

06-16-2023 LETTING ITEM 186

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

# PROPOSED HIGHWAY PLANS

F.A.I. ROUTE 57 NB (I-57)  
OVER FAS 2936 (OLD RTE US 51)  
SECTION D9 BRIDGE REPAIR 2023-3

PULASKI COUNTY  
MAJOR BRIDGE PREVENTATIVE MAINTENANCE  
PROJECT: STP-VLDC (34-1)  
C-99-031-23

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	1
		ILLINOIS	CONTRACT NO. 78986	

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

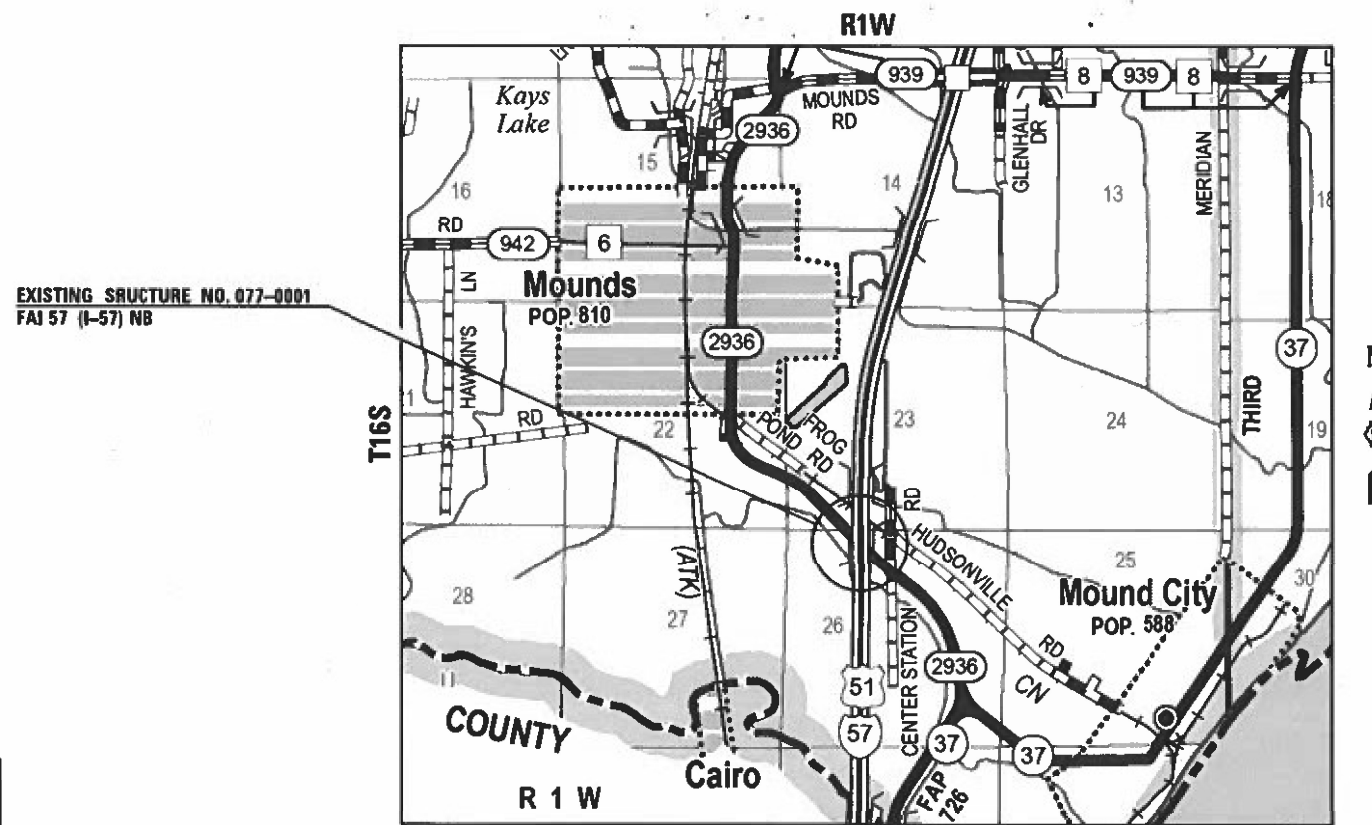
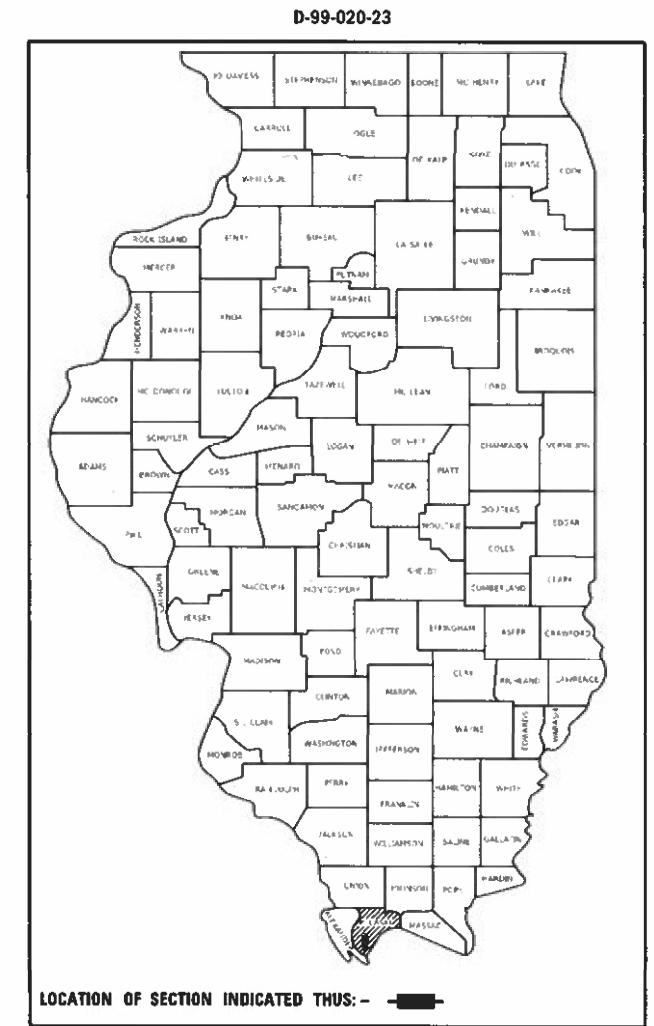
**TRAFFIC DATA**

**I-57 (NORTHBOUND ONLY)**

2023 ADT = 7,780  
58% TRUCKS

**TOWNSHIPS:**

COUNTY UNIT ROAD DISTRICT



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

PROJECT ENGINEER: Grant Deterding, P.E. (618) 351-5226  
DESIGNER: Moshe Cohen, S.E. (618) 233-5877

CONTRACT NO. 78986

SN 077-0001 (NB)  
BRIDGE LENGTH = 1013.16 FT  
NET LENGTH = 1013.16 FT



Signed: *Moshe L. Cohen*

Dated: 2023-03-07  
Illinois Structural Engineer  
No. 081-008104  
License Expires: 11-30-2024

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SUBMITTED March 17, 2023  
Kirk H. Brown  
REGION FIVE ENGINEER

May 12, 2023 [Signature]  
ENGINEER OF DESIGN AND ENVIRONMENT

May 12, 2023 [Signature]  
DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

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

FILE NAME: P:\22-1868\11-57 over Old US 51 Bridge Rehab\9.1001\Structures\78986-001 Title sheet.dwg

MODEL: Detail  
 FILE NAME: P-22-1860-11-157-over-03-05-1-Bridge-Neighborhood-Structures/78986-02-Shop-Draws.dwg

**Kaskaskia**  
 Engineering Group, LLC  
 47 South Third Street  
 Suite 204  
 Carbondale, Illinois 62901  
 618-335-1100 phone  
 www.kaskaskiaeng.com  
 Professional Engineering Group

USER NAME	mmk
PLOT SCALE	= 2.0000' / in.
PLOT DATE	= 1/9/2023

DESIGNED	-	REVISED	-
DRAWN	-	REVISED	-
CHECKED	-	REVISED	-
DATE	-	REVISED	-

**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 2023-3	PULASKI	24	2
CONTRACT NO. 78986				
ILLINOIS FED. AID PROJECT				

PREPARED BY: Charles Steier  
 DISTRICT STUDIES & PLANS ENGINEER

EXAMINED BY: Nancy Bee  
 DISTRICT LAND ACQUISITION ENGINEER

EXAMINED BY: Caroline  
 DISTRICT PROGRAM DEVELOPMENT ENGINEER

EXAMINED BY: [Signature]  
 DISTRICT OPERATIONS ENGINEER

EXAMINED BY: Douglas J. [Signature]  
 DISTRICT PROJECT IMPLEMENTATION ENGINEER

EXAMINED BY: Douglas J. [Signature]  
 DISTRICT CONSTRUCTION ENGINEER

EXAMINED BY: Ann Hayes  
 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
- 5-24 STRUCTURE PLANS

**INDEX OF HIGHWAY STANDARDS**

- 000001-08 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 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
- 701201-05 LANE CLOSURE 2 LANE 2 WAY-DAY ONLY
- 701400-11 APPROACH TO LANE CLOSURE FREEWAY EXPRESSWAY
- 701406-13 LANE CLOSURE FREEWAY EXPRESSWAY DAY OPERATIONS ONLY
- 001001-02 AREAS OF REINFORCEMENT BARS
- 001006 DECIMAL OF AN INCH AND OF A FOOT
- 701901-08 TRAFFIC CONTROL DEVICES

REV. - MS

MODEL: Default FILE NAME: P123-1060.01 1-37 over Old US 51 Bridge Rehab01 DDTStructures78986-003 General Notes.dgn



477 South Third Street  
Bloomington, Illinois 61704  
618.333.3337 phone  
www.kaskaskiaeng.com

**PROFESSIONAL ENGINEER**  
Illinois Professional Design Firm  
34-007133  
28-108936  
Professional Engineering Group

USER NAME = mmc	DESIGNED -	REVISED -
PLOT SCALE = 2.0000' / in.	DRAWN -	REVISED -
PLOT DATE = 1/9/2023	CHECKED -	REVISED -
	DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

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

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	3
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78986	



Existing Structure: SN 077-0001 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 ( $7/16"$   $\odot$  Stress Relieved Strands)  
 $f_{si} = 173,600$  psi ( $7/16"$   $\odot$  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)  
 $f_y = 36,000$  psi (M270 Gr. 36)

Existing Structure (2015 Rehab)

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

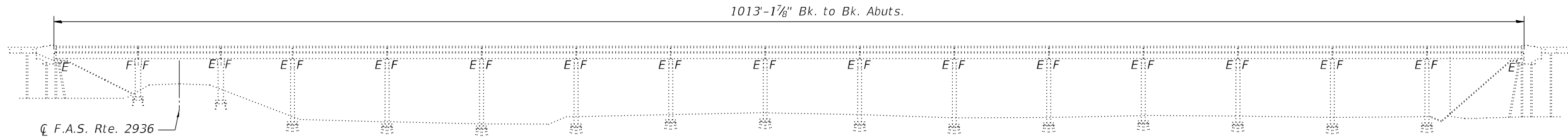
**DESIGN SPECIFICATIONS**

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

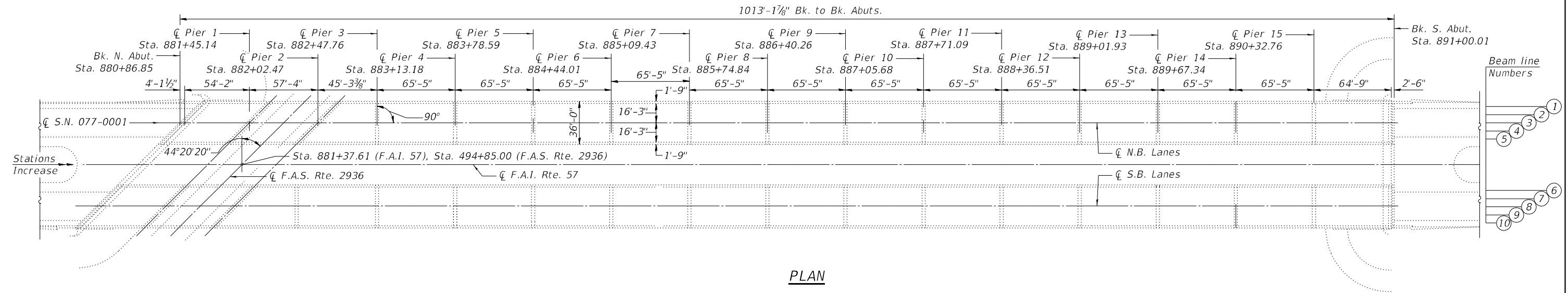
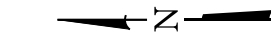
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**INDEX OF SHEETS**

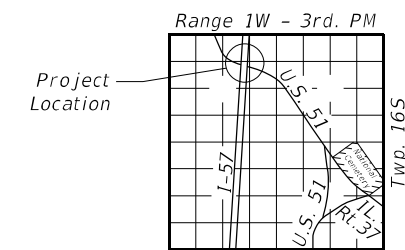
- 1 - General Plan & Elevation
- 2 - General Data
- 3 - Substructure Repair - Pier 2
- 4 - Substructure Repair - Pier 3
- 5 - Substructure Repair - Pier 4
- 6 - Substructure Repair - Pier 5
- 7 - Substructure Repair - Pier 6
- 8 - Substructure Repair - Pier 7
- 9 - Substructure Repair - Pier 8
- 10 -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



**ELEVATION**

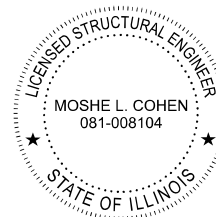


**PLAN**



**LOCATION SKETCH**

**GENERAL PLAN & ELEVATION**  
**I-57 (NORTHBOUND) OVER F.A.S. 2936**  
**F.A.I. RTE. 57 - SEC. D9 BRIDGE REPAIRS 2023-3**  
**PULASKI COUNTY**  
**STATION 881+37.61**  
**STRUCTURE NO. 077-0001 (NB)**



Signed: *Moshe L. Cohen*  
 Dated: 2023-03-07  
 Illinois Structural Engineer  
 No. 081-008104  
 License Expires: 11-30-2024

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

SHEET 1 OF 20 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	5
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78986	

MODEL: Default  
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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.

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Concrete Structures	Cu. Yd.	100.5
Reinforcement Bars, Epoxy Coated	Pound	18,810
Concrete Sealer	Sq. Ft.	6,705
Seismic Restrainer	Each	168
Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)	Sq. Ft.	2,232
Temporary Shoring and Cribbing	Each	83

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**Kaskaskia**  
 Engineering Group, LLC  
 PROFESSIONAL ENGINEERING GROUP  
 Illinois Professional Design Firm  
 Professional Engineering Group

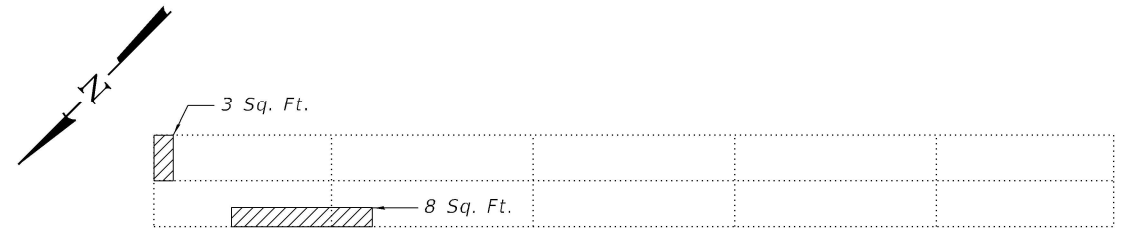
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**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

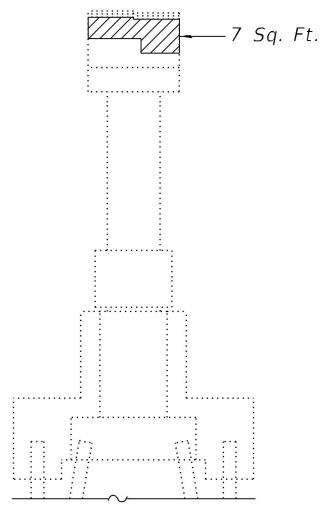
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 STRUCTURE NO. 077-0001**

SHEET 2 OF 20 SHEETS

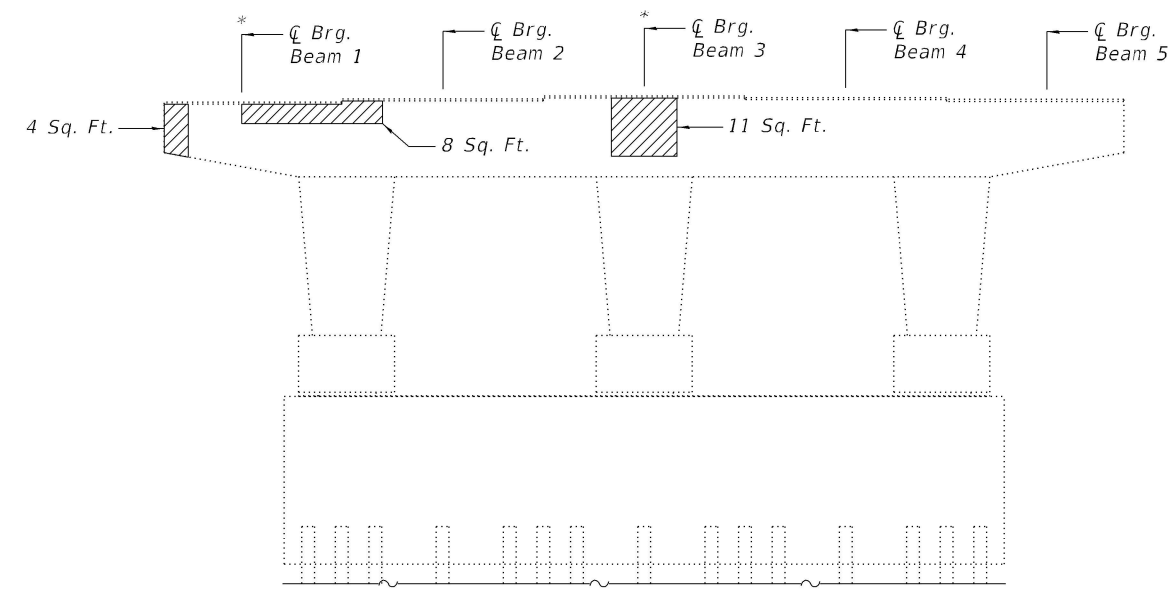
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57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	6
ILLINOIS			CONTRACT NO. 78986	
ILLINOIS			FED. AID PROJECT	



**PLAN**



**END ELEVATION**  
(Southeast Face - Looking Northwest)



**ELEVATION**  
(Northeast Face - Looking Southwest)

**BEAM REACTIONS**

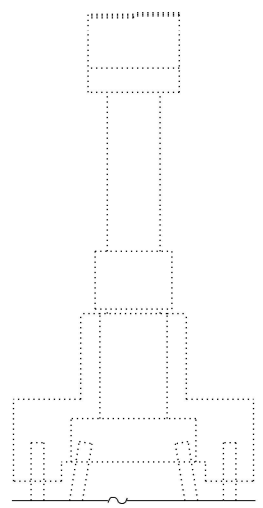
Reaction	Span 2	Span 3
R <sub>v</sub>	(k) 52.7	42.8
R <sub>h</sub>	(k) 82.4	78.1
R Imp.	(k) 22.5	23.0
R (Total)	(k) 157.6	143.9

**LEGEND**

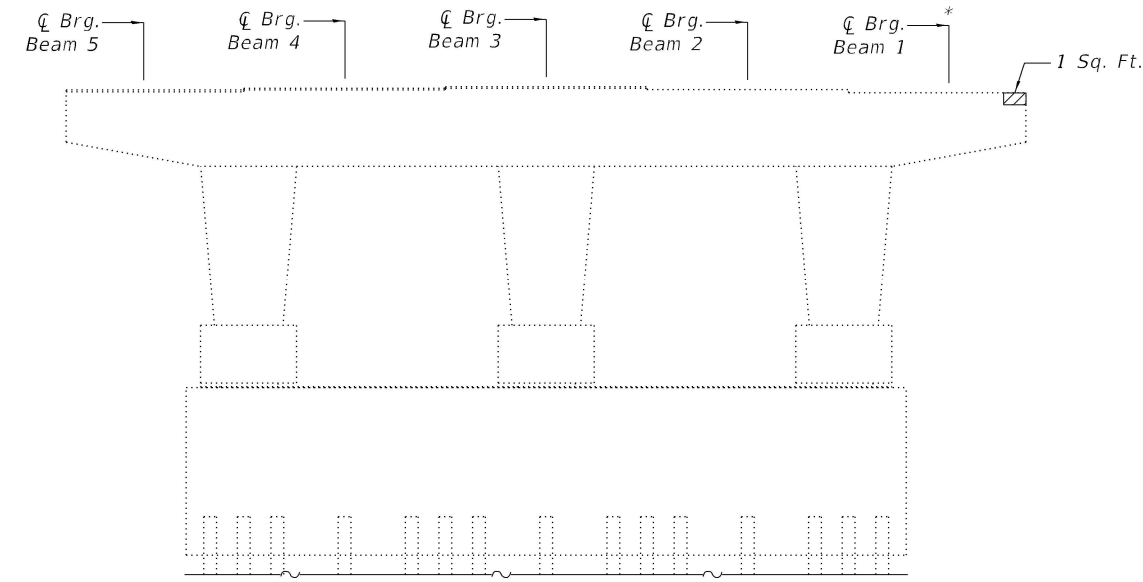
Indicates Structural Repair of Concrete (Depth Equal to or Less Than 5 Inches)

**Notes:**  
 See sheet 17 of 20 for pier cap encasement details.  
 See sheet 19 of 20 for seismic cable details.  
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 17 of 20.

