





Illinois Department of Transportation  
Division of Highways  
DOT

DRILLED AND LOGGED BY IDOT

ROCK CORE LOG

Page 2 of 2

Date 9/5/07

ROUTE FAP 315 (IL 336) DESCRIPTION IL 336 Macomb Bypass (Northwest Corridor) - IL 336 over E. Fork LaMoine River LOGGED BY JAR-IDOT

SECTION 55-3 LOCATION NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Dual Barrel

STRUCT. NO. 055-0066(prop) CORING BARREL TYPE & SIZE NWD4

BORING NO. B-116X (S Pier, NBL's) Core Diameter 2.1 in  
Station 583+25 Top of Rock Elev. 561.70 ft  
Offset 58.0 ft Begin Core Elev. 581.70 ft

DEPTH (ft)	RECOVERY (%)	RECOVERY (min/ft)	RECOVERY (tsf)	RECOVERY (%)	RECOVERY (%)
561.70	1	56	15		
561.00					
560.00				12.5	6
559.20				9.0	6
556.70					
556.30	2	94	45	22.9	4
554.70				379.5	1
553.20				42.0	4
551.70				49.4	4
551.70				15.5	6
546.70				49.1	6
				63.1	6
546.70				53.9	6

Color pictures of the cores Yes  
Cores will be stored for examination until  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

BBS, form 138 (Rev. 8-99)



Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

SOIL BORING LOG

Page 1 of 2

Date 4/27/05

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (TC)

SECTION 55-3 LOCATION Prop. North Pier, NE 1/4, SEC. 4, TWP. 5 N, RNG. 3 W, 4<sup>th</sup> PM

COUNTY McDonough DRILLING METHOD CME 850 w/HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-117  
Station 585+55  
Offset 25.0 ft RT  
Ground Surface Elev. 584.4 ft

DEPTH (ft)	RECOVERY (%)	RECOVERY (min/ft)	RECOVERY (tsf)	RECOVERY (%)	RECOVERY (%)
584.0					
583.0				0.2	22
580.2					
578.4					
575.2				20	
573.6					
570.1				11	
566.9				7	

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

ROCK CORE LOG

Page 2 of 2

Date 4/27/05

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (TC)

SECTION 55-3 LOCATION Prop. North Pier, NE 1/4, SEC. 4, TWP. 5 N, RNG. 3 W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Modified Wire Line

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-117  
Station 585+55  
Offset 25.0 ft RT  
Ground Surface Elev. 584.4 ft

DEPTH (ft)	RECOVERY (%)	RECOVERY (min/ft)	RECOVERY (tsf)	RECOVERY (%)	RECOVERY (%)
584.0					
583.0					
580.2					
578.4					
575.2					
573.6					
570.1					
566.9					

Color pictures of the cores No  
Cores will be stored for examination until  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

BBS, form 138 (Rev. 8-99)

FILE NAME = I:\DOT\5606\_HEI\_IL336\CADD\_Structure\East Fork Lemoine River\NORTHBOUND\NBoring01.dgn



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PLOT DATE = 1/15/2015

DESIGNED - JMB  
CHECKED - ACB  
DRAWN - RLK  
CHECKED - JMB

REVISED -  
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REVISED -  
REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS  
STRUCTURE NO. 055-0046  
SHEET NO. 42 OF 53 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[31PV;HB(2-6);B,B-1,B-2]	MCDONOUGH	874	402
	SN 055-0046			CONTRACT NO. 68B44
	STA. 583+30.75	ILLINOIS FED. AID PROJECT		









**Illinois Department of Transportation**  
Division of Highways  
SCI Engineering, Inc.

### ROCK CORE LOG

Page 2 of 4

Date: 8/22-8/23/2012

ROUTE FAP 407 (IL 336) DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 2, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 CORING BARREL TYPE & SIZE NX  
Station 583+84.75

BORING NO. B-804 Core Diameter 1.9 in  
Station 583+31.5 Top of Rock Elev. 555.0 ft  
Offset 64.0 ft LT  
Ground Surface Elev. 580.0 ft

DEPTH (ft)	DEPTH (#)	RECOVERY (%)	ROQ (%)	CORE D I M E N S I O N S (min/ft)	STRENGTH (tsf)	MOISTURE (%)
555.0	1	51	14	22.3		
553.3						
552.7						
552.3						6.0
551.4	2	100	0	17		8.3
550.2	3	100	0	12		
	4	88	40	10.6		8.0
						6.5
546.1						
544.7						
	5	95	57	8.6		
	6	99	39	4.1		9.7
						9.6
539.1						
						425.0
						8.3

Color pictures of the cores Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)



**Illinois Department of Transportation**  
Division of Highways  
SCI Engineering, Inc.

### ROCK CORE LOG

Page 3 of 4

Date: 8/22-8/23/2012

ROUTE FAP 407 (IL 336) DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 2, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 CORING BARREL TYPE & SIZE NX  
Station 583+84.75

BORING NO. B-804 Core Diameter 1.9 in  
Station 583+31.5 Top of Rock Elev. 555.0 ft  
Offset 64.0 ft LT  
Ground Surface Elev. 580.0 ft

DEPTH (ft)	DEPTH (#)	RECOVERY (%)	ROQ (%)	CORE D I M E N S I O N S (min/ft)	STRENGTH (tsf)	MOISTURE (%)
555.0	1	51	14	22.3		
553.3						
552.7						
552.3						6.0
551.4	2	100	0	17		8.3
550.2	3	100	0	12		
	4	88	40	10.6		8.0
						6.5
546.1						
544.7						
	5	95	57	8.6		
	6	99	39	4.1		9.7
						9.6
539.1						
						425.0
						8.3

Color pictures of the cores Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)



**Illinois Department of Transportation**  
Division of Highways  
SCI Engineering, Inc.

### ROCK CORE LOG

Page 4 of 4

Date: 8/22-8/23/2012

ROUTE FAP 407 (IL 336) DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 2, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 CORING BARREL TYPE & SIZE NX  
Station 583+84.75

BORING NO. B-804 Core Diameter 1.9 in  
Station 583+31.5 Top of Rock Elev. 555.0 ft  
Offset 64.0 ft LT  
Ground Surface Elev. 580.0 ft

DEPTH (ft)	DEPTH (#)	RECOVERY (%)	ROQ (%)	CORE D I M E N S I O N S (min/ft)	STRENGTH (tsf)	MOISTURE (%)
555.0	1	51	14	22.3		
553.3						
552.7						
552.3						6.0
551.4	2	100	0	17		8.3
550.2	3	100	0	12		
	4	88	40	10.6		8.0
						6.5
546.1						
544.7						
	5	95	57	8.6		
	6	99	39	4.1		9.7
						9.6
539.1						
						425.0
						8.3

Color pictures of the cores Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)

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PLOT DATE = 1/15/2015

DESIGNED - JMB  
CHECKED - ACB  
DRAWN - RLK  
CHECKED - JMB

REVISED -  
REVISED -  
REVISED -  
REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SOIL BORING LOGS  
STRUCTURE NO. 055-0046**  
SHEET NO. 46 OF 53 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV[HB](2-6)B,B-1,B-2]	MCDONOUGH	874	406
	SN 055-0046	CONTRACT NO. 68B44		
	STA. 583+30.75	ILLINOIS FED. AID PROJECT		



# SOIL BORING LOG

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 3, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM, Latitude, Longitude

COUNTY McDonough DRILLING METHOD Diedrich D-90 w/ HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047 Station 583+84.75 BORING NO. B-805 Station 585+56.76 Offset 64.0 ft LT Ground Surface Elev. 585.2 ft

Table with columns for Depth (ft), Blows (B), Penetration (P), Soil Type (S), Moisture (M), and Soil Strength (S). Includes notes like 'No soil sampling performed' and 'Auger refusal at 33.5 feet'.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



# ROCK CORE LOG

ROUTE FAP 407 (IL 336) DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 3, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 Station 583+84.75 BORING NO. B-805 Station 585+56.76 Offset 64.0 ft LT Ground Surface Elev. 585.2 ft

Table with columns for Depth (ft), Core Diameter (in), Core Type, and Strength (tsf). Includes descriptions like 'CONGLOMERATE: Gray and grayish-green, moderately hard, siltstone and limestone gravels in shale matrix'.

Color pictures of the cores Yes Cores will be stored for examination until The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938) BBS, form 138 (Rev. 8-99)



# ROCK CORE LOG

ROUTE FAP 407 (IL 336) DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 3, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 Station 583+84.75 BORING NO. B-805 Station 585+56.76 Offset 64.0 ft LT Ground Surface Elev. 585.2 ft

Table with columns for Depth (ft), Core Diameter (in), Core Type, and Strength (tsf). Includes descriptions like 'SANDSTONE: Gray and tan, fine to medium grained, hard, slightly weathered, some iron stains, trace pyrite, some fossils'.

Color pictures of the cores Yes Cores will be stored for examination until The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938) BBS, form 138 (Rev. 8-99)

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DESIGNED - JMB CHECKED - ACB DRAWN - RLK CHECKED - JMB

REVISED - REVISED - REVISED - REVISED -

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS STRUCTURE NO. 055-0046 SHEET NO. 47 OF 53 SHEETS

Table with columns for F.A.P. RTE., SECTION, COUNTY, TOTAL SHEETS, SHEET NO., STA., ILLINOIS FED. AID PROJECT.







Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

### SOIL BORING LOG

Date 8/27-28/2012

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 1, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM.

COUNTY McDonough DRILLING METHOD Diedrich D-90 w/ HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-809  
Station 581+40.76  
Offset 65.0 ft RT  
Ground Surface Elev. 580.8 ft (ft) (#6") (tsf) (%)

DEPTH (ft)	SOIL DESCRIPTION	UCS (tsf)	MOISTURE (%)
0	TOPSOIL - 3 inches		
0	CLAY: Brown, trace sand, rare organics, A-7		
7		>4.5	7
6		P	
6	Becomes gray, with iron stains		
4		2.0	19
4		P	
-3			
575.3	CLAY LOAM: Brown, A-4		
2		0.4	21
1		B/20	
2			
573.0	SANDY CLAY LOAM: Brown and gray, A-4 (grain size analysis performed)		
		0.3	22
		P	
-10			
570.3	SAND: Gray, fine grained, trace silt, trace gravel, A-3		
6		n/c	30
8			
6	1 inch gravel seam observed		
567.8	SANDSTONE: Gray, fine grained, moderately hard, moderately weathered, with siltstone and shale seams		
50/3"		n/a	14
-15			
	Auger refusal at 15.5 feet. Borehole continued with rock coring.		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bluge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

### ROCK CORE LOG

Date 8/27-28/2012

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 1, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM.

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-809  
Station 581+40.76  
Offset 65.0 ft RT  
Ground Surface Elev. 580.8 ft

DEPTH (ft)	ROCK DESCRIPTION	RECOVERY (%)	COVERAGE (%)	CORE DIAMETER (in)	STRENGTH (tsf)	MOISTURE (%)
1	SANDSTONE: Gray, fine grained, moderately hard, moderately weathered, with siltstone and shale seams (continued)	89	45	1.7		
9.3						
563.0	SILTSTONE: Dark gray to black, soft, moderately to highly weathered, with black shale partings					
2.5	inch CORE LOSS					
561.3						
561.0	COAL: Black, sub-bituminous					
-20						
559.5	SHALE: Brownish-gray, soft, moderately weathered					
559.1						
559.5	SANDY SHALE: Brownish-gray, moderately hard, slightly to moderately weathered					
559.1	SANDSTONE: Gray and black, fine to medium grained, cross-bedded, moderately hard, rare coal fragments				69.0	3.8
	With shale seams					
2		85	48	2.1		
-25	13 inch CORE LOSS					6.6
554.3						
553.7	SANDY SHALE: Brownish-gray, moderately hard, slightly to moderately weathered					
553.1	SANDSTONE: Gray and black, fine to medium grained, cross-bedded, moderately hard					
551.9	SHALE: Brownish-gray, moderately soft, some sand					9.8
-30	5 inch CORE LOSS					
	ARGILLACEOUS SANDSTONE: Gray and black, fine to medium grained, cross-bedded, moderately hard, with shale lenses, rare coal fragments					
	No cross-bedding					23.0
						3.2
						3.6
548.2	SILTSTONE: Light gray, soft, moderately to highly weathered, trace sand					
547.8	SANDSTONE: Gray and black, fine to medium grained, cross-bedded, moderately hard					11.0
3		67	55	3.4		
-35						
						1551.0
						2.2

Color pictures of the cores Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)



Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

### ROCK CORE LOG

Date 8/27-28/2012

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 1, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM.

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-809  
Station 581+40.76  
Offset 65.0 ft RT  
Ground Surface Elev. 580.8 ft

DEPTH (ft)	ROCK DESCRIPTION	RECOVERY (%)	COVERAGE (%)	CORE DIAMETER (in)	STRENGTH (tsf)	MOISTURE (%)
	SANDSTONE: Gray and black, fine to medium grained, cross-bedded, moderately hard (continued)					
542.8						
542.2	CONGLOMERATE: Gray, maroon, greenish-gray, siltstone and shale gravels in a sandstone matrix, moderately hard					
-40	CORE LOSS					
539.3						
538.0	SANDSTONE: Gray and black, fine to medium grained, cross-bedded, moderately hard					
538.1	SILTSTONE: Grayish-green, moderately hard, slightly weathered, some sand					
537.1	SHALE: Grayish-green, soft to moderately soft, moderately weathered					
4	CLAYEY SHALE: Gray, soft, highly weathered	100	68	2.8		
-45						
						1.0
						20.0
						13.7
533.8						
533.4	SILTSTONE: Light gray, moderately hard, slightly weathered, some sand					
	SANDSTONE: Gray and tan, fine grained, moderately hard to hard, slightly weathered, trace iron stains					
						509.0
						5.7
5		95	83	3.7		
-55						
						7.6

Color pictures of the cores Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)

FILE NAME = I:\DOT\5606\_HEI\_IL336\CADD\_Structure\East Fork Lemoine River\NORTHBOUND\NBboring01.dgn



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PLOT DATE = 1/15/2015

DESIGNED - JMB  
CHECKED - ACB  
DRAWN - RLK  
CHECKED - JMB

REVISED -  
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REVISED -  
REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS  
STRUCTURE NO. 055-0046  
SHEET NO. 49 OF 53 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3KPV;HB(2-6);B,B-1,B-2]	MCDONOUGH	874	409
	SN 055-0046			CONTRACT NO. 68B44
	STA. 583+30.75	ILLINOIS FED. AID PROJECT		



Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

### ROCK CORE LOG

Date 8/27-28/2012

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 1, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM.

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 CORING BARREL TYPE & SIZE NX  
Station 583+84.75

BORING NO. B-809 Core Diameter 1.9 in  
Station 581+40.76 Top of Rock Elev. 567.8 ft  
Offset 65.0 ft RT Begin Core Elev. 565.3 ft  
Ground Surface Elev. 580.8 ft

DEPTH (ft)	REMARKS	RECOVERED (%)	QUANTITY (%)	UNIT WEIGHT (min/ft)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	MOISTURE (%)
0	SANDSTONE: Gray and tan, fine grained, moderately hard to hard, slightly weathered, trace iron stains (continued)					9.9
523.0	SHALE: Dark gray, moderately soft, moderately weathered, some sand					
520.6	ARGILLACEOUS SANDSTONE: Dark gray, fine grained, moderately hard, slightly weathered, slight banding					19.9
519.3	SILTSTONE: Dark gray, moderately hard, slightly weathered					174.0
516.9	Boring terminated at 63.9 ft.					4.4

Color pictures of the cores Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)



Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

### SOIL BORING LOG

Date 8/23-24/2012

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 2, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM.

COUNTY McDonough DRILLING METHOD Diedrich D-90 w/ HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-810  
Station 583+11  
Offset 56.0 ft RT  
Ground Surface Elev. 580.0 ft

DEPTH (ft)	REMARKS	RECOVERED (%)	QUANTITY (%)	UNIT WEIGHT (min/ft)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	MOISTURE (%)
0	No soil sampling performed.					
545.3	SILTSTONE: Gray					
543.3	Borehole continued with rock coring.					

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



Illinois Department of Transportation  
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SCI Engineering, Inc.

### ROCK CORE LOG

Date 8/23-24/2012

ROUTE FAP 407 (IL 336) DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 2, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 CORING BARREL TYPE & SIZE NX  
Station 583+84.75

BORING NO. B-810 Core Diameter 1.9 in  
Station 583+11 Top of Rock Elev. 545.3 ft  
Offset 56.0 ft RT Begin Core Elev. 545.3 ft  
Ground Surface Elev. 580.0 ft

DEPTH (ft)	REMARKS	RECOVERED (%)	QUANTITY (%)	UNIT WEIGHT (min/ft)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	MOISTURE (%)
545.3	CORE LOSS	1	83	63	2.3	
544.8	SHALE: Grayish-green, soft to very soft, moderately to highly weathered, trace sand					12.3
543.8	SANDSTONE: Greenish-gray, fine, moderately hard, with shale partings					
543.4	LIMESTONE: Gray, hard, vuggy, with shale partings and stylolites					
541.9	SILTSTONE: Greenish-gray and tan, hard, top 2 inches are calcareous					
541.3	SHALE: Grayish-green, soft, moderately to highly weathered	2	100	57	2.5	
536.5	SILTSTONE: Dark gray, moderately hard, slightly weathered					17.7
535.1	SANDSTONE: Gray and tan, fine to medium grained, hard, slightly weathered, some iron stains					640.0
535.1						2.5
545.5	SILTSTONE: Gray	3	98	89	2.4	
543.3	Borehole continued with rock coring.					
525.8	SILTSTONE: Dark gray, moderately hard, slightly weathered, some shale partings					4.7
						403.0
						5.3

Color pictures of the cores Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)

FILE NAME = I:\DOT\5606\_HEI\_IL336\CADD\_Structure\East Fork Lemoine River\NORTHBOUND\NBboring01.dgn



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PLOT SCALE = 0.0833 1/ in.  
PLOT DATE = 1/15/2015

DESIGNED - JMB  
CHECKED - ACB  
DRAWN - RLK  
CHECKED - JMB

REVISED -  
REVISED -  
REVISED -  
REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS  
STRUCTURE NO. 055-0046  
SHEET NO. 50 OF 53 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3P]V[HB](2-6)B,B-1,B-2]	MCDONOUGH	874	410
	SN 055-0046			
	STA. 583+30.75	ILLINOIS FED. AID PROJECT		

CONTRACT NO. 68B44



**Illinois Department of Transportation**  
Division of Highways  
SCI Engineering, Inc.

### ROCK CORE LOG

ROUTE FAP 407 (IL 336) DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 2, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 CORING BARREL TYPE & SIZE NX  
Station 583+84.75

BORING NO. B-810 Core Diameter 1.9 in  
Station 583+11 Top of Rock Elev. 545.3 ft  
Offset 56.0 ft RT  
Begin Core Elev. 545.3 ft  
Ground Surface Elev. 580.0 ft

DEPTH (ft)	DEPTH (#)	RECOVERY (%)	ROQ (%)	Q (min/ft)	TI (tsf)	STRENGTH (%)	MOISTURE (%)
524.8							
SHALE: Gray, moderately hard, slightly to moderately weathered							
522.9					341.0	4.4	
SANDSTONE: Gray, fine, hard, slight weathering							
521.3							
ARGILLACEOUS SILTSTONE: Dark gray, moderately hard, slightly weathered, some shale partings							
	4	94	33	5			
						8.7	
					29.0	7.1	
	5	98	38	5.8			
513.5							
SANDSTONE: Gray, fine, hard, slight weathering							
512.5							7.8
ARGILLACEOUS SILTSTONE: Dark gray, moderately hard							
511.3							6.7
Boring terminated at 68.8 ft.							

Color pictures of the cores Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)



**Illinois Department of Transportation**  
Division of Highways  
SCI Engineering, Inc.

### SOIL BORING LOG

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 3, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM, Latitude, Longitude

COUNTY McDonough DRILLING METHOD Diedrich D-90 w/ HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-811  
Station 585+85  
Offset 65.0 ft RT  
Ground Surface Elev. 586.5 ft

DEPTH (ft)	DEPTH (#)	RECOVERY (%)	ROQ (%)	Q (min/ft)	TI (tsf)	STRENGTH (%)	MOISTURE (%)
No soil sampling performed.							
No soil sampling performed. (continued)							
Slow and hard drilling observed.							
Borehole continued with rock coring.							

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



**Illinois Department of Transportation**  
Division of Highways  
SCI Engineering, Inc.

### ROCK CORE LOG

ROUTE FAP 407 (IL 336) DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)

SECTION 55-3 LOCATION Proposed Pier 3, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough CORING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 CORING BARREL TYPE & SIZE NX  
Station 583+84.75

BORING NO. B-811 Core Diameter 1.9 in  
Station 585+85 Top of Rock Elev. 552.5 ft  
Offset 65.0 ft RT  
Begin Core Elev. 552.5 ft  
Ground Surface Elev. 586.5 ft

DEPTH (ft)	DEPTH (#)	RECOVERY (%)	ROQ (%)	Q (min/ft)	TI (tsf)	STRENGTH (%)	MOISTURE (%)
552.5	1	63	9	5.4			
ARGILLACEOUS SANDSTONE: Greenish-gray, soft, highly weathered, with shale seams							
CORE LOSS							
550.5							
ARGILLACEOUS SANDSTONE: Greenish-gray, soft, highly weathered, with shale seams							
549.1							14.3
SILTSTONE: Green and gray, soft, highly weathered, some shale							
LIMESTONE: Gray and greenish-gray, hard, slightly to moderately weathered, with shale inclusions and layers, fractured, conglomeratic							
546.2	2	99	76	4			
CONGLOMERATE: Gray and grayish-green, moderately hard, siltstone and limestone gravels in shale matrix							
543.7							158.0
LIMESTONE: Gray and greenish-gray, hard, slightly to moderately weathered, with shale inclusions and layers, fractured, conglomeratic							
542.1	3	92	64	2.7			
CONGLOMERATE: Gray and grayish-green, moderately hard, siltstone and limestone gravels in shale matrix							
2 inch SHALE seam							
540.3							
SANDSTONE: Greenish-gray, fine, hard to moderately hard, moderately weathered							
539.6							
CORE LOSS							
538.9							
CLAYEY SHALE: Gray, soft, highly weathered							
537.4							17.8
SILTSTONE: Dark gray, moderately hard, slightly weathered, some shale							
536.5							
SANDSTONE: Gray and tan, fine to medium grained, hard, slightly weathered, some iron stains, trace pyrite, trace fossils							
1/4 inch SHALE SEAM							
							4.3
							379.0
							8.3

Color pictures of the cores Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)

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PLOT DATE = 1/15/2015

DESIGNED - JMB  
CHECKED - ACB  
DRAWN - RLK  
CHECKED - JMB

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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SOIL BORING LOGS  
STRUCTURE NO. 055-0046**

SHEET NO. 51 OF 53 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3P]V[HB](2-6)B-B-1[B-2]	MCDONOUGH	874	411
	SN 055-0046	CONTRACT NO. 68B44		
STA. 583+30.75 ILLINOIS FED. AID PROJECT				



**Illinois Department of Transportation**  
Division of Highways  
SCI Engineering, Inc.

### ROCK CORE LOG

Page 3 of 3

ROUTE FAP 407 (IL 336) DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)  
Date 08/30/12

SECTION 55-3 LOCATION Proposed Pier 3, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough DRILLING METHOD Wireline

STRUCT. NO. 055-0046 & 055-0047 CORING BARREL TYPE & SIZE NX  
Station 583+84.75

BORING NO. B-811 Core Diameter 1.9 in  
Station 585+85 Top of Rock Elev. 552.5 ft  
Offset 65.0 ft RT  
Begin Core Elev. 552.5 ft

DEPTH (ft)	RECOVERY (%)	ROQ (%)	CTI (min/ft)	STRENGTH (tsf)	MOISTURE (%)
4	98	96	1.5		
5				264.0	10.2
6					
7					
8					
9					
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100					

Boring terminated at 74.0 ft.  Yes  
Color pictures of the cores  Yes  
Cores will be stored for examination until \_\_\_\_\_  
The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)  
BBS, form 138 (Rev. 8-99)



**Illinois Department of Transportation**  
Division of Highways  
SCI Engineering, Inc.

### SOIL BORING LOG

Page 1 of 1

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY SCI (HHF)  
Date 8/31/12

SECTION 55-3 LOCATION Proposed North Abutment, NE 1/4, SEC. 4, TWP. 5N, RNG. 3W, 4<sup>th</sup> PM

COUNTY McDonough DRILLING METHOD Diedrich D-90 w/ HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-812  
Station 586+57.7  
Offset 65.0 ft RT  
Ground Surface Elev. 588.5 ft

DEPTH (ft)	RECOVERY (%)	ROQ (%)	CTI (min/ft)	STRENGTH (tsf)	MOISTURE (%)
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
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99					
100					

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



**Illinois Department of Transportation**  
Division of Highways  
SCI Engineering, Inc.

### SOIL BORING LOG

Page 1 of 1

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY EK  
Date 11/16/12

SECTION 55-3 LOCATION SEC. 4, TWP. 5 N, RNG. 3 W, 4<sup>th</sup> PM

COUNTY McDonough DRILLING METHOD PA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-901  
Station 580+03  
Offset 130.0 ft RT  
Ground Surface Elev. 581.9 ft

DEPTH (ft)	RECOVERY (%)	ROQ (%)	CTI (min/ft)	STRENGTH (tsf)	MOISTURE (%)
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
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Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

### SOIL BORING LOG

Page 1 of 1

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY EK

SECTION 55-3 LOCATION SEC. 4, TWP. 5 N, RNG. 3 W, 4<sup>th</sup> PM

COUNTY McDonough DRILLING METHOD PA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-902  
Station 580+50  
Offset 140.0 ft RT  
Ground Surface Elev. 582.9 ft (ft) (/6") (tsf) (%)

Soil Description	Depth (ft)	UCS (tsf)	Failure Mode
CLAY: Brown, medium stiff	0 - 3	1.2 P	32
Soft, brown and gray below 3.5 FT	0 - 2	1.0 P	23
	0 - 1	0.5 P	31
Very soft at 8.5 FT	0 - 0	0.0 P	30
SANDY LOAM: Gray, medium dense	570.9		
SHALE: Gray	568.9 - 568.7	16 / 50/3"	18 / 12
Boring terminated at 14.3 ft.	-15		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

### SOIL BORING LOG

Page 1 of 1

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY EK

SECTION 55-3 LOCATION SEC. 4, TWP. 5 N, RNG. 3 W, 4<sup>th</sup> PM

COUNTY McDonough DRILLING METHOD PA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-903  
Station 580+70  
Offset 130.0 ft LT  
Ground Surface Elev. 580.4 ft (ft) (/6") (tsf) (%)

Soil Description	Depth (ft)	UCS (tsf)	Failure Mode
CLAY: Brown, soft to medium stiff	1 - 2	0.9 B	18
	2 - 2	0.5 P	20
Very soft at 5.5 FT	0 - 0	0.0 P	23
SANDY CLAY: Gray, very soft to soft	572.4	0.0 P	27
SHALE: Gray	568.4		
Boring terminated at 13.8 ft.	566.6 / 50/2"		14

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



Illinois Department of Transportation  
Division of Highways  
SCI Engineering, Inc.

### SOIL BORING LOG

Page 1 of 1

ROUTE FAP 407 DESCRIPTION IL 336 Macomb Bypass - East Fork LaMoine River Bridge (Chalmers Twp) LOGGED BY EK

SECTION 55-3 LOCATION SEC. 4, TWP. 5 N, RNG. 3 W, 4<sup>th</sup> PM

COUNTY McDonough DRILLING METHOD PA HAMMER TYPE Automatic

STRUCT. NO. 055-0046 & 055-0047  
Station 583+84.75

BORING NO. B-904  
Station 581+08  
Offset 175.0 ft LT  
Ground Surface Elev. 579.7 ft (ft) (/6") (tsf) (%)

Soil Description	Depth (ft)	UCS (tsf)	Failure Mode
CLAY: Brown, soft to medium stiff	1 - 2	1.0 P	19
	2 - 2	1.0 P	23
CLAY: Brown-gray, very soft	574.2	0.0 P	25
SANDY CLAY: Gray, soft to medium stiff	570.7	0.0 P	28
SHALE: Gray	566.7		
Boring terminated at 14.5 ft.	565.2 / 50/1'		16

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

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CHECKED - ACB  
DRAWN - RLK  
CHECKED - JMB

REVISED -  
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

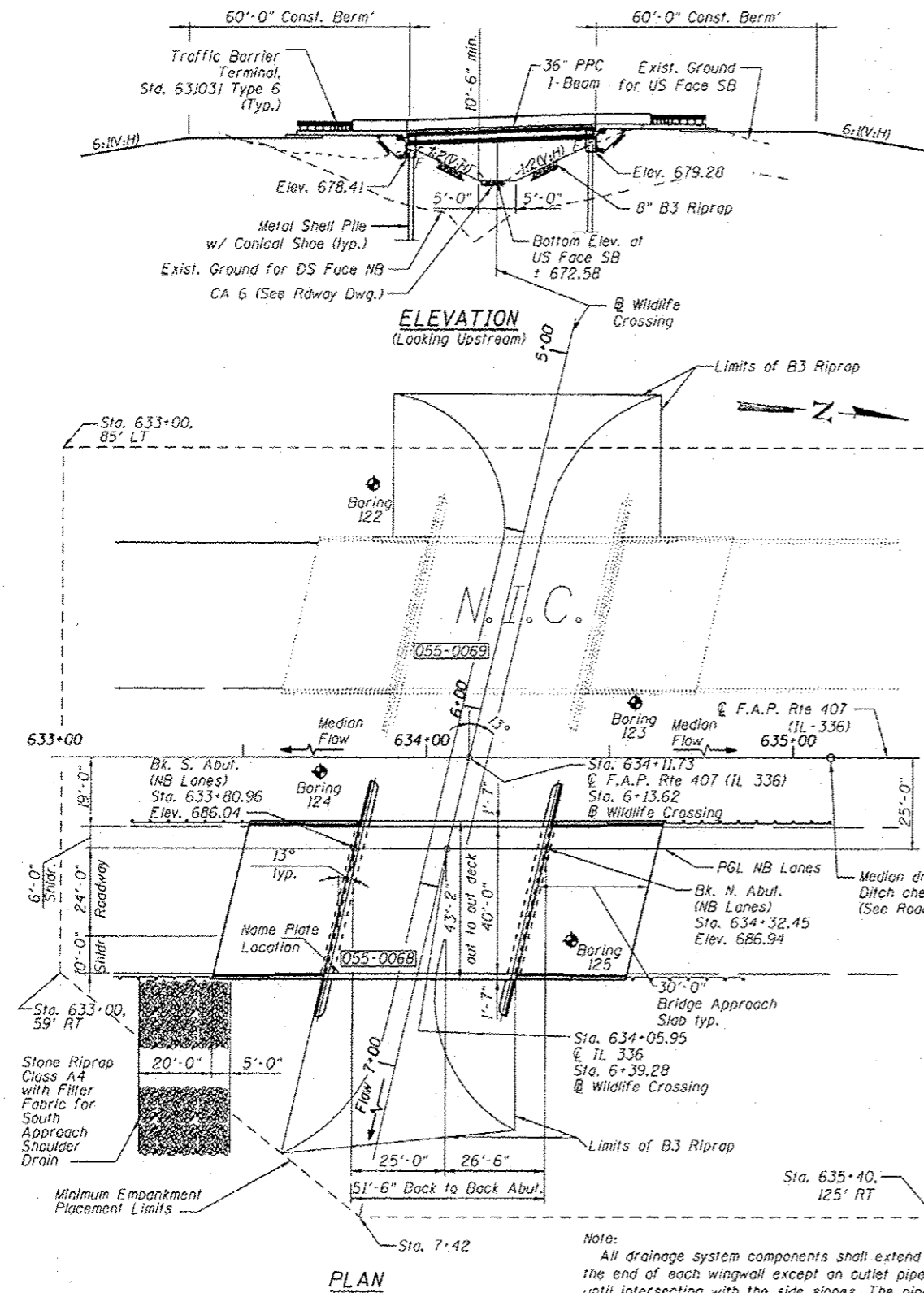
SOIL BORING LOGS  
STRUCTURE NO. 055-0046

SHEET NO. 53 OF 53 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV;HB[2-6];B,B-1,B-2]	MCDONOUGH	874	413
SN 055-0046		CONTRACT NO. 68B44		
STA. 583+30.75		ILLINOIS FED. AID PROJECT		

Bench Mark: BM HEI 14: RR Spike in a power pole on the north side of 1250N (Adams St.), located 30' LT of Sta. 1005+48, Elevation 693.68.

Notes: 1). Drainage flows are minimal through the natural ravine that is serving as the path for the Wildlife Crossing.  
Existing Structure: None



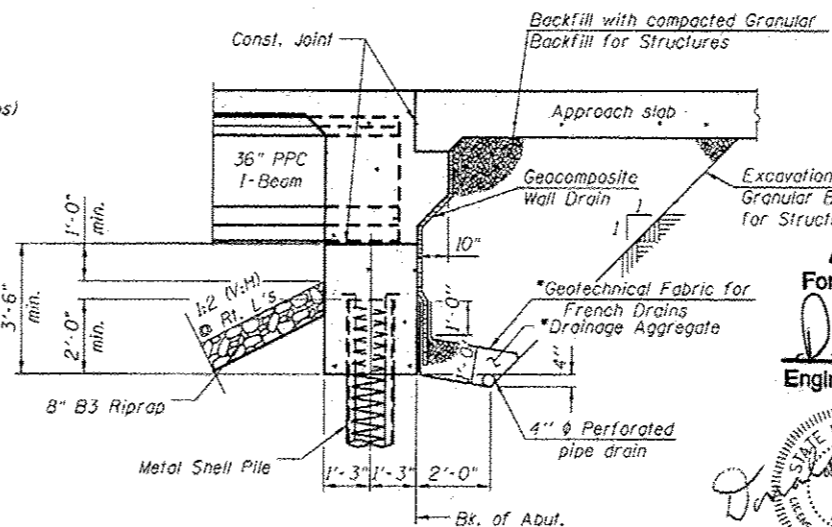
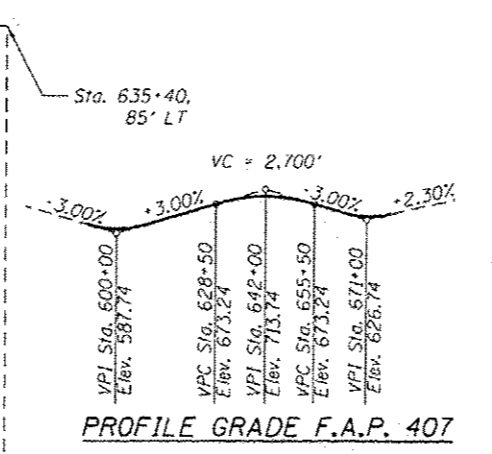
**LOADING HL 93**  
Allow 50#/sq. ft. for future wearing surface.

**DESIGN SPECIFICATIONS**  
2010 AASHTO LRFD Bridge Design Specifications 5th Edition with 2010 Interims

**DESIGN STRESSES**  
**FIELD UNITS**  
 $f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (Reinforcement)

**PRECAST PRESTRESSED UNITS**  
 $f'_c = 6,000$  psi  
 $f'_{cl} = 5,000$  psi  
 $f_{pu} = 270$  ksi ( $1/2$ " low lax. strands)  
 $f_{psi} = 202.5$  ksi ( $1/2$ " low lax. strand)

**SEISMIC DATA**  
Seismic Performance Zone (SPZ) = 1  
Design Spectral Acceleration at 1.0 sec. ( $S_{D1}$ ) = 0.11g  
Design Spectral Acceleration at 0.2 sec. ( $S_{D0.2}$ ) = 0.17g  
Soil Site Class = D



**INDEX OF SHEETS**

- 01 General Plan and Elevation
- 02-03 Top of Slab Elevations
- 04-05 Top of Approach Slab Elevations
- 06 Superstructure Plan and Cross Section
- 07 Superstructure Details
- 08 Diaphragm Details
- 08A Concrete Parapet Slipform Option
- 09-10 Bridge Approach Slab Details
- 11 Framing Plan
- 12 36" PPC I-Beam
- 13 36" PPC I-Beam Details
- 14 South Abutment, SN 055-0068
- 15 North Abutment, SN 055-0068
- 16 Bar Splicer Assembly Details
- 17 Metal Shell Pile Details
- 18-19 Soil Boring Profiles

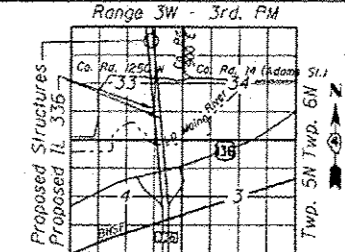
**GENERAL NOTES**

Reinforcement bars designated (E) shall be epoxy coated.  
Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.  
The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.  
This contract is for the construction of SN 055-0068 (NB) only. SN 055-0069 (SB) is to be built in a future contract and is shown for information only.

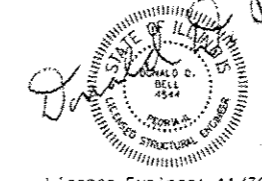
**NAME PLATE**  
See Std. 515001

**S.N. 055-0068 TOTAL BILL OF MATERIALS**

Item	Unit	Total		
		SUPER	SUB	
STONE RIPRAP, CLASS A4	SQ YD		149	149
STONE RIPRAP, CLASS B3	SQ YD		1,318	1,318
FILTER FABRIC	SQ YD		149	149
STRUCTURE EXCAVATION	CU YD		232	232
CONCRETE STRUCTURES	CU YD		65.6	65.6
CONCRETE SUPERSTRUCTURE	CU YD	225.0		225.0
BRIDGE DECK GROOVING	SQ YD		479	479
FURNISHING AND ERECTING PRECAST PRESTRESSED CONCRETE I-BEAMS, 36 IN.	FOOT	301.5		301.5
REINFORCEMENT BARS, EPOXY COATED	POUND	48,460	12,560	61,020
BAR SPlicERS	EACH		88	88
FURNISHING METAL SHELL PILES 14" X 0.312"	FOOT		256	256
DRIVING PILES	FOOT		256	256
TEST PILE METAL SHELLS	EACH		1	1
PILE SHOES	EACH		12	12
NAME PLATES	EACH	1		1
GEOCOMPOSITE WALL DRAIN	SQ YD		90	90
GRANULAR BACKFILL FOR STRUCTURES	CU YD		146	146
PIPE UNDERDRAINS FOR STRUCTURES 4"	FOOT		170	170
PROTECTIVE COAT	SQ YD	564		564



**APPROVED**  
For Structural Adequacy Only  
D. Carl Perry  
Engineer of Bridges & Structures



**GENERAL PLAN & ELEVATION**  
F.A.P. 407 (ILLINOIS 336)-SECTION 55-3  
OVER WILDLIFE CROSSING #1  
McDONOUGH COUNTY  
STATION 634+11.73  
STRUCTURE NO. 055-0068

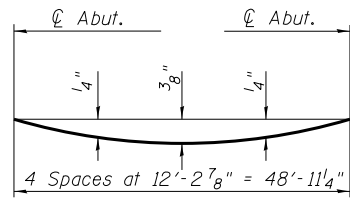
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Date Signed: 4-16-15



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	DRAWN: CM	REVISED:
PLOT DATE: 4/16/2015	CHECKED: JB	REVISED:

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

F.A.P. RTE. 407	SECTION 55C3PV1B12-61B-B-1B-211	COUNTY McDONOUGH	TOTAL SHEETS 874	SHEET NO. 1 OF 19 SHEETS
CONTRACT NO. 68844			ILLINOIS FED. AID PROJECT	

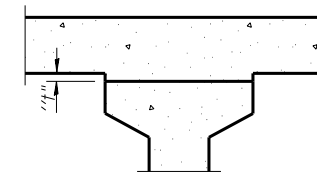


**DEAD LOAD DEFLECTION DIAGRAM**

(Includes weight of concrete, excluding beams).

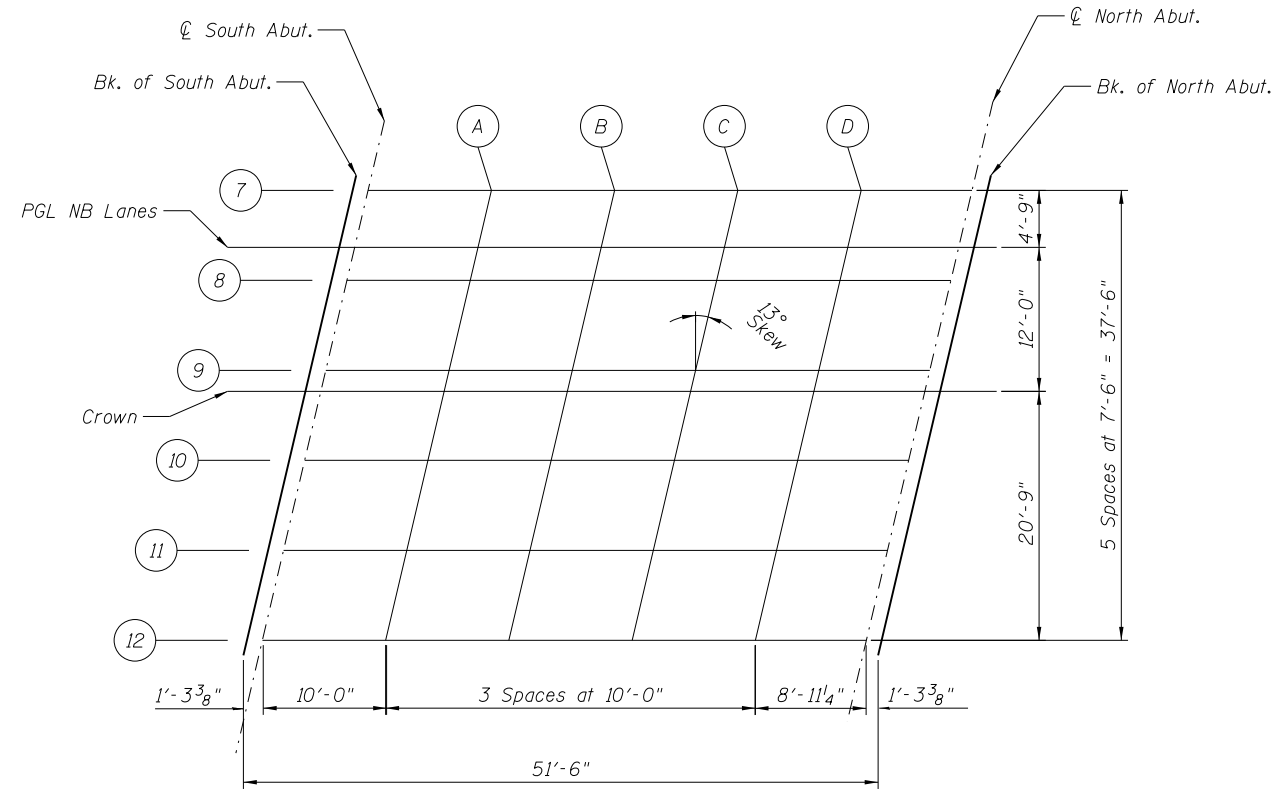
**Note:**

The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown below.

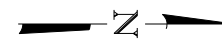


To determine "t": After all precast prestressed beams have been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflections" shown below, minus slab thickness, equals the fillet heights "t" above top flanges of beams.

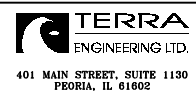
**FILLET HEIGHTS**



**PLAN**  
**055-0068**



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

**TOP OF SLAB ELEVATIONS**  
**STRUCTURE NO. 055-0068**

SHEET NO. 2 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV[HB(2-6)]B,B-1,B-2]	McDONOUGH	874	415
CONTRACT NO. 68B44				

ILLINOIS FED. AID PROJECT

**GIRDER 7**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
BK. S. ABUT	633+82.06	4.75 Lt	685.96	685.96
CL. BRG. S. ABUT.	633+83.34	4.75 Lt	685.98	685.98
A	633+93.34	4.75 Lt	686.16	686.18
B	634+03.34	4.75 Lt	686.34	686.38
C	634+13.34	4.75 Lt	686.52	686.55
D	634+23.34	4.75 Lt	686.69	686.71
CL BRG. N. ABUT.	634+32.27	4.75 Lt	686.84	686.84
BK. N. ABUT.	634+33.55	4.75 Lt	686.86	686.86

**PROFILE GRADE**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
BK. S. ABUT	633+80.96	0.00	686.04	686.04
CL. BRG. S. ABUT.	633+82.24	0.00	686.06	686.06
A	633+92.24	0.00	686.24	686.26
B	634+02.24	0.00	686.42	686.46
C	634+12.24	0.00	686.59	686.63
D	634+22.24	0.00	686.77	686.79
CL BRG. N. ABUT.	634+31.17	0.00	686.92	686.92
BK. N. ABUT.	634+32.45	0.00	686.94	686.94

**GIRDER 8**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
BK. S. ABUT	633+80.33	2.75 Rt	686.07	686.07
CL. BRG. S. ABUT.	633+81.61	2.75 Rt	686.09	686.09
A	633+91.61	2.75 Rt	686.27	686.30
B	634+01.61	2.75 Rt	686.45	686.49
C	634+11.61	2.75 Rt	686.63	686.66
D	634+21.61	2.75 Rt	686.80	686.82
CL BRG. N. ABUT.	634+30.54	2.75 Rt	686.95	686.95
BK. N. ABUT.	634+31.82	2.75 Rt	686.98	686.98

**GIRDER 9**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
BK. S. ABUT	633+78.59	10.25 Rt	686.15	686.15
CL. BRG. S. ABUT.	633+79.87	10.25 Rt	686.18	686.18
A	633+89.87	10.25 Rt	686.36	686.38
B	633+99.87	10.25 Rt	686.54	686.57
C	634+09.87	10.25 Rt	686.71	686.75
D	634+19.87	10.25 Rt	686.89	686.91
CL BRG. N. ABUT.	634+28.80	10.25 Rt	687.04	687.04
BK. N. ABUT.	634+30.08	10.25 Rt	687.06	687.06

**CROWN**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
BK. S. ABUT	633+78.19	12.00 Rt	686.17	686.17
CL. BRG. S. ABUT.	633+79.47	12.00 Rt	686.20	686.20
A	633+89.47	12.00 Rt	686.38	686.40
B	633+99.47	12.00 Rt	686.56	686.59
C	634+09.47	12.00 Rt	686.73	686.77
D	634+19.47	12.00 Rt	686.91	686.93
CL BRG. N. ABUT.	634+28.40	12.00 Rt	687.06	687.06
BK. N. ABUT.	634+29.68	12.00 Rt	687.08	687.08

**GIRDER 10**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
BK. S. ABUT	633+76.86	17.75 Rt	686.06	686.06
CL. BRG. S. ABUT.	633+78.14	17.75 Rt	686.08	686.08
A	633+88.14	17.75 Rt	686.26	686.29
B	633+98.14	17.75 Rt	686.44	686.48
C	634+08.14	17.75 Rt	686.62	686.66
D	634+18.14	17.75 Rt	686.80	686.82
CL BRG. N. ABUT.	634+27.07	17.75 Rt	686.95	686.95
BK. N. ABUT.	634+28.35	17.75 Rt	686.97	686.97

**GIRDER 11**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
BK. S. ABUT	633+75.13	25.25 Rt	685.90	685.90
CL. BRG. S. ABUT.	633+76.41	25.25 Rt	685.93	685.93
A	633+86.41	25.25 Rt	686.11	686.13
B	633+96.41	25.25 Rt	686.29	686.33
C	634+06.41	25.25 Rt	686.47	686.50
D	634+16.41	25.25 Rt	686.64	686.66
CL BRG. N. ABUT.	634+25.34	25.25 Rt	686.80	686.80
BK. N. ABUT.	634+26.62	25.25 Rt	686.82	686.82

**GIRDER 12**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted for Dead Load Deflection
BK. S. ABUT	633+73.40	32.75 Rt	685.72	685.72
CL. BRG. S. ABUT.	633+74.68	32.75 Rt	685.74	685.74
A	633+84.68	32.75 Rt	685.92	685.95
B	633+94.68	32.75 Rt	686.10	686.14
C	634+04.68	32.75 Rt	686.28	686.32
D	634+14.68	32.75 Rt	686.46	686.48
CL BRG. N. ABUT.	634+23.61	32.75 Rt	686.61	686.61
BK. N. ABUT.	634+24.89	32.75 Rt	686.63	686.63

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STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

TOP OF SLAB ELEVATIONS  
 STRUCTURE NO. 055-0068

SHEET NO. 3 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV)+B(2-6)+B-1,B-2]	McDONOUGH	874	416
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	



**WEST EDGE OF SHOULDER**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Pav't	633+52.35	6.00 Lt	685.38
A1	633+62.35	6.00 Lt	685.57
A2	633+72.35	6.00 Lt	685.75
N. End of S. Appr. Pav't	633+82.35	6.00 Lt	685.94

**PROFILE GRADE & WEST EDGE OF PAVEMENT**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Pav't	633+50.96	0.00	685.48
A1	633+60.96	0.00	685.67
A2	633+70.96	0.00	685.85
N. End of S. Appr. Pav't	633+80.96	0.00	686.04

**CROWN**

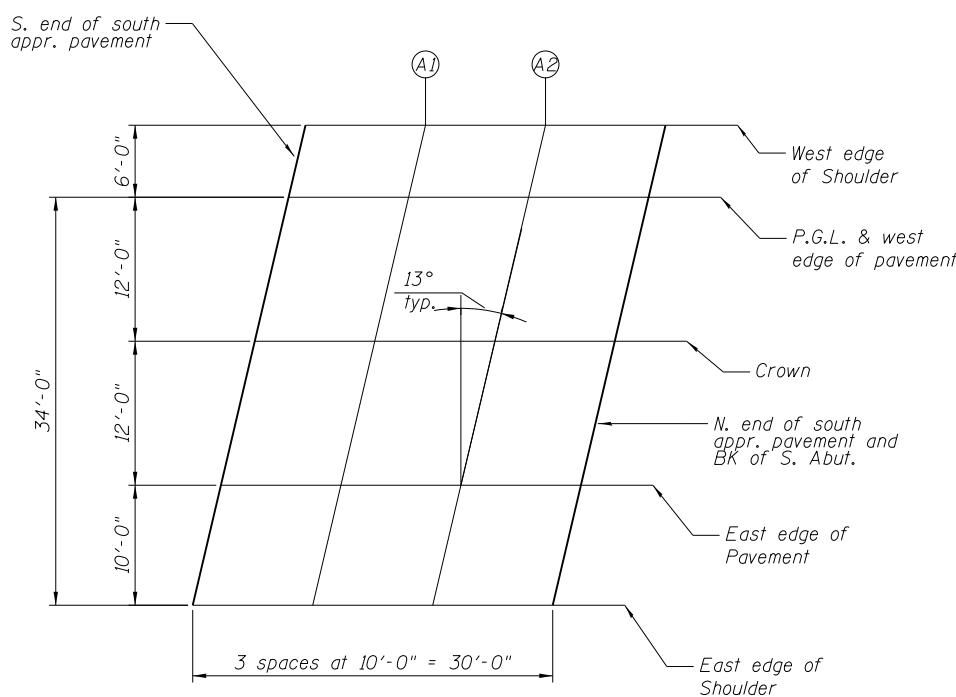
Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Pav't	633+48.19	12.00 Rt	685.62
A1	633+58.19	12.00 Rt	685.80
A2	633+68.19	12.00 Rt	685.99
N. End of S. Appr. Pav't	633+78.19	12.00 Rt	686.17

**EAST EDGE OF PAVEMENT**

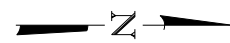
Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Pav't	633+45.42	24.00 Rt	685.38
A1	633+55.42	24.00 Rt	685.56
A2	633+65.42	24.00 Rt	685.75
N. End of S. Appr. Pav't	633+75.42	24.00 Rt	685.94

**EAST EDGE OF SHOULDER**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Pav't	633+43.11	34.00 Rt	685.12
A1	633+53.11	34.00 Rt	685.31
A2	633+63.11	34.00 Rt	685.50
N. End of S. Appr. Pav't	633+73.11	34.00 Rt	685.68



**PLAN**



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**WEST EDGE OF SHOULDER**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Pav't	634+33.84	6.00 Lt	686.84
A1	634+43.84	6.00 Lt	687.01
A2	634+53.84	6.00 Lt	687.18
N. End of N. Appr. Pav't	634+63.84	6.00 Lt	687.34

**PROFILE GRADE & WEST EDGE OF PAVEMENT**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Pav't	634+32.45	0.00	686.94
A1	634+42.45	0.00	687.11
A2	634+52.45	0.00	687.28
N. End of N. Appr. Pav't	634+62.45	0.00	687.45

**CROWN**

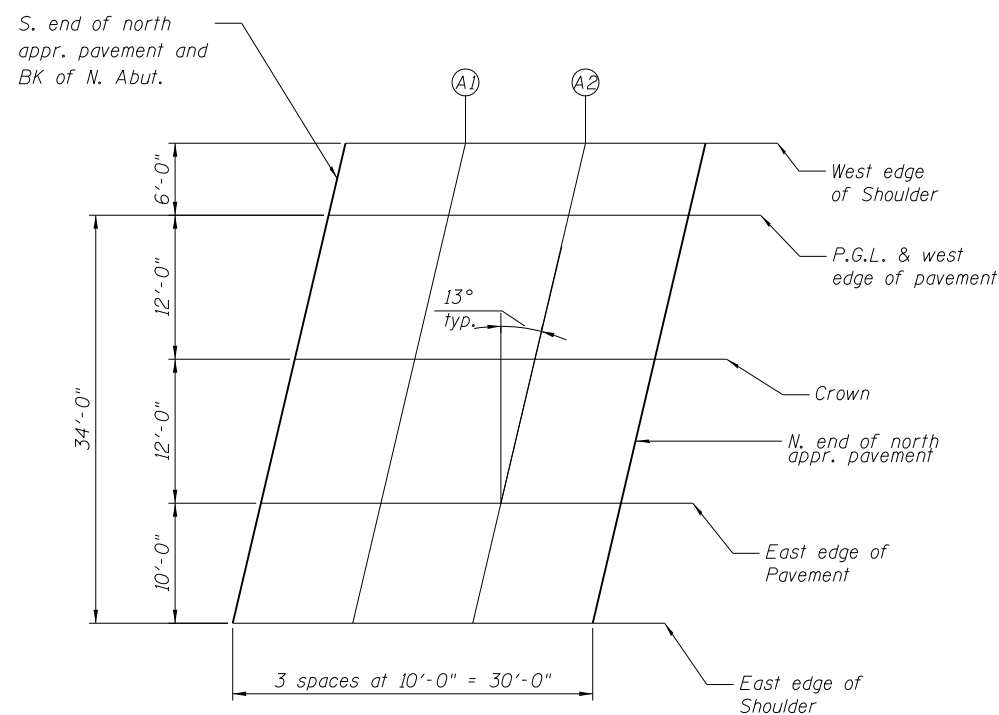
Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Pav't	634+29.68	12.00 Rt	687.08
A1	634+39.68	12.00 Rt	687.25
A2	634+49.68	12.00 Rt	687.42
N. End of N. Appr. Pav't	634+59.68	12.00 Rt	687.59

**EAST EDGE OF PAVEMENT**

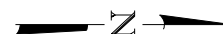
Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Pav't	634+26.91	24.00 Rt	686.85
A1	634+36.91	24.00 Rt	687.02
A2	634+46.91	24.00 Rt	687.19
N. End of N. Appr. Pav't	634+56.91	24.00 Rt	687.35

**EAST EDGE OF SHOULDER**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Pav't	634+24.60	34.00 Rt	686.60
A1	634+34.60	34.00 Rt	686.77
A2	634+44.60	34.00 Rt	686.94
N. End of N. Appr. Pav't	634+54.60	34.00 Rt	687.11



PLAN

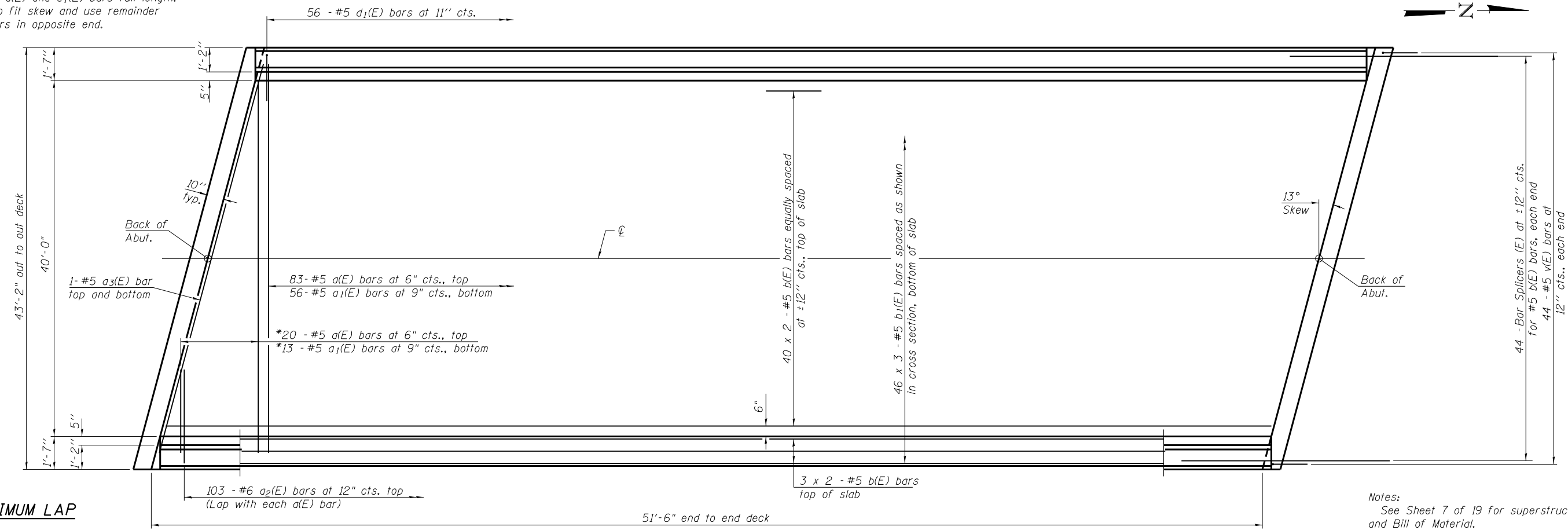
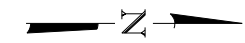


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F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV+HB(2-6);B,B-1,B-2)]	McDONOUGH	874	418
				CONTRACT NO. 68B44
ILLINOIS FED. AID PROJECT				

\* Order a(E) and a<sub>1</sub>(E) bars full length.  
Cut to fit skew and use remainder  
of bars in opposite end.



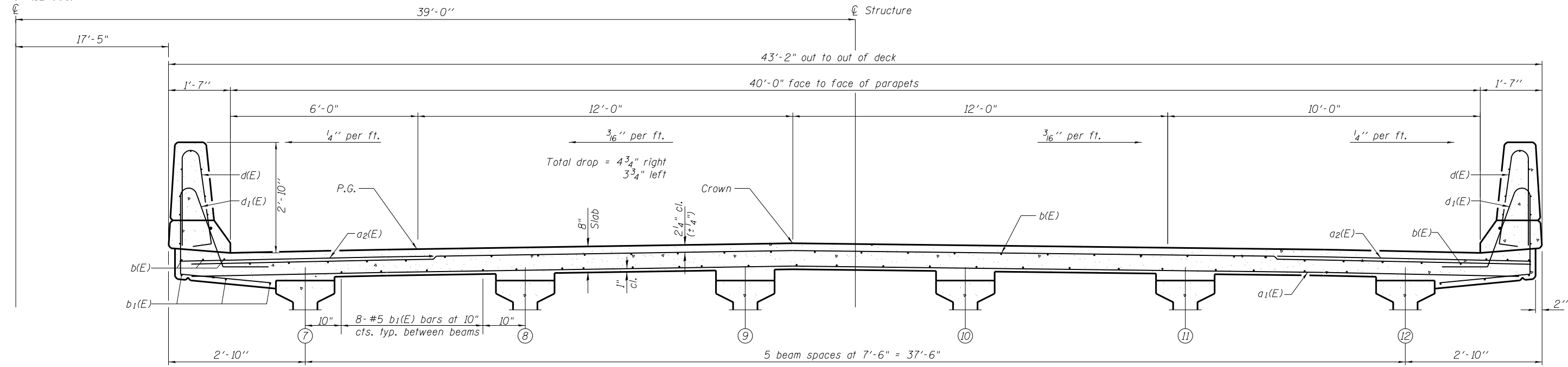
**MINIMUM LAP**

#5 bar = 3'-3"

Notes:  
See Sheet 7 of 19 for superstructure details  
and Bill of Material.  
Bars indicated thus 20 x 3-#5 etc. indicates  
20 lines of bars with 3 lengths per line.  
See Sheet 7 of 19 for parapet reinforcement.

**PLAN**

FAP Rte 407 (IL 336)



**TYPICAL CROSS SECTION**  
(Looking North)



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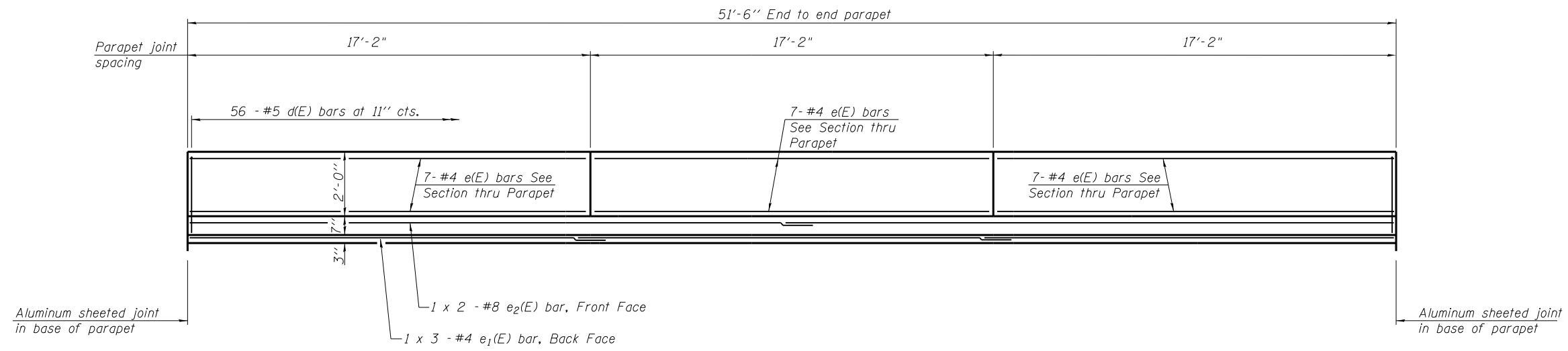
**SUPERSTRUCTURE**  
**STRUCTURE NO. 055-0068**

SHEET NO. 6 OF 19 SHEETS

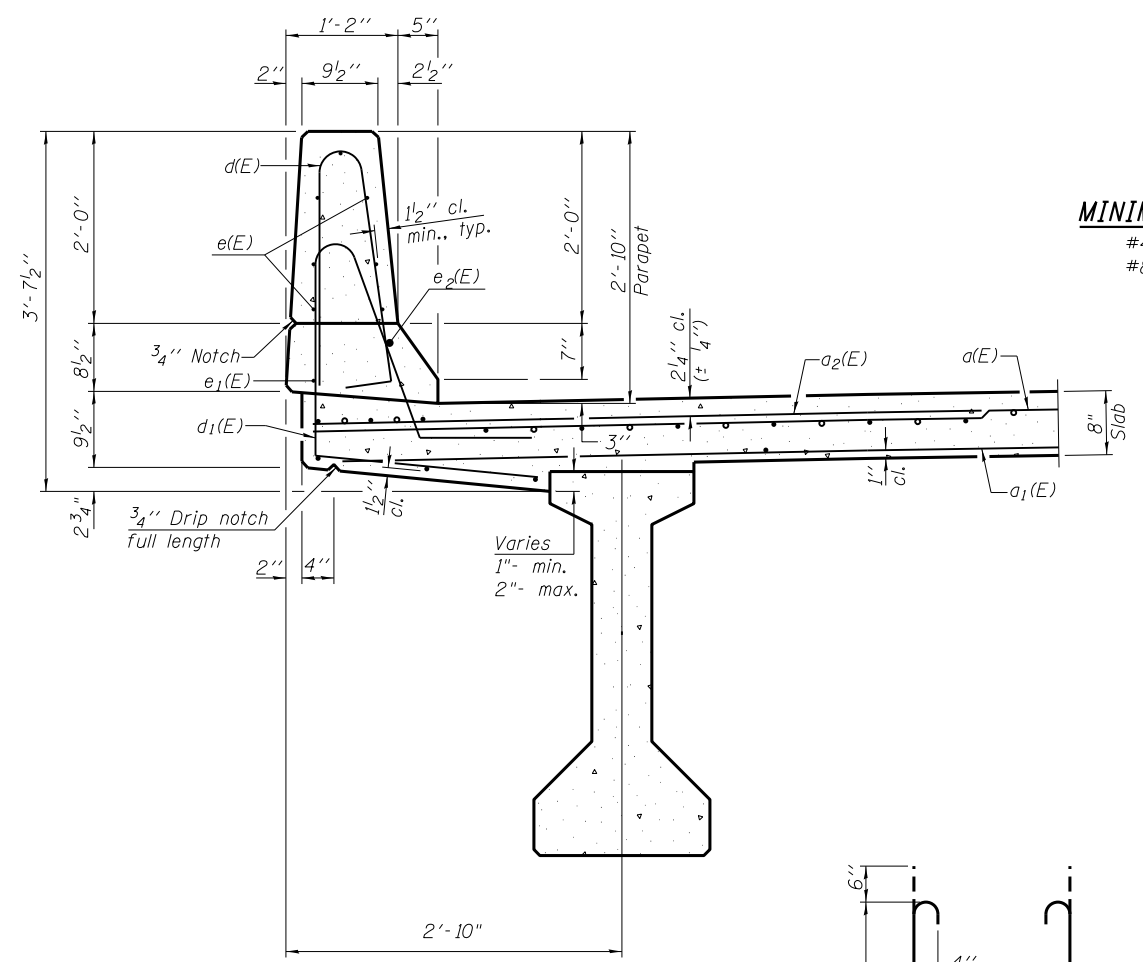
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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			CONTRACT NO. 68B44	

ILLINOIS FED. AID PROJECT

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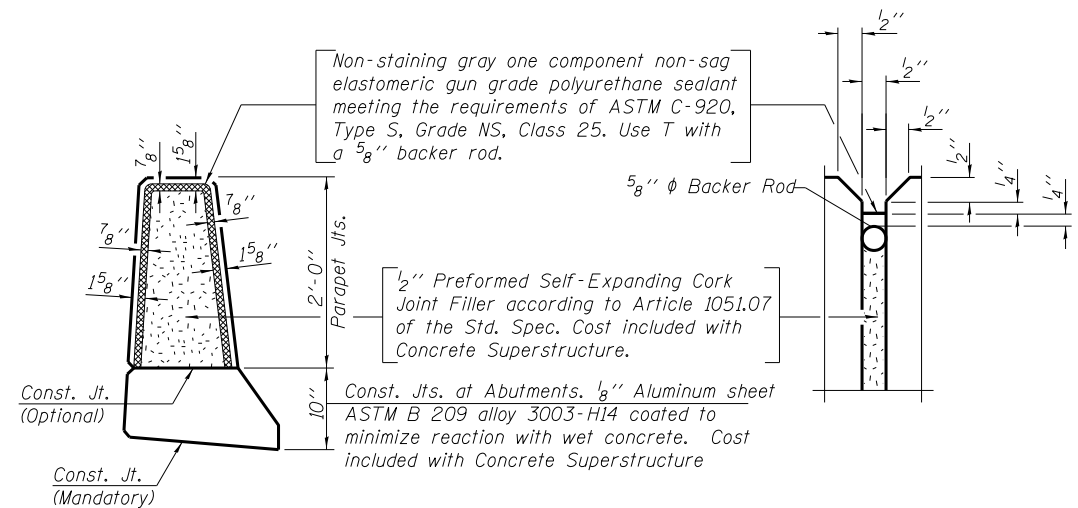
**INSIDE ELEVATION OF PARAPET**



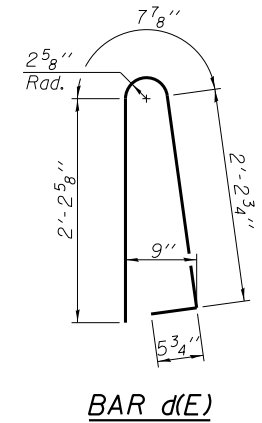
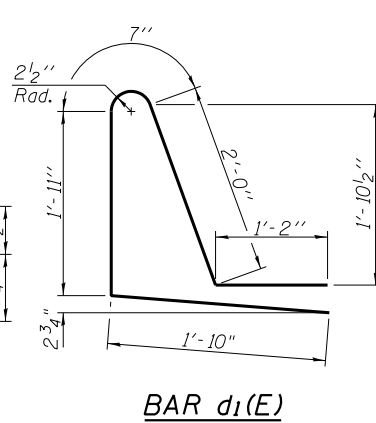
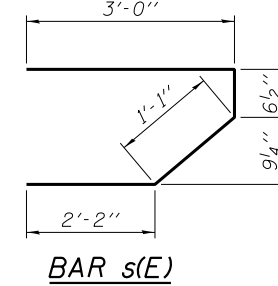
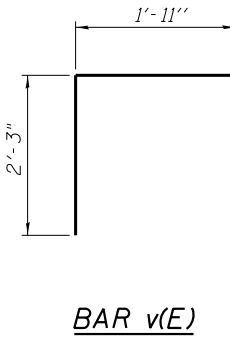
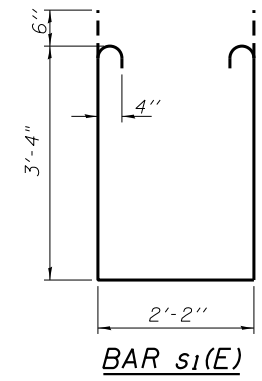
**SECTION THRU PARAPET**

**MINIMUM BAR LAP**

#4 bar = 2'-7"  
#8 bar = 6'-9"



**PARAPET JOINT DETAILS**



**SUPERSTRUCTURE BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a(E)	103	#5	42'-6"	—
a1(E)	69	#5	41'-10"	—
a2(E)	206	#6	6'-6"	—
a3(E)	4	#5	43'-7"	—
b(E)	92	#5	27'-3"	—
b1(E)	138	#5	19'-3"	—
d(E)	112	#5	5'-7"	⌒
d1(E)	112	#5	7'-6"	⌒
e(E)	42	#4	16'-10"	—
e1(E)	6	#4	18'-9"	—
e2(E)	4	#8	29'-0"	—
m(E)	10	#6	44'-0"	—
m1(E)	16	#6	11'-2"	—
m2(E)	10	#6	5'-10"	—
m3(E)	4	#6	1'-9"	—
m4(E)	8	#6	8'-3"	—
s(E)	82	#5	6'-10"	⌒
s1(E)	92	#4	9'-10"	⌒
v(E)	88	#5	4'-2"	⌒
Reinforcement Bars, Epoxy Coated		Lbs.	20,240	
Concrete Superstructure		Cu. Yds.	90.1	
Protective Coat		Sq.Yd.	564	
Bridge Deck Grooving		Sq.Yd.	217	

Bars indicated thus 2 x 5-#5 etc. indicates 2 lines of bars with 5 lengths per line.

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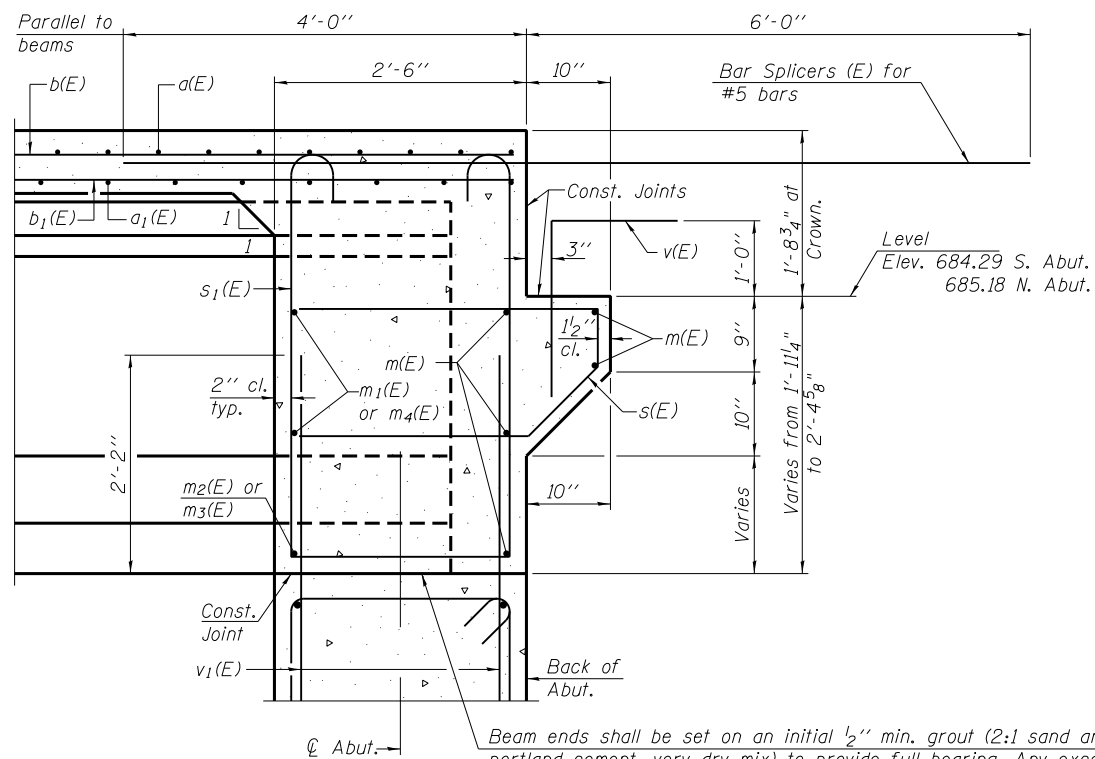
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SUPERSTRUCTURE DETAILS  
STRUCTURE NO. 055-0068**

SHEET NO. 7 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV[HB](2-6);B-B-1,B-2]	McDONOUGH	874	420
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	



**SECTION A-A**

Dimensions at right angles to abutment, except as shown.

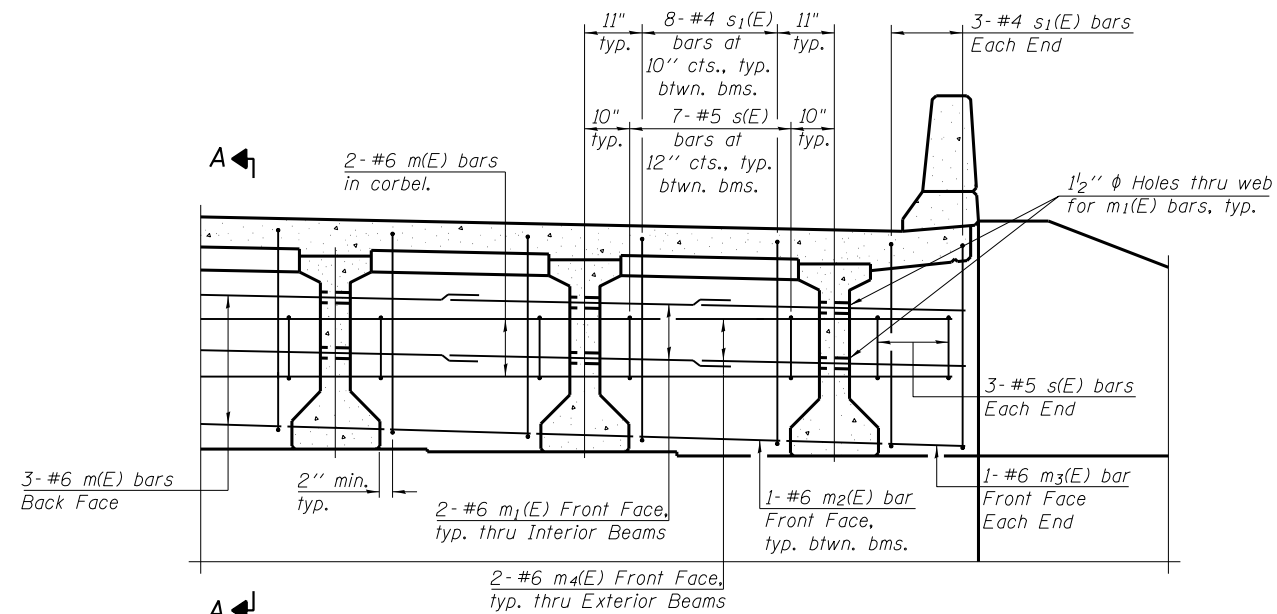
**Notes:**

Reinforcement bars in diaphragm are billed with superstructure on sheet 7 of 19.

Concrete in diaphragm is included with Concrete Superstructure on sheet 7 of 19.

For details of bars s(E), s1(E) and s2(E) see sheet 7 of 19.

The s(E), s1(E) and s2(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams.



**DIAPHRAGM ELEVATION AT ABUTMENT**

**MIN. BAR LAP**

#6 bar = 3'-4"

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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

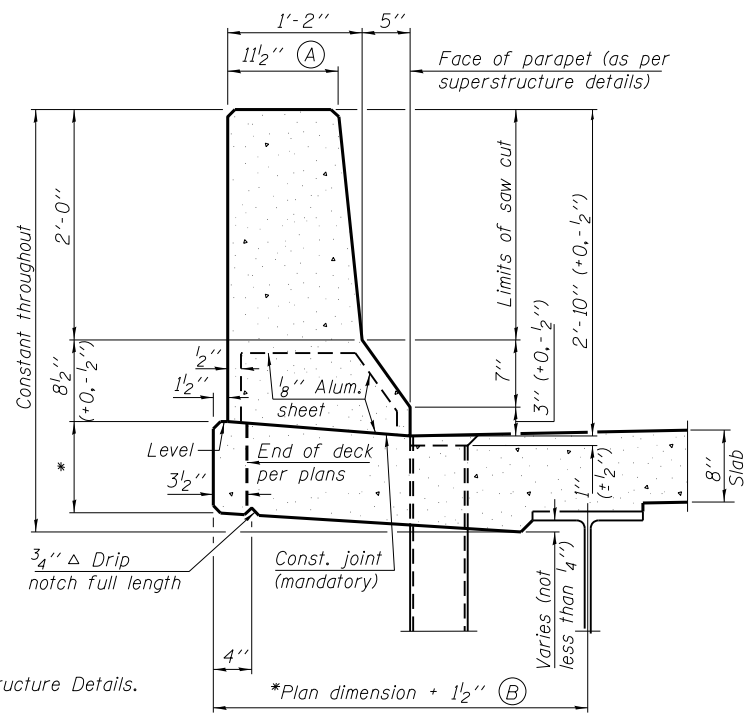
**DIAPHRAGM DETAILS  
STRUCTURE NO. 055-0068**

SHEET NO. 8 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV;HB(2-6);B,B-1,B-2]	McDONOUGH	874	421
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	

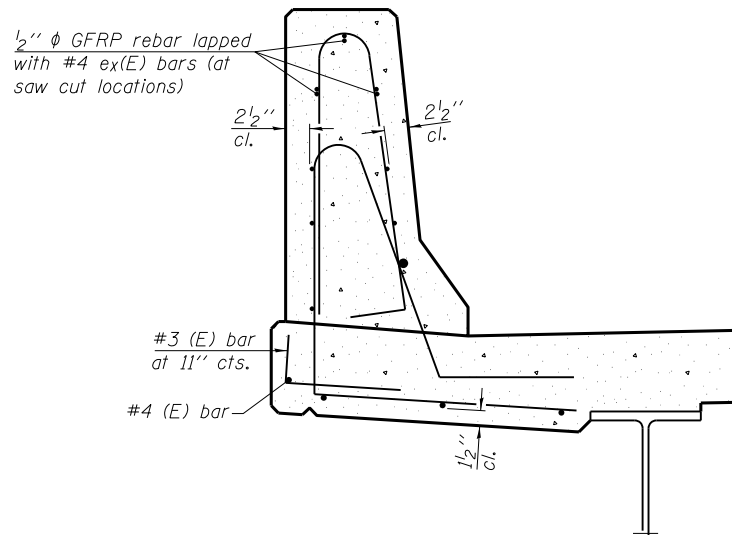
**GENERAL NOTES**

All dimensions shall remain the same as shown on superstructure details, except dimensions A and B which are to be revised as shown to provide additional clearance. Additional concrete needed to revise dimension A and B = 0.0165 cu. yds./ft. for 34" parapet or = 0.0223 cu. yds./ft. for 42" parapet. Place aluminum sheet in curb portion at and near piers. Full thickness saw cut at all joint locations in lieu of cork joint filler. Steel superstructure shown. Other superstructure types similar.



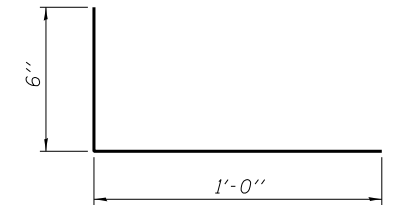
**34" F SHAPE PARAPET SECTION**  
(Showing dimensions)

\*See Superstructure Details.

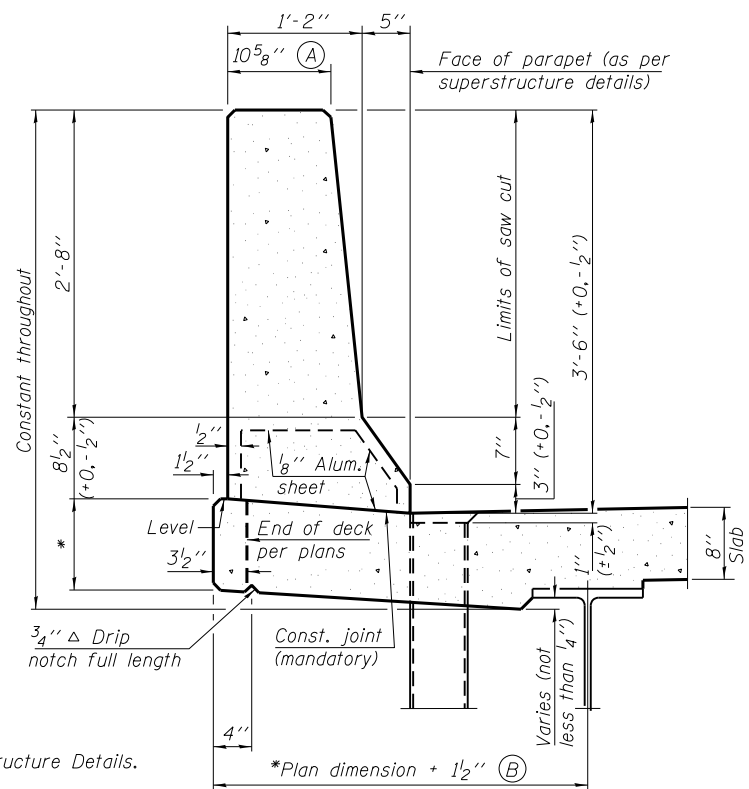


**SECTION**

(34" parapet shown - 42" parapet similar)  
(Showing reinforcement clearances for slip forming and additional reinforcement bars)

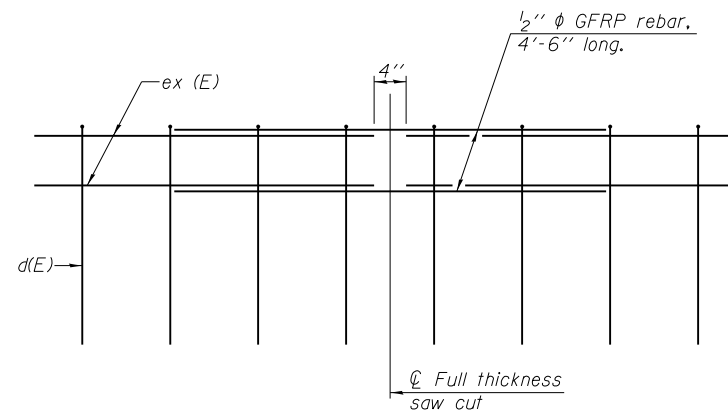


**#3 (E) BAR**



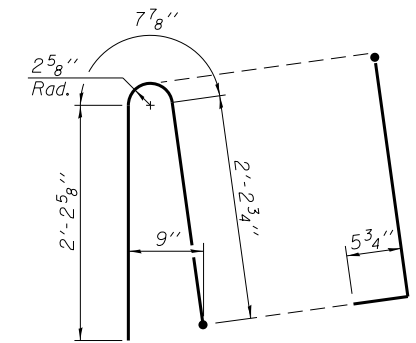
**42" F SHAPE PARAPET SECTION**  
(Showing dimensions)

\*See Superstructure Details.



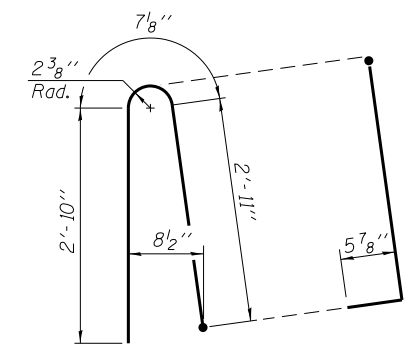
**GFRP REBAR STIFFENING DETAIL**

(Place as shown in parapet section at each parapet joint location.)



