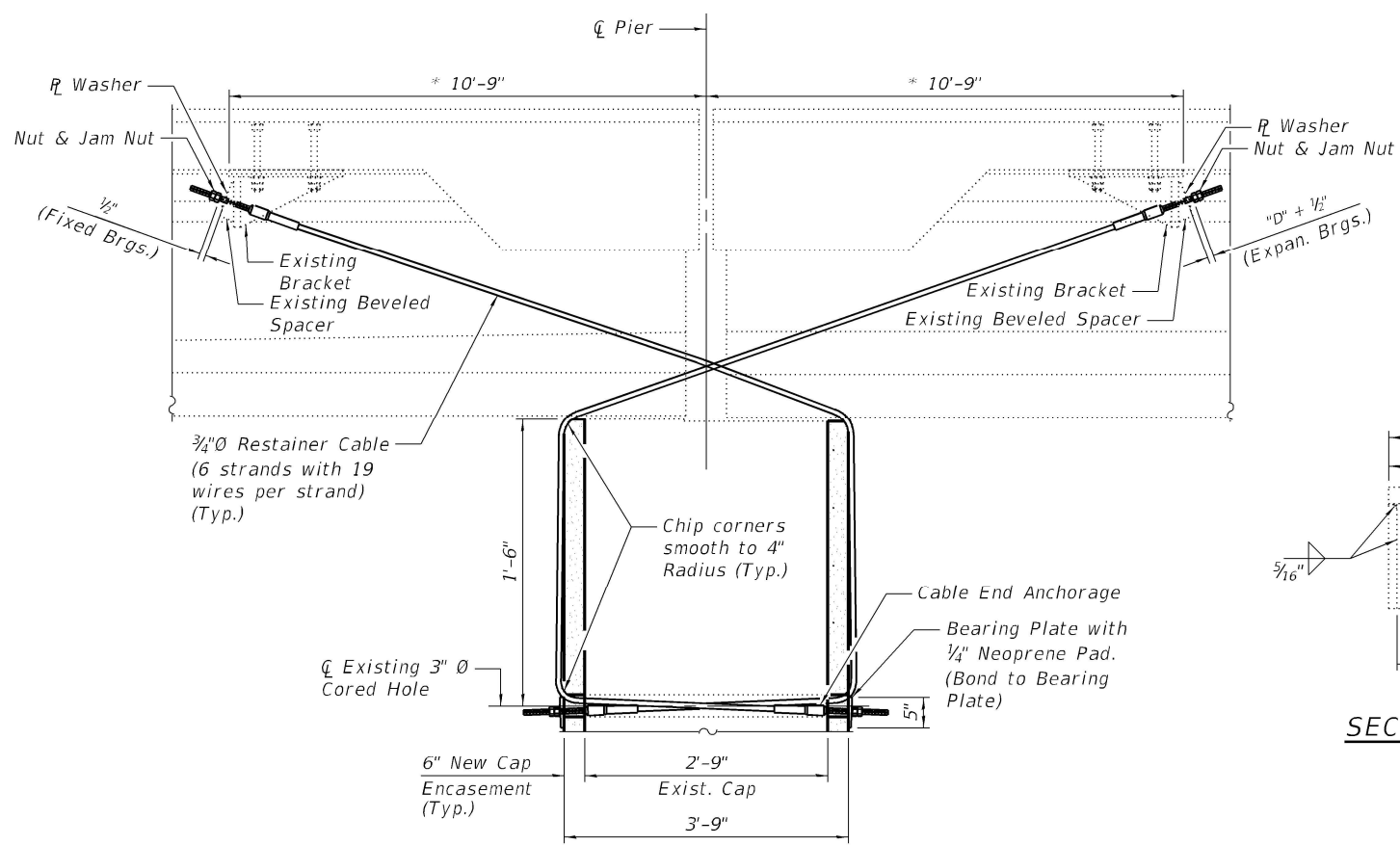
PIER ENCASEMENT DETAILS (PIERS 7 THROUGH 15)
STRUCTURE NO. 077-0002

SHEET 12 OF 13 SHEETS

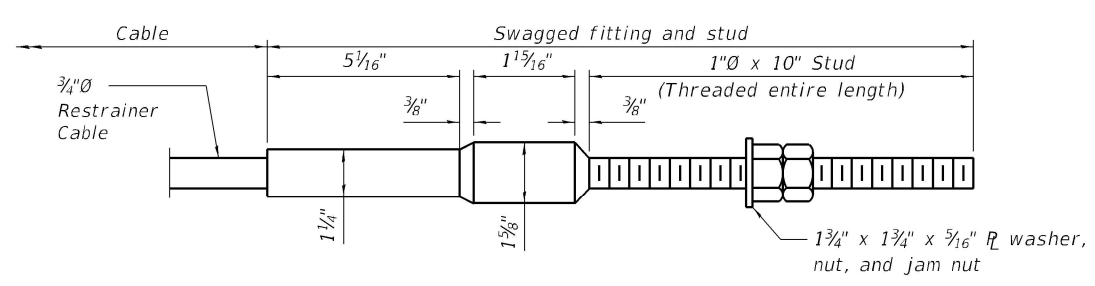
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2024-1	PULASKI	17	16
CONTRACT NO. 78A22				
ILLINOIS FED. AID PROJECT				