\* Location of Temporary Shoring and Cribbing.



**END ELEVATION**  
(Northwest Face - Looking Southeast)



**ELEVATION**  
(Southwest Face - Looking Northeast)

**BILL OF MATERIAL**

Item	Unit	Total
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	42
Temporary Shoring and Cribbing	Each	3

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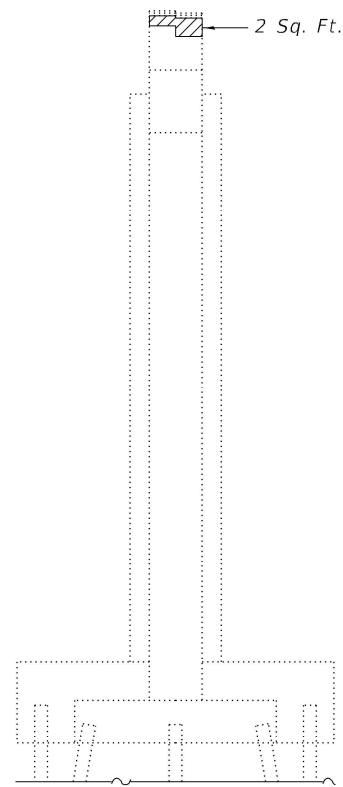
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PLOT DATE =	DRAWN - MMC	REVISED -
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**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

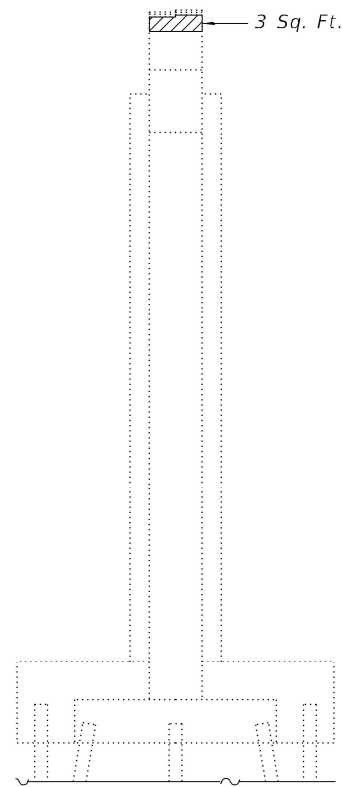
**SUBSTRUCTURE REPAIR - PIER 2  
 STRUCTURE NO. 077-0001**

SHEET 3 OF 20 SHEETS

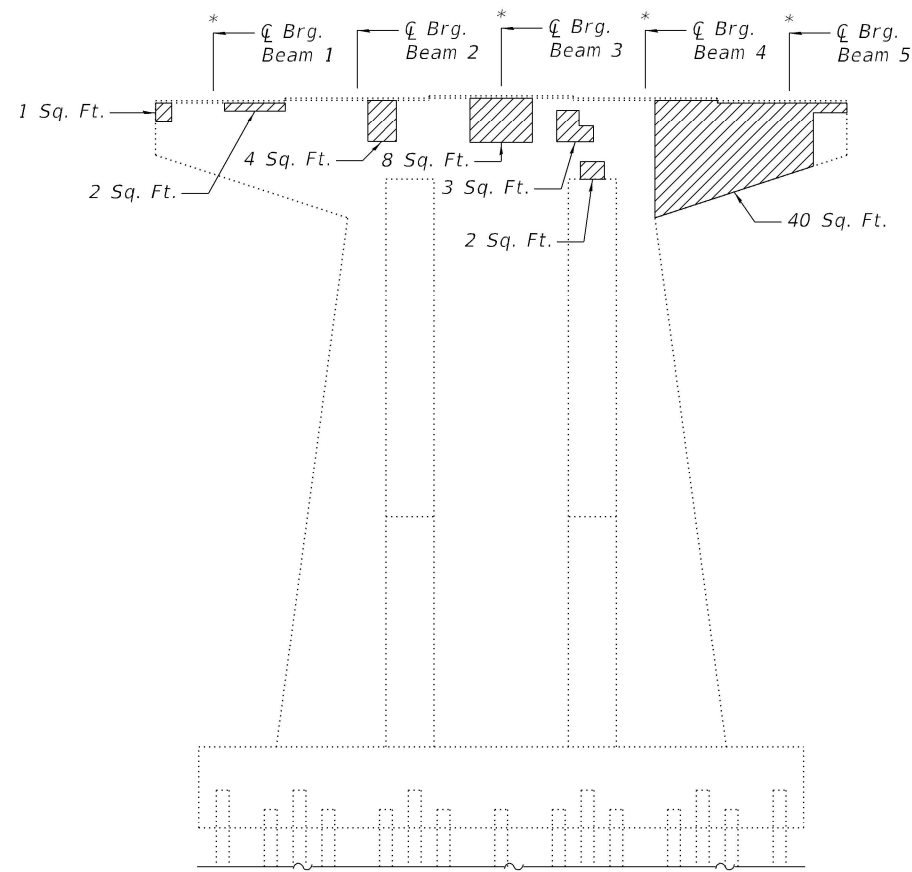
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57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	7
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78986	



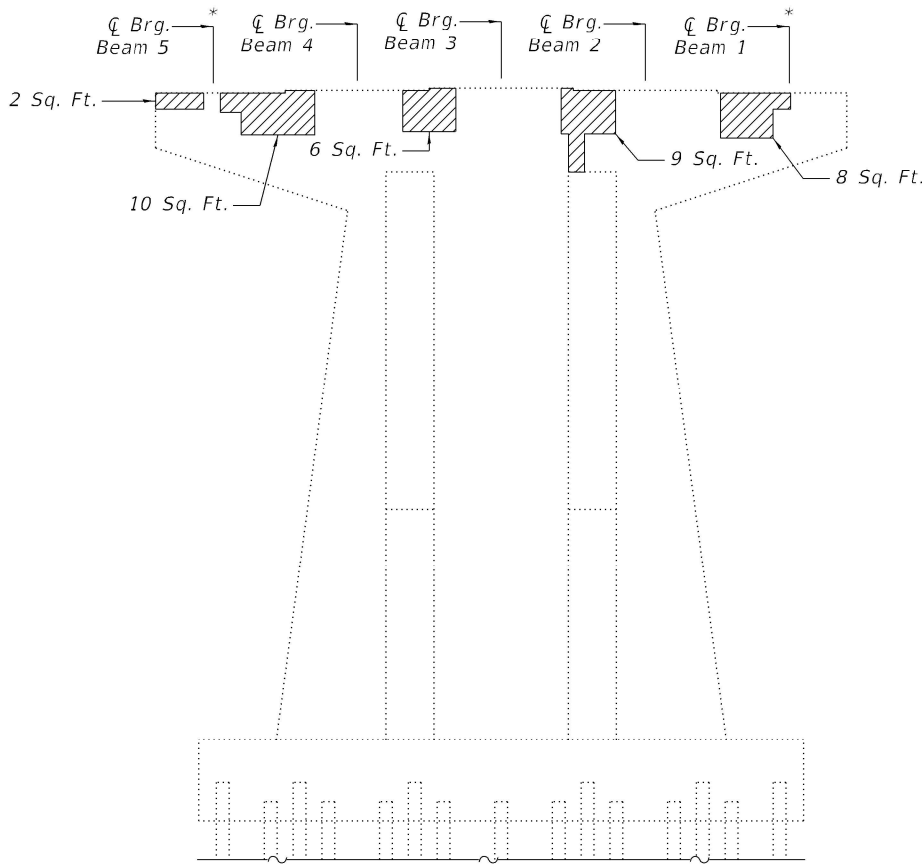
**END ELEVATION**  
(East Face - Looking West)



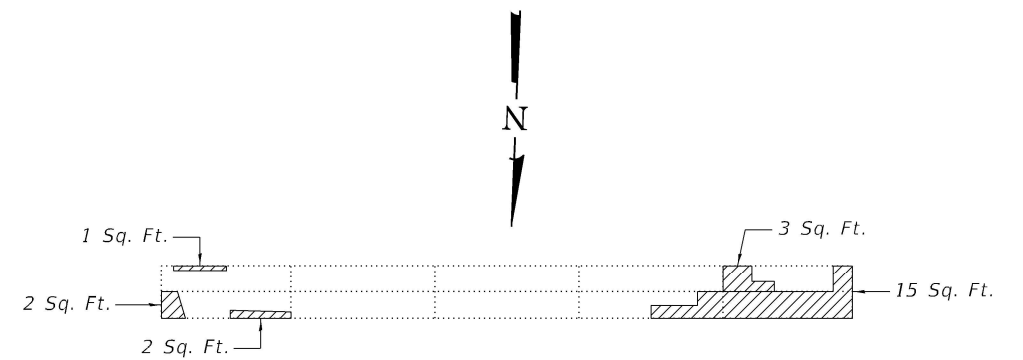
**END ELEVATION**  
(West Face - Looking East)



**ELEVATION**  
(North Face - Looking South)



**ELEVATION**  
(South Face - Looking North)



**PLAN**

**BEAM REACTIONS**

Reaction	Span 3	Span 4
R <sub>∅</sub>	(k) 42.8	57.7
R <sub>L</sub>	(k) 78.1	84.4
R Imp.	(k) 23.0	22.2
R (Total)	(k) 143.9	164.3

**LEGEND**

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

**Notes:**

See sheet 18 of 20 for pier cap encasement details.

See sheet 20 of 20 for seismic cable details.

All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	123
Temporary Shoring and Cribbing	Each	6

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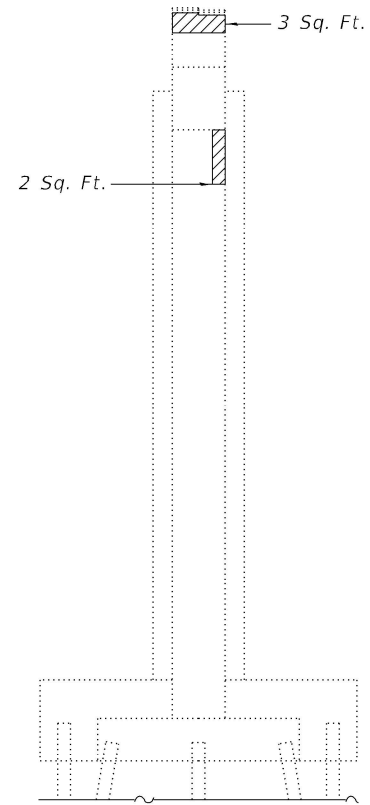
**Kaskaskia**  
Engineering Group, LLC  
Professional Engineering Group  
11707 N. 1st St.  
Moline, IL 61704  
617-321-1111  
www.kaskaskiaeng.com

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

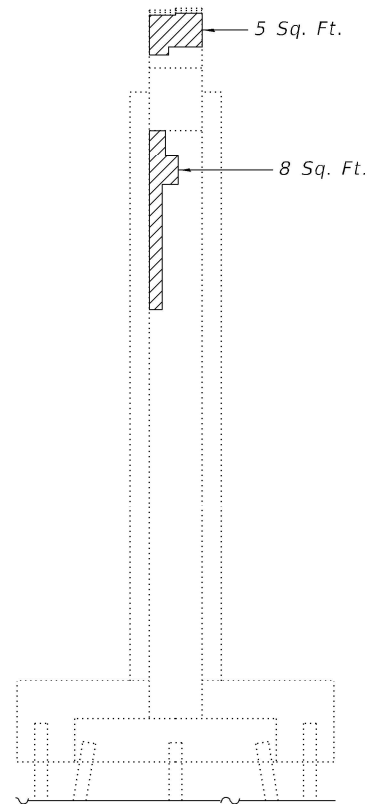
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 3**  
**STRUCTURE NO. 077-0001**

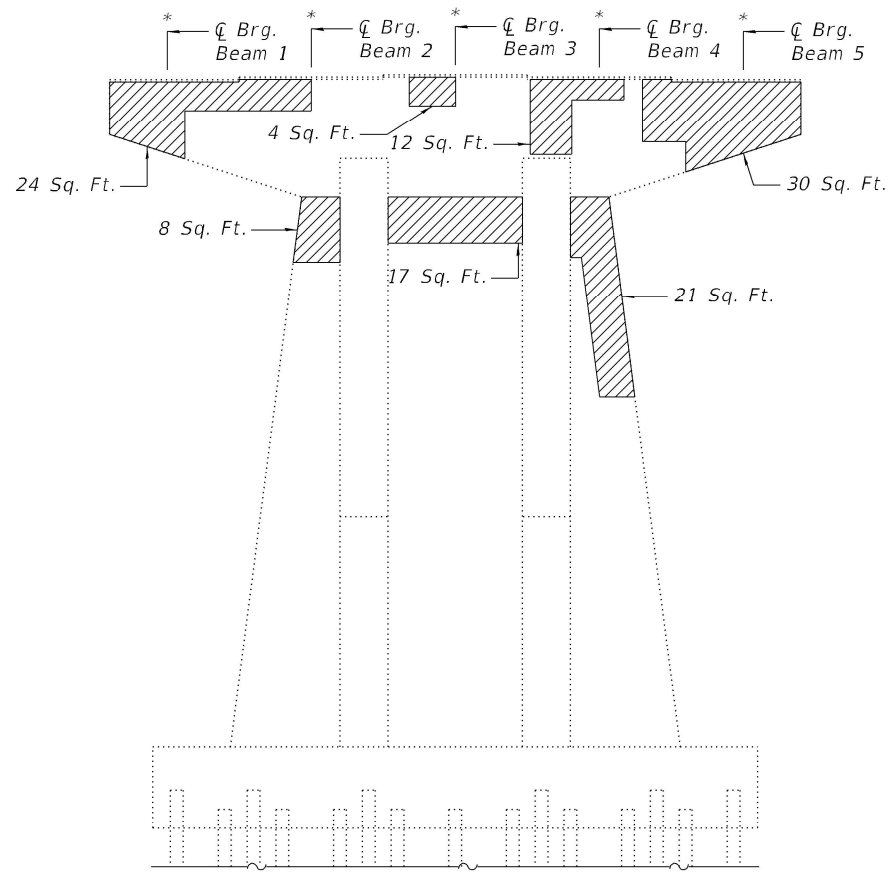
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57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	8
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78986	



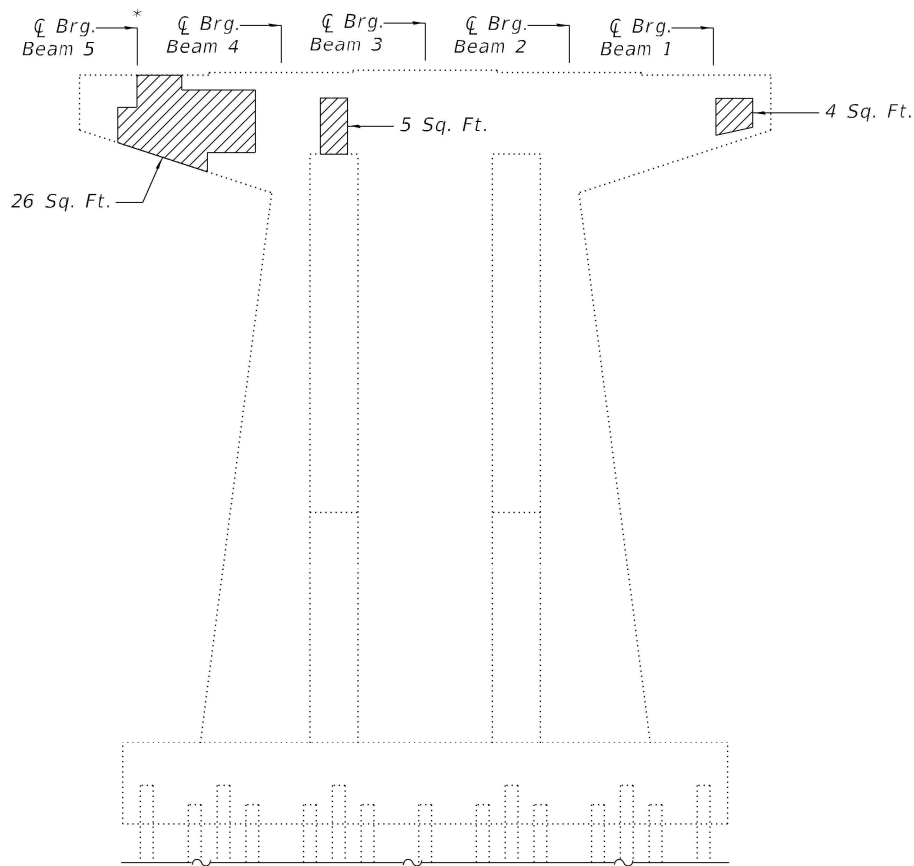
**END ELEVATION**  
(East Face - Looking West)



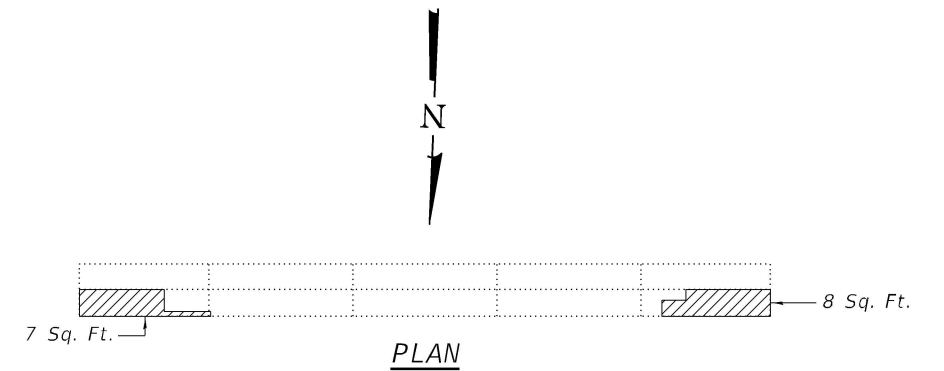
**END ELEVATION**  
(West Face - Looking East)



**ELEVATION**  
(North Face - Looking South)



**ELEVATION**  
(South Face - Looking North)



**PLAN**

**BEAM REACTIONS**

Reaction	Span 4	Span 5
R <sub>v</sub>	(k) 57.7	57.7
R <sub>h</sub>	(k) 84.4	84.4
R <sub>Imp.</sub>	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3

**LEGEND**

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

**Notes:**

See sheet 18 of 20 for pier cap encasement details.

See sheet 20 of 20 for seismic cable details.

