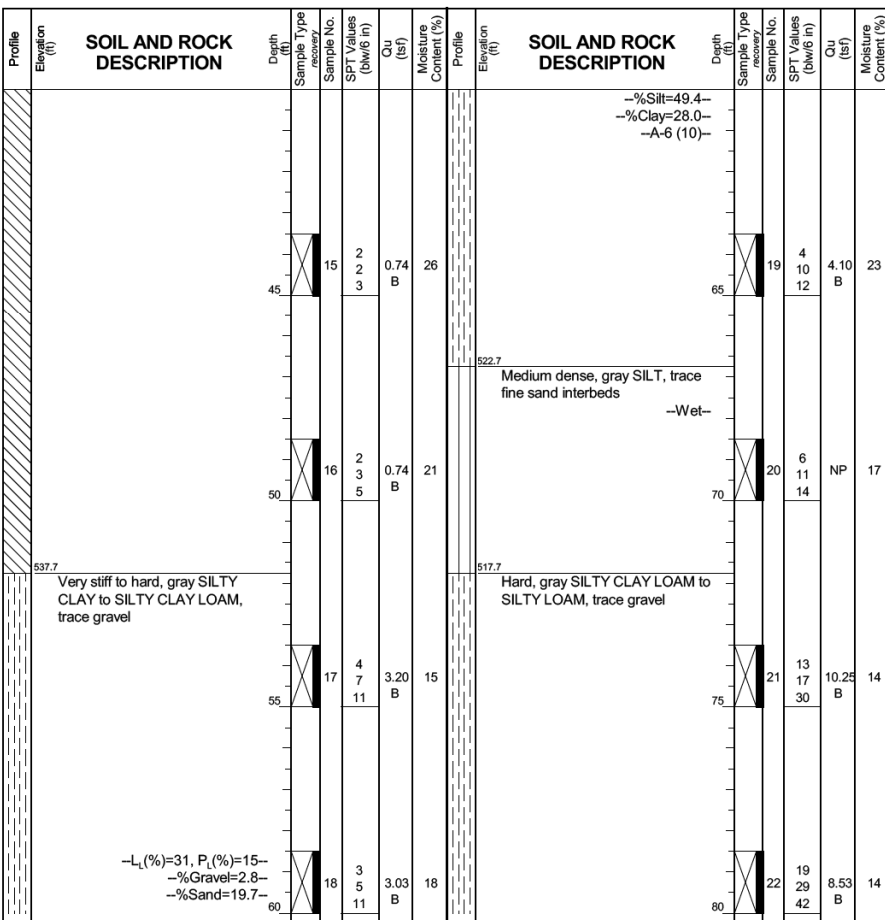


**GENERAL NOTES**  
 Begin Drilling 03-17-2014 Complete Drilling 03-18-2014  
 Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR [85%]  
 Driller R&N Logger F. Bozga Checked by C. Marin  
 Drilling Method 2.25" SSA to 10', mud rotary thereafter, boring

**WATER LEVEL DATA**  
 While Drilling Rotary wash  
 At Completion of Drilling mud at 8 ft  
 Time After Drilling 24 hours  
 Depth to Water 8.00 ft  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

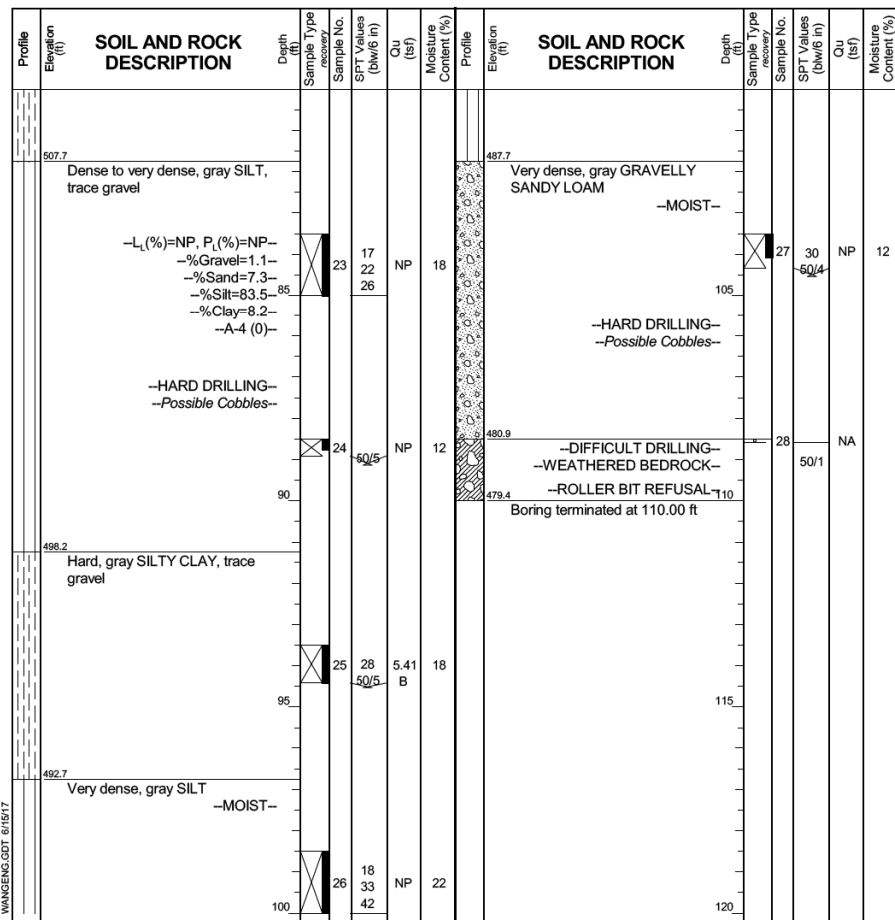
backfilled upon completion



**GENERAL NOTES**  
 Begin Drilling 03-17-2014 Complete Drilling 03-18-2014  
 Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR [85%]  
 Driller R&N Logger F. Bozga Checked by C. Marin  
 Drilling Method 2.25" SSA to 10', mud rotary thereafter, boring

**WATER LEVEL DATA**  
 While Drilling Rotary wash  
 At Completion of Drilling mud at 8 ft  
 Time After Drilling 24 hours  
 Depth to Water 8.00 ft  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

backfilled upon completion



**GENERAL NOTES**  
 Begin Drilling 03-17-2014 Complete Drilling 03-18-2014  
 Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR [85%]  
 Driller R&N Logger F. Bozga Checked by C. Marin  
 Drilling Method 2.25" SSA to 10', mud rotary thereafter, boring

**WATER LEVEL DATA**  
 While Drilling Rotary wash  
 At Completion of Drilling mud at 8 ft  
 Time After Drilling 24 hours  
 Depth to Water 8.00 ft  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

backfilled upon completion

**NOTE:**  
 1. Station and offset are measured along  
 @ Ramp WS & PGL.

0161715-60X93-S157-Boring.dgn



USER NAME = floresg	DESIGNED - AV	REVISED
PLOT SCALE = N.T.S.	CHECKED - ATB	REVISED
PLOT DATE = 7/26/2018	DRAWN - GF	REVISED
	CHECKED - ATB	REVISED

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**SOIL BORING LOGS - 19  
 STRUCTURE NO. 016-1715**

SHEET NO. S3-159 OF S3-172

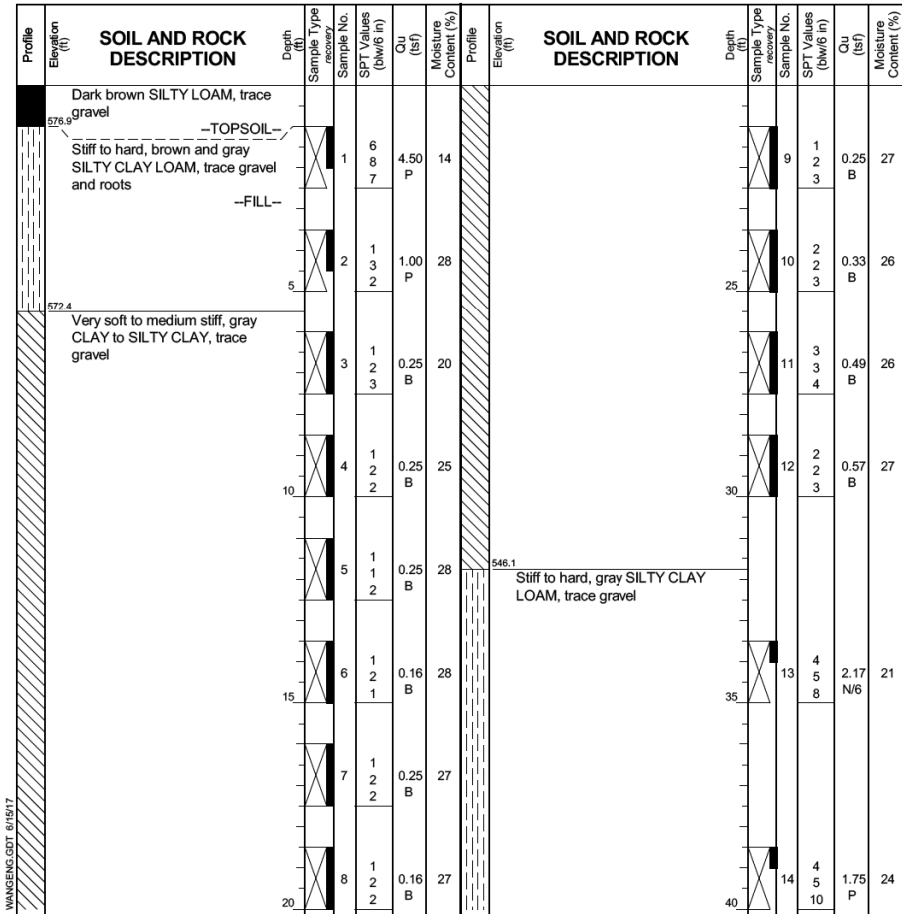
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	901
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

**BORING LOG 1715-B-05**

WEI Job No.: 1100-04-01

Datum: NAVD 88  
 Elevation: 577.87 ft  
 North: 1897826.42 ft  
 East: 1171228.58 ft  
 Station: 1223+01.29  
 Offset: 21.767 RT

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**



**GENERAL NOTES**

Begin Drilling: 04-14-2014 Complete Drilling: 04-17-2014  
 Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV [93%]  
 Driller: N&J Logger: A. Happel Checked by: C. Marin  
 Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring  
 backfilled upon completion

**WATER LEVEL DATA**

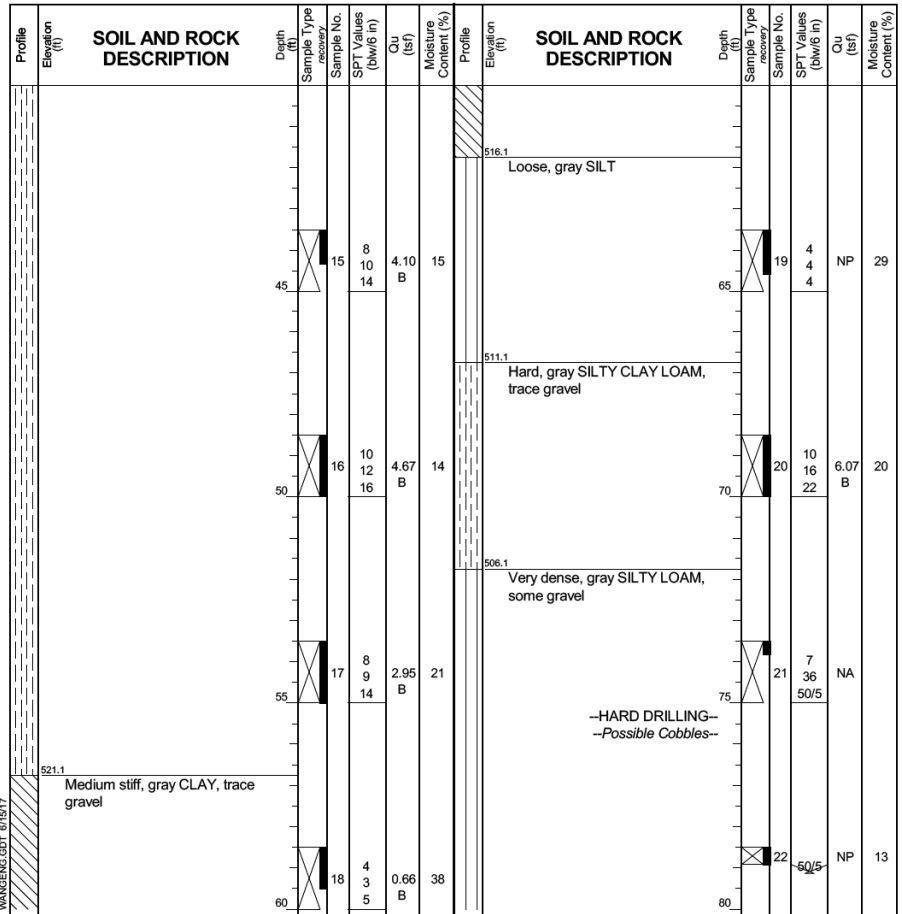
While Drilling: Rotary wash  
 At Completion of Drilling: mud in the borehole  
 Time After Drilling: NA  
 Depth to Water: NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

**BORING LOG 1715-B-05**

WEI Job No.: 1100-04-01

Datum: NAVD 88  
 Elevation: 577.87 ft  
 North: 1897826.42 ft  
 East: 1171228.58 ft  
 Station: 1223+01.29  
 Offset: 21.767 RT

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**



**GENERAL NOTES**

Begin Drilling: 04-14-2014 Complete Drilling: 04-17-2014  
 Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV [93%]  
 Driller: N&J Logger: A. Happel Checked by: C. Marin  
 Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring  
 backfilled upon completion

**WATER LEVEL DATA**

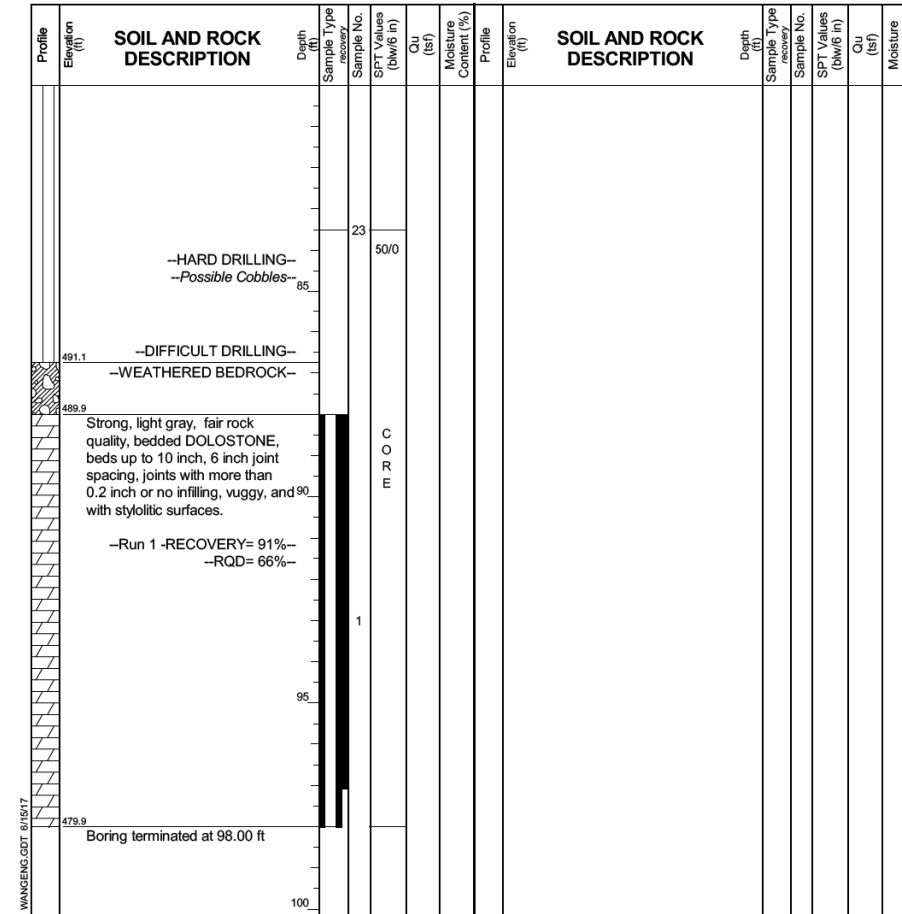
While Drilling: Rotary wash  
 At Completion of Drilling: mud in the borehole  
 Time After Drilling: NA  
 Depth to Water: NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

**BORING LOG 1715-B-05**

WEI Job No.: 1100-04-01

Datum: NAVD 88  
 Elevation: 577.87 ft  
 North: 1897826.42 ft  
 East: 1171228.58 ft  
 Station: 1223+01.29  
 Offset: 21.767 RT

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**



**GENERAL NOTES**

Begin Drilling: 04-14-2014 Complete Drilling: 04-17-2014  
 Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV [93%]  
 Driller: N&J Logger: A. Happel Checked by: C. Marin  
 Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring  
 backfilled upon completion

**WATER LEVEL DATA**

While Drilling: Rotary wash  
 At Completion of Drilling: mud in the borehole  
 Time After Drilling: NA  
 Depth to Water: NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

**NOTE:**

1. Station and offset are measured along @ Ramp WS & PGL.

**BORING LOG 1715-PMT-01**

WEI Job No.: 1100-04-01  
 Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88  
 Elevation: 586.37 ft  
 North: 1898101.38 ft  
 East: 1171922.25 ft  
 Station: 1211+54.18  
 Offset: 33.616 LT

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)
	Drilled without sampling												
		5							25				
		10							30				
		15							35				
		20							40				

**GENERAL NOTES**

Begin Drilling: 04-24-2014 Complete Drilling: 04-24-2014  
 Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV [93%]  
 Driller: N&J Logger: A. Happel Checked by: C. Marin  
 Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring  
 backfilled upon completion

**WATER LEVEL DATA**

While Drilling: Rotary wash  
 At Completion of Drilling: mud in the borehole  
 Time After Drilling: NA  
 Depth to Water: NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

**BORING LOG 1715-PMT-01**

WEI Job No.: 1100-04-01  
 Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88  
 Elevation: 586.37 ft  
 North: 1898101.38 ft  
 East: 1171922.25 ft  
 Station: 1211+54.18  
 Offset: 33.616 LT

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)
	Hard, gray SILTY CLAY, little gravel	55	11	11	4.10	16			55				
		60							60				
		70	2	18	7.38	13			70				
		75							75				
		80							80				
		85							85				
		90	5	34	40	48			90				
		95							95				
		100							100				

**GENERAL NOTES**

Begin Drilling: 04-24-2014 Complete Drilling: 04-24-2014  
 Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV [93%]  
 Driller: N&J Logger: A. Happel Checked by: C. Marin  
 Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring  
 backfilled upon completion

**WATER LEVEL DATA**

While Drilling: Rotary wash  
 At Completion of Drilling: mud in the borehole  
 Time After Drilling: NA  
 Depth to Water: NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

**BORING LOG 1715-PMT-01**

WEI Job No.: 1100-04-01  
 Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88  
 Elevation: 586.37 ft  
 North: 1898101.38 ft  
 East: 1171922.25 ft  
 Station: 1211+54.18  
 Offset: 33.616 LT

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)
	Very dense, gray SANDY GRAVEL	85	4	50/4	NP	11			85				
		90							90				
		95							95				
		100							100				
		105							105				
		110							110				
		115							115				
		120							120				

**GENERAL NOTES**

Begin Drilling: 04-24-2014 Complete Drilling: 04-24-2014  
 Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV [93%]  
 Driller: N&J Logger: A. Happel Checked by: C. Marin  
 Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring  
 backfilled upon completion

**WATER LEVEL DATA**

While Drilling: Rotary wash  
 At Completion of Drilling: mud in the borehole  
 Time After Drilling: NA  
 Depth to Water: NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

**NOTE:**

1. Station and offset are measured along  
 @ Ramp WS & PGL.



USER NAME = floresg	DESIGNED - AV	REVISED
PLOT SCALE = N.T.S.	CHECKED - ATB	REVISED
PLOT DATE = 7/26/2018	DRAWN - GF	REVISED
	CHECKED - ATB	REVISED

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS - 21  
 STRUCTURE NO. 016-1715

SHEET NO. S3-161 OF S3-172

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	903
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blows/in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blows/in)	Qu (tsf)	Moisture Content (%)
	Drilled without sampling								-S <sub>u</sub> undr = 958.3 psf- -S <sub>u</sub> remold = 595.7 psf- -Sensitivity = 1.61-	3	VS				
		25							-In-Situ Vane Shear, 25.0 feet- -S <sub>u</sub> undr = 595.7 psf- -S <sub>u</sub> remold = 414.4 psf- -Sensitivity = 1.44-	4	VS				
	-In-Situ Vane Shear, 10.0 feet- -S <sub>u</sub> undr = 1036.0 psf- -S <sub>u</sub> remold = 543.9 psf- -Sensitivity = 1.90-	10							-In-Situ Vane Shear, 30.0 feet- -S <sub>u</sub> undr = 828.8 psf- -S <sub>u</sub> remold = 466.2 psf- -Sensitivity = 1.78-	30					
		15							-In-Situ Vane Shear, 35.0 feet- -S <sub>u</sub> undr = 1139.6 psf- -S <sub>u</sub> remold = 673.4 psf- -Sensitivity = 1.69-	35					
	-In-Situ Vane Shear, 20.0 feet-	20							-In-Situ Vane Shear, 40.0 feet-	40					

GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	03-27-2014	Complete Drilling	03-27-2014
Drilling Contractor	Wang Testing Services	Drill Rig	D-25 ATV [93%]
Driller	N&J	Logger	F. Bozga
Checked by	C. Marin	Drilling Method	3.25" HSA, boring backfilled upon completion
The stratification lines represent the approximate boundary between soil types. The actual transition may be gradual.		While Drilling	Rotary wash
		At Completion of Drilling	mud in the borehole
		Time After Drilling	NA
		Depth to Water	NA

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blows/in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Sample No.	SPT Values (blows/in)	Qu (tsf)	Moisture Content (%)
545.9	-S <sub>u</sub> undr = 1139.6 psf- -S <sub>u</sub> remold = 725.2 psf- -Sensitivity = 1.57-	7													
Boring terminated at 40.50 ft															

GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	03-27-2014	Complete Drilling	03-27-2014
Drilling Contractor	Wang Testing Services	Drill Rig	D-25 ATV [93%]
Driller	N&J	Logger	F. Bozga
Checked by	C. Marin	Drilling Method	3.25" HSA, boring backfilled upon completion
The stratification lines represent the approximate boundary between soil types. The actual transition may be gradual.		While Drilling	Rotary wash
		At Completion of Drilling	mud in the borehole
		Time After Drilling	NA
		Depth to Water	NA

**NOTE:**  
 1. Station and offset are measured along  
 @ Ramp WS & PGL.

0161715-60X93-S160-Bor-Ing.dgn



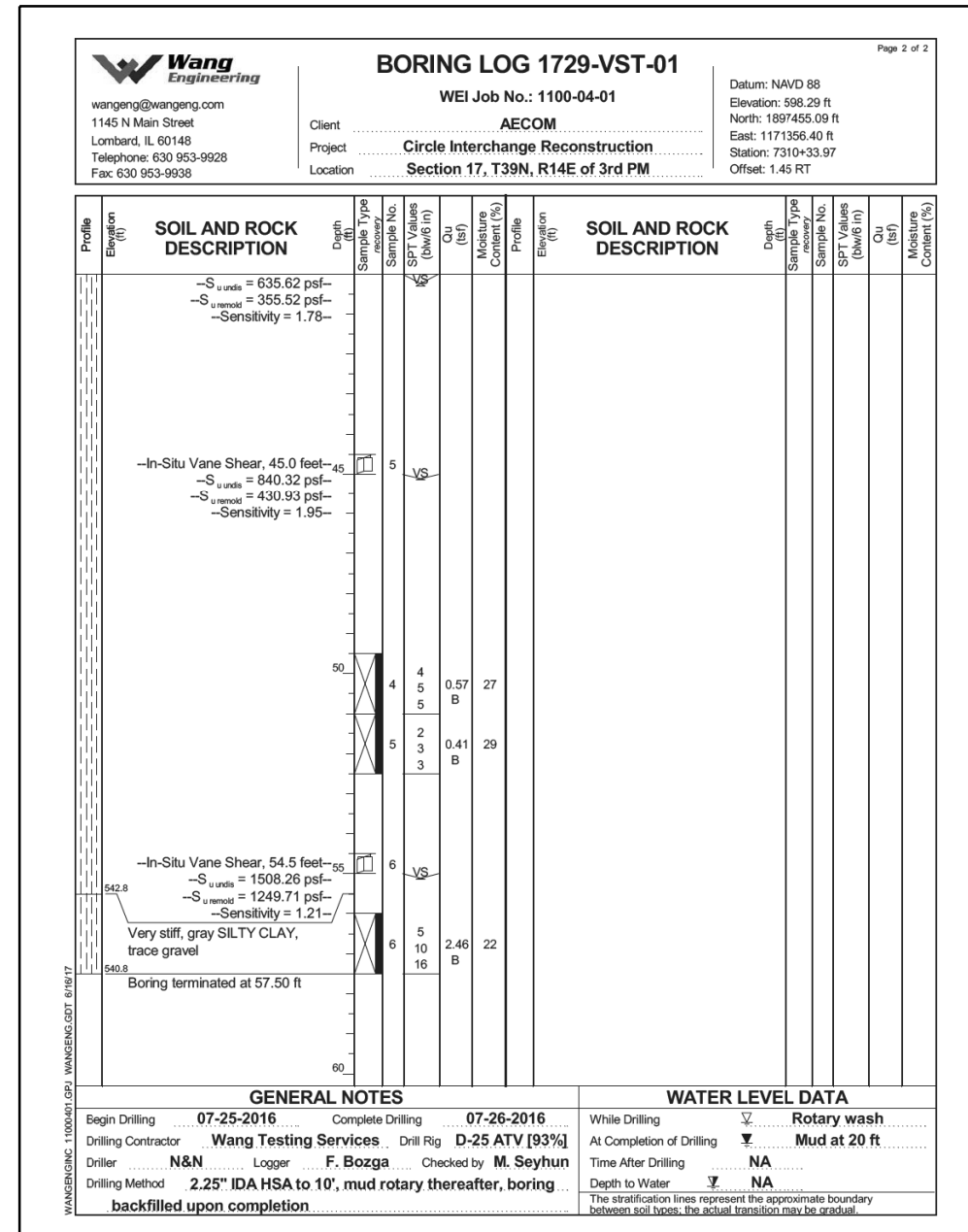
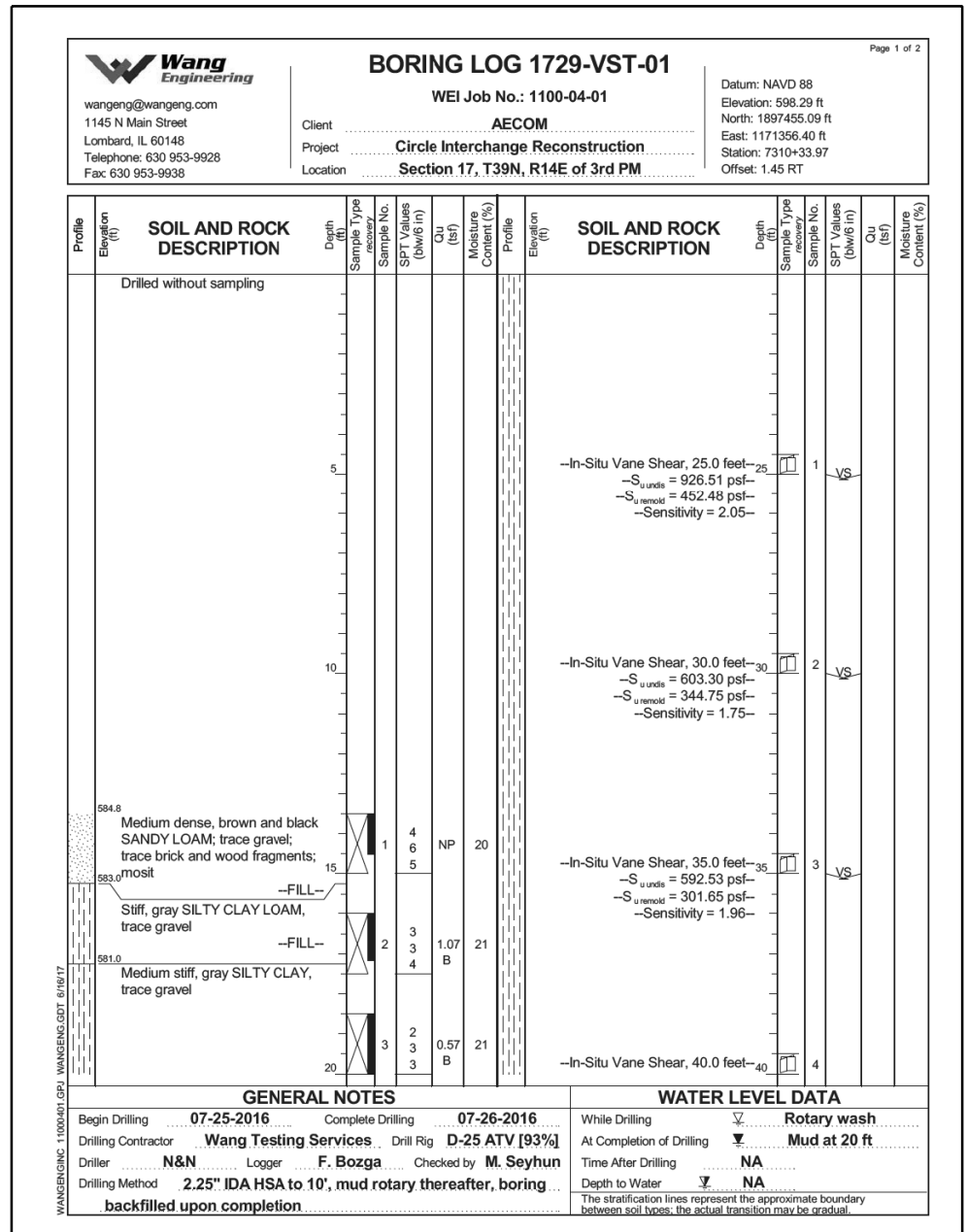
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PLOT SCALE = N.T.S.	CHECKED - ATB	REVISED
PLOT DATE = 7/26/2018	DRAWN - GF	REVISED
	CHECKED - ATB	REVISED

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS - 22  
 STRUCTURE NO. 016-1715

SHEET NO. S3-162 OF S3-172

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	904
CONTRACT NO. 60X93			ILLINOIS FED. AID PROJECT	



**NOTE:**

1. Soil Boring 1729-VST-01, Station 1226+93.86, 12.3199 RT along @ Ramp WS & PGL.

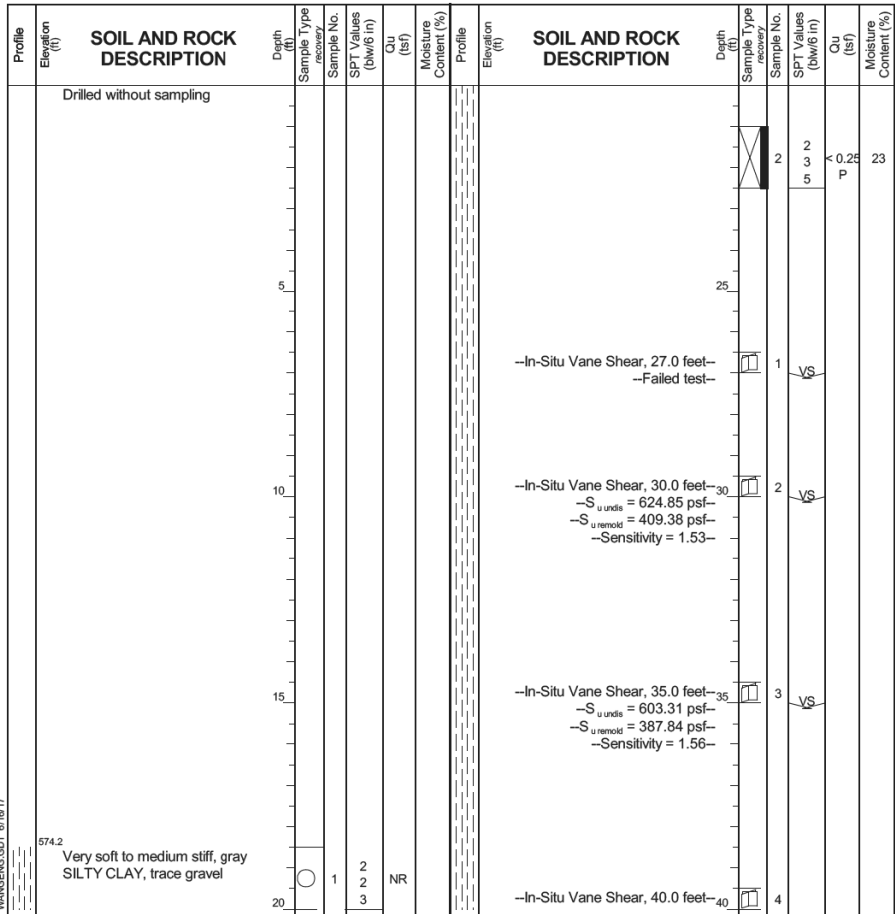
0161715-60X93-S161-BorIng.dgn

**Wang Engineering**  
wangeng@wangeng.com  
1145 N Main Street  
Lombard, IL 60148  
Telephone: 630 953-9928  
Fax: 630 953-9938

**BORING LOG 1729-VST-02**  
WEI Job No.: 1100-04-01  
Client: **AECOM**  
Project: **Circle Interchange Reconstruction**  
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88  
Elevation: 592.70 ft  
North: 1897206.55 ft  
East: 1171441.79 ft  
Station: 7312+95.08  
Offset: 32.79 LT

Page 1 of 2



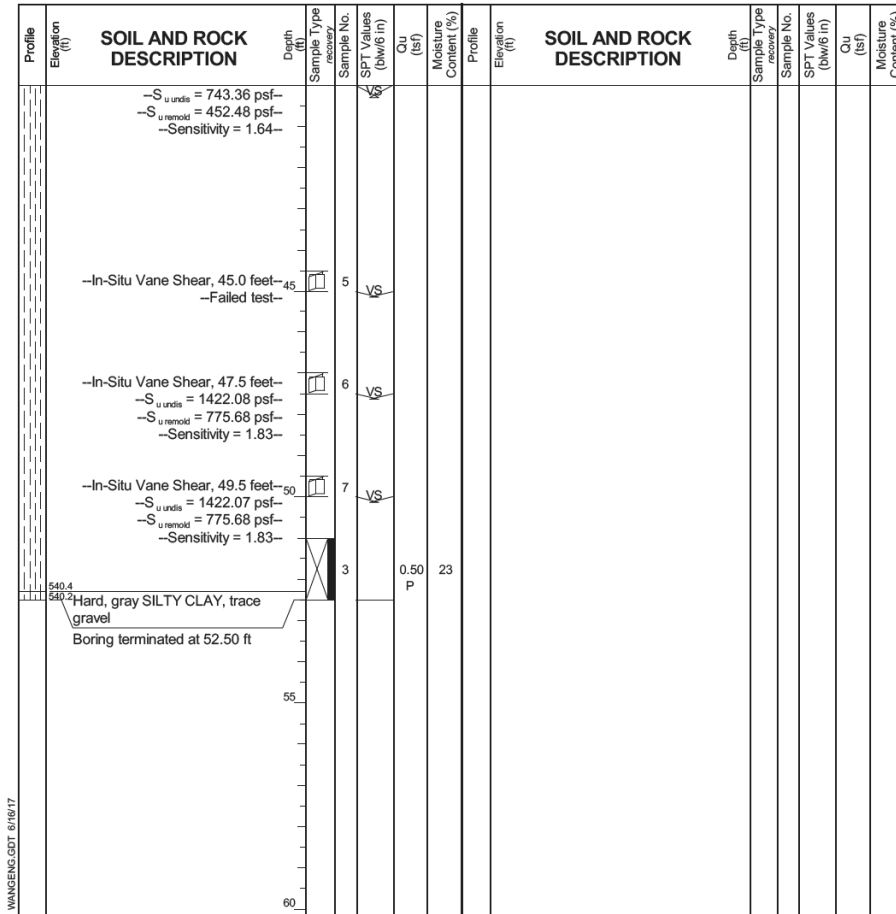
GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	07-27-2016	Complete Drilling	07-27-2016
Drilling Contractor	Wang Testing Services	Drill Rig	D-25 ATV [93%]
Driller	N&N	Logger	F. Bozga
Checked by	M. Seyhun	Drilling Method	2.25" IDA HSA to 10', mud rotary thereafter, boring backfilled upon completion
While Drilling	Rotary wash	At Completion of Drilling	Mud at 22.5 ft
Time After Drilling	NA	Depth to Water	NA

**Wang Engineering**  
wangeng@wangeng.com  
1145 N Main Street  
Lombard, IL 60148  
Telephone: 630 953-9928  
Fax: 630 953-9938

**BORING LOG 1729-VST-02**  
WEI Job No.: 1100-04-01  
Client: **AECOM**  
Project: **Circle Interchange Reconstruction**  
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88  
Elevation: 592.70 ft  
North: 1897206.55 ft  
East: 1171441.79 ft  
Station: 7312+95.08  
Offset: 32.79 LT

Page 2 of 2



GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	07-27-2016	Complete Drilling	07-27-2016
Drilling Contractor	Wang Testing Services	Drill Rig	D-25 ATV [93%]
Driller	N&N	Logger	F. Bozga
Checked by	M. Seyhun	Drilling Method	2.25" IDA HSA to 10', mud rotary thereafter, boring backfilled upon completion
While Drilling	Rotary wash	At Completion of Drilling	Mud at 22.5 ft
Time After Drilling	NA	Depth to Water	NA

**NOTE:**  
1. Soil Boring 1729-VST-02, Station 1229+56.59, 6.1267 RT along @ Ramp WS & PGL.

0161715-60X93-S162-Bor-Ing.dgn



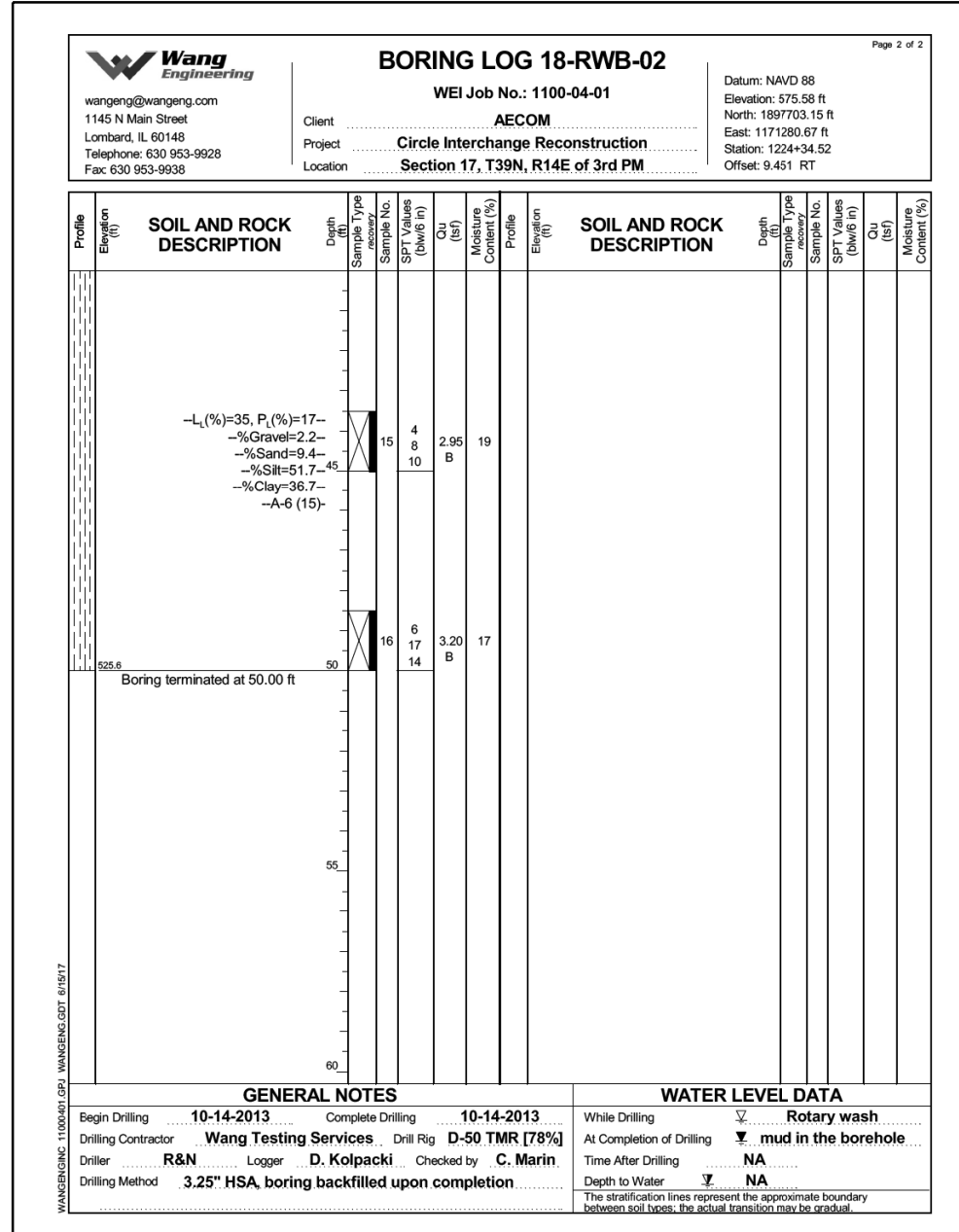
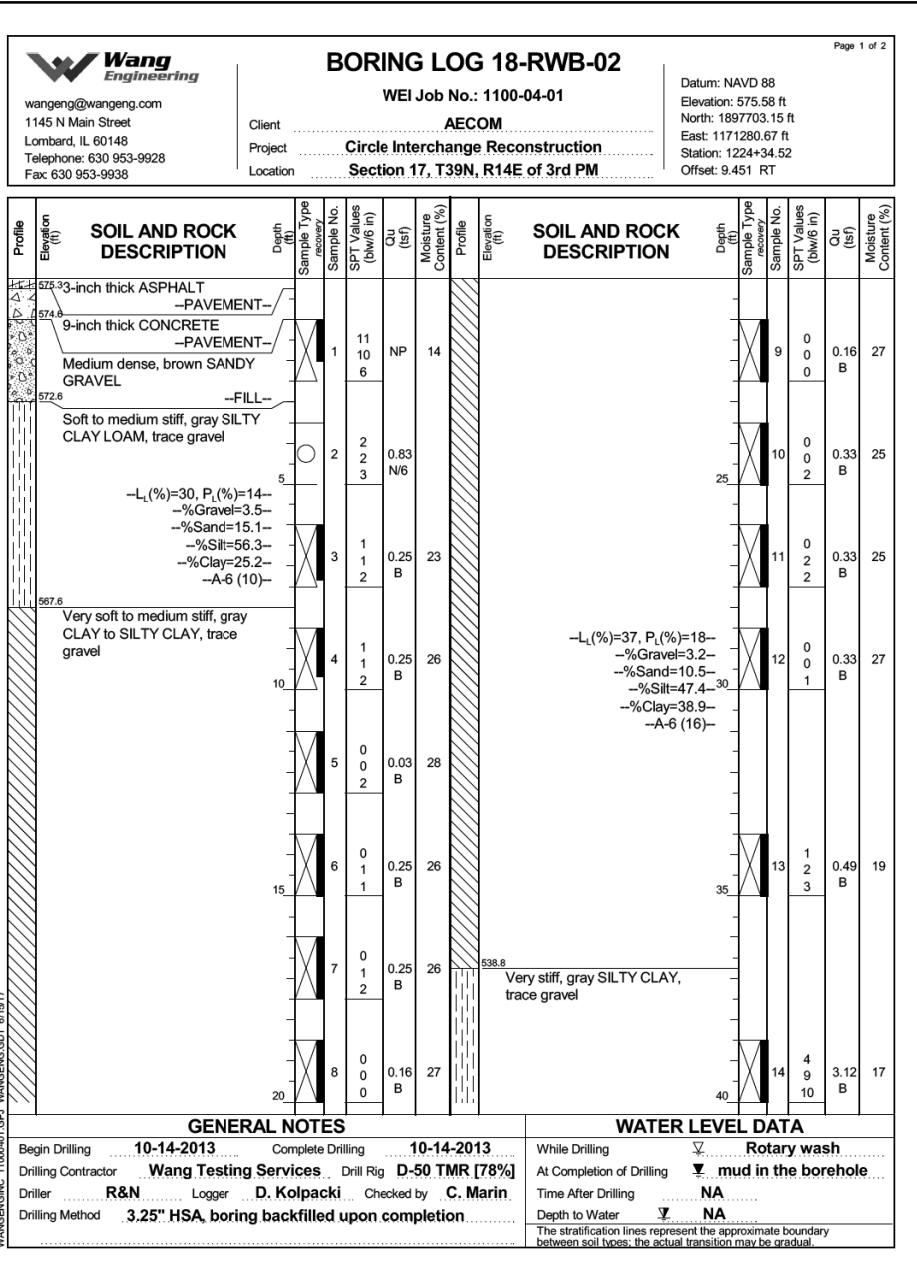
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PLOT SCALE = N.T.S.	CHECKED - ATB	REVISED
PLOT DATE = 7/26/2018	DRAWN - GF	REVISED
	CHECKED - ATB	REVISED

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SOIL BORING LOGS - 24  
STRUCTURE NO. 016-1715**

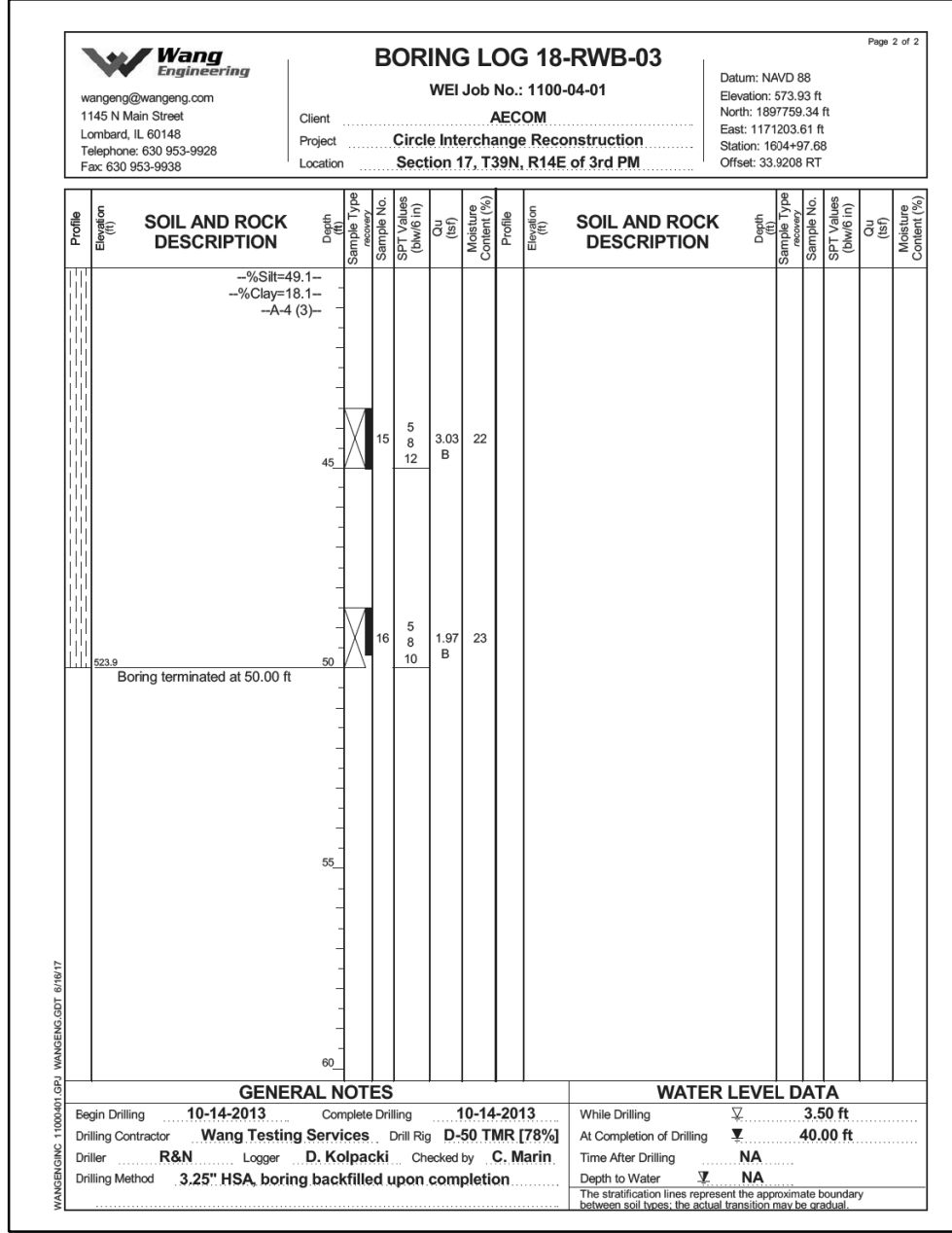
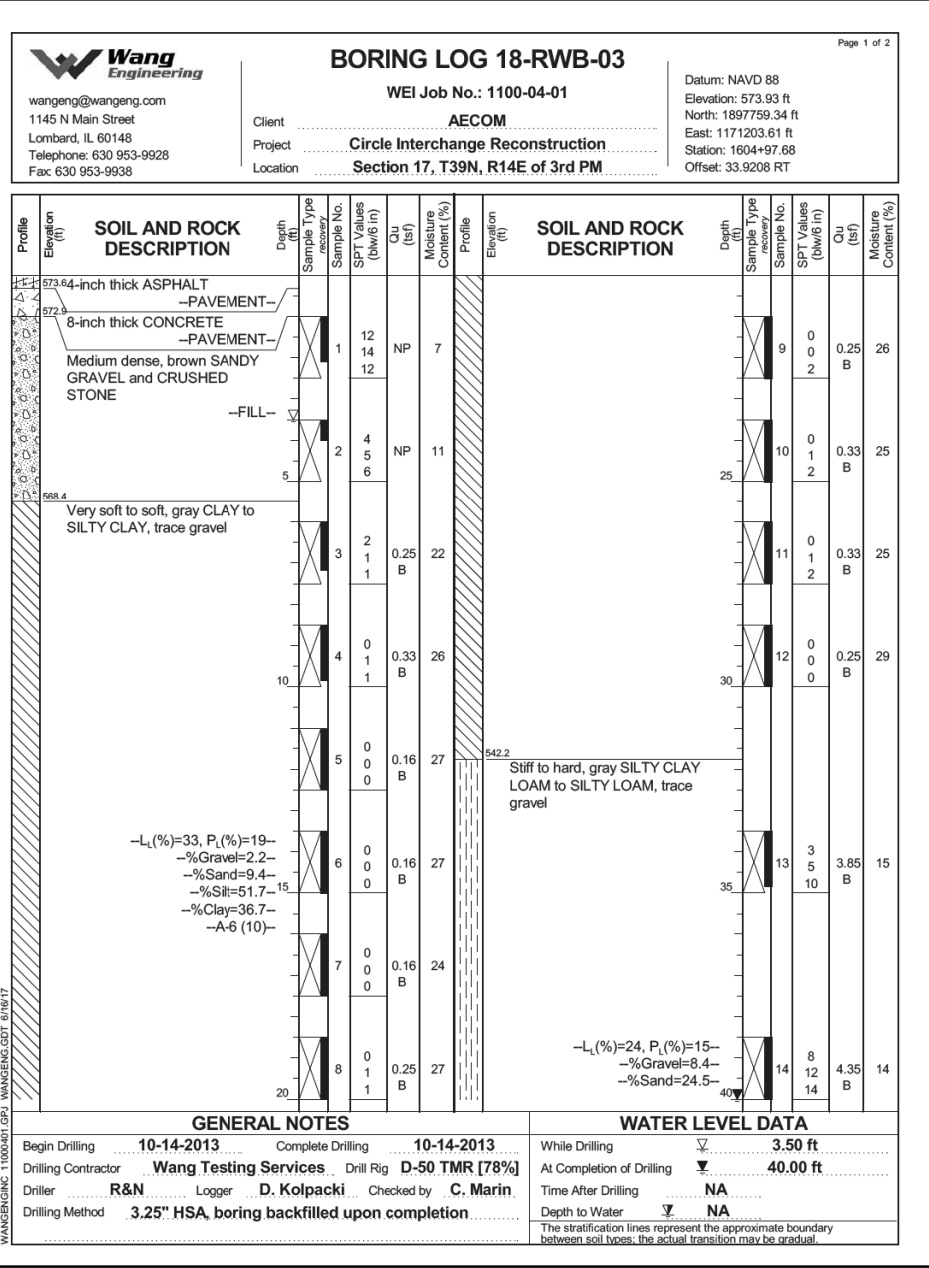
SHEET NO. S3-164 OF S3-172

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	906
CONTRACT NO. 60X93			ILLINOIS FED. AID PROJECT	



**NOTE:**  
 1. Station and offset are measured along  
 @ Ramp WS & PGL.

0161715-60X93-S163-Boring.dgn



**NOTE:**

1. Soil Boring 18-RWB-03, Station 1223+57.65, 65.8994 RT along @ Ramp WS & PGL.

0161715-60X93-S164-Boring.dgn



USER NAME = floresg	DESIGNED - AV	REVISED
	CHECKED - ATB	REVISED
PLOT SCALE = N.T.S.	DRAWN - GF	REVISED
PLOT DATE = 7/26/2018	CHECKED - ATB	REVISED

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SOIL BORING LOGS - 26  
STRUCTURE NO. 016-1715**

SHEET NO. S3-166 OF S3-172

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	908
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



**BORING LOG 2055-B-04**

WEI Job No.: 1100-04-01  
 Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**  
 Datum: NAVD 88  
 Elevation: 575.69 ft  
 North: 1898363.22 ft  
 East: 1171499.16 ft  
 Station: 8150+09.25  
 Offset: 43.5063 RT

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Cu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Cu (tsf)	Moisture Content (%)
574.7	5-inch thick ASPHALT over 7-inch thick CONCRETE -PAVEMENT-												
	Medium dense, brown SANDY GRAVEL -BASE COURSE-	1	5	9	NP	4							
572.7	Stiff, gray SILTY CLAY	2	3	2	1.07	20							
570.2	Soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel	3	1	2	0.57	25							
547.7	Medium dense, gray, coarse SAND, little gravel	4	1	2	0.57	24							
543.7	Medium dense, gray SANDY GRAVEL	5	0	1	0.57	17							
540.9	Very stiff, gray SILTY CLAY to SILTY CLAY LOAM to LOAM, trace to some gravel	6	0	2	0.66	25							
	-L <sub>1</sub> (%)=35, P <sub>1</sub> (%)=15- -%Gravel=4.3- -%Sand=15.2- -%Silt=48.0- -%Clay=32.4- -A-6 (15)-	7	0	1	0.57	26							
		8	0	2	0.66	26							
		9	0	2	0.66	26							
		10	0	2	0.66	26							
		11	0	1	0.57	25							
		12	2	5	NP	15							
		13	8	8	NP	15							
		14	4	7	NP	15							
		15	5	8	NP	15							
		16	4	6	NP	15							
		17	5	8	NP	15							
		18	4	5	NP	15							
		19	5	8	NP	15							
		20	4	7	NP	15							
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		24	5	8	NP	15							
		25	5	8	NP	15							
		26	5	8	NP	15							
		27	5	8	NP	15							
		28	5	8	NP	15							
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		35	5	8	NP	15							
		36	5	8	NP	15							
		37	5	8	NP	15							
		38	5	8	NP	15							
		39	5	8	NP	15							
		40	5	8	NP	15							

**GENERAL NOTES**

**WATER LEVEL DATA**

Begin Drilling **05-19-2013** Complete Drilling **05-20-2013**  
 Drilling Contractor **Wang Testing Services** Drill Rig **CME-55 TMR [85%]**  
 Driller **P&N** Logger **F. Bozga** Checked by **C. Marin**  
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring**  
**backfilled upon completion**

**BORING LOG 2055-B-04**

WEI Job No.: 1100-04-01  
 Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**  
 Datum: NAVD 88  
 Elevation: 575.69 ft  
 North: 1898363.22 ft  
 East: 1171499.16 ft  
 Station: 8150+09.25  
 Offset: 43.5063 RT

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Cu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Cu (tsf)	Moisture Content (%)
513.9	Hard, gray SILTY CLAY LOAM, trace gravel												
508.9	Very dense, gray SILT to SILTY LOAM, trace to some gravel												
518.9	Medium dense, gray SILT												

**GENERAL NOTES**

**WATER LEVEL DATA**

Begin Drilling **05-19-2013** Complete Drilling **05-20-2013**  
 Drilling Contractor **Wang Testing Services** Drill Rig **CME-55 TMR [85%]**  
 Driller **P&N** Logger **F. Bozga** Checked by **C. Marin**  
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring**  
**backfilled upon completion**

**BORING LOG 2055-B-04**

WEI Job No.: 1100-04-01  
 Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**  
 Datum: NAVD 88  
 Elevation: 575.69 ft  
 North: 1898363.22 ft  
 East: 1171499.16 ft  
 Station: 8150+09.25  
 Offset: 43.5063 RT

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Cu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Cu (tsf)	Moisture Content (%)
483.7	-HARD DRILLING- Boulders, Sandy Gravel												
478.7	-AUGER REFUSAL- Strong, light gray, fair rock mass quality, bedded fresh DOLOSTONE, up to 18-inch beds, 1- to 18-inch spaced joints, horizontal and oblique joints with less than 0.2- to 3-inch greenish gray silty infilling, hard joint wall,												

**GENERAL NOTES**

**WATER LEVEL DATA**

Begin Drilling **05-19-2013** Complete Drilling **05-20-2013**  
 Drilling Contractor **Wang Testing Services** Drill Rig **CME-55 TMR [85%]**  
 Driller **P&N** Logger **F. Bozga** Checked by **C. Marin**  
 Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring**  
**backfilled upon completion**

**NOTE:**

- Soil Boring 2055-B-04, Station 1216+35.69, 40.7047 RT along @ Ramp WS & PGL.



USER NAME = floresg	DESIGNED - AV	REVISED
PLOT SCALE = N.T.S.	CHECKED - ATB	REVISED
PLOT DATE = 7/26/2018	DRAWN - GF	REVISED
	CHECKED - ATB	REVISED

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

**SOIL BORING LOGS - 27**  
**STRUCTURE NO. 016-1715**

SHEET NO. S3-167 OF S3-172

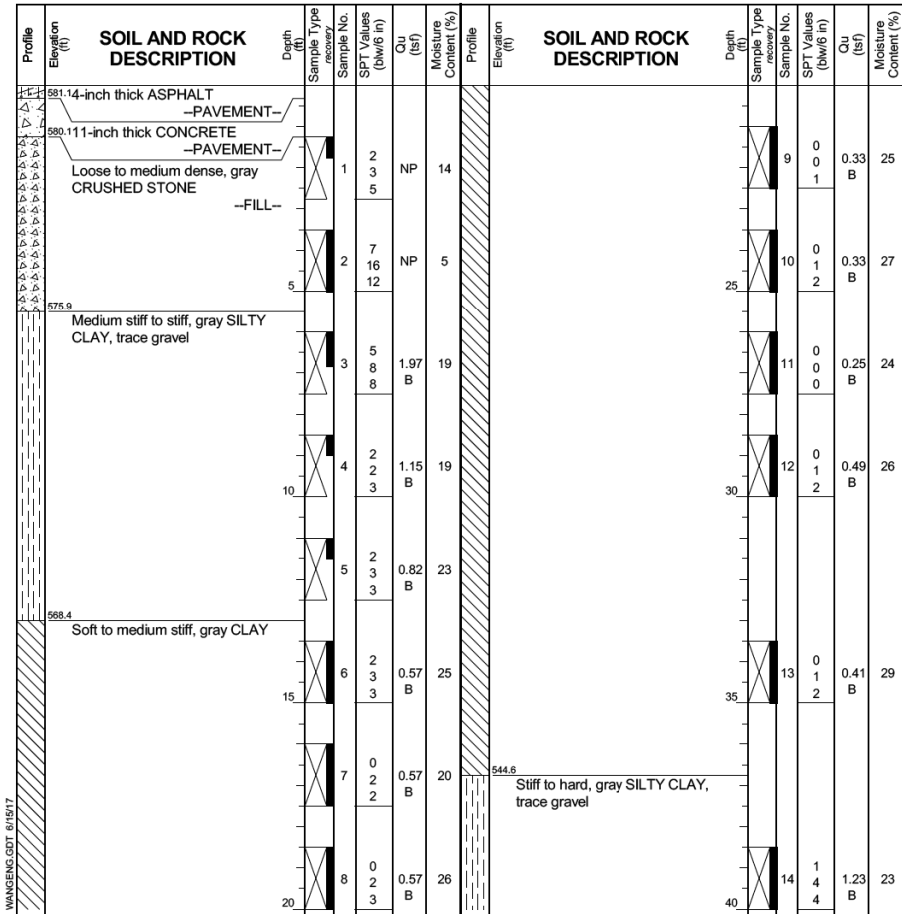
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	909
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60X93	

**BORING LOG 2081-B-03**

WEI Job No.: 1100-04-01

Datum: NAVD 88  
 Elevation: 581.38 ft  
 North: 1898040.36 ft  
 East: 1171151.03 ft  
 Station: 1220+89.44  
 Offset: 51.7421 RT

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**



**GENERAL NOTES**

Begin Drilling 03-28-2013 Complete Drilling 03-29-2013  
 Drilling Contractor Wang Testing Services Drill Rig B-57 TMR [100%]  
 Driller P&N Logger D. Wind Checked by C. Marin  
 Drilling Method 3.25" HSA to 8.5', mud rotary thereafter, boring  
 backfilled upon completion

**WATER LEVEL DATA**

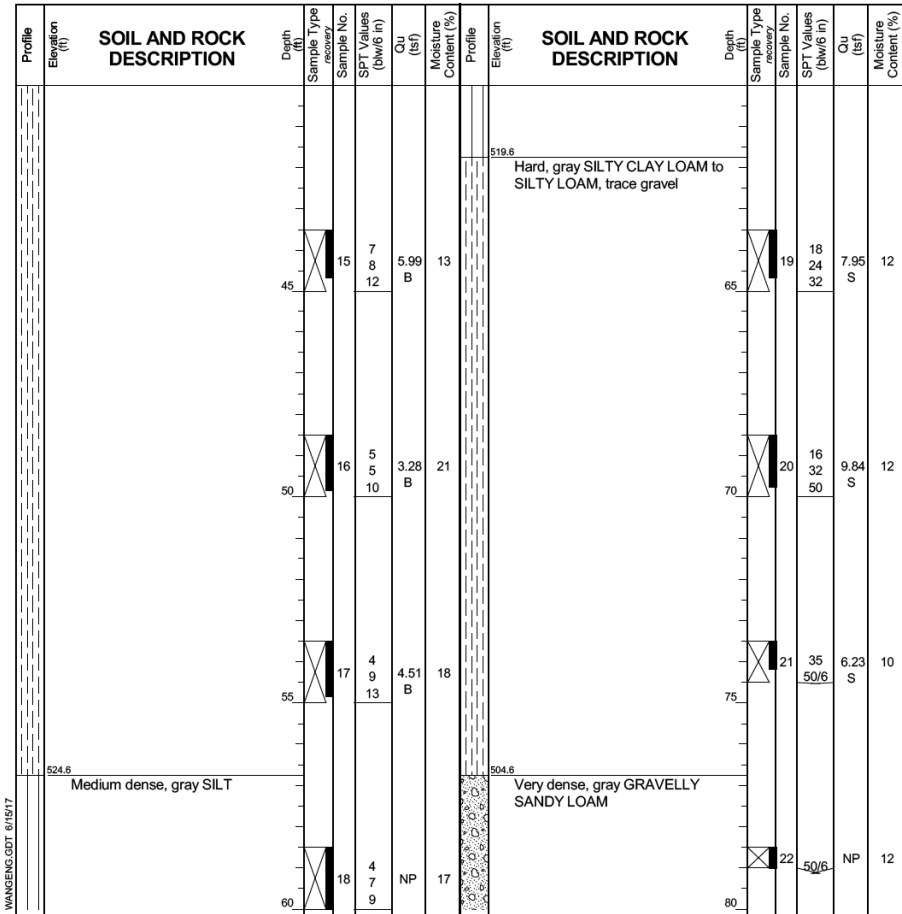
While Drilling  Rotary wash  
 At Completion of Drilling  mud in the borehole  
 Time After Drilling NA  
 Depth to Water  NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual

**BORING LOG 2081-B-03**

WEI Job No.: 1100-04-01

Datum: NAVD 88  
 Elevation: 581.38 ft  
 North: 1898040.36 ft  
 East: 1171151.03 ft  
 Station: 1220+89.44  
 Offset: 51.7421 RT

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**



**GENERAL NOTES**

Begin Drilling 03-28-2013 Complete Drilling 03-29-2013  
 Drilling Contractor Wang Testing Services Drill Rig B-57 TMR [100%]  
 Driller P&N Logger D. Wind Checked by C. Marin  
 Drilling Method 3.25" HSA to 8.5', mud rotary thereafter, boring  
 backfilled upon completion

**WATER LEVEL DATA**

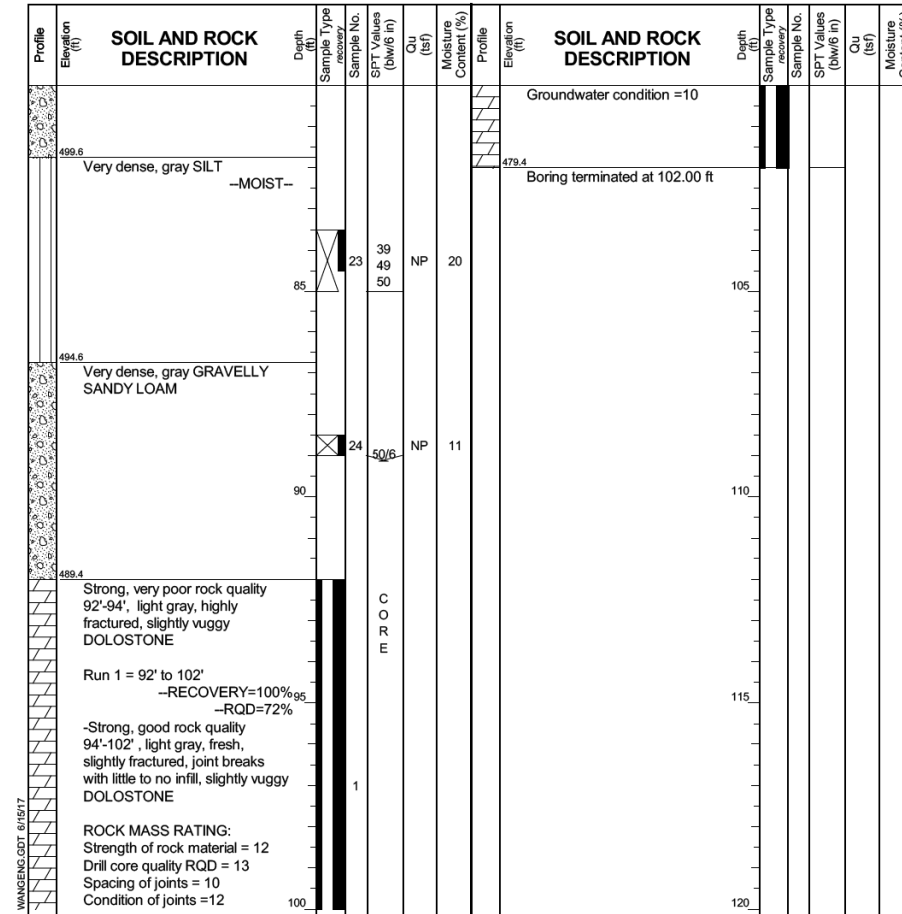
While Drilling  Rotary wash  
 At Completion of Drilling  mud in the borehole  
 Time After Drilling NA  
 Depth to Water  NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual

**BORING LOG 2081-B-03**

WEI Job No.: 1100-04-01

Datum: NAVD 88  
 Elevation: 581.38 ft  
 North: 1898040.36 ft  
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 Station: 1220+89.44  
 Offset: 51.7421 RT

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**



**GENERAL NOTES**

Begin Drilling 03-28-2013 Complete Drilling 03-29-2013  
 Drilling Contractor Wang Testing Services Drill Rig B-57 TMR [100%]  
 Driller P&N Logger D. Wind Checked by C. Marin  
 Drilling Method 3.25" HSA to 8.5', mud rotary thereafter, boring  
 backfilled upon completion

**WATER LEVEL DATA**

While Drilling  Rotary wash  
 At Completion of Drilling  mud in the borehole  
 Time After Drilling NA  
 Depth to Water  NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual

**NOTE:**

1. Station and offset are measured along @ Ramp WS & PGL.



USER NAME = floresg	DESIGNED - AV	REVISED
PLOT SCALE = N.T.S.	CHECKED - ATB	REVISED
PLOT DATE = 7/26/2018	DRAWN - GF	REVISED
	CHECKED - ATB	REVISED

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS - 28  
 STRUCTURE NO. 016-1715

SHEET NO. S3-168 OF S3-172

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	910
CONTRACT NO. 60X93			ILLINOIS FED. AID PROJECT	

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)
577.5	14-inch thick ASPHALT -PAVEMENT-												
577.4	4-inch thick CRUSHED STONE -BASE COURSE-												
	Very stiff, brown and gray SILTY CLAY LOAM, trace gravel -FILL-		1	4	3.85	18				9	1	0.16	24
			5	6						2	2		
			6							1	1		
574.9	Medium dense CRUSHED STONE -FILL-		2	11	NP	4				10	0	0.25	27
			5	16						11	0		
			14							2	2		
			3	10	NP	5				11	0	0.33	26
			12							0	0		
			9							2	2		
570.7	Loose, light brown GRAVELLY SAND -FILL-		4	6	NP	6				12	0	0.33	24
			10	5						1	1		
			4							2	2		
			5	10	NP					13	1	0.57	27
			15	4						8	9		
			4							4	4		
563.2	Very soft to medium stiff, gray CLAY, trace gravel		7	0	0.25	26				1	1		
			1	2						3	3		
			0							2	2	0.98	19
			1							4	4		
			0							4	4		
			1							5	5		

**GENERAL NOTES**  
 Begin Drilling 04-01-2013 Complete Drilling 04-01-2013  
 Drilling Contractor Wang Testing Services Drill Rig D-50 TMR [78%]  
 Driller R&N Logger D. Kolpacki Checked by C. Marin  
 Drilling Method 2.25" SSA to 10", mud rotary thereafter, boring backfilled upon completion

**WATER LEVEL DATA**  
 While Drilling  DRY  
 At Completion of Drilling  mud in the borehole  
 Time After Drilling NA  
 Depth to Water  NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)
536.9	Stiff to hard, gray SILTY CLAY LOAM, trace gravel						516.9	Hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel					
			15	7	1.97	16				19	15	10.00	12
			8							30			
			11							32			
			16	9	5.58	13				14	14	10.25	15
			13							23			
			13							31			
			17	8	2.05	14				11	11	6.97	22
			11							40			
			4							14	14	10.25	23
			4							20			
			5							31			
521.9	Medium stiff, gray SILTY LOAM, trace silt and sand seams												

**GENERAL NOTES**  
 Begin Drilling 04-01-2013 Complete Drilling 04-01-2013  
 Drilling Contractor Wang Testing Services Drill Rig D-50 TMR [78%]  
 Driller R&N Logger D. Kolpacki Checked by C. Marin  
 Drilling Method 2.25" SSA to 10", mud rotary thereafter, boring backfilled upon completion

**WATER LEVEL DATA**  
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 At Completion of Drilling  mud in the borehole  
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 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/6 in)	Qu (tsf)	Moisture Content (%)
483.7	Boring terminated at 85.00 ft												
			23	23	3.94	20				49			
			47							47			

**GENERAL NOTES**  
 Begin Drilling 04-01-2013 Complete Drilling 04-01-2013  
 Drilling Contractor Wang Testing Services Drill Rig D-50 TMR [78%]  
 Driller R&N Logger D. Kolpacki Checked by C. Marin  
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**NOTE:**  
 1. Station and offset are measured along @ Ramp WS & PGL.



USER NAME = floresg	DESIGNED - AV	REVISED
PLOT SCALE = N.T.S.	CHECKED - ATB	REVISED
PLOT DATE = 7/26/2018	DRAWN - GF	REVISED
	CHECKED - ATB	REVISED

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS - 29  
 STRUCTURE NO. 016-1715  
 SHEET NO. S3-169 OF S3-172

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	911
CONTRACT NO. 60X93			ILLINOIS FED. AID PROJECT	

0161715-60X93-S167-Boring.dgn

**Wang Engineering**  
 wangeng@wangeng.com  
 1145 N Main Street  
 Lombard, IL 60148  
 Telephone: 630 953-9928  
 Fax: 630 953-9938

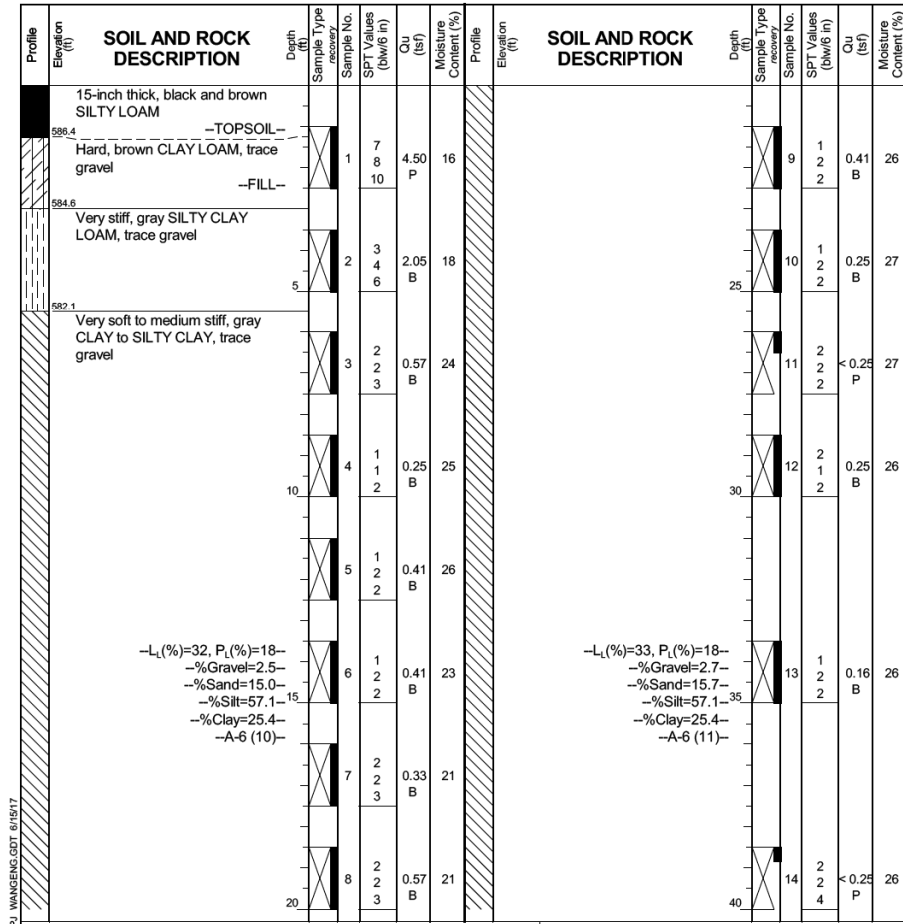
### BORING LOG 22-RWB-03

WEI Job No.: 1100-04-01

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88  
 Elevation: 587.62 ft  
 North: 1898185.65 ft  
 East: 1171879.86 ft  
 Station: 1212+29.37  
 Offset: 21.9731 RT

Page 1 of 3



#### GENERAL NOTES

Begin Drilling 03-07-2014 Complete Drilling 03-10-2014  
 Drilling Contractor Wang Testing Services Drill Rig D-25 ATV [93%]  
 Driller N&J Logger A. Happel Checked by C. Marin  
 Drilling Method 2.25" HSA to 15', mud rotary thereafter, boring  
 backfilled upon completion

#### WATER LEVEL DATA

While Drilling 62.00 ft  
 At Completion of Drilling mud in the borehole  
 Time After Drilling NA  
 Depth to Water NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual

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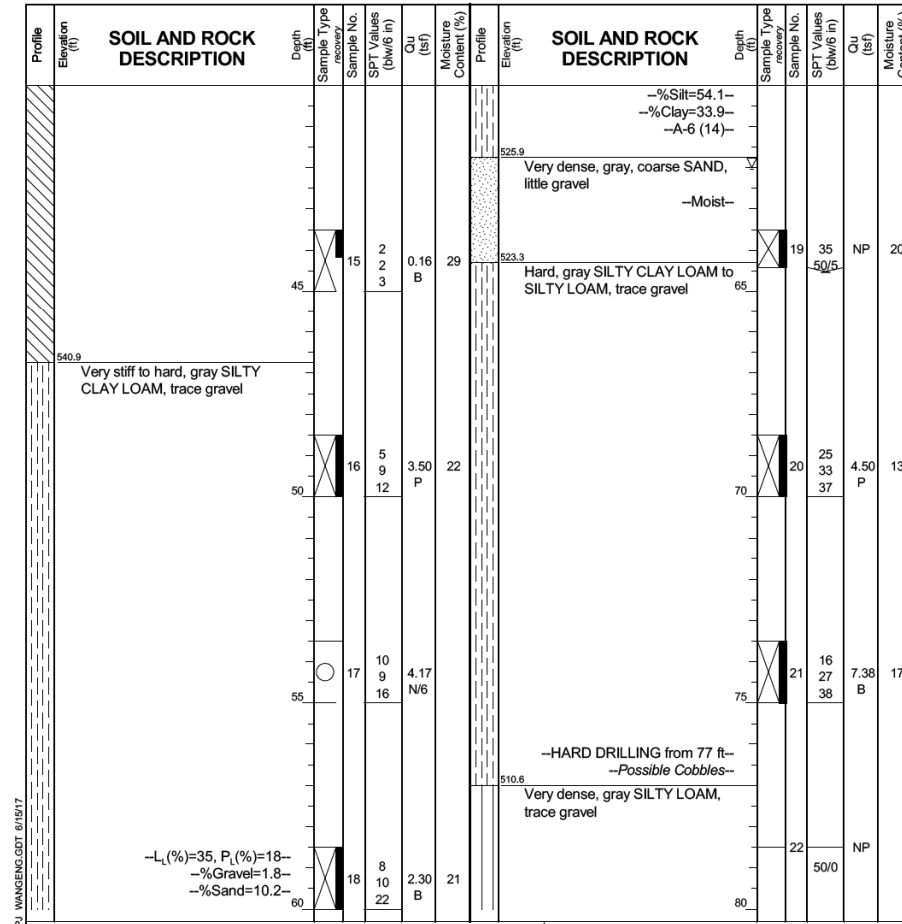
### BORING LOG 22-RWB-03

WEI Job No.: 1100-04-01

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

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Page 2 of 3



#### GENERAL NOTES

Begin Drilling 03-07-2014 Complete Drilling 03-10-2014  
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 Telephone: 630 953-9928  
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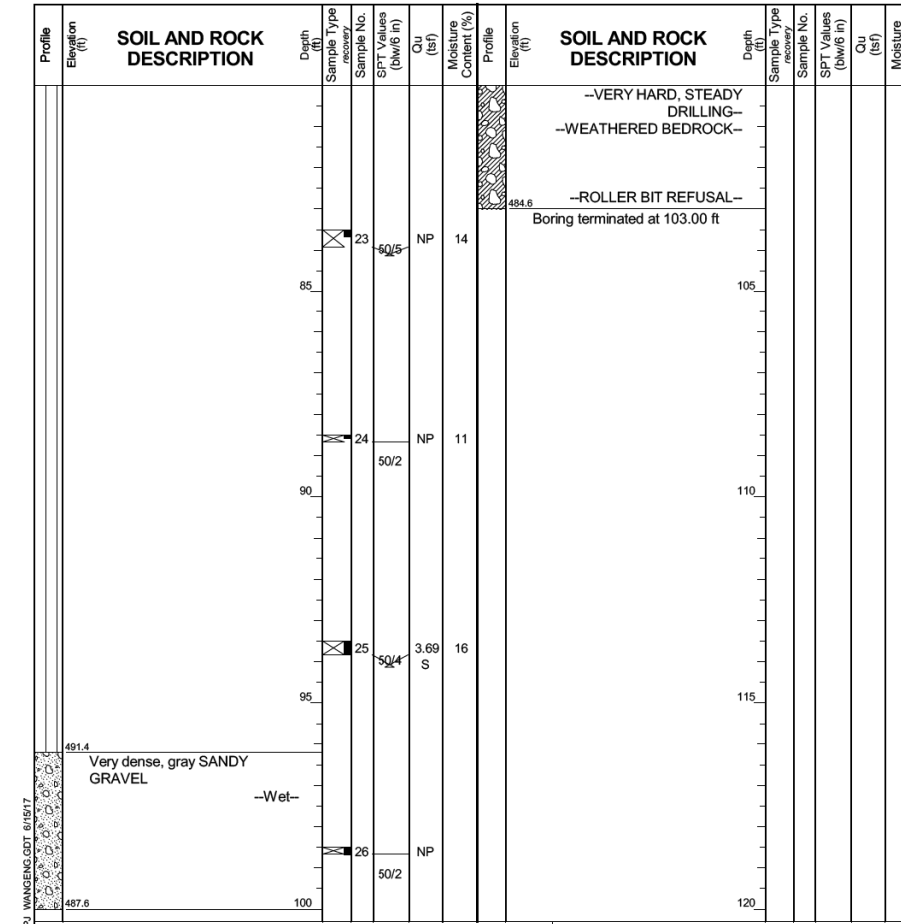
### BORING LOG 22-RWB-03

WEI Job No.: 1100-04-01

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88  
 Elevation: 587.62 ft  
 North: 1898185.65 ft  
 East: 1171879.86 ft  
 Station: 1212+29.37  
 Offset: 21.9731 RT

Page 3 of 3



#### GENERAL NOTES

Begin Drilling 03-07-2014 Complete Drilling 03-10-2014  
 Drilling Contractor Wang Testing Services Drill Rig D-25 ATV [93%]  
 Driller N&J Logger A. Happel Checked by C. Marin  
 Drilling Method 2.25" HSA to 15', mud rotary thereafter, boring  
 backfilled upon completion

#### WATER LEVEL DATA

While Drilling 62.00 ft  
 At Completion of Drilling mud in the borehole  
 Time After Drilling NA  
 Depth to Water NA  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual

#### NOTE:

1. Station and offset are measured along @ Ramp WS & PGL.



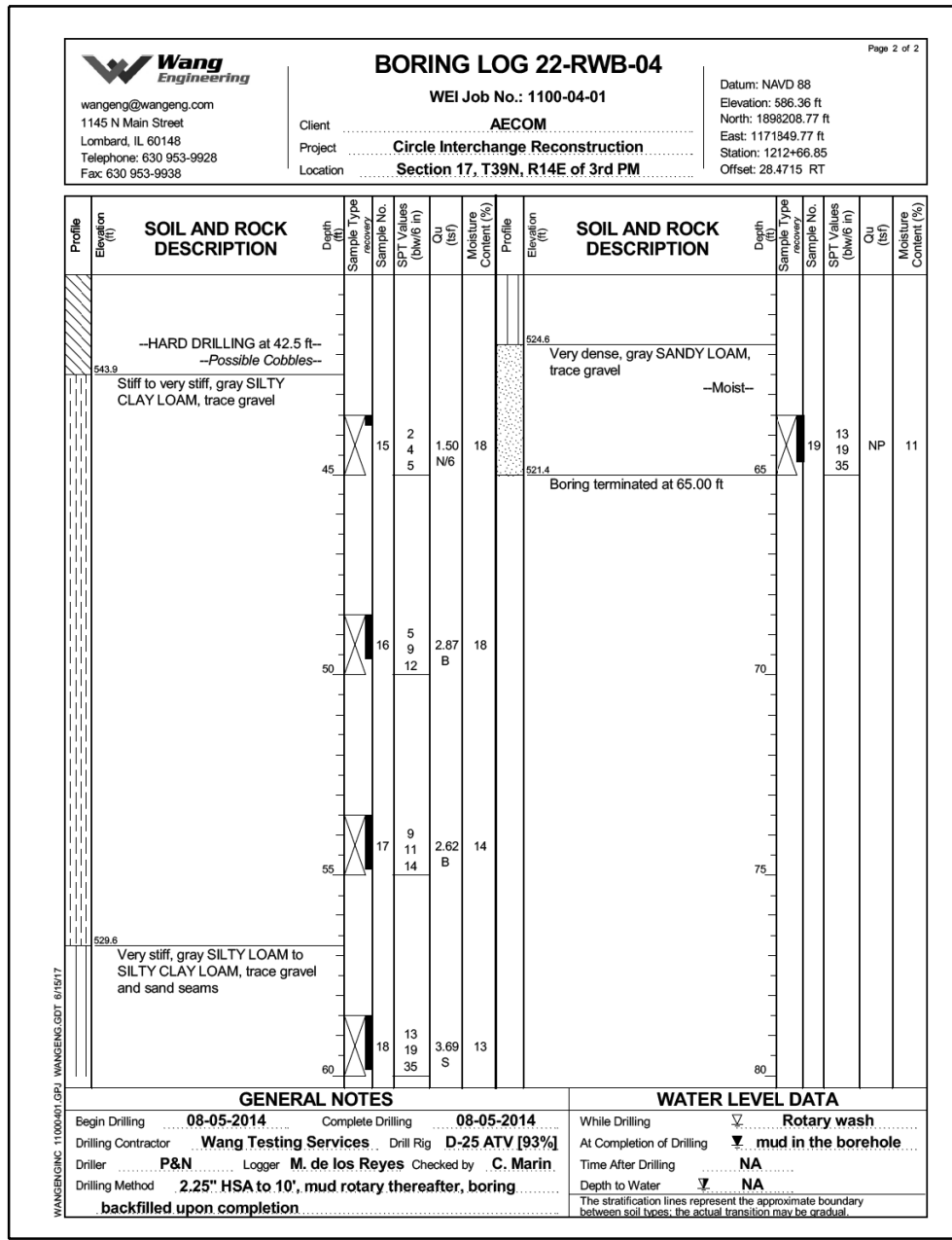
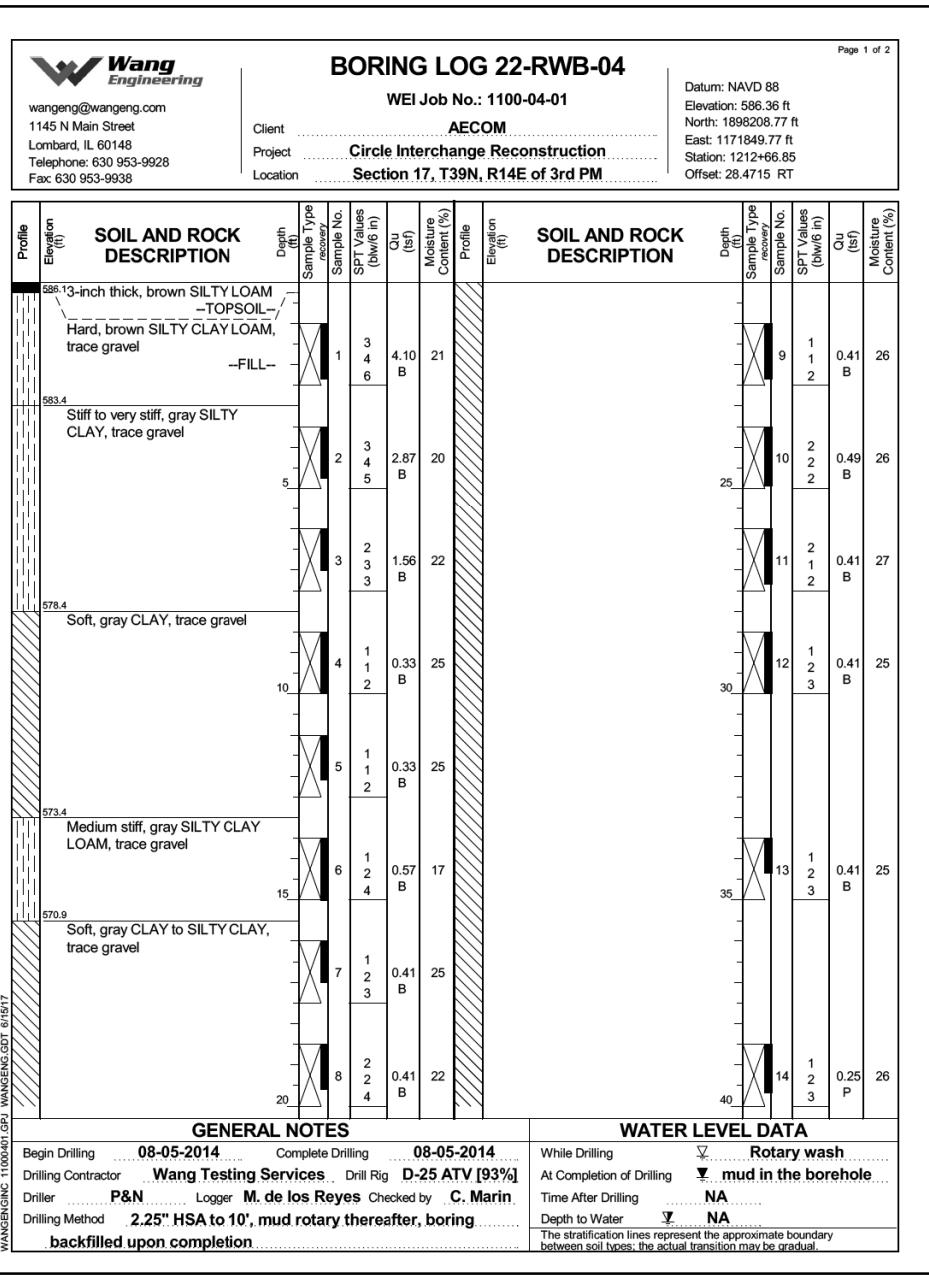
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PLOT SCALE = N.T.S.	CHECKED - ATB	REVISED
PLOT DATE = 7/26/2018	DRAWN - GF	REVISED
	CHECKED - ATB	REVISED

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**SOIL BORING LOGS - 30  
 STRUCTURE NO. 016-1715**  
 SHEET NO. S3-170 OF S3-172

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	912
CONTRACT NO. 60X93			ILLINOIS FED. AID PROJECT	

0161715-60X93-S168-Boring.dgn



**NOTE:**  
1. Station and offset are measured along  
Ramp WS & PGL.

0161715-60X93-S169-Boring.dgn



USER NAME = floresg	DESIGNED - AV	REVISED
	CHECKED - ATB	REVISED
PLOT SCALE = N.T.S.	DRAWN - GF	REVISED
PLOT DATE = 7/26/2018	CHECKED - ATB	REVISED

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SOIL BORING LOGS - 31  
STRUCTURE NO. 016-1715**

SHEET NO. S3-171 OF S3-172

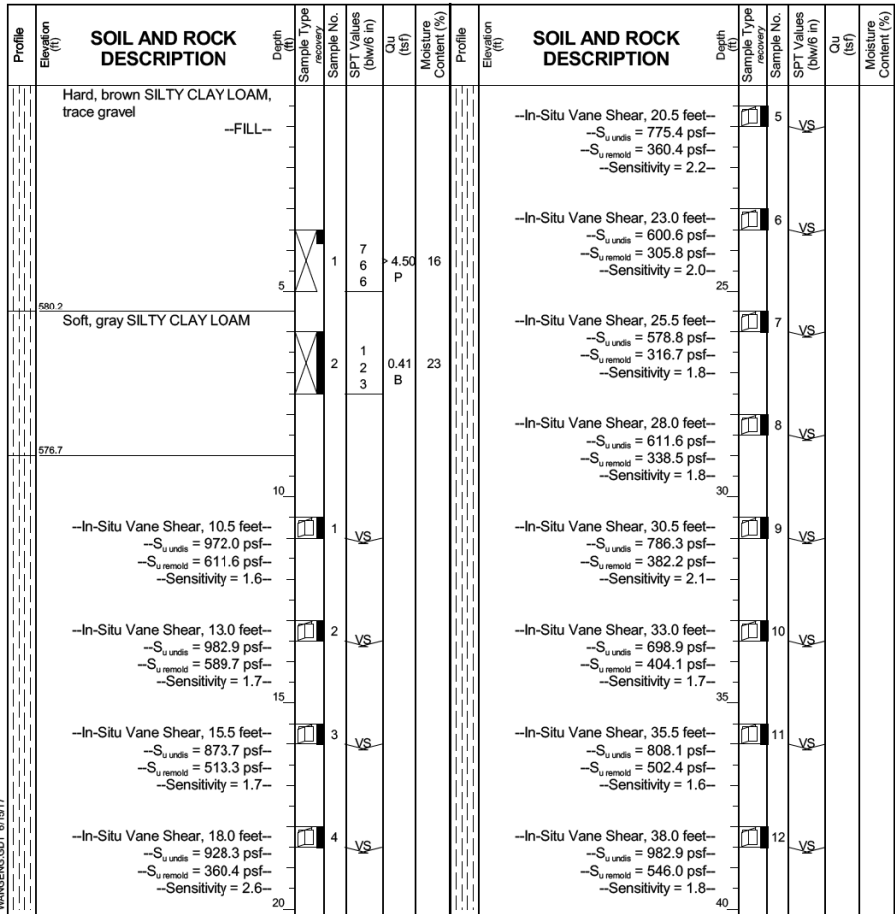
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	913
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

**Wang Engineering**  
 wangeng@wangeng.com  
 1145 N Main Street  
 Lombard, IL 60148  
 Telephone: 630 953-9928  
 Fax: 630 953-9938

**BORING LOG VST-06**  
 WEI Job No.: 1100-04-01  
 Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88  
 Elevation: 585.69 ft  
 North: 1898109.29 ft  
 East: 1171902.18 ft  
 Station: 1211+74.65  
 Offset: 35.3599 LT

Page 1 of 2



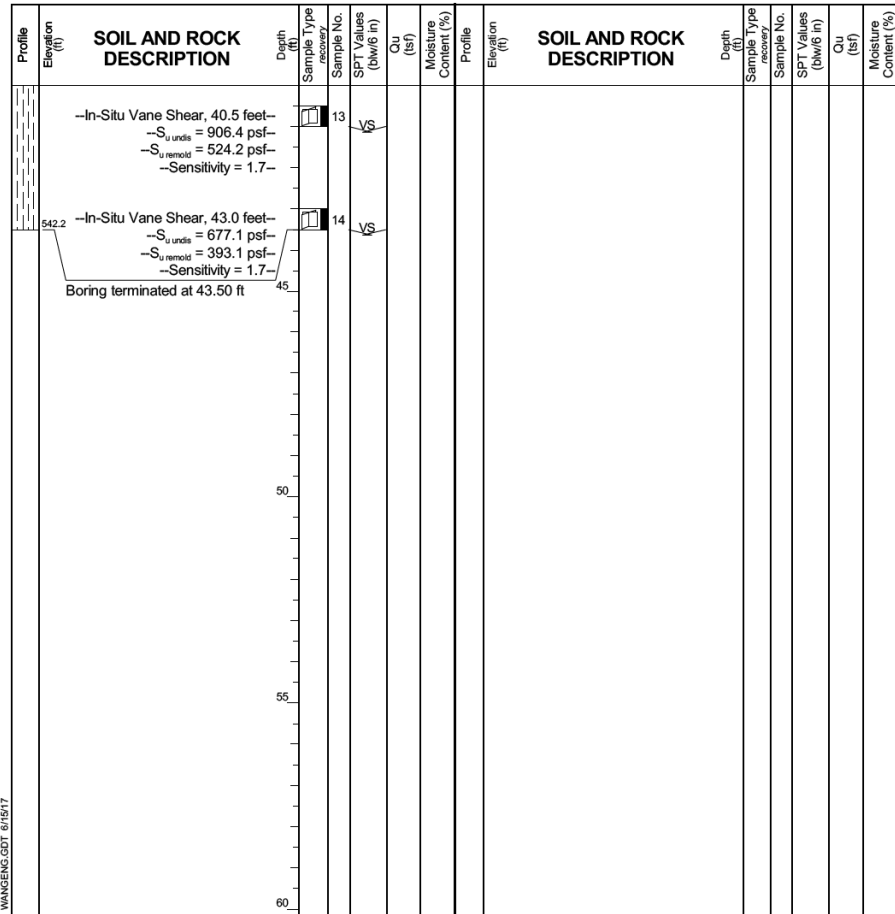
GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	12-09-2015	Complete Drilling	12-14-2015
Drilling Contractor	Wang Testing Services	Drill Rig	CME-55 TMR [85%]
Driller	R&N	Logger	F. Bozga
Checked by	A. Kurnia	Drilling Method	2.25" HSA to 10', mud rotary thereafter, boring
backfilled upon completion		The stratification lines represent the approximate boundary between soil types. the actual transition may be gradual.	
While Drilling	Rotary wash	At Completion of Drilling	mud in the borehole
Time After Drilling	NA	Depth to Water	NA

**Wang Engineering**  
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 1145 N Main Street  
 Lombard, IL 60148  
 Telephone: 630 953-9928  
 Fax: 630 953-9938

**BORING LOG VST-06**  
 WEI Job No.: 1100-04-01  
 Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88  
 Elevation: 585.69 ft  
 North: 1898109.29 ft  
 East: 1171902.18 ft  
 Station: 1211+74.65  
 Offset: 35.3599 LT

Page 2 of 2



GENERAL NOTES		WATER LEVEL DATA	
Begin Drilling	12-09-2015	Complete Drilling	12-14-2015
Drilling Contractor	Wang Testing Services	Drill Rig	CME-55 TMR [85%]
Driller	R&N	Logger	F. Bozga
Checked by	A. Kurnia	Drilling Method	2.25" HSA to 10', mud rotary thereafter, boring
backfilled upon completion		The stratification lines represent the approximate boundary between soil types. the actual transition may be gradual.	
While Drilling	Rotary wash	At Completion of Drilling	mud in the borehole
Time After Drilling	NA	Depth to Water	NA

**NOTE:**

1. Station and offset are measured along  
 @ Ramp WS & PGL.

0161715-60X93-S170-Boring.dgn



USER NAME = floresg	DESIGNED - AV	REVISED
PLOT SCALE = N.T.S.	CHECKED - ATB	REVISED
PLOT DATE = 7/26/2018	DRAWN - GF	REVISED
	CHECKED - ATB	REVISED

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS - 32  
 STRUCTURE NO. 016-1715

SHEET NO. S3-172 OF S3-172

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	914
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60X93	

Benchmark: Cut square at southeast corner of Van Buren St. and Halsted St., on northeast corner of first step of decorative pillar. Elevation 594.00.