**ALTERNATE BAR d(E)**

(For 34" parapet when conduit is present)



**ALTERNATE BAR d(E)**

(For 42" parapet when conduit is present)

SFP 34-42

8-16-12



USER NAME = ddb	DESIGNED - DB	REVISED -
	CHECKED - OY	REVISED -
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PLOT DATE = 1/23/2015	CHECKED - OY	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**CONCRETE PARAPET SLIPFORMING OPTION  
STRUCTURE NO. 055-0068**

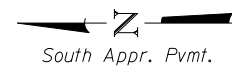
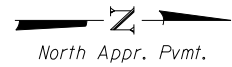
SHEET NO. 8A OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV)HB(2-6)B,B-1,B-2]	McDONOUGH	874	421A
CONTRACT NO. 68B44				

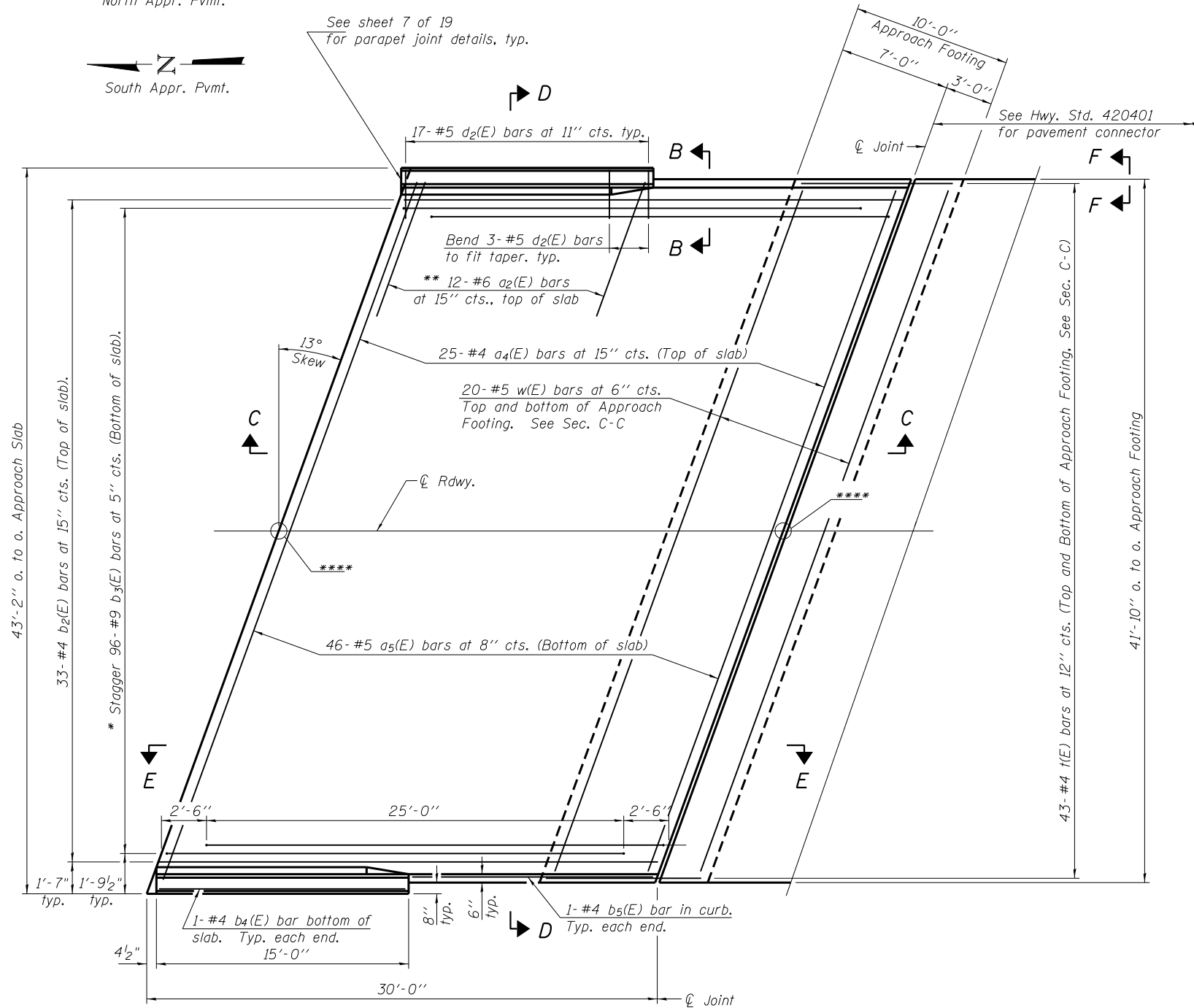
ILLINOIS FED. AID PROJECT

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Notes:  
See sheet 10 of 19 for Sections C-C & D-D and View E-E.  
a<sub>4</sub>(E) and a<sub>5</sub>(E) bar spacings measured along  $\varnothing$  Rdwy.

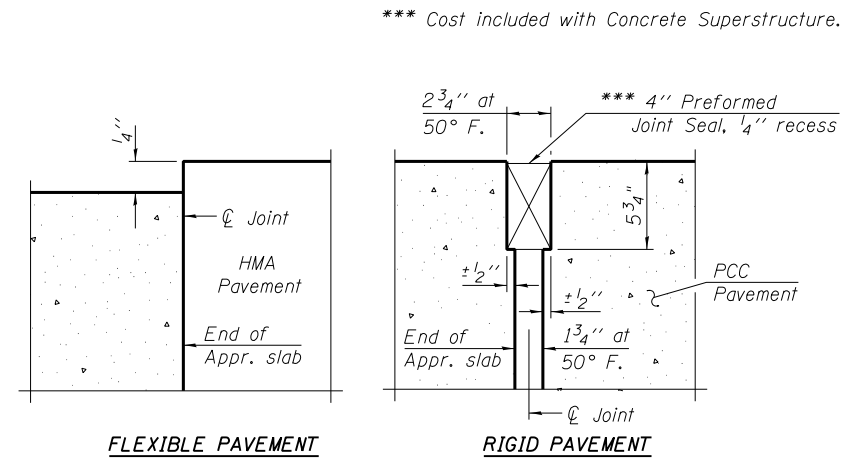


See sheet 7 of 19  
for parapet joint details, typ.

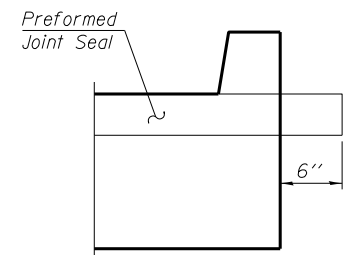


**PLAN**

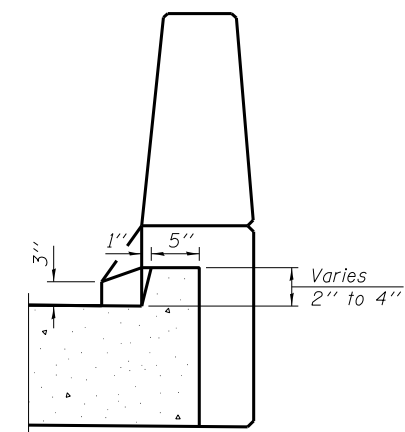
- \* Tilt #9 b<sub>3</sub>(E) bars as required to maintain clearance.
- \*\* Space between a<sub>4</sub>(E) bars, typ. each parapet.
- \*\*\*\* See sheets 4 to 5 of 19 for beginning and ending of Approach Slab stations along  $\varnothing$  Roadway and P.G.L.



**DETAIL A**



**VIEW F-F**



**VIEW B-B**

(Sheet 1 of 2)



USER NAME = ddb	DESIGNED - DB	REVISED -
	CHECKED - OY	REVISED -
	DRAWN - CM	REVISED -
PLOT DATE = 4/16/2015	CHECKED - JB	REVISED -

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DEPARTMENT OF TRANSPORTATION

BRIDGE APPROACH SLAB DETAILS  
STRUCTURE NO. 055-0068

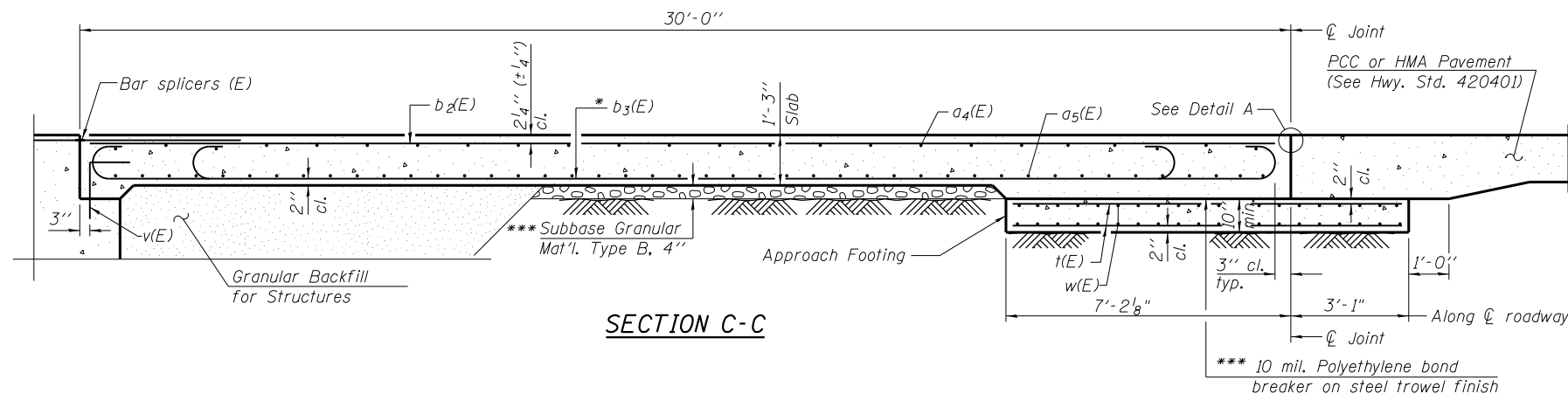
SHEET NO. 9 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV)HB(2-6)B,B-1,B-2]	MCDONOUGH	874	422
CONTRACT NO. 68B44				

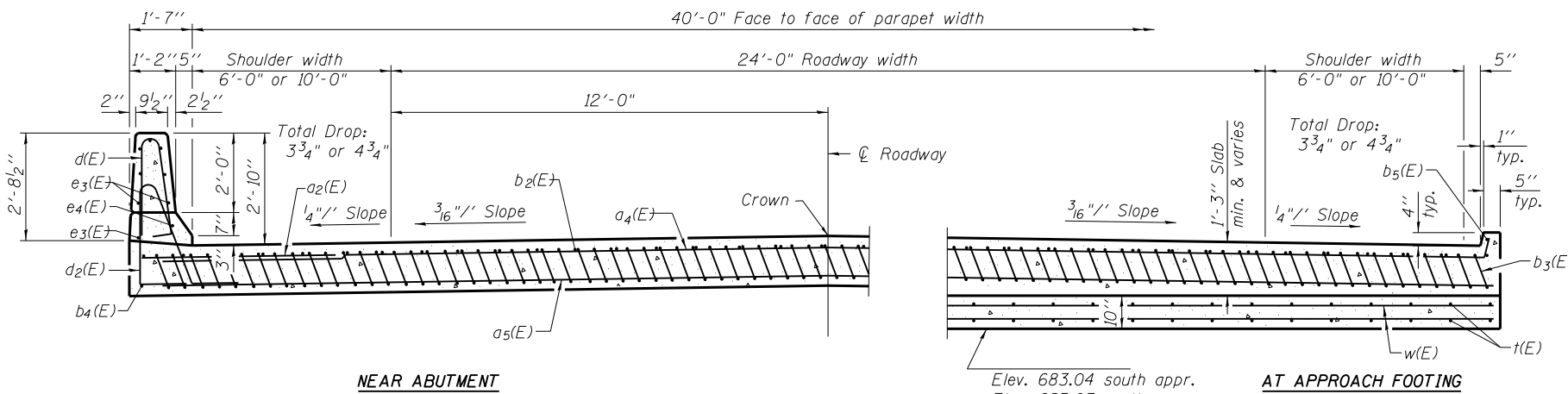
ILLINOIS FED. AID PROJECT

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Notes:  
 See sheet 9 of 19 for Detail A and View B-B.  
 Approach slab and parapet concrete shall be paid for as Concrete Superstructure.  
 Approach footing concrete shall be paid for as Concrete Structures.  
 Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.  
 For v(E) bar details, see sheet 7 of 19.  
 The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.  
 For bar splicer details, see sheet 16 of 19.  
 Cost of excavation for approach footing included with Concrete Structures.  
 For Granular Backfill for Structures and drainage treatment details, see sheet 1 of 19.  
 For additional parapet details, see sheet 7 of 19.



SECTION C-C



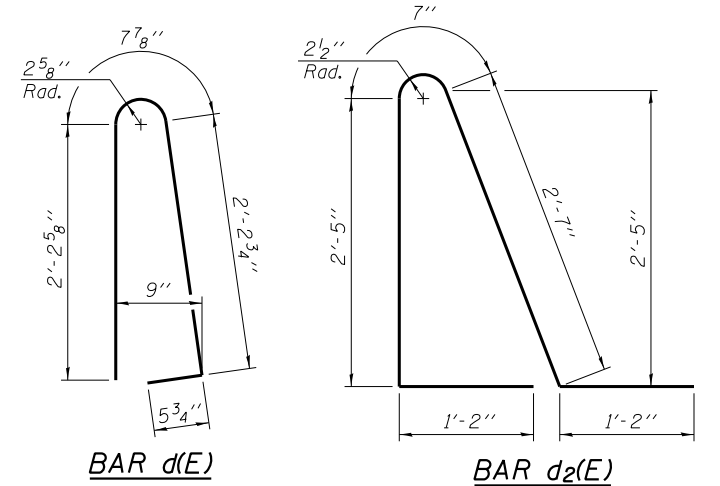
NEAR ABUTMENT

SECTION D-D

(See Plan for dimensions not shown)

AT APPROACH FOOTING

Elev. 683.04 south appr.  
 Elev. 685.03 north appr.  
 (Level out to out)

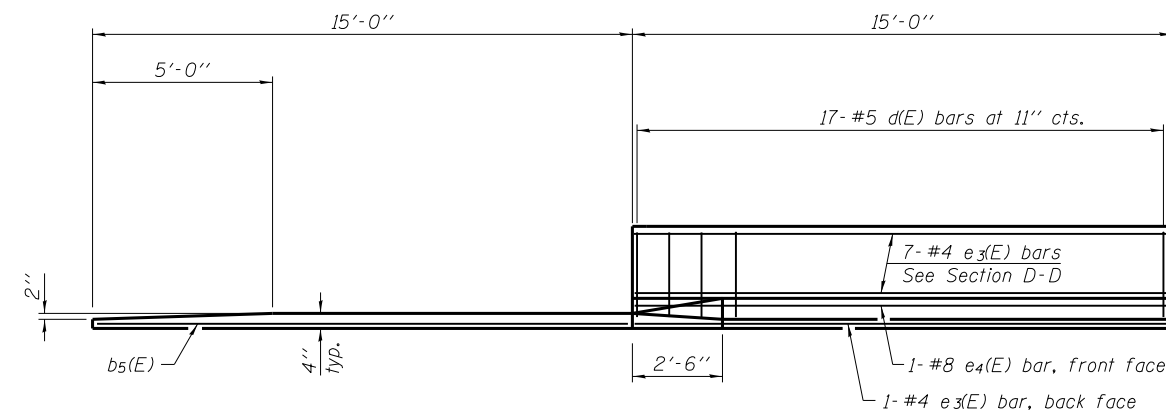


BAR d(E)

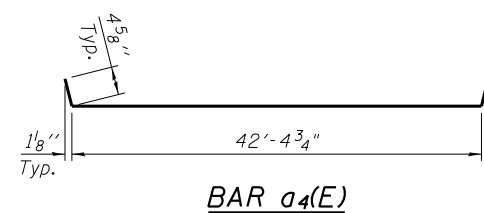
BAR d2(E)

\* Tilt #9 b3(E) bars as required to maintain clearance.

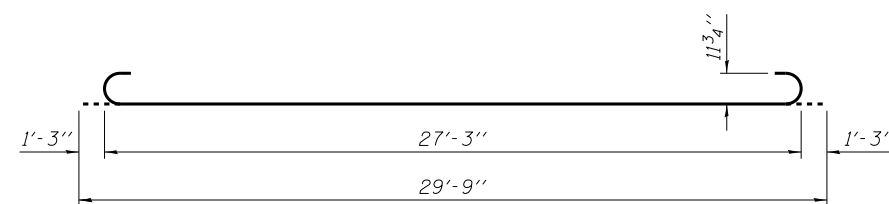
\*\*\* Cost included with Concrete Superstructure.



VIEW E-E



BAR a4(E)

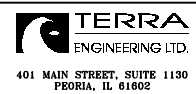


BAR b3(E)

TWO APPROACHES  
 BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a2(E)	48	#6	6'-6"	—
a4(E)	50	#4	42'-7"	—
a5(E)	92	#5	42'-7"	—
b2(E)	66	#4	29'-8"	—
b3(E)	192	#9	29'-9"	—
b4(E)	4	#4	14'-8"	—
b5(E)	4	#4	14'-8"	—
d(E)	68	#5	5'-7"	—
d2(E)	68	#5	7'-11"	—
e3(E)	32	#4	14'-8"	—
e4(E)	4	#8	14'-8"	—
t(E)	172	#4	9'-11"	—
w(E)	80	#5	42'-7"	—
Concrete Superstructure		Cu. Yd.	134.9	
Concrete Structures		Cu. Yd.	25.8	
Reinforcement Bars, Epoxy Coated		Pound	32,920	
Bridge Deck Grooving		Sq. Yd.	262	

(Sheet 2 of 2)



USER NAME = ddb	DESIGNED - DB	REVISED -
	CHECKED - OY	REVISED -
	DRAWN - CM	REVISED -
PLOT DATE = 4/16/2015	CHECKED - JB	REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

BRIDGE APPROACH SLAB DETAILS  
 STRUCTURE NO. 055-0068

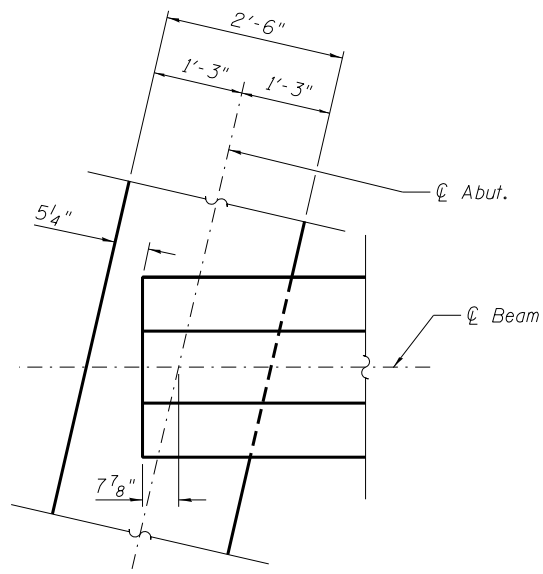
SHEET NO. 10 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55I3IPV4HB(2-6)B,B-1,B-2J	McDONOUGH	874	423
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	

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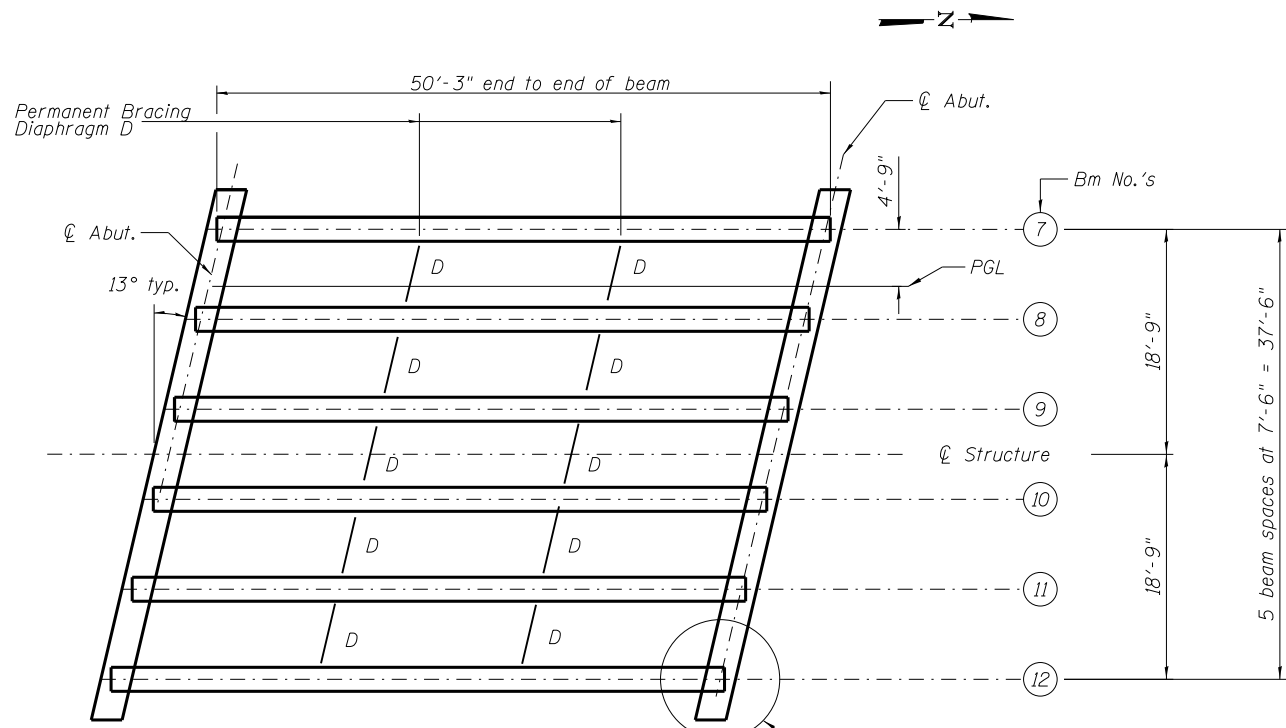


**DETAIL - A**

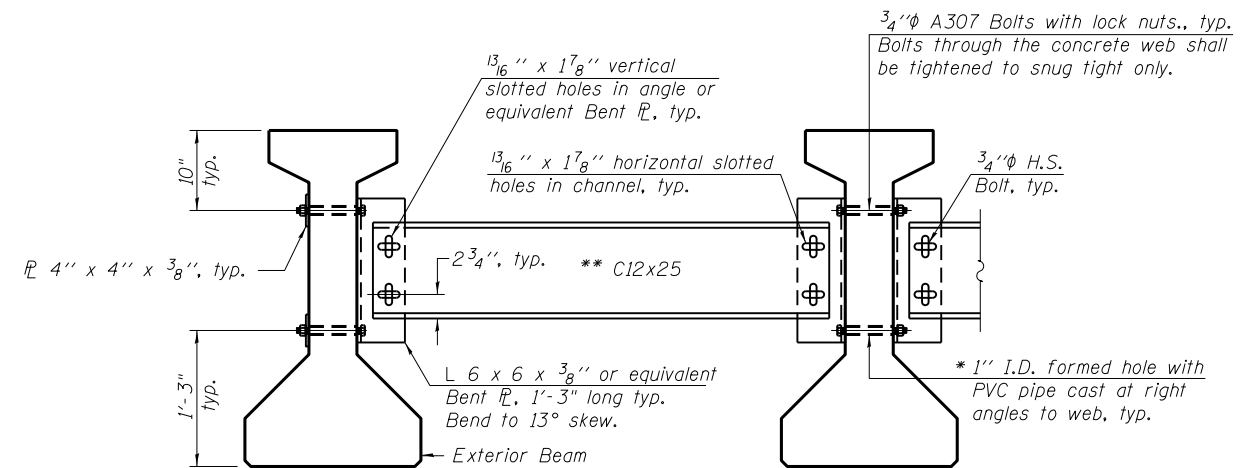
INTERIOR BEAM MOMENT TABLE		
0.5 Sp. 1		
$I$	(in <sup>4</sup> )	48,648
$I'$	(in <sup>4</sup> )	182,901
$S_b$	(in <sup>3</sup> )	3165.1
$S_b'$	(in <sup>3</sup> )	6035.5
$S_t$	(in <sup>3</sup> )	2358.1
$S_t'$	(in <sup>3</sup> )	32,112.9
$DC1$	(k/')	1.144
$M_{DC1}$	('k)	342
$DC2$	(k/')	0.150
$M_{DC2}$	('k)	45
$DW$	(k/')	0.375
$M_{DW}$	('k)	112
$M_{\frac{1}{2} + IM}$	('k)	674

INTERIOR BEAM REACTION TABLE		
Abut.		
$R_{DC1}$	(k)	28.0
$R_{DC2}$	(k)	3.70
$R_{DW}$	(k)	9.20
$R_{\frac{1}{2} + IM}$	(k)	75.8
$R_{Total}$	(k)	116.7

$I$ : Non-composite moment of inertia of beam section (in<sup>4</sup>).  
 $I'$ : Composite moment of inertia of beam section (in<sup>4</sup>).  
 $S_b$ : Non-composite section modulus for the bottom fiber of the prestressed beam (in<sup>3</sup>).  
 $S_b'$ : Composite section modulus for the bottom fiber of the prestressed beam (in<sup>3</sup>).  
 $S_t$ : Non-composite section modulus for the top fiber of the prestressed beam (in<sup>3</sup>).  
 $S_t'$ : Composite section modulus for the top fiber of the prestressed beam (in<sup>3</sup>).  
 $DC1$ : Un-factored non-composite dead load (kips/ft.).  
 $M_{DC1}$ : Un-factored moment due to non-composite dead load (kip-ft.).  
 $DC2$ : Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).  
 $M_{DC2}$ : Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).  
 $DW$ : Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).  
 $M_{DW}$ : Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).  
 $M_{\frac{1}{2} + IM}$ : Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).



**FRAMING PLAN**

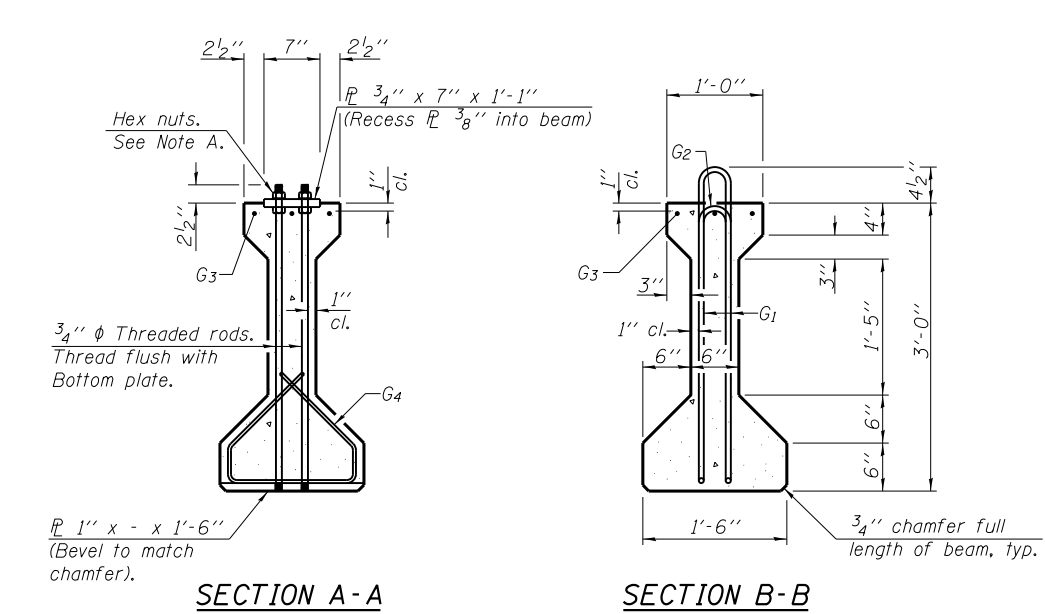
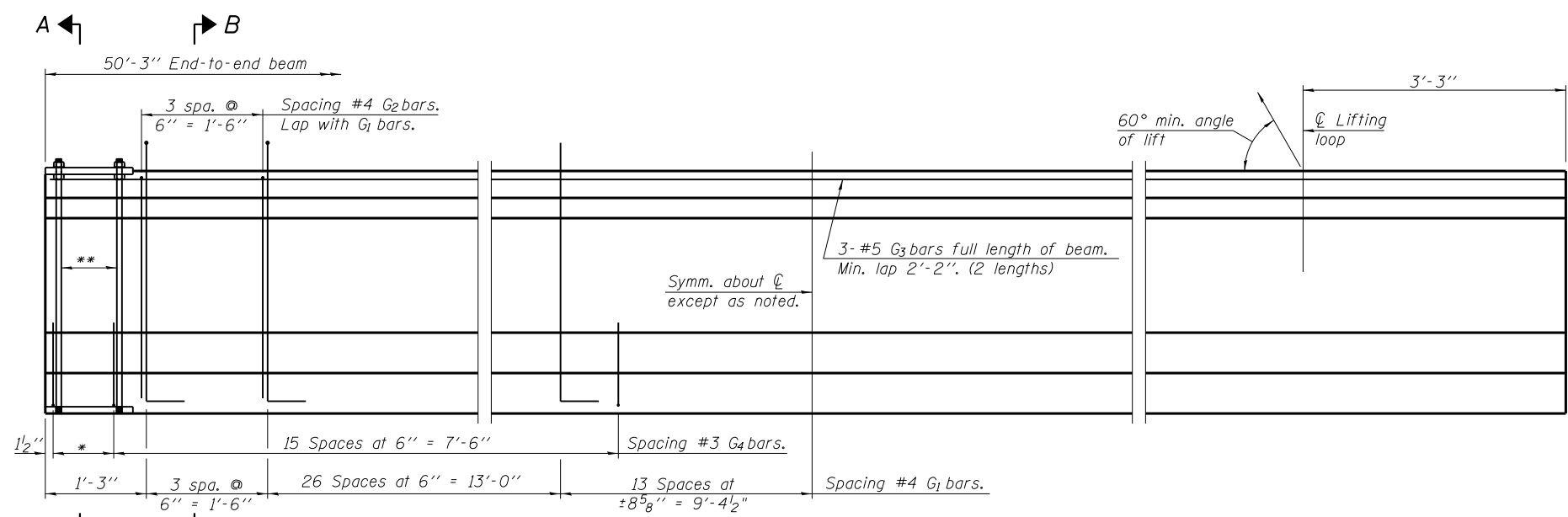


**Notes:**

All material for bracing shall be hot dip galvanized according to AASHTO M111 unless otherwise noted.  
 Two hardened washers are required for each set of oversized holes.  
 All holes shall be 15/16"  $\phi$  unless otherwise noted.  
 5/16" x 3" x 3" plate washers are required over all slotted holes.  
 All bolts shall be galvanized according to AASHTO M232.  
 Bracing shall be installed as beams are erected and tightened as soon as possible during erection.  
 Permanent bracing shall not be paid for separately, but shall be included in the cost of Furnishing and Erecting Precast Prestressed Concrete I-Beams.

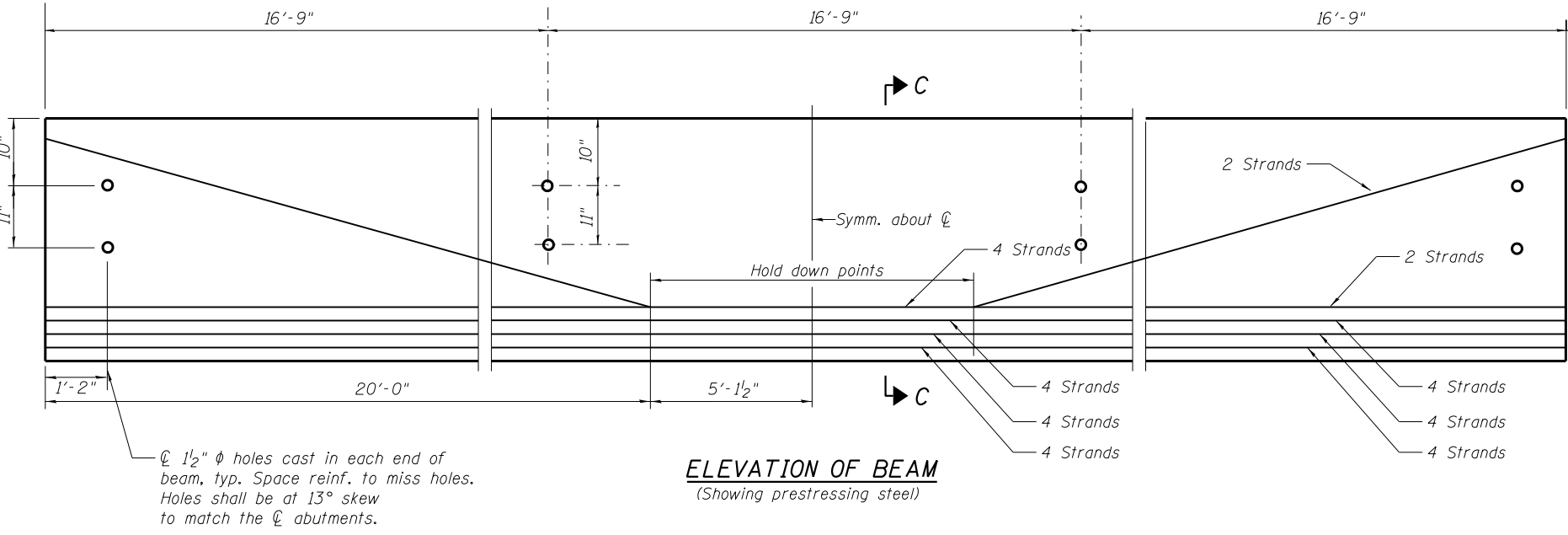
\* Fabricator shall locate to miss strands within permissible tolerances.  
 \*\* Alternate C12x30 channels are permitted to facilitate material acquisition.

**PERMANENT BRACING DETAILS - DIAPHRAGM D**

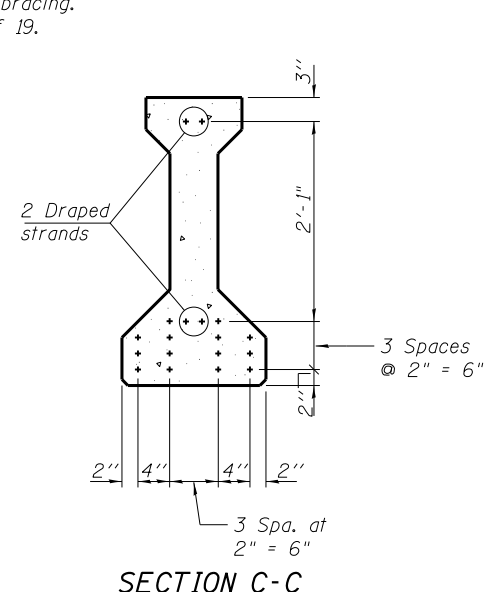


**ELEVATION OF BEAM**  
(Showing reinforcement & dimensions)

Note A:  
Hex nuts (top and bottom) with lock washers (top). Only tighten sufficiently to compress lock washers.



Formed hole spacing for permanent bracing. See sheet 11 of 19.



**\*\*\*BAR LIST ONE BEAM ONLY**

Bar	No.	Size	Length	Shape
G <sub>1</sub>	87	#4	7'-5"	∩ L
G <sub>2</sub>	8	#4	5'-8"	∩
G <sub>3</sub>	6	#5	26'-1"	—
G <sub>4</sub>	38	#3	4'-1"	⊃

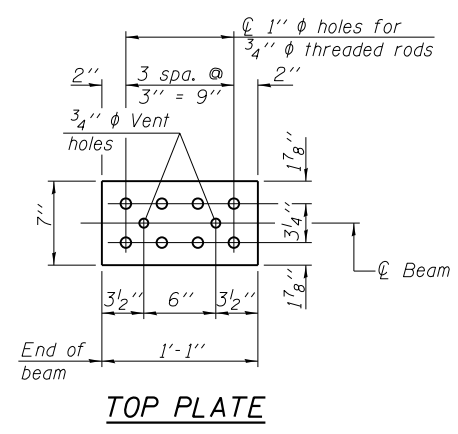
\*\*\*For information only

Notes:  
See sheet 13 of 19 for additional details and Bill of Material.  
Required release strength,  $f'_{ci}$ , shall be 5000 psi.

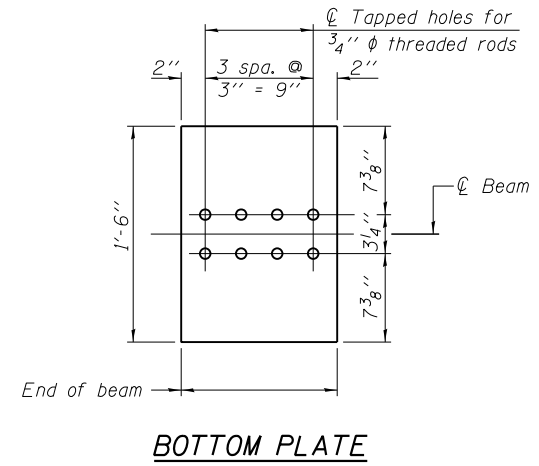
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**NOTES**

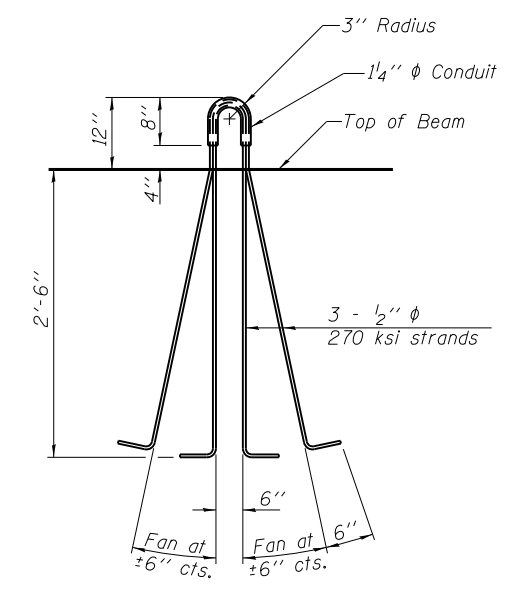
Inserts for 3/4"  $\phi$  threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams.  
 Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in.  
 A minimum 2 1/2"  $\phi$  lifting pin shall be used to engage the lifting loops during handling.  
 The top and bottom plates shall be AASHTO M270 Grade 50.  
 The bottom plates shall be galvanized according to AASHTO M111. Top plates and threaded rods need not be galvanized.  
 Threaded rods shall be ASTM F 1554 Grade 55.



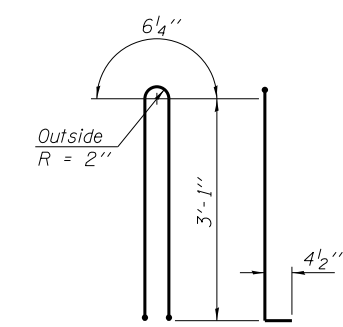
**TOP PLATE**



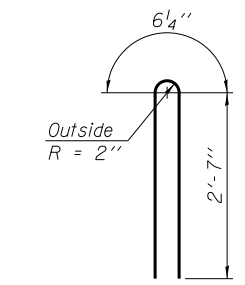
**BOTTOM PLATE**



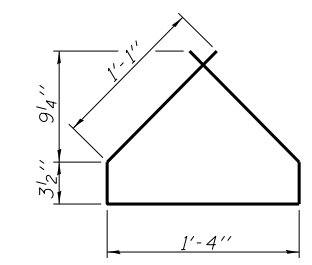
**LIFTING LOOP DETAIL**



**BAR G1**



**BAR G2**



**BAR G4**

**BILL OF MATERIAL**

Item	Unit	Total
Furnishing and Erecting Precast Prestressed Concrete I-Beams, 36"	Ft.	301.5

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	DRAWN - CM	REVISED -
PLOT DATE = 12/18/2014	CHECKED - JBY	REVISED -

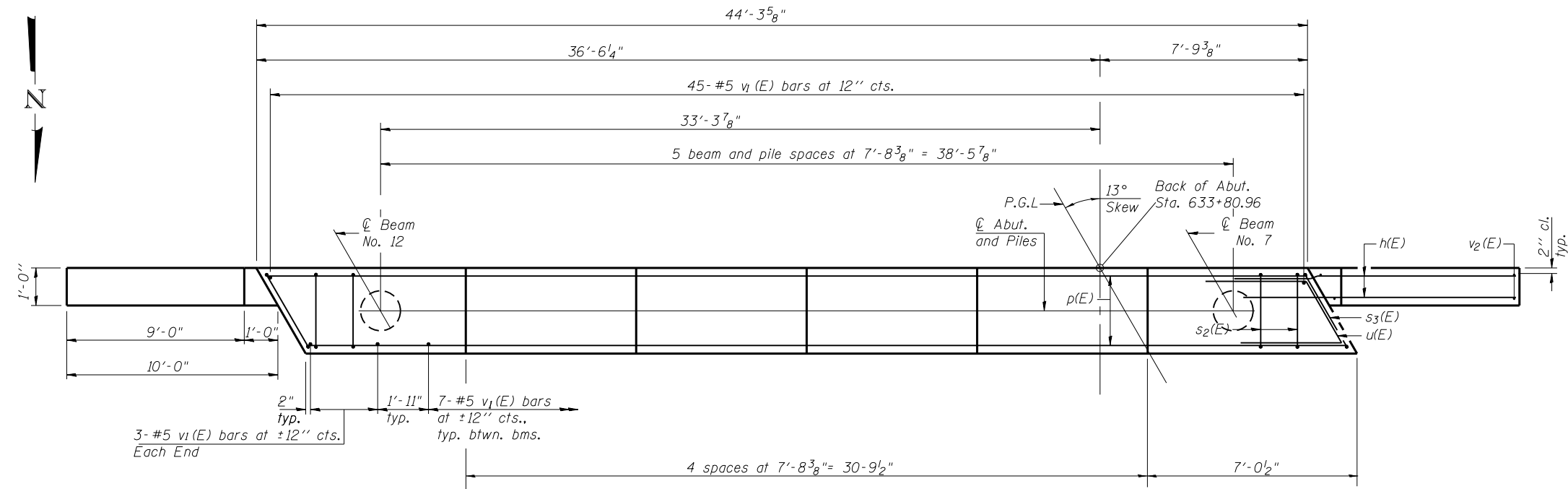
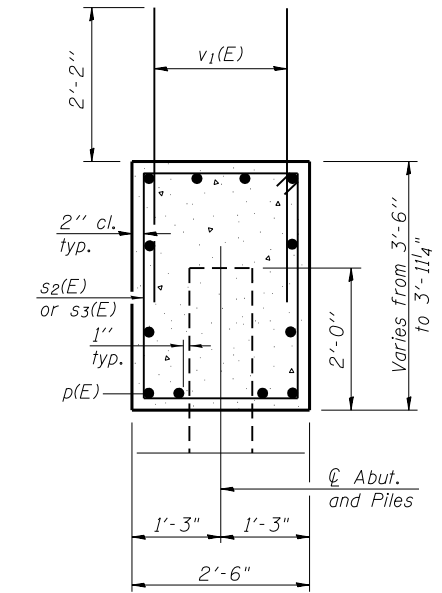
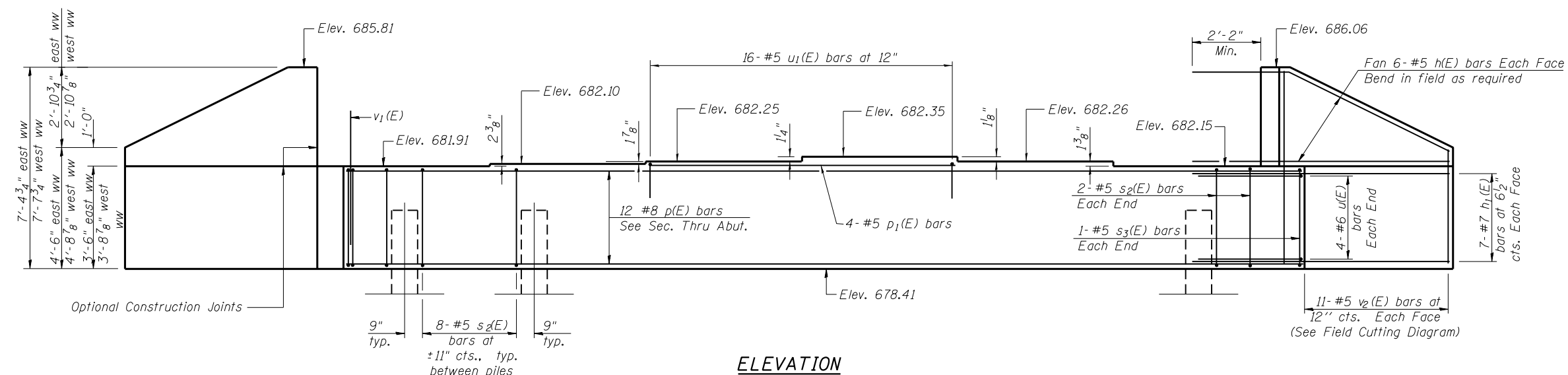
**STATE OF ILLINOIS  
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**36" PPC I-BEAM DETAILS  
STRUCTURE NO. 055-0068**

SHEET NO. 13 OF 19 SHEETS

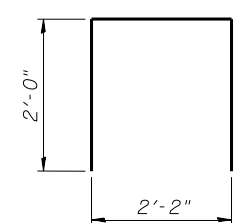
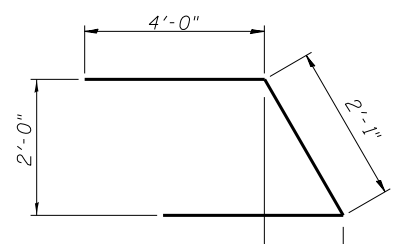
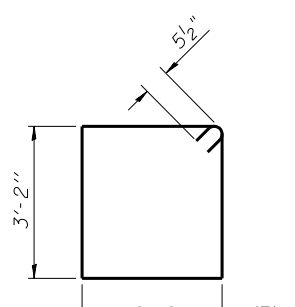
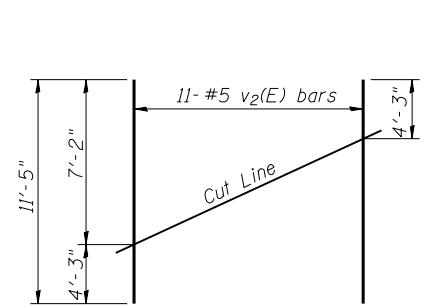
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV)HB(2-6)B,B-1,B-2]	McDONOUGH	874	426
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	

Notes:  
Pour steps monolithically with cap.



**PILE DATA**

Type: Metal shell - 14" dia. X 0.312 in. walls with pile shoes  
 Nominal Required Bearing: 418 Kips  
 Factored Resistance Available: 230 Kips  
 Est. Length: 26'  
 No. Production Piles: 6  
 No. Test Piles: 0



**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h(E)	24	#5	13'-0"	—
h <sub>1</sub> (E)	28	#7	13'-0"	—
p(E)	12	#8	43'-11"	—
p <sub>1</sub> (E)	4	#5	15'-1"	—
s <sub>2</sub> (E)	44	#5	11'-6"	□
s <sub>3</sub> (E)	2	#5	11'-8"	□
u(E)	8	#6	10'-1"	∩
u <sub>1</sub> (E)	16	#4	6'-2"	∩
v <sub>1</sub> (E)	86	#5	4'-4"	—
v <sub>2</sub> (E)	22	#5	11'-5"	—
Structure Excavation		Cu. Yd.	116	
Concrete Structures		Cu. Yd.	20.0	
Reinforcement Bars, Epoxy Coated		Pound	3930	
Furnishing Metal Shell Piles, 14" x 0.312"		Foot	156	
Driving Piles		Foot	156	
Pile Shoes		Each	6	
Granular Backfill for Structures		Cu. Yd.	73	
Geocomposite Wall Drain		Sq. Yd.	45	
Pipe Underdrains for Structures, 4"		Foot	85	

For details of Bar Splicers, see sheet 16 of 19.  
 For details of piles, see sheet 17 of 19.

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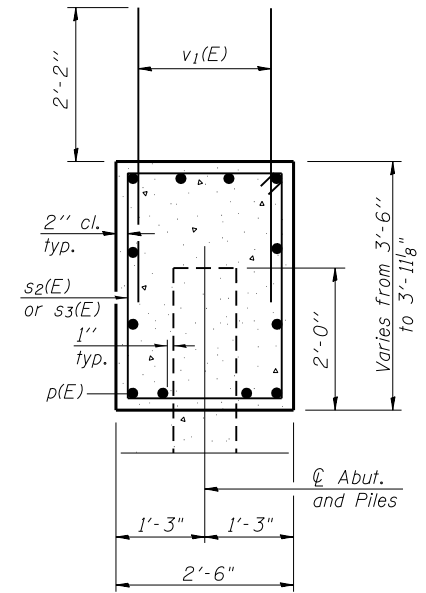
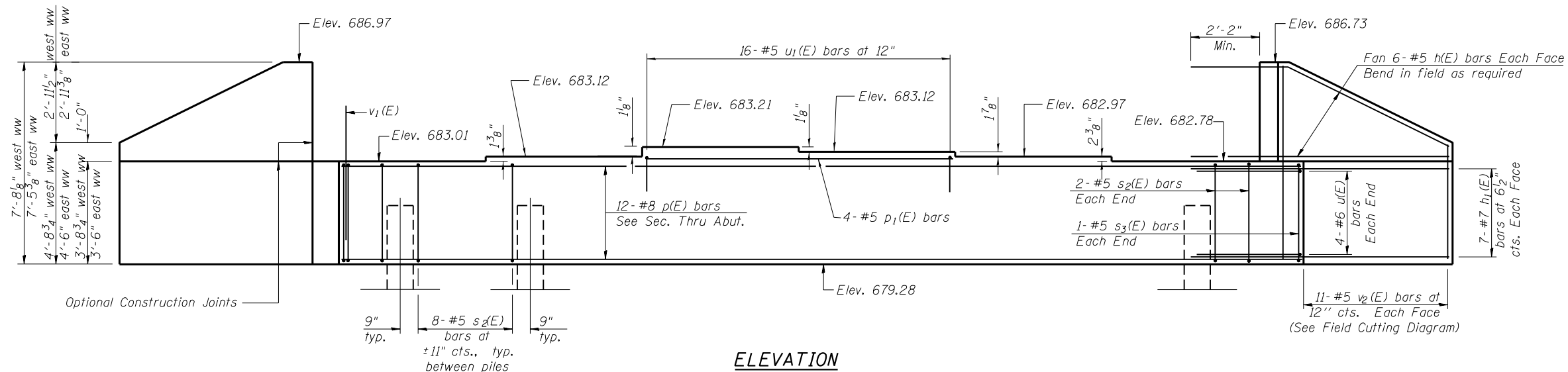
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	CHECKED - QY	REVISED -
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PLOT DATE = 12/18/2014	CHECKED - QB	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

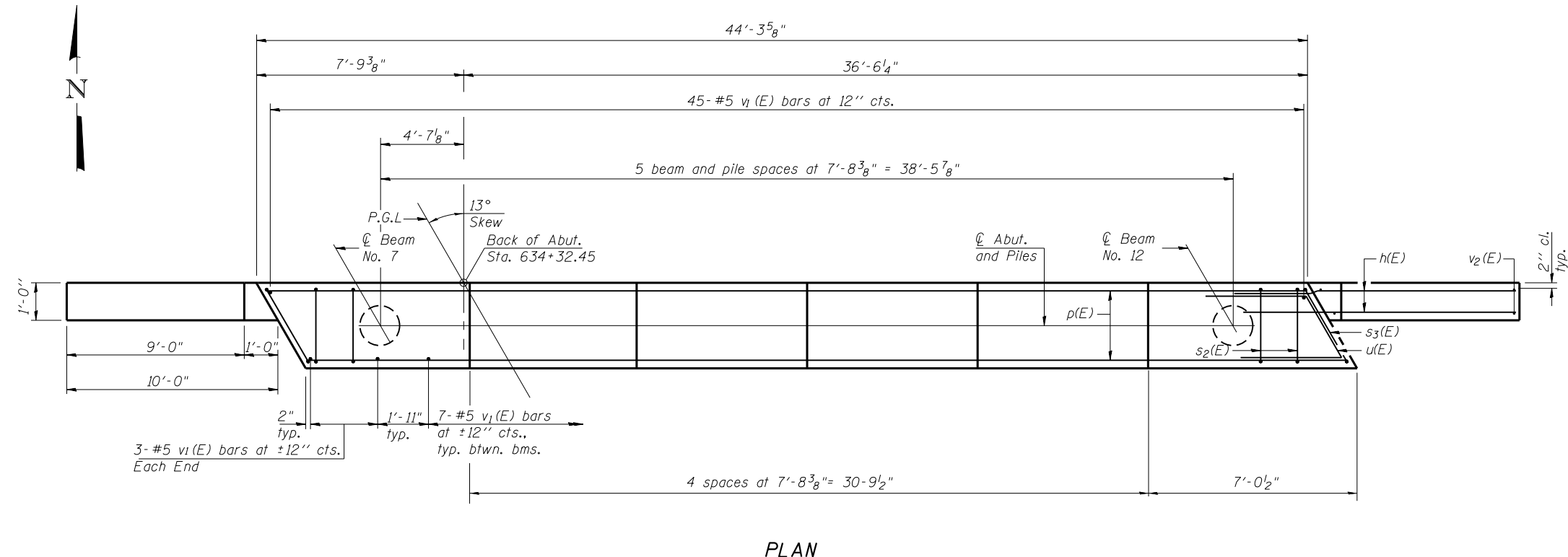
SOUTH ABUTMENT  
STRUCTURE NO. 055-0068  
SHEET NO. 14 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV[H]B[2-6]H[B-1,B-2]	MCDONOUGH	874	427
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	

Notes:  
Pour steps monolithically with cap.



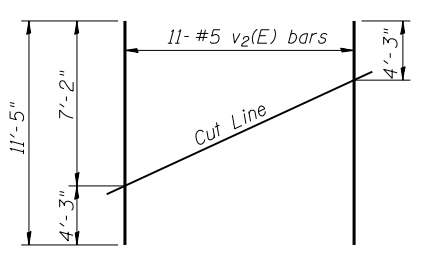
SEC. THRU ABUT.



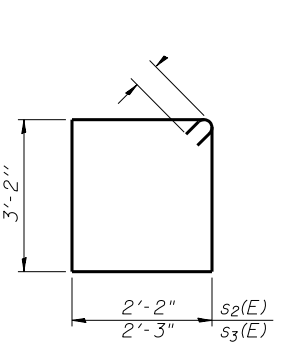
PLAN

**PILE DATA**

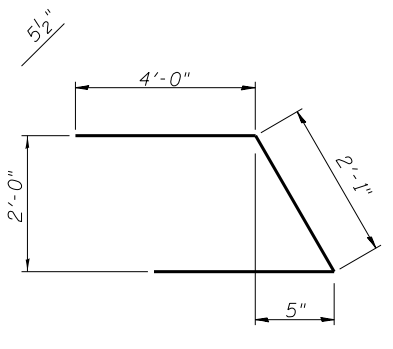
Type: Metal shell - 14" dia. X 0.312 in. walls with pile shoes  
Nominal Required Bearing: 418 Kips  
Factored Resistance Available: 230 Kips  
Est. Length: 20'  
No. Production Piles: 5  
No. Test Piles: 1



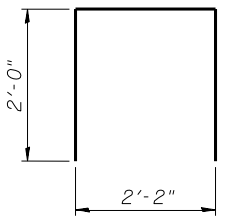
**FIELD CUTTING DIAGRAM**  
Order v2(E) full length. Cut as shown and use remainder of bars in opposite face.



**BARS s2(E) & s3(E)**



**BAR u(E)**



**BAR u1(E)**

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape	
h(E)	24	#5	13'-0"	—	
h1(E)	28	#7	13'-0"	—	
p(E)	12	#8	43'-11"	—	
p1(E)	4	#5	15'-1"	—	
s2(E)	44	#5	11'-6"	□	
s3(E)	2	#5	11'-8"	□	
u(E)	8	#6	10'-1"	∩	
u1(E)	16	#4	6'-2"	∩	
v1(E)	86	#5	4'-4"	—	
v2(E)	22	#5	11'-5"	—	
Structure Excavation				Cu. Yd.	116
Concrete Structures				Cu. Yd.	19.8
Reinforcement Bars, Epoxy Coated				Pound	3930
Furnishing Metal Shell Piles, 14" x 0.312"				Foot	100
Driving Piles				Foot	100
Test Pile, Metal Shell				Each	1
Pile Shoes				Each	6
Granular Backfill for Structures				Cu. Yd.	73
Geocomposite Wall Drain				Sq. Yd.	45
Pipe Underdrains for Structures, 4"				Foot	85

For details of Bar Splicers, see sheet 16 of 19.  
For details of piles, see sheet 17 of 19.

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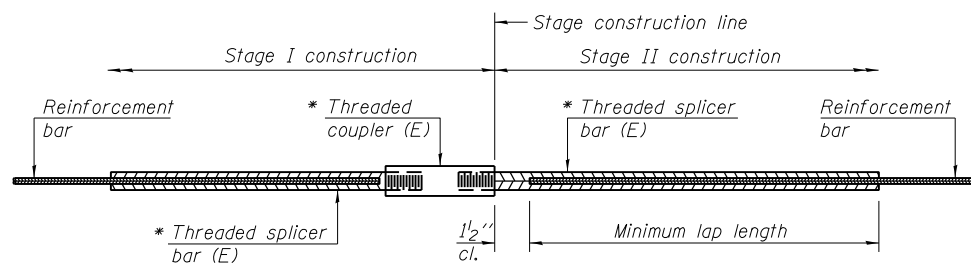
USER NAME = ddb	DESIGNED - DB	REVISED -
	CHECKED - OY	REVISED -
	DRAWN - CM	REVISED -
PLOT DATE = 12/18/2014	CHECKED - OB	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

NORTH ABUTMENT  
STRUCTURE NO. 055-0068

SHEET NO. 15 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV[H](2-6)H[B,L-B-2]	MCDONOUGH	874	428
				CONTRACT NO. 68B44
ILLINOIS FED. AID PROJECT				



**STANDARD BAR SPLICER ASSEMBLY**

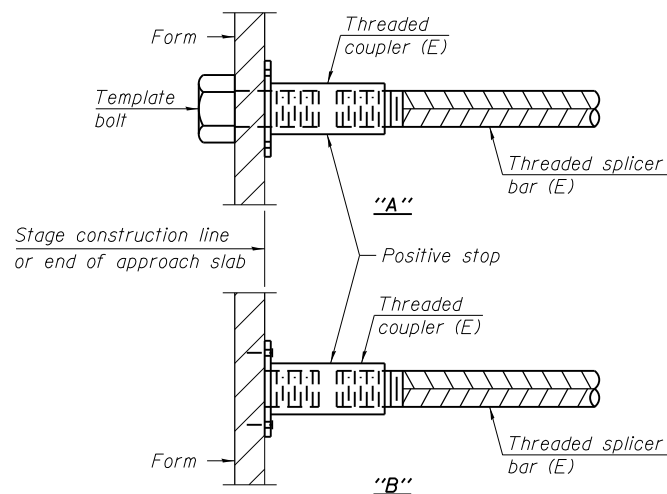
Minimum Lap Lengths						
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
3, 4	1'-5"	1'-11"	2'-1"	2'-4"	2'-7"	2'-11"
5	1'-9"	2'-5"	2'-7"	2'-11"	3'-3"	3'-8"
6	2'-1"	2'-11"	3'-1"	3'-6"	3'-10"	4'-5"
7	2'-9"	3'-10"	4'-2"	4'-8"	5'-2"	5'-10"
8	3'-8"	5'-1"	5'-5"	6'-2"	6'-9"	7'-8"
9	4'-7"	6'-5"	6'-10"	7'-9"	8'-7"	9'-8"

- Table 1: Black bar, 0.8 Class C
- Table 2: Black bar, Top bar lap, 0.8 Class C
- Table 3: Epoxy bar, 0.8 Class C
- Table 4: Epoxy bar, Top bar lap, 0.8 Class C
- Table 5: Epoxy bar, Class C
- Table 6: Epoxy bar, Top bar top, Class C

Threaded splicer bar length = min. lap length + 1/2" + thread length

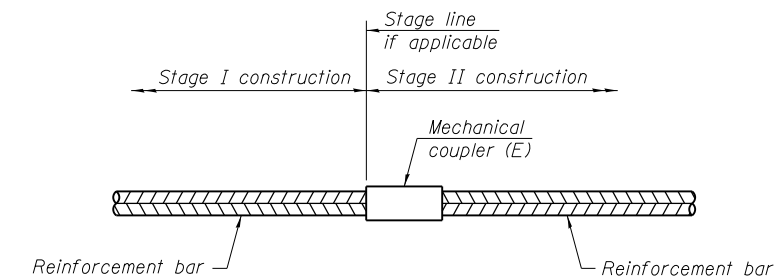
\* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length
N/A			



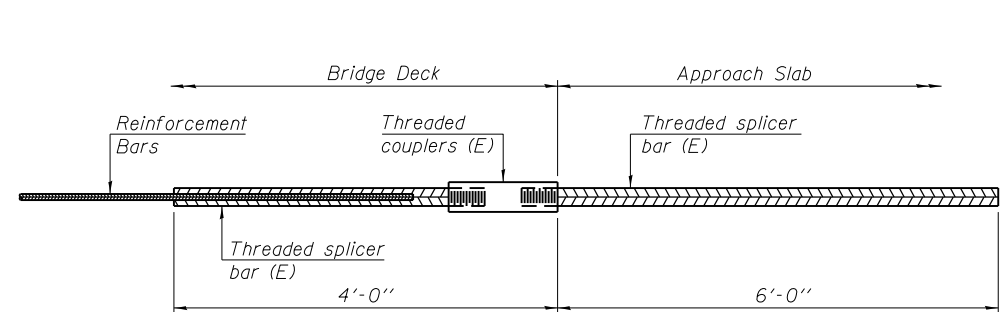
**INSTALLATION AND SETTING METHODS**

"A" : Set bar splicer assembly by means of a template bolt.  
 "B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.  
 (E) : Indicates epoxy coating.



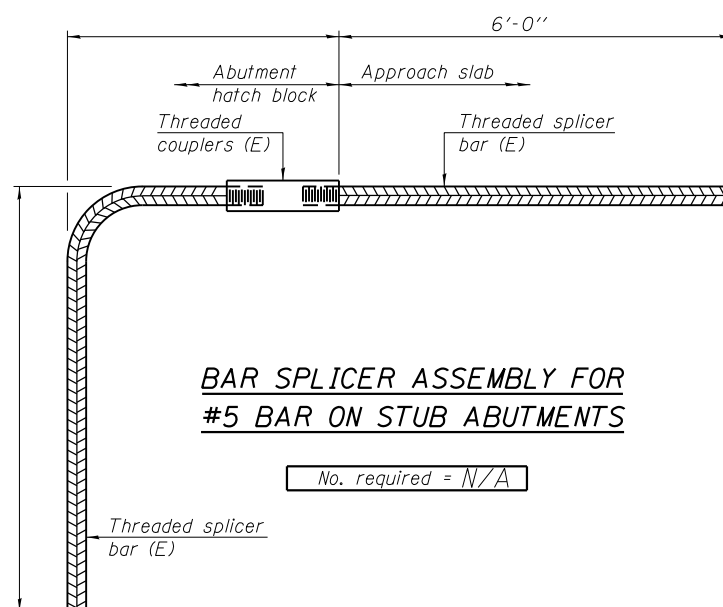
**STANDARD MECHANICAL SPLICER**

Location	Bar size	No. assemblies required
N/A		



**BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

No. required = 88



**BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS**

No. required = N/A

**NOTES**

Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.  
 All reinforcement shall be lapped and tied to the splicer bars.  
 Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.  
 See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BSD-1

1-27-12



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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

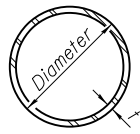
BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS  
STRUCTURE NO. 055-0068

SHEET NO. 16 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV)HB(2-6)B,B-1,B-2]	McDONOUGH	874	429
				CONTRACT NO. 68B44

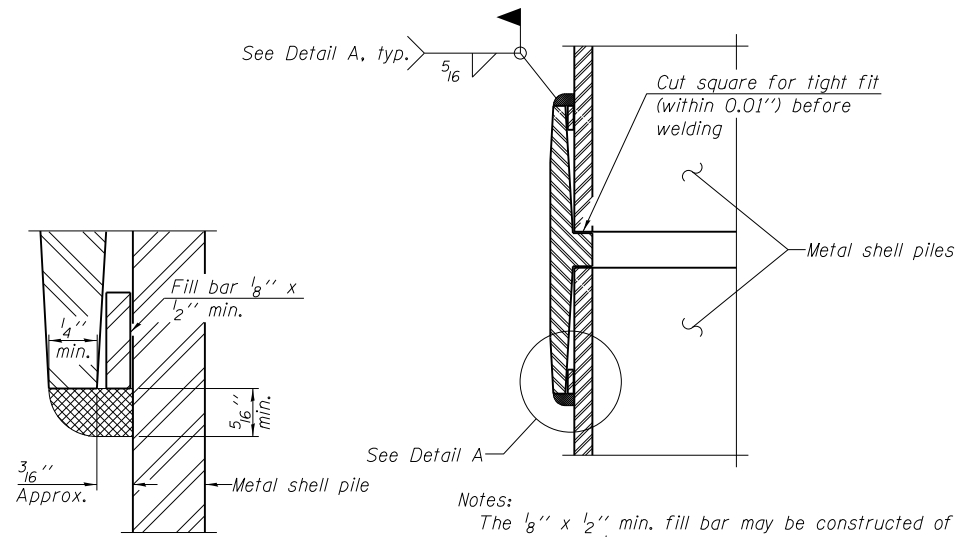
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**METAL SHELL PILE TABLE**

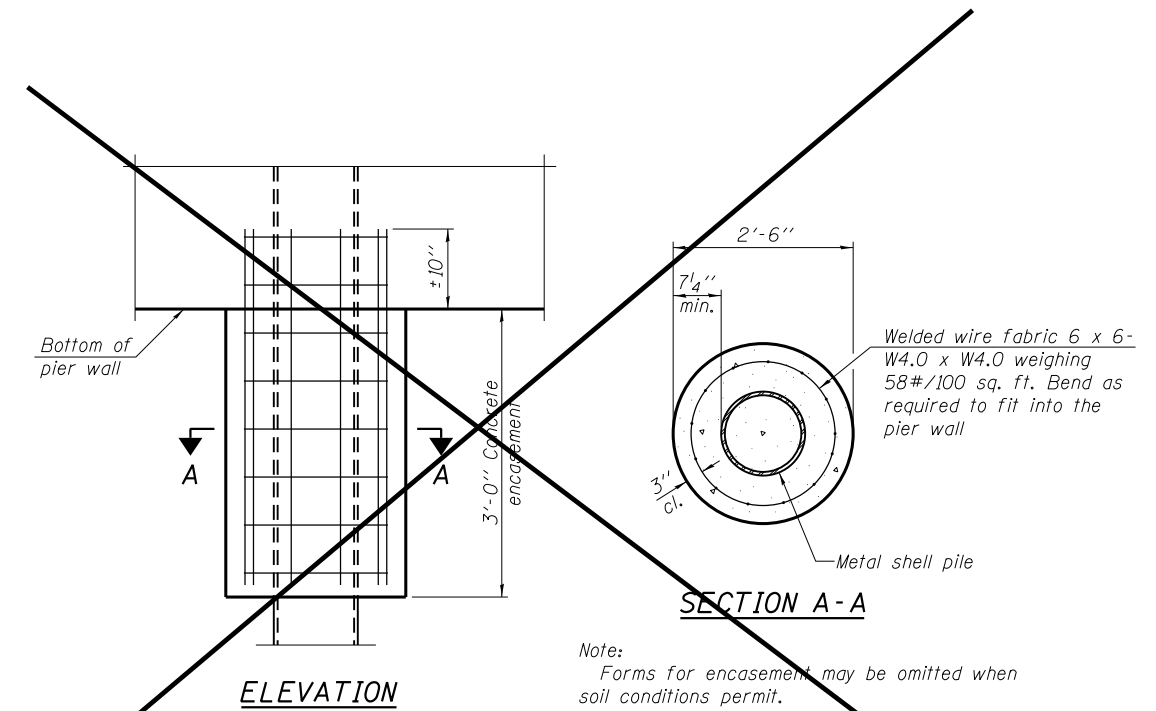
Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd. <sup>3</sup> /ft.)
PP12	0.179"	22.60	0.0274
PP12	0.250"	31.37	0.0267
PP14	0.250"	36.71	0.0368
PP14	0.312"	45.61	0.0361



**DETAIL A**

**Notes:**  
 The 1/8" x 1/2" min. fill bar may be constructed of 2 bars with a 1/8" max. gap between them.  
 Pile segments shall be driven to solid contact with splicer before welding.

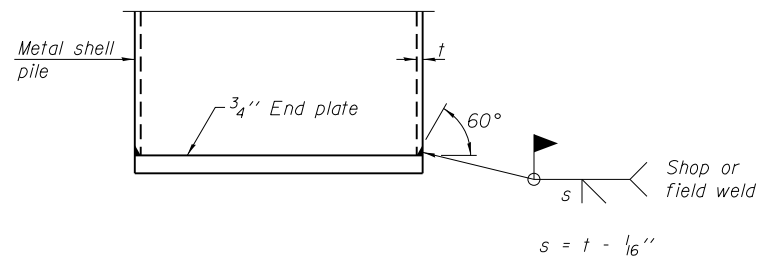
**WELDED COMMERCIAL SPLICE**



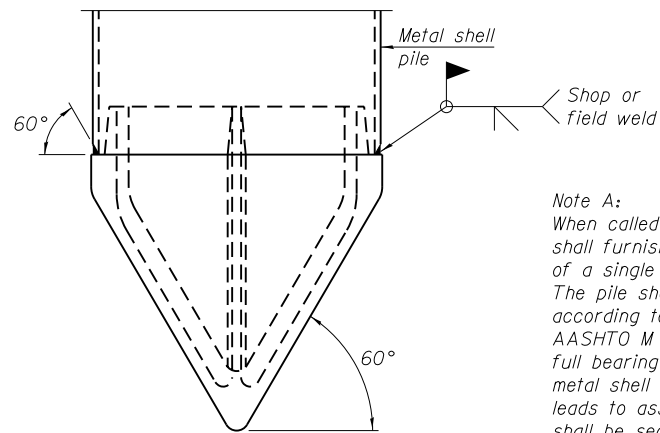
**ELEVATION**

**SECTION A-A**

**CONCRETE ENCASEMENT AT PIERS**



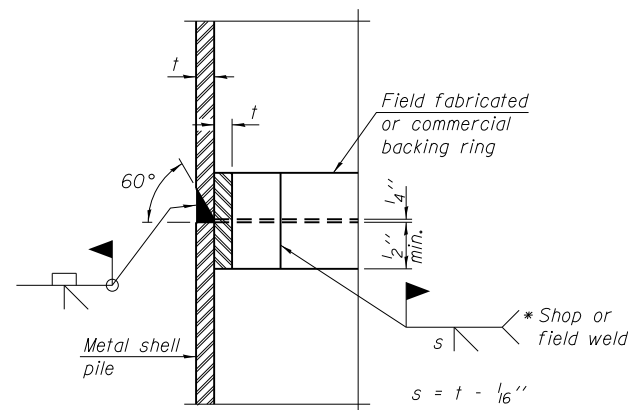
**END PLATE ATTACHMENT**



**METAL SHELL PILE SHOE ATTACHMENT**

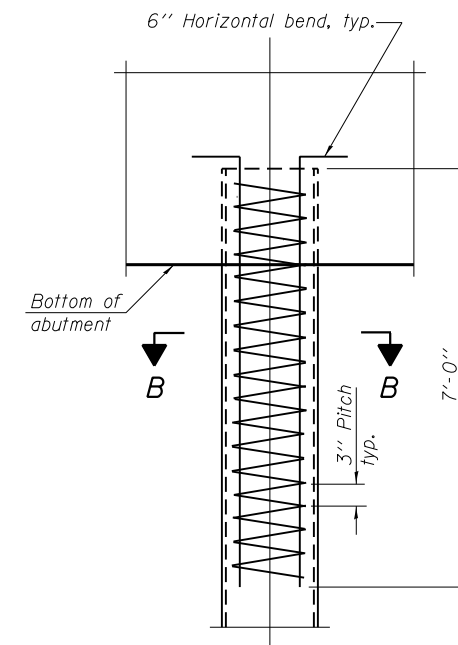
(See Note A)

**Note A:**  
 When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 90-60 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to assure proper alignment and fitting and shall be secured to the pile with a circumferential weld.

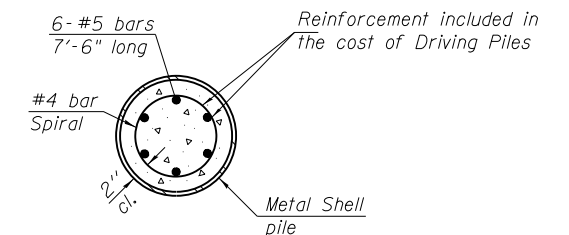


**COMPLETE PENETRATION WELD SPLICE**

\* Field fabricated backing ring may be made from pile shell by removing segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



**ELEVATION**

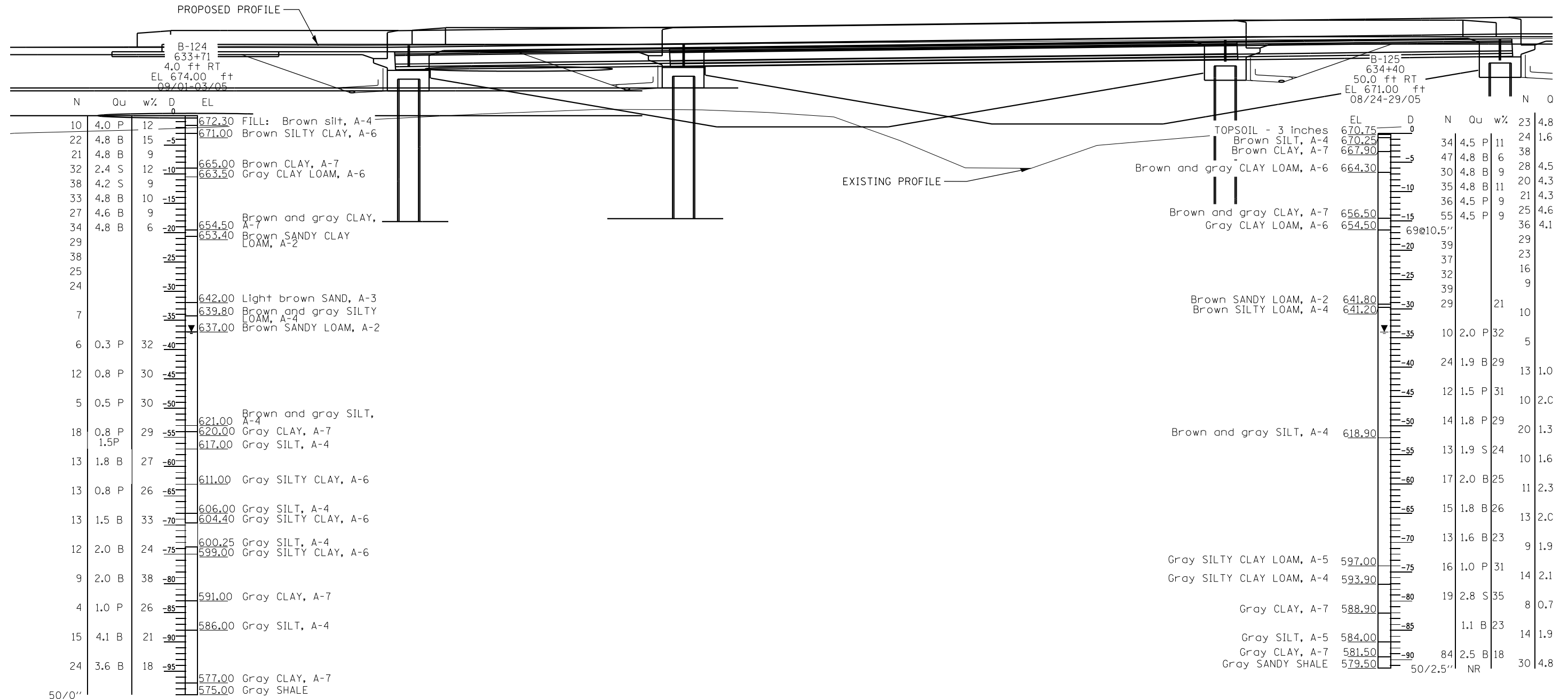


**SECTION B-B**

**METAL SHELL REINFORCEMENT AT ABUTMENTS**

**Note:**  
 The metal shell piles shall be according to ASTM A 252 Grade 3.

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**SUBSURFACE DATA PROFILE**  
**IL 336 OVER WILDLIFE CROSSING #3**  
**F.A.P. 315- SECTION 55-3**  
**MCDONOUGH COUNTY**  
**STATION 634+11.73**  
**STRUCTURE NO. 055-0068**

NOT TO SCALE

**LEGEND**

- EL = Elevation (ft)
- D = Depth Below Existing Ground Surface (ft)
- N = SPT N-Value (AASHTO T206)
- Qu = Unconfined compressive Strength in tons per tsf (tsf)
- Failure Mode (B= Bulge, S= shear, P= penetrometer)
- w% = Moisture Content Percentage

**WATER TABLE LEGEND**

- ▼ = Groundwater Level First Encountered
- ▽ = Groundwater Level Upon Completion
- ◊ = Groundwater Level After \_\_\_ hours



USER NAME = ddb	DESIGNED - DB	REVISED -
	CHECKED - CM	REVISED -
	DRAWN - CM	REVISED -
PLOT DATE = 12/18/2014	CHECKED - JBY	REVISED -

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

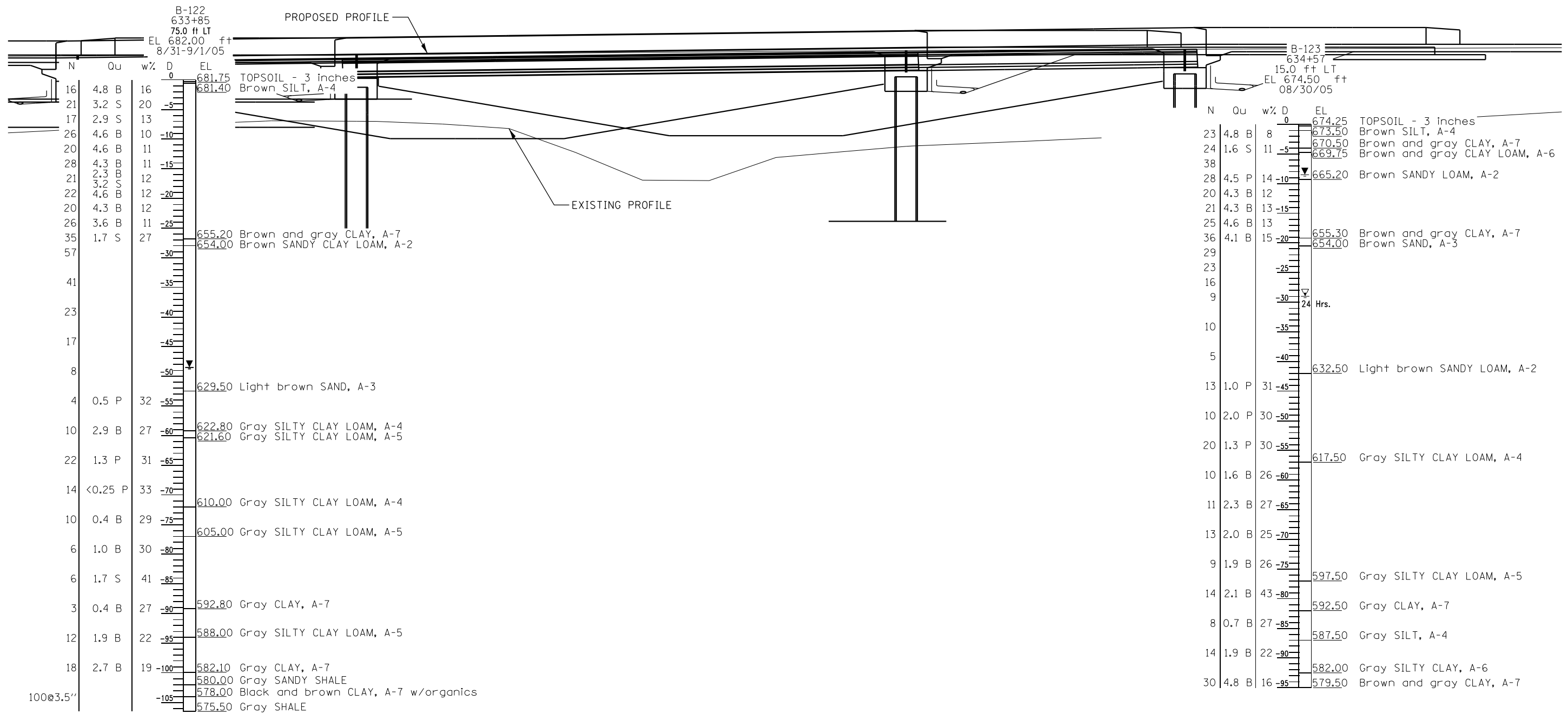
**SOIL BORING PROFILE**  
**STRUCTURE NO. 055-0068**

SHEET NO. 18 OF 19 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55(31PV)HB(2-6);B,B-1,B-2	McDONOUGH	874	431
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	

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**SUBSURFACE DATA PROFILE**  
**IL 336 OVER WILDLIFE CROSSING #3**  
**F.A.P. 315- SECTION 55-3**  
**MCDONOUGH COUNTY**  
**STATION 634+11.73**  
**STRUCTURE NO. 055-0069**

NOT TO SCALE

**LEGEND**  
 EL = Elevation (ft)  
 D = Depth Below Existing Ground Surface (ft)  
 N = SPT N-Value (AASHTO T206)  
 Qu = Unconfined compressive Strength in tons per tsf (tsf)  
 Failure Mode (B= Bulge, S= shear, P= penetrometer)  
 w% = Moisture Content Percentage

**WATER TABLE LEGEND**  
 ▽ = Groundwater Level First Encountered  
 ▽ = Groundwater Level Upon Completion  
 ▽ = Groundwater Level After \_\_\_ hours

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	DRAWN - CM	REVISED -
PLOT DATE = 12/18/2014	CHECKED - JB	REVISED -

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

**SOIL BORING PROFILE**  
**STRUCTURE NO. 055-0069**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV[HB(2-6);B,B-1,B-2]	McDONOUGH	874	432
			CONTRACT NO. 68B44	

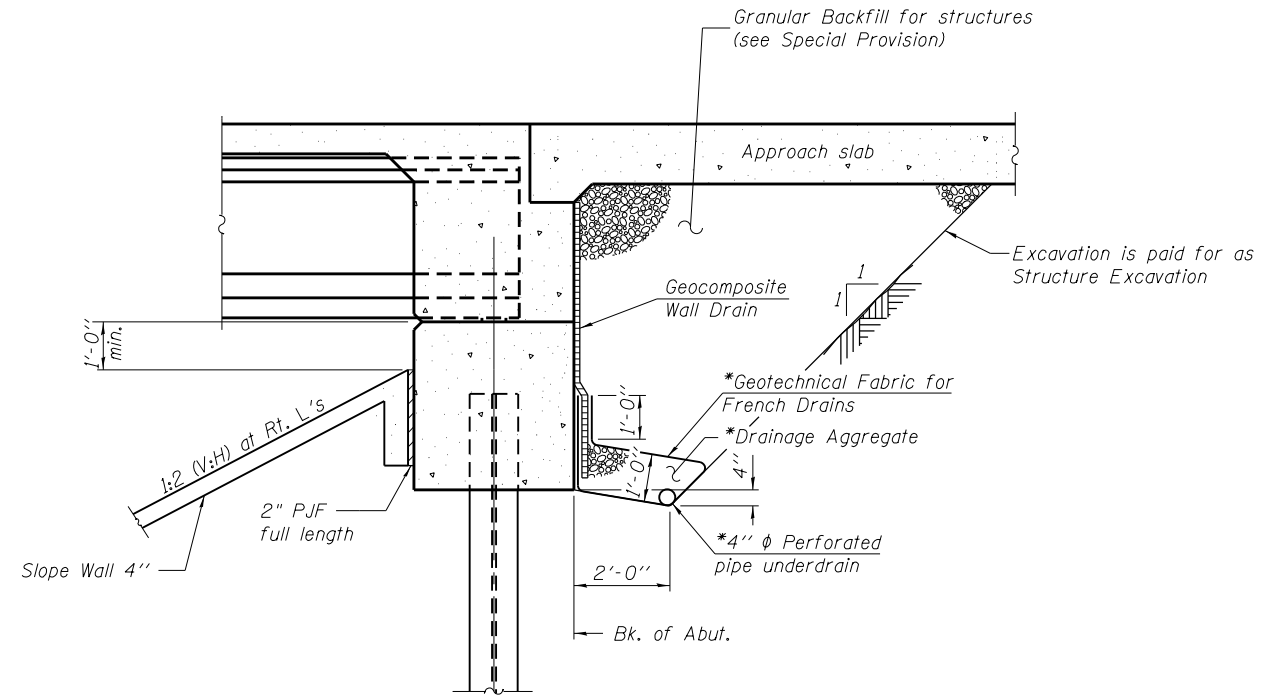
SHEET NO. 19 OF 19 SHEETS

ILLINOIS FED. AID PROJECT



**GENERAL NOTES**

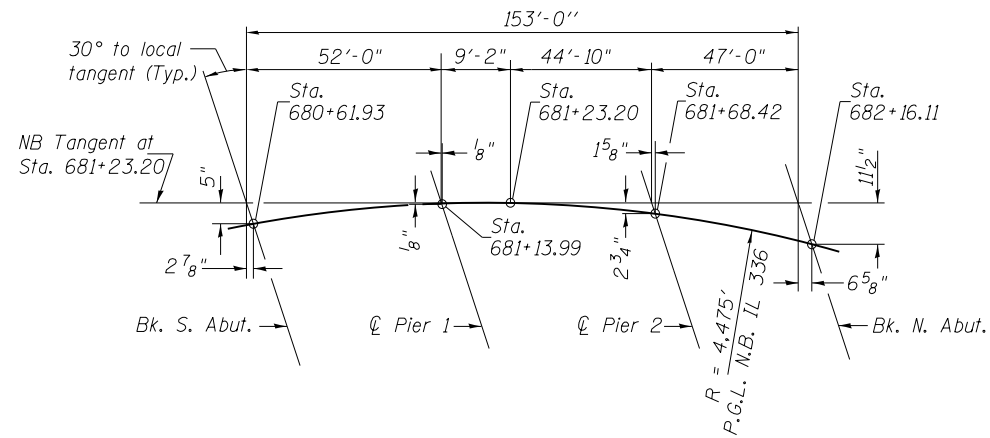
Reinforcement bars designated (E) shall be epoxy coated.  
 The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.  
 Concrete Sealer shall be applied to the traffic face of the piers along with the top of crashwall and bottom of pier cap.  
 This contract is for the construction of SN 055-0070 (NB) only.  
 SN 055-0071 (SB) is to be built in a future contract and is shown for information only.  
 The embankment for the SB structure shall be placed in this contract.



**SECTION THRU ABUTMENT**

\*Included in the cost of Pipe Underdrains for Structures (see Special Provisions)

Note:  
 All drainage system components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601101).



**OFFSET SKETCH**

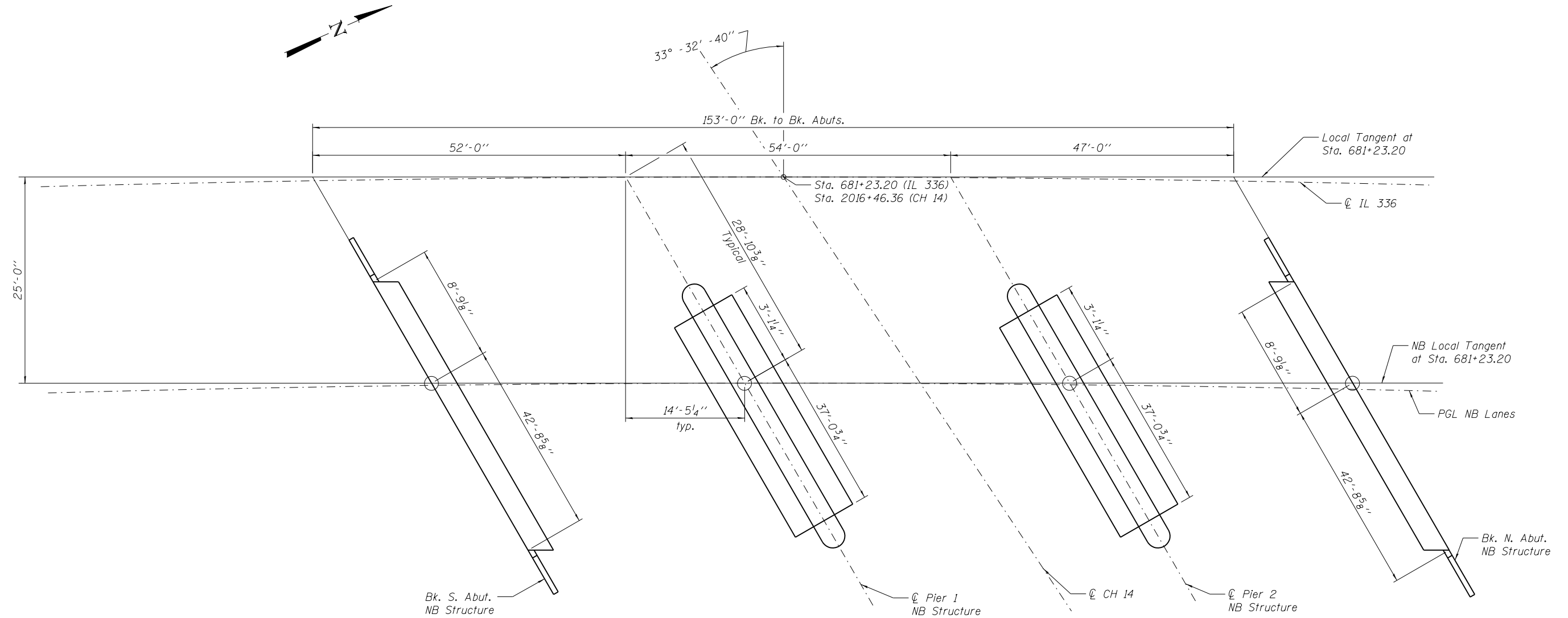
STATION 681+23.20  
 BUILT 20 BY  
 STATE OF ILLINOIS  
 F.A.P. 407  
 SEC. 55[3(PV,HB(2-6);B,B-1,B-2)]  
 LOADING HL-93  
 STRUCTURE NO. 055-0070

**NAME PLATE**  
 See Std. 515001

**TOTAL BILL OF MATERIAL (SN 055-0070)**

ITEM	UNIT	SUPER	SUB	TOTAL
Structure Excavation	Cu. Yd.	-	849	849
Concrete Structures	Cu. Yd.	-	378.8	378.8
Concrete Superstructure	Cu. Yd.	408.5	-	408.5
Bridge Deck Grooving	Sq. Yd.	923	-	923
Protective Coat	Sq. Yd.	1,129	-	1,129
Furnishing and Erecting PPC I Beams, 36"	Foot	887	-	887
Reinforcement Bars, Epoxy Coated	Pound	92,620	61,650	154,270
Slope Wall 4 Inch	Sq. Yd.	-	633	633
Furnishing Steel Piles HP 14x89	Foot	-	3,358	3,358
Driving Piles	Foot	-	3,358	3,358
Test Pile Steel HP 14x89	Each	-	4	4
Name Plates	Each	1	-	1
Concrete Sealer	Sq. Ft.	-	1,596	1,596
Geocomposite Wall Drain	Sq. Yd.	-	98	98
Granular Backfill for Structures	Cu. Yd.	-	194	194
Pipe Underdrains for Structures 4"	Foot	-	150	150
Drainage Scuppers, DS-11	Each	1	-	1

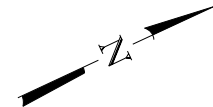
Note:  
Dimensions are measured along tangent unless otherwise noted.