All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	184
Temporary Shoring and Cribbing	Each	6

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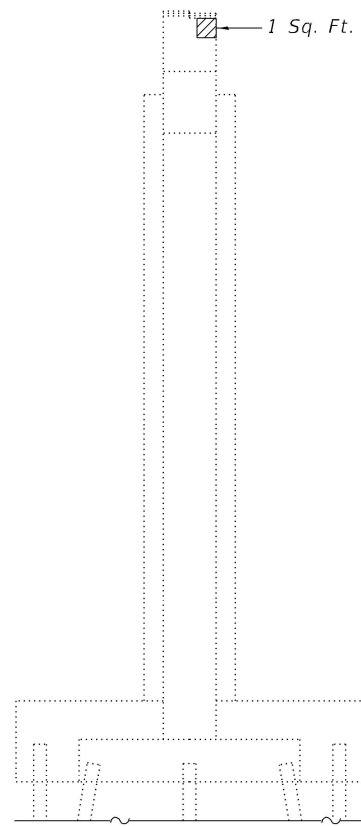
**Kaskaskia**  
Engineering Group, LLC  
Professional Engineering Group  
1127 N. Main St., Suite 100  
Pulaski, Illinois 62450  
618.552.8877 (Phone)  
618.552.8877 (Fax)  
www.kaskaskiaeng.com  
11/27/2013  
11/27/2013  
20-088268

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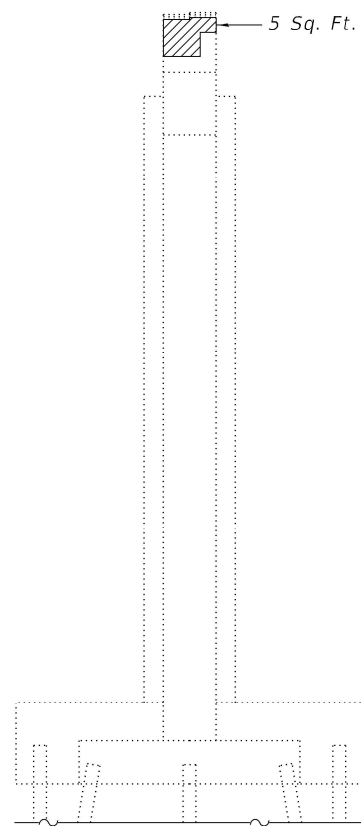
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 4**  
**STRUCTURE NO. 077-0001**

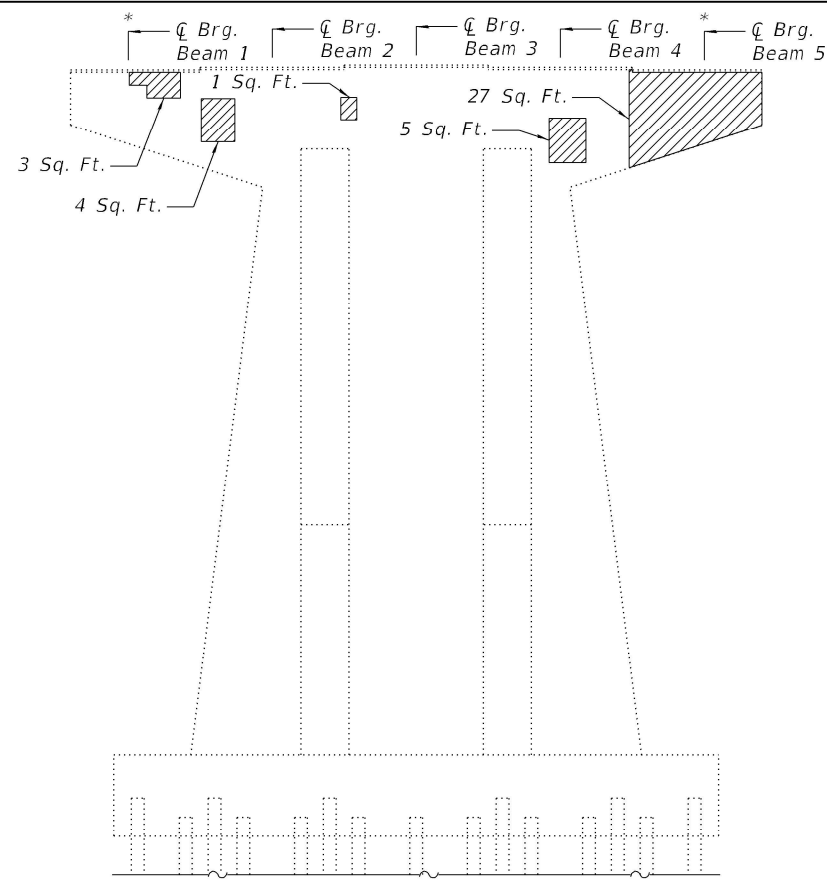
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57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	9
CONTRACT NO. 78986				
ILLINOIS FED. AID PROJECT				



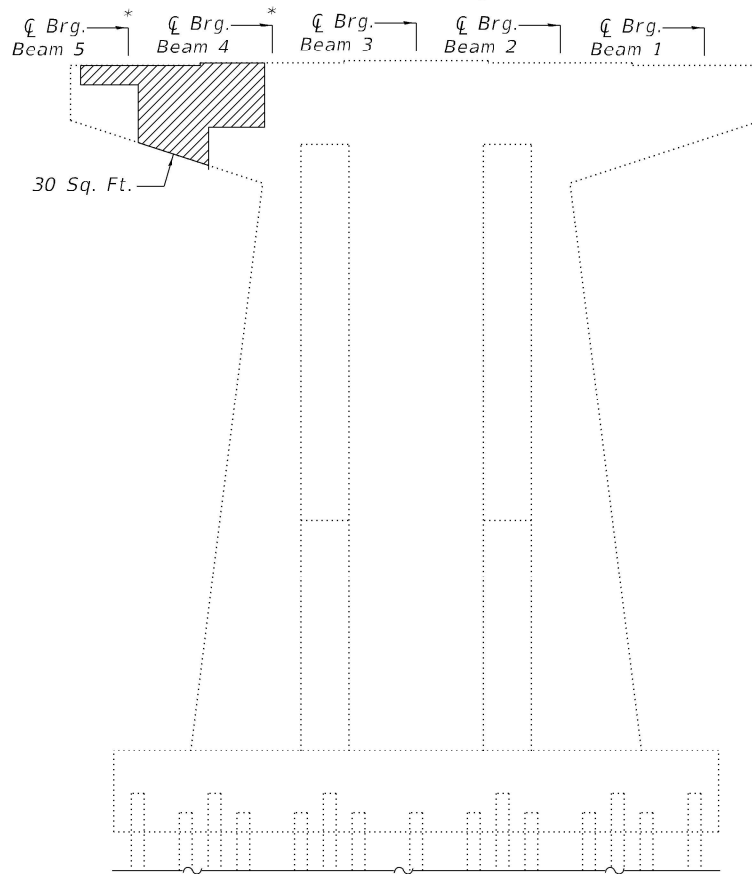
**END ELEVATION**  
(East Face - Looking West)



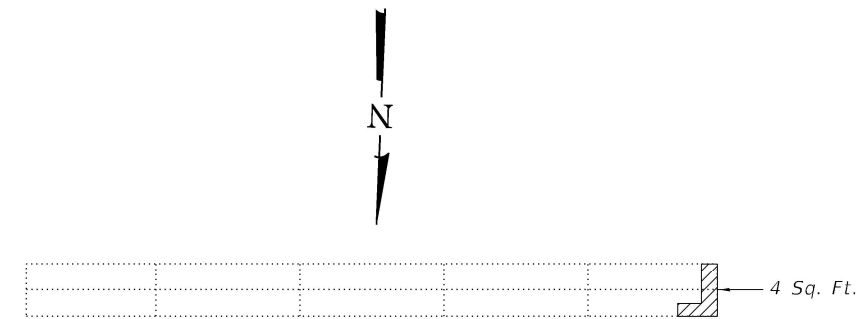
**END ELEVATION**  
(West Face - Looking East)



**ELEVATION**  
(North Face - Looking South)



**ELEVATION**  
(South Face - Looking North)



**PLAN**

**BEAM REACTIONS**

Reaction	Span 5	Span 6
R <sub>v</sub>	(k) 57.7	57.7
R <sub>h</sub>	(k) 84.4	84.4
R <sub>Imp.</sub>	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3

**LEGEND**

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

**Notes:**

- See sheet 18 of 20 for pier cap encasement details.
- See sheet 20 of 20 for seismic cable details.
- All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	80
Temporary Shoring and Cribbing	Each	4

MODEL: Default  
FILE NAME: P:\22-1060.01-157 over Old US 51 Bridge Rehab\0\_IDOT\Structures\0770001-78986-006-SubstructureRepair-Pier5.dgn

**Kaskaskia**  
Engineering Group, LLC  
Professional Engineering Group

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

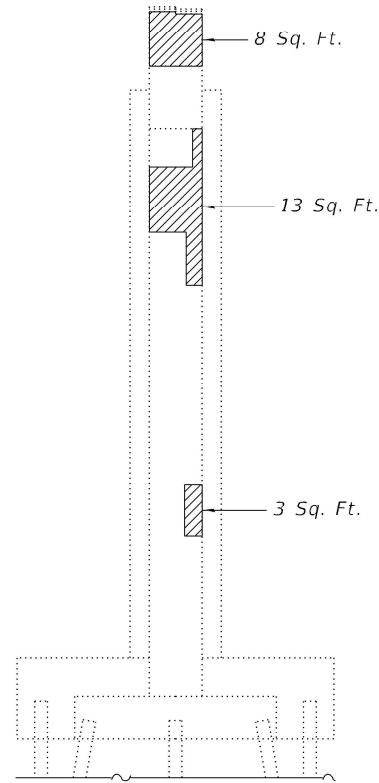
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 5**  
**STRUCTURE NO. 077-0001**

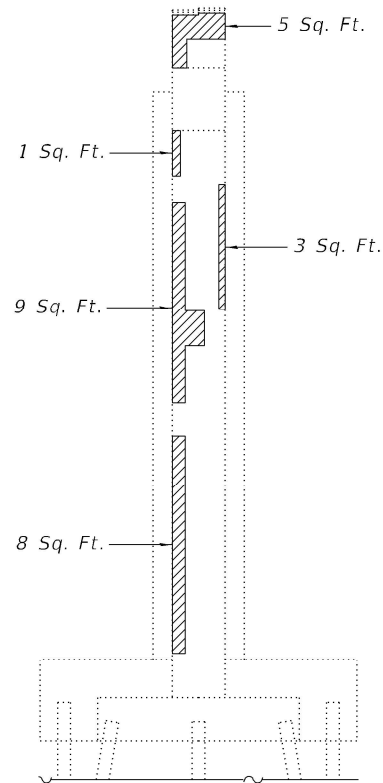
SHEET 6 OF 20 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	10
CONTRACT NO. 78986				
ILLINOIS FED. AID PROJECT				

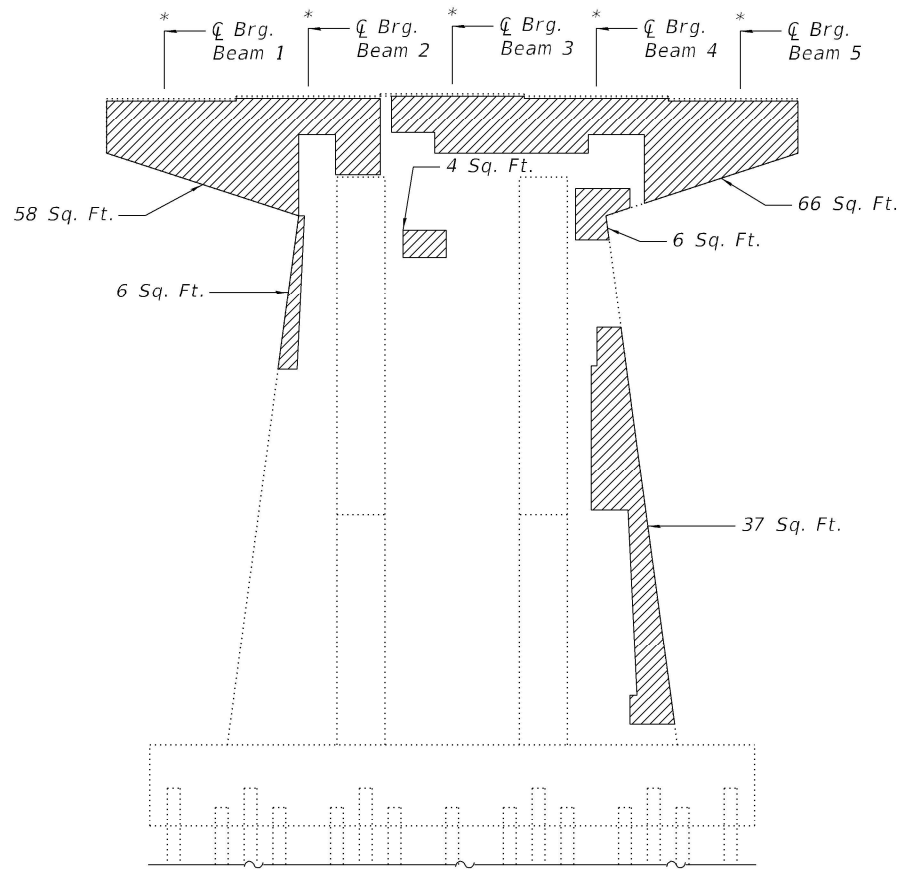




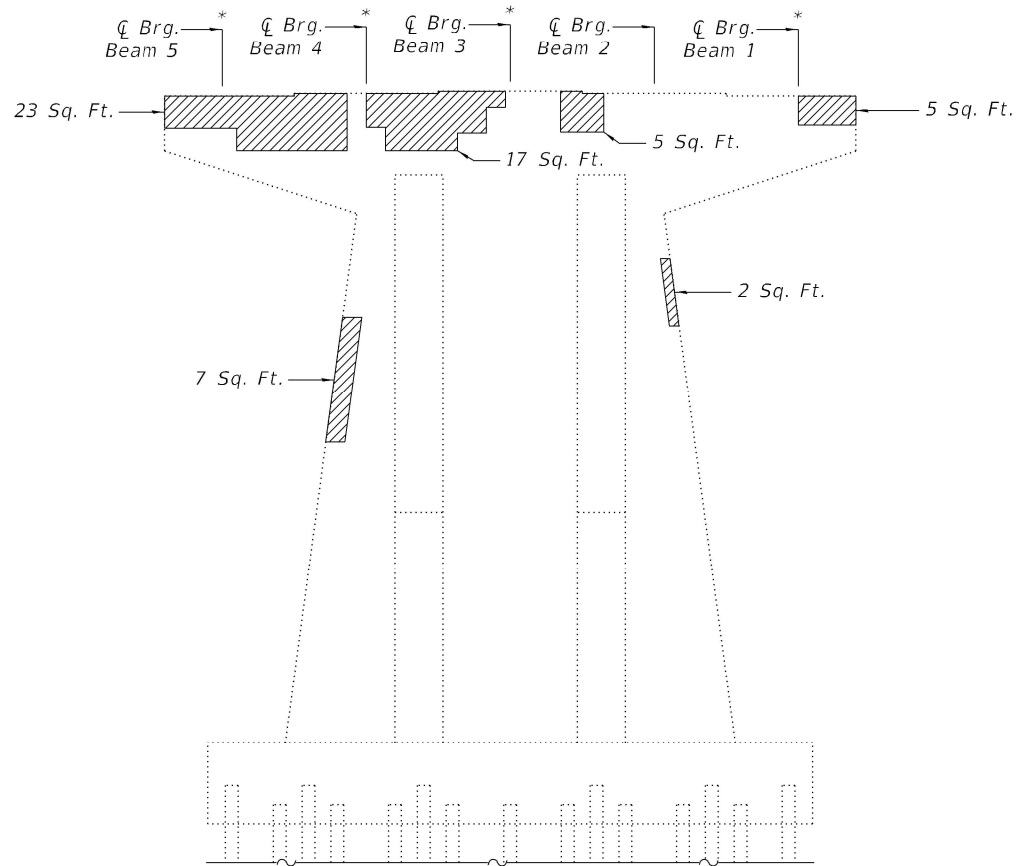
**END ELEVATION**  
(East Face - Looking West)



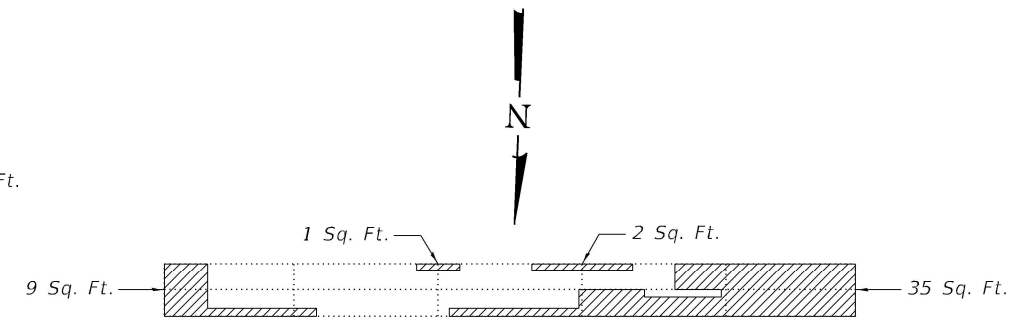
**END ELEVATION**  
(West Face - Looking East)



**ELEVATION**  
(North Face - Looking South)



**ELEVATION**  
(South Face - Looking North)



**PLAN**

**BEAM REACTIONS**

Reaction	Span 6	Span 7
R <sub>∅</sub>	(k) 57.7	57.7
R <sub>L</sub>	(k) 84.4	84.4
R <sub>Imp.</sub>	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3

**LEGEND**

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

**Notes:**

See sheet 18 of 20 for pier cap encasement details.

See sheet 20 of 20 for seismic cable details.

All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	333
Temporary Shoring and Cribbing	Each	9

MODEL: Default  
FILE NAME: P:\22-1060.01-157 over Old US 51 Bridge Rehab\0\_IDOT\Structures\0770001-78986-007-SubstructureRepair-Pier6.dgn

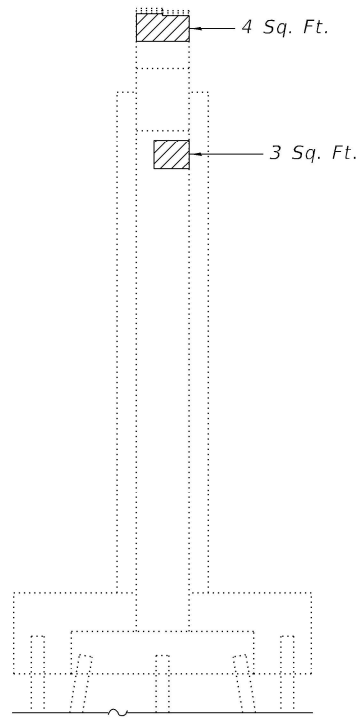


USER NAME =	DESIGNED - MMC	REVISED -
	CHECKED - MLC	REVISED -
PLOT SCALE =	DRAWN - MMC	REVISED -
PLOT DATE =	CHECKED - MLC	REVISED -

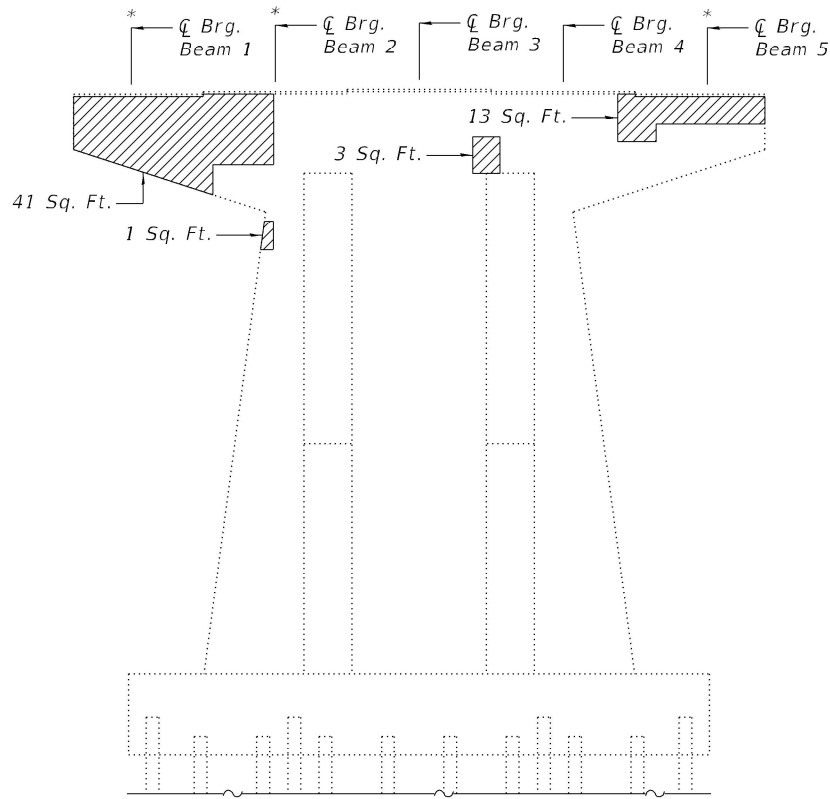
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 6**  
**STRUCTURE NO. 077-0001**

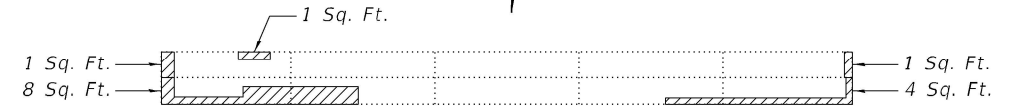
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	11
CONTRACT NO. 78986				
ILLINOIS FED. AID PROJECT				



**END ELEVATION**  
(East Face - Looking West)



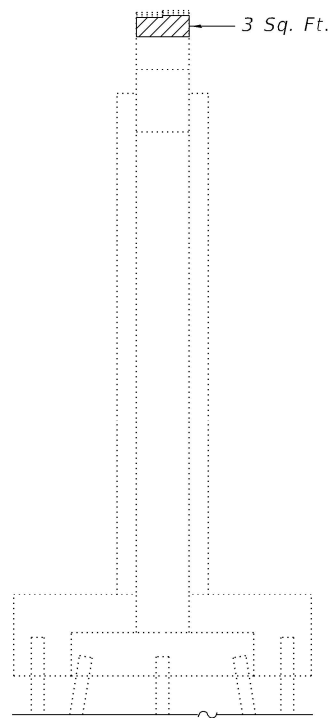
**ELEVATION**  
(North Face - Looking South)