Existing Structure: None

**DESIGN SPECIFICATIONS**

2014 AASHTO LRFD Bridge Design Specifications, 7th Edition, with 2015 & 2016 Interim Revisions

**DESIGN STRESSES**

**FIELD UNITS**  
 f'c = 3,500 psi  
 f'c = 4,000 psi (Superstructure Concrete)  
 fy = 60,000 psi (Reinforcement)  
 fy = 50,000 psi (M270 Grade 50)

**LOADING HL-93**

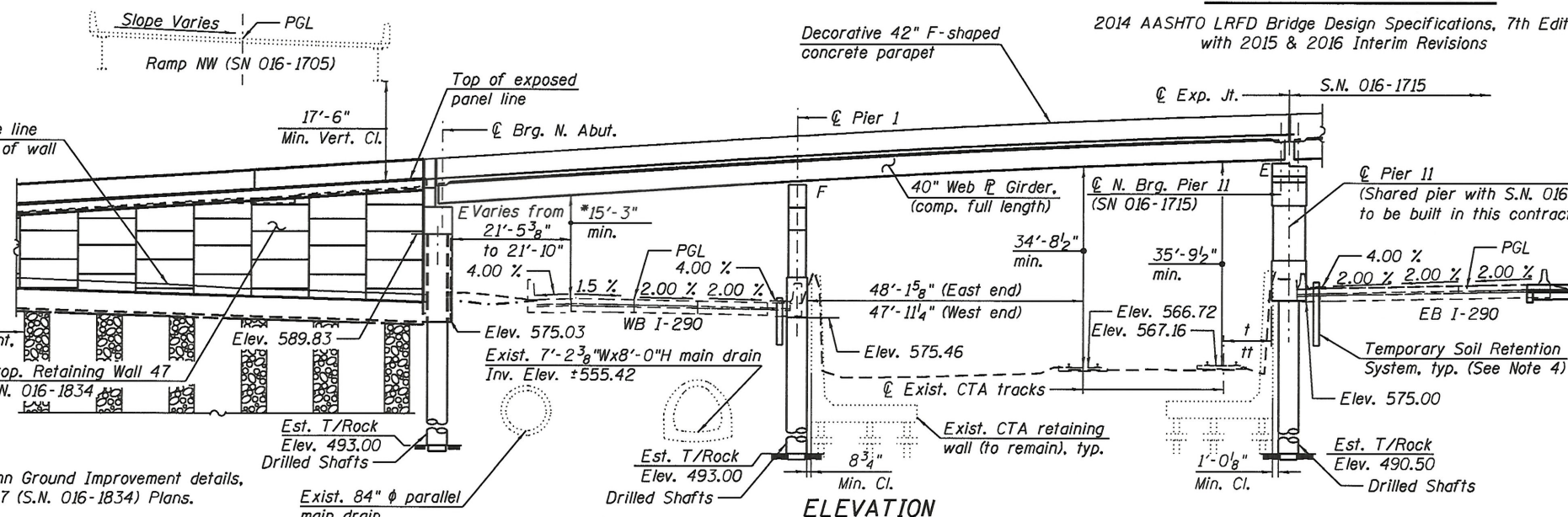
Allow 50#/sq. ft. for future wearing surface.

**SEISMIC DATA**

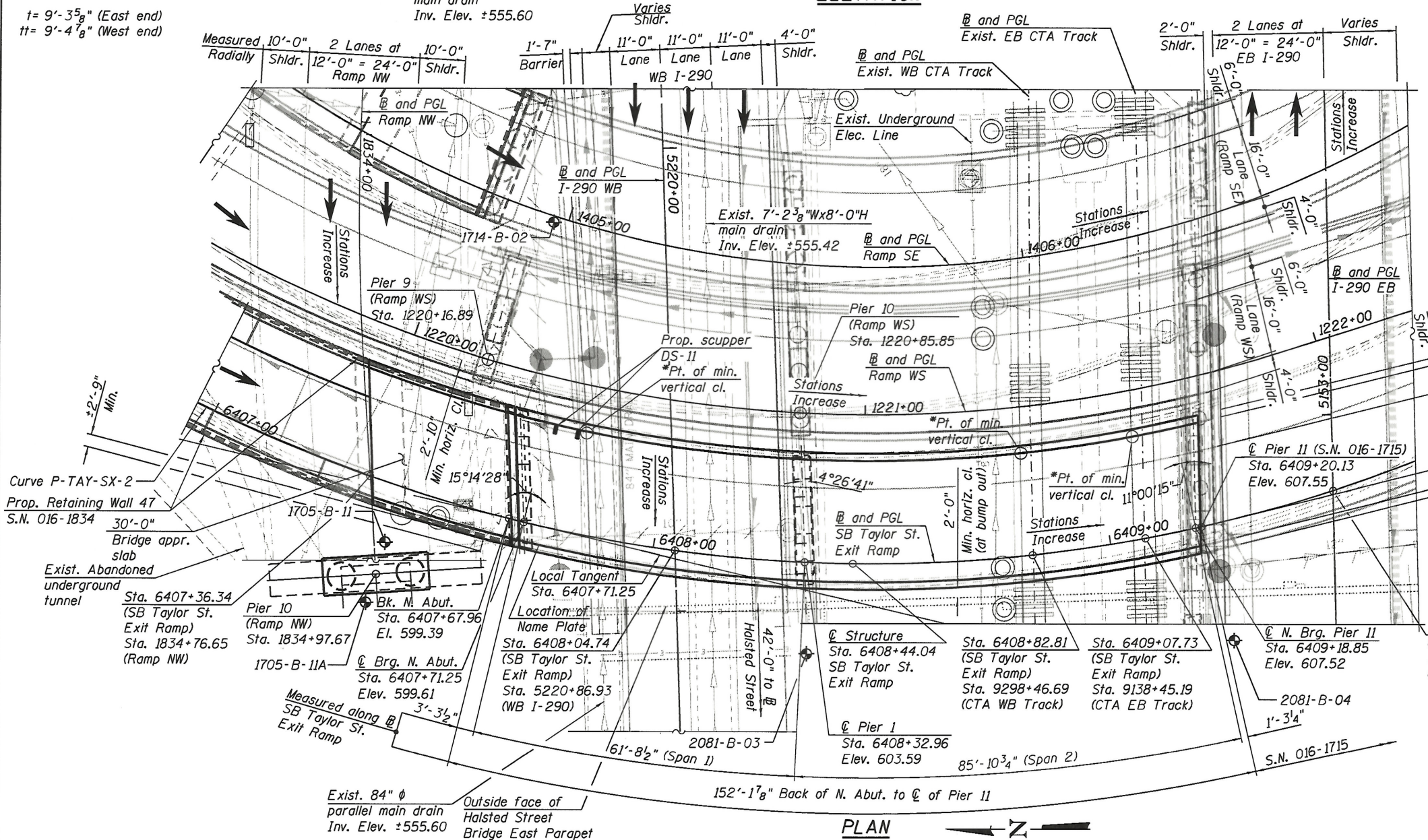
Seismic Performance Zone (SPZ) = 1  
 Design Spectral Acceleration at 1.0 sec. (S01) = 0.085g  
 Design Spectral Acceleration at 0.2 sec. (S05) = 0.144g  
 Soil Site Class = D

**NOTES:**

1. For Offset Sketch, Profile Grade Lines and Curve Data, see Sheet S4-02
2. For Index of Sheets and Total Bill of Material, see Sheet S4-03
3. For General Notes and Existing Structure Assessment Notes, see Sheet S4-04.
4. For Temporary Soil Retention System Details, see proposed Ramp WS (S.N. 016-1715) Plans.



**ELEVATION**



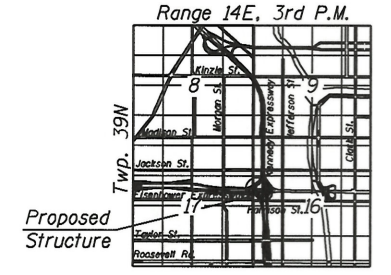
**PLAN**



Signed Moussa A. Issa  
 Dr. Moussa A. Issa, S.E. I.L. Lic. No. 081-005738  
 Expires 11-30-2018  
 Date 07/30/18 For Sheets S4-01 thru S4-38

**LEGEND:**

- Soil Boring
- Temporary Soil Retention System
- Junction Box
- Exist. Manhole
- Electric
- Exist. Storm Sewer
- Prop. Storm Sewer
- Aband. Sewer
- Prop. Catch Basin
- Exist. Catch Basin



**GENERAL PLAN AND ELEVATION**  
**SB TAYLOR ST. EXIT RAMP**  
**OVER F.A.I. RTE. 290**  
**(EISENHOWER EXPRESSWAY) AND CTA**  
**F.A.I. RTE. 90/94/290**  
**SECTION 2014-013R&B-R**  
**COOK COUNTY**  
**STATION 6408+44.04**  
**STRUCTURE NO. 016-1718**

**SCUPPER LOCATION**

Station	Offset
6407+73.79	22.00' Lt.
6407+78.79	22.00' Lt.



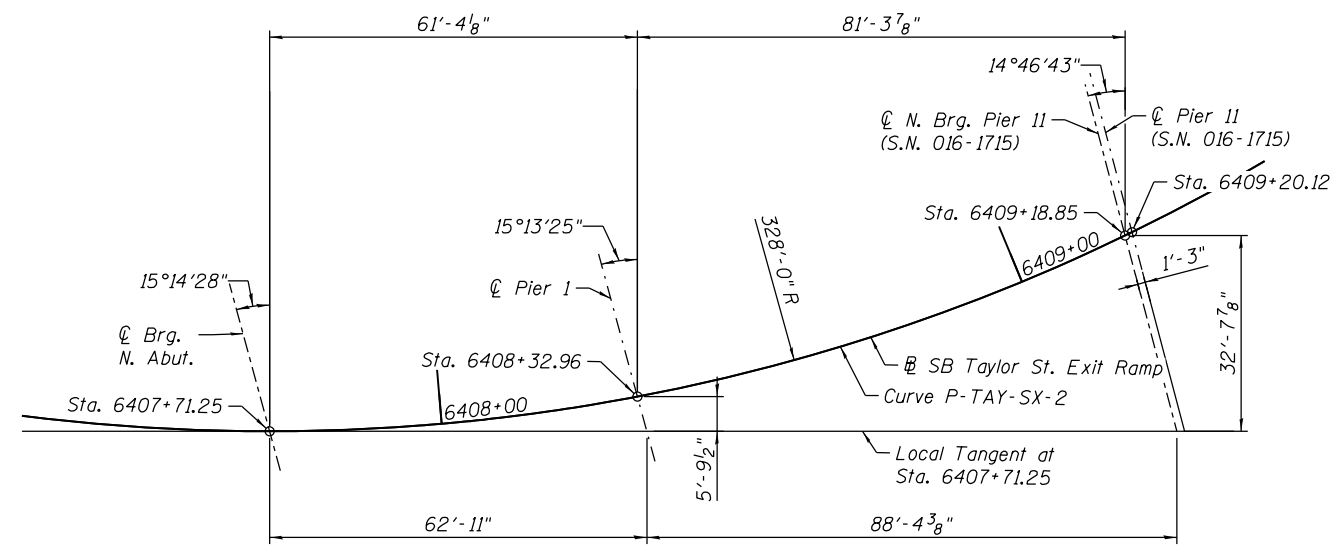
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STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

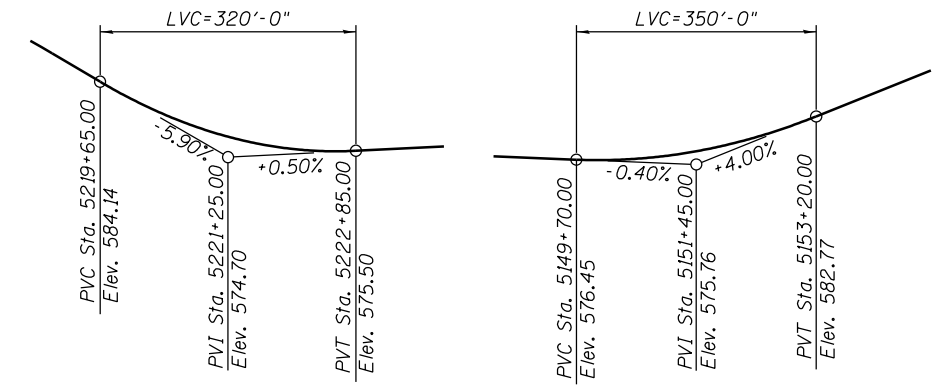
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90/94/290	2014-013R&B-R	COOK	1972	915
ILLINOIS FED. AID PROJECT				

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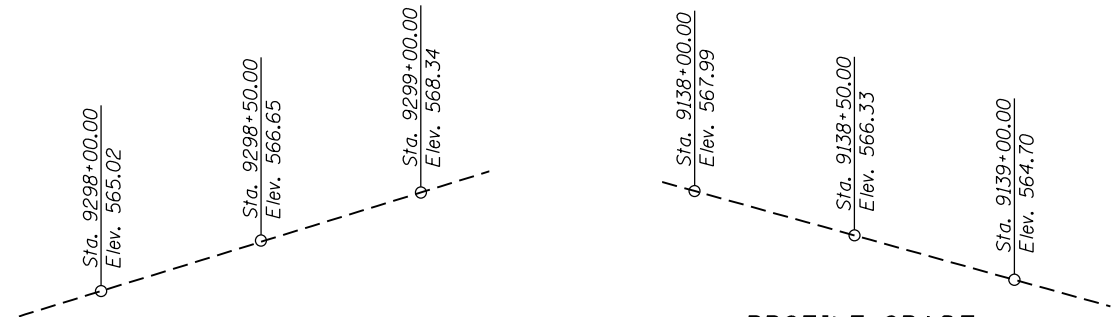


**OFFSET SKETCH**



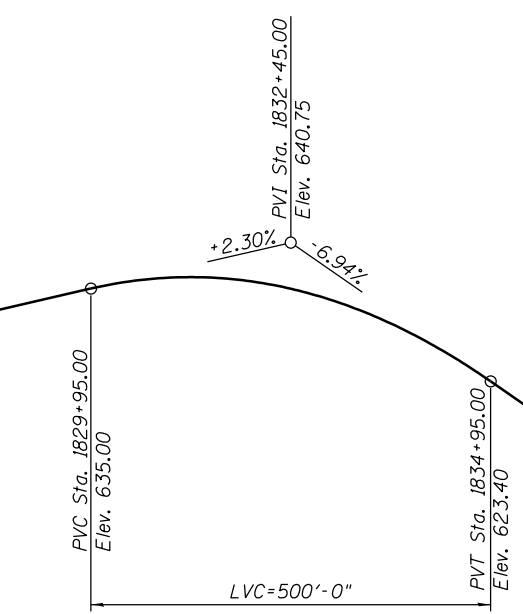
**PROFILE GRADE**  
(Along WB Congress)

**PROFILE GRADE**  
(Along EB Congress)



**PROFILE GRADE**  
(Along CTA WB Track)

**PROFILE GRADE**  
(Along CTA EB Track)



**PROFILE GRADE**  
(Along Ramp NW)

**CURVE DATA**  
(Ramp NW)

Prop. Curve P-CIR-NW-6  
 PI Sta. = 1831+44.22  
 $\Delta = 88^\circ 30' 25"$  (LT)  
 $D = 10^\circ 36' 37"$   
 $R = 540.00'$   
 $T = 526.11'$   
 $L = 834.16'$   
 $E = 213.92'$   
 $e = 5.40\%$   
 $T.R. = N/A$   
 $S.E. Run = 66'$   
 $P.C. Sta. = 1826+18.11$   
 $P.T. Sta. = 1834+52.27$   
 $DS = 35$   
 $PS = 35$

**CURVE DATA**  
(SB Taylor St. Exit Ramp)

Prop. Curve P-TAY-SX-2  
 PI Sta. = 6408+06.27  
 $\Delta = 65^\circ 55' 10"$  (LT)  
 $D = 17^\circ 28' 06"$   
 $R = 328.00'$   
 $T = 212.68'$   
 $L = 377.37'$   
 $E = 62.92'$   
 $e = -5.00\%$   
 $T.R. = 46'$   
 $S.E. Run = 114'$   
 $P.C. Sta. = 6405+93.59$   
 $P.T. Sta. = 6409+70.96$   
 $DS = 25$   
 $PS = 25$

**PROFILE GRADE**  
(Along SB Taylor St. Exit Ramp)



USER NAME =	ahmad,issa	DESIGNED -	JJS	REVISED -	
		CHECKED -	LAB	REVISED -	
PLOT SCALE =	N.T.S	DRAWN -	JJS	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	MI, MAI	REVISED -	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

OFFSET SKETCH, PROFILE GRADE LINES AND CURVE DATA  
STRUCTURE NO. 016-1718

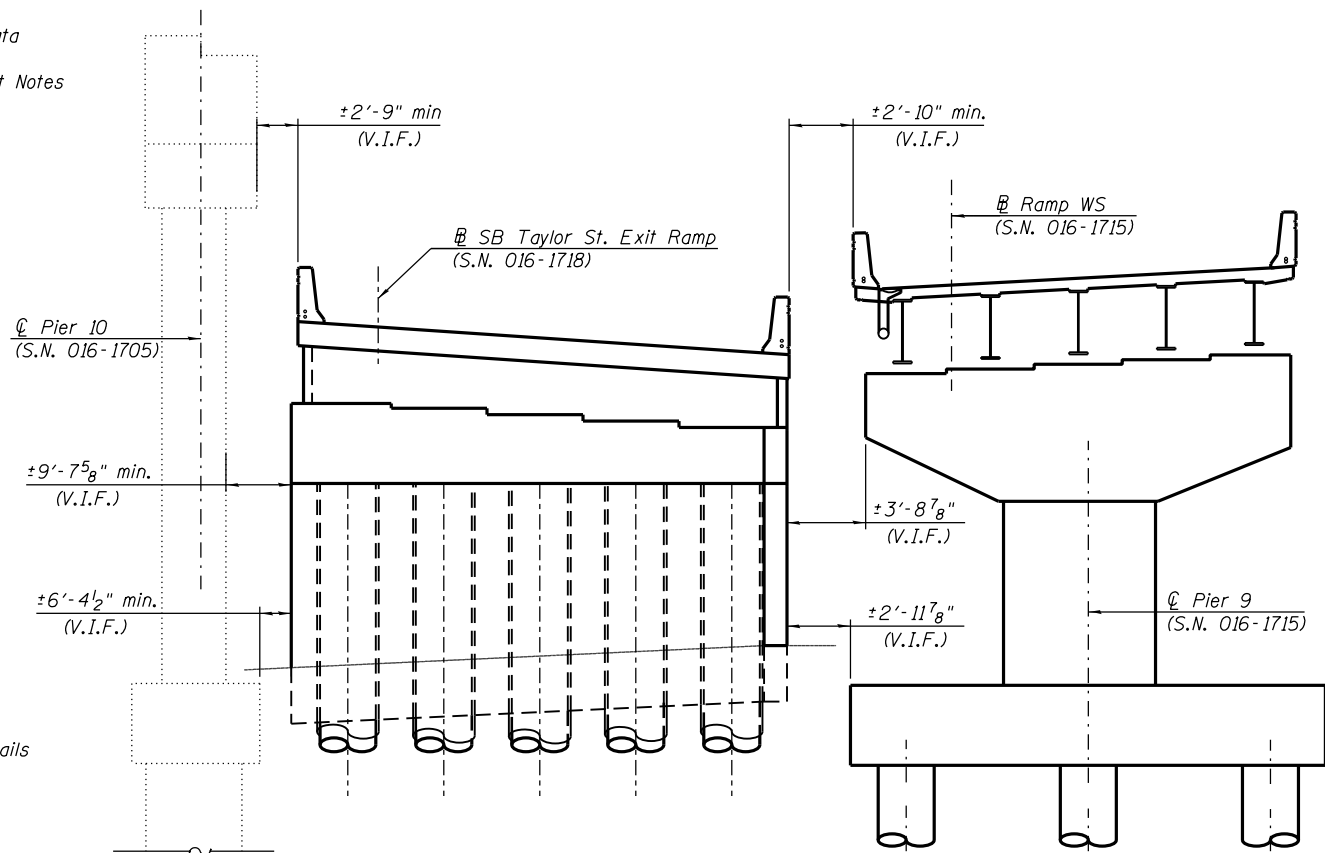
SHEET NO. S4-02 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 60X93				
ILLINOIS		FED. AID PROJECT		

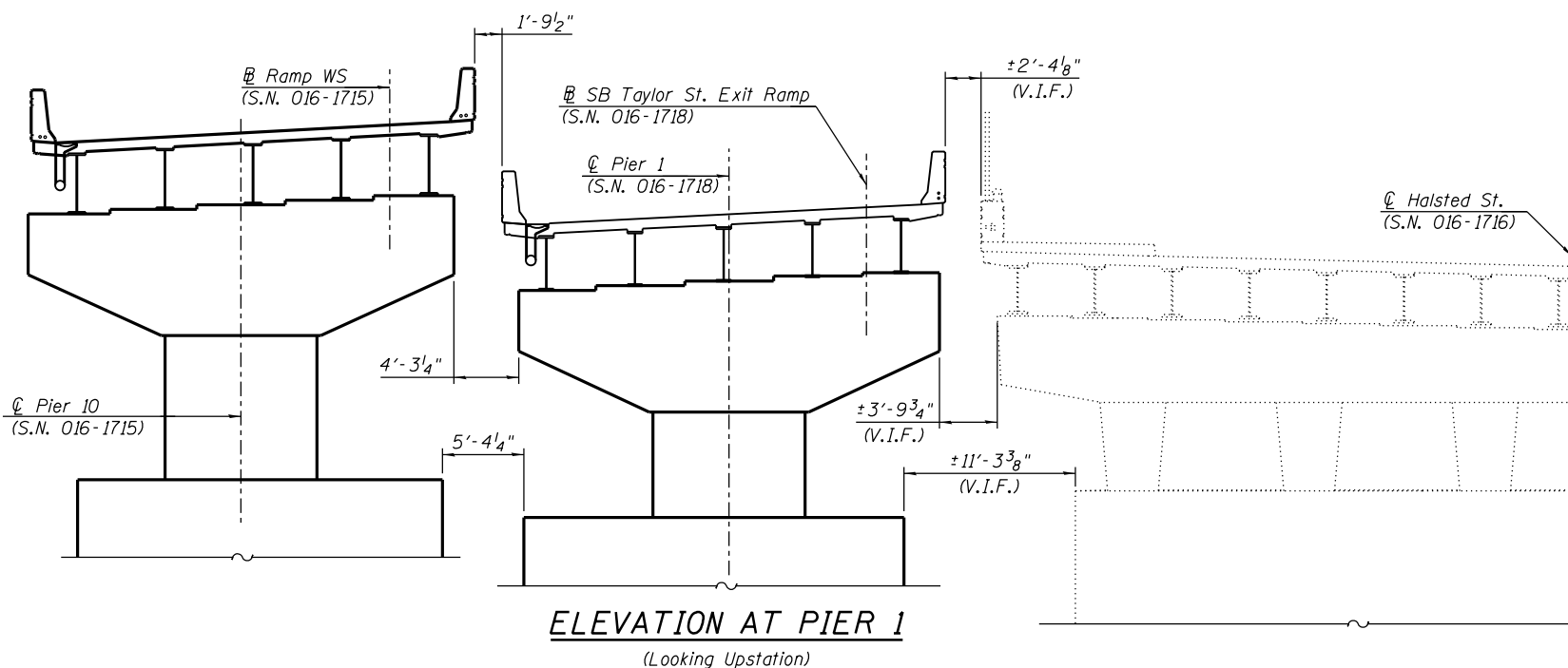


**INDEX OF SHEETS**

- S4-01 General Plan and Elevation
- S4-02 Offset Sketch, Profile Grade Lines and Curve Data
- S4-03 Total Bill of Material and Index of Sheets
- S4-04 General Notes and Existing Structure Assessment Notes
- S4-05 Substructure Layout
- S4-06 Top of Slab Elevations Layout
- S4-07 Top of Slab Elevations
- S4-08 Top of North Approach Slab Elevations
- S4-09 Deck Plan and Cross Section
- S4-10 Parapet Elevations
- S4-11 Deck Cross Section, Details and Bill of Material
- S4-12 North Approach Slab Plan
- S4-13 North Approach Slab Details
- S4-14 Expansion Joint Details
- S4-15 Bridge Drainage System
- S4-16 Drainage Scupper, DS-II
- S4-17 Framing Plan
- S4-18 Girder Elevation
- S4-19 Girder Moment and Reaction Tables
- S4-20 Structural Steel Details I
- S4-21 Structural Steel Details II
- S4-22 Bearing Layout and Orientation
- S4-23 Expansion Pot Bearing Details I
- S4-24 Expansion Pot Bearing Details II
- S4-25 Fixed Pot Bearing Details
- S4-26 North Abutment Plan and Elevation
- S4-27 North Abutment Details I
- S4-28 North Abutment Details II
- S4-29 North Abutment Architectural Details
- S4-30 Pier 1 Plan and Elevation
- S4-31 Pier 1 Sections and Details
- S4-32 Pier 1 Architectural Details
- S4-33 Bar Splicer Assembly and Mechanical Splicer Details
- S4-34 Boring Logs - I
- S4-35 Boring Logs - II
- S4-36 Boring Logs - III
- S4-37 Boring Logs - IV
- S4-38 Boring Logs - V



**ELEVATION AT NORTH ABUTMENT**  
(Looking North)



**ELEVATION AT PIER 1**  
(Looking Upstation)

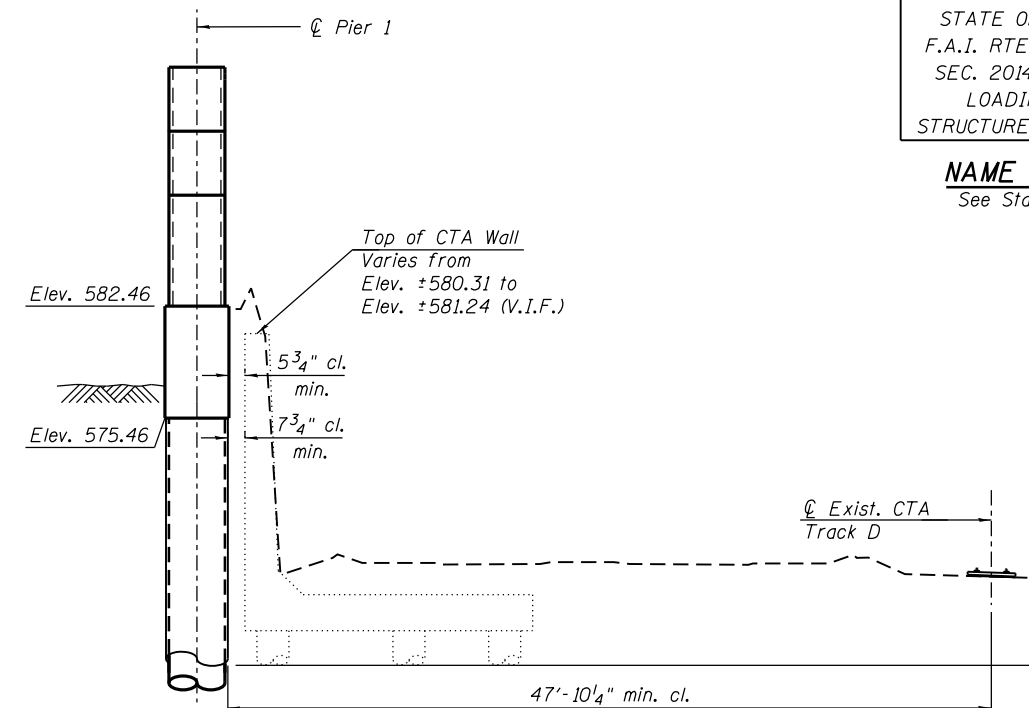
**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Structure Excavation	CU YD	-	51.3	51.3
Concrete Structures	CU YD	-	120.7	120.7
Rubbed Finish	SQ FT	-	479	479
Concrete Superstructure	CU YD	169.6	-	169.6
Form Liner Textured Surface	SQ FT	-	217	217
Protective Coat	SQ YD	737	-	737
Concrete Superstructure (Approach Slab)	CU YD	45.8	-	45.8
Furnishing And Erecting Structural Steel	L SUM	0.10	-	0.10
Stud Shear Connectors	EACH	2,124	150	2,274
Reinforcement Bars	POUND	-	82,780	82,780
Reinforcement Bars, Epoxy Coated	POUND	61,760	22,710	84,470
Bar Splicers	EACH	31	-	31
Mechanical Splicers	EACH	-	120	120
Name Plates	EACH	1	-	1
Permanent Casing	FOOT	-	739	739
Drilled Shaft In Soil	CU YD	-	264.0	264.0
Drilled Shaft In Rock	CU YD	-	12.0	12.0
Preformed Joint Strip Seal	FOOT	31	-	31
Anchor Bolts, 1"	EACH	40	-	40
Anchor Bolts, 1 1/2"	EACH	30	-	30
Concrete Sealer	SQ FT	-	1,932	1,932
Granular Backfill Special	CU YD	-	2.7	2.7
Crosshole Sonic Logging Access Ducts	FOOT	-	779	779
Crosshole Sonic Logging Testing	EACH	-	2	2
Foundation Construction At Existing Obstructions	EACH	-	7	7
Earth Excavation (Special)	CU YD	-	14.0	14.0
Bridge Deck Grooving (Longitudinal)	SQ YD	463	-	463
High Load Multi-Rotational Bearings, Guided Expansion, 150K	EACH	10	-	10
High Load Multi-Rotational Bearings, Fixed - 300K	EACH	5	-	5
Granular Backfill For Structures	CU YD	-	26.2	26.2
Drainage Scuppers, Ds-II	EACH	2	-	2
Drainage System	L SUM	0.10	-	0.10
* CTA Protective Shield	L SUM	0.33	-	0.33

\* CTA Protective Shield shall be as per the Special Provision "CTA Protective Shield". See Ramp WS (S.N. 016-1715) (Contract 60X93) Plans for details.

STATION 6408+44.04  
BUILT 20-- BY  
STATE OF ILLINOIS  
F.A.I. RTE. 90/94/290  
SEC. 2014-013R&B-R  
LOADING HL-93  
STRUCTURE NO. 016-1718

**NAME PLATE**  
See Std. 515001



**SECTION AT PIER 1**



USER NAME = marian.agamy	DESIGNED - MI, JJS	REVISED -
PLOT SCALE = N.T.S	CHECKED - MI, LAB	REVISED -
PLOT DATE = 9/19/2018	DRAWN - WM	REVISED -
	CHECKED - MI, MAI	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOTAL BILL OF MATERIAL AND INDEX OF SHEETS  
STRUCTURE NO. 016-1718**

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 917
CONTRACT NO. 60X93				

SHEET NO. S4-03 OF S4-38 SHEETS

ILLINOIS FED. AID PROJECT

FILE NAME: D:\161749-PWINT-aecom\line\local\AECOM\_DS02\_NAYDocuments\01\_Americas\Transportation\60269938\_Circle\Phase\_II\000\_CAD\008\_Structural\Structure\_016-1718\0161718-60X93-5003-BOM 3:53:58 PM

**GENERAL NOTES**

1. Fasteners shall be ASTM A325 Type 1, hot-dipped galvanized bolts. Bolts 7/8"  $\phi$ , holes 15/16"  $\phi$ , unless otherwise noted.
2. Calculated weight of Structural Steel = 177,860 lbs.
3. All structural steel shall be AASHTO M 270 Grade 50.
4. All structural steel shall be metalized (thermal spraying). See Special Provision for "Metalizing of Structural Steel".
5. No field welding is permitted except as specified in the contract documents.
6. Reinforcement bars designated (E) shall be epoxy coated.
7. Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.
8. Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 in. (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
9. Concrete Sealer shall be applied to the designated areas of the abutment and pier.
10. Structural steel erection shall be accomplished by a steel erection contractor or subcontractor certified as an Advanced Certified Steel Erector (ACSE) by the American Institute of Steel Construction (AISC). See Special Provision for "Erection of Complex Steel Structures".
11. Existing/Abandoned foundation elements (drilld shafts, etc.) are present at the proposed locations of North Abutment and Pier 1. The Contractor shall provide equipment, labor and materials as required to install drilled shafts thru existing known obstructions. Obstruction mitigation shall be as per the Special Provision for Foundation Construction at Existing Obstructions. If, in the course of drilling, interference with an existing element is observed through which the drill cannot proceed, the contractor shall immediately notify the Engineer and work shall cease until such time as an appropriate solution is provided. All costs for such coordination shall be included with Foundation Construction at Existing Obstructions.
12. The drilled shaft quantities and reinforcement detailing are based on the estimated elevations shown on the plans. The actual elevations may differ at each shaft location and corresponding adjustments shall be made to the drilled shaft and reinforcement quantities and payment limits.
13. "System 1" shall be utilized to top-coat all metalized steel. See Special Provision for "Metalizing of Structural Steel" for details.
14. The Contractor shall field-verify the locations of existing utilities prior to construction and take all precautions not to damage existing utilities. Any such damage shall be repaired by the Contractor at no additional cost to the Department.
15. The Contractor shall exercise extreme caution during removal and construction to make certain that removal/construction activities, live load surcharge, structure excavation and other loads applied to the structures will not have detrimental effects on the adjacent structures (including CTA Retaining Walls), buildings, 84" diameter and 7'-2 3/8"Wx8'-0"H existing main drains located along the I-290 westbound roadway (between the North Abutment and Pier 1) and/or other utilities. See Contract Special Provisions for details. Any damage to the existing elements during removal/construction shall be repaired by the Contractor, at his/her expense, and at no charge to the Department.
16. Slipforming of the parapet is not allowed.
17. For the Conduits Embedded in Structure details and quantities, see Roadway and Electrical Plans.
18. For drilled shaft locations where permanent casing is required as shown on the plans, the casing will be paid for under the Permanent Casing pay item. If the Contractor elects to use permanent Casing for ease of construction in locations where permanent casing is not required on the plans, the casing will not be paid for separately and is included in the Drilled Shaft in Soil pay item.
19. Limited groundwater elevation data is available in the boring logs. In addition, groundwater may also be present in deeper granular layers. The groundwater may rise in the shafts to an elevation above the top of granular layers. The Contractor shall consider this information when choosing construction methods. The Contractor will not be compensated for issues related to the groundwater elevation.
20. The Contractor shall take all necessary precautions not to contaminate groundwater during the drilled shaft construction operation. Contractor is responsible for the proper containment and disposal of the contaminated groundwater and spoils resulting from Contractor's means and methods. No additional cost will be paid for this effort.
21. Based on the squeeze potential of the soft clay soils, the use of temporary casing will be required to two feet below the soft clay layer in order to properly construct the drilled shafts. Casing may be pulled or left in place, as determined by the Contractor, at no additional cost to the Department.
22. The existing drainage manholes at the northwest corner of the proposed abutment and Retaining Wall 47 (S.N. 016-1834) shall be relocated to avoid conflict with proposed construction. See Drainage and Utility Plans for details.
23. The Contractor shall provide vibration and displacement monitoring at the locations specified in the Special Provisions for Construction Vibration Monitoring and Monitoring Adjacent Structures to ensure that removal/construction activities in the vicinity of the structures do not have detrimental effects on building foundations. No additional compensation shall be provided to the Contractor for alternative means and methods, or additional precautionary measures, required during removal/construction activities to satisfy these requirements. See Contract Special Provisions for details.

24. The Contractor shall coordinate the construction of the proposed structure with the construction of the proposed Retaining Wall 47 (S.N. 016-1834) and the proposed Ramp WS Bridge (S.N. 016-1715). See MOT plan sheets and Contract Special Provisions, including the Available Work Areas and Sequencing Requirements Special Provision, for additional construction and coordination requirements.
25. The Contractor may encounter abandoned foundation elements including, but not limited to, sheet piles, drilled shafts and steel piles, that obstruct construction of the proposed structure. Removal and disposal of portions of abandoned foundation elements shall be as per the Special Provision for Abandoned Foundation Removal. See Roadway Plans for approximate locations and quantities.
26. The Contractor shall install a protective shield system to protect the existing CTA infrastructure from any falling objects during the demolition of the existing structures and the construction of proposed Ramp WS (S.N. 016-1715), Ramp SE (S.N. 016-1714) and SB Taylor Street Exit Ramp (S.N. 016-1718). The Contractor shall install the CTA Protective Shield prior to any construction activity over and/or adjacent to CTA. This work shall be in accordance with the Special Provision for CTA Protective Shield.

**EXISTING STRUCTURE ASSESSMENT NOTES**

1. In order to construct proposed superstructure and substructure elements, the Contractor may elect to support temporary construction material and/or equipment on the existing structures in the vicinity of the proposed structure. The Contractor shall submit Structural Assessment Report(s) for approval prior to beginning the work. See Special Provision.
  2. An Existing Structure Information Package (ESIP) will be provided by the Department to the Contractor upon request.
  3. The Contractor shall retain the services of an engineering firm, prequalified in the IDOT consultant selection category of Highway Bridge (Adv. Typical), for preparation of the Structural Assessment Report(s). Contractor's pre-approval shall not be applicable for this project. See Special Provision.
- Current existing structure Load Rating on file:
- |  |  |
|--|--|
| S.N. 016-1713 (Harrison St over SB I-90/94)<br>Inventory Rating Factor: 2.19 (HL-93)<br>Operating Rating Factor: 2.84 (HL-93)<br>Live Load Restriction: None | S.N. 016-1703 (WB I-290 over I-90/94)<br>Inventory Rating Factor: 1.21 (HL-93)<br>Operating Rating Factor: 2.11 (HL-93)<br>Live Load Restriction: None |
| S.N. 016-1716 (Halsted St over I-290 & CTA)<br>Inventory Rating Factor: 1.12 (HL-93)<br>Operating Rating Factor: 1.45 (HL-93)<br>Live Load Restriction: None | S.N. 016-2450 (WB I-290 to SB I-90/94)<br>Inventory: 0.71 (H20)<br>Operating: 1.18 (H20)<br>Live Load Restriction: None                                |
4. Inventory and Operating Ratings, and Live Load Restrictions, are provided for information only. Inventory and Operating Ratings are based on live loading and configuration as noted. Live Load Restrictions are based on Illinois legal loads and configurations. The Ratings and Live load Restrictions are not necessarily representative of capacities to support the Contractor's equipment.
  5. The Contractor is advised that the existing structures may contain members in deteriorated conditions with reduced load-carrying capacities. It is the Contractor's responsibility to account for the condition of existing structures when developing construction procedures for using them to support construction loads.
  6. The Contractor shall verify that the structural demands of the applied loads due to the Contractor's means and methods will not exceed the available capacity of the structure at the time loads are applied. Most likely, the Contractor will be required to provide additional shoring under the existing bridges (or other methods of retrofitting) to support construction loads. Design, installation and subsequent removal of such shoring system will be the responsibility of the Contractor and will not be paid separately.
  7. The Contractor shall use caution and not damage any component of the existing structure. Upon completion of work, and prior to allowing traffic back on the existing structure, the Contractor must restore the existing structure to its original condition.

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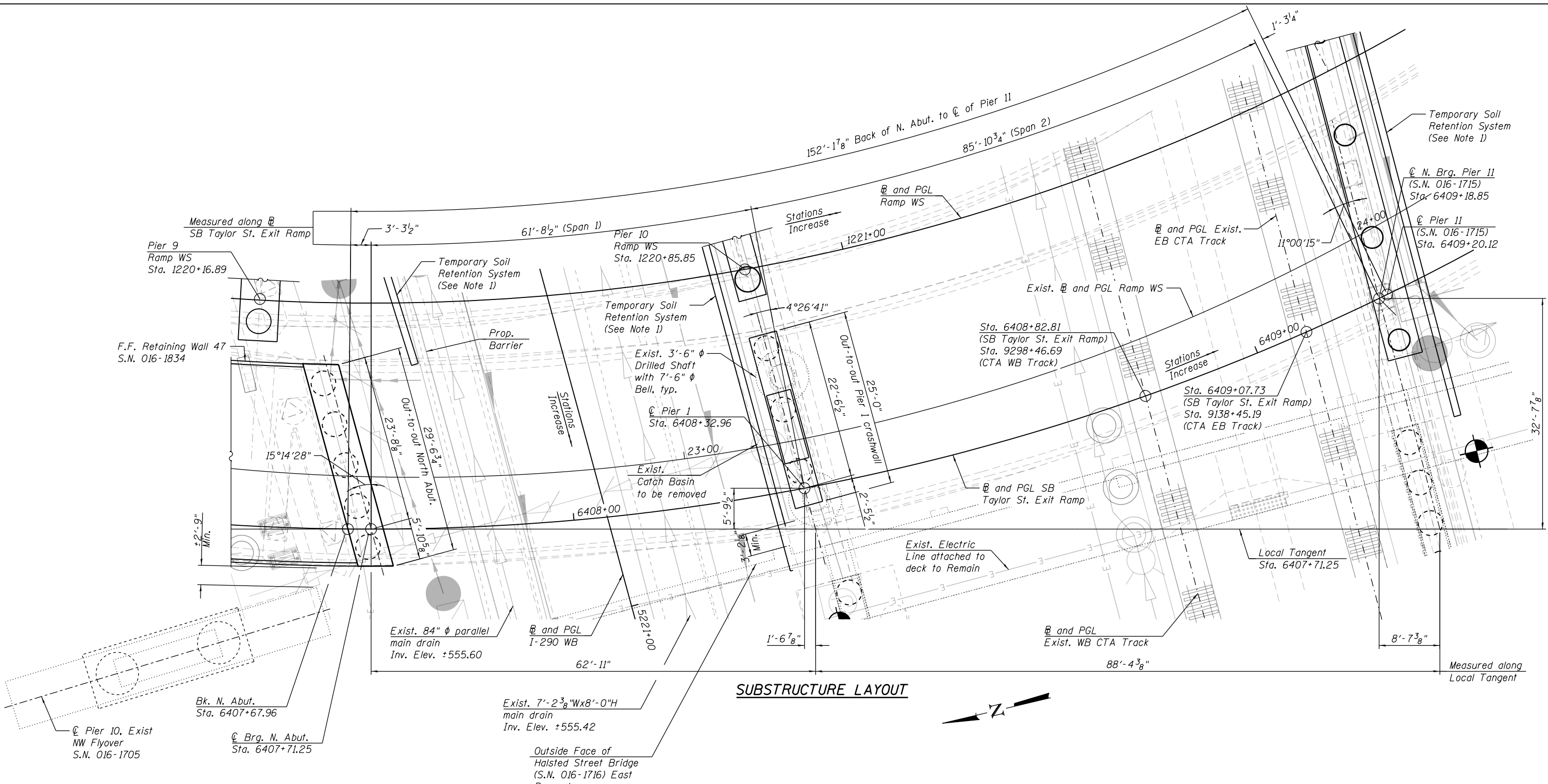
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**GENERAL NOTES AND EXISTING STRUCTURE ASSESSMENT NOTES  
STRUCTURE NO. 016-1718**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	918
CONTRACT NO. 60X93				
		ILLINOIS	FED. AID PROJECT	

SHEET NO. S4-04 OF S4-38 SHEETS

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**SUBSTRUCTURE LAYOUT**



**NOTES:**

1. For Temporary Soil Retention System Details, see prop. Ramp WS (S.N. 016-1715) Plans.

**LEGEND:**

- Soil Boring
- Temporary Soil Retention System
- Junction Box
- Exist. Manhole
- Exist. Catch Basin
- Prop. Catch Basin
- Light Pole
- Electric
- Exist. Storm Sewer
- Prop. Storm Sewer
- Aband. Sewer



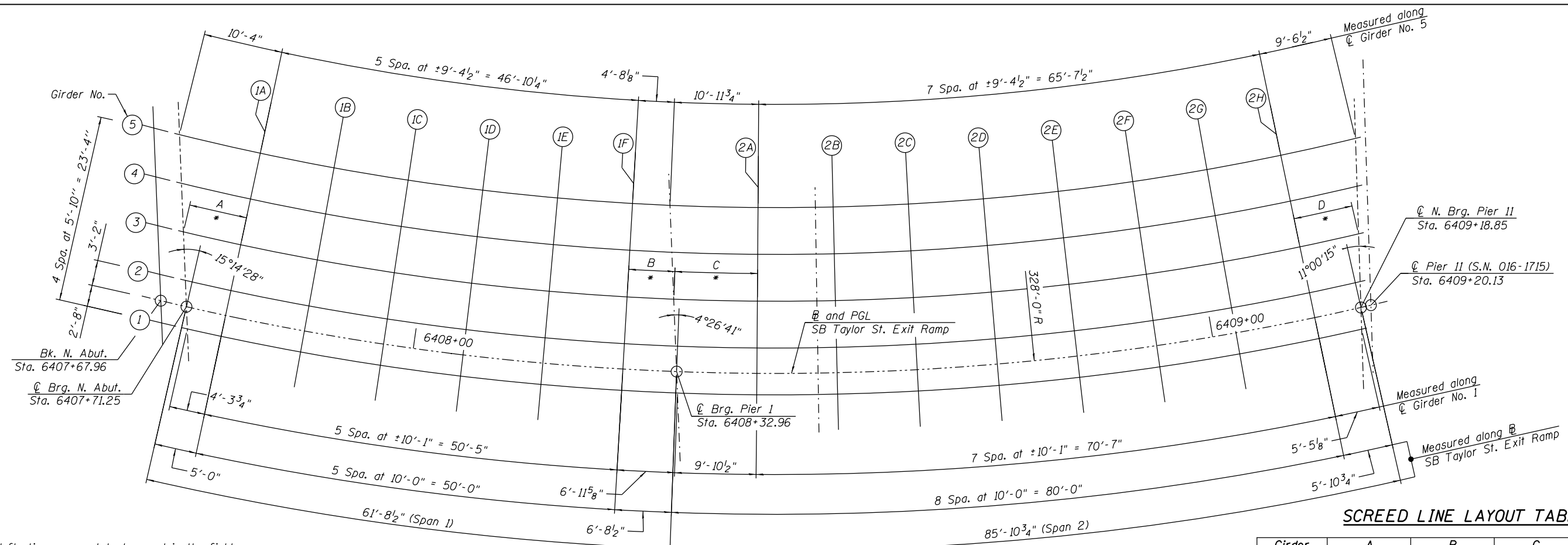
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PLOT DATE =	7/30/2018	CHECKED -	MI, MAI	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE LAYOUT  
STRUCTURE NO. 016-1718**

SHEET NO. S4-05 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	919
CONTRACT NO. 60X93				
ILLINOIS		FED. AID PROJECT		

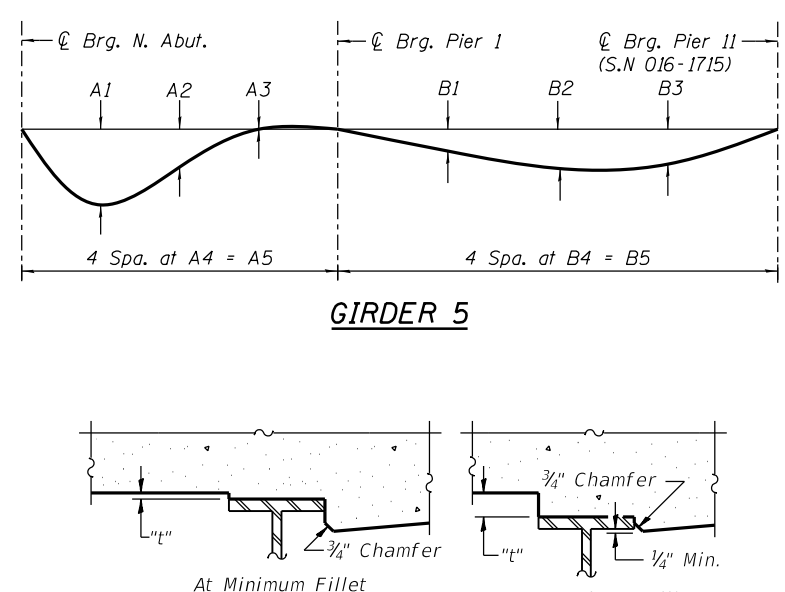
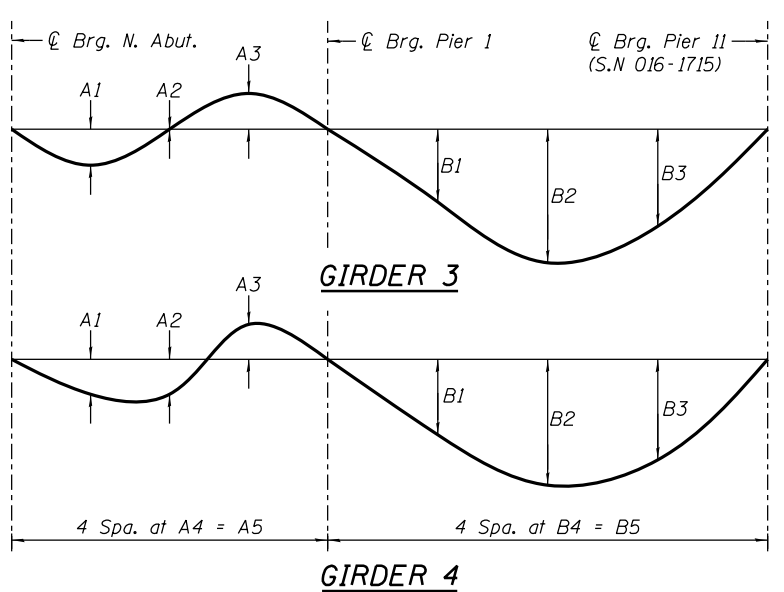
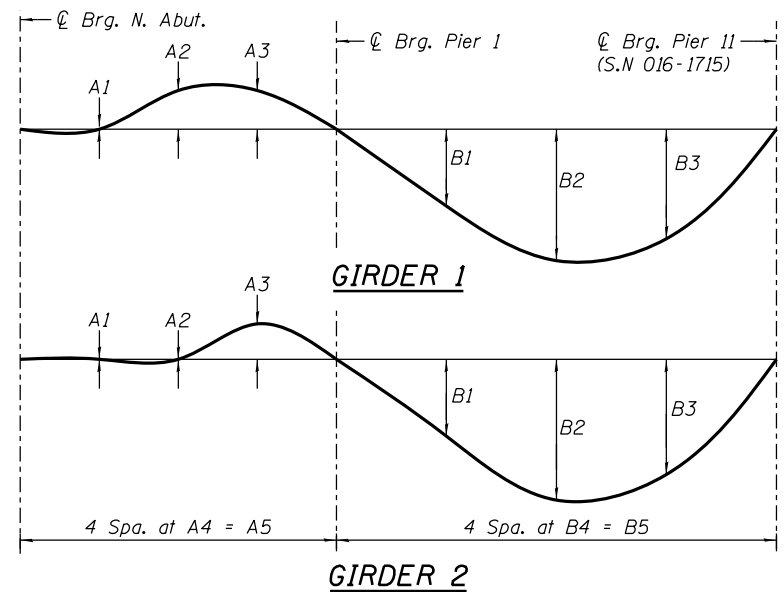


**SCREED LINE LAYOUT TABLE**

Girder	A	B	C	D
1	4'-3 3/4"	6'-11 5/8"	9'-10 1/2"	5'-5 1/8"
2	5'-9 3/4"	6'-4 3/4"	10'-1 3/4"	6'-5 3/8"
3	7'-3 3/4"	5'-9 7/8"	10'-5 1/8"	7'-5 3/4"
4	8'-9 7/8"	5'-3"	10'-8 3/8"	8'-6 1/8"
5	10'-4"	4'-8 1/8"	10'-11 3/4"	9'-6 1/2"

**PLAN**

\*For Dimensions A thru D, see Screed Line Layout Table.



Girder No.	DEAD LOAD DEFLECTIONS - CONCRETE WEIGHT ONLY									
	Span 1					Span 2				
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5
1	0"	0 1/8"	0 1/8"	15'-5 1/8"	61'-8 1/4"	0 7/8"	1 1/2"	1 1/4"	21'-5 5/8"	85'-10 3/8"
2	0"	0"	0 1/8"	15'-5 1/8"	61'-8 3/4"	0 3/4"	1 3/8"	1 1/8"	21'-5 3/4"	85'-11 1/8"
3	0 1/8"	0"	0 1/8"	15'-5 1/4"	61'-9 1/4"	0 3/4"	1 3/8"	1"	21'-6"	85'-11 7/8"
4	0 1/8"	0 1/8"	0 1/8"	15'-5 3/8"	61'-9 3/4"	0 3/4"	1 1/4"	1"	21'-6 1/8"	86'-0 5/8"
5	0 1/4"	0 1/8"	0"	15'-5 5/8"	61'-10 1/4"	0 5/8"	1 1/8"	1"	21'-6 3/8"	86'-1 3/8"

**FILLET HEIGHTS**

To determine "t": After all structural steel has been erected, elevations of the top flanges of the girders shall be taken at intervals in tables presented on Sheet S4-07. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" (see tables presented on Sheet S4-07), minus slab thickness, equals the fillet heights "t" above top flange of girders.

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USER NAME = ahmad,issa	DESIGNED - WM	REVISED -
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PLOT DATE = 7/30/2018	DRAWN - MA, WM	REVISED -
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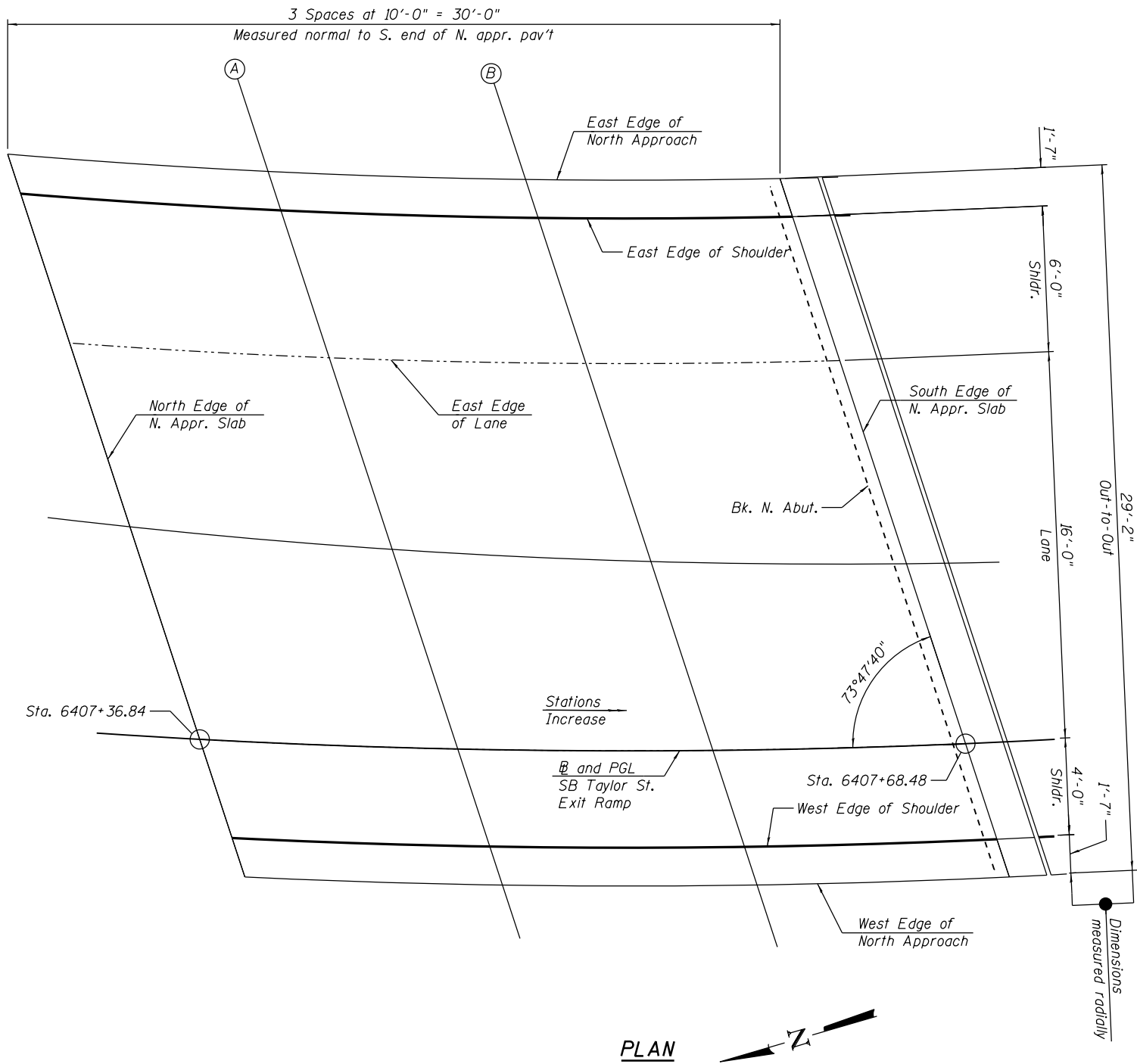
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS LAYOUT  
STRUCTURE NO. 016-1718**

SHEET NO. S4-06 OF S4-38 SHEETS

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 920
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				





PLAN



**WEST EDGE OF SHOULDER**

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
N. End of N. Appr. Slab	6407+38.37	4.00'	597.67
A	6407+48.89	4.00'	598.35
B	6407+59.30	4.00'	599.03
S. End of N. Appr. Slab	6407+69.60	4.00'	599.70

**B AND PGL SB TAYLOR STREET EXIT RAMP**

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
N. End of N. Appr. Slab	6407+36.84	0.00'	597.37
A	6407+47.50	0.00'	598.06
B	6407+58.05	0.00'	598.75
S. End of N. Appr. Slab	6407+68.48	0.00'	599.43

**EAST EDGE OF LANE**

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
N. End of N. Appr. Slab	6407+30.27	-16.00'	596.14
A	6407+41.56	-16.00'	596.87
B	6407+52.71	-16.00'	597.60
S. End of N. Appr. Slab	6407+63.74	-16.00'	598.32

**EAST EDGE OF SHOULDER**

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
N. End of N. Appr. Slab	6407+27.62	-22.00'	595.67
A	6407+39.17	-22.00'	596.42
B	6407+50.56	-22.00'	597.16
S. End of N. Appr. Slab	6407+61.82	-22.00'	597.89

FILE NAME: D:\161749-PWINT-aecomonline.local\AECOM\_DS02\_NAD\Documents\01\_Americas\Transportation\60269938\_Circle\Phase\_II\000\_CAD\008\_Structural\Structure\_016-1718\0161718-60X93-5008-TOS-III



USER NAME =	ahmad,issa	DESIGNED -	LAB	REVISED -	
		CHECKED -	WM	REVISED -	
PLOT SCALE =	N.T.S	DRAWN -	MA, LAB	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	MI, MAI	REVISED -	

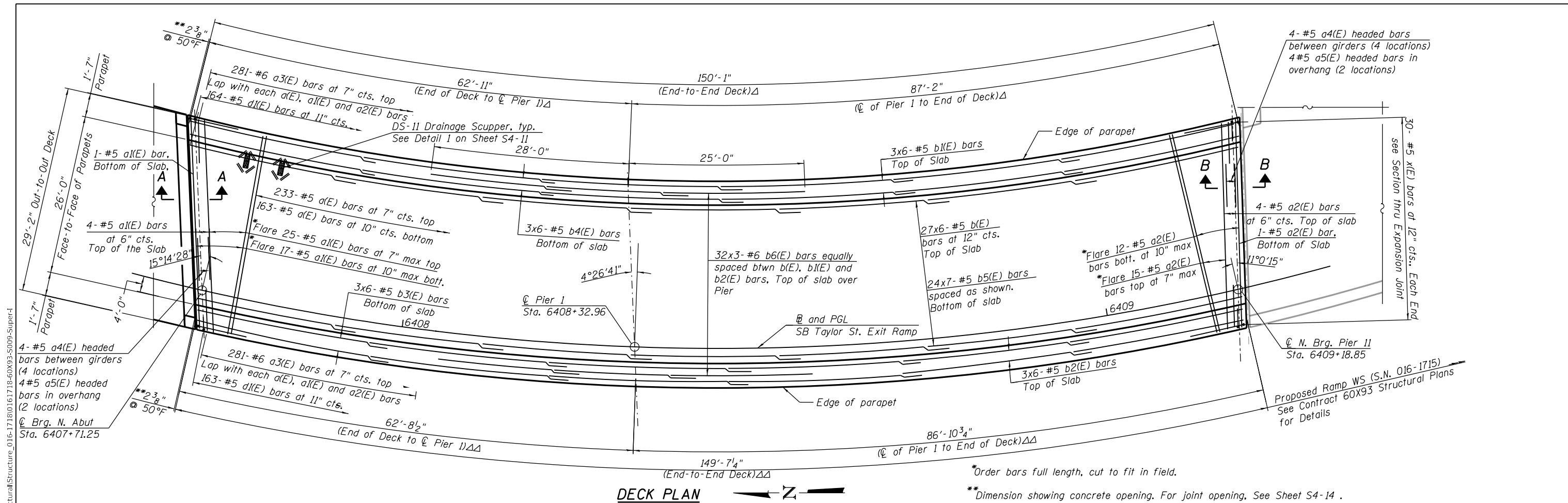
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

TOP OF NORTH APPROACH SLAB ELEVATIONS  
STRUCTURE NO. 016-1718

SHEET NO. S4-08 OF S4-38 SHEETS

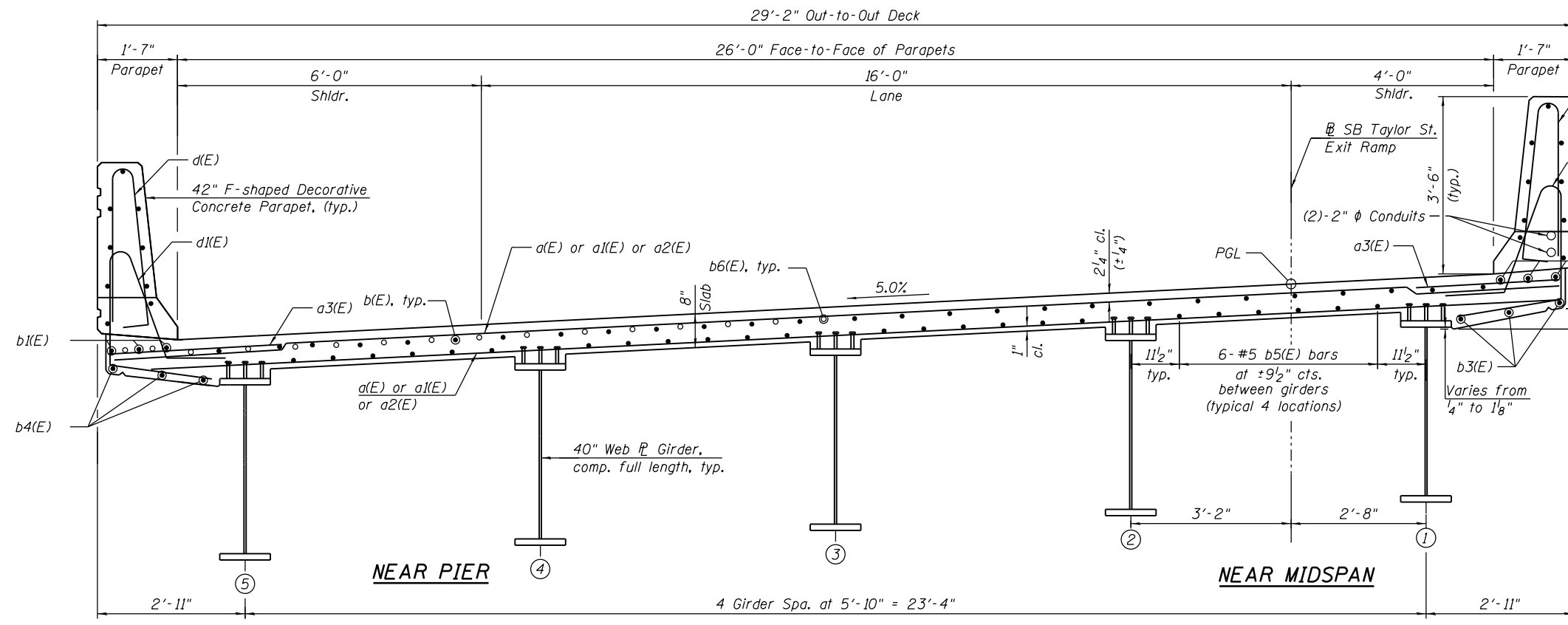
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	922
CONTRACT NO. 60X93				

ILLINOIS FED. AID PROJECT



**DECK PLAN**

\*Order bars full length, cut to fit in field.  
 \*\*Dimension showing concrete opening. For joint opening, See Sheet S4-14.



**DECK CROSS SECTION**  
(Looking Upstation)

- NOTES:**
1. Stations measured along SB Taylor St. Exit Ramp unless noted otherwise.
  2. Dimensions are radial from SB Taylor St. Exit Ramp unless noted otherwise.
  3. Dimensions are based on Rolled Rail Strip Seal Joint. If the Contractor elects to use the Welded Rail Strip Seal Joint, deck dimensions may require adjustments to satisfy the details on Sheet S4-14.
  4. Bars indicated thus: 3x5-#5 indicates 3 lines of #5 bars with 5 lengths per line.
  5. For parapet elevations, see Sheet S4-10.
  6. For Sections A-A and B-B, Detail 1, Section thru Parapet, Bar Diagrams and Bill of Material, see Sheet S4-11.
  7. Δ Dimensions along inside face of East Parapet.
  8. ΔΔ Dimensions along inside face of West Parapet.



USER NAME =	ahmad,issa	DESIGNED -	MAA, EK	REVISED -	
PLOT SCALE =	N.T.S	CHECKED -	MI, JJS	REVISED -	
PLOT DATE =	7/30/2018	DRAWN -	MAA, EK	REVISED -	
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

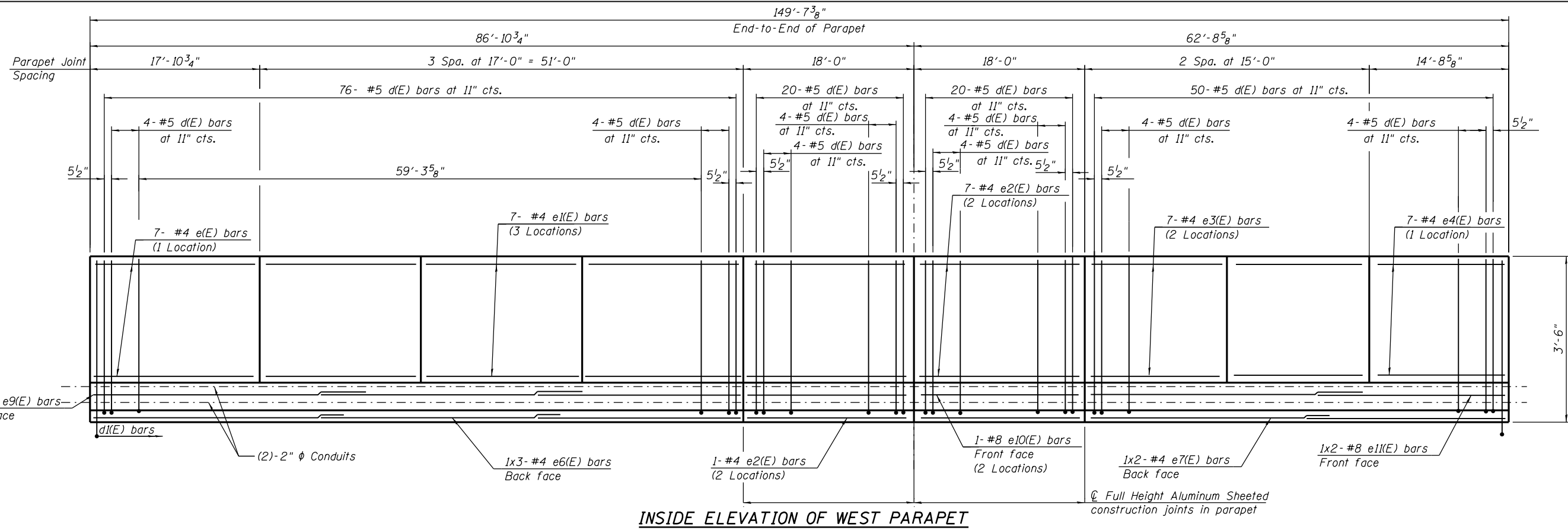
**DECK PLAN AND CROSS SECTION  
STRUCTURE NO. 016-1718**

SHEET NO. S4-09 OF S4-38 SHEETS

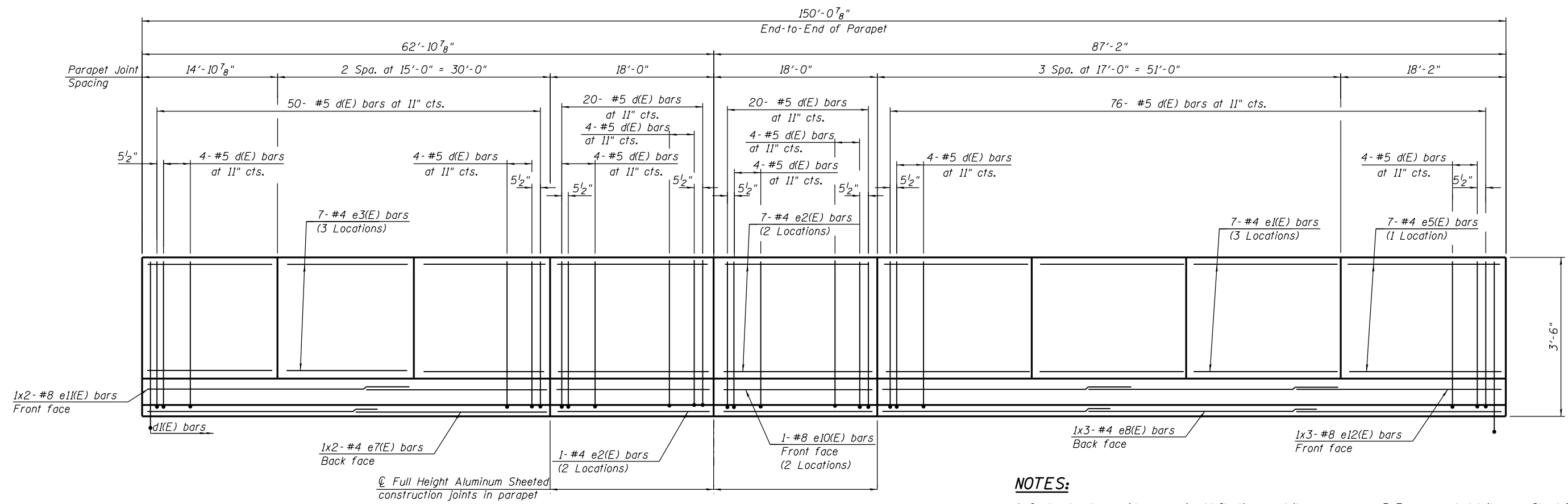
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90/94/290	2014-013R&B-R	COOK	1972	923
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

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**INSIDE ELEVATION OF WEST PARAPET**



**INSIDE ELEVATION OF EAST PARAPET**

- NOTES:**
- Contractor to provide expansion/deflection conduit fittings at all structural expansion joints. See Electrical Plans for expansion/deflection fitting installation details.
  - Bars indicated thus: 1x3-#4 indicates 1 line of bars with 3 lengths per line.
  - For parapet details, see Sheet S4-11.
  - For electrical junction box locations and conduit stub out details, see Electrical Plans.



USER NAME =	ahmad,issa	DESIGNED -	MAA, EK	REVISED -	
PLOT SCALE =	N.T.S	CHECKED -	MI, JJS	REVISED -	
PLOT DATE =	7/30/2018	DRAWN -	EK, YA	REVISED -	
		CHECKED -	MI, MAI	REVISED -	

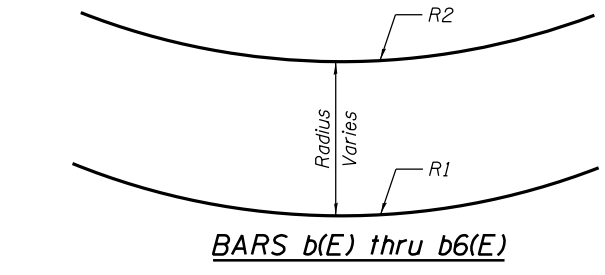
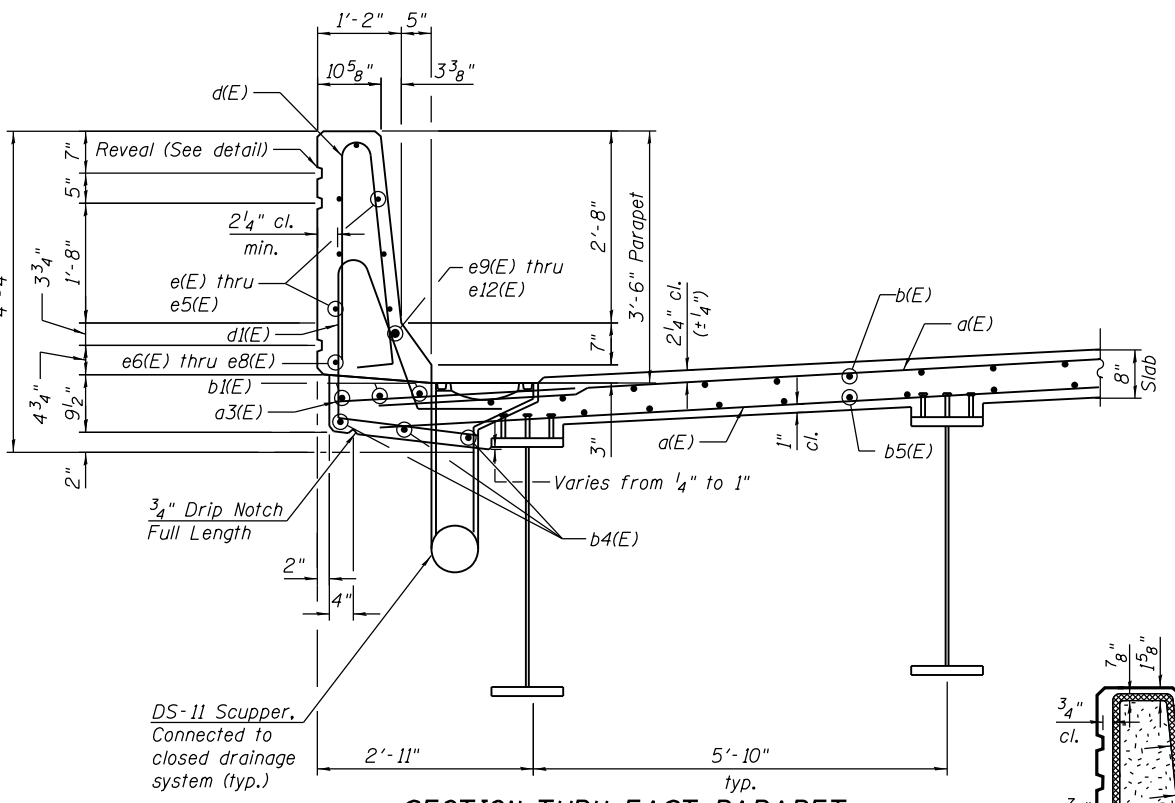
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PARAPET ELEVATIONS  
STRUCTURE NO. 016-1718  
SHEET NO. S4-10 OF S4-38 SHEETS

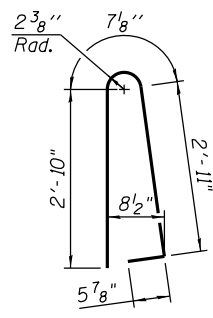
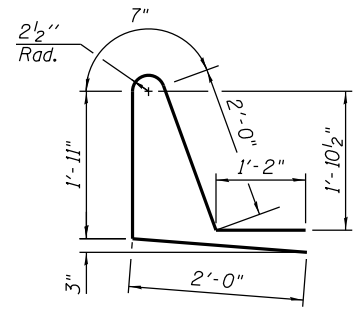
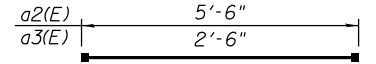
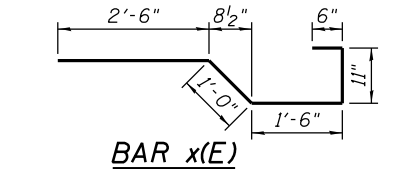
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	924
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



FILE NAME: DWG:\617479-PWINT-aecomonline.local\AECOM\_DS02\_NAYDocuments\01\_Americas\Transportation\60269938\_CirclePhase\_I\000\_CAD\008\_Structural\Structure\_016-1718\0161718-60X93-S011-Super-I11

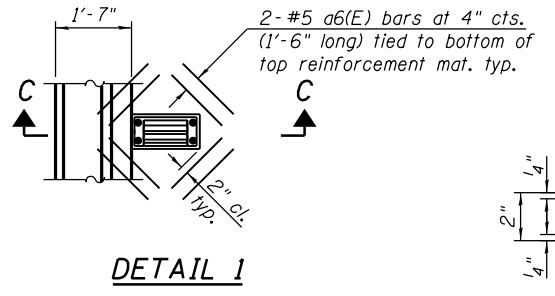
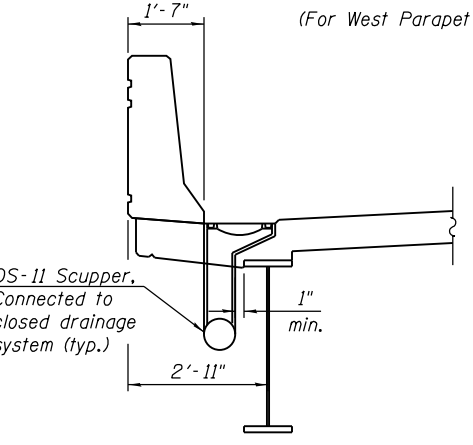


Bar	No. Per Series	R1	R2	Bar Length	No. Series
b(E)	27	306'-2"	331'-10"	27'-11"	6
b1(E)	3	304'-9"	306'-0"	27'-11"	6
b2(E)	3	332'-0"	333'-3"	27'-10"	6
b3(E)	3	331'-4"	333'-3"	27'-10"	6
b4(E)	3	304'-9"	306'-8"	27'-11"	6
b5(E)	24	307'-10"	330'-2"	24'-0"	7
b6(E)	27	305'-0 1/2"	333'-1 1/2"	20'-1"	3

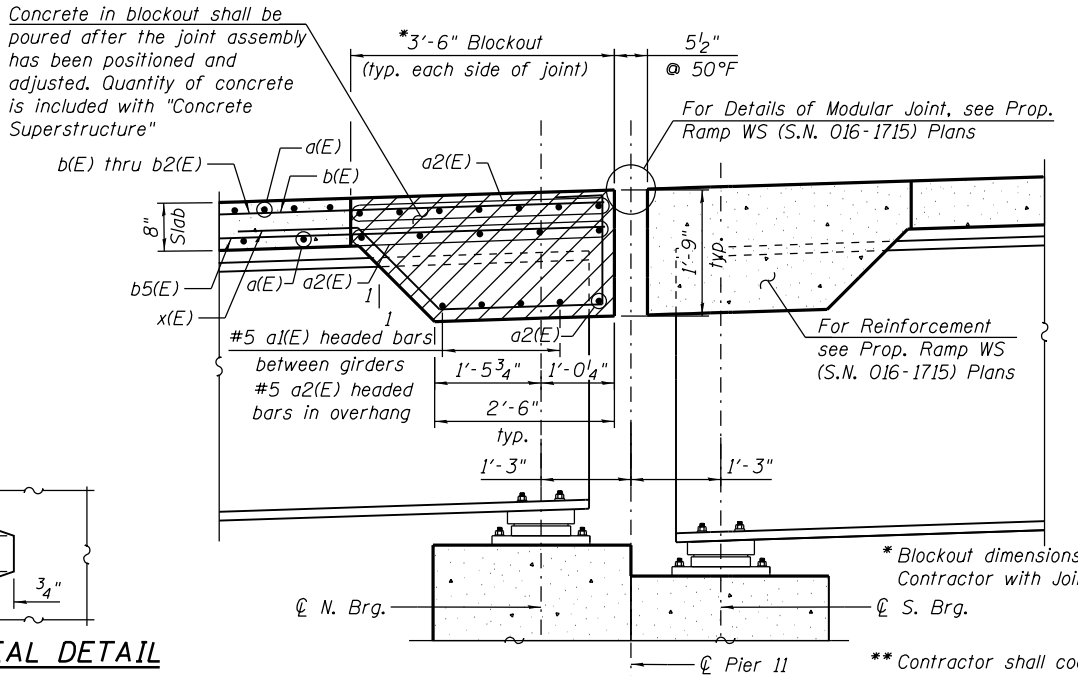
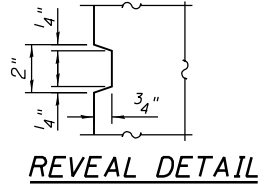


**SUPERSTRUCTURE BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a1(E)	396	#5	28'-6"	
a2(E)	47	#5	29'-1"	
a3(E)	32	#5	29'-8"	
a4(E)	562	#6	6'-6"	
a5(E)	32	#5	5'-6"	
a6(E)	16	#5	2'-6"	
a6(E)	16	#5	1'-6"	
b(E)	162	#5	27'-11"	
b1(E)	18	#5	27'-11"	
b2(E)	18	#5	27'-10"	
b3(E)	18	#5	27'-10"	
b4(E)	18	#5	27'-10"	
b5(E)	168	#5	24'-0"	
b6(E)	96	#6	20'-1"	
d(E)	396	#5	6'-10"	
d1(E)	327	#5	7'-8"	
e(E)	7	#4	17'-7"	
e1(E)	42	#4	16'-8"	
e2(E)	32	#4	17'-8"	
e3(E)	35	#4	14'-8"	
e4(E)	7	#4	14'-5"	
e5(E)	7	#4	17'-10"	
e6(E)	3	#4	24'-8"	
e7(E)	4	#4	23'-8"	
e8(E)	3	#4	24'-9"	
e9(E)	3	#8	26'-10"	
e10(E)	4	#8	17'-8"	
e11(E)	4	#8	25'-2"	
e12(E)	2	#8	26'-11"	
x(E)	60	#5	6'-5"	
Concrete Superstructure		Cu Yd	157.9	
Bridge Deck Grooving (Longitudinal)		Sq Yd	380	
Protective Coat		Sq Yd	601	
Reinforcement Bars, Epoxy Coated		Pound	42,080	



Note: Cut longitudinal reinforcement to clear drainage scuppers.