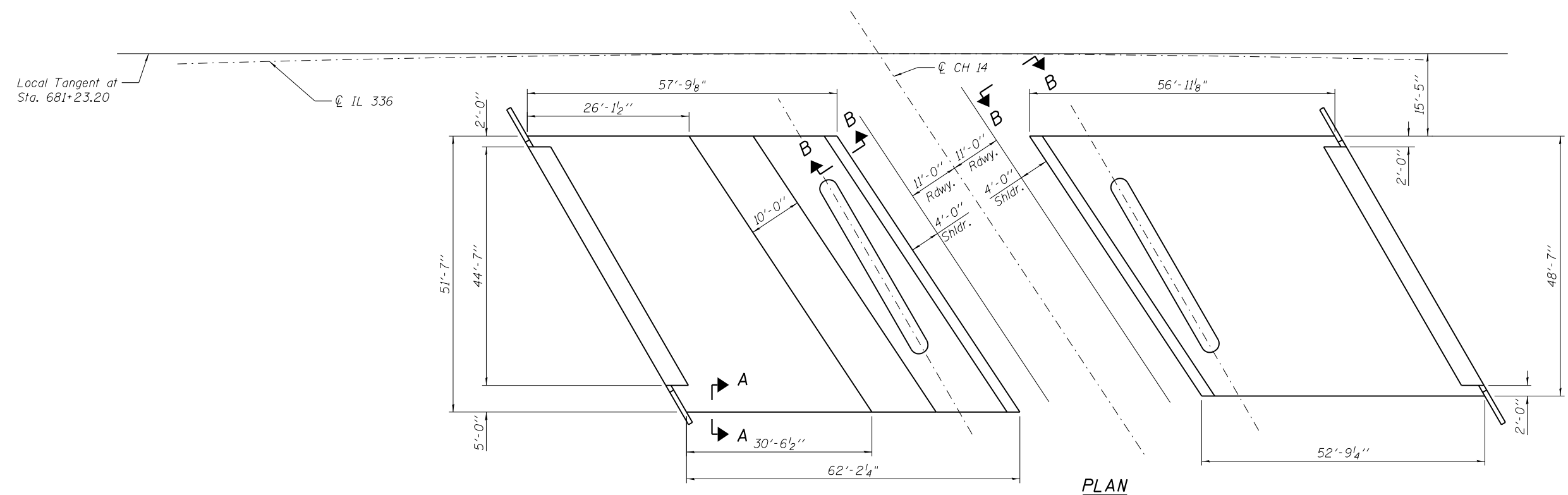
**FOOTING LAYOUT**

USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

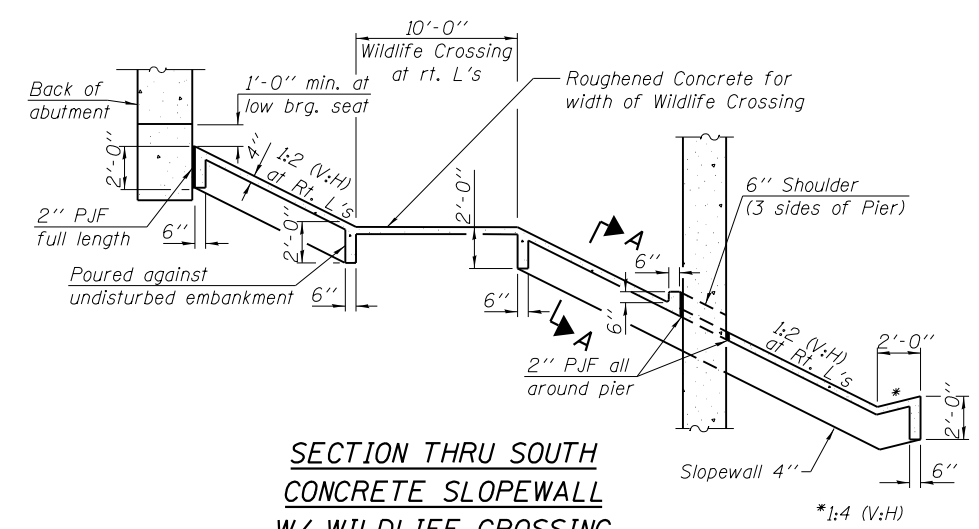
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	435
CONTRACT NO. 68B44				
ILLINOIS FED. AID PROJECT				



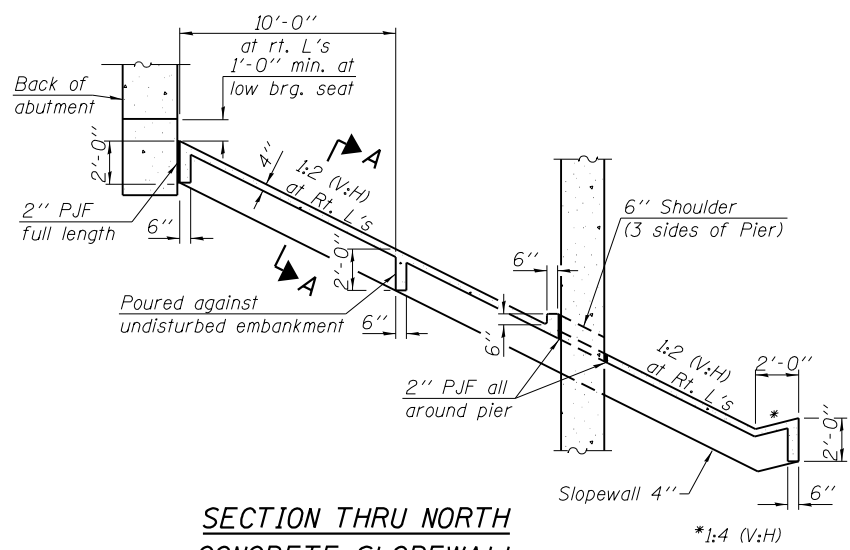
Notes:  
 Slope wall shall be reinforced with galvanized welded wire fabric, 6" x 6" - W4.0 x W4.0, weighing 58 lbs. per 100 sq. ft.  
 Dimensions are measured along Local Tangent unless noted otherwise.



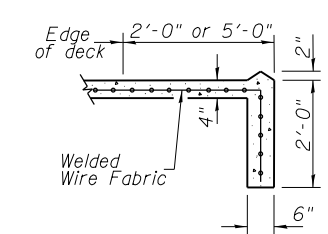
PLAN



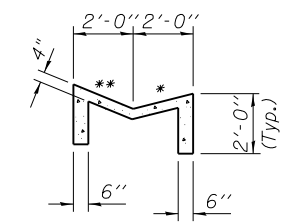
SECTION THRU SOUTH CONCRETE SLOPEWALL W/ WILDLIFE CROSSING



SECTION THRU NORTH CONCRETE SLOPEWALL



SECTION A-A



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Slope Wall 4 Inch	Sq. Yd.	633



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

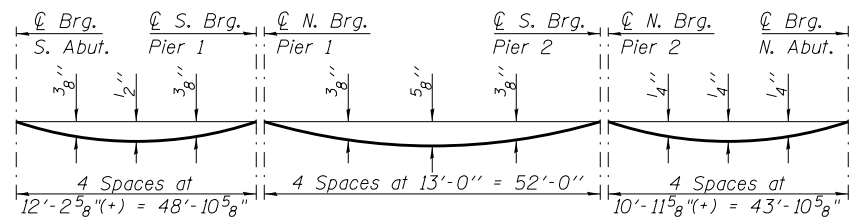
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SLOPE WALL DETAILS  
 STRUCTURE NO. 055-0070

SHEET NO. 4 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV,HB[2-6]B,B-1,B-2]	McDONOUGH	874	436
CONTRACT NO. 68B44				

ILLINOIS FED. AID PROJECT

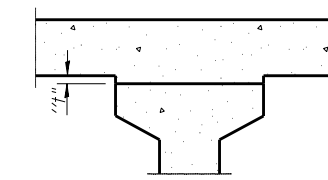


**DEAD LOAD DEFLECTION DIAGRAM**

(Includes weight of concrete, excluding beams).

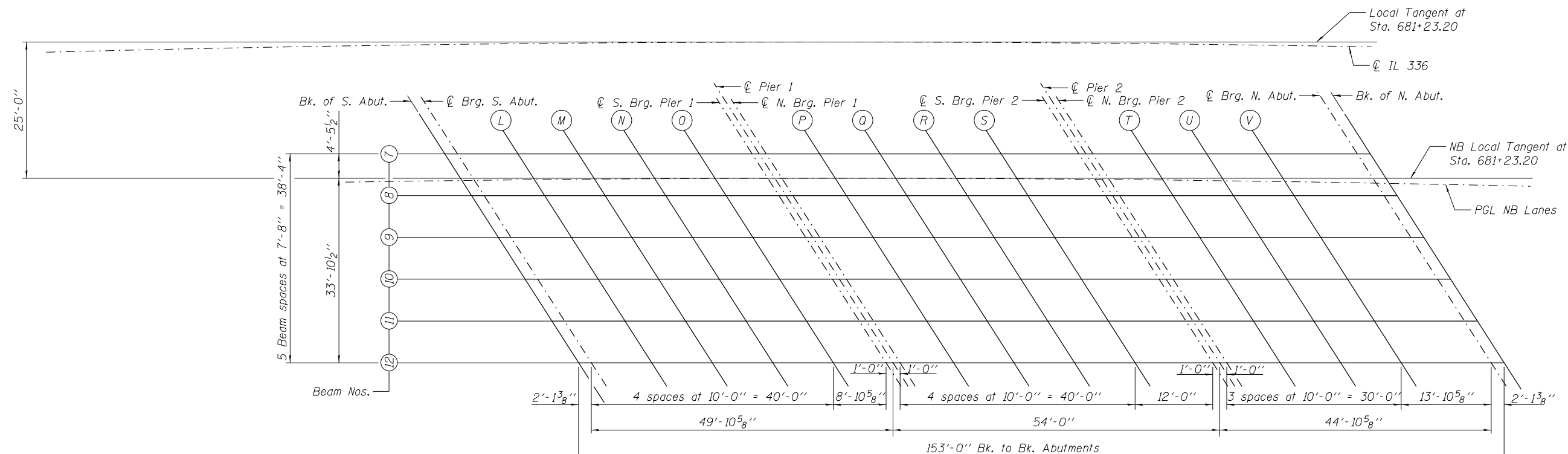
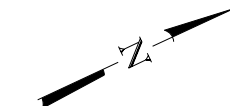
Note:

The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown on sheet 6 of 29.



To determine "t": After all precast prestressed beams have been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflections" shown on sheet 6 of 29, minus slab thickness, equals the fillet heights "t" above top flanges of beams.

**FILLET HEIGHTS**



**PLAN**

(Sheet 1 of 2)

<p>LIN ENGINEERING, LTD. Consulting Engineers Springfield, Illinois</p>	USER NAME =	DESIGNED - HP	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>TOP OF SLAB ELEVATIONS STRUCTURE NO. 055-0070</b>	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	FILE NAME =	CHECKED - RPW	REVISED -			407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	437
	PLOT SCALE =	DRAWN - AJF	REVISED -			CONTRACT NO. 68B44				
	PLOT DATE =	CHECKED - MTH	REVISED -			ILLINOIS FED. AID PROJECT				

**BEAM 7**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	680+59.17	-4.91	649.00	649.00
☉ Brg. S. Abut.	680+61.30	-4.88	649.05	649.05
L	680+71.34	-4.76	649.28	649.30
M	680+81.39	-4.65	649.50	649.54
N	680+91.43	-4.57	649.73	649.76
O	681+01.48	-4.51	649.96	649.98
☉ S. Brg. Pier 1	681+10.40	-4.48	650.16	650.16
☉ Pier 1	681+11.41	-4.47	650.19	650.19
☉ N. Brg. Pier 1	681+12.41	-4.47	650.21	650.21
P	681+22.46	-4.46	650.44	650.47
Q	681+32.50	-4.47	650.67	650.71
R	681+42.55	-4.50	650.90	650.94
S	681+52.60	-4.55	651.14	651.16
☉ S. Brg. Pier 2	681+64.65	-4.65	651.42	651.42
☉ Pier 2	681+65.65	-4.66	651.44	651.44
☉ N. Brg. Pier 2	681+66.66	-4.67	651.46	651.46
T	681+76.70	-4.78	651.70	651.72
U	681+86.75	-4.91	651.94	651.96
V	681+96.79	-5.06	652.17	652.19
☉ Brg. N. Abut.	682+10.73	-5.31	652.50	652.50
Bk. of N. Abut.	682+12.86	-5.35	652.56	652.56

**P.G.L.**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	680+61.93	0.00	648.86	648.86
☉ Brg. S. Abut.	680+64.05	0.00	648.91	648.91
L	680+74.03	0.00	649.14	649.17
M	680+84.03	0.00	649.37	649.41
N	680+94.04	0.00	649.60	649.64
O	681+04.07	0.00	649.83	649.85
☉ S. Brg. Pier 1	681+12.99	0.00	650.04	650.04
☉ Pier 1	681+13.99	0.00	650.06	650.06
☉ N. Brg. Pier 1	681+14.99	0.00	650.08	650.08
P	681+25.05	0.00	650.32	650.35
Q	681+35.11	0.00	650.55	650.59
R	681+45.19	0.00	650.78	650.82
S	681+55.28	0.00	651.01	651.04
☉ S. Brg. Pier 2	681+67.41	0.00	651.29	651.29
☉ Pier 2	681+68.42	0.00	651.31	651.31
☉ N. Brg. Pier 2	681+69.43	0.00	651.34	651.34
T	681+79.55	0.00	651.57	651.59
U	681+89.69	0.00	651.80	651.83
V	681+99.84	0.00	652.04	652.06
☉ Brg. N. Abut.	682+13.95	0.00	652.36	652.36
Bk. of N. Abut.	682+16.11	0.00	652.41	652.41

**BEAM 8**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	680+63.52	2.82	648.79	648.79
☉ Brg. S. Abut.	680+65.65	2.84	648.83	648.83
L	680+75.71	2.96	649.06	649.08
M	680+85.77	3.05	649.29	649.32
N	680+95.83	3.13	649.52	649.55
O	681+05.90	3.18	649.75	649.77
☉ S. Brg. Pier 1	681+14.84	3.20	649.95	649.95
☉ Pier 1	681+15.84	3.20	649.97	649.97
☉ N. Brg. Pier 1	681+16.85	3.20	650.00	650.00
P	681+26.91	3.21	650.23	650.26
Q	681+36.97	3.19	650.46	650.50
R	681+47.04	3.15	650.69	650.74
S	681+57.10	3.08	650.93	650.96
☉ S. Brg. Pier 2	681+69.17	2.97	651.21	651.21
☉ Pier 2	681+70.18	2.96	651.23	651.23
☉ N. Brg. Pier 2	681+71.19	2.95	651.26	651.26
T	681+81.25	2.84	651.49	651.51
U	681+91.31	2.70	651.73	651.75
V	682+01.37	2.53	651.97	651.99
☉ Brg. N. Abut.	682+15.34	2.27	652.30	652.30
Bk. of N. Abut.	682+17.46	2.23	652.35	652.35

**BEAM 9**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	680+67.88	10.54	648.57	648.57
☉ Brg. S. Abut.	680+70.01	10.56	648.62	648.62
L	680+80.09	10.67	648.84	648.87
M	680+90.17	10.75	649.07	649.11
N	681+00.25	10.82	649.30	649.34
O	681+10.33	10.86	649.53	649.55
☉ S. Brg. Pier 1	681+19.28	10.87	649.74	649.74
☉ Pier 1	681+20.29	10.87	649.76	649.76
☉ N. Brg. Pier 1	681+21.30	10.87	649.78	649.78
P	681+31.38	10.87	650.02	650.05
Q	681+41.46	10.84	650.25	650.29
R	681+51.54	10.79	650.48	650.53
S	681+61.62	10.71	650.72	650.75
☉ S. Brg. Pier 2	681+73.71	10.59	651.00	651.00
☉ Pier 2	681+74.72	10.58	651.02	651.02
☉ N. Brg. Pier 2	681+75.73	10.57	651.05	651.05
T	681+85.81	10.44	651.29	651.30
U	681+95.89	10.29	651.52	651.55
V	682+05.96	10.12	651.76	651.78
☉ Brg. N. Abut.	682+19.95	9.84	652.10	652.10
Bk. of N. Abut.	682+22.09	9.80	652.15	652.15

**BEAM 10**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	680+72.25	18.26	648.35	648.35
☉ Brg. S. Abut.	680+74.39	18.28	648.40	648.40
L	680+84.48	18.38	648.63	648.65
M	680+94.58	18.45	648.86	648.89
N	681+04.68	18.50	649.09	649.12
O	681+14.78	18.53	649.32	649.34
☉ S. Brg. Pier 1	681+23.75	18.54	649.53	649.53
☉ Pier 1	681+24.76	18.54	649.55	649.55
☉ N. Brg. Pier 1	681+25.77	18.54	649.57	649.57
P	681+35.86	18.52	649.81	649.83
Q	681+45.96	18.48	650.04	650.08
R	681+56.06	18.42	650.27	650.32
S	681+66.15	18.34	650.51	650.54
☉ S. Brg. Pier 2	681+78.27	18.21	650.79	650.79
☉ Pier 2	681+79.28	18.20	650.82	650.82
☉ N. Brg. Pier 2	681+80.29	18.18	650.84	650.84
T	681+90.39	18.04	651.08	651.10
U	682+00.48	17.88	651.32	651.34
V	682+10.57	17.70	651.56	651.58
☉ Brg. N. Abut.	682+24.59	17.41	651.89	651.89
Bk. of N. Abut.	682+26.72	17.36	651.94	651.94

**BEAM 11**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	680+76.64	25.97	648.14	648.14
☉ Brg. S. Abut.	680+78.78	25.99	648.19	648.19
L	680+88.89	26.08	648.42	648.44
M	680+99.01	26.14	648.65	648.68
N	681+09.12	26.19	648.88	648.91
O	681+19.24	26.21	649.11	649.13
☉ S. Brg. Pier 1	681+28.22	26.21	649.31	649.31
☉ Pier 1	681+29.24	26.20	649.34	649.34
☉ N. Brg. Pier 1	681+30.25	26.20	649.36	649.36
P	681+40.36	26.18	649.60	649.62
Q	681+50.48	26.13	649.83	649.87
R	681+60.59	26.05	650.07	650.11
S	681+70.71	25.96	650.30	650.33
☉ S. Brg. Pier 2	681+82.84	25.82	650.59	650.59
☉ Pier 2	681+83.85	25.80	650.61	650.61
☉ N. Brg. Pier 2	681+84.86	25.79	650.63	650.63
T	681+94.98	25.64	650.87	650.89
U	682+05.09	25.47	651.11	651.14
V	682+15.20	25.28	651.35	651.37
☉ Brg. N. Abut.	682+29.24	24.97	651.69	651.69
Bk. of N. Abut.	682+31.38	24.92	651.74	651.74

**BEAM 12**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. of S. Abut.	680+81.04	33.68	647.92	647.92
☉ Brg. S. Abut.	680+83.19	33.70	647.97	647.97
L	680+93.32	33.78	648.20	648.22
M	681+03.45	33.83	648.43	648.46
N	681+13.58	33.86	648.66	648.70
O	681+23.72	33.88	648.90	648.92
☉ S. Brg. Pier 1	681+32.72	33.87	649.10	649.10
☉ Pier 1	681+33.73	33.86	649.13	649.13
☉ N. Brg. Pier 1	681+34.74	33.86	649.15	649.15
P	681+44.88	33.82	649.39	649.41
Q	681+55.01	33.76	649.62	649.66
R	681+65.14	33.68	649.86	649.90
S	681+75.27	33.58	650.09	650.12
☉ S. Brg. Pier 2	681+87.43	33.42	650.38	650.38
☉ Pier 2	681+88.44	33.41	650.40	650.40
☉ N. Brg. Pier 2	681+89.46	33.39	650.43	650.43
T	681+99.59	33.24	650.67	650.68
U	682+09.71	33.05	650.91	650.93
V	682+19.84	32.85	651.15	651.17
☉ Brg. N. Abut.	682+33.90	32.53	651.49	651.49
Bk. of N. Abut.	682+36.05	32.48	651.54	651.54

Note: Offsets measured from P.G.L.

(Sheet 2 of 2)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

TOP OF SLAB ELEVATIONS  
STRUCTURE NO. 055-0070

SHEET NO. 6 OF 29 SHEETS

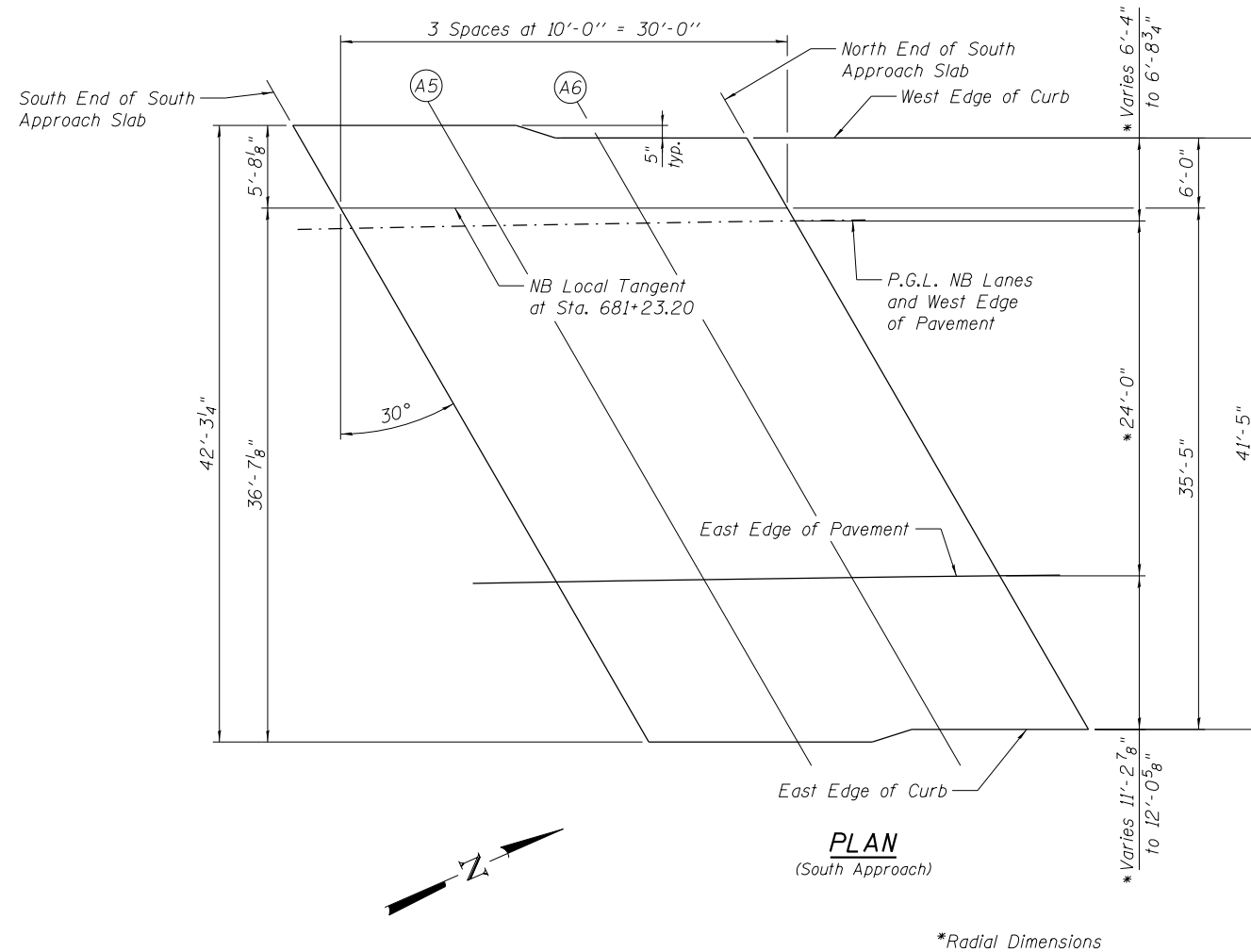
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55I3(PV,HB(2-6)B,B-1,B-2)]	McDONOUGH	874	438
CONTRACT NO. 68B44				
ILLINOIS FED. AID PROJECT				

**WEST EDGE OF CURB**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Slab	680+29.52	-6.64	648.39
A5	680+39.42	-6.70	648.62
A6	680+49.56	-6.35	648.84
N. End of S. Appr. Slab	680+59.46	-6.45	649.07

**P.G.L. & WEST EDGE OF PAVEMENT**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Slab	680+33.20	0.00	648.20
A5	680+43.15	0.00	648.43
A6	680+53.11	0.00	648.66
N. End of S. Appr. Slab	680+63.08	0.00	648.89



**EAST EDGE OF PAVEMENT**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Slab	680+46.58	24.00	647.53
A5	680+56.60	24.00	647.76
A6	680+66.63	24.00	647.99
N. End of S. Appr. Slab	680+76.68	24.00	648.22

**EAST EDGE OF CURB**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Slab	680+53.36	36.06	647.19
A5	680+63.35	35.94	647.43
A6	680+73.11	35.40	647.67
N. End of S. Appr. Slab	680+83.10	35.24	647.91

Note: Offsets measured from PGL NB Lanes.

(Sheet 1 of 2)



USER NAME =	DESIGNED - HP	REVISED -
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PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF APPROACH SLAB ELEVATIONS  
STRUCTURE NO. 055-0070**

SHEET NO. 7 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	439
CONTRACT NO. 68B44				

ILLINOIS FED. AID PROJECT

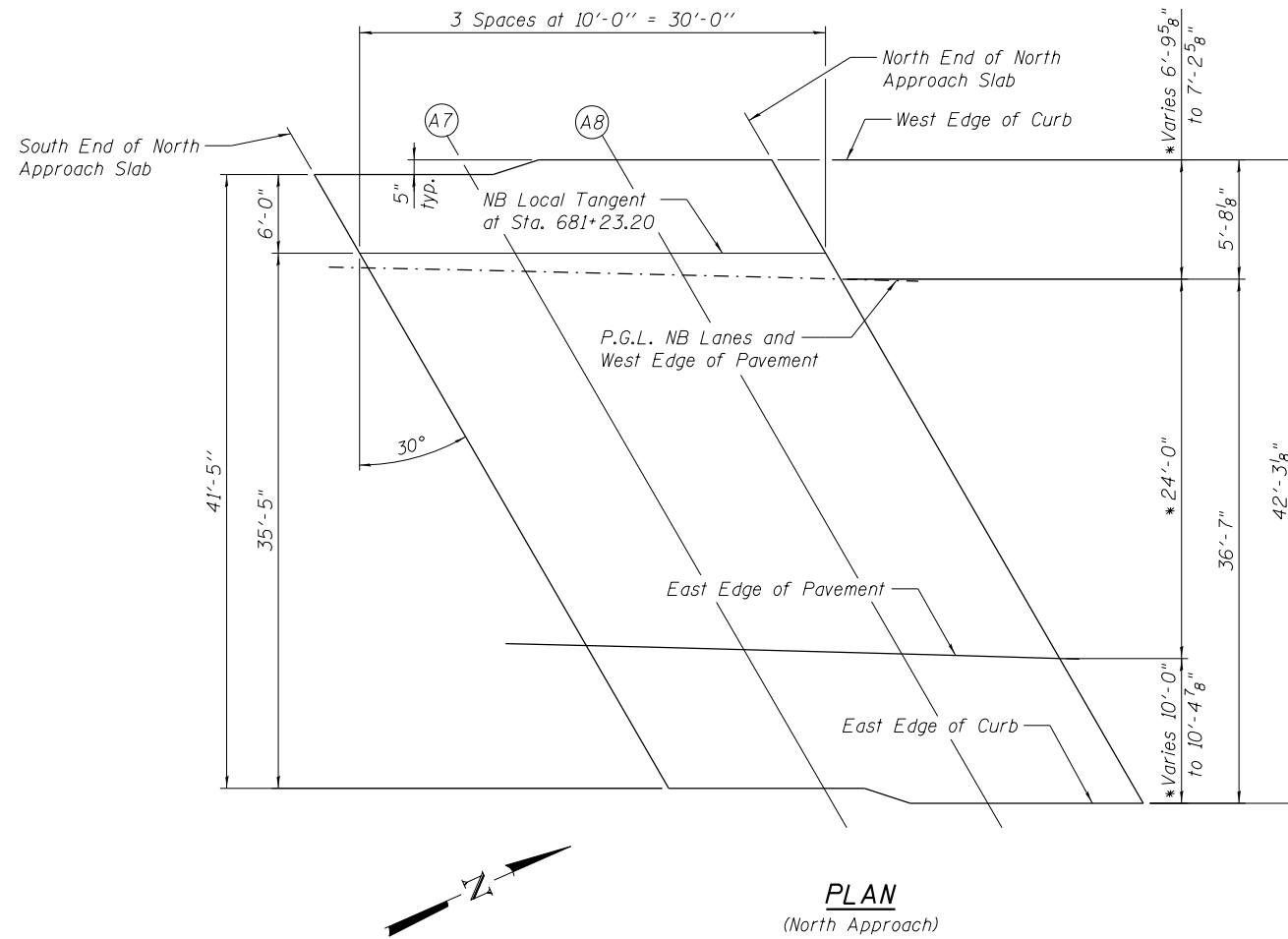


**WEST EDGE OF CURB**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Slab	682+10.78	-6.85	652.57
A7	682+20.96	-6.81	652.80
A8	682+30.89	-7.21	653.05
N. End of N. Appr. Slab	682+41.08	-7.22	653.28

**P.G.L. & WEST EDGE OF PAVEMENT**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Slab	682+14.93	0.00	652.38
A7	682+25.12	0.00	652.62
A8	682+35.32	0.00	652.85
N. End of N. Appr. Slab	682+45.53	0.00	653.09



\*Radial Dimensions

**EAST EDGE OF PAVEMENT**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Slab	682+29.62	24.00	651.74
A7	682+39.88	24.00	651.97
A8	682+50.16	24.00	652.21
N. End of N. Appr. Slab	682+60.45	24.00	652.45

**EAST EDGE OF CURB**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Slab	682+35.82	34.03	651.47
A7	682+46.09	34.00	651.71
A8	682+56.64	34.38	651.93
N. End of N. Appr. Slab	682+66.92	34.32	652.17

Note: Offsets measured from P.G.L.

(Sheet 2 of 2)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

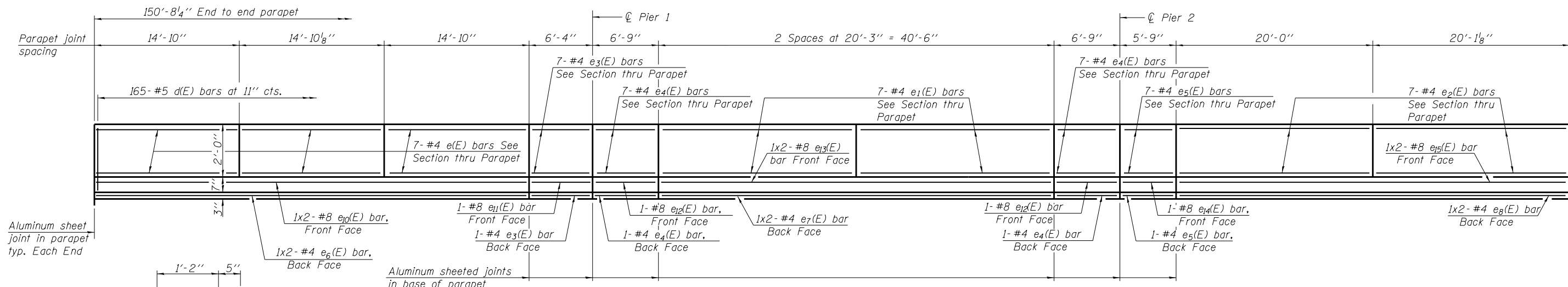
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF APPROACH SLAB ELEVATIONS  
STRUCTURE NO. 055-0070**

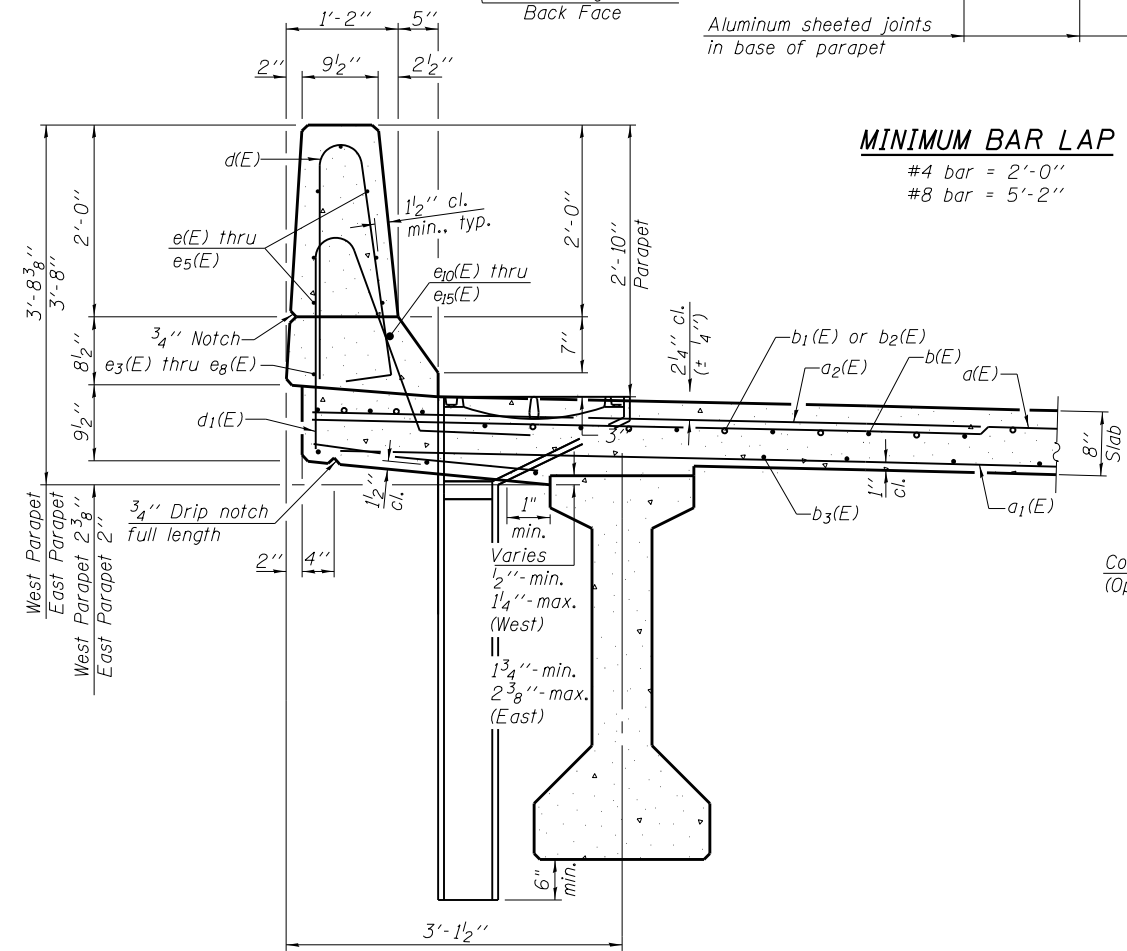
SHEET NO. 8 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	440
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	



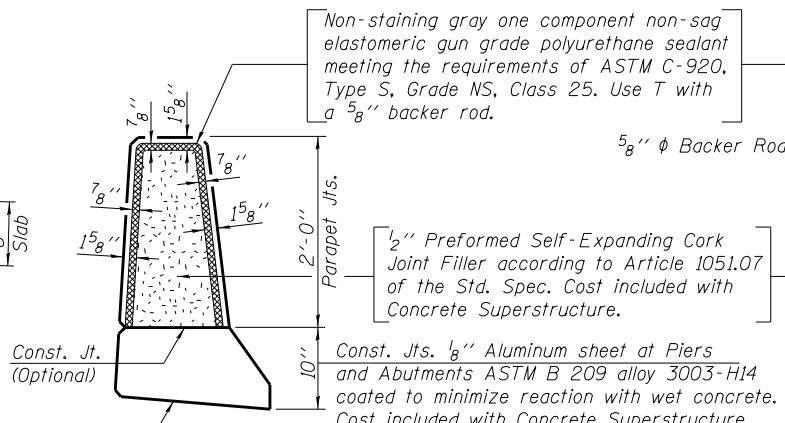


**INSIDE ELEVATION OF PARAPET**

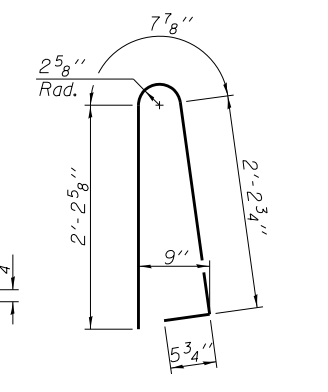


**SECTION THRU PARAPET**

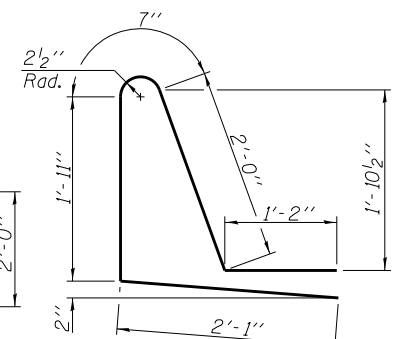
**MINIMUM BAR LAP**  
 #4 bar = 2'-0"  
 #8 bar = 5'-2"



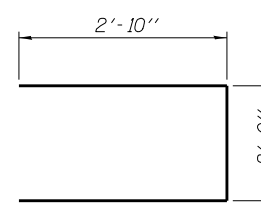
**PARAPET JOINT DETAILS**



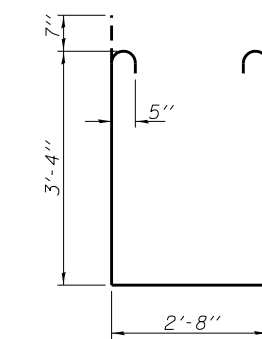
**BAR d(E)**



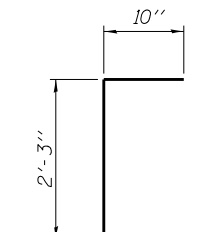
**BAR d1(E)**



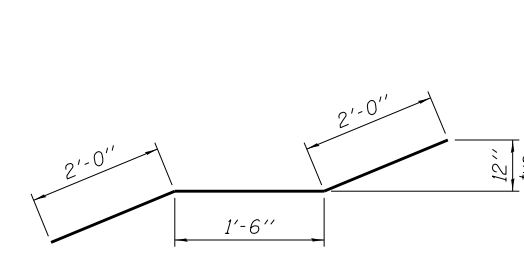
**BAR s(E)**



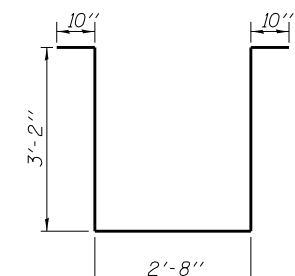
**BAR s1(E)**



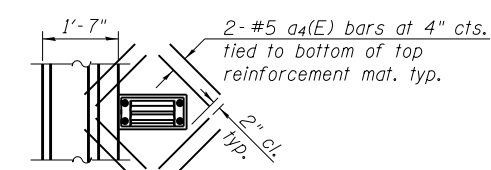
**BAR v(E)**



**BAR m7(E)**



**BAR s2(E)**



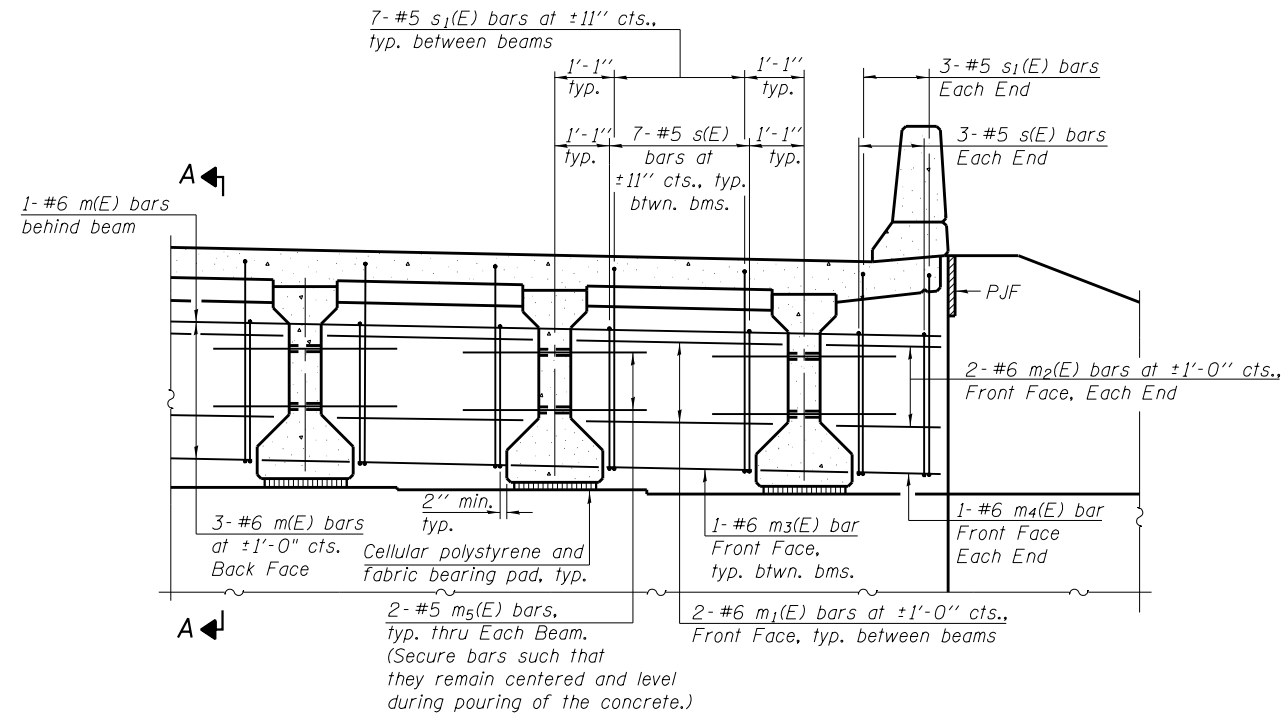
**PLAN AT SCUPPER**

Note:  
 Cut longitudinal reinforcement to clear drainage scuppers.

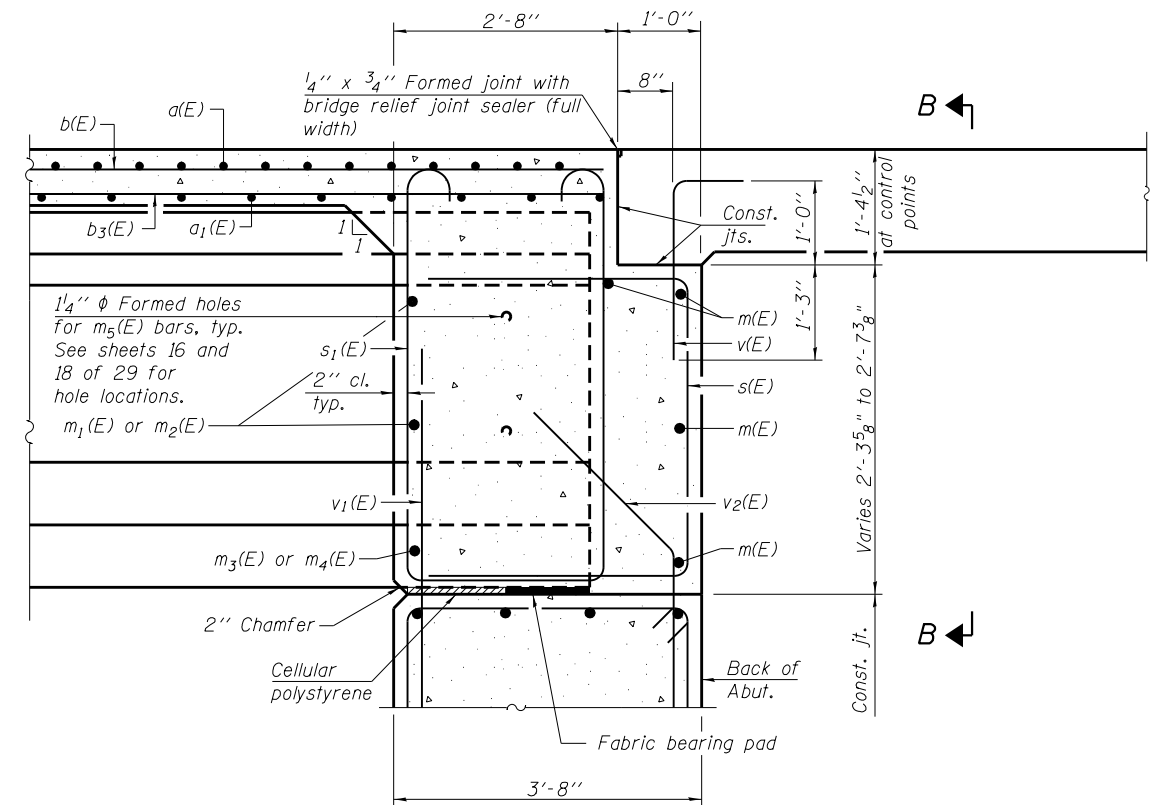
**SUPERSTRUCTURE BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a(E)	329	#5	43'-11"	—
a1(E)	223	#5	43'-3"	—
a2(E)	640	#6	6'-6"	—
a3(E)	8	#5	26'-8"	—
a4(E)	8	#5	1'-6"	—
b(E)	235	#5	32'-2"	—
b1(E)	44	#6	24'-9"	—
b2(E)	44	#6	23'-9"	—
b3(E)	276	#5	27'-3"	—
d(E)	330	#5	5'-7"	U
d1(E)	330	#5	7'-9"	U
e(E)	42	#4	14'-7"	—
e1(E)	28	#4	19'-11"	—
e2(E)	28	#4	19'-9"	—
e3(E)	16	#4	6'-0"	—
e4(E)	32	#4	6'-5"	—
e5(E)	16	#4	5'-5"	—
e6(E)	4	#4	23'-1"	—
e7(E)	4	#4	21'-1"	—
e8(E)	4	#4	21'-0"	—
e9(E)	4	#8	24'-8"	—
e10(E)	2	#8	6'-0"	—
e11(E)	4	#8	6'-5"	—
e12(E)	4	#8	22'-8"	—
e13(E)	4	#8	22'-7"	—
e14(E)	2	#8	5'-5"	—
e15(E)	4	#8	22'-7"	—
m(E)	8	#6	51'-0"	—
m1(E)	60	#6	7'-9"	—
m2(E)	8	#6	2'-10"	—
m3(E)	30	#6	6'-8"	—
m4(E)	4	#6	2'-4"	—
m5(E)	24	#5	4'-0"	—
m7(E)	12	#8	5'-6"	—
s(E)	82	#5	7'-8"	U
s1(E)	82	#5	10'-6"	U
s2(E)	70	#4	10'-8"	U
v(E)	90	#5	3'-1"	Γ
Reinforcement Bars, Epoxy Coated			Lbs.	61,880
Concrete Superstructure			Cu. Yds.	276.1

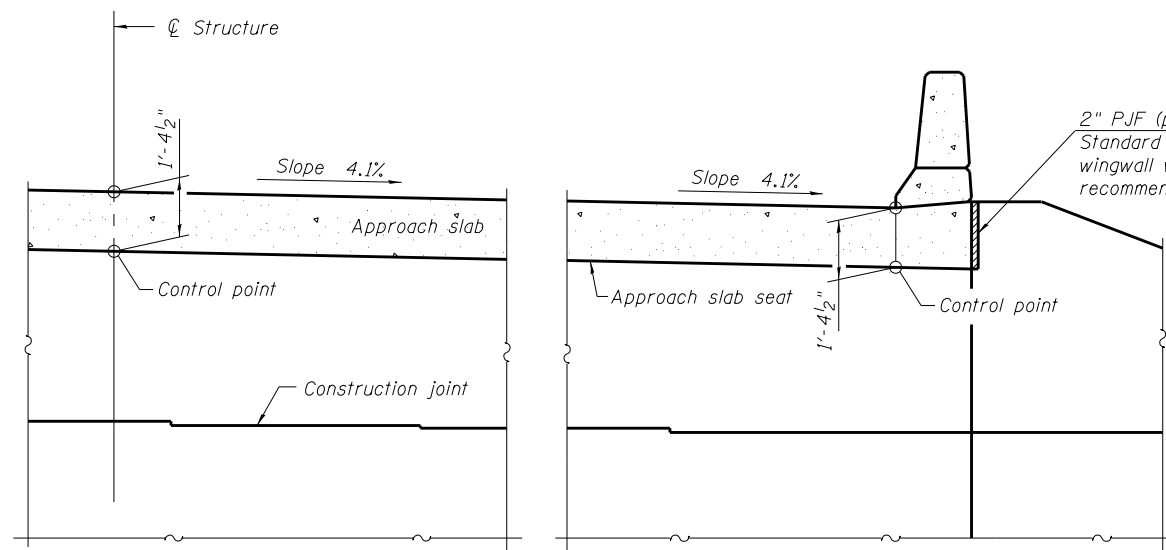
Bars indicated thus 1 x 2-#8 etc. indicates 1 line of bars with 2 lengths per line.



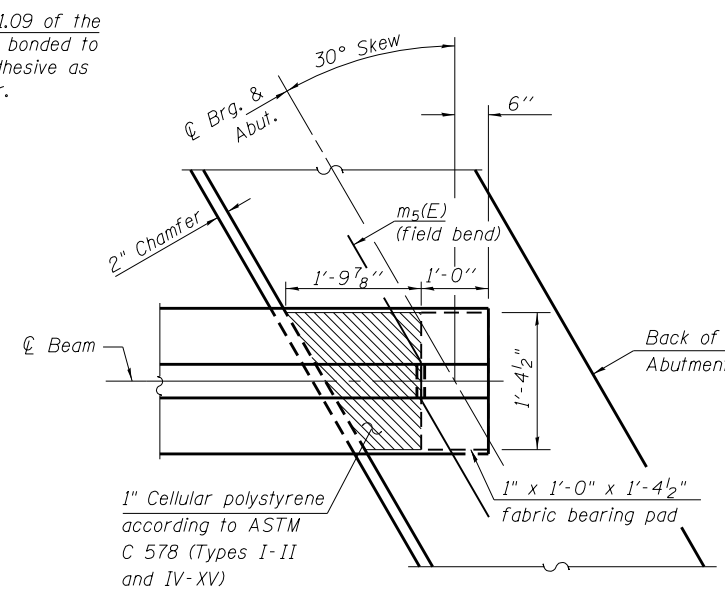
**DIAPHRAGM ELEVATION AT ABUTMENT**



**SECTION A-A**  
(at Rt. L's)



**SECTION B-B**



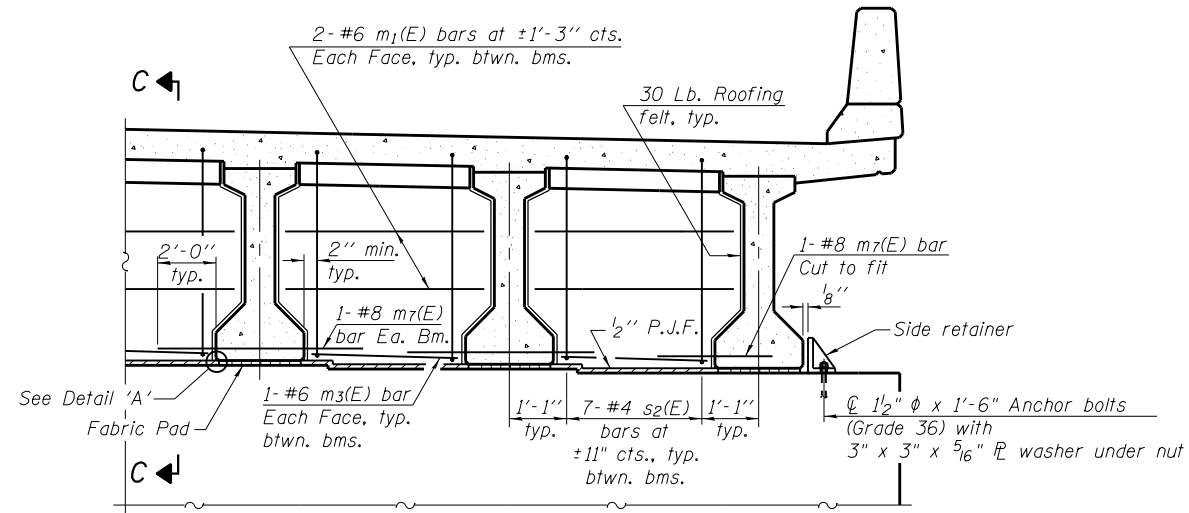
**PARTIAL PLAN AT ABUTMENT**  
(Showing bottom flange of beam)

**Notes:**  
 Reinforcement bars in diaphragm are billed with superstructure on sheet 10 of 29.  
 Concrete in diaphragm is included with Concrete Superstructure on sheet 10 of 29.  
 For details of bars s(E), s1(E), and v(E) see sheet 10 of 29.  
 The s(E) and s1(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams.  
 The approach slab seat shall have a constant slope determined from the control points shown.  
 Cost of cellular polystyrene is included with Concrete Superstructure.

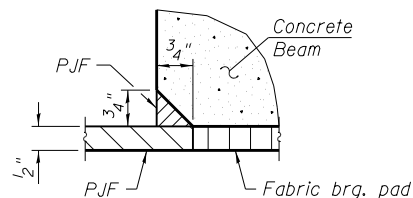
(Sheet 1 of 2)

USER NAME =	DESIGNED - HP	REVISED -
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PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

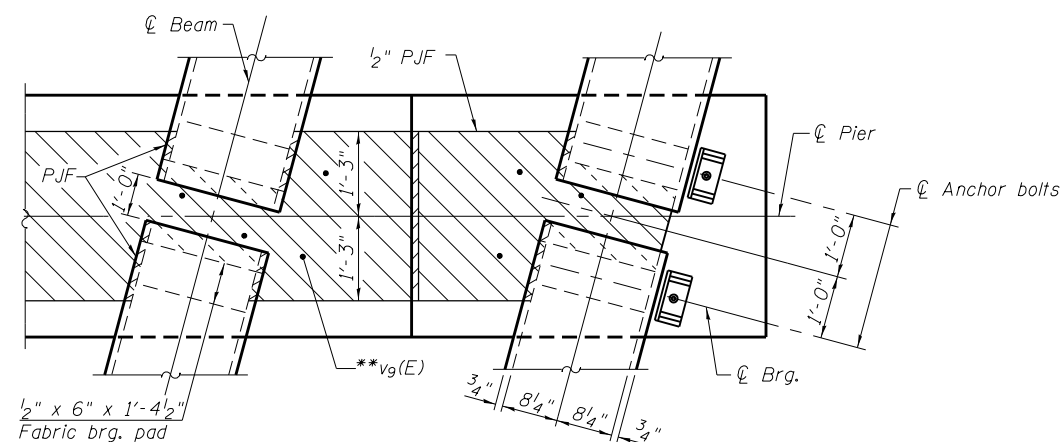
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	443
CONTRACT NO. 68B44				
ILLINOIS FED. AID PROJECT				



**DIAPHRAM AT PIER**

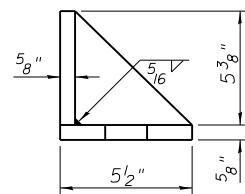


**DETAIL 'A'**



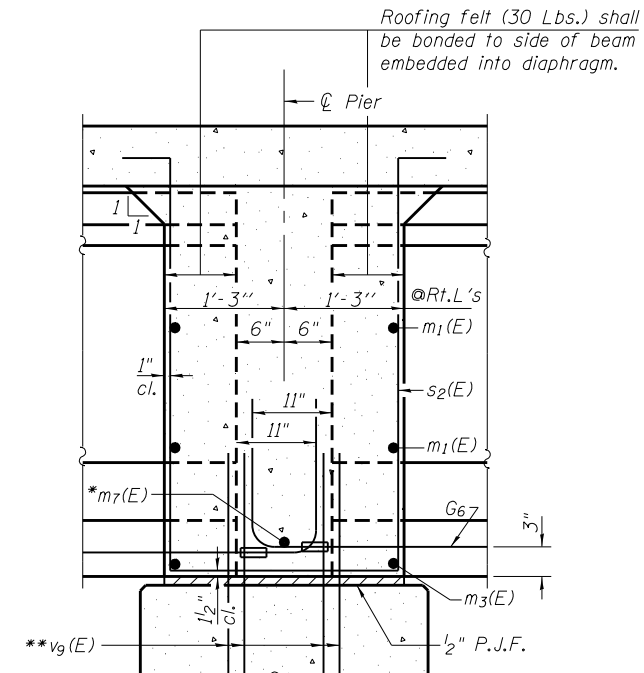
**PLAN AT PIER**

(Showing bearing pads and P.J.F. details)



**SIDE RETAINER**

(2 required each side of pier).  
Equivalent rolled angle with stiffeners  
will be allowed in lieu of welded plates.



**SECTION C-C**

Dimensions along  $\perp$  of beam, except as shown.

\* Tightly fasten the #8 bars together with No. 9 wire ties.

\*\* For location and quantity of  $v_9(E)$  bars see sheets 23 and 24 of 29.

**Notes:**

Reinforcement bars in diaphragm are billed with superstructure on sheet 10 of 29.

Concrete in diaphragm is included with Concrete Superstructure on sheet 10 of 29.

For details of bars  $s_2(E)$  see sheet 10 of 29.

The  $s_2(E)$  bars shall be placed parallel to the beams.

Spacing for these bars shall be at right angles to the beams.

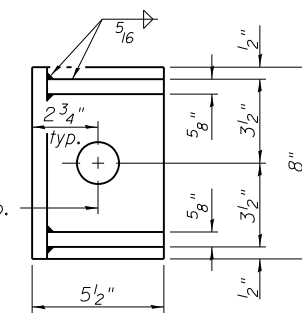
Cost of 30 Lb. roofing felt is included with Concrete Superstructure. The side retainer shall be galvanized after shop fabrication according to AASHTO M 111. Cost of side retainer and anchor bolts shall be included with Concrete Structures.

Anchor bolt assemblies shall be galvanized according to Article 1006.09 of the Standard Specifications.

Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

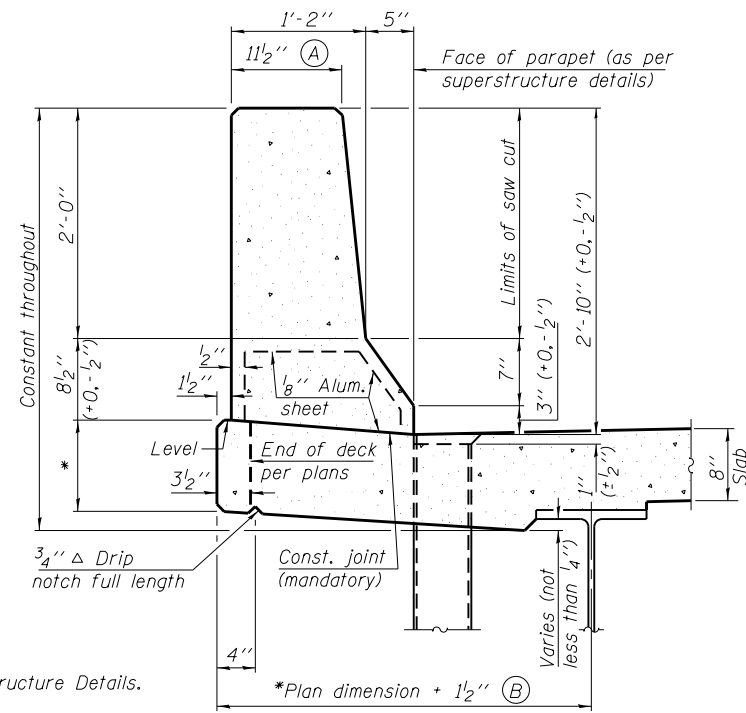
Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.

Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.



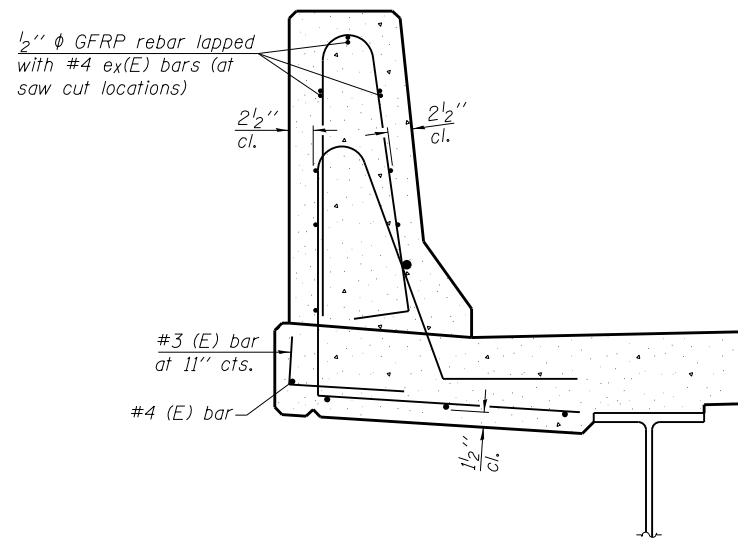
$\perp$  1 3/4"  $\phi$  hole, typ.

(Sheet 2 of 2)



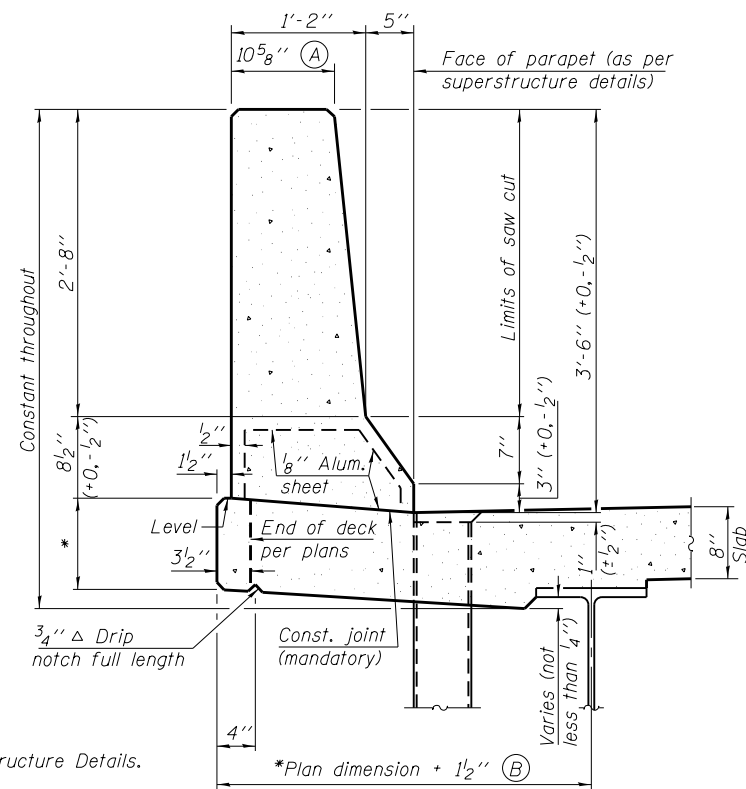
**34" F SHAPE PARAPET SECTION**  
(Showing dimensions)

\*See Superstructure Details.



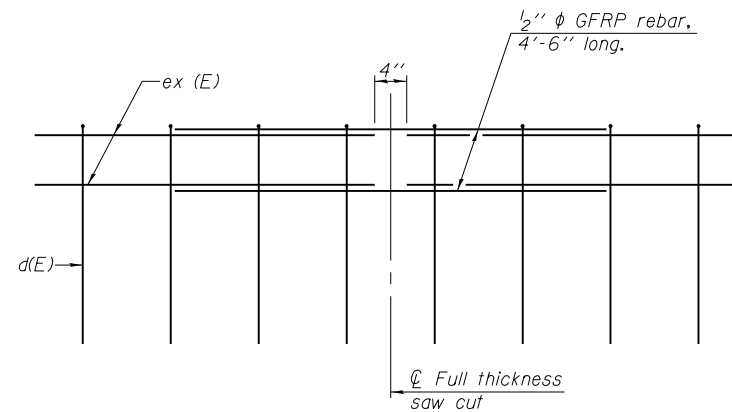
**SECTION**

(34" parapet shown - 42" parapet similar)  
(Showing reinforcement clearances for slip forming and additional reinforcement bars)



**42" F SHAPE PARAPET SECTION**  
(Showing dimensions)

\*See Superstructure Details.

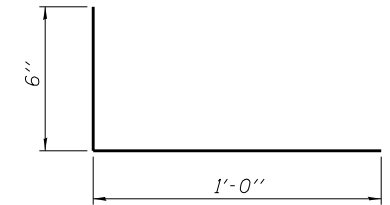


**GFRP REBAR STIFFENING DETAIL**

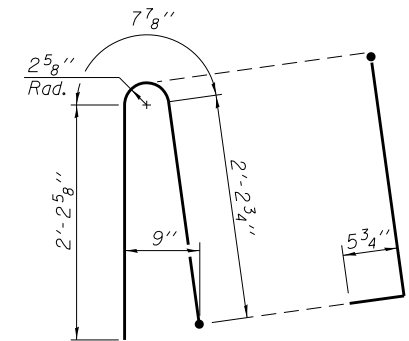
(Place as shown in parapet section at each parapet joint location.)

**GENERAL NOTES**

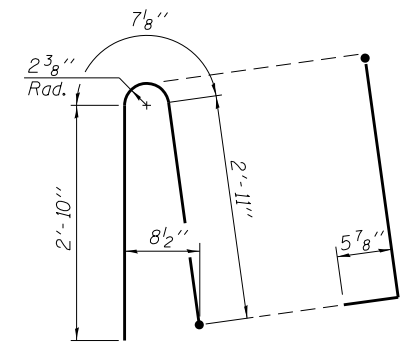
All dimensions shall remain the same as shown on superstructure details, except dimensions A and B which are to be revised as shown to provide additional clearance. Additional concrete needed to revise dimension A and B = 0.0165 cu. yds./ft. for 34" parapet or = 0.0223 cu. yds./ft. for 42" parapet. Place aluminum sheet in curb portion at and near piers. Full thickness saw cut at all joint locations in lieu of cork joint filler. Steel superstructure shown. Other superstructure types similar.



**#3 (E) BAR**



**ALTERNATE BAR d(E)**  
(For 34" parapet when conduit is present)



**ALTERNATE BAR d(E)**  
(For 42" parapet when conduit is present)

SFP 34-42

8-16-12

**E** LIN ENGINEERING, LTD.  
Consulting Engineers  
Springfield, Illinois

USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

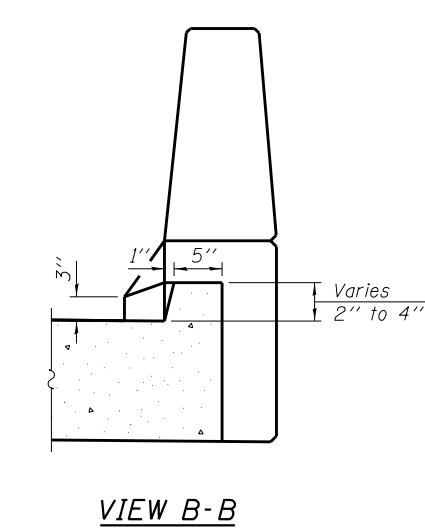
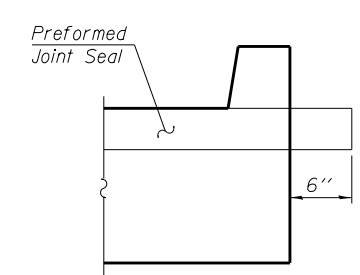
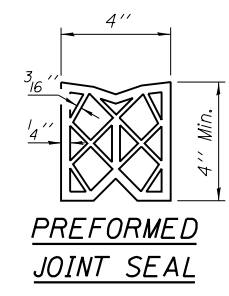
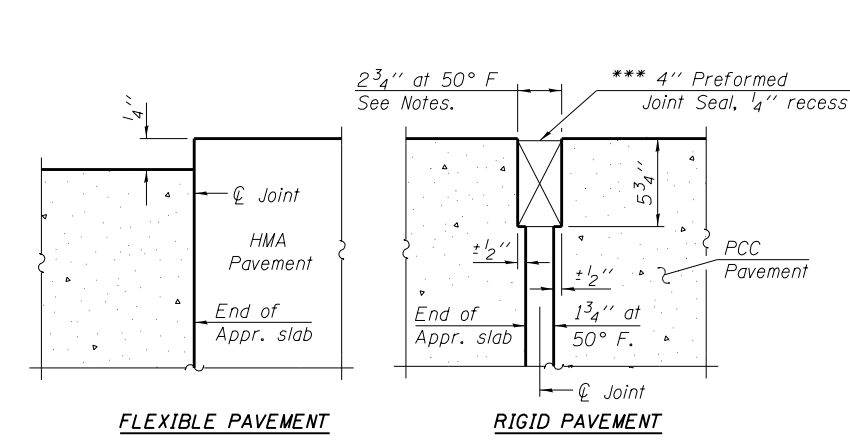
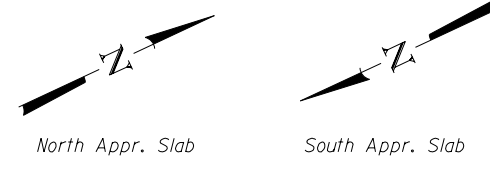
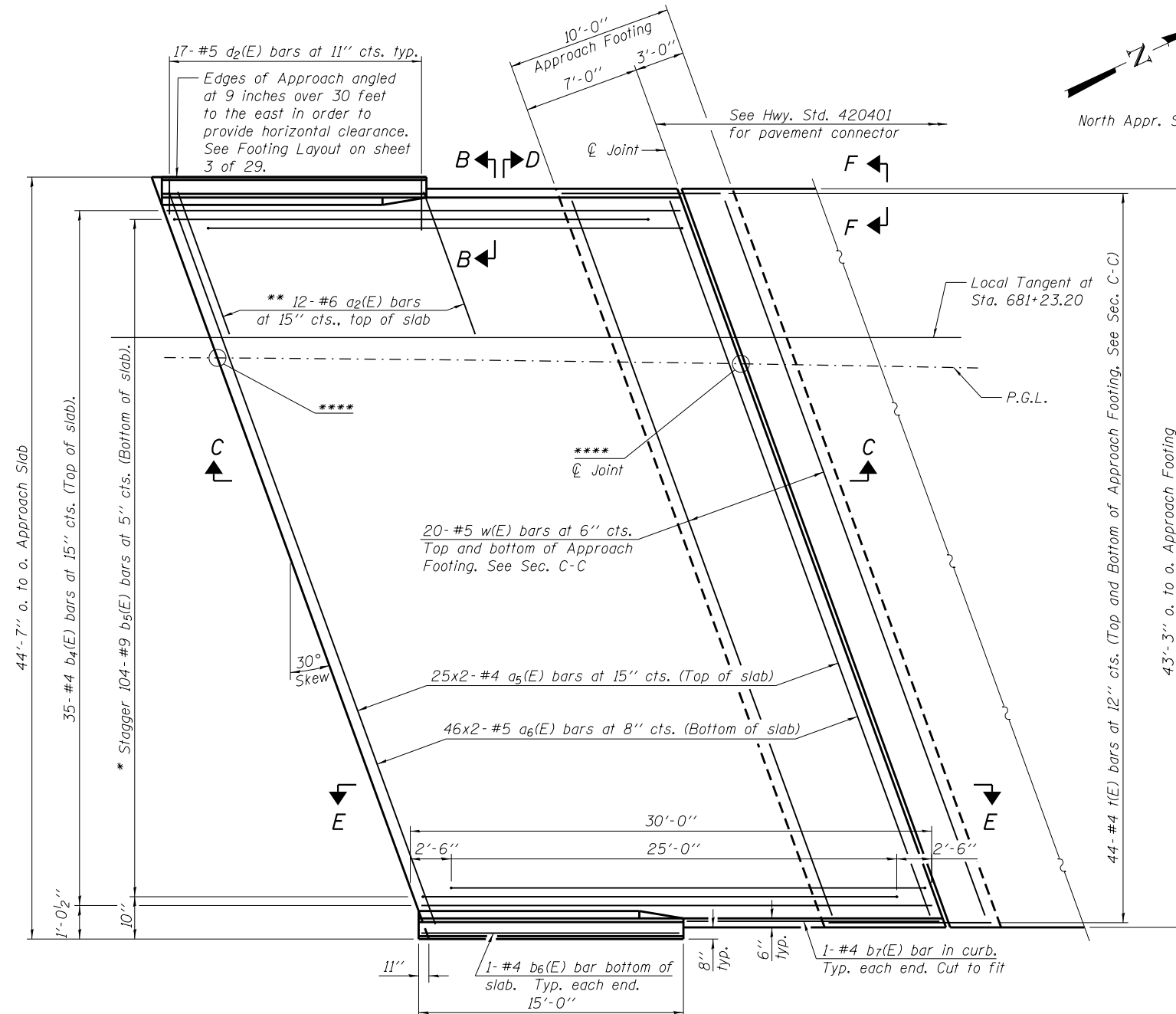
**CONCRETE PARAPET SLIPFORMING OPTION  
STRUCTURE NO. 055-0070**

SHEET NO. 12A OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	444A
				CONTRACT NO. 68B44
ILLINOIS FED. AID PROJECT				

Notes:  
 See sheet 14 of 29 for Sections C-C & D-D and View E-E.  
 $a_5(E)$  and  $a_6(E)$  bar spacings measured along  $\bar{C}$  structure.  
 The joint opening shall be determined per Article 520.04 except that on jointless structures, the distance described as the bridge length between the nearest fixed bearings each way from the joint shall be taken as half the bridge length plus the approach slab length. The minimum dimension shall be  $1\frac{1}{2}$ " for installation purposes.

\*\*\* Cost included with Concrete Superstructure.



**MINIMUM BAR LAP**

#4 bar = 2'-4"  
 #5 bar = 2'-7"

**PLAN**  
 (North approach shown, South approach similar)  
 (Transverse dimensions at right angles to Tangent)

\* Tilt #9  $b_5(E)$  bars as required to maintain clearance.  
 \*\* Space between  $a_5(E)$  bars, typ. each parapet.  
 \*\*\*\* See sheets 7 and 8 of 29 for beginning and ending of approach slab stations along P.G.L.

(Sheet 1 of 2)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

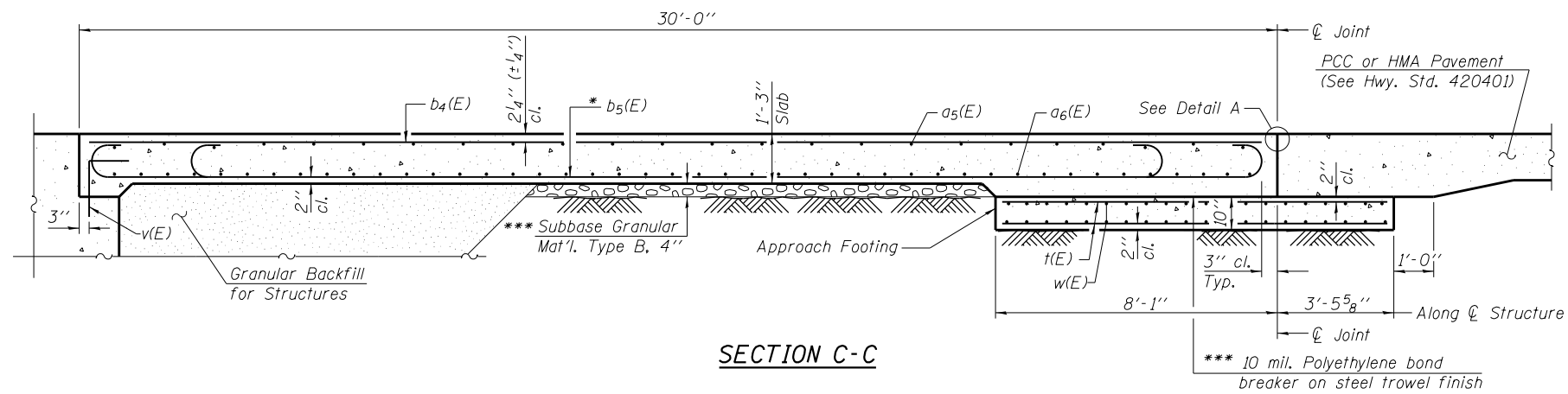
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

BRIDGE APPROACH SLAB DETAILS  
 STRUCTURE NO. 055-0070

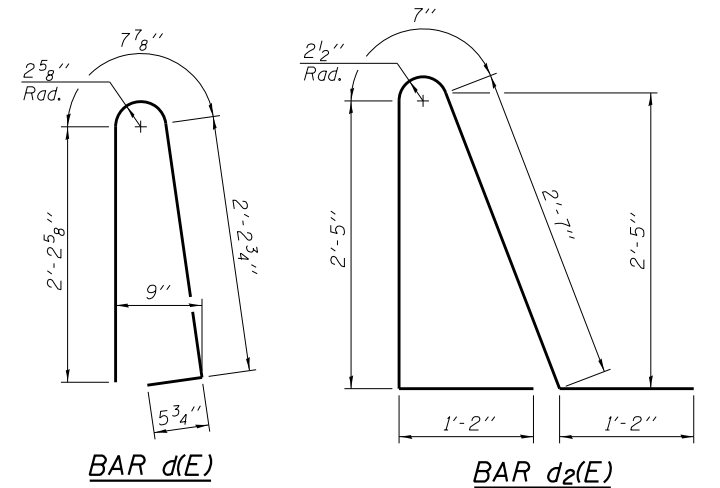
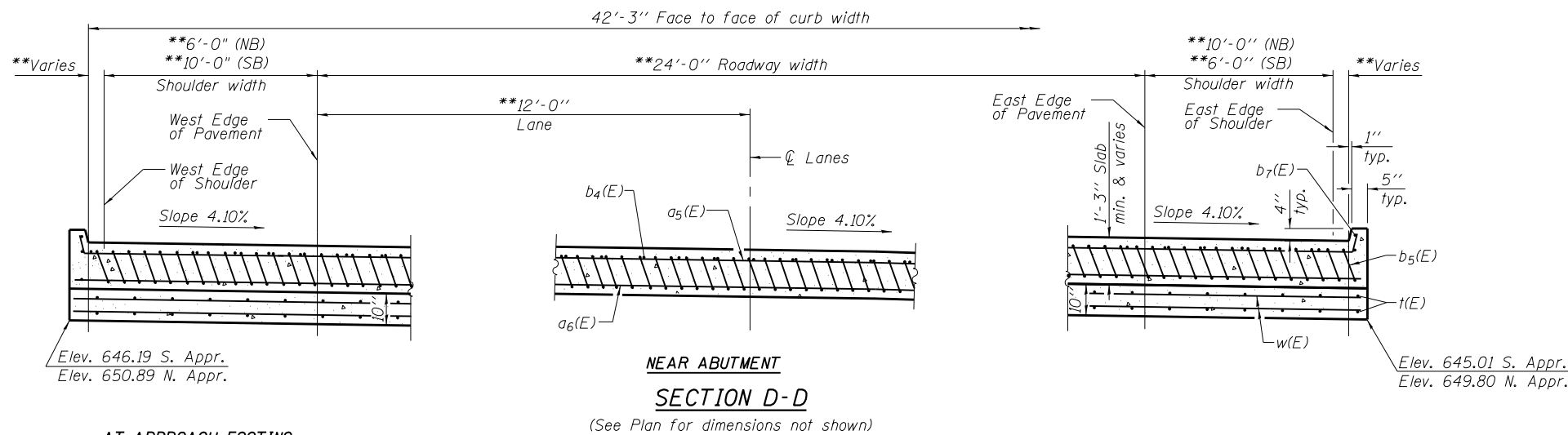
SHEET NO. 13 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	445
CONTRACT NO. 68B44				

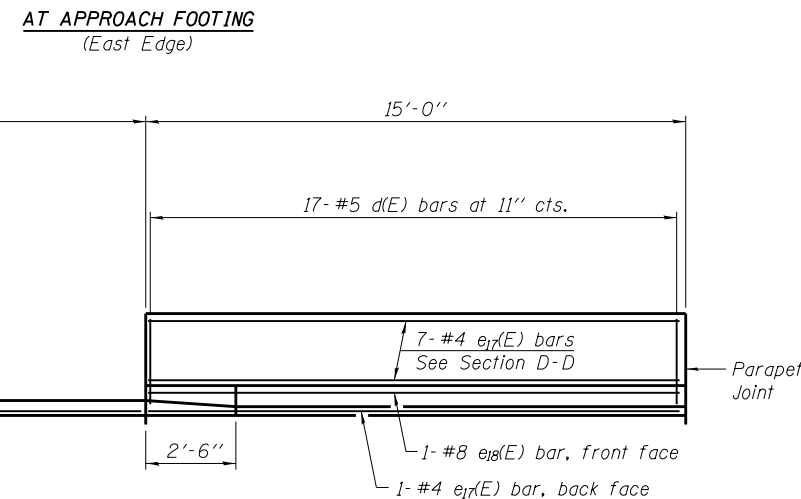
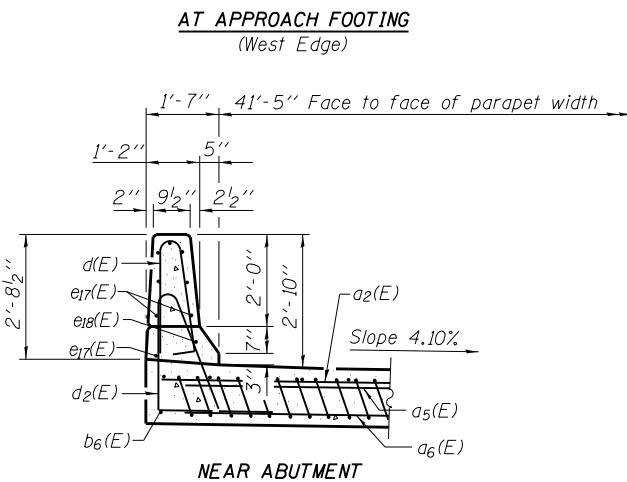
ILLINOIS FED. AID PROJECT



Notes:  
 See sheet 13 of 29 for Detail A and View B-B.  
 Approach slab and parapet concrete shall be paid for as Concrete Superstructure.  
 Approach footing concrete shall be paid for as Concrete Structures.  
 Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.  
 For v(E) bar details, see sheets 9 thru 11 of 29.  
 The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.  
 Cost of excavation for approach footing included with Concrete Structures.  
 For Granular Backfill for Structures and drainage treatment details, see sheet 2 of 29.  
 For additional parapet details, see sheet 10 of 29.

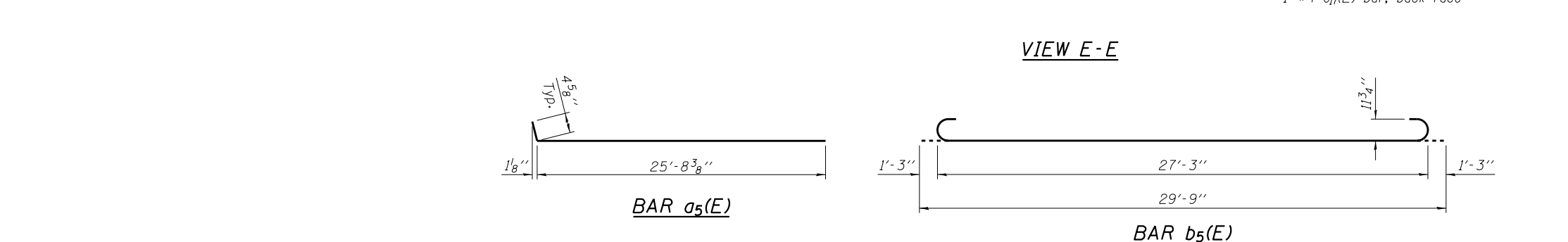


\* Tilt #9 b5(E) bars as required to maintain clearance.  
 \*\* Radial Dimensions  
 \*\*\* Cost included with Concrete Superstructure.