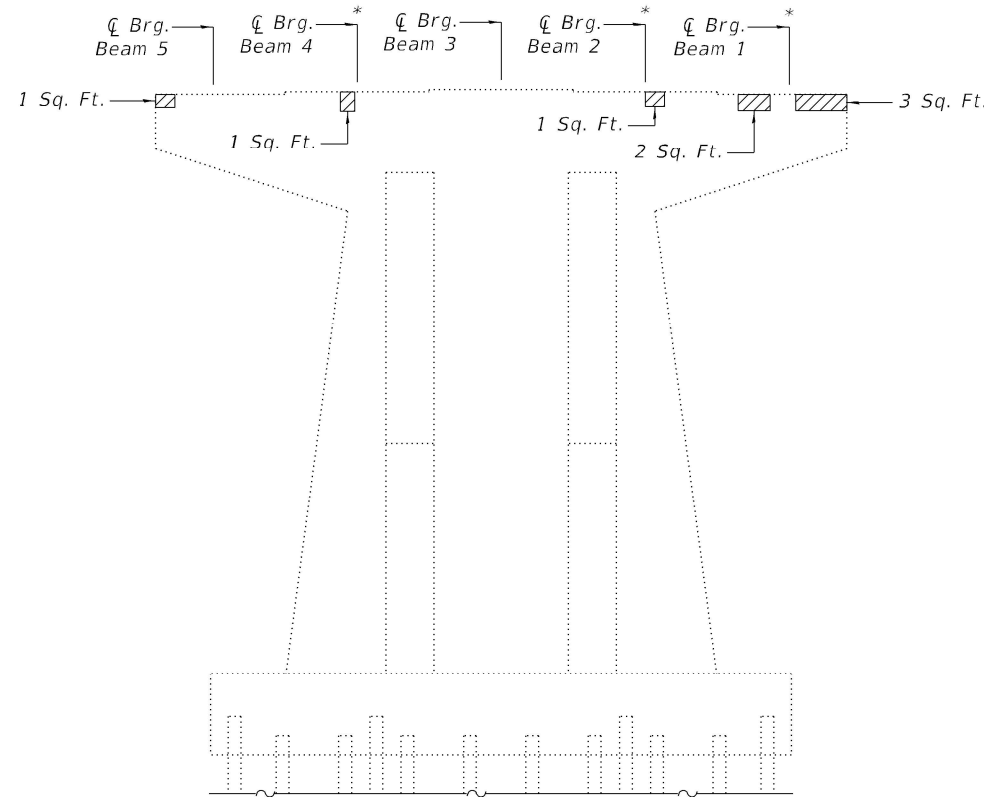
**PLAN**

**BEAM REACTIONS**

Reaction	Span 7	Span 8
R <sub>D</sub>	(k) 57.7	57.7
R <sub>L</sub>	(k) 84.4	84.4
R Imp.	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3



**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 18 of 20 for pier cap encasement details.  
 See sheet 20 of 20 for seismic cable details.  
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	91
Temporary Shoring and Cribbing	Each	6

MODEL: Default  
 FILE NAME: P:\22-1060.01-157 over Old US 51 Bridge Rehab\0\_IDOT\Structures\0770001-78986-008-SubstructureRepair-Pier7.dgn

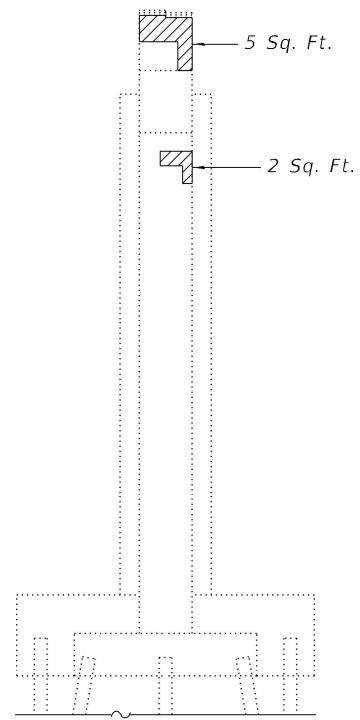
**Kaskaskia**  
 Engineering Group, LLC  
 PROFESSIONAL ENGINEERING GROUP  
 201 E. Main St., Suite 300  
 Moline, IL 61401  
 309.335.8877  
 309.335.8877  
 www.kaskaskiaeng.com  
 1/27/2013  
 01/07/13  
 20-086261

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

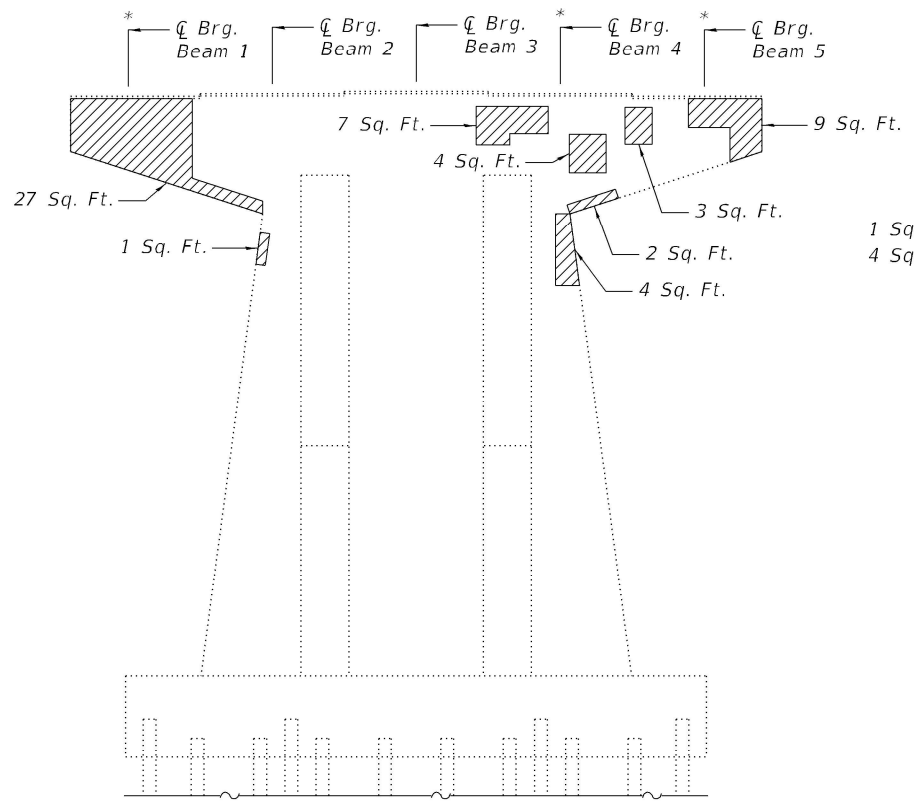
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 7**  
**STRUCTURE NO. 077-0001**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	12
CONTRACT NO. 78986				
ILLINOIS FED. AID PROJECT				



**END ELEVATION**  
(East Face - Looking West)



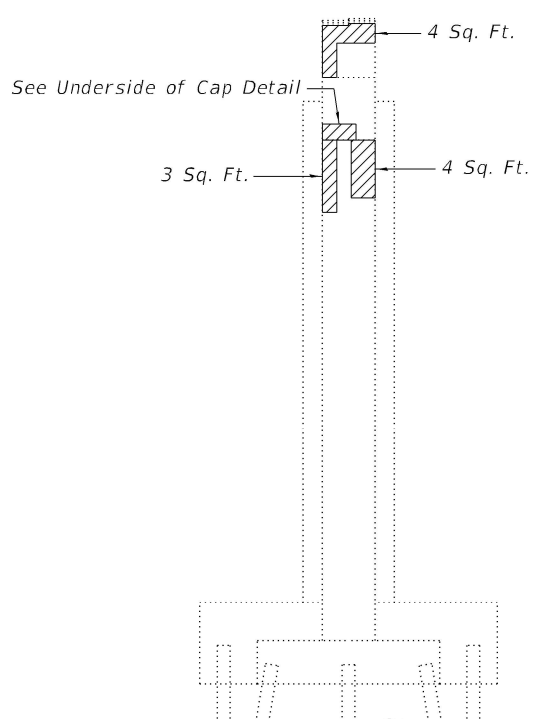
**ELEVATION**  
(North Face - Looking South)



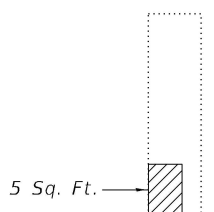
**PLAN**

**BEAM REACTIONS**

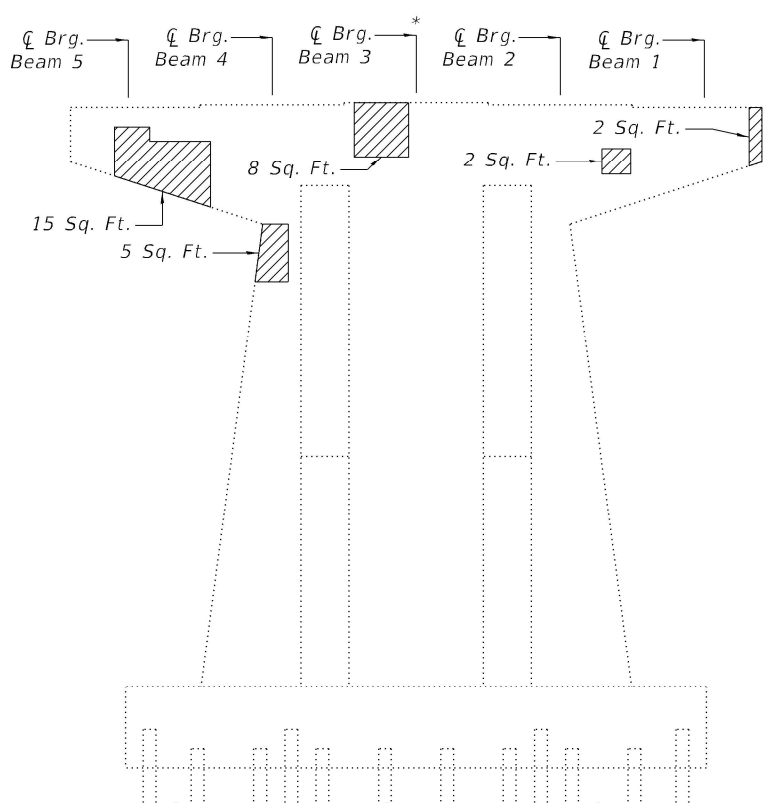
Reaction	Span 8	Span 9
R <sub>∅</sub>	(k) 57.7	57.7
R <sub>L</sub>	(k) 84.4	84.4
R Imp.	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3



**END ELEVATION**  
(West Face - Looking East)



**UNDERSIDE OF CAP**  
(West End - Looking East)



**ELEVATION**  
(South Face - Looking North)

**LEGEND**

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

**Notes:**  
 See sheet 18 of 20 for pier cap encasement details.  
 See sheet 20 of 20 for seismic cable details.  
 All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	119
Temporary Shoring and Cribbing	Each	4

MODEL: Default  
FILE NAME: P:\22-1060.01-157 over Old US 51 Bridge Rehab\0\_IDOT\Structures\0770001-78986-009-SubstructureRepair-Pier8.dgn

**Kaskaskia**  
Engineering Group, LLC  
Professional Engineering Group

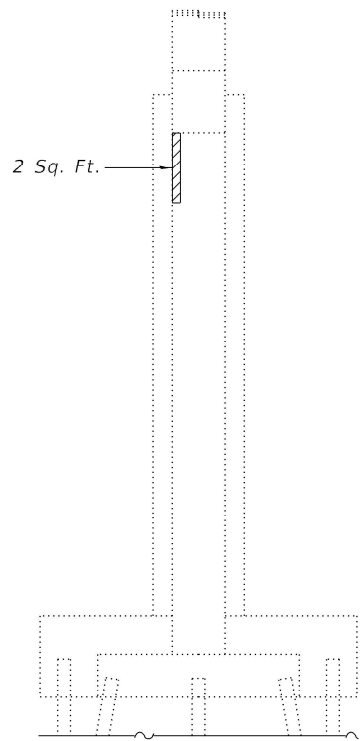
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	CHECKED - MLC	REVISED -
PLOT SCALE =	DRAWN - MMC	REVISED -
PLOT DATE =	CHECKED - MLC	REVISED -

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

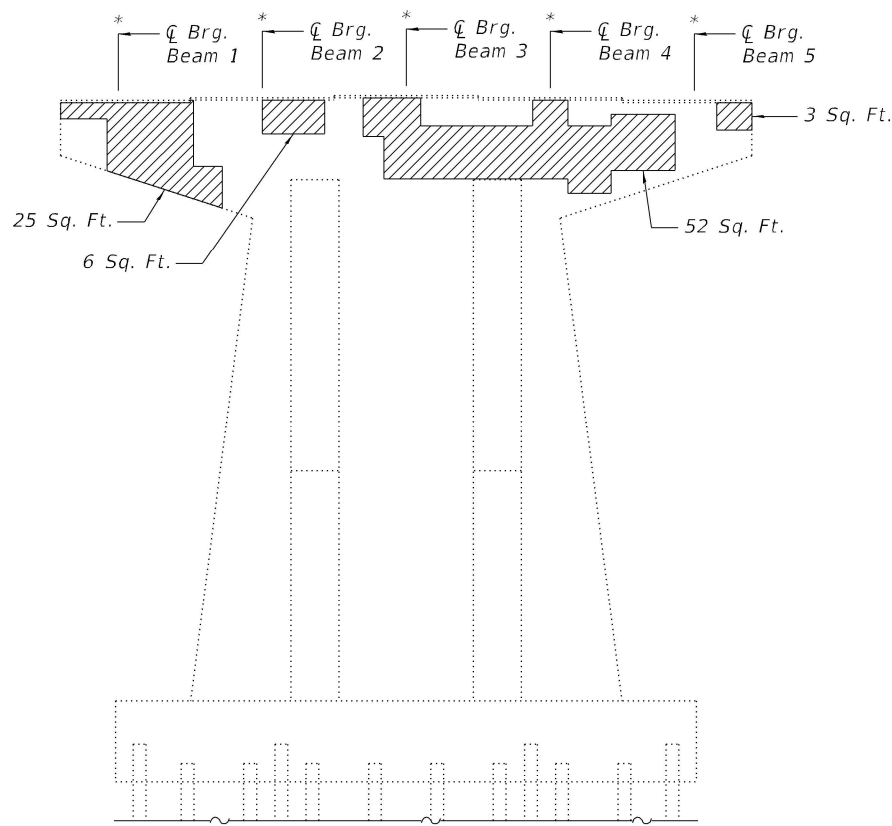
**SUBSTRUCTURE REPAIR - PIER 8**  
**STRUCTURE NO. 077-0001**

SHEET 9 OF 20 SHEETS

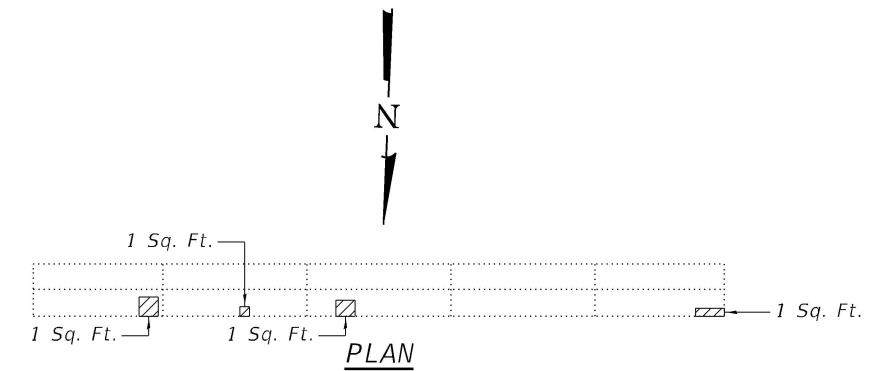
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	13
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78986	



**END ELEVATION**  
(East Face - Looking West)



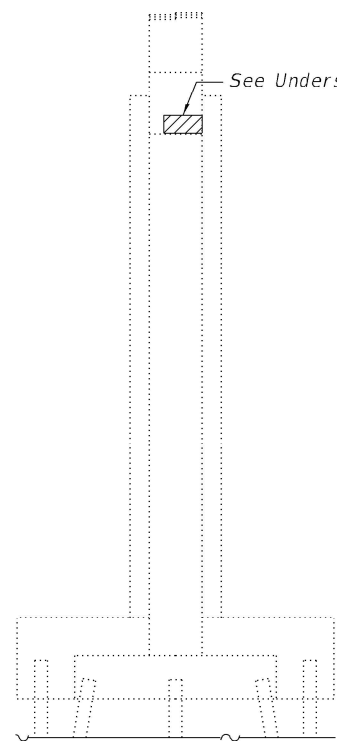
**ELEVATION**  
(North Face - Looking South)



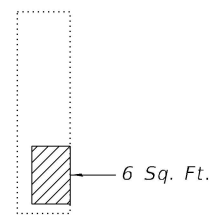
**PLAN**

**BEAM REACTIONS**

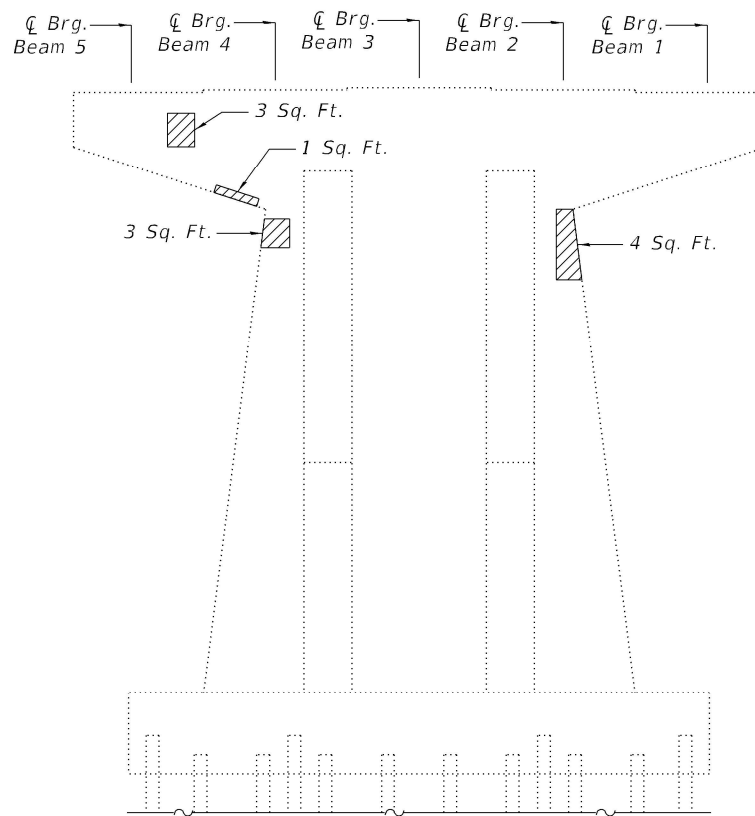
Reaction	Span 9	Span 10
R <sub>∅</sub>	(k) 57.7	57.7
R <sub>L</sub>	(k) 84.4	84.4
R Imp.	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3



**END ELEVATION**  
(West Face - Looking East)



**UNDERSIDE OF CAP**  
(West End - Looking East)



**ELEVATION**  
(South Face - Looking North)

**LEGEND**

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

**Notes:**

See sheet 18 of 20 for pier cap encasement details.

See sheet 20 of 20 for seismic cable details.

All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	109
Temporary Shoring and Cribbing	Each	5

MODEL: Default  
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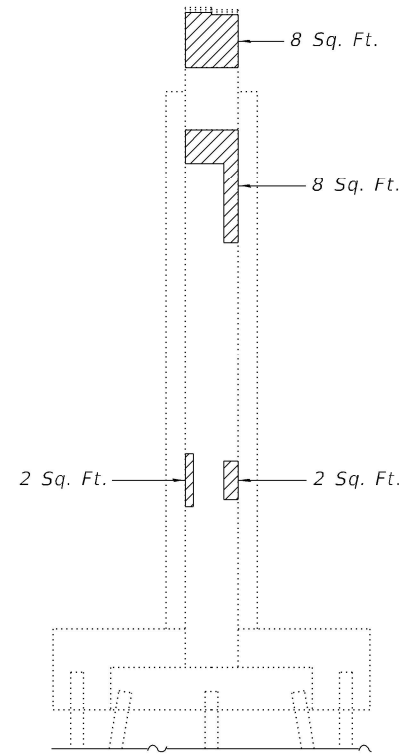
**Kaskaskia**  
Engineering Group, LLC  
Professional Engineering Group  
11707 W. 117th St.  
Morton, IL 62450  
618-271-1170  
www.kaskaskiaeng.com

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

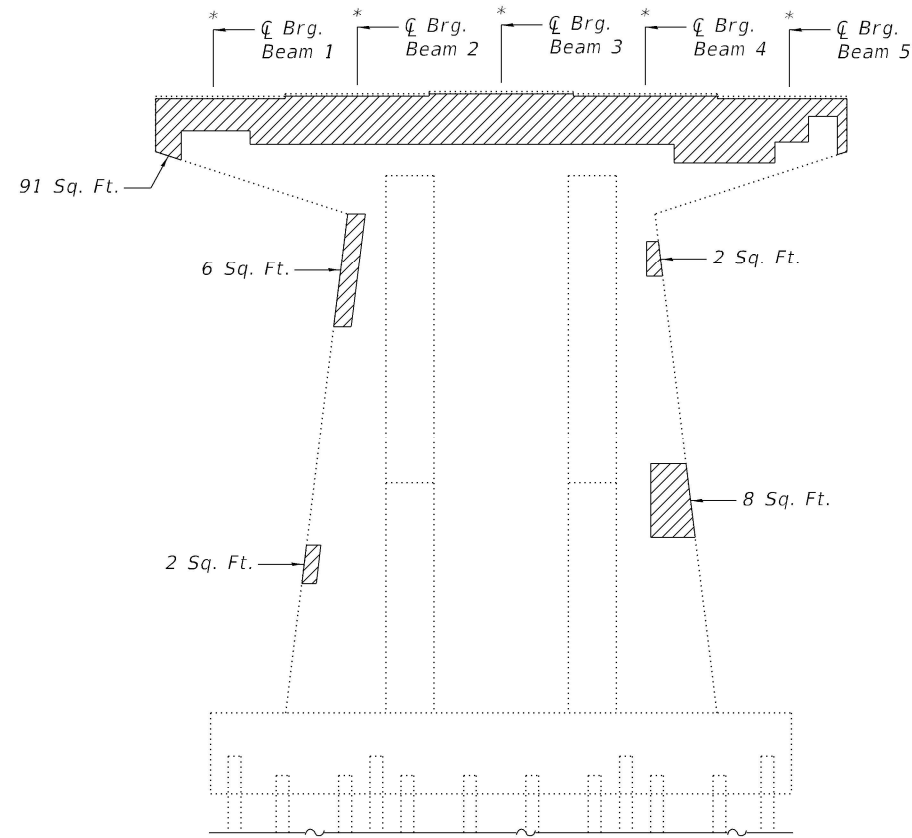
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 9**  
**STRUCTURE NO. 077-0001**