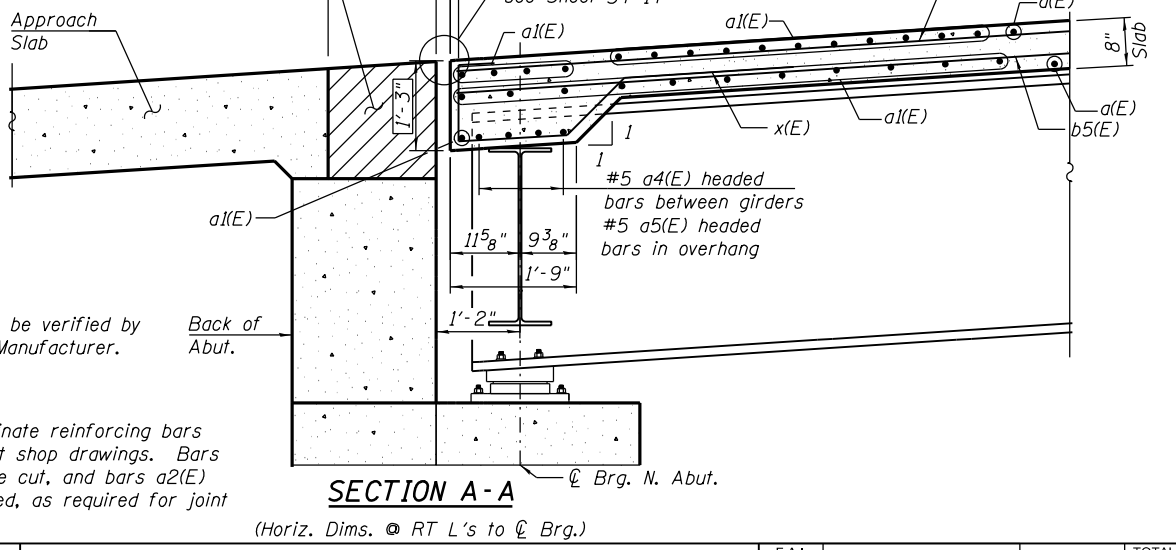
**SECTION B-B**  
(Horiz. Dims. @ RT L's to C Brg.)

Non-staining gray one component non-sag elastomeric gun grade polyurethane sealant meeting the requirements of ASTM C-920, Type S, Grade NS, Class 25, use T with a 5/8" backer rod.

1/2" Preformed Self-Expanding Cork Joint Filler according to Article 1051.07 of the Std. Spec. Cost included with Concrete Superstructure.

Const. Jts. at Piers 1/8" Aluminum sheet ASTM B 209 alloy 3003-H14, coated to minimize reaction with wet concrete. Cost included with Concrete Superstructure

Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure for abutment.



**SECTION A-A**  
(Horiz. Dims. @ RT L's to C Brg.)

**Minimum Bar Laps**

Bar	Lap
#4	2'-8"
#5	3'-6"
#6	3'-7"
#8	5'-11"



USER NAME =	ahmad,issa	DESIGNED -	MAA, EK	REVISED -	
PLOT SCALE =	N.T.S	CHECKED -	MI, JJS	REVISED -	
PLOT DATE =	7/30/2018	DRAWN -	MAA, EK	REVISED -	
		CHECKED -	MI, MAI	REVISED -	

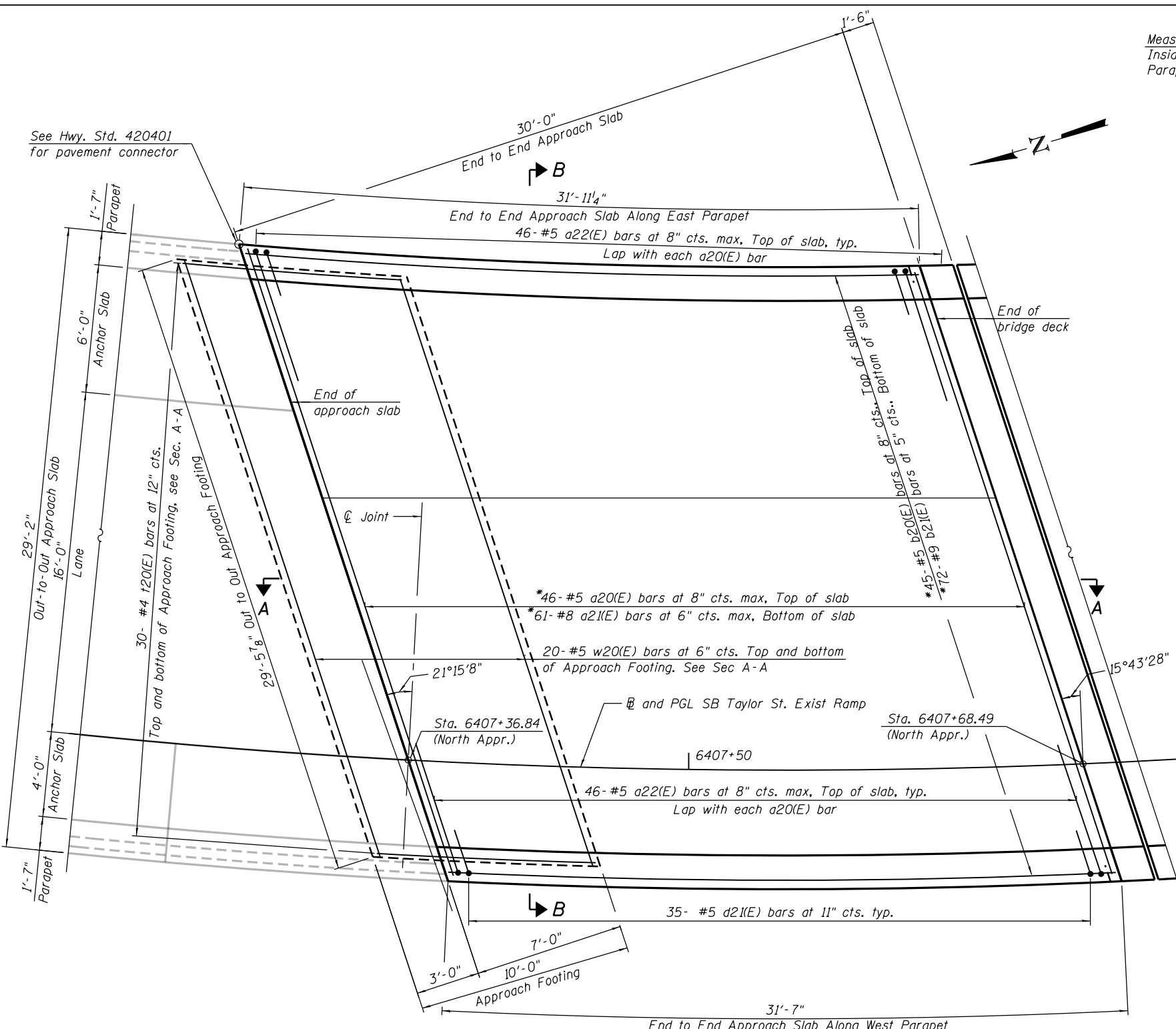
**STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION**

**DECK CROSS SECTION, DETAILS AND BILL OF MATERIAL**  
**STRUCTURE NO. 016-1718**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	925
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

SHEET NO. S4-11 OF S4-38 SHEETS

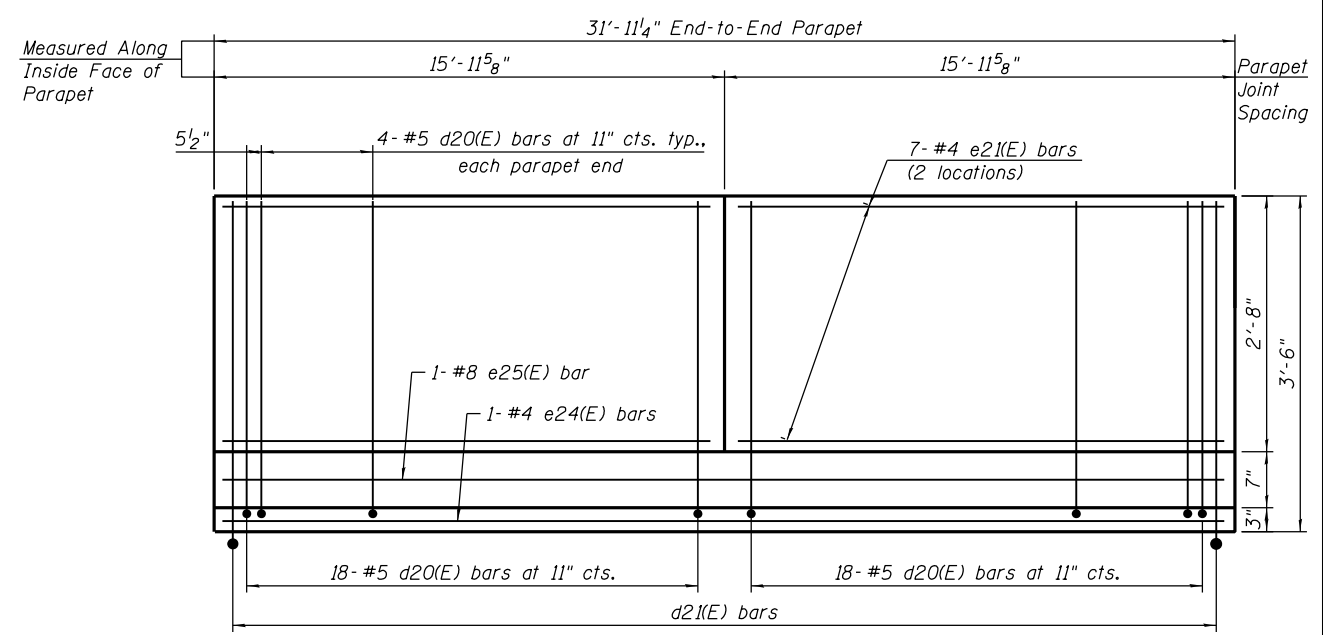
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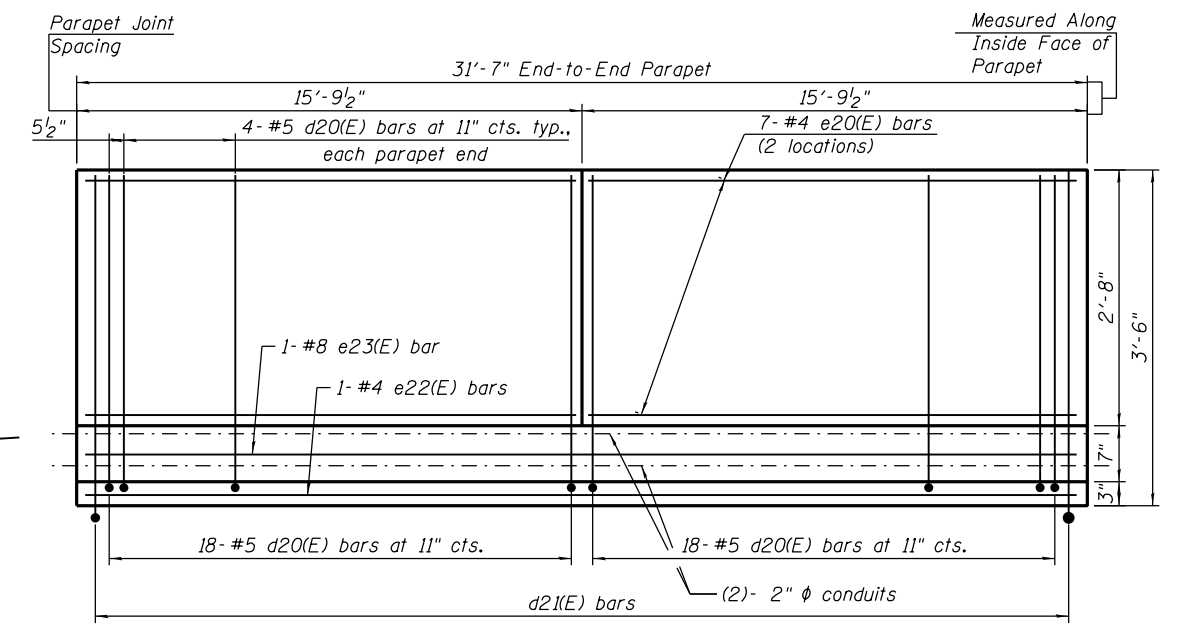
**NORTH APPROACH SLAB PLAN**

**NOTES:**  
1. For Sections A-A and B-B, see Sheet S4-13.

\* Cut bars in the field to fit



**INSIDE ELEVATION OF EAST PARAPET**



**INSIDE ELEVATION OF WEST PARAPET**



USER NAME =	ahmad,issa	DESIGNED -	EK, MAA	REVISED -	
		CHECKED -	MI, JJS	REVISED -	
PLOT SCALE =	N.T.S	DRAWN -	EK	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	MI, MAI	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**NORTH APPROACH SLAB PLAN  
STRUCTURE NO. 016-1718**

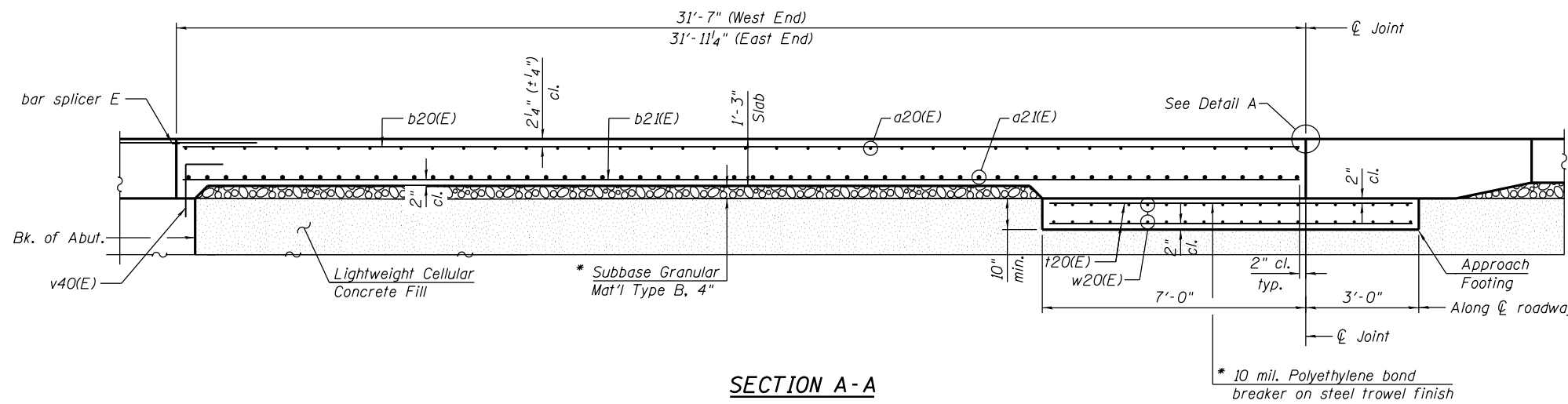
SHEET NO. S4-12 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 60X93				
ILLINOIS		FED. AID PROJECT		

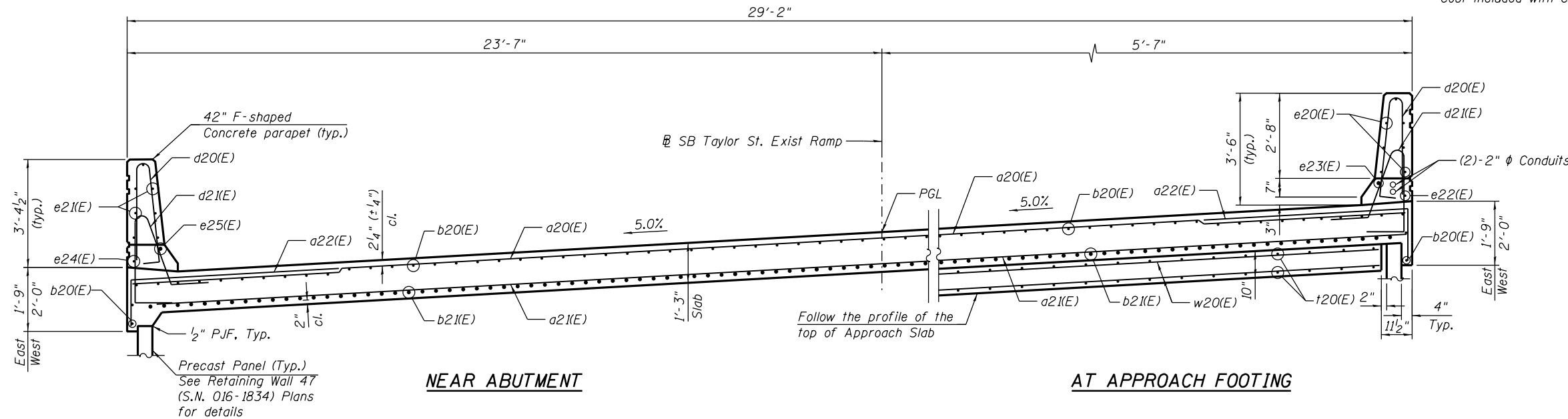
**NOTES:**

1. Approach slab shall be paid for as Concrete Superstructure (Approach Slab).
2. Parapet Concrete shall be paid for as Concrete Superstructure.
3. Approach footing concrete shall be paid for as Concrete Structures.
4. Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
5. For v40(E) bar details, see Sheets4-28 .
6. The approach footing maximum applied service bearing pressure (Omax) = 2.0 ksf.
7. For bar splicer details, see SheetS4-33 .
8. Cost of excavation for approach footing included with Concrete Structures.
9. For MSE Retaining Wall, Lightweight Cellular Concrete Fill, Anchorage Slab, and drainage treatment details, see Retaining Wall 47 (S.N. 016-1834) Plans.
10. For additional parapet details, see SheetS4-12 .

\* Cost included with Concrete Superstructure (Approach Slab).



**SECTION A-A**



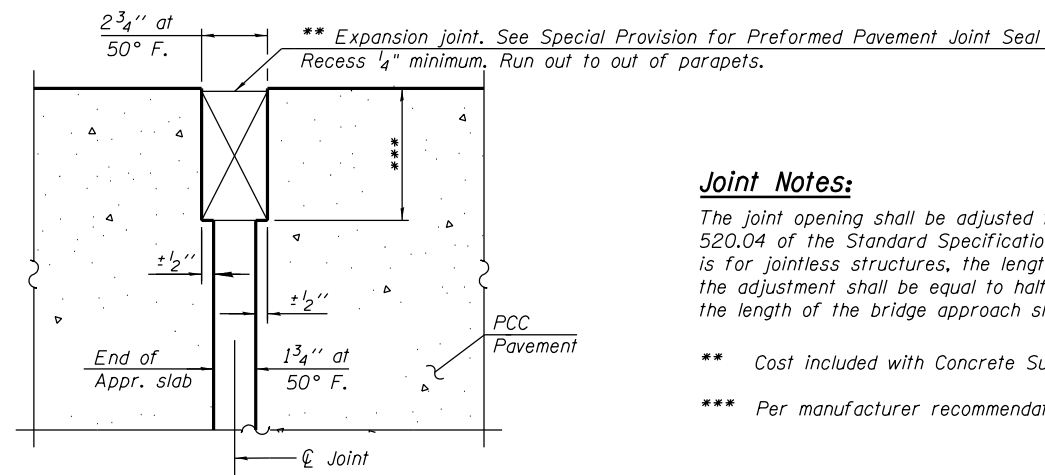
**NEAR ABUTMENT**

**AT APPROACH FOOTING**

**SECTION B-B**

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a20(E)	46	#5	31'-0"	—
a21(E)	61	#8	31'-0"	—
a22(E)	92	#5	7'-10"	—
b20(E)	47	#5	31'-6"	—
b21(E)	72	#9	31'-6"	—
d20(E)	88	#5	6'-10"	⌒
d21(E)	70	#5	7'-8"	⌒
e20(E)	14	#4	15'-6"	—
e21(E)	14	#4	15'-8"	—
e22(E)	1	#4	31'-3"	—
e23(E)	1	#8	31'-3"	—
e24(E)	1	#4	31'-7"	—
e25(E)	1	#8	31'-7"	—
t20(E)	30	#4	10'-5"	—
w20(E)	40	#5	29'-6"	—
Concrete Structures			Cu Yd	9.1
Bridge Deck Grooving (Longitudinal)			Sq Yd	83
Concrete Superstructure			Cu Yd	9
Protective Coat			Sq Yd	129
Concrete Superstructure (Approach Slab)			Cu Yd	45.8
Reinforcement Bars, Epoxy Coated			Pound	19,680



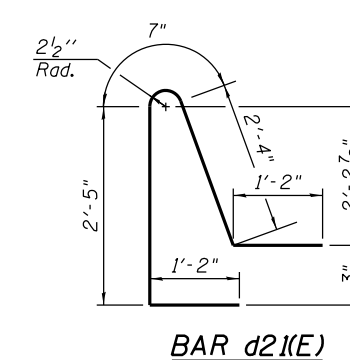
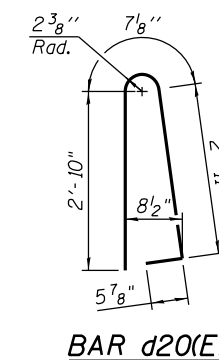
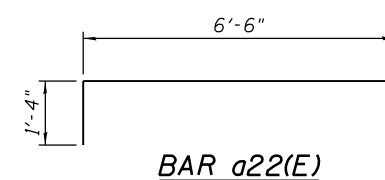
**DETAIL A**

**Joint Notes:**

The joint opening shall be adjusted for temperature per Article 520.04 of the Standard Specifications. However, since this detail is for jointless structures, the length of bridge used to calculate the adjustment shall be equal to half the total bridge length plus the length of the bridge approach slab.

\*\* Cost included with Concrete Superstructure (Approach Slab).

\*\*\* Per manufacturer recommendations.



Minimum Bar Laps	
Bar	Lap
#5	3'-2"
#8	6'-9"



USER NAME = marian.agamy	DESIGNED - EK, MAA	REVISED -
PLOT SCALE = N.T.S	CHECKED - MI, JJS	REVISED -
PLOT DATE = 9/19/2018	DRAWN - EK	REVISED -
	CHECKED - MI, MAI	REVISED -

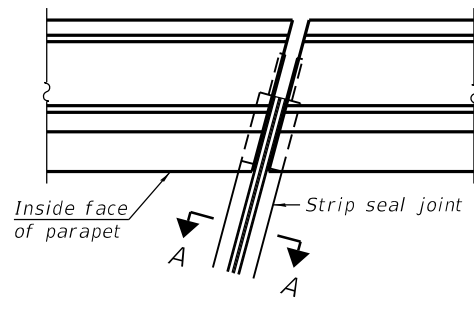
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

NORTH APPROACH SLAB DETAILS  
STRUCTURE NO. 016-1718

SHEET NO. S4-13 OF S4-38 SHEETS

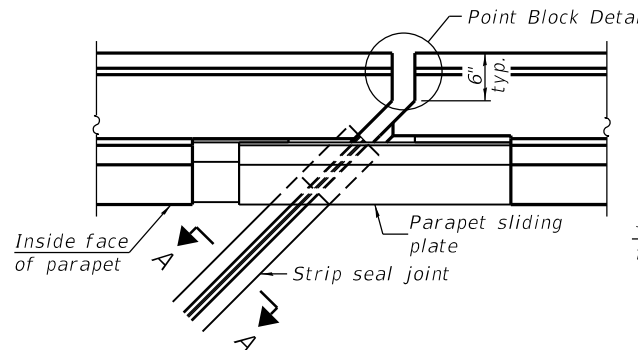
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	927
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

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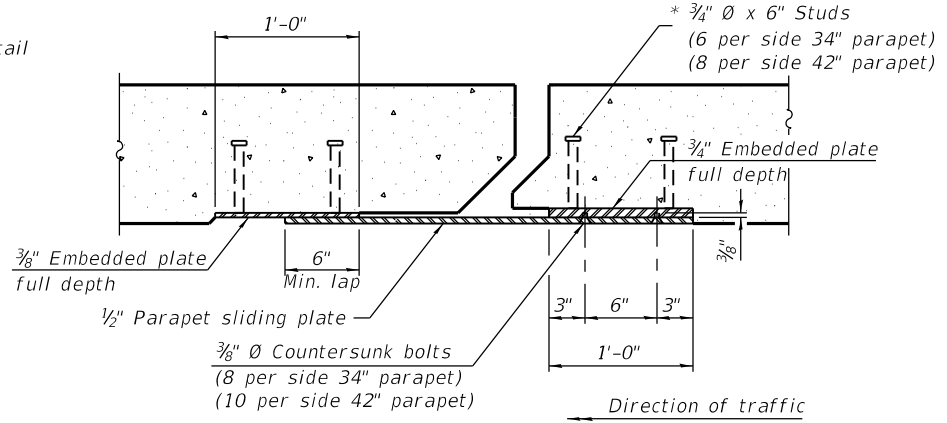


FOR SKEWS  $\leq 30^\circ$

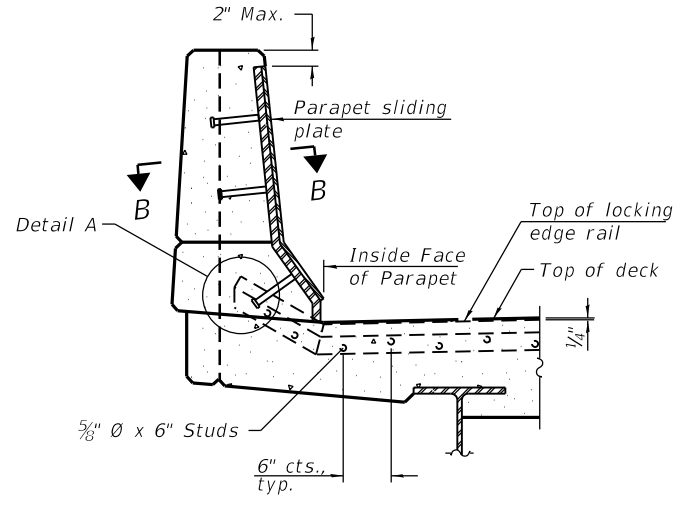
**PLAN AT PARAPET**



FOR SKEWS  $> 30^\circ$

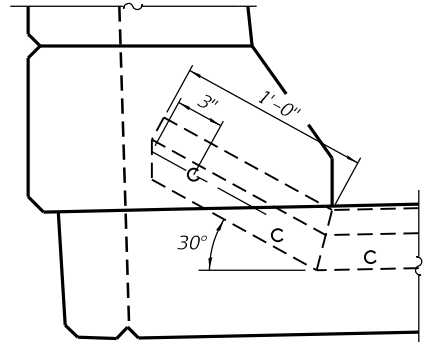


**SECTION B-B**

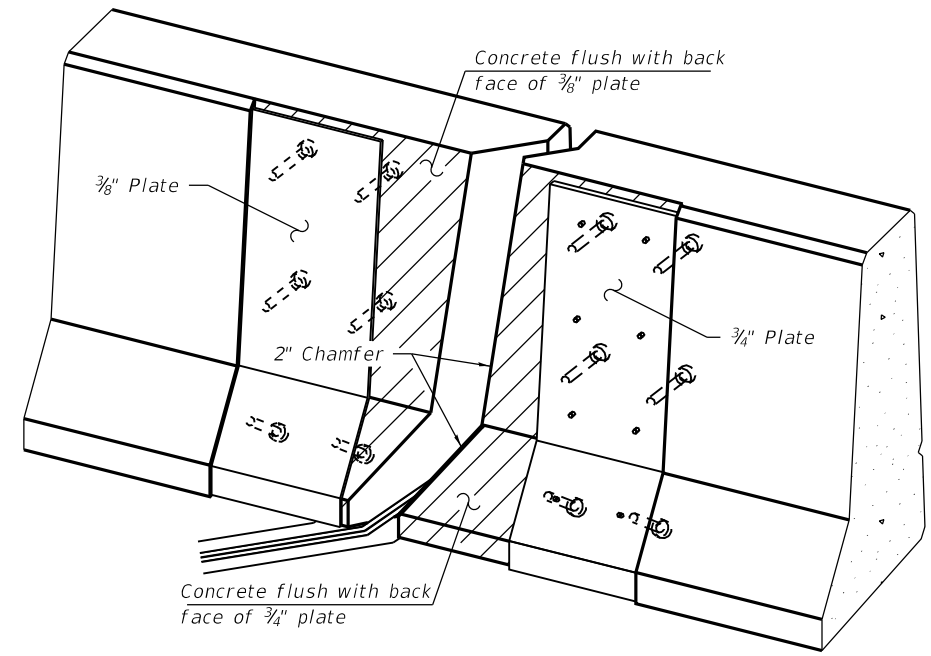


**ELEVATION AT PARAPET**

(Skews  $> 30^\circ$  shown. Skews  $\leq 30^\circ$  similar except as shown in plan view.)

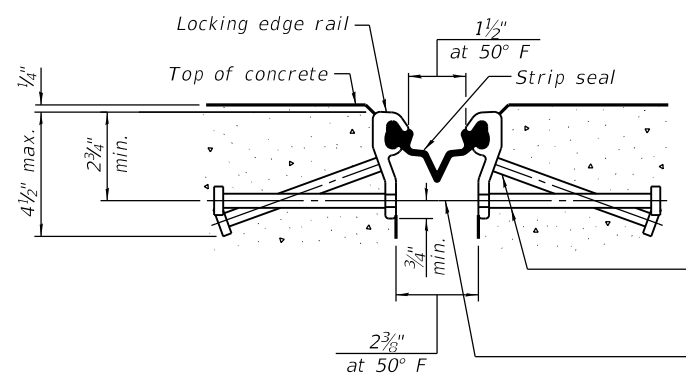


**DETAIL A**



**TRIMETRIC VIEW**

(Showing embedded plates only)



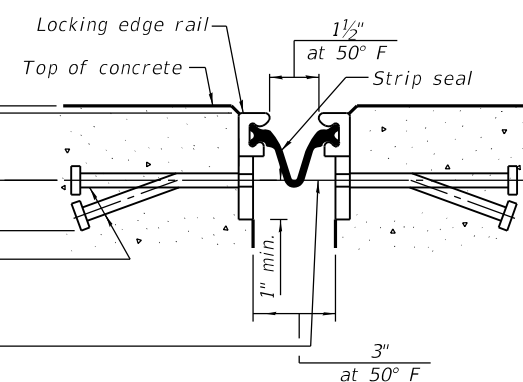
**SHOWING ROLLED RAIL JOINT**

\*  $5/8$ "  $\phi$  x 6" studs @ 6" cts. (alternate angled/bent studs with horizontal studs)

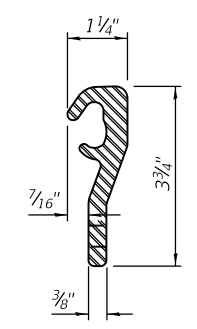
$3/8$ "  $\phi$  threaded rods in  $7/16$ "  $\phi$  holes at  $\pm 4$ "-0" cts. for holding the proper joint opening based on the temperature during the deck pour. Place to miss studs. All rods shall be burned, or sawed off flush with the plates after concrete is set.

**SECTION A-A**

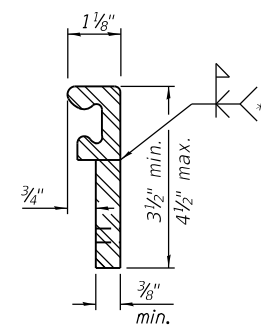
\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



**SHOWING WELDED RAIL JOINT**



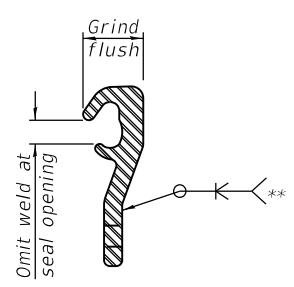
**ROLLED (EXTRUDED) RAIL**



**WELDED RAIL**

**LOCKING EDGE RAILS**

\*\* Back gouge not required if complete joint penetration is verified by mock-up.



**LOCKING EDGE RAIL SPLICE**

The inside of the locking edge rail groove shall be free of weld residue. Rolled rail shown, welded rail similar.

**BILL OF MATERIAL**

Item	Unit	Total
Preformed Joint Strip Seal	Foot	31

EJ-SS

8-11-17



USER NAME = ahmad,issa	DESIGNED - EK, LAB	REVISED -
PLOT SCALE = N.T.S	CHECKED - JJS, LAB	REVISED -
PLOT DATE = 7/30/2018	DRAWN - LAB	REVISED -
	CHECKED - MI, MAI	REVISED -

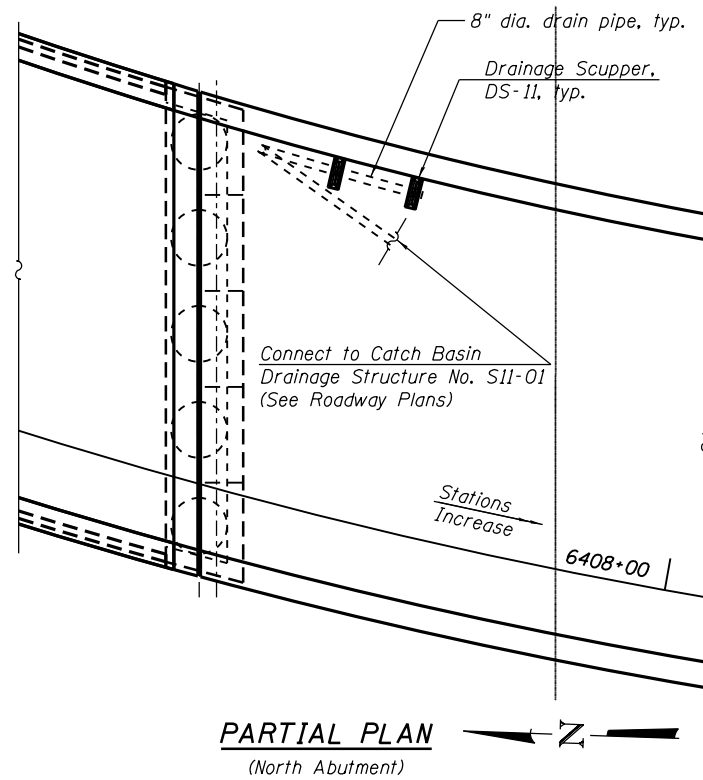
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EXPANSION JOINT DETAILS  
STRUCTURE NO. 016-1718**

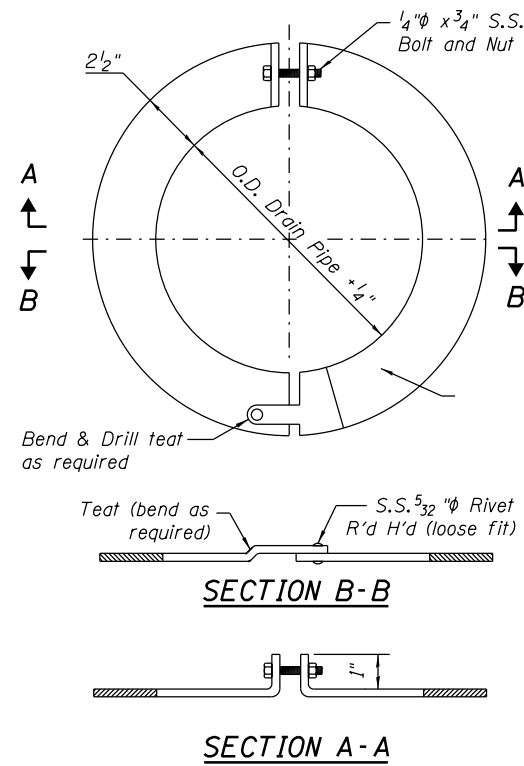
SHEET NO. S4-14 OF S4-38 SHEETS

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 928
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

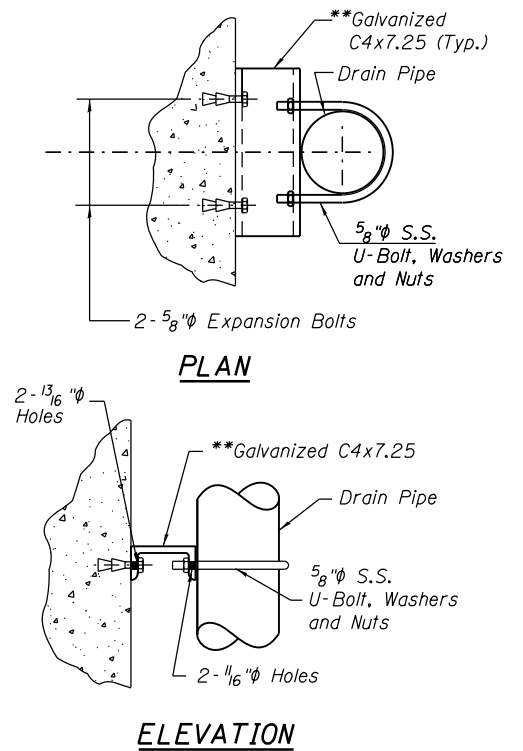
FILE NAME: D:\V1617479-PWINT-aecomonline.local\AECOM\_D502\_NAYDocuments\01\_Americas\Transportation\60269938\_CirclePhase\_I\000\_CAD\008\_Structural\Structure\_016-17180161718-60X93-5015-DRN-I



**PARTIAL PLAN**  
(North Abutment)

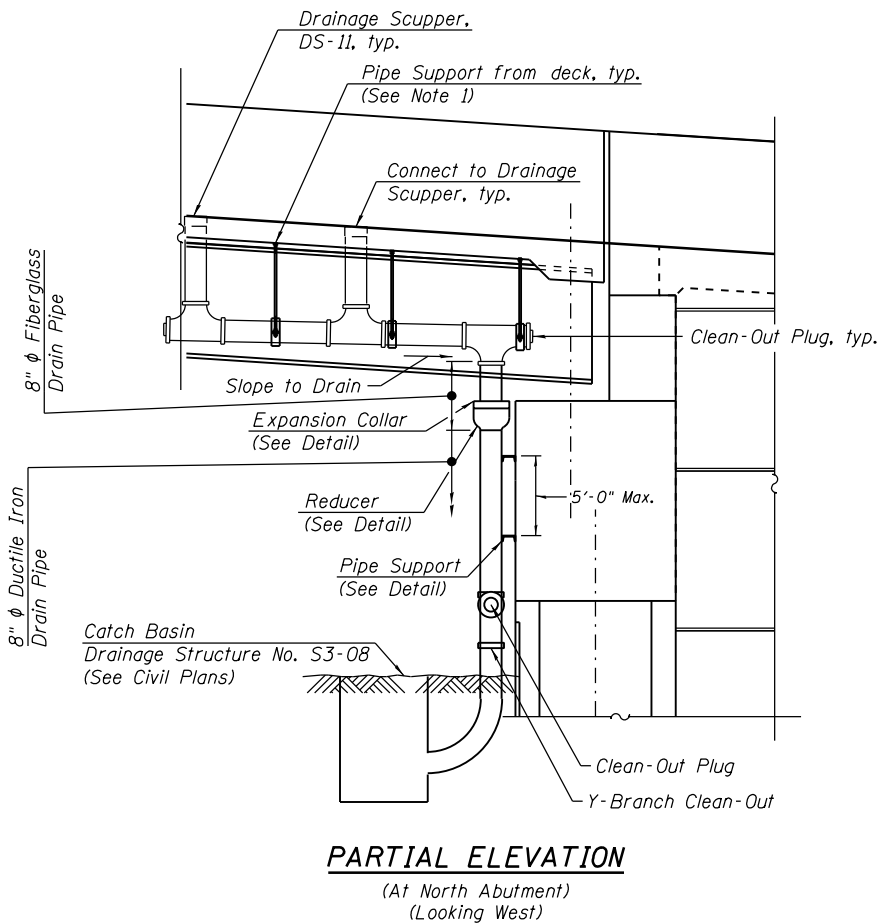


**DETAIL OF EXPANSION COLLAR**

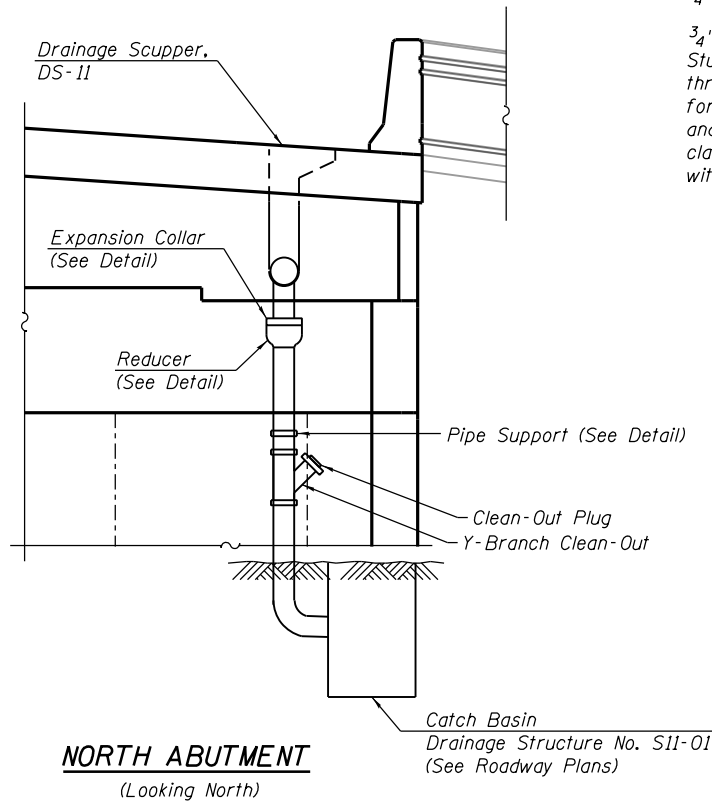


**PIPE SUPPORT DETAIL**

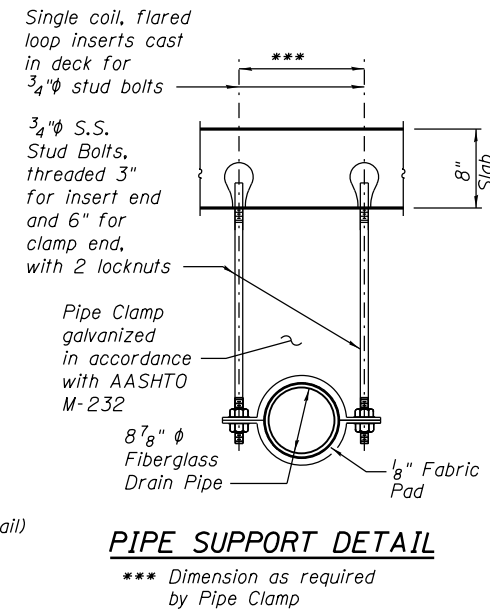
\*\*Provide curved C6x8.2 to fit Round Pier Columns where needed



**PARTIAL ELEVATION**  
(At North Abutment)  
(Looking West)



**NORTH ABUTMENT**  
(Looking North)

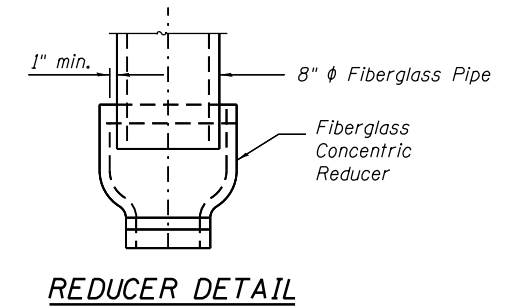


**PIPE SUPPORT DETAIL**

\*\*\* Dimension as required by Pipe Clamp

**NOTES:**

1. Provide structural support from proposed deck slab for drain pipe per manufacturer's recommendation, not to exceed 6' cts. Cost included with Drainage System.
2. All pipe, pipe fittings and brackets needed shall be included with cost of Drainage System.
3. For Drainage Scupper details, see Sheet S4-16.



**REDUCER DETAIL**

**SCUPPER LOCATION**

Station	Offset
6407+73.79	22.00' Lt.
6407+78.79	22.00' Lt.

**BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Drainage System	L. Sum	0.10



USER NAME =	ahmad,issa	DESIGNED -	KJD, DA	REVISED -	
		CHECKED -	MI, JJS	REVISED -	
PLOT SCALE =	N.T.S	DRAWN -	KJD, DA	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	MI, MAI	REVISED -	

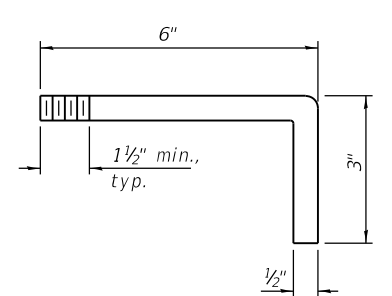
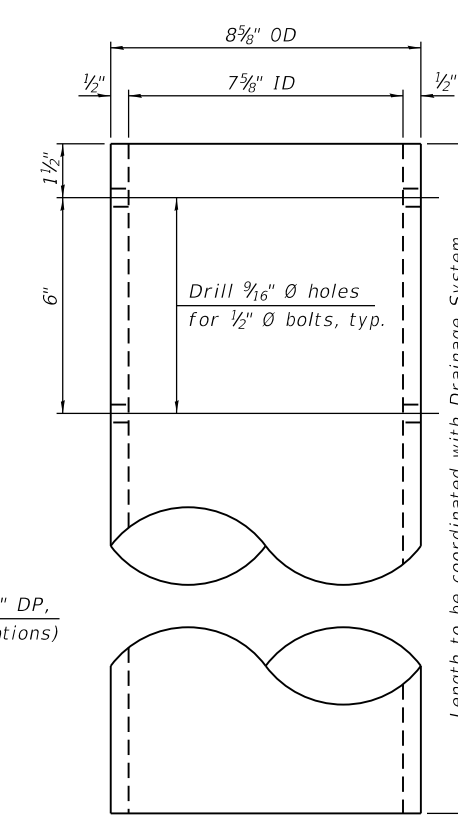
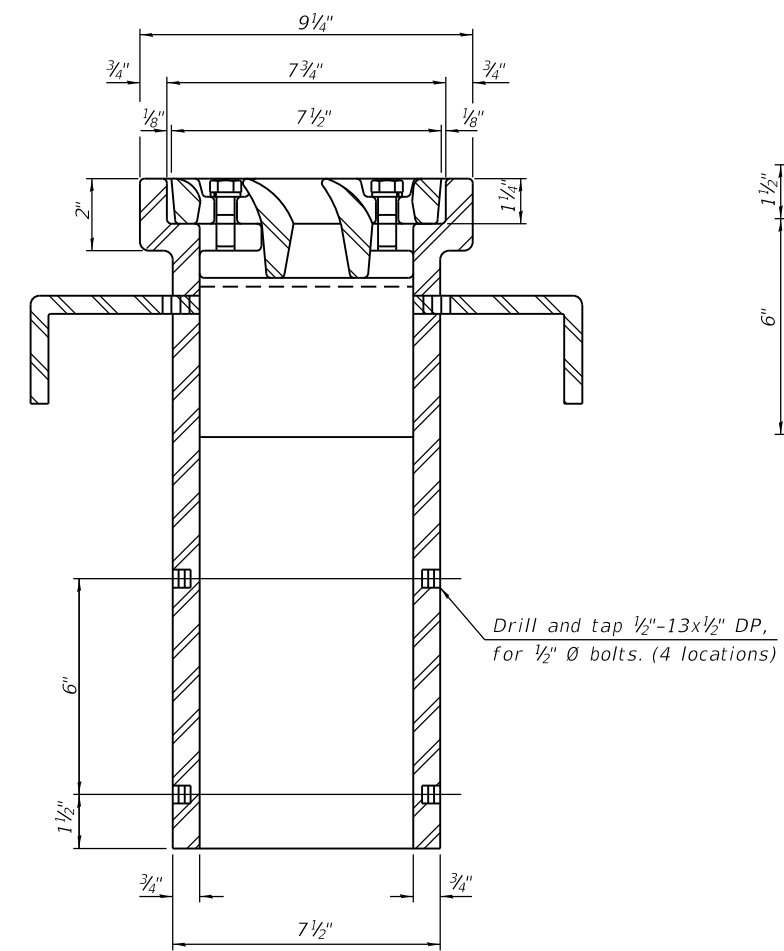
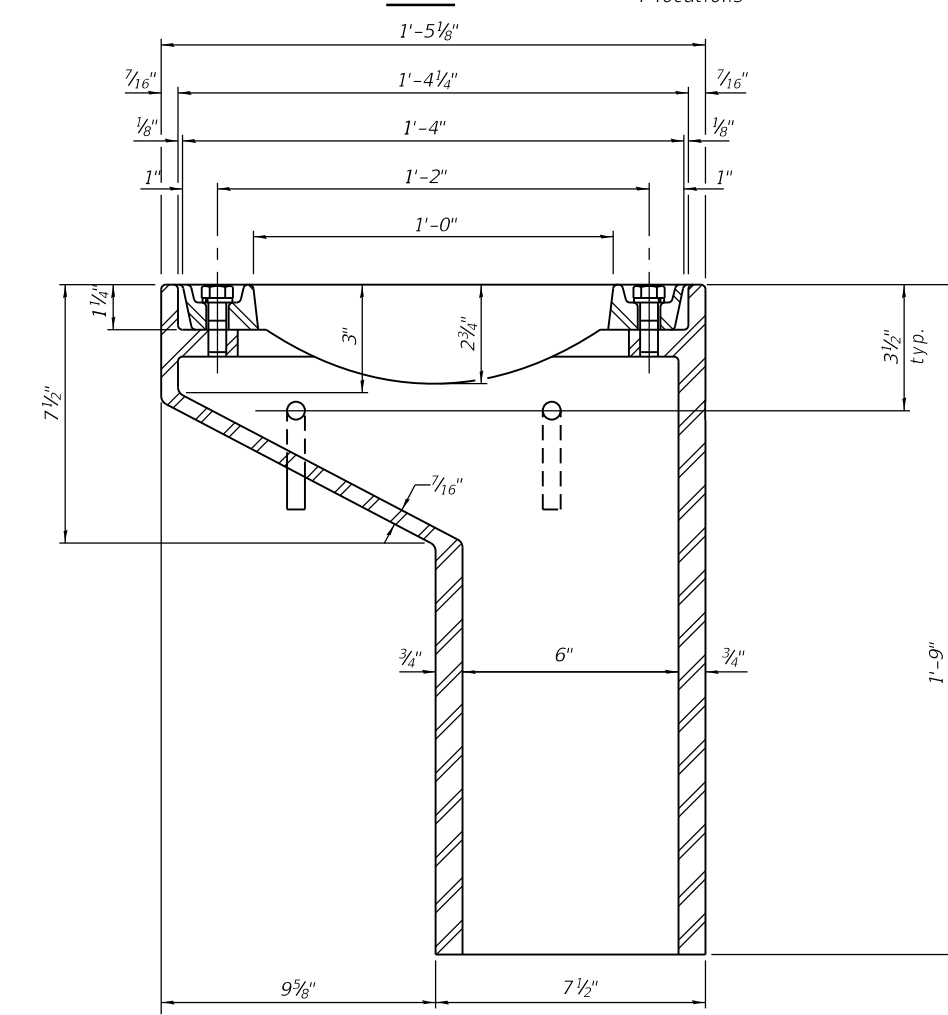
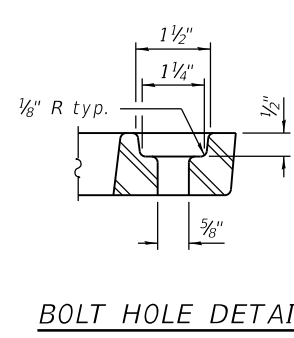
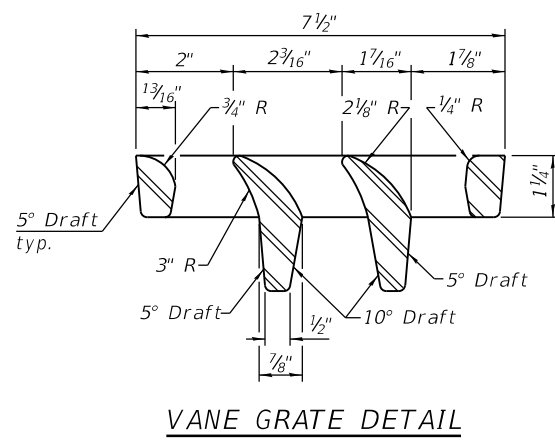
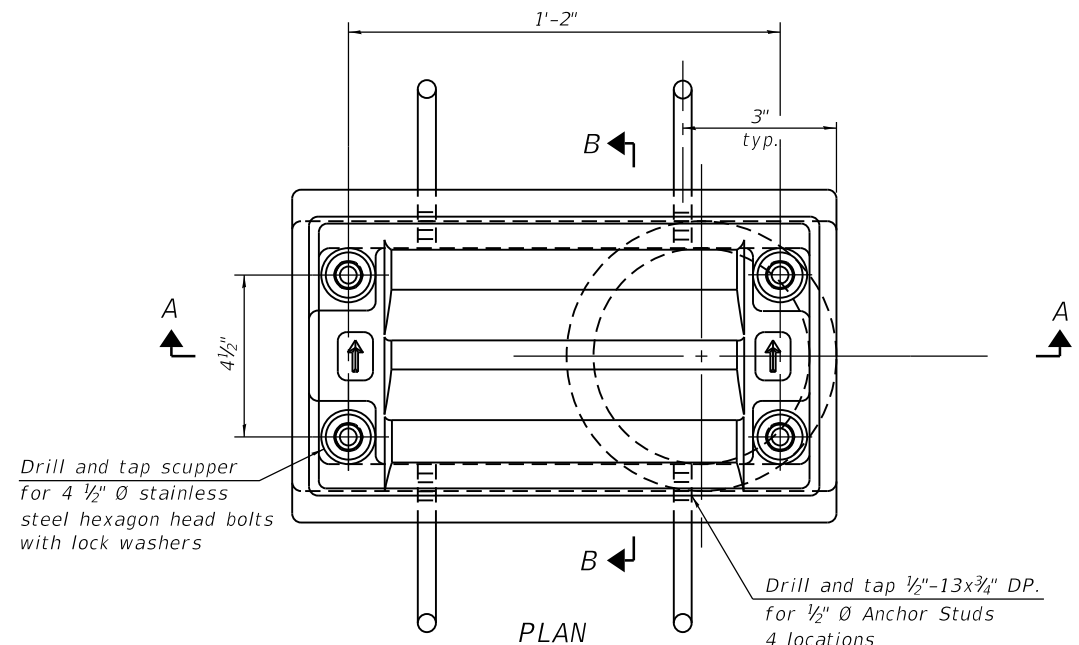
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

BRIDGE DRAINAGE SYSTEM  
STRUCTURE NO. 016-1718

SHEET NO. S4-15 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	929
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

FILE NAME: DW:\161749-PWINT-aecomonline.local\AECOM\_DS02\_NAYDocuments\01\_Americas\Transportation\60269938\_Circle\Phase\_I\000\_CAD\008\_Structural\Structure\_016-1718\0161718\0161718-60X93-5016-DRN-11



See Sheet S4-15 of S4-38 for scupper location relative to parapet.

**BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Drainage Scupper, DS-11	Each	2

DS-11

2-17-2017



USER NAME = ahmad,issa	DESIGNED - KJD	REVISED -
PLOT SCALE = N.T.S	CHECKED - JJS	REVISED -
PLOT DATE = 7/30/2018	DRAWN - KJD	REVISED -
	CHECKED - MI, MAI	REVISED -

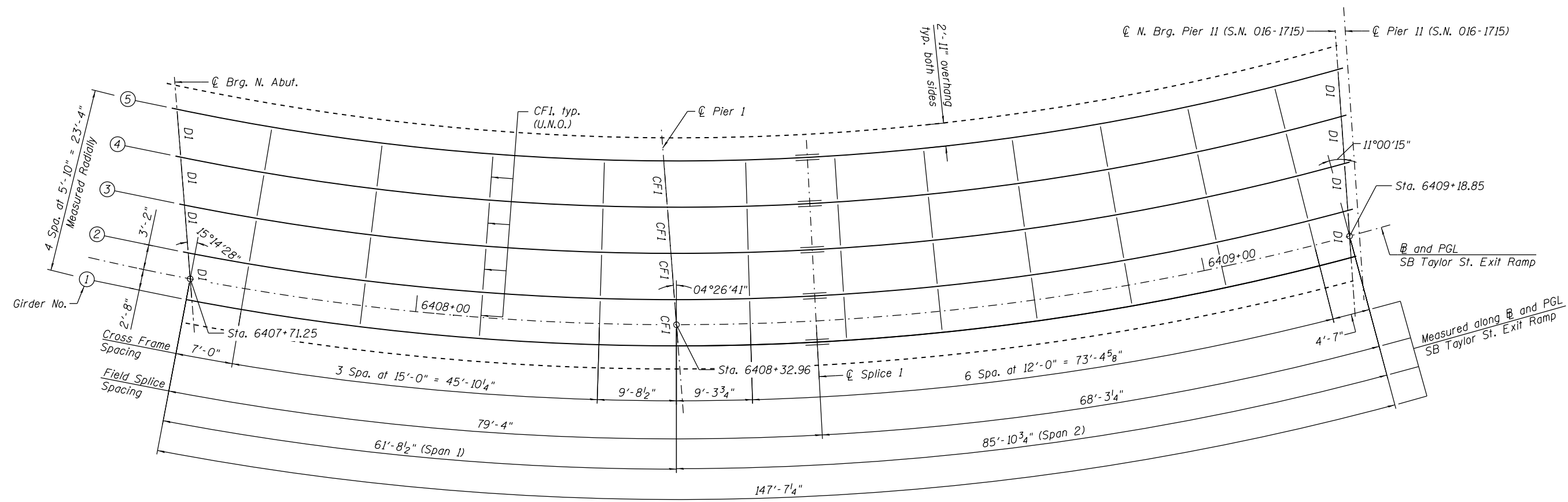
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**DRAINAGE SCUPPER, DS-11  
STRUCTURE NO. 016-1718**

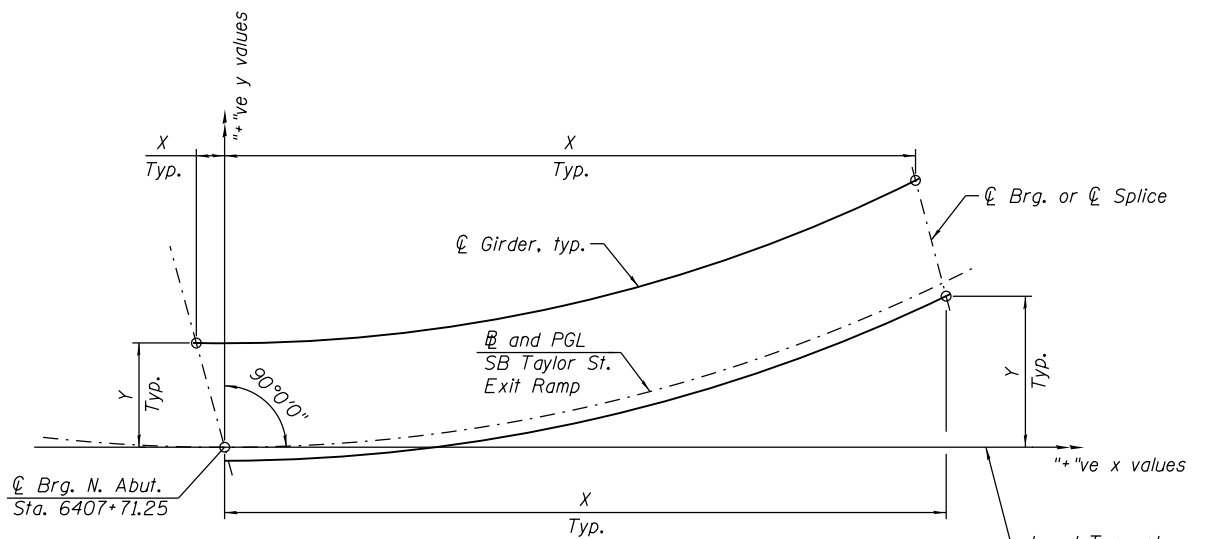
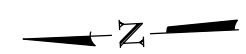
SHEET NO. S4-16 OF S4-38 SHEETS

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 930
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60X93	

FILE NAME: D:\V161749-PWINT-aecomonline.local\AECOM\_DS02\_NAD\Documents\01\_Americas\Transportation\60269938\_Circle\Phase\_I\000\_CAD\008\_Structural\Structure\_016-1718\0161718-60X93-5017-FramPlan



**FRAMING PLAN**



**CURVED GIRDER LAYOUT**  
(X Measured along Local Tangent)

**GIRDER COORDINATES**  
(All Dimensions in Feet)

Girder	☐ Brg. N. Abut.		☐ Pier 1		☐ Splice 1		☐ Brg. Pier II	
	X	Y	X	Y	X	Y	X	Y
1	0.730	-2.670	62.040	3.210	79.200	6.960	143.360	30.030
2	-0.860	3.170	60.510	8.850	77.800	12.620	141.840	35.770
3	-2.450	9.010	58.970	14.500	76.410	18.290	140.330	41.520
4	-4.050	14.860	57.440	20.150	75.010	23.950	138.810	47.280
5	-5.650	20.720	55.900	25.790	73.610	29.610	137.290	53.040

**NOTES:**

- All structural steel shall be AASHTO M270 Grade 50.
- For Girder Elevation, Girder Dimensions, Camber and Top of Web Elevations, see Sheet S4-18.
- For moment and reaction tables, see Sheet S4-19.
- For end diaphragms and cross frames, see Sheet S4-20
- For girder bolted field splice details, see Sheet S4-21.
- All cross frames and field splice lines are radial to the ☐ of SB Taylor St. Exit Ramp, except at ☐ Brg. N. Abut., ☐ Pier 1 and ☐ N. Brg. - Pier II, where end diaphragms and cross frames are oriented parallel to the respective ☐ of supports.
- The Contractor shall submit a comprehensive Steel Erection Plan detailing the proposed methods, procedures, and plans for the erection of the structural steel to the desired lines, elevations, and geometry indicated in the contract plans. Erection plans shall be complete in detail for all phases of the erection process and shall describe the erection procedures, sequences, geometry controls and adjustment procedures, temporary shoring or bracing, bearing and anchor bolt placement, bolt installation and tightening procedures, and shall include any necessary drawings and calculations. The Erection Plan shall be prepared and sealed by an Illinois-Licensed Structural Engineer and shall be submitted to the Engineer for review and acceptance. See Special Provision for Erection of Complex Steel Structures.



USER NAME = ahmad,issa	DESIGNED - JJS, WM	REVISED -
PLOT SCALE = N.T.S	CHECKED - MI, LAB	REVISED -
PLOT DATE = 7/30/2018	DRAWN - JJS, WM	REVISED -
	CHECKED - MI, MAI	REVISED -

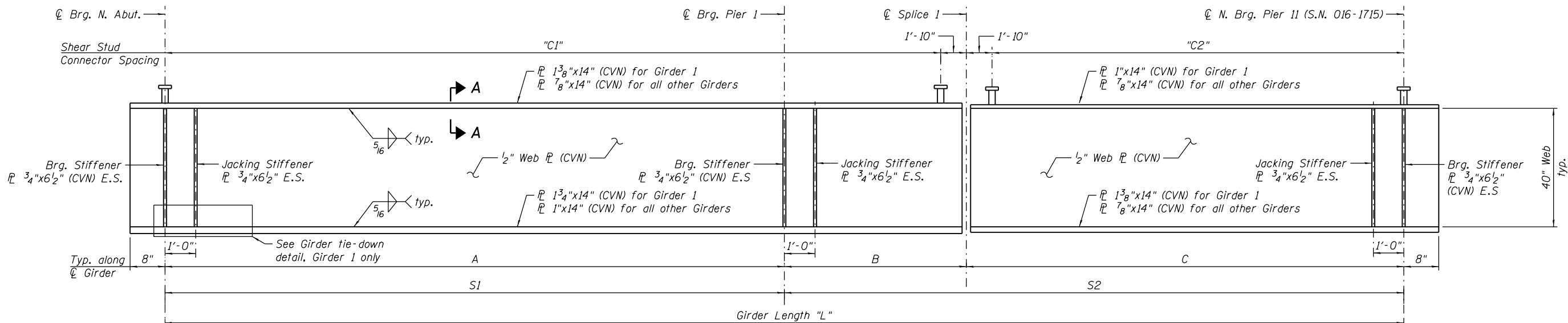
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN  
STRUCTURE NO. 016-1718

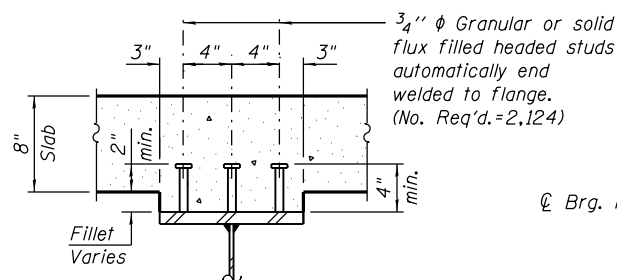
SHEET NO. S4-17 OF S4-38 SHEETS

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 931
CONTRACT NO. 60X93				

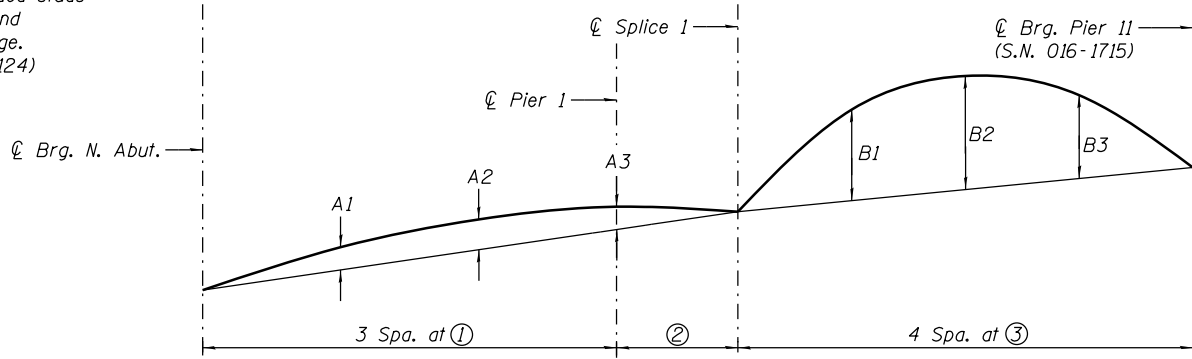
ILLINOIS FED. AID PROJECT



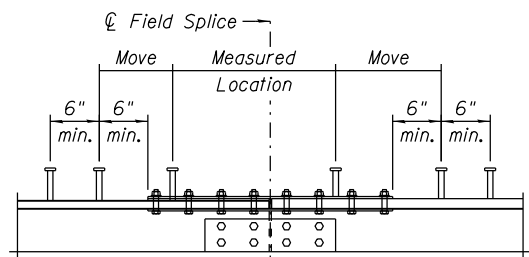
**GIRDER ELEVATION**



**SECTION A-A**



**CAMBER DIAGRAM**



**SHEAR CONNECTOR DETAIL AT SPLICES**

DO NOT place shear connectors on splice plates. Move row of studs to 6" beyond nearest edge of splice plate from measured location.

**TOP OF WEB ELEVATIONS\*\***

Girder	℄ Brg. N. Abut.	℄ Brg. Pier 1	℄ Splice 1	℄ Brg. Pier 11
1	598.88	602.78	603.84	606.76
2	598.53	602.51	603.60	606.52
3	598.13	602.18	603.30	606.26
4	597.72	601.88	603.01	606.00
5	597.32	601.55	602.71	605.75

\*\*For fabrication use only.

**CAMBER ORDINATES**

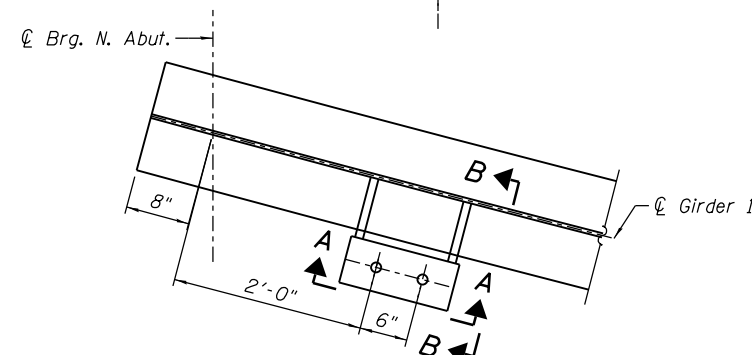
Girder	A1	A2	A3	B1	B2	B3	①	②	③
1	0 1/2"	0 3/4"	0 1/2"	3 1/2"	4 1/4"	3"	20'-6 3/4"	17'-6 3/4"	17'-0 7/8"
2	0 1/2"	0 3/4"	0 1/2"	3"	4"	2 3/4"	20'-6 7/8"	17'-8 1/2"	17'-0 5/8"
3	0 1/2"	0 3/4"	0 1/2"	3"	4"	2 3/4"	20'-7 1/8"	17'-10 1/8"	17'-0 3/8"
4	0 3/4"	1"	0 3/4"	3"	4"	2 3/4"	20'-7 1/4"	17'-11 3/4"	17'-0 1/4"
5	0 3/4"	1"	0 3/4"	3"	4"	2 3/4"	20'-7 3/8"	18'-1 1/2"	17'-0"

**GIRDER DIMENSIONS**

(All dimensions in feet unless otherwise noted)

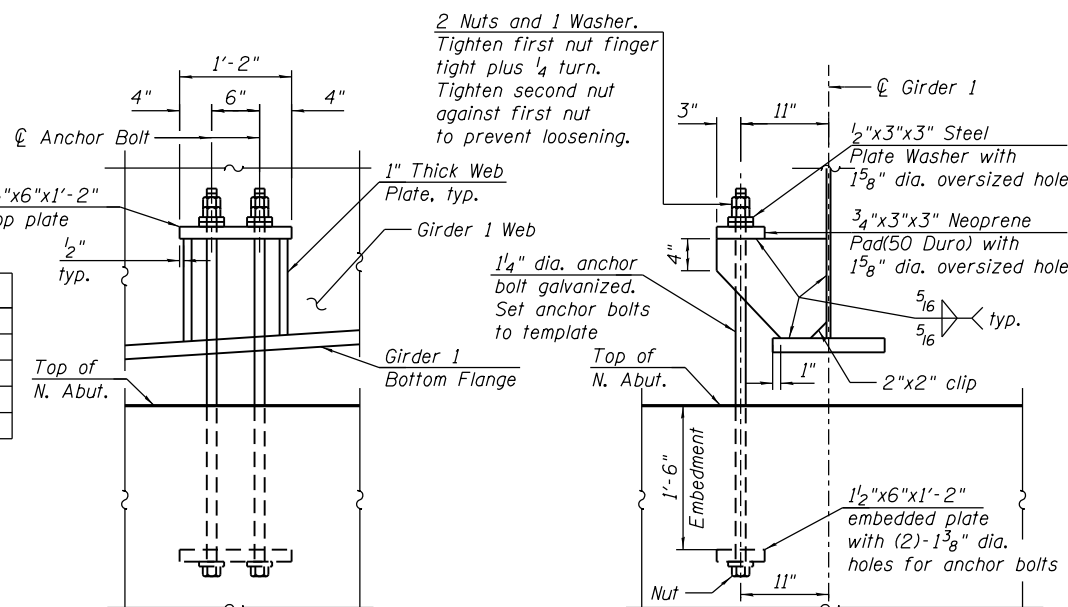
Girder	Radius	L*	S1	S2	A	B	C	C1	C2
1	330.667	147.554	61.688	85.866	61.688	17.564	68.302	116 Spa. @ 8"	100 Spa. @ 8"
2	324.833	147.653	61.727	85.926	61.727	17.704	68.223	66 Spa. @ 14"	57 Spa. @ 14"
3	319.000	147.755	61.768	85.987	61.768	17.844	68.144	58 Spa. @ 16"	50 Spa. @ 16"
4	313.167	147.860	61.811	86.049	61.811	17.984	68.066	67 Spa. @ 14"	50 Spa. @ 16"
5	307.333	147.969	61.856	86.112	61.856	18.124	67.989	67 Spa. @ 14"	67 Spa. @ 12"

\*Girder Length "L" excludes girder ends beyond first and last bearings.



**DETAIL-GIRDER TIE-DOWN**

(Cost Included with High Load Multi-Rotational Bearing, Guided Expansion)  
(Bearing manufacturer may provide alternate details subject to review and approval by the Engineer)



**VIEW A-A**

**SECTION B-B**

**NOTES:**

- All structural steel, including all steel for Girder Tie-Down Device, shall be AASHTO M270 Grade 50.
- "CVN" denotes Charpy-V-Notch Impact Energy Requirements, Zone 2.
- E.S. denotes Each Side.



EXTERIOR GIRDER 1 MOMENT TABLE				
		0.4 Sp. 1	*Pier 1	0.6 Sp. 2
Is	(in <sup>4</sup> )	21,390	21,390	16,560
Ic(n)	(in <sup>4</sup> )	45,098	-	38,043
Ic(3n)	(in <sup>4</sup> )	33,278	-	27,832
Ic(cr)	(in <sup>4</sup> )	-	25,374	-
Ss	(in <sup>3</sup> )	1,071	1,071	859
Sc(n)	(in <sup>3</sup> )	1,341	-	1,116
Sc(3n)	(in <sup>3</sup> )	1,240	-	1,027
Sc(cr)	(in <sup>3</sup> )	-	1,137	-
Sxc	(in <sup>2</sup> )	1,332	1,121	1,043
DC1	(k')	0.92	0.92	0.89
MDC1	('k)	103	877	677
DC2	(k')	0.39	0.39	0.39
MDC2	('k)	40	279	190
DW	(k')	0.21	0.21	0.21
MDW	('k)	26	243	211
M <sub>t+IM</sub>	('k)	876	1,210	1,251
fl (Strength I)	(ksi)	0.58	5.25	4.73
Mu + 1/3 fl Sxc	('k)	2,008	5,888	5,234
Øf Mn	('k)	-	-	-
fs DC1	(ksi)	1.15	9.83	9.46
fs DC2	(ksi)	0.39	2.95	2.22
fs DW	(ksi)	0.25	2.57	2.47
fs (t+IM)	(ksi)	7.84	12.77	13.46
fl (Service II)	(ksi)	0.44	3.98	3.57
fs + f <sub>l/2</sub> (Service II)	(ksi)	12.20	33.93	33.42
0.95Rh Fyf	(ksi)	47.50	47.50	47.50
fs + f <sub>l/3</sub> (Total)(Strength I)	(ksi)	16.21	43.92	43.43
Øf Fn	(ksi)	50.00	50.00	50.00
Vf	(k)	14.80	28.10	17.98

\*Bottom flange stress controls

EXTERIOR GIRDER 1 REACTION TABLE				
		N. Abut.	Pier 1	*Pier 11
RDC1	(k)	18.1	89.1	38.7
RDC2	(k)	6.5	30.9	12.4
RDW	(k)	4.1	23.9	11.1
R <sub>t+IM</sub>	(k)	73.4	108.1	78.2
R <sub>t+IM</sub> (Uplift)	(k)	-24.8	-4.8	-11.7
RTotal	(k)	77.4	247.2	128.8
LRFD Strength I (Max.)	(k)	165.5	375.0	217.4
LRFD Strength I (Min.)	(k)	-18.5	115.1	32.8
LRFD Service II (Max.)	(k)	124.2	169.3	130.5
LRFD Service II (Min.)	(k)	-3.4	22.5	13.6

\*North Bearing of Pier 11 (S.N. 016-1715)

INTERIOR GIRDER 2 MOMENT TABLE				
		0.4 Sp. 1	*Pier 1	0.6 Sp. 2
Is	(in <sup>4</sup> )	13,640	13,640	12,902
Ic(n)	(in <sup>4</sup> )	31,474	-	29,290
Ic(3n)	(in <sup>4</sup> )	23,337	-	21,897
Ic(cr)	(in <sup>4</sup> )	-	17,078	-
Ss	(in <sup>3</sup> )	675	675	618
Sc(n)	(in <sup>3</sup> )	896	-	824
Sc(3n)	(in <sup>3</sup> )	823	-	755
Sc(cr)	(in <sup>3</sup> )	-	737	-
Sxc	(in <sup>2</sup> )	886	721	772
DC1	(k')	0.78	0.78	0.78
MDC1	('k)	92	589	451
DC2	(k')	0.13	0.13	0.13
MDC2	('k)	9	115	89
DW	(k')	0.29	0.29	0.29
MDW	('k)	33	181	131
M <sub>t+IM</sub>	('k)	410	658	669
fl (Strength I)	(ksi)	1.79	5.35	4.18
Mu + 1/3 fl Sxc	('k)	1,422	3,589	3,118
Øf Mn	('k)	-	-	-
fs DC1	(ksi)	1.64	10.47	8.76
fs DC2	(ksi)	0.13	1.87	1.41
fs DW	(ksi)	0.48	2.95	2.08
fs (t+IM)	(ksi)	5.49	10.71	9.74
fl (Service II)	(ksi)	1.34	4.05	3.16
fs + f <sub>l/2</sub> (Service II)	(ksi)	10.06	31.24	26.50
0.95Rh Fyf	(ksi)	47.50	47.50	47.50
fs + f <sub>l/3</sub> (Total)(Strength I)	(ksi)	13.13	40.38	34.28
Øf Fn	(ksi)	50.00	50.00	50.00
Vf	(k)	12.56	16.93	14.81

\*Bottom flange stress controls

INTERIOR GIRDER 2 REACTION TABLE				
		N. Abut.	Pier 1	*Pier 11
RDC1	(k)	14.5	79.4	31.1
RDC2	(k)	1.1	15.8	4.5
RDW	(k)	4.8	25.3	9.1
R <sub>t+IM</sub>	(k)	49.3	84.9	57.0
RTotal	(k)	69.8	205.4	101.8

\*North Bearing of Pier 11 (S.N. 016-1715)

EXTERIOR GIRDER 5 MOMENT TABLE				
		0.4 Sp. 1	*Pier 1	0.6 Sp. 2
Is	(in <sup>4</sup> )	13,640	13,640	12,902
Ic(n)	(in <sup>4</sup> )	31,474	-	29,290
Ic(3n)	(in <sup>4</sup> )	23,337	-	21,897
Ic(cr)	(in <sup>4</sup> )	-	17,078	-
Ss	(in <sup>3</sup> )	675	675	618
Sc(n)	(in <sup>3</sup> )	896	-	824
Sc(3n)	(in <sup>3</sup> )	823	-	755
Sc(cr)	(in <sup>3</sup> )	-	737	-
Sxc	(in <sup>2</sup> )	879	721	778
DC1	(k')	0.86	0.86	0.86
MDC1	('k)	151	590	388
DC2	(k')	0.39	0.39	0.39
MDC2	('k)	54	192	120
DW	(k')	0.21	0.21	0.21
MDW	('k)	39	169	117
M <sub>t+IM</sub>	('k)	497	792	815
fl (Strength I)	(ksi)	2.78	5.74	2.74
Mu + 1/3 fl Sxc	('k)	1,999	3,996	2,947
Øf Mn	('k)	-	-	-
fs DC1	(ksi)	2.68	10.49	7.53
fs DC2	(ksi)	0.79	3.13	1.91
fs DW	(ksi)	0.57	2.75	1.86
fs (t+IM)	(ksi)	6.65	12.89	11.87
fl (Service II)	(ksi)	2.09	4.35	2.06
fs + f <sub>l/2</sub> (Service II)	(ksi)	13.74	35.30	27.76
0.95Rh Fyf	(ksi)	47.50	47.50	47.50
fs + f <sub>l/3</sub> (Total)(Strength I)	(ksi)	17.77	45.62	36.27
Øf Fn	(ksi)	50.00	50.00	50.00
Vf	(k)	11.71	21.38	12.65

\*Bottom flange stress controls

EXTERIOR GIRDER 5 REACTION TABLE				
		N. Abut.	Pier 1	*Pier 11
RDC1	(k)	17.1	84.9	24.7
RDC2	(k)	6.4	30.6	8.4
RDW	(k)	4.1	23.6	6.7
R <sub>t+IM</sub>	(k)	46.6	103.3	52.8
RTotal	(k)	74.2	242.4	92.6

\*North Bearing of Pier 11 (S.N. 016-1715)

Is, Ss: Non-composite moment of inertia and section modulus of the steel section used for computing fs(Total-Strength I, and Service II) due to non-composite dead loads (in.<sup>4</sup> and in.<sup>3</sup>).

Ic(n), Sc(n): Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing fs(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>).

Ic(3n), Sc(3n): Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing fs(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>).

Ic(cr), Sc(cr): Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing fs(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>).

Sxc: Section modulus about the major axis of section to the controlling flange, tension or compression, taken as yield moment with respect to the controlling flange over the yield strength of the controlling flange (in.<sup>3</sup>).

DC1: Un-factored non-composite dead load (kips/ft.).

MDC1: 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.).

MDC2: 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.).

MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

M<sub>t+IM</sub>: Un-factored live load moment plus dynamic load allowance (impact)(kip-ft.).

Mu (Strength I): Factored design moment (kip-ft.).

1.25 (MDC1 + MDC2) + 1.5 MDW + 1.75 M<sub>t+IM</sub>

fl: Factored calculated normal stress at edge of flange for controlling flange plate due to lateral bending, Strength I or Service II as applicable (ksi).

Øf Mn: 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.).

fs DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

MDC1 / Snc

fs DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

MDC2 / Sc(3n) or MDC2 / Sc(cr) as applicable.

fs DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

MDW / Sc(3n) or MDW / Sc(cr) as applicable.

fs (t+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live plus impact loads as calculated below (ksi).

M<sub>t+IM</sub> / Sc(n) or M<sub>t+IM</sub> / Sc(cr) as applicable.

fs + f<sub>l/2</sub> (Service II): Sum of stresses as computed below (ksi).

fsDC1 + fsDC2 + fsDW + 1.3 fs(t+IM) + f<sub>l/2</sub>

0.95RhFyf: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

fs + f<sub>l/3</sub> (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

1.25 (fsDC1 + fsDC2) + 1.5 fsDW + 1.75 fs(t+IM) + f<sub>l/3</sub>

Øf Fn: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

Vf: Maximum factored shear range in span computed according to Article 6.10.10.

Note:

M<sub>t</sub> and R<sub>t</sub> include the effects of centrifugal force and superelevation.

FILE NAME: D:\V1749-PWINT-aecomonline.local\AECOM\_DS02\_NAYDocuments\01\_Americas\Transportation\60269938\_Circle\Phase\_I\000\_CAD\008\_Structural\Structure\_016-1718\0161718-60X93-5019-Moment.tbl



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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

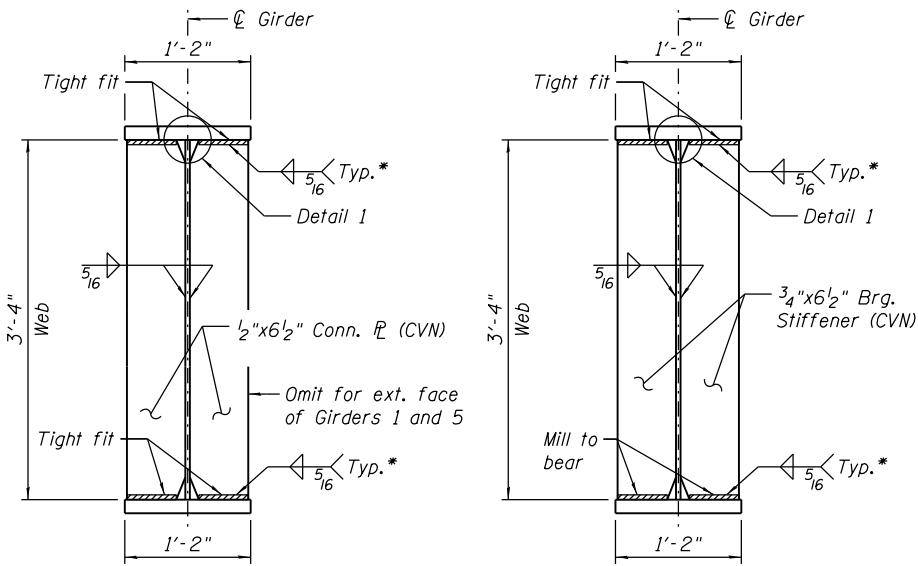
**GIRDER MOMENT AND REACTION TABLES  
STRUCTURE NO. 016-1718**

SHEET NO. S4-19 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	933
CONTRACT NO. 60X93				
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**NOTES:**

- See Sheet S4-17 for location of girder cross frames and end diaphragms.
- AASHTO M270 Grade 50 steel shall be used for all cross frames, end diaphragms, connection plates, bearing stiffeners and jacking stiffeners.
- "CVN" denotes Charpy-V-Notch Impact Energy Requirements, Zone 2.
- All cross frame members, end diaphragms, bearing stiffeners, jacking stiffeners, connection plates and gusset plates shall comply with "CVN".
- Fasteners shall be ASTM A325 Type 1, hot-dipped galvanized bolts. Bolts  $\frac{7}{8}$ "  $\phi$ , holes  $\frac{15}{16}$ "  $\phi$ , unless otherwise noted.
- If any field reaming is required, two hardened washers are required for each oversized bolt hole.
- Bolt spacing shall be 3" min. and edge distances shall be 2" min.
- All cross frames or diaphragms between beams or girders shall be installed with erection pins and bolts in accordance with the erection plan approved by the Engineer. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
- The Contractor shall either:
  - Ream cross frame connection holes during shop assembly, or
  - Provide detailing and fabrication controls acceptable to the Engineer which ensures accuracy such that field reaming will not exceed the amount permitted in Article 505.08(l) of the Standard Specifications.

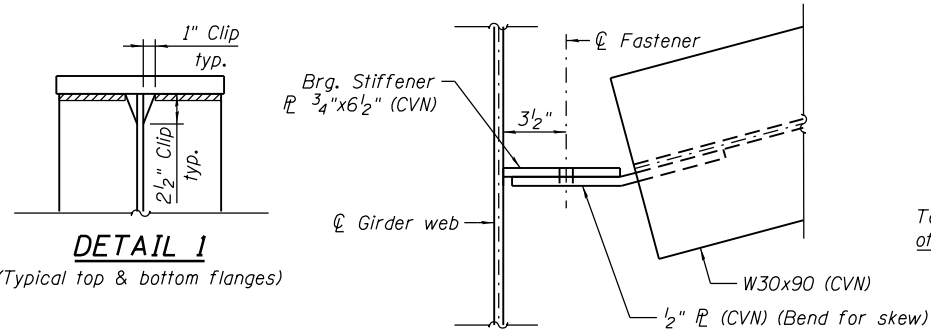


**CONNECTION PLATE DETAIL BEARING/JACKING STIFFENER DETAIL**

(No. Req'd = 88)

(No. Req'd = 60)

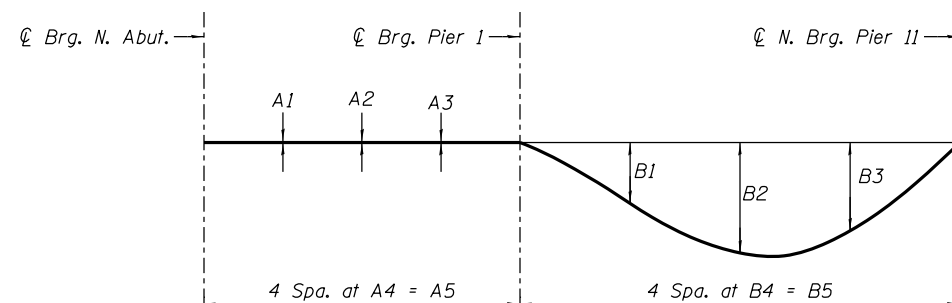
\* Terminate weld  $\frac{1}{4}$ " from edges of stiffener  $\bar{r}$



**DETAIL 1**  
(Typical top & bottom flanges)

**SECTION A-A**

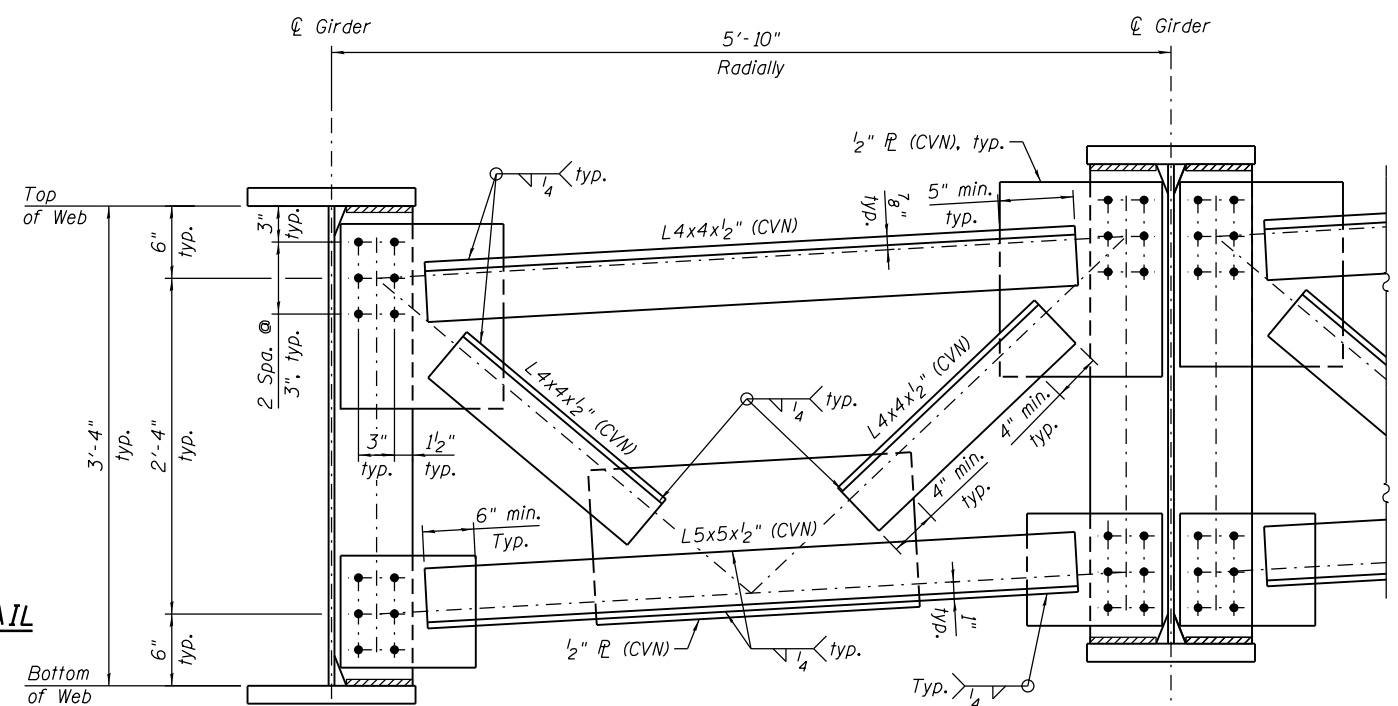
(Bott. flange of plate girder not shown for clarity)



**DEAD LOAD DEFLECTION DIAGRAM**

(Includes weight of structural steel only.)