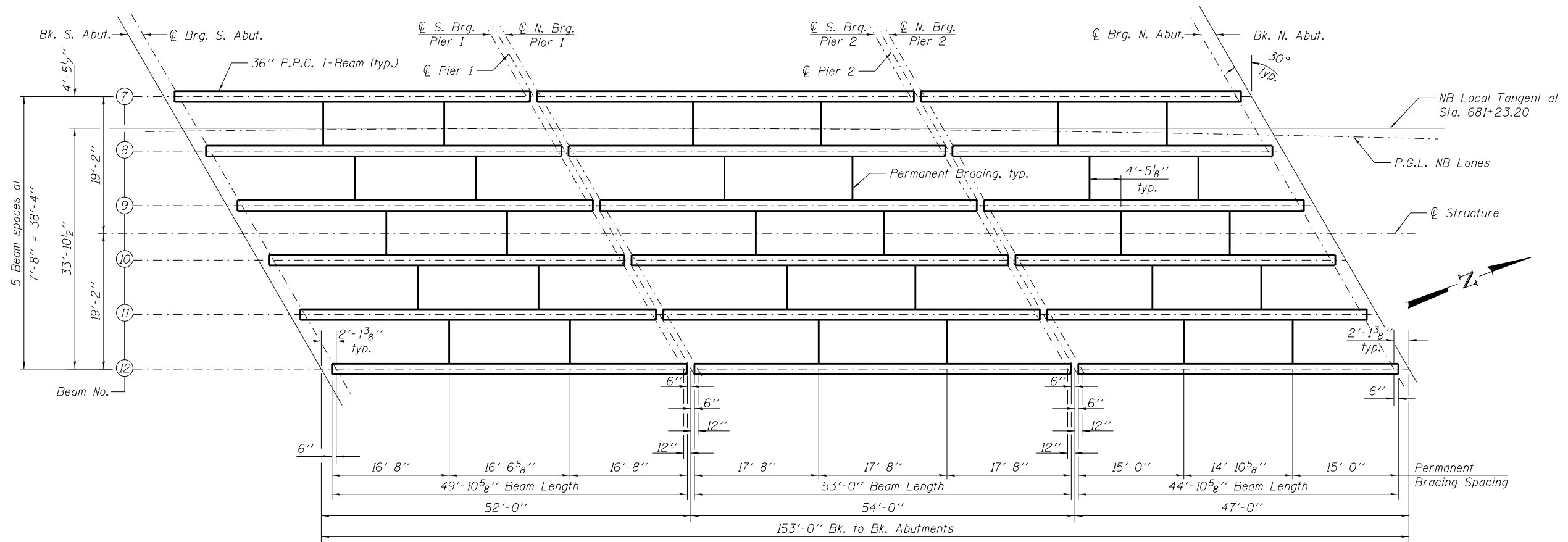
**TWO APPROACHES  
 BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a2(E)	48	#6	6'-6"	—
a5(E)	100	#4	26'-1"	—
a6(E)	184	#5	26'-3"	—
b4(E)	70	#4	29'-8"	—
b5(E)	208	#9	29'-9"	—
b6(E)	4	#4	14'-8"	—
b7(E)	4	#4	15'-7"	—
d(E)	68	#5	5'-7"	—
d2(E)	68	#5	7'-11"	—
e17(E)	32	#4	14'-8"	—
e18(E)	4	#8	14'-8"	—
t(E)	176	#4	11'-2"	—
w(E)	80	#5	49'-6"	—
Concrete Superstructure		Cu. Yd.	132.4	
Concrete Structures		Cu. Yd.	30.9	
Reinforcement Bars, Epoxy Coated		Pound	36,640	

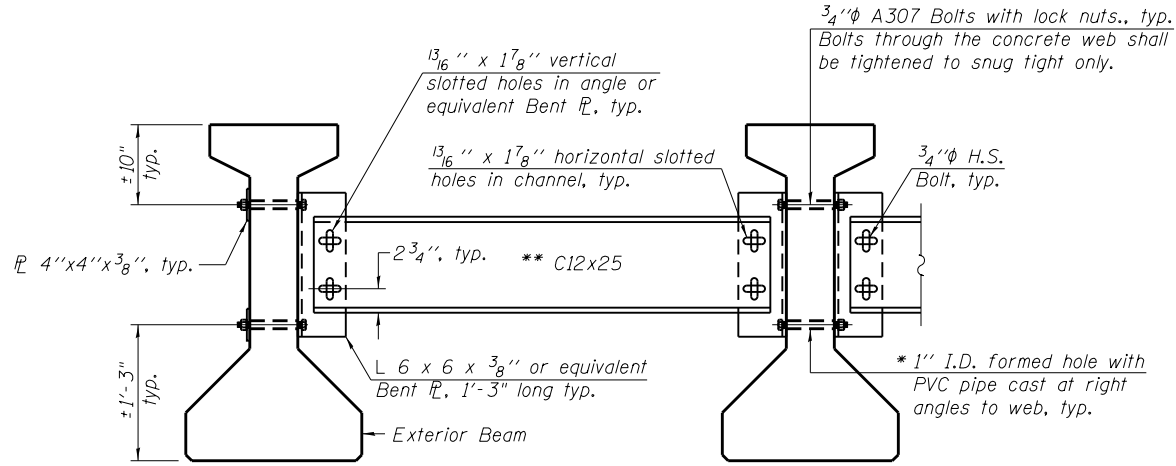


(Sheet 2 of 2)





**FRAMING PLAN**



**PERMANENT BRACING DETAILS**

**Notes:**  
 All material for bracing shall be hot dip galvanized according to AASHTO M111 unless otherwise noted.  
 Two hardened washers are required for each set of oversized holes.  
 All holes shall be 1/16 inch diameter unless otherwise noted.  
 5/16 inch x 3 inch x 3 inch plate washers are required over all slotted holes.  
 All bolts shall be galvanized according to AASHTO M232.  
 Bracing shall be installed as beams are erected and tightened as soon as possible during erection.  
 Permanent bracing shall not be paid for separately, but shall be included in the cost of Furnishing and Erecting Precast Prestressed Concrete I-Beams.

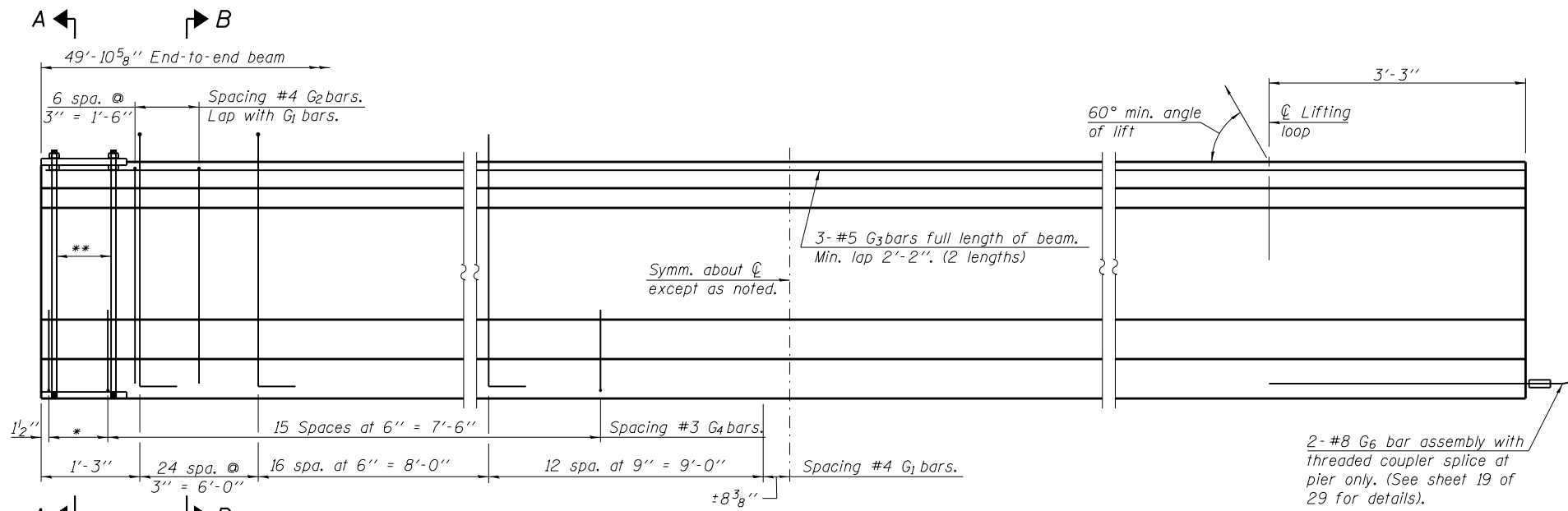
\* Fabricator shall locate to miss strands within permissible tolerances.  
 \*\* Alternate C12x30 channels are permitted to facilitate material acquisition.

$I$ : Non-composite moment of inertia of beam section ( $\text{in}^4$ ).  
 $I'$ : Composite moment of inertia of beam section ( $\text{in}^4$ ).  
 $S_b$ : Non-composite section modulus for the bottom fiber of the prestressed beam ( $\text{in}^3$ ).  
 $S_b'$ : Composite section modulus for the bottom fiber of the prestressed beam ( $\text{in}^3$ ).  
 $S_t$ : Non-composite section modulus for the top fiber of the prestressed beam ( $\text{in}^3$ ).  
 $S_t'$ : Composite section modulus for the top fiber of the prestressed beam ( $\text{in}^3$ ).  
 $DC1$ : Un-factored non-composite dead load (kips/ft).  
 $M_{DC1}$ : Un-factored moment due to non-composite dead load (kip-ft).  
 $DC2$ : Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft).  
 $M_{DC2}$ : Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft).  
 $DW$ : Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft).  
 $M_{DW}$ : Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft).  
 $M_{LL+IM}$ : Un-factored live load moment plus dynamic load allowance (impact) (kip-ft).

INTERIOR BEAM MOMENT TABLE						
		0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp.3
$I$	( $\text{in}^4$ )	48647	48647	48647	48647	48647
$I'$	( $\text{in}^4$ )	184097	184097	184097	184097	184097
$S_b$	( $\text{in}^3$ )	3165	3165	3165	3165	3165
$S_b'$	( $\text{in}^3$ )	6049	6049	6049	6049	6049
$S_t$	( $\text{in}^3$ )	2358	2358	2358	2358	2358
$S_t'$	( $\text{in}^3$ )	33072	33072	33072	33072	33072
$DC1$	( $\text{k}'$ )	1.151	1.151	1.151	1.151	1.151
$M_{DC1}$	( $\text{k}$ )	332	0	392	0	268
$DC2$	( $\text{k}'$ )	0.150	0.150	0.150	0.150	0.150
$M_{DC2}$	( $\text{k}$ )	28	38	16	32	22
$DW$	( $\text{k}'$ )	0.345	0.345	0.345	0.345	0.345
$M_{DW}$	( $\text{k}$ )	65	86	37	73	51
$M_{LL+IM}$	( $\text{k}$ )	533	376	461	329	475

INTERIOR BEAM REACTION TABLE							
		S. Abut.	Pier 1 Span 1	Pier 1 Span 2	Pier 2 Span 2	Pier 2 Span 3	N. Abut.
$R_{DC1}$	( $\text{k}$ )	28.3	28.3	30.2	30.2	25.5	25.5
$R_{DC2}$	( $\text{k}$ )	2.9	4.2	4.2	3.9	3.9	2.6
$R_{DW}$	( $\text{k}$ )	6.7	9.7	9.7	9.0	9.0	5.9
$R_{LL+IM}$	( $\text{k}$ )	78.4	86.3	86.3	83.9	83.9	75.5
$R_{Total}$	( $\text{k}$ )	116.3	128.5	130.4	127.0	122.3	109.5

\*At continuous piers, reactions from composite loads are assumed to be equally distributed to each bearing line.

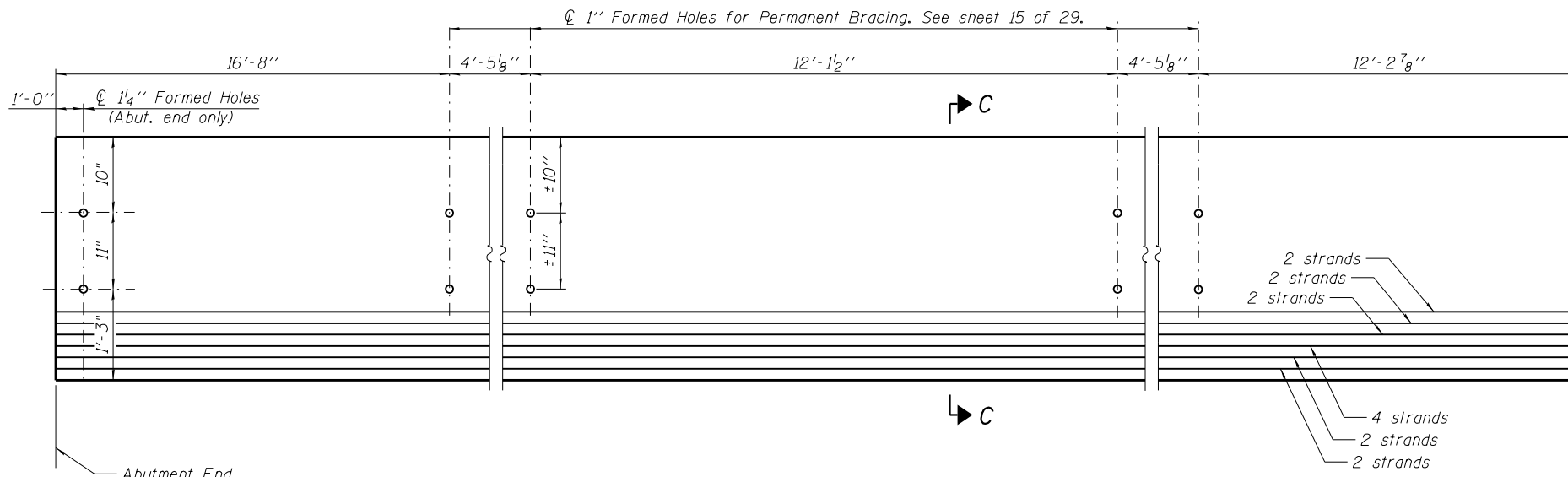
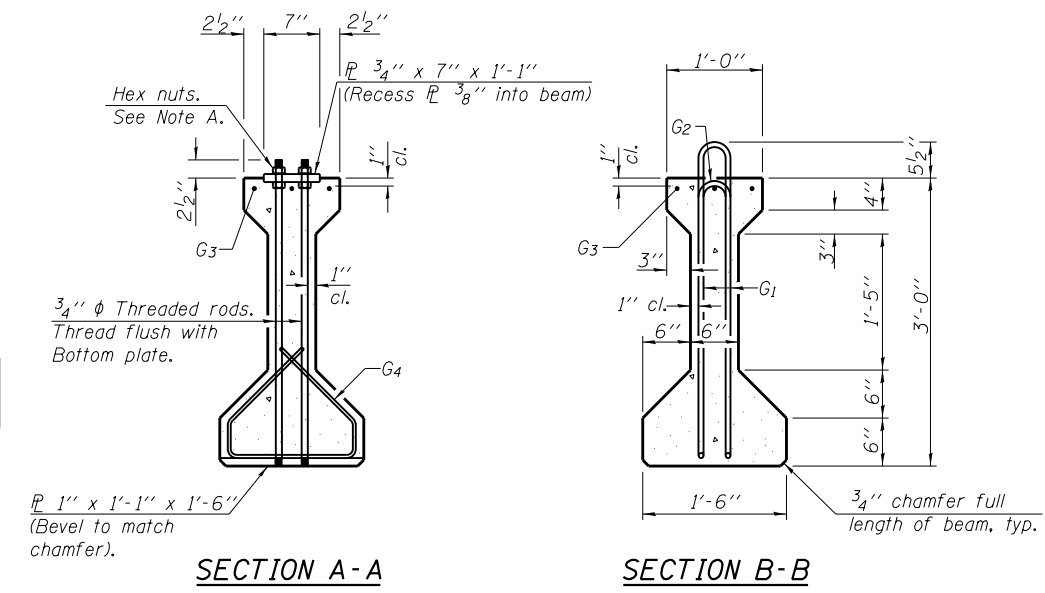


**ELEVATION OF BEAM**  
(Showing reinforcement & dimensions)

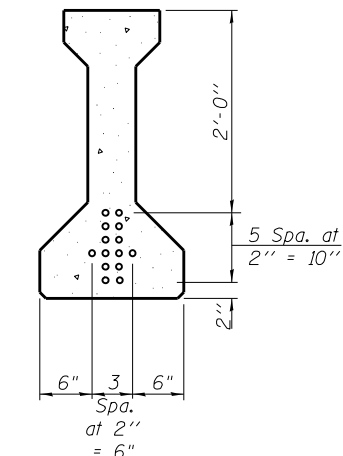
\* 3 spaces at 3" = 9".  
\*\* 4- $\frac{3}{4}$ "  $\phi$  threaded dowel rods at 3" cts., Each Face

2-#8 G<sub>6</sub> bar assembly with threaded coupler splice at pier only. (See sheet 19 of 29 for details).

Note A:  
Hex nuts (top and bottom) with lock washers (top). Only tighten sufficiently to compress lock washers.



**ELEVATION OF BEAM**  
(Showing prestressing steel)

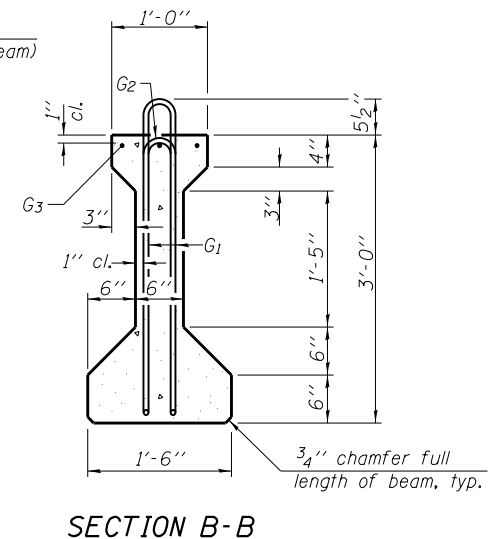
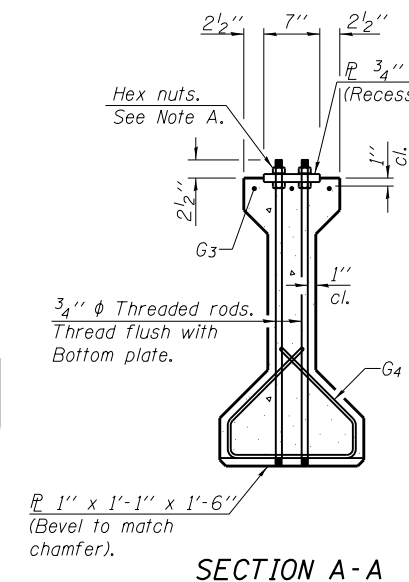
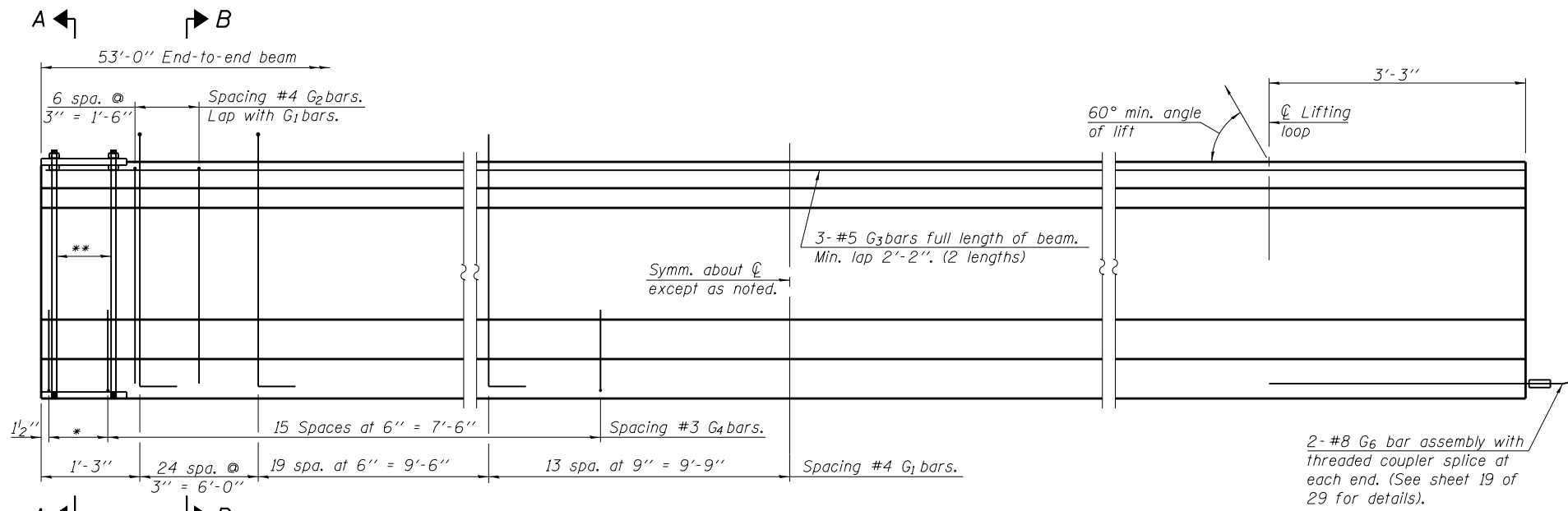


**\*\*\*BAR LIST  
ONE BEAM ONLY**

Bar	No.	Size	Length	Shape
G <sub>1</sub>	107	#4	7'-7"	$\cap$ L
G <sub>2</sub>	14	#4	5'-8"	$\cap$
G <sub>3</sub>	6	#5	26'-0"	—
G <sub>4</sub>	38	#3	4'-1"	$\cap$
G <sub>6</sub>	2	#8	6'-6"	—

\*\*\*For information only

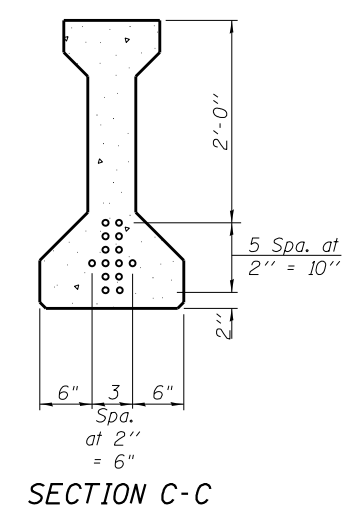
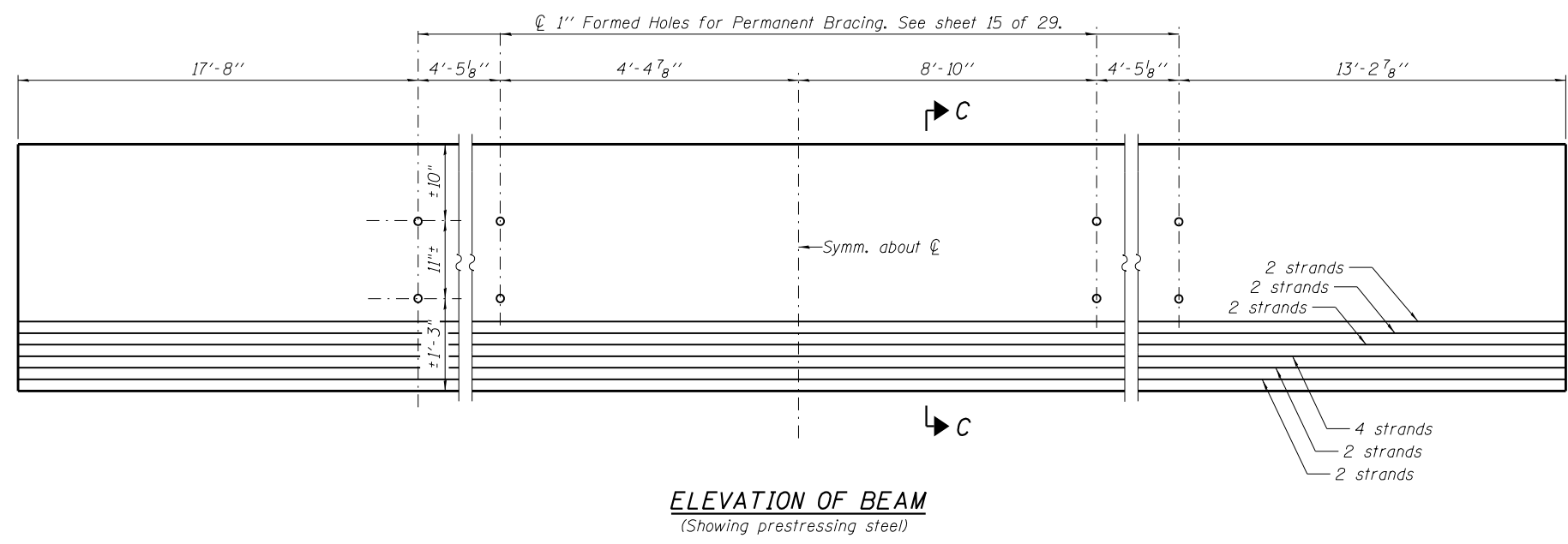
Notes:  
See sheet 19 of 29 for additional details and Bill of Material.  
Required release strength, f'ci, shall be 5000 psi.



**ELEVATION OF BEAM**  
(Showing reinforcement & dimensions)

\* 3 spaces at 3" = 9".  
\*\* 4-3/4" ⌀ threaded dowel rods at 3" cts., Each Face

Note A:  
Hex nuts (top and bottom) with lock washers (top). Only tighten sufficiently to compress lock washers.

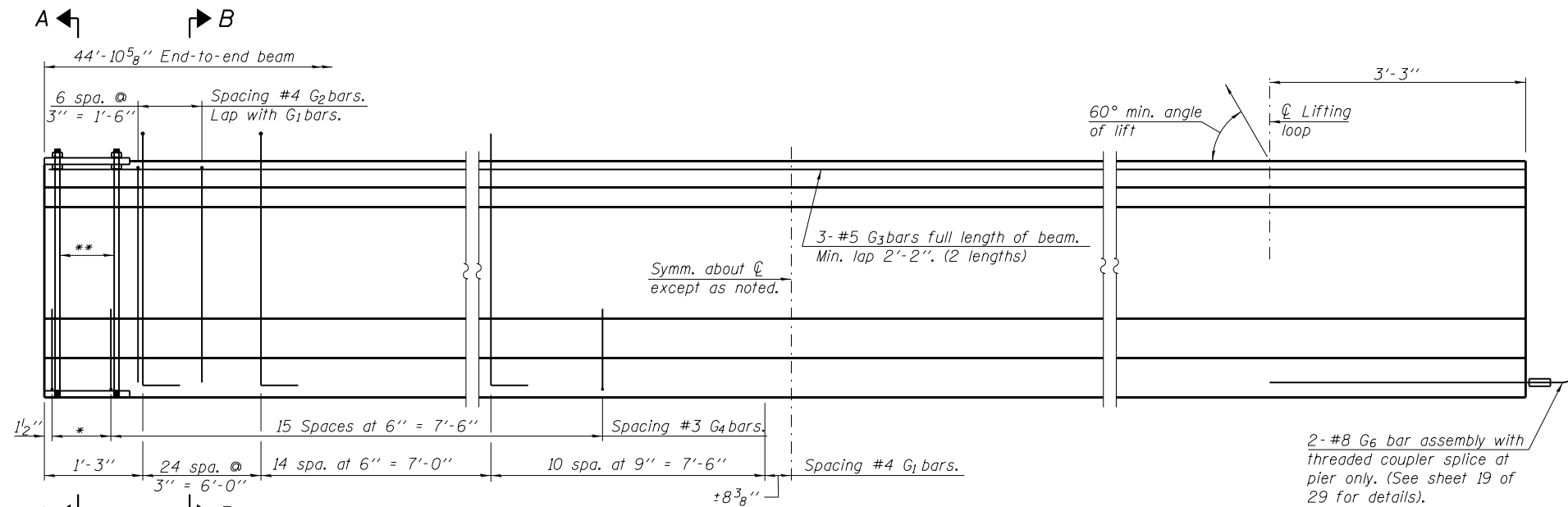


**\*\*\*BAR LIST**  
**ONE BEAM ONLY**

Bar	No.	Size	Length	Shape
G <sub>1</sub>	113	#4	7'-7"	⌒
G <sub>2</sub>	14	#4	5'-8"	⌒
G <sub>3</sub>	6	#5	27'-6"	—
G <sub>4</sub>	38	#3	4'-1"	⌒
G <sub>6</sub>	4	#8	6'-6"	—

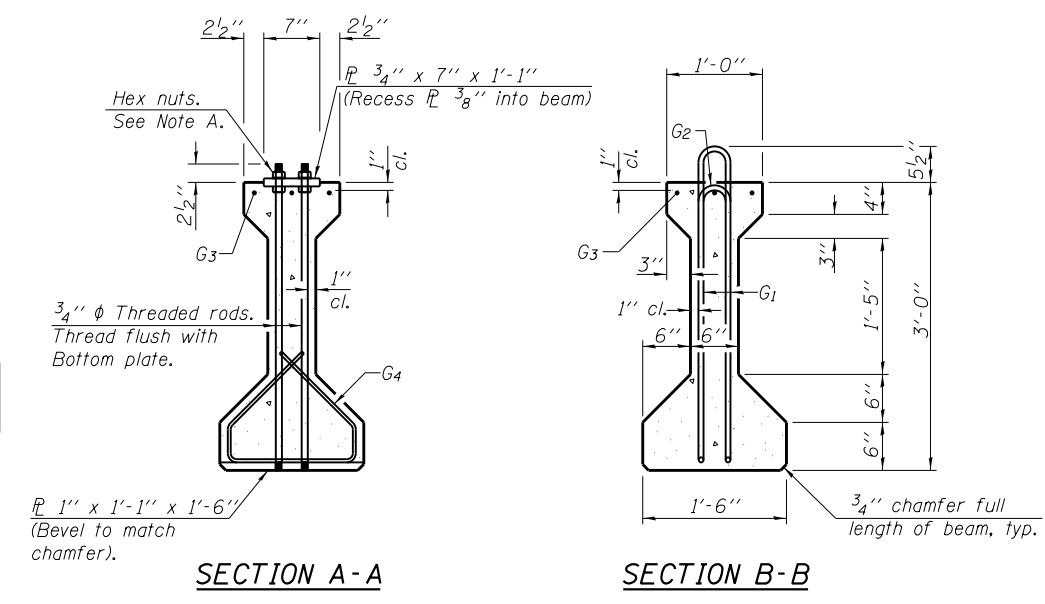
\*\*\*For information only

Notes:  
See sheet 19 of 29 for additional details and Bill of Material.  
Required release strength, f'ci, shall be 5000 psi.

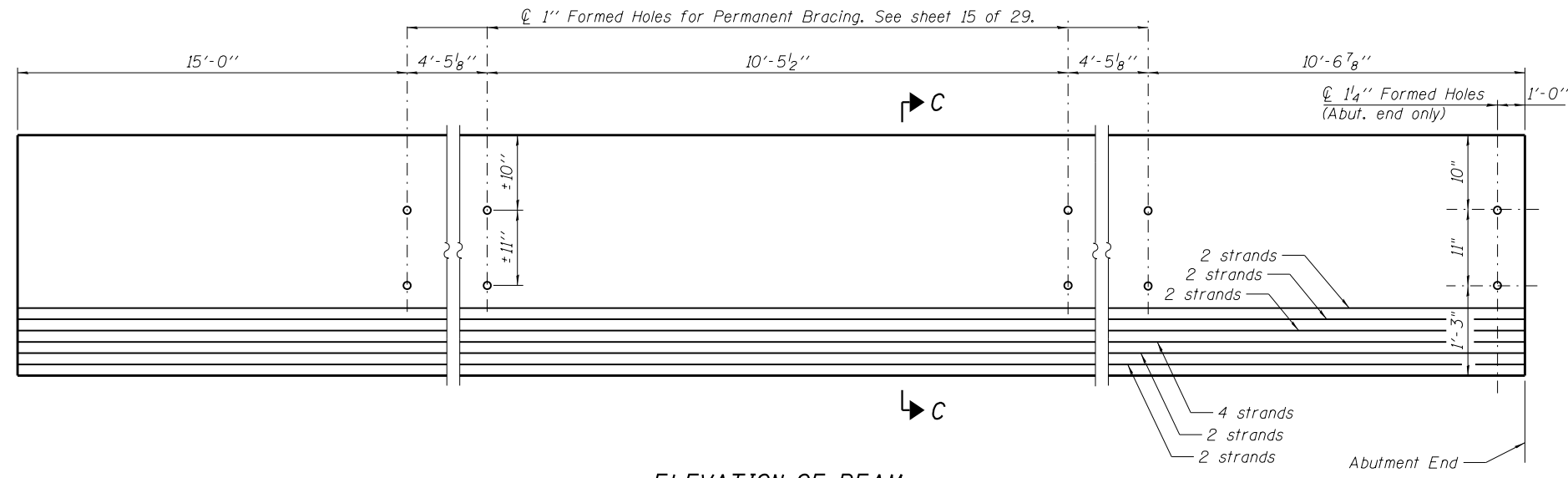


**ELEVATION OF BEAM**  
(Showing reinforcement & dimensions)

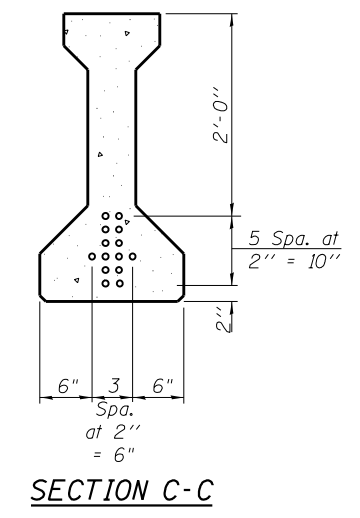
\* 3 spaces at 3" = 9".  
\*\* 4- 3/4" ⌀ threaded dowel rods at 3" cts., Each Face



Note A:  
Hex nuts (top and bottom) with lock washers (top). Only tighten sufficiently to compress lock washers.



**ELEVATION OF BEAM**  
(Showing prestressing steel)



**\*\*\*BAR LIST ONE BEAM ONLY**

Bar	No.	Size	Length	Shape
G <sub>1</sub>	99	#4	7'-7"	⊕ L
G <sub>2</sub>	14	#4	5'-8"	⊓
G <sub>3</sub>	6	#5	23'-6"	—
G <sub>4</sub>	38	#3	4'-1"	⊓
G <sub>6</sub>	2	#8	6'-6"	⊓

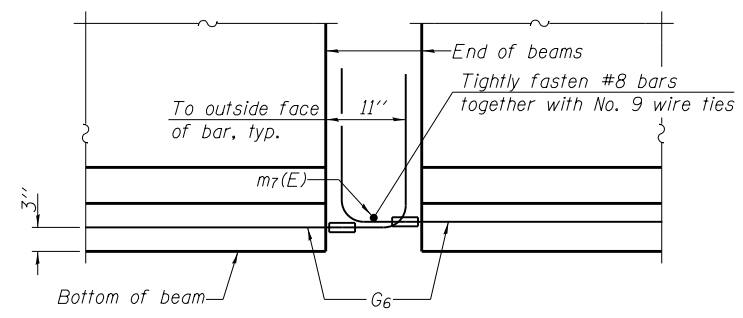
\*\*\*For information only

Notes:  
See sheet 19 of 29 for additional details and Bill of Material.  
Required release strength, f'ci, shall be 5000 psi.

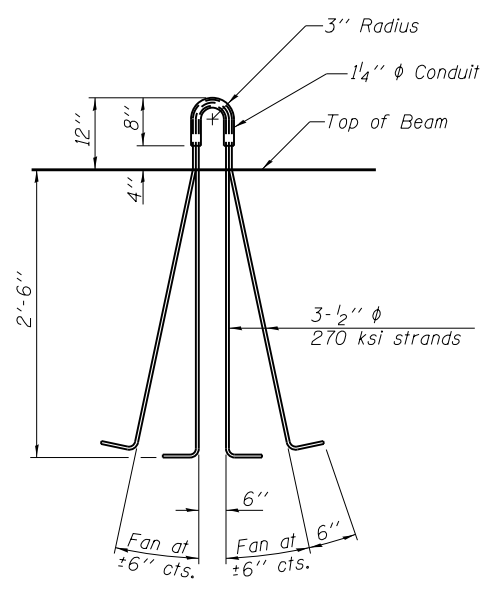
**NOTES**

Inserts for  $\frac{3}{4}$ "  $\phi$  threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be  $\frac{1}{2}$ " and the nominal cross-sectional area shall be 0.153 sq. in.

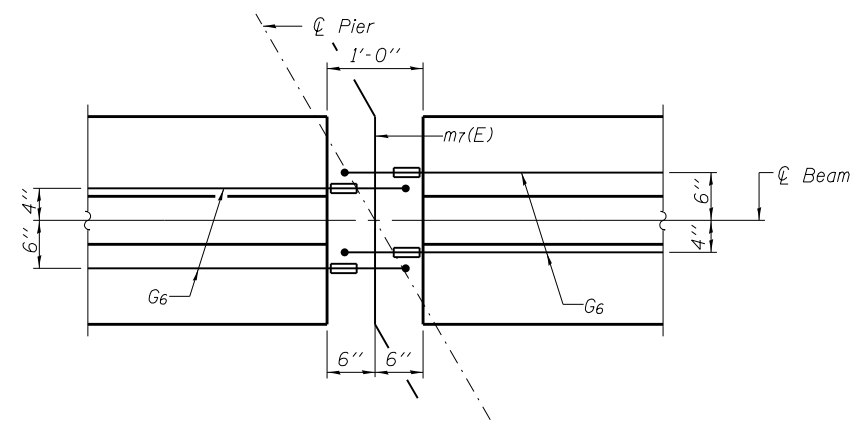
A minimum  $2\frac{1}{2}$ "  $\phi$  lifting pin shall be used to engage the lifting loops during handling. Tilt  $G_6$  bars when necessary to maintain  $\frac{1}{2}$ " clearance. The top and bottom plates shall be AASHTO M270 Grade 50. The bottom plates shall be galvanized according to AASHTO M111. Top plates and threaded rods need not be galvanized. Threaded rods shall be ASTM F 1554 Grade 55. The  $G_6$  bar assembly shall be capable of developing 125 percent of the yield strength of the grade 60 reinforcement bar components. The assembly shall allow completion of the splice without turning of the hook bar. The hook bar shall be threaded such that the entire coupler can be threaded onto the hook bar. Beams requiring  $G_6$  bar assemblies shall not be released from the fabricator until they have attained 45 days of age or older.



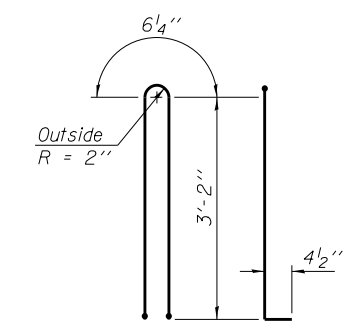
**ELEVATION OF BEAM AT PIER**



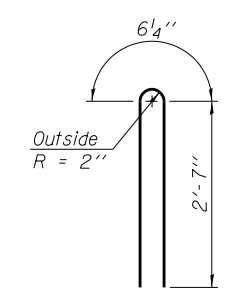
**LIFTING LOOP DETAIL**



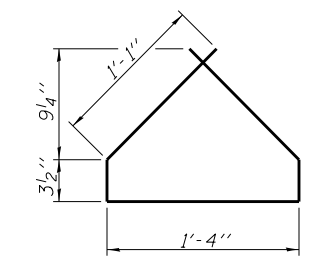
**PLAN OF BEAM AT PIER**



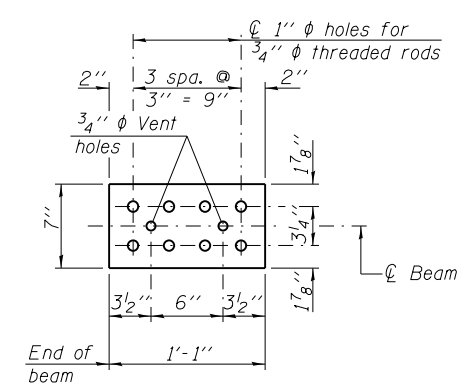
**BAR G1**



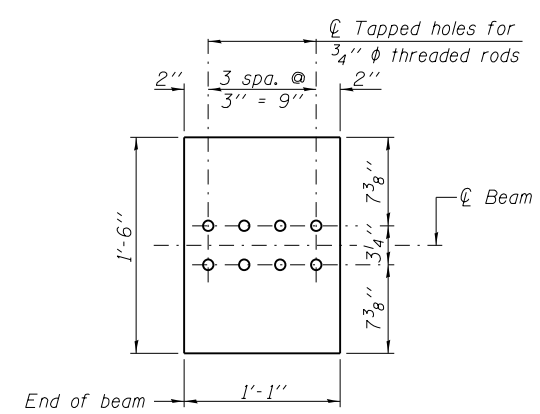
**BAR G2**



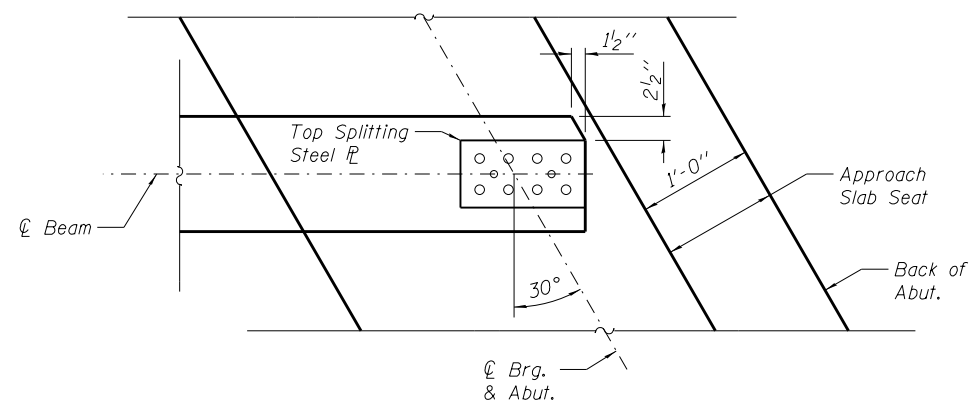
**BAR G4**



**TOP PLATE**

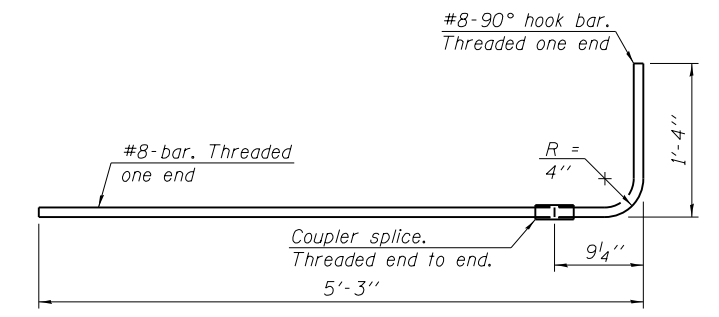


**BOTTOM PLATE**



**TOP FLANGE PLAN - CLIPPED**

(Span 1 and Span 3 at Abutments)



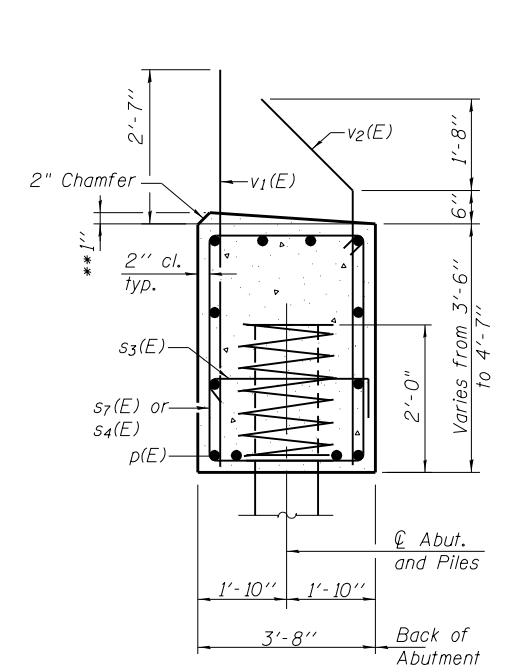
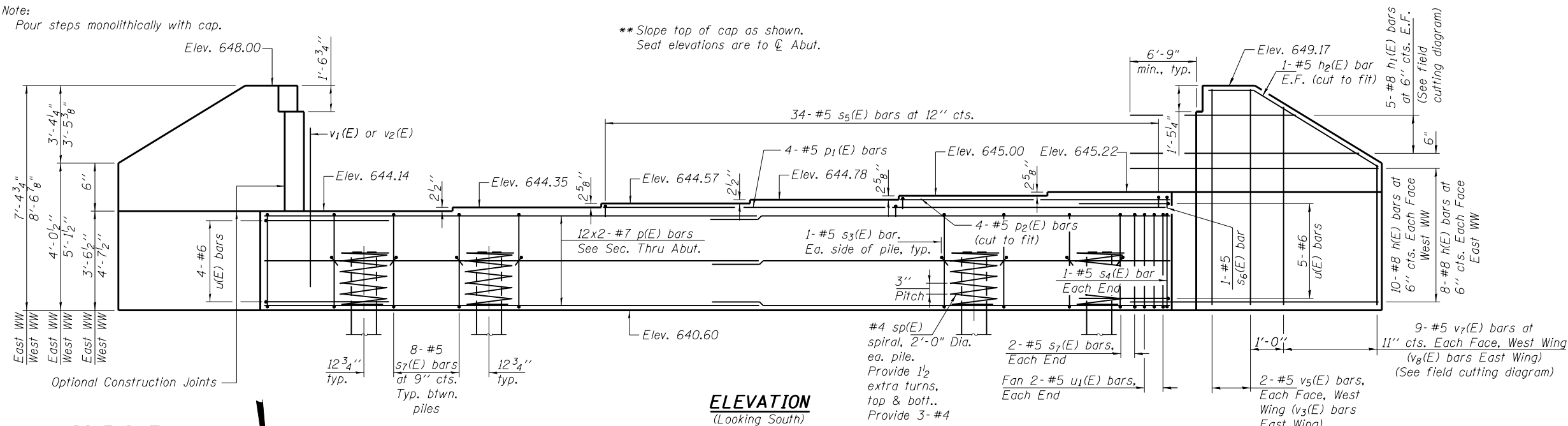
**G6 BAR ASSEMBLY**

**BILL OF MATERIAL**

Item	Unit	Total
Furnishing and Erecting Precast Prestressed Concrete I-Beams, 36"	Ft.	887

Note: Pour steps monolithically with cap.

\*\* Slope top of cap as shown. Seat elevations are to  $\phi$  Abut.

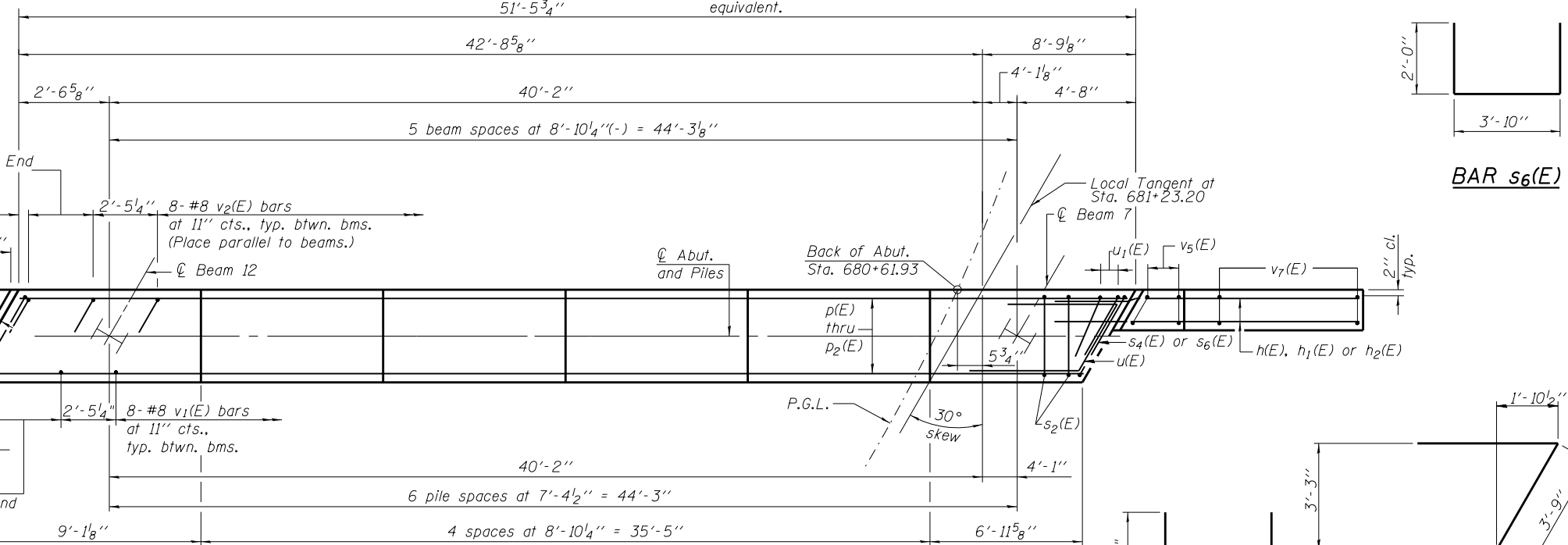


**SEC. THRU ABUT.**

Dimensions at right angles to abutment.

**PILE DATA**

Type: Steel HP 14x89  
 Nominal Required Bearing: 648 kips  
 Factored Resistance Available: 247 kips  
 Est. Length: 78 ft  
 No. Production Piles: 6  
 No. Test Piles: 1



**ELEVATION**  
(Looking South)

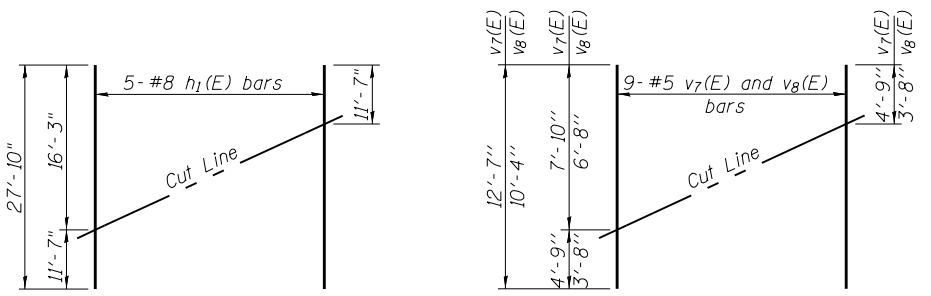
**PLAN**

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h(E)	36	#8	16'-9"	—
h1(E)	10	#8	27'-10"	—
h2(E)	4	#5	10'-1"	—
p(E)	24	#7	28'-7"	—
p1(E)	4	#5	33'-2"	—
p2(E)	4	#5	17'-7"	—
s3(E)	12	#5	4'-4"	U
s4(E)	2	#5	15'-0"	U
s5(E)	34	#5	7'-4"	U
s6(E)	1	#5	7'-10"	U
s7(E)	52	#5	13'-11"	U
sp(E)	7	#4	2'-0"	WWW
u(E)	9	#6	11'-5"	U
u1(E)	4	#5	9'-10"	U
v1(E)	46	#8	5'-11"	—
v2(E)	46	#8	6'-2"	—
v3(E)	4	#5	7'-0"	—
v5(E)	4	#5	8'-2"	—
v7(E)	9	#5	12'-7"	—
v8(E)	9	#5	10'-4"	—
Structure Excavation		Cu. Yd.	108	
Concrete Structures		Cu. Yd.	32.9	
Reinforcement Bars, Epoxy Coated		Pound	7,400	
Furnishing Steel Piles, HP 14x89		Foot	468	
Driving Piles		Foot	468	
Test Pile, Steel HP 14x89		Each	1	

For details of piles see sheet 24 of 29.  
 \*Length is height of spiral.

**MINIMUM BAR LAP**  
#7 bar = 5'-10"



**FIELD CUTTING DIAGRAM**

Order h1(E) full length. Cut as shown and use remainder of bars in opposite face.

**FIELD CUTTING DIAGRAM**

Order v7(E) and v8(E) full length. Cut as shown and use remainder of bars in opposite face.

**BARS v2(E) & h2(E)**

**BARS s7(E) & s4(E)**

**BAR s3(E)**

**BAR u1(E)**



USER NAME =  
 FILE NAME =  
 PLOT SCALE =  
 PLOT DATE =

DESIGNED - HP  
 CHECKED - RPW  
 DRAWN - AJF  
 CHECKED - MTH

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

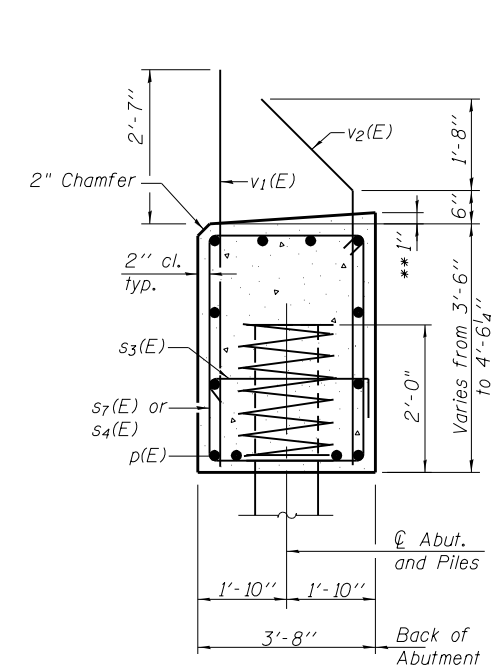
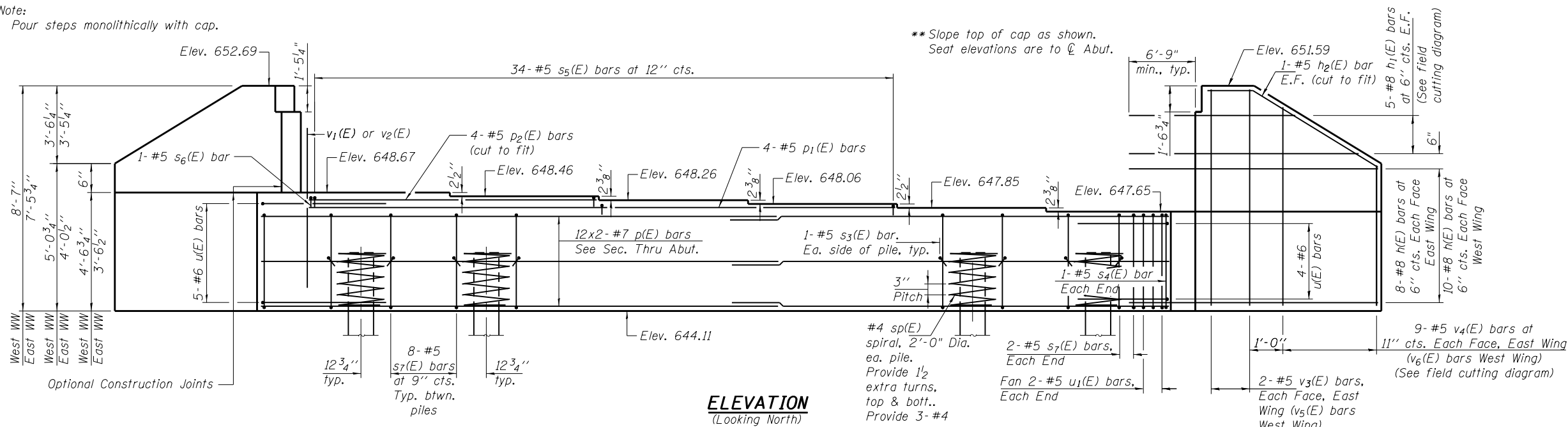
SOUTH ABUTMENT DETAILS  
 STRUCTURE NO. 055-0070

SHEET NO. 20 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[31PV,HB(2-6);B-1,B-2]	McDONOUGH	874	452
				CONTRACT NO. 68B44

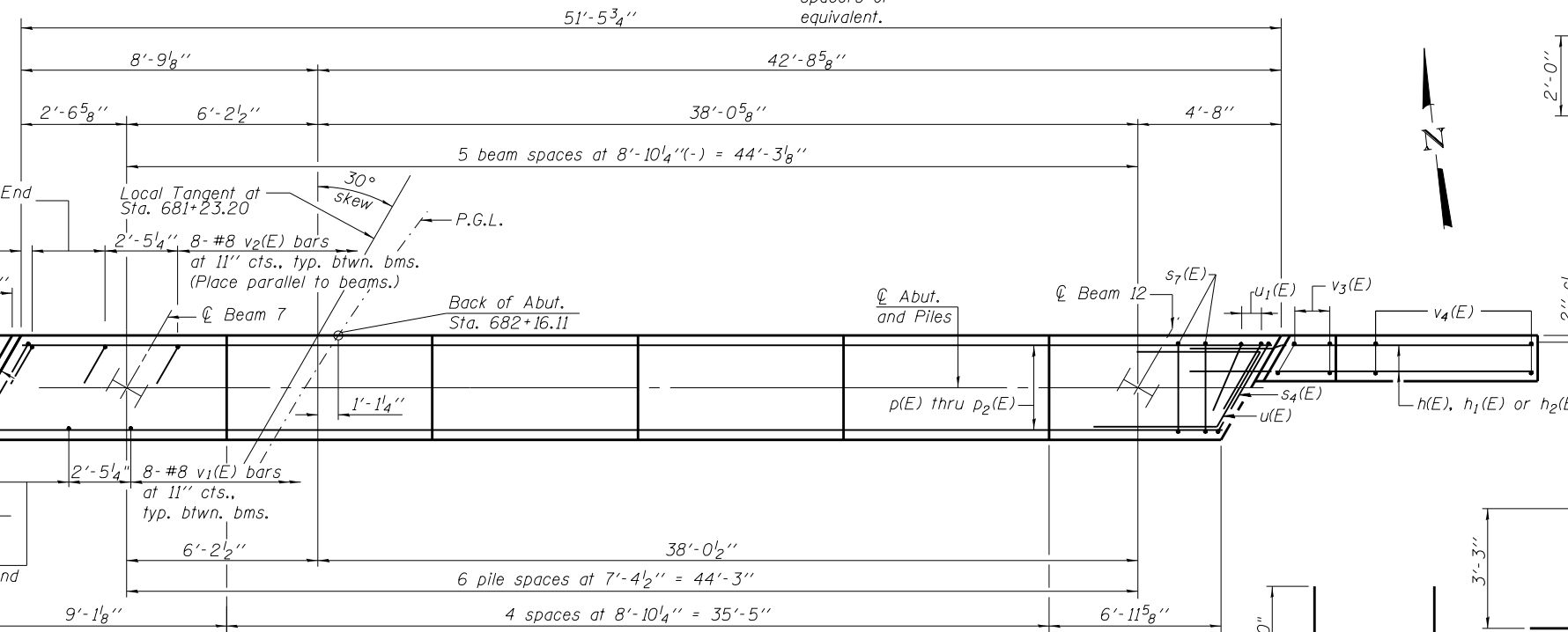
ILLINOIS FED. AID PROJECT

Note:  
Pour steps monolithically with cap.



**PILE DATA**

Type: Steel HP 14x89  
Nominal Required Bearing: 645 kips  
Factored Resistance Available: 242 kips  
Est. Length: 75 ft  
No. Production Piles: 6  
No. Test Piles: 1



**ELEVATION**  
(Looking North)

**SEC. THRU ABUT.**

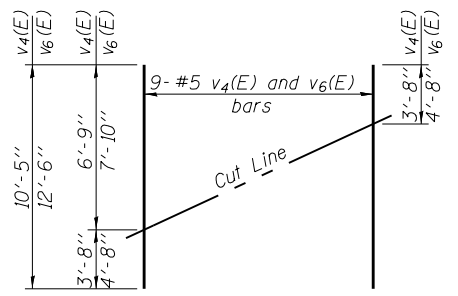
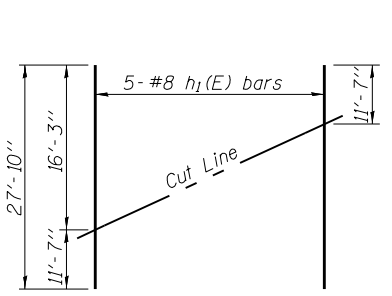
Dimensions at right angles to abutment.

**BILL OF MATERIAL**

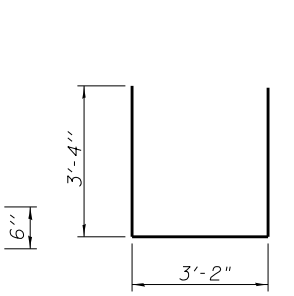
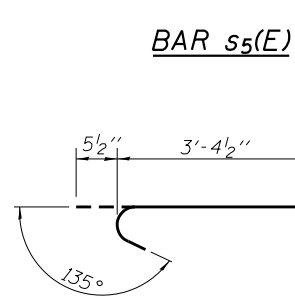
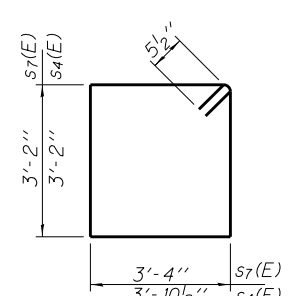
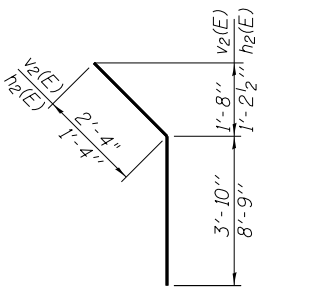
Bar	No.	Size	Length	Shape
h(E)	36	#8	16'-9"	—
h1(E)	10	#8	27'-10"	—
h2(E)	4	#5	10'-1"	—
p(E)	24	#7	28'-7"	—
p1(E)	4	#5	33'-2"	—
p2(E)	4	#5	17'-7"	—
s3(E)	12	#5	4'-4"	U
s4(E)	2	#5	15'-0"	U
s5(E)	34	#5	7'-4"	U
s6(E)	1	#5	7'-10"	U
s7(E)	52	#5	13'-11"	U
sp(E)	7	#4	2'-0"	W
u(E)	9	#6	11'-5"	U
u1(E)	4	#5	9'-10"	U
v1(E)	46	#8	5'-11"	—
v2(E)	46	#8	6'-2"	—
v3(E)	4	#5	7'-0"	—
v4(E)	9	#5	10'-5"	—
v5(E)	4	#5	8'-2"	—
v6(E)	9	#5	12'-6"	—
Structure Excavation	Cu. Yd.	108		
Concrete Structures	Cu. Yd.	32.8		
Reinforcement Bars, Epoxy Coated	Pound	7,400		
Furnishing Steel Piles, HP 14x89	Foot	450		
Driving Piles	Foot	450		
Test Pile, Steel HP 14x89	Each	1		

For details of piles see sheet 24 of 29.  
\*Length is height of spiral.

**MINIMUM BAR LAP**  
#7 bar = 5'-10"



**PLAN**



**FIELD CUTTING DIAGRAM**

Order h1(E) full length. Cut as shown and use remainder of bars in opposite face.

**FIELD CUTTING DIAGRAM**

Order v4(E) and v6(E) full length. Cut as shown and use remainder of bars in opposite face.

**BARS v2(E) & h2(E)**

**BARS s7(E) & s4(E)**

**BAR s3(E)**

**BAR u1(E)**



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

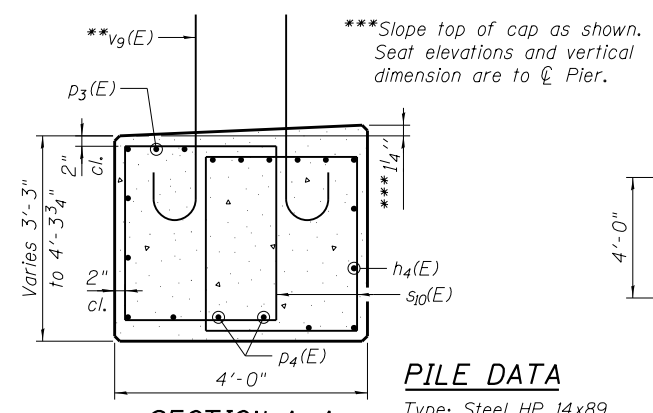
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

NORTH ABUTMENT DETAILS  
STRUCTURE NO. 055-0070

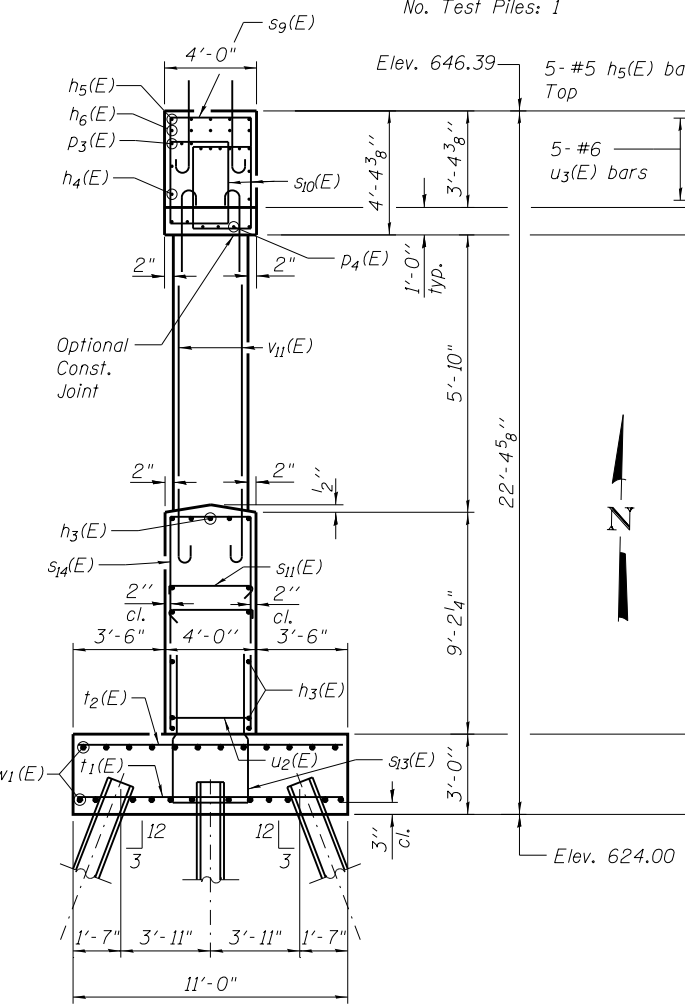
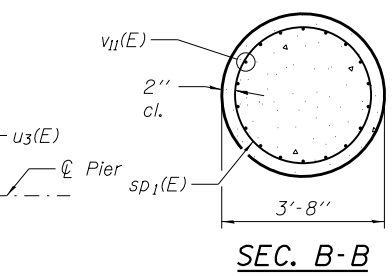
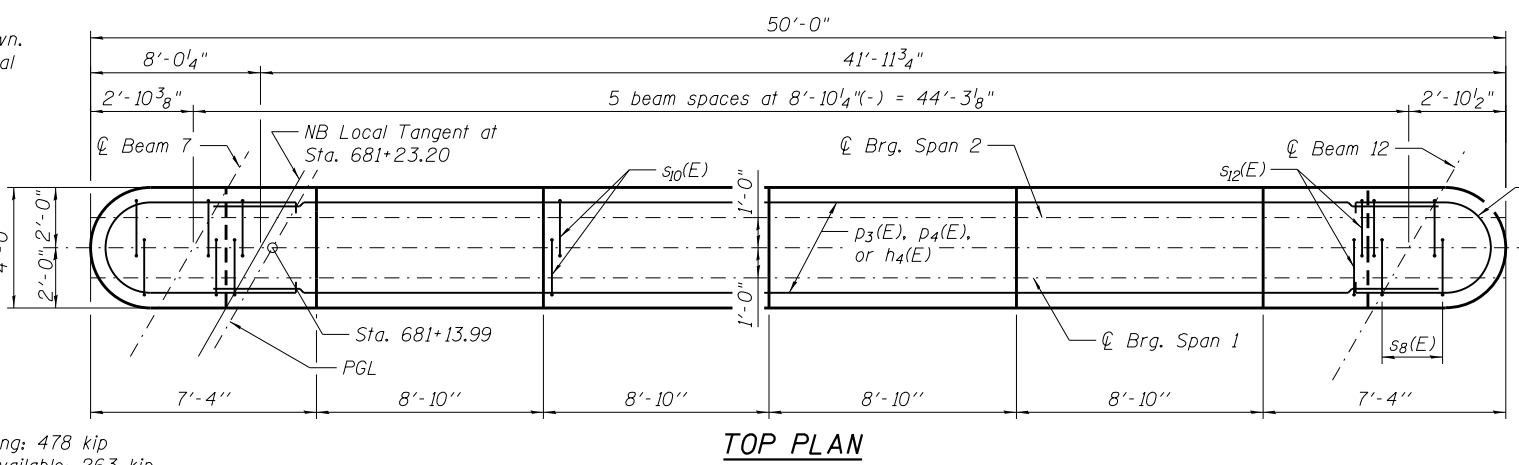
SHEET NO. 21 OF 29 SHEETS

F.A.P. RT.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV,HB[2-6]B-B-1B-2]	McDONOUGH	874	453
CONTRACT NO. 68B44				

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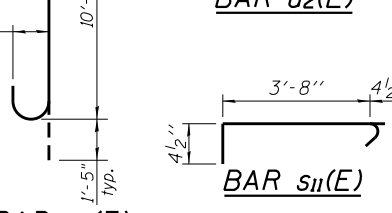
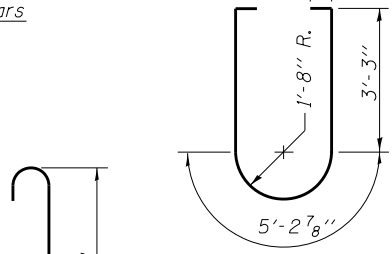
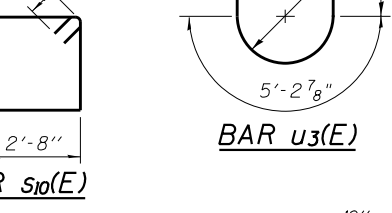
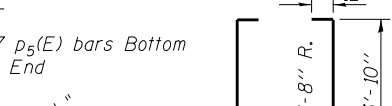
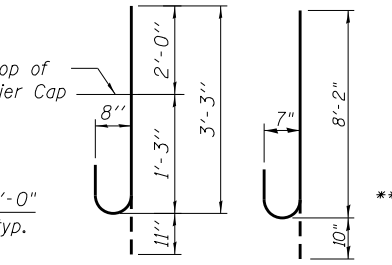
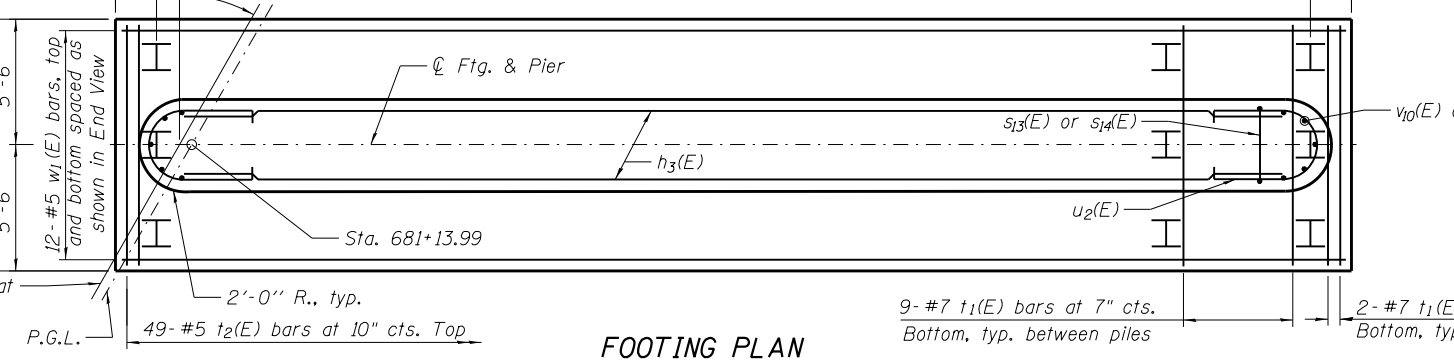
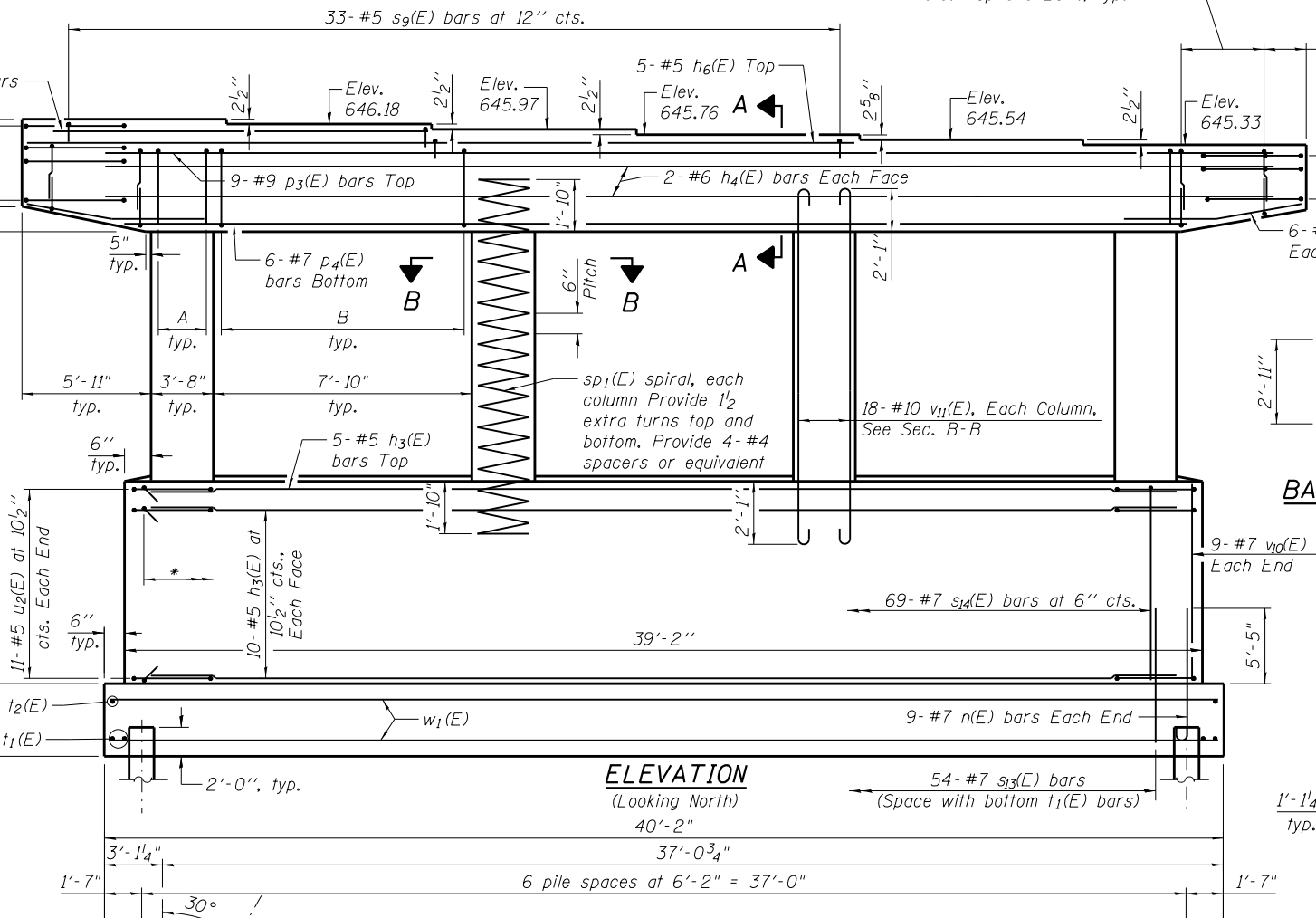
**PILE DATA**  
 Type: Steel HP 14x89  
 Nominal Required Bearing: 478 kip  
 Factored Resistance Available: 263 kip  
 Est. Length: 56 ft.  
 No. Production Piles: 20  
 No. Test Piles: 1



**C AND D DIMENSIONS**

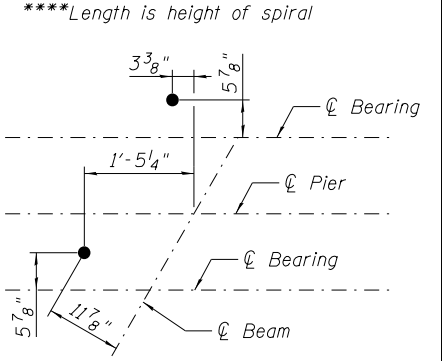
Bar	C	D
s8(E)	2'-2"	2'-8"
s9(E)	2'-6"	3'-8"
s12(E)	2'-11"	2'-8"
s13(E)	8'-2"	3'-8"
s14(E)	8'-10"	3'-8"

**BARS s8(E), s9(E) AND s12(E) THRU s14(E)**



**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h3(E)	25	#5	35'-0"	—
h4(E)	4	#6	46'-4"	—
h5(E)	5	#5	14'-4"	—
h6(E)	5	#5	32'-0"	—
n(E)	18	#7	9'-0"	U
p3(E)	9	#9	46'-4"	—
p4(E)	6	#7	39'-0"	—
p5(E)	12	#7	10'-8"	—
s8(E)	32	#5	7'-0"	U
s9(E)	33	#5	8'-8"	U
s10(E)	114	#5	12'-1"	U
s11(E)	90	#4	4'-5"	U
s12(E)	72	#5	8'-6"	U
s13(E)	54	#7	20'-0"	U
s14(E)	69	#7	21'-4"	U
sp1(E)	4	#4	9'-6"	—
t1(E)	58	#7	10'-8"	—
t2(E)	49	#5	10'-8"	—
u2(E)	22	#5	13'-5"	U
u3(E)	9	#6	14'-11"	U
v9(E)	20	#8	4'-2"	U
v10(E)	18	#7	8'-10"	—
v11(E)	72	#10	12'-10"	U
w1(E)	24	#5	39'-8"	—
Concrete Structures	Cu. Yd.		138.6	
Reinforcement Bars, Epoxy Coated	Pound		20,540	
Furnishing Steel Piles HP 14x89	Foot		1,120	
Driving Piles	Foot		1,120	
Test Pile Steel HP 14x89	Each		1	
Structure Excavation	Cu. Yd.		290	



**ANCHOR BOLT LAYOUT**  
 (Beam 7 shown, Beam 12 similar)

Notes:  
 Space reinforcement in cap to miss anchor bolts.  
 Pour steps monolithically with cap.  
 For details of piles, see sheet 24 of 29.

A = 9 pairs of #5 s12(E) bars  
 B = 19 pairs of #5 s10(E) bars

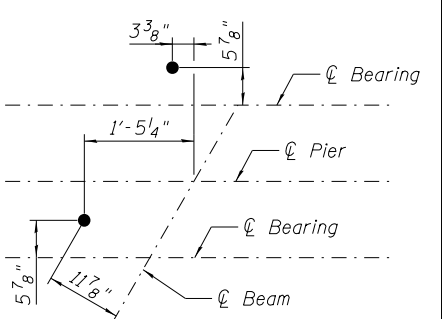
\*90-#4 s11(E) bars at 4'-0" cts. max. Hook with h3(E) bars. Alternate the horizontal position of 90 and 135 degree hooked ends.



**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h <sub>3</sub> (E)	29	#5	35'-0"	—
h <sub>4</sub> (E)	4	#6	46'-4"	—
h <sub>5</sub> (E)	5	#5	14'-4"	—
h <sub>6</sub> (E)	5	#5	32'-0"	—
n(E)	18	#7	9'-0"	—
p <sub>3</sub> (E)	9	#9	46'-4"	—
p <sub>4</sub> (E)	6	#7	39'-0"	—
p <sub>5</sub> (E)	12	#7	10'-8"	—
s <sub>8</sub> (E)	32	#5	7'-0"	U
s <sub>9</sub> (E)	33	#5	8'-8"	U
s <sub>10</sub> (E)	114	#5	12'-1"	U
s <sub>11</sub> (E)	90	#4	4'-5"	U
s <sub>12</sub> (E)	72	#5	8'-6"	U
s <sub>13</sub> (E)	54	#7	20'-0"	U
s <sub>16</sub> (E)	69	#7	23'-2"	U
sp <sub>3</sub> (E)	4	#4	9'-5"	—
t <sub>1</sub> (E)	58	#7	10'-8"	—
t <sub>2</sub> (E)	49	#5	10'-8"	—
u <sub>2</sub> (E)	26	#5	13'-5"	U
u <sub>3</sub> (E)	9	#6	14'-11"	U
v <sub>9</sub> (E)	20	#8	4'-2"	U
v <sub>13</sub> (E)	72	#10	12'-9"	U
v <sub>16</sub> (E)	18	#7	9'-9"	—
w <sub>1</sub> (E)	24	#5	39'-8"	—
Concrete Structures			Cu. Yd.	143.6
Reinforcement Bars, Epoxy Coated			Pound	20,800
Furnishing Steel Piles HP 14x89			Foot	1,320
Driving Piles			Foot	1,320
Test Pile Steel HP 14x89			Each	1
Structure Excavation			Cu. Yd.	343

\*\*\*\*Length is height of spiral

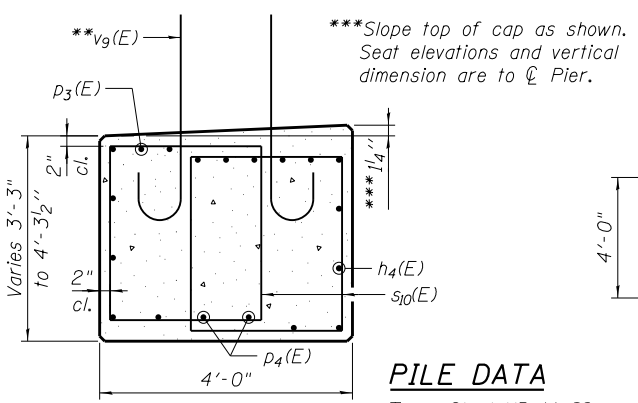


**ANCHOR BOLT LAYOUT**  
(Beam 7 shown, Beam 12 similar)

Notes:  
Space reinforcement in cap to miss anchor bolts.  
Four steps monolithically with cap.  
For details of piles, see sheet 24 of 29.

A = 9 pairs of #5 s<sub>12</sub>(E) bars  
B = 19 pairs of #5 s<sub>10</sub>(E) bars

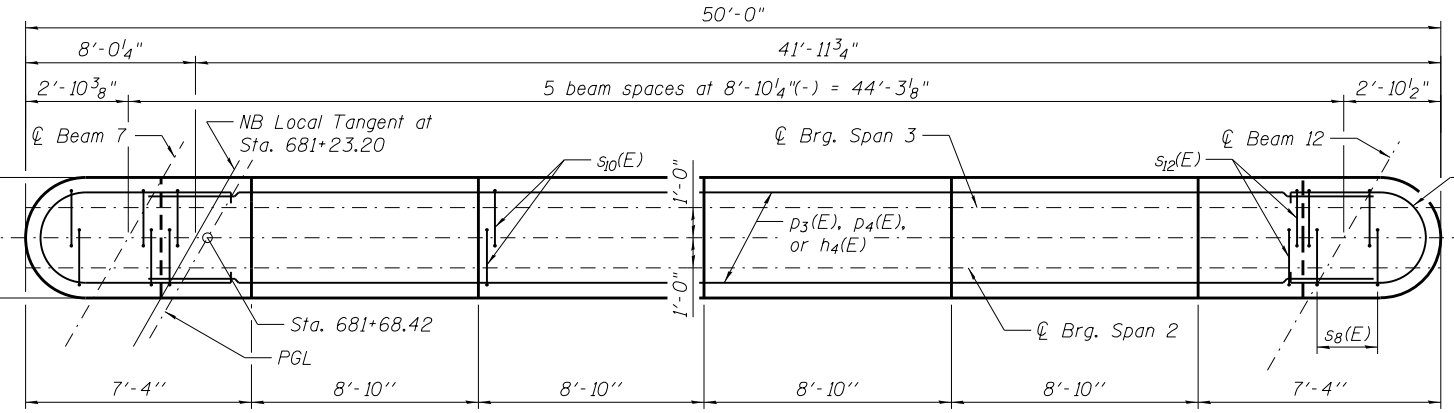
\*90-#4 s<sub>11</sub>(E) bars at 4'-0" cts. max. Hook with h<sub>3</sub>(E) bars. Alternate the horizontal position of 90 and 135 degree hooked ends.



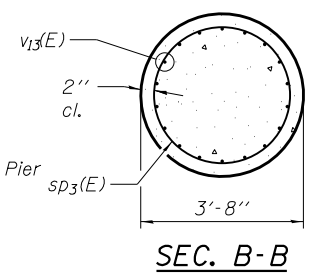
**PILE DATA**

Type: Steel HP 14x89  
Nominal Required Bearing: 459 kip  
Factored Resistance Available: 253 kip  
Est. Length: 66 ft.  
No. Production Piles: 20  
No. Test Piles: 1

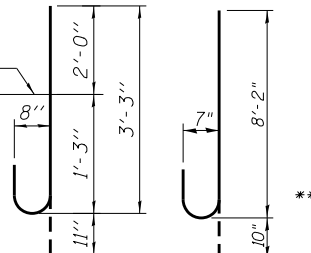
\*\*For layout of v<sub>9</sub>(E) bars, see sheet 12 of 29.