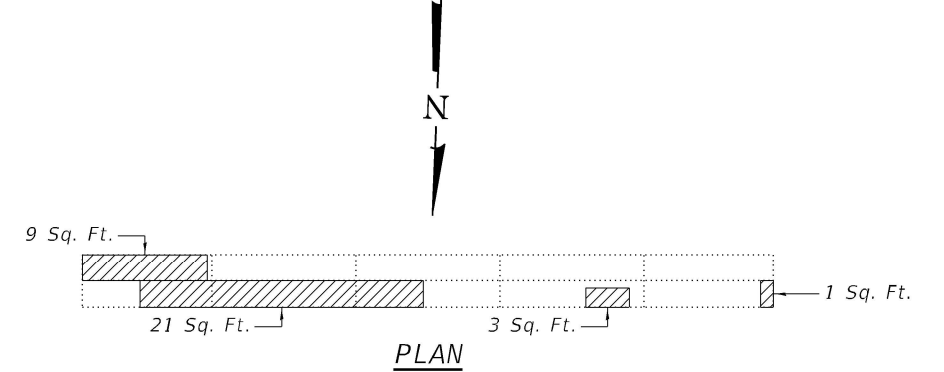
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	14
ILLINOIS			CONTRACT NO. 78986	
FED. AID PROJECT				



**END ELEVATION**  
(East Face - Looking West)



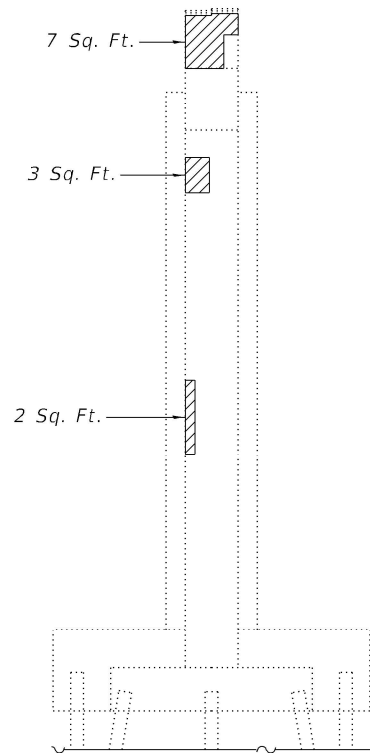
**ELEVATION**  
(North Face - Looking South)



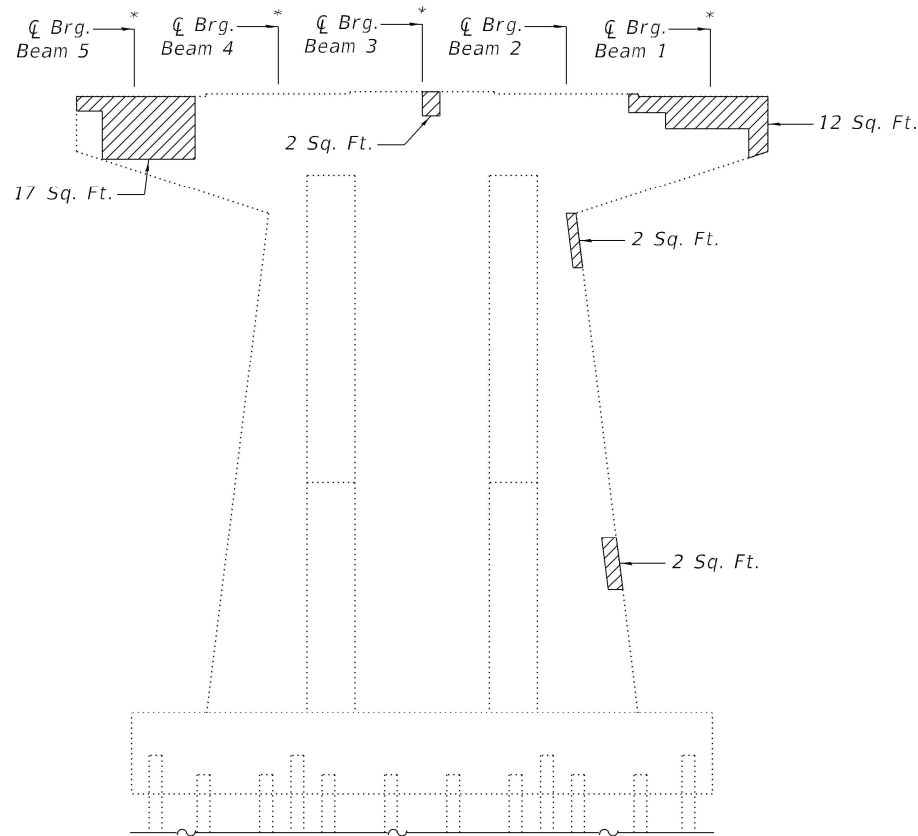
**PLAN**

**BEAM REACTIONS**

Reaction	Span 10	Span 11
R <sub>D</sub> (k)	57.7	57.7
R <sub>L</sub> (k)	84.4	84.4
R <sub>Imp.</sub> (k)	22.2	22.2
R (Total) (k)	164.3	164.3



**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 18 of 20 for pier cap encasement details.

See sheet 20 of 20 for seismic cable details.

All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	210
Temporary Shoring and Cribbing	Each	9

MODEL: Default  
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**Kaskaskia**  
Engineering Group, LLC  
Professional Engineering Group  
1180 N. Main St., Suite 100  
Bella Vista, Illinois 62226  
618.552.8877 (Phone)  
618.552.8877 (Fax)  
www.kaskaskiaeng.com  
11/27/2013  
20-086046

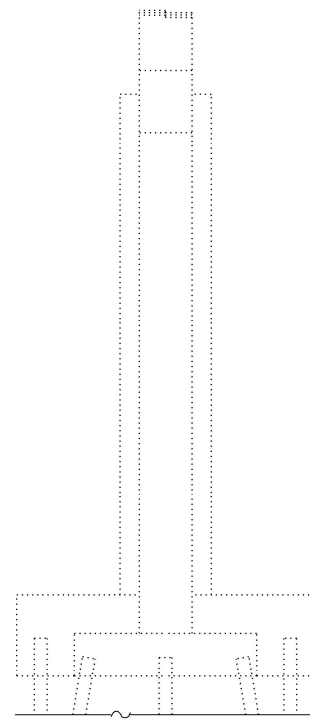
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PLOT DATE =	CHECKED - MLC	REVISED -

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

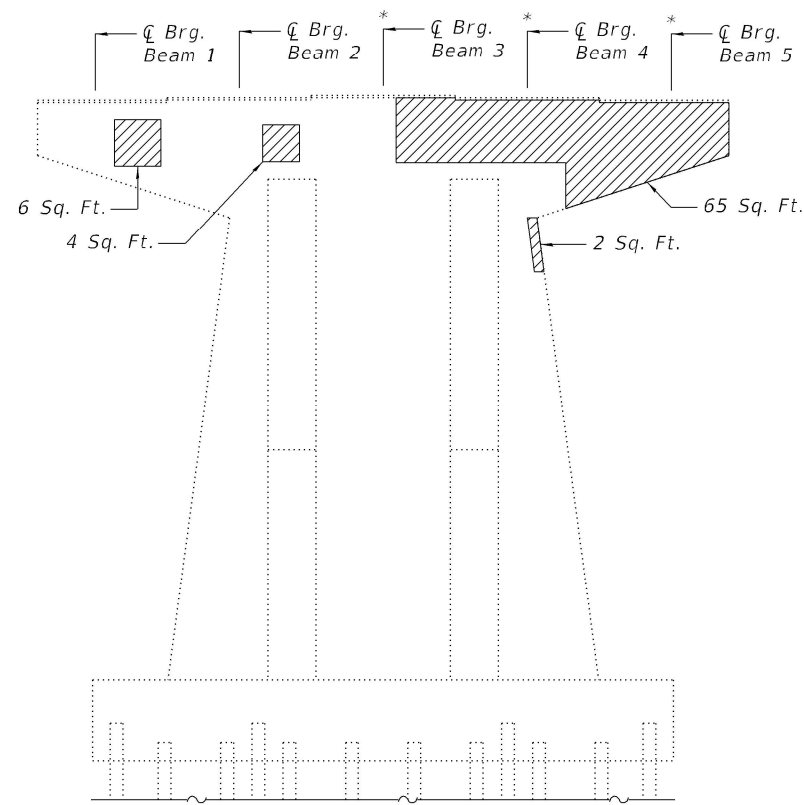
**SUBSTRUCTURE REPAIR - PIER 10**  
**STRUCTURE NO. 077-0001**

SHEET 11 OF 20 SHEETS

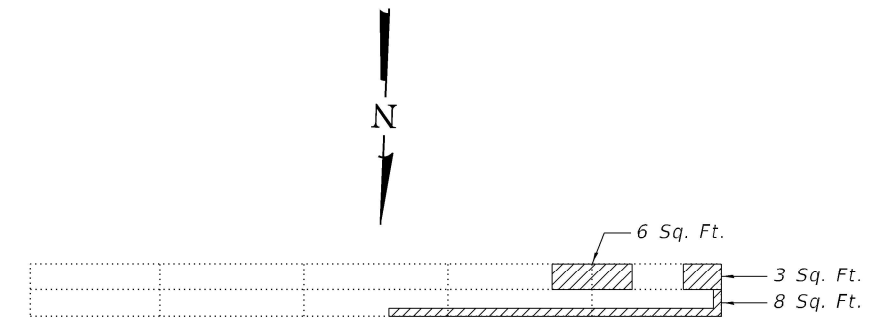
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57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	15
CONTRACT NO. 78986				
		ILLINOIS	FED. AID PROJECT	



**END ELEVATION**  
(East Face - Looking West)



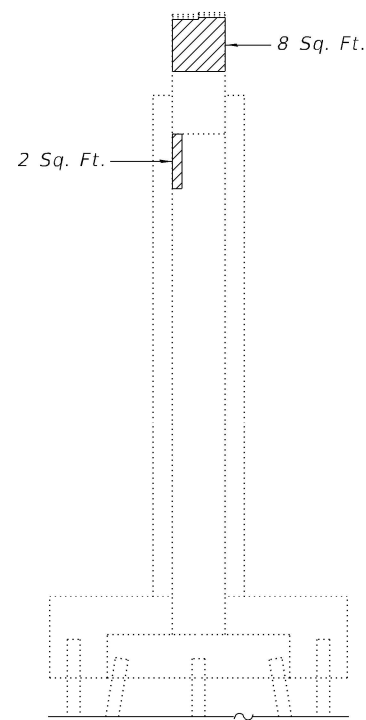
**ELEVATION**  
(North Face - Looking South)



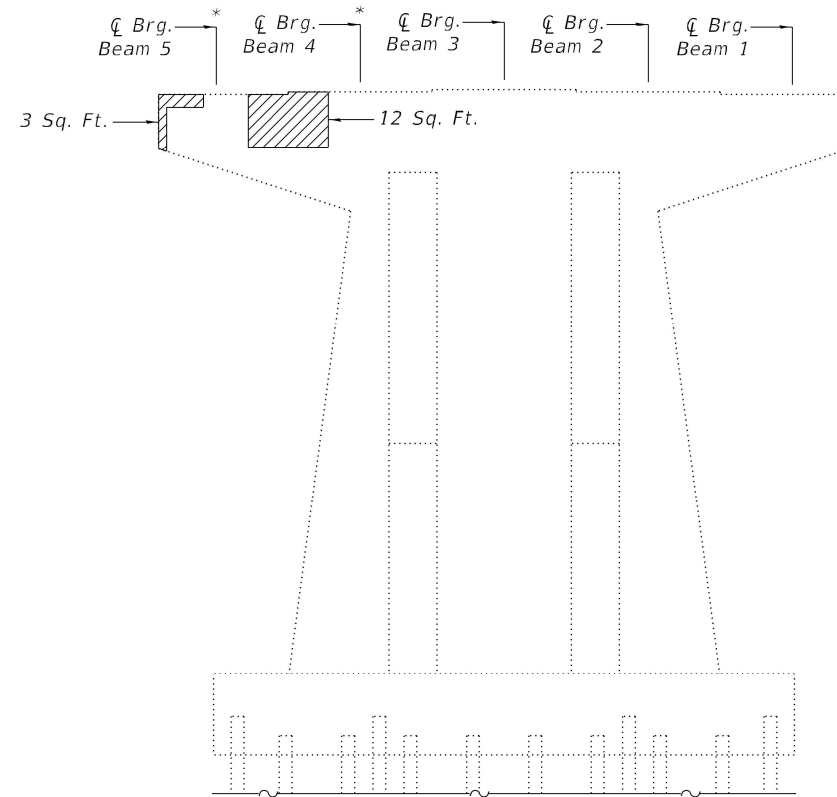
**PLAN**

**BEAM REACTIONS**

Reaction	Span 11	Span 12
R <sub>D</sub>	(k) 57.7	57.7
R <sub>L</sub>	(k) 84.4	84.4
R <sub>Imp.</sub>	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3



**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 18 of 20 for pier cap encasement details.
- See sheet 20 of 20 for seismic cable details.
- All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	119
Temporary Shoring and Cribbing	Each	5

MODEL: Default  
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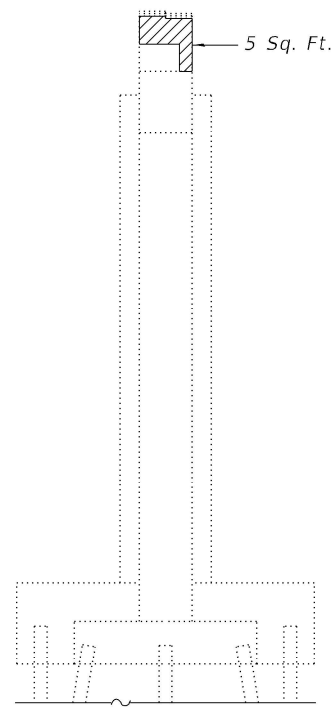
**Kaskaskia**  
Engineering Group, LLC  
Professional Engineering Group  
1127 N. 1st St.  
Moline, IL 61704  
314.861.9111  
20-088056

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

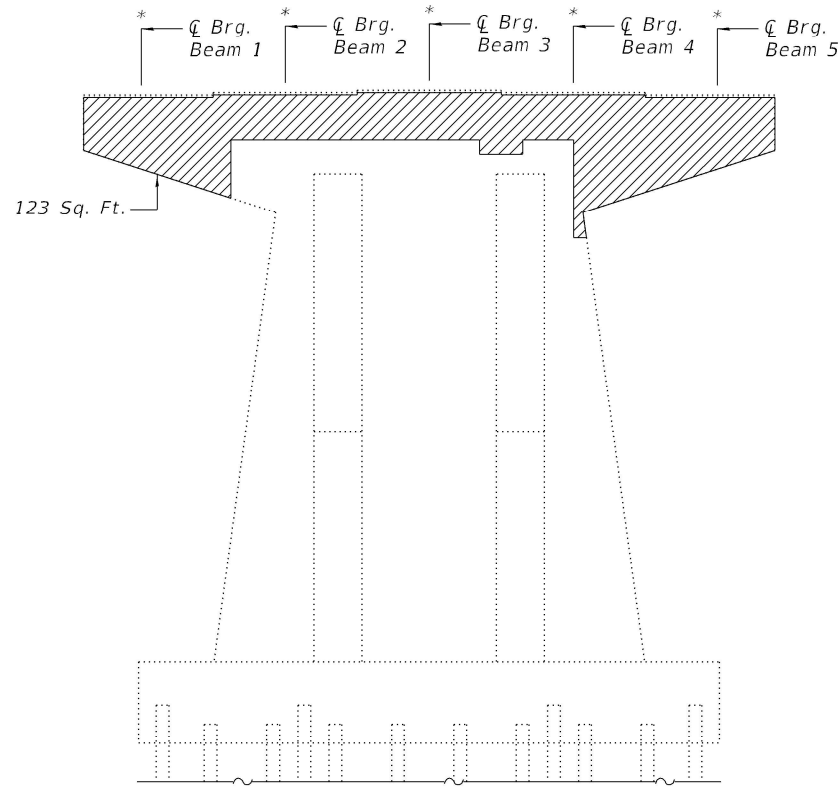
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 11**  
**STRUCTURE NO. 077-0001**

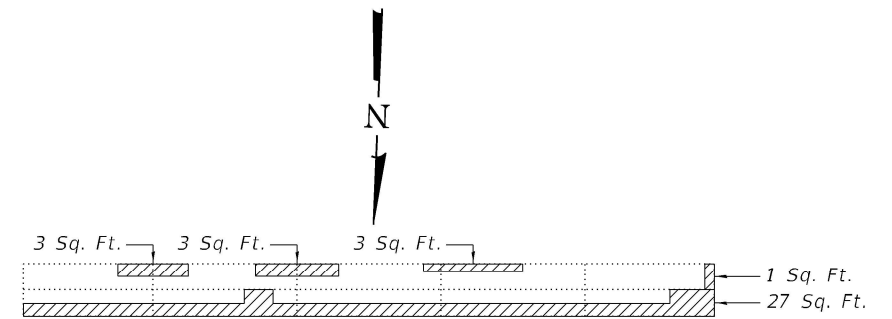
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	16
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78986	



**END ELEVATION**  
(East Face - Looking West)



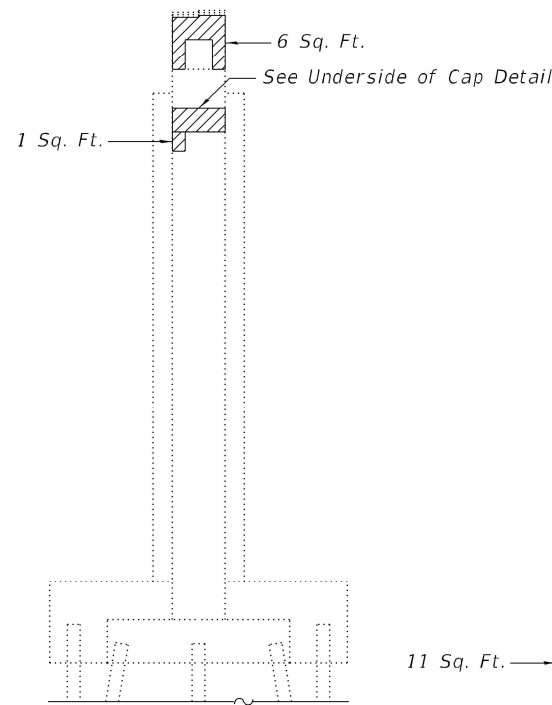
**ELEVATION**  
(North Face - Looking South)



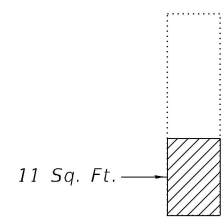
**PLAN**

**BEAM REACTIONS**

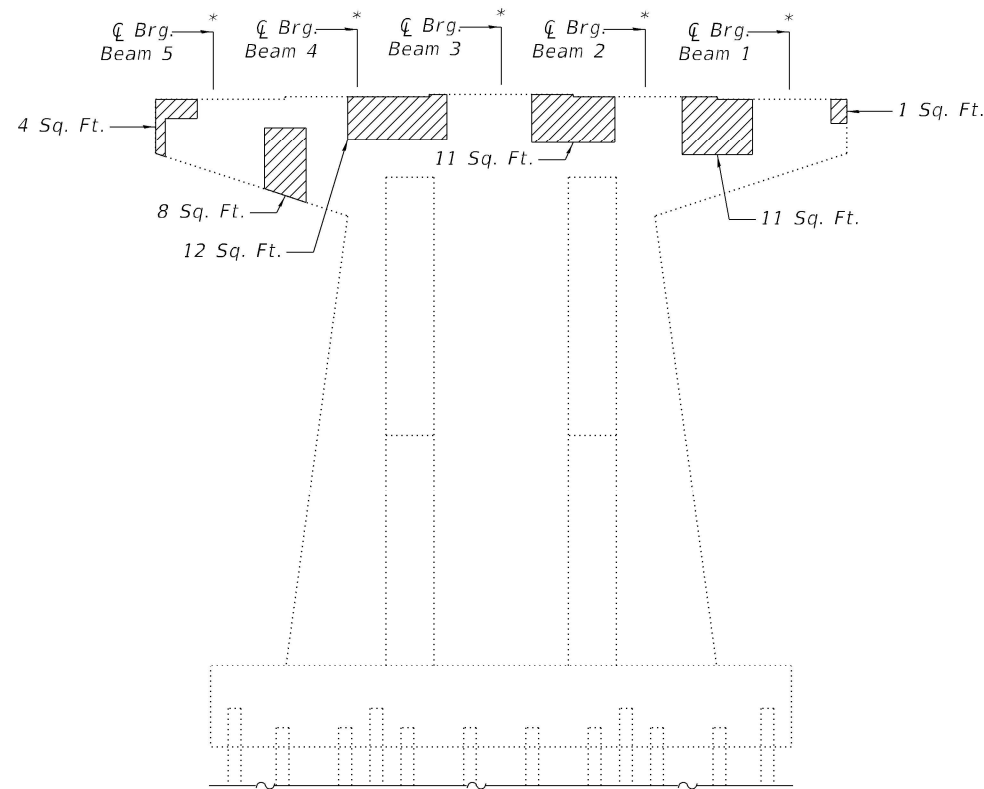
Reaction	Span 12	Span 13
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R <sub>h</sub>	(k) 84.4	84.4
R Imp.	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3



**END ELEVATION**  
(West Face - Looking East)



**UNDERSIDE OF CAP**  
(West End - Looking East)



**ELEVATION**  
(South Face - Looking North)

**LEGEND**

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

**Notes:**

See sheet 18 of 20 for pier cap encasement details.