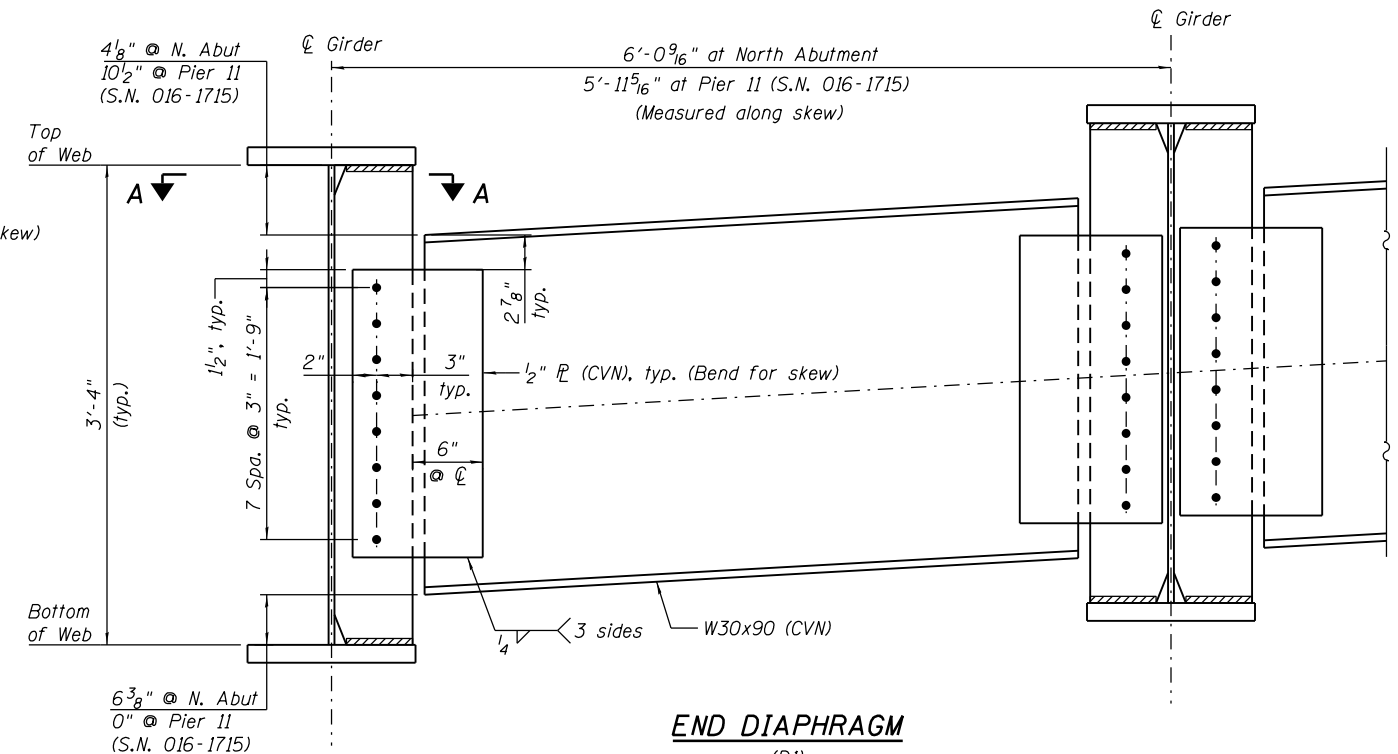
Note:  
The calculated deflections of the primary girders under steel self-weight shall be used to detail the diaphragm and cross frame connections, and to erect the structural steel such that the girders will be plumb within a tolerance of  $\pm \frac{1}{8}$  in. per vertical ft. throughout the length of the girder system when supporting their own weight.



**INTERIOR CROSS FRAME**

(CF1)

(No. Req'd = 48)



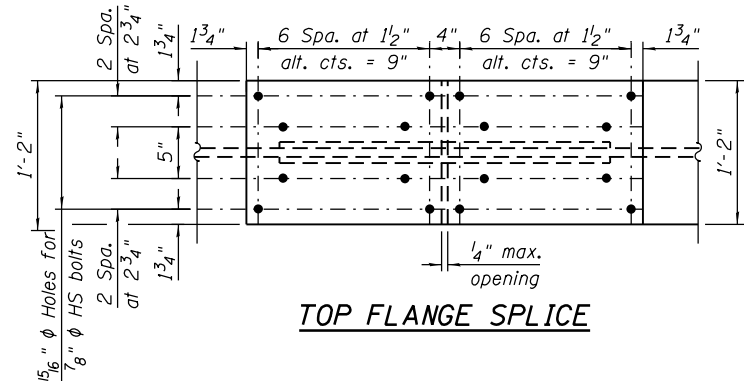
**END DIAPHRAGM**

(D1)

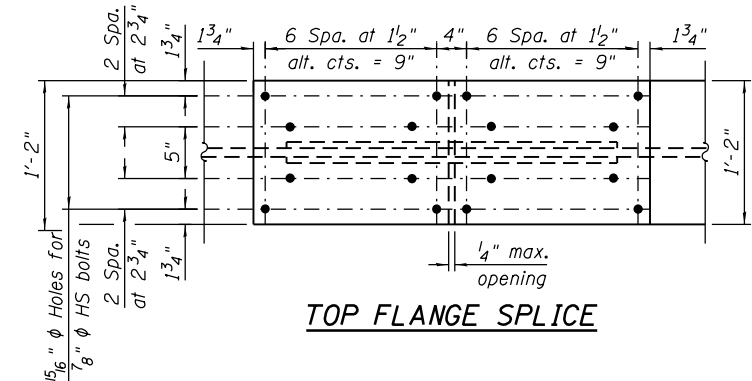
(No. Req'd = 8)

Girder No.	DEAD LOAD DEFLECTIONS - STEEL SELF-WEIGHT ONLY									
	Span 1					Span 2				
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5
1	0"	0"	0"	15'-5 1/8"	61'-8 1/4"	0 1/4"	0 3/8"	0 1/4"	21'-5 5/8"	85'-10 3/8"
2	0"	0"	0"	15'-5 1/8"	61'-8 3/4"	0 1/4"	0 3/8"	0 1/4"	21'-5 3/4"	85'-11 1/8"
3	0"	0"	0"	15'-5 1/4"	61'-9 1/4"	0 1/8"	0 3/8"	0 1/4"	21'-6"	85'-11 7/8"
4	0"	0"	0"	15'-5 3/8"	61'-9 3/4"	0 1/8"	0 1/4"	0 1/4"	21'-6 1/8"	86'-0 5/8"
5	0"	0"	0"	15'-5 5/8"	61'-10 1/4"	0 1/8"	0 1/4"	0 1/4"	21'-6 3/8"	86'-1 3/8"

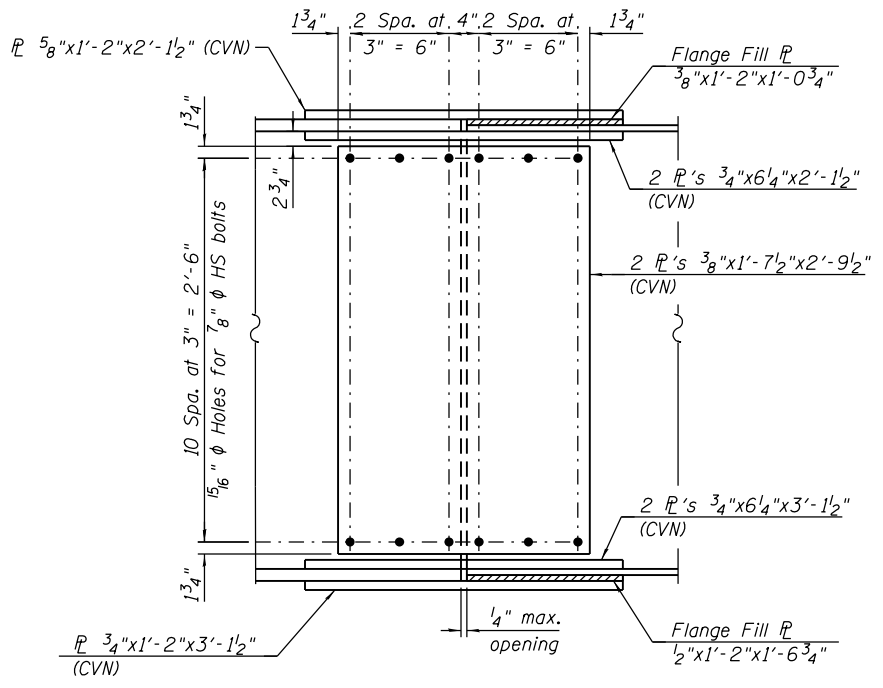
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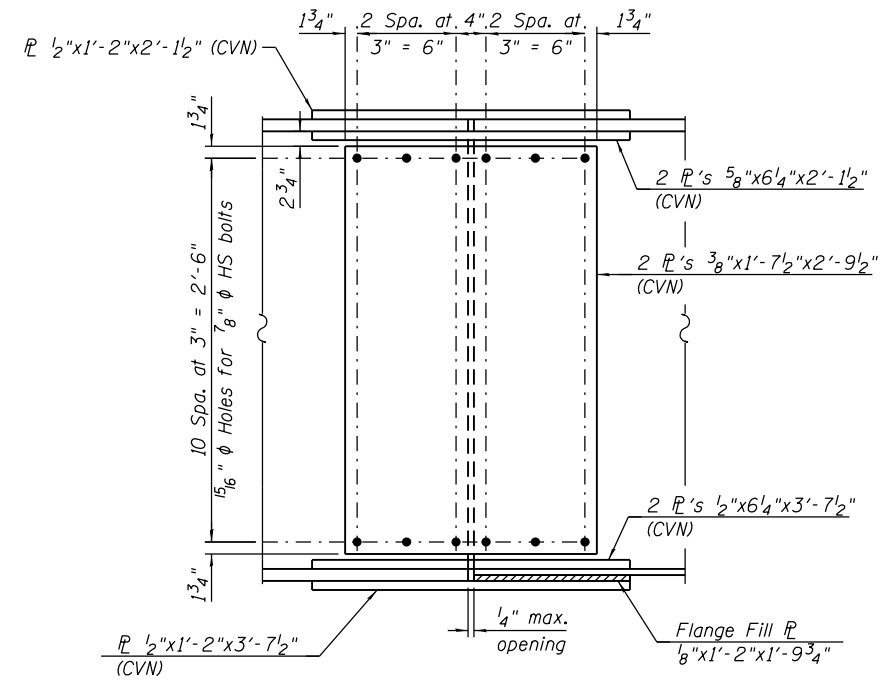
**TOP FLANGE SPLICE**



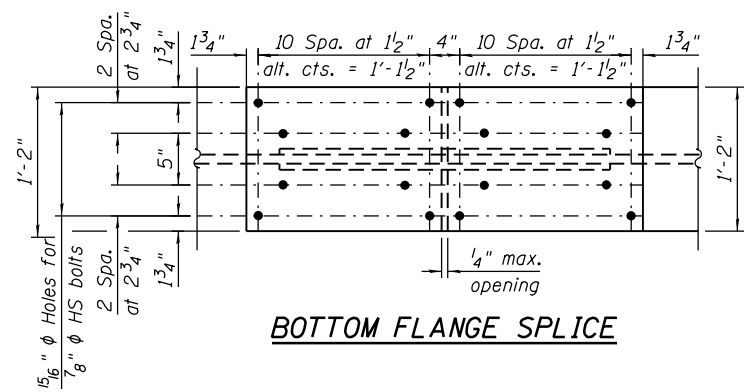
**TOP FLANGE SPLICE**



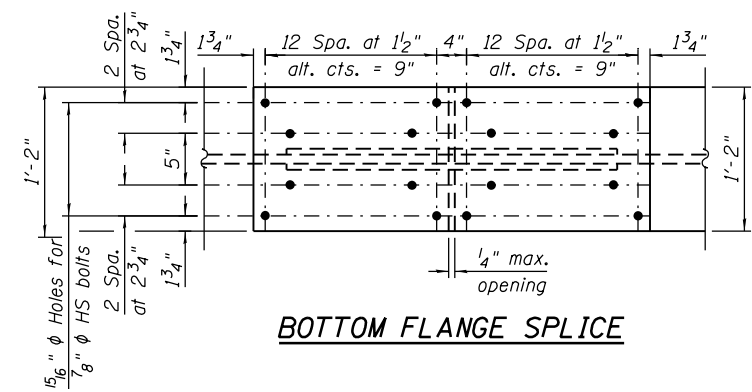
**WEB SPLICE**



**WEB SPLICE**



**BOTTOM FLANGE SPLICE**



**BOTTOM FLANGE SPLICE**

**SPLICE 1  
(GIRDER 1)**  
(1 Required)

**SPLICE 1  
(GIRDERS 2-5)**  
(4 Required)

**NOTES:**

1. See Sheet S4-17 for girder framing plan.
2. All structural steel shall be AASHTO M270 Grade 50.
3. "CVN" denotes Charpy-V-Notch Impact Energy Requirements, Zone 2.
4. For Shear Connector Detail at Splices, see Sheet S4-18.



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		CHECKED -	MI, MAI	REVISED -	

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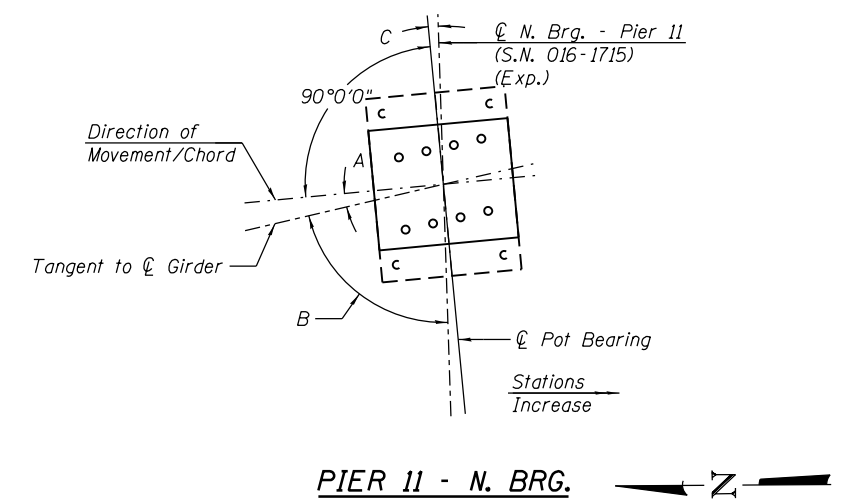
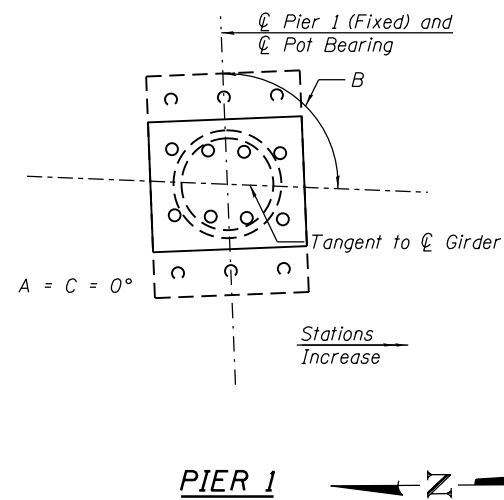
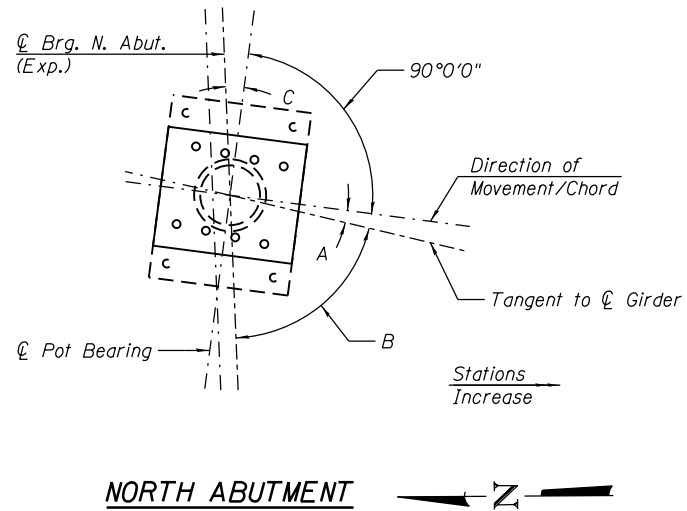
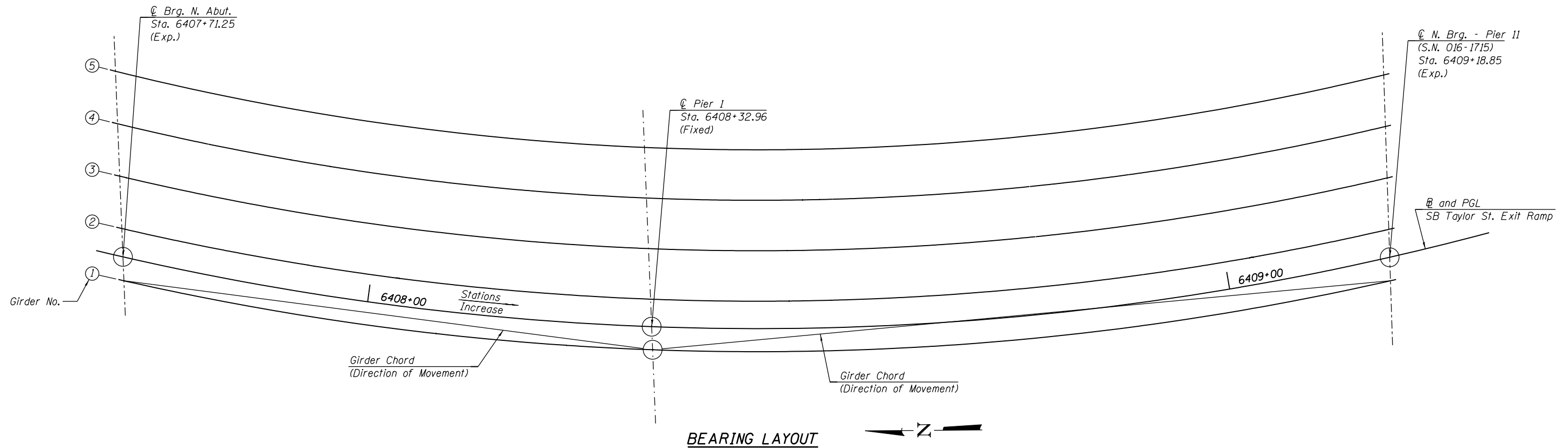
**STRUCTURAL STEEL DETAILS II  
STRUCTURE NO. 016-1718**

SHEET NO. S4-21 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	935
CONTRACT NO. 60X93				

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**LAYOUT ANGLES**

GIRDER	NORTH ABUTMENT				PIER II			
	A	B	C	D	A	B	C	D
1	5°20'40"	74°53'5"	9°46'15"	90°0'0"	7°26'21"	79°5'8"	3°28'31"	90°0'0"
2	5°26'38"	74°36'24"	9°56'57"	90°0'0"	7°34'41"	78°53'14"	3°32'5"	90°0'0"
3	5°32'49"	74°19'5"	10°8'6"	90°0'0"	7°43'20"	78°40'53"	3°35'48"	90°0'0"
4	5°39'16"	74°1'5"	10°19'39"	90°0'0"	7°52'18"	78°28'3"	3°39'39"	90°0'0"
5	5°45'57"	73°42'23"	10°31'40"	90°0'0"	8°1'37"	78°14'44"	3°43'39"	90°0'0"

**NOTES:**

- A = Angle between Tangent to Girder and Direction of Movement/Chord
- B = Angle between Tangent to Girder and Centerline of Pier or Abutment
- C = Setting Angle between Centerline of Bearing Base and Centerline of Pier or Abutment
- D = Set Bearing Base Centers at right angles to Direction of Movement/Chord



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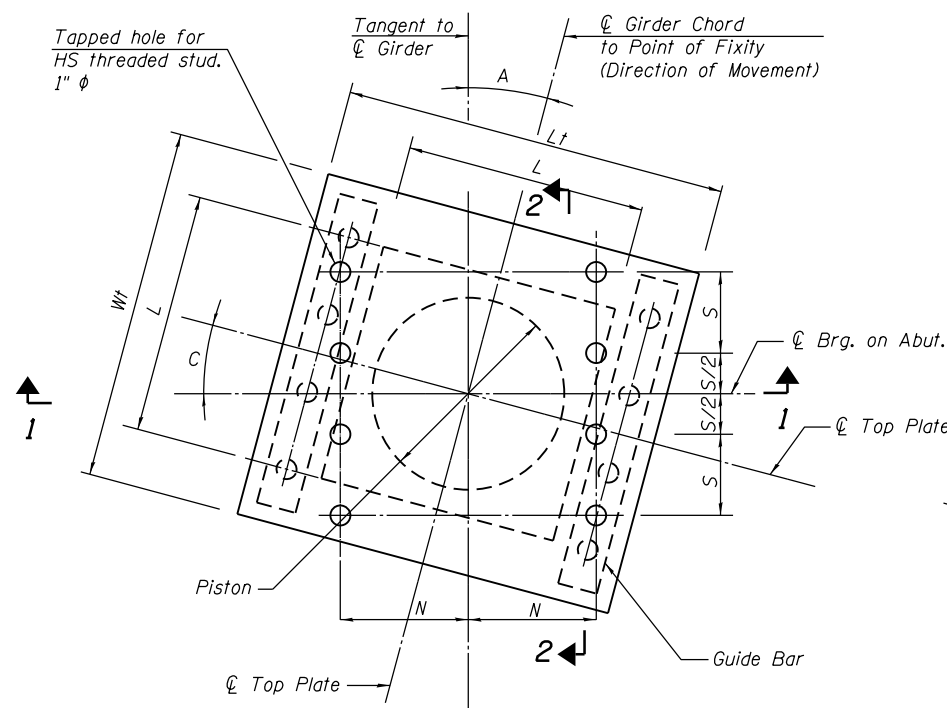
BEARING LAYOUT AND ORIENTATION  
STRUCTURE NO. 016-1718

SHEET NO. S4-22 OF S4-38 SHEETS

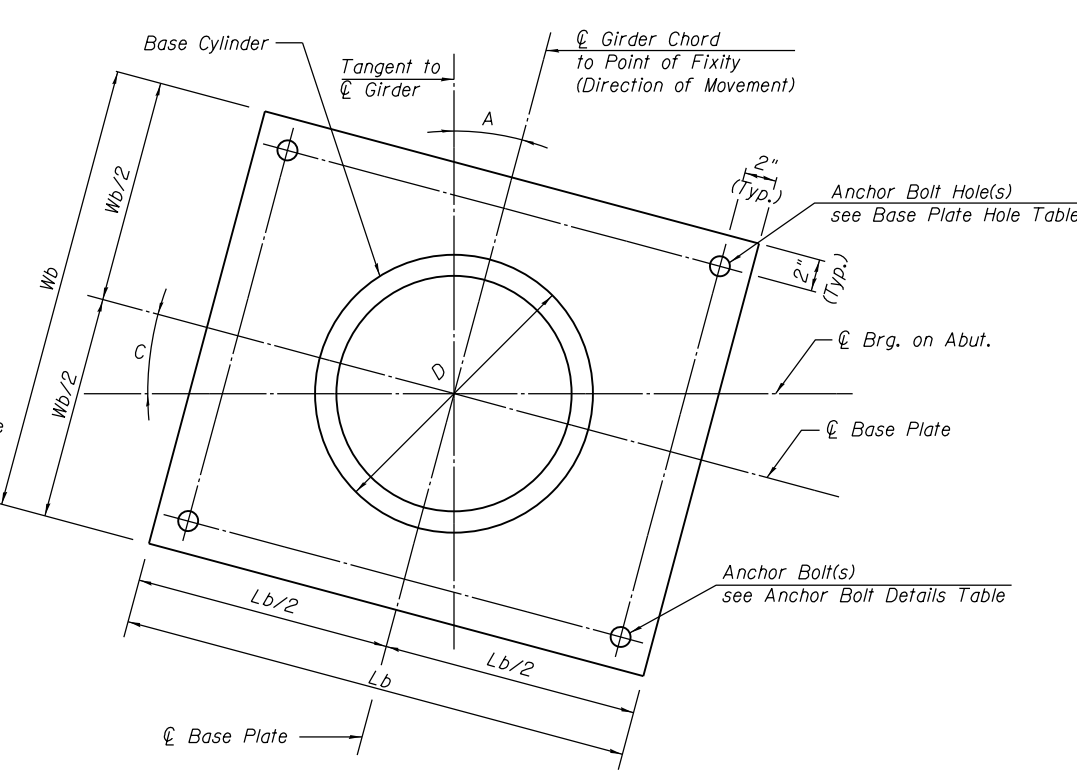
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90/94/290	2014-013R&B-R	COOK	1972	936
CONTRACT NO. 60X93				

ILLINOIS FED. AID PROJECT

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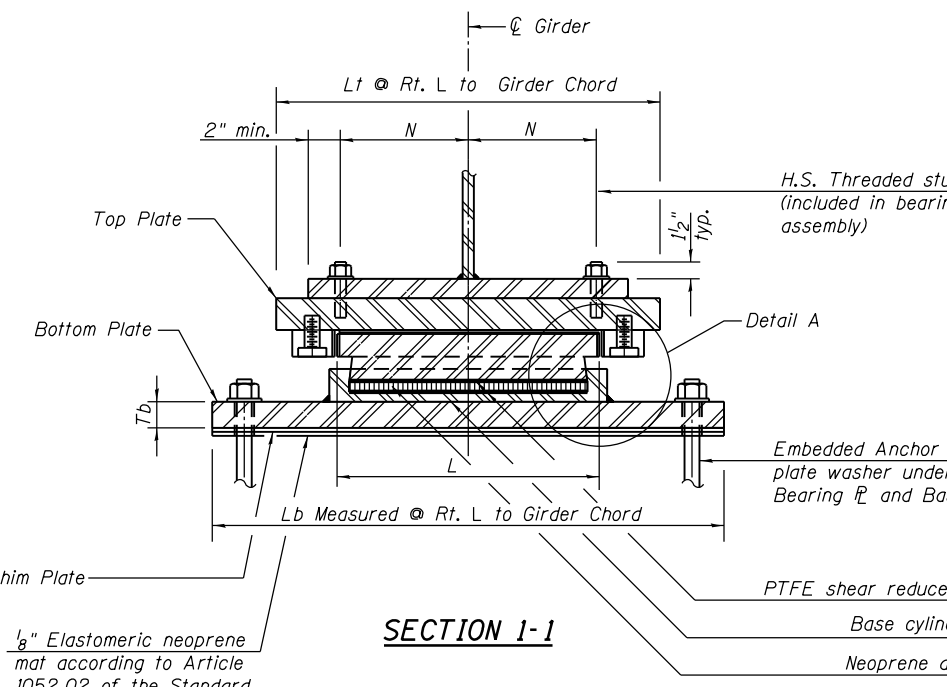
**TOP BEARING PLATE AND PISTON PLAN**



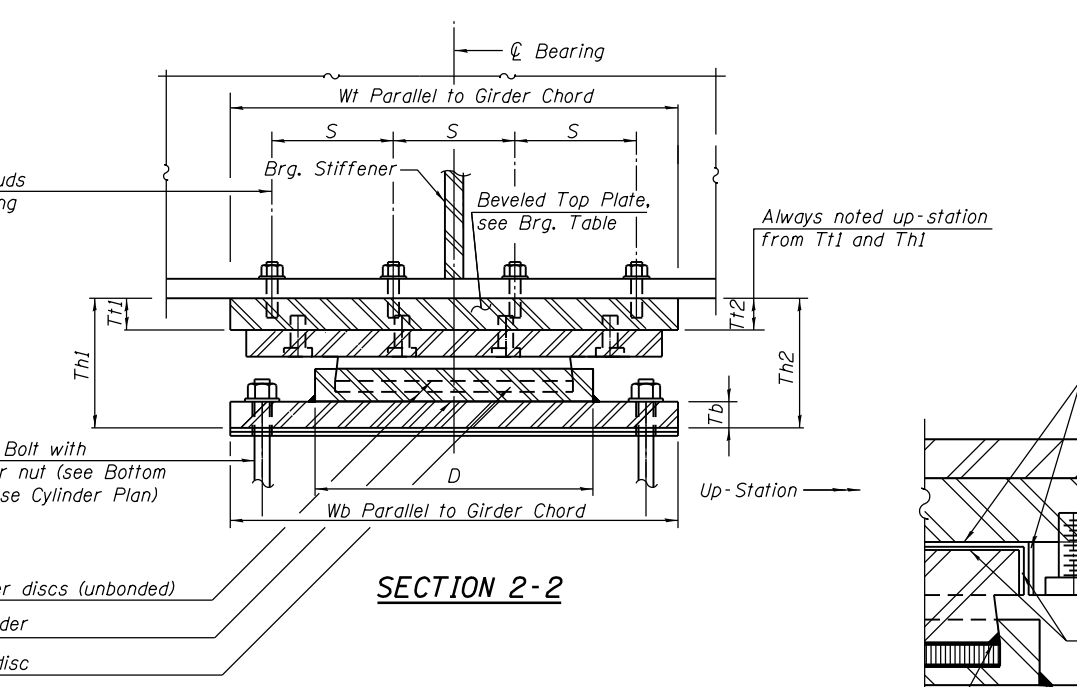
**BOTTOM BEARING PLATE AND BASE CYLINDER PLAN**

**NOTES:**

- The Structural Steel for the top & bottom bearing plates shall be AASHTO M270 Grade 50.
- For anchor bolt diameter/grade and location details, see Guided Expansion Bearing Dimensions Table and Anchor Bolt Location Detail, respectively, on Sheet S4-24.
- Top & bottom plates, threaded studs, washers & shim plates are included in the cost of the High Load Multi-Rotational Bearings, Guided Expansion.
- Anchor bolts for bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place.
- Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
- The 1/8" PTFE sheet shall be bonded directly to the piston with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.
- 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 bearing details.
- Work this sheet with Sheet S4-24.
- All (embedded and separate) bearing plates, anchor bolts, nuts, washers and pintles shall be galvanized according to AASHTO M111 or M232 as applicable.
- If base cylinder is recessed into the bottom bearing plate, the thickness of the bottom plate shall be Tb plus the depth of the recess.
- The "Top Bearing Plate and Piston Plan", and the "Bottom Bearing Plate and Base Cylinder Plan", presented on this sheet are schematic in nature. For actual orientation of bearings, see Sheet S4-22.



**SECTION 1-1**



**SECTION 2-2**

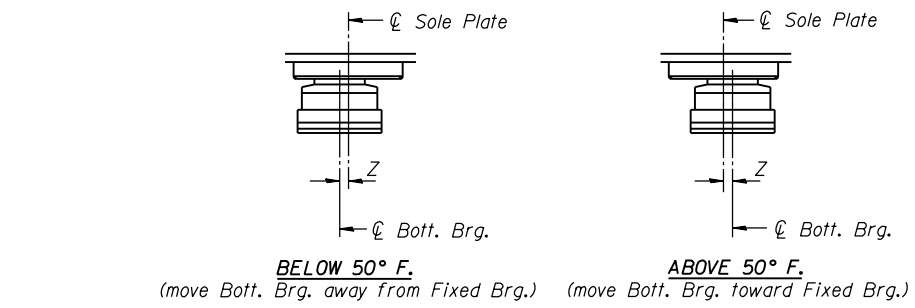
1/8" Elastomeric neoprene mat according to Article 1052.02 of the Standard Specifications (Cost included with bearing)

**ANCHOR BOLT DETAILS**

Bolt Dia. x Length	Plate Washer
1" x 12"	2 1/4" x 2 1/4" x 5/16"

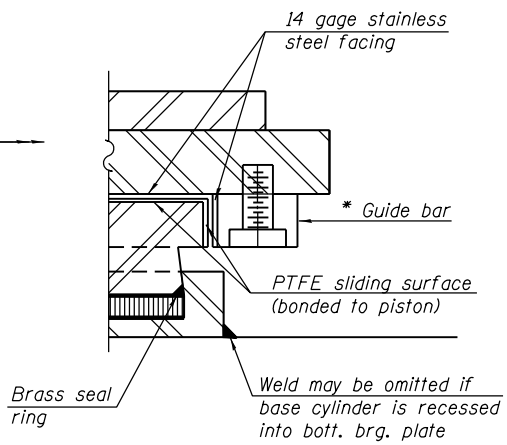
**BASE PLATE HOLE TABLE**

Anchor Bolt $\phi$	Max. Hole $\phi$
1"	1 1/2"



**SETTING ANCHOR BOLTS AT EXP. BRG.**

Z = 1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50° F.



**DETAIL A**

\* As alternates to the bolted connection shown, the guide bars may be connected to the top bearing plate by groove welds or the guide bars and top bearing plate may be fabricated as a single piece.



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EXPANSION POT BEARING DETAILS I  
STRUCTURE NO. 016-1718

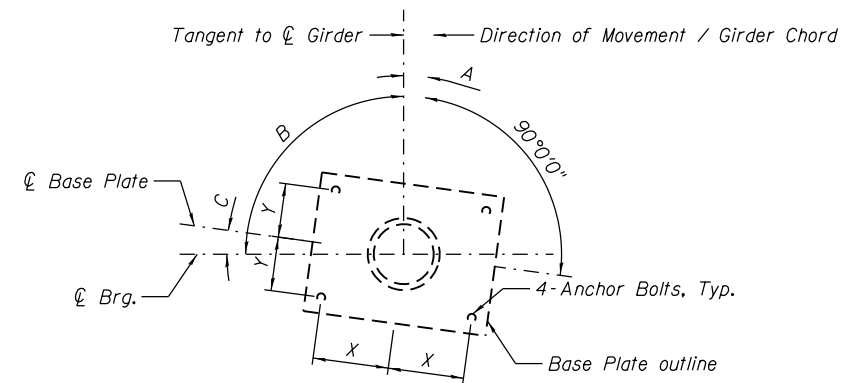
SHEET NO. S4-23 OF S4-38 SHEETS

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90/94/290	2014-013R&B-R	COOK	1972	937
CONTRACT NO. 60X93				
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**GUIDED EXPANSION BEARING DIMENSIONS TABLE**

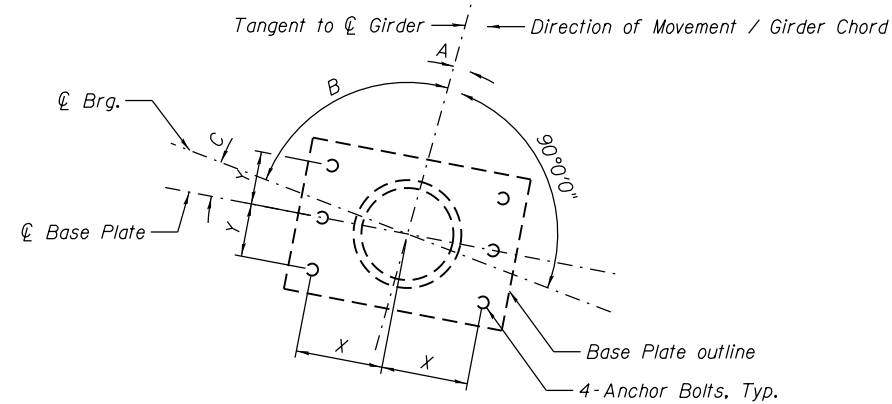
Brg. Location	Vertical Design Load (kips)	Lateral Design Load (kips)	Total Required Movement (inches)	Bottom Bearing Plate			Top Bearing Plate						Th1	Th2	L	D	Anchor Bolt Dia.	Anchor Bolt Specification Grade
				Tb	Lb	Wb	Tt1	Tt2	Lt	Wt	N	S						
*N. Abut.	150	30	7/8"	1 1/8"	23"	17 1/2"	1 1/2"	2 5/8"	15"	17 1/2"	5"	3 3/4"	6 1/8"	7 1/4"	11"	9"	1"	F1554, Grade 36
Pier 11 - N	150	30	1 1/4"	1 3/8"	23"	17 1/2"	1 1/2"	2"	15"	17 1/2"	4 1/2"	3 1/2"	6 3/8"	6 7/8"	11"	9"	1"	F1554, Grade 36

\* Uplift is present at Girder 1 at the North Abutment. Refer to "Exterior Girder 1 Reaction Table" (Sheet S4-19 ) for uplift reactions and to Sheet S4-18 for uplift restraint details. The Contractor may provide alternate details for uplift restraint provided design calculations and details are signed and sealed by a Structural Engineer licensed in the State of Illinois. All alternate details shall be subject to the approval of the Engineer.



**ANCHOR BOLT  
LOCATION DETAIL**  
(At N. Abut.)

Location	Girder	X	Y	A	B	C
N. Abut.	1	9 1/2"	6 3/4"	05°20'40"	74°53'05"	09°46'15"
	2	9 1/2"	6 3/4"	05°26'38"	74°36'24"	09°56'58"
	3	9 1/2"	6 3/4"	05°32'49"	74°19'05"	10°08'06"
	4	9 1/2"	6 3/4"	05°39'16"	74°01'05"	10°19'39"
	5	9 1/2"	6 3/4"	05°45'57"	73°42'23"	10°31'40"



**ANCHOR BOLT  
LOCATION DETAIL**  
(At Pier 1)

Location	Girder	X	Y	A	B	C
Pier 11 - N	1	9 1/2"	6 3/4"	07°26'21"	79°05'08"	03°28'31"
	2	9 1/2"	6 3/4"	07°34'41"	78°53'14"	03°32'05"
	3	9 1/2"	6 3/4"	07°43'20"	78°40'53"	03°35'48"
	4	9 1/2"	6 3/4"	07°52'18"	78°28'03"	03°39'39"
	5	9 1/2"	6 3/4"	08°01'37"	78°14'44"	03°43'39"

**NOTES:**

- All HLMR bearings shall be designed to carry minimum Factored Ultimate (Strength) Design Rotation of 0.02 radians. See Special Provision.
- 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.
- Work this sheet with Sheet S4-23.
- See Sheet S4-22 for bearing layout & orientation.

**BILL OF MATERIAL**

Item	Unit	Total
Anchor Bolts, 1"	Each	40
High Load Multi-Rotational Bearings, Guided Expansion, 150K	Each	10



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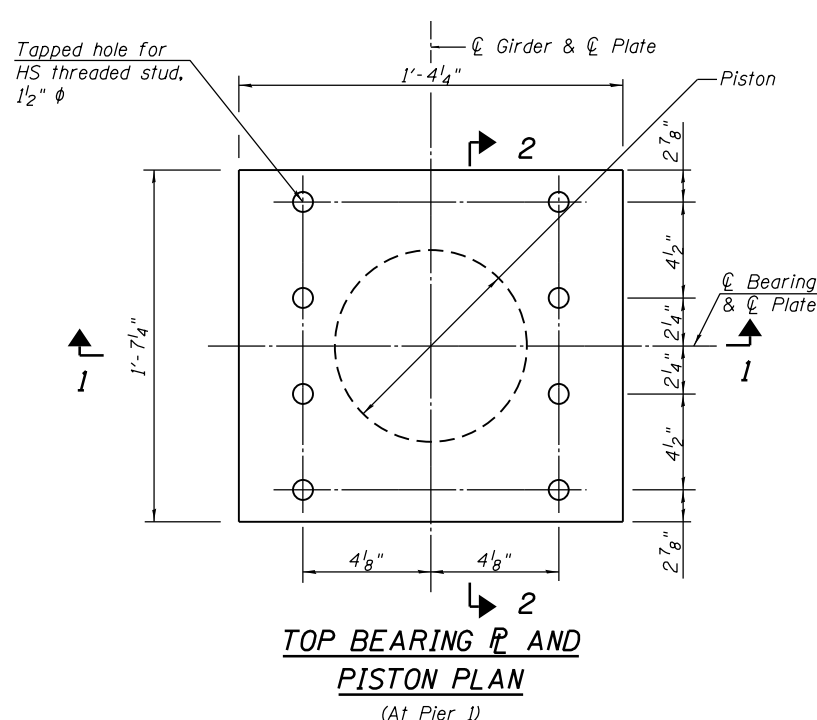
**EXPANSION POT BEARING DETAILS II  
STRUCTURE NO. 016-1718**

SHEET NO. S4-24 OF S4-38 SHEETS

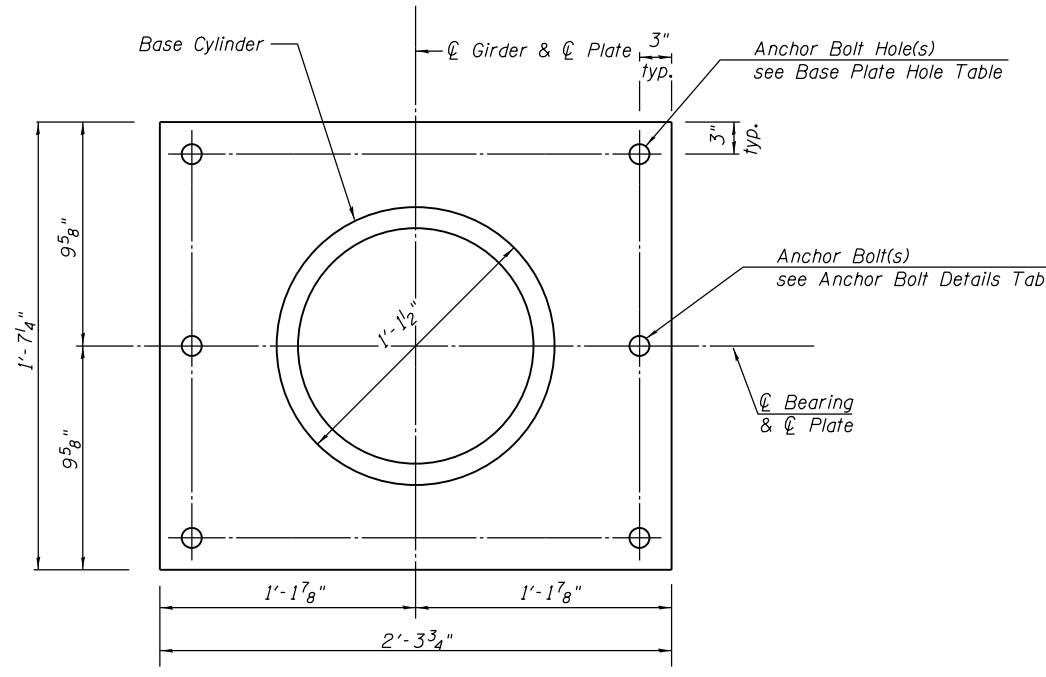
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	938
CONTRACT NO. 60X93				
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FILE NAME: D:\161749-PWINT-aecom\line\local\AECOM\_DS02\_NAD\Documents\01\_Americas\Transportation\60269938\_Circle\Phase\_II\000\_CAD\008\_Structural\Structure\_016-1718\0161718-60X93-5024-ExpPotBrg-II

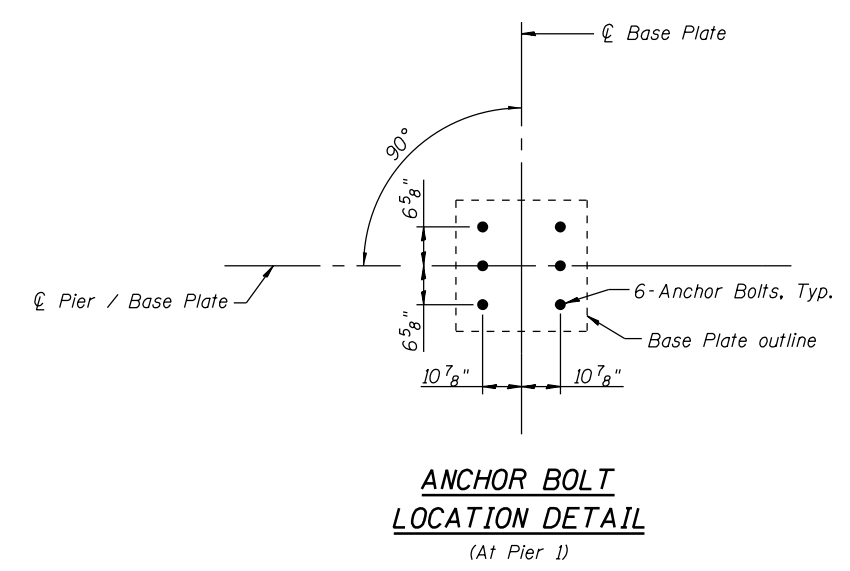
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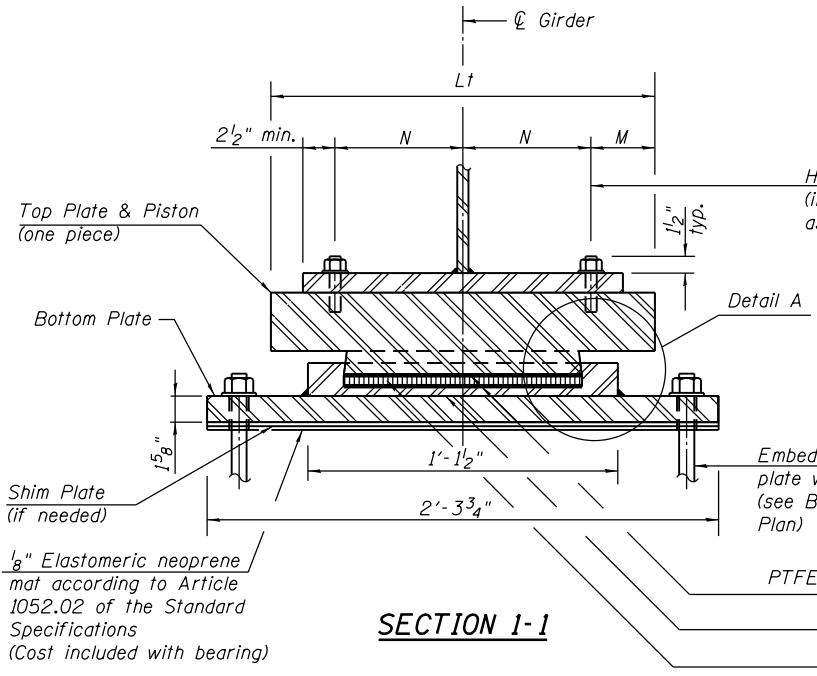
**TOP BEARING PLATE AND PISTON PLAN**  
(At Pier 1)



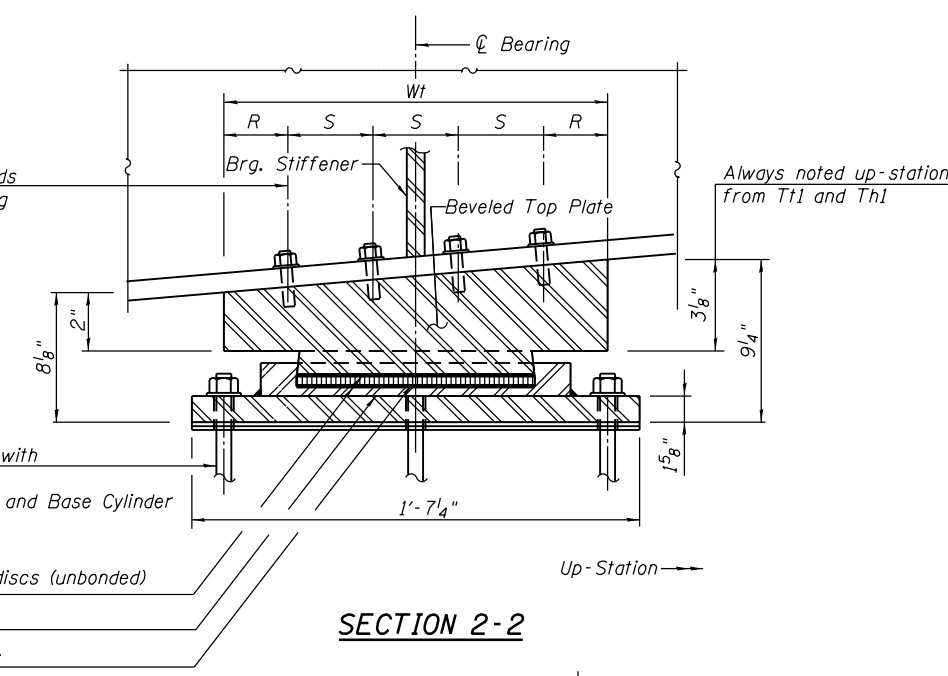
**BOTTOM BEARING PLATE AND BASE CYLINDER PLAN**  
(At Pier 1)



**ANCHOR BOLT LOCATION DETAIL**  
(At Pier 1)



**SECTION 1-1**



**SECTION 2-2**

1/8" Elastomeric neoprene mat according to Article 1052.02 of the Standard Specifications (Cost included with bearing)

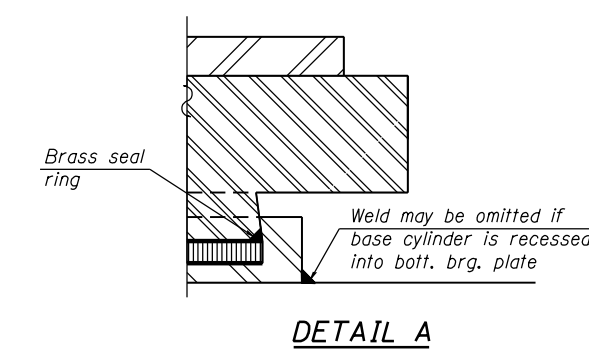
**ANCHOR BOLT DETAILS**

Bolt Dia. x Length *	Plate Washer
1/2" x 18"	3"x3"x 5/16"

\* Length shown is minimum required embedment length.

**BASE PLATE HOLE**

Anchor Bolt $\phi$	Max. Hole $\phi$
1/2"	2"



**DETAIL A**

**NOTES:**

- The Structural Steel for the top & bottom bearing plates shall be AASHTO M270 Grade 50.
- Top & bottom plates, threaded studs, washers & shim plates are included in the cost of the High Load Multi-Rotational Bearings, Fixed.
- Anchor bolts for bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place.
- Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
- 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 bearing details.
- All (embedded and separate) bearing plates, anchor bolts, nuts, washers and pintles shall be galvanized according to AASHTO M111 or M232 as applicable.
- If base cylinder is recessed into the bottom bearing plate, the thickness of the bottom plate shall be  $T_b$  plus the depth of the recess.
- All HLMR bearings shall be designed to carry minimum Factored Ultimate (Strength) Design Rotation of 0.02 radians. See Special Provision.
- 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.
- See Sheet S4-22 for bearing layout & orientation.

**BILL OF MATERIAL**

Item	Unit	Total
Anchor Bolts, 1/2"	Each	30
High Load Multi-Rotational Bearings, Fixed - 300K	Each	5



USER NAME = ahmad,issa	DESIGNED - JJS	REVISED -
PLOT SCALE = N.T.S	CHECKED - MI, LAB	REVISED -
PLOT DATE = 7/30/2018	DRAWN - SK, JJS	REVISED -
	CHECKED - MI, MAI	REVISED -

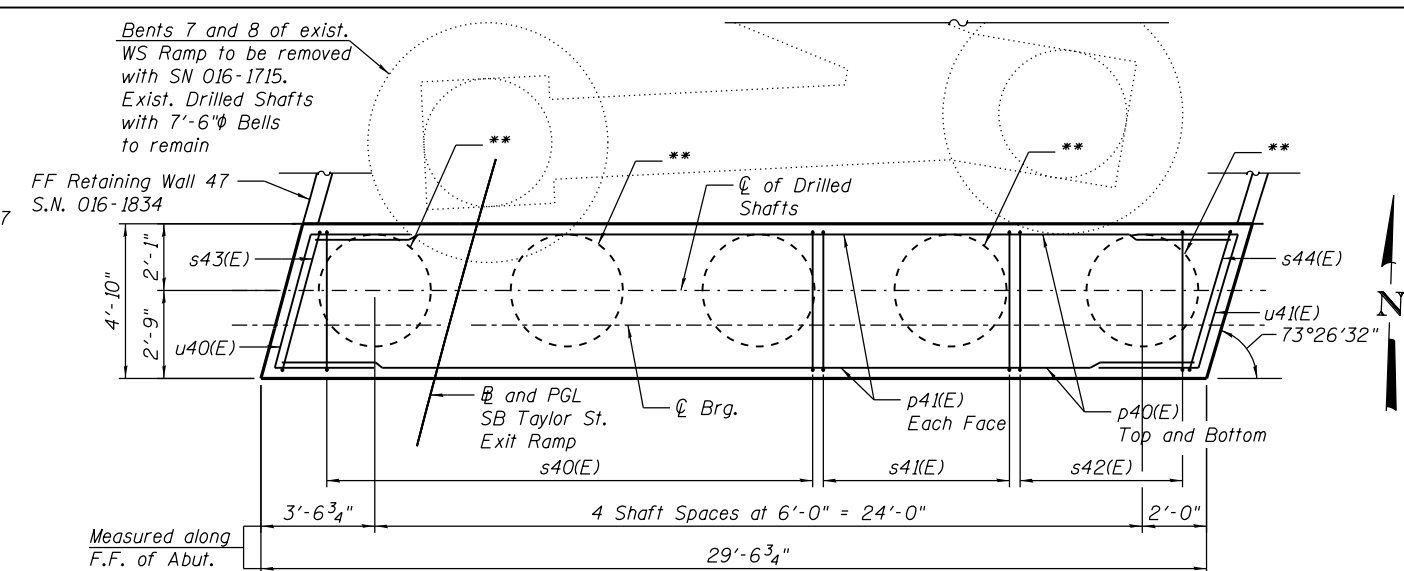
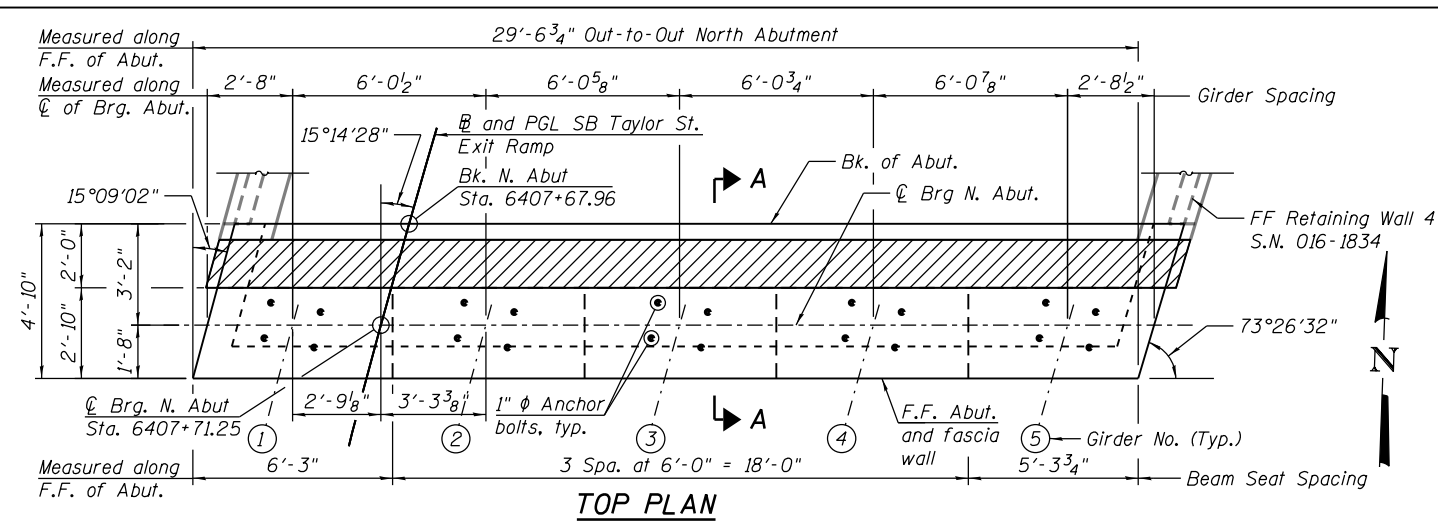
**STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION**

**FIXED POT BEARING DETAILS  
STRUCTURE NO. 016-1718**

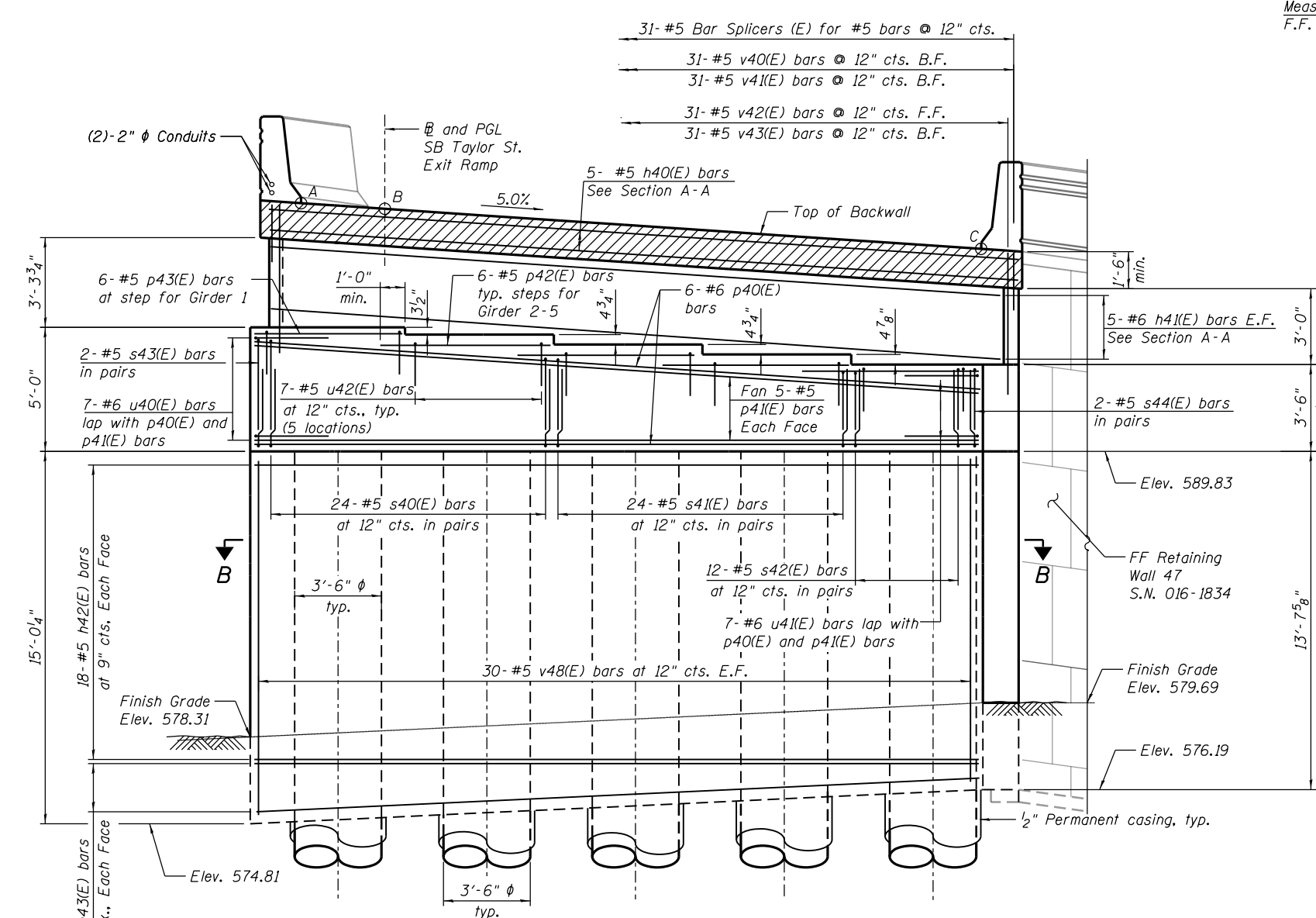
SHEET NO. S4-25 OF S4-38 SHEETS

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 939
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

FILE NAME: D:\V161749-PWINT-aecomonline.local\AECOM\_DS02\_NADDocuments\01\_Americas\Transportation\60269938\_Circle\Phase\_1\000\_CAD\008\_Structural\Structure\_016-171810\16171810\60X93-5026-AbutPlanElev



\*\* See Special Provision for Foundation Construction at Existing Obstruction if obstructions are identified.



**TOP OF BACKWALL (CLOSURE POUR) ELEVATIONS**

Points	Front Face	Back Face
A - West Curb Line	599.80	599.70
B - 4 and PGL SB Taylor St Exit Ramp	599.53	599.43
C - East Curb Line	598.00	597.89

**TOP OF SEAT ELEVATION**

Girder No.	Seat Elevation
1	594.83
2	594.54
3	594.14
4	593.74
5	593.33

**NOTES:**

1. Pour steps monolithically with cap.
2. For Anchor Bolt Details, see Sheet S4-24.
3. For Section A-A, see Sheet S4-27.
4. For Section B-B, see Sheet S4-28.
5. For Bar Splicers, see Sheet S4-33.
6. Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure.
7. Concrete Sealer shall be applied to abutment backwall, bearing seats and exposed faces of abutment cap.
8. Space bars in cap to miss anchor bolts.
9. A Drilled Shaft shall be tested in accordance with Special Provision for Crosshole Sonic Logging.

**LEGEND:**

E.F. - Each Face  
F.F. - Front Face  
B.F. - Back Face



USER NAME =	ahmad,issa	DESIGNED -	WM, SK	REVISED -	
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		CHECKED -	MI, MAI	REVISED -	

STATE OF ILLINOIS  
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NORTH ABUTMENT PLAN AND ELEVATION  
STRUCTURE NO. 016-1718

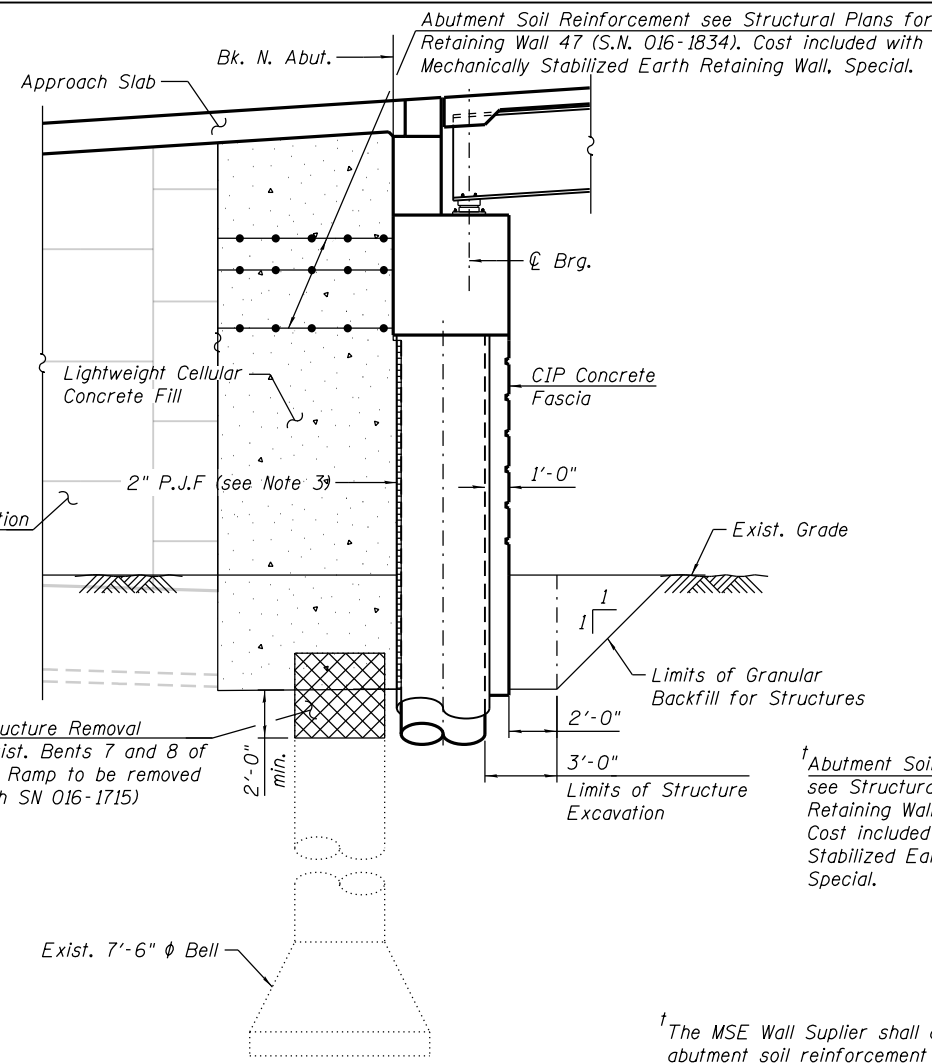
SHEET NO. S4-26 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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			CONTRACT NO. 60X93	

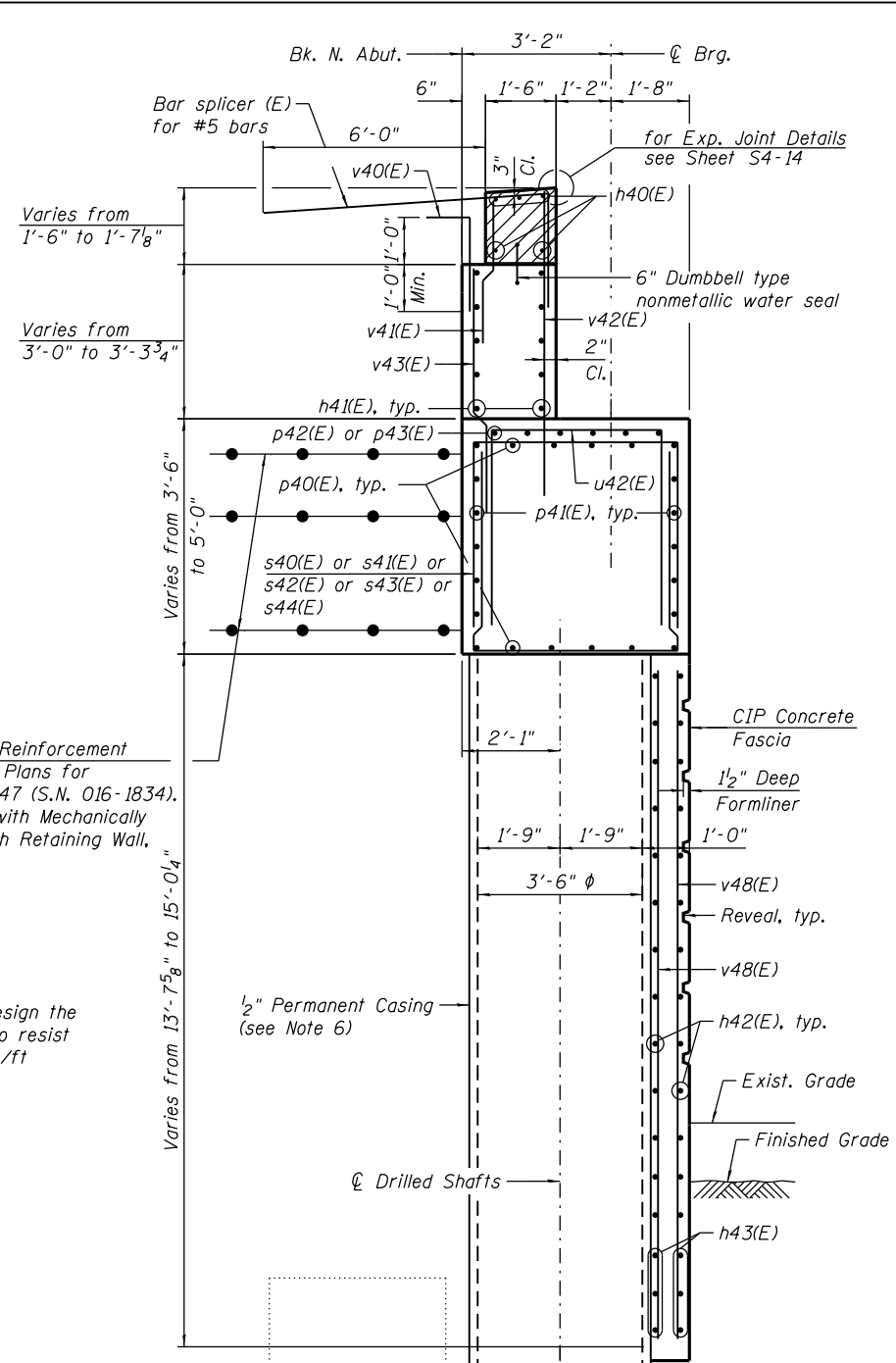
ILLINOIS FED. AID PROJECT



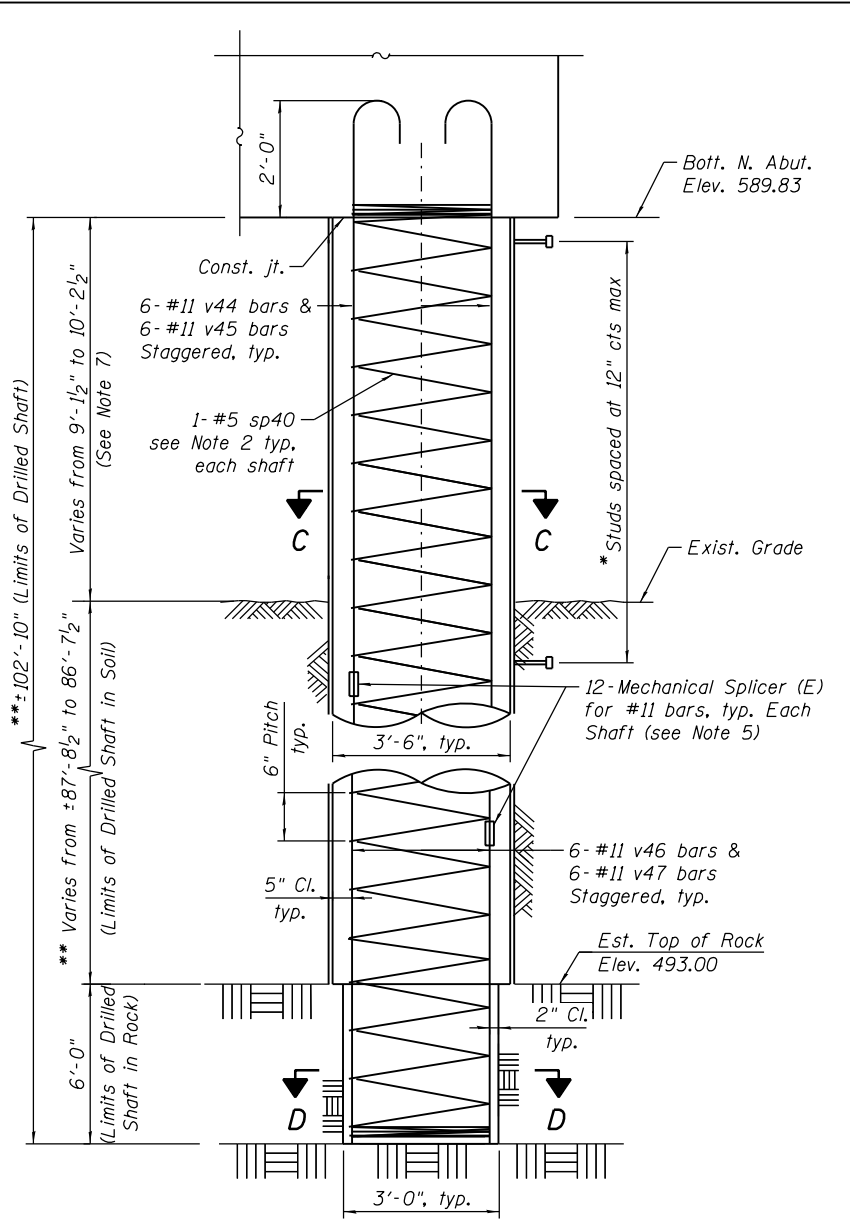
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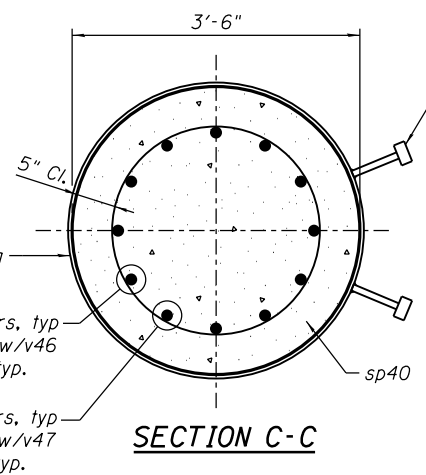
**SECTION THRU ABUTMENT**



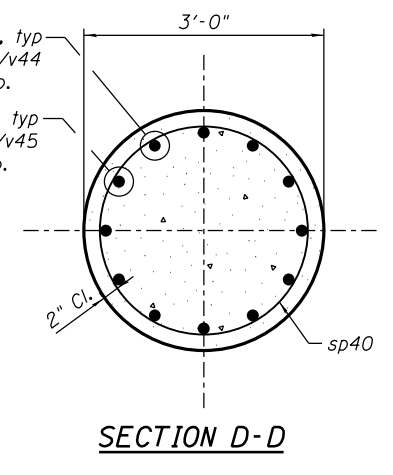
**SECTION A-A**



**DRILLED SHAFT**



**SECTION C-C**



**SECTION D-D**

**NOTES:**

1. For reveal details, see Sheet S4-29.
2. #5 sp40 spiral
  - (a) Provide 1/2 extra turns, shop welded together per AWS D1.4 top and bottom. Extend spiral 3" into pier cap. Provide 4-#4 spacers or equivalent.
  - (b) When splicing spiral reinforcement is necessary, the spiral shall be provided with 1/2 extra turns at the ends to be spliced. These additional turns shall either be welded together according to AWS D1.4 or shall both terminate with a 135° standard hook.
  - (c) Spirals are measured vertically.
3. Install 2" PJF from bottom of abutment to Elev. 589.83. Cost is included in Drilled Shaft In Soil.
4. For details and quantity of Bar Splicers, see Sheet S4-33.
5. Contractor shall use Mechanical splicers in drilled shafts that will fit between spirals. Contractor shall field adjust spiral pitch to 12" max. at Mechanical Splicer location.
6. Contractor may need to increase the casing thickness to withstand the installation process. The Estimated Top of Rock/Bottom of Permanent Casing Elevation is shown. The limits of casing shall be adjusted as necessary, and as approved, such that the actual installed casing length extends to the as-encountered top of rock at each shaft. See Article 516.06(d) of the Standard Specifications.
7. Drilled Shafts will be paid as Drilled Shaft in Soil pay item between the Existing Grade Elev. and Bottom of Abutment.

Exist. Drilled Shaft (Exist. Ramp WS - S.N. 016-2450) to be partially removed. See Prop. Ramp WS (S.N. 016-1715) plans for details

- \* 7/8"x8" Granular or solid flux filled headed studs conforming to article 1006.32 of the standard specifications automatically end welded to flange, typ.
- \*\* The quantities and detailing are based on the estimated elevations shown on the plans. The actual elevations may differ at each shaft and corresponding adjustments shall be made to the drilled shaft and reinforcement quantities and payment limits.



USER NAME =	ahmad,issa	DESIGNED -	WM, SK	REVISED -	
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PLOT SCALE =	N.T.S	DRAWN -	WM, SK	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	MI, MAI	REVISED -	

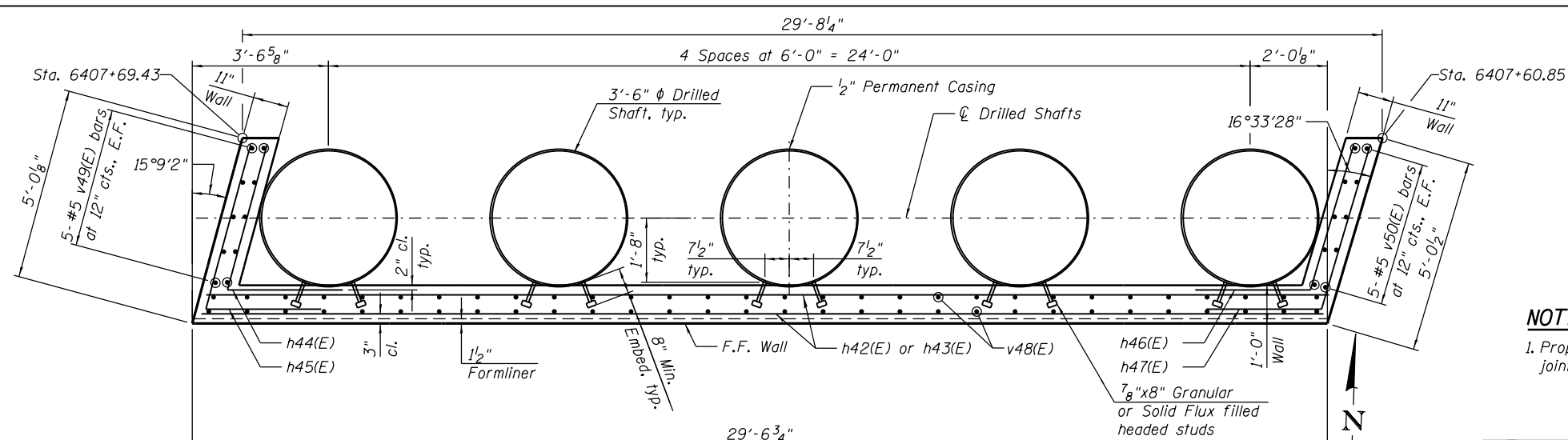
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**NORTH ABUTMENT DETAILS I  
STRUCTURE NO. 016-1718**

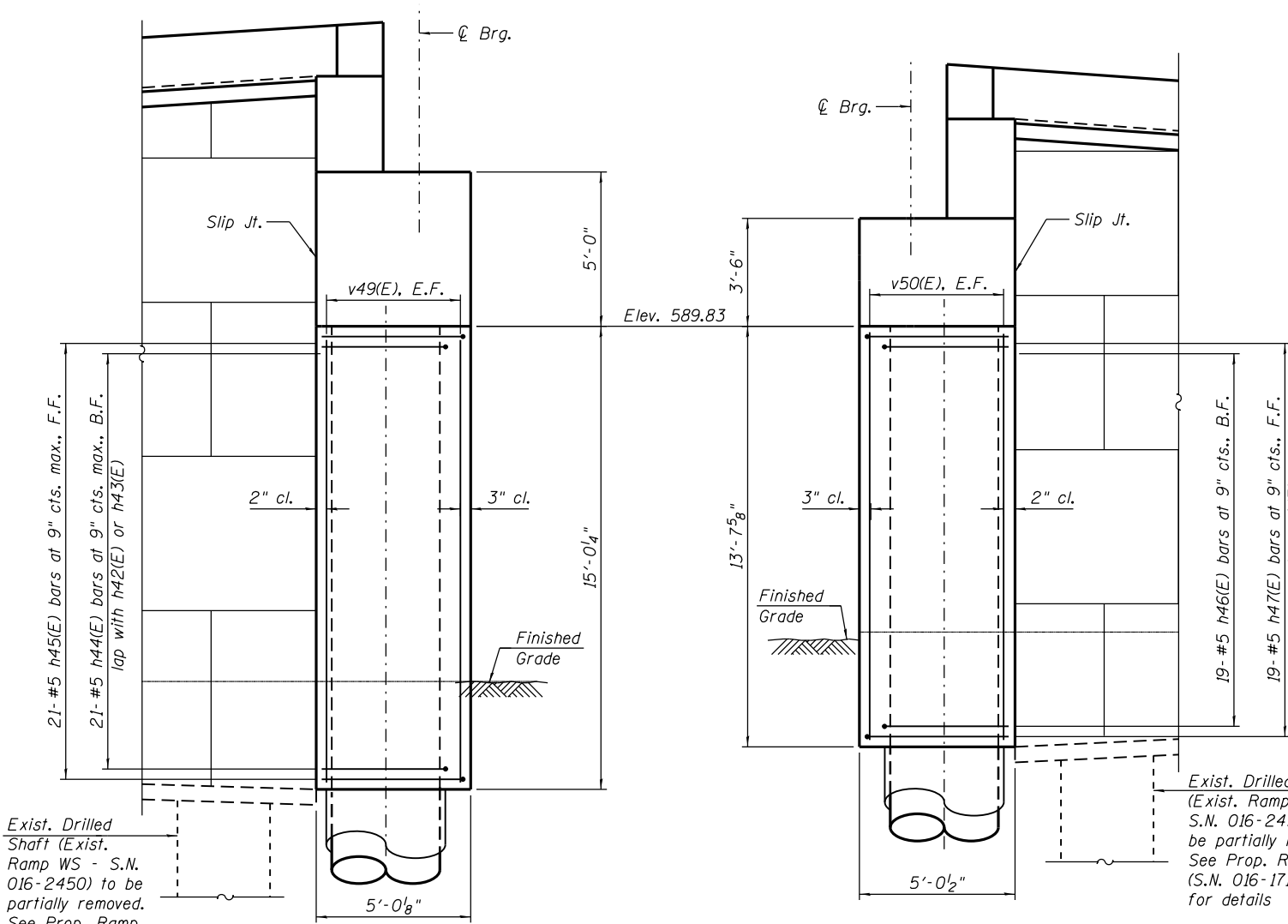
SHEET NO. S4-27 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

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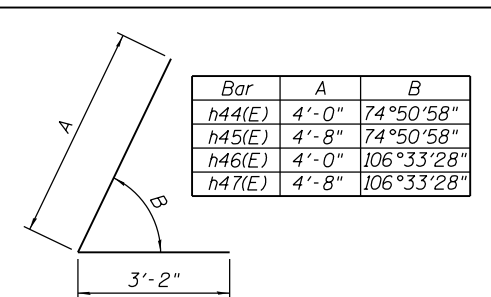


**SECTION B-B**  
(Abutment and drilled shafts reinforcement not shown for clarity)



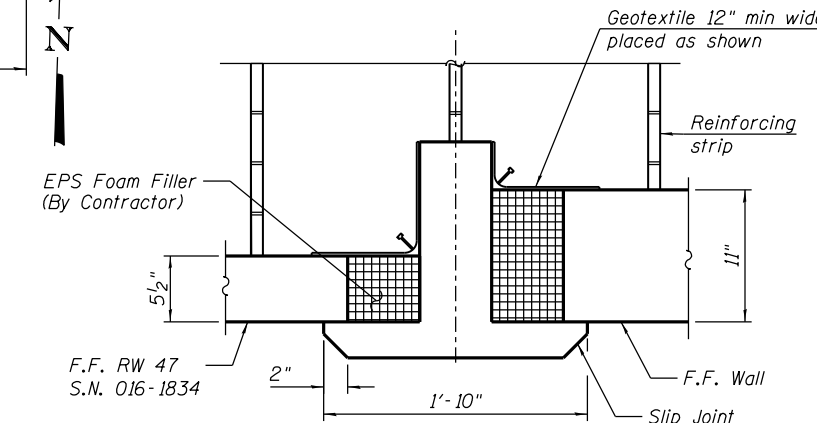
**NORTHWEST WALL ELEVATION**  
(Abutment View shown along Front Face of Wall)  
(Looking East)

**NORTHEAST WALL ELEVATION**  
(Abutment View shown along Front Face of Wall)  
(Looking West)

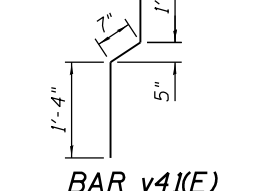


**BARS h44(E) thru h47(E)**

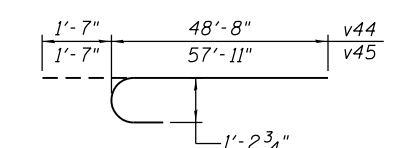
**NOTE:**  
1. Proper installation of foam filler and geotextile at slip joints is imperative in preventing loss of backfill material.