**TOP PLAN**

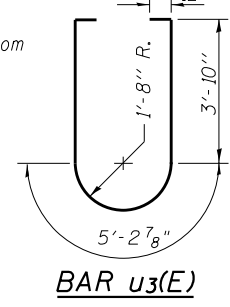


**SEC. B-B**

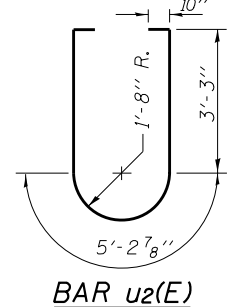


**BAR v<sub>9</sub>(E)**

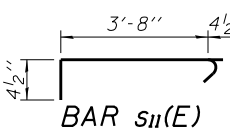
**BAR n(E)**



**BAR u<sub>3</sub>(E)**



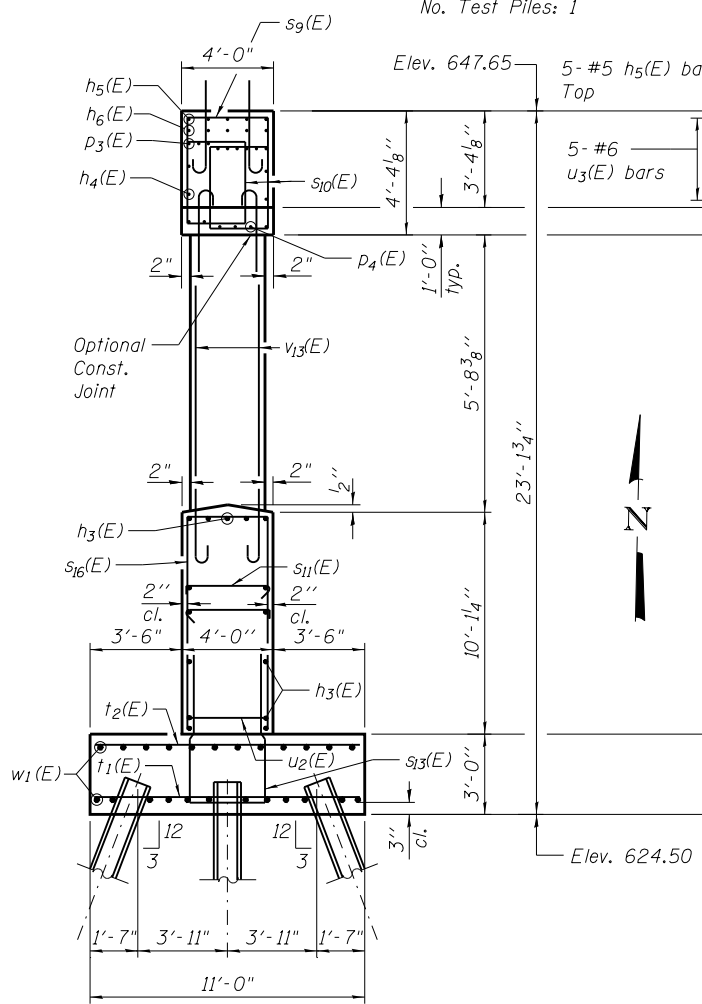
**BAR u<sub>2</sub>(E)**



**BAR s<sub>11</sub>(E)**

**BAR v<sub>13</sub>(E)**

**BAR p<sub>5</sub>(E)**

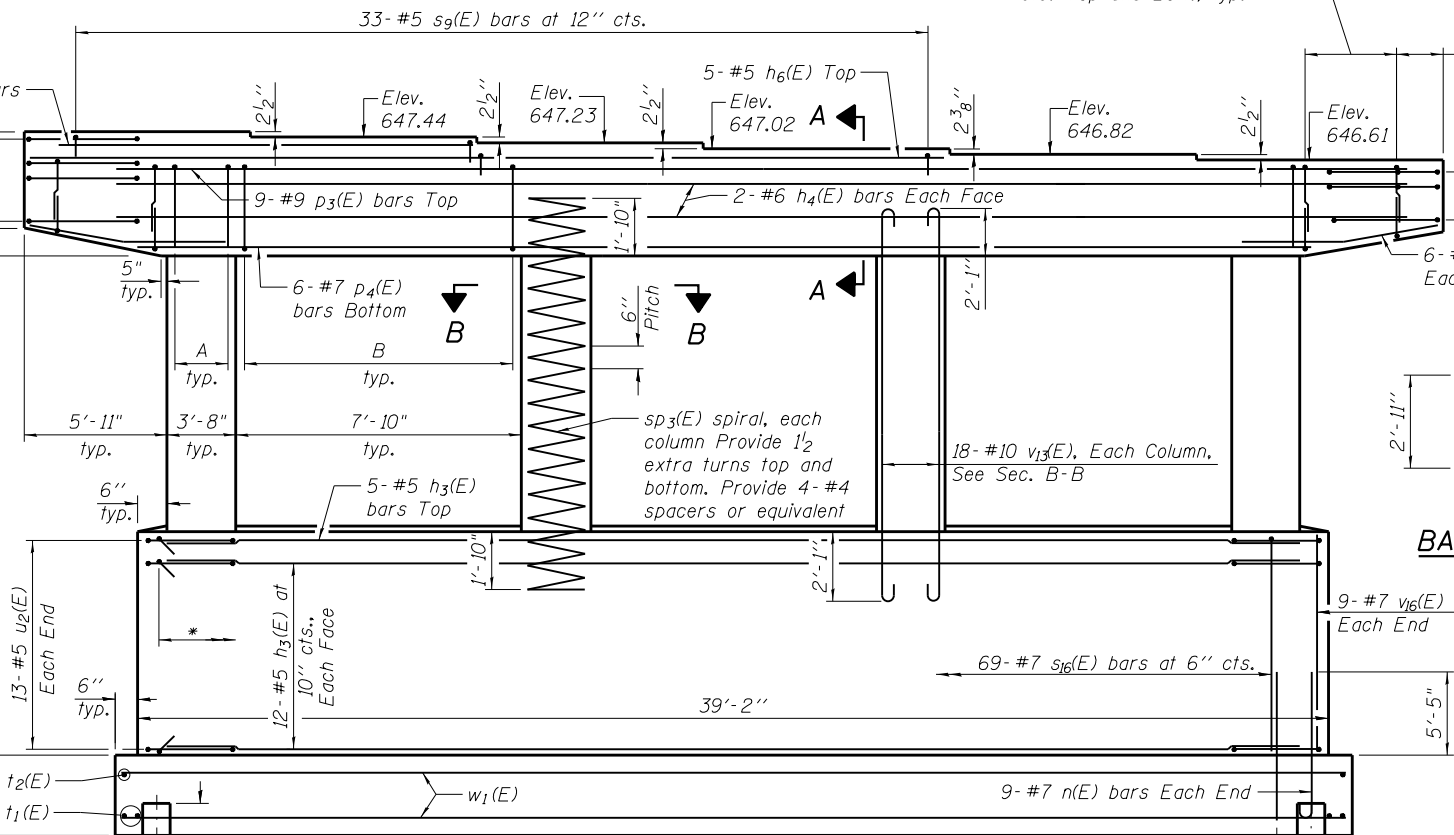


**END VIEW**

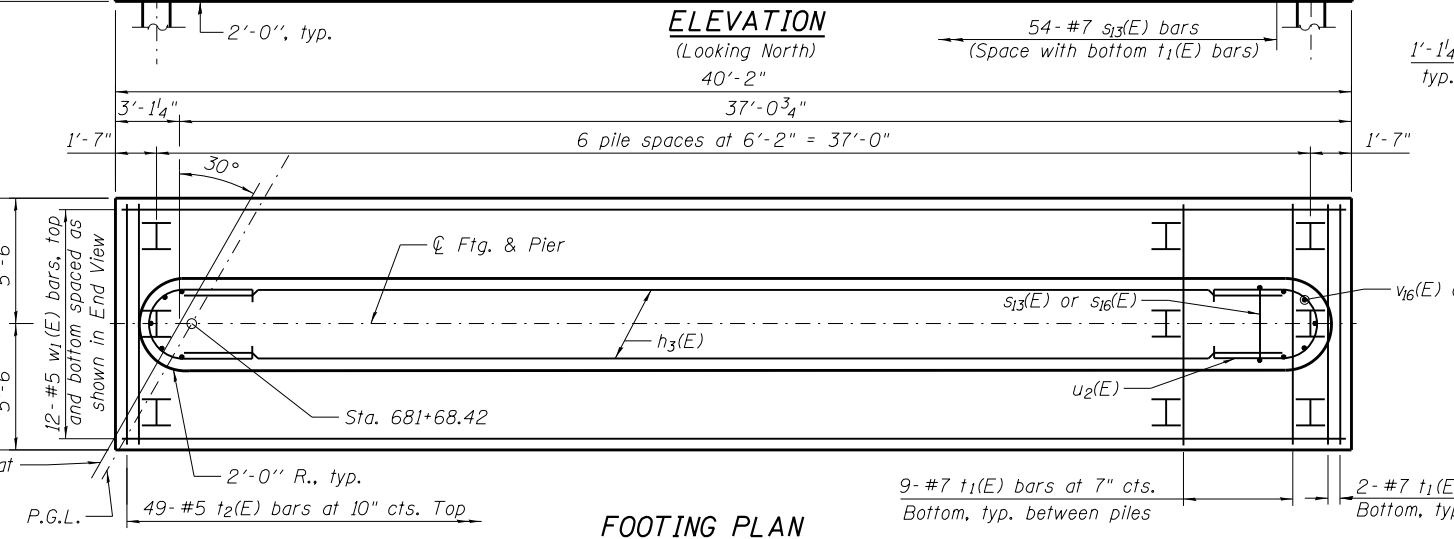
**C AND D DIMENSIONS**

Bar	C	D
s <sub>8</sub> (E)	2'-2"	2'-8"
s <sub>9</sub> (E)	2'-6"	3'-8"
s <sub>12</sub> (E)	2'-11"	2'-8"
s <sub>13</sub> (E)	8'-2"	3'-8"
s <sub>16</sub> (E)	9'-9"	3'-8"

**BARS s<sub>8</sub>(E), s<sub>9</sub>(E), s<sub>12</sub>(E), s<sub>13</sub>(E) AND s<sub>16</sub>(E)**



**ELEVATION**  
(Looking North)



**FOOTING PLAN**



USER NAME =  
FILE NAME =  
PLOT SCALE =  
PLOT DATE =

DESIGNED - HP  
CHECKED - RPW  
DRAWN - AJF  
CHECKED - MTH

REVISED -  
REVISED -  
REVISED -  
REVISED -

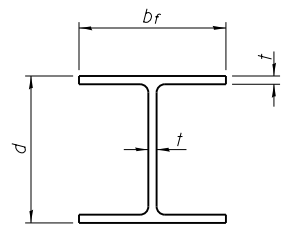
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**PIER 2 DETAILS**  
**STRUCTURE NO. 055-0070**

SHEET NO. 23 OF 29 SHEETS

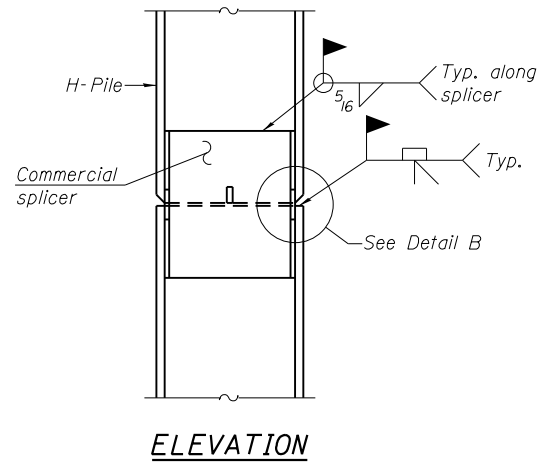
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55I31PV,HB(2-6)B-B-1,B-2	MCDONOUGH	874	455
				CONTRACT NO. 68B44

ILLINOIS FED. AID PROJECT

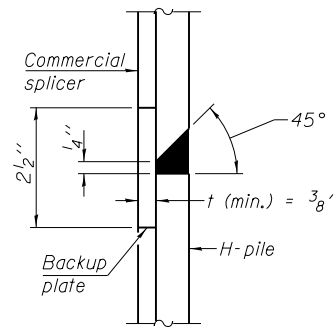


**STEEL PILE TABLE**

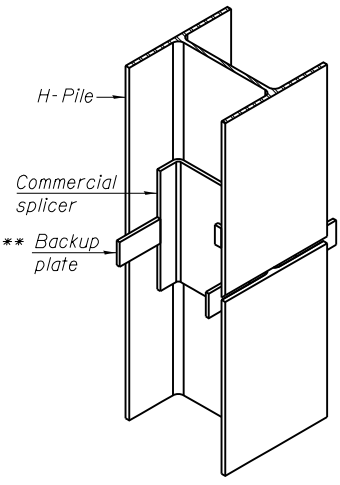
Designation	Depth d	Flange width br	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	13/16"	30"
x102	14"	14 3/4"	1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"



**ELEVATION**

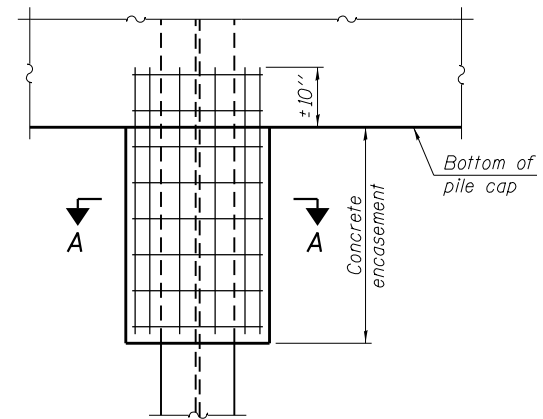


**DETAIL "B"**



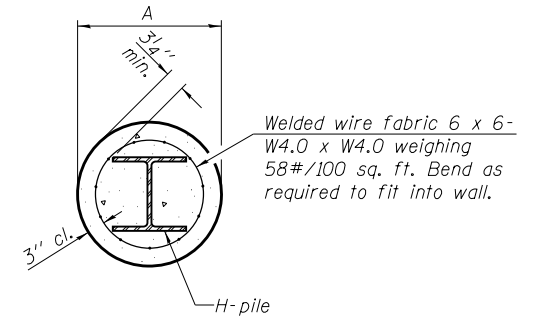
**ISOMETRIC VIEW**

**WELDED COMMERCIAL SPLICE**



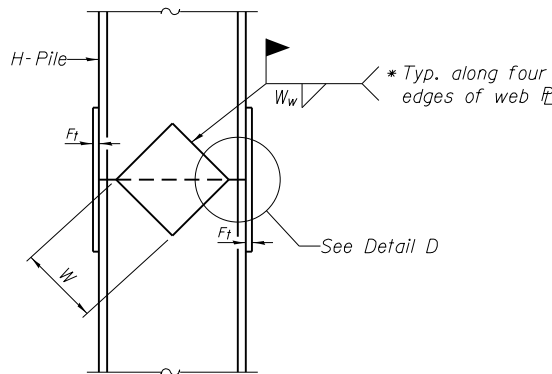
**ELEVATION**

**PILE ENCASEMENT**



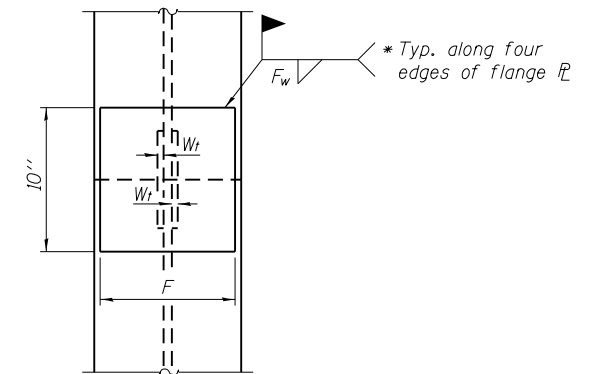
Note:  
Forms for encasement may be omitted when soil conditions permit.

**SECTION A-A**

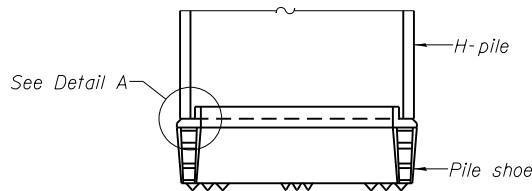


**ELEVATION**

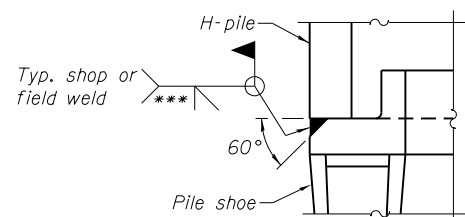
**DETAIL D**



**END VIEW**

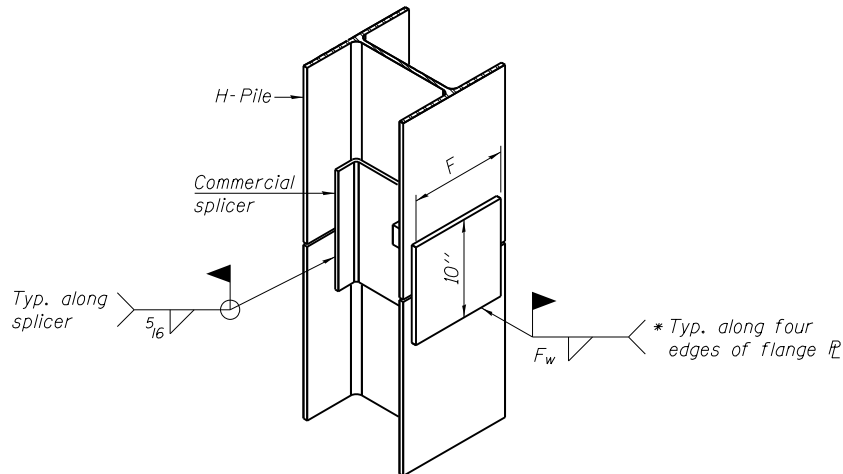


**ELEVATION**



**DETAIL A**

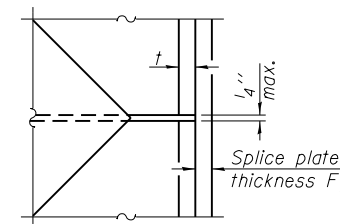
**H-PILE SHOE ATTACHMENT**



**ISOMETRIC VIEW**

**WELDED COMMERCIAL SPLICE ALTERNATE**

- \* Interrupt welds 1/4" from end of web and/or each flange.
- \*\* Remove portions of backup plates that extend outside the flanges.
- \*\*\* Weld size per pile shoe manufacturer (5/16" min.).



**WELDED PLATE FIELD SPLICE**

Designation	F	Ft	Fw	W	Wt	Ww
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	1/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	1/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

Note:  
The steel H-piles shall be according to AASHTO M270 Grade 50.

F-HP 1-27-12



USER NAME =  
FILE NAME =  
PLOT SCALE =  
PLOT DATE =

DESIGNED - HP  
CHECKED - RPW  
DRAWN - AJF  
CHECKED - MTH

REVISED -  
REVISED -  
REVISED -  
REVISED -

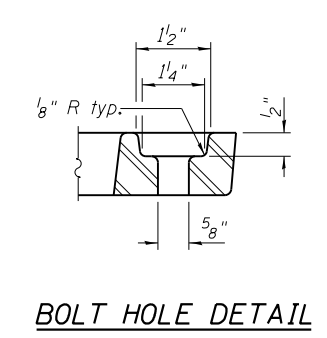
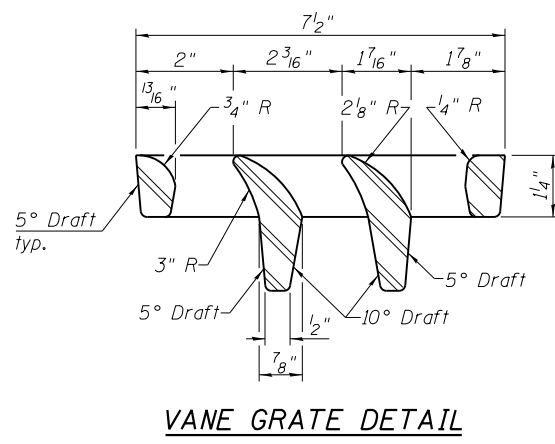
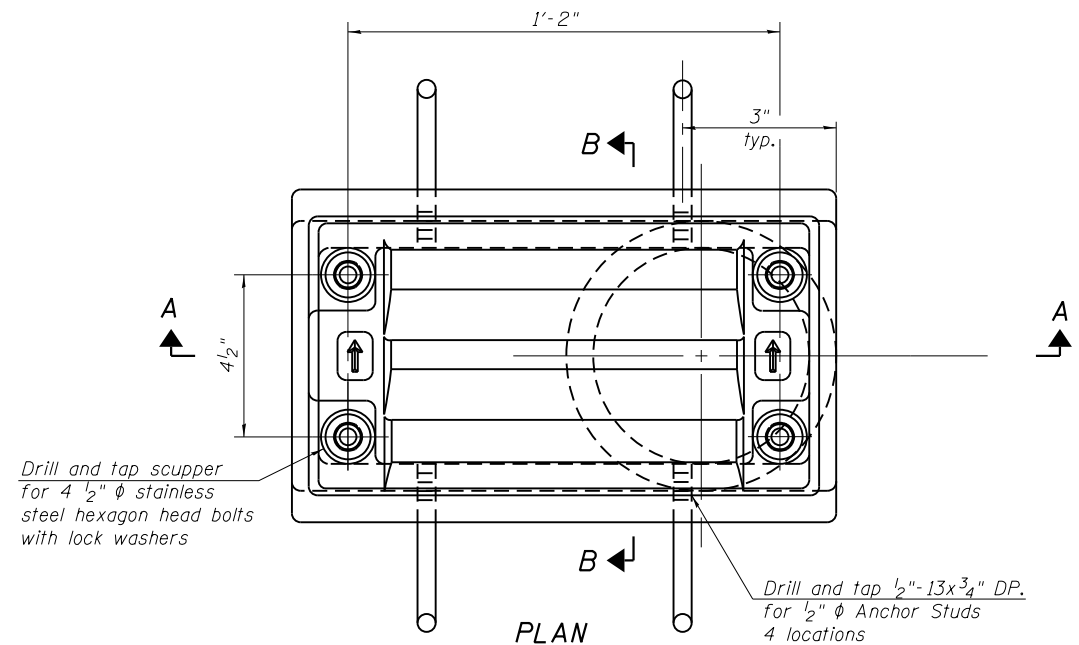
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

HP PILE DETAILS  
STRUCTURE NO. 055-0070

SHEET NO. 24 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6)+B,B-1,B-2)]	McDONOUGH	874	456
CONTRACT NO. 68B44				

ILLINOIS FED. AID PROJECT



Notes:

All cast iron parts shall be gray iron conforming to the requirements of AASHTO M 105, Class 35B.

Bolts, anchor studs, washers and nuts shall conform to the requirements of ASTM A 307 and shall be galvanized according to AASHTO M 232.

Downspouts located on the exterior side of a painted steel fascia beam shall be painted with the finish coat specified for the exterior side of the fascia beam.

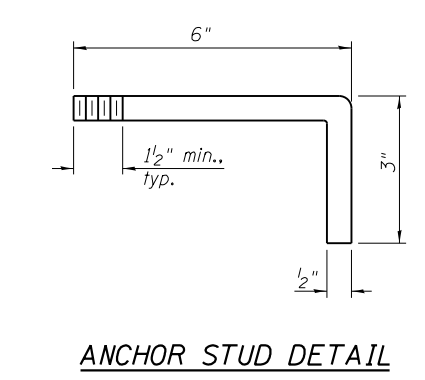
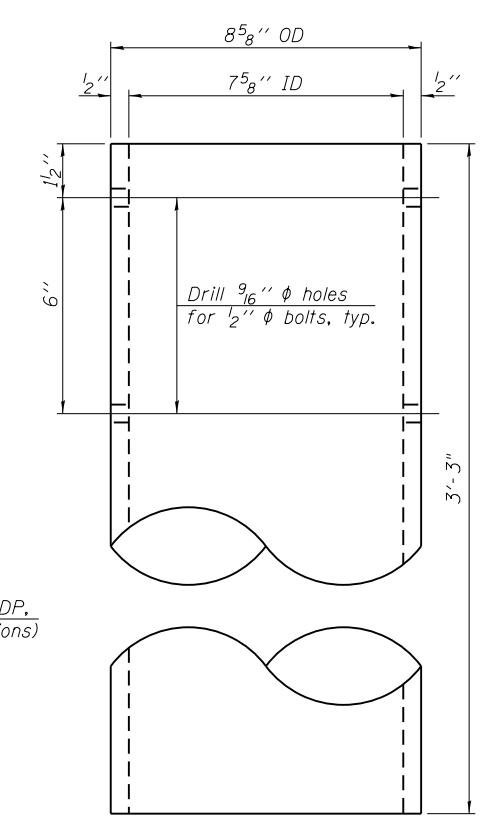
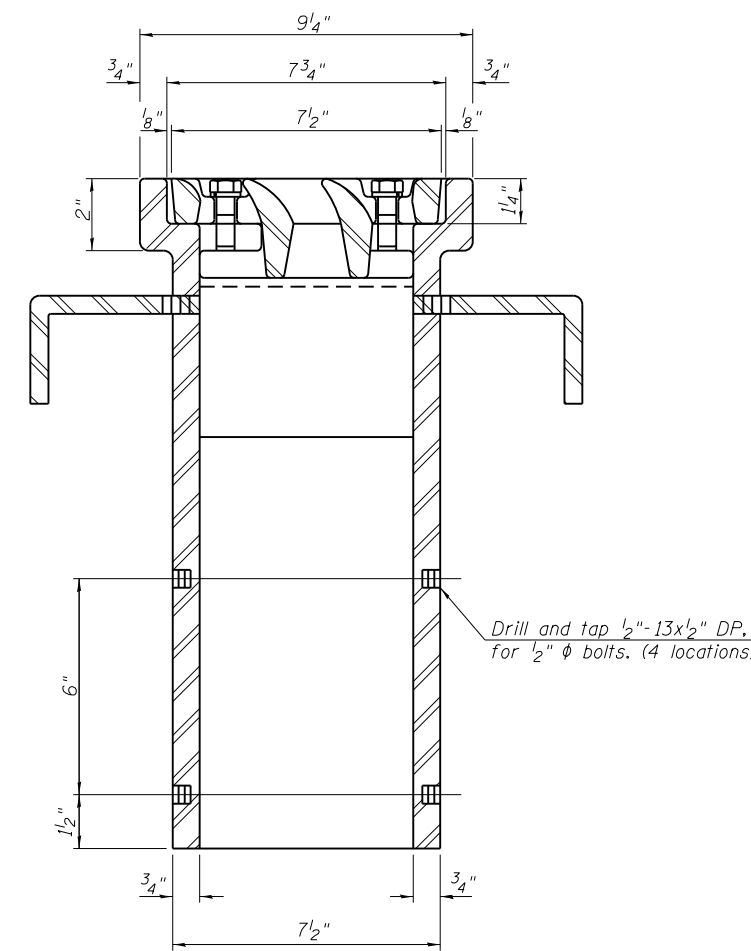
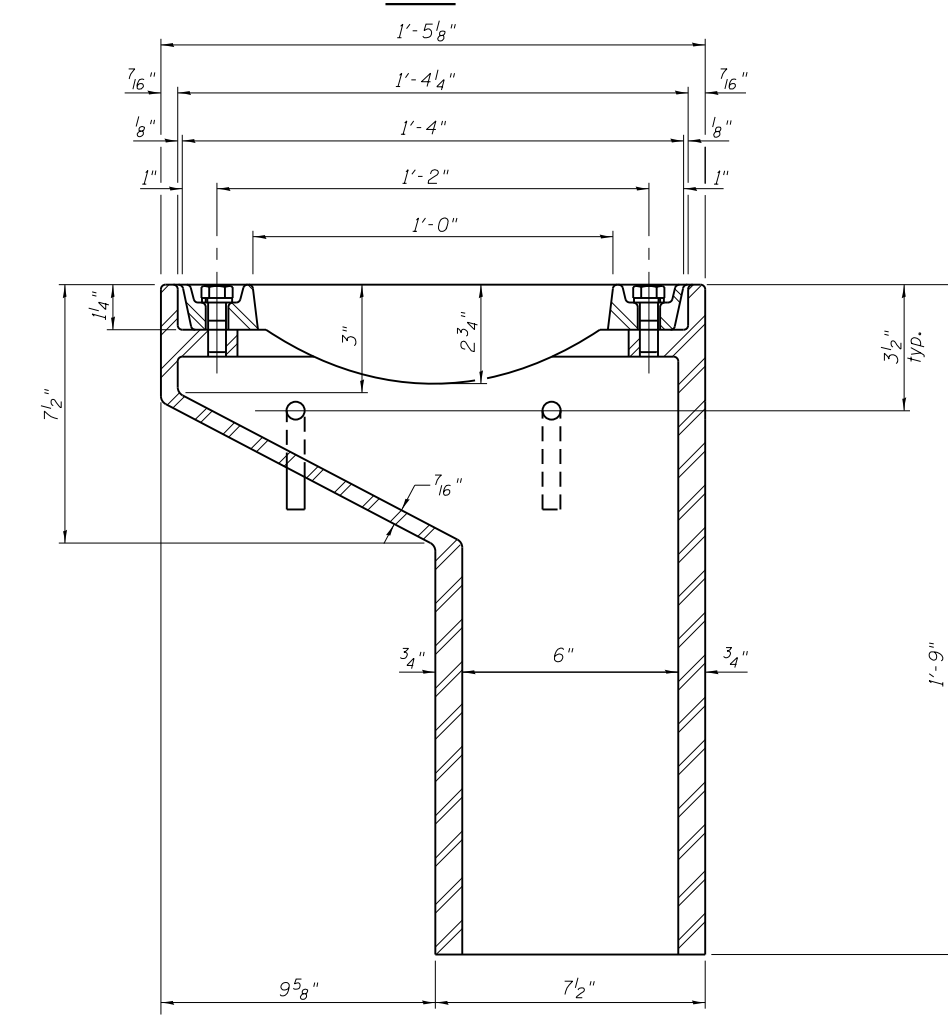
As an alternate, bolts, anchor studs, washers and nuts may be stainless steel according to Article 1006.29(d) of the Standard Specifications.

Structural steel weldments of equal sections and of the same configuration may be substituted for the cast iron scupper frame. Fillet or full penetration welds shall be used for the weldments. Details shall be submitted to the Engineer for approval. Structural steel weldments shall not be substituted for the cast iron scupper grate. Structural steel frames and downspouts shall be galvanized according to AASHTO M111.

The Contractor shall take appropriate measures to assure that Protective Coat is not applied to the scupper.

Cost of the Grate, Frame, Downspout, Anchor Studs, Bolts, Washers and Nuts including complete installation of the scupper shall be paid for at the contract unit price each for Drainage Scupper, DS-11.

Alternate fiberglass downspout conforming to ASTM D 2996 with a short-time rupture strength hoop tensile stress of 30,000 psi min. may be used in lieu of the cast iron or steel equivalent.



See sheet 10 of 29 for scupper location relative to parapet.

**BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Drainage Scupper, DS-11	Each	1

DS-11

7-1-10

**E** LIN ENGINEERING, LTD.  
Consulting Engineers  
Springfield, Illinois

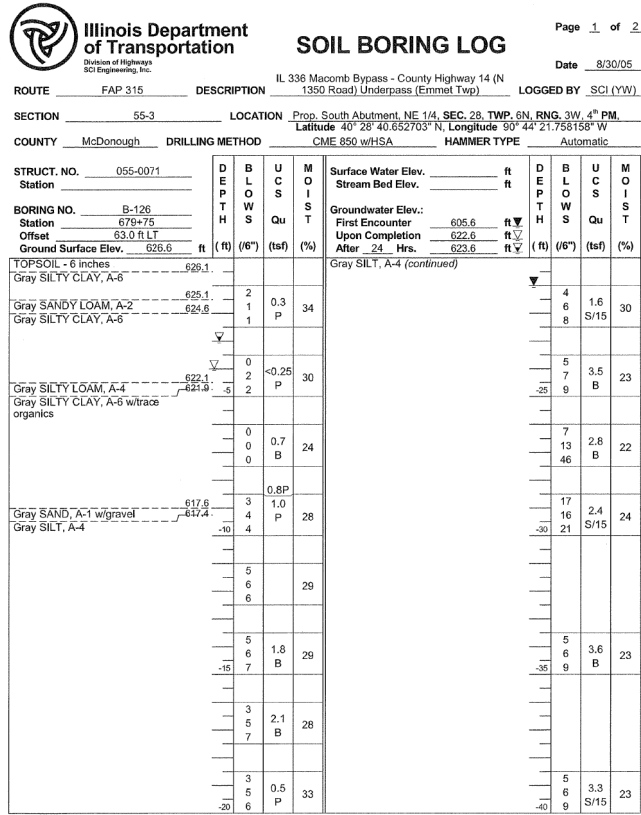
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FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

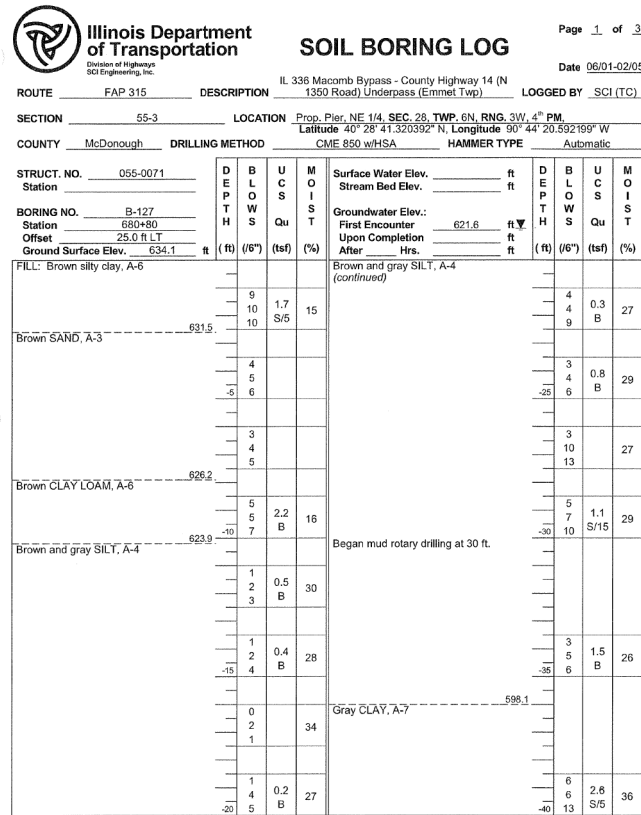
DRAINAGE SCUPPER, DS-11  
STRUCTURE NO. 055-0070

SHEET NO. 25 OF 29 SHEETS

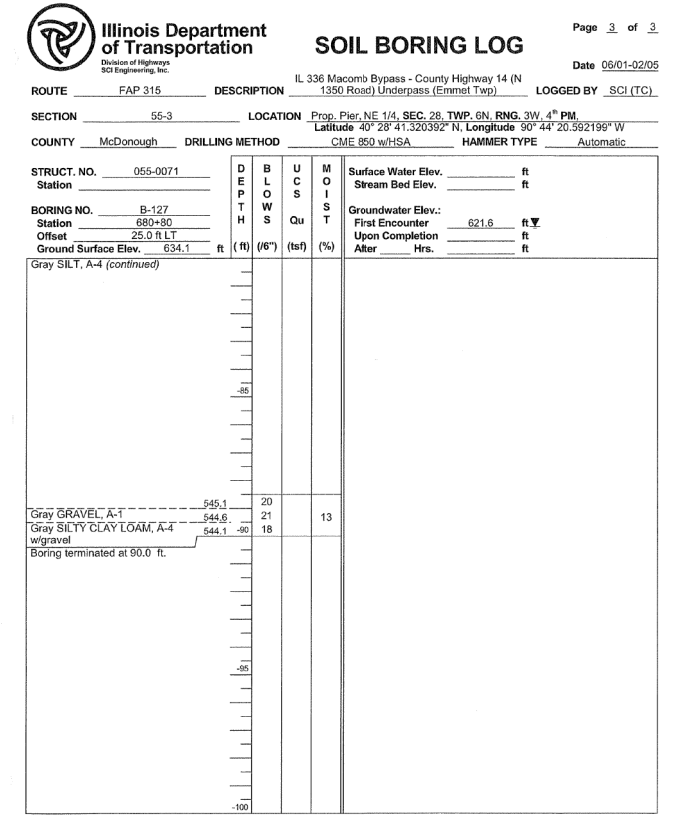
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	457
CONTRACT NO. 68B44				
ILLINOIS FED. AID PROJECT				



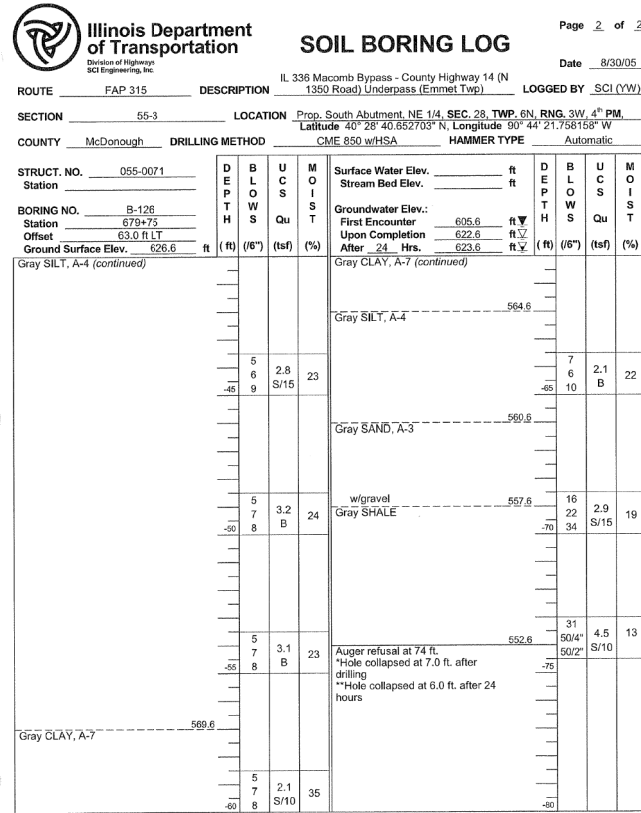
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



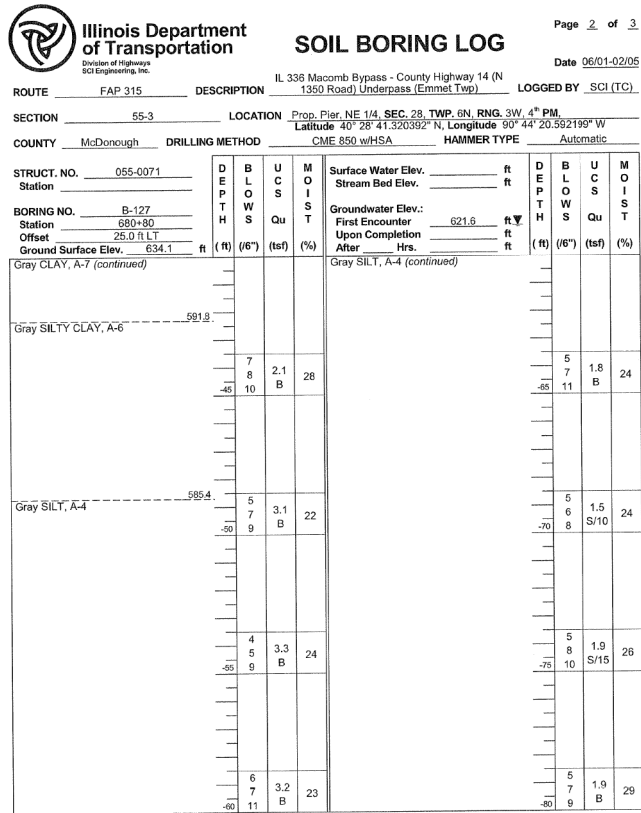
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

(Sheet 1 of 4)

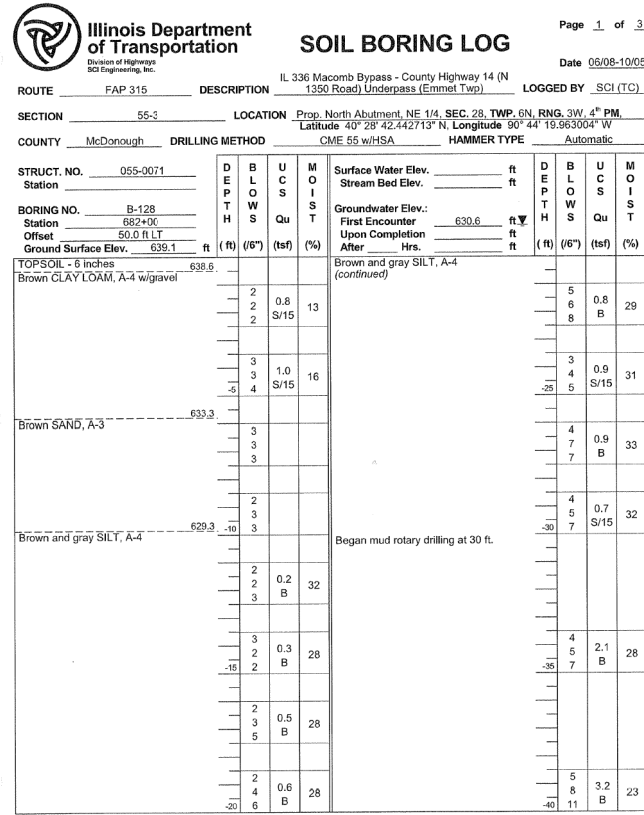


USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

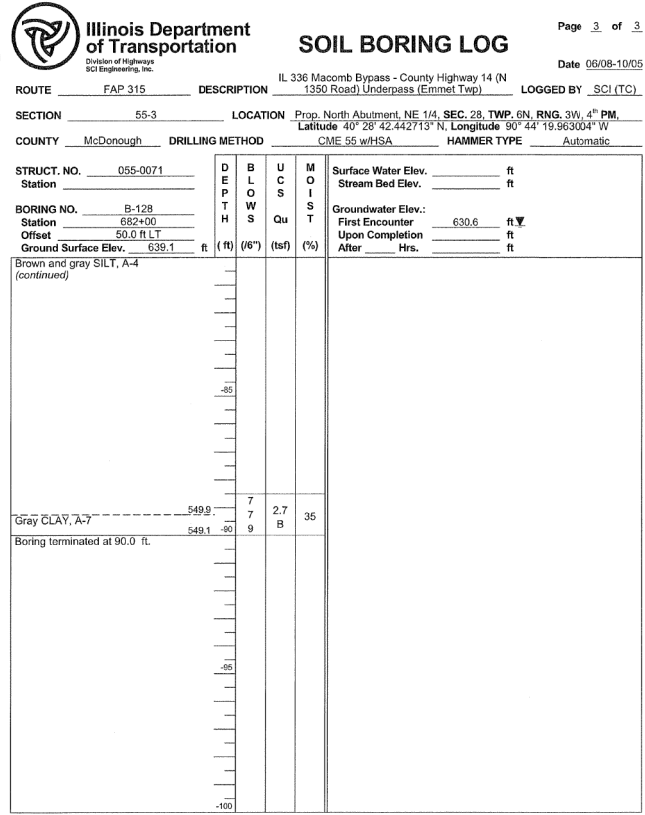
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SOIL BORINGS  
STRUCTURE NO. 055-0070  
SHEET NO. 26 OF 29 SHEETS

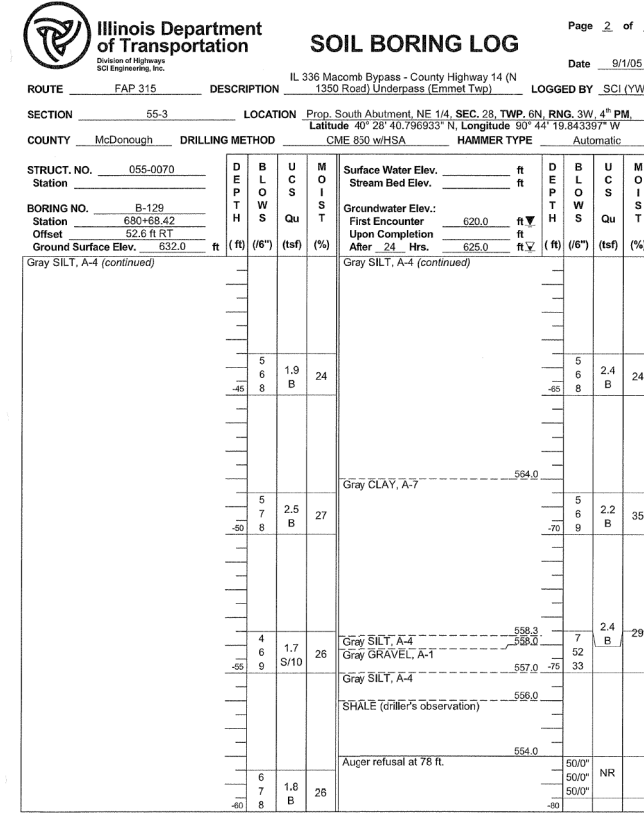
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55I3(PV,HB(2-6);B,B-1,B-2)]	MCDONOUGH	874	458
			CONTRACT NO.	68B44
ILLINOIS FED. AID PROJECT				



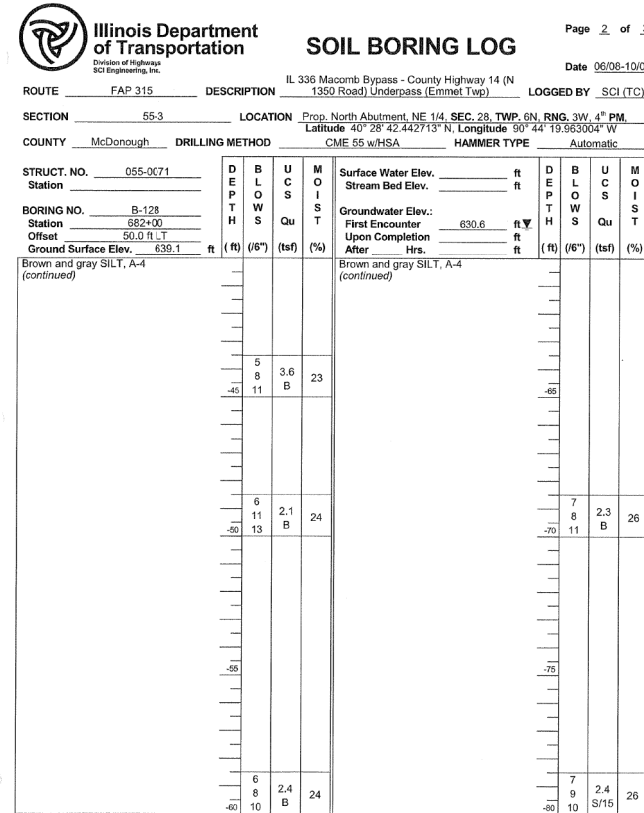
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



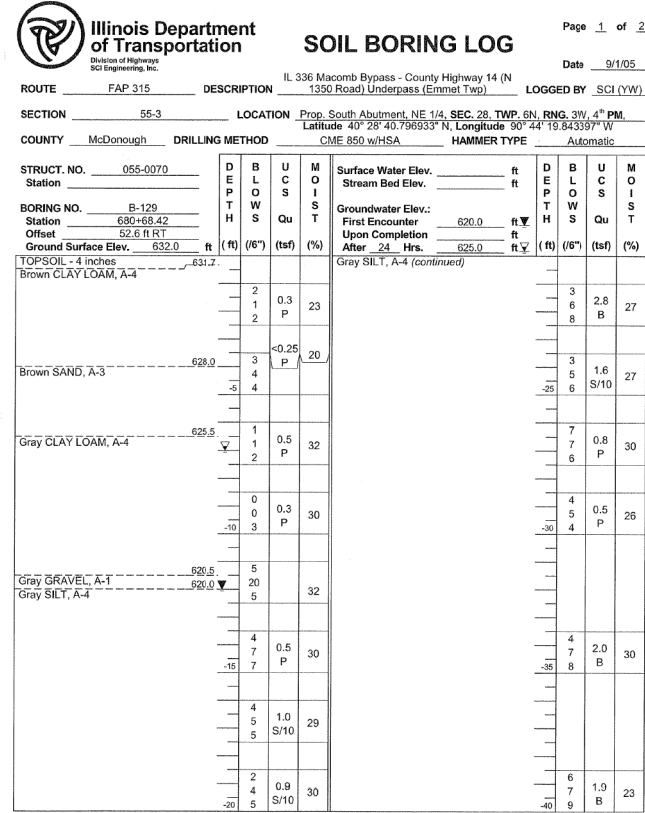
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

(Sheet 2 of 4)

**Illinois Department of Transportation** SOIL BORING LOG Page 1 of 3  
Date 5/10/05

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - County Highway 14 (N 1350 Road) Underpass (Emmet Twp) LOGGED BY SCI (TC)

SECTION 55-3 LOCATION Prop. Pier, NE 1/4, SEC. 28, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM  
Latitude 40° 28' 41.268005" N, Longitude 90° 44' 19.463340" W

COUNTY McDonough DRILLING METHOD CME 55 w/HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0070 DEPTH 0 TO 30 ft  
BORING NO. B-130 Station 681+25 Offset 50.0 ft RT  
Ground Surface Elev. 635.1 ft

DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)
FILL: Sand and gravel									
633.7	3								
	4	1.0							
	6	B							
632.0	2								
	2								
	3								
625.9	2	1.0							
	2	B							
	3								
	2	0.6							
	3	B							
	3								
	4	0.9							
	3	S/10							
	0								
	2	1.0							
	2	S/10							
	1								
	2	0.2							
	3	B							

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

**Illinois Department of Transportation** SOIL BORING LOG Page 3 of 3  
Date 5/10/05

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - County Highway 14 (N 1350 Road) Underpass (Emmet Twp) LOGGED BY SCI (TC)

SECTION 55-3 LOCATION Prop. Pier, NE 1/4, SEC. 28, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM  
Latitude 40° 28' 41.268005" N, Longitude 90° 44' 19.463340" W

COUNTY McDonough DRILLING METHOD CME 55 w/HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0070 DEPTH 0 TO 30 ft  
BORING NO. B-130 Station 681+25 Offset 50.0 ft RT  
Ground Surface Elev. 635.1 ft

DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)
Gray SILT, A-4 (continued)									
594.1	3								
	6	1.1							
	6	S/10							
	5								
	7	2.6							
	9	B							
547.1	3								
	3	1.3							
	16	S/15							
545.6	22								
Gray GRAVEL, A-1									
541.9	16								
	35	4.9							
	6	S/15							
536.1	50/2"								
	-100								

Boring terminated at 99.0 ft. Hole collapsed at 16.0 ft. after 24 hours.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

**Illinois Department of Transportation** SOIL BORING LOG Page 2 of 3  
Date 06/13-14/05

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - County Highway 14 (N 1350 Road) Underpass (Emmet Twp) LOGGED BY SCI (TC)

SECTION 55-3 LOCATION Prop. North Abutment, NE 1/4, SEC. 28, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM  
Latitude 40° 28' 42.210488" N, Longitude 90° 44' 18.985962" W

COUNTY McDonough DRILLING METHOD CME 55 w/HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0070 DEPTH 0 TO 30 ft  
BORING NO. B-131 Station 682+25 Offset 25.0 ft RT  
Ground Surface Elev. 642.1 ft

DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)
Gray SILT, A-4 (continued)									
626.1	5								
	8	3.3							
	12	B							
605	7								
	9	1.8							
	12	B							
67	6								
	7	1.5							
	8	B							
	9								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

**Illinois Department of Transportation** SOIL BORING LOG Page 2 of 3  
Date 5/10/05

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - County Highway 14 (N 1350 Road) Underpass (Emmet Twp) LOGGED BY SCI (TC)

SECTION 55-3 LOCATION Prop. Pier, NE 1/4, SEC. 28, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM  
Latitude 40° 28' 41.268005" N, Longitude 90° 44' 19.463340" W

COUNTY McDonough DRILLING METHOD CME 55 w/HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0070 DEPTH 0 TO 30 ft  
BORING NO. B-130 Station 681+25 Offset 50.0 ft RT  
Ground Surface Elev. 635.1 ft

DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)
Gray SILT, A-4 (continued)									
	3								
	4	2.2							
	5	B							
627.6	4								
	6	1.0							
	11	B							
624.1	4								
	6	1.5							
	11	S/10							
620.6	4								
	7	2.9							
	11	S/10							

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

**Illinois Department of Transportation** SOIL BORING LOG Page 1 of 3  
Date 06/13-14/05

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - County Highway 14 (N 1350 Road) Underpass (Emmet Twp) LOGGED BY SCI (TC)

SECTION 55-3 LOCATION Prop. North Abutment, NE 1/4, SEC. 28, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM  
Latitude 40° 28' 42.210488" N, Longitude 90° 44' 18.985962" W

COUNTY McDonough DRILLING METHOD CME 55 w/HSA HAMMER TYPE Automatic

STRUCT. NO. 055-0070 DEPTH 0 TO 30 ft  
BORING NO. B-131 Station 682+25 Offset 25.0 ft RT  
Ground Surface Elev. 642.1 ft

DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)
TOPSOIL - 6.5 inches									
641.9	13								
	11								
	7								
639.4	5								
	7	1.5							
	9	S/10							
619.9	3								
	5	1.7							
	7	S/10							
	2								
	2	0.8							
	2	B							
633.1	4								
	6	0.8							
	3	S/5							
630.7	3								
	2	0.8							
	4	B							
	2								
	2	0.2							
	3	B							
	2								
	1	0.4							
	1	B							
	2								
	2	0.4							
	2	B							
	1								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

**Illinois Department of Transportation** SOIL BORING LOG Page 3 of 3  
Date 06/13-14/05

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - County Highway 14 (N 1350 Road) Underpass (Emmet Twp) LOGGED BY SCI (TC)

SECTION 55-3 LOCATION Prop. North Abutment, NE 1/4, SEC. 28, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM  
Latitude 40° 28' 42.210488" N, Longitude 90° 44' 18.985962" W

COUNTY McDonough DRILLING METHOD CME 55 w/HSA HAMMER TYPE Automatic

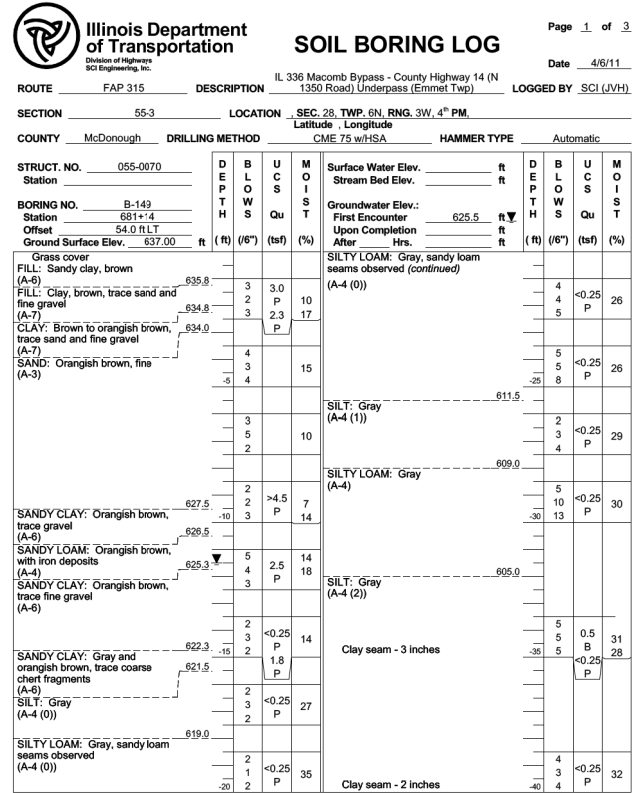
STRUCT. NO. 055-0070 DEPTH 0 TO 30 ft  
BORING NO. B-131 Station 682+25 Offset 25.0 ft RT  
Ground Surface Elev. 642.1 ft

DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)
Gray SILT, A-4 (continued)									
620.1	0								
	2	1.7							
	4	S/5							
619.9	3								
	5	1.7							
	5	S/10							
	3								
	4	0.8							
	4	B							
	6								
	7	1.9							
	10	B							
549.6	6								
	7								
	10								

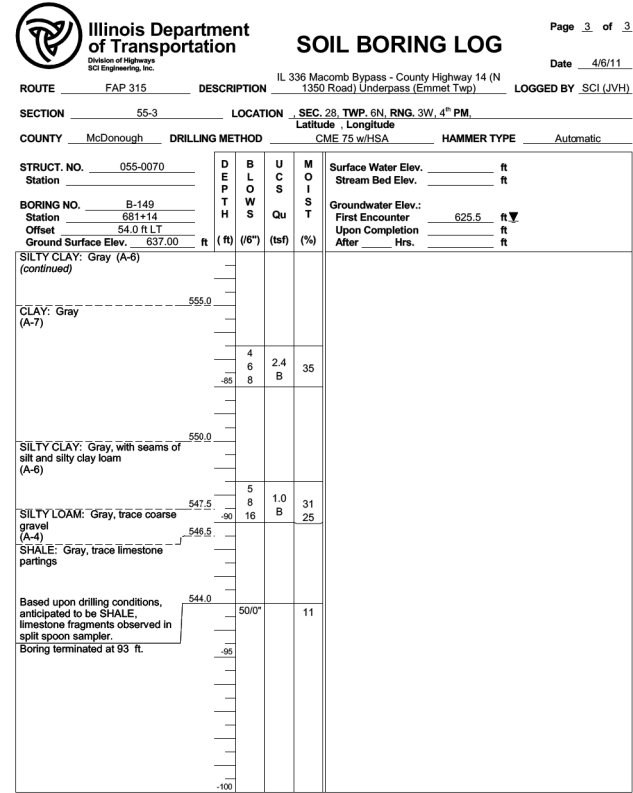
Auger refusal at 92.5 ft.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

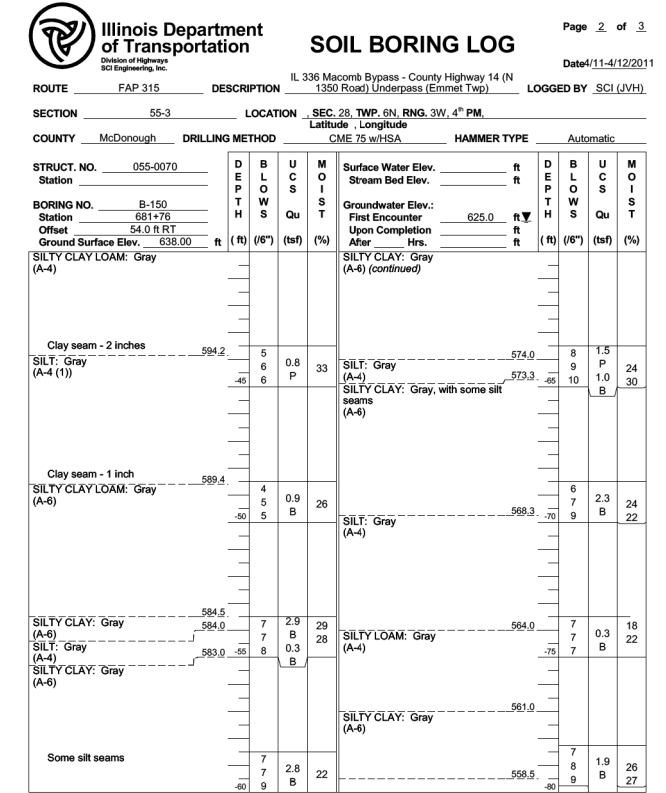
(Sheet 3 of 4)



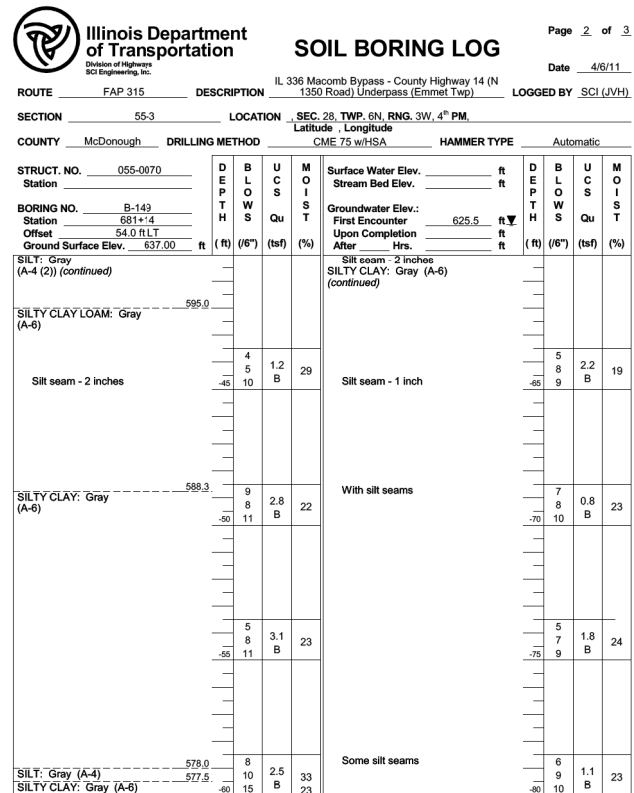
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



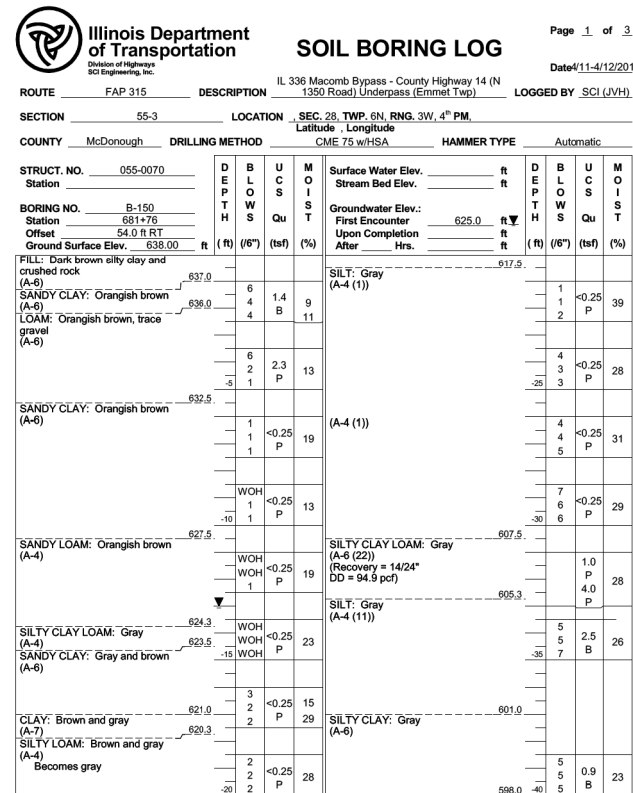
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



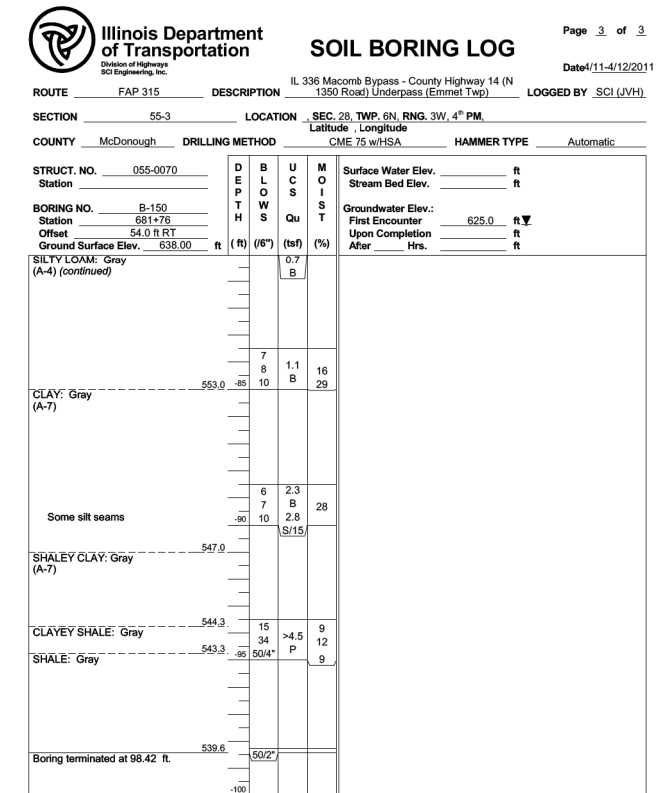
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

(Sheet 4 of 4)



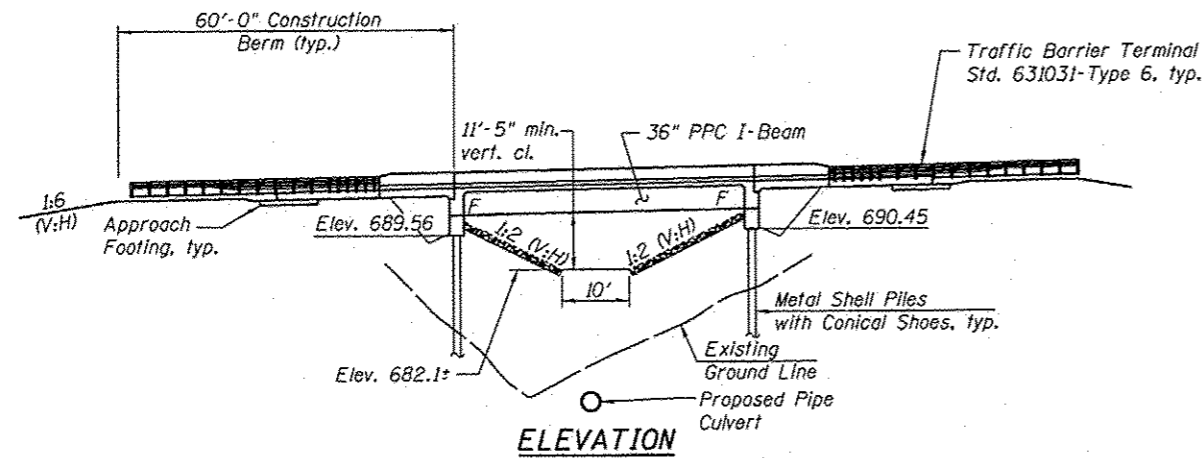
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FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SOIL BORINGS  
 STRUCTURE NO. 055-0070  
 SHEET NO. 29 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[31PV,HB(2-6);B,B-1,B-2]	McDONOUGH	874	461
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	

Benchmark: RR Spike on northeast side of 34" Locust Tree, sta. 700+94.92, 22.73' LT. Elev. 696.64  
 Existing Structure: None



**Notes:**  
 The construction schedule should allow for a 30 day delay between placement of embankment fill and installation of the abutment piles to allow for consolidation of the underlying soils. Settlement of the fill should be monitored during this period to confirm that the settlement is complete.  
 The embankment and riprap for the SB Structure shall be placed in this contract.

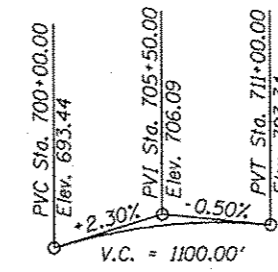
STATION 702+70.00  
 BUILT 20 BY  
 STATE OF ILLINOIS  
 F.A.P. RT. 407  
 SEC. 55(3)(PV,HB(2-6);B.B-1.B-2)]  
 LOADING HL-93  
 STRUCTURE NO. 055-0072

**NAME PLATE**  
 See Std. 515001

**INDEX OF SHEETS**

1. General Plan and Elevation
2. General Data
- 3.-4. Top of Slab Elevations
- 5.-6. Top of Approach Slab Elevations
7. Superstructure
8. Superstructure Details
9. Diaphragm Details
- 9A. Concrete Parapet Slipforming Option
- 10.-11. Bridge Approach Slab Details
12. Framing Plan
13. 36" PPC I-Beam
14. 36" PPC I-Beam Details
15. South Abutment Details
16. North Abutment Details
17. Metal Shell Pile Details
- 18.-21. Soil Borings

**CURVE DATA**  
 $\Delta = 60^{\circ}-09'-14''$  (RT)  
 $D = 1^{\circ}-16'-24''$   
 $T = 2,606.15'$   
 $L = 4,724.48'$   
 $E = 700.19'$   
 $R = 4,500.00'$   
 $S.E. = 4.1\%$   
 $P.C. = \text{Sta. } 659+43.10$   
 $P.T. = \text{Sta. } 706+67.58$   
 $P.I. = \text{Sta. } 685+49.24$



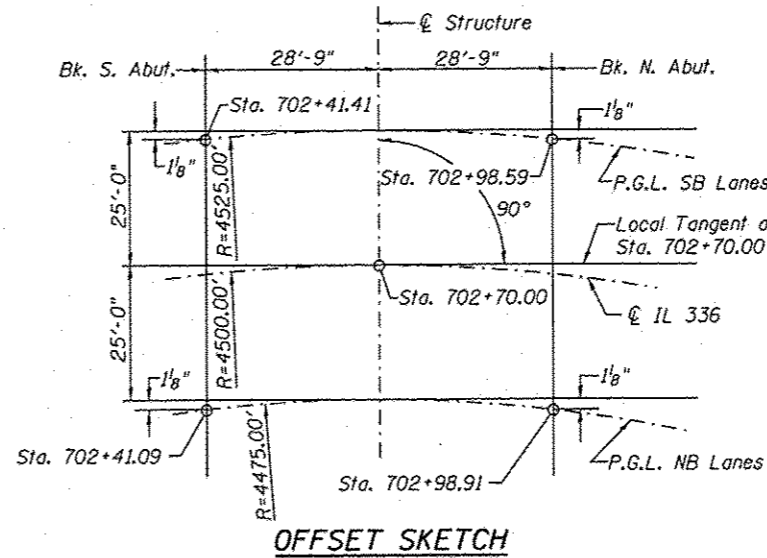
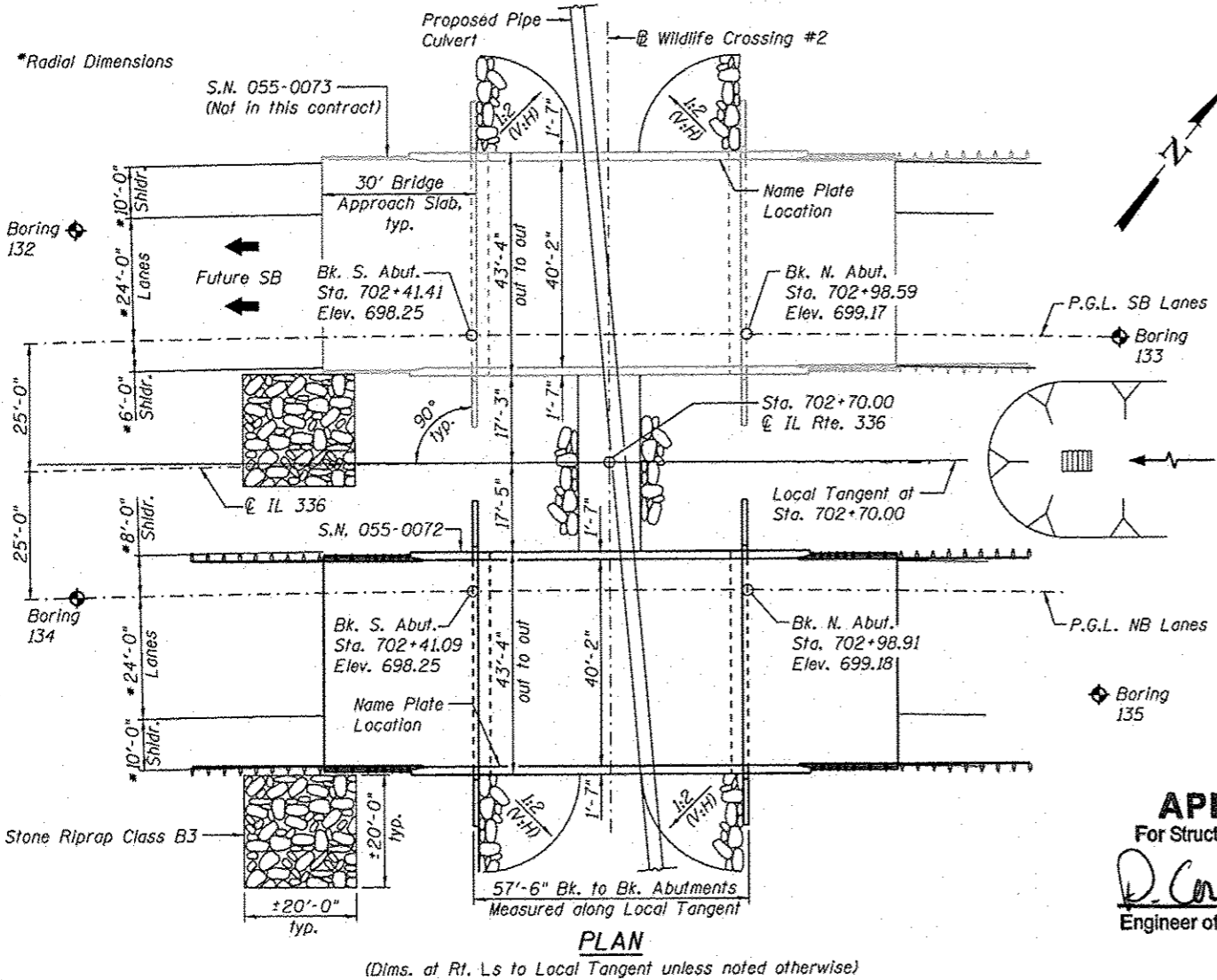
**PROFILE GRADE**  
 (along P.G.L. IL 336)

**DESIGN STRESSES**  
**FIELD UNITS**

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

**PRECAST PRESTRESSED UNITS**

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



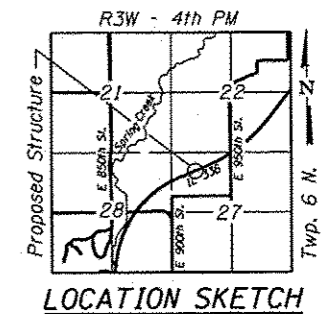
**DESIGN SPECIFICATIONS**  
 2012 AASHTO LRFD Bridge Design Specifications,  
 6th Edition with 2013 Interim Revisions

**LOADING HL-93**

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

**SEISMIC DATA**

Seismic Performance Zone (SPZ) = 1  
 Design Spectral Acceleration at 1.0 sec. ( $S_{D1}$ ) = 0.08g  
 Design Spectral Acceleration at 0.2 sec. ( $S_{D5}$ ) = 0.13g  
 Soil Site Class = C

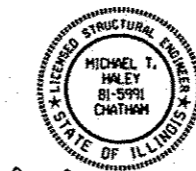


**GENERAL PLAN AND ELEVATION**  
**IL 336 OVER WILDLIFE CROSSING #2**

**F.A.P. RTE. 407**  
**SECTION 55(3)(PV,HB(2-6);B.B-1.B-2)]**

**McDONOUGH COUNTY**  
**STATION 702+70.00**  
**STRUCTURE NO. 055-0072**

**APPROVED**  
 For Structural Adequacy Only  
 Michael J. Haley  
 Engineer of Bridges & Structures



Michael J. Haley 1-22-15  
 Michael T. Haley  
 Licensed Structural Engineer  
 State of Illinois No. 81-5991  
 Expires 11/30/2016

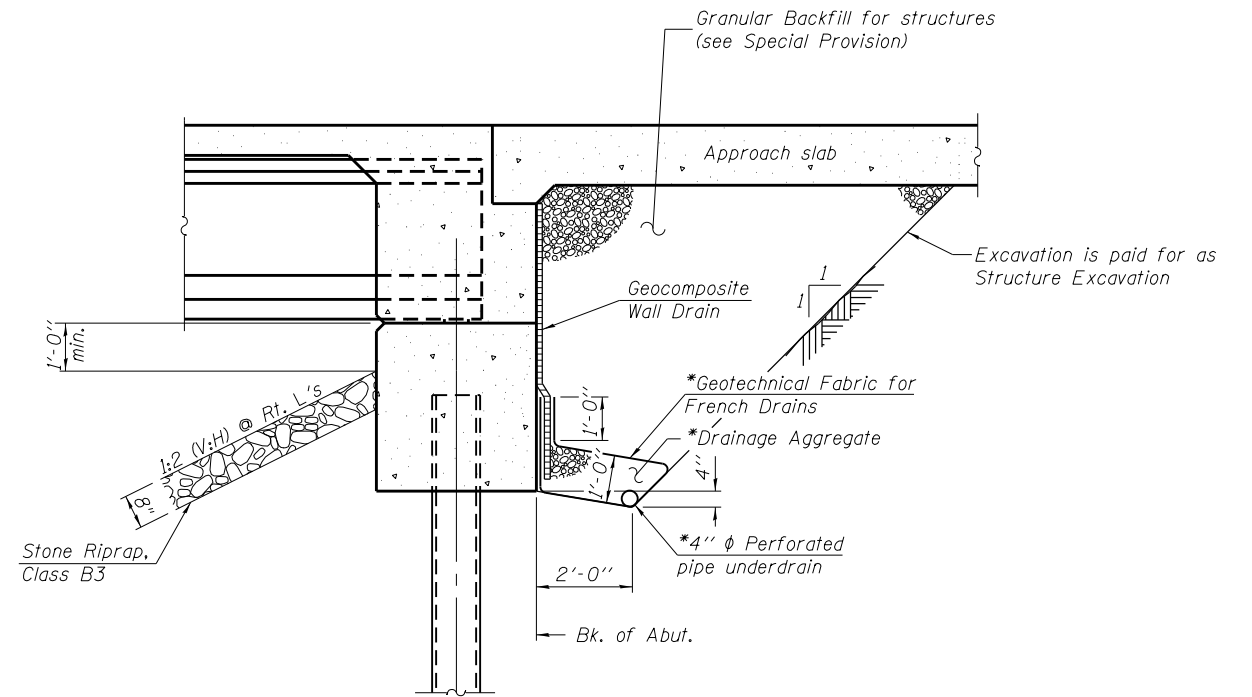
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	PLOT DATE =	CHECKED - MTH	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55(3)(PV,HB(2-6);B.B-1.B-2)]	McDONOUGH	874	462
			CONTRACT NO. 68B44	
ILLINOIS FED. AID PROJECT				



**GENERAL NOTES**

Reinforcement bars designated (E) shall be epoxy coated.  
 Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.  
 The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.  
 Slip forming of the concrete parapet is not allowed.  
 This contract is for the construction of SN 055-0072 (NB) only. SN 055-0073 (SB) is to be built in a future contract and is shown for information only.



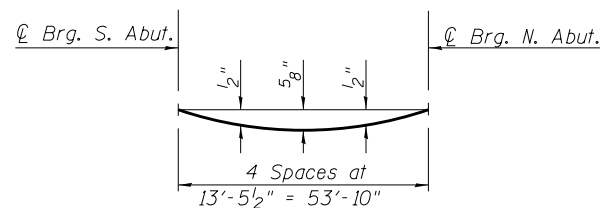
**SECTION THRU ABUTMENT**

\*Included in the cost of Pipe Underdrains for Structures (see Special Provisions)

Note:  
 All drainage system components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601101).

**TOTAL BILL OF MATERIAL (SN 055-0072)**

ITEM	UNIT	SUPER	SUB	TOTAL
Stone Riprap, Class B3	Sq. Yd.	-	1,041	1,041
Structure Excavation	Cu. Yd.	-	196	196
Concrete Structures	Cu. Yd.	-	85.4	85.4
Concrete Superstructure	Cu. Yd.	234.8	-	234.8
Bridge Deck Grooving	Sq. Yd.	490	-	490
Protective Coat	Sq. Yd.	593	-	593
Furnishing and Erecting PPC I Beams, 36"	Foot	329	-	329
Reinforcement Bars, Epoxy Coated	Pound	50,660	17,690	68,350
Furnishing Metal Shell Piles 14"x0.250"	Foot	-	630	630
Driving Piles	Foot	-	630	630
Test Pile Metal Shells	Each	-	2	2
Pile Shoes	Each	-	12	12
Name Plates	Each	1	-	1
Geocomposite Wall Drain	Sq. Yd.	-	91	91
Granular Backfill for Structures	Cu. Yd.	-	189	189
Pipe Underdrains for Structures 4"	Foot	-	135	135

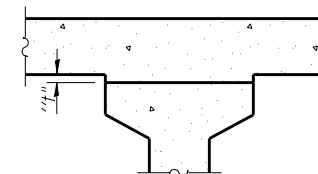


**DEAD LOAD DEFLECTION DIAGRAM**

(Includes weight of concrete, excluding beams).

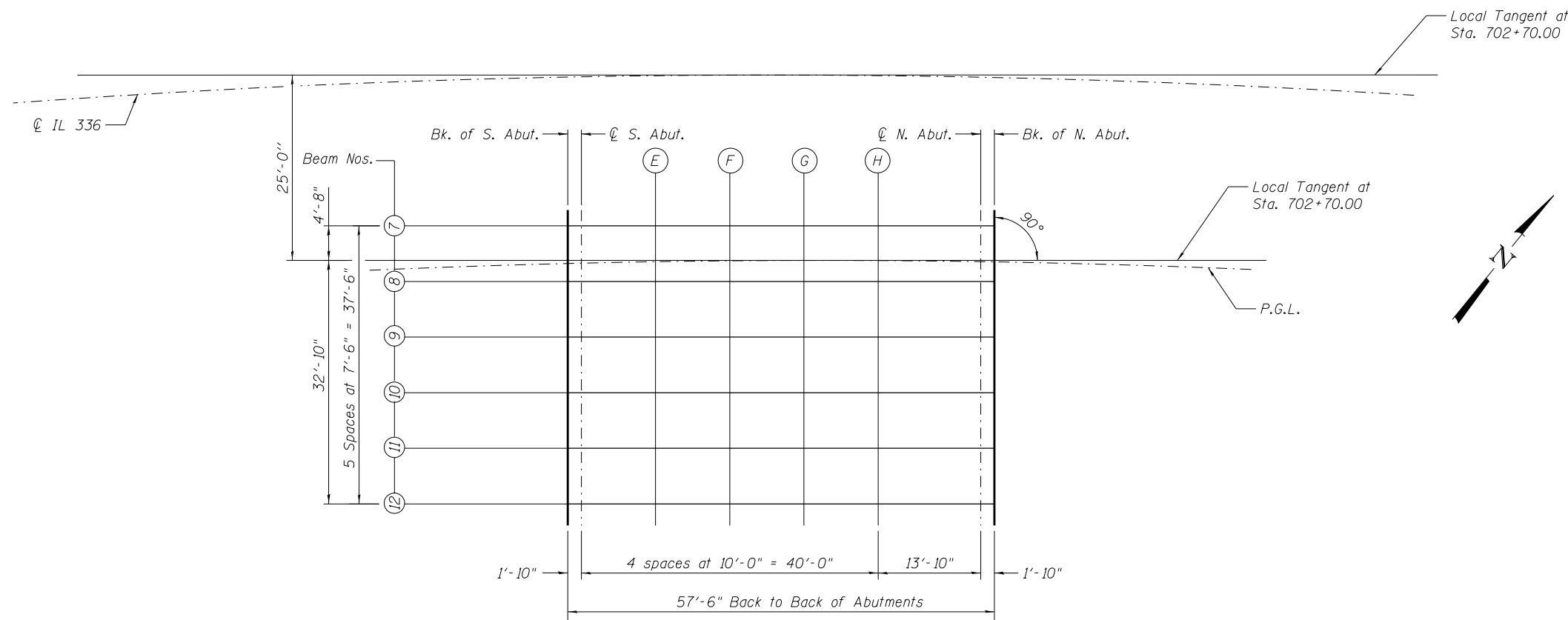
**Note:**

The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown on sheet 4 of 21.



To determine "t": After all precast prestressed beams have been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflections" shown on sheet 4 of 21, minus slab thickness, equals the fillet heights "t" above top flanges of beams.

**FILLET HEIGHTS**



**PLAN**

(Sheet 1 of 2)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS  
STRUCTURE NO. 055-0072**

SHEET NO. 3 OF 21 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	464
CONTRACT NO. 68B44				

ILLINOIS FED. AID PROJECT

**BEAM 7**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. S. ABUT.	702+41.12	-4.76	698.44	698.44
☉ S. ABUT.	702+42.96	-4.75	698.47	698.47
E	702+53.01	-4.70	698.64	698.66
F	702+63.05	-4.67	698.80	698.85
G	702+73.10	-4.67	698.96	699.01
H	702+83.14	-4.69	699.12	699.16
☉ N. ABUT.	702+97.04	-4.75	699.34	699.34
BK. N. ABUT.	702+98.88	-4.76	699.37	699.37

**PROFILE GRADE**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. S. ABUT.	702+41.09	0.00	698.25	698.25
☉ S. ABUT.	702+42.93	0.00	698.28	698.28
E	702+52.99	0.00	698.44	698.48
F	702+63.04	0.00	698.61	698.66
G	702+73.10	0.00	698.77	698.83
H	702+83.16	0.00	698.93	698.97
☉ N. ABUT.	702+97.07	0.00	699.15	699.15
BK. N. ABUT.	702+98.91	0.00	699.18	699.18

**BEAM 8**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. S. ABUT.	702+41.07	2.74	698.13	698.13
☉ S. ABUT.	702+42.92	2.75	698.16	698.16
E	702+52.98	2.80	698.33	698.36
F	702+63.04	2.83	698.49	698.54
G	702+73.10	2.83	698.66	698.71
H	702+83.16	2.81	698.82	698.86
☉ N. ABUT.	702+97.08	2.75	699.04	699.04
BK. N. ABUT.	702+98.93	2.74	699.07	699.07

**BEAM 9**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. S. ABUT.	702+41.02	10.24	697.82	697.82
☉ S. ABUT.	702+42.87	10.25	697.85	697.85
E	702+52.95	10.30	698.02	698.05
F	702+63.03	10.33	698.19	698.24
G	702+73.11	10.33	698.35	698.40
H	702+83.19	10.31	698.51	698.55
☉ N. ABUT.	702+97.13	10.25	698.73	698.73
BK. N. ABUT.	702+98.98	10.24	698.76	698.76

**BEAM 10**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. S. ABUT.	702+40.97	17.74	697.52	697.52
☉ S. ABUT.	702+42.83	17.75	697.55	697.55
E	702+52.92	17.80	697.71	697.74
F	702+63.02	17.83	697.88	697.93
G	702+73.11	17.83	698.04	698.10
H	702+83.21	17.81	698.20	698.24
☉ N. ABUT.	702+97.18	17.75	698.42	698.42
BK. N. ABUT.	702+99.03	17.74	698.45	698.45

**BEAM 11**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. S. ABUT.	702+40.93	25.24	697.21	697.21
☉ S. ABUT.	702+42.78	25.25	697.24	697.24
E	702+52.89	25.30	697.41	697.44
F	702+63.01	25.33	697.57	697.62
G	702+73.12	25.33	697.73	697.79
H	702+83.23	25.31	697.90	697.94
☉ N. ABUT.	702+97.22	25.25	698.12	698.12
BK. N. ABUT.	702+99.07	25.24	698.15	698.15

**BEAM 12**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
BK. S. ABUT.	702+40.88	32.74	696.90	696.90
☉ S. ABUT.	702+42.73	32.75	696.93	696.93
E	702+52.86	32.80	697.10	697.12
F	702+62.99	32.83	697.26	697.31
G	702+73.12	32.83	697.43	697.47
H	702+83.25	32.81	697.59	697.62
☉ N. ABUT.	702+97.27	32.75	697.81	697.81
BK. N. ABUT.	702+99.12	32.74	697.84	697.84

Note: Offsets measured from PGL.

(Sheet 2 of 2)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS  
STRUCTURE NO. 055-0072**

SHEET NO. 4 OF 21 SHEETS

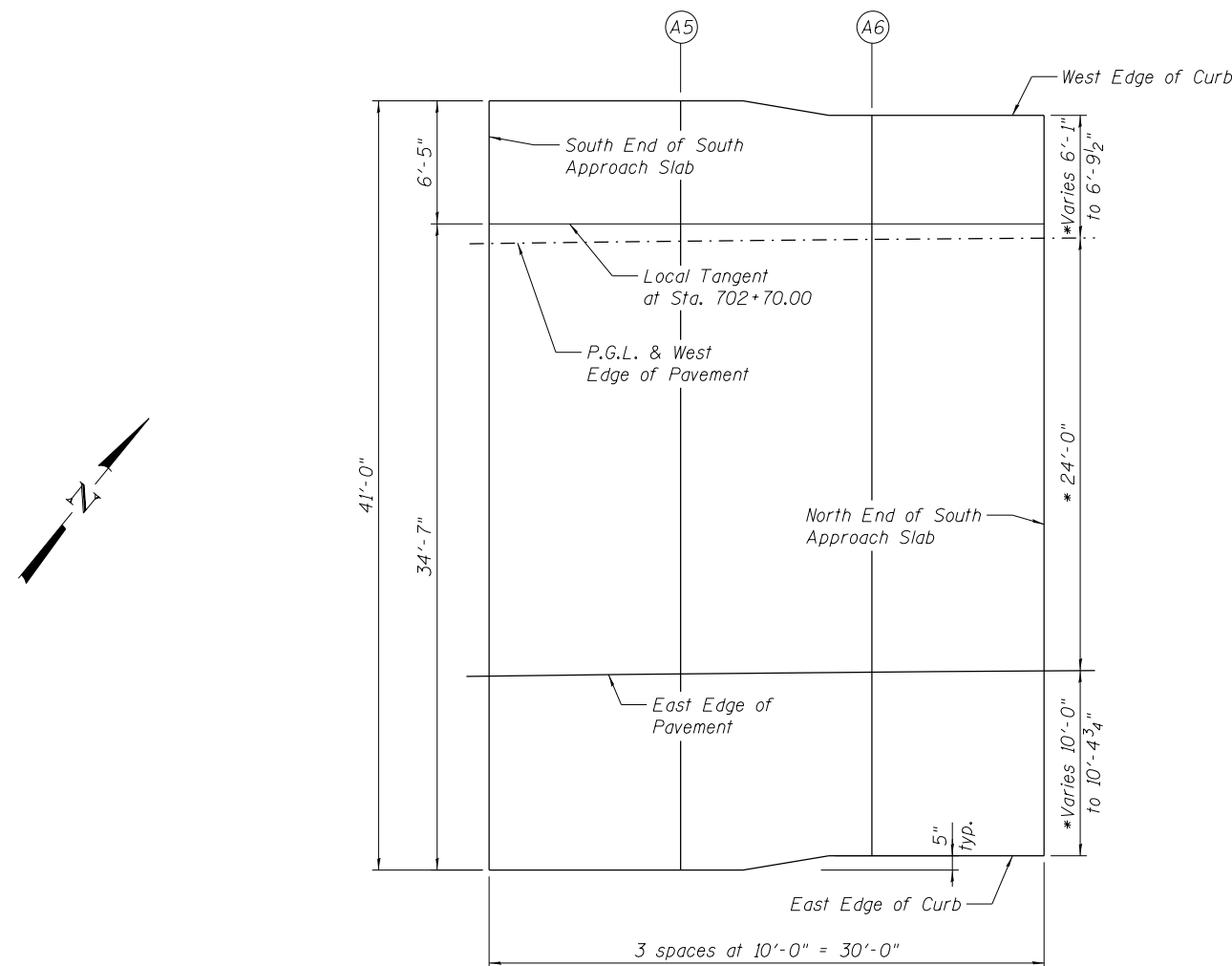
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV,HB(2-6)B,B-1B-2J	McDONOUGH	874	465
CONTRACT NO. 68B44				
ILLINOIS FED. AID PROJECT				

**WEST EDGE OF CURB**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Slab	702+12.01	-6.79	698.02
A5	702+22.05	-6.67	698.19
A6	702+32.09	-6.16	698.34
N. End of S. Appr. Slab	702+42.13	-6.09	698.51

**WEST EDGE OF PAVEMENT AND PROFILE GRADE**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Slab	702+11.93	0.00	697.74
A5	702+21.98	0.00	697.92
A6	702+32.04	0.00	698.09
N. End of S. Appr. Slab	702+42.09	0.00	698.26



\*Radial Dimensions

**PLAN**  
(South Approach)

**EAST EDGE OF PAVEMENT**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Slab	702+11.61	24.00	696.75
A5	702+21.72	24.00	696.93
A6	702+31.83	24.00	697.10
N. End of S. Appr. Slab	702+41.94	24.00	697.28

**EAST EDGE OF CURB**

Location	Station	Offset	Theoretical Grade Elevations
S. End of S. Appr. Slab	702+11.48	34.21	696.33
A5	702+21.61	34.33	696.50
A6	702+31.75	34.01	696.70
N. End of S. Appr. Slab	702+41.88	34.08	696.86

Note: Offsets measured from P.G.L.