See sheet 20 of 20 for seismic cable details.

All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	230
Temporary Shoring and Cribbing	Each	10

MODEL: Default  
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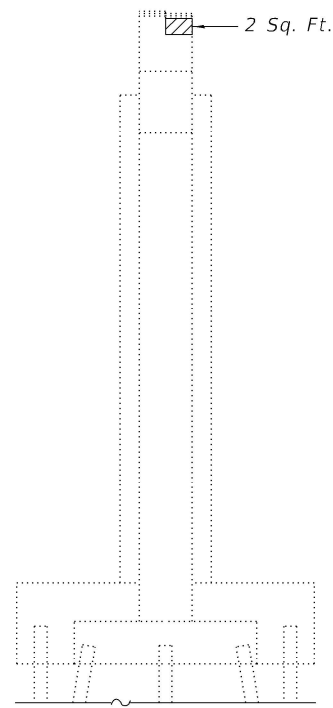
**Kaskaskia**  
Engineering Group, LLC  
Professional Engineering Group  
1127 N. Main St., Suite 100  
Pulaski, Illinois 62450  
618.553.8877 (Phone)  
618.553.8877 (Fax)  
www.kaskaskiaeng.com  
11/27/2013  
11/27/2013  
20-088268

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

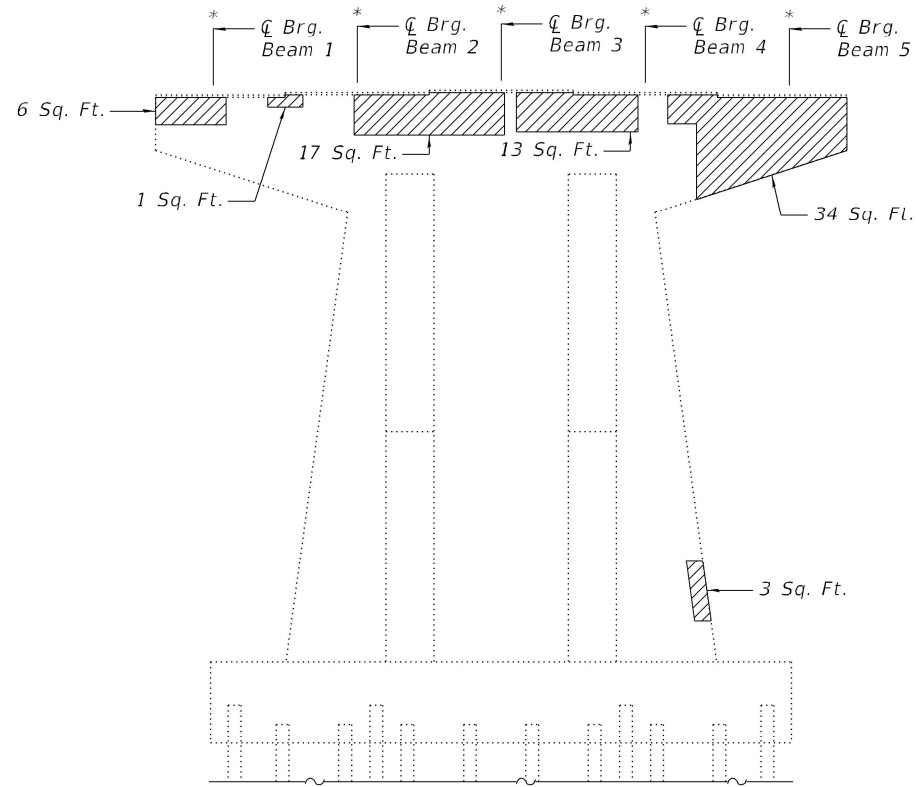
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE REPAIR - PIER 12**  
**STRUCTURE NO. 077-0001**

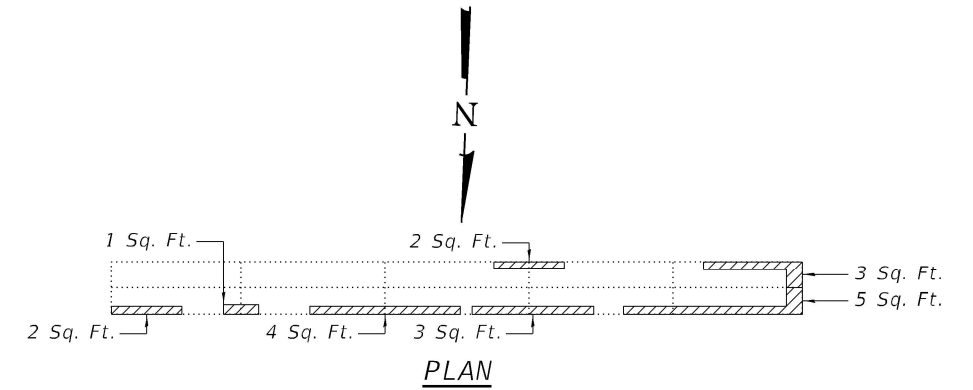
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	17
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78986	



**END ELEVATION**  
(East Face - Looking West)



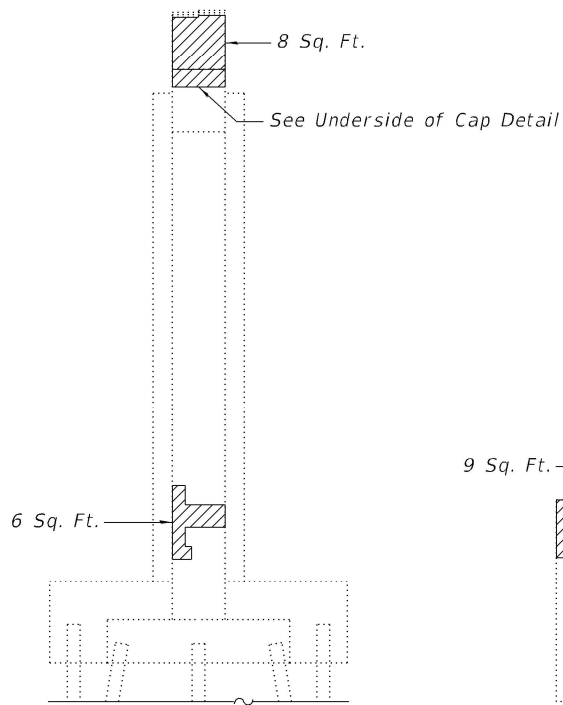
**ELEVATION**  
(North Face - Looking South)



**PLAN**

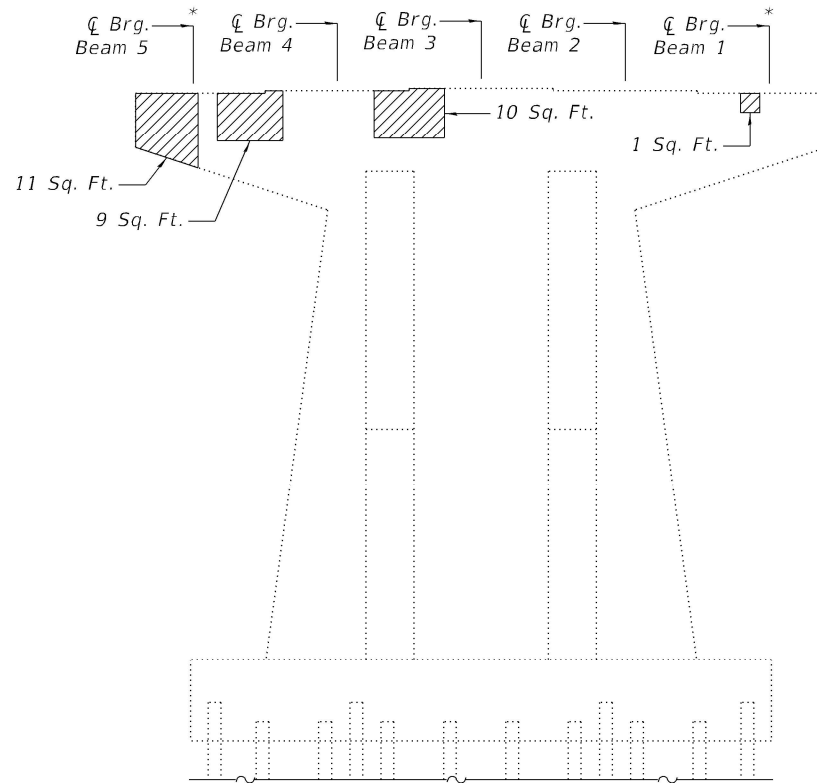
**BEAM REACTIONS**

Reaction	Span 13	Span 14
R <sub>v</sub>	(k) 57.7	57.7
R <sub>h</sub>	(k) 84.4	84.4
R Imp.	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3



**END ELEVATION**  
(West Face - Looking East)

**UNDERSIDE OF CAP**  
(West End - Looking East)



**ELEVATION**  
(South Face - Looking North)

**LEGEND**

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

**Notes:**  
See sheet 18 of 20 for pier cap encasement details.  
See sheet 20 of 20 for seismic cable details.  
All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	150
Temporary Shoring and Cribbing	Each	7

MODEL: Default  
FILE NAME: P:\22-1060.01-157 over Old US 51 Bridge Rehab\0\_IDOT\Structures\0770001-78986-014-SubstructureRepair-Pier13.dgn

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618.553.8877 (Fax)  
www.kaskaskiaeng.com  
11/27/2013  
11/27/2013  
20-088266

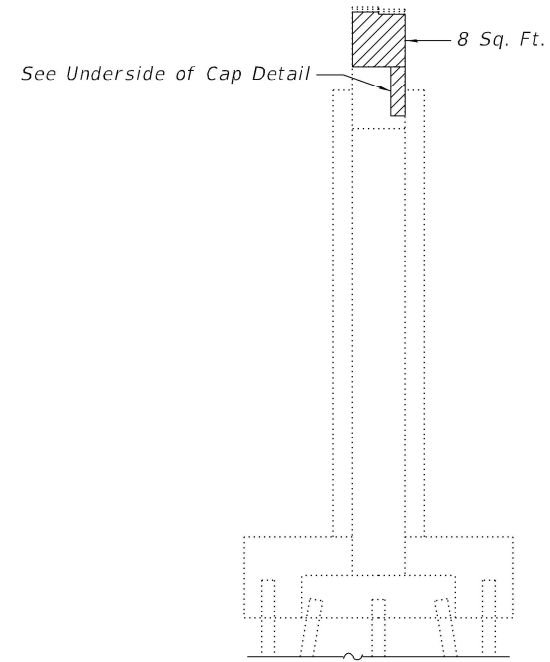
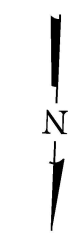
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	CHECKED - MLC	REVISED -
PLOT SCALE =	DRAWN - MMC	REVISED -
PLOT DATE =	CHECKED - MLC	REVISED -

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

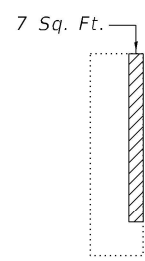
**SUBSTRUCTURE REPAIR - PIER 13**  
**STRUCTURE NO. 077-0001**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	18
CONTRACT NO. 78986				
ILLINOIS FED. AID PROJECT				

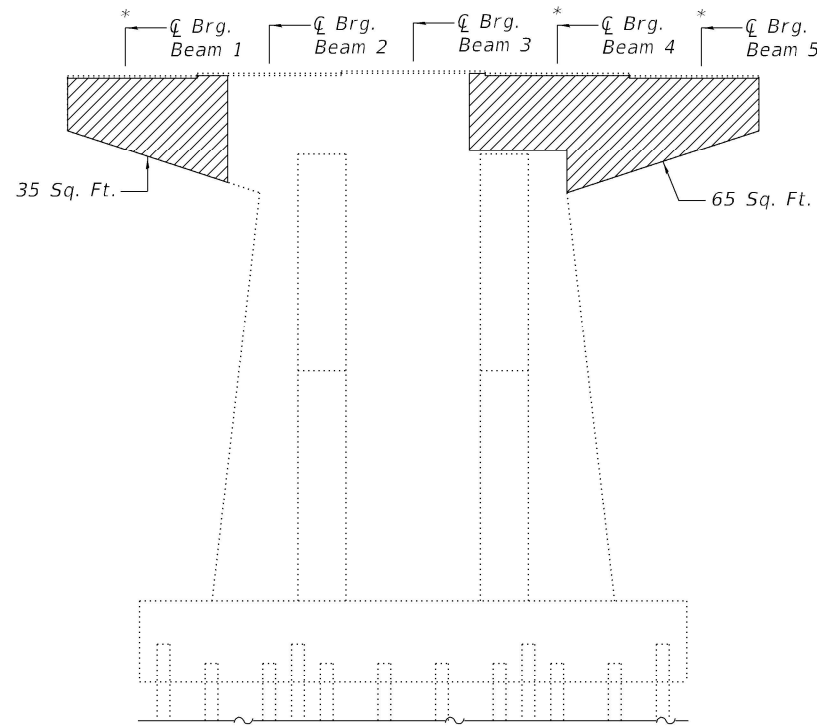




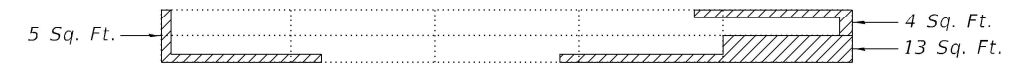
**END ELEVATION**  
(East Face - Looking West)



**UNDERSIDE OF CAP**  
(East End - Looking West)



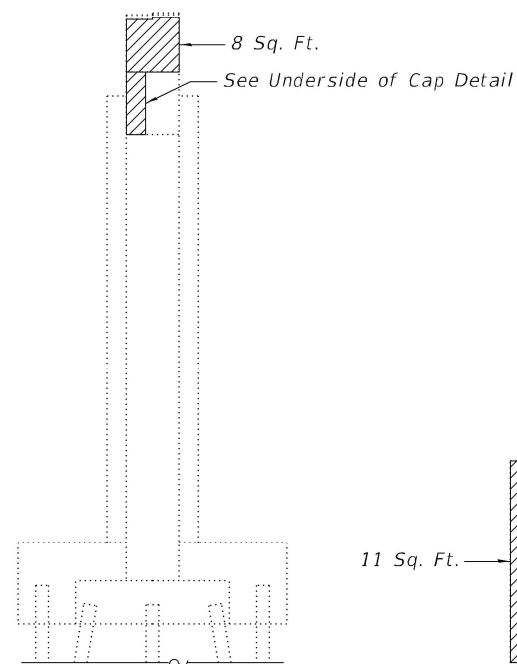
**ELEVATION**  
(North Face - Looking South)



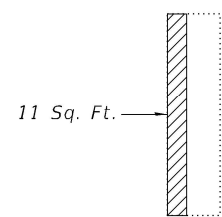
**PLAN**

**BEAM REACTIONS**

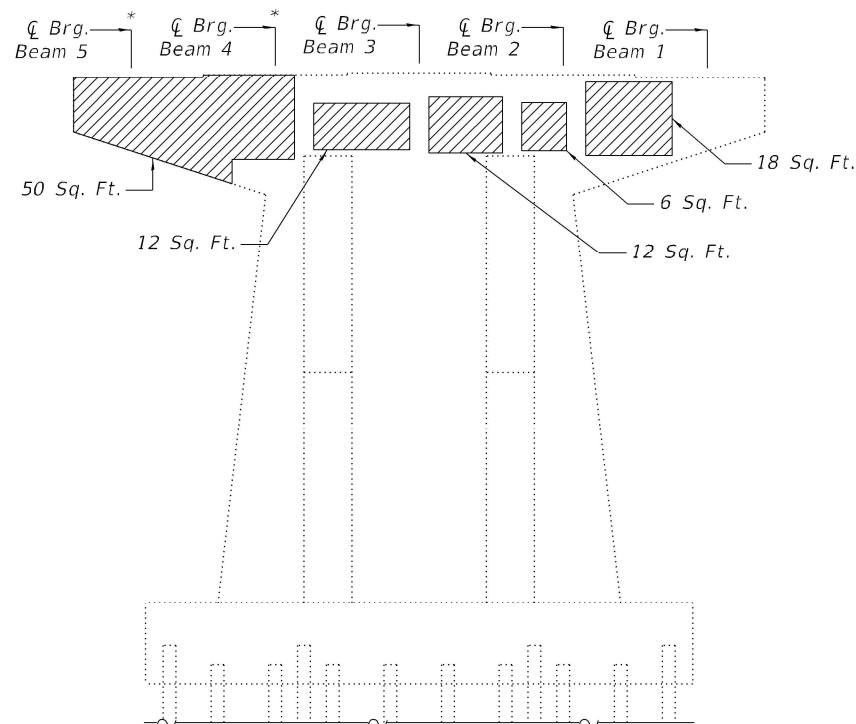
Reaction	Span 14	Span 15
R <sub>v</sub>	(k) 57.7	57.7
R <sub>h</sub>	(k) 84.4	84.4
R Imp.	(k) 22.2	22.2
R (Total)	(k) 164.3	164.3



**END ELEVATION**  
(West Face - Looking East)



**UNDERSIDE OF CAP**  
(West End - Looking East)



**ELEVATION**  
(South Face - Looking North)

**LEGEND**

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

**Notes:**

See sheet 18 of 20 for pier cap encasement details.

See sheet 20 of 20 for seismic cable details.

All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	254
Temporary Shoring and Cribbing	Each	5

MODEL: Default  
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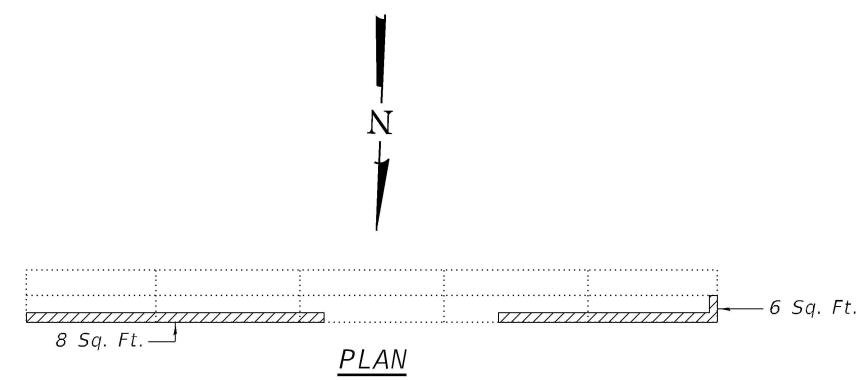
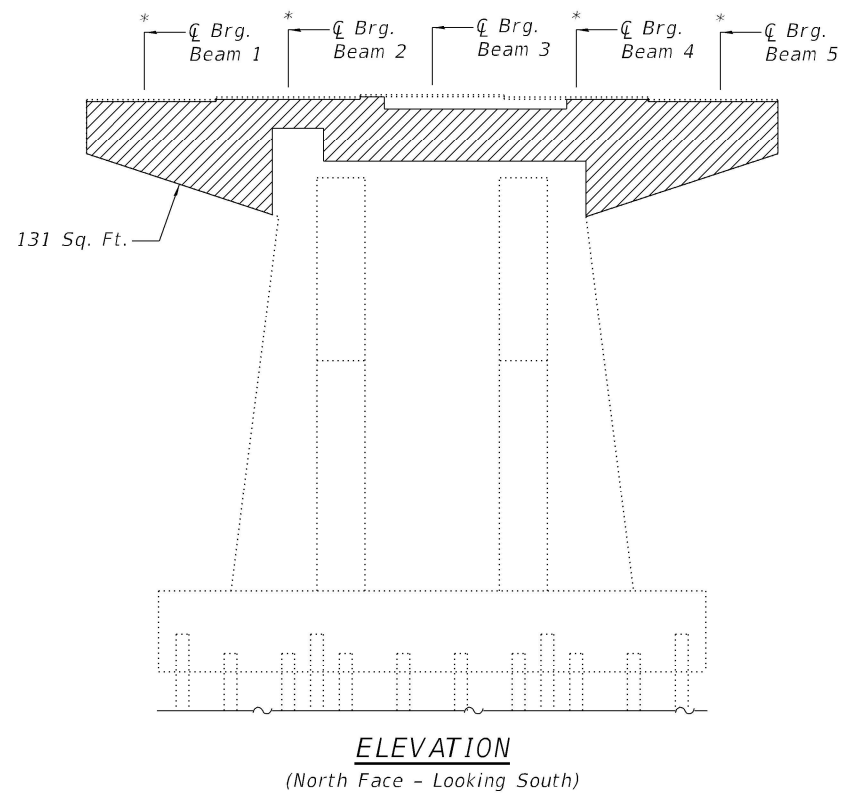
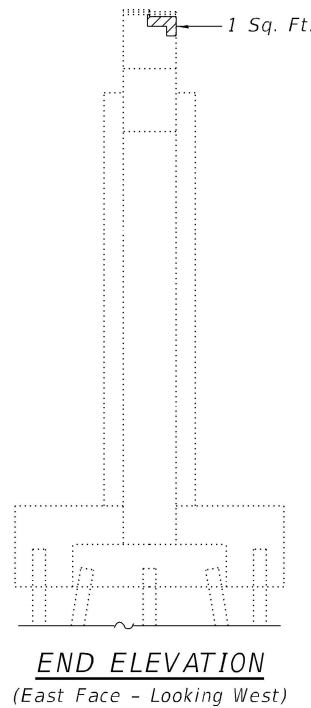
**Kaskaskia**  
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Bella Vista, Illinois 62226  
618.553.8877 (Phone)  
618.553.8877 (Fax)  
www.kaskaskiaeng.com  
11/27/2013  
11/27/2013  
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	CHECKED - MLC	REVISED -
PLOT SCALE =	DRAWN - MMC	REVISED -
PLOT DATE =	CHECKED - MLC	REVISED -