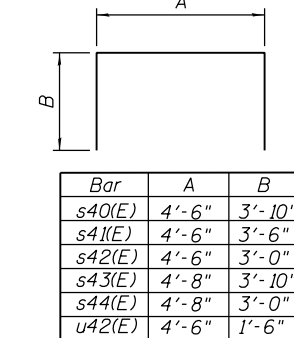
**PLAN - SLIP JOINT DETAIL**



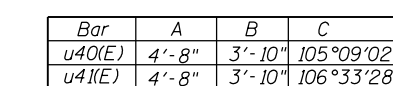
**BAR v41(E)**



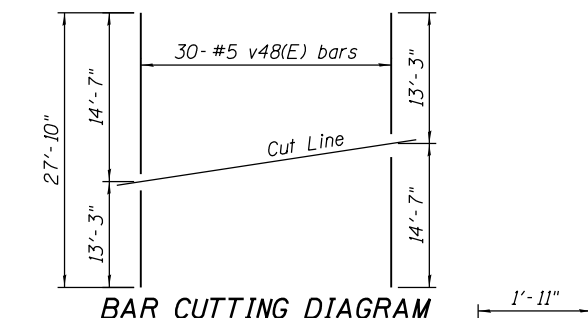
**BARS v44 and v45**



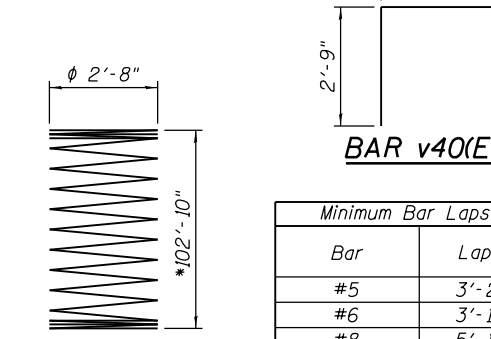
**BARS s40(E) thru s44(E)  
and u42(E)**



**BARS u40(E) and u41(E)**



**BAR CUTTING DIAGRAM**



**BAR v40(E)**

Minimum Bar Laps	
Bar	Lap
#5	3'-2"
#6	3'-10"
#8	5'-1"
#11	9'-3"

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h40(E)	5	#5	30'-6"	—
h41(E)	10	#6	29'-5"	—
h42(E)	36	#5	29'-3"	—
h43(E)	6	#5	29'-4"	—
h44(E)	21	#5	7'-2"	└
h45(E)	21	#5	7'-10"	└
h46(E)	19	#5	7'-2"	└
h47(E)	19	#5	7'-10"	└
p40(E)	12	#6	29'-3"	—
p41(E)	10	#5	29'-3"	—
p42(E)	24	#5	6'-10"	—
p43(E)	6	#5	5'-11"	—
s40(E)	24	#5	12'-2"	└
s41(E)	24	#5	11'-6"	└
s42(E)	12	#5	10'-6"	└
s43(E)	2	#5	12'-4"	└
s44(E)	2	#5	10'-8"	└
sp40	5	#5	102'-10"	⊘
u40(E)	7	#6	12'-4"	└
u41(E)	7	#6	12'-4"	└
u42(E)	35	#5	7'-6"	└
v40(E)	31	#5	4'-8"	└
v41(E)	31	#5	3'-7"	└
v42(E)	31	#5	7'-11"	└
v43(E)	31	#5	6'-5"	└
v44	30	#11	50'-3"	└
v45	30	#11	59'-6"	└
v46	30	#11	65'-2"	└
v47	30	#11	55'-11"	└
v48(E)	30	#5	27'-10"	└
v49(E)	10	#5	14'-7"	└
v50(E)	10	#5	13'-3"	└
Structure Excavation		Cu Yd	51.3	
Concrete Structures		Cu Yd	50.0	
Concrete Superstructure		Cu Yd	2.7	
Protective Coat		Sq Yd	7.0	
Stud Shear Connectors		Each	150	
Reinforcement Bars		Pound	45,930	
Reinforcement Bars, Epoxy Coated		Pound	6,750	
Permanent Casing		Foot	485	
Drilled Shaft in Soil		Cu Yd	173	
Drilled Shaft in Rock		Cu Yd	8	
Concrete Sealer		Sq Ft	932	
Crosshole Sonic Logging		Foot	514	
Access Ducts				
Crosshole Sonic Logging Testing		Each	1	
Foundation Construction at Existing Obstructions		Each	4	
Granular Backfill for Structures		Cu Yd	17.0	

\*Length is height of spiral



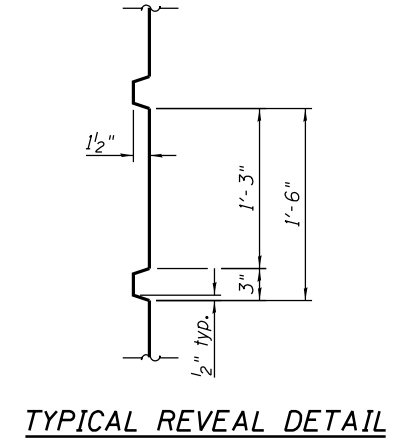
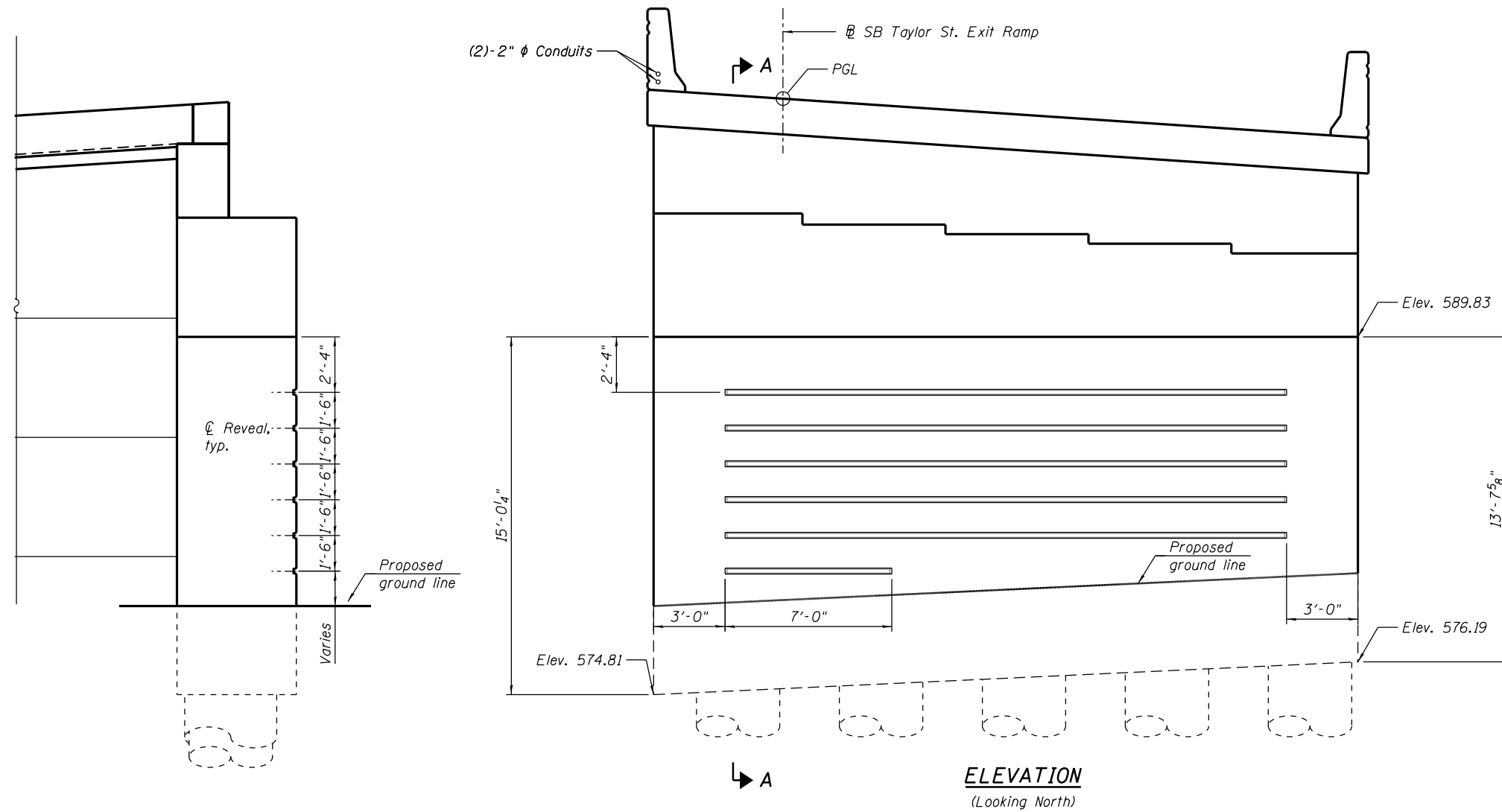
USER NAME = marian.agamy	DESIGNED - WM, SK	REVISED -
PLOT SCALE = N.T.S	CHECKED - MI, LAB	REVISED -
PLOT DATE = 9/10/2018	DRAWN - WM, SK	REVISED -
	CHECKED - MI, MAI	REVISED -

STATE OF ILLINOIS  
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NORTH ABUTMENT DETAILS II  
STRUCTURE NO. 016-1718

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 942
			CONTRACT NO. 60X93	
		ILLINOIS FED. AID PROJECT		

FILE NAME: D:\161749-PWINT-aecomonline.local\AECOM\_DS02\_NAD\Documents\01\_Americas\Transportation\60269938\_Circle\Phase\_I\000\_CAD\008\_Structural\Structure\_016-1718\0161718-60X93-5029-AbutArch



**NOTE:**  
 1. The 3"x1 1/2" reveal in the fascia panel will not be paid separately and shall be included in the cost of the pay item Concrete Structures.



USER NAME =	ahmad,issa	DESIGNED -	MR	REVISED -	
		CHECKED -	JJS	REVISED -	
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PLOT DATE =	7/30/2018	CHECKED -	MI, MAI	REVISED -	

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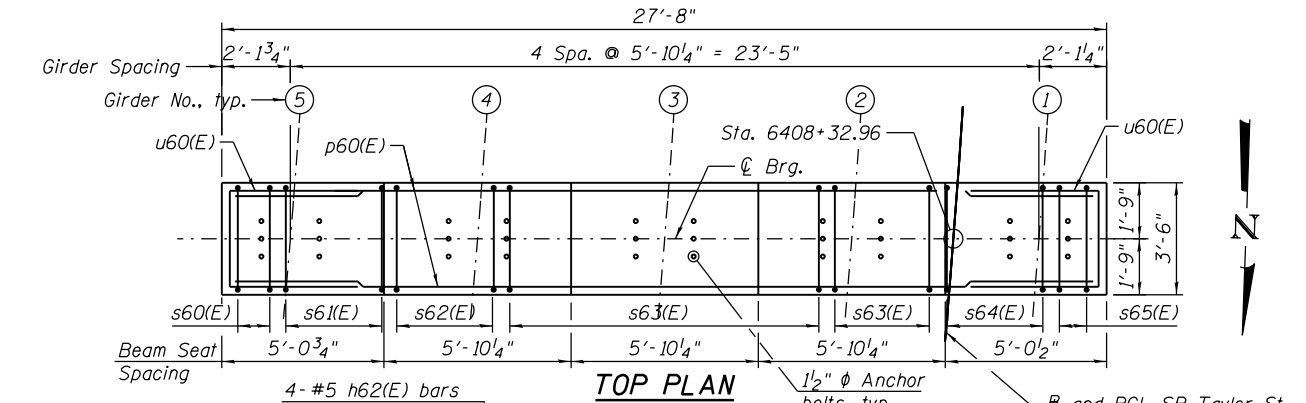
NORTH ABUTMENT ARCHITECTURAL DETAILS  
 STRUCTURE NO. 016-1718

SHEET NO. S4-29 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	943
CONTRACT NO. 60X93				
ILLINOIS		FED. AID PROJECT		

11:54:40 AM

FILE NAME: D:\V1617479-PWINT.aecommonline.local\AECOM\_DS02\_NAD\Documents\01\_Americas\Transportation\60269938\_Circle\Phase\_I\000\_CAD\008\_Structural\Structure\_016-1718\0161718-60X93-5030-PierPlanElev

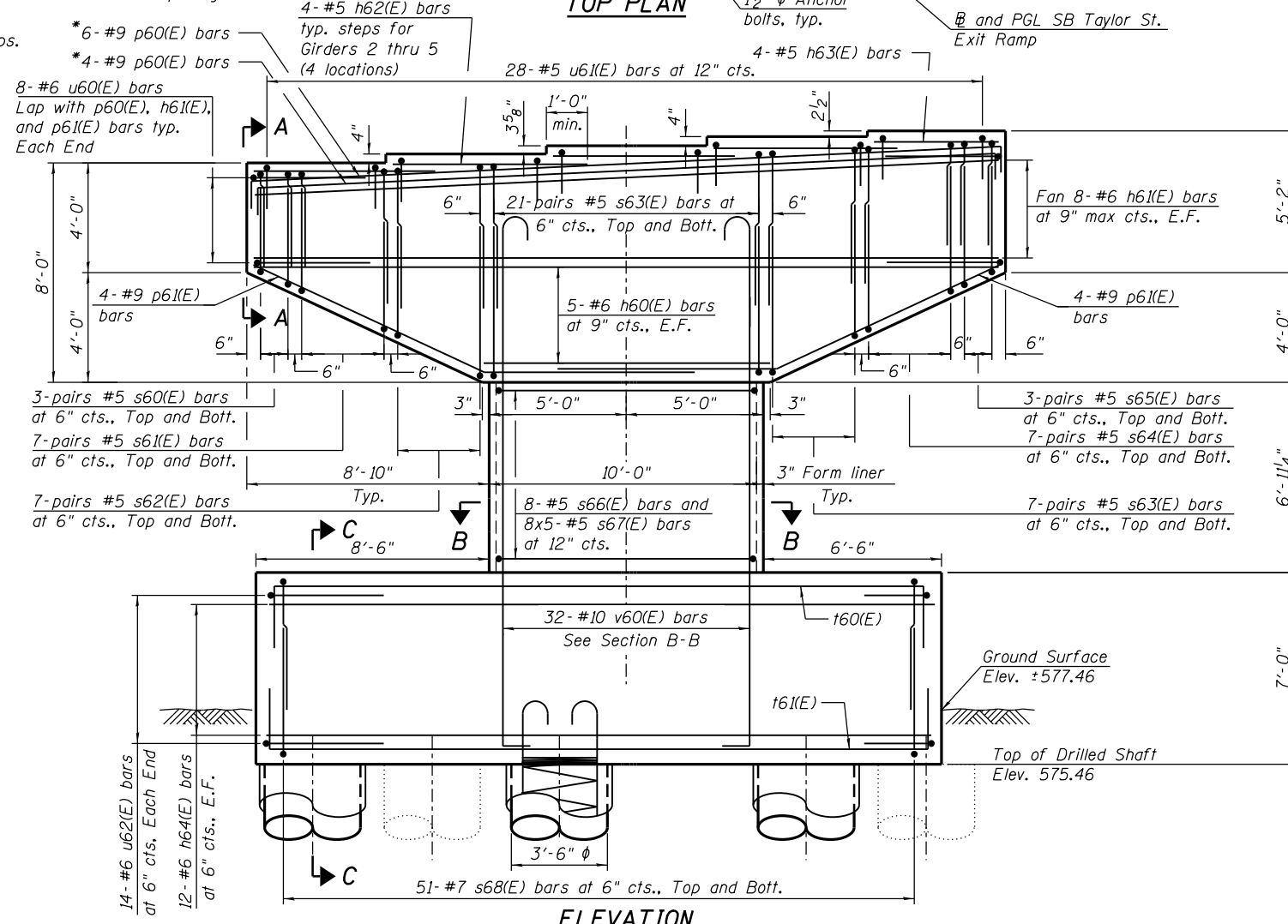


**TOP OF SEAT  
ELEVATION**

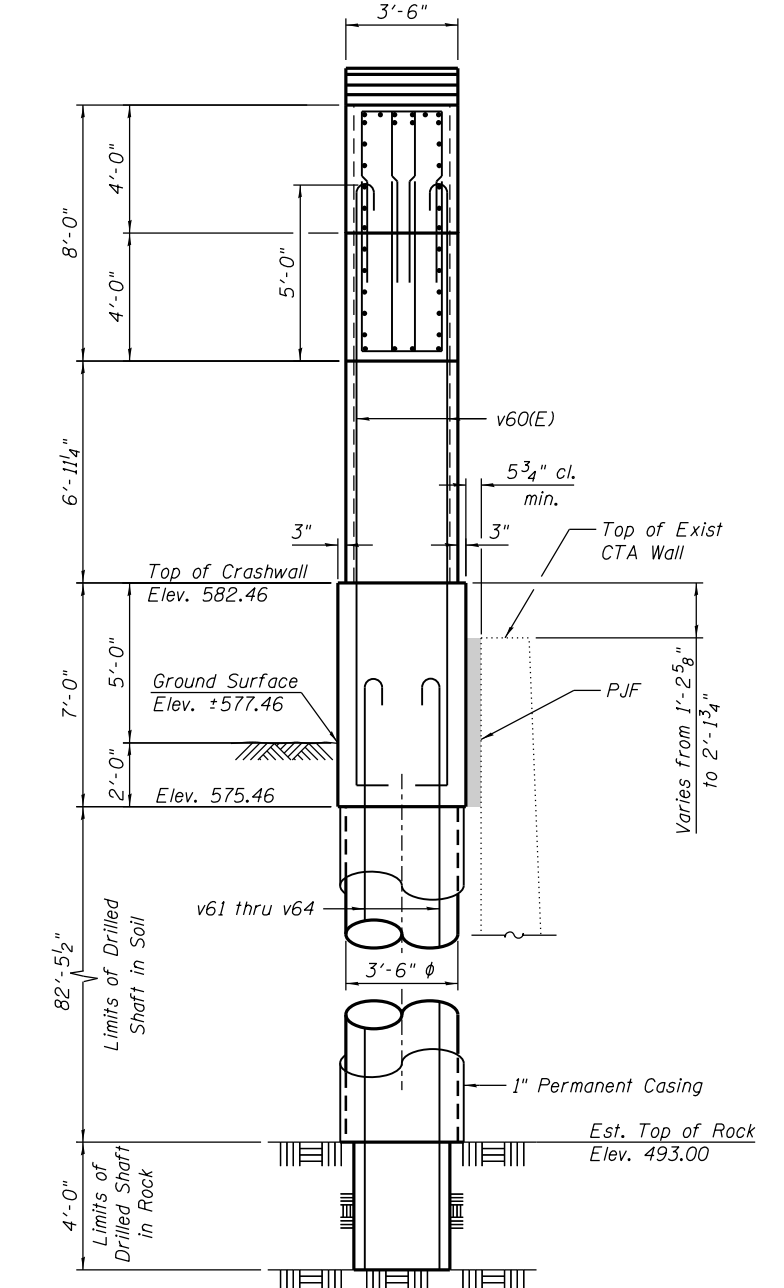
Girder No.	Seat Elevation
1	598.57
2	598.36
3	598.03
4	597.73
5	597.40

- NOTES:**
1. Pour steps monolithically with cap.
  2. Space reinforcement in cap to miss anchor bolts.
  3. For Anchor Bolt Details, see Sheet S4-25.
  4. For details of drilled shafts and Sections A-A thru C-C, see Sheet S4-31.

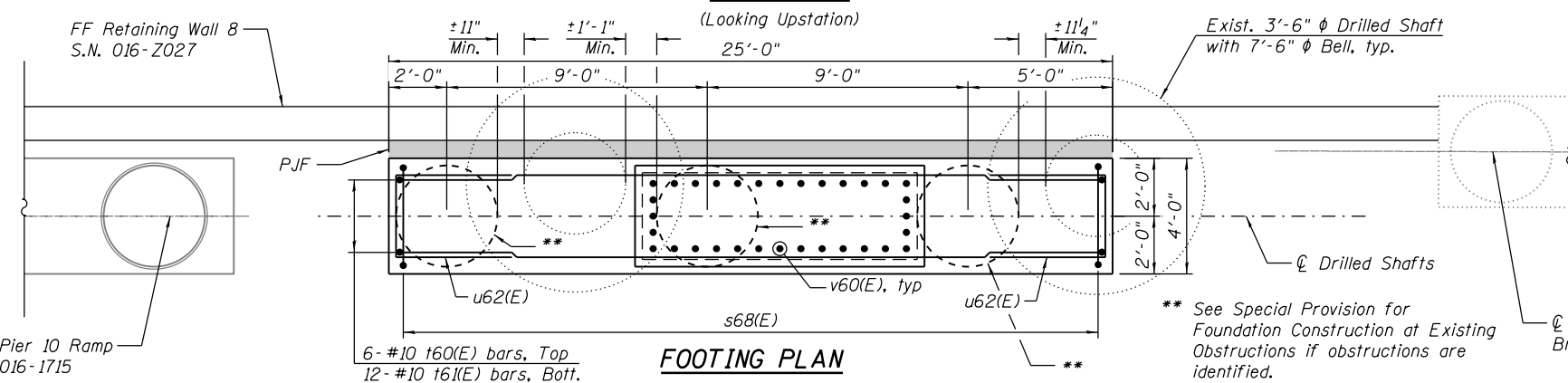
\* Slope with bearing steps.



**ELEVATION**



**END VIEW**



**FOOTING PLAN**

\*\* See Special Provision for Foundation Construction at Existing Obstructions if obstructions are identified.



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PLOT SCALE =	N.T.S	CHECKED -	MI,JJS	REVISED -	
PLOT DATE =	7/30/2018	DRAWN -	WM,SK	REVISED -	
		CHECKED -	MI,MAI	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**PIER 1 PLAN AND ELEVATION  
STRUCTURE NO. 016-1718**

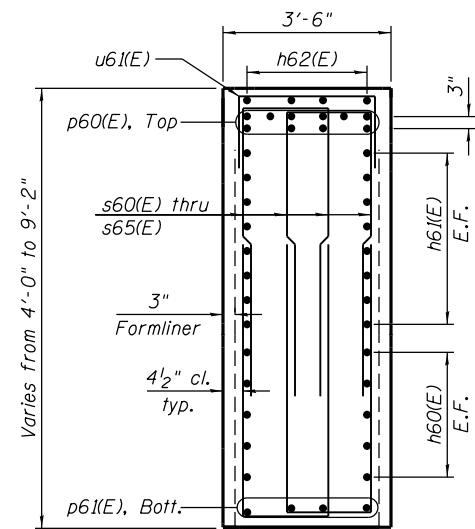
SHEET NO. S4-30 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

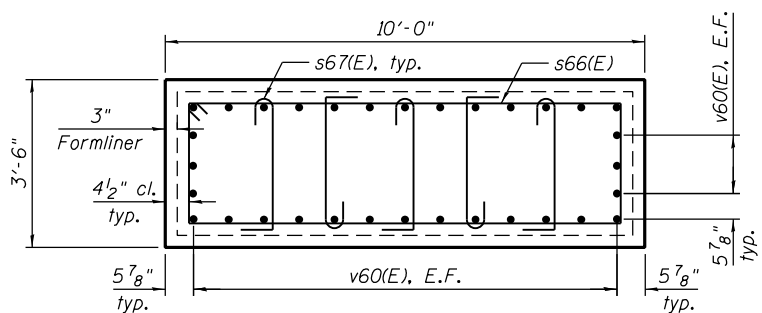
**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h60(E)	5	#6	37'-6"	—
h61(E)	16	#6	27'-4"	—
h62(E)	16	#5	6'-8"	—
h63(E)	4	#5	4'-9"	—
h64(E)	24	#6	24'-8"	—
p60(E)	10	#9	33'-4"	⌋
p61(E)	8	#9	17'-7"	⌋
s60(E)	12	#5	9'-3"	⌋
s61(E)	28	#5	10'-9"	⌋
s62(E)	28	#5	12'-9"	⌋
s63(E)	112	#5	13'-5"	⌋
s64(E)	28	#5	11'-11"	⌋
s65(E)	12	#5	10'-5"	⌋
s66(E)	8	#5	24'-11"	⌋
s67(E)	40	#5	4'-2"	⌋
s68(E)	102	#7	14'-10"	⌋
sp60	3	#5	86'-6"	⌋
t60(E)	6	#10	26'-8"	⌋
t61(E)	12	#10	28'-4"	⌋
u60(E)	16	#6	10'-5"	⌋
u61(E)	28	#5	5'-9"	⌋
u62(E)	28	#6	11'-4"	⌋
v60(E)	32	#10	21'-11"	⌋
v61	30	#11	44'-1"	⌋
v62	30	#11	53'-4"	⌋
v63	30	#11	57'-0"	⌋
v64	30	#11	47'-9"	⌋
Concrete Structures	Cu Yd		61.6	
Reinforcement Bars	Pound		36,850	
Reinforcement Bars, Epoxy Coated	Pound		15,960	
Permanent Casing	Foot		254	
Drilled Shaft in Soil	Cu Yd		91.0	
Drilled Shaft in Rock	Cu Yd		4.0	
Concrete Sealer	Sq Ft		1000	
Granular Backfill Special	Cu Yd		2.7	
Crosshole Sonic Logging Access Ducts	Foot		265	
Crosshole Sonic Logging Testing	Each		1	
Foundation Construction At Existing Obstructions	Each		3	
Earth Excavation (Special)	Cu Yd		14.0	
Granular Backfill for Structures	Cu Yd		9.2	

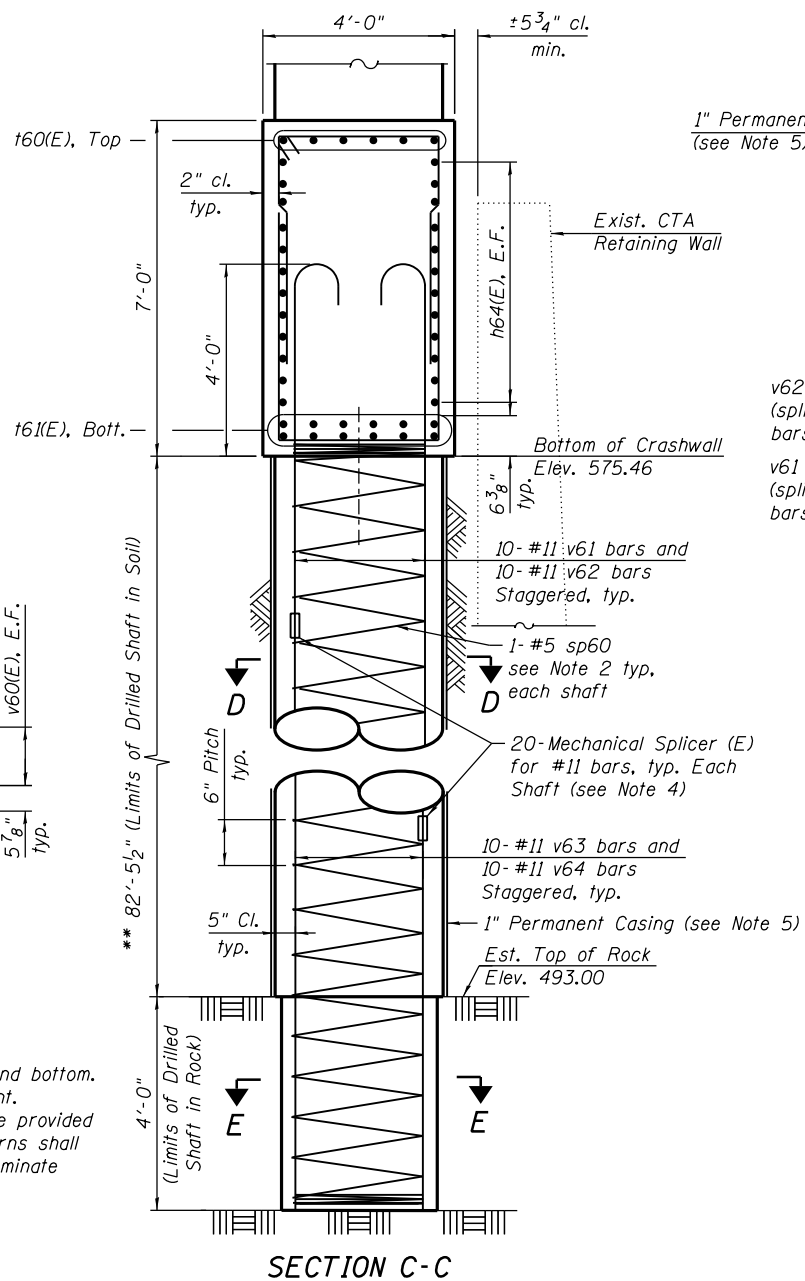
\* Length is height of spiral



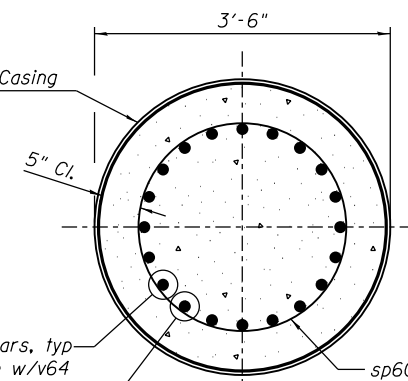
**SECTION A-A**



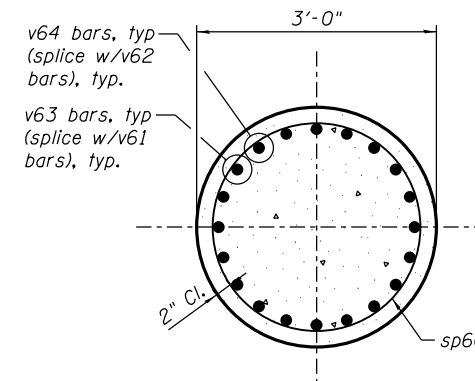
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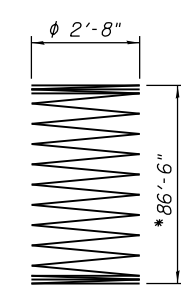
**SECTION C-C**



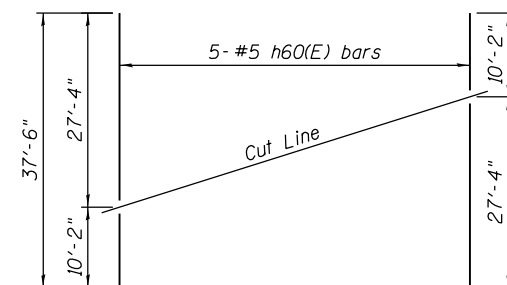
**SECTION D-D**



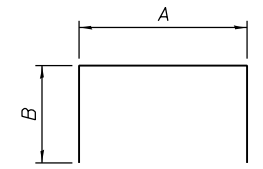
**SECTION E-E**



**BAR sp60**

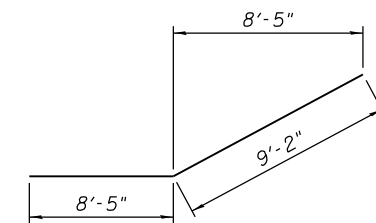


**BAR CUTTING DIAGRAM**

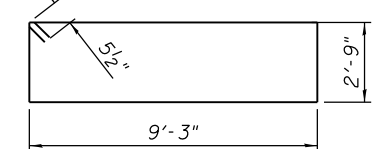


Bar	A	B
p60(E)	27'-4"	3'-0"
s60(E)	1'-9"	3'-9"
s61(E)	1'-9"	4'-6"
s62(E)	1'-9"	5'-6"
s63(E)	1'-9"	5'-10"
s64(E)	1'-9"	5'-1"
s65(E)	1'-9"	4'-4"
s68(E)	3'-8"	5'-7"
t60(E)	24'-8"	1'-0"
t61(E)	24'-8"	1'-10"
u60(E)	2'-9"	3'-10"
u61(E)	2'-9"	1'-6"
u62(E)	3'-8"	3'-10"

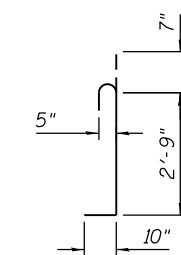
**BARS p60(E), s60(E) thru s68(E), t60(E), t61(E), and u60(E) thru u62(E)**



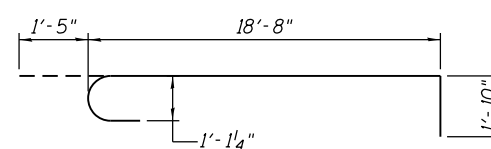
**BAR p61(E)**



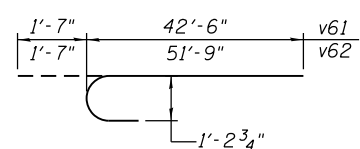
**BAR s66(E)**



**BAR s67(E)**



**BAR v60**



**BARS v61 and v62**

Minimum Bar Laps	
Bar	Lap
#5	3'-2"
#6	3'-10"
#7	4'-5"
#9	6'-3"
#10	7'-8"
#11	9'-3"

**NOTES:**

- For reveal details, see Sheet S4-32.
- #5 sp60 spiral
  - Provide 1/2 extra turns, shop welded together per AWS D1.4 top and bottom. Extend spiral 3" into pier cap. Provide 4-#4 spacers or equivalent.
  - When splicing spiral reinforcement is necessary, the spiral shall be provided with 1/2 extra turns at the ends to be spliced. These additional turns shall either be welded together according to AWS D1.4 or shall both terminate with a 135° standard hook.
  - Spirals are measured vertically.
- For details and quantity of Bar Splicers, see Sheet S4-33.
- Contractor shall use Mechanical splicers in drilled shafts that will fit between spirals. Contractor shall field adjust spiral pitch to 12" max. at Mechanical Splicer location.
- Contractor may need to increase the casing thickness to withstand the installation process. The Estimated Top of Rock/Bottom of Permanent Casing Elevation is shown. The limits of casing shall be adjusted as necessary, and as approved, such that the actual installed casing length extends to the as-encountered top of rock at each shaft. See Article 516.06(d) of the Standard Specifications.
- A drilled shaft shall be tested in accordance with the Special Provisions for Crosshole Sonic Logging Testing of Drilled Shafts.
- Proposed Piers 1 and 11 permanent casing shall be installed by twisting and/or pushing the casing in conjunction with drilled excavation inside of the permanent casing. The bottom of the permanent casing shall maintain minimum 2 ft. embedment into underlying soil below the bottom of shaft excavation elevation. Neither the Wet Method of construction nor the use of Temporary Casing will be permitted. See Special Provisions for Foundation Drilling Procedures.
- Excavation around the existing CTA retaining wall for the construction of the proposed pier shall be performed per Special Provision for Earth Excavation (Special) using only hand excavation or approved methods that would cause no damage to the existing CTA retaining wall. The limits of excavation shall be identified prior to start of work. All planned excavation is subject to approval by the Engineer and CTA.

\*\* The quantities and detailing are based on the estimated elevations shown on the plans. The actual elevations may differ at each shaft and corresponding adjustments shall be made to the drilled shaft and reinforcement quantities and payment limits.



USER NAME = marian.agamy	DESIGNED - WM, SK	REVISED -
PLOT SCALE = N.T.S	CHECKED - MI, JJS	REVISED -
PLOT DATE = 9/19/2018	DRAWN - WM, SK	REVISED -
	CHECKED - MI, MAI	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

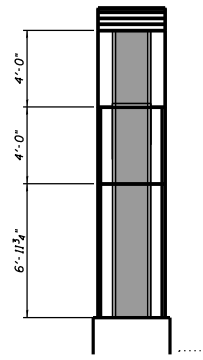
**PIER 1 SECTIONS AND DETAILS  
STRUCTURE NO. 016-1718**

SHEET NO. S4-31 OF S4-38 SHEETS

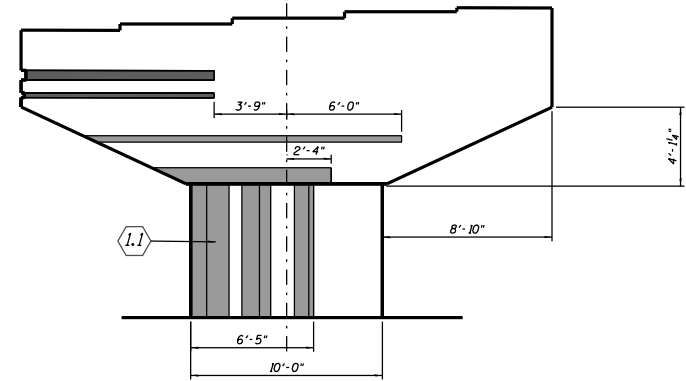
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CONTRACT NO. 60X93			ILLINOIS FED. AID PROJECT	

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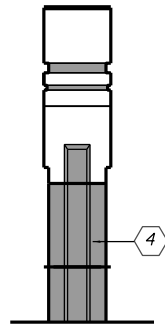
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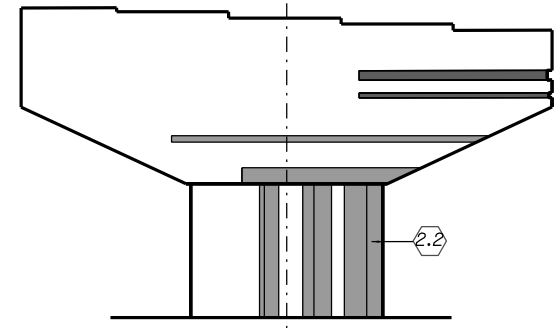
ELEVATION C



ELEVATION A



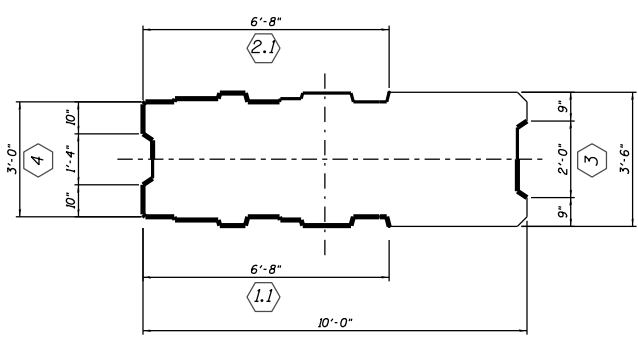
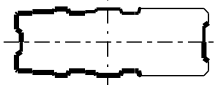
ELEVATION D



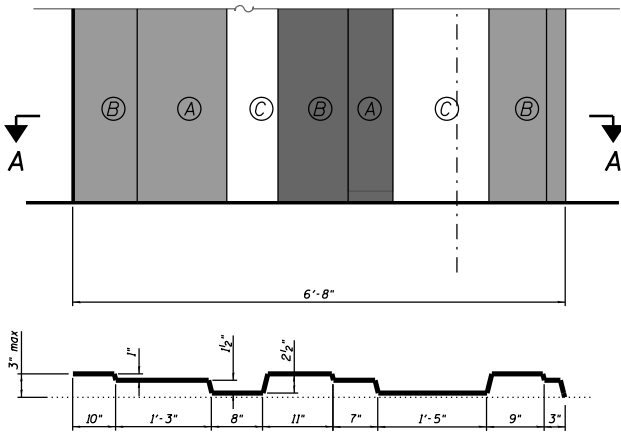
ELEVATION B

**NOTES:**

1. For Pier and Pier Cap Dimensions, see Sheets S4-30 and S4-31.
2. Unless otherwise noted on plans, draft at formliner will be 1/4" per inch depth, typ.
3. Maximum depth of formliner texture at columns and maximum depth of reveals at pier caps is 3".

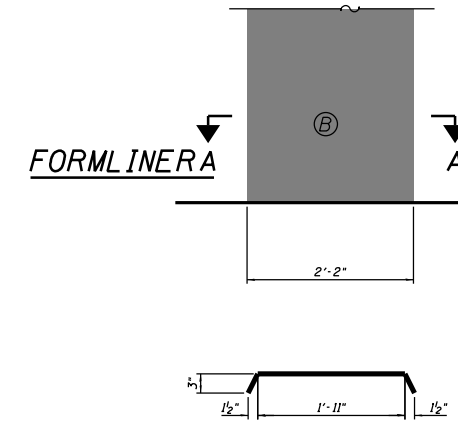


FORMLINER LAYOUT

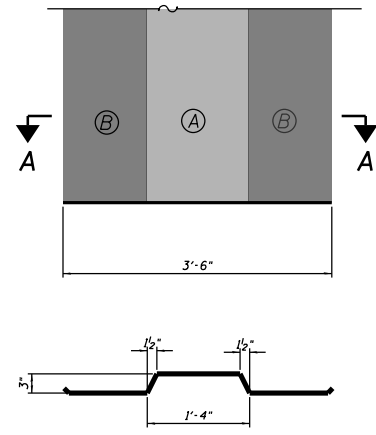


SECTION A-A  
FORMLINER 1.1

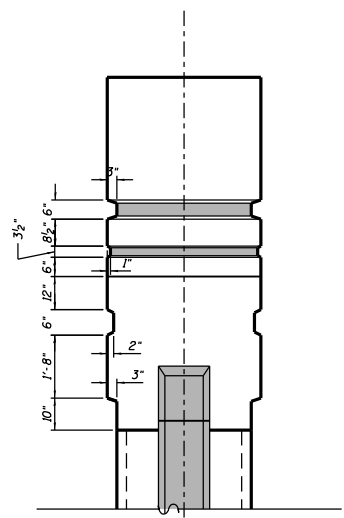
Formliner 2.1 - Similar (Opposite Hand)



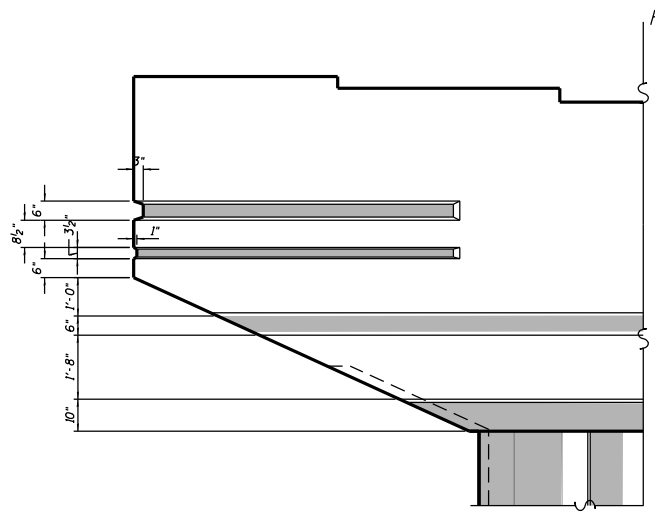
SECTION A-A  
FORMLINER 3



SECTION A-A  
FORMLINER 4



DETAIL A



DETAIL B

**PIER CAP REVEAL DETAIL**

**LEGEND:**

- 1.1 2.1 5 6 Formliner Panel Designation
- 7 Contractor's form: Rubbed Finish at all concrete surface on columns and pier caps, exposed to view and not indicated as textured formliner or textured reveal.
- A Texture: Light Sandblast: Max Depth: 0.0625"
- B Texture: Medium Sandblast: Max Depth: 0.125"
- C Texture: Smooth

**NOTES:**

1. Verify / coordinate pier dimensions with drawings S4-30 & S4-31
2. Unless otherwise noted on plans, draft at formliner will be 1/4" per inch depth, typ.
3. Maximum depth of formliner texture at columns and maximum depth of reveals at pier caps is 3".
4. The Contractor can choose to reuse formliners from Contract 60W28/ Structure 016-1705
5. Designation of formliners: 1.1, 2.2, 5 and 6, used in these drawings, matches the designations used for IDOT Contract 60W28/ Structure 016-1705.

**BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Rubbed Finish	Sq Ft	479
Form Liner Textured Surface	Sq Ft	217



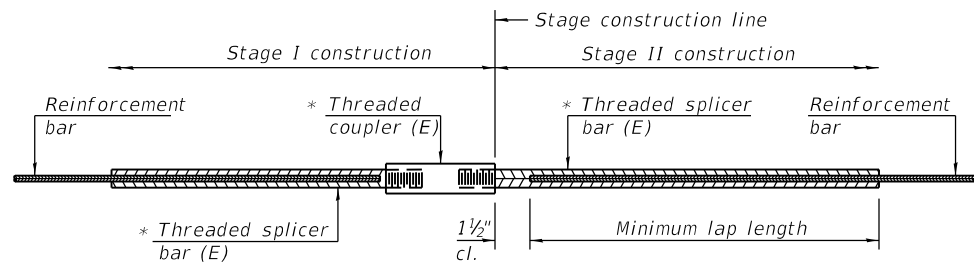
USER NAME = marian.agamy	DESIGNED - MR	REVISED -
PLOT SCALE = N.T.S	CHECKED - JJS	REVISED -
PLOT DATE = 9/19/2018	DRAWN - MR	REVISED -
	CHECKED - MI, MAI	REVISED -

STATE OF ILLINOIS  
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PIER 1 ARCHITECTURAL DETAILS  
STRUCTURE NO. 016-1718

SHEET NO. S4-32 OF S4-38 SHEETS

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 946
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

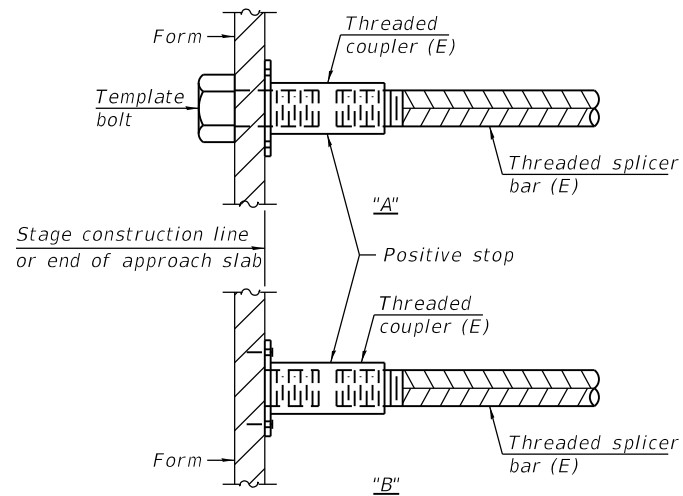


**STANDARD BAR SPLICER ASSEMBLY**

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

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

Location	Bar size	No. assemblies required	Minimum lap length

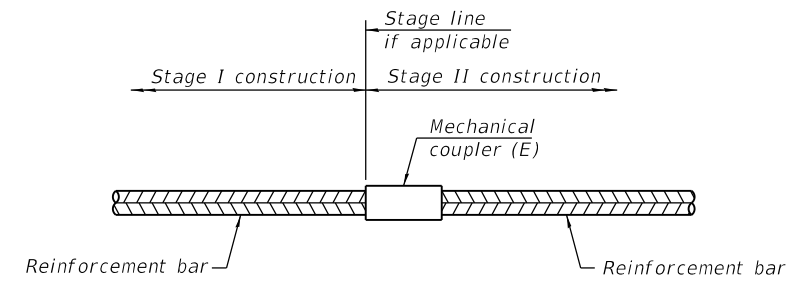


**INSTALLATION AND SETTING METHODS**

"A" : Set bar splicer assembly by means of a template bolt.

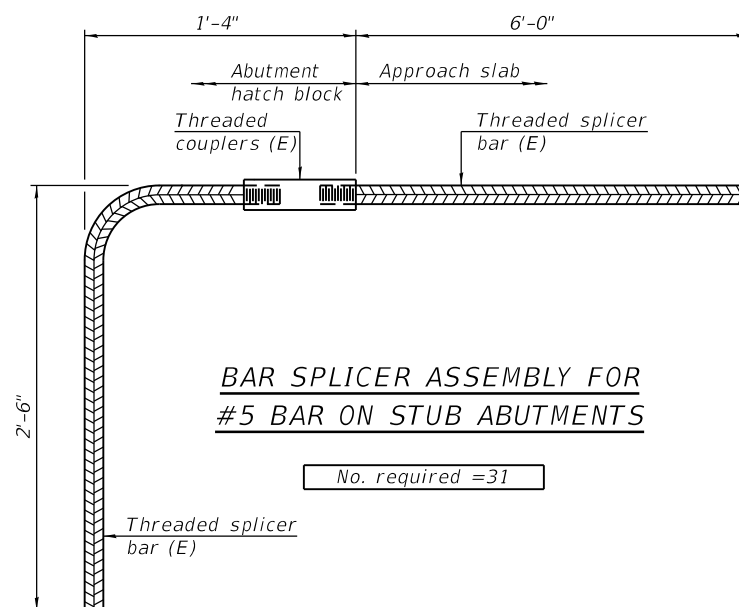
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.

(E) : Indicates epoxy coating.



**STANDARD MECHANICAL SPLICER**

Location	Bar size	No. assemblies required
N. Abut.	#11	60
Pier 1	#11	60



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

No. required = 31

**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

2-17-2017



USER NAME =	ahmad,issa	DESIGNED -	SK	REVISED -	
		CHECKED -	MI, LAB	REVISED -	
PLOT SCALE =	N.T.S	DRAWN -	SK	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	MI, MAI	REVISED -	

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DEPARTMENT OF TRANSPORTATION

BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS  
STRUCTURE NO. 016-1718

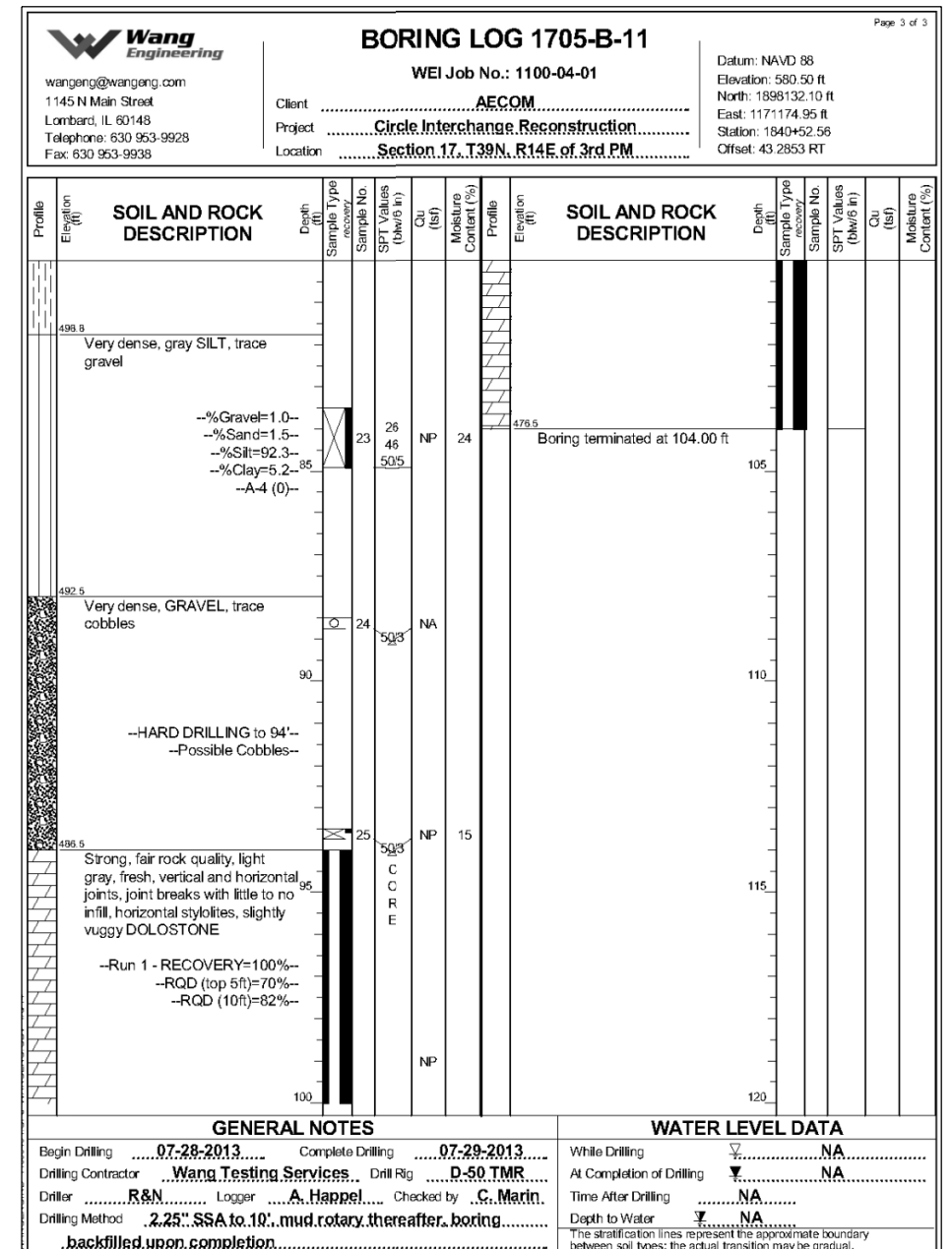
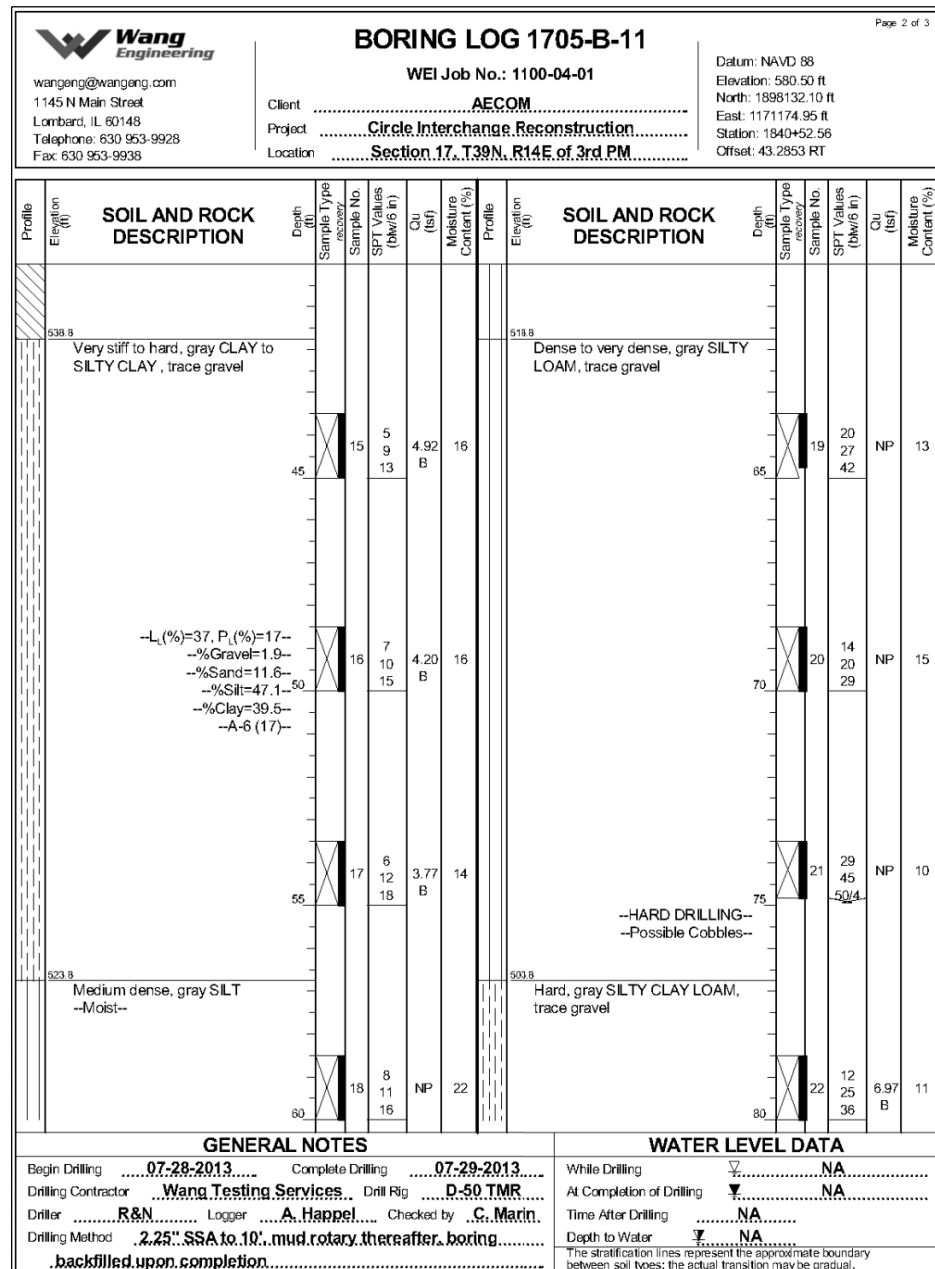
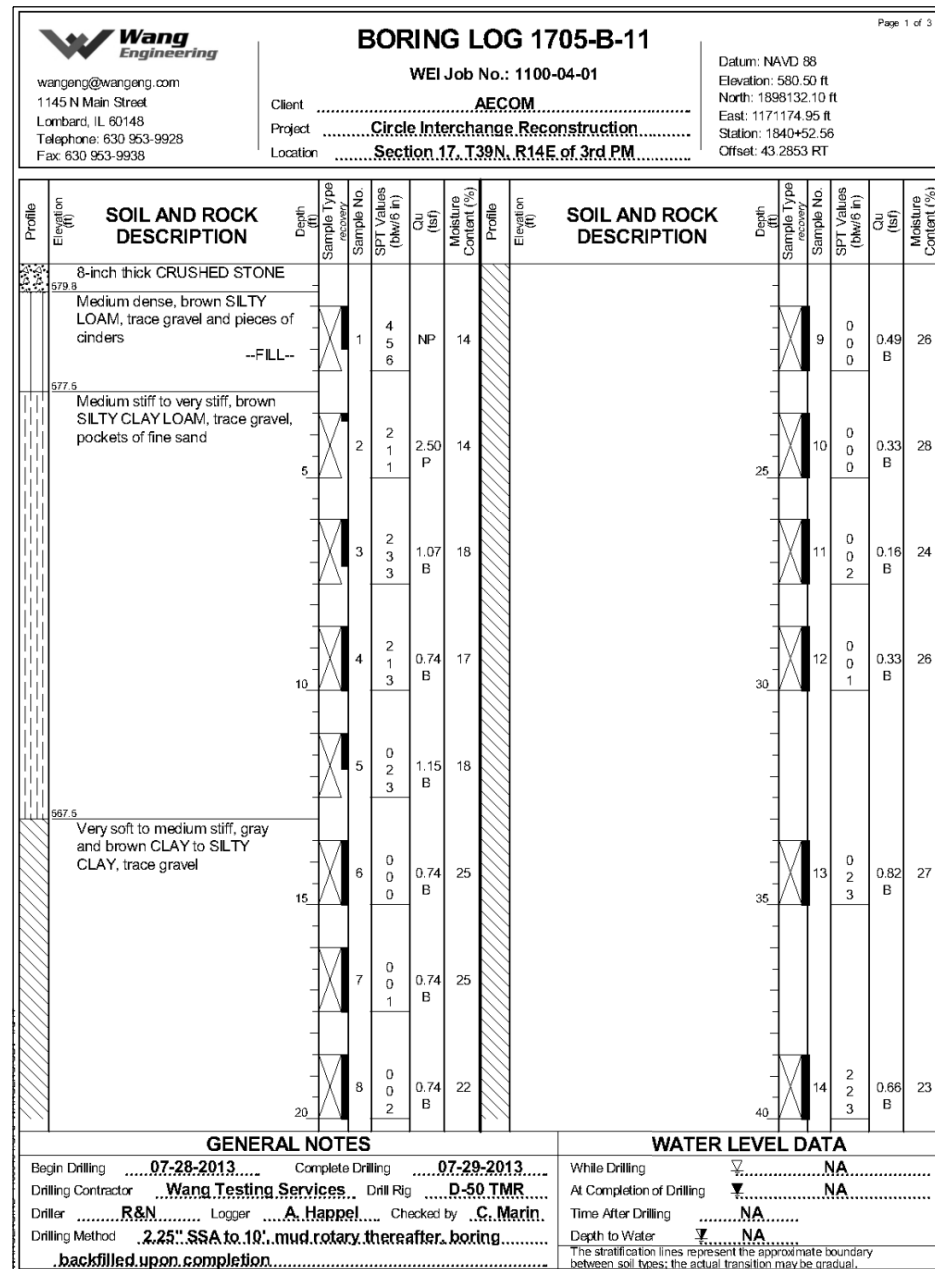
SHEET NO. S4-33 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	947
CONTRACT NO. 60X93				
ILLINOIS		FED. AID PROJECT		

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**NOTE:**

1. Boring Log 1705-B-11 station & offset along Proposed SB Taylor St. Exit Ramp is: Sta. 6407+43.78, Offset 12.34' Rt.



USER NAME =	ahmad,issa	DESIGNED -	SK	REVISED -	
PLOT SCALE =	N.T.S	CHECKED -	WM	REVISED -	
PLOT DATE =	7/30/2018	DRAWN -	SK	REVISED -	
		CHECKED -	MI, MAI	REVISED -	

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DEPARTMENT OF TRANSPORTATION**

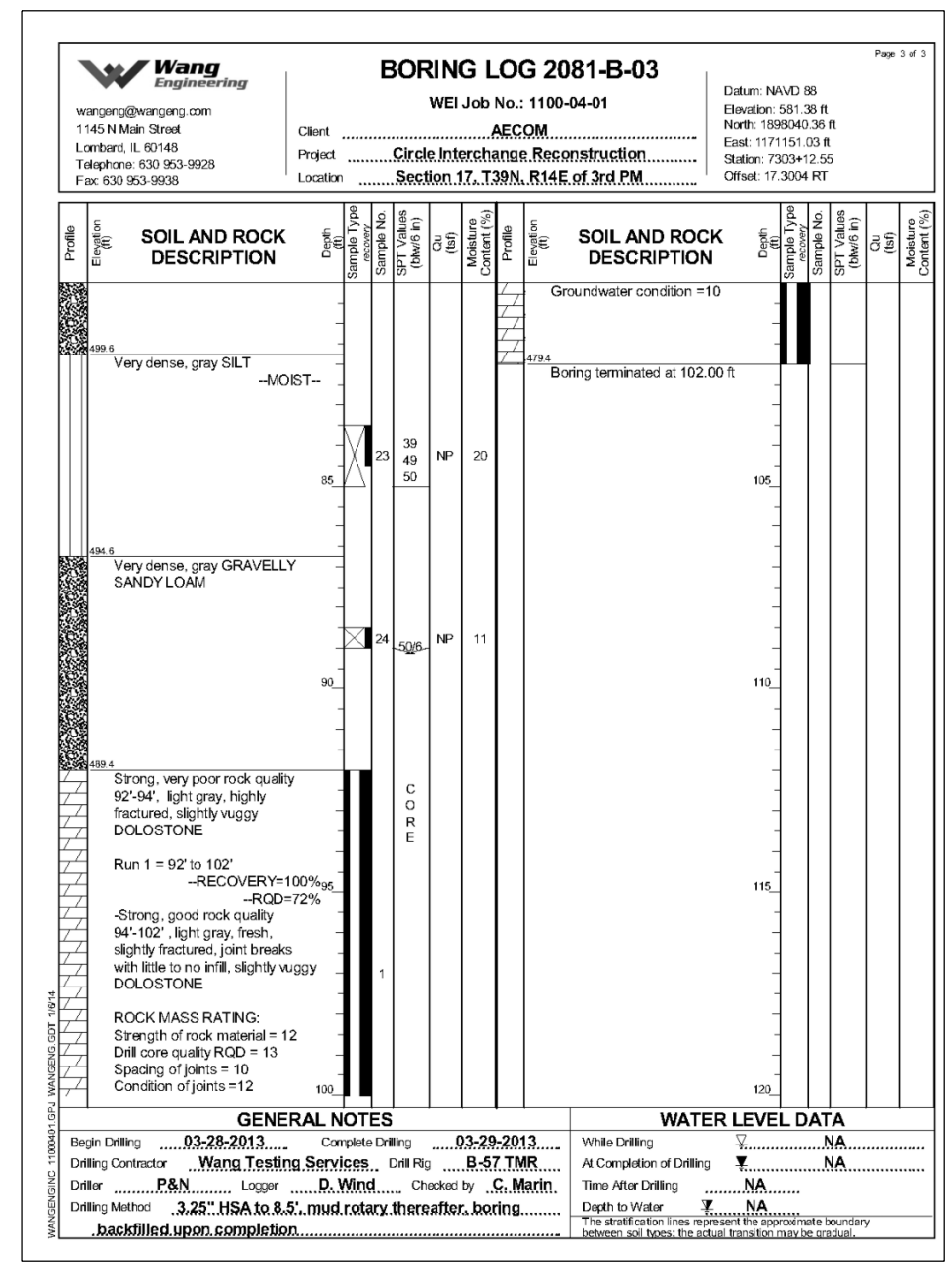
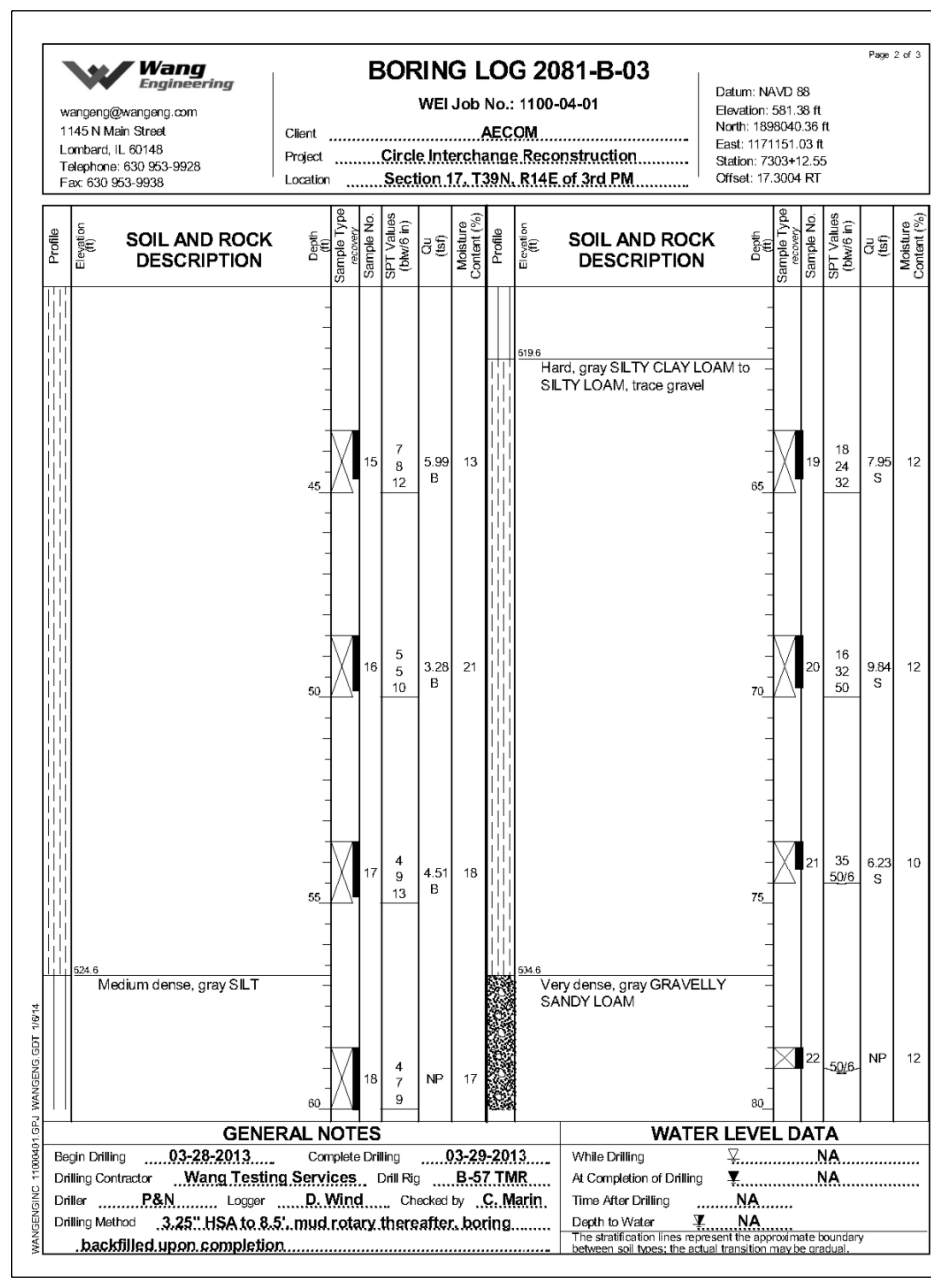
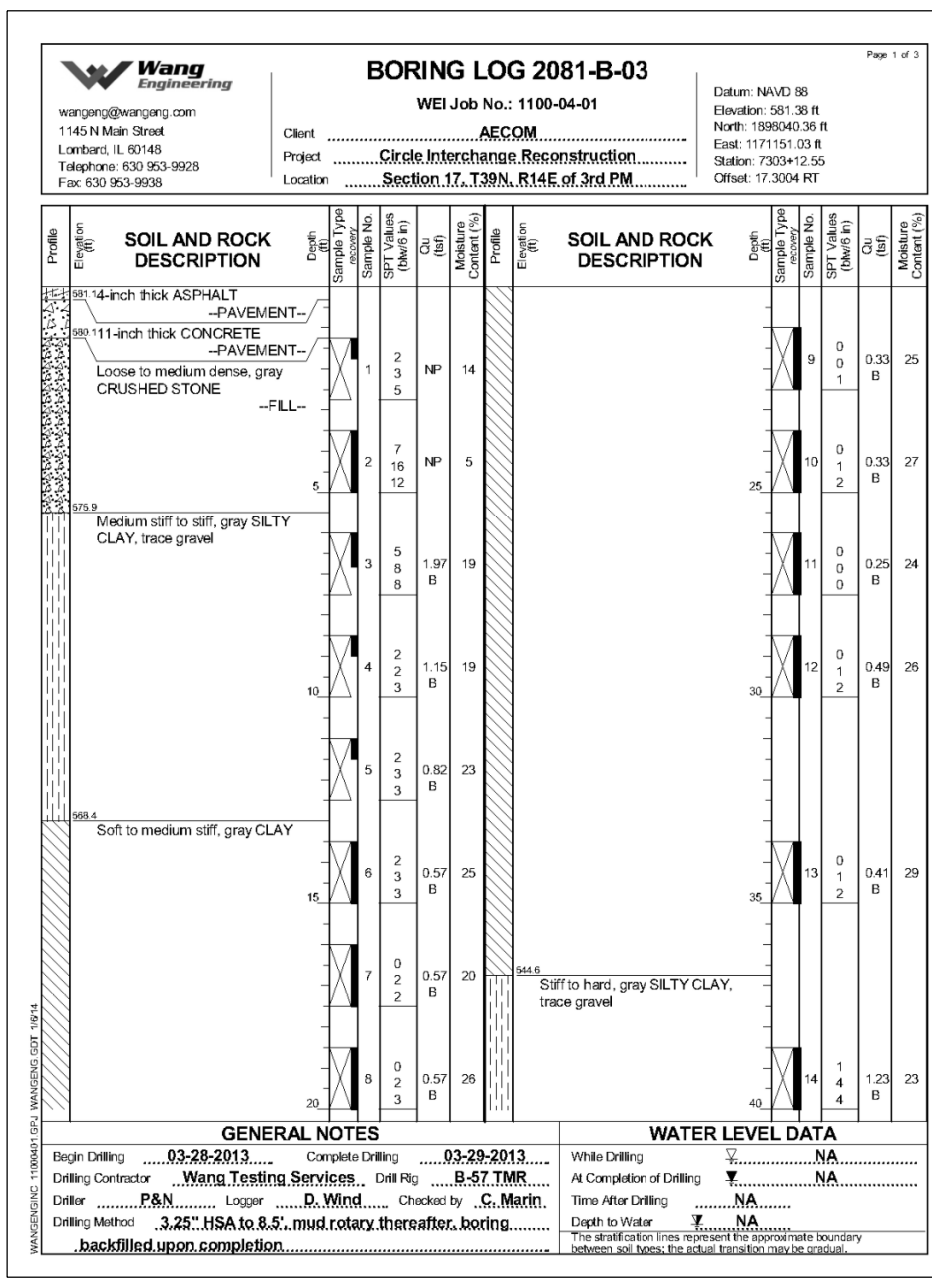
**BORING LOGS - I  
STRUCTURE NO. 016-1718**

SHEET NO. S4-34 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	948
CONTRACT NO. 60X93				
		ILLINOIS	FED. AID PROJECT	



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**NOTE:**

1. Boring Log 2081-B-03 station & offset along Proposed SB Taylor St. Exit Ramp is: Sta. 6408+34.18, Offset 19.74' RT.



USER NAME = ahmad,issa	DESIGNED - SK	REVISED -
PLOT SCALE = N.T.S	CHECKED - WM	REVISED -
PLOT DATE = 7/30/2018	DRAWN - SK	REVISED -
	CHECKED - MI, MAI	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**BORING LOG - II  
STRUCTURE NO. 016-1718**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	949
CONTRACT NO. 60X93				
ILLINOIS		FED. AID PROJECT		

**Wang Engineering**  
 wangeng@wangeng.com  
 1145 N Main Street  
 Lombard, IL 60148  
 Telephone: 630 953-9928  
 Fax: 630 953-9938

**BORING LOG 2081-B-04**

Page 1 of 3

WEI Job No.: 1100-04-01

Datum: NAVD 88  
 Elevation: 578.68 ft  
 North: 1897947.00 ft  
 East: 1171154.08 ft  
 Station: 7302+57.20  
 Offset: 44.0821 RT

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/ft)	Cu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/ft)	Cu (tsf)	Moisture Content (%)
577.5	14-inch thick ASPHALT -PAVEMENT-						577.5						
577.5	24-inch thick CRUSHED STONE -BASE COURSE-						574.9						
574.9	Very stiff, brown and gray SILTY CLAY LOAM, trace gravel	1	4	5	3.85	18	574.9	Medium dense CRUSHED STONE	2	11	16	NP	4
		5	6						5	10	12	NP	5
		10	12	9					6	5	4	NP	6
		15	8	4					7	0	1	0.25	26
		20	0	0	0.16	24			8	0	0	0.16	24
570.7	Loose, light brown GRAVELLY SAND	4	6	5			570.7	Very soft to medium stiff, gray CLAY, trace gravel	7	0	1	0.25	26
		10	6	4					8	0	0	0.16	24
		15	8	4					9	0	1	0.25	26
		20	0	0	0.16	24			10	0	0	0.16	24
563.2							563.2		13	1	3	0.57	27
									14	2	4	0.98	19
									18	4	4	0.98	29
									20	4	5		

**GENERAL NOTES**

Begin Drilling **04-01-2013** Complete Drilling **04-01-2013**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**  
 Driller **R&N** Logger **D. Kolpacki** Checked by **C. Marin**  
 Drilling Method **2.25" SSA to 10', mud rotary thereafter, boring**  
**backfilled upon completion**

**WATER LEVEL DATA**

While Drilling **DRY**  
 At Completion of Drilling **NA**  
 Time After Drilling **NA**  
 Depth to Water **NA**  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

**Wang Engineering**  
 wangeng@wangeng.com  
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**BORING LOG 2081-B-04**

Page 2 of 3

WEI Job No.: 1100-04-01

Datum: NAVD 88  
 Elevation: 578.68 ft  
 North: 1897947.00 ft  
 East: 1171154.08 ft  
 Station: 7302+57.20  
 Offset: 44.0821 RT

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/ft)	Cu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/ft)	Cu (tsf)	Moisture Content (%)
536.9	Stiff to hard, gray SILTY CLAY LOAM, trace gravel	9	2	1	0.16	24	536.9	Hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel	19	15	30	10.00	12
		15	7	8	1.97	16			23	49	47	3.94	20
		45	15	11					20	14	23	10.25	15
		50	9	13	5.58	13			21	11	19	6.97	22
		55	8	9	2.05	14			22	14	20	10.25	23
		60	4	4	0.98	29			23	31			
									24	4	5		
521.9	Medium stiff, gray SILTY LOAM, trace silt and sand seams	18	4	4	0.98	29							

**GENERAL NOTES**

Begin Drilling **04-01-2013** Complete Drilling **04-01-2013**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**  
 Driller **R&N** Logger **D. Kolpacki** Checked by **C. Marin**  
 Drilling Method **2.25" SSA to 10', mud rotary thereafter, boring**  
**backfilled upon completion**

**WATER LEVEL DATA**

While Drilling **DRY**  
 At Completion of Drilling **NA**  
 Time After Drilling **NA**  
 Depth to Water **NA**  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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**BORING LOG 2081-B-04**

Page 3 of 3

WEI Job No.: 1100-04-01

Datum: NAVD 88  
 Elevation: 578.68 ft  
 North: 1897947.00 ft  
 East: 1171154.08 ft  
 Station: 7302+57.20  
 Offset: 44.0821 RT

Client: **AECOM**  
 Project: **Circle Interchange Reconstruction**  
 Location: **Section 17, T39N, R14E of 3rd PM**

Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/ft)	Cu (tsf)	Moisture Content (%)	Profile Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blows/ft)	Cu (tsf)	Moisture Content (%)
493.7	Boring terminated at 85.00 ft	85					493.7						

**GENERAL NOTES**

Begin Drilling **04-01-2013** Complete Drilling **04-01-2013**  
 Drilling Contractor **Wang Testing Services** Drill Rig **D-50 TMR**  
 Driller **R&N** Logger **D. Kolpacki** Checked by **C. Marin**  
 Drilling Method **2.25" SSA to 10', mud rotary thereafter, boring**  
**backfilled upon completion**

**WATER LEVEL DATA**

While Drilling **DRY**  
 At Completion of Drilling **NA**  
 Time After Drilling **NA**  
 Depth to Water **NA**  
 The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

**NOTE:**

1. Boring Log 2081-B-04 station & offset along Proposed SB Taylor St. Exit Ramp is: Sta. 6409+21.66, Offset 25.48' Rt.



USER NAME =	ahmad,issa	DESIGNED -	SK	REVISED -	
PLOT SCALE =	N.T.S	CHECKED -	WM	REVISED -	
PLOT DATE =	7/30/2018	DRAWN -	SK	REVISED -	
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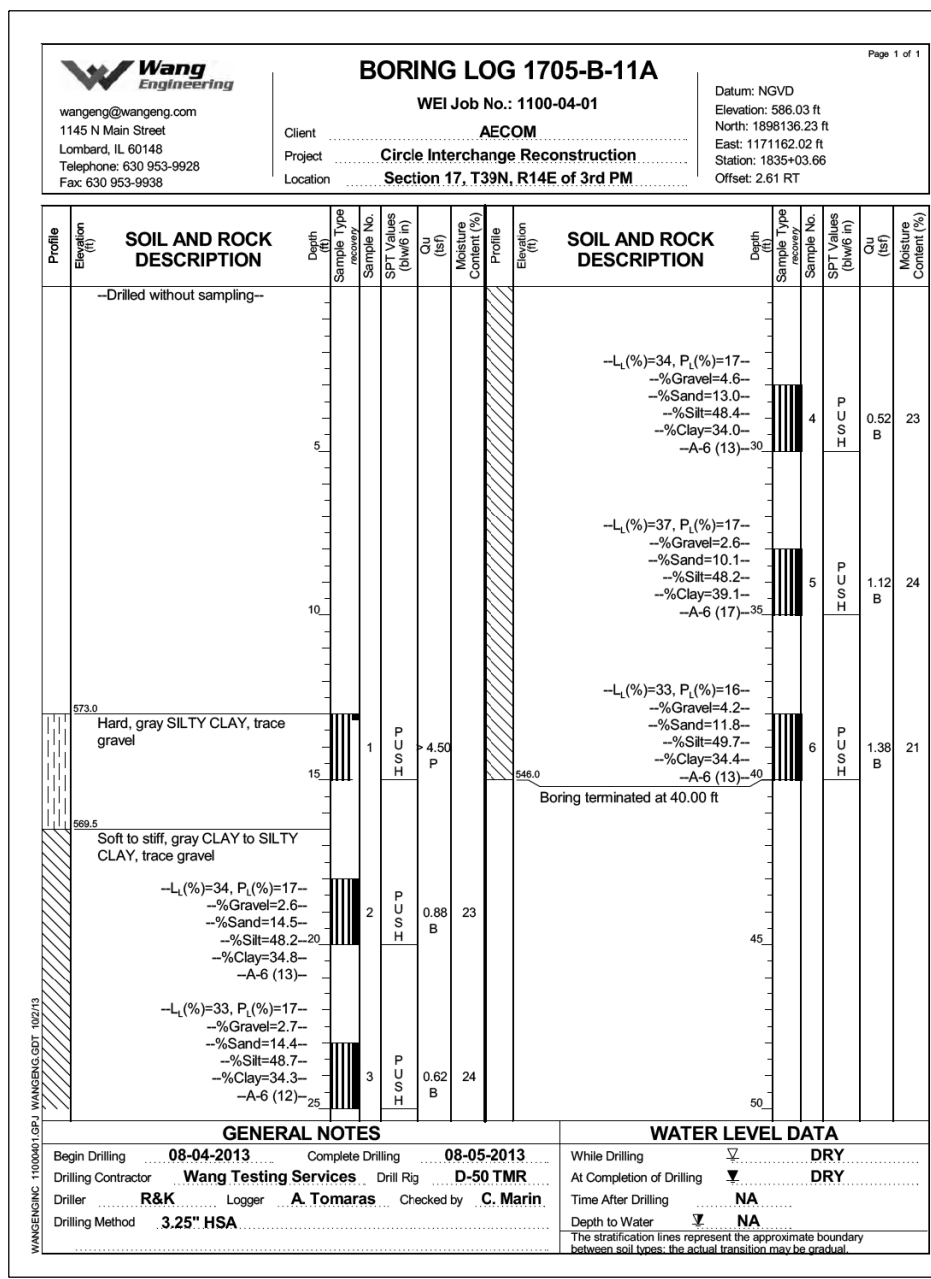
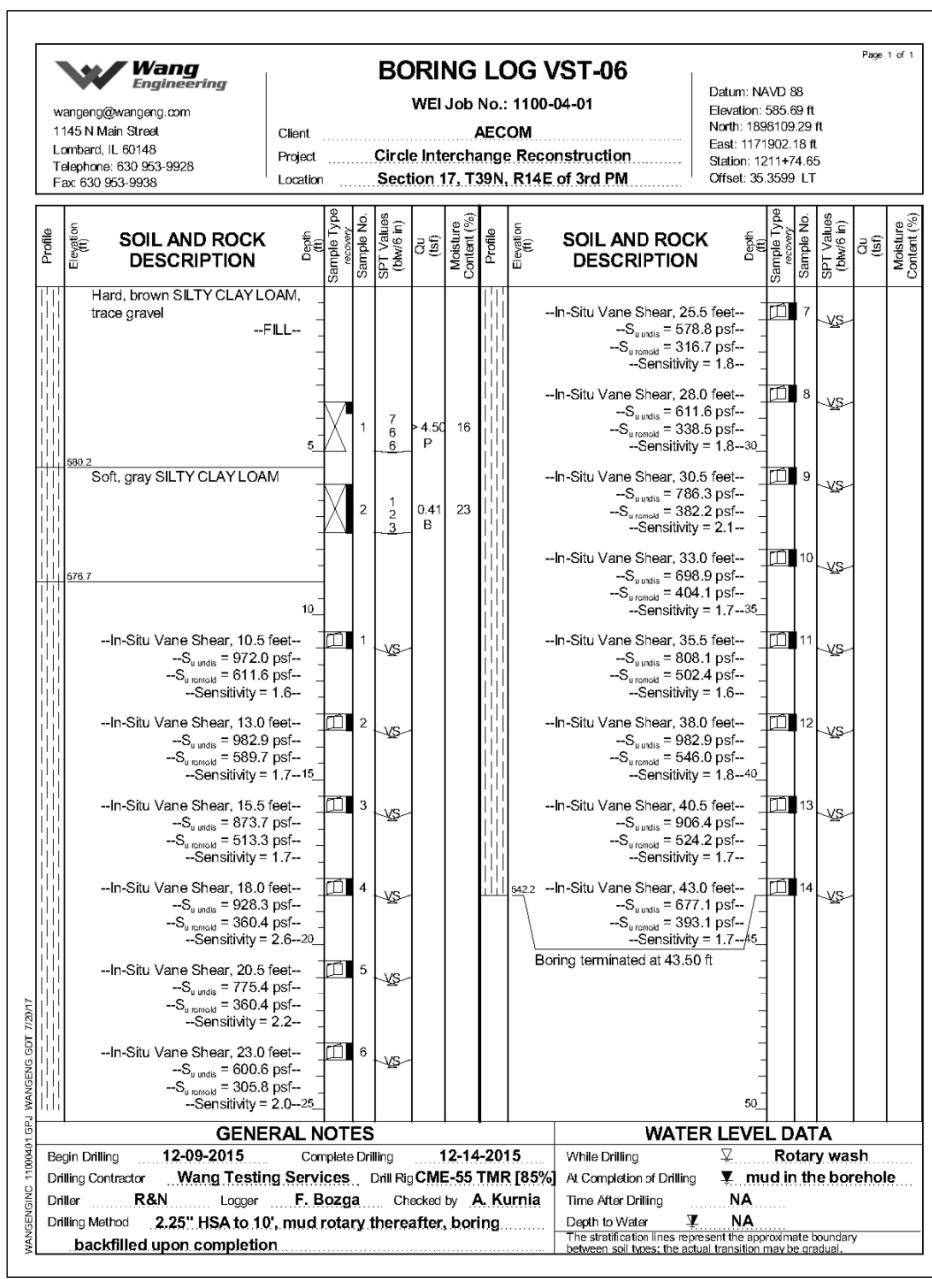
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**BORING LOGS - III  
 STRUCTURE NO. 016-1718**

SHEET NO. S4-36 OF S4-38 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	950
CONTRACT NO. 60X93				
ILLINOIS		FED. AID PROJECT		

FILE NAME: D:\161749-PWINT-aecom\online\local\AECOM\_DS02\_NAYDocuments\01\_Americas\Transportation\60269938\_CirclePhase\_I\000\_CAD\008\_Structural\Structure\_016-171810\161718-60X93-5037-Boring



**NOTES:**

- Boring Log VST-06 station & offset along Proposed SB Taylor St. Exit Ramp is: Sta. 6404+28.10, Offset 594.24' Lt.
- Boring Log 1705-B-11A station & offset along Proposed SB Taylor St. Exit Ramp is: Sta. 6407+43.86, Offset 25.91' Rt.