(Sheet 1 of 2)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF APPROACH SLAB ELEVATIONS  
STRUCTURE NO. 055-0072**

SHEET NO. 5 OF 21 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	466
CONTRACT NO. 68B44				

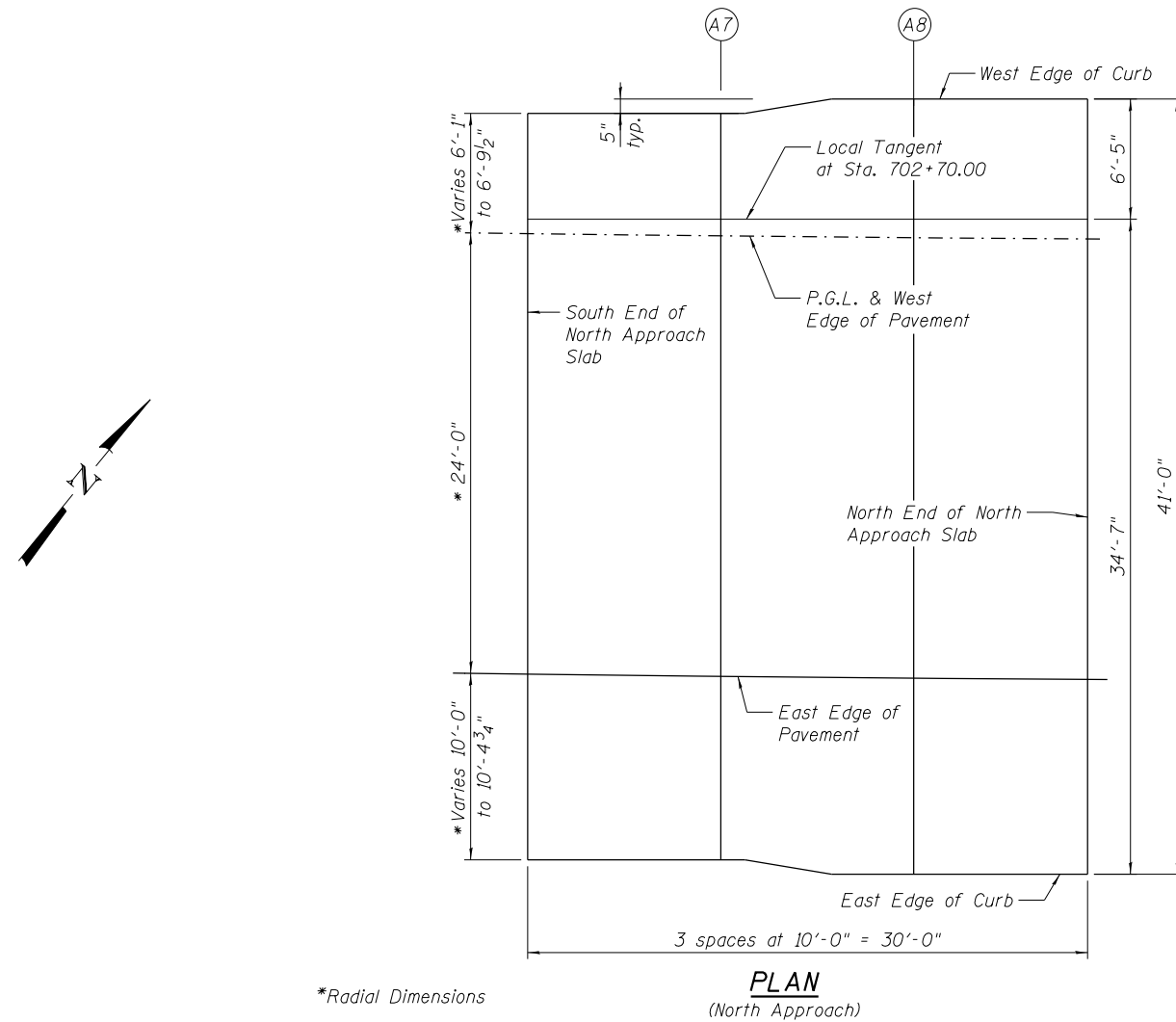
ILLINOIS FED. AID PROJECT

**WEST EDGE OF CURB**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Slab	702+97.87	-6.09	699.41
A7	703+07.91	-6.16	699.57
A8	703+17.95	-6.67	699.74
N. End of N. Appr. Slab	703+27.99	-6.79	699.89

**WEST EDGE OF PAVEMENT AND PROFILE GRADE**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Slab	702+97.91	0.00	699.16
A7	703+07.96	0.00	699.32
A8	703+18.02	0.00	699.47
N. End of N. Appr. Slab	703+28.07	0.00	699.62



**EAST EDGE OF PAVEMENT**

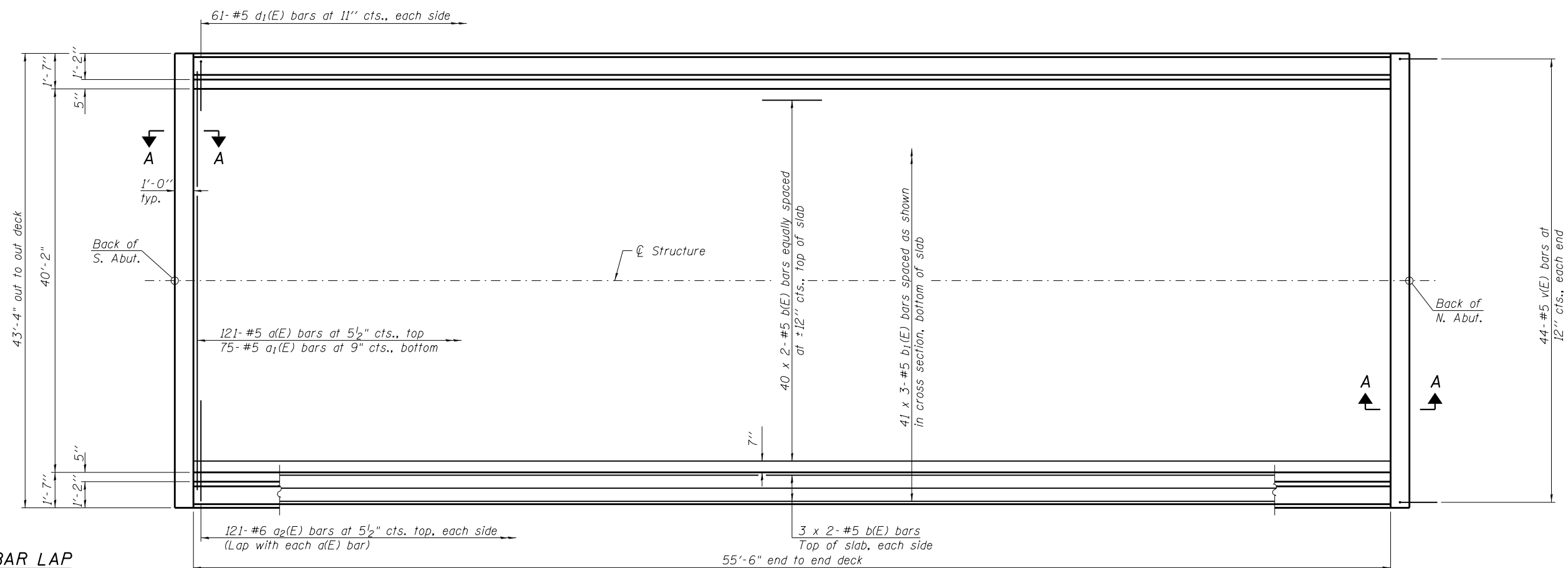
Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Slab	702+98.06	24.00	698.18
A7	703+08.17	24.00	698.34
A8	703+18.28	24.00	698.49
N. End of N. Appr. Slab	703+28.39	24.00	698.64

**EAST EDGE OF CURB**

Location	Station	Offset	Theoretical Grade Elevations
S. End of N. Appr. Slab	702+98.12	34.08	697.77
A7	703+08.25	34.01	697.93
A8	703+18.39	34.33	698.07
N. End of N. Appr. Slab	703+28.52	34.21	698.22

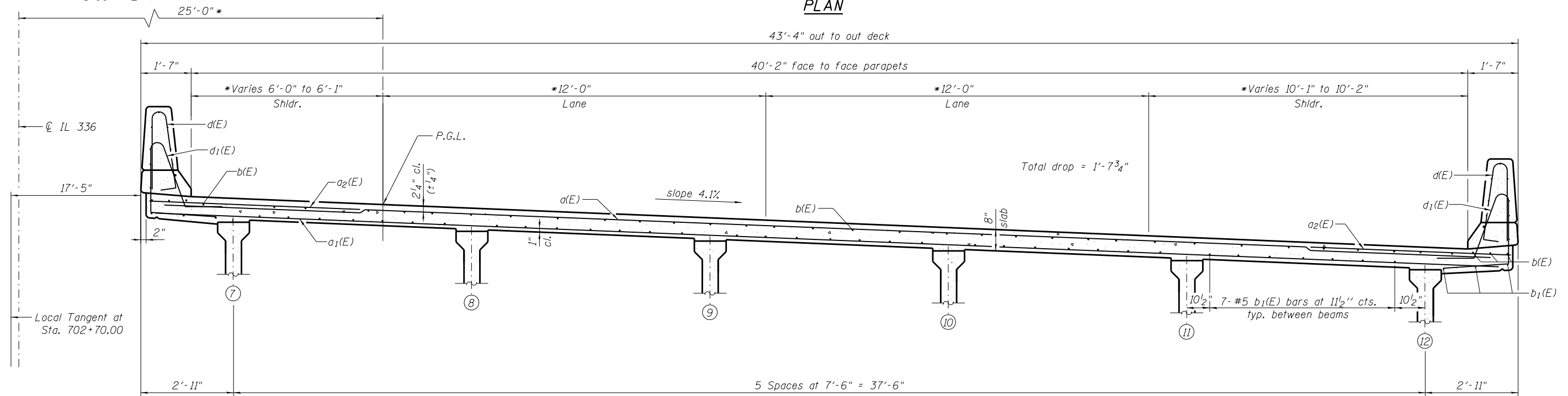
Note: Offsets measured from PGL.

(Sheet 2 of 2)



**MINIMUM BAR LAP**  
(Deck)  
#5 bar = 2'-7"

**PLAN**



**CROSS SECTION**  
(Looking North)

Notes:  
See Sheet 8 of 21 for superstructure details and Bill of Material.  
Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.  
See Sheet 8 of 21 for parapet reinforcement.  
See sheet 9 of 21 for Section A-A.



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

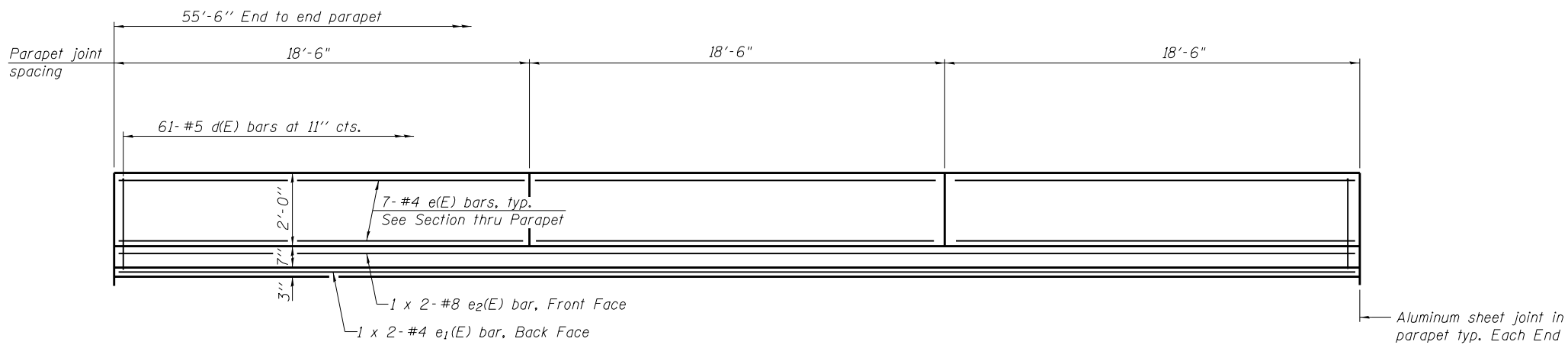
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUPERSTRUCTURE**  
**STRUCTURE NO. 055-0072**

SHEET NO. 7 OF 21 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	468
CONTRACT NO. 68B44				

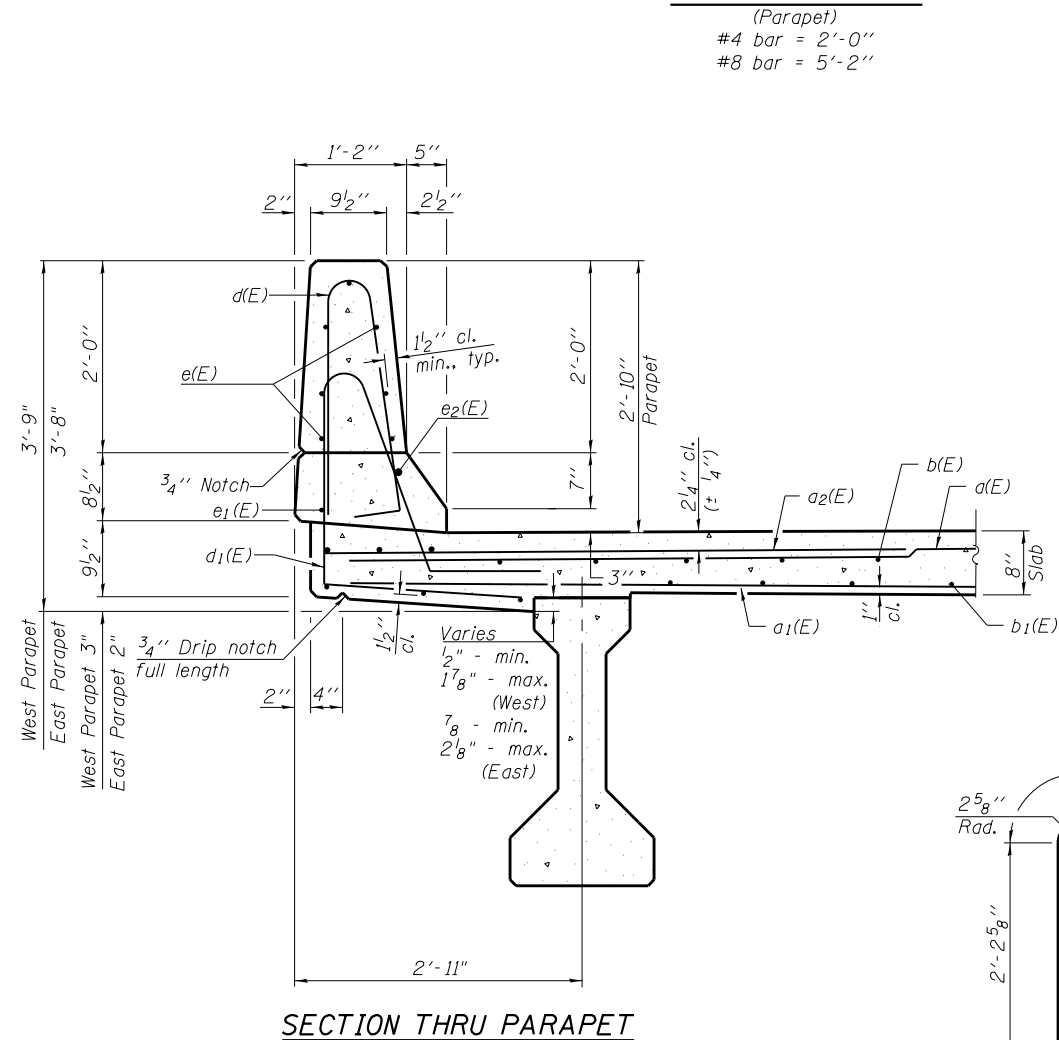
ILLINOIS FED. AID PROJECT



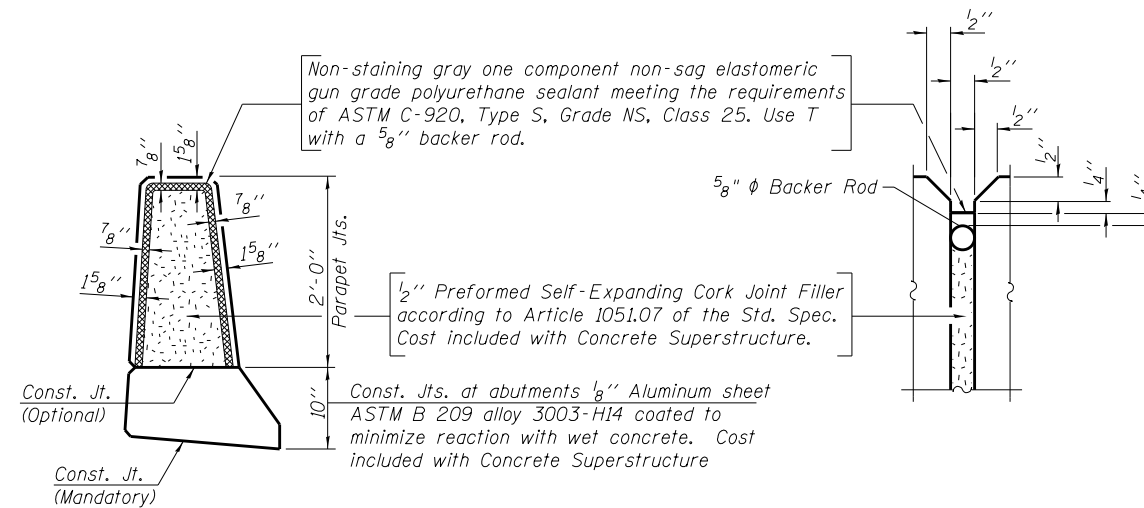
**INSIDE ELEVATION OF PARAPET**

**MINIMUM BAR LAP**

(Parapet)  
 #4 bar = 2'-0"  
 #8 bar = 5'-2"



**SECTION THRU PARAPET**

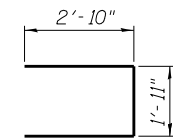


**PARAPET JOINT DETAILS**

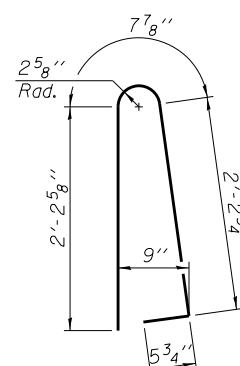
**SUPERSTRUCTURE  
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a(E)	121	#5	42'-8"	—
a1(E)	75	#5	42'-0"	—
a2(E)	242	#6	6'-6"	—
b(E)	92	#5	29'-0"	—
b1(E)	123	#5	20'-2"	—
d(E)	122	#5	5'-7"	⌋
d1(E)	122	#5	7'-7"	⌋
e(E)	42	#4	18'-2"	—
e1(E)	4	#4	28'-8"	—
e2(E)	4	#8	30'-3"	—
m(E)	8	#6	43'-0"	—
m1(E)	20	#6	6'-8"	—
m2(E)	8	#6	2'-4"	—
m3(E)	10	#6	5'-8"	—
m4(E)	4	#6	1'-10"	—
m5(E)	24	#5	4'-0"	—
s(E)	82	#5	7'-7"	⌋
s1(E)	82	#5	10'-0"	⌋
v(E)	88	#5	3'-1"	⌋
Reinforcement Bars, Epoxy Coated		Pound	21,720	
Concrete Superstructure		Cu. Yds.	106.8	

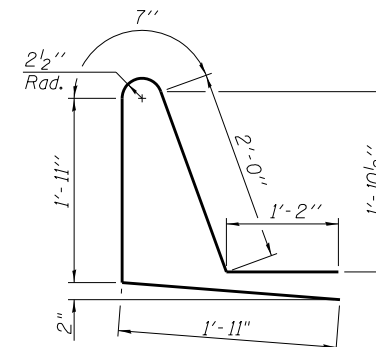
Bars indicated thus 1 x 2-#8 etc. indicates 1 line of bars with 2 lengths per line.



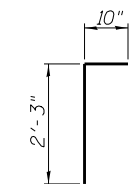
**BAR s(E)**



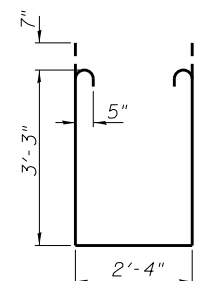
**BAR d(E)**



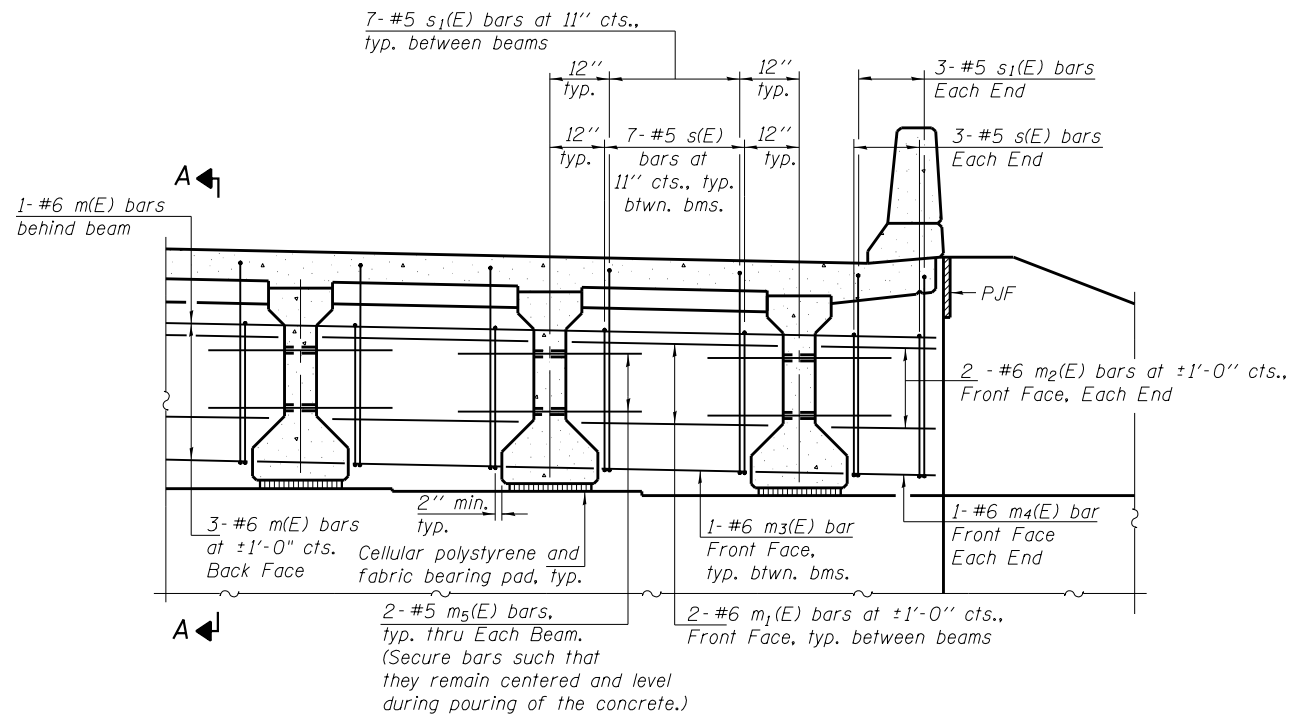
**BAR d1(E)**



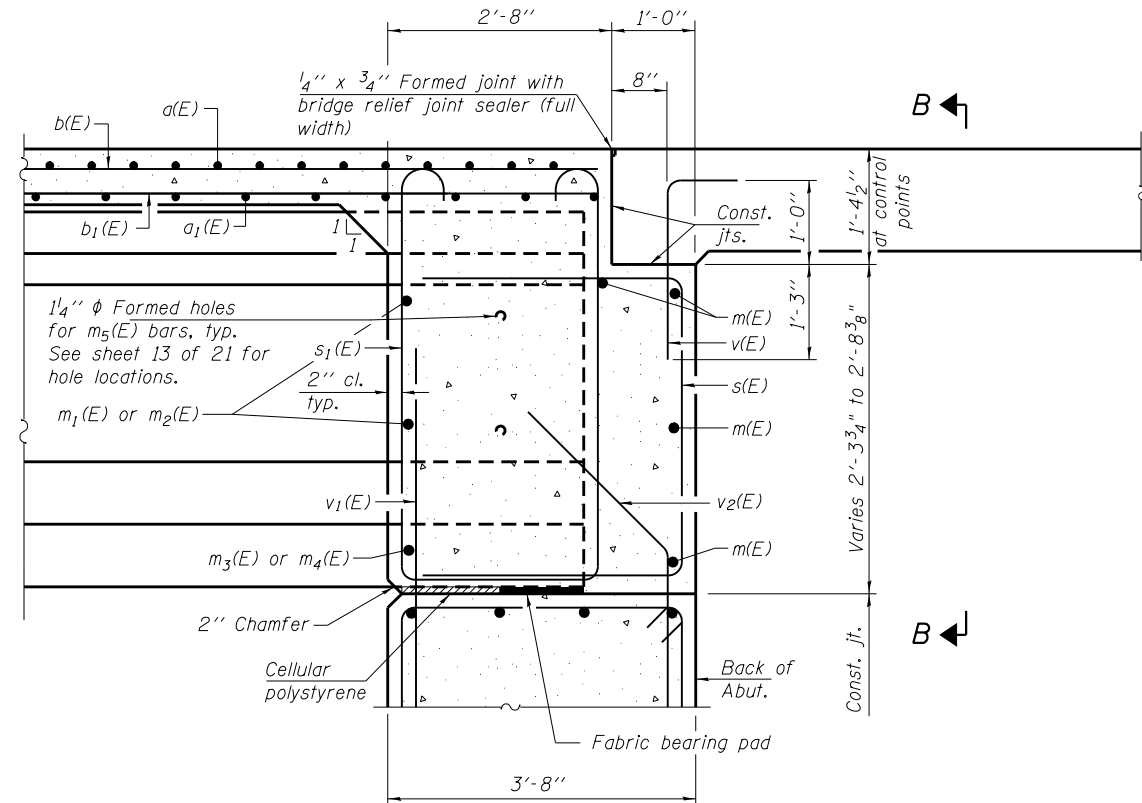
**BAR v(E)**



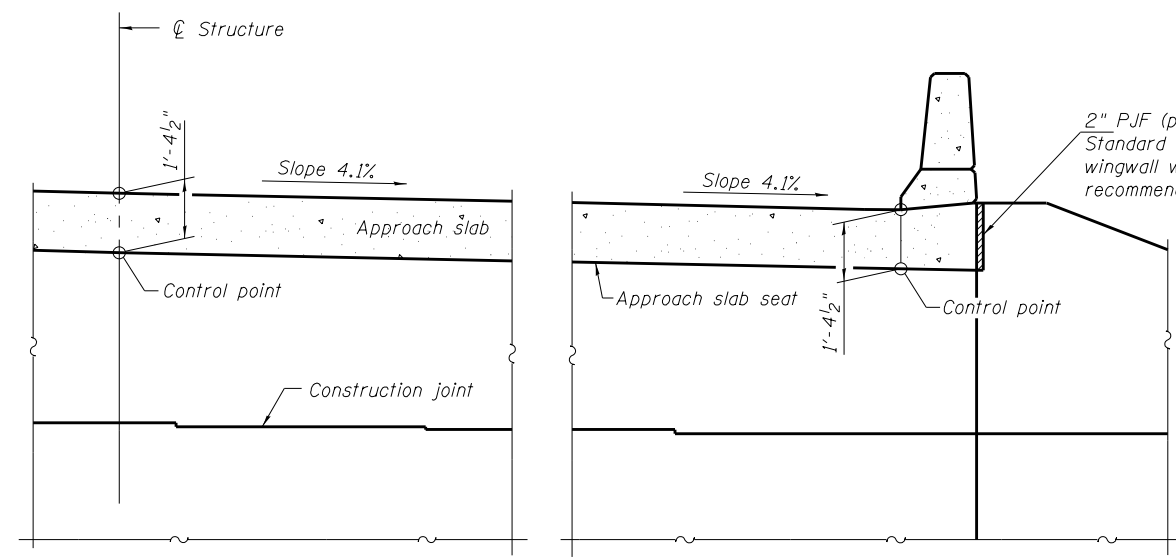
**BAR s1(E)**



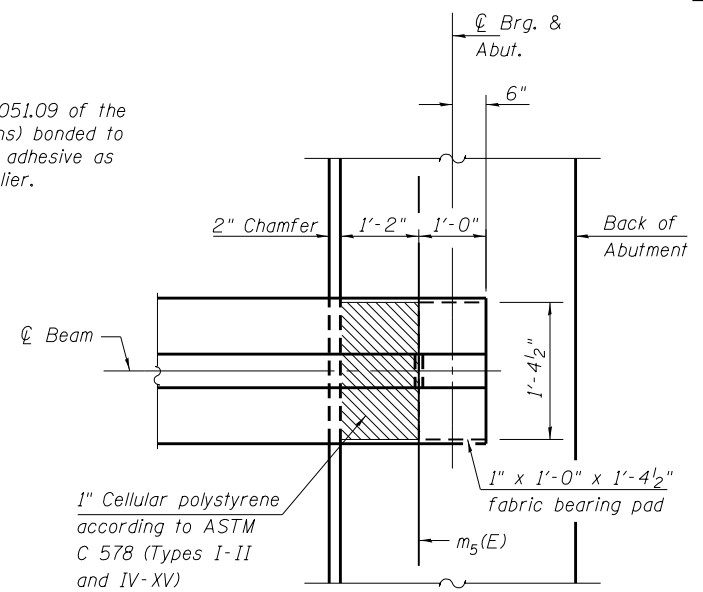
**DIAPHRAGM ELEVATION AT ABUTMENT**



**SECTION A-A**



**SECTION B-B**



**PARTIAL PLAN AT ABUTMENT**  
(Showing bottom flange of beam)

Notes:  
 Reinforcement bars in diaphragm are billed with superstructure on sheet 8 of 21.  
 Concrete in diaphragm is included with Concrete Superstructure on sheet 8 of 21.  
 For details of bars s(E), s1(E) and v(E) see sheet 8 of 21.  
 The approach slab seat shall have a constant slope determined from the control points shown.  
 Cost of cellular polystyrene is included with Concrete Superstructure.

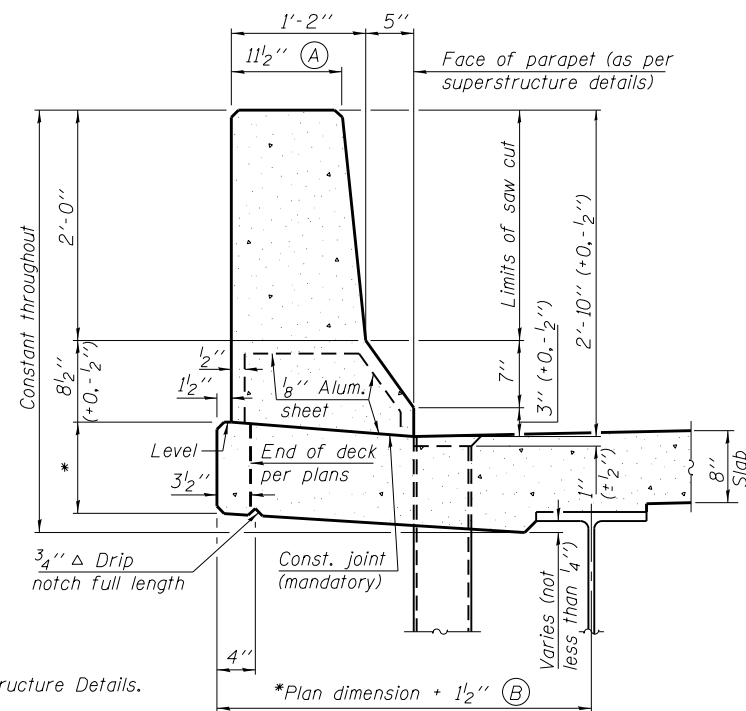
USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3/PV,HB(2-6);B,B-1,B-2]	McDONOUGH	874	470
CONTRACT NO. 68B44				

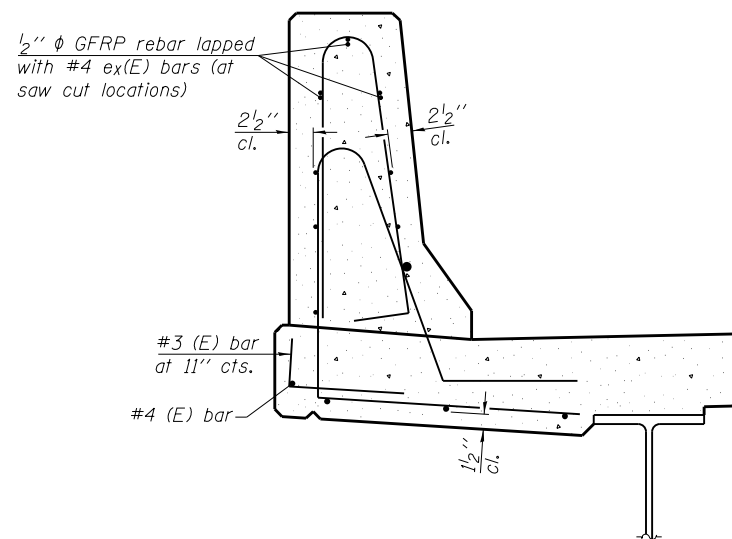


**GENERAL NOTES**

All dimensions shall remain the same as shown on superstructure details, except dimensions A and B which are to be revised as shown to provide additional clearance. Additional concrete needed to revise dimension A and B = 0.0165 cu. yds./ft. for 34" parapet or = 0.0223 cu. yds./ft. for 42" parapet. Place aluminum sheet in curb portion at and near piers. Full thickness saw cut at all joint locations in lieu of cork joint filler. Steel superstructure shown. Other superstructure types similar.

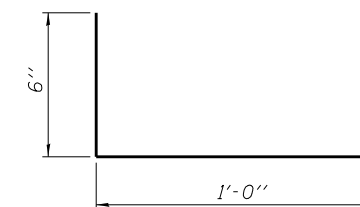


**34" F SHAPE PARAPET SECTION**  
(Showing dimensions)

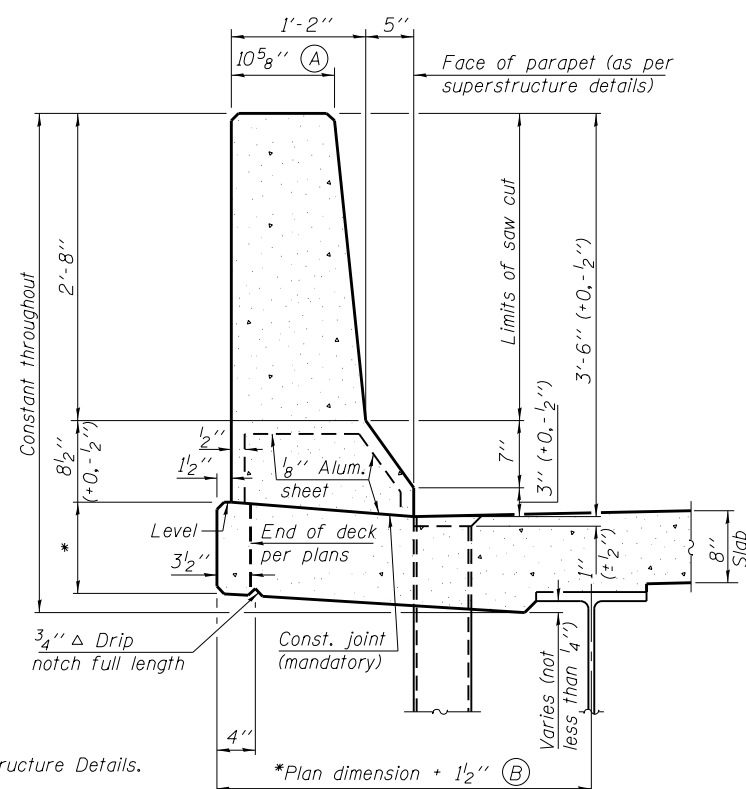


**SECTION**

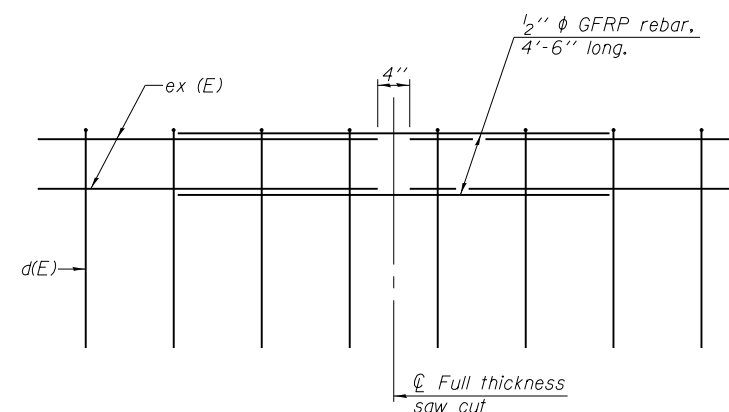
(34" parapet shown - 42" parapet similar)  
(Showing reinforcement clearances for slip forming and additional reinforcement bars)



**#3 (E) BAR**

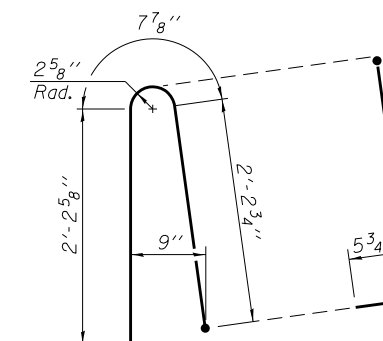


**42" F SHAPE PARAPET SECTION**  
(Showing dimensions)

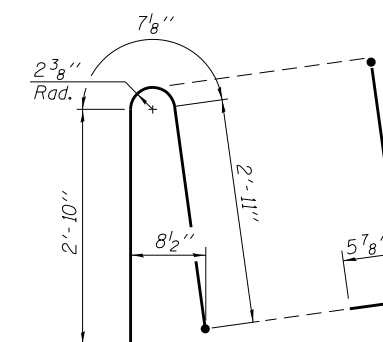


**GFRP REBAR STIFFENING DETAIL**

(Place as shown in parapet section at each parapet joint location.)



**ALTERNATE BAR d(E)**  
(For 34" parapet when conduit is present)



**ALTERNATE BAR d(E)**  
(For 42" parapet when conduit is present)

SFP 34-42

8-16-12



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

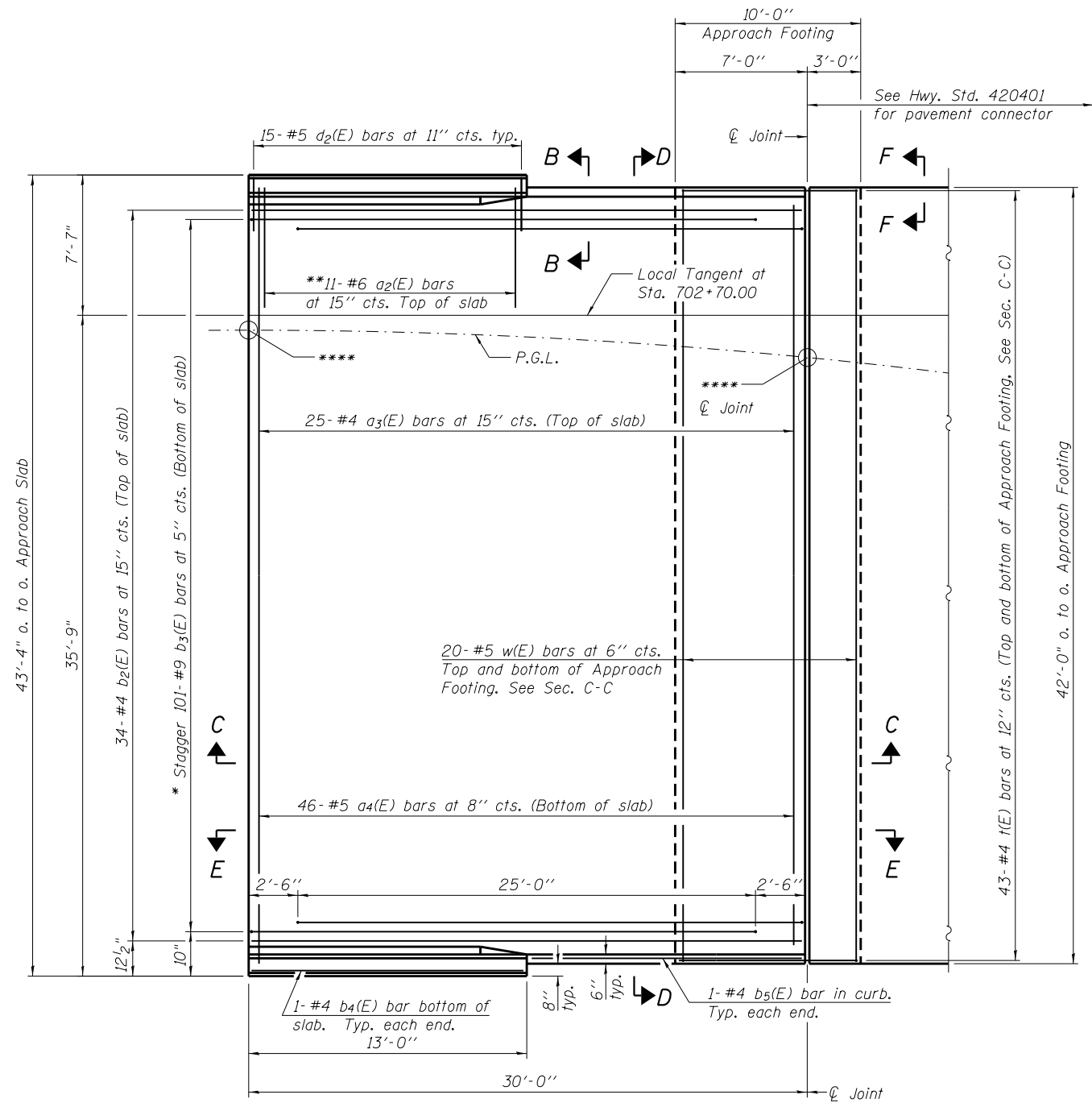
**CONCRETE PARAPET SLIPFORMING OPTION  
STRUCTURE NO. 055-0072**

SHEET NO. 9A OF 21 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	470A
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	

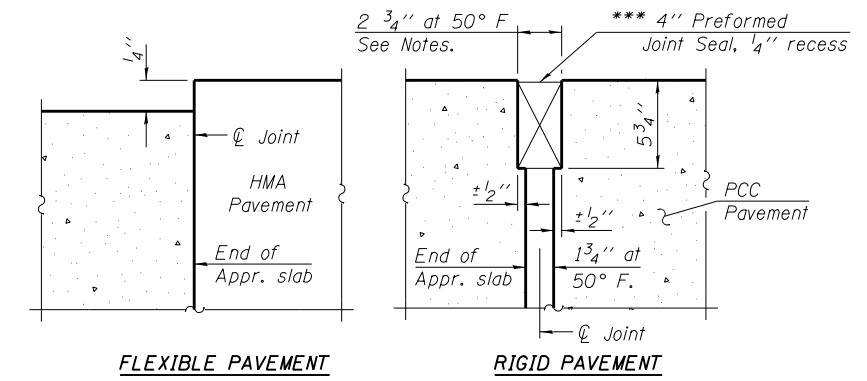
Notes:  
 See sheet 11 of 21 for Sections C-C & D-D and View E-E.  
 a<sub>3</sub>(E) and a<sub>4</sub>(E) bar spacings measured along  $\varnothing$  Structure.  
 The joint opening shall be determined per Article 520.04 except that on jointless structures, the distance described as the bridge length between the nearest fixed bearings each way from the joint shall be taken as half the bridge length plus the approach slab length. The minimum dimension shall be 1 1/2' for installation purposes.

\*\*\* Cost included with Concrete Superstructure.

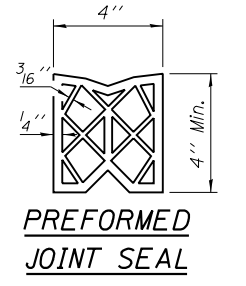


**PLAN**  
 (North Approach shown, South Approach similar)

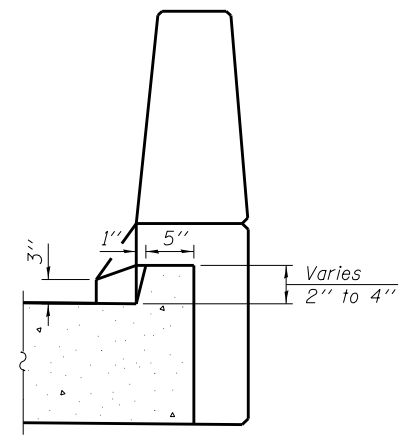
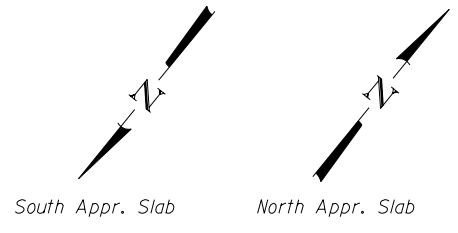
\* Tilt #9 b<sub>3</sub>(E) bars as required to maintain clearance.  
 \*\* Space between a<sub>3</sub>(E) bars, typ. ea. parapet.  
 \*\*\*\* See sheets 5 and 6 of 21 for beginning and ending of approach slab stations along P.G.L.



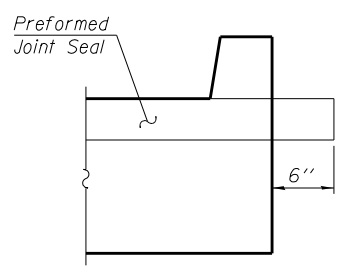
**DETAIL A**



**PREFORMED JOINT SEAL**



**VIEW B-B**



**VIEW F-F**

(Sheet 1 of 2)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

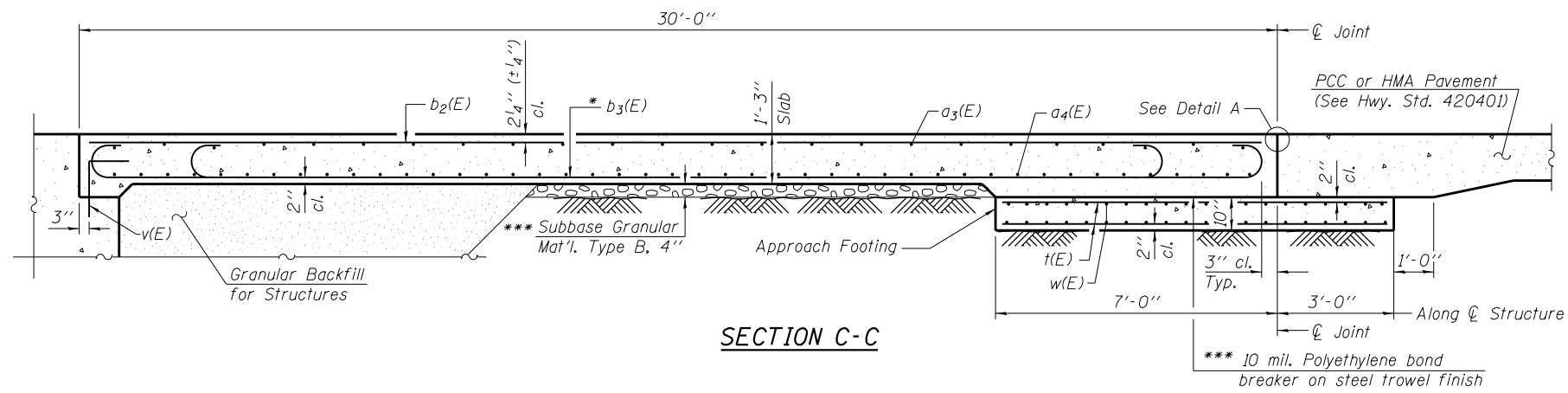
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**BRIDGE APPROACH SLAB DETAILS  
 STRUCTURE NO. 055-0072**

SHEET NO. 10 OF 21 SHEETS

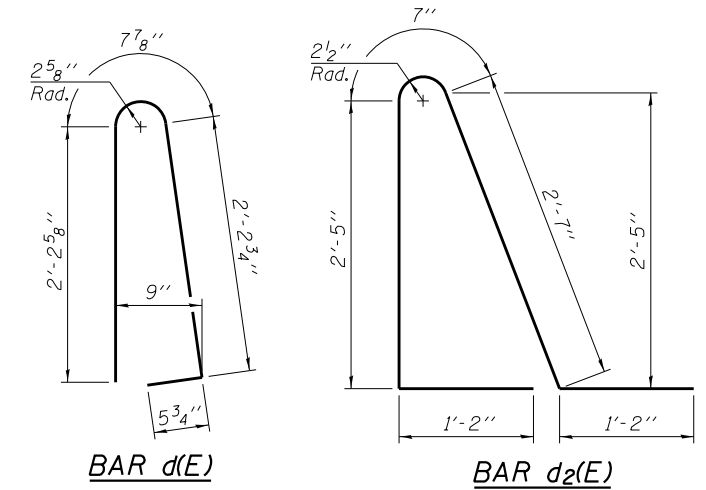
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	471
CONTRACT NO. 68B44				

ILLINOIS FED. AID PROJECT



Notes:

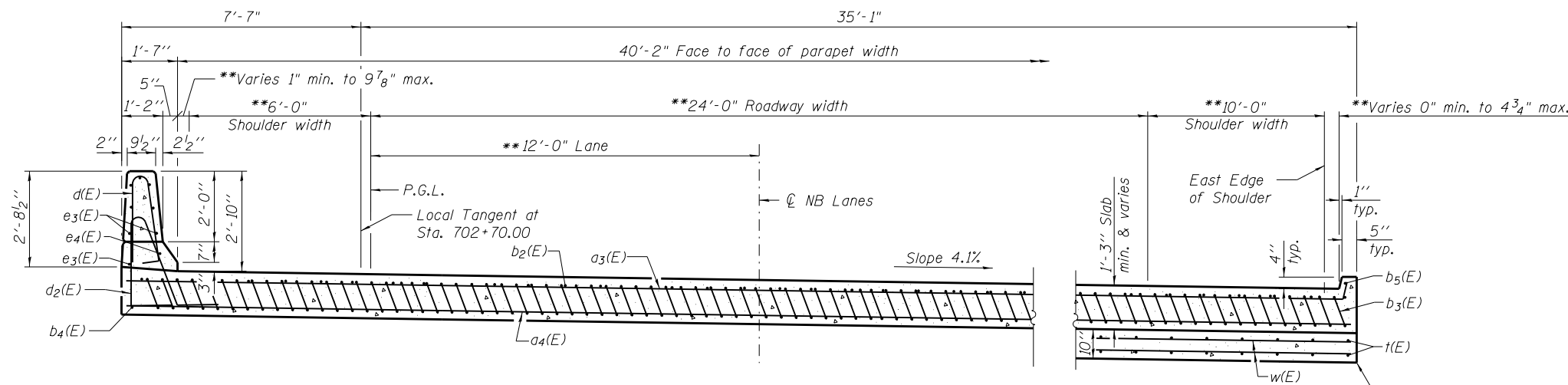
See sheet 10 of 21 for Detail A and View B-B.  
 Approach slab and parapet concrete shall be paid for as Concrete Superstructure.  
 Approach footing concrete shall be paid for as Concrete Structures.  
 Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.  
 For v(E) bar details, see sheet 7 thru 9 of 21.  
 The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.  
 Cost of excavation for approach footing included with Concrete Structures.  
 For Granular Backfill for Structures and drainage treatment details, see sheet 2 of 21.  
 For additional parapet details, see sheet 8 of 21.



BAR d(E)

BAR d2(E)

\* Tilt #9 b3(E) bars as required to maintain clearance.  
 \*\* Radial Dimensions.  
 \*\*\* Cost included with Concrete Superstructure.



NEAR ABUTMENT

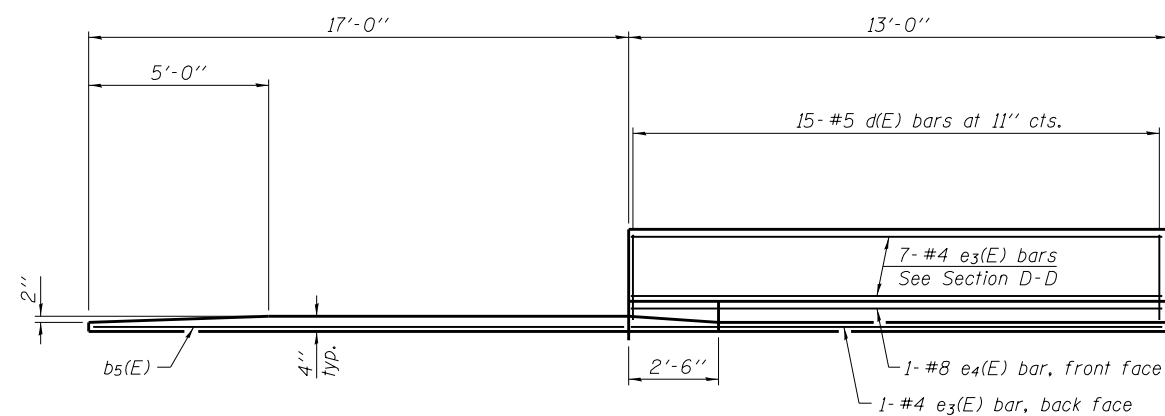
SECTION D-D  
 (See Plan for dimensions not shown)

AT APPROACH FOOTING

Elev. (S. Appr.) W. End 695.83, E. End 694.14  
 Elev. (N. Appr.) W. End 697.60, E. End 695.92

TWO APPROACHES  
 BILL OF MATERIAL

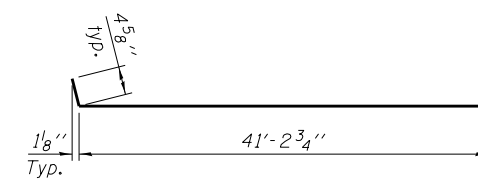
Bar	No.	Size	Length	Shape
a2(E)	44	#6	6'-6"	—
a3(E)	50	#4	42'-0"	—
a4(E)	92	#5	41'-8"	—
b2(E)	68	#4	29'-8"	—
b3(E)	202	#9	29'-9"	—
b4(E)	4	#4	12'-8"	—
b5(E)	4	#4	16'-8"	—
d(E)	60	#5	5'-7"	—
d2(E)	60	#5	7'-11"	—
e3(E)	32	#4	12'-8"	—
e4(E)	4	#8	12'-8"	—
t(E)	172	#4	9'-8"	—
w(E)	80	#5	41'-8"	—
Concrete Superstructure			Cu. Yd.	128.0
Concrete Structures			Cu. Yd.	26.0
Reinforcement Bars, Epoxy Coated			Pound	33,530



VIEW E-E

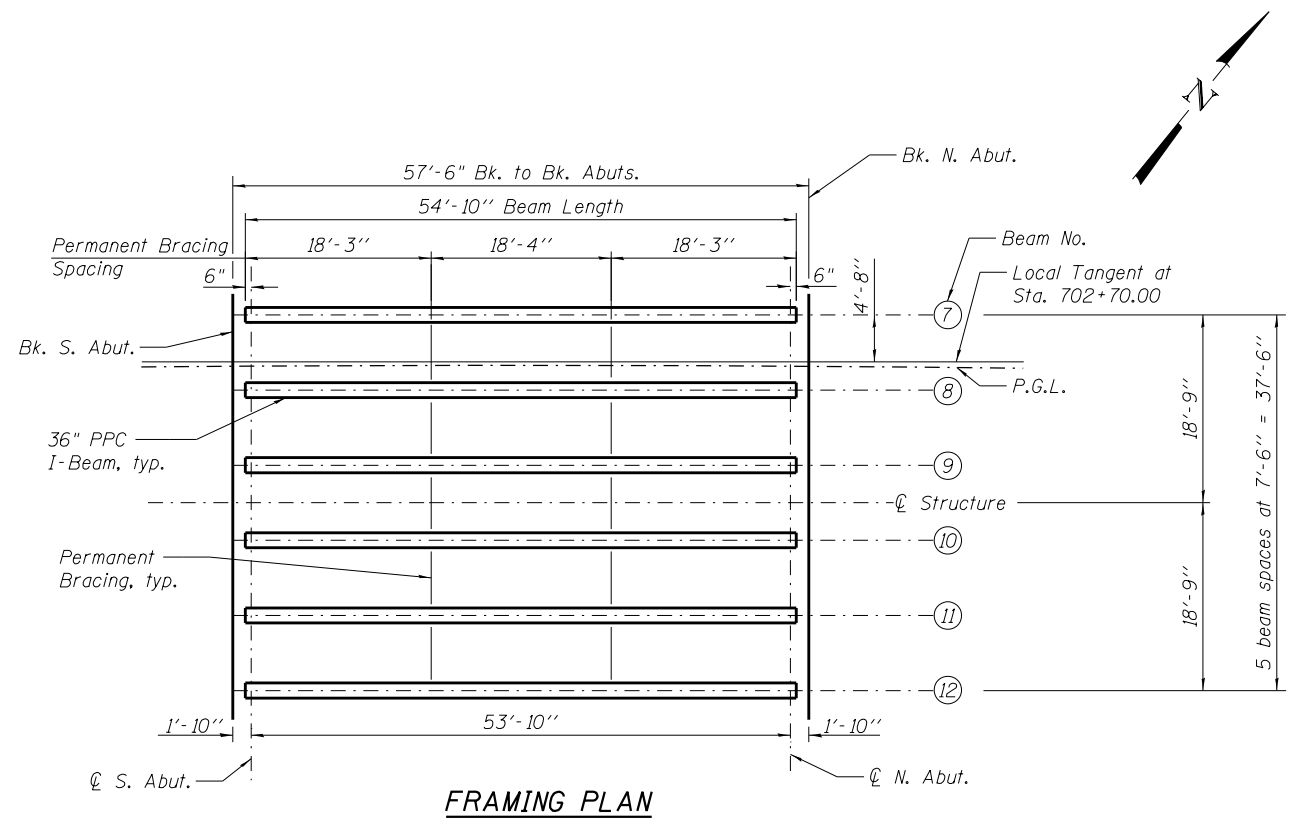


BAR b3(E)



BAR a3(E)

(Sheet 2 of 2)

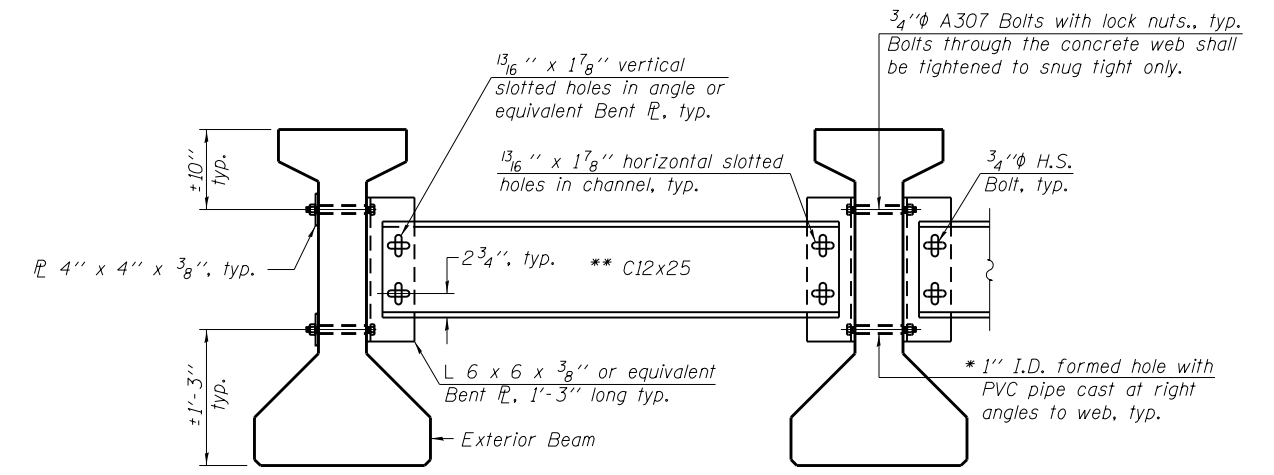


**FRAMING PLAN**

INTERIOR BEAM MOMENT TABLE		
0.5 Sp. 1		
$I$	(in <sup>4</sup> )	48647
$I'$	(in <sup>4</sup> )	182899
$S_b$	(in <sup>3</sup> )	3165
$S_b'$	(in <sup>3</sup> )	6035
$S_t$	(in <sup>3</sup> )	2358
$S_t'$	(in <sup>3</sup> )	32088
$DC1$	(k/')	1.143
$M_{DC1}$	('k)	414
$DC2$	(k/')	0.150
$M_{DC2}$	('k)	54
$DW$	(k/')	0.335
$M_{DW}$	('k)	121
$M_{LL + IM}$	('k)	765

INTERIOR BEAM REACTION TABLE		
Abut.		
$R_{DC1}$	(k)	30.7
$R_{DC2}$	(k)	4.0
$R_{DW}$	(k)	9.0
$R_{LL + IM}$	(k)	76.1
$R_{Total}$	(k)	119.8

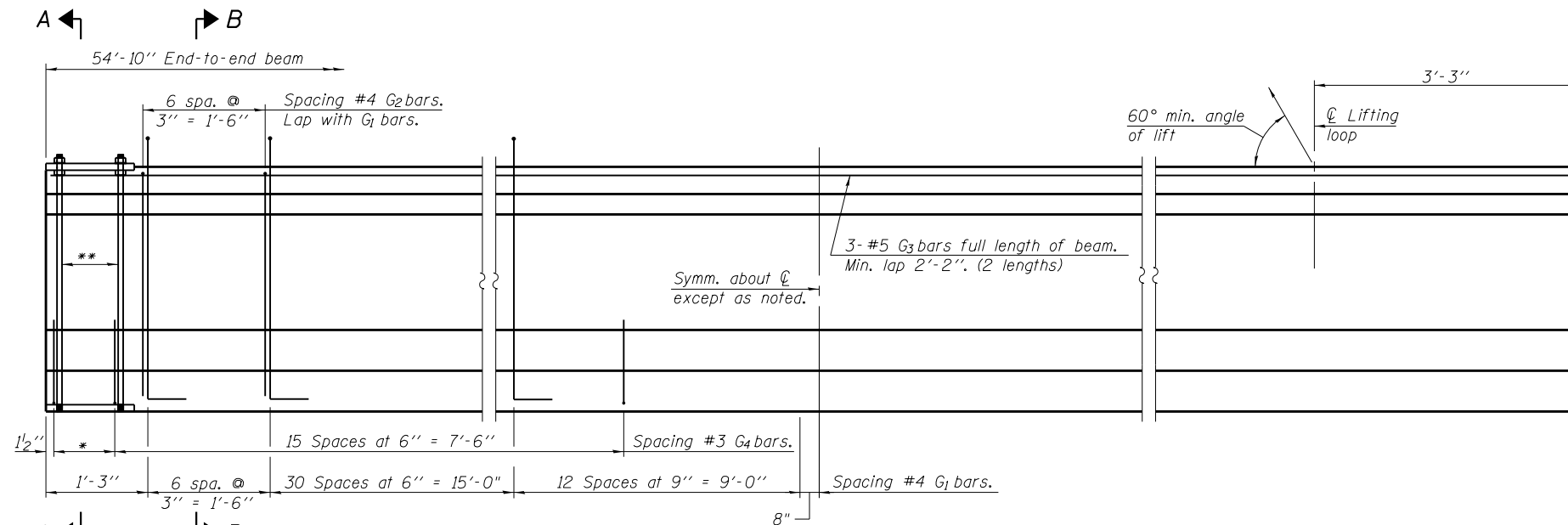
$I$ : Non-composite moment of inertia of beam section (in.<sup>4</sup>).  
 $I'$ : Composite moment of inertia of beam section (in.<sup>4</sup>).  
 $S_b$ : Non-composite section modulus for the bottom fiber of the prestressed beam (in.<sup>3</sup>).  
 $S_b'$ : Composite section modulus for the bottom fiber of the prestressed beam (in.<sup>3</sup>).  
 $S_t$ : Non-composite section modulus for the top fiber of the prestressed beam (in.<sup>3</sup>).  
 $S_t'$ : Composite section modulus for the top fiber of the prestressed beam (in.<sup>3</sup>).  
 $DC1$ : Un-factored non-composite dead load (kips/ft.).  
 $M_{DC1}$ : Un-factored moment due to non-composite dead load (kip-ft.).  
 $DC2$ : Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).  
 $M_{DC2}$ : Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).  
 $DW$ : Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).  
 $M_{DW}$ : Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).  
 $M_{LL + IM}$ : Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).



**Notes:**  
 All material for bracing shall be hot dip galvanized according to AASHTO M111 unless otherwise noted.  
 Two hardened washers are required for each set of oversized holes.  
 All holes shall be 1<sup>5</sup>/<sub>16</sub>"  $\phi$  unless otherwise noted.  
 3<sup>5</sup>/<sub>16</sub>" x 3" x 3" plate washers are required over all slotted holes.  
 All bolts shall be galvanized according to AASHTO M232.  
 Bracing shall be installed as beams are erected and tightened as soon as possible during erection.  
 Permanent bracing shall not be paid for separately, but shall be included in the cost of Furnishing and Erecting Precast Prestressed Concrete I-Beams.

\* Fabricator shall locate to miss strands within permissible tolerances.  
 \*\* Alternate C12x30 channels are permitted to facilitate material acquisition.

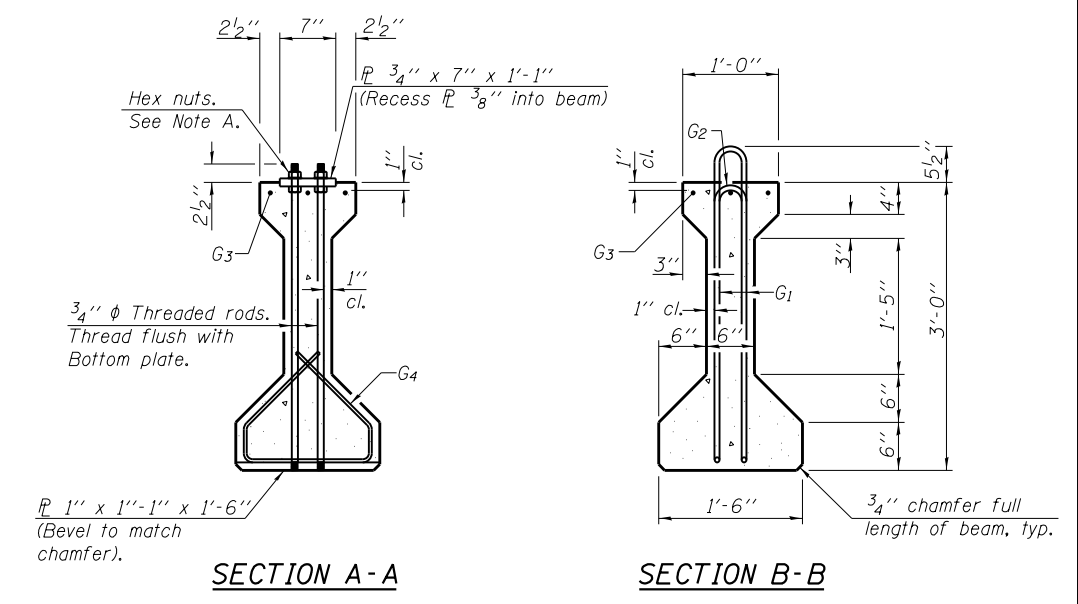
**PERMANENT BRACING DETAILS**



**ELEVATION OF BEAM**  
(Showing reinforcement & dimensions)

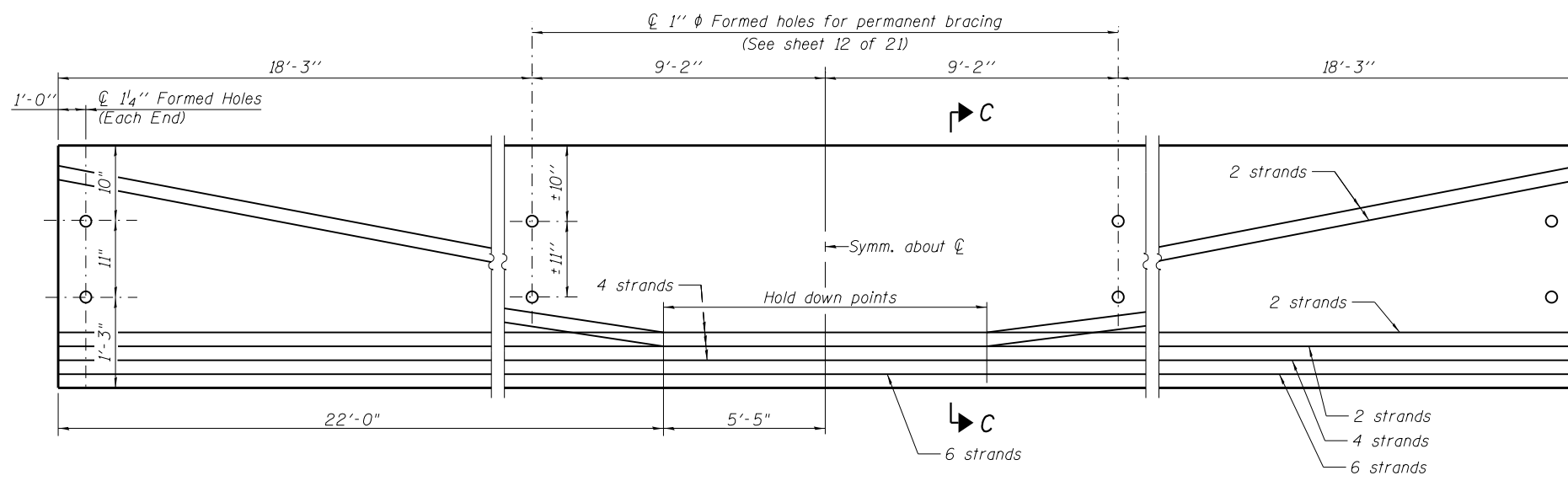
\* 3 spaces at 3" = 9"  
\*\* 4-3/4" φ threaded dowel rods at 3" cts., Each Face

Note A:  
Hex nuts (top and bottom) with lock washers (top). Only tighten sufficiently to compress lock washers.

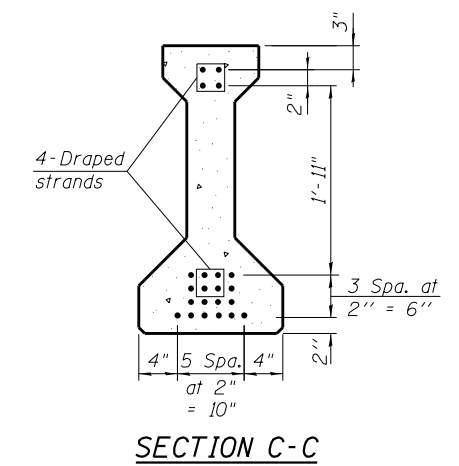


**SECTION A-A**

**SECTION B-B**



**ELEVATION OF BEAM**  
(Showing prestressing steel)



**SECTION C-C**

**\*\*\*BAR LIST  
ONE BEAM ONLY**

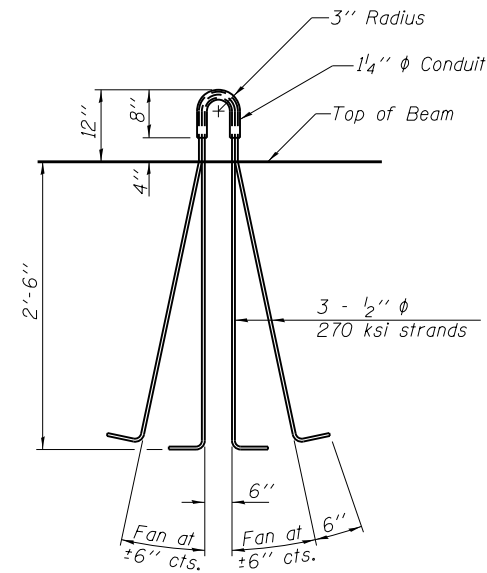
Bar	No.	Size	Length	Shape
G <sub>1</sub>	99	#4	7'-7"	⊏
G <sub>2</sub>	14	#4	5'-8"	⊏
G <sub>3</sub>	6	#5	28'-6"	—
G <sub>4</sub>	38	#3	4'-1"	⊏

\*\*\*For information only

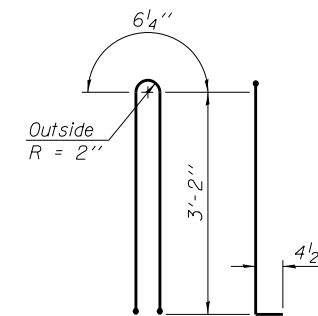
Notes:  
See sheet 14 of 21 for additional details and Bill of Material.  
Required release strength, f'ci, shall be 5000 psi.

**NOTES**

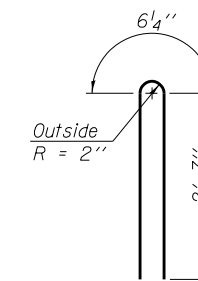
Inserts for  $\frac{3}{4}$ "  $\phi$  threaded dowel rods, when specified, are to be two strut, ferrule type for interior beams and single ferrule, flared loop type for exterior beams. Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be  $\frac{1}{2}$ " and the nominal cross-sectional area shall be 0.153 sq. in. A minimum  $2\frac{1}{2}$ "  $\phi$  lifting pin shall be used to engage the lifting loops during handling. The top and bottom plates shall be AASHTO M270 Grade 50. The bottom plates shall be galvanized according to AASHTO M111. Top plates and threaded rods need not be galvanized. Threaded rods shall be ASTM F 1554 Grade 55.



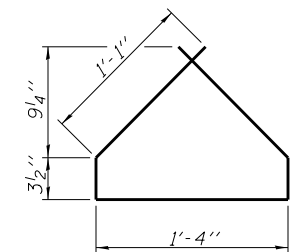
**LIFTING LOOP DETAIL**



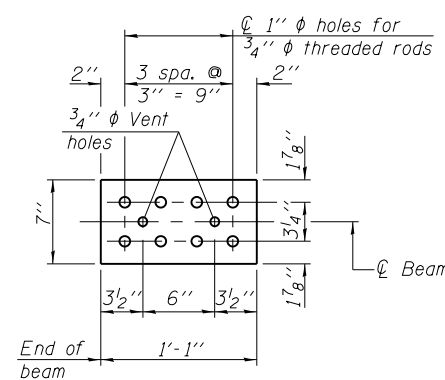
**BAR G1**



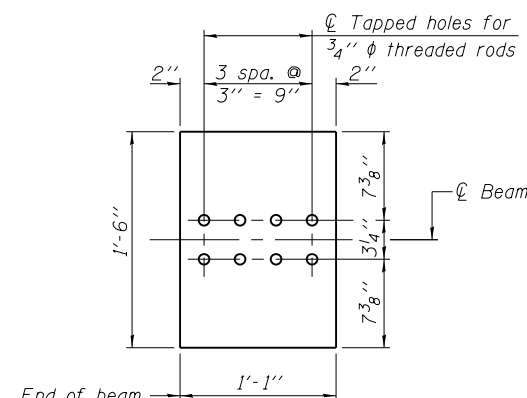
**BAR G2**



**BAR G4**



**TOP PLATE**

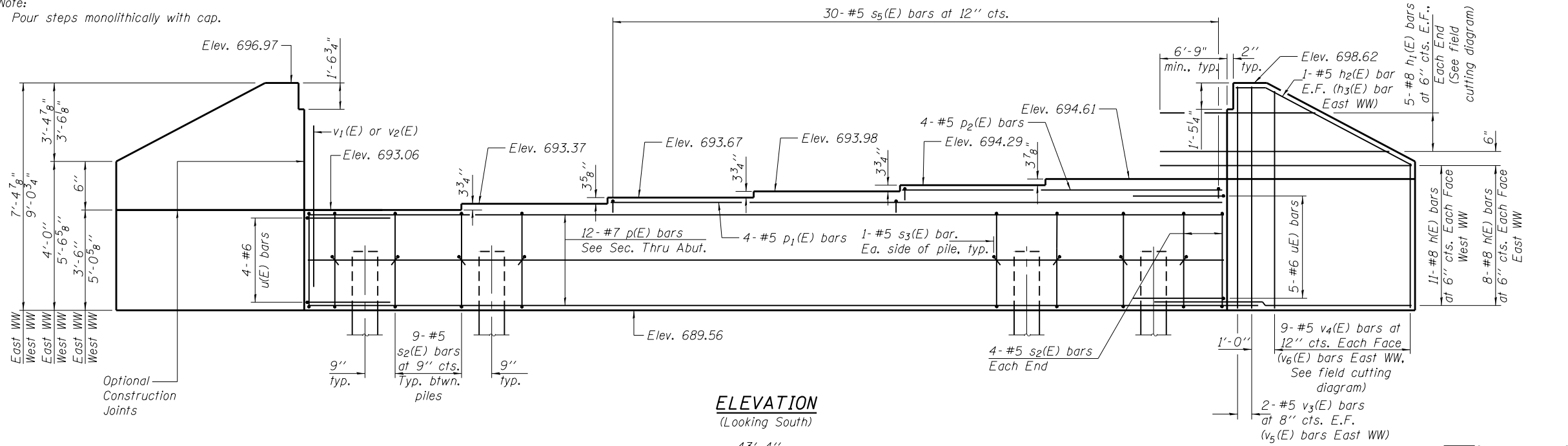


**BOTTOM PLATE**

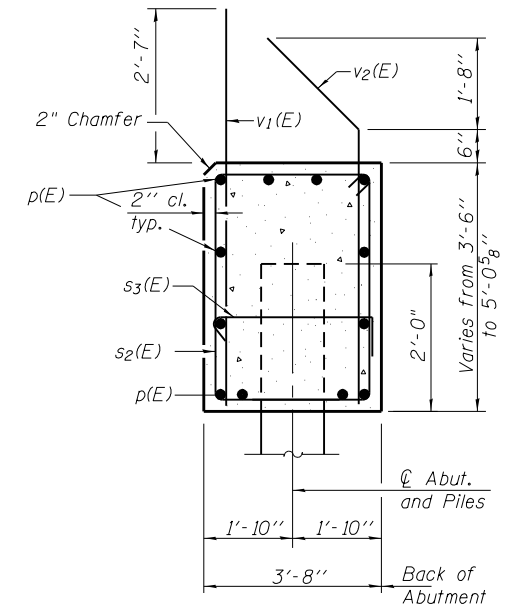
**BILL OF MATERIAL**

Item	Unit	Total
Furnishing and Erecting Precast Prestressed Concrete I-Beams, 36"	Ft.	329

Note:  
Four steps monolithically with cap.

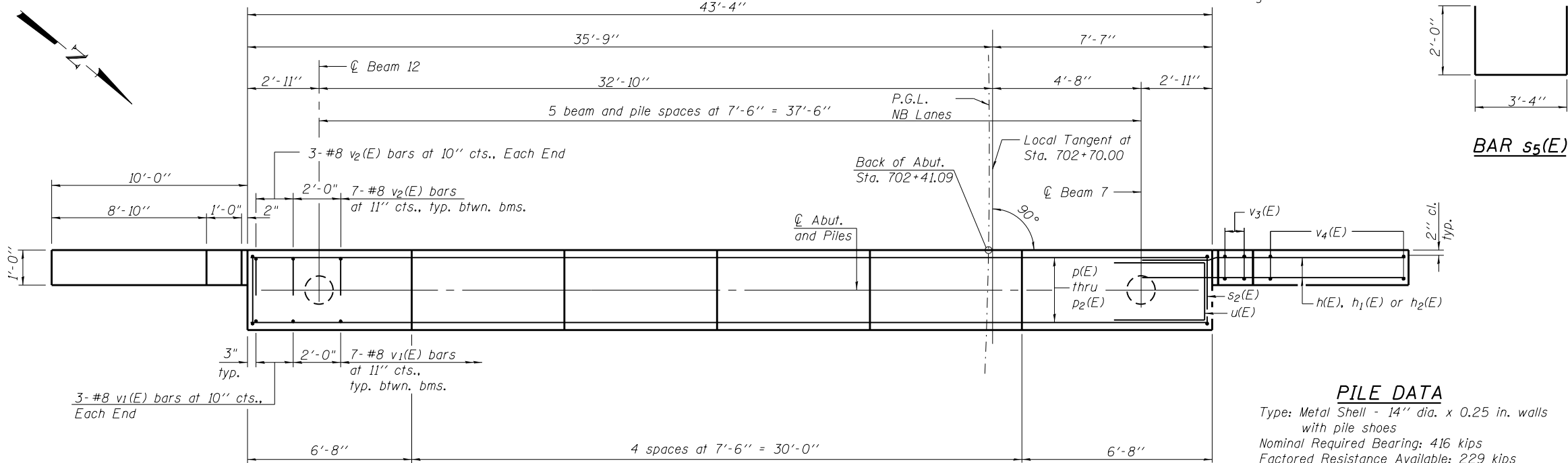
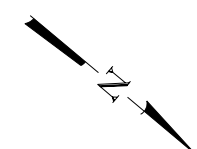


**ELEVATION**  
(Looking South)



**SEC. THRU ABUT.**

Dimensions at right angles to abutment.

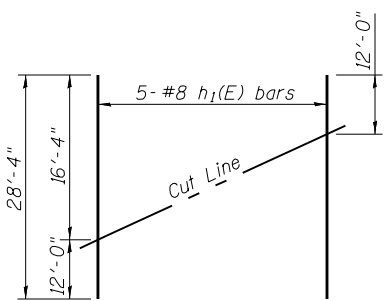


**PLAN**

**BILL OF MATERIAL**

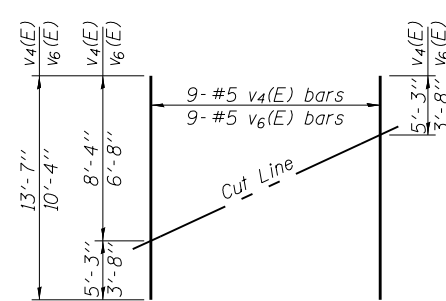
Bar	No.	Size	Length	Shape
h(E)	38	#8	16'-9"	—
h1(E)	10	#8	28'-4"	—
h2(E)	2	#5	10'-1"	—
h3(E)	2	#5	10'-0"	—
p(E)	12	#7	43'-0"	—
p1(E)	4	#5	28'-10"	—
p2(E)	4	#5	13'-10"	—
s2(E)	53	#5	13'-11"	□
s3(E)	12	#5	4'-4"	—
s5(E)	30	#5	7'-4"	—
u(E)	9	#6	10'-11"	—
v1(E)	41	#8	5'-11"	—
v2(E)	41	#8	6'-2"	—
v3(E)	4	#5	8'-9"	—
v4(E)	9	#5	13'-7"	—
v5(E)	4	#5	7'-1"	—
v6(E)	9	#5	10'-4"	—
Structure Excavation	Cu. Yd.		98	
Concrete Structures	Cu. Yd.		29.7	
Reinforcement Bars, Epoxy Coated	Pound		6,550	
Furnishing Metal Shell Piles, 14"x0.250"	Foot		385	
Driving Piles	Foot		385	
Test Pile, Metal Shells	Each		1	
Pile Shoes	Each		6	

For details of piles see sheet 17 of 21.



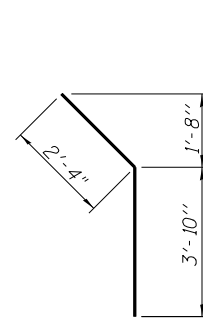
**FIELD CUTTING DIAGRAM**

Order h1(E) full length. Cut as shown and use remainder of bars in opposite face.

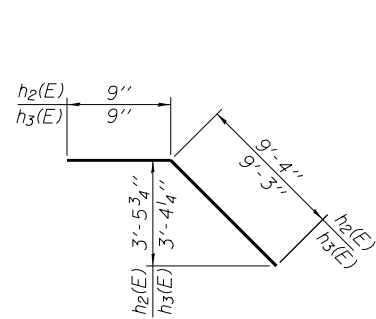


**FIELD CUTTING DIAGRAM**

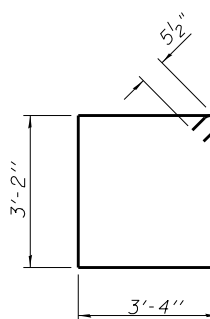
Order v4(E) and v6(E) full length. Cut as shown and use remainder of bars in opposite face.