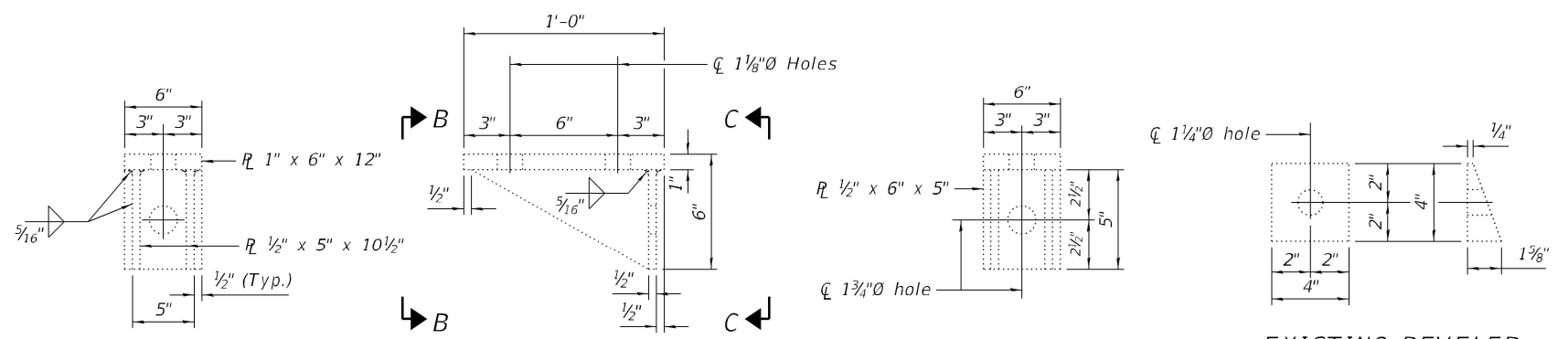
RESTRAINER CABLES AT PIERS 7 THROUGH 15



SECTION A-A



CABLE END ANCHORAGE
(2 per Cable)



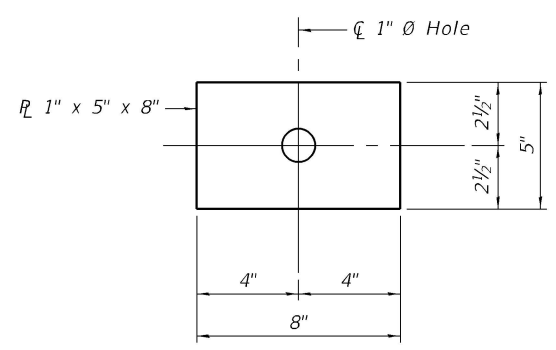
SECTION B-B

ELEVATION

SECTION C-C

EXISTING BEVELED SPACER

EXISTING BRACKET DETAILS



BEARING PLATE

NOTES:
* Estimated. Contractor required to check actual length.
Existing brackets to be re-used.

BILL OF MATERIAL

Item	Unit	Total
Seismic Restrainer	Each	108

SEISMIC RESTRAINER NOTES

All steel parts except cables shall be galvanized according to AASHTO M 232. Restrainer cables shall be galvanized according to AASHTO M 120 Class C.
Cable shall be 3/4"Ø preformed, 6 x 19 wire rope, ultimate strength = 47,600 pounds in accordance with AASHTO M 277.
The swagged fitting shall be machined from hot-rolled bars of steel conforming to AISI C 1035, and shall be annealed, suitable for cold swagging. The manufacturer's identifying mark shall be stamped on the body of the swagged fitting.
The 1 inch diameter stud shall conform to the requirements of AASHTO M 314.
Nuts shall conform to the requirements of AASHTO M 164 except they need not be Grade DH or Grade 2H nor is it necessary for the nuts to be lubricated. After galvanizing, the pitch diameter of the nut and the head of the swagged fitting may be tapped over ANSI B1.1 Class 2B tolerance by 3/16 inch oversize if the stud threads conform to Class 2A fit before galvanizing.
The swagged fitting, stud, and nut assembly shall develop 125 percent of the specified ultimate strength of the cable.
The Contractor shall be responsible for determining the required lengths of cable to account for the additional cap encasement. The restrainer cable shall be installed after concrete encasement has cured.
Each seismic restrainer consists of 3/4"Ø Restrainer Cable with 2 end anchorage assemblies, 1 bearing plate (including neoprene pad), and misc. hardware.
Cost of cables, cable end anchorages, plates, neoprene pads, washers, and nuts, including removal of the existing and installation of restrainers will be paid for at the unit bid price each for each "Seismic Restrainer."
Cost of removal and disposal of existing cables and associated elements is included in the cost of "Seismic Restrainer."
Cored holes shall be sealed with sealant, subject to approval of the Engineer. Cost of the sealant is included with "Seismic Restrainer."

SEISMIC RESTRAINER INSTALLATION PROCEDURES

- 1.) Locate and install cables snug tight.
- 2.) For Restrainers at fixed bearings, back off the nut at bracket end of cable by 3/4".
- 3.) For Restrainers at expansion bearings, back off the nut at bracket end of cable by "D" + 3/4".
"D" = +1/8" per 100' of expansion length for every 15°F temperature rise above 50°F Normal Temperature.
"D" = -1/8" per 100' of expansion length for every 15°F temperature drop below 50°F Normal Temperature.
- 4.) Tighten jam nuts.

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Kaskaskia Engineering Group, LLC
Professional Engineering Group
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USER NAME =	DESIGNED - MMC	REVISED -
	CHECKED - MLC	REVISED -
PLOT SCALE =	DRAWN - MMC	REVISED -
PLOT DATE =	CHECKED - MLC	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**SEISMIC RESTRAINER DETAILS (PIERS 7 THROUGH 15)
STRUCTURE NO. 077-0002**

SHEET 13 OF 13 SHEETS

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