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PLOT DATE =	7/30/2018	DRAWN -	SK	REVISED -	
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STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

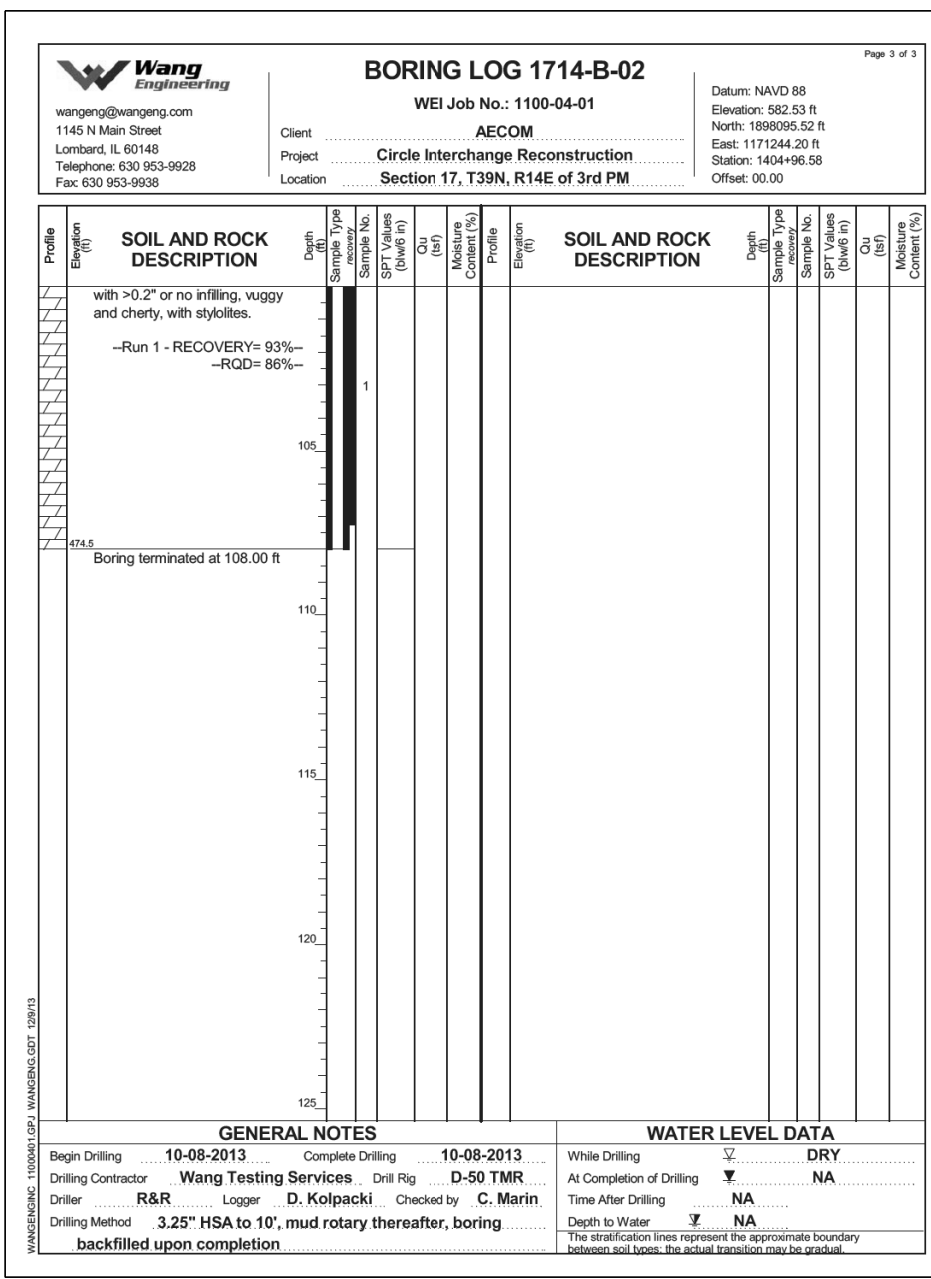
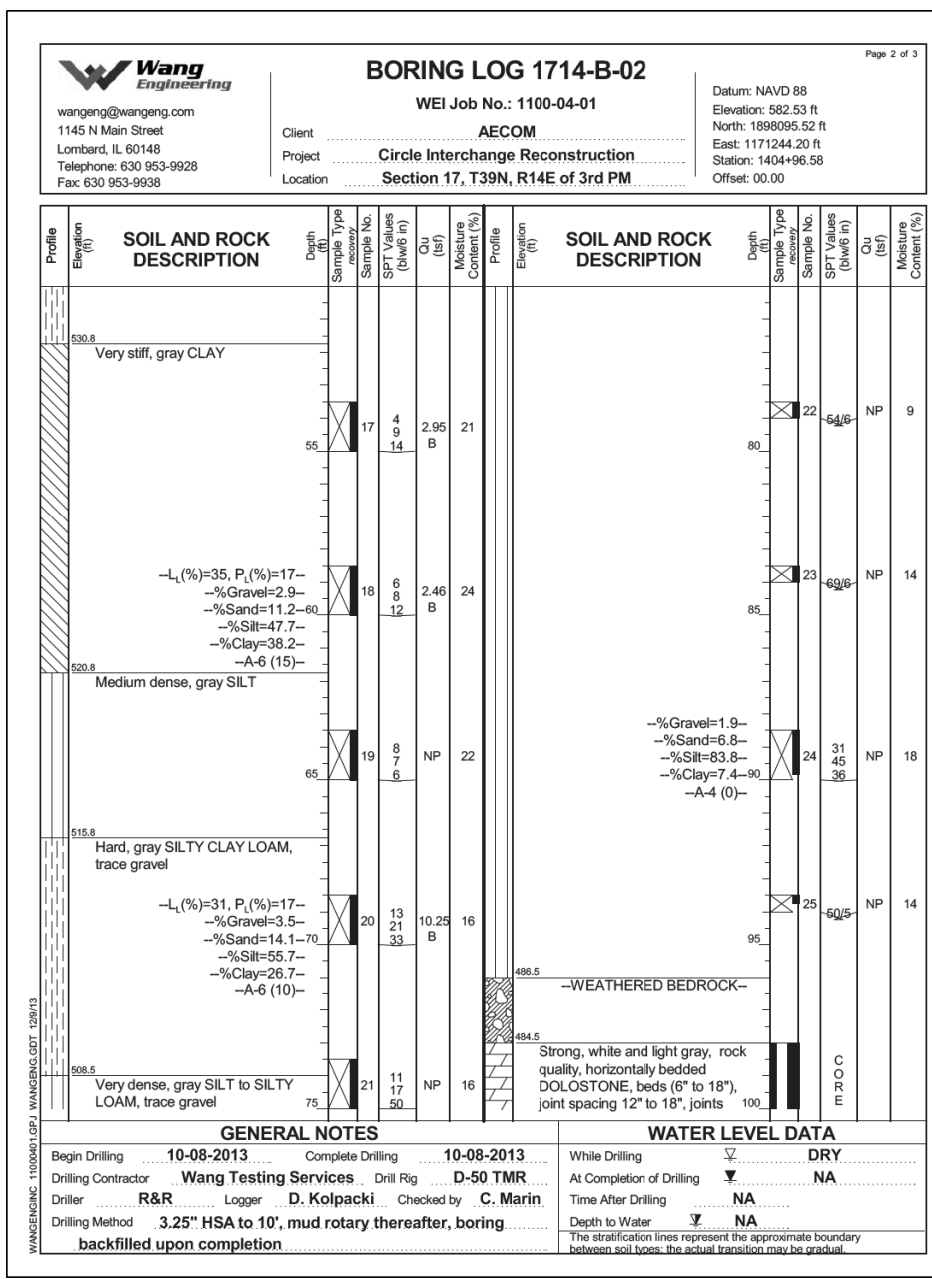
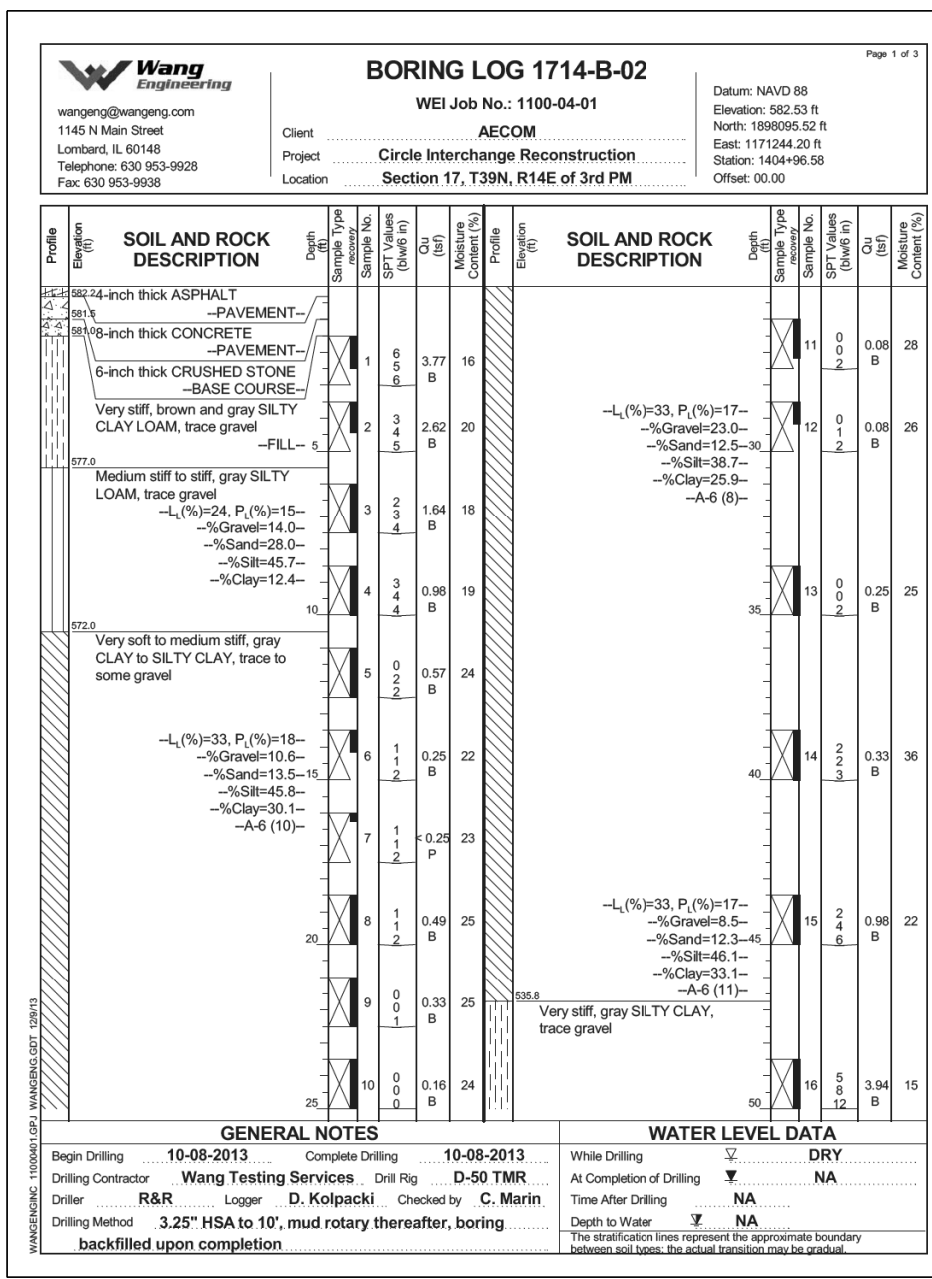
BORING LOGS - IV  
 STRUCTURE NO. 016-1718

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	951
CONTRACT NO. 60X93				

SHEET NO. S4-37 OF S4-38 SHEETS

ILLINOIS FED. AID PROJECT

FILE NAME: D:\161749-PWINT-aecom\line\local\AECOM\_DS02\_NAYDocuments\01\_Americas\Transportation\60269938\_Circle\Phase\_II\000\_CAD\008\_Structural\Structure\_016-1718\0161718-60X93-5038-Boring



**NOTE:**

1. Boring Log 1714-B-02 station & offset along Proposed SB Taylor St. Exit Ramp is: Sta. 6407+60.33, Offset 64.51' Lt.



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PLOT DATE =	7/30/2018	DRAWN -	SK	REVISED -	
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**BORING LOGS - V  
STRUCTURE NO. 016-1718**

SHEET NO. S4-38 OF S4-38 SHEETS

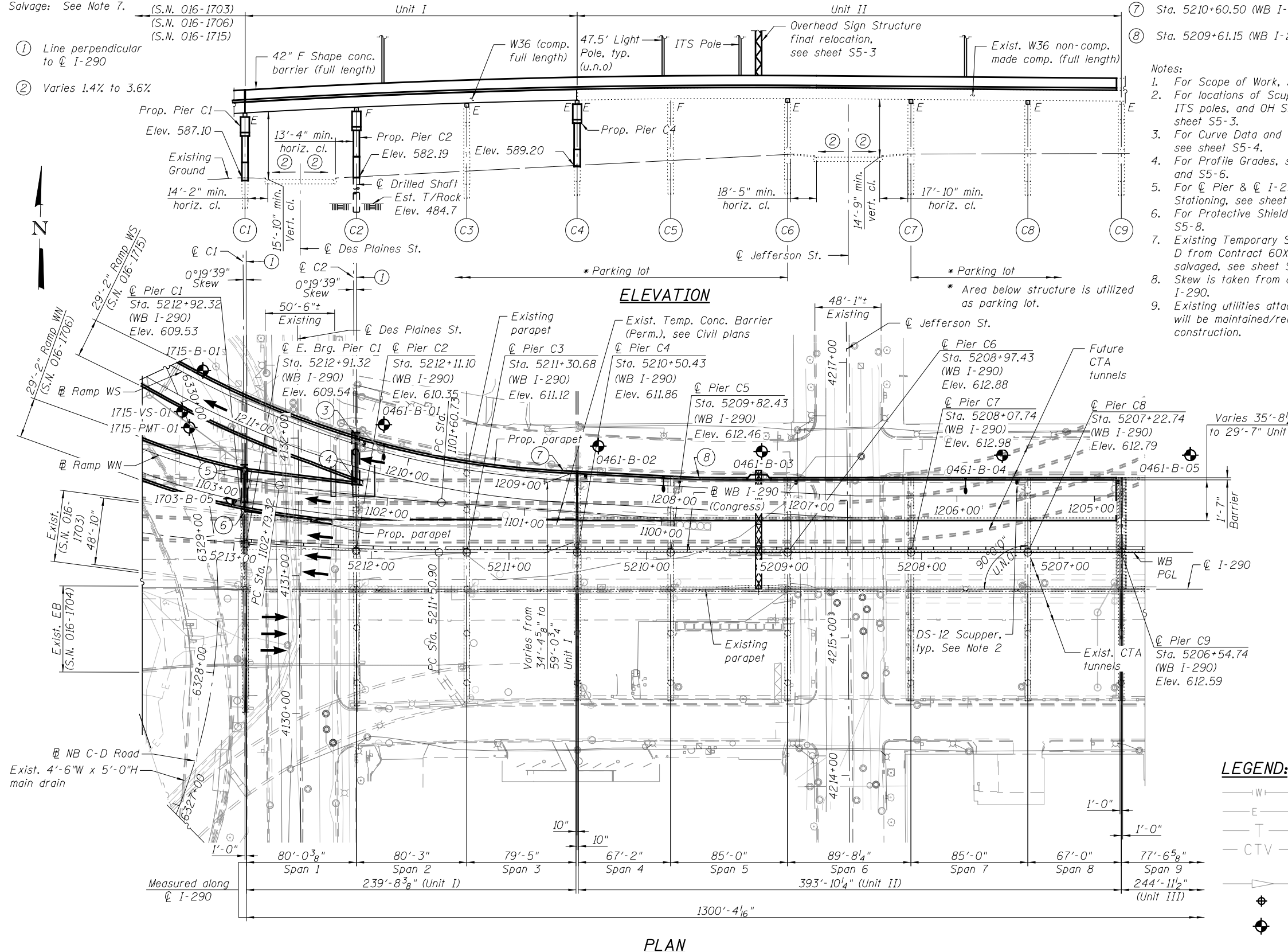
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	952
CONTRACT NO. 60X93				
ILLINOIS		FED. AID PROJECT		

Bench Mark: Square cut at center of door entrance to 707 W. Harrison St; South side of Harrison St. ±90' west of west line of Des Plaines. Elevation 597.47. A + cut in the SE anchor bolt at the 11th street light N. of Roosevelt on the W. side of Halsted. Elev. = 594.06.

Existing Structure: S.N. 016-0461 was originally built in 1952 as F.A. Route Number 131, Section 062-2424.4. The existing structure consists of 16 main spans of multi-unit steel continuous multi-beam superstructures with additional entrance and exit ramp spans along Spans 12 and 13. The existing structure has an overall length of approximately 1301'-4" and an average out-to-out width of approximately 162'-0" for the main spans and 25'-0" for the ramp spans. The substructure units are founded on drilled shafts and consist of 17 multi column piers. The existing bridge is to be rehabilitated through a combination of partial removal and replacement and repairs. Portions of S.N. 016-0461 not included in this Contract were rehabilitated under Contract 62B76, 60X78 and 60X75.

Traffic Control: Two lanes of mainline traffic will be maintained during construction. Canal Street Entrance Ramp will be closed during stage construction. Ramp traffic will be closed during construction and traffic will be detoured via local roads.

Salvage: See Note 7.



- ③ Sta. 5212+14.60 (WB I-290) offset 83.30' Rt.
- ④ Sta. 5212+13.06 (WB I-290) offset 49.92' Rt.
- ⑤ Sta. 5212+97.33 (WB I-290) offset 54.68' Rt.
- ⑥ Sta. 5212+94.31 (WB I-290) offset 23.64' Rt.
- ⑦ Sta. 5210+60.50 (WB I-290) offset 59.31' Rt.
- ⑧ Sta. 5209+61.15 (WB I-290) offset 54.25' Rt.

- Notes:
1. For Scope of Work, see sheet S5-2.
  2. For locations of Scuppers, Light poles, ITS poles, and OH Sign structures, see sheet S5-3.
  3. For Curve Data and Geometric Layout, see sheet S5-4.
  4. For Profile Grades, see sheet S5-5 and S5-6.
  5. For Pier & I-290 Intersect Stationing, see sheet S5-6.
  6. For Protective Shield limits, see sheet S5-8.
  7. Existing Temporary Support System C & D from Contract 60X78 shall be salvaged, see sheet S5-9.
  8. Skew is taken from a line normal to I-290.
  9. Existing utilities attached to structure will be maintained/relocated during construction.

**DESIGN SPECIFICATIONS**  
 2014 AASHTO LRFD Bridge Design Specifications 7th Edition (Spans 1-3)  
 2002 AASHTO Standard Specifications for Highway Bridges (Spans 4-16)

**DESIGN STRESSES**  
**FIELD UNITS (New Construction)**  
 f'c = 3,500 psi  
 f'c = 4,000 psi (Superstructure)  
 fy = 60,000 psi (Reinforcement)  
 fy = 50,000 psi (M270 Grade 50)

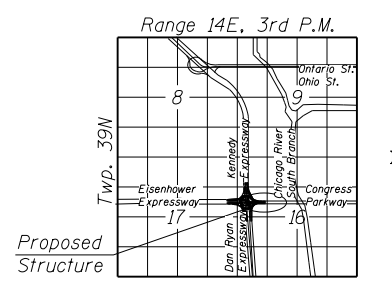
**FIELD UNITS (Exist. Construction)**  
 f'c = 3,500 psi  
 fy = 60,000 psi (Deck Reinforcement)  
 fy = 40,000 psi (Pier Reinforcement)  
 fy = 33,000 psi (ASTM A7)

**LOADING HL-93**  
**(SPANS 1-3 & PIER C1 THRU C4)**  
**LOADING HS20-44 & ALT. MILITARY (SPANS 4-16)**  
 Allow 25#/sq. ft. for future wearing surface

**SEISMIC DATA**  
 Seismic Performance Zone (SPZ) = 1  
 Design Spectral Acceleration at 1.0 sec. (SD1) = 0.085  
 Design Spectral Acceleration at 0.2 sec. (SD5) = 0.144  
 Soil Site Class = D



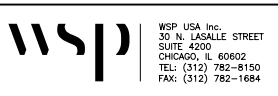
Signed *Jamal Grainawi*  
 JAMAL I. GRAINAWI, S.E. IL Lic. No. 081-005161  
 Expires 11-30-2018.  
 Date *7/18/18*



**GENERAL PLAN & ELEVATION**  
**WB I-290 (CONGRESS) VIADUCT OVER**  
**DES PLAINES ST. TO CANAL ST.**  
**F.A.I. ROUTE 90/94/290**  
**SECTION 2014-013 R&B-R,**  
**COOK COUNTY**  
**STATION 5165+03.09**  
**STRUCTURE NO. 016-0461**

- LEGEND:**
- (W)— Water Line
  - (E)— Electric
  - (T)— Telephone line
  - (CTV)— Television line
  - (CS)— Combined Sewer
  - (SS)— Storm Sewer
  - ⊕ Point of min. vert. cl.
  - ⊙ Soil Boring Location

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USER NAME = ibrahim1	DESIGNED - NJP	REVISED -
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PLOT DATE = 7/30/2018	DRAWN - NJP	REVISED -
	CHECKED - JIG	REVISED -

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

SHEET NO. S5-1 OF S5-72 SHEETS

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 953
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60X93	

**GENERAL NOTES:**

1. Fasteners shall be ASTM A325 Type 1, hot dipped galvanized bolts. Bolts  $\frac{7}{8}$ "  $\phi$ , holes  $\frac{15}{16}$ "  $\phi$ , unless otherwise noted.
2. Calculated weight of Structural Steel = 338,970 lbs. (Gr. 50)  
= 2,330 lbs. (Gr. 36)
3. All structural steel shall be hot-dip galvanized (see special provisions).
4. The Contractor shall test the existing welds by non-destructive methods within 2 ft. of the end of the existing cover plates for cracks after removal of the existing concrete deck. Dye penetrant (PT), magnetic particle (MT), or other approved testing method shall be performed by qualified personnel approved by the Engineer. If cracks are found, report them to the Bureau of Bridges and Structures for disposition. The cost of testing is included in Removal of Existing Concrete Deck. The cost of crack repair, if necessary, will be paid for according to Article 109.04 of the Standard Specifications.
5. No field welding is permitted except as specified in the contract documents.
6. Reinforcement bars designated (E) shall be epoxy coated.
7. Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.  
  
As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer. Any cracks that cannot be removed by grinding  $\frac{1}{4}$  in. deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.
8. If the Contractor elects to use cantilever forming brackets on the exterior beams or girders, the brackets shall be placed at the same locations as required for the hardwood blocks in Article 503.06(b) of the Standard Specifications. If additional cantilever forming brackets are required, hardwood blocking shall be wedged between the exterior and first interior beam at each of these additional bracket locations.
9. Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.
10. Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of  $\frac{1}{8}$ " (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
11. Concrete Sealer shall be applied to the designated areas of the Piers C1, C2 & C4.
12. The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
13. Cleaning and field painting of structural steel shall be done under a separate painting contract, unless noted otherwise.
14. Existing structural steel shall only be cleaned and painted as required by the Special Provision "Cleaning and Painting Contact Surface Areas of Existing Steel Structures".
15. Slipforming of the parapet is not allowed.
16. The Contractor shall field verify location of existing utilities prior to construction. The Contractor shall take precautions not to damage existing utilities. Any such damage shall be repaired by the Contractor at no additional cost.
17. The Contractor shall take all necessary precautions not to contaminate groundwater during the drilled shaft construction operation. The Contractor is responsible for the proper containment and disposal of the contaminated groundwater and spoils resulting from the Contractor's means and methods. No additional cost will be paid for this effort.

**GENERAL NOTES (CONT.):**

18. The Drilled Shaft quantities and reinforcement detailing are based on the estimated elevations shown on the plans. The actual elevations may differ at each shaft locations and corresponding adjustments shall be made to the drilled shaft and reinforcement quantities and payment limits. The drilled shaft tip should be established six inches below top of solid rock.
19. Limited groundwater elevation data is available in the boring logs. In addition, groundwater may also be present in deeper granular layers. The groundwater may rise in the shafts to an elevation above the top of granular layers. The Contractor shall consider this information when choosing construction methods. The Contractor will not be compensated for issues related to the groundwater elevation.
20. Based on the high squeeze potential of the clay soils, the use of temporary casing will be required to Elev. +540.0 at Pier C2 in order to properly construct the drilled shaft. Casing may be removed or left in place as determined by the Contractor at no cost to the Department.
21. The Contractor shall coordinate the construction of proposed structure with the construction of shared Pier C1 & Pier C2 with Ramp WN (S.N. 016-1706) & Ramp WS (S.N. 016-1715), respectively.
22. The Contractor shall take all necessary precautions not to contaminate groundwater during the drilled shaft construction operation. The Contractor is responsible for the proper containment and disposal of the contaminated groundwater and spoils resulting from the Contractor's means and methods. No additional cost will be paid for this effort.
23. The Contractor shall exercise extreme caution during construction to make certain that construction activities, live load surcharge and other loads applied to the structures will not have detrimental effects on the adjacent structures, buildings and utilities. See Contract Special Provision for details.
24. The Contractor shall provide vibration and displacement monitoring at the locations specified in the Special Provision for "Construction Vibration Monitoring", to ensure that construction activities in the vicinity of the structures do not have detrimental effects on building foundations. No additional compensation shall be provided to the Contractor for alternative means and methods, or additional precautionary measures, required during removal/construction activities to satisfy these requirements. See Contract Special Provisions for details.

**SCOPE OF WORK:**

1. Remove and replace WB superstructure between Piers C1 & C4. Install Elastometric Bearings at C1, C3 & C4.
2. Replace WB deck in Spans 4 through 8 with a composite deck.
3. Replace WB bridge deck expansion joints with modular type at Piers C1 & C2 and strip seal type at Pier C4.
4. Replace high profile rocker bearings with elastomeric bearings at WB Piers C6, C7 & C8.
5. Repair all WB substructure units in Unit I & Unit II except Piers C1, C4 & C9.
6. Reconstruct concrete columns and caps of WB Piers C1, C2 & C4, and reconfigure beam seats at Piers C3 and C6 through C8 to accommodate the proposed WB deck geometry. Install drilled shaft and construct new column at Pier C2.
7. Relocate Existing Overhead Sign Structure from Unit III to final location in Unit II (See roadway plans and table on next sheet).
8. Remove and replace drainage system in WB Spans 1 through 8 (See Drainage System Details on sheets S5-37 and S5-38).
9. Remove and replace underpass lighting over the existing roadways (See elec. plans).

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S5-7	Substructure Layout
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S5-9	Existing Structure Removal Details II
S5-10	Existing Structure Removal Details III
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S5-14	Top of Slab Elevations II - Unit I
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S5-38	Drainage System Details II
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S5-69	Boring Logs IV
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PLOT SCALE =	N.T.S.	DRAWN -	NJP	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**GENERAL DATA I  
STRUCTURE NO. 016-0461**

SHEET NO. S5-2 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	954
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				

**EXISTING STRUCTURE ASSESSMENT NOTES**

- In order to construct proposed superstructure & substructure elements, Contractor may elect to support temporary construction material and/or equipment, on the existing structures in the vicinity of the proposed structure. The Contractor shall submit Structural Assessment Report(s) for approval prior to beginning the work. See Special Provision.
- An Existing Structure Information Package (ESIP) will be provided by the Department to the Contractor upon request.
- The Contractor shall retain the services of an engineering firm, prequalified in the IDOT consultant selection category of Highway Bridge (Adv. Typical), for preparation of the Structural Assessment Report(s). Contractor's pre-approval shall not be applicable for this project. See Special Provision.

Current Existing Structures Load Rating on File:

S.N. 016-0461 (I-290 (Congress) Viaduct over Des Plaines St. to Canal St.)  
 Inventory: HS 17.2  
 Operating: HS 33  
 Live Load Restrictions: None

S.N. 016-1703 (WB I-290 over I-90/94)\*  
 Inventory Rating Factor: HS 24.2  
 Operating Rating Factor: HS 42.2  
 Live Load Restriction: None

S.N. 016-2448 (Ramp WB I-290 to NB I-90/94 over Des Plaines Ave.)  
 Inventory: HS 32-1 (HS 20+MOD)  
 Operating: HS 53-5 (HS 20+MOD)  
 Live Load Restrictions: None

S.N. 016-2450 (Ramp WB I-290 to SB I-90/94 over I-90/94)  
 Inventory: HS 14.2  
 Operating: HS 23.6  
 Live Load Restrictions: None

- Inventory and Operating Ratings and Live Load Restrictions are provided for information only. Inventory and Operating Ratings are based on HS loading and configuration. Live Load Restrictions are based on Illinois legal loads and configurations. The Ratings and Live load Restrictions are not necessarily representative of capacities to support the Contractor's equipment.
- The Contractor is advised that the existing structures may contain members in deteriorated conditions with reduced load carrying capacities. It is the Contractor's responsibility to account for the condition of existing structures when developing construction procedures for using them to support construction loads and for the complete or partial removal or replacement of the structure.
- The Contractor shall verify that the structural demands of the applied loads due to the Contractor's means and methods will not exceed the available capacity of the structure at the time loads are applied. Most likely, the Contractor will be required to provide additional shoring under the existing bridges (or other methods of retrofitting) to support construction loads. Design, installation and subsequent removal of such shoring system will be the responsibility of the Contractor and will not be paid separately.
- The Contractor shall use caution and not damage any component of the existing structure. Upon completion of work and prior to allowing traffic back on the existing structure the contractor must restore existing structure in its original condition.

**DS-12 SCUPPER LOCATIONS WB I-290**

Station	Offset
5207+30.56	52.67' Rt.
5208+91.29	52.67' Rt.
5209+76.29	53.43' Rt.
5210+44.29	56.88' Rt.
5212+07.56	80.00' Rt.

**LIGHT POLE OR ITS POLE LOCATIONS WB I-290**

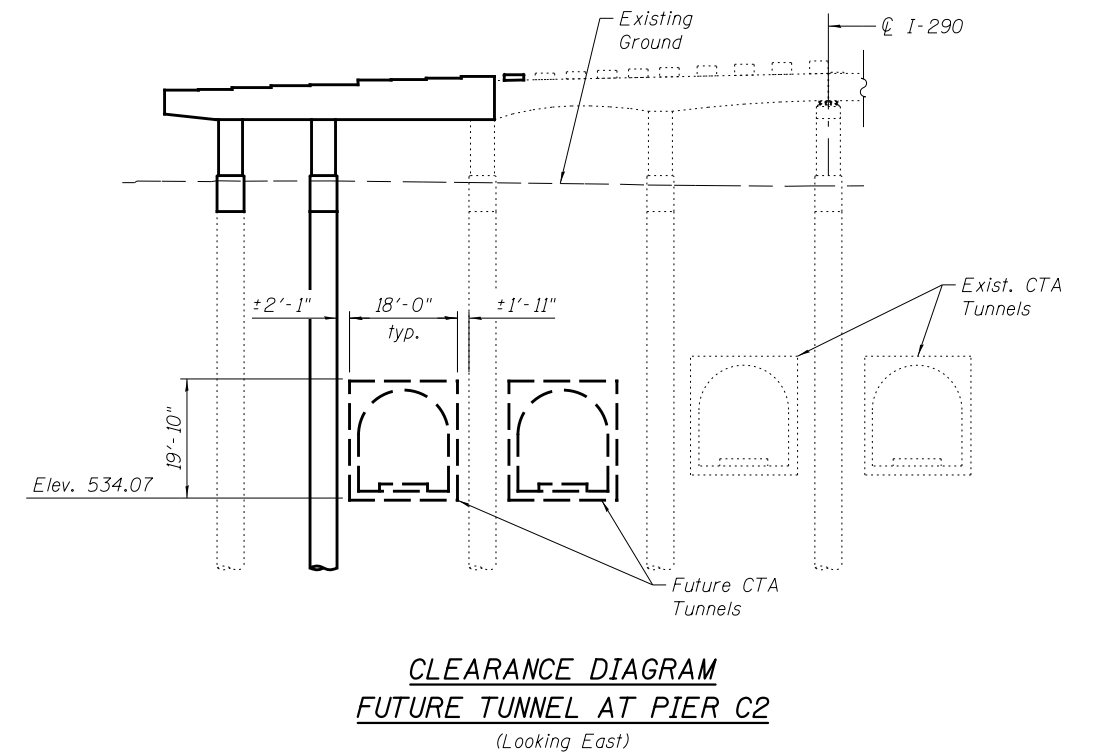
Baseline	Station	Offset
Ramp WS	1210+20.00	4.18' Rt.
WB I-290	5209+87.81	54.02' Rt.
WB I-290	5209+31.93	52.67' Rt.
WB I-290	5207+68.01	52.67' Rt.

**OH SIGN STRUCTURE LOCATIONS WB I-290**

Station	Offset
5209+18.43	52.67' Rt.
(Relocated)	(Relocated)
5206+12.43	52.67' Rt.
(Existing)	(Existing)

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	SUPER	SUB	TOTAL
Removal of Existing Superstructures	Each	1	-	1
Concrete Removal	Cu. Yd.	-	158.5	158.5
Removal of Existing Concrete Deck	Each	1	-	1
Protective Shield	Sq. Yd.	2,851	-	2,851
Structure Excavation	Cu. Yd.	-	50	50
Concrete Structures	Cu. Yd.	-	158.8	158.8
Concrete Superstructure	Cu. Yd.	711.5	-	711.5
Bridge Deck Grooving	Sq. Yd.	2,239	-	2,239
Protective Coat	Sq. Yd.	2,372	-	2,372
Furnishing and Erecting Structural Steel	L. Sum	0.1	-	0.1
Stud Shear Connectors	Each	13,299	-	13,299
Reinforcement Bars	Pound	-	11,650	11,650
Reinforcement Bars, Epoxy Coated	Pound	167,890	39,230	207,120
Mechanical Splicers	Each	-	6	6
Drilled Shaft in Soil	Cu. Yd.	-	58	58
Drilled Shaft in Rock	Cu. Yd.	-	1	1
Preformed Joint Strip Seal	Foot	36	-	36
Elastomeric Bearing Assembly, Type I	Each	25	-	25
Elastomeric Bearing Assembly, Type II	Each	20	-	20
Anchor Bolts, 1"	Each	90	-	90
Anchor Bolts, 1/4"	Each	20	-	20
Temporary Soil Retention System	Sq. Ft.	-	539	539
Concrete Sealer	Sq. Ft.	-	3,384	3,384
Crosshole Sonic Logging Access Ducts	Foot	-	100	100
Crosshole Sonic Logging Testing	Each	-	1	1
Temporary Drainage System No. 1	L. Sum	1	-	1
Bar Splicers, Special	Each	1,606	76	1,682
Jack and Remove Existing Bearings	Each	21	-	21
Structural Repair of Concrete (Depth Equal to or Less than 5 Inches)	Sq. Ft.	-	80	80
Structural Repair of Concrete (Depth Greater than 5 Inches)	Sq. Ft.	-	4	4
Drainage Scuppers, DS-12	Each	5	-	5
Drainage System	L. Sum	0.1	-	0.1
Modular Expansion Joint 6"	Foot	59	-	59
Temporary Shoring	Each	2	-	2



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WSP USA Inc.  
 30 N. LA SALLE STREET  
 SUITE 4000  
 CHICAGO, IL 60602  
 TEL: (312) 782-8150  
 FAX: (312) 782-1684

USER NAME = ibrahim1	DESIGNED - NJP	REVISED -
PLOT SCALE = N.T.S.	CHECKED - P.JL	REVISED -
PLOT DATE = 7/30/2018	DRAWN - NJP	REVISED -
	CHECKED - JIG	REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**GENERAL DATA II  
 STRUCTURE NO. 016-0461**

SHEET NO. S5-3 OF S5-72 SHEETS

F.A.I. RTE. 90/94/290	SECTION 2014-013R&B-R	COUNTY COOK	TOTAL SHEETS 1972	SHEET NO. 955
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				

**CURVE DATA**

(WB I-290 (Congress))  
 PROP. CURVE P-CON-WB-1  
 PI STA. = 5212+68.02  
 $\Delta = 8^\circ 12' 18''$  (RT)  
 D = 3° 30' 31"  
 R = 1,633.00'  
 T = 117.13'  
 L = 233.85'  
 E = 4.20'  
 e = 4.40%  
 T.R. = 67'  
 S.E. RUN = 147'  
 P.C. STA. = 5211+50.90  
 P.T. STA. = 5213+84.75

**CURVE DATA**

(Ramp WN)  
 PROP. CURVE P-CIR-WN-1  
 PI STA. = 1102+20.05  
 $\Delta = 4^\circ 14' 49''$  (RT)  
 D = 3° 34' 52"  
 R = 1,600.00'  
 T = 59.33'  
 L = 118.60'  
 E = 1.10'  
 e = 5.20%  
 T.R. = 49'  
 S.E. RUN = 127'  
 P.C. STA. = 1101+60.73  
 P.C.C. STA. = 1102+79.32

PROP. CURVE P-CIR-WN-2  
 PI STA. = 1105+88.67  
 $\Delta = 69^\circ 00' 44''$  (RT)  
 D = 12° 43' 57"  
 R = 450.00'  
 T = 309.35'  
 L = 542.02'  
 E = 96.07'  
 e = 5.20%  
 T.R. = NA  
 S.E. RUN = NA  
 P.C.C. STA. = 1102+79.32  
 P.T. STA. = 1108+21.34

**CURVE DATA**

(EB I-290 (Congress))  
 PROP. CURVE P-CON-EB-2  
 PI STA. = 5159+19.48  
 $\Delta = 1^\circ 39' 04''$  (RT)  
 D = 0° 52' 23"  
 R = 6,562.00'  
 T = 94.56'  
 L = 189.11'  
 E = 0.68'  
 e = 2.00%  
 T.R. = 72'  
 S.E. RUN = 72'  
 P.C. STA. = 5158+24.92  
 P.T. STA. = 5160+14.03

PROP. CURVE P-CON-EB-3  
 PI STA. = 5184+63.84  
 $\Delta = 2^\circ 50' 37''$  (RT)  
 D = 1° 02' 45"  
 R = 5,478.00'  
 T = 135.97'  
 L = 271.88'  
 E = 1.69'  
 e = NC  
 T.R. = NA  
 S.E. RUN = NA  
 P.C. STA. = 5183+27.87  
 P.T. STA. = 5185+99.75

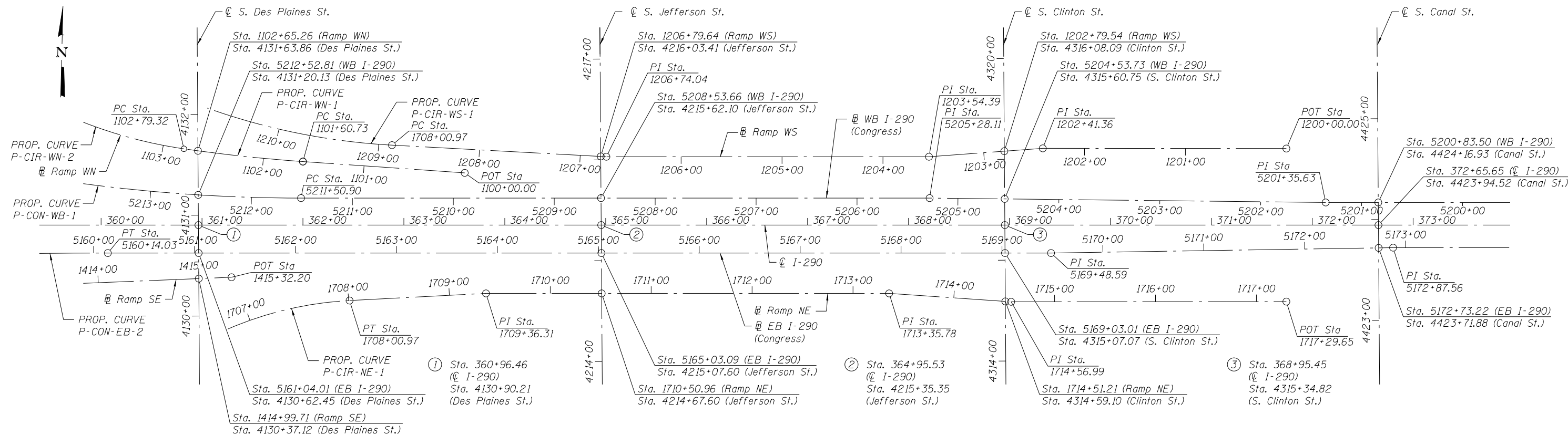
**CURVE DATA**

(Ramp NE)  
 PROP. CURVE P-CIR-NE-1  
 PI STA. = 1706+01.77  
 $\Delta = 86^\circ 38' 23''$  (RT)  
 D = 16° 22' 13"  
 R = 350.00'  
 T = 330.05'  
 L = 529.25'  
 E = 131.08'  
 e = 5.60%  
 T.R. = 48'  
 S.E. RUN = 136'  
 P.C. STA. = 1702+71.71  
 P.T. STA. = 1708+00.97

**CURVE DATA**

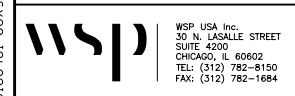
(Ramp WS)  
 PROP. CURVE P-CIR-WS-1  
 PI STA. = 1210+36.88  
 $\Delta = 26^\circ 00' 07''$  (RT)  
 D = 8° 48' 53"  
 R = 650.00'  
 T = 150.08'  
 L = 294.98'  
 E = 17.10'  
 e = 5.20%  
 T.R. = 52'  
 S.E. RUN = 134'  
 P.C. STA. = 1208+86.80  
 P.T. STA. = 1211+81.78

For information only,  
 not included in contract



**GEOMETRIC LAYOUT**

0160461-60X93-5004-DET.dgn



USER NAME =	ibrahim1	DESIGNED -	NJP	REVISED -	
		CHECKED -	PJL	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	NJP	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

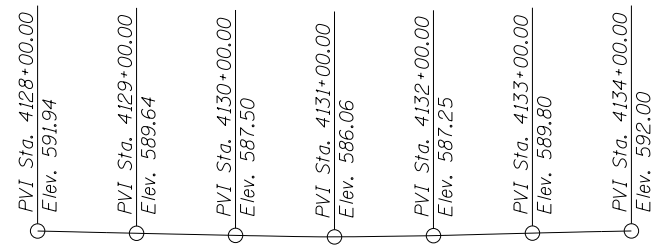
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**GEOMETRIC LAYOUT & CURVE DATA  
 STRUCTURE NO. 016-0461**

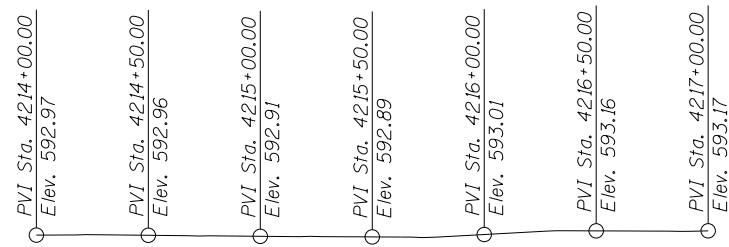
SHEET NO. S5-4 OF S5-72 SHEETS

F.A.I. R.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	956
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				

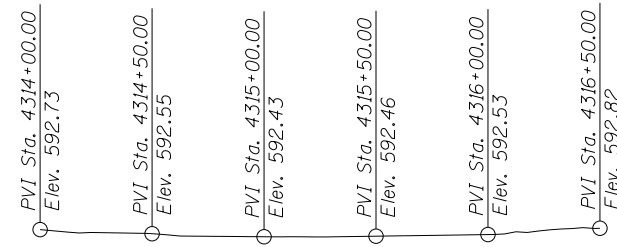




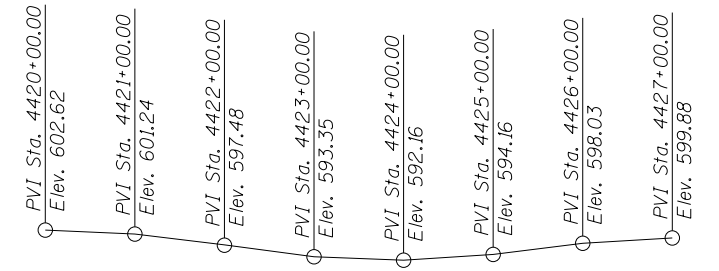
**EXISTING PROFILE GRADE**  
(Along  $\bar{C}$  S. Des Plaines St.)



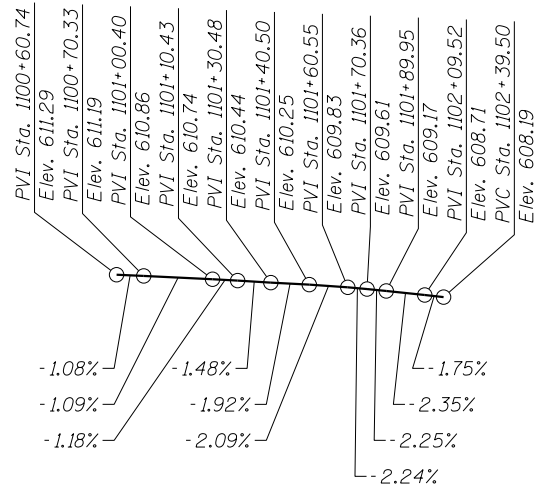
**EXISTING PROFILE GRADE**  
(Along  $\bar{C}$  S. Jefferson St.)



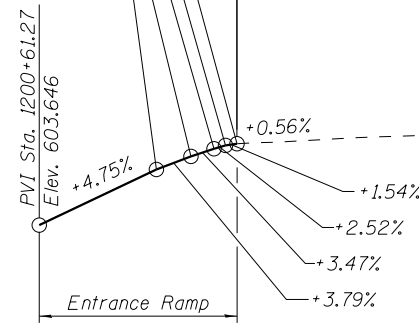
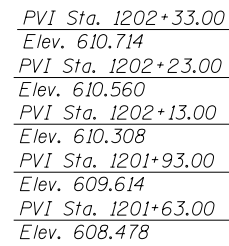
**EXISTING PROFILE GRADE**  
(Along  $\bar{C}$  S. Clinton St.)



**EXISTING PROFILE GRADE**  
(Along  $\bar{C}$  S. Canal St.)

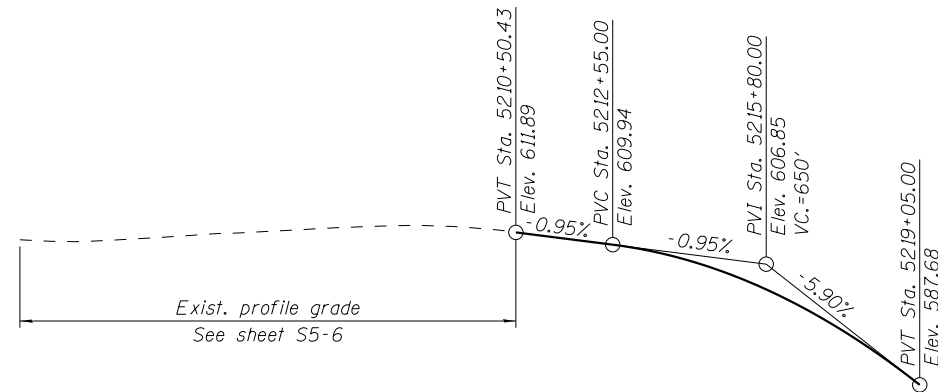
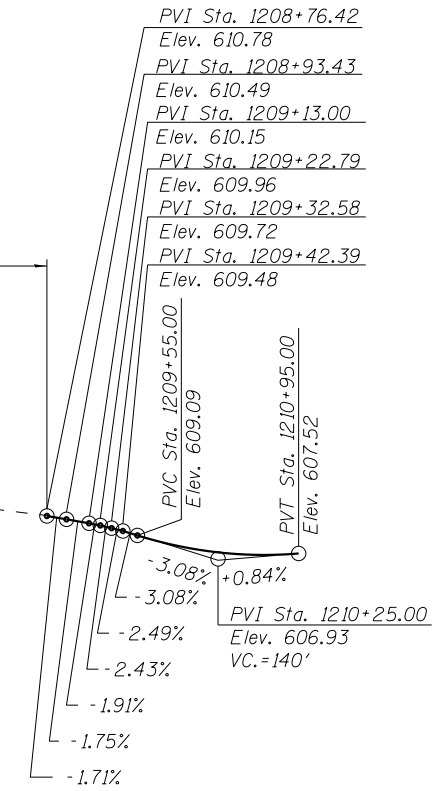


**PROFILE GRADE**  
(Along  $\bar{B}$  Ramp WN)



Exist. profile grade  
See next sheet

**PROFILE GRADE**  
(Along  $\bar{B}$  Ramp WS)



**PROFILE GRADE**  
(Along  $\bar{B}$  WB I-290 (Congress))

Note:  
1. Existing profiles of WB I-290 (Congress) from Pier C4 to Pier C12, S. Des Plaines St., S. Jefferson St., S. Clinton St. and S. Canal St. is based on a field survey by Dynasty Group, Inc. on 09-18-2015. Existing profile grade is to remain unchanged.

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WSP USA Inc.  
30 N. LASALLE STREET  
SUITE 4200  
CHICAGO, IL 60602  
TEL: (312) 782-8150  
FAX: (312) 782-1684

USER NAME = ibrahim1	DESIGNED - NJP	REVISED -
	CHECKED - PJL	REVISED -
PLOT SCALE = N.T.S.	DRAWN - NJP	REVISED -
PLOT DATE = 7/30/2018	CHECKED - JIG	REVISED -

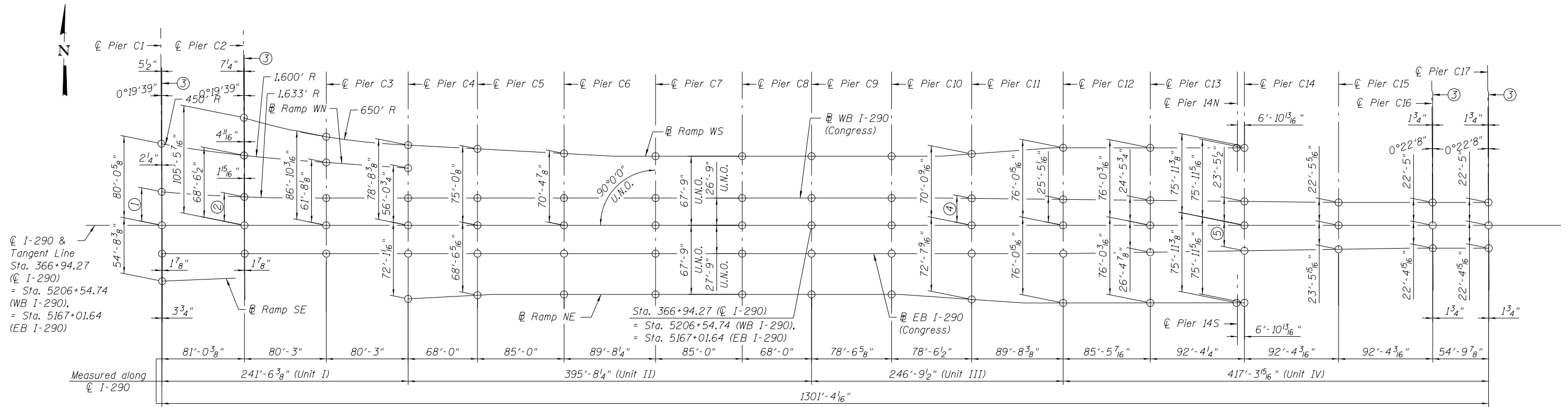
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**PROFILE GRADE**  
**STRUCTURE NO. 016-0461**

SHEET NO. S5-5 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	957
<b>CONTRACT NO. 60X93</b>				

ILLINOIS FED. AID PROJECT



OFFSET SKETCH

PIER & I-290 INTERSECT STATIONING

☉ Pier C1	Sta. 360+57.05	☉ Pier C10	Sta. 367+72.82
☉ Pier C2	Sta. 361+38.08	☉ Pier C11	Sta. 368+51.36
☉ Pier C3	Sta. 362+18.33	☉ Pier C12	Sta. 369+41.06
☉ Pier C4	Sta. 362+98.58	☉ Pier C13	Sta. 370+26.51
☉ Pier C5	Sta. 363+66.58	☉ Pier 14N/14S	Sta. 371+11.96
☉ Pier C6	Sta. 364+51.58	☉ Pier C14	Sta. 371+18.86
☉ Pier C7	Sta. 365+41.27	☉ Pier C15	Sta. 372+11.21
☉ Pier C8	Sta. 366+26.27	☉ Pier C16	Sta. 373+03.56
☉ Pier C9	Sta. 366+94.27	☉ Pier C17	Sta. 373+58.38

Notes:

- Stationing along ☉ I-290 is for information only. Stationing along ☉ EB I-290 (Congress) and ☉ Ramp NE are for information only, part of future contract.
- Existing profile of WB I-290 (Congress) from Pier C4 to Pier C12 is based on a field survey by Dynasty Group, Inc. on 09-18-2015. Existing profile grade is to remain unchanged.



EXISTING PROFILE GRADE  
(Along a Line 27' N. of ☉ I-290.)

EXISTING PROFILE GRADE STATIONS AND ELEVATIONS

PVI Sta.	Elev.	PVI Sta.	Elev.	PVI Sta.	Elev.	PVI Sta.	Elev.	PVI Sta.	Elev.	PVI Sta.	Elev.
362+98.58	611.86	364+80.00	612.96	366+70.00	612.67	368+60.00	611.91	370+50.00	611.08	372+40.00	610.41
363+00.00	611.88	364+90.00	612.98	366+80.00	612.65	368+70.00	611.88	370+60.00	611.03	372+50.00	610.42
363+10.00	612.01	365+00.00	613.01	366+90.00	612.61	368+80.00	611.84	370+70.00	610.99	372+60.00	610.44
363+20.00	612.11	365+10.00	613.02	367+00.00	612.57	368+90.00	611.81	370+80.00	610.95	372+70.00	610.45
363+30.00	612.21	365+20.00	613.01	367+10.00	612.54	369+00.00	611.78	370+90.00	610.90	372+80.00	610.46
363+40.00	612.29	365+30.00	612.99	367+20.00	612.49	369+10.00	611.75	371+00.00	610.86	372+90.00	610.49
363+50.00	612.36	365+40.00	612.98	367+30.00	612.44	369+20.00	611.73	371+10.00	610.82	373+00.00	610.51
363+60.00	612.42	365+50.00	612.97	367+40.00	612.40	369+30.00	611.71	371+20.00	610.78	373+10.00	610.54
363+70.00	612.49	365+60.00	612.95	367+50.00	612.36	369+40.00	611.67	371+30.00	610.74	373+20.00	610.58
363+80.00	612.55	365+70.00	612.93	367+60.00	612.31	369+50.00	611.63	371+40.00	610.70	373+30.00	610.62
363+90.00	612.61	365+80.00	612.91	367+70.00	612.27	369+60.00	611.59	371+50.00	610.65	373+40.00	610.64
364+00.00	612.68	365+90.00	612.88	367+80.00	612.22	369+70.00	611.53	371+60.00	610.61	373+50.00	610.68
364+10.00	612.74	366+00.00	612.86	367+90.00	612.18	369+80.00	611.46	371+70.00	610.56	373+59.26	610.72
364+20.00	612.78	366+10.00	612.83	368+00.00	612.14	369+90.00	611.40	371+80.00	610.52		
364+30.00	612.83	366+20.00	612.81	368+10.00	612.10	370+00.00	611.34	371+90.00	610.50		
364+40.00	612.86	366+30.00	612.78	368+20.00	612.06	370+10.00	611.29	372+00.00	610.47		
364+50.00	612.88	366+40.00	612.75	368+30.00	612.03	370+20.00	611.24	372+10.00	610.44		
364+60.00	612.90	366+50.00	612.72	368+40.00	611.99	370+30.00	611.18	372+20.00	610.42		
364+70.00	612.93	366+60.00	612.69	368+50.00	611.95	370+40.00	611.14	372+30.00	610.40		

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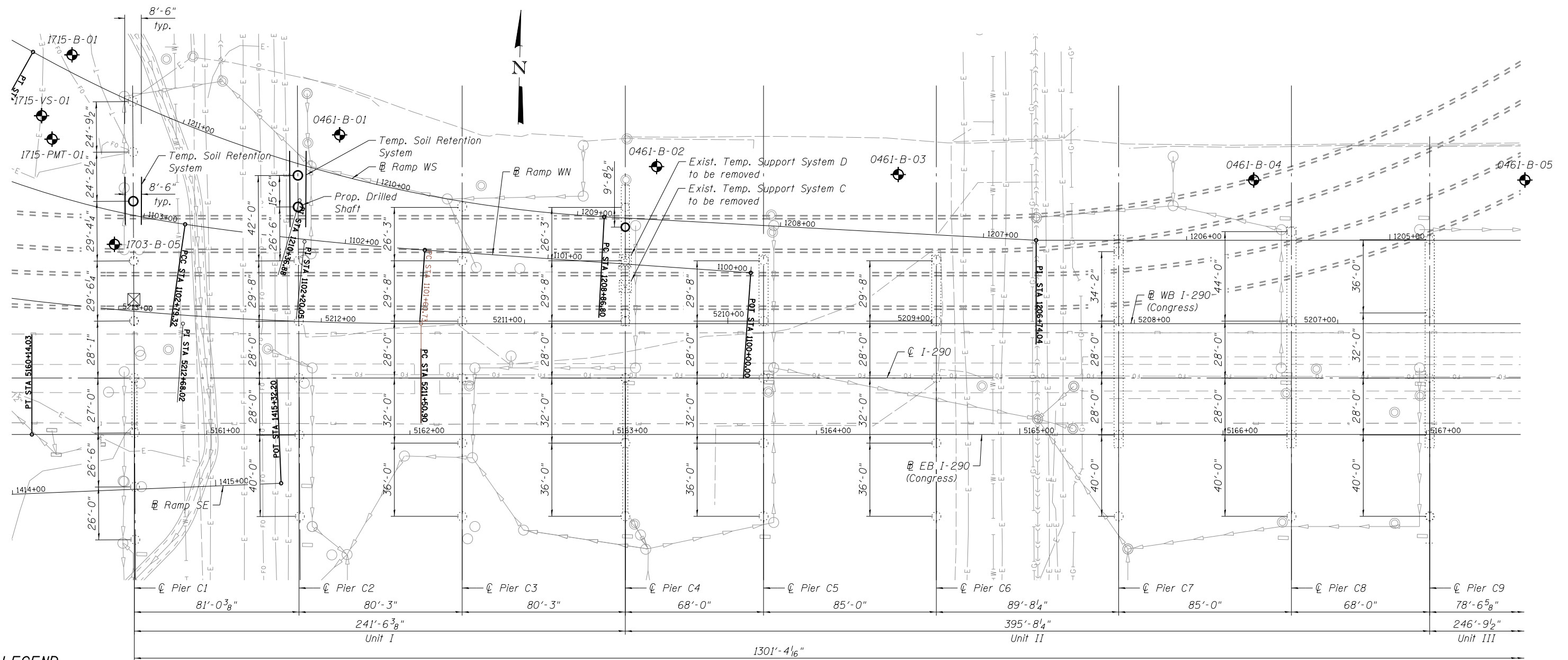
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		CHECKED -	PJL	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	NJP	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

OFFSET SKETCH  
STRUCTURE NO. 016-0461

SHEET NO. S5-6 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	958
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



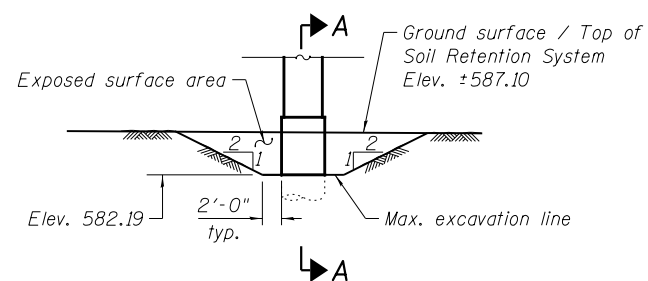
**SUBSTRUCTURE LAYOUT PLAN**

**LEGEND:**

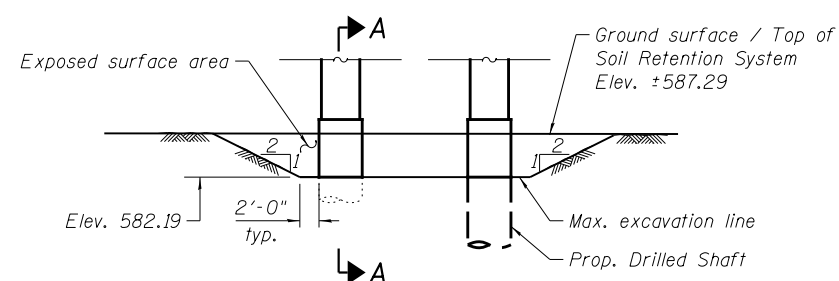
- (W)— Water Line
- (E)— Electric
- (G)— Gas
- (T)— Telephone line
- (FO)— Fiber Optic
- (CTV)— Television line
- (CS)— Combined Sewer
- (SS)— Storm Sewer
- ⊙ Soil Boring Location
- ⊠ Temporary support system to be removed

**Notes:**

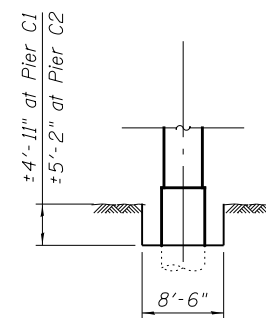
1. Temporary Soil Retention System required for existing pier removal and construction of Piers C1 and C2.
2. See sheet S5-9 for Removal of Exist. Temporary Support System C & D.
3. A cantilever sheet piling design does not appear feasible and additional members or other retention systems may be necessary. The Contractor shall submit a Temporary Soil Retention System design including plan details and calculations for review and acceptance by the Engineer.
4. The Contractor shall take precautions to protect existing utilities and foundations during construction of the bridge. The utilities were located based on SUE and utility supplier information available at design.
5. Temporary Soil Retention System shall avoid existing roadway drainage.
6. Temporary Soil Retention System shall be installed without the use of impact-type pile drivers. The proposed equipment and procedures used for the installation of Temporary Soil Retention System shall be submitted to the Engineer for approval prior to their use. If vibratory equipment utilized, the Contractor shall also submit documentation regarding the operating noise levels and operating vibration characteristics of the equipment proposed. The approval of the equipment and procedure by the Engineer does not guarantee the performance in the field of the equipment will be acceptable. All provisions and requirements required under Construction Vibration Monitoring, Monitoring Adjacent Structures and Noise Compliance shall apply to work performed under this item. The costs incurred finding suitable equipment and procedures shall be included in the cost of Temporary Soil Retention System. No additional costs shall be paid for this effort.



**ELEVATION - TEMPORARY SOIL RETENTION SYSTEM AT EXISTING PIER C1 (Looking East)**



**ELEVATION - TEMPORARY SOIL RETENTION SYSTEM AT EXISTING PIER C2 (Looking East)**



**SECTION A-A**

**BILL OF MATERIAL**

Item	Unit	Total
Temporary Soil Retention System	Sq. Ft.	539

0160461-60X93-5007-LAY.dgn



WSP USA Inc.  
30 N. LA SALLE STREET  
SUITE 4000  
CHICAGO, IL 60602  
TEL: (312) 782-8150  
FAX: (312) 782-1684

USER NAME = ibrahiml  
DESIGNED - NJP  
CHECKED - IJL  
PLOT SCALE = N.T.S.  
DRAWN - NJP  
PLOT DATE = 7/30/2018  
CHECKED - JIG

REVISED -  
REVISED -  
REVISED -  
REVISED -

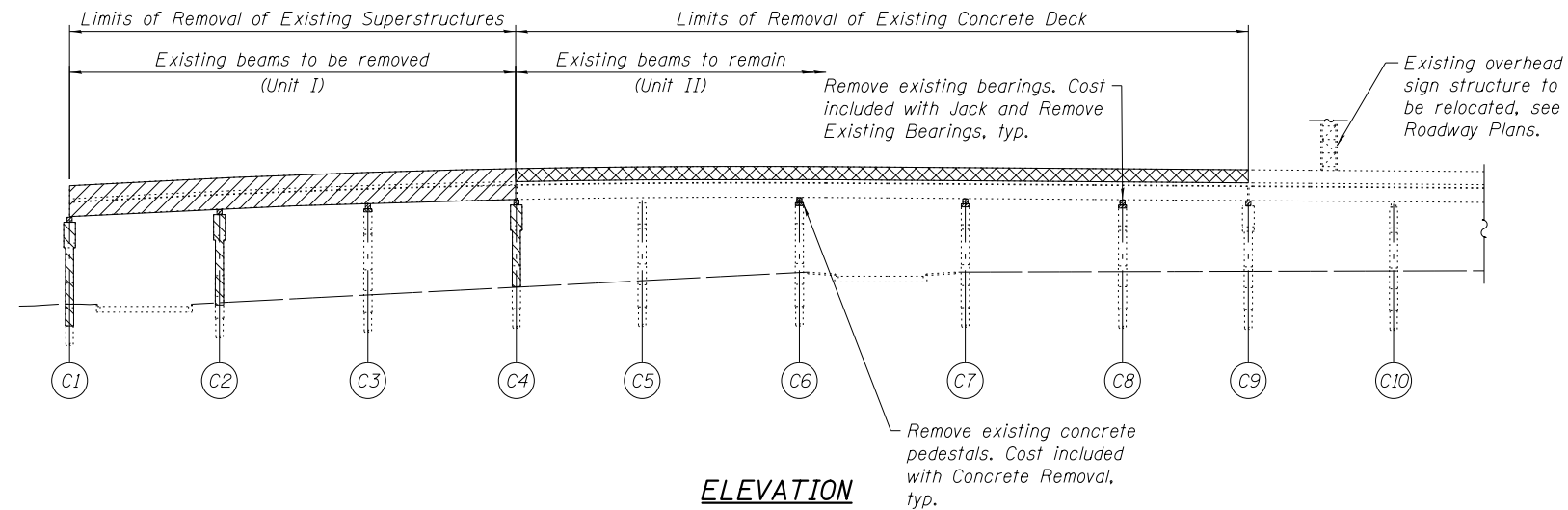
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SUBSTRUCTURE LAYOUT  
STRUCTURE NO. 016-0461**

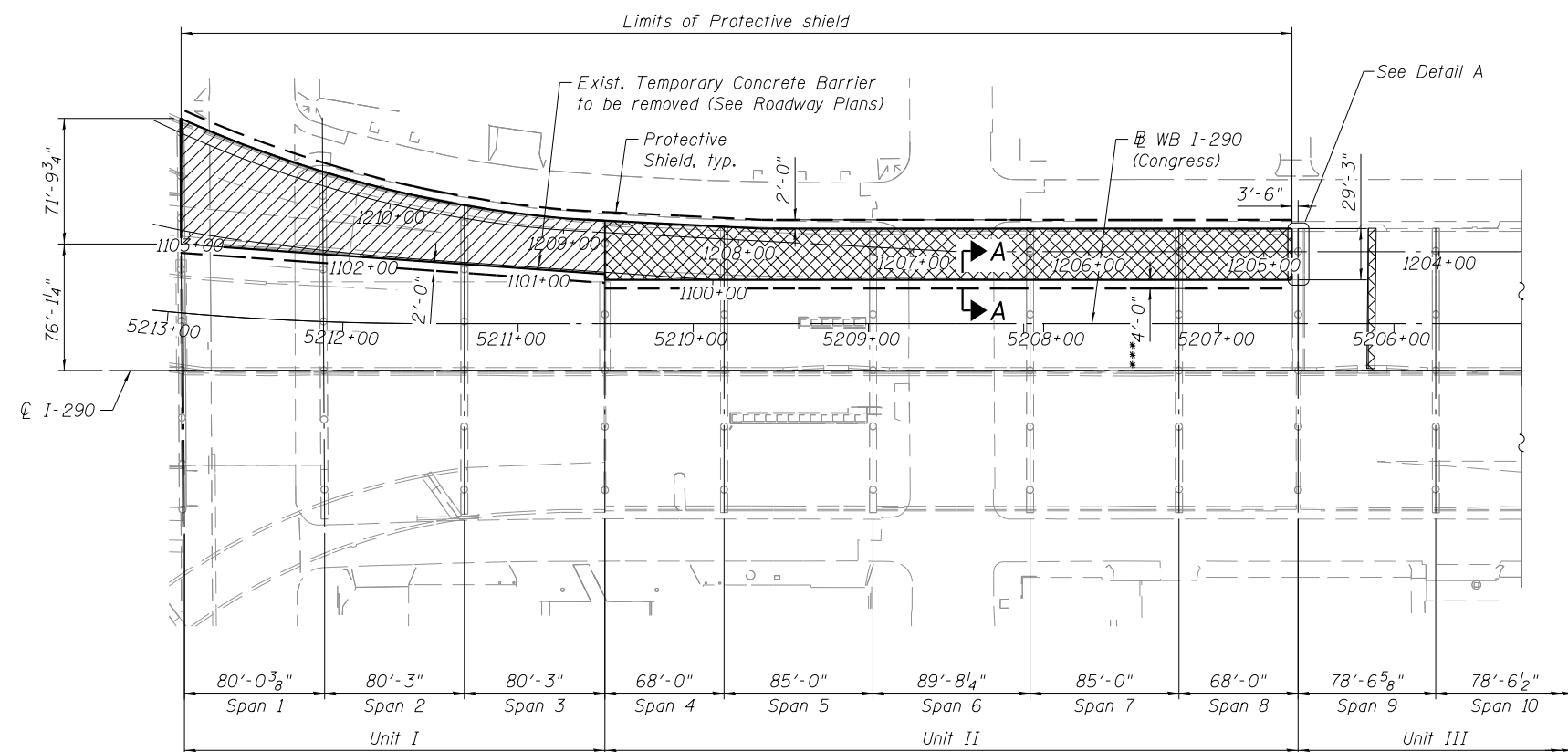
SHEET NO. S5-7 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	959

**CONTRACT NO. 60X93**  
ILLINOIS FED. AID PROJECT



**ELEVATION**



**PLAN**

\*\*\* Within Unit II

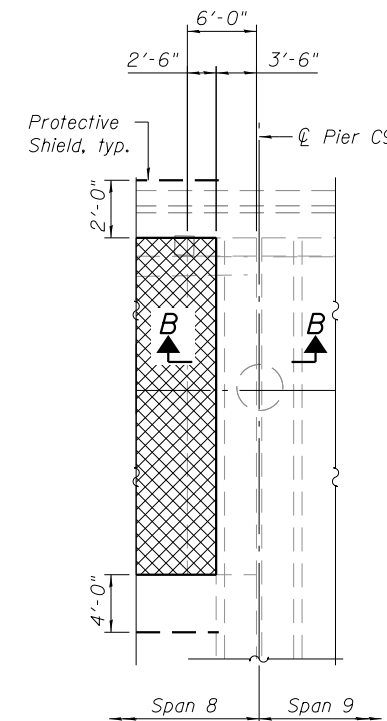
Concrete Removal not shown for clarity

\*\*Temporary Drainage System No. 1 (Designed by Contractor)

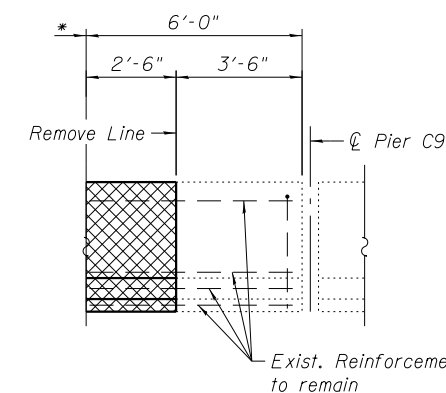
**SECTION A-A**

Unit II shown, (Unit I Similar)

\*\* For minimum cross-sectional area of Temporary Drainage System, see Special Provision.

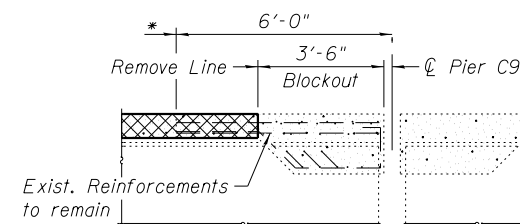


**DETAIL A**



**PARAPET REMOVAL DETAIL-PIER C9**

\* Exist. Construction Joint per Contract 60X78



**SECTION B-B**

\* Exist. Construction Joint per Contract 60X78

**LEGEND:**

- Removal of Existing Superstructures
- Concrete Removal
- Removal of Existing Concrete Deck
- Protective Shield

**BILL OF MATERIAL**

Item	Unit	Quantity
Removal of Existing Superstructures	Each	1
Removal of Existing Concrete Deck	Each	1
Protective Shield	Sq Yd	2,851
Temporary Drainage System No. 1	L. Sum	1

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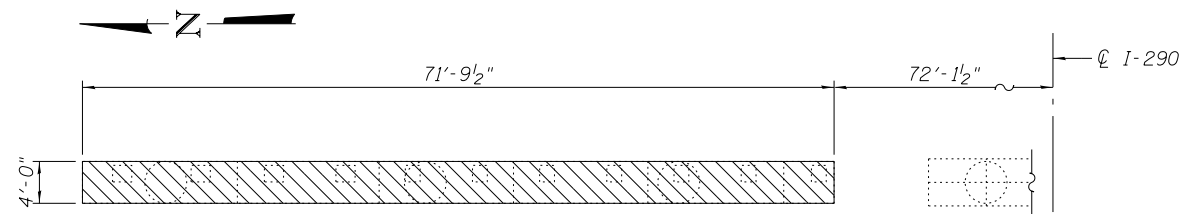
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PLOT SCALE = N.T.S.	CHECKED - IJL/MI	REVISED -
PLOT DATE = 9/19/2018	DRAWN - NJP	REVISED -
	CHECKED - JIG	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

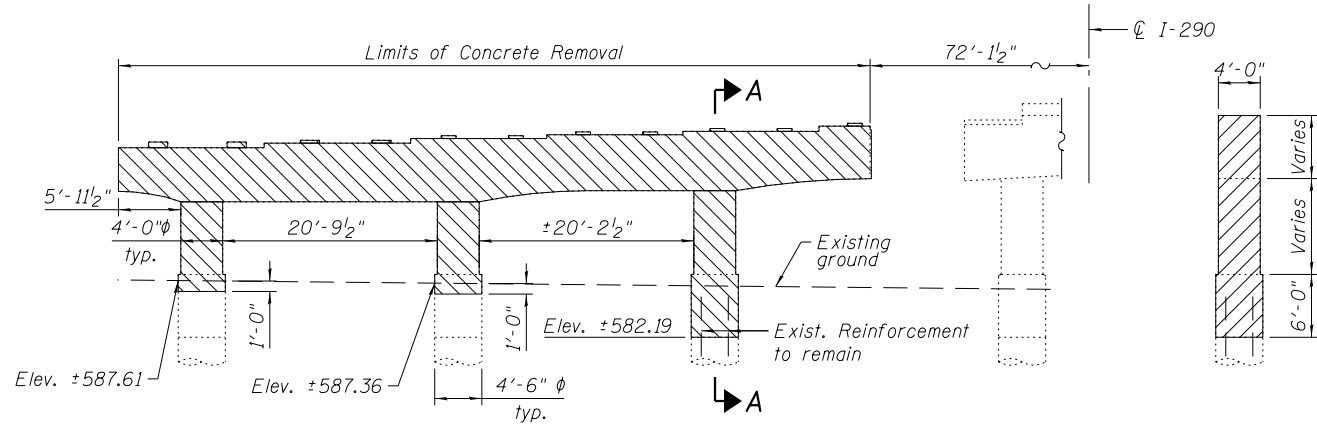
**EXISTING STRUCTURE REMOVAL DETAILS I  
STRUCTURE NO. 016-0461**

SHEET NO. S5-8 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	960
<b>CONTRACT NO. 60X93</b>				
<small>ILLINOIS FED. AID PROJECT</small>				

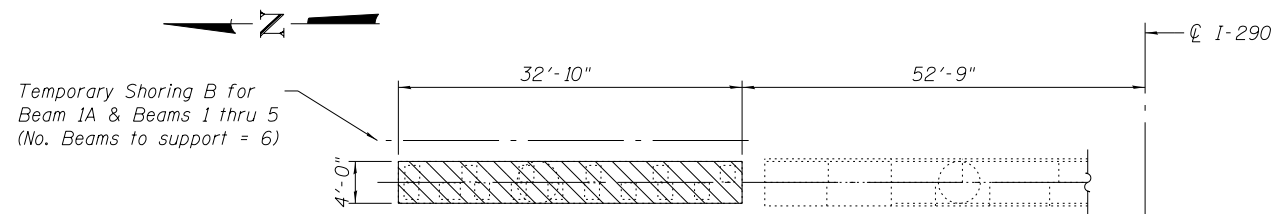


PLAN - PIER C1

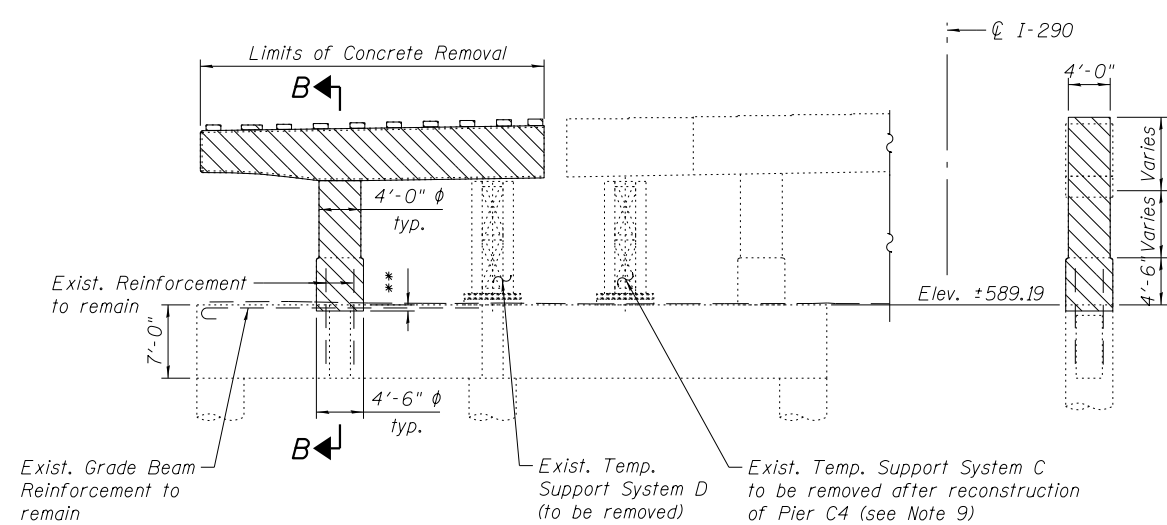


ELEVATION - PIER C1

SECTION A-A



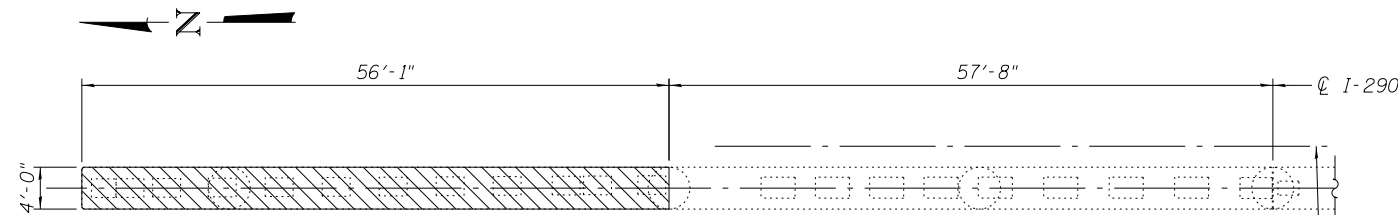
PLAN - PIER C4



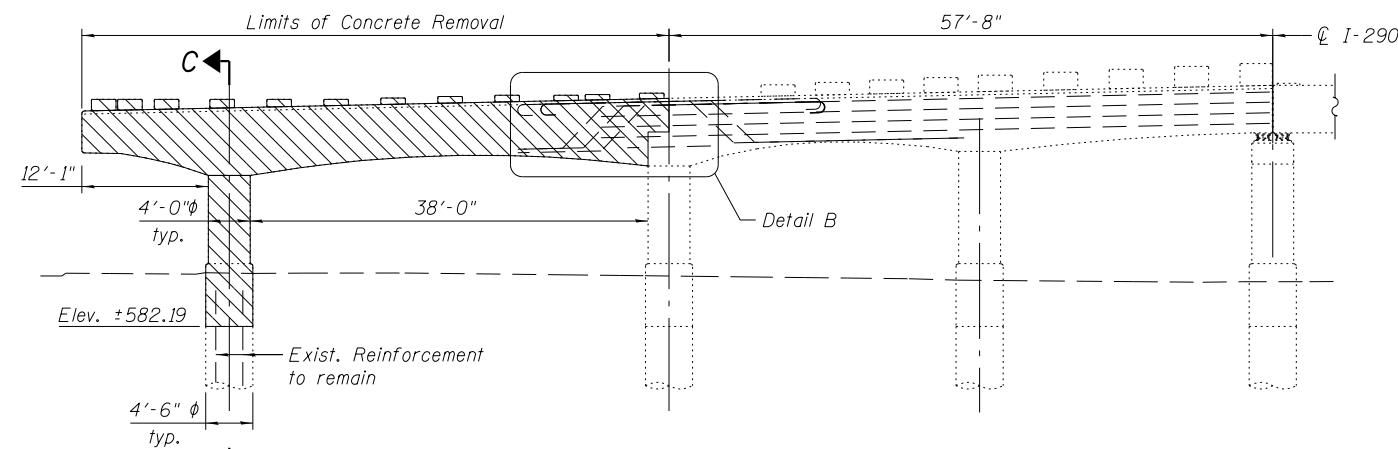
ELEVATION - PIER C4

SECTION B-B

\*\*Remove Exist. Concrete cover ±2"



PLAN - PIER C2



ELEVATION - PIER C2

SECTION C-C

REACTION TABLE FOR TEMPORARY SHORING OF EXISTING BEAMS\*

Location	Pier C2	Pier C4 (East Side)
Temp. Shoring	A	B
$Q$ (k)	82.3	5.5
$Q + IM$ (k)	136.4	-
Total (k)	218.7	5.5

\*Reactions shown represent the maximum service reaction for a single beam.

MAXIMUM LATERAL FORCES AT PIER C2 ON TEMPORARY SHORING A (BEAMS 10 THRU 18)

Service (k)	5.4 (parallel to pier)
	79.2 (normal to pier)
Ultimate (k)	6.3 (parallel to pier)
	133.9 (normal to pier)

Loads may be evenly distributed between beams for design of Temporary Shoring A.

Notes:

- All elevation views are looking East.
- See sheet S5-8 for removal plan.
- See sheet S5-10 for Detail B.
- Removal of Piers C1, C2, and C4 shall be paid for as Concrete Removal.
- Any reinforcement bars noted to remain that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included in Concrete Removal.
- Exist. reinforcement shall be cleaned and incorporated into the new construction. Cost included with Concrete Removal.
- Temporary Shorings A and B are required to support existing beams affected by pier removal and reconstruction operations, see Special Provisions.
- Temporary Shoring B installation shall be carried out after the removal of Unit II concrete deck.
- Exist. Temporary Support System C located south of Pier C4 removal line shall not be removed until new concrete pier cap and column have reached a minimum compressive strength of 3,500 psi or 28 days of age.
- The cost of removal of Exist. Temporary Support System C and D shall be included in Removal of Existing Superstructures.
- The Contractor shall salvage the Exist. Temporary Support System C and D. Cost included in Removal of Existing Superstructures. See Special Provisions.

LEGEND:

Concrete Removal

BILL OF MATERIAL

Item	Unit	Quantity
Concrete Removal	Cu. Yd.	157.4
Temporary Shoring	Each	2

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WSP USA Inc.  
30 N. LASALLE STREET  
SUITE 4200  
CHICAGO, IL 60602  
TEL: (312) 782-8150  
FAX: (312) 782-1684

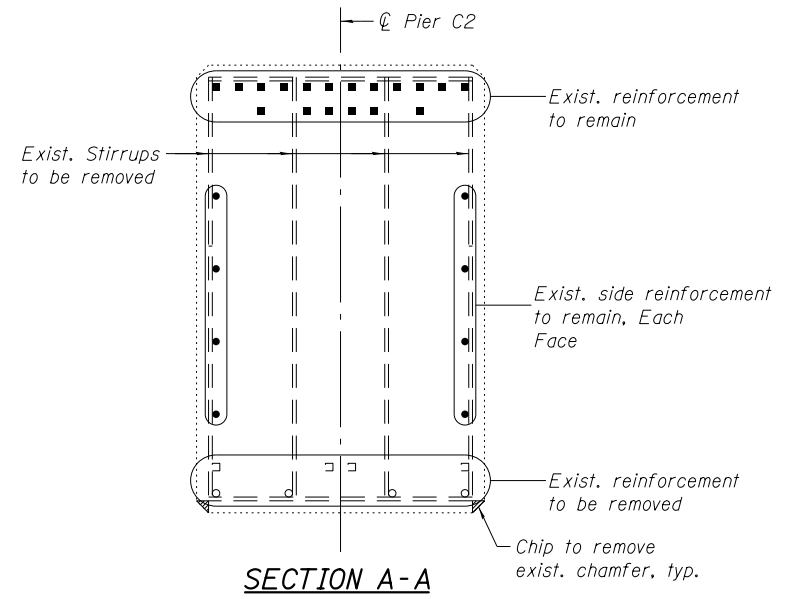
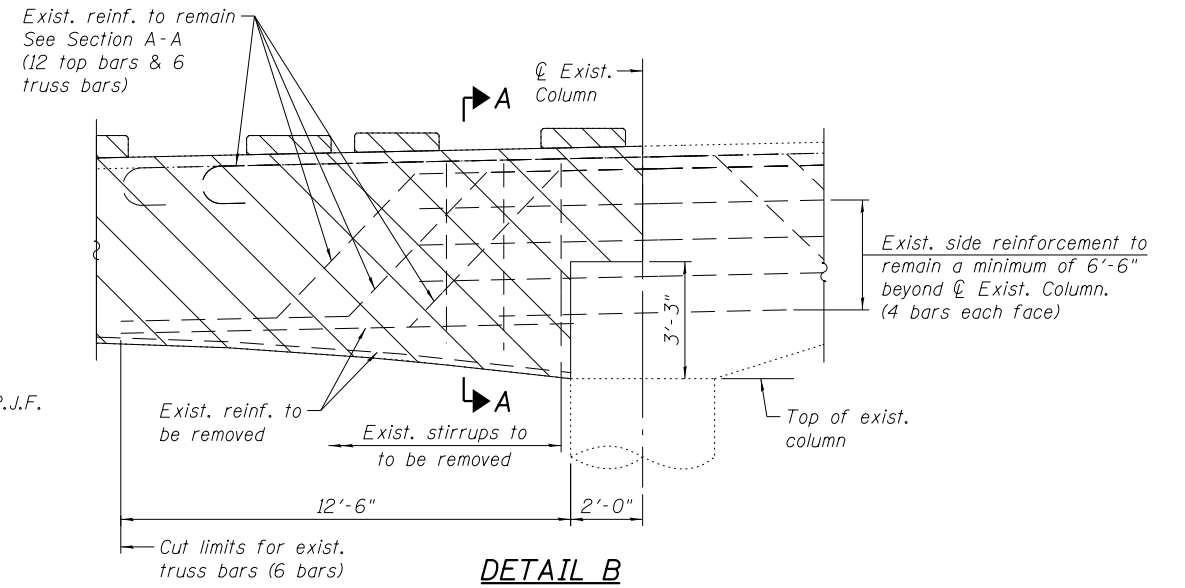
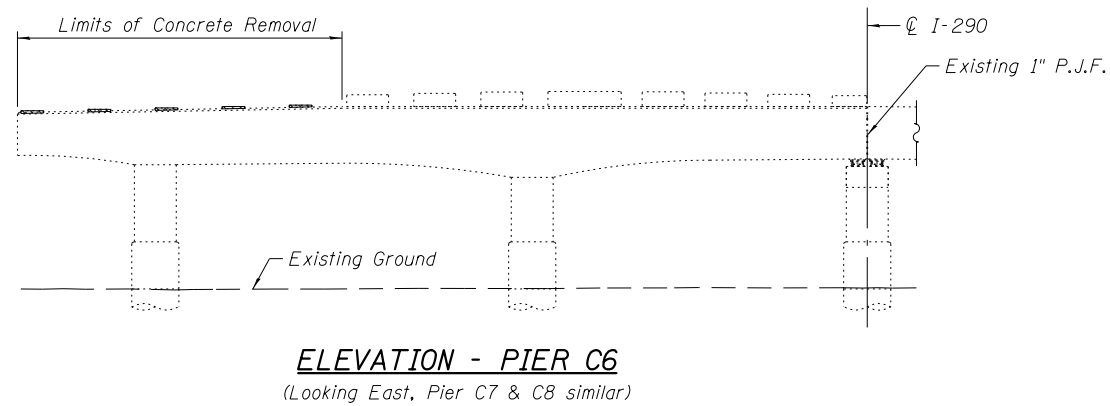
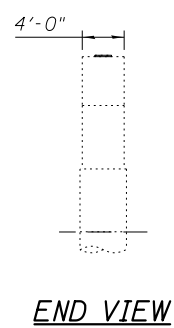
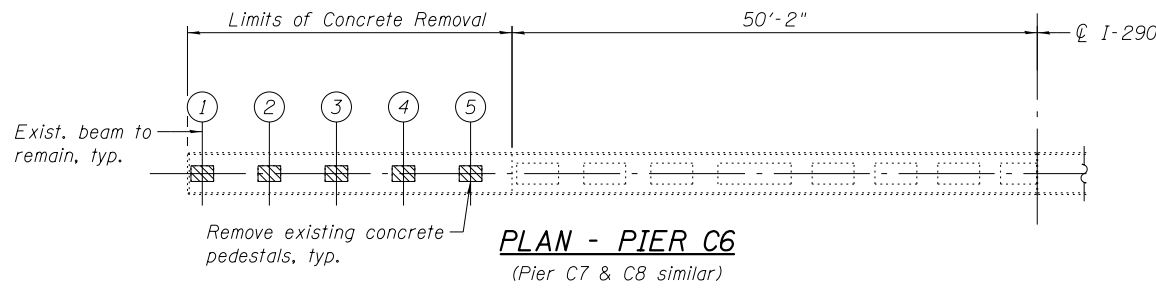
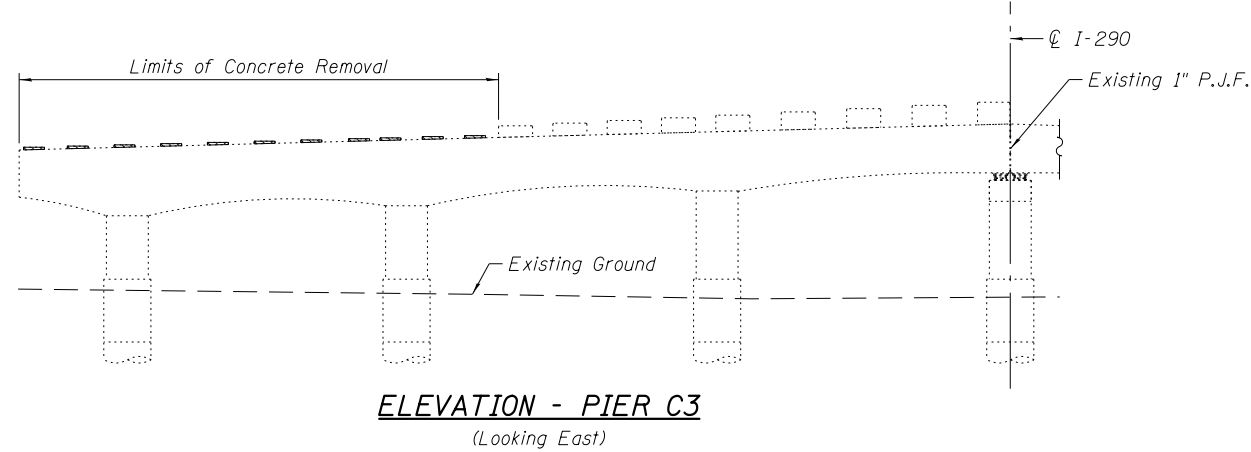
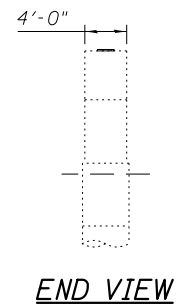
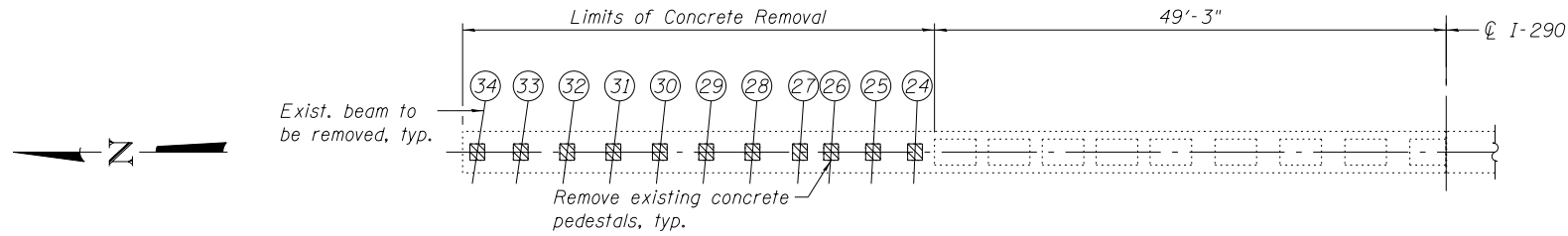
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CHECKED - JIG  
REVISIONS:  
REVISED -  
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

EXISTING STRUCTURE REMOVAL DETAILS II  
STRUCTURE NO. 016-0461

SHEET NO. S5-9 OF S5-72 SHEETS

F.A.I. R.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	961
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



- Notes:
1. Removal of existing concrete pedestals shall be included in the cost of Concrete Removal.
  2. Exist. reinforcement shall be cleaned and incorporated into the new construction. Cost included with Concrete Removal.
  3. The Contractor shall provide temporary shoring and cribbing for the existing beams 1 thru 5 on Piers C6, C7, and C8. Cost included with Jack and Remove Existing Bearings. See Special Provisions.

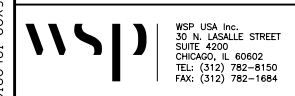
**LEGEND**

Concrete Removal

**BILL OF MATERIAL**

Item	Unit	Quantity
Concrete Removal	Cu. Yd.	1.1

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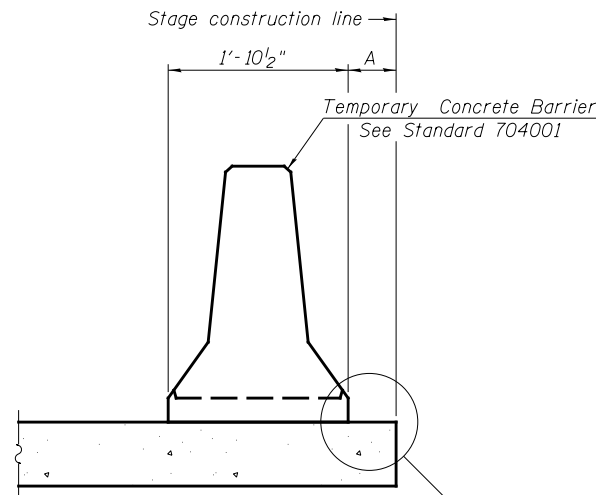
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PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**EXISTING STRUCTURE REMOVAL DETAILS III  
STRUCTURE NO. 016-0461**

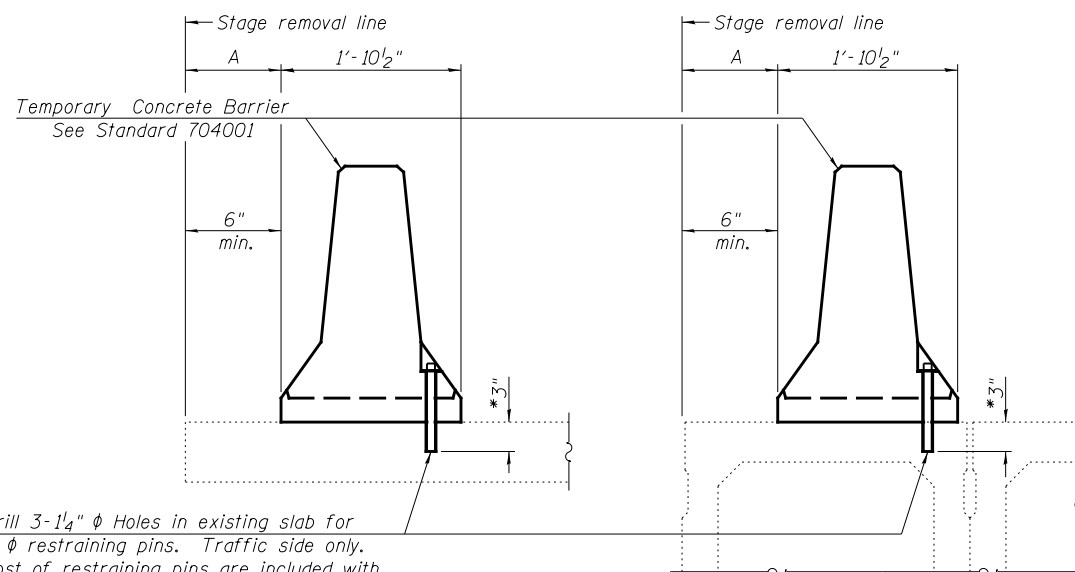
SHEET NO. S5-10 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	962
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				



When "A" is 3'-1" or less, the temporary concrete barrier shall be restrained to the new slab according to Detail I, II or III. No restraint is required when "A" is greater than 3'-1".