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**DEPARTMENT OF TRANSPORTATION**

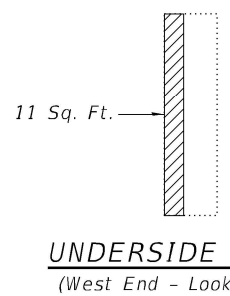
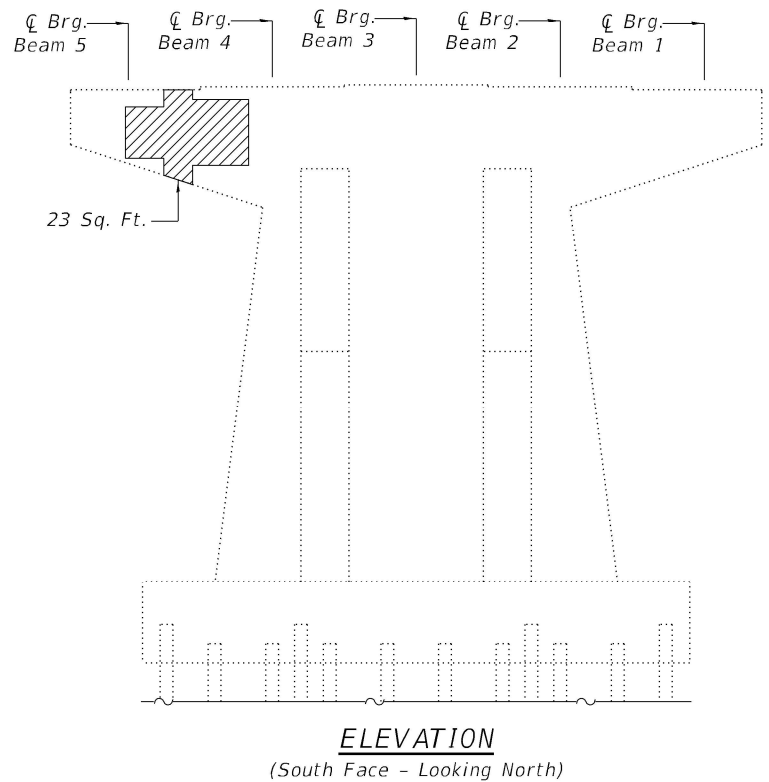
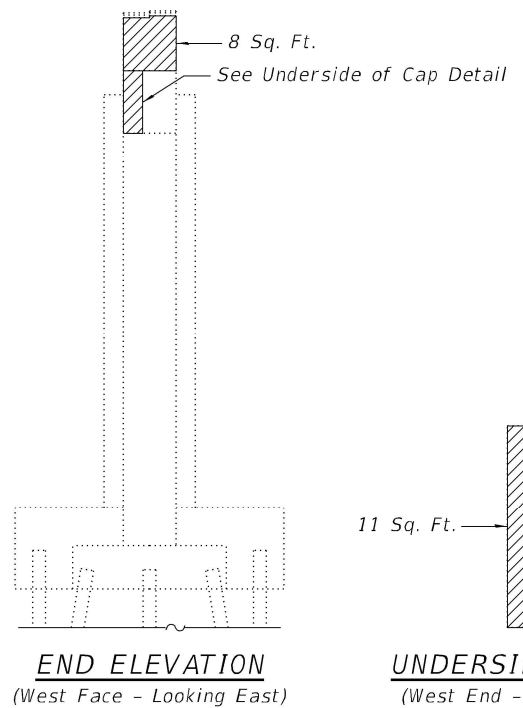
**SUBSTRUCTURE REPAIR - PIER 14**  
**STRUCTURE NO. 077-0001**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	19
CONTRACT NO. 78986				
		ILLINOIS	FED. AID PROJECT	



**BEAM REACTIONS**

Reaction	Span 15	Span 16
R <sub>v</sub>	(k) 57.7	57.1
R <sub>h</sub>	(k) 84.4	84.4
R Imp.	(k) 22.2	22.3
R (Total)	(k) 164.3	163.8



**LEGEND**

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

**Notes:**

See sheet 18 of 20 for pier cap encasement details.  
See sheet 20 of 20 for seismic cable details.  
All concrete necessary for the repairs to the pier cap shall be poured monolithically with the pier cap encasement concrete detailed on sheet 18 of 20.

\* 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.	188
Temporary Shoring and Cribbing	Each	4

MODEL: Default  
FILE NAME: P:\22-1060.01-157 over Old US 51 Bridge Rehab\0\_IDOT\Structures\0770001-78986-016-SubstructureRepair-Pier15.dgn

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

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

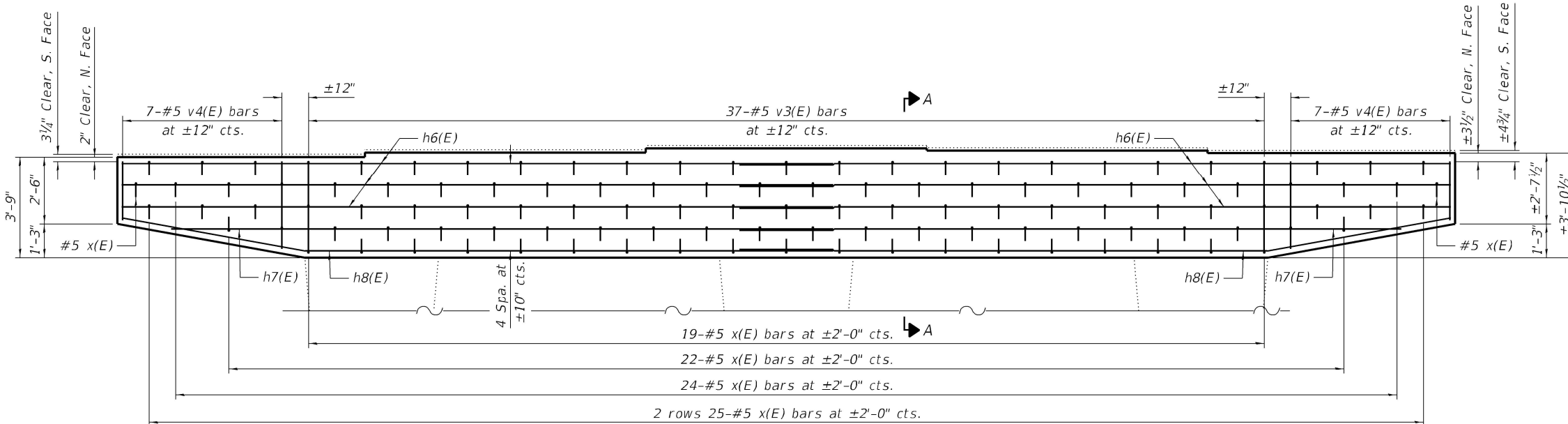
**SUBSTRUCTURE REPAIR - PIER 15**  
**STRUCTURE NO. 077-0001**

SHEET 16 OF 20 SHEETS

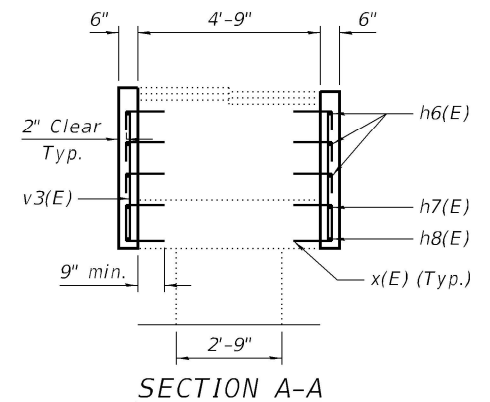
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	20
				CONTRACT NO. 78986
		ILLINOIS	FED. AID PROJECT	

**MINIMUM BAR LAP**

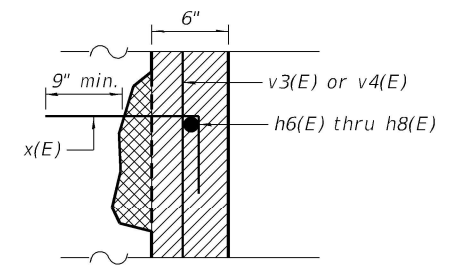
#5 bar = 3'-6"



**ELEVATION**  
(Pier 2 North Face Shown - Looking South,  
Pier 2 South Face - Looking North Similar,  
Pier 1 Similar)

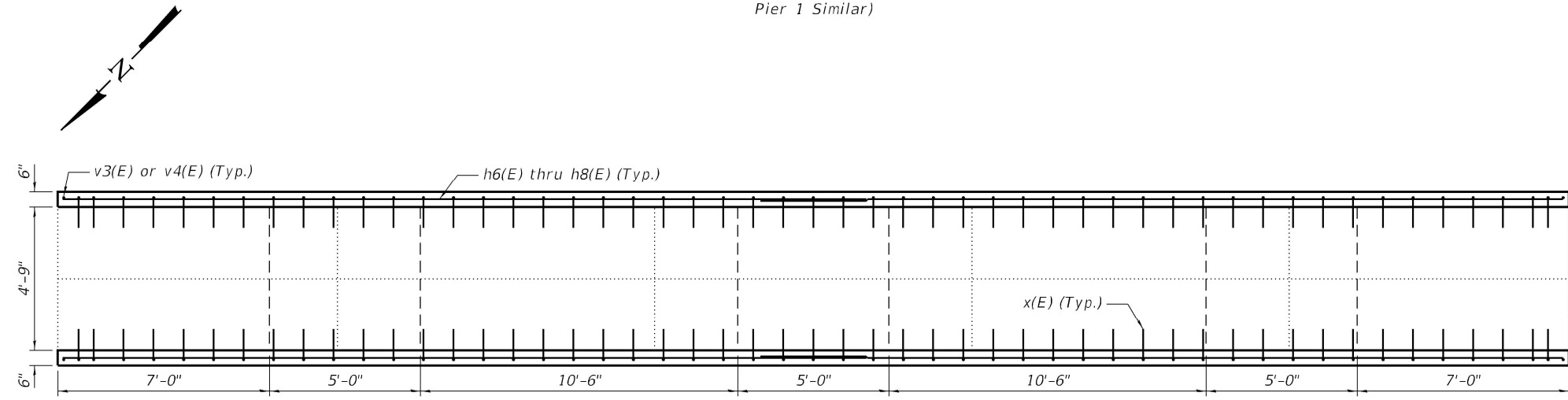


**SECTION A-A**

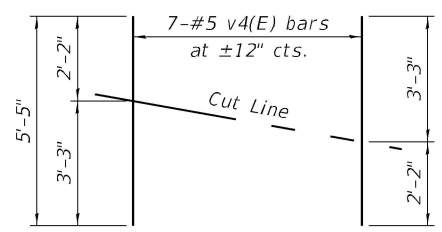


**REPAIR DETAIL**

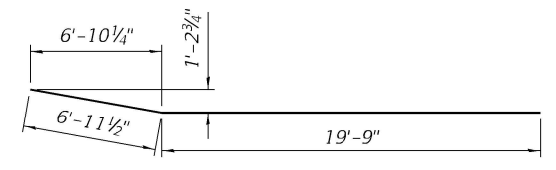
- Concrete in this area to be paid as Concrete Structures
- Concrete in this area is included with Structural Repair of Concrete (Depth Less Than or Equal to 5 Inches)



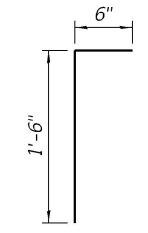
**TOP OF CAP PLAN**



**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)**

**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.

**BILL OF MATERIAL**  
(PIERS 1 & 2)

Bar	No.	Size	Length	Shape
h6(E)	24	#5	26'-7"	—
h7(E)	8	#5	24'-9"	—
h8(E)	8	#5	26'-9"	—
v3(E)	148	#5	3'-5"	—
v4(E)	28	#5	5'-5"	—
x(E)	468	#5	2'-0"	┐
Concrete Structures			Cu. Yd.	14.2
Reinforcement Bars, Epoxy Coated			Pound	2,760

MODEL: Default  
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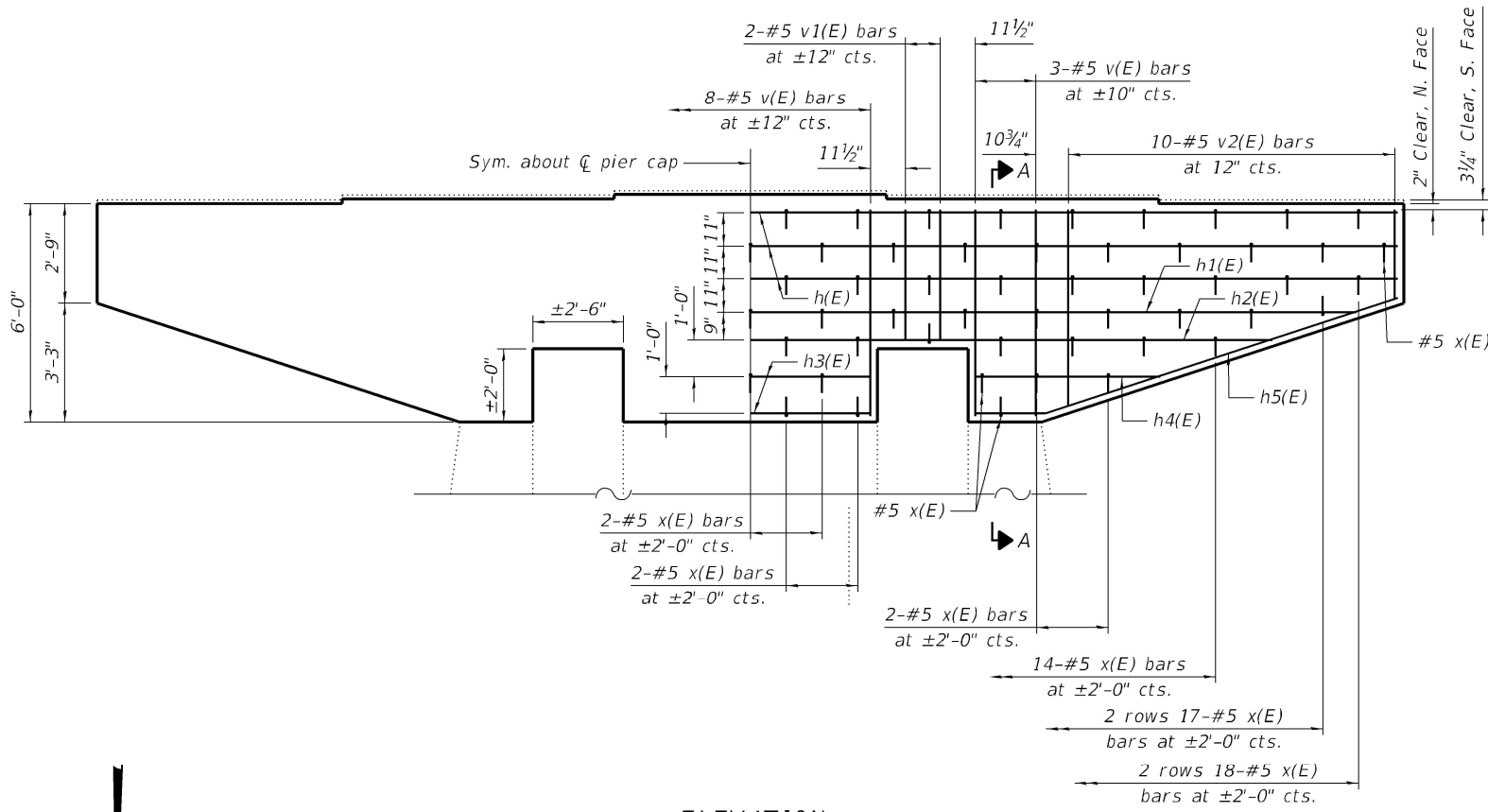
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PLOT SCALE =	CHECKED - MLC	REVISED -
PLOT DATE =	DRAWN - MMC	REVISED -
	CHECKED - MLC	REVISED -

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

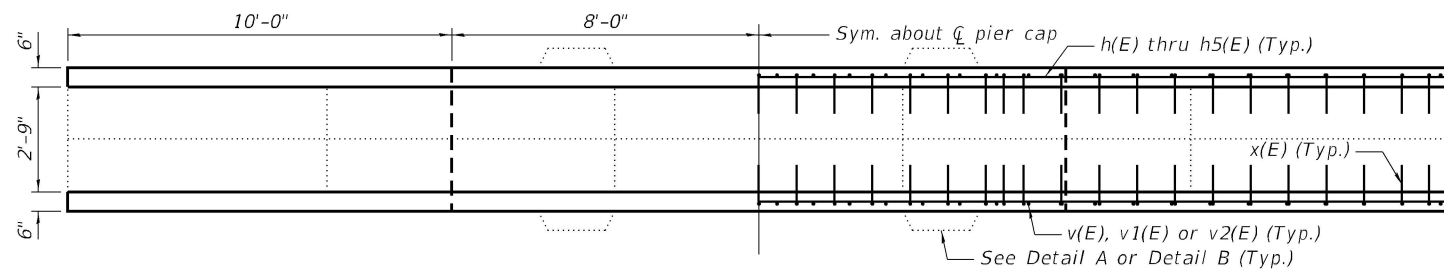
**PIER ENCASMENT DETAILS (PIERS 1 & 2)**  
**STRUCTURE NO. 077-0001**

SHEET 17 OF 20 SHEETS

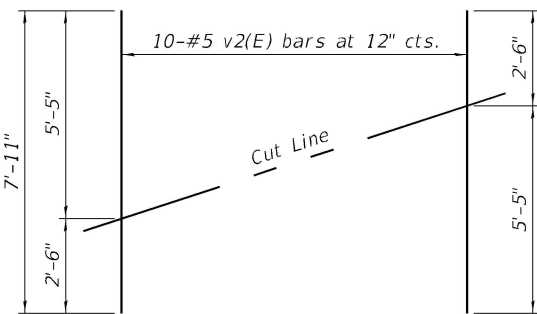
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	21
CONTRACT NO. 78986				
ILLINOIS FED. AID PROJECT				



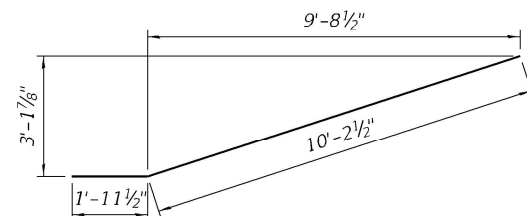
**ELEVATION**  
(North Face Shown - Looking South,  
South Face - Looking North Similar)



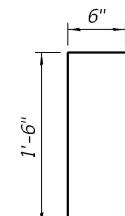
**TOP OF CAP PLAN**  
(Piers 3, 13, & 14 Shown,  
Piers 4 Thru 12 & 15 Similar)



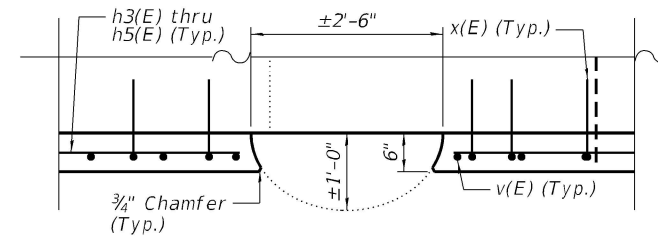
**FIELD CUTTING DIAGRAM**  
Order v2(E) full length. Cut as shown and  
use remainder of bars in opposite end.