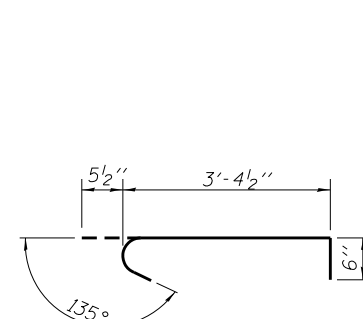
**BAR v2(E)**



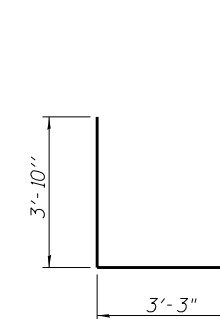
**BARS h2(E) & h3(E)**



**BAR s2(E)**



**BAR s3(E)**



**BAR u(E)**



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

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

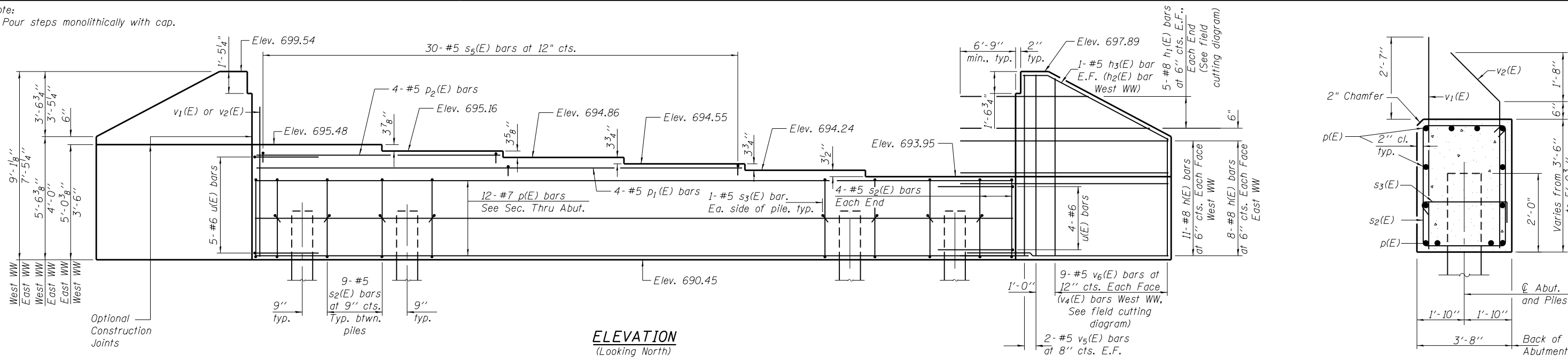
**SOUTH ABUTMENT DETAILS**  
**STRUCTURE NO. 055-0072**

SHEET NO. 15 OF 21 SHEETS

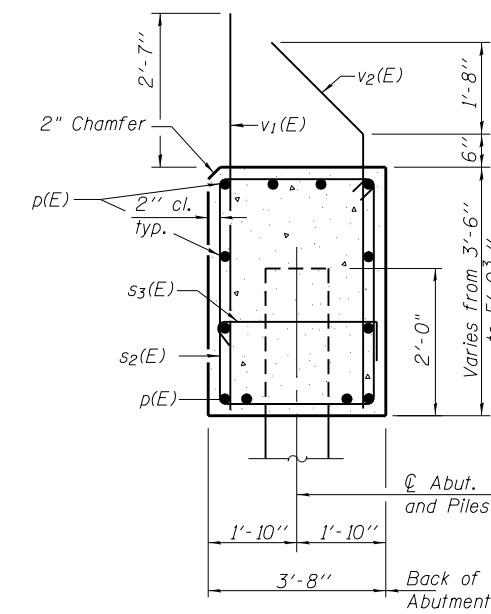
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55I3(PV,HB(2-6)B-B-1B-2]	MCDONOUGH	874	476
CONTRACT NO. 68B44				

ILLINOIS FED. AID PROJECT

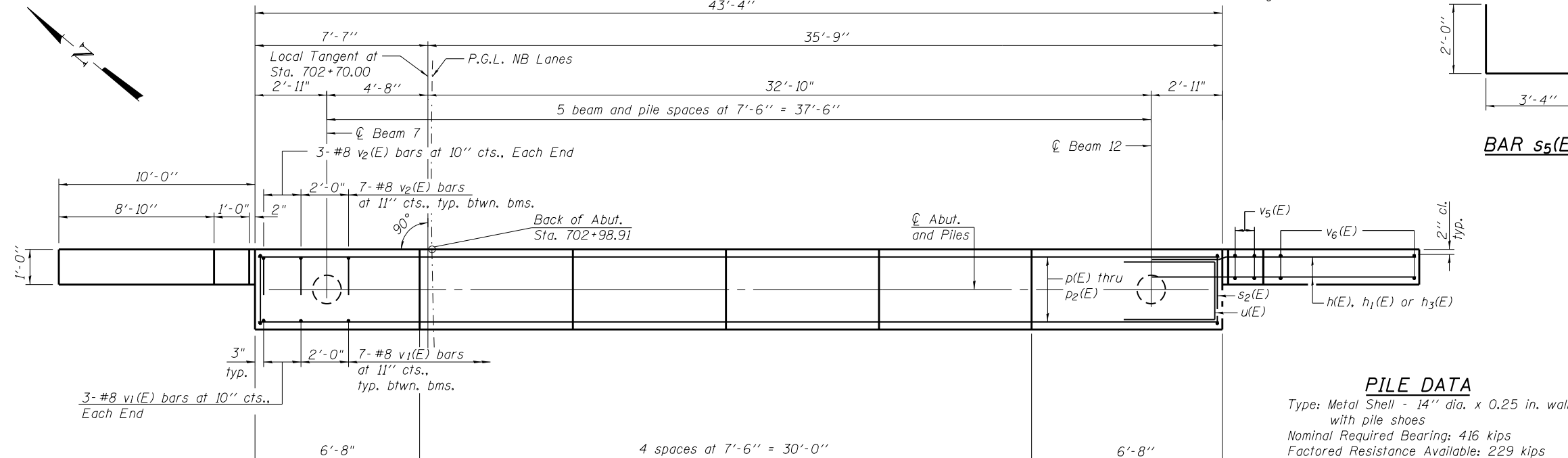
Note:  
Pour steps monolithically with cap.



**ELEVATION**  
(Looking North)



**SEC. THRU ABUT.**  
Dimensions at right angles to abutment.



**PLAN**

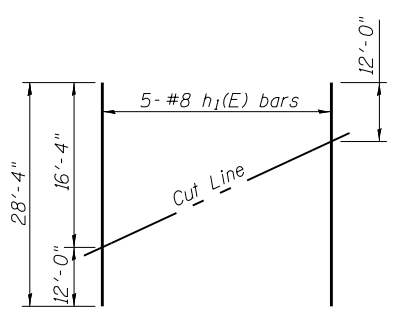
**BAR s5(E)**

**PILE DATA**  
Type: Metal Shell - 14" dia. x 0.25 in. walls with pile shoes  
Nominal Required Bearing: 416 kips  
Factored Resistance Available: 229 kips  
Est. Length: 49'  
No. Production Piles: 5  
No. Test Piles: 1

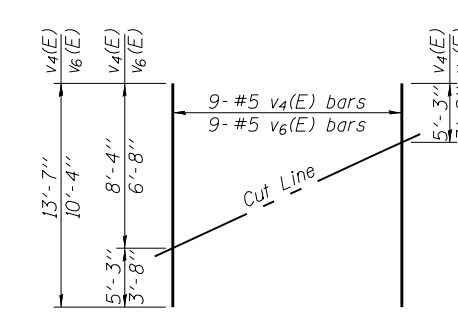
**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h(E)	38	#8	16'-9"	—
h1(E)	10	#8	28'-4"	—
h2(E)	2	#5	10'-1"	—
h3(E)	2	#5	10'-0"	—
p(E)	12	#7	43'-0"	—
p1(E)	4	#5	28'-10"	—
p2(E)	4	#5	13'-10"	—
s2(E)	53	#5	13'-11"	□
s3(E)	12	#5	4'-4"	□
s5(E)	30	#5	7'-4"	□
u(E)	9	#6	10'-11"	□
v1(E)	41	#8	5'-11"	—
v2(E)	41	#8	6'-2"	—
v3(E)	4	#5	8'-9"	—
v4(E)	9	#5	13'-7"	—
v5(E)	4	#5	7'-1"	—
v6(E)	9	#5	10'-4"	—
Structure Excavation	Cu. Yd.	98		
Concrete Structures	Cu. Yd.	29.7		
Reinforcement Bars, Epoxy Coated	Pound	6,550		
Furnishing Metal Shell Piles, 14"x0.250"	Foot	245		
Driving Piles	Foot	245		
Test Pile, Metal Shells	Each	1		
Pile Shoes	Each	6		

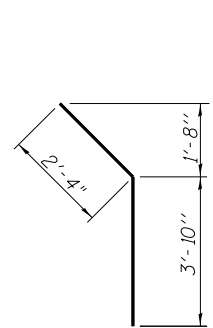
For details of piles see sheet 17 of 21.



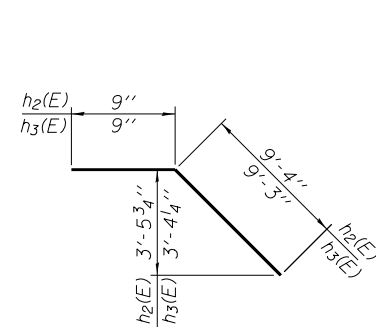
**FIELD CUTTING DIAGRAM**  
Order h1(E) full length. Cut as shown and use remainder of bars in opposite face.



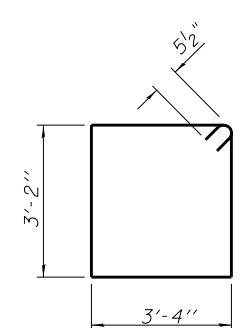
**FIELD CUTTING DIAGRAM**  
Order v4(E) and v6(E) full length. Cut as shown and use remainder of bars in opposite face.



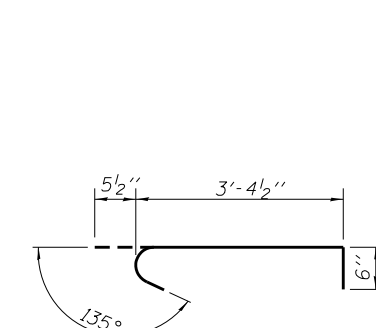
**BAR v2(E)**



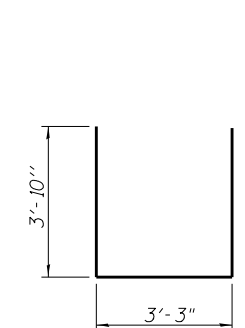
**BARS h2(E) & h3(E)**



**BAR s2(E)**

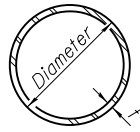


**BAR s3(E)**



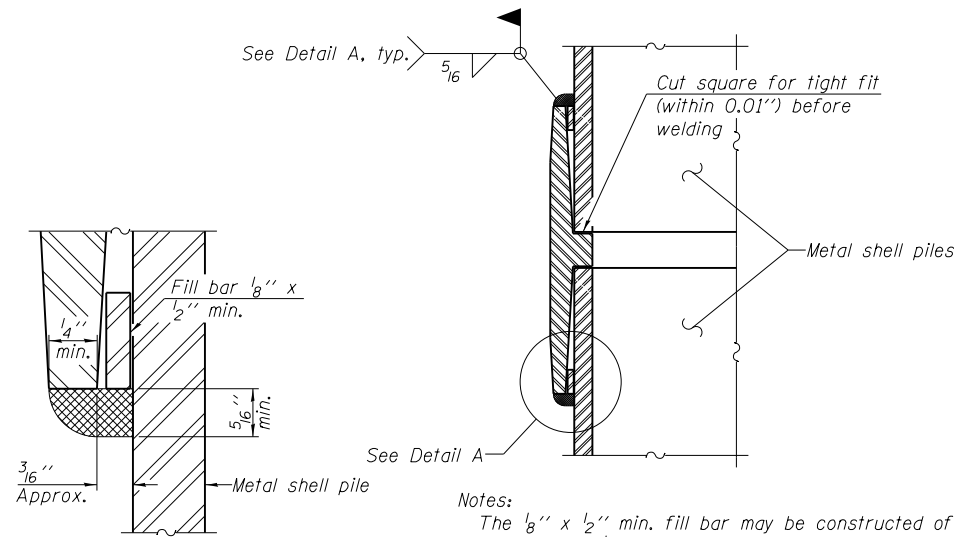
**BAR u(E)**





**METAL SHELL PILE TABLE**

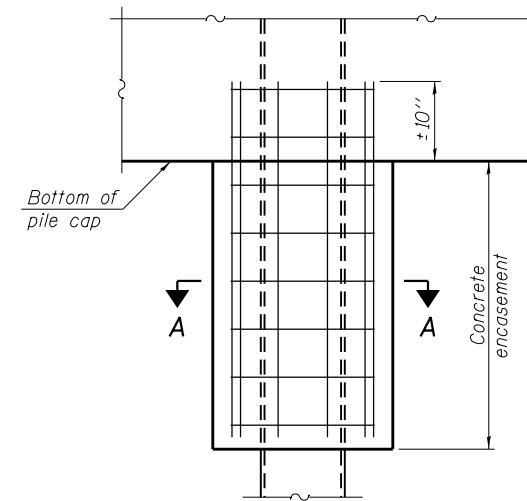
Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd. <sup>3</sup> /ft.)
PP12	0.179"	22.60	0.0274
PP12	0.250"	31.37	0.0267
PP14	0.250"	36.71	0.0368
PP14	0.312"	45.61	0.0361



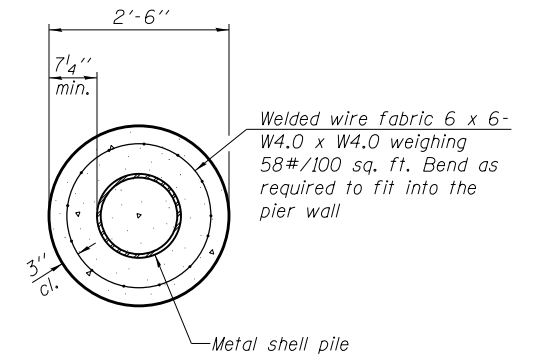
Notes:  
 The  $\frac{1}{8}$ " x  $\frac{1}{2}$ " min. fill bar may be constructed of 2 bars with a  $\frac{1}{8}$ " max. gap between them.  
 Pile segments shall be driven to solid contact with splicer before welding.

**DETAIL A**

**WELDED COMMERCIAL SPLICE**



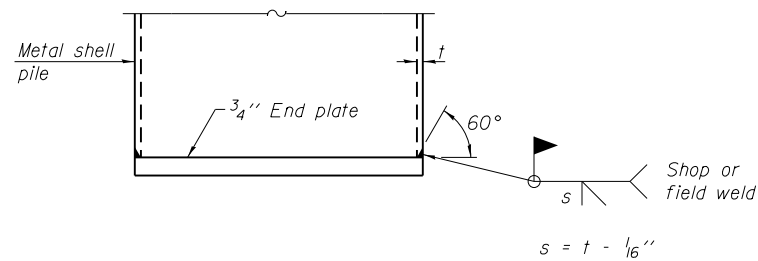
**ELEVATION**



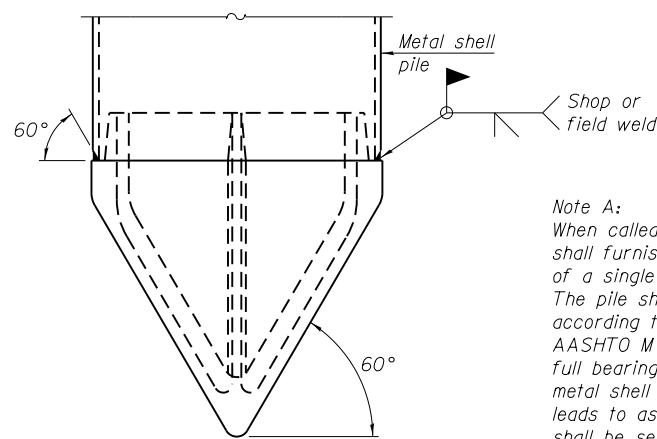
**SECTION A-A**

Note:  
 Forms for encasement may be omitted when soil conditions permit.

**CONCRETE ENCASEMENT AT PIERS**



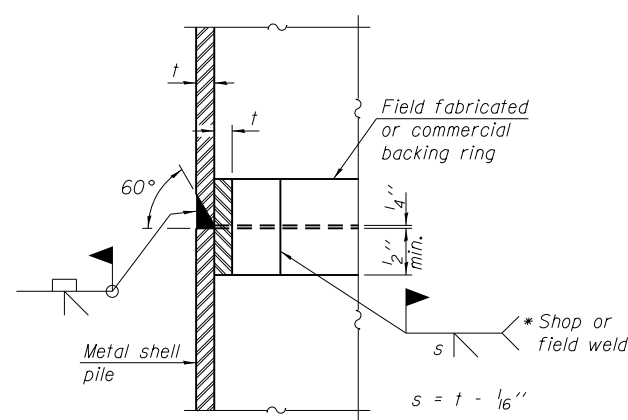
**END PLATE ATTACHMENT**



Note A:  
 When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 90-60 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to assure proper alignment and fitting and shall be secured to the pile with a circumferential weld.

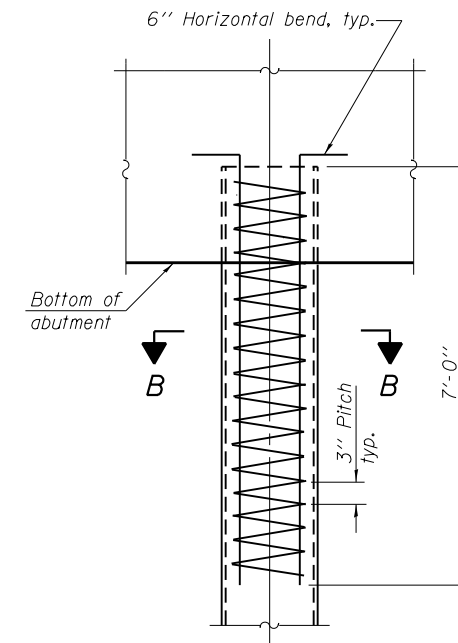
**METAL SHELL PILE SHOE ATTACHMENT**

(See Note A)



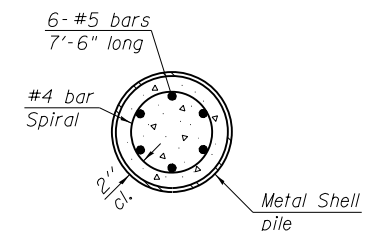
**COMPLETE PENETRATION WELD SPLICE**

\* Field fabricated backing ring may be made from pile shell by removing segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



**ELEVATION**

**METAL SHELL REINFORCEMENT AT ABUTMENTS**



**SECTION B-B**

Note:  
 The metal shell piles shall be according to ASTM A 252 Grade 3.

F-MS 1-27-12



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

METAL SHELL PILE DETAILS  
 STRUCTURE NO. 055-0072

SHEET NO. 17 OF 21 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	478
CONTRACT NO. 68B44				

ILLINOIS FED. AID PROJECT



### SOIL BORING LOG

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass Wildlife Crossing Bridge (Emmet Twp) LOGGED BY SCI (TC)  
 SECTION 55-3 LOCATION Prop. West Abutment, NE 1/4, SEC. 27, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM, Latitude 40° 28' 55.121351" N, Longitude 90° 44' 1.709294" W  
 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO. Station	D E P T H	B L O W S	U C S Qu	M O I S T %	Surface Water Elev. Stream Bed Elev.	ft	D E P T H	B L O W S	U C S Qu	M O I S T %
055-0073 701+00 50.0 ft LT 694.4	6	7	3.5 P	18	Surface Water Elev. _____	ft	4	5	2.6 B	18
	7	8			Stream Bed Elev. _____	ft	5	7		
B-132 701+00 50.0 ft LT 694.4	5	7	4.9 B	20	Groundwater Elev.: _____	ft	4	6	2.9 S/15	17
	7				First Encounter _____	ft	6	9		
B-132 701+00 50.0 ft LT 694.4	3	5	1.5 B	19	Upon Completion _____	ft	4	5	2.4 B	18
	5	7			After _____	ft	5	8		
B-132 701+00 50.0 ft LT 694.4	3	6	2.5 B	20	_____	ft	4	6	3.2 B	18
	6	8			_____	ft	3	8		
B-132 701+00 50.0 ft LT 694.4	5	11	4.4 S/10	15	_____	ft	4	13		
	15				_____	ft	5	15	1.8 B	18
B-132 701+00 50.0 ft LT 694.4	6	11	5.0 S/5	14	_____	ft	5	7		
	14				_____	ft	7	8		
B-132 701+00 50.0 ft LT 694.4	6	12	6.5 S/15	14	_____	ft	11	13		
	15				_____	ft	13	15		
B-132 701+00 50.0 ft LT 694.4	6	9	4.5 B	15	_____	ft	11	13		
	13				_____	ft	13	15		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



### SOIL BORING LOG

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass Wildlife Crossing Bridge (Emmet Twp) LOGGED BY SCI (TC)  
 SECTION 55-3 LOCATION Prop. West Abutment, NE 1/4, SEC. 27, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM, Latitude 40° 28' 55.121351" N, Longitude 90° 44' 1.709294" W  
 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO. Station	D E P T H	B L O W S	U C S Qu	M O I S T %	Surface Water Elev. Stream Bed Elev.	ft	D E P T H	B L O W S	U C S Qu	M O I S T %
055-0073 701+00 50.0 ft LT 694.4	4	5	2.6 B	18	Surface Water Elev. _____	ft	16			
	7				Stream Bed Elev. _____	ft	15			
B-132 701+00 50.0 ft LT 694.4	4	6	2.9 S/15	17	Groundwater Elev.: _____	ft	48			
	6	9			First Encounter _____	ft	17			
B-132 701+00 50.0 ft LT 694.4	4	5	2.4 B	18	Upon Completion _____	ft	13			
	5	8			After _____	ft	15			
B-132 701+00 50.0 ft LT 694.4	4	6	3.2 B	18	_____	ft	15			
	6	8			_____	ft	17			
B-132 701+00 50.0 ft LT 694.4	5	11	4.4 S/10	15	_____	ft	6			
	15				_____	ft	11			
B-132 701+00 50.0 ft LT 694.4	6	11	5.0 S/5	14	_____	ft	15			
	14				_____	ft	16			
B-132 701+00 50.0 ft LT 694.4	6	12	6.5 S/15	14	_____	ft	20			
	15				_____	ft	34			
B-132 701+00 50.0 ft LT 694.4	6	9	4.5 B	15	_____	ft	604.4			
	13				_____	ft	90.0			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



### SOIL BORING LOG

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass Wildlife Crossing Bridge (Emmet Twp) LOGGED BY SCI (TC)  
 SECTION 55-3 LOCATION Prop. West Abutment, NE 1/4, SEC. 27, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM, Latitude 40° 28' 55.121351" N, Longitude 90° 44' 1.709294" W  
 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO. Station	D E P T H	B L O W S	U C S Qu	M O I S T %	Surface Water Elev. Stream Bed Elev.	ft	D E P T H	B L O W S	U C S Qu	M O I S T %
055-0073 701+00 50.0 ft LT 694.4	6	7	3.5 P	18	Surface Water Elev. _____	ft	610.7			
	7				Stream Bed Elev. _____	ft	85			
B-132 701+00 50.0 ft LT 694.4	5	7	4.9 B	20	Groundwater Elev.: _____	ft	628.4			
	7				First Encounter _____	ft	65			
B-132 701+00 50.0 ft LT 694.4	3	5	1.5 B	19	Upon Completion _____	ft	6			
	5	7			After _____	ft	11			
B-132 701+00 50.0 ft LT 694.4	3	6	2.5 B	20	_____	ft	20			
	6	8			_____	ft	34			
B-132 701+00 50.0 ft LT 694.4	5	11	4.4 S/10	15	_____	ft	604.4			
	15				_____	ft	90.0			
B-132 701+00 50.0 ft LT 694.4	6	11	5.0 S/5	14	_____	ft	20			
	14				_____	ft	34			
B-132 701+00 50.0 ft LT 694.4	6	12	6.5 S/15	14	_____	ft	34			
	15				_____	ft	100			
B-132 701+00 50.0 ft LT 694.4	6	9	4.5 B	15	_____	ft	8			
	13				_____	ft	13			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

(Sheet 1 of 4)

#### SOIL BORINGS STRUCTURE NO. 055-0072

SHEET NO. 18 OF 21 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV,HB[2-6];B,B-1,B-2]	McDONOUGH	874	479
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

#### STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION



# SOIL BORING LOG

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass LOGGED BY SCI (TC)  
 SECTION 55-3 LOCATION Prop. East Abutment, NE 1/4, SEC. 27, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM,  
 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO.	BORING NO.	DEPTH (ft)	DEPTH (6")	DEPTH (tsf)	DEPTH (%)	DEPTH (ft)	DEPTH (6")	DEPTH (tsf)	DEPTH (%)
055-0073	B-133	5	5	1.5	18	4	7	3.3	15
		8	8	S/10		10	10	S/15	
		4	7	4.2	23	3	6	3.8	17
		8	8	B		9	9	B	
		1	3	1.0	20	3	5	3.0	17
		4	4	B		8	8	B	
		1	4	1.5	22	5	6	4.0	18
		7	7	B		9	9	B	
		4	8	3.1	15				
		11	11	S/15					
		2	6	2.3	14	2	3	2.3	18
		10	10	S/10		6	6	B	
		5	8	4.9	15				
		13	13	S/15					
		5	8	3.8	14	3	4	2.2	19
		13	13	S/15		6	6	B	

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



# SOIL BORING LOG

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass LOGGED BY SCI (TC)  
 SECTION 55-3 LOCATION Prop. East Abutment, NE 1/4, SEC. 27, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM,  
 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO.	BORING NO.	DEPTH (ft)	DEPTH (6")	DEPTH (tsf)	DEPTH (%)	DEPTH (ft)	DEPTH (6")	DEPTH (tsf)	DEPTH (%)
055-0073	B-133	2	4	1.9	18	3	6	3.8	17
		6	6	B		9	9	B	
		3	5	3.0	17	3	5	3.0	17
		8	8	B		8	8	B	
		4	8	2.1	28	4	8	2.1	28
		11	11	S/10		11	11	S/10	
		2	3	2.3	18	2	3	2.3	18
		7	7	B		6	6	B	
		2	9	1.5	30	6	9	1.5	30
		15	15	S/5		15	15	S/5	
		2	4	2.2	25	2	4	2.2	25
		6	6	B		6	6	B	

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



# SOIL BORING LOG

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass LOGGED BY SCI (TC)  
 SECTION 55-3 LOCATION Prop. East Abutment, NE 1/4, SEC. 27, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM,  
 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO.	BORING NO.	DEPTH (ft)	DEPTH (6")	DEPTH (tsf)	DEPTH (%)	DEPTH (ft)	DEPTH (6")	DEPTH (tsf)	DEPTH (%)
055-0073	B-133	1	3	1.7	29	1	3	1.7	29
		4	4	S/15		4	4	S/15	
		614.1	614.1	-85					
		630.1	630.1	-70					
		626.3	626.3						
		621.9	621.9						
		621.9	621.9						
		95	95						
		100	100						

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

(Sheet 2 of 4)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SOIL BORINGS  
STRUCTURE NO. 055-0072

SHEET NO. 19 OF 21 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3/PV,HB(2-6);B,B-1,B-2]	McDONOUGH	874	480
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	



# SOIL BORING LOG

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass Wildlife Crossing Bridge (Emmet Twp) LOGGED BY SCI (TC)  
 SECTION 55-3 LOCATION Prop. West Abutment, NE 1/4, SEC. 27, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM, Latitude 40° 28' 54.480803" N, Longitude 90° 44' 1.221188" W  
 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO.	BORING NO.	STATION	OFFSET	GROUND SURFACE ELEV.	D	B	U	M	Surface Water Elev.	Stream Bed Elev.	Groundwater Elev.	First Encounter	Upon Completion	After 24 Hrs.	Not Obs	
055-0072	B-134	701+00	25.0 ft RT	695.0	(ft)	(/6")	(tsf)	(%)	ft	ft	ft	ft	ft	ft	ft	
TOPSOIL - 3 inches																
Brown SILTY CLAY, A-6																
694.8					7	8.0										
689.4					9	B	19									
686.7					5	3.8										
689.4					5	S/15	22									
686.7					-5											
Brown CLAY, A-7																
689.4					3	1.0										
686.7					3	B	20									
686.7					5	2.8										
686.7					5	B	22									
686.7					-10											
686.7					3	3.1										
686.7					6	S/15	19									
686.7					4	4.3										
686.7					7	B	16									
686.7					-15											
Brown and gray SILT, A-4																
686.7					5	2.6										
686.7					7	B	22									
686.7					-55											
Brown SAND, A-3																
686.7					6	4.1										
686.7					10	S/15	12									
686.7					16											
686.7					5	3.3										
686.7					7	S/15	14									
686.7					-20											

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
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# SOIL BORING LOG

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 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO.	BORING NO.	STATION	OFFSET	GROUND SURFACE ELEV.	D	B	U	M	Surface Water Elev.	Stream Bed Elev.	Groundwater Elev.	First Encounter	Upon Completion	After 24 Hrs.	Not Obs	
055-0072	B-134	701+00	25.0 ft RT	695.0	(ft)	(/6")	(tsf)	(%)	ft	ft	ft	ft	ft	ft	ft	
Brown SAND, A-3 (continued)																
695.0					4	4.8										
695.0					8	B	16									
695.0					9											
695.0					4	2.4										
695.0					5	S/15	17									
695.0					-25											
Brown SANDY LOAM, A-2 (continued)																
695.0					4	3.0										
695.0					6	S/10	17									
695.0					8											
695.0					4	2.7										
695.0					9	B	17									
695.0					-30											
Brown and gray SILT, A-4																
695.0					5	2.6										
695.0					7	B	22									
695.0					-55											
Brown SANDY LOAM, A-2																
695.0					2											
695.0					3											
695.0					-80											
Brown SANDY LOAM, A-2 (continued)																
695.0					5	1.5										
695.0					7	B	25									
695.0					-75											
Brown SANDY LOAM, A-2 (continued)																
695.0					1	1.6										
695.0					2	B	28									
695.0					4											
695.0					-70											
Brown SANDY LOAM, A-2 (continued)																
695.0					4	1.6										
695.0					9	B	28									
695.0					-50											
Brown SANDY LOAM, A-2 (continued)																
695.0					2	0.9										
695.0					3	B	17									
695.0					-80											

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
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# SOIL BORING LOG

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass Wildlife Crossing Bridge (Emmet Twp) LOGGED BY SCI (TC)  
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 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO.	BORING NO.	STATION	OFFSET	GROUND SURFACE ELEV.	D	B	U	M	Surface Water Elev.	Stream Bed Elev.	Groundwater Elev.	First Encounter	Upon Completion	After 24 Hrs.	Not Obs	
055-0072	B-134	701+00	25.0 ft RT	695.0	(ft)	(/6")	(tsf)	(%)	ft	ft	ft	ft	ft	ft	ft	
Gray SILTY CLAY LOAM, A-6 (continued)																
695.0					611.9											
Gray SAND, A-3																
695.0					610.8											
695.0					11											
695.0					16											
695.0					26											
695.0					-85											
Gray GRAVEL, A-1																
695.0					610.0											
695.0					-85											
** Hole collapsed at 13 ft after 24 hours Boring terminated at 85.0 ft.																

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

(Sheet 3 of 4)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

## STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

### SOIL BORINGS STRUCTURE NO. 055-0072

SHEET NO. 20 OF 21 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	481
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	



# SOIL BORING LOG

Page 1 of 2

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass Wildlife Crossing Bridge (Emmet Twp) LOGGED BY SCI (BCR)  
 SECTION 55-3 LOCATION Prop. East Abutment, NE 1/4, SEC. 27, TWP. 6N, RNG. 3W, 4<sup>th</sup> PM, Latitude 40° 28' 55.921372" N, Longitude 90° 43' 56.965110" W  
 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO.	DEPTHS	SOIL	UCS	MOISTURE	Surface Water Elev.	DEPTHS	SOIL	UCS	MOISTURE
Station	(ft)	(/6")	(tsf)	(%)	ft	(ft)	(/6")	(tsf)	(%)
055-0072									
B-135									
704+62									
50.0 ft RT									
699.6									
TOPSOIL - 4 inches									
Brown and gray CLAY, A-7									
	5	4.8		19		4	3.4		15
	8	B				6	B		
	11					9			
	6	4.5		17		4	2.3		16
	7	P				6	B		
	11					10			
Brown SILTY CLAY, A-6									
	1	0.6		24		5	4.3		14
	3	B				7	B		
	4					12			
	2	1.2		13		4	2.7		17
	2	B				5	B		
	4					8			
Brown and gray CLAY, A-7									
	3	3.5		15					
	6	B							
	10								
	3	1.3		16		2	2.4		19
	4	S/10				5	B		
	6					6			
	4	4.6		13					
	9	B							
	12								
	6	4.6		14		2	2.1		17
	11	B				4	B		
	13					6			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)



# SOIL BORING LOG

Page 2 of 2

ROUTE FAP 315 DESCRIPTION IL 336 Macomb Bypass - Proposed Bypass Wildlife Crossing Bridge (Emmet Twp) LOGGED BY SCI (BCR)  
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 COUNTY McDonough DRILLING METHOD CME 1050 w/HSA HAMMER TYPE Automatic

STRUCT. NO.	DEPTHS	SOIL	UCS	MOISTURE	Surface Water Elev.	DEPTHS	SOIL	UCS	MOISTURE
Station	(ft)	(/6")	(tsf)	(%)	ft	(ft)	(/6")	(tsf)	(%)
055-0072									
B-135									
704+62									
50.0 ft RT									
699.6									
Brown and gray CLAY, A-7									
(continued)									
	4	2.2		18		4	4.8		16
	5	B				8			
	6					16			
Brown and gray SILT, A-4									
	2	1.7		24		4	9		11
	4	S/10				9			
	7					11			
Brown and gray SAND, A-3									
(continued)									
	3								
	8								
	10								
	5								
	11								
	17								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 AASHTO Classifications are based on visual classifications unless otherwise noted BBS, form 137 (Rev. 8-99)

(Sheet 4 of 4)



USER NAME =	DESIGNED - HP	REVISED -
FILE NAME =	CHECKED - RPW	REVISED -
PLOT SCALE =	DRAWN - AJF	REVISED -
PLOT DATE =	CHECKED - MTH	REVISED -

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SOIL BORINGS  
 STRUCTURE NO. 055-0072

SHEET NO. 21 OF 21 SHEETS

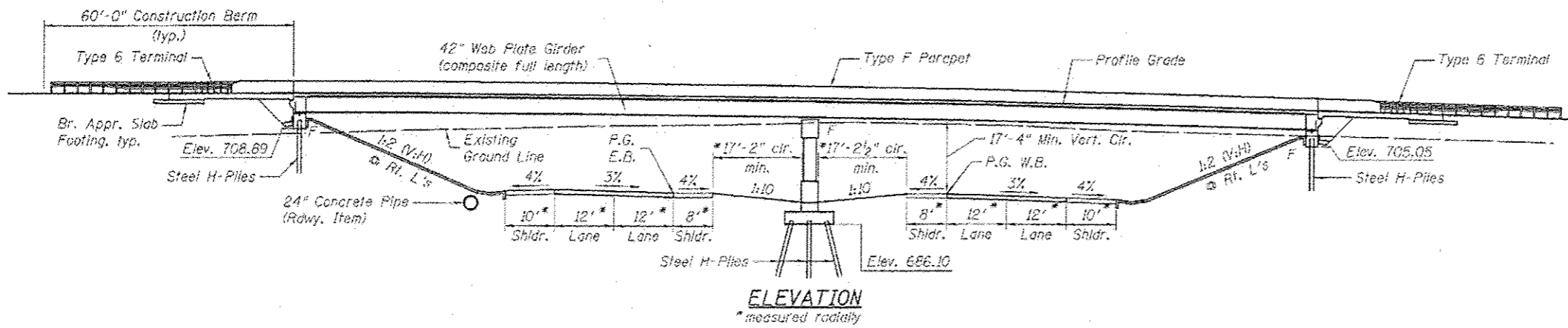
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV,HB(2-6);B,B-1,B-2)]	McDONOUGH	874	482
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	

Bench Mark: Benchmark "BM HEI 17" - R.P. spike in power pole at southwest quadrant of existing intersection between 950E (Emory Road) and 1400N Road. Located 27' left of Sta. 3012+00. Elevation = 710.93

Existing Structure: None

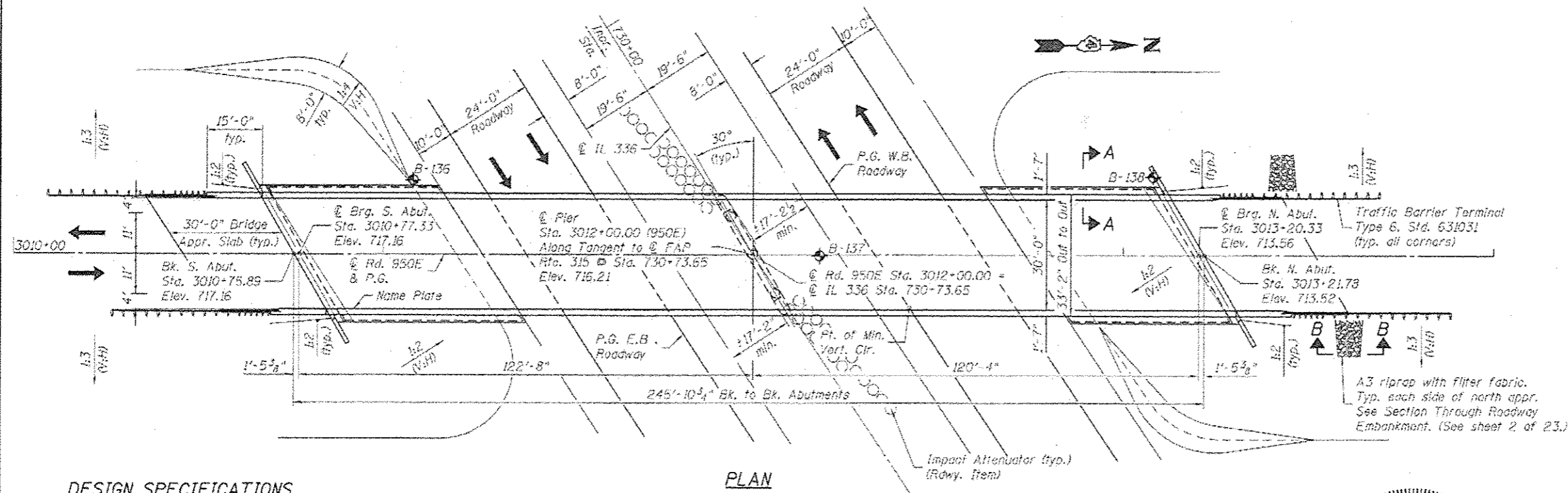
**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Structure Excavation	Cu. Yd.	-	121	121
Concrete Structures	Cu. Yd.	-	135.7	135.7
Concrete Superstructure	Cu. Yd.	405.3	-	405.3
Bridge Deck Grooving	Sq. Yd.	955	-	955
Concrete Encasement	Cu. Yd.	-	6.6	6.6
Protective Coat	Sq. Yd.	1259	-	1259
Furnishing and Erecting Structural Steel	L. Sum	0.13	-	0.13
Stud Shear Connectors	Each	2538	-	2538
Reinforcement Bars, Epoxy Coated	Pound	92360	21540	114000
Bar Splicers	Each	68	-	68
Slope Wall 4 Inch	Sq. Yd.	-	424	424
Furnishing Steel Piles HP12x53	Foot	-	1054	1054
Furnishing Steel Piles HP14x73	Foot	-	585	585
Driving Piles	Foot	-	1639	1639
Test Pile Steel HP12x53	Each	-	1	1
Test Pile Steel HP14x73	Each	-	2	2
Name Plates	Each	1	-	1
Anchor Bolts, 1"	Each	24	-	24
Anchor Bolts, 1/2"	Each	12	-	12
Geocomposite Wall Drain	Sq. Yd.	-	81	81
Granular Backfill for Structures	Cu. Yd.	-	153	153
Pipe Underdrains for Structures 4"	Foot	-	141	141



**INDEX OF SHEETS**

1. General Plan and Elevation
2. General Data & Footing Layout
3. Top of Slab Elevations (1 of 3)
4. Top of Slab Elevations (2 of 3)
5. Top of Slab Elevations (3 of 3)
6. Top of Approach Slab Elevations
7. Superstructure
8. Superstructure Details
- 8A. Concrete Parapet Slipforming Option
9. Integral Abutment Diaphragm Details
10. Bridge Approach Slab Details (1 of 2)
11. Bridge Approach Slab Details (2 of 2)
12. Framing Plan
13. Structural Steel Details (1 of 2)
14. Structural Steel Details (2 of 2)
15. South Abutment Details
16. North Abutment Details
17. Pier Details
18. HP Pile Details
19. Bar Splicer Assembly and Mechanical Splicer Details
20. Soil Boring Logs (1 of 4)
21. Soil Boring Logs (2 of 4)
22. Soil Boring Logs (3 of 4)
23. Soil Boring Logs (4 of 4)



**DESIGN SPECIFICATIONS**

2010 AASHTO LRFD  
Bridge Design Specifications  
with 2010 Interims

**LOADING HL-93**

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

**DESIGN STRESSES**

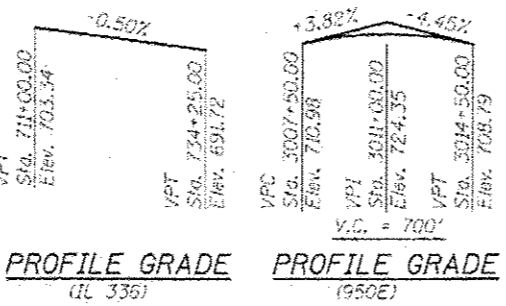
**FIELD UNITS**  
 $f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (Reinforcement)  
 $f_y = 50,000$  psi (M270 Grade 50)

**SEISMIC DATA**

Seismic Performance Zone (SPZ) = 1  
 Design Spectral Acceleration at 1.0 sec. ( $S_1$ ) = 0.08g  
 Design Spectral Acceleration at 0.2 sec. ( $S_0.2$ ) = 0.12g  
 Soil Site Class = C

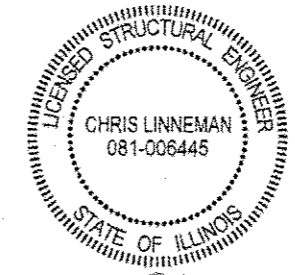
**CURVE DATA**

IL 336  
 $\Delta = 29^\circ 19' 54.52''$  (L.T.)  
 $D = 0^\circ 52' 24.28''$   
 $T = 1,716.81'$   
 $L = 3,356.30'$   
 $E = 220.93'$   
 $R = 6,560.00'$   
 $S.E. = 3.0\%$   
 $P.C. = \text{Sta. } 719+60.73$   
 $P.T. = \text{Sta. } 753+19.04$   
 $P.I. = \text{Sta. } 736+77.55$

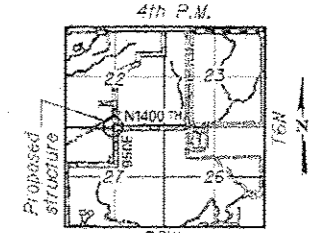


**APPROVED**  
For Structural Adequacy Only

*D. Carl Dunney, P.E.*  
Engineer of Bridges & Structures



Signed: *[Signature]*  
Date: 4/15/2015  
License Expires: 11/30/2015



**LOCATION SKETCH**

**GENERAL PLAN & ELEVATION**  
**TOWNSHIP ROAD 950E OVER IL 336**  
**F.A.P. RTE. 407 -**  
**SECTION 55(3(PV;HB(2-6);B.B-1.B-2))**  
**MCDONOUGH COUNTY**  
**STA. 3012+00.00**  
**STRUCTURE NO. 055-0074**

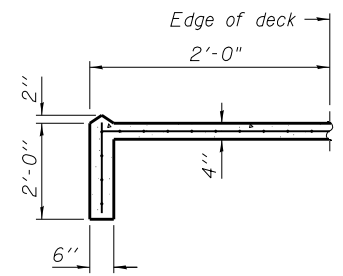
<b>EFK Moen, LLC</b> Civil Engineering Design 303 Fountain Parkway, Suite 140 Fairview Heights, IL 62208 Phone 618-296-4250	USER NAME = col PLOT SCALE = 1/2" = 1'-0" PLOT DATE = 4/15/2015	DESIGNED - CTW CHECKED - COL DRAWN - JAA DATE - 4/15/2015	REVISED - REVISED - REVISED - REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>GENERAL PLAN &amp; ELEVATION</b> <b>STRUCTURE NO. 055-0074</b> SHEET NO. 1 OF 23 SHEETS	F.A.P. RTE. 407 SECTION 55(3(PV;HB(2-6);B.B-1.B-2)) COUNTY MCDONOUGH TOTAL SHEETS 23 SHEET NO. 1 CONTRACT NO. 68B44
	ILLINOIS REG. AND PROJECT					

**GENERAL NOTES**

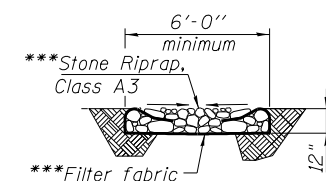
1. Fasteners shall be ASTM A325 Type 1, mechanically galvanized bolts. Bolts 7/8-in.  $\phi$ , holes 15/16-in.  $\phi$ , unless otherwise noted.
2. Calculated weight of Structural Steel = 280,640 lbs. (AASHTO M270 Grade 50) 23,240 lbs. (AASHTO M270 Grade 36)
3. No field welding is permitted except as specified in the contract documents.
4. Reinforcement bars designated (E) shall be epoxy coated.
5. Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 inch (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
6. The Inorganic Zinc Rich Primer / Acrylic / Acrylic Paint System shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the final finish coat for all interior steel surfaces shall be gray, Munsell No. 5B 7/1. The color of the final finish coat for the exterior and bottom flange of the fascia beams shall be Blue, Munsell No. 10B 3/6.
7. The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.

STATION 3012+00.00  
 BUILT 201- BY  
 STATE OF ILLINOIS  
 F.A.P. RTE. 407 SEC. 55-3  
 LOADING HL-93  
 STR. NO. 055-0074

**NAME PLATE**  
 See Std. 515001

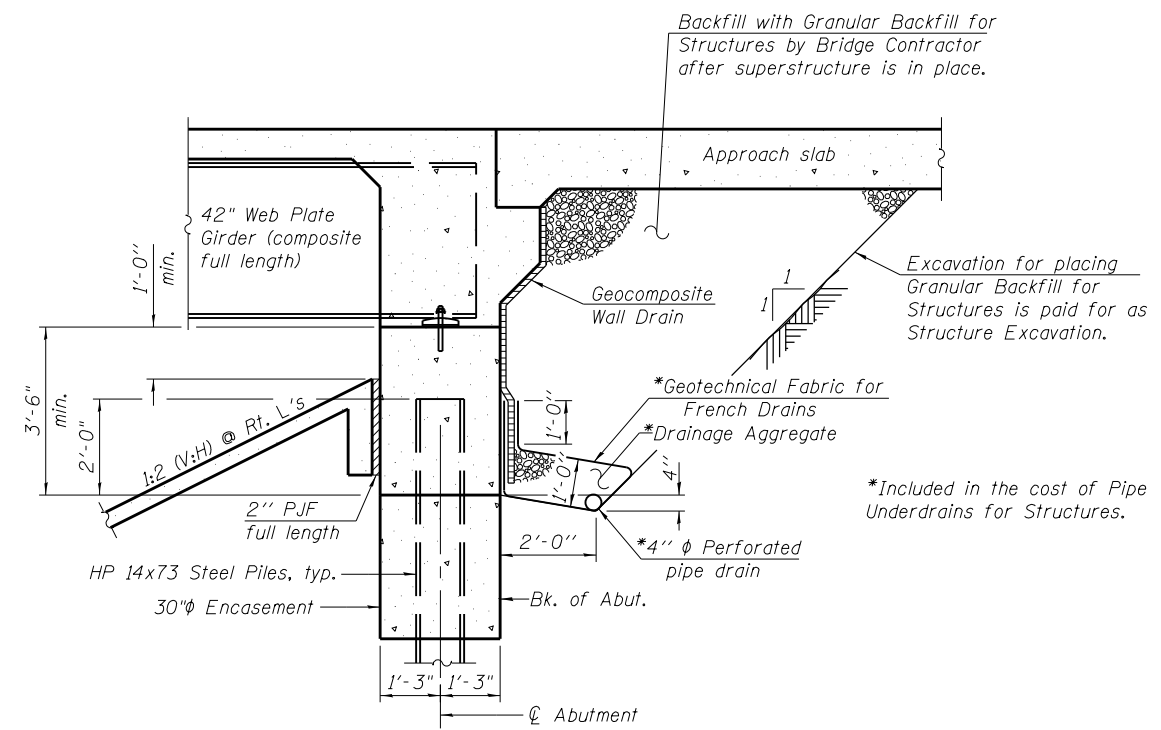


**SECTION A-A**



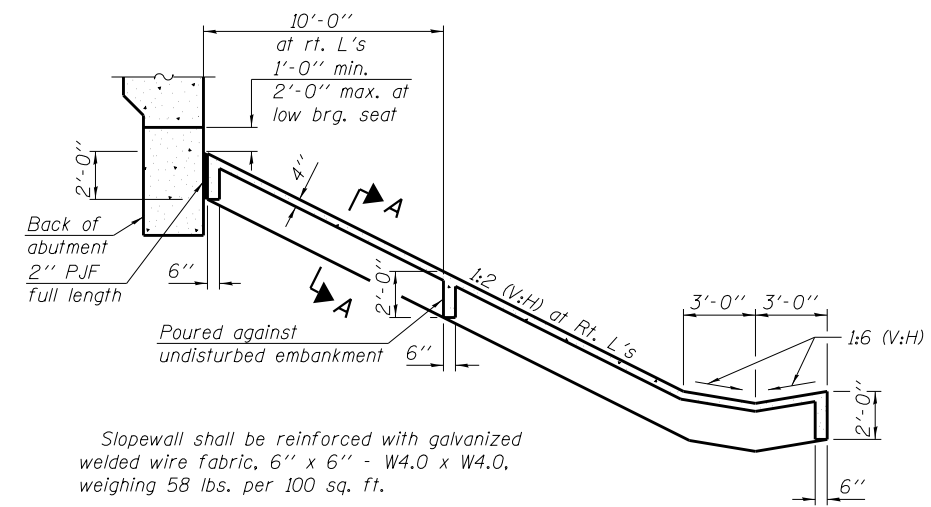
**SECTION B-B THROUGH ROADWAY EMBANKMENT**

Provide drainage down embankment from bridge appr. slab.  
 \*\*\*Roadway Item



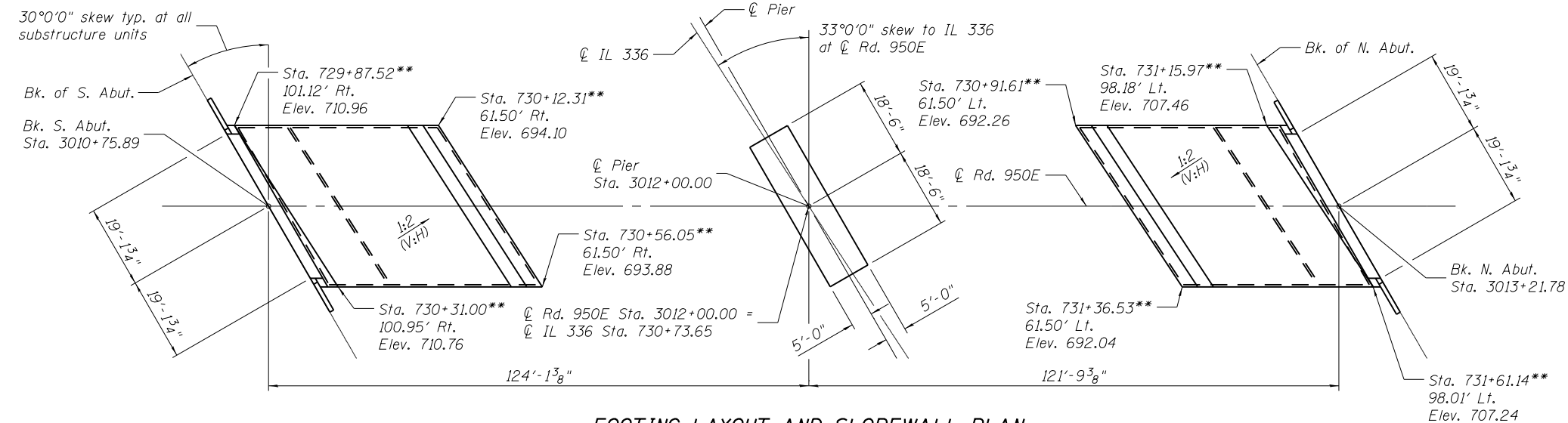
**SECTION THRU INTEGRAL ABUTMENT**  
 (Horiz. dim. @ Rt. L's)

Note:  
 All drainage system components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601101).



**SECTION THRU CONCRETE SLOPEWALL**

Sloped wall shall be reinforced with galvanized welded wire fabric, 6" x 6" - W4.0 x W4.0, weighing 58 lbs. per 100 sq. ft.



**FOOTING LAYOUT AND SLOPEWALL PLAN**

\*\* Sloped wall stationing along  $\phi$  IL 336.

PRINT DATE: 1/26/2015 12:07:28 PM \$FILE\$

**EFK Moen, LLC**  
 Civil Engineering Design  
 303 Fountains Parkway, Suite 240  
 Fairview Heights, IL 62208  
 Phone 618-206-4250

USER NAME = ctwilliams	DESIGNED - CTW	REVISED -
PLOT SCALE = 0.2" = 1' / in.	CHECKED - CDL	REVISED -
PLOT DATE = 1/26/2015	DRAWN - JAA	REVISED -
	DATE - 1/26/2015	REVISED -

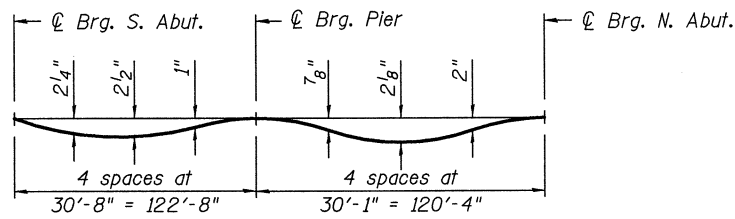
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**GENERAL DATA AND FOOTING LAYOUT**  
**STRUCTURE NO. 055-0074**

SHEET NO. 2 OF 23 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV)HB(2-6)B,B-1,B-2]	MCDONOUGH	874	484
			CONTRACT NO. 68B44	

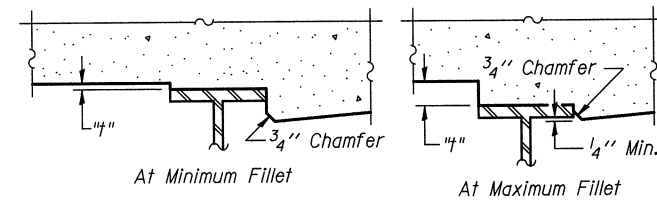
ILLINOIS FED. AID PROJECT



**DEAD LOAD DEFLECTION DIAGRAM**

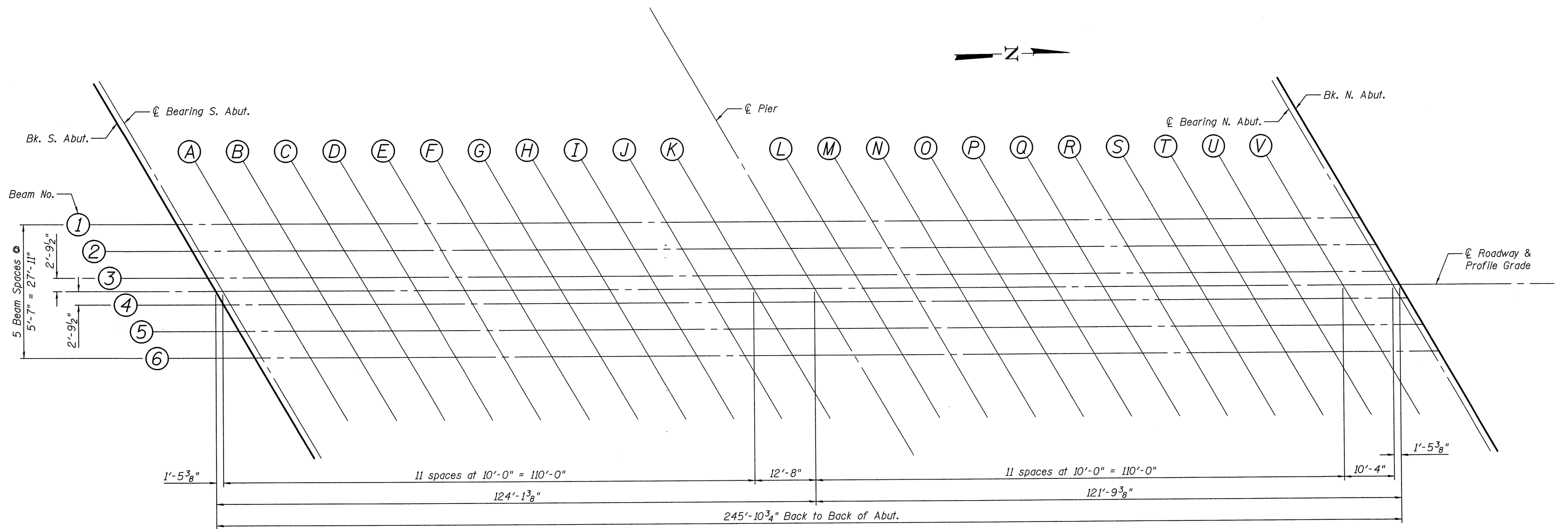
(Includes weight of concrete only.)

Note:  
The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown on sheets 4 & 5 of 23.



To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown on sheets 4 & 5 of 23, minus slab thickness, equals the fillet heights "t" above top flange of beams.

**FILLET HEIGHTS**



PRINT DATE: 12/5/2014 12:35:55 PM Y:\10051 Meconb Bigpass.DGN\Bridg\Final\Plotsheets\0550074-68B44-003-T051.Elev.dgn

**EFK Moen, LLC**  
Civil Engineering Design  
303 Fountains Parkway, Suite 240  
Fairview Heights, IL 62208  
Phone 618-206-4250

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PLOT DATE = 12/5/2014	DRAWN - JAA	REVISED -
	DATE - 12/5/2014	REVISED -

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

**TOP OF SLAB ELEVATIONS (1 OF 3)**  
**STRUCTURE NO. 055-0074**  
SHEET NO. 3 OF 23 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV)HB(2-6)B-B-1,B-2]	MCDONOUGH	874	485
CONTRACT NO. 68B44				
ILLINOIS FED. AID PROJECT				



**BEAM 1**

Table with 5 columns: Location, Station, Offset, Theoretical Grade Elevations, Theoretical Grade Elevations Adjusted For Dead Load Deflection. Rows include Bk. S. Abut., Q Brg S. Abut., A through K, Q Pier, L through V, Q Brg N. Abut., Bk. N. Abut.

**BEAM 2**

Table with 5 columns: Location, Station, Offset, Theoretical Grade Elevations, Theoretical Grade Elevations Adjusted For Dead Load Deflection. Rows include Bk. S. Abut., Q Brg S. Abut., A through K, Q Pier, L through V, Q Brg N. Abut., Bk. N. Abut.

**BEAM 3**

Table with 5 columns: Location, Station, Offset, Theoretical Grade Elevations, Theoretical Grade Elevations Adjusted For Dead Load Deflection. Rows include Bk. S. Abut., Q Brg S. Abut., A through K, Q Pier, L through V, Q Brg N. Abut., Bk. N. Abut.

**Q ROADWAY & PROFILE GRADE LINE**

Table with 5 columns: Location, Station, Offset, Theoretical Grade Elevations, Theoretical Grade Elevations Adjusted For Dead Load Deflection. Rows include Bk. S. Abut., Q Brg S. Abut., A through K, Q Pier, L through V, Q Brg N. Abut., Bk. N. Abut.

**BEAM 4**

Table with 5 columns: Location, Station, Offset, Theoretical Grade Elevations, Theoretical Grade Elevations Adjusted For Dead Load Deflection. Rows include Bk. S. Abut., Q Brg S. Abut., A through K, Q Pier, L through V, Q Brg N. Abut., Bk. N. Abut.

**BEAM 5**

Table with 5 columns: Location, Station, Offset, Theoretical Grade Elevations, Theoretical Grade Elevations Adjusted For Dead Load Deflection. Rows include Bk. S. Abut., Q Brg S. Abut., A through K, Q Pier, L through V, Q Brg N. Abut., Bk. N. Abut.

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E-S 7-1-10

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USER NAME = ja  
PLOT SCALE = 0.2,0000 1" = 10'  
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REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS (2 OF 3)  
STRUCTURE NO. 055-0074**

SHEET NO. 4 OF 23 SHEETS

Table with 5 columns: F.A.P. RTE., SECTION, COUNTY, TOTAL SHEETS, SHEET NO. Values: 407, 55C3(PV)HB(2-6)B,B-1,B-2)1, MCDONOUGH, 874, 486.

CONTRACT NO. 68B44  
ILLINOIS FED. AID PROJECT

**BEAM 6**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	3010+83.95	13.96	716.92	716.92
⊙ Brg S. Abut.	3010+85.39	13.96	716.92	716.92
A	3010+95.39	13.96	716.90	716.97
B	3011+05.39	13.96	716.87	717.00
C	3011+15.39	13.96	716.82	717.01
D	3011+25.39	13.96	716.77	716.98
E	3011+35.39	13.96	716.70	716.92
F	3011+45.39	13.96	716.62	716.83
G	3011+55.39	13.96	716.53	716.71
H	3011+65.39	13.96	716.43	716.56
I	3011+75.39	13.96	716.31	716.41
J	3011+85.39	13.96	716.19	716.24
K	3011+95.39	13.96	716.05	716.07
⊙ Pier	3012+08.06	13.96	715.86	715.86
L	3012+18.06	13.96	715.69	715.70
M	3012+28.06	13.96	715.51	715.55
N	3012+38.06	13.96	715.33	715.40
O	3012+48.06	13.96	715.13	715.23
P	3012+58.06	13.96	714.91	715.06
Q	3012+68.06	13.96	714.69	714.87
R	3012+78.06	13.96	714.45	714.65
S	3012+88.06	13.96	714.21	714.39
T	3012+98.06	13.96	713.95	714.11
U	3013+08.06	13.96	713.68	713.80
V	3013+18.06	13.96	713.39	713.46
⊙ Brg N. Abut.	3013+28.40	13.96	713.09	713.09
Bk. N. Abut.	3013+29.84	13.96	713.04	713.04

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E-S

7-1-10

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 Fairview Heights, IL 62208  
 Phone 618-206-4250

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 PLOT SCALE = 0:2.0000 'ft / in.  
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 DRAWN - JAA  
 DATE - 12/5/2014

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**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS (3 OF 3)  
 STRUCTURE NO. 055-0074**

SHEET NO. 5 OF 23 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55C3(PV+HB(2-6);B,B-1,B-2)I	MCDONOUGH	874	487
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	

**WEST CURB LINE**

Location	Station	Offset	Theoretical Grade Elevations
Begin S. Appr. Slab	3010+37.23	-15.00	716.83
	A1 3010+47.23	-15.00	716.86
	B1 3010+57.23	-15.00	716.89
End S. Appr. Slab	3010+67.23	-15.00	716.90
Begin N. Appr. Slab	3013+13.12	-15.00	713.51
	A2 3013+23.12	-15.00	713.22
	B2 3013+33.12	-15.00	712.92
	End N. Appr. Slab	3013+43.12	-15.00

**WEST EDGE OF PAVEMENT**

Location	Station	Offset	Theoretical Grade Elevations
Begin S. Appr. Slab	3010+39.54	-11.00	716.92
	A1 3010+49.54	-11.00	716.95
	B1 3010+59.54	-11.00	716.98
End S. Appr. Slab	3010+69.54	-11.00	716.99
Begin N. Appr. Slab	3013+15.43	-11.00	713.53
	A2 3013+25.43	-11.00	713.24
	B2 3013+35.43	-11.00	712.93
	End N. Appr. Slab	3013+45.43	-11.00

**☉ ROADWAY & PROFILE GRADE**

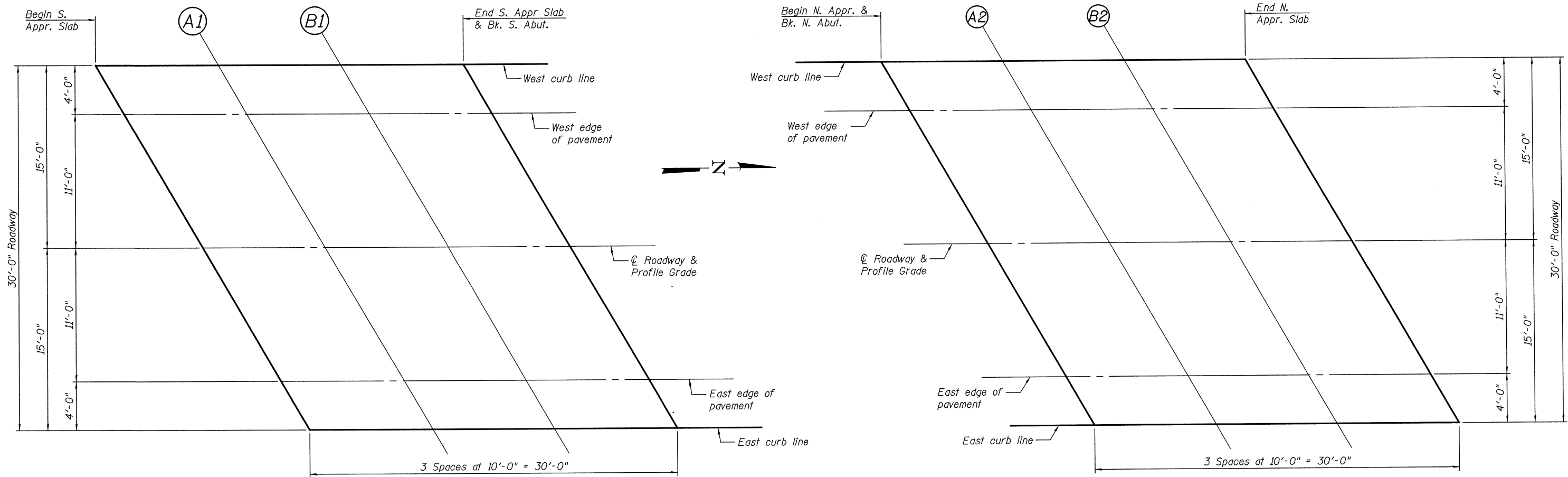
Location	Station	Offset	Theoretical Grade Elevations
Begin S. Appr. Slab	3010+45.89	0.00	717.11
	A1 3010+55.89	0.00	717.14
	B1 3010+65.89	0.00	717.16
End S. Appr. Slab	3010+75.89	0.00	717.16
Begin N. Appr. Slab	3013+21.78	0.00	713.52
	A2 3013+31.78	0.00	713.22
	B2 3013+41.78	0.00	712.91
	End N. Appr. Slab	3013+51.78	0.00

**EAST EDGE OF PAVEMENT**

Location	Station	Offset	Theoretical Grade Elevations
Begin S. Appr. Slab	3010+52.24	11.00	716.96
	A1 3010+62.24	11.00	716.98
	B1 3010+72.24	11.00	716.99
End S. Appr. Slab	3010+82.24	11.00	716.98
Begin N. Appr. Slab	3013+28.13	11.00	713.16
	A2 3013+38.13	11.00	712.85
	B2 3013+48.13	11.00	712.53
	End N. Appr. Slab	3013+58.13	11.00

**EAST CURB LINE**

Location	Station	Offset	Theoretical Grade Elevations
Begin S. Appr. Slab	3010+54.55	15.00	716.88
	A1 3010+64.55	15.00	716.90
	B1 3010+74.55	15.00	716.90
End S. Appr. Slab	3010+84.55	15.00	716.90
Begin N. Appr. Slab	3013+30.44	15.00	713.00
	A2 3013+40.44	15.00	712.69
	B2 3013+50.44	15.00	712.37
	End N. Appr. Slab	3013+60.44	15.00



**PLAN**

E-AS

7-1-10

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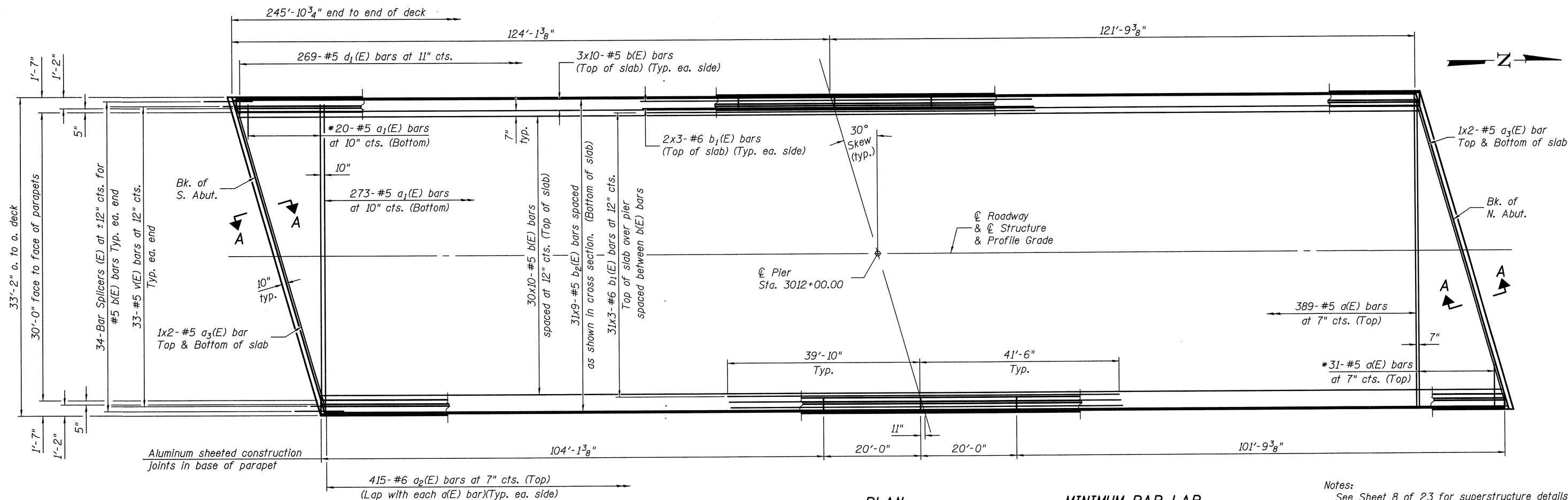
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	DATE - 12/5/2014	REVISD -

STATE OF ILLINOIS	DESIGNED - CTW	REVISD -
DEPARTMENT OF TRANSPORTATION	CHECKED - CDL	REVISD -
	DRAWN - JAA	REVISD -
	DATE - 12/5/2014	REVISD -

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

**TOP OF APPROACH SLAB ELEVATIONS**  
**STRUCTURE NO. 055-0074**  
 SHEET NO. 6 OF 23 SHEETS

F.A.P. RTE. 407	SECTION 55C3(PV)HB(2-6)B,B-1,B-2J	COUNTY MCDONOUGH	TOTAL SHEETS 874	SHEET NO. 488
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	



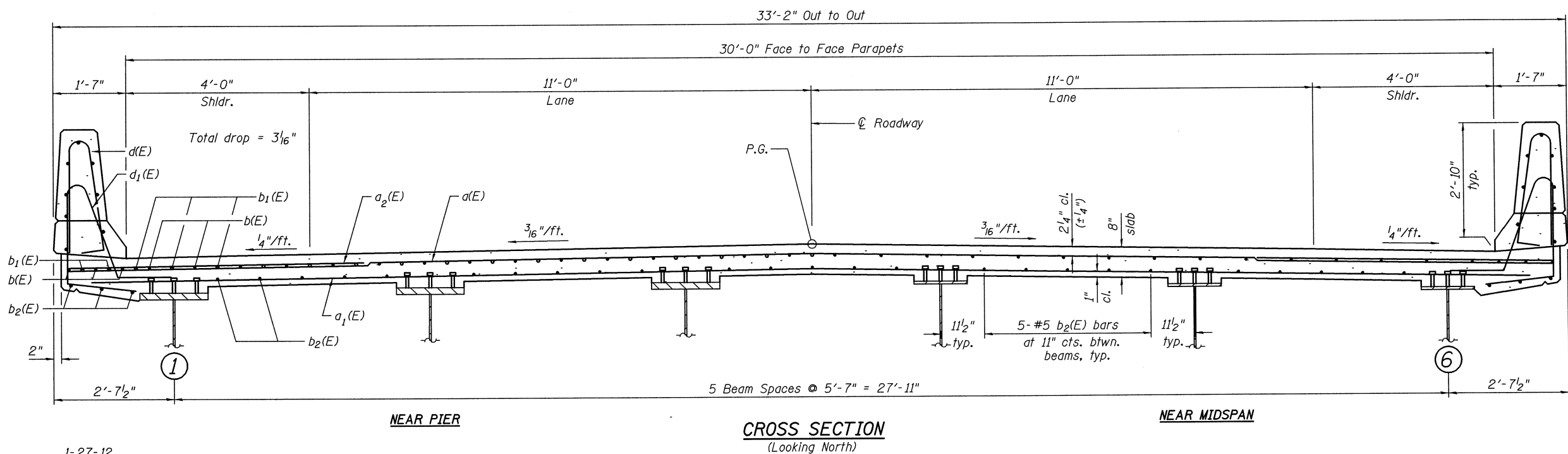
**PLAN**

**MINIMUM BAR LAP**

#5 bars = 2'-7"  
#6 bars = 3'-10"

\* Order a(E) and a1(E) bars full length. Cut bars in field to fit skew and use remainder of bars in opposite end of deck.

Notes:  
See Sheet 8 of 23 for superstructure details and Bill of Material.  
Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.  
See Sheet 8 of 23 for parapet reinforcement.  
See Sheet 9 of 23 for Section A-A.



**CROSS SECTION**  
(Looking North)

SI-2-R

1-27-12

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PLOT SCALE = 1/4" = 1'-0"	CHECKED - CDL	REVISED -
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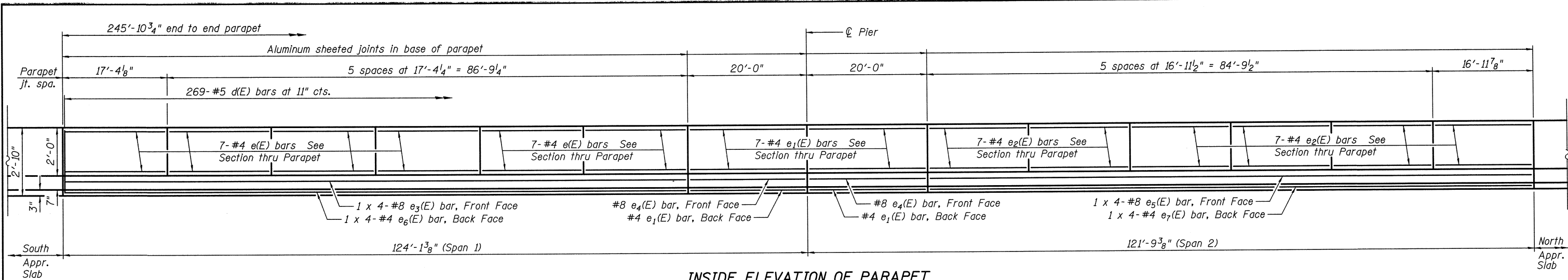
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUPERSTRUCTURE**  
**STRUCTURE NO. 055-0074**

SHEET NO. 7 OF 23 SHEETS

F.A.P. RTE. 407	SECTION 55C3(PV+HB)(2-6);B,B-1,B-2(1)	COUNTY MCDONOUGH	TOTAL SHEETS 874	SHEET NO. 489
ILLINOIS FED. AID PROJECT			CONTRACT NO. 68B44	

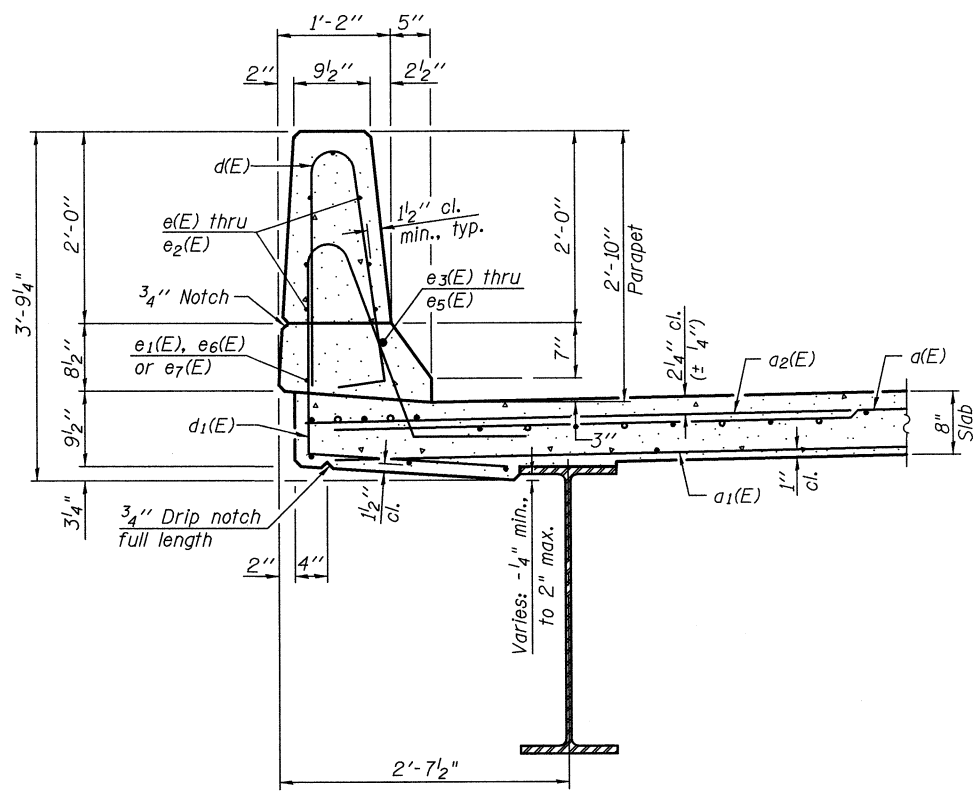
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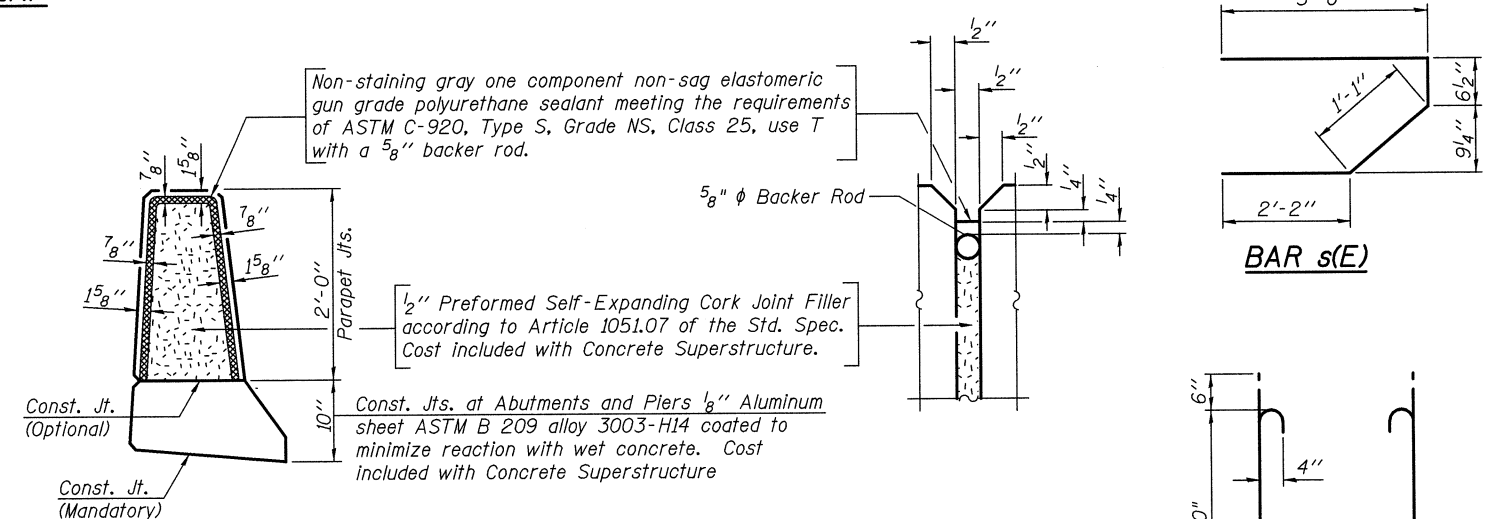
**INSIDE ELEVATION OF PARAPET**

**MINIMUM BAR LAP**

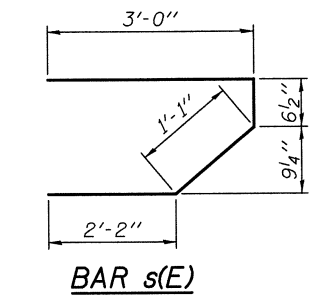
(Parapet)  
 #4 bar = 2'-0"  
 #8 bar = 5'-2"



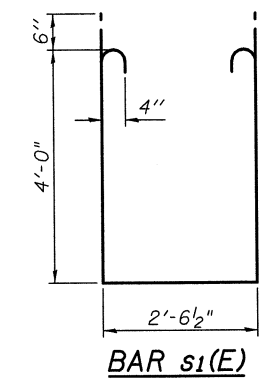
**SECTION THRU PARAPET**



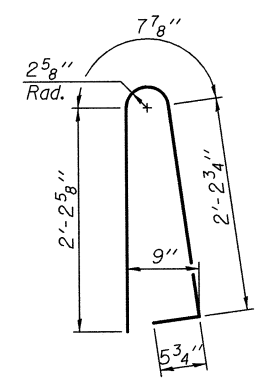
**PARAPET JOINT DETAILS**



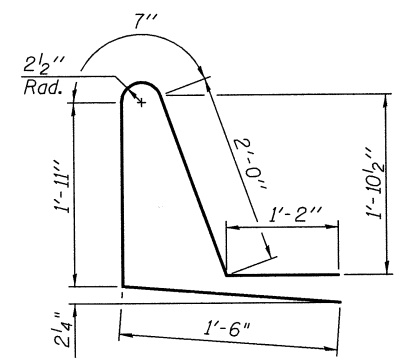
**BAR s(E)**



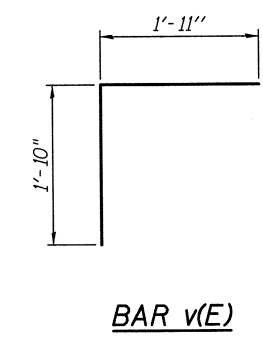
**BAR s1(E)**



**BAR d(E)**



**BAR d1(E)**



**BAR v(E)**

**SUPERSTRUCTURE BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
d(E)	420	#5	32'-6"	—
a1(E)	293	#5	31'-6"	—
a2(E)	830	#6	6'-6"	—
a3(E)	8	#5	19'-7"	—
b(E)	360	#5	26'-11"	—
b1(E)	105	#6	29'-8"	—
b2(E)	279	#5	29'-8"	—
d(E)	538	#5	5'-7"	⌒
d1(E)	538	#5	7'-2"	⌒
e(E)	84	#4	17'-1"	—
e1(E)	32	#4	19'-9"	—
e2(E)	84	#4	16'-8"	—
e3(E)	8	#8	29'-11"	—
e4(E)	4	#8	19'-9"	—
e5(E)	8	#8	29'-4"	—
e6(E)	8	#4	27'-6"	—
e7(E)	8	#4	26'-11"	—
m(E)	10	#6	37'-11"	—
m1(E)	16	#6	9'-10"	—
m2(E)	10	#6	6'-0"	—
m3(E)	8	#6	7'-9"	—
m4(E)	4	#6	2'-7"	—
s(E)	72	#5	6'-10"	⌒
s1(E)	62	#4	11'-7"	⌒
v(E)	66	#5	3'-9"	⌒
Concrete Superstructure			Cu. Yd.	296.1
Bridge Deck Grooving			Sq. Yd.	765
Protective Coat			Sq. Yd.	1051
Reinforcement Bars, Epoxy Coated			Pound	69,040

Bars indicated thus 1 x 3- #5 etc. indicates 1 line of bars with 3 lengths per line.

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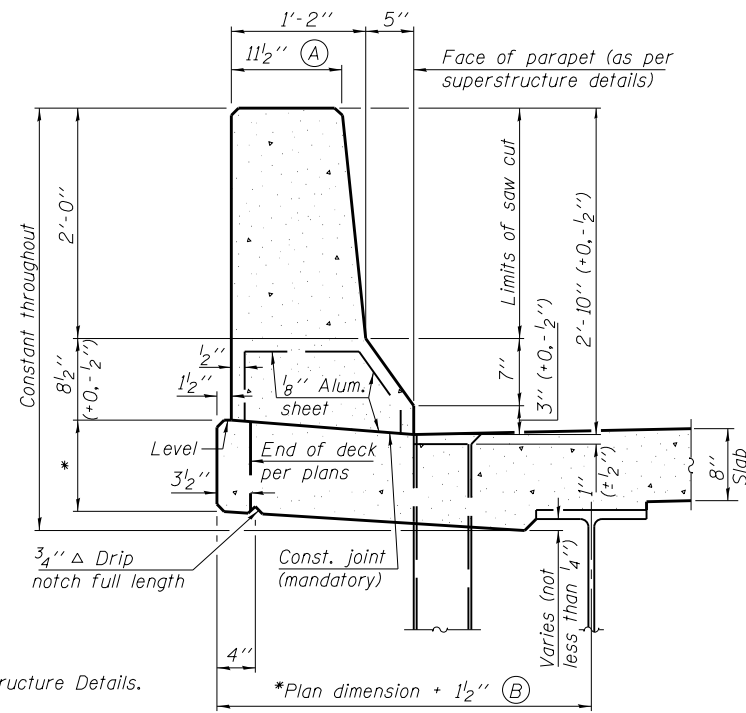
**S-I-D**  
**EFK Moen, LLC**  
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 Fairview Heights, IL 62208  
 Phone 618-206-4250

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**STATE OF ILLINOIS**  
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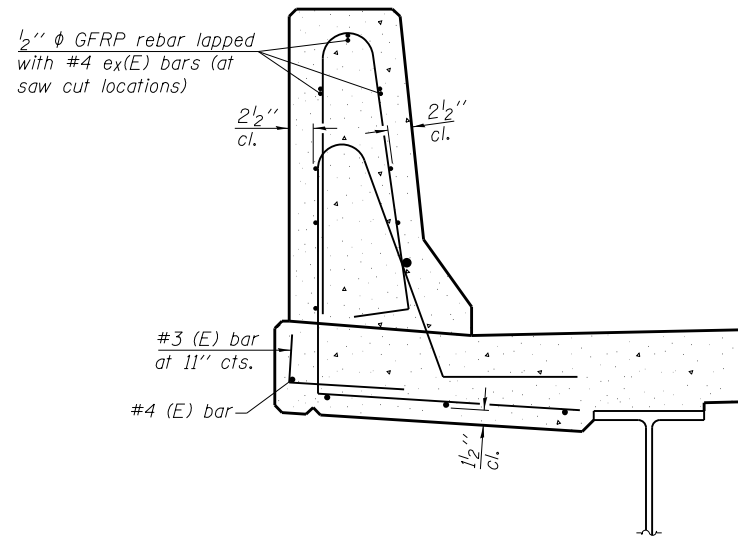
**SUPERSTRUCTURE DETAILS**  
**STRUCTURE NO. 055-0074**  
 SHEET NO. 8 OF 23 SHEETS

F.A.P. RTE. 407	SECTION 55C3(PV)HB(2-6)B-B-1,B-2(1)	COUNTY MCDONOUGH	TOTAL SHEETS 874	SHEET NO. 490
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	



**34'' F SHAPE PARAPET SECTION**  
(Showing dimensions)

\*See Superstructure Details.