**NEW SLAB OR NEW DECK BEAM**



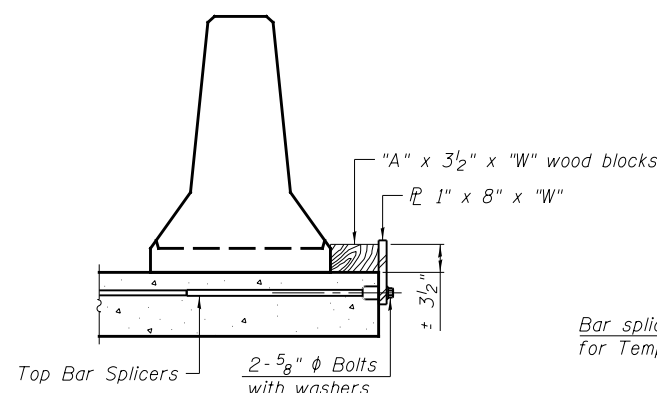
Drill 3-1/4"  $\phi$  Holes in existing slab for 1"  $\phi$  restraining pins. Traffic side only. Cost of restraining pins are included with Temporary Concrete Barrier. No restraint is required when "A" is greater than 3'-1".

\* When hot-mix asphalt wearing surface is present, embedment shall be 3" plus the wearing surface depth.

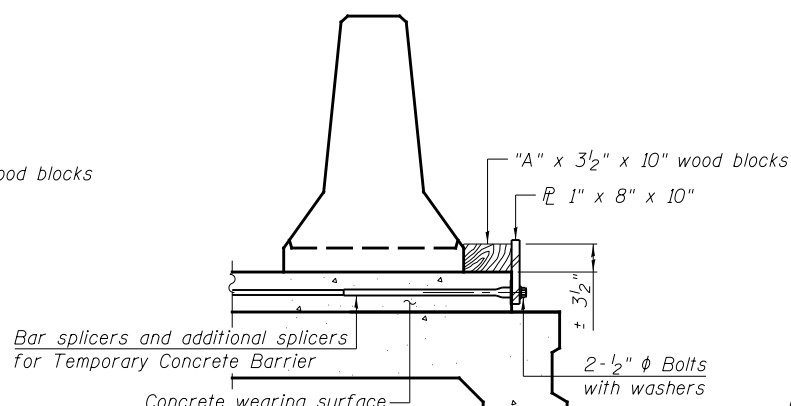
**EXISTING SLAB**

**EXISTING DECK BEAM**

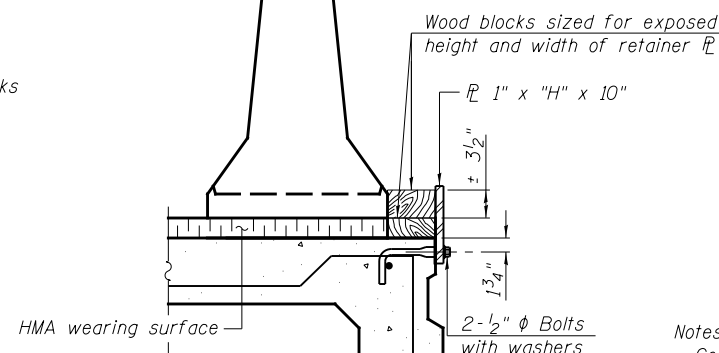
**SECTIONS THRU SLAB OR DECK BEAM**



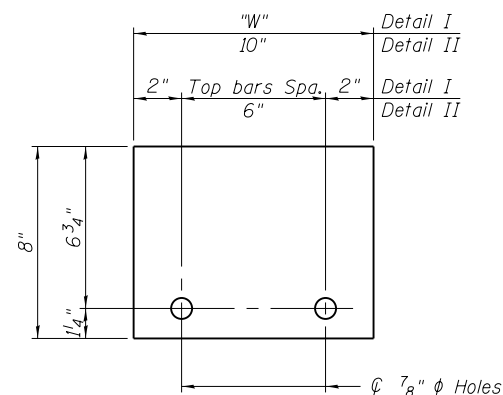
**DETAIL I**



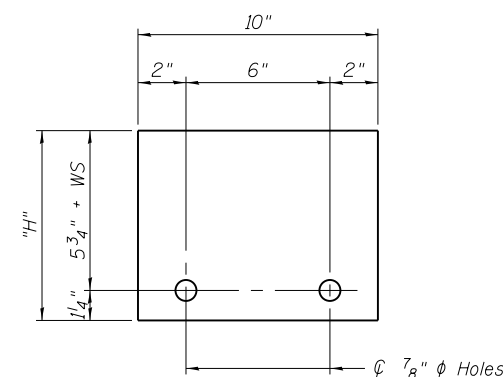
**DETAIL II**



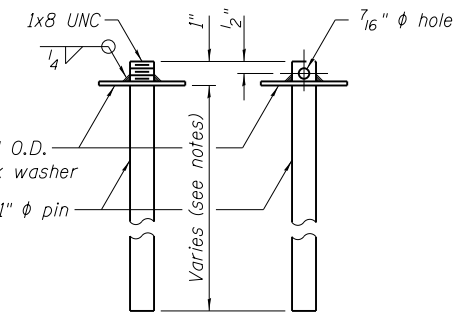
**DETAIL III**



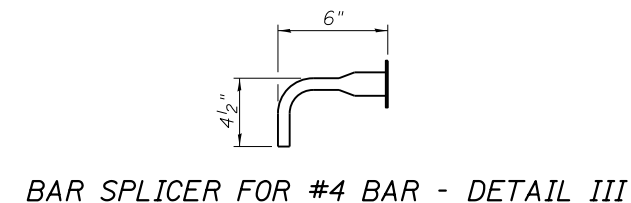
**STEEL RETAINER 1" x 8" x "W"**  
(Detail I and II)



**STEEL RETAINER 1" x "H" x 10"**  
(Detail III)



**RESTRAINING PIN**



**BAR SPLICER FOR #4 BAR - DETAIL III**

**Notes:**  
 Cost of retainer assembly is included with Temporary Concrete Barrier.  
 A retainer assembly shall be located at the approximate  $\phi$  of each temporary concrete barrier.  
 The retainer plate shall not be removed until the concrete on the adjacent stage is ready to be poured. For Detail III applications the retainer plate shall not be removed until just prior to placing the adjacent beam.  
 When the 'A' dimension is less than 1 1/2", the wood block shall be omitted and the barrier shall be placed in direct contact with the steel retainer plate. For deck beam applications the minimum required 'A' distance is 6" to accommodate the shear key clamping device.

**Detail I** - Installation for a new bridge deck or bridge slab.  
**Detail II** - Installation for a new deck beam with an initial concrete wearing surface. Additional bar splicers shall be provided at 6'-0" centers and paired with the bar splicers of the concrete wearing surface reinforcement to accommodate the installation of the retainer assemblies. The cost of the additional bar splicers is included with the concrete wearing surface.  
**Detail III** - Installation for a new deck beam with no initial wearing surface or with an initial hot-mix asphalt (HMA) wearing surface present. The deck beam directly beneath the temporary concrete barrier shall be fabricated with bar splicer inserts in the side of the beam, as detailed, to accommodate the installation of the retainer assemblies. A pair of bar splicers, 6" apart, shall be placed at 6'-0" centers along the length of the beam. The cost of the bar splicers is included with the deck beam.

R-27

8-11-2017



USER NAME = ibrahim1	DESIGNED - NJP	REVISED -
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PLOT DATE = 7/30/2018	DRAWN - NJP	REVISED -
	CHECKED - JIG	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

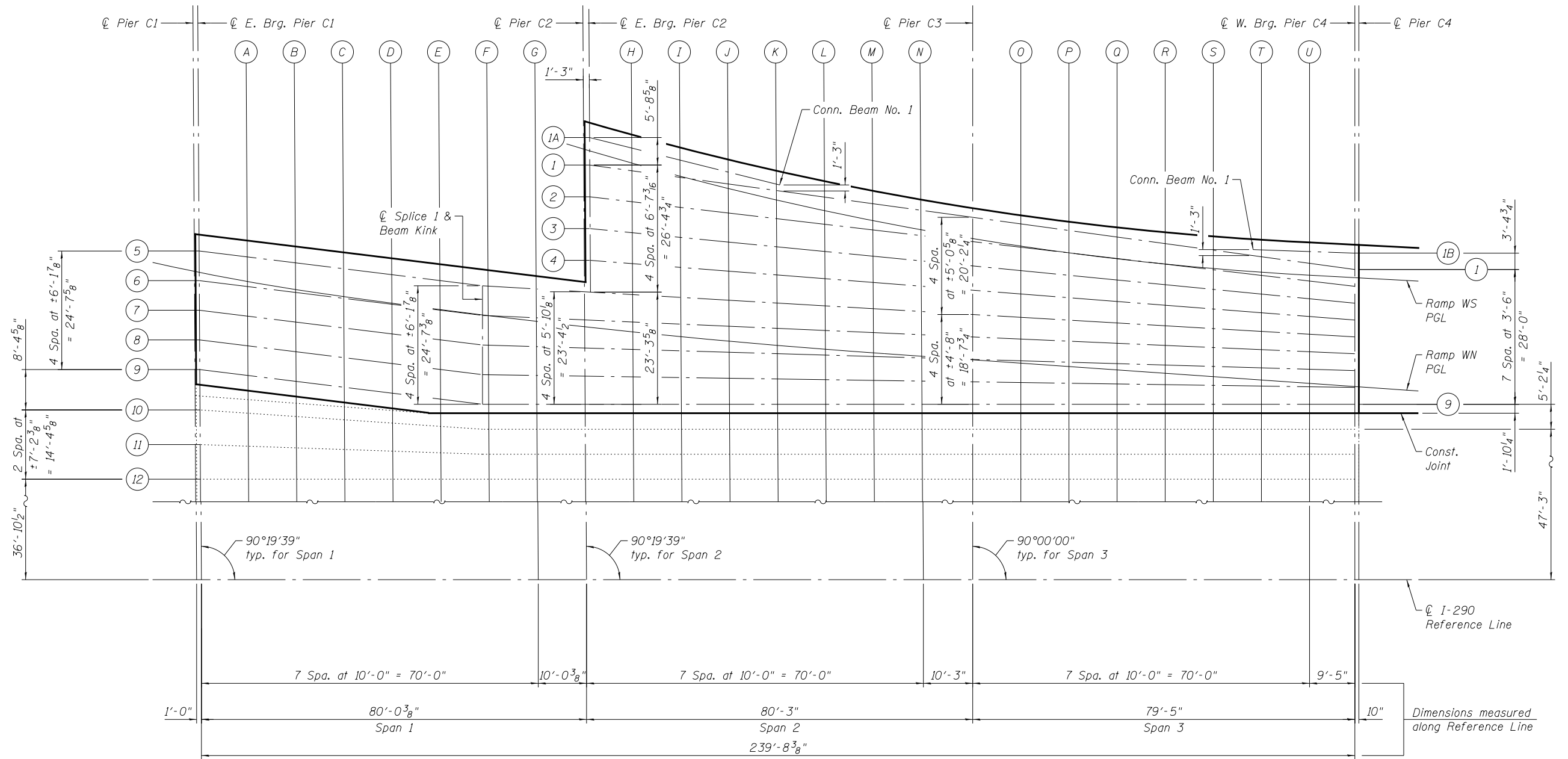
**TEMPORARY CONCRETE BARRIER FOR STAGE CONSTRUCTION  
STRUCTURE NO. 016-0461**

SHEET NO. S5-11 OF S5-72 SHEETS

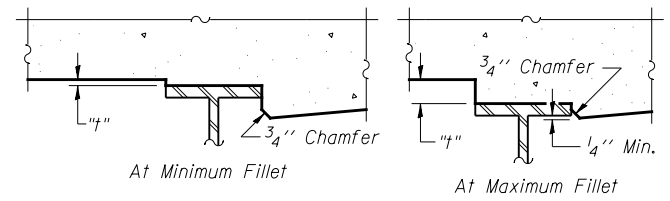
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	963
<b>CONTRACT NO. 60X93</b>				

ILLINOIS FED. AID PROJECT

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PLAN - UNIT I

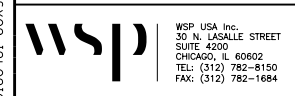


To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals in tables, see sheets S5-13 thru S5-17. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown on sheets S5-13 thru S5-17, minus slab thickness, equals the fillet heights "t" above top flange of beams.

FILLET HEIGHTS

- Notes:
- See sheet S5-13 for Dead Load Deflection Diagram - Beam 1A, Dead Load Deflection Diagram - Beam 1B & Dead Load Deflection Diagram - Beams 1 thru 4.
  - See sheet S5-15 for Dead Load Deflection Diagram - Beams 5 thru 9.

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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

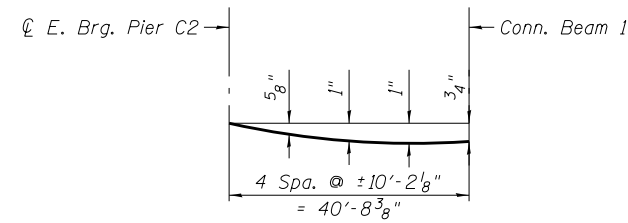
TOP OF SLAB ELEVATION PLAN - UNIT I  
STRUCTURE NO. 016-0461

SHEET NO. S5-12 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	964
CONTRACT NO. 60X93				

ILLINOIS FED. AID PROJECT



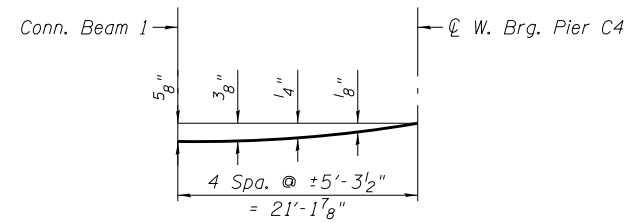


**DEAD LOAD DEFLECTION DIAGRAM - BEAM 1A**

(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 in the table below.

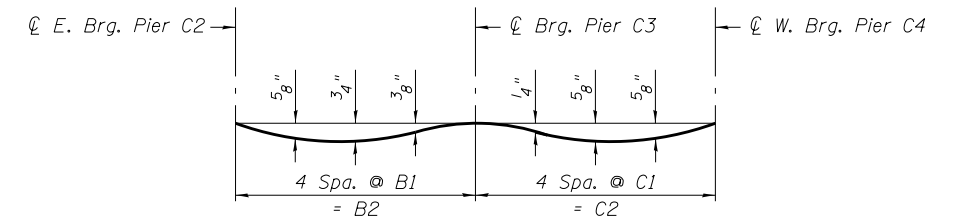


**DEAD LOAD DEFLECTION DIAGRAM - BEAM 1B**

(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 in the table below.



**DEAD LOAD DEFLECTION DIAGRAM - BEAMS 1 THRU 4**

(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 in the table below and sheet S5-14.

**BEAM 1A**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Q Pier C2	1210+40.94	2.60	607.34	607.34
Q E. Brg. Pier C2	1210+39.65	2.65	607.34	607.34
H	1210+30.58	2.99	607.40	607.45
I	1210+20.22	3.23	607.50	607.59
J	1210+09.84	3.30	607.65	607.73
K	1209+99.47	3.21	607.83	607.89
Conn. Beam No. 1	1209+98.76	3.20	607.84	607.90

**BEAM 1B**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Conn. Beam No. 1	1208+98.76	4.57	610.26	610.31
T	1208+97.03	4.63	610.29	610.33
U	1208+86.95	4.90	610.47	610.49
Q W. Brg. Pier C4	1208+77.53	5.09	610.64	610.66
Q Pier C4	1208+76.70	5.10	610.66	610.66

Beam	Span 2		Span 3	
	B1	B2	C1	C2
1	±20'-1"	80'-3 7/8"	±20'-1 1/2"	80'-1 7/8"
2	20'-0 1/4"	80'-1"	19'-11 7/8"	79'-11 1/2"
3	±19'-11 5/8"	79'-10 5/8"	19'-11 3/8"	79'-9 1/2"
4	19'-11 1/8"	79'-8 1/2"	±19'-11"	79'-7 7/8"

**BEAM 1**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Q Pier C2	1210+39.24	-3.01	607.64	607.48
Q E. Brg. Pier C2	1210+37.99	-2.82	607.64	607.49
H	1210+29.28	-1.55	607.65	607.59
I	1210+19.28	-0.24	607.70	607.73
J	1210+09.24	0.92	607.78	607.88
K	1209+99.16	1.92	607.90	608.06
L	1209+89.06	2.76	608.06	608.25
M	1209+78.94	3.45	608.25	608.46
N	1209+68.79	3.97	608.48	608.70
Q Brg. Pier C3	1209+57.85	4.37	608.77	609.00
O	1209+47.69	4.57	609.09	609.32
P	1209+37.52	4.61	609.39	609.62
Q	1209+27.36	4.50	609.66	609.88
R	1209+17.20	4.23	609.91	610.12
S	1209+07.06	3.80	610.12	610.31
T	1208+96.93	3.21	610.33	610.48
U	1208+86.82	2.47	610.54	610.63
Q W. Brg. Pier C4	1208+77.35	1.69	610.72	610.76
Q Pier C4	1208+76.51	1.63	610.74	610.78

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USER NAME =	ibrahim1	DESIGNED -	PJL	REVISED -	
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PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS I- UNIT I  
STRUCTURE NO. 016-0461**

SHEET NO. S5-13 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	965
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60X93	

**RAMP WS PROFILE GRADE LINE**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Ⓞ Pier C2	1210+40.15	0.00	607.48	607.48
Ⓞ E. Brg. Pier C2	1210+39.10	0.00	607.49	607.49
H	1210+29.72	0.00	607.57	607.59
I	1210+19.34	0.00	607.68	607.73
J	1210+09.00	0.00	607.83	607.89
K	1209+98.71	0.00	608.01	608.07
L	1209+88.45	0.00	608.21	608.26
M	1209+78.23	0.00	608.45	608.48
N	1209+68.04	0.00	608.71	608.73
Ⓞ Brg. Pier C3	1209+57.13	0.00	609.02	609.02
O	1209+47.01	0.00	609.34	609.35
P	1209+36.91	0.00	609.61	609.64
Q	1209+26.83	0.00	609.86	609.90
R	1209+16.78	0.00	610.08	610.13
S	1209+06.73	0.00	610.26	610.31
T	1208+96.70	0.00	610.43	610.48
U	1208+86.68	0.00	610.61	610.63
Ⓞ W. Brg. Pier C4	1208+77.25	0.00	610.77	610.77
Ⓞ Pier C4	1208+76.42	0.00	610.78	610.78

**BEAM 2**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Ⓞ Pier C2	1210+37.34	-9.35	607.99	607.99
Ⓞ E. Brg. Pier C2	1210+36.36	-9.18	607.98	607.98
H	1210+27.53	-7.73	607.99	608.03
I	1210+17.67	-6.26	608.03	608.11
J	1210+07.76	-4.94	608.11	608.20
K	1209+97.82	-3.77	608.22	608.33
L	1209+87.85	-2.76	608.37	608.46
M	1209+77.85	-1.90	608.55	608.62
N	1209+67.82	-1.20	608.78	608.81
Ⓞ Brg. Pier C3	1209+57.03	-0.61	609.06	609.06
O	1209+46.98	-0.23	609.35	609.37
P	1209+36.91	0.00	609.61	609.67
Q	1209+26.84	0.07	609.86	609.94
R	1209+16.77	-0.02	610.08	610.18
S	1209+06.71	-0.26	610.27	610.36
T	1208+96.66	-0.66	610.45	610.54
U	1208+86.62	-1.21	610.64	610.68
Ⓞ W. Brg. Pier C4	1208+77.16	-1.80	610.81	610.81
Ⓞ Pier C4	1208+76.32	-1.85	610.82	610.82

**BEAM 3**

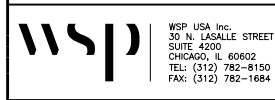
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Ⓞ Pier C2	1210+35.48	-15.70	608.33	608.33
Ⓞ E. Brg. Pier C2	1210+34.52	-15.52	608.33	608.33
H	1210+25.81	-13.92	608.33	608.37
I	1210+16.09	-12.28	608.37	608.44
J	1210+06.32	-10.80	608.44	608.53
K	1209+96.51	-9.46	608.54	608.65
L	1209+86.66	-8.28	608.68	608.77
M	1209+76.78	-7.25	608.86	608.92
N	1209+66.86	-6.37	609.07	609.11
Ⓞ Brg. Pier C3	1209+56.22	-5.59	609.34	609.34
O	1209+46.27	-5.03	609.61	609.63
P	1209+36.31	-4.62	609.84	609.89
Q	1209+26.33	-4.37	610.05	610.13
R	1209+16.35	-4.27	610.25	610.35
S	1209+06.37	-4.32	610.41	610.50
T	1208+96.39	-4.53	610.57	610.66
U	1208+86.42	-4.89	610.74	610.78
Ⓞ W. Brg. Pier C4	1208+76.97	-5.30	610.90	610.90
Ⓞ Pier C4	1208+76.13	-5.33	610.91	610.91

**BEAM 4**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Ⓞ Pier C2	1210+33.66	-22.05	608.43	608.43
Ⓞ E. Brg. Pier C2	1210+32.47	-21.80	608.43	608.43
H	1102+14.72	14.09	608.49	608.53
I	1102+04.60	14.32	608.61	608.69
J	1101+94.48	14.48	608.74	608.84
K	1209+95.21	-15.16	608.86	608.98
L	1209+85.49	-13.80	608.99	609.09
M	1209+75.72	-12.60	609.16	609.23
N	1209+65.92	-11.54	609.37	609.40
Ⓞ Brg. Pier C3	1209+55.43	-10.58	609.62	609.62
O	1209+45.58	-9.83	609.86	609.89
P	1209+35.71	-9.24	610.06	610.11
Q	1209+25.83	-8.80	610.25	610.33
R	1209+15.93	-8.51	610.41	610.52
S	1209+06.03	-8.38	610.55	610.65
T	1208+96.13	-8.40	610.69	610.77
U	1208+86.22	-8.57	610.84	610.87
Ⓞ W. Brg. Pier C4	1208+76.78	-8.79	610.98	610.98
Ⓞ Pier C4	1208+75.94	-8.81	610.99	610.99

- ① Elevations controlled by Ramp WN PGL
- ② Elevations controlled by Ramp WS PGL

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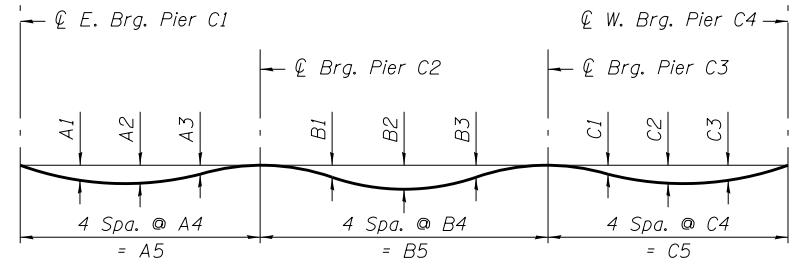
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		CHECKED -	MI	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	PJL	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS II - UNIT I  
STRUCTURE NO. 016-0461**

SHEET NO. S5-14 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	966
CONTRACT NO. 60X93			ILLINOIS FED. AID PROJECT	



**DEAD LOAD DEFLECTION DIAGRAM - BEAMS 5 THRU 9**

(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 in the tables on this sheet and sheets S5-16 & S5-17.

Beam	Span 1				
	A1	A2	A3	A4	A5
5	3/4"	7/8"	3/8"	±20'-1 5/8"	80'-6 3/4"
6	1"	1 1/4"	3/4"	20'-1 5/8"	80'-6 1/2"
7	1 1/8"	1 1/2"	7/8"	±20'-1 5/8"	80'-6 3/8"
8	1 1/4"	1 3/4"	1 1/8"	±20'-1 1/2"	80'-6 1/4"
9	1 3/8"	1 7/8"	1 1/4"	±20'-1 1/2"	80'-6 1/4"

Beam	Span 2				
	B1	B2	B3	B4	B5
5	1/4"	3/8"	1/4"	±20'-2 1/2"	80'-9 7/8"
6	0"	1/8"	0"	±20'-2 1/2"	80'-8 3/4"
7	-1/4"	-1/8"	-1/8"	±20'-2"	80'-7 3/4"
8	-3/8"	-1/4"	-1/8"	±20'-1 3/4"	80'-7 1/8"
9	-3/8"	-3/8"	-1/4"	±20'-1 5/8"	80'-6 5/8"

Beam	Span 3				
	C1	C2	C3	C4	C5
5	3/8"	3/4"	5/8"	±19'-10 5/8"	79'-6 5/8"
6	3/8"	3/4"	5/8"	±19'-10 1/2"	79'-5 7/8"
7	1/2"	7/8"	3/4"	±19'-10 3/8"	79'-5 3/8"
8	1/2"	1"	3/4"	±19'-10 1/4"	79'-5 1/8"
9	5/8"	1 1/8"	7/8"	19'-10 1/4"	79'-5"

BEAM 5				
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
℄ Pier C1	1103+06.08	4.26	605.63	605.63
℄ E. Brg. Pier C1	1103+05.07	4.34	605.68	605.68
A	1102+94.90	5.03	606.15	606.19
B	1102+84.71	5.48	606.57	606.65
C	1102+74.55	5.72	606.98	607.08
D	1102+64.43	5.88	607.35	607.46
E	1102+54.31	5.97	607.67	607.76
F	1102+44.20	6.08	607.94	608.00
G	1102+34.16	6.68	608.15	608.19
℄ Brg. Pier C2	1102+24.07	7.23	608.38	608.38
H	1102+14.02	7.70	608.56	608.55
I	1102+03.96	8.12	608.72	608.71
J	1101+93.89	8.47	608.88	608.88
K	1101+83.82	8.76	609.06	609.06
L	1101+73.75	8.99	609.25	609.24
M	1101+63.67	9.15	609.44	609.43
N	1101+53.63	9.27	609.66	609.65
℄ Brg. Pier C3	1209+54.64	-15.56	609.91	609.91
O	1209+44.89	-14.64	610.11	610.14
P	1209+35.12	-13.86	610.28	610.33
Q	1209+25.33	-13.24	610.44	610.52
R	1209+15.52	-12.76	610.58	610.68
S	1209+05.70	-12.44	610.69	610.79
T	1208+95.87	-12.27	610.81	610.89
U	1208+86.02	-12.24	610.93	610.97
℄ W. Brg. Pier C4	1208+76.59	-12.29	611.07	611.07
℄ Pier C4	1208+75.75	-12.29	611.07	611.07

BEAM 6				
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
℄ Pier C1	1103+04.81	-1.75	606.01	606.01
℄ E. Brg. Pier C1	1103+03.81	-1.67	606.06	606.06
A	1102+93.78	-1.02	606.51	606.55
B	1102+83.72	-0.59	606.93	607.01
C	1102+73.65	-0.36	607.30	607.40
D	1102+63.57	-0.21	607.62	607.73
E	1102+53.49	-0.13	607.89	607.98
F	1102+43.42	-0.01	608.11	608.17
G	1102+33.43	0.74	608.28	608.31
℄ Brg. Pier C2	1102+23.40	1.42	608.45	608.45
H	1102+13.40	2.04	608.62	608.62
I	1102+03.39	2.60	608.81	608.80
J	1101+93.37	3.09	609.02	609.01
K	1101+83.35	3.52	609.22	609.22
L	1101+73.32	3.89	609.42	609.41
M	1101+63.29	4.20	609.62	609.61
N	1101+53.27	4.46	609.83	609.82
℄ Brg. Pier C3	1101+42.63	4.74	610.06	610.06
O	1101+32.63	5.00	610.26	610.29
P	1101+22.62	5.26	610.43	610.48
Q	1101+12.61	5.52	610.59	610.67
R	1101+02.61	5.78	610.72	610.82
S	1100+92.60	6.03	610.82	610.92
T	1100+82.60	6.29	610.93	611.01
U	1208+85.82	-15.88	611.03	611.07
℄ W. Brg. Pier C4	1208+76.40	-15.78	611.15	611.15
℄ Pier C4	1208+75.56	-15.77	611.15	611.15

- ① Elevations controlled by Ramp WN PGL
- ② Elevations controlled by Ramp WS PGL

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WSP USA Inc. 30 N. LASALLE STREET SUITE 4000 CHICAGO, IL 60602 TEL: (312) 782-8150 FAX: (312) 782-1684	USER NAME = ibrahim1	DESIGNED - PJL	REVISED -
	PLOT SCALE = N.T.S.	CHECKED - MI	REVISED -
	PLOT DATE = 7/30/2018	DRAWN - PJL	REVISED -
		CHECKED - JIG	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS III - UNIT I  
STRUCTURE NO. 016-0461**

SHEET NO. S5-15 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	967
CONTRACT NO. 60X93			ILLINOIS FED. AID PROJECT	

**RAMP WN PROFILE GRADE LINE**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C1	1103+05.18	0.00	605.90	605.90
⊕ E. Brg. Pier C1	1103+04.16	0.00	605.95	605.95
A	1102+93.97	0.00	606.45	606.49
B	1102+83.82	0.00	606.89	606.97
C	1102+73.70	0.00	607.28	607.38
D	1102+63.60	0.00	607.61	607.72
E	1102+53.51	0.00	607.88	607.97
F	1102+43.42	0.00	608.11	608.17
G	1102+33.34	0.00	608.29	608.32
⊕ Brg. Pier C2	1102+23.24	0.00	608.47	608.47
H	1102+13.18	0.00	608.65	608.64
I	1102+03.12	0.00	608.86	608.85
J	1101+93.07	0.00	609.10	609.09
K	1101+83.03	0.00	609.33	609.33
L	1101+72.99	0.00	609.55	609.55
M	1101+62.96	0.00	609.78	609.77
N	1101+52.93	0.00	609.99	609.98
⊕ Brg. Pier C3	1101+42.30	0.00	610.21	610.21
O	1101+32.28	0.00	610.41	610.43
P	1101+22.25	0.00	610.56	610.62
Q	1101+12.23	0.00	610.71	610.79
R	1101+02.20	0.00	610.84	610.94
S	1100+92.18	0.00	610.95	611.04
T	1100+82.16	0.00	611.06	611.14
U	1100+72.13	0.00	611.17	611.21
⊕ W. Brg. Pier C4	1100+62.69	0.00	611.27	611.27
⊕ Pier C4	1100+61.86	0.00	611.28	611.28

**BEAM 7**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C1	1103+03.57	-7.78	606.39	606.39
⊕ E. Brg. Pier C1	1103+02.58	-7.71	606.43	606.43
A	1102+92.68	-7.08	606.88	606.92
B	1102+82.76	-6.67	607.28	607.36
C	1102+72.76	-6.46	607.65	607.74
D	1102+62.71	-6.31	607.96	608.08
E	1102+52.67	-6.23	608.23	608.32
F	1102+42.64	-6.10	608.44	608.50
G	1102+32.71	-5.21	608.56	608.59
⊕ Brg. Pier C2	1102+22.74	-4.39	608.69	608.69
H	1102+12.78	-3.62	608.82	608.81
I	1102+02.82	-2.92	608.99	608.98
J	1101+92.85	-2.29	609.19	609.19
K	1101+82.88	-1.71	609.39	609.39
L	1101+72.89	-1.20	609.60	609.59
M	1101+62.90	-0.75	609.80	609.79
N	1101+52.91	-0.34	610.00	610.00
⊕ Brg. Pier C3	1101+42.31	0.09	610.21	610.21
O	1101+32.31	0.49	610.39	610.42
P	1101+22.32	0.90	610.54	610.59
Q	1101+12.32	1.30	610.68	610.76
R	1101+02.32	1.71	610.80	610.91
S	1100+92.33	2.11	610.91	611.00
T	1100+82.33	2.52	611.01	611.09
U	1100+72.34	2.92	611.11	611.15
⊕ W. Brg. Pier C4	1100+62.92	3.31	611.20	611.20
⊕ Pier C4	1100+62.09	3.34	611.21	611.21

**BEAM 8**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C1	1103+02.36	-13.82	606.76	606.76
⊕ E. Brg. Pier C1	1103+01.39	-13.75	606.81	606.81
A	1102+91.61	-13.15	607.24	607.28
B	1102+81.82	-12.76	607.63	607.72
C	1102+71.87	-12.55	607.99	608.09
D	1102+61.87	-12.41	608.30	608.42
E	1102+51.86	-12.34	608.57	608.65
F	1102+41.87	-12.19	608.77	608.83
G	1102+32.00	-11.16	608.87	608.90
⊕ Brg. Pier C2	1102+22.07	-10.19	608.97	608.97
H	1102+12.17	-9.29	609.08	609.08
I	1102+02.26	-8.45	609.24	609.23
J	1101+92.34	-7.67	609.42	609.42
K	1101+82.41	-6.95	609.60	609.60
L	1101+72.47	-6.29	609.79	609.78
M	1101+62.52	-5.70	609.97	609.96
N	1101+52.54	-5.15	610.16	610.15
⊕ Brg. Pier C3	1101+41.98	-4.56	610.35	610.35
O	1101+32.00	-4.01	610.51	610.54
P	1101+22.01	-3.46	610.65	610.70
Q	1101+12.03	-2.91	610.78	610.86
R	1101+02.04	-2.36	610.89	610.99
S	1100+92.05	-1.81	610.99	611.08
T	1100+82.07	-1.26	611.09	611.17
U	1100+72.08	-0.70	611.18	611.22
⊕ W. Brg. Pier C4	1100+62.68	-0.19	611.27	611.27
⊕ Pier C4	1100+61.85	-0.14	611.28	611.28

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USER NAME =	ibrahim1	DESIGNED -	PJL	REVISED -	
		CHECKED -	MI	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	PJL	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS IV - UNIT I  
STRUCTURE NO. 016-0461**

SHEET NO. S5-16 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	968
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				

**BEAM 9**

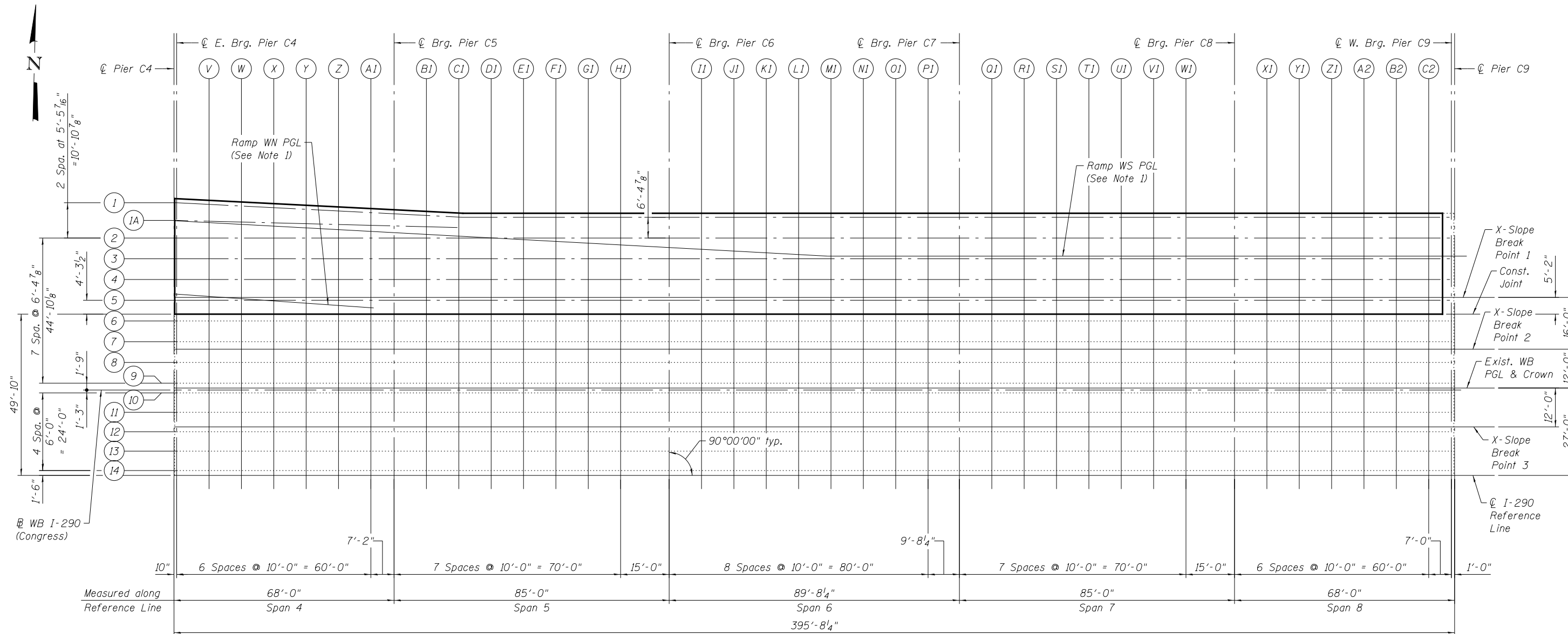
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C1	1103+01.18	-19.86	607.14	607.14
⊕ E. Brg. Pier C1	1103+00.22	-19.79	607.18	607.18
A	1102+90.57	-19.21	607.60	607.64
B	1102+80.91	-18.85	607.99	608.07
C	1102+70.99	-18.65	608.34	608.44
D	1102+61.02	-18.51	608.65	608.76
E	1102+51.06	-18.44	608.90	608.99
F	1102+41.11	-18.27	609.10	609.16
G	1102+31.29	-17.11	609.18	609.21
⊕ Brg. Pier C2	1102+21.42	-16.00	609.26	609.26
H	1102+11.57	-14.95	609.35	609.34
I	1102+01.70	-13.97	609.49	609.48
J	1101+91.83	-13.05	609.65	609.65
K	1101+81.94	-12.19	609.81	609.81
L	1101+72.05	-11.39	609.98	609.97
M	1101+62.15	-10.65	610.15	610.14
N	1101+52.18	-9.95	610.31	610.30
⊕ Brg. Pier C3	1101+41.66	-9.22	610.48	610.48
O	1101+31.68	-8.52	610.64	610.66
P	1101+21.71	-7.82	610.75	610.81
Q	1101+11.73	-7.12	610.87	610.95
R	1101+01.75	-6.43	610.97	611.08
S	1100+91.78	-5.73	611.07	611.16
T	1100+81.80	-5.03	611.16	611.25
U	1100+71.83	-4.33	611.26	611.30
⊕ W. Brg. Pier C4	1100+62.43	-3.68	611.35	611.35
⊕ Pier C4	1100+61.60	-3.62	611.35	611.35

**CONSTRUCTION JOINT - FOR INFORMATION ONLY**

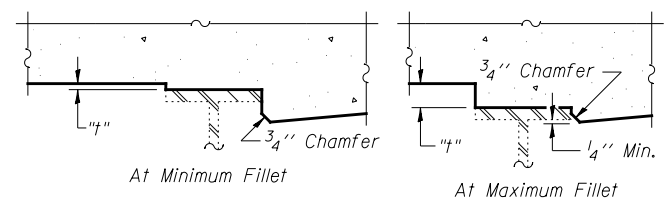
Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C1				
⊕ E. Brg. Pier C1				
A				
B				
C				
D				
E	5212+42.49	21.30	609.12	609.21
F	5212+32.37	21.83	609.19	609.25
G	5212+22.25	22.30	609.27	609.30
⊕ Brg. Pier C2	5212+12.08	22.70	609.35	609.35
H	5212+01.94	23.05	609.43	609.42
I	1102+01.52	-15.81	609.57	609.56
J	1101+91.66	-14.89	609.73	609.72
K	1101+81.78	-14.03	609.88	609.88
L	1101+71.90	-13.24	610.04	610.04
M	1101+62.00	-12.50	610.21	610.20
N	1101+52.04	-11.80	610.37	610.36
⊕ Brg. Pier C3	1101+41.53	-11.07	610.54	610.54
O	1101+31.55	-10.37	610.69	610.71
P	1101+21.58	-9.67	610.80	610.85
Q	1101+11.60	-8.97	610.91	610.99
R	1101+01.63	-8.28	611.01	611.11
S	1100+91.65	-7.58	611.11	611.20
T	1100+81.67	-6.88	611.20	611.28
U	1100+71.70	-6.18	611.30	611.34
⊕ W. Brg. Pier C4	1100+62.30	-5.53	611.38	611.38
⊕ Pier C4	1100+61.47	-5.47	611.39	611.39

- ① Elevations controlled by Ramp WN PGL
- ② Elevations controlled by WB I-290 PGL
- ③ Not part of the Construction Joint

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PLAN - UNIT II

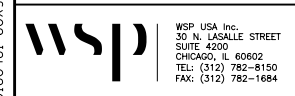


To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals in tables, see sheets S5-19 thru S5-21. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown on sheets S5-19 thru S5-21, minus slab thickness, equals the fillet heights "t" above top flange of beams.

FILLET HEIGHTS

- Notes:
1. Top of Slab Elevations - Unit II are based on Exist. WB Profile Grade Line. Ramp WS Profile Grade Line & Ramp WN Profile Grade Line are shown for reference only.
  2. See sheet S5-19 for Dead Load Deflection Diagram - Beam 1A and for Dead Load Deflection Diagram - Beams 1 thru 5.

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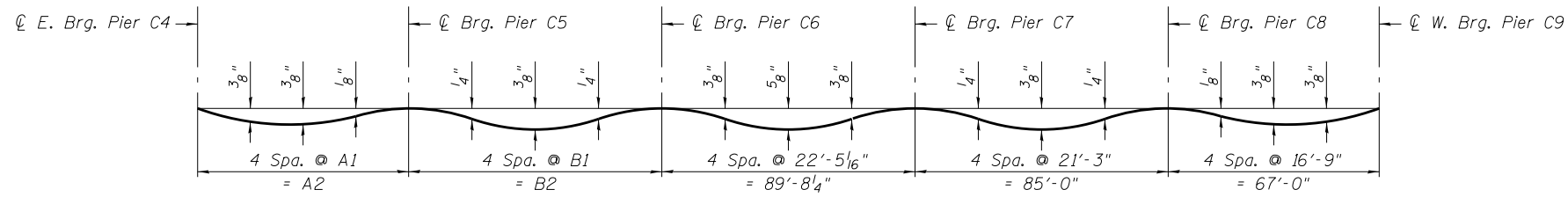
USER NAME =	ibrahim1	DESIGNED -	PJL	REVISED -	
		CHECKED -	MI	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	PJL	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

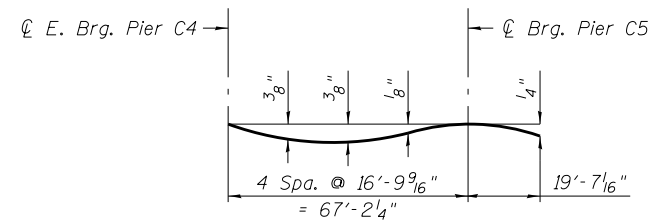
TOP OF SLAB ELEVATION PLAN - UNIT II  
STRUCTURE NO. 016-0461

SHEET NO. S5-18 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	970
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



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 in tables, on this sheet & sheets S5-20 and S5-21.



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 in the table below.

Beam	Span 4		Span 5	
	A1	A2	B1	B2
1	16'-9 <sup>3</sup> / <sub>4</sub> "	67'-3"	±21'-3 <sup>1</sup> / <sub>8</sub> "	85'-0 <sup>3</sup> / <sub>8</sub> "
2 thru 5	16'-9 <sup>1</sup> / <sub>2</sub> "	67'-2"	21'-3"	85'-0"

**BEAM 1**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C4	5210+50.43	57.50	610.60	610.60
⊕ E. Brg. Pier C4	5210+49.60	57.50	610.61	610.61
V	5210+39.60	56.99	610.78	610.80
W	5210+29.60	56.48	610.93	610.96
X	5210+19.60	55.97	611.07	611.10
Y	5210+09.60	55.46	611.18	611.21
Z	5209+99.60	54.96	611.29	611.30
A1	5209+89.60	54.45	611.37	611.38
⊕ Brg. Pier C5	5209+82.43	54.08	611.43	611.43
B1	5209+72.43	53.57	611.50	611.51
C1	5209+62.43	53.06	611.58	611.60
D1	5209+52.43	53.00	611.64	611.67
E1	5209+42.43	53.00	611.70	611.73
F1	5209+32.43	53.00	611.76	611.78
G1	5209+22.43	53.00	611.80	611.83
H1	5209+12.43	53.00	611.84	611.85
⊕ Brg. Pier C6	5208+97.43	53.00	611.88	611.88
I1	5208+87.43	53.00	611.92	611.93
J1	5208+77.43	53.00	611.95	611.97
K1	5208+67.43	53.00	611.97	612.01
L1	5208+57.43	53.00	612.00	612.05
M1	5208+47.43	53.00	612.02	612.07
N1	5208+37.43	53.00	612.03	612.07
O1	5208+27.43	53.00	612.02	612.05
P1	5208+17.43	53.00	612.00	612.02
⊕ Brg. Pier C7	5208+07.74	53.00	611.99	611.99
Q1	5207+97.74	53.00	611.98	611.99
R1	5207+87.74	53.00	611.96	611.98
S1	5207+77.74	53.00	611.94	611.96
T1	5207+67.74	53.00	611.92	611.95
U1	5207+57.74	53.00	611.89	611.92
V1	5207+47.74	53.00	611.87	611.89
W1	5207+37.74	53.00	611.82	611.83
⊕ Brg. Pier C8	5207+22.74	53.00	611.75	611.75
X1	5207+12.74	53.00	611.72	611.73
Y1	5207+02.74	53.00	611.69	611.70
Z1	5206+92.74	53.00	611.66	611.69
A2	5206+82.74	53.00	611.64	611.67
B2	5206+72.74	53.00	611.61	611.65
C2	5206+62.74	53.00	611.58	611.60
⊕ W. Brg. Pier C9	5206+55.74	53.00	611.55	611.55
⊕ Pier C9	5206+54.74	53.00	611.55	611.55

**BEAM 1A**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C4	5210+50.43	52.05	610.73	610.73
⊕ E. Brg. Pier C4	5210+49.60	52.05	610.74	610.74
V	5210+39.60	51.79	610.90	610.92
W	5210+29.60	51.54	611.04	611.07
X	5210+19.60	51.28	611.18	611.21
Y	5210+09.60	51.03	611.29	611.31
Z	5209+99.60	50.77	611.39	611.40
A1	5209+89.60	50.52	611.47	611.47
⊕ Brg. Pier C5	5209+82.43	50.34	611.52	611.52
B1	5209+72.43	50.08	611.58	611.59
C1	5209+62.43	49.83	611.65	611.67

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WSP USA Inc. 30 N. LASALLE STREET SUITE 4000 CHICAGO, IL 60602 TEL: (312) 782-8150 FAX: (312) 782-1684	USER NAME = ibrahim1	DESIGNED - PJL	REVISED -
		CHECKED - MI	REVISED -
	PLOT SCALE = N.T.S.	DRAWN - PJL	REVISED -
	PLOT DATE = 7/30/2018	CHECKED - JIG	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

TOP OF SLAB ELEVATIONS I- UNIT II  
STRUCTURE NO. 016-0461

SHEET NO. S5-19 OF S5-72 SHEETS

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	971
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

**BEAM 2**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
☉ Pier C4	5210+50.43	46.59	610.86	610.86
☉ E. Brg. Pier C4	5210+49.60	46.59	610.87	610.87
V	5210+39.60	46.59	611.03	611.04
W	5210+29.60	46.59	611.16	611.19
X	5210+19.60	46.59	611.29	611.32
Y	5210+09.60	46.59	611.39	611.42
Z	5209+99.60	46.59	611.49	611.50
A1	5209+89.60	46.59	611.56	611.56
☉ Brg. Pier C5	5209+82.43	46.59	611.60	611.60
B1	5209+72.43	46.59	611.67	611.68
C1	5209+62.43	46.59	611.73	611.75
D1	5209+52.43	46.59	611.79	611.82
E1	5209+42.43	46.59	611.85	611.88
F1	5209+32.43	46.59	611.91	611.93
G1	5209+22.43	46.59	611.95	611.98
H1	5209+12.43	46.59	611.99	612.00
☉ Brg. Pier C6	5208+97.43	46.59	612.03	612.03
I1	5208+87.43	46.59	612.07	612.08
J1	5208+77.43	46.59	612.10	612.12
K1	5208+67.43	46.59	612.12	612.16
L1	5208+57.43	46.59	612.15	612.20
M1	5208+47.43	46.59	612.18	612.22
N1	5208+37.43	46.59	612.19	612.22
O1	5208+27.43	46.59	612.17	612.20
P1	5208+17.43	46.59	612.16	612.17
☉ Brg. Pier C7	5208+07.74	46.59	612.14	612.14
Q1	5207+97.74	46.59	612.13	612.14
R1	5207+87.74	46.59	612.11	612.13
S1	5207+77.74	46.59	612.09	612.12
T1	5207+67.74	46.59	612.07	612.10
U1	5207+57.74	46.59	612.04	612.07
V1	5207+47.74	46.59	612.02	612.04
W1	5207+37.74	46.59	611.97	611.99
☉ Brg. Pier C8	5207+22.74	46.59	611.90	611.90
X1	5207+12.74	46.59	611.87	611.88
Y1	5207+02.74	46.59	611.84	611.85
Z1	5206+92.74	46.59	611.81	611.84
A2	5206+82.74	46.59	611.79	611.82
B2	5206+72.74	46.59	611.76	611.80
C2	5206+62.74	46.59	611.73	611.75
☉ W. Brg. Pier C9	5206+55.74	46.59	611.70	611.70
☉ Pier C9	5206+54.74	46.59	611.70	611.70

**BEAM 3**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
☉ Pier C4	5210+50.43	40.19	611.01	611.01
☉ E. Brg. Pier C4	5210+49.60	40.19	611.02	611.02
V	5210+39.60	40.19	611.18	611.19
W	5210+29.60	40.19	611.31	611.34
X	5210+19.60	40.19	611.44	611.47
Y	5210+09.60	40.19	611.54	611.57
Z	5209+99.60	40.19	611.64	611.65
A1	5209+89.60	40.19	611.71	611.71
☉ Brg. Pier C5	5209+82.43	40.19	611.75	611.75
B1	5209+72.43	40.19	611.82	611.83
C1	5209+62.43	40.19	611.88	611.90
D1	5209+52.43	40.19	611.95	611.97
E1	5209+42.43	40.19	612.01	612.04
F1	5209+32.43	40.19	612.06	612.08
G1	5209+22.43	40.19	612.10	612.13
H1	5209+12.43	40.19	612.14	612.15
☉ Brg. Pier C6	5208+97.43	40.19	612.18	612.18
I1	5208+87.43	40.19	612.22	612.23
J1	5208+77.43	40.19	612.25	612.28
K1	5208+67.43	40.19	612.27	612.31
L1	5208+57.43	40.19	612.30	612.35
M1	5208+47.43	40.19	612.33	612.37
N1	5208+37.43	40.19	612.34	612.37
O1	5208+27.43	40.19	612.32	612.35
P1	5208+17.43	40.19	612.31	612.32
☉ Brg. Pier C7	5208+07.74	40.19	612.29	612.29
Q1	5207+97.74	40.19	612.28	612.29
R1	5207+87.74	40.19	612.26	612.28
S1	5207+77.74	40.19	612.24	612.27
T1	5207+67.74	40.19	612.22	612.25
U1	5207+57.74	40.19	612.19	612.22
V1	5207+47.74	40.19	612.17	612.19
W1	5207+37.74	40.19	612.12	612.14
☉ Brg. Pier C8	5207+22.74	40.19	612.05	612.05
X1	5207+12.74	40.19	612.02	612.03
Y1	5207+02.74	40.19	611.99	612.00
Z1	5206+92.74	40.19	611.96	611.99
A2	5206+82.74	40.19	611.94	611.97
B2	5206+72.74	40.19	611.92	611.95
C2	5206+62.74	40.19	611.88	611.90
☉ W. Brg. Pier C9	5206+55.74	40.19	611.85	611.85
☉ Pier C9	5206+54.74	40.19	611.85	611.85

**BEAM 4**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
☉ Pier C4	5210+50.43	33.78	611.16	611.16
☉ E. Brg. Pier C4	5210+49.60	33.78	611.17	611.17
V	5210+39.60	33.78	611.33	611.35
W	5210+29.60	33.78	611.46	611.49
X	5210+19.60	33.78	611.59	611.62
Y	5210+09.60	33.78	611.69	611.72
Z	5209+99.60	33.78	611.79	611.80
A1	5209+89.60	33.78	611.86	611.86
☉ Brg. Pier C5	5209+82.43	33.78	611.90	611.90
B1	5209+72.43	33.78	611.97	611.98
C1	5209+62.43	33.78	612.03	612.05
D1	5209+52.43	33.78	612.10	612.12
E1	5209+42.43	33.78	612.16	612.19
F1	5209+32.43	33.78	612.21	612.23
G1	5209+22.43	33.78	612.25	612.28
H1	5209+12.43	33.78	612.29	612.30
☉ Brg. Pier C6	5208+97.43	33.78	612.33	612.33
I1	5208+87.43	33.78	612.37	612.39
J1	5208+77.43	33.78	612.40	612.43
K1	5208+67.43	33.78	612.42	612.46
L1	5208+57.43	33.78	612.45	612.50
M1	5208+47.43	33.78	612.48	612.52
N1	5208+37.43	33.78	612.49	612.52
O1	5208+27.43	33.78	612.47	612.50
P1	5208+17.43	33.78	612.46	612.47
☉ Brg. Pier C7	5208+07.74	33.78	612.44	612.44
Q1	5207+97.74	33.78	612.43	612.44
R1	5207+87.74	33.78	612.41	612.43
S1	5207+77.74	33.78	612.39	612.42
T1	5207+67.74	33.78	612.37	612.40
U1	5207+57.74	33.78	612.35	612.37
V1	5207+47.74	33.78	612.32	612.34
W1	5207+37.74	33.78	612.27	612.29
☉ Brg. Pier C8	5207+22.74	33.78	612.20	612.20
X1	5207+12.74	33.78	612.17	612.18
Y1	5207+02.74	33.78	612.14	612.16
Z1	5206+92.74	33.78	612.11	612.14
A2	5206+82.74	33.78	612.09	612.12
B2	5206+72.74	33.78	612.07	612.10
C2	5206+62.74	33.78	612.03	612.05
☉ W. Brg. Pier C9	5206+55.74	33.78	612.00	612.00
☉ Pier C9	5206+54.74	33.78	612.00	612.00

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USER NAME =	ibrahim1	DESIGNED -	PJL	REVISED -	
		CHECKED -	MI	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	PJL	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS II - UNIT II  
STRUCTURE NO. 016-0461**

SHEET NO. S5-20 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	972
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



**CROSS SLOPE BREAK POINT 1**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C4	5210+50.43	28.25	611.29	611.29
⊕ E. Brg. Pier C4	5210+49.60	28.25	611.30	611.30
V	5210+39.60	28.25	611.46	611.48
W	5210+29.60	28.25	611.59	611.62
X	5210+19.60	28.25	611.72	611.75
Y	5210+09.60	28.25	611.82	611.85
Z	5209+99.60	28.25	611.92	611.93
A1	5209+89.60	28.25	611.99	611.99
⊕ Brg. Pier C5	5209+82.43	28.25	612.03	612.03
B1	5209+72.43	28.25	612.10	612.11
C1	5209+62.43	28.25	612.16	612.18
D1	5209+52.43	28.25	612.23	612.25
E1	5209+42.43	28.25	612.29	612.32
F1	5209+32.43	28.25	612.34	612.36
G1	5209+22.43	28.25	612.38	612.41
H1	5209+12.43	28.25	612.42	612.43
⊕ Brg. Pier C6	5208+97.43	28.25	612.46	612.46
I1	5208+87.43	28.25	612.50	612.52
J1	5208+77.43	28.25	612.53	612.56
K1	5208+67.43	28.25	612.55	612.59
L1	5208+57.43	28.25	612.58	612.63
M1	5208+47.43	28.25	612.61	612.65
N1	5208+37.43	28.25	612.62	612.65
O1	5208+27.43	28.25	612.60	612.63
P1	5208+17.43	28.25	612.59	612.60
⊕ Brg. Pier C7	5208+07.74	28.25	612.57	612.57
Q1	5207+97.74	28.25	612.56	612.57
R1	5207+87.74	28.25	612.54	612.56
S1	5207+77.74	28.25	612.52	612.55
T1	5207+67.74	28.25	612.50	612.53
U1	5207+57.74	28.25	612.48	612.50
V1	5207+47.74	28.25	612.45	612.47
W1	5207+37.74	28.25	612.40	612.42
⊕ Brg. Pier C8	5207+22.74	28.25	612.33	612.33
X1	5207+12.74	28.25	612.30	612.31
Y1	5207+02.74	28.25	612.27	612.29
Z1	5206+92.74	28.25	612.24	612.27
A2	5206+82.74	28.25	612.22	612.25
B2	5206+72.74	28.25	612.20	612.23
C2	5206+62.74	28.25	612.16	612.18
⊕ W. Brg. Pier C9	5206+55.74	28.25	612.13	612.13
⊕ Pier C9	5206+54.74	28.25	612.13	612.13

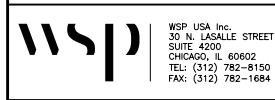
**BEAM 5**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C4	5210+50.43	27.38	611.31	611.31
⊕ E. Brg. Pier C4	5210+49.60	27.38	611.32	611.32
V	5210+39.60	27.38	611.47	611.49
W	5210+29.60	27.38	611.61	611.64
X	5210+19.60	27.38	611.74	611.77
Y	5210+09.60	27.38	611.84	611.86
Z	5209+99.60	27.38	611.94	611.95
A1	5209+89.60	27.38	612.00	612.01
⊕ Brg. Pier C5	5209+82.43	27.38	612.05	612.05
B1	5209+72.43	27.38	612.11	612.12
C1	5209+62.43	27.38	612.18	612.20
D1	5209+52.43	27.38	612.24	612.27
E1	5209+42.43	27.38	612.30	612.33
F1	5209+32.43	27.38	612.35	612.38
G1	5209+22.43	27.38	612.40	612.42
H1	5209+12.43	27.38	612.43	612.45
⊕ Brg. Pier C6	5208+97.43	27.38	612.47	612.47
I1	5208+87.43	27.38	612.52	612.53
J1	5208+77.43	27.38	612.54	612.57
K1	5208+67.43	27.38	612.57	612.61
L1	5208+57.43	27.38	612.60	612.64
M1	5208+47.43	27.38	612.62	612.67
N1	5208+37.43	27.38	612.63	612.67
O1	5208+27.43	27.38	612.62	612.64
P1	5208+17.43	27.38	612.60	612.61
⊕ Brg. Pier C7	5208+07.74	27.38	612.59	612.59
Q1	5207+97.74	27.38	612.58	612.59
R1	5207+87.74	27.38	612.56	612.58
S1	5207+77.74	27.38	612.54	612.56
T1	5207+67.74	27.38	612.51	612.54
U1	5207+57.74	27.38	612.49	612.52
V1	5207+47.74	27.38	612.46	612.49
W1	5207+37.74	27.38	612.42	612.43
⊕ Brg. Pier C8	5207+22.74	27.38	612.35	612.35
X1	5207+12.74	27.38	612.32	612.33
Y1	5207+02.74	27.38	612.29	612.30
Z1	5206+92.74	27.38	612.26	612.29
A2	5206+82.74	27.38	612.24	612.27
B2	5206+72.74	27.38	612.21	612.25
C2	5206+62.74	27.38	612.18	612.20
⊕ W. Brg. Pier C9	5206+55.74	27.38	612.15	612.15
⊕ Pier C9	5206+54.74	27.38	612.15	612.15

**CONSTRUCTION JOINT - FOR INFORMATION ONLY**

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
⊕ Pier C4	5210+50.43	23.08	611.39	611.39
⊕ E. Brg. Pier C4	5210+49.60	23.08	611.41	611.41
V	5210+39.60	23.08	611.56	611.58
W	5210+29.60	23.08	611.69	611.72
X	5210+19.60	23.08	611.81	611.85
Y	5210+09.60	23.08	611.92	611.94
Z	5209+99.60	23.08	612.01	612.02
A1	5209+89.60	23.08	612.08	612.08
⊕ Brg. Pier C5	5209+82.43	23.08	612.12	612.12
B1	5209+72.43	23.08	612.19	612.20
C1	5209+62.43	23.08	612.25	612.27
D1	5209+52.43	23.08	612.32	612.34
E1	5209+42.43	23.08	612.38	612.41
F1	5209+32.43	23.08	612.43	612.46
G1	5209+22.43	23.08	612.48	612.50
H1	5209+12.43	23.08	612.51	612.52
⊕ Brg. Pier C6	5208+97.43	23.08	612.55	612.55
I1	5208+87.43	23.08	612.59	612.61
J1	5208+77.43	23.08	612.62	612.65
K1	5208+67.43	23.08	612.64	612.68
L1	5208+57.43	23.08	612.67	612.72
M1	5208+47.43	23.08	612.70	612.74
N1	5208+37.43	23.08	612.71	612.74
O1	5208+27.43	23.08	612.69	612.72
P1	5208+17.43	23.08	612.68	612.69
⊕ Brg. Pier C7	5208+07.74	23.08	612.66	612.66
Q1	5207+97.74	23.08	612.65	612.66
R1	5207+87.74	23.08	612.63	612.65
S1	5207+77.74	23.08	612.61	612.64
T1	5207+67.74	23.08	612.59	612.62
U1	5207+57.74	23.08	612.57	612.59
V1	5207+47.74	23.08	612.54	612.56
W1	5207+37.74	23.08	612.50	612.51
⊕ Brg. Pier C8	5207+22.74	23.08	612.44	612.44
X1	5207+12.74	23.08	612.41	612.42
Y1	5207+02.74	23.08	612.38	612.39
Z1	5206+92.74	23.08	612.35	612.38
A2	5206+82.74	23.08	612.33	612.36
B2	5206+72.74	23.08	612.30	612.33
C2	5206+62.74	23.08	612.27	612.28
⊕ W. Brg. Pier C9	5206+55.74	23.08	612.24	612.24
⊕ Pier C9	5206+54.74	23.08	612.24	612.24

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WSP USA Inc.  
30 N. LASALLE STREET  
SUITE 4000  
CHICAGO, IL 60602  
TEL: (312) 782-8150  
FAX: (312) 782-1884

USER NAME =	ibrahim1	DESIGNED -	PJL	REVISED -	
		CHECKED -	MI	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	PJL	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

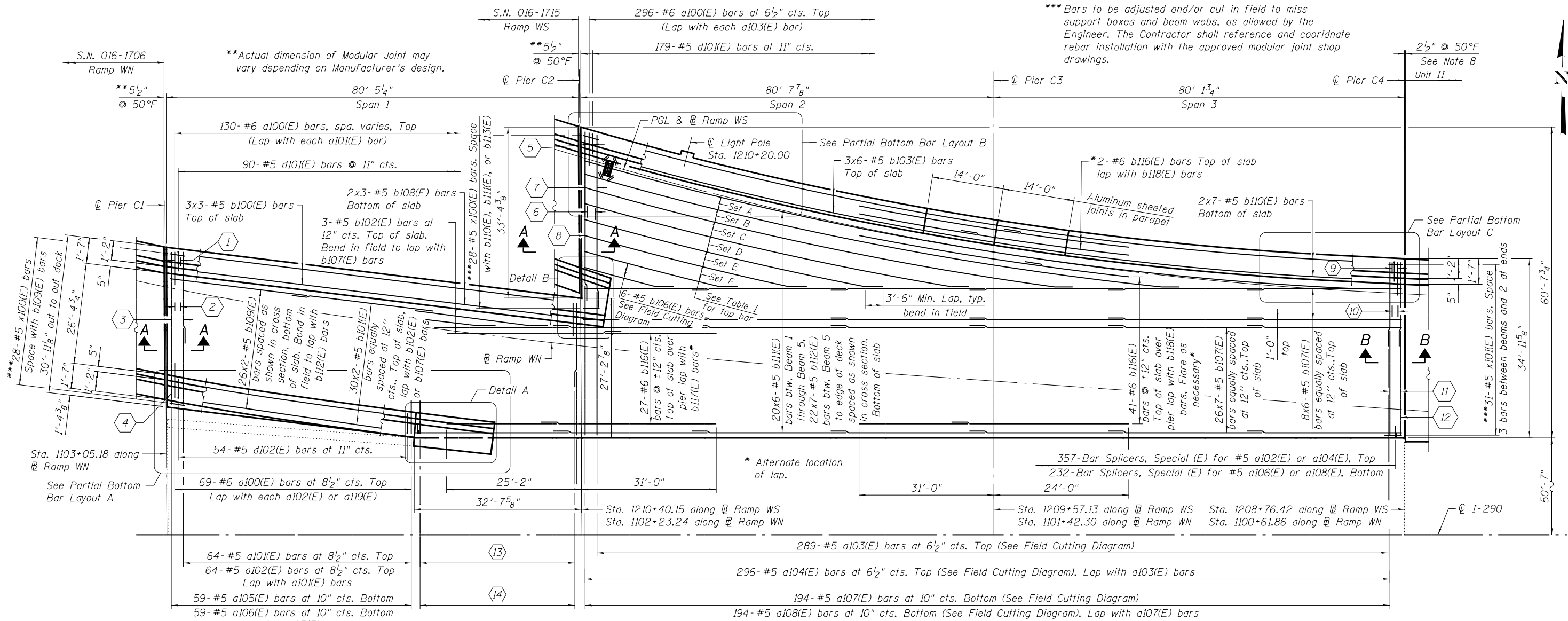
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS III - UNIT II  
STRUCTURE NO. 016-0461**

SHEET NO. S5-21 OF S5-72 SHEETS

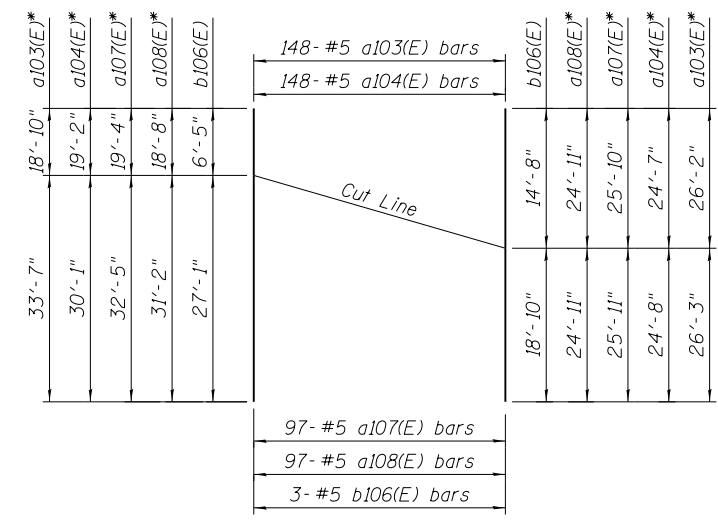
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	973
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				

\*\*\* Bars to be adjusted and/or cut in field to miss support boxes and beam webs, as allowed by the Engineer. The Contractor shall reference and coordinate rebar installation with the approved modular joint shop drawings.



**DECK PLAN - UNIT I**

- ① 4- #5 a111(E) headed bars in north overhang  
4- #5 a113(E) headed bars in south overhang
- ② 4- #5 a112(E) headed bars btw. beam 5 thru beam 9
- ③ 7- #5 a119(E) bars at 6" cts. Top placed under b101(E)
- ④ 1- #5 a119(E) bar, bottom
- ⑤ 4- #5 a114(E) headed bars in north overhang
- ⑥ 4- #5 a115(E) headed bars btw. beam 1A & beam 1  
4- #5 a116(E) headed bars btw. beam 1 thru beam 5
- ⑦ 7- #5 a103(E) bars at 6 1/2" cts. Top placed under b103(E) thru b107(E)
- ⑧ 1- #5 a120(E) bar, bottom
- ⑨ 3- #5 a117(E) headed bars in north overhang  
3- #5 a117(E) headed bars btw. Beam 9 and Const. Jt.
- ⑩ 3- #5 a118(E) headed bars btw. beam 1B thru beam 9
- ⑪ 4- #5 a121(E) bars at 6" cts. Top placed under b103(E) and b107(E)
- ⑫ 1- #5 a121(E) bar, bottom



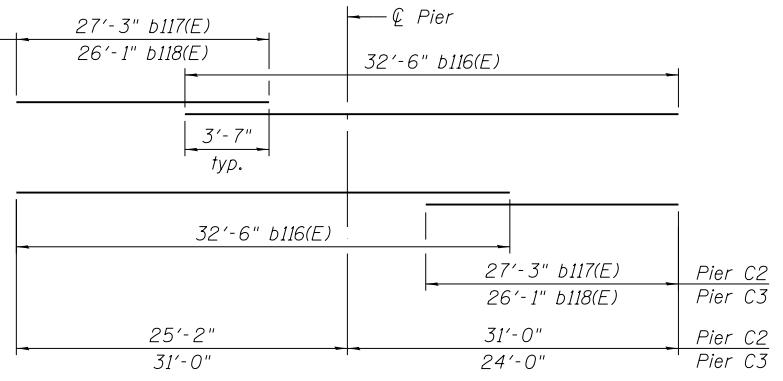
**FIELD CUTTING DIAGRAM**

Cut Bars as shown & use remainder in Adjacent Section

\* Place reinforcement longest to shortest from West to East

**ALTERNATE BAR LAP DETAIL**

For bars b116(E), b117(E) & b118(E)



**TABLE 1**

Set	Top bars
A	2x6- #5 b104(E)
B	2x6- #5 b105(E)
C	3x5- #5 b105(E)
D	4x4- #5 b105(E)
E	4x3- #5 b105(E)
F	3x2- #5 b105(E)

Place bars at 12" cts.  
Cut to fit or bend to fit in field

**MINIMUM BAR LAP**

#5 bar = 3'-6"  
#6 bar = 3'-7"

- ⑬ 61- #5 a101(E) bars at 6 1/2" cts. Top  
38- #5 a105(E) bars at 10" cts. Bottom
- ⑭ 61- #5 a102(E) bars at 6 1/2" cts. Top, lap with a101(E)  
38- #5 a106(E) bars at 10" cts. Bottom, lap with a105(E)

**Notes:**

1. See sheet S5-23 for partial bottom bar layout.
2. See sheet S5-24 for Deck Cross Section.
3. See sheet S5-25 for parapet reinforcement.
4. See sheet S5-26 for Detail A and Detail B.
5. See sheet S5-27 for superstructure details, Section A-A, Section B-B and Unit I Bill of Material.
6. Bars indicated thus 20 x 3- #5 etc. indicates 20 lines of bars with 3 lengths per line.
7. Reinforcement bars shall not pass thru aluminum sheets and cork joint filler.
8. Dimensions are based on a Rolled Rail Strip Seal Joint. If the Contractor elects to use the Welded Rail strip seal Joint, deck dimensions may require adjustments to satisfy the details on sheet S5-36.
9. Bar Splicers, Special (E) shall be spliced to the existing bar splicer assembly. The cost is included in the cost of Bar Splicers, Special. See Special Provisions and sheet S5-27 for details of the Bar Splicers, Special.

0160461-60X93-5022-DEK.dgn



USER NAME = ibrahiml  
PLOT SCALE = N.T.S.  
PLOT DATE = 7/30/2018

DESIGNED - NJP  
CHECKED - PAL  
DRAWN - NJP  
CHECKED - JIG

REVISED -  
REVISED -  
REVISED -  
REVISED -

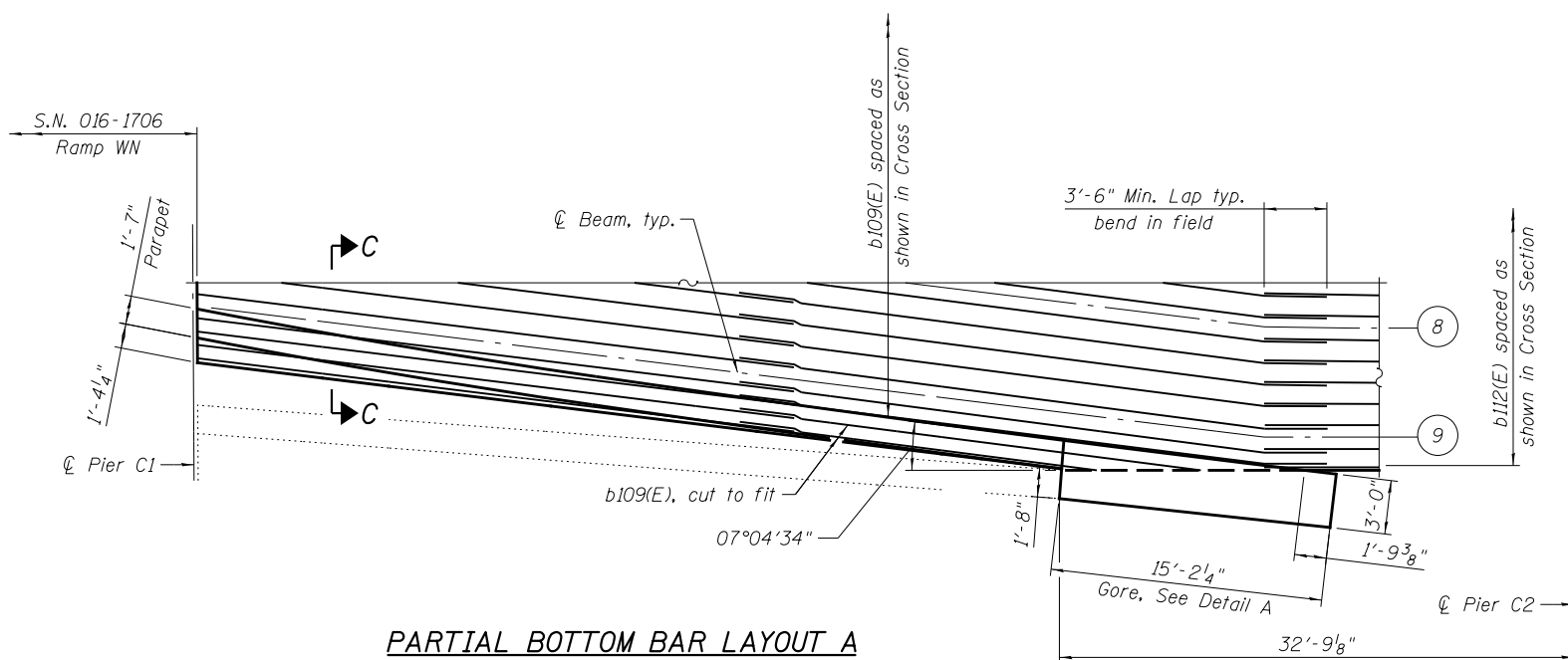
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**DECK PLAN I - UNIT I  
STRUCTURE NO. 016-0461**

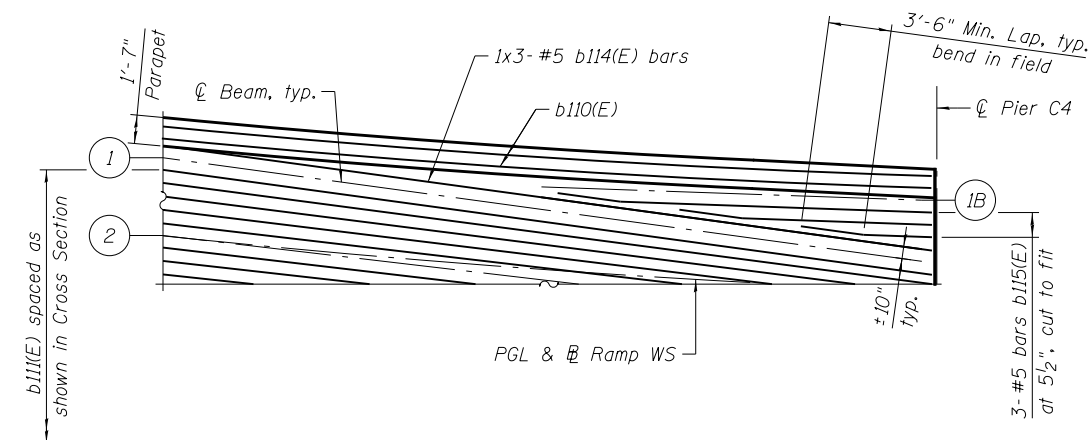
SHEET NO. S5-22 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	974
<b>CONTRACT NO. 60X93</b>				

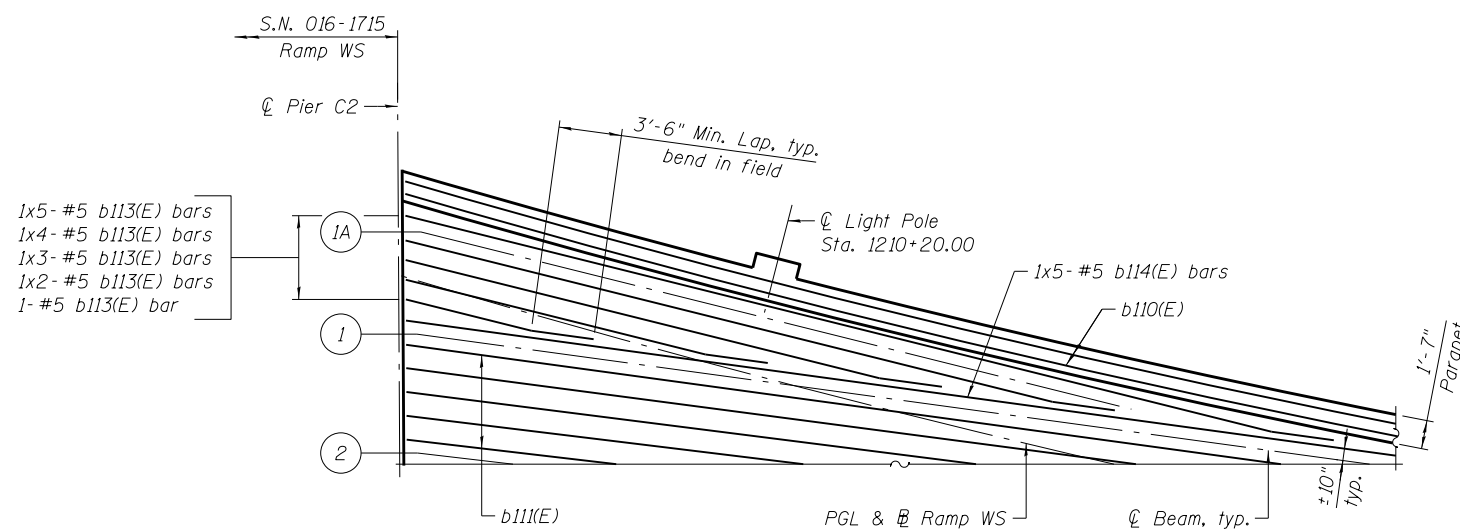
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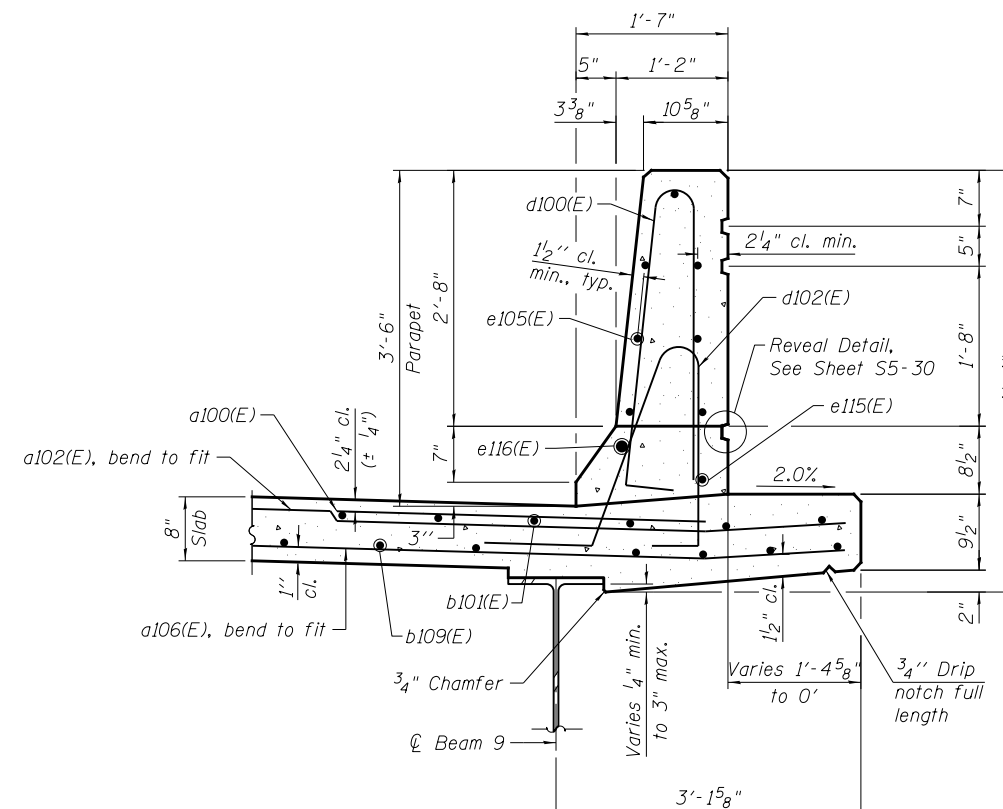
**PARTIAL BOTTOM BAR LAYOUT A**



**PARTIAL BOTTOM BAR LAYOUT C**



**PARTIAL BOTTOM BAR LAYOUT B**



**SECTION C-C**

- Notes:
1. Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
  2. See sheet S5-24 for Deck Cross-Section.
  3. See sheet S5-26 for Detail A

0160461-60X93-5023-DEK.dgn



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USER NAME =	ibrahim1	DESIGNED -	NJP	REVISED -	
		CHECKED -	PAL	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	NJP	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

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DEPARTMENT OF TRANSPORTATION**

**DECK PLAN II - UNIT I  
STRUCTURE NO. 016-0461**

SHEET NO. S5-23 OF S5-72 SHEETS

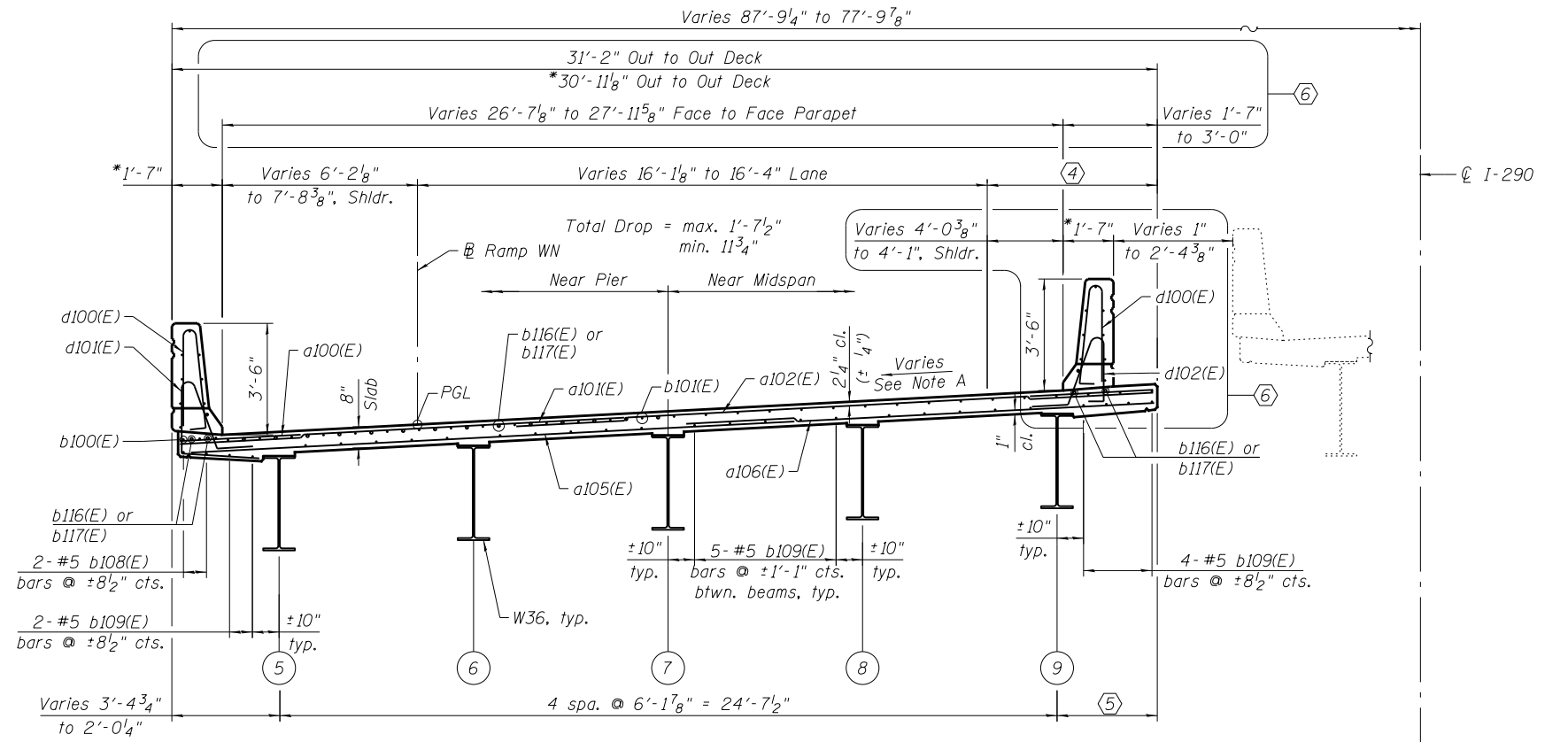
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90/94/290	2014-013R&B-R	COOK	1972	975
<b>CONTRACT NO. 60X93</b>				

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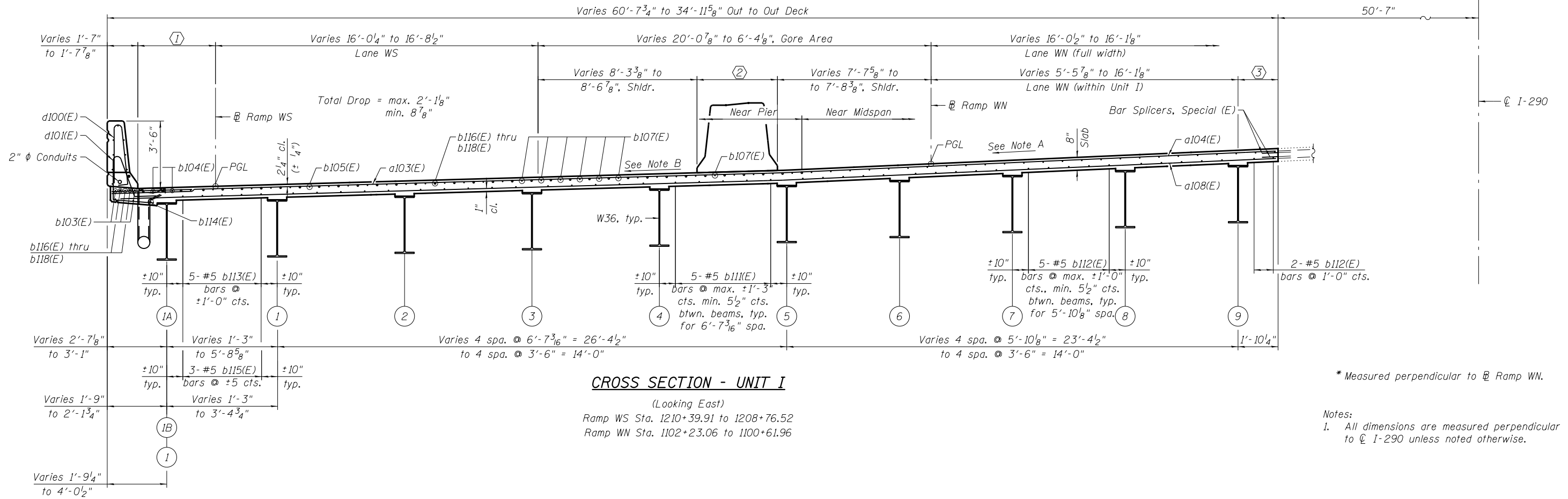
- ① Varies 4'-2<sup>3</sup>/<sub>8</sub>" to 5'-3<sup>1</sup>/<sub>8</sub>", Shldr.
- ② Barrier varies 2'-11<sup>1</sup>/<sub>2</sub>" to 4'-2" between Ramp WN Sta. 1102+18.33 to 1102+23.06 & Ramp WS Sta. 1210+34.34 to 1210+39.76. No barrier for remainder of Unit I.
- ③ Varies 0' to 1'-10<sup>1</sup>/<sub>8</sub>", Shldr. between Ramp WN Sta. 1102+04.98 to 1102+23.06.
- ④ Varies 7'-1" to 5'-7<sup>1</sup>/<sub>2</sub>" Parapet Zone: Sta. 1103+04.94 to 1102+56.00  
 Varies 7'-3<sup>3</sup>/<sub>4</sub>" to 7'-0<sup>5</sup>/<sub>8</sub>" Gore Zone: Sta. 1102+56.13 to 1102+40.56  
 Varies 4'-0<sup>3</sup>/<sub>8</sub>" to 1'-10<sup>1</sup>/<sub>8</sub>" No Parapet Zone: Sta. 1102+42.34 to 1102+23.06
- ⑤ 3'-3<sup>7</sup>/<sub>8</sub>" Parapet Zone: Sta. 1103+04.94 to 1102+56.00  
 Varies 4'-10" to 5'-0<sup>1</sup>/<sub>2</sub>" Gore Zone: Sta. 1102+56.13 to 1102+40.56  
 1'-10<sup>1</sup>/<sub>4</sub>" No Parapet Zone: Sta. 1102+42.34 to 1102+23.06
- ⑥ Parapet Zone: Sta. 1103+04.94 to 1102+56.00

Note A: (Direction of slope referenced from left edge of pavement)  
 Normal (-2.00%) Sta. 1100+61.96 to Sta. 1101+08.34 (Ramp WN)  
 Transition (-2.00% to -5.20%) Sta. 1101+08.34 to Sta. 1102+40.34 (Ramp WN)

Note B: (Direction of slope referenced from left edge of pavement)  
 Normal (-2.35%) Sta. 1208+76.52 to Sta. 1208+79.90 (Ramp WS)  
 Transition (-2.35% to -5.20%) Sta. 1208+79.90 to Sta. 1209+53.90 (Ramp WS)



**CROSS SECTION - UNIT I**  
 (Looking East)  
 Ramp WN Sta. 1103+04.94 to 1102+23.06



**CROSS SECTION - UNIT I**  
 (Looking East)  
 Ramp WS Sta. 1210+39.91 to 1208+76.52  
 Ramp WN Sta. 1102+23.06 to 1100+61.96

\* Measured perpendicular to Ramp WN.