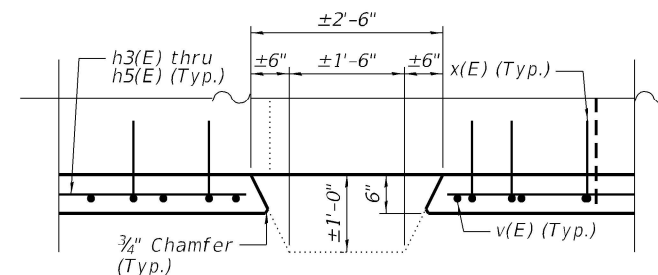
**BAR h5(E)**



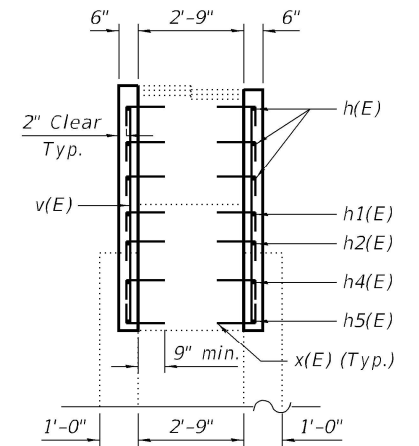
**BAR x(E)**



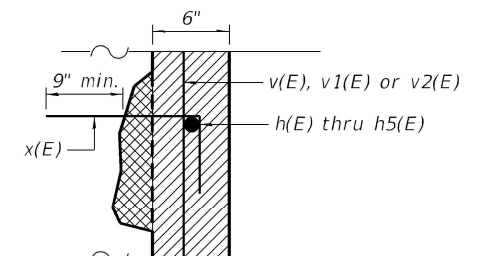
**DETAIL A**  
(Piers 4 Thru 12 & 15)



**DETAIL B**  
(Piers 3, 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)

**BILL OF MATERIAL**  
(PIERS 3 THRU 15)

Bar	No.	Size	Length	Shape
h(E)	78	#5	35'-8"	—
h1(E)	26	#5	33'-4"	—
h2(E)	26	#5	28'-9"	—
h3(E)	52	#5	6'-8"	—
h4(E)	52	#5	5'-1"	—
h5(E)	52	#5	12'-2"	—
v(E)	364	#5	5'-8"	—
v1(E)	104	#5	3'-7"	—
v2(E)	260	#5	7'-11"	—
x(E)	2626	#5	2'-0"	└
Concrete Structures			Cu. Yd.	86.3
Reinforcement Bars, Epoxy Coated			Pound	16,050

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.

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Bella Vista, Illinois 62226  
618.553.8877

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

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**PIER ENCASEMENT DETAILS (PIERS 3 THRU 15)**  
**STRUCTURE NO. 077-0001**

SHEET 18 OF 20 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	22
CONTRACT NO. 78986				
ILLINOIS FED. AID PROJECT				

**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."

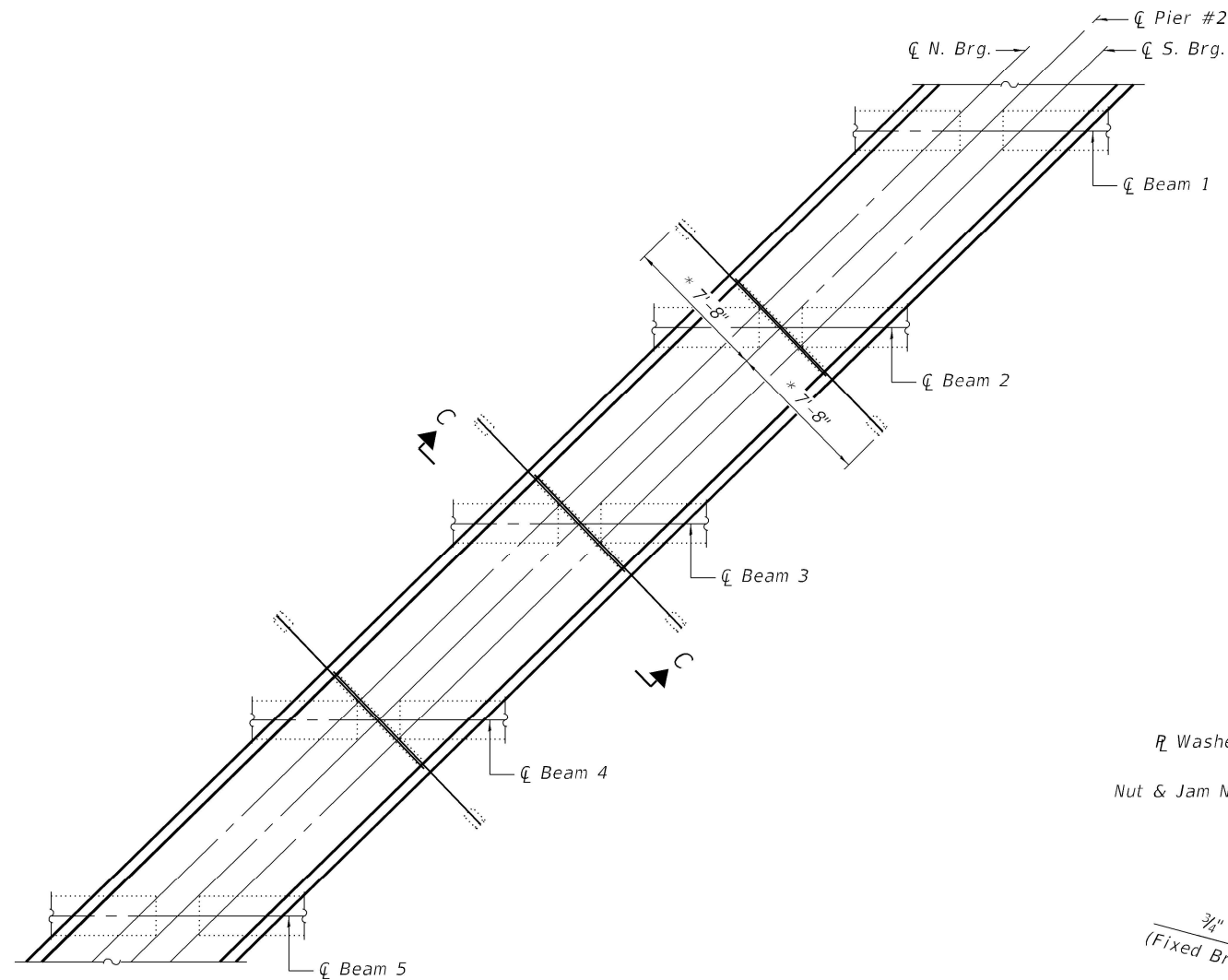
Cost of removal and disposal of existing cables and associated elements is included in the cost of "Seismic Restrainer."

Cored holes shall be sealed with sealant, subject to approval of the Engineer. Cost of the sealant is included with "Seismic Restrainer."

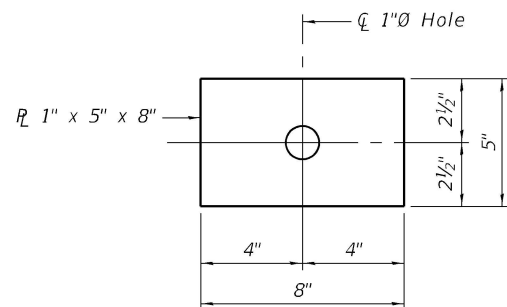
For details of the 3/4"Ø Restrainer Cable Ends, existing Beveled Spacer, and existing Brackets, see sheet 20 of 20.

**SEISMIC RESTRAINER INSTALLATION PROCEDURES**

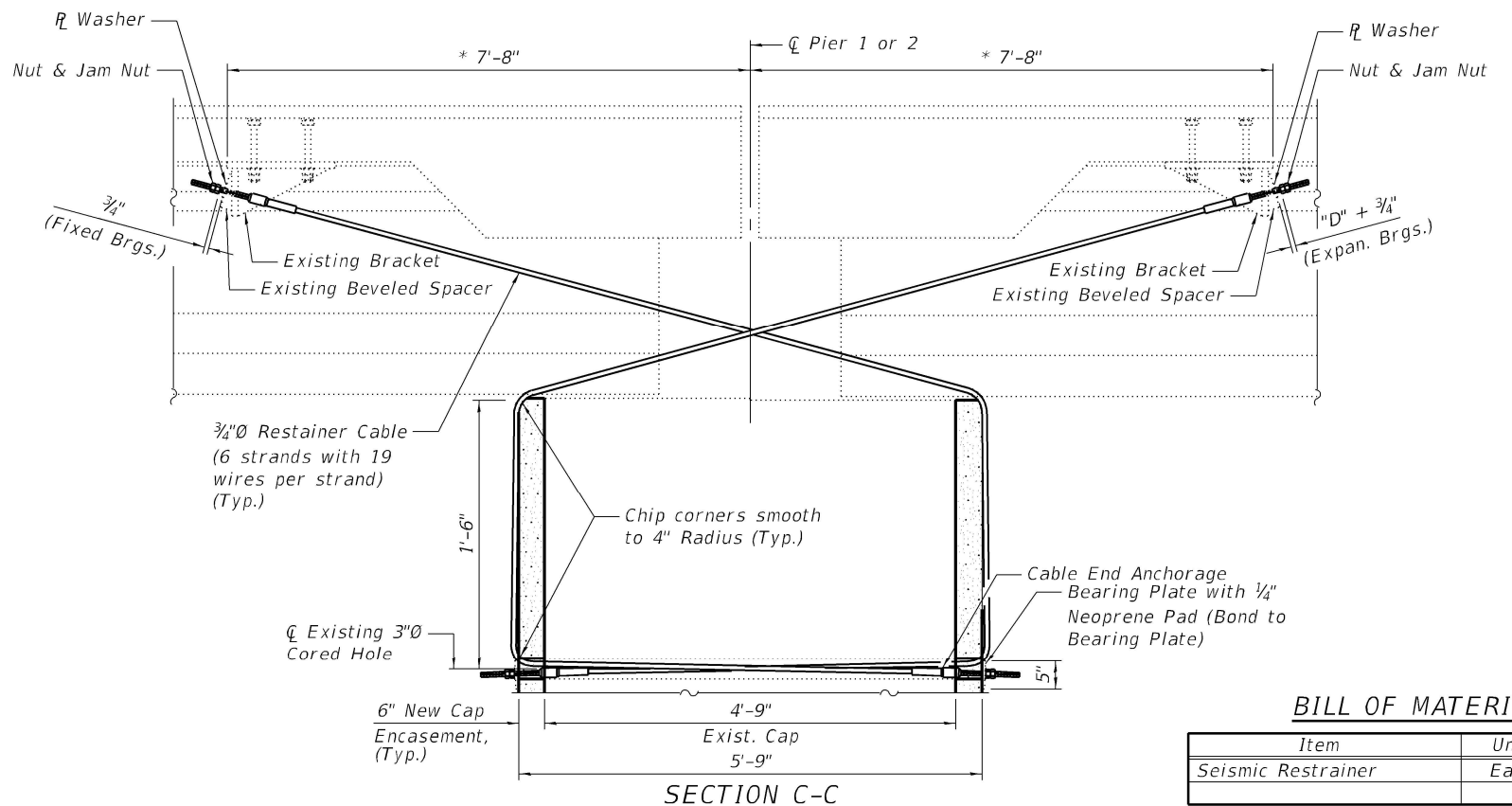
- 1.) Locate and install cables snug tight.
- 2.) For Restrainers at fixed bearings, back off the nut at bracket end of cable by 3/4".
- 3.) For Restrainers at expansion bearings, back off the nut at bracket end of cable by "D" + 3/4".  
 "D" = +1/8" per 100' of expansion length for every 15°F temperature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



**PIER PLAN**  
(Showing location of Seismic Restrainers)  
(Pier 2 shown, Pier 1 similar)



**BEARING PLATE**



**SECTION C-C**

\* Estimated. Contractor required to check actual length.

**BILL OF MATERIAL**

Item	Unit	Total
Seismic Restrainer	Each	12

MODEL: Default  
FILE NAME: P:\22-1060.01-157 over Old US 51 Bridge Rehab\0\_IDOTStructures\0770001-78986-019-SeismicCableDetails.dgn

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Professional Engineering Group

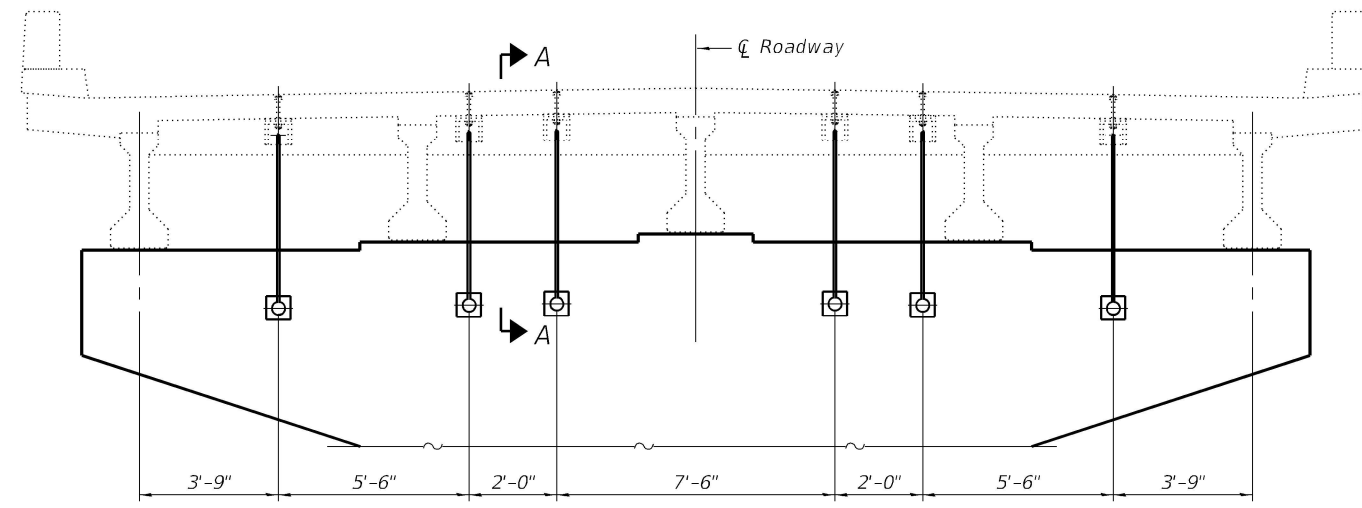
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PLOT DATE =	DRAWN - MLC	REVISED -
	CHECKED - MMC	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

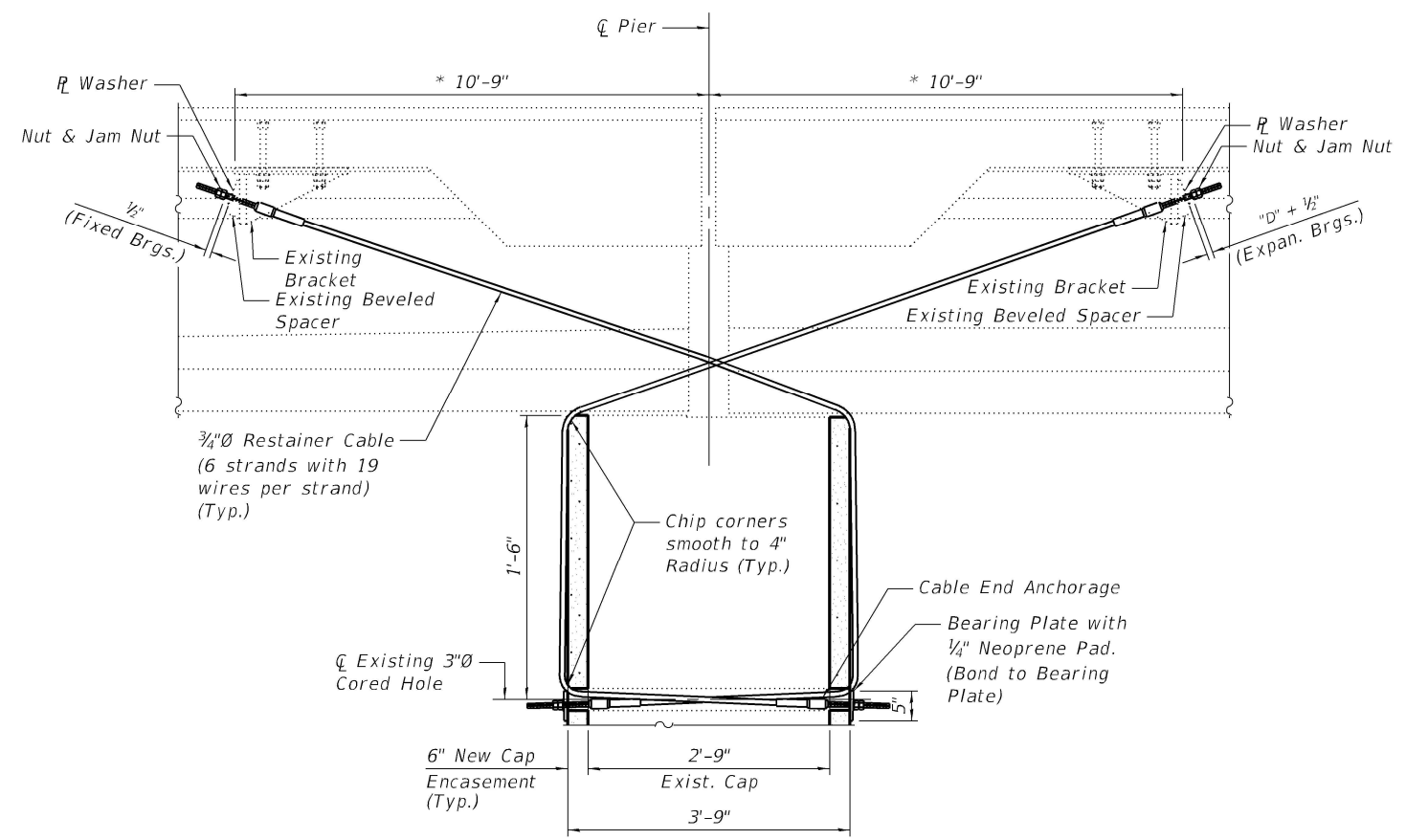
**SEISMIC RESTRAINER DETAILS (PIERS 1 & 2)  
STRUCTURE NO. 077-0001**

SHEET 19 OF 20 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	23
CONTRACT NO. 78986				
ILLINOIS FED. AID PROJECT				

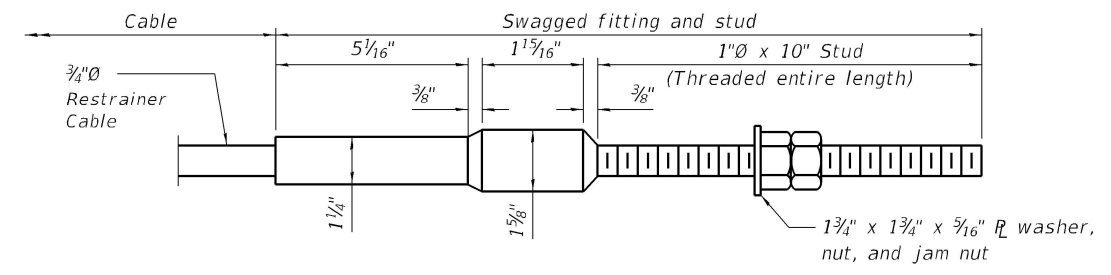


**RESTRAINER CABLES AT PIERS 3 THRU 15**

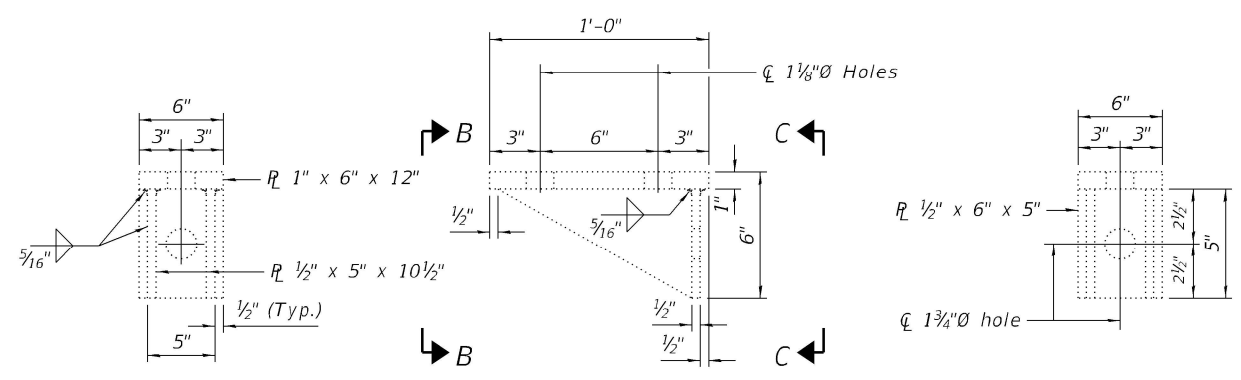


**SECTION A-A**

\*Estimated. Contractor required to check actual length.



**CABLE END ANCHORAGE**  
(2 per Cable)

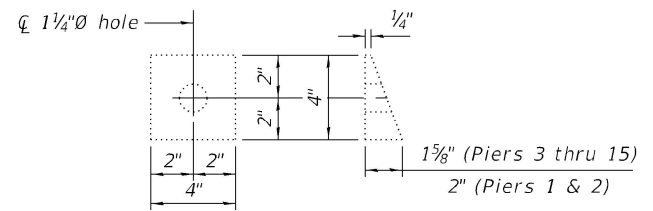


**SECTION B-B**

**ELEVATION**

**SECTION C-C**

**EXISTING BRACKET DETAILS**



**EXISTING BEVELED SPACER**

**BILL OF MATERIAL**

Item	Unit	Total
Seismic Restrainer	Each	156

Notes:  
For Seismic Restrainer notes and installation procedure, see sheet 19 of 20.  
Existing brackets to be re-used.

MODEL: Default  
FILE NAME: P:\22-1060.01 1-57 over Old US 51 Bridge Rehab\0\_IDOT\Structures\0770001-78986-02p-SeismicCableDetails.dgn



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

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SEISMIC RESTRAINER DETAILS (PIERS 3 THRU 15)**  
**STRUCTURE NO. 077-0001**

SHEET 20 OF 20 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
57	D9 BRIDGE REPAIR 2023-3	PULASKI	24	24
CONTRACT NO. 78986				

ILLINOIS FED. AID PROJECT