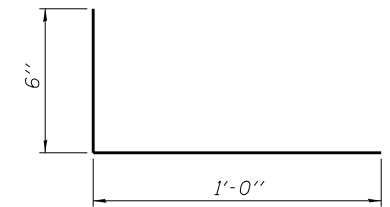


**SECTION**

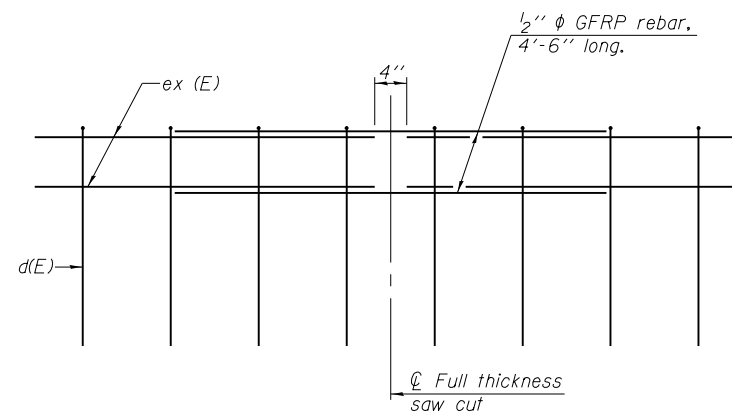
(34'' parapet shown - 42'' parapet similar)  
(Showing reinforcement clearances for slip forming and additional reinforcement bars)

**GENERAL NOTES**

All dimensions shall remain the same as shown on superstructure details, except dimensions A and B which are to be revised as shown to provide additional clearance. Additional concrete needed to revise dimension A and B = 0.0165 cu. yds./ft. for 34'' parapet or = 0.0223 cu. yds./ft. for 42'' parapet. Place aluminum sheet in curb portion at and near piers. Full thickness saw cut at all joint locations in lieu of cork joint filler. Steel superstructure shown. Other superstructure types similar.



**#3 (E) BAR**



**GFRP REBAR STIFFENING DETAIL**

(Place as shown in parapet section at each parapet joint location.)

SFP 34-42

8-16-12

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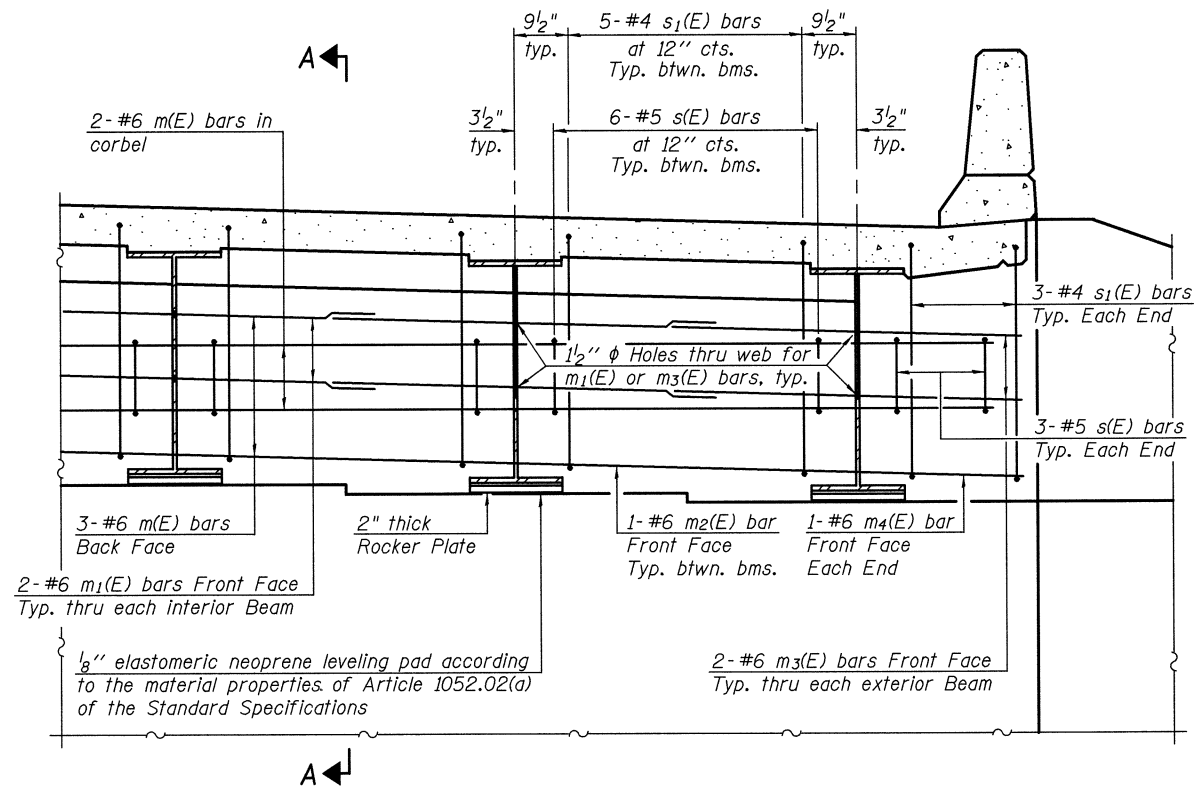
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**CONCRETE PARAPET SLIPFORMING OPTION**  
**STRUCTURE NO. 055-0074**

SHEET NO. 8A OF 23 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3(PV)HB(2-6)B,B-1,B-2]	MCDONOUGH	874	490A
CONTRACT NO. 68B44				
ILLINOIS FED. AID PROJECT				

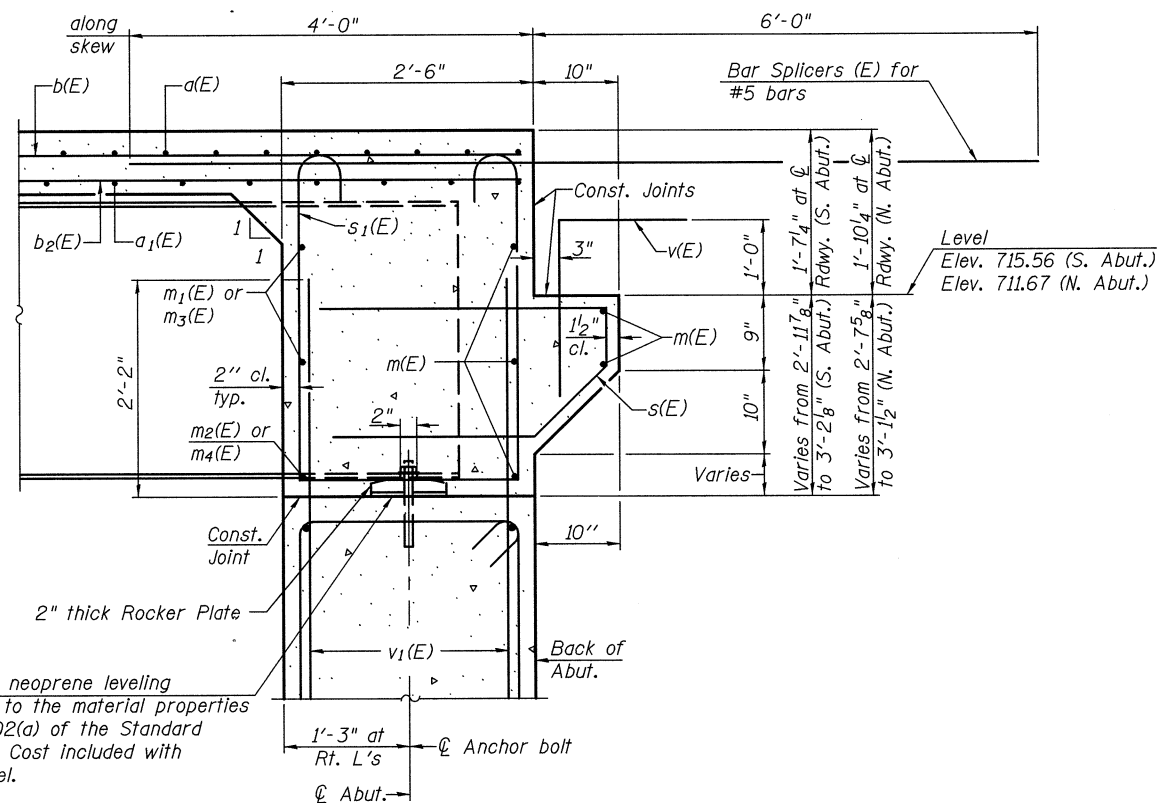
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**DIAPHRAGM ELEVATION AT ABUTMENT**

**Notes:**

- Reinforcement bars in diaphragm are billed with superstructure on sheet 8 of 23.
- Concrete in diaphragm is included with Concrete Superstructure on sheet 8 of 23.
- For details of bars s(E) & s1(E) see sheet 8 of 23.
- The s(E) and s1(E) bars shall be placed parallel to the beams. Spacing for these bars shall be at right angles to the beams.
- For details of v(E) bars, see sheet 8 of 23.
- For details of v1(E) bars, see sheet 15 and 16 of 23.
- For bar splicer details, see sheet 7 and 19 of 23.



**SECTION A-A**

Dimensions at right angles to abutment, except as shown.

**MIN. BAR LAP**  
#6 bar = 3'-4"

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SI-DS1

1-27-12

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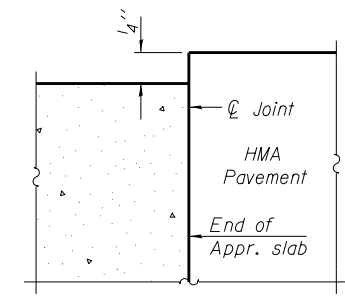
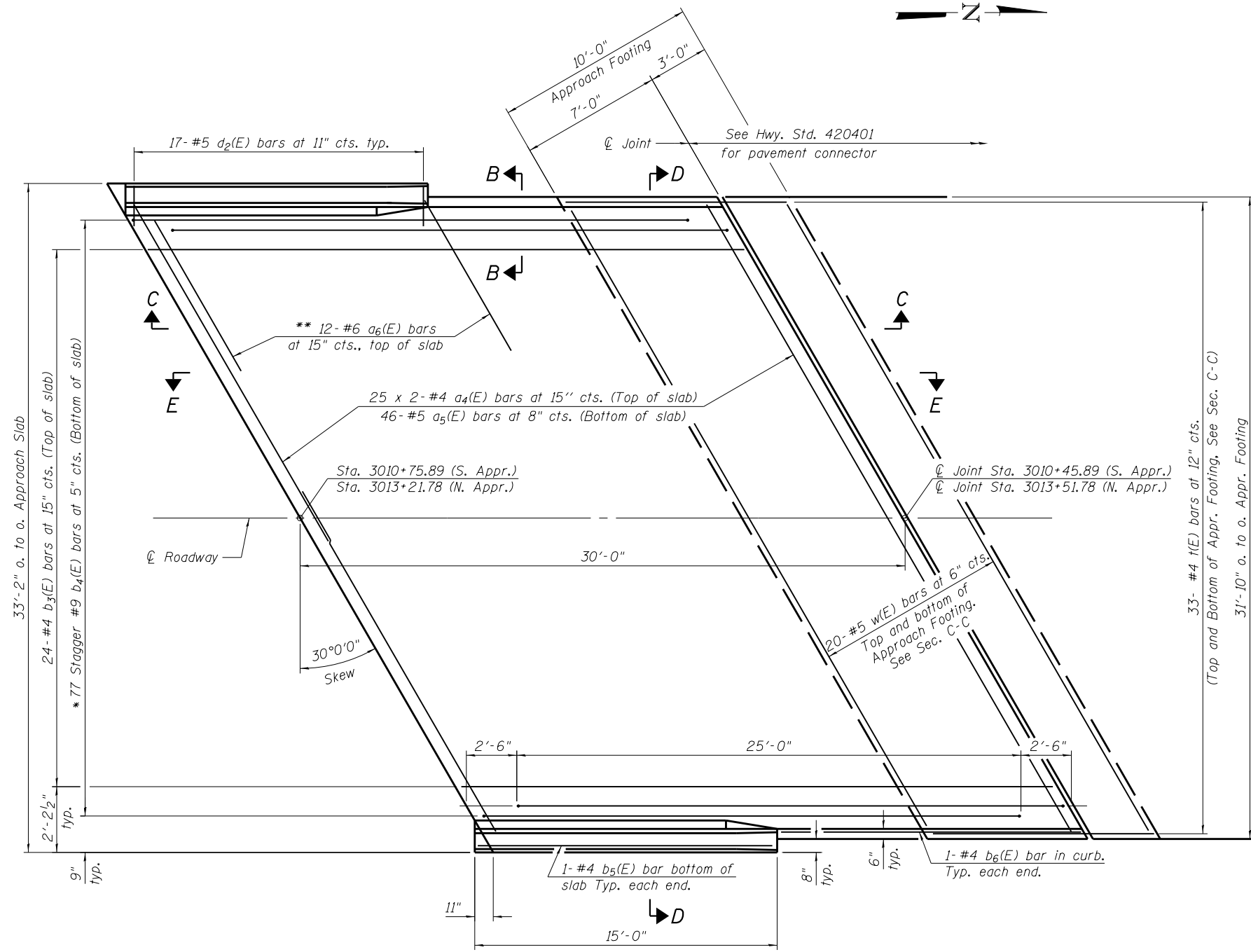
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**INTEGRAL ABUTMENT DIAPHRAGM DETAILS**  
**STRUCTURE NO. 055-0074**

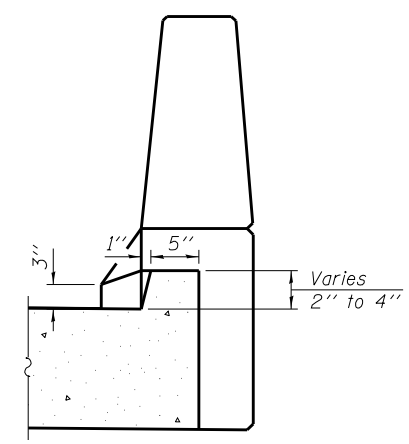
SHEET NO. 9 OF 23 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV;HB(2-6);B,B-1,B-2[1]	MCDONOUGH	874	491
CONTRACT NO. 68B44				
ILLINOIS FED. AID PROJECT				

Notes:  
See sheet 11 of 23 for Sections C-C & D-D and View E-E.  
a<sub>4</sub>(E) and a<sub>5</sub>(E) bar spacings measured along  $\text{C Rdwy.}$



**FLEXIBLE PAVEMENT**  
**DETAIL A**



**VIEW B-B**

**MIN. BAR LAP**  
#4 bar = 2'-11"

**PLAN**

North approach shown, south approach similar.

- \* Tilt #9 b<sub>1</sub>(E) bars as required to maintain clearance.
- \*\* Space between a(E) bars, typ. each parapet.

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**EFK Moen, LLC**  
Civil Engineering Design  
303 Fountains Parkway, Suite 240  
Fairview Heights, IL 62208  
Phone 618-206-4250

USER NAME = ja	DESIGNED - CTW	REVISED -
PLOT SCALE = 0.2' = 1"	CHECKED - CDL	REVISED -
PLOT DATE = 4/16/2015	DRAWN - JAA	REVISED -
	DATE - 4/16/2015	REVISED -

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

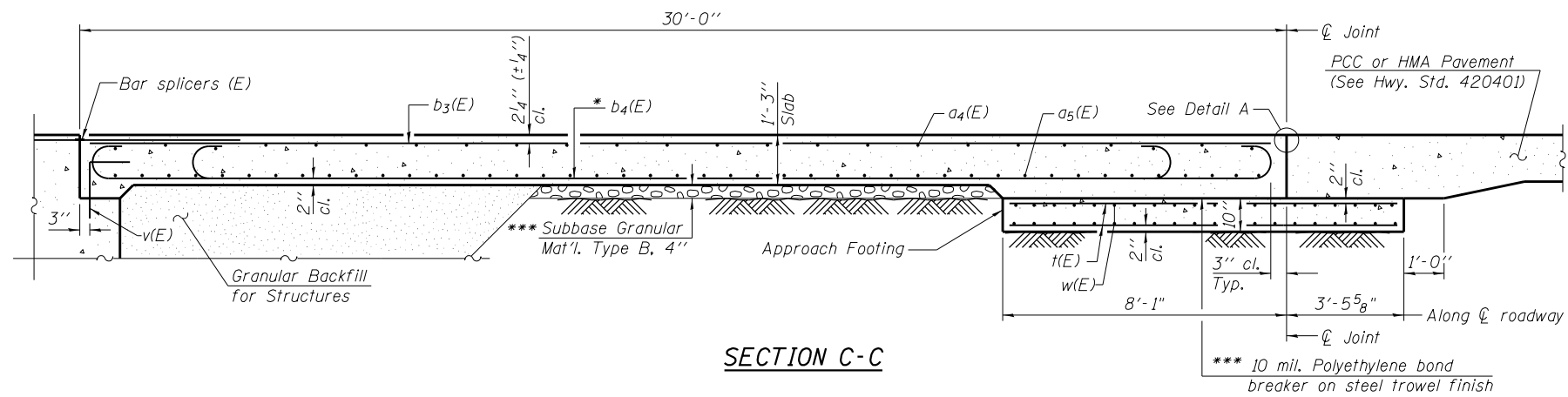
**BRIDGE APPROACH SLAB DETAILS (1 OF 2)**  
**STRUCTURE NO. 055-0074**

SHEET NO. 10 OF 23 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55[3]PV+HB(2-6)+B,B-1,B-2]	MCDONOUGH	874	492
CONTRACT NO. 68B44				

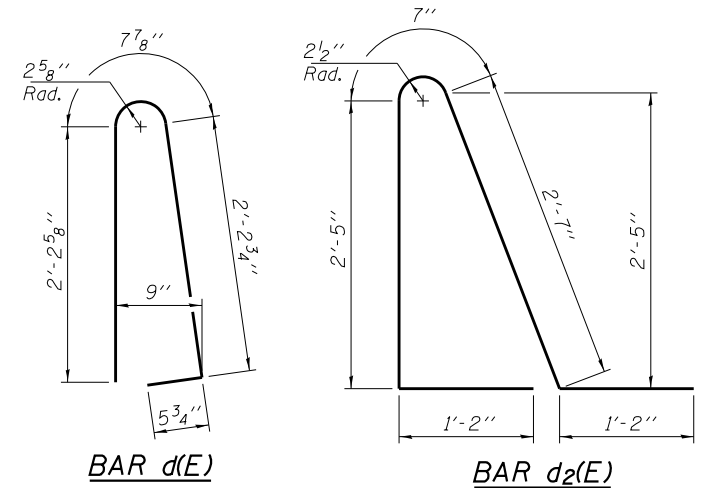
ILLINOIS FED. AID PROJECT





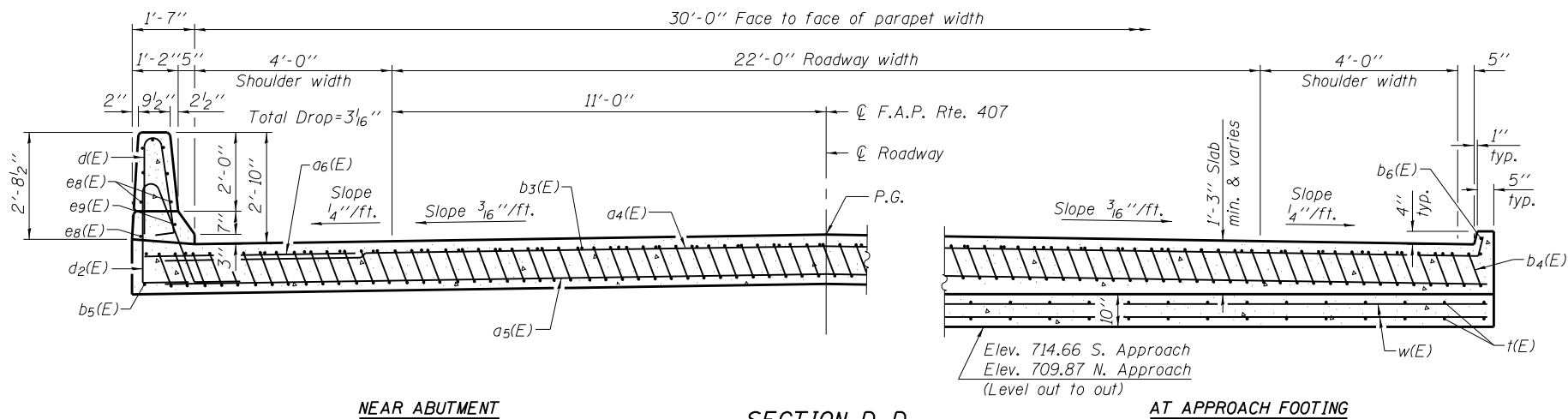
**Notes:**

See sheet 10 of 23 for Detail A and View B-B.  
 Approach slab and parapet concrete shall be paid for as Concrete Superstructure.  
 Approach footing concrete shall be paid for as Concrete Structures.  
 Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.  
 For v(E) bar details, see sheet 9 of 23.  
 The approach footing maximum applied service bearing pressure ( $Q_{max}$ ) = 2.0 ksf.  
 For bar splicer details, see sheet 19 of 23.  
 Cost of excavation for approach footing included with Concrete Structures.  
 For Granular Backfill for Structures and drainage treatment details, see sheet 2 of 23.  
 For additional parapet details, see sheet 8 of 23.



\* Tilt #9  $b_4(E)$  bars as required to maintain clearance.

\*\*\* Cost included with Concrete Superstructure.

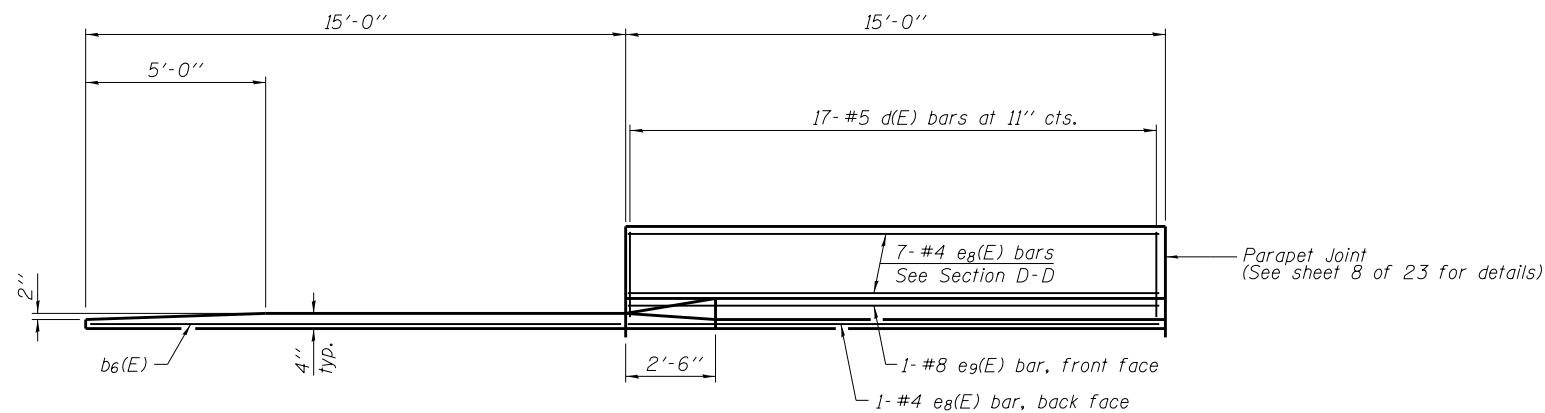


NEAR ABUTMENT

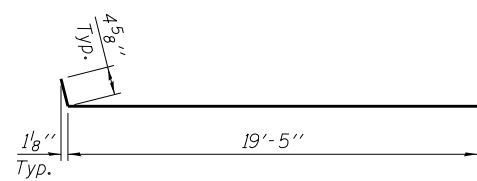
SECTION D-D

(See Plan for dimensions not shown)

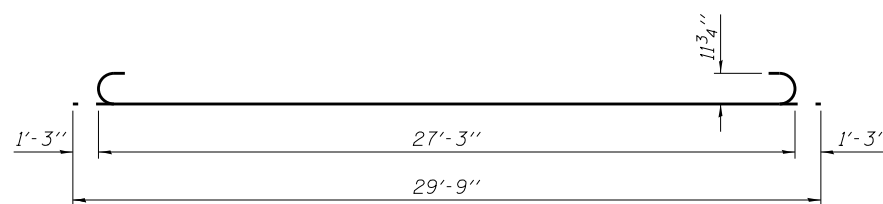
AT APPROACH FOOTING



VIEW E-E



BAR  $a_4(E)$



BAR  $b_4(E)$

**TWO APPROACHES  
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
$a_4(E)$	100	#4	19'-10"	U
$a_5(E)$	92	#5	36'-5"	—
$a_6(E)$	48	#6	6'-6"	—
$b_3(E)$	48	#4	29'-8"	—
$b_4(E)$	154	#9	29'-9"	U
$b_5(E)$	4	#4	14'-8"	—
$b_6(E)$	4	#4	14'-8"	—
$d(E)$	68	#5	5'-7"	U
$d_2(E)$	68	#5	7'-11"	U
$e_8(E)$	32	#4	14'-8"	—
$e_9(E)$	4	#8	14'-8"	—
$t(E)$	132	#4	11'-2"	—
$w(E)$	80	#5	36'-5"	—
Concrete Structures		Cu. Yd.	22.7	
Concrete Superstructure		Cu. Yd.	109.2	
Bridge Deck Grooving		Sq. Yd.	190	
Protective Coat		Sq. Yd.	208	
Reinforcement Bars, Epoxy Coated		Pound	27,340	

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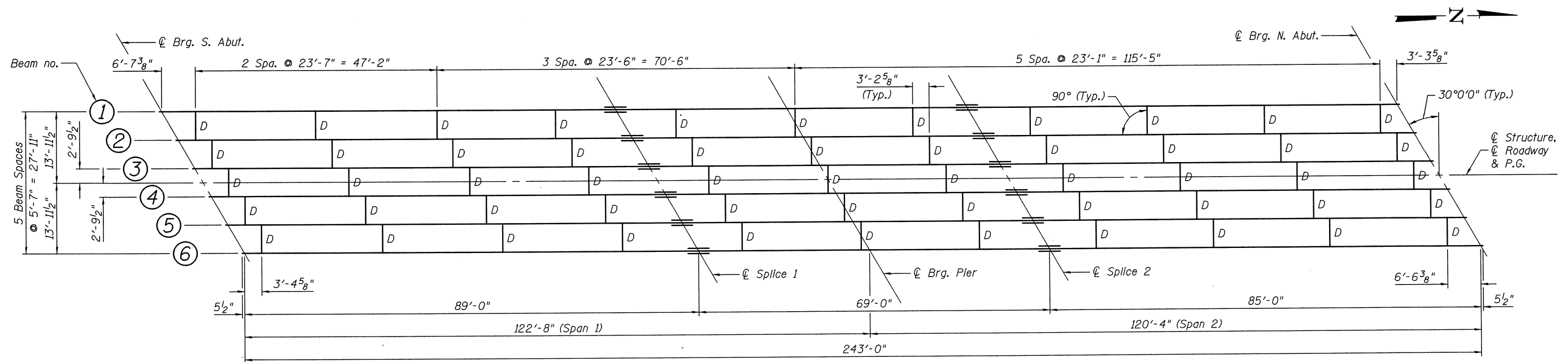
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PLOT DATE = 4/16/2015	DRAWN - JAA	REVISED -
	DATE - 4/16/2015	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

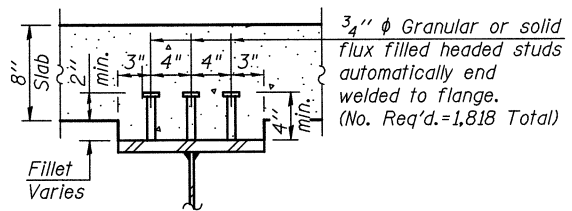
BRIDGE APPROACH SLAB DETAILS (2 OF 2)  
STRUCTURE NO. 055-0074

SHEET NO. 11 OF 23 SHEETS

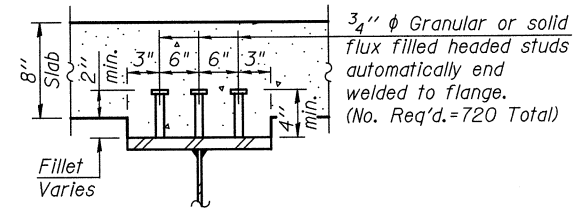
F.A.P. RTE. 407	SECTION 55[3(PV)HB(2-6)B-B-1B-2]	COUNTY MCDONOUGH	TOTAL SHEETS 874	SHEET NO. 493
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	



PLAN

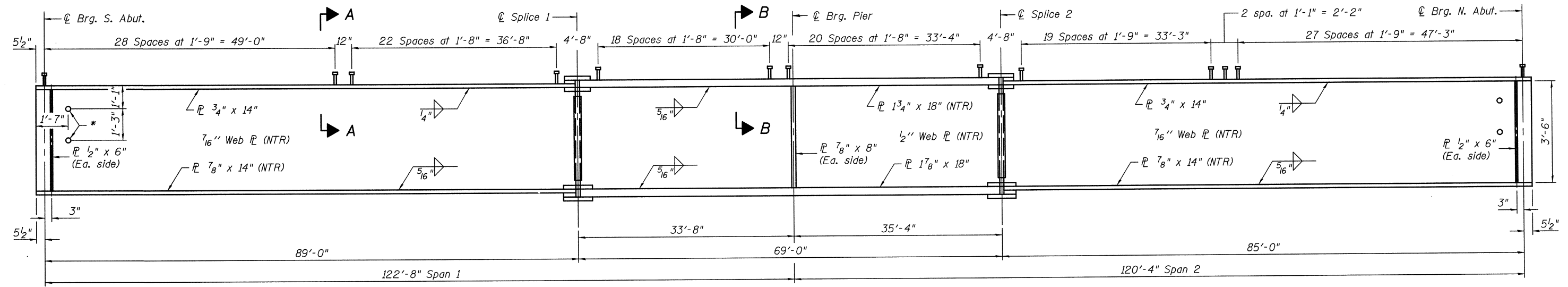


SECTION A-A



SECTION B-B

Notes:  
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirements Zone 2.  
 All girder flanges, webs and bearing stiffeners shall be AASHTO M270, Grade 50.



GIRDER ELEVATION

"NTR" denotes plates to which notch toughness requirements are applicable.

\* 1/2" φ holes for m<sub>1</sub>(E) or m<sub>3</sub>(E) bars (Typ. each end)

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 303 Fountains Parkway, Suite 240  
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USER NAME = ja  
 DESIGNED - CTW  
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 DRAWN - JAA  
 DATE - 12/5/2014  
 PLOT SCALE = 0.2" = 1'-0"  
 PLOT DATE = 12/5/2014

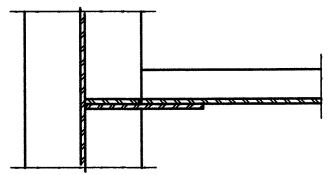
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**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

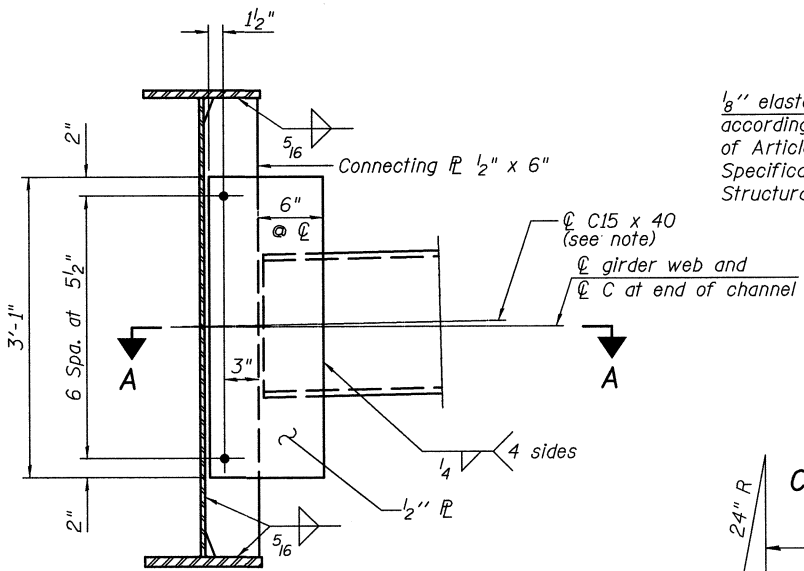
**FRAMING PLAN**  
**STRUCTURE NO. 055-0074**

SHEET NO. 12 OF 23 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55C3(PV+HB)(2-6)B,B-1,B-2(1)	MCDONOUGH	874	494
CONTRACT NO. 68B44				
ILLINOIS FED. AID PROJECT				



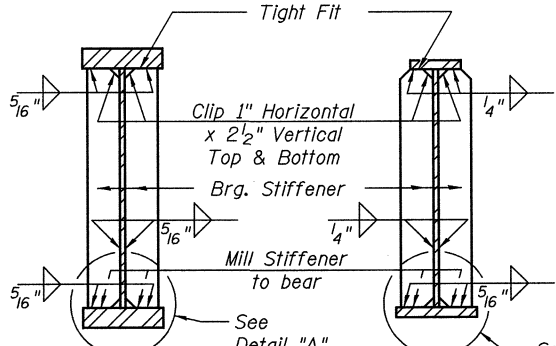
**SECTION A-A**



**INTERIOR DIAPHRAGM, D**

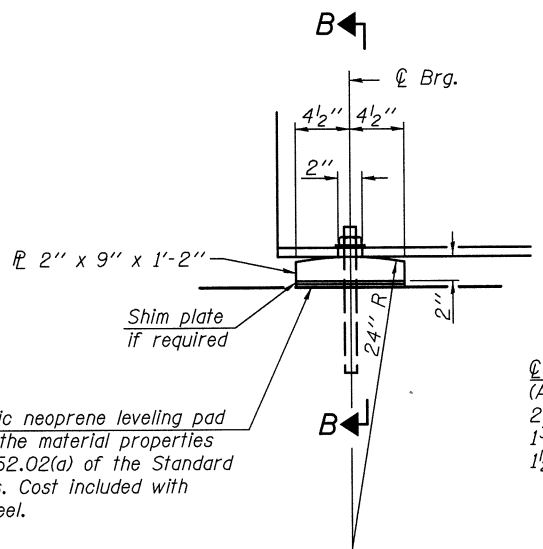
(55 Required)

**Note:**  
 Two hardened washers required for each set of oversized holes.  
 \*3/4" φ HS bolts, 15/16" φ holes  
 Alternate channels are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section. The alternate, C15x50, if utilized, shall be provided at no extra cost to the Department.  
 All diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted.  
 Individual diaphragms at support may be temporarily disconnected to install bearing anchor rods.



**SECTION AT PIER**

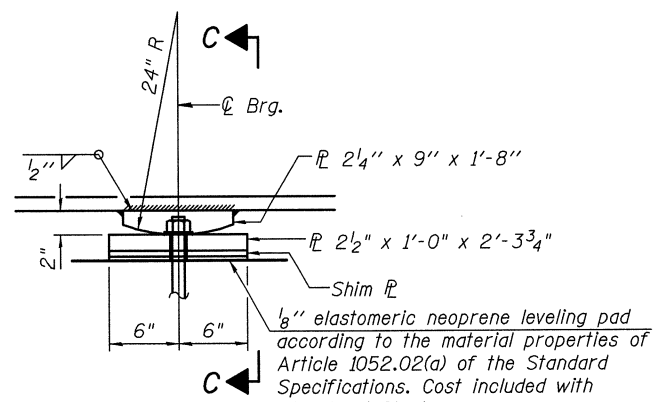
**SECTION AT ABUTMENT**



**ELEVATION AT ABUTMENT**

**FIXED BEARING AT ABUTMENTS**

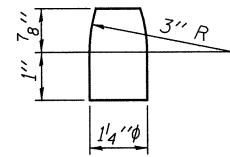
(12 Required)



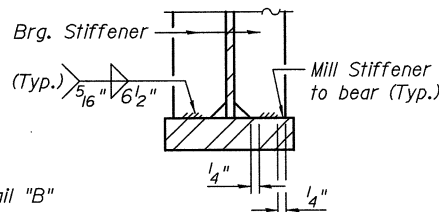
**ELEVATION AT PIER**

**FIXED BEARING AT PIER**

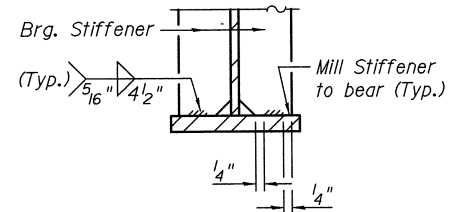
(6 Required)



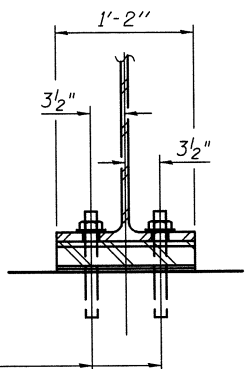
**PINTLE**



**DETAIL "A"**

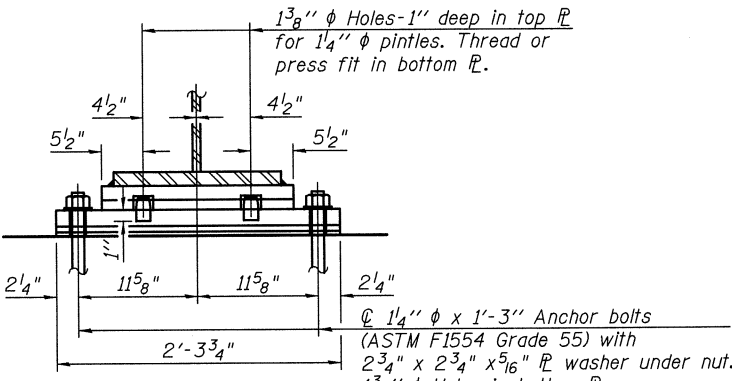


**DETAIL "B"**



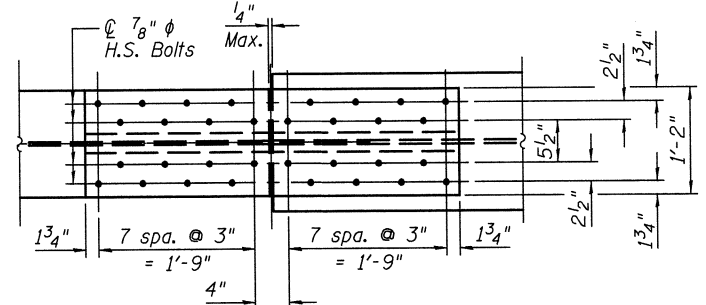
**SECTION B-B**

1" φ x 12" anchor bolts (ASTM F1554 Grade 36) with 2 1/4" x 2 1/4" x 5/16" PL washer under nut. 1 3/8" x 2" slotted hole in flange. 1 1/2" φ holes in bearing plate.

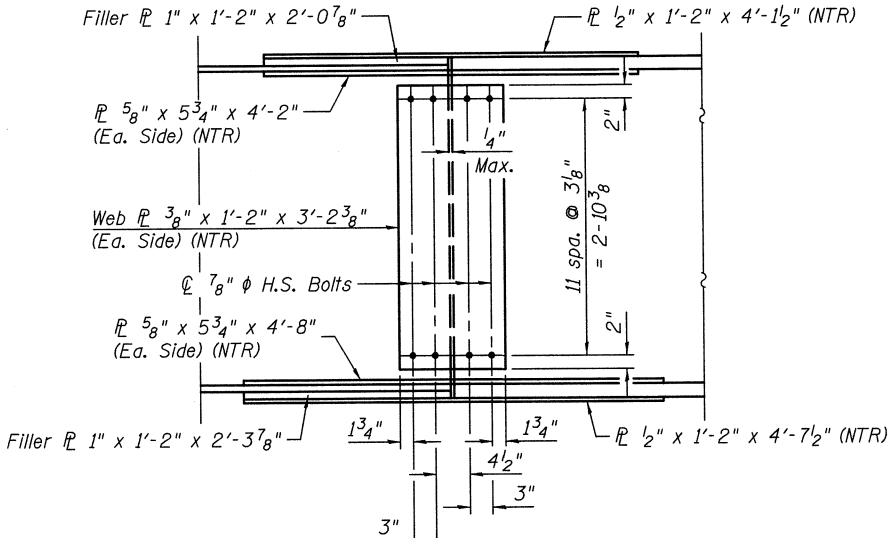


**SECTION C-C**

SHIM PLATE THICKNESS	
Location	Pier
Beam 1	-
Beam 2	3/4"
Beam 3	-
Beam 4	1/2"
Beam 5	-
Beam 6	-



**TOP FLANGE SPLICE PLATE**



**ELEVATION**

**FIELD SPLICE DETAIL**

(12 Required)

All flange and web splice plates shall be AASHTO M270 Grade 50 and meet notch toughness requirements.

**BILL OF MATERIAL**

ITEM	UNIT	TOTAL
Anchor Bolts, 1"	Each	24
Anchor Bolts, 1 1/4"	Each	12

**Notes:**  
 Anchor bolts shall be ASTM F1554 (or an Engineer-approved alternate material of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (F<sub>y</sub> = 36 ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.  
 Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported members are in place.  
 Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.  
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirement Zone 2.  
 Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on the bearing details.

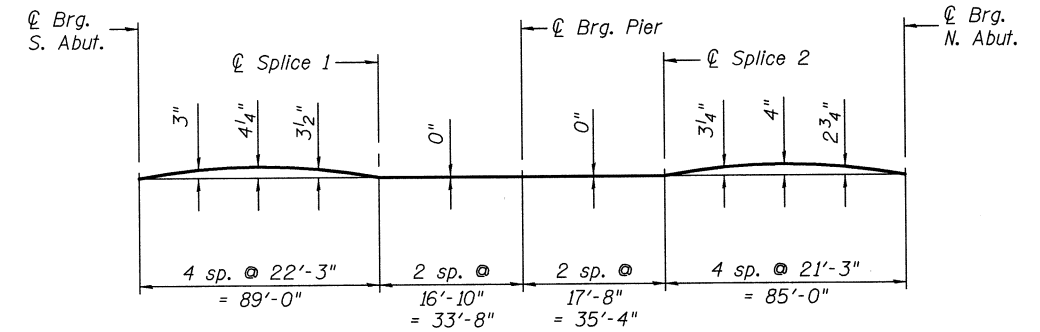
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EXTERIOR GIRDER MOMENT TABLE				
		0.4 Sp. 1	Pier	0.6 Sp. 2
$I_s$	(in <sup>4</sup> )	13094	34390	13094
$I_c(n)$	(in <sup>4</sup> )	30269	60078	30269
$I_c(3n)$	(in <sup>4</sup> )	22331	45964	22331
$I_c(cr)$	(in <sup>4</sup> )	-	39029	-
$S_s$	(in <sup>3</sup> )	625.1	1543.5	625.1
$S_c(n)$	(in <sup>3</sup> )	833.2	-	833.2
$S_c(3n)$	(in <sup>3</sup> )	762.8	-	762.8
$S_c(cr)$	(in <sup>3</sup> )	-	1611.2	-
DC1	(k/')	0.75	0.93	0.75
M <sub>DC1</sub>	('k)	648	1852	596
DC2	(k/')	0.15	0.15	0.15
M <sub>DC2</sub>	('k)	135	339	125
DW	(k/')	0.25	0.25	0.25
M <sub>DW</sub>	('k)	225	565	208
M <sub>ℓ + IM</sub>	('k)	1527	1984	1492
M <sub>u</sub> (Strength I)	('k)	3989	7058	3824
φ <sub>r</sub> M <sub>n</sub>	('k)	4102	7373	4135
f <sub>s</sub> DC1	(ksi)	12.4	14.4	11.4
f <sub>s</sub> DC2	(ksi)	2.1	2.5	2.0
f <sub>s</sub> DW	(ksi)	3.5	4.2	3.3
f <sub>s</sub> (ℓ+IM)	(ksi)	22.0	14.8	21.5
f <sub>s</sub> (Service II)	(ksi)	46.7	40.3	44.6
0.95R <sub>h</sub> F <sub>yf</sub>	(ksi)	47.5	47.5	47.5
f <sub>s</sub> (Total)(Strength I)	(ksi)	-	53.3	-
φ <sub>r</sub> F <sub>n</sub>	(ksi)	-	-	-
V <sub>r</sub>	(k)	27.3	27.2	27.6

\*\* Controlling Interior Girder values.

INTERIOR GIRDER REACTION TABLE				
		S. Abut.	Pier	N. Abut.
R <sub>DC1</sub>	(k)	31.6	129.9	30.4
R <sub>DC2</sub>	(k)	6.4	23.8	6.2
R <sub>DW</sub>	(k)	10.7	39.7	10.4
R <sub>ℓ + IM</sub>	(k)	87.0	155.6	86.2
R <sub>Total</sub>	(k)	135.7	349.0	133.2

- $I_s, S_s$ : Non-composite moment of inertia and section modulus of the steel section used for computing  $f_s$  (Total-Strength I, and Service II) due to non-composite dead loads (in<sup>4</sup> and in<sup>3</sup>).
- $I_c(n), S_c(n)$ : Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in<sup>4</sup> and in<sup>3</sup>).
- $I_c(3n), S_c(3n)$ : Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing  $f_s$  (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).
- $I_c(cr), S_c(cr)$ : Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing  $f_s$  (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in<sup>4</sup> and in<sup>3</sup>).
- DC1: Un-factored non-composite dead load (kips/ft.).
- M<sub>DC1</sub>: Un-factored moment due to non-composite dead load (kip-ft.).
- DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
- M<sub>DC2</sub>: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
- DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
- M<sub>DW</sub>: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
- M<sub>ℓ + IM</sub>: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).
- M<sub>u</sub> (Strength I): Factored design moment (kip-ft.).  
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{ℓ + IM}$
- φ<sub>r</sub>M<sub>n</sub>: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).
- f<sub>s</sub> DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).  
 $M_{DC1} / S_s$
- f<sub>s</sub> DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).  
 $M_{DC2} / S_c(3n)$  or  $M_{DC2} / S_c(cr)$  as applicable.
- f<sub>s</sub> DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).  
 $M_{DW} / S_c(3n)$  or  $M_{DW} / S_c(cr)$  as applicable.
- f<sub>s</sub> (ℓ+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).  
 $M_{ℓ + IM} / S_c(n)$  or  $M_{DW} / S_c(cr)$  as applicable.
- f<sub>s</sub> (Service II): Sum of stresses as computed below (ksi).  
 $f_{sDC1} + f_{sDC2} + f_{sDW} + 1.3 f_s(ℓ + IM)$
- 0.95R<sub>h</sub>F<sub>yf</sub>: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).
- f<sub>s</sub> (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).  
 $1.25 (f_{sDC1} + f_{sDC2}) + 1.5 f_{sDW} + 1.75 f_s(ℓ + IM)$
- φ<sub>r</sub>F<sub>n</sub>: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).
- V<sub>r</sub>: Maximum factored shear range in span computed according to Article 6.10.10.



CAMBER DIAGRAM

TOP OF WEB ELEVATIONS*					
Location	℄ Brg. S. Abut.	℄ Splice 1	℄ Brg. Pier	℄ Splice 2	℄ Brg. N. Abut.
Beam 1	716.13	715.69	715.22	714.71	712.77
Beam 2	716.24	715.76	715.28	714.76	712.78
Beam 3	716.32	715.81	715.32	714.78	712.77
Beam 4	716.32	715.78	715.27	714.72	712.68
Beam 5	716.23	715.66	715.13	714.57	712.50
Beam 6	716.13	715.52	714.98	714.40	712.30

\* For fabrication only

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 Phone 618-206-4250

USER NAME = jo	DESIGNED - CTW	REVISIONS -
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PLOT DATE = 12/5/2014	DRAWN - JAA	REVISIONS -
	DATE - 12/5/2014	REVISIONS -

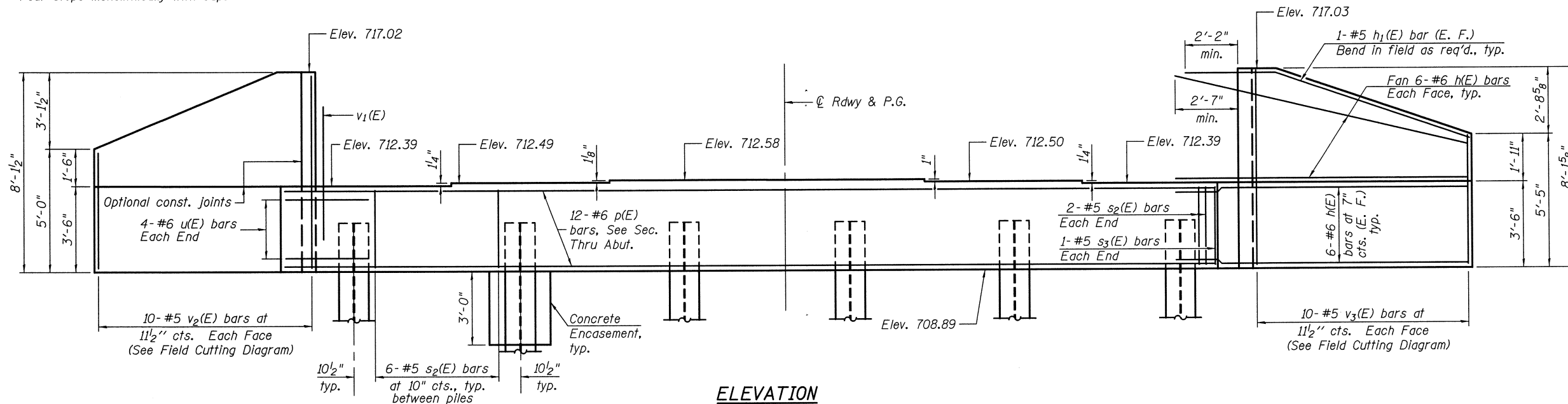
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS (2 OF 2)  
 STRUCTURE NO. 055-0074

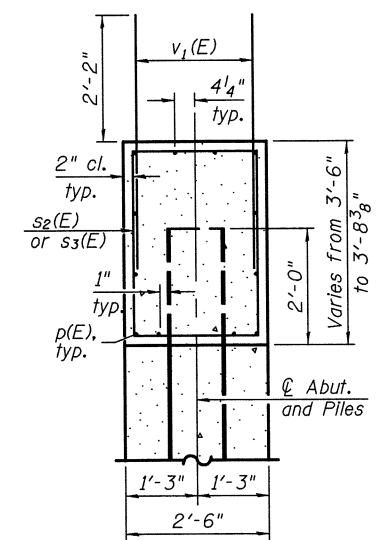
SHEET NO. 14 OF 23 SHEETS

F.A.P. RTE. 407	SECTION 5513(PV+HB(2-6);B,B-1,B-2)	COUNTY MCDONOUGH	TOTAL SHEETS 874	SHEET NO. 496
				CONTRACT NO. 68B44
ILLINOIS FED. AID PROJECT				

Notes:  
Pour steps monolithically with cap.



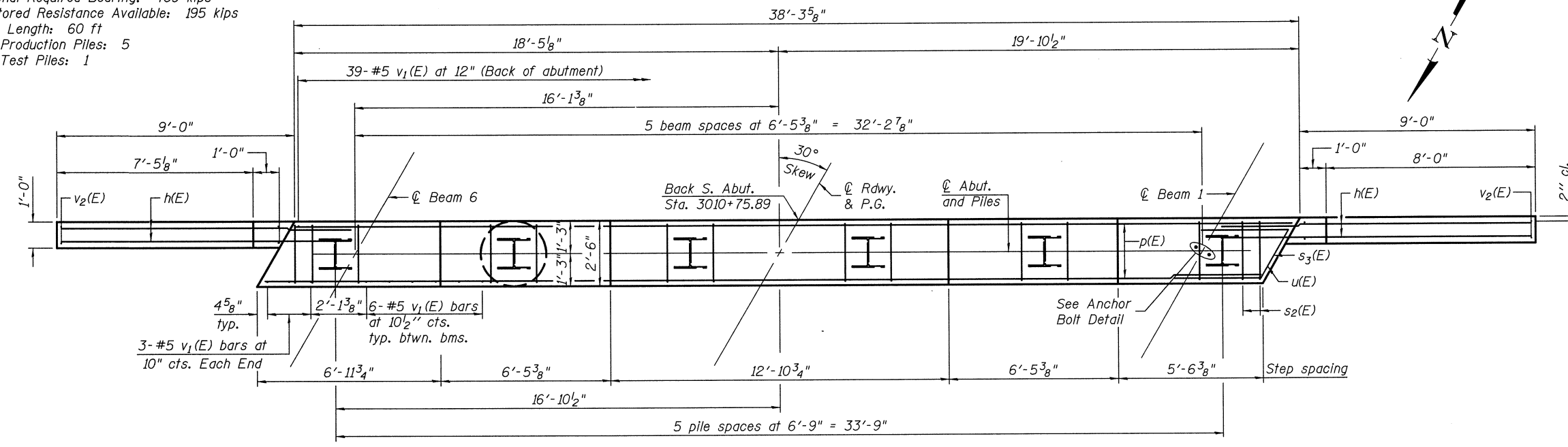
**ELEVATION**  
(Looking South)



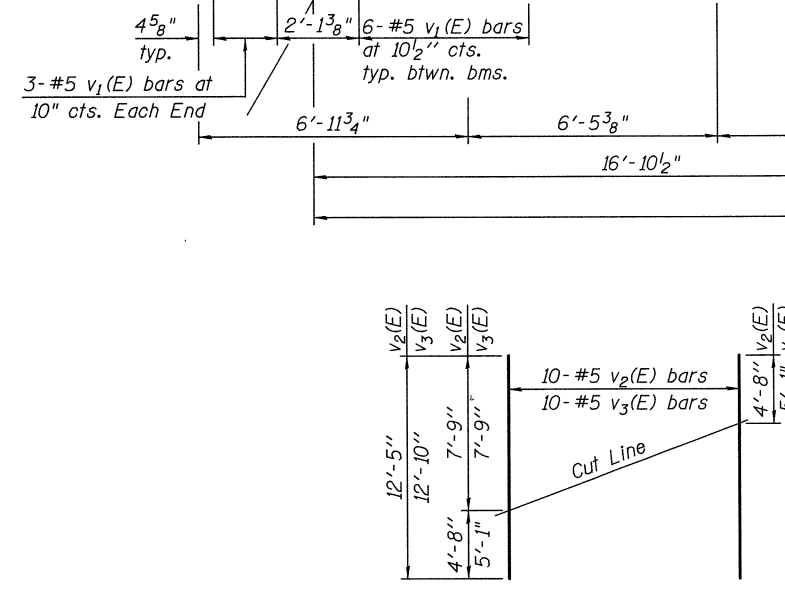
**SEC. THRU ABUT.**

**PILE DATA**

Type: Steel HP14x73  
Nominal Required Bearing: 409 kips  
Factored Resistance Available: 195 kips  
Est. Length: 60 ft  
No. Production Piles: 5  
No. Test Piles: 1

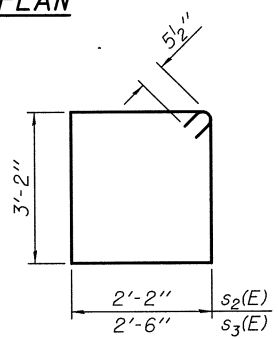


**PLAN**

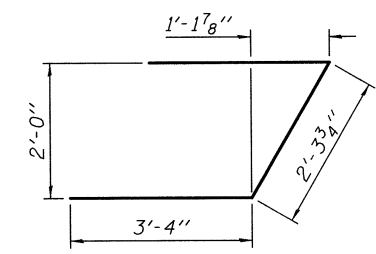


**FIELD CUTTING DIAGRAM**

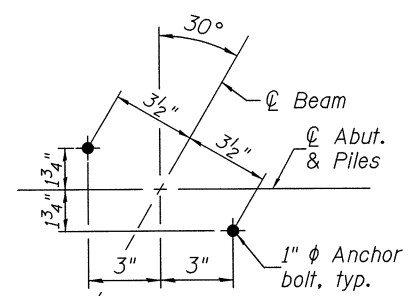
Order v2(E) & v3(E) full length. Cut as shown and use remainder of bars in opposite face.



**BARS s2(E) & s3(E)**



**BAR u(E)**



**ANCHOR BOLT DETAIL**

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h(E)	48	#6	12'-0"	—
h1(E)	4	#5	12'-2"	—
p(E)	12	#6	37'-11"	—
s2(E)	34	#5	11'-7"	□
s3(E)	2	#5	12'-3"	□
u(E)	8	#6	9'-0"	┌
v1(E)	75	#5	4'-4"	—
v2(E)	20	#5	12'-5"	—
v3(E)	20	#5	12'-10"	—
Concrete Structures		Cu. Yd.	17.3	
Reinforcement Bars, Epoxy Coated		Pound	3,010	
Furnishing Steel Piles, HP14x73		Foot	300	
Driving Piles		Foot	300	
Test Pile Steel HP14x73		Each	1	
Concrete Encasement		Cu. Yd.	3.3	

For details of Bar Splicers, see sheet 19 of 23.  
For details of piles and Concrete Encasement, see sheet 18 of 23.

PRINT DATE: 12/05/2014 12:36:05 PM Y:\10851\_Macomb Bypass\Bridges\Final\Plotsheets\0550074-68B44-015-South-Abutment.dgn

**EFK Moen, LLC**  
Civil Engineering Design  
303 Fountains Parkway, Suite 240  
Fairview Heights, IL 62208  
Phone 618-206-4250

USER NAME = ja	DESIGNED - CTW	REVISION -
PLOT SCALE = 0.25" = 1'-0"	CHECKED - CDL	REVISION -
PLOT DATE = 12/5/2014	DRAWN - JAA	REVISION -
	DATE - 12/5/2014	REVISION -

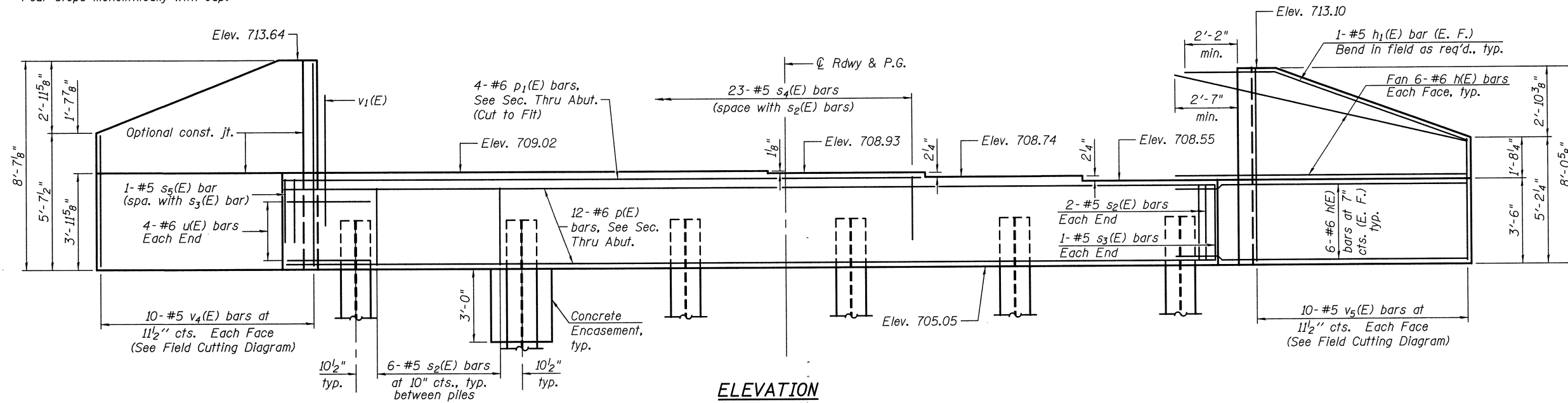
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SOUTH ABUTMENT DETAILS**  
**STRUCTURE NO. 055-0074**

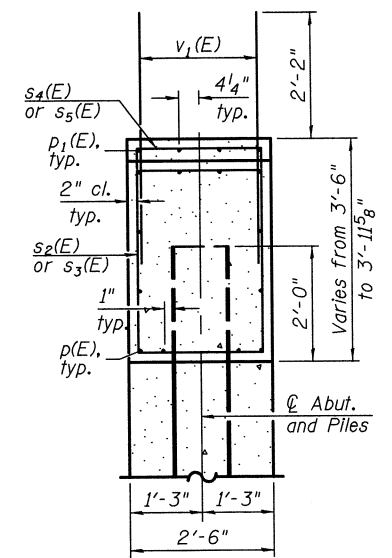
F.A.P. RTE. 407	SECTION 5513(PV)HB(2-6)B,B-1,B-2(1)	COUNTY MCDONOUGH	TOTAL SHEETS 874	SHEET NO. 497
			CONTRACT NO. 68B44	
ILLINOIS FED. AID PROJECT				

SHEET NO. 15 OF 23 SHEETS

Notes:  
Four steps monolithically with cap.



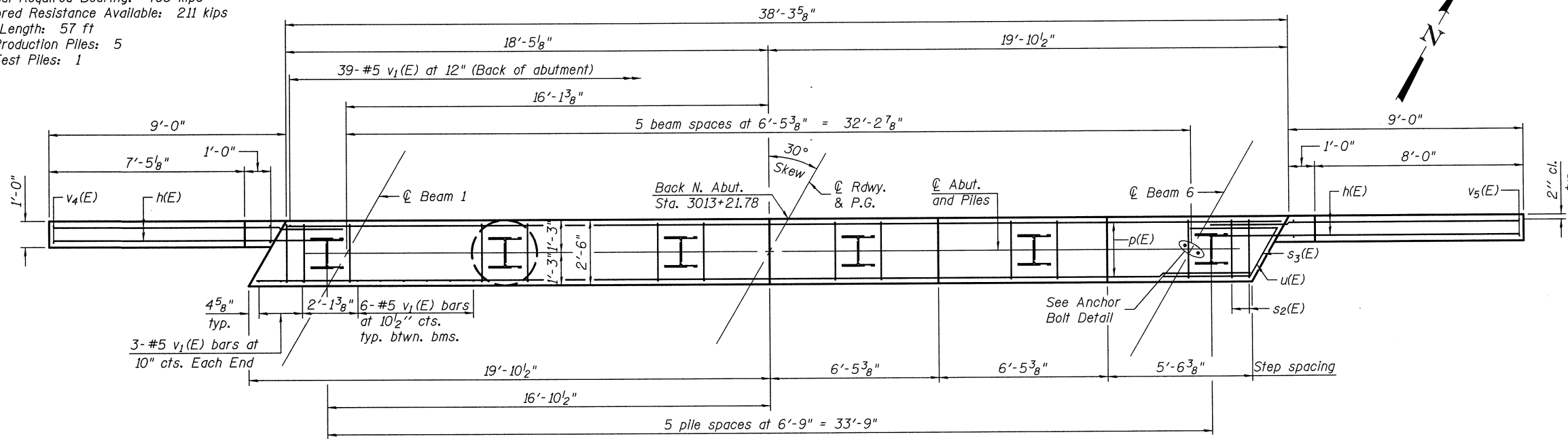
**ELEVATION**  
(Looking North)



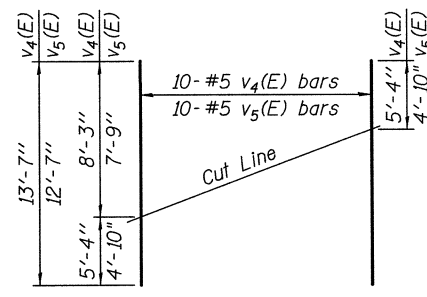
**SEC. THRU ABUT.**

**PILE DATA**

Type: Steel HP14x73  
Nominal Required Bearing: 408 kips  
Factored Resistance Available: 211 kips  
Est. Length: 57 ft  
No. Production Piles: 5  
No. Test Piles: 1

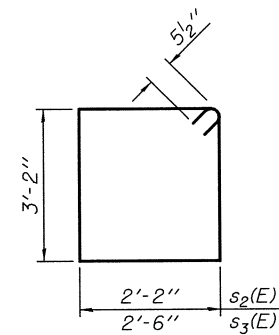


**PLAN**

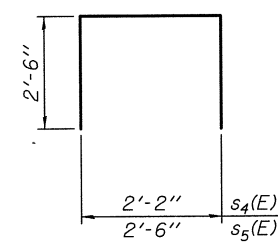


**FIELD CUTTING DIAGRAM**

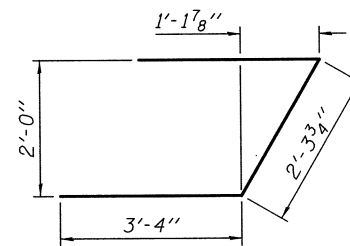
Order v4(E) & v5(E) full length. Cut as shown and use remainder of bars in opposite face.



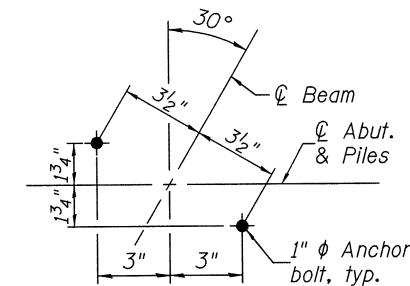
**BARS s2(E) & s3(E)**



**BARS s4(E) & s5(E)**



**BAR u(E)**



**ANCHOR BOLT DETAIL**

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h(E)	48	#6	12'-0"	—
h1(E)	4	#5	12'-2"	—
p(E)	12	#6	37'-11"	—
p1(E)	4	#6	26'-0"	—
s2(E)	34	#5	11'-7"	□
s3(E)	2	#5	12'-4"	□
s4(E)	23	#5	7'-2"	□
s5(E)	1	#5	7'-6"	□
u(E)	8	#6	9'-0"	┘
v1(E)	75	#5	4'-4"	—
v4(E)	20	#5	13'-7"	—
v5(E)	20	#5	12'-7"	—
Structure Excavation		Cu. Yd.	31	
Concrete Structures		Cu. Yd.	18.3	
Reinforcement Bars, Epoxy Coated		Pound	3,360	
Furnishing Steel Piles, HP14x73		Foot	285	
Driving Piles		Foot	285	
Test Pile Steel HP14x73		Each	1	
Concrete Encasement		Cu. Yd.	3.3	

For details of Bar Splicers, see sheet 19 of 23.  
For details of piles and Concrete Encasement, see sheet 18 of 23.

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**EFK Moen, LLC**  
Civil Engineering Design  
303 Fountains Parkway, Suite 240  
Fairview Heights, IL 62208  
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USER NAME = ja  
PLOT SCALE = 0.25" = 1'-0"  
PLOT DATE = 12/5/2014

DESIGNED - CTW  
CHECKED - CDL  
DRAWN - JAA  
DATE - 12/5/2014

REVISED -  
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REVISED -

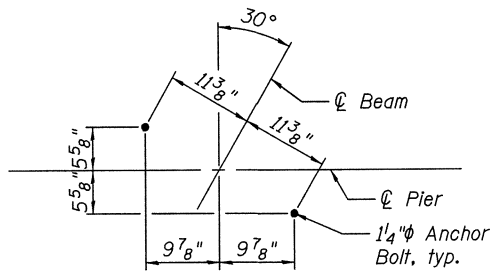
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**NORTH ABUTMENT DETAILS**  
**STRUCTURE NO. 055-0074**

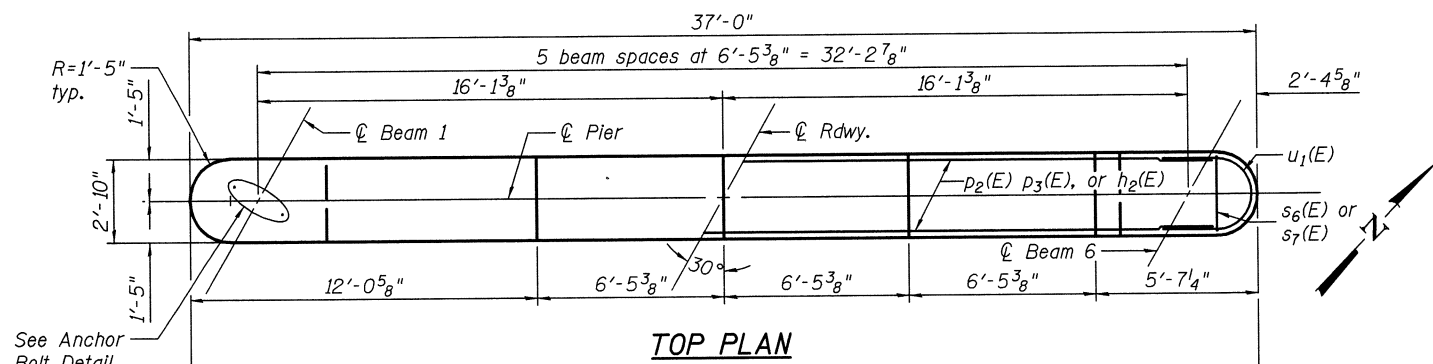
SHEET NO. 16 OF 23 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
407	55C3(PV)HB(2-6);B,B-1,B-2(1)	MCDONOUGH	874	498
				CONTRACT NO. 68B44
ILLINOIS FED. AID PROJECT				

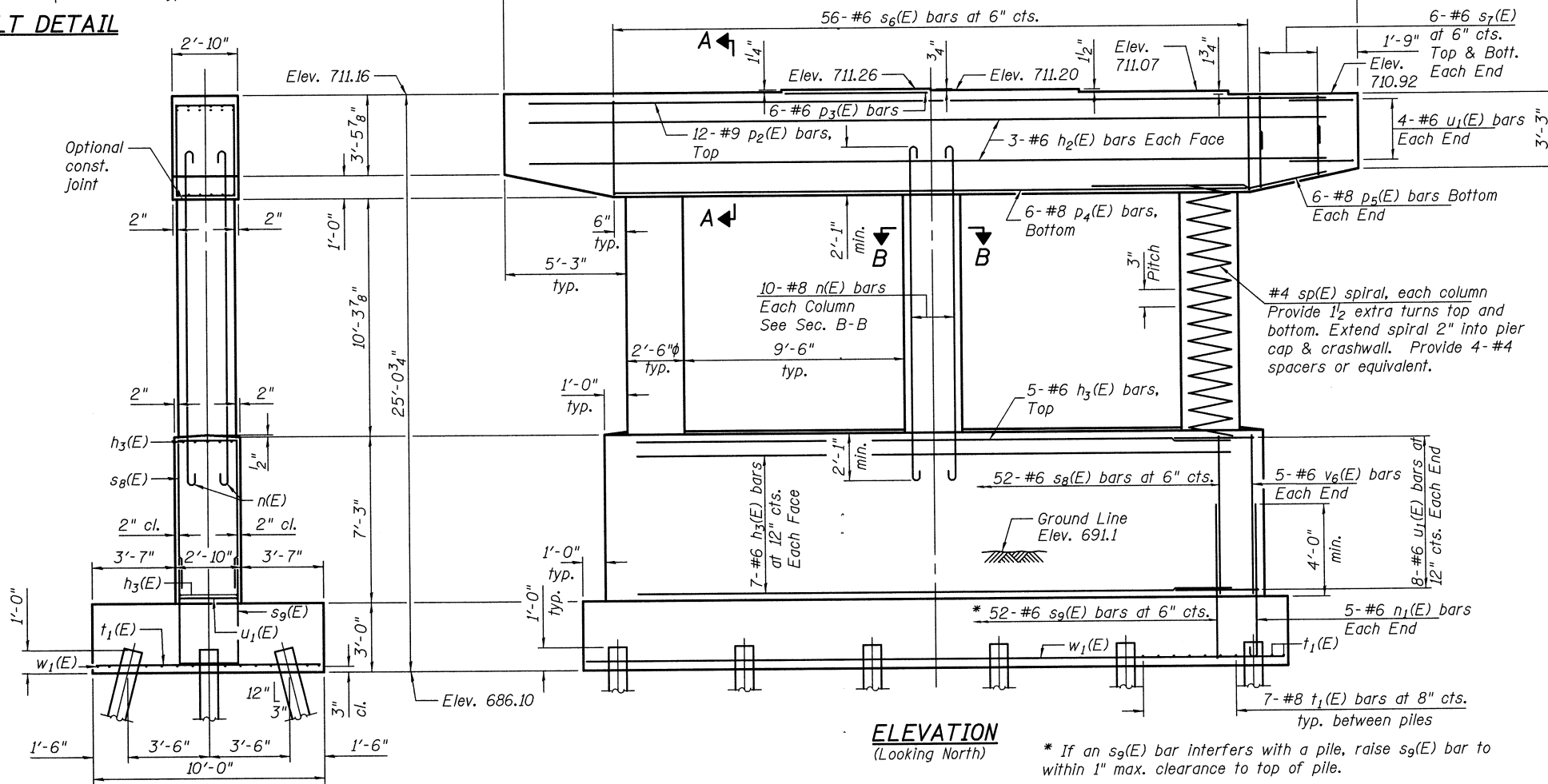
Notes:  
 Space reinforcement in cap to miss anchor bolts.  
 Pour steps monolithically with cap.  
 For details of piles, see sheet 18 of 23.



ANCHOR BOLT DETAIL



TOP PLAN

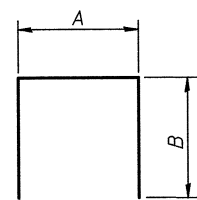


ELEVATION  
 (Looking North)

\* If an  $s_9(E)$  bar interferes with a pile, raise  $s_9(E)$  bar to within 1" max. clearance to top of pile.

PILE DATA

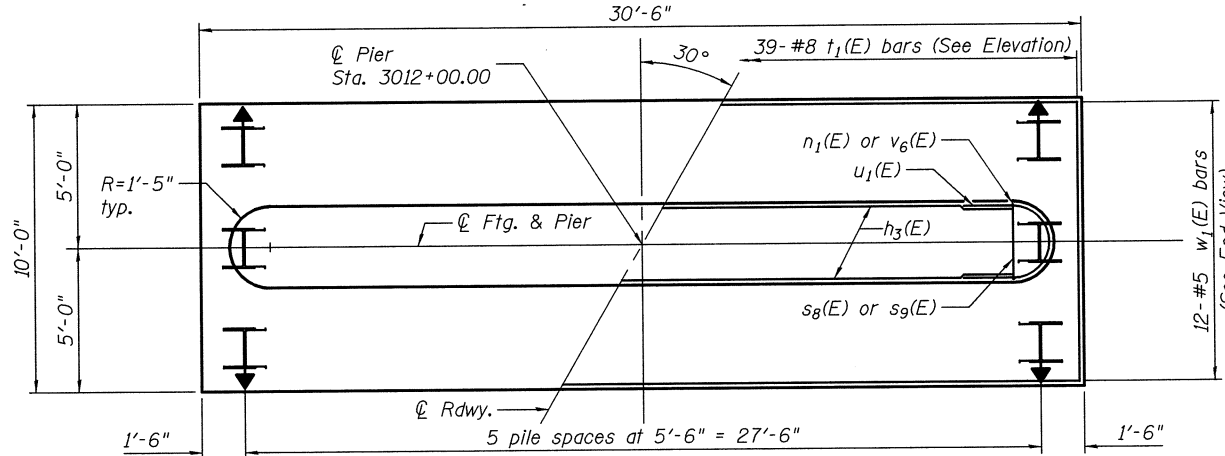
Type: HP12x53  
 Nominal Required Bearing: 391 kips  
 Factored Resistance Available: 215 kips  
 Est. Length: 62'  
 No. Production Piles: 17  
 No. Test Piles: 1



BARS

A & B DIMENSIONS

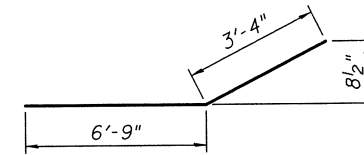
Bar	A	B
$s_7(E)$	2'-6"	3'-3"
$s_8(E)$	2'-6"	6'-11"
$s_9(E)$	2'-6"	6'-9"



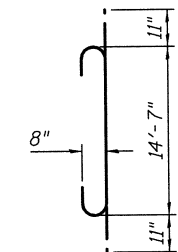
FOOTING PLAN

MIN. BAR LAP

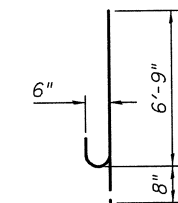
#6 bar = 3'-10"



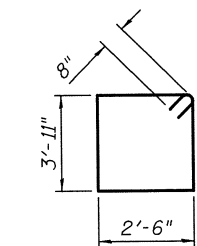
BAR  $p_5(E)$



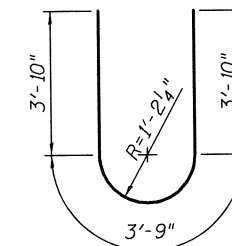
BAR  $n(E)$



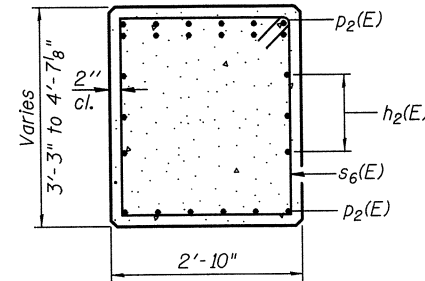
BAR  $n_1(E)$



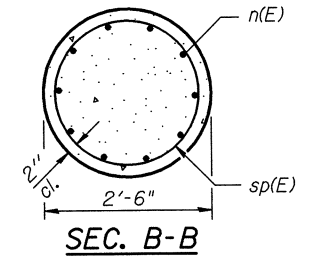
BAR  $s_6(E)$



BAR  $u_1(E)$



SEC. A-A

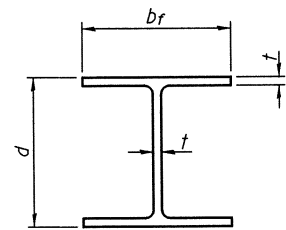


SEC. B-B

BILL OF MATERIAL

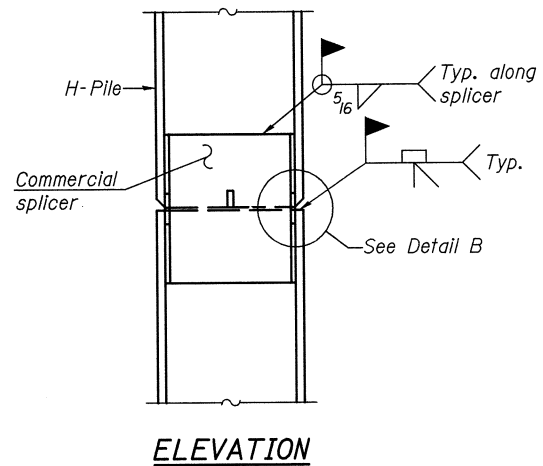
Bar	No.	Size	Length	Shape
$h_2(E)$	6	#6	34'-2"	—
$h_3(E)$	19	#6	25'-8"	—
$n(E)$	30	#8	16'-5"	U
$n_1(E)$	10	#6	7'-5"	U
$p_2(E)$	12	#9	34'-2"	—
$p_3(E)$	6	#6	6'-1"	—
$p_4(E)$	6	#8	27'-6"	—
$p_5(E)$	12	#8	10'-1"	—
$s_6(E)$	56	#6	14'-2"	□
$s_7(E)$	24	#6	9'-0"	□
$s_8(E)$	52	#6	16'-4"	□
$s_9(E)$	52	#6	16'-0"	□
$sp(E)$	3	#4	10'-9"	W
$t_1(E)$	39	#8	9'-8"	—
$u_1(E)$	24	#6	11'-5"	U
$v_6(E)$	10	#6	6'-11"	—
$w_1(E)$	12	#5	30'-2"	—
Structure Excavation		Cu. Yd.	90	
Concrete Structures		Cu. Yd.	77.4	
Reinforcement Bars, Epoxy Coated		Pound	11,250	
Furnishing Steel Piles, HP12x53		Foot	1,054	
Driving Piles		Foot	1,054	
Test Pile, HP12x53		Each	1	

\*\* Length is height of spiral.

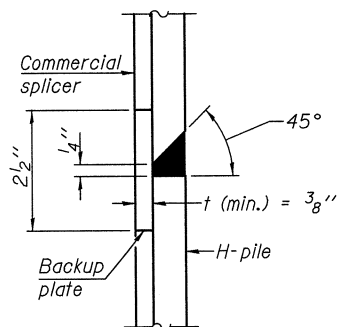


**STEEL PILE TABLE**

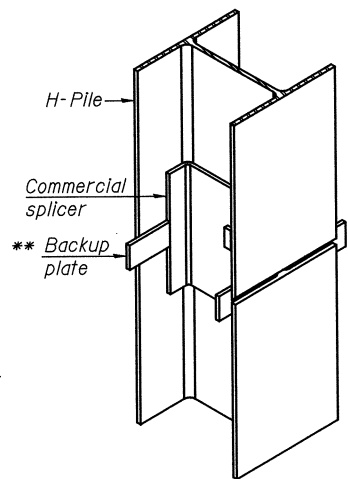
Designation	Depth d	Flange width b <sub>f</sub>	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	13/16"	30"
x102	14"	14 3/4"	1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"



**ELEVATION**

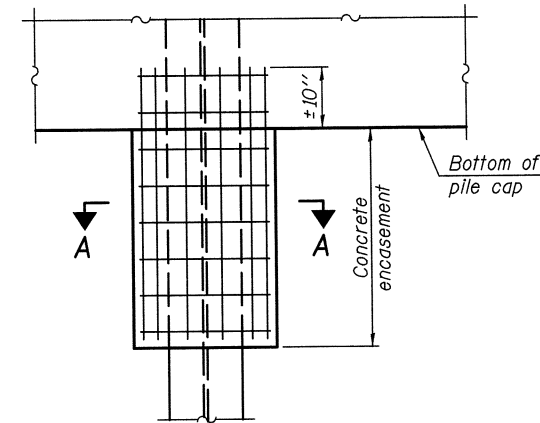


**DETAIL "B"**



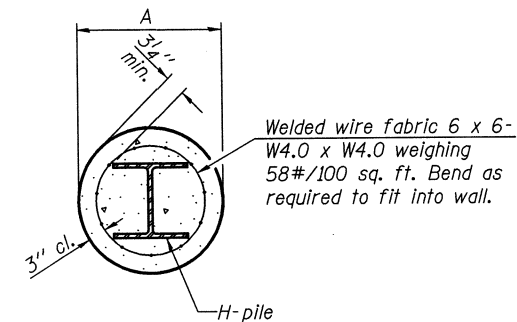
**ISOMETRIC VIEW**

**WELDED COMMERCIAL SPLICE**



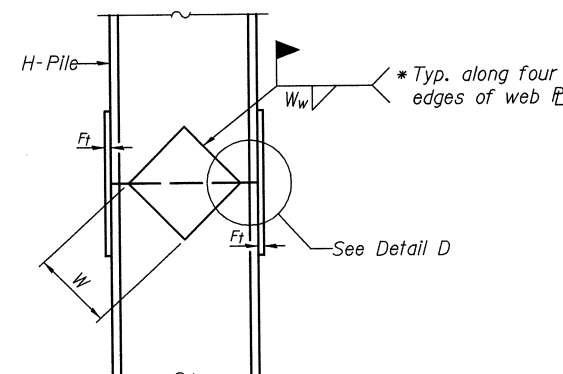
**ELEVATION**

**PILE ENCASEMENT**

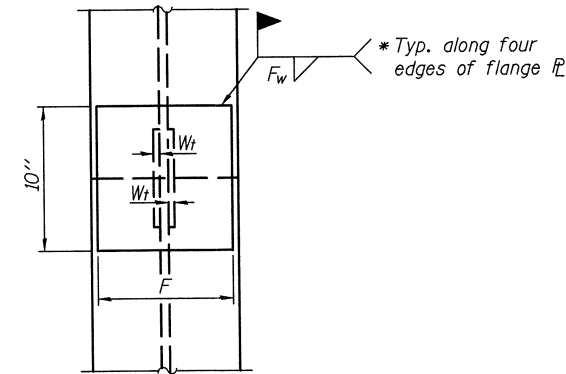


**SECTION A-A**

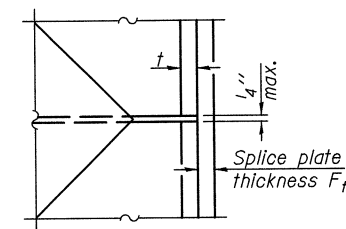
Note:  
Forms for encasement may be omitted when soil conditions permit.



**ELEVATION**



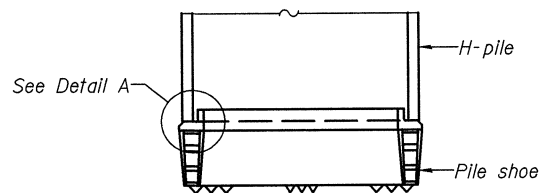
**END VIEW**



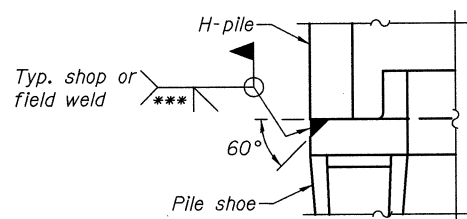
**DETAIL D**

**WELDED PLATE FIELD SPLICE**

Designation	F	F <sub>t</sub>	F <sub>w</sub>	W	W <sub>t</sub>	W <sub>w</sub>
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5 1/2"	1 1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5 1/2"	1 1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5 1/2"	1 1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5 1/2"	1 1/2"
HP 12x84	10"	7/8"	1/16"	6 1/2"	5 1/2"	1 1/2"
x74	10"	7/8"	1/16"	6 1/2"	5 1/2"	1 1/2"
x63	10"	5/8"	1/2"	6 1/2"	1 1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1 1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1 1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1 1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1 1/2"	3/8"

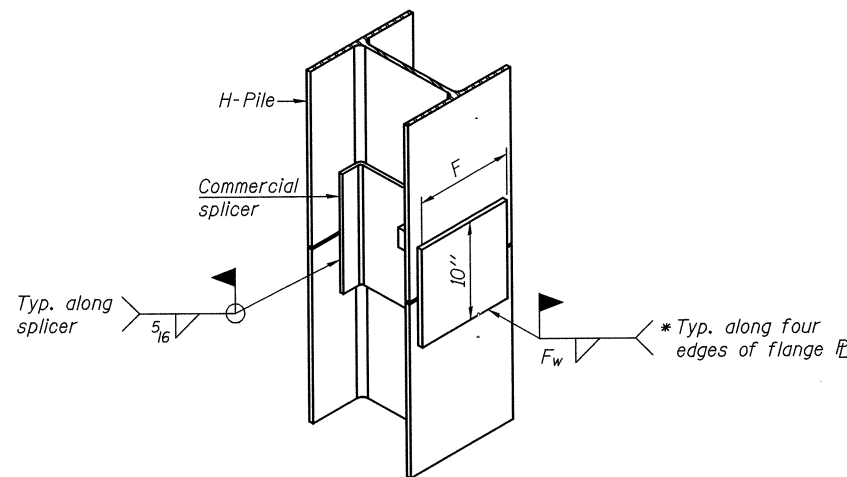


**ELEVATION**



**DETAIL A**

**H-PILE SHOE ATTACHMENT**



**ISOMETRIC VIEW**

**WELDED COMMERCIAL SPLICE ALTERNATE**

- \* Interrupt welds 1/4" from end of web and/or each flange.
- \*\* Remove portions of backup plates that extend outside the flanges.
- \*\*\* Weld size per pile shoe manufacturer (5/16" min.).

Note:  
The steel H-piles shall be according to AASHTO M270 Grade 50.

PRINT DATE: 12/15/2014 12:36:08 PM Y:\0051 Mecomb Bypass\DWG\B-rdgs\Final\PlotSheets\0550074-68B44-018-F-HP-Details.dgn

**F-HP**  
**EFK Moen, LLC**  
Civil Engineering Design  
303 Fountains Parkway, Suite 240  
Fairview Heights, IL 62208  
Phone 618-206-4250

1-27-12  
USER NAME = ja  
DESIGNED - CTW  
CHECKED - CDL  
DRAWN - JAA  
DATE - 12/5/2014  
PLOT SCALE = 0:2.0000 '1" / 1"  
PLOT DATE = 12/5/2014

REVISÉ -  
REVISÉ -  
REVISÉ -  
REVISÉ -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**HP PILE DETAILS  
STRUCTURE NO. 055-0074**

SHEET NO. 18 OF 23 SHEETS

F.A.P. RTE. 407	SECTION 5513(PV+HB(2-6)B,B-1,B-2)3	COUNTY MCDONOUGH	TOTAL SHEETS 874	SHEET NO. 500
CONTRACT NO. 68B44			ILLINOIS FED. AID PROJECT	