Notes:  
 1. All dimensions are measured perpendicular to I-290 unless noted otherwise.

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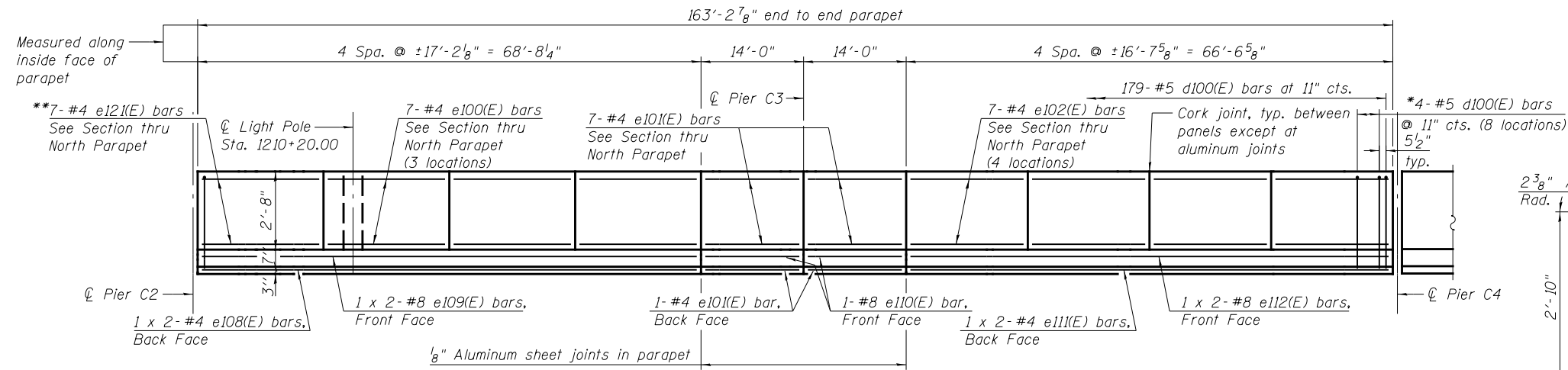
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PLLOT SCALE = N.T.S.	CHECKED - PAL	REVISED -
PLLOT DATE = 7/30/2018	DRAWN - NJP	REVISED -
	CHECKED - JIG	REVISED -

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

**DECK DETAIL I - UNIT I**  
**STRUCTURE NO. 016-0461**

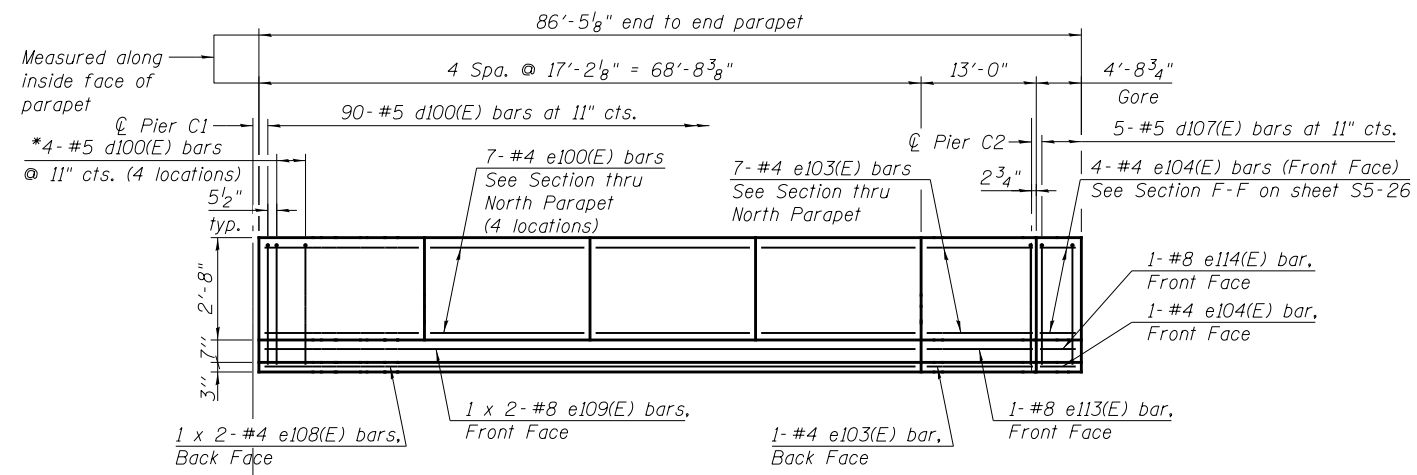
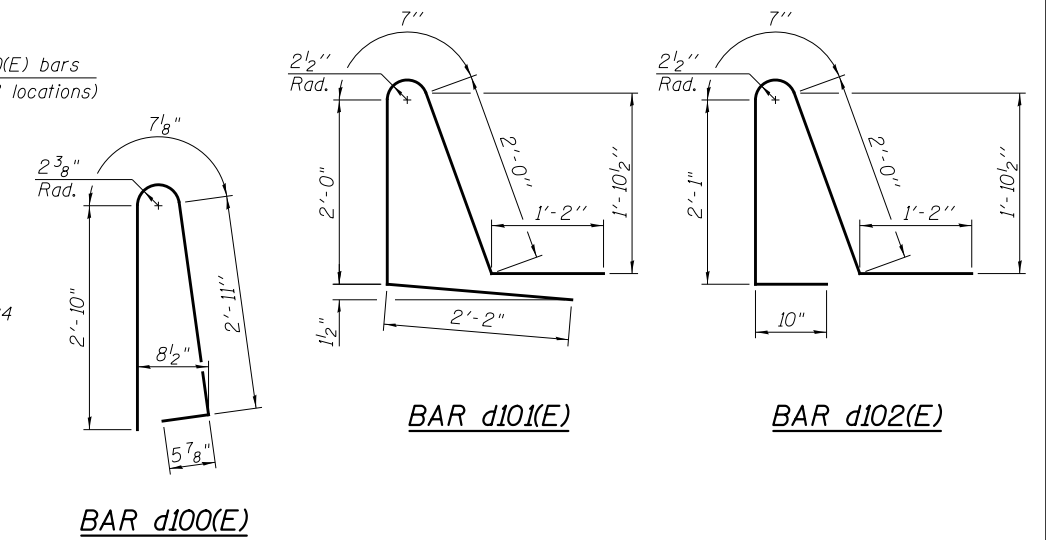
F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	976
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

SHEET NO. S5-24 OF S5-72 SHEETS



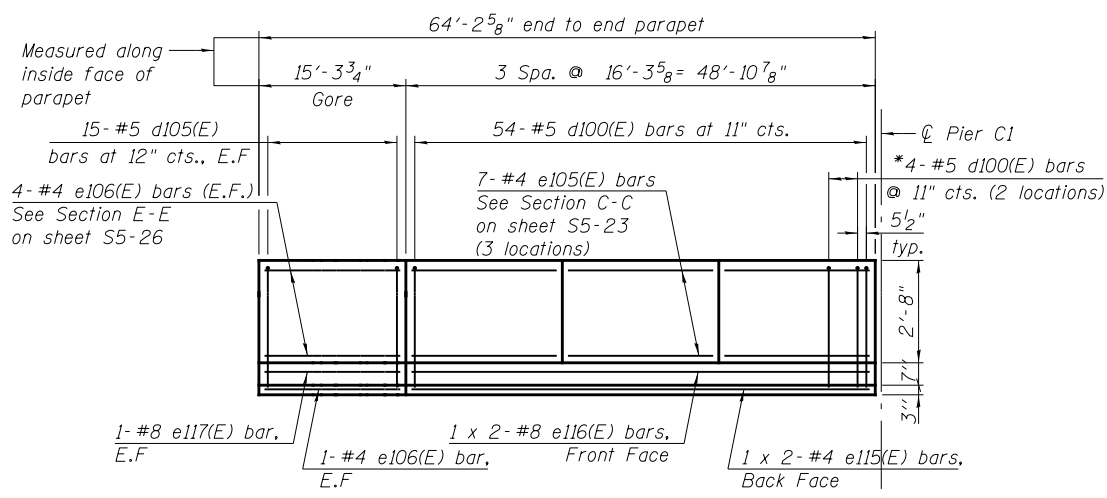
**INSIDE ELEVATION OF NORTH PARAPET**  
(Looking North)  
Ramp WS Station 1210+41.14 to 1208+76.81

**MINIMUM BAR LAP**  
(Parapet)  
#4 bar = 2'-5"  
#8 bar = 5'-11"

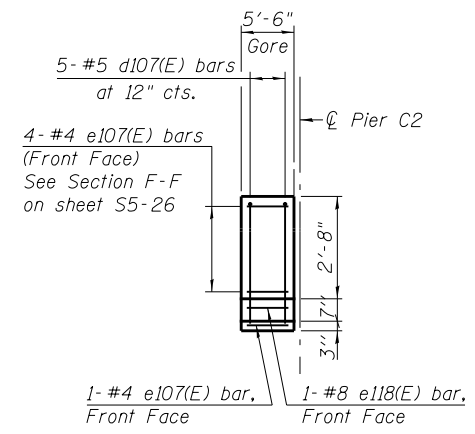


**INSIDE ELEVATION OF NORTH PARAPET**  
(Looking North)  
Ramp WN Station 1102+19.14 to 1103+06.23

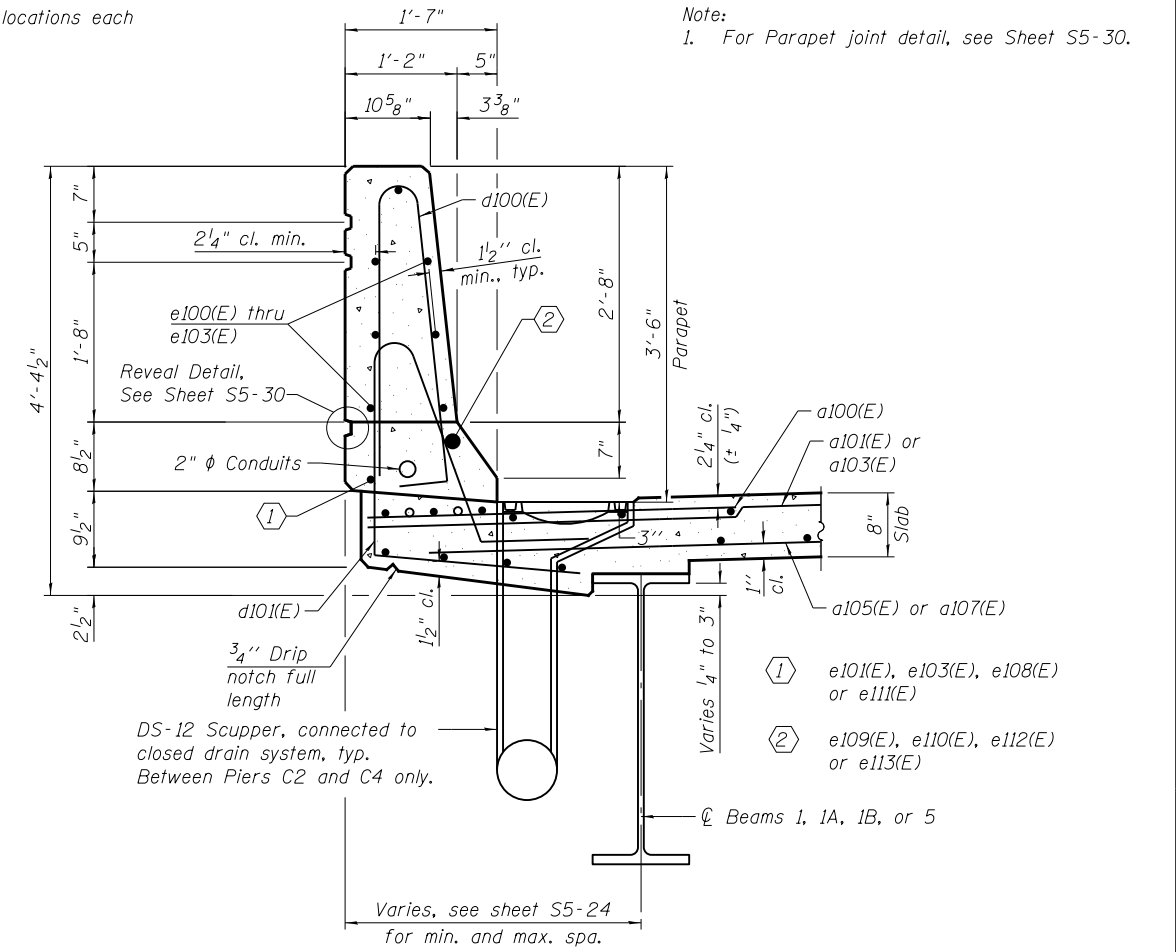
\* Typical at parapet ends and each side of aluminium sheeted joints (14 locations each parapet)  
\*\* Cut to fit in field



**INSIDE ELEVATION OF SOUTH PARAPET**  
(Looking South)  
Ramp WN Station 1102+38.18 to 1103+00.93



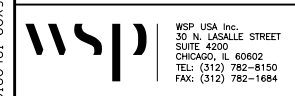
**INSIDE ELEVATION OF SOUTH GORE**  
(Looking South)  
Ramp WS Station 1210+27.60 to 1210+32.89



**SECTION THRU NORTH PARAPET**  
Ramp WS Station 1210+41.14 to 1208+76.81 or  
Ramp WN Station 1102+23.89 to 1103+06.23

Note:  
1. For Parapet joint detail, see Sheet S5-30.

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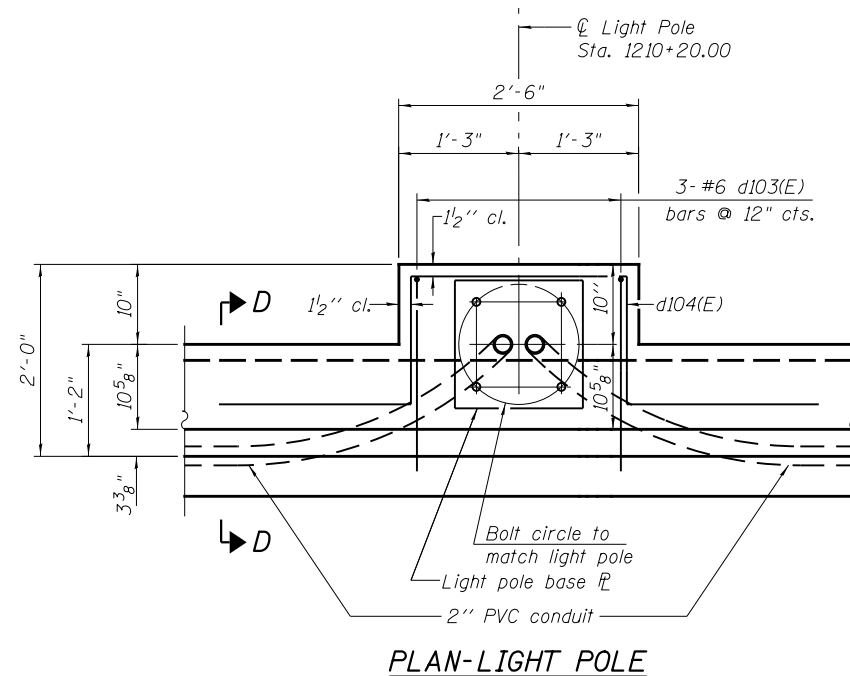
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PLOT SCALE =	N.T.S.	CHECKED -	PAL	REVISED -	
PLOT DATE =	7/30/2018	DRAWN -	NJP	REVISED -	
		CHECKED -	JIG	REVISED -	

**STATE OF ILLINOIS**  
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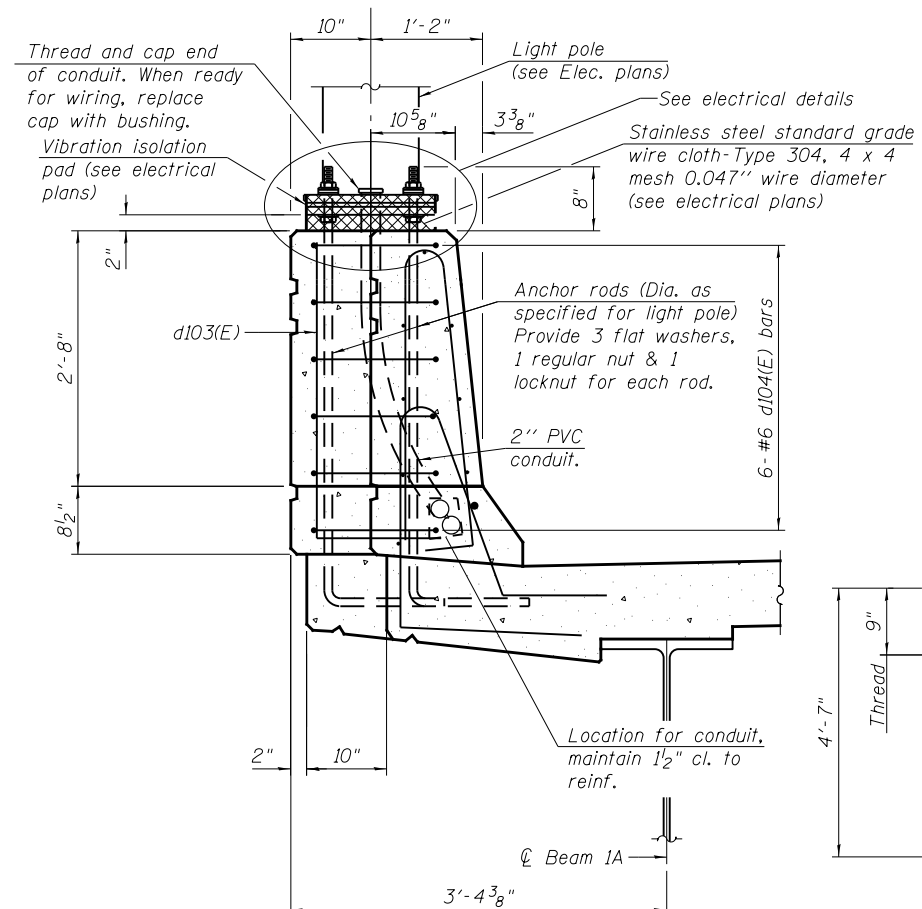
**DECK DETAIL II - UNIT I**  
**STRUCTURE NO. 016-0461**

SHEET NO. S5-25 OF S5-72 SHEETS

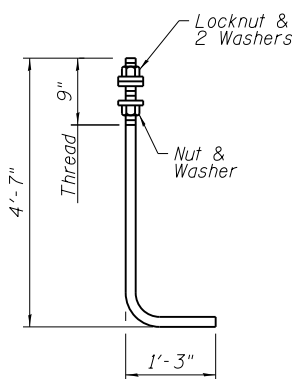
F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	977
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



**PLAN-LIGHT POLE**

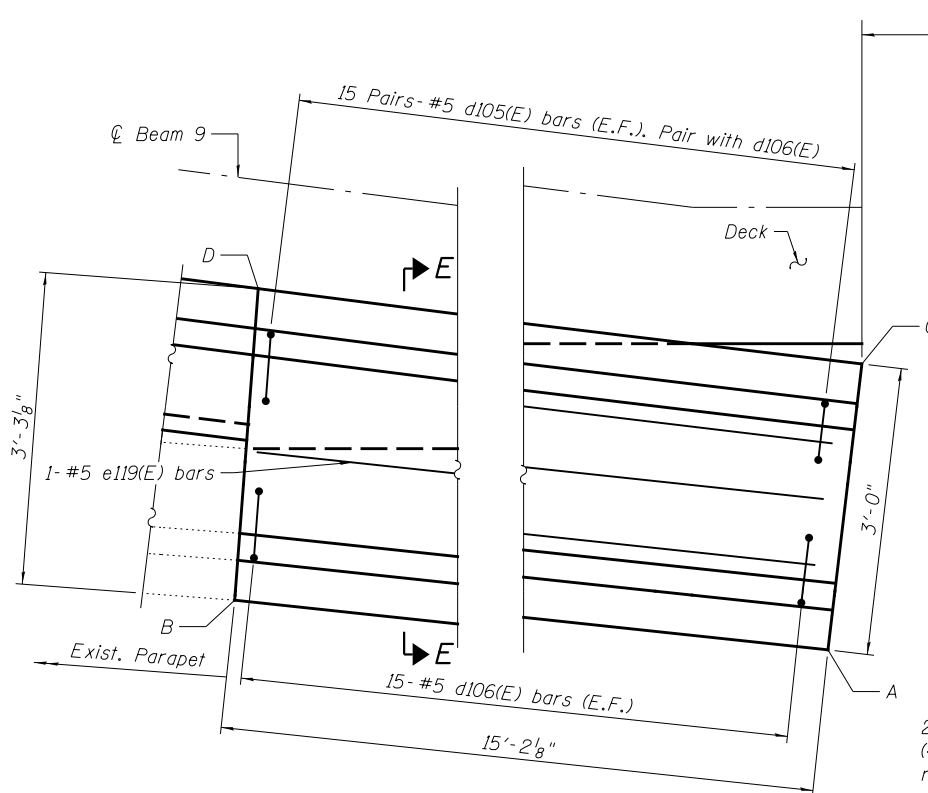


**SECTION D-D**

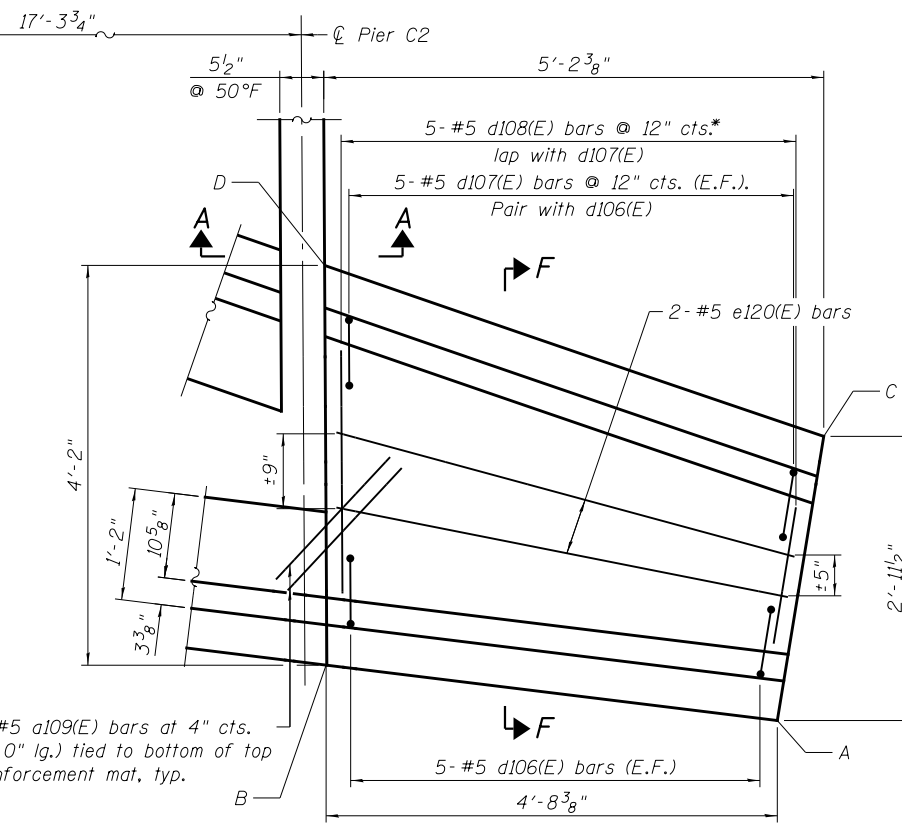


**ANCHOR ROD**

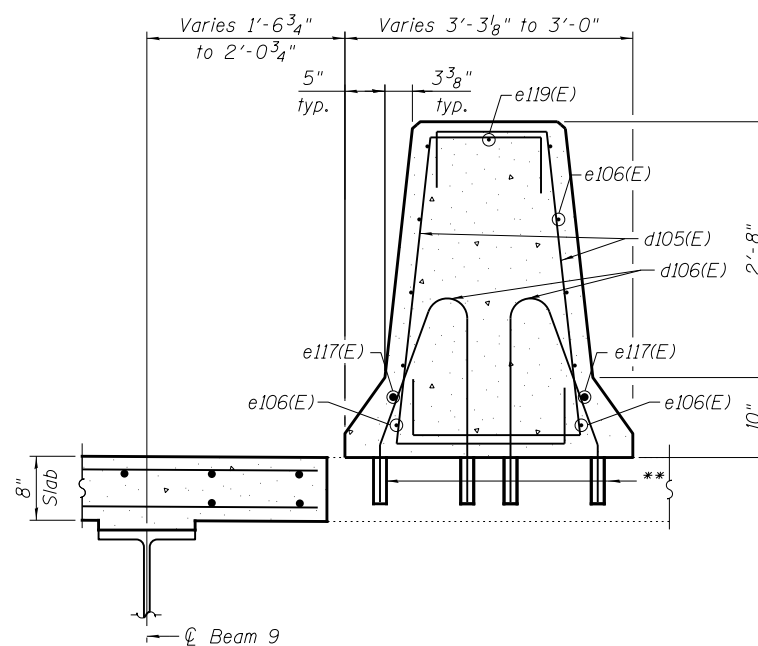
Diameter as specified for light poles. (ASTM F 1554 Grade 105) full length hot dipped galvanized. Cost included with cost of Concrete Superstructure



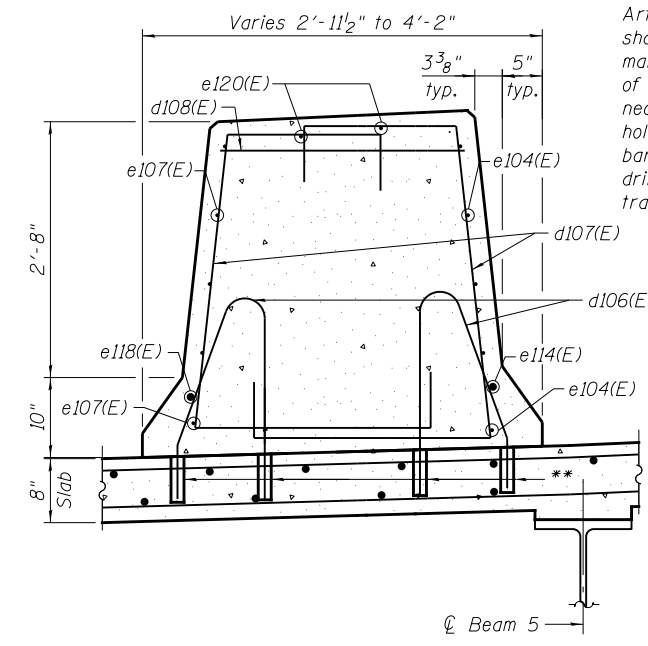
**DETAIL A - SOUTH BARRIER**



**DETAIL B - NORTH BARRIER**



**SECTION E-E**



**SECTION F-F**

\* Cut to fit in field  
 \*\* Drill and set #5 d106(E) bar according to Art. 509.06 of the Std. Specs. Drilled holes shall be roughened or scored per manufacturer's recommendations. Max. depth of hole shall be 6". Contractor shall take all necessary precautions to prevent drilled holes interference with deck reinforcement bars. Locate longitudinal bars to miss drilled locations. Locate drilled holes to miss transverse bars in deck.

Location	South Barrier			North Barrier		
	Baseline	Station	Offset	Baseline	Station	Offset
A	WB I-290	5212+29.82	18'-9 7/8" Rt.	Ramp WN	1102+19.14	7'-7 7/8" Rt.
B	WB I-290	5212+45.15	19'-6 3/4" Rt.	Ramp WN	1102+23.89	7'-7 7/8" Rt.
C	Ramp WN	1102+38.18	20'-0" Lt.	Ramp WS	1210+27.60	24'-3 7/8" Lt.
D	Ramp WN	1102+53.31	20'-0" Lt.	Ramp WS	1210+32.89	23'-11 1/2" Lt.

Note:  
 1. See sheet S5-27 for Section A-A.

0160461-60X93-5026-DET.dgn



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USER NAME = ibrahim1  
 DESIGNED - NJP  
 CHECKED - PAL  
 PLOT SCALE = N.T.S.  
 DRAWN - NJP  
 PLOT DATE = 7/30/2018  
 CHECKED - JIG

DESIGNED - NJP  
 CHECKED - PAL  
 DRAWN - NJP  
 CHECKED - JIG

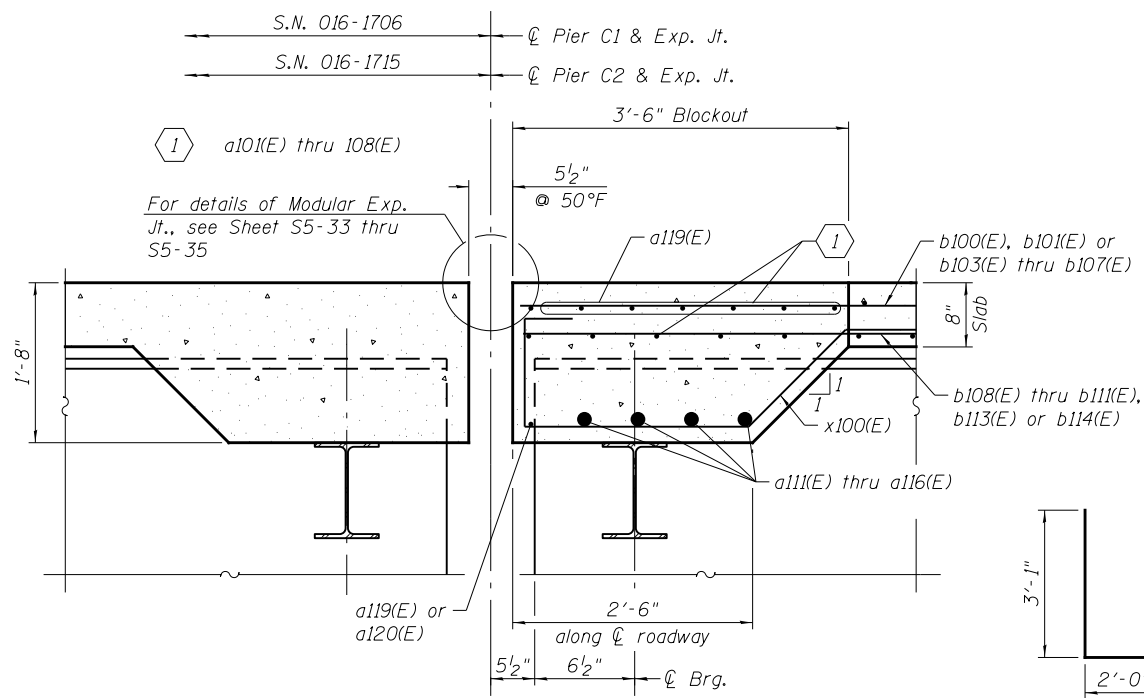
REVISED -  
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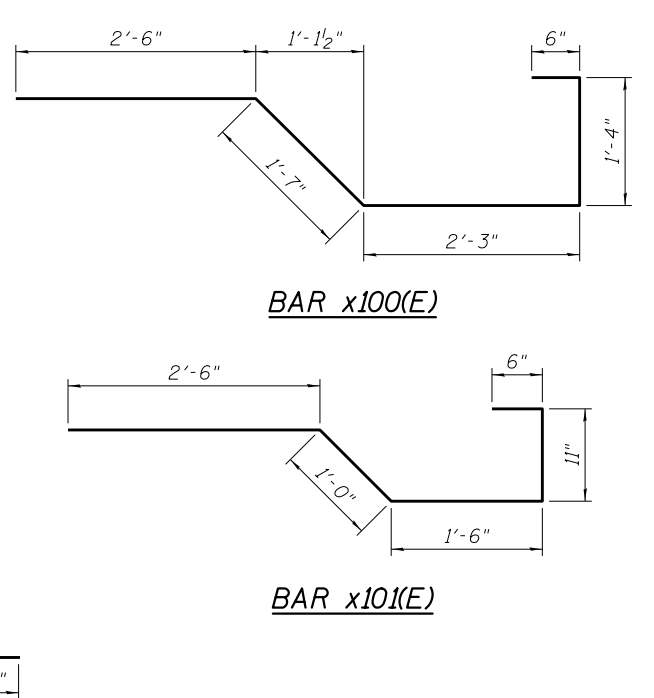
DECK DETAILS III - UNIT I  
 STRUCTURE NO. 016-0461

SHEET NO. S5-26 OF S5-72 SHEETS

F.A.I. R.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	978
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



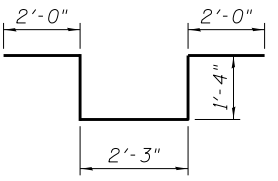
SECTION A-A



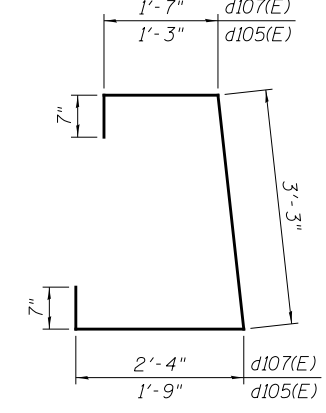
BAR x100(E)

BAR x101(E)

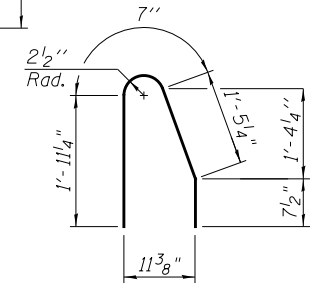
BAR d103(E)



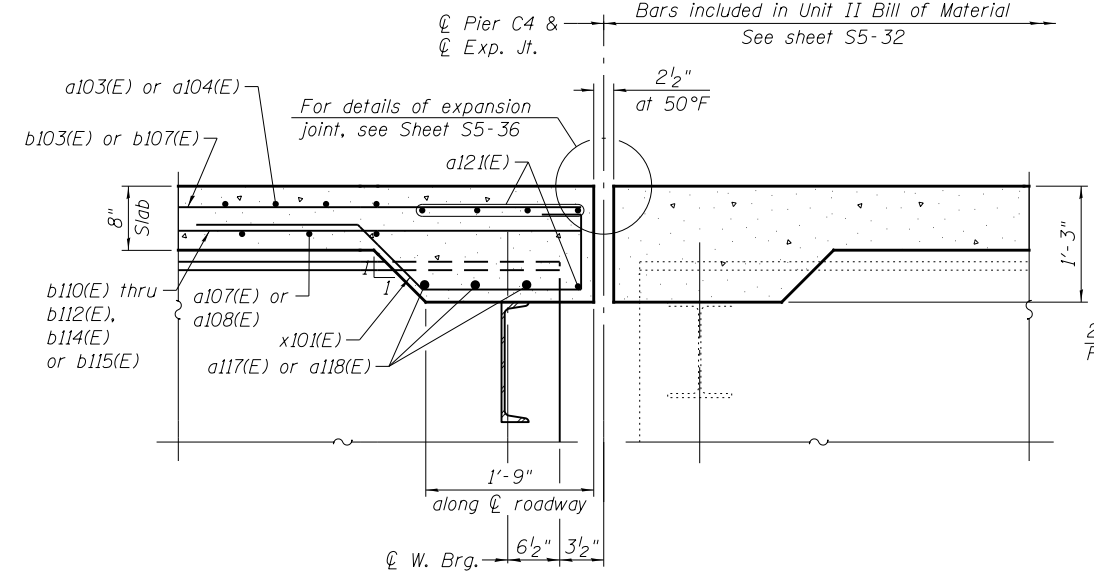
BAR d104(E)



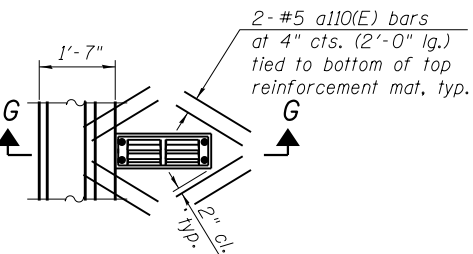
BARS d105(E) & d107(E)



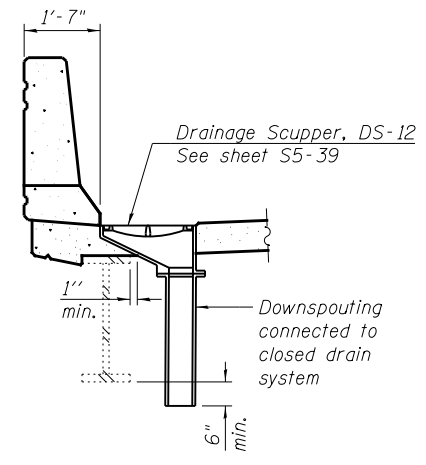
BAR d106(E)



SECTION B-B



PLAN



SECTION G-G

**UNIT I  
BILL OF MATERIAL**

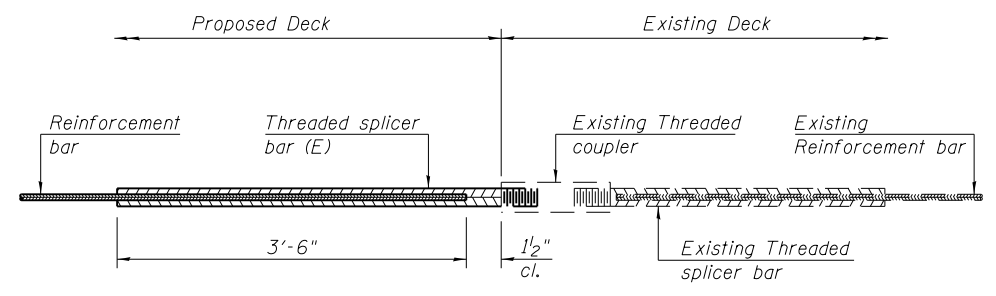
Bar	No.	Size	Length	Shape
a100(E)	495	#6	6'-6"	—
a101(E)	125	#5	14'-3"	—
a102(E)	125	#5	20'-2"	—
a103(E)	148	#5	52'-5"	—
a104(E)	148	#5	49'-3"	—
a105(E)	97	#5	19'-5"	—
a106(E)	97	#5	14'-10"	—
a107(E)	97	#5	51'-9"	—
a108(E)	97	#5	49'-10"	—
a109(E)	2	#5	4'-0"	—
a110(E)	8	#5	2'-0"	—
a111(E)	4	#5	3'-1"	—
a112(E)	16	#5	5'-10"	—
a113(E)	4	#5	2'-10"	—
a114(E)	4	#5	2'-8"	—
a115(E)	4	#5	5'-4"	—
a116(E)	16	#5	6'-3"	—
a117(E)	6	#5	1'-6"	—
a118(E)	27	#5	3'-2"	—
a119(E)	8	#5	30'-8"	—
a120(E)	1	#5	35'-1"	—
a121(E)	5	#5	34'-7"	—
b100(E)	9	#5	31'-2"	—
b101(E)	60	#5	29'-11"	—
b102(E)	3	#5	28'-0"	—
b103(E)	18	#5	30'-2"	—
b104(E)	12	#5	27'-4"	—
b105(E)	61	#5	23'-8"	—
b106(E)	3	#5	33'-6"	—
b107(E)	230	#5	30'-7"	—
b108(E)	6	#5	30'-3"	—
b109(E)	52	#5	33'-6"	—
b110(E)	14	#5	26'-4"	—
b111(E)	120	#5	29'-9"	—
b112(E)	154	#5	29'-1"	—
b113(E)	15	#5	13'-5"	—
b114(E)	8	#5	17'-8"	—
b115(E)	3	#5	20'-10"	—
b116(E)	70	#6	32'-6"	—
b117(E)	27	#6	27'-3"	—
b118(E)	43	#6	26'-1"	—
d100(E)	379	#5	6'-10"	⌋
d101(E)	269	#5	7'-11"	⌋
d102(E)	54	#5	6'-8"	⌋
d103(E)	3	#6	5'-1"	⌋
d104(E)	6	#6	8'-11"	⌋
d105(E)	30	#5	7'-5"	⌋
d106(E)	40	#5	4'-7"	⌋
d107(E)	10	#5	8'-4"	⌋
d108(E)	5	#5	2'-8"	—

**UNIT I  
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
e100(E)	49	#4	16'-10"	—
e101(E)	16	#4	13'-8"	—
e102(E)	28	#4	16'-3"	—
e103(E)	8	#4	12'-8"	—
e104(E)	5	#4	4'-5"	—
e105(E)	21	#4	15'-11"	—
e106(E)	10	#4	14'-10"	—
e107(E)	5	#4	5'-2"	—
e108(E)	4	#4	35'-7"	—
e109(E)	4	#8	37'-4"	—
e110(E)	2	#8	13'-8"	—
e111(E)	2	#4	34'-4"	—
e112(E)	2	#8	36'-1"	—
e113(E)	1	#8	12'-8"	—
e114(E)	1	#8	4'-5"	—
e115(E)	2	#4	25'-6"	—
e116(E)	2	#8	27'-3"	—
e117(E)	2	#8	14'-10"	—
e118(E)	1	#8	5'-2"	—
e119(E)	1	#5	14'-10"	—
e120(E)	2	#5	5'-1"	—
e121(E)	7	#5	17'-3"	—
x100(E)	56	#5	8'-2"	⌋
x101(E)	31	#5	6'-5"	⌋

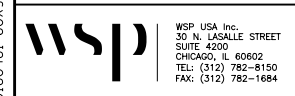
Reinforcement Bars, Epoxy Coated	Pound	78,450
Concrete Superstructure	Cu. Yds.	323.1
Protective Coat	Sq. Yd.	1,178
Bridge Deck Grooving	Sq. Yd.	972
Bar Splicers, Special	Each	589



BAR SPLICERS, SPECIAL

All reinforcement shall be lapped and tied to the splicer bars. See Sheets S5-22 and S5-24 for locations. See Special Provision.

0160461-60X93-5027-DET.dgn



WSP USA Inc.  
30 N. LASALLE STREET  
SUITE 4000  
CHICAGO, IL 60602  
TEL: (312) 782-8150  
FAX: (312) 782-1684

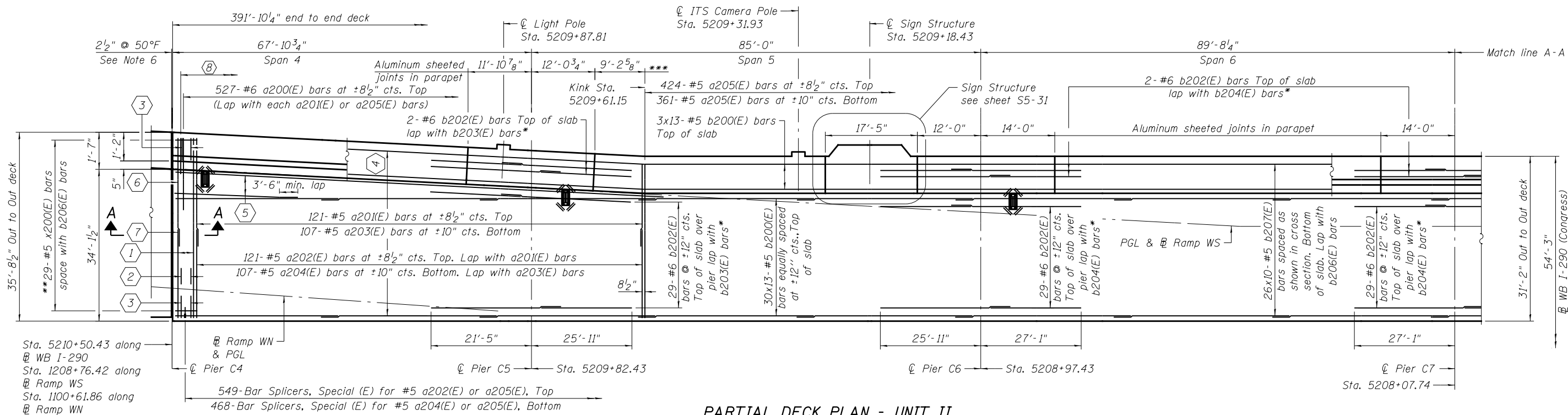
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		CHECKED -	PAL	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	NJP	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**DECK DETAIL IV - UNIT I  
STRUCTURE NO. 016-0461**

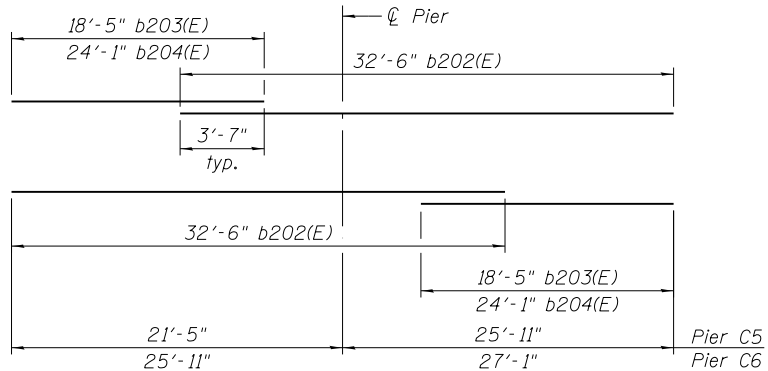
F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	979
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

SHEET NO. S5-27 OF S5-72 SHEETS



**PARTIAL DECK PLAN - UNIT II**

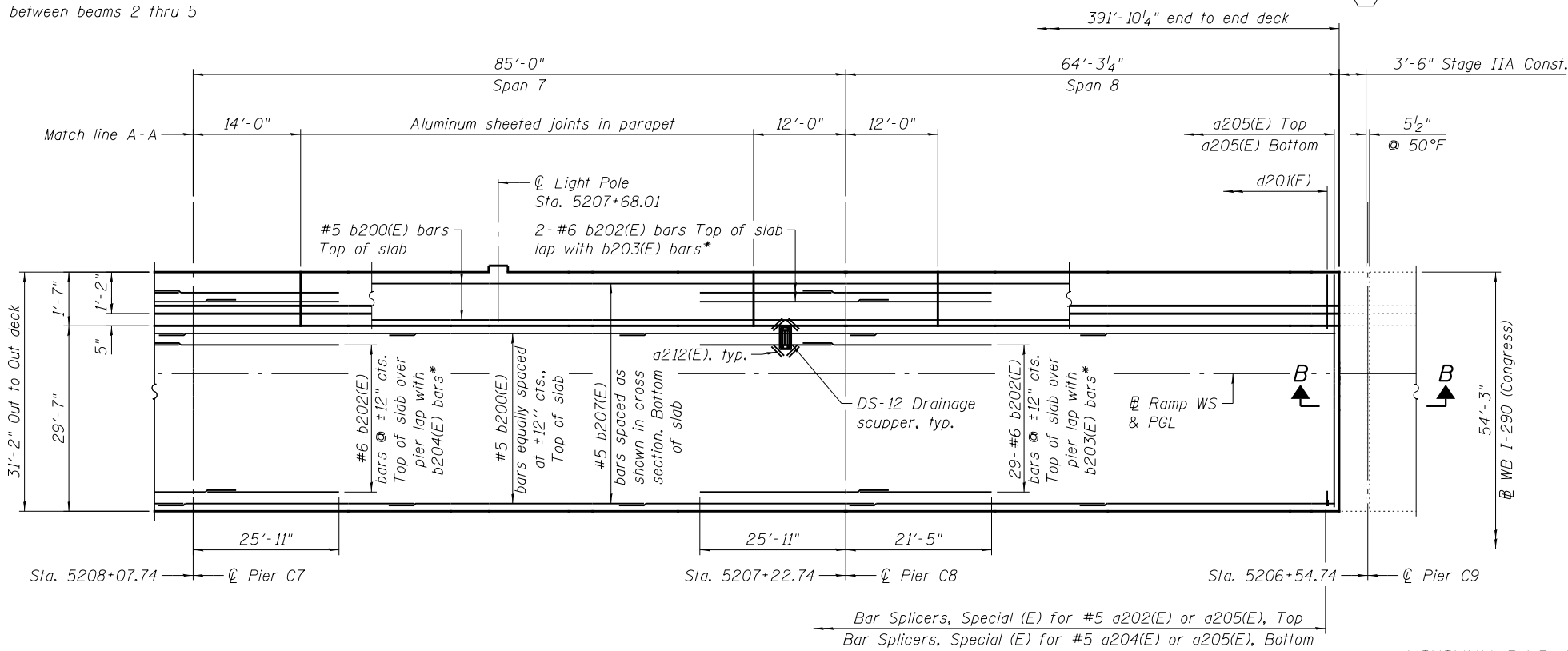
- ① 4-#5 a201(E) and a202(E) bars at 6" cts., Placed under b200(E) or b201(E) bars
- ② 3-#5 a208(E) headed bars at 6" cts. bottom between beam 1, 1A, and 2  
3-#5 a209(E) headed bars at 6" cts. bottom between beams 2 thru 5
- ③ 3-#5 a210(E) headed bars in north overhang  
3-#5 a211(E) headed bars between beam 5 and Const. joint
- ④ 29x3-#5 b206(E) bars spaced as shown in cross section. Bottom of slab
- ⑤ 1x5-#5 b201(E) bars, Top of slab  
1x4-#5 b201(E) bars, Top of slab  
1x3-#5 b201(E) bars, Top of slab  
1x2-#5 b201(E) bars, Top of slab spaced at ±1'-1"
- ⑥ 1-#5 a203(E) bar bottom
- ⑦ 1-#5 a204(E) bar bottom. Lap with a203(E) bars
- ⑧ 429-#5 a201(E) bars at 11" cts.



**ALTERNATE BAR LAP DETAIL**  
(Pier C5 & C6 shown, Pier C7 & C8 mirror)

\* Alternate location of lap.  
 \*\* Bars to be adjusted and/or cut in field to miss support boxes and beam webs, as allowed by the Engineer. The Contractor shall reference and coordinate rebar installation with the approved modular joint shop drawings.  
 \*\*\* Measured along the outer face of north parapet.

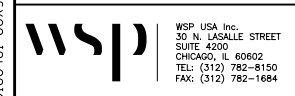
- Notes:
- See sheet S5-29 for Deck Cross Section.
  - See sheet S5-30 for parapet reinforcement.
  - See sheet S5-32 for Section A-A, Section B-B, and Bill of Material.
  - Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
  - Reinforcement bars shall not pass thru aluminum sheets and cork joint filler.
  - Dimensions are based on a Rolled Rail Strip Seal Joint. If the Contractor elects to use the Welded Rail strip seal Joint, deck dimensions may require adjustments to satisfy the details on sheet S5-36.
  - Bar Splicers, Special (E) shall be spliced to the existing bar splicer assembly. The cost is included in the cost of Bar Splicers, Special. See Special Provisions and sheet S5-32 for details of the Bar Splicers, Special.
  - Stations are measured along WB I-290 (Congress).



**PARTIAL DECK PLAN - UNIT II**

**MINIMUM BAR LAP**  
 #5 bar = 3'-6"  
 #6 bar = 3'-7"

0160461-60X93-5028-DEK.dgn



USER NAME = ibrahiml	DESIGNED - NJP	REVISED -
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PLOT DATE = 7/30/2018	DRAWN - NJP	REVISED -
	CHECKED - JIG	REVISED -

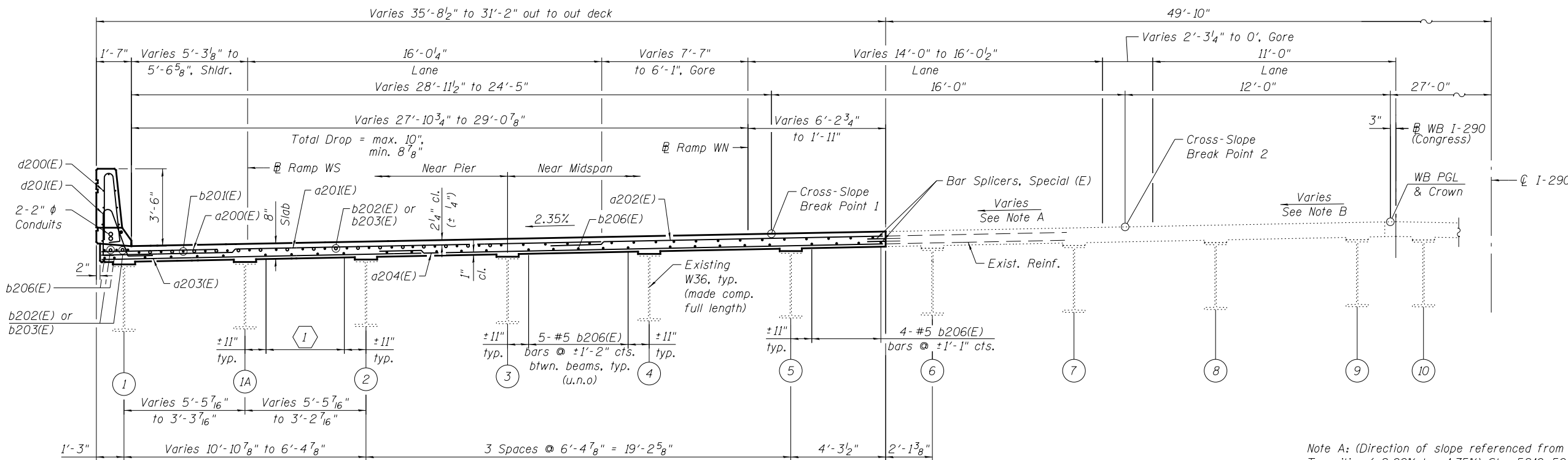
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**DECK PLAN - UNIT II  
STRUCTURE NO. 016-0461**

SHEET NO. S5-28 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	980
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				





**CROSS SECTION - UNIT II**

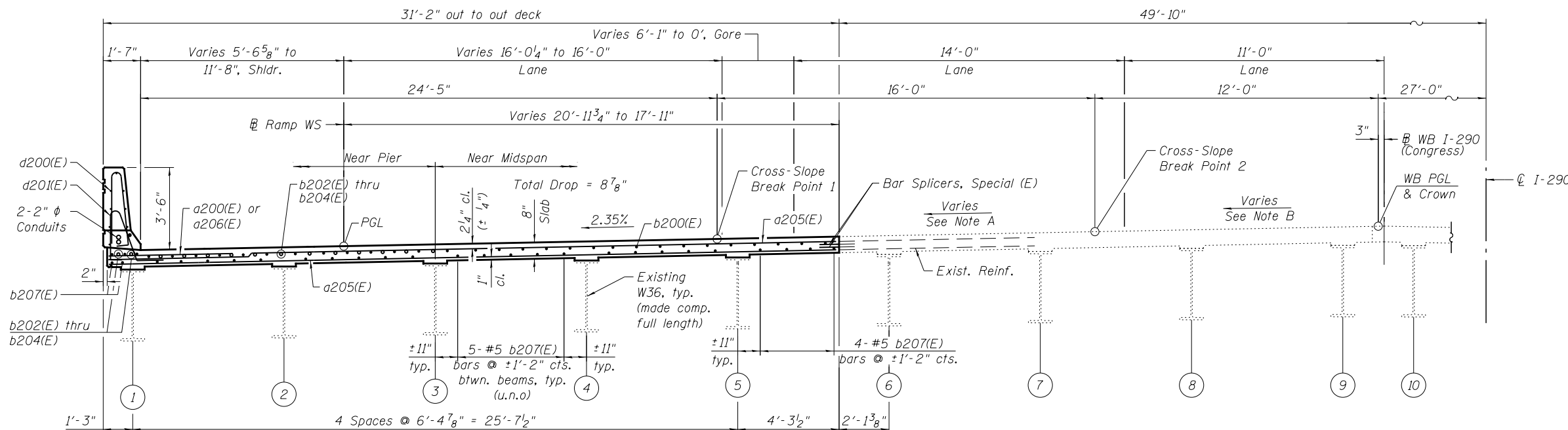
(Looking East)

Sta. 5210+50.32 to 5209+61.15

Note A: (Direction of slope referenced from WB Crown)  
 Transition (-2.00% to -1.75%) Sta. 5210+50.43 to Sta. 5209+99.01  
 Constant cross slope (-1.75%) Sta. 5209+99.01 to Sta. 5207+49.01  
 Transition (-1.75% to -2.08%) Sta. 5207+49.01 to Sta. 5207+24.01  
 Constant cross slope (-2.08%) Sta. 5207+24.01 to Sta. 5206+54.74

Note B: (Direction of slope referenced from WB Crown)  
 Transition (-2.08% to -1.25%) Sta. 5210+50.43 to Sta. 5209+99.01  
 Constant cross slope (-1.25%) Sta. 5209+99.01 to Sta. 5208+99.01  
 Transition (-1.25% to -1.04%) Sta. 5208+99.01 to Sta. 5208+89.01  
 Constant cross slope (-1.04%) Sta. 5208+89.01 to Sta. 5206+54.74

1 4-#5 b206(E) bars Eq. Spa. btwn. beams 1, 1A, and 2.



**CROSS SECTION - UNIT II**

(Looking East)

Sta. 5209+61.15 to 5206+58.47

- Notes:
1. Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
  2. Reinforcement bars shall not pass thru aluminum sheets and cork joint filler.
  3. Stations are measured along WB I-290 (Congress)

0160461-60X93-5029-DET.dgn



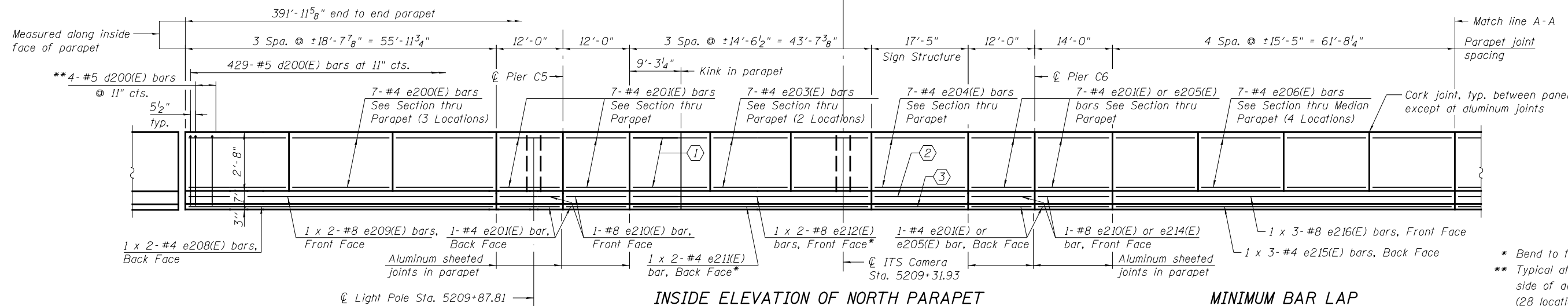
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PLOT SCALE = N.T.S.	CHECKED - PAL	REVISED -
PLOT DATE = 7/30/2018	DRAWN - NJP	REVISED -
	CHECKED - JIG	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**DECK DETAIL I - UNIT II  
STRUCTURE NO. 016-0461**

SHEET NO. S5-29 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	981
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				



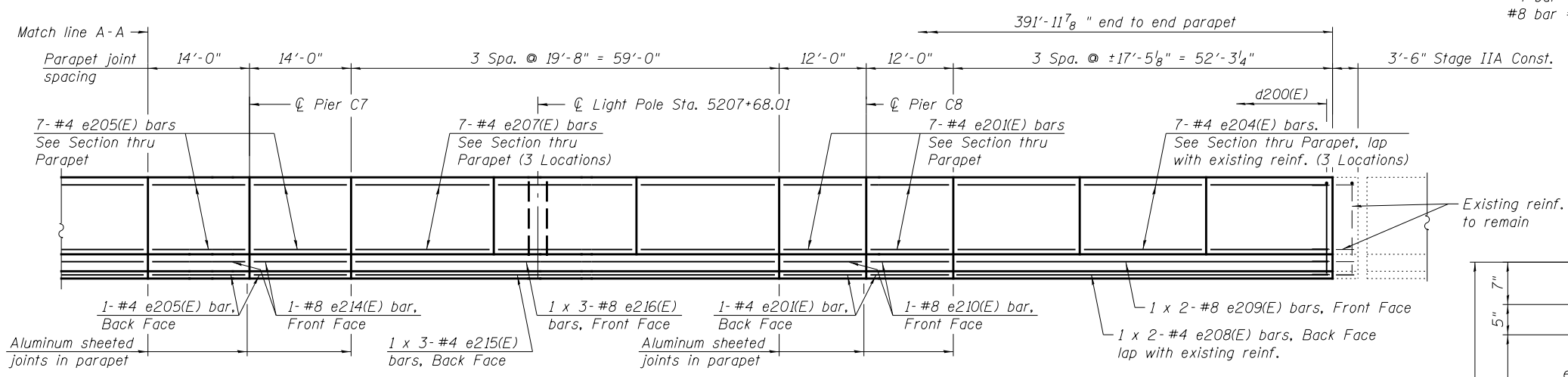
**INSIDE ELEVATION OF NORTH PARAPET**

**MINIMUM BAR LAP**

(Parapet)  
 #4 bar = 2'-5"  
 #8 bar = 5'-11"

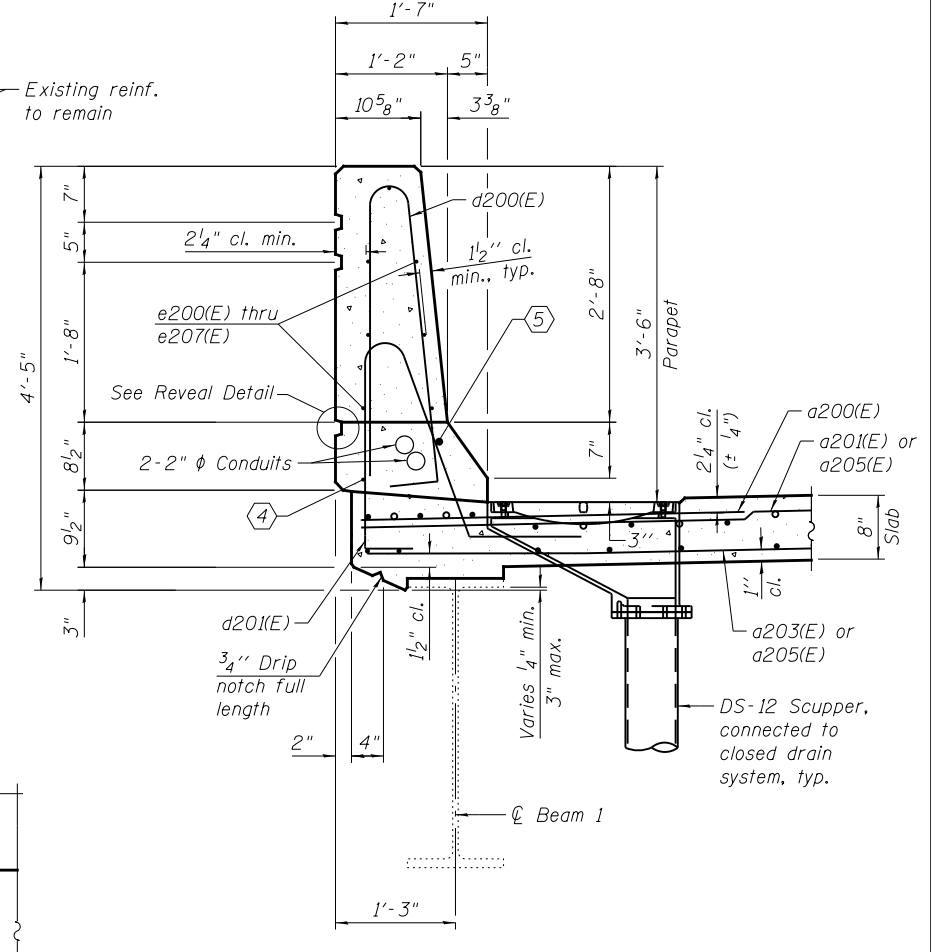
\* Bend to fit.  
 \*\* Typical at parapet ends and each side of aluminum sheeted joints (28 locations).

Note:  
 1. Any reinforcement bars that are damaged during concrete removal operations shall be repaired or replaced using an approved bar splicer or anchorage system. Cost included with Removal of Existing Concrete Deck.

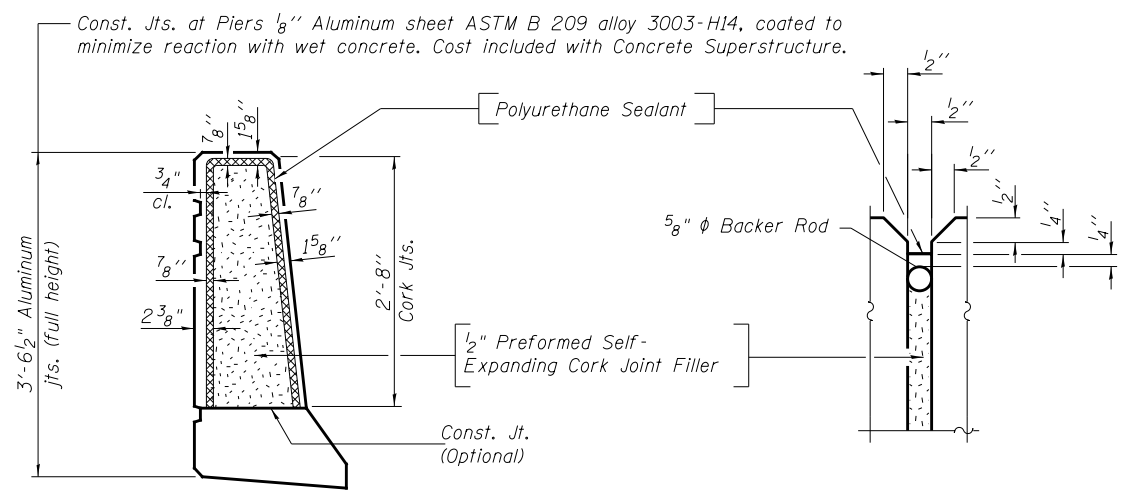


**INSIDE ELEVATION OF NORTH PARAPET**

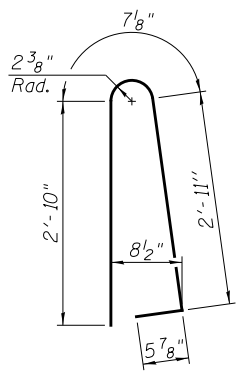
- ① 7- #4 e202(E) bars. See Section thru Parapet\*
- ② 1- #8 e213(E) bar, Front Face
- ③ 1- #4 e204(E) bar, Back Face
- ④ e201(E), e204(E), e205(E), e208(E), e211(E) or e215(E)
- ⑤ e209(E), e210(E), e212(E), e213(E), e214(E) or e216(E)



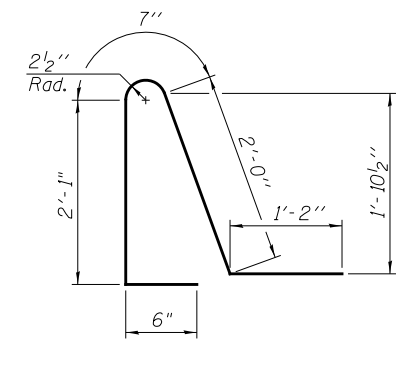
**SECTION THRU NORTH PARAPET**



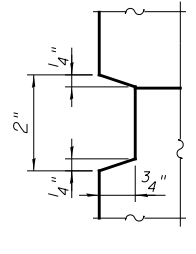
**PARAPET JOINT DETAILS**



**BAR d200(E)**

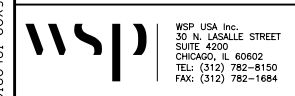


**BAR d201(E)**



**REVEAL DETAIL**

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WSP USA Inc.  
 30 N. LASALLE STREET  
 SUITE 4000  
 CHICAGO, IL 60602  
 TEL: (312) 782-8150  
 FAX: (312) 782-1684

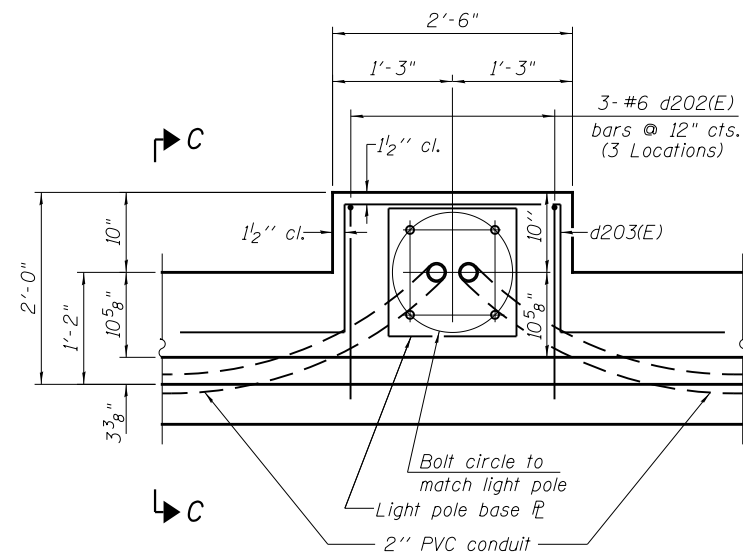
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PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

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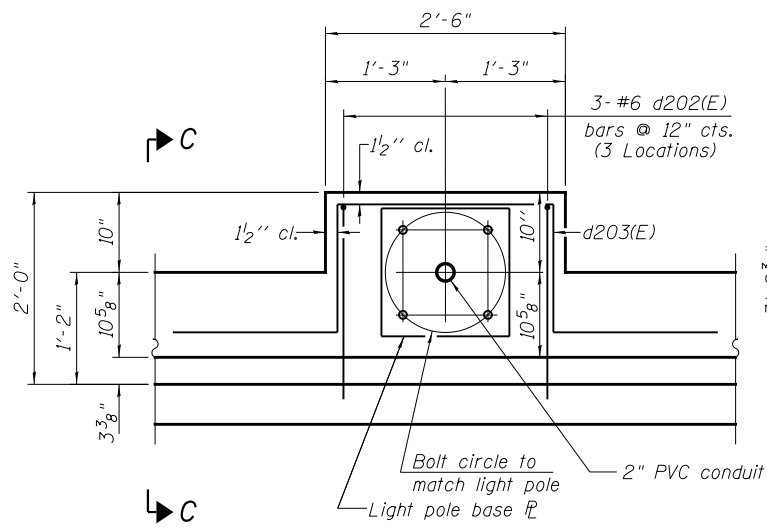
**DECK DETAILS II - UNIT II  
 STRUCTURE NO. 016-0461**

SHEET NO. S5-30 OF S5-72 SHEETS

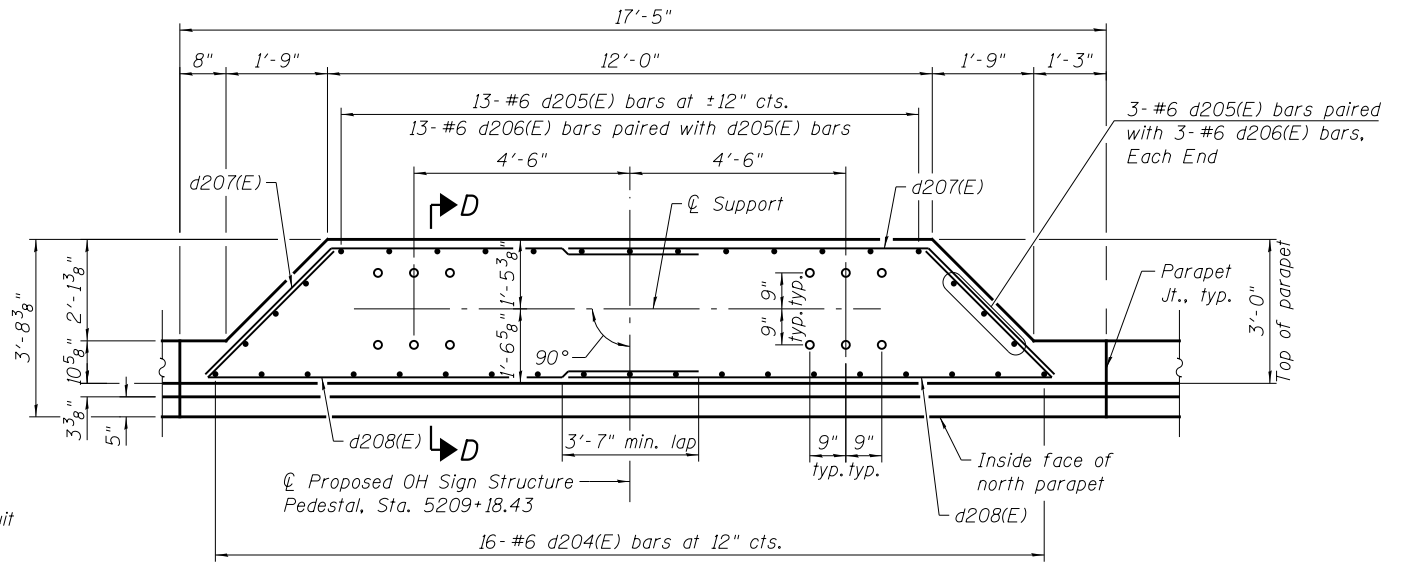
F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	982
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				



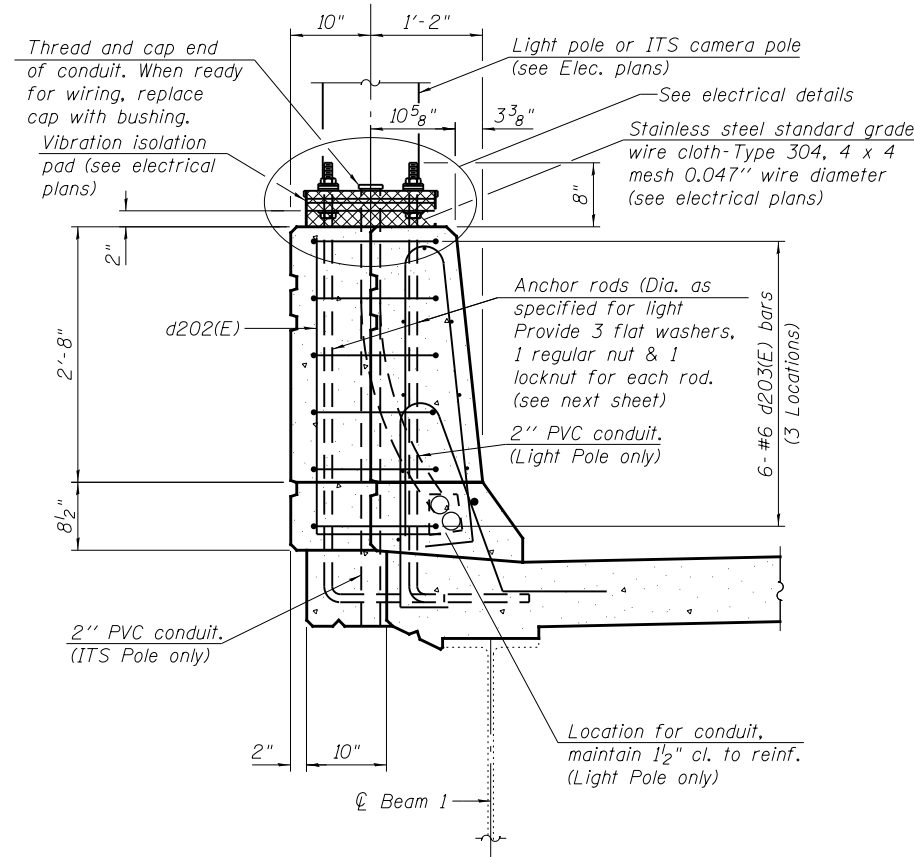
PLAN - LIGHT POLE



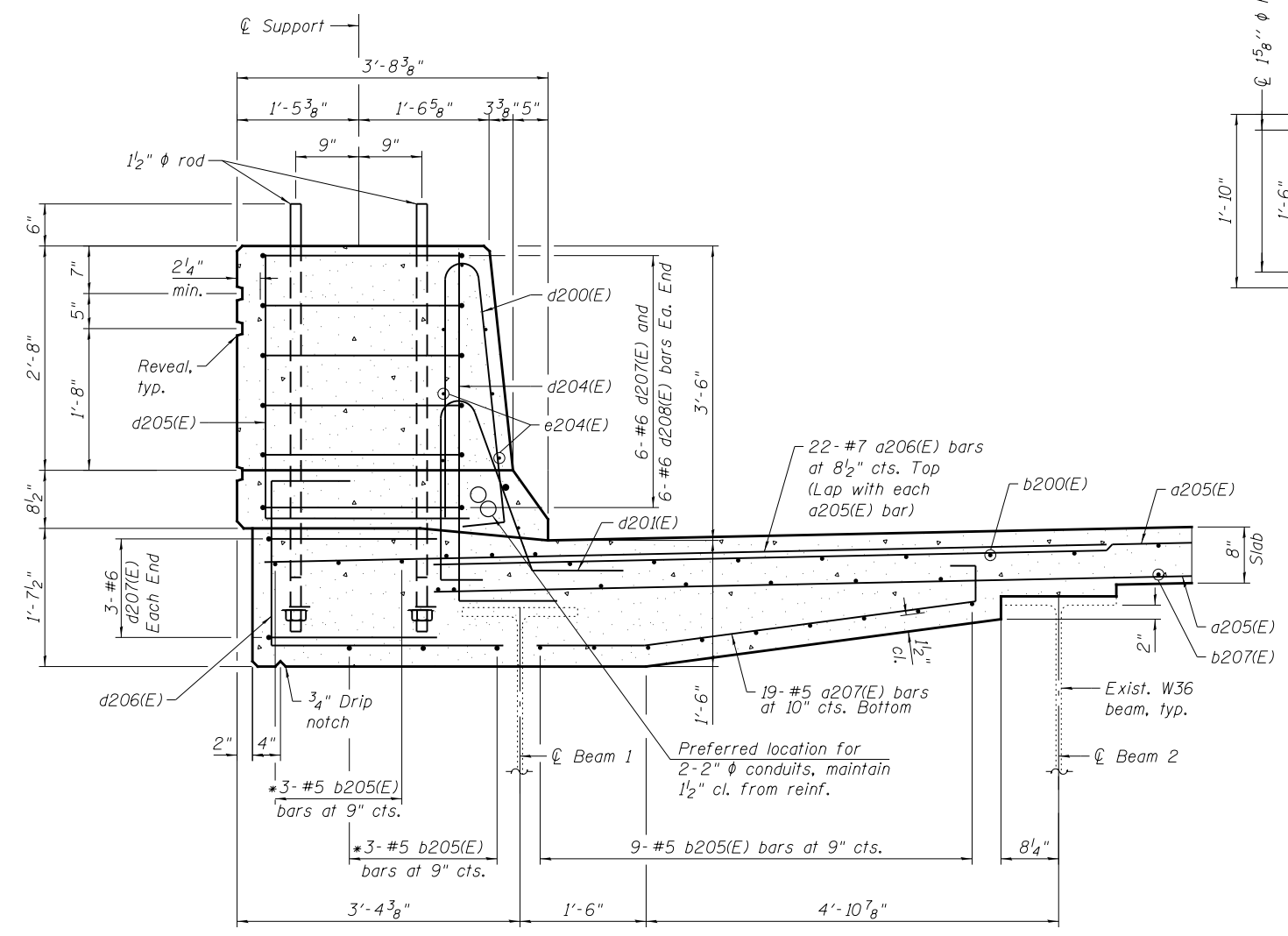
PLAN - ITS CAMERA POLE



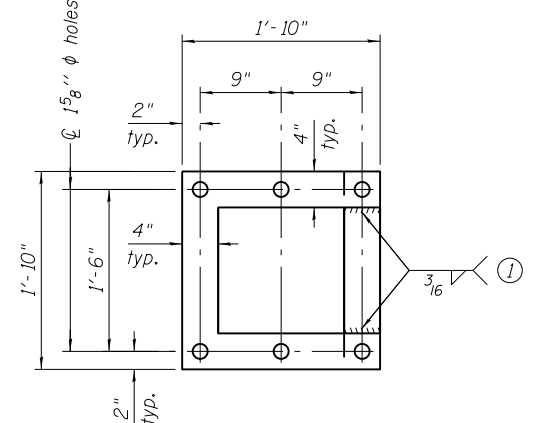
OH SIGN STRUCTURE PEDESTAL PLAN NORTH PARAPET



SECTION C-C



SECTION D-D

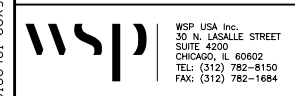


POSITIONING PLATE(S)

① Optionally may use four (4) separate bars. Weld to maintain perpendicularity.

Notes:  
1. See sheet S5-31, for Anchor Rod Details for light pole, ITS camera pole and OH Sign structure.

0160461-60X93-5031-DET.dgn



USER NAME = ibrahiml  
DESIGNED - NJP  
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PLOT SCALE = N.T.S.  
DRAWN - NJP  
PLOT DATE = 7/30/2018  
CHECKED - JIG

DESIGNED - NJP  
CHECKED - PAL  
DRAWN - NJP  
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DEPARTMENT OF TRANSPORTATION

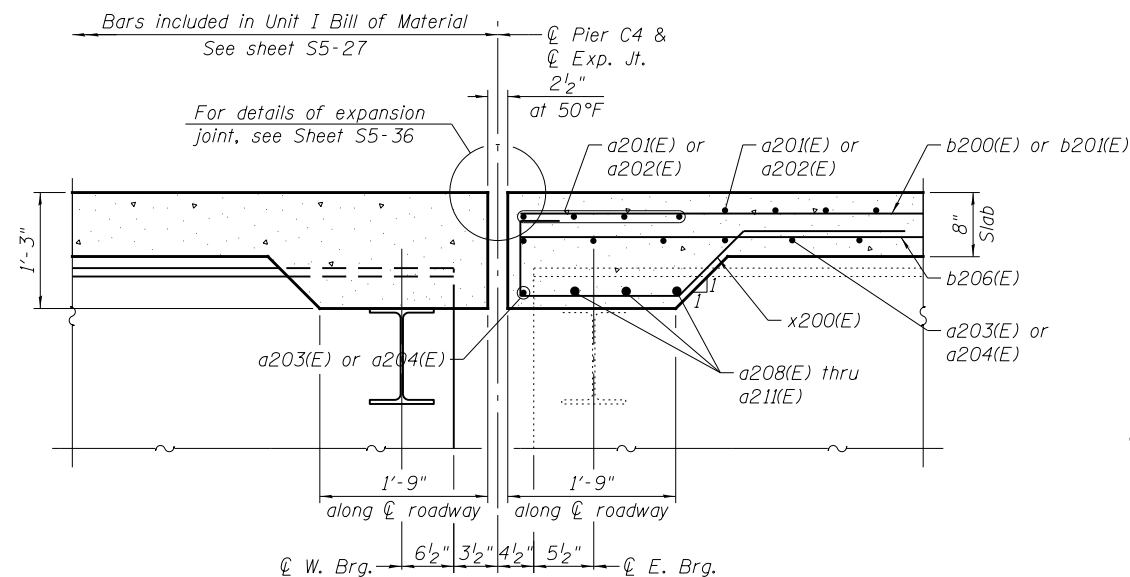
DECK DETAILS III - UNIT II  
STRUCTURE NO. 016-0461

SHEET NO. S5-31 OF S5-72 SHEETS

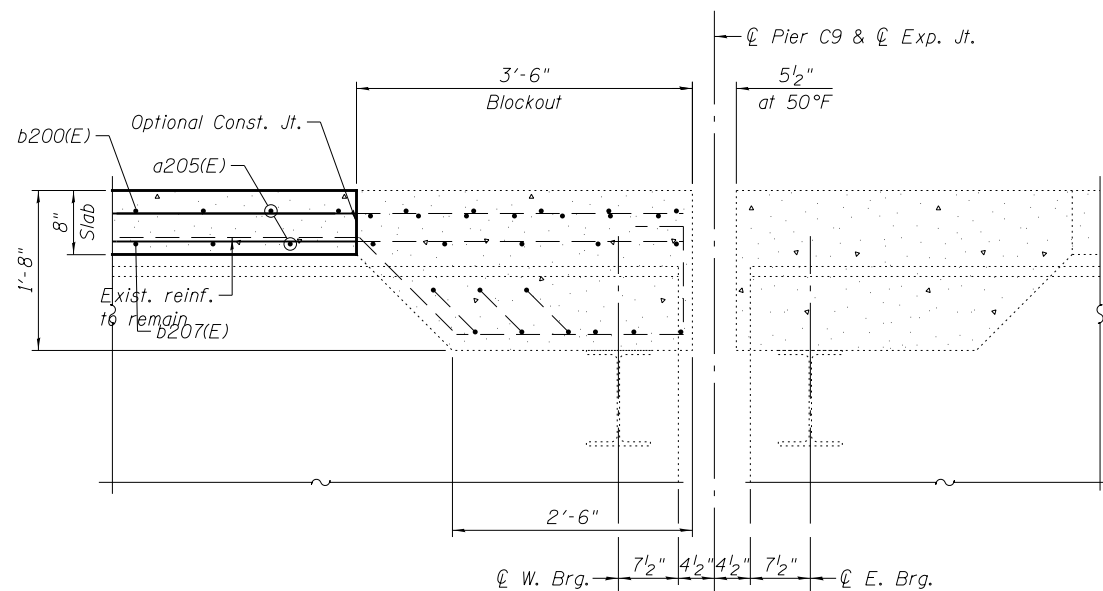
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CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

**UNIT II  
BILL OF MATERIAL**

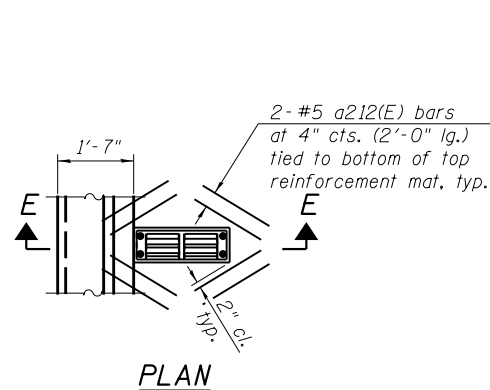
Bar	No.	Size	Length	Shape
a200(E)	527	#6	6'-6"	—
a201(E)	125	#5	23'-2"	—
a202(E)	125	#5	15'-5"	—
a203(E)	108	#5	13'-6"	—
a204(E)	108	#5	25'-1"	—
a205(E)	785	#5	30'-8"	—
a206(E)	22	#7	10'-1"	—
a207(E)	19	#5	6'-3"	—
a208(E)	6	#5	5'-1"	—
a209(E)	9	#5	6'-1"	—
a210(E)	3	#5	0'-9"	—
a211(E)	3	#5	3'-11"	—
a212(E)	32	#5	2'-0"	—
b200(E)	429	#5	33'-5"	—
b201(E)	14	#5	23'-5"	—
b202(E)	124	#6	32'-6"	—
b203(E)	62	#6	18'-5"	—
b204(E)	62	#6	24'-1"	—
b205(E)	15	#5	15'-0"	—
b206(E)	87	#5	32'-8"	—
b207(E)	260	#5	33'-8"	—
d200(E)	541	#5	6'-10"	—
d201(E)	429	#5	6'-4"	—
d202(E)	9	#6	5'-1"	—
d203(E)	18	#6	8'-11"	—
d204(E)	16	#6	4'-10"	—
d205(E)	19	#6	5'-8"	—
d206(E)	19	#6	6'-1"	—
d207(E)	18	#6	11'-3"	—
d208(E)	12	#6	13'-5"	—
e200(E)	21	#4	18'-4"	—
e201(E)	40	#4	11'-8"	—
e202(E)	7	#4	14'-3"	—
e203(E)	14	#4	14'-2"	—
e204(E)	29	#4	17'-1"	—
e205(E)	24	#4	13'-8"	—
e206(E)	28	#4	15'-1"	—
e207(E)	21	#4	19'-4"	—
e208(E)	4	#4	29'-1"	—
e209(E)	4	#8	30'-10"	—
e210(E)	5	#8	11'-8"	—
e211(E)	2	#4	22'-10"	—
e212(E)	2	#8	24'-7"	—
e213(E)	1	#8	17'-1"	—
e214(E)	3	#8	13'-8"	—
e215(E)	6	#4	22'-1"	—
e216(E)	6	#8	24'-5"	—
x200(E)	29	#5	6'-5"	—
Reinforcement Bars, Epoxy Coated		Pound	89,440	
Concrete Superstructure		Cu. Yds.	388.4	
Protective Coat		Sq. Yd.	1,194	
Bridge Deck Grooving		Sq. Yd.	1,267	
Bar Splicers, Special		Each	1,017	



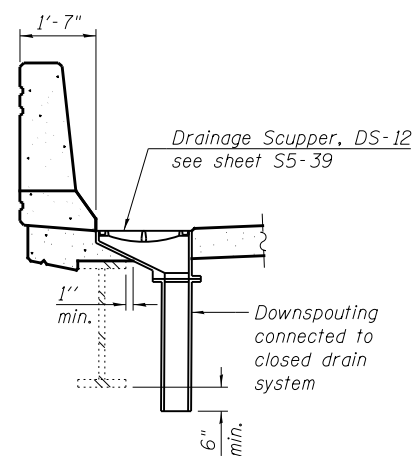
**SECTION A-A**



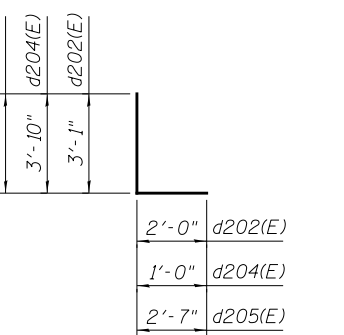
**SECTION B-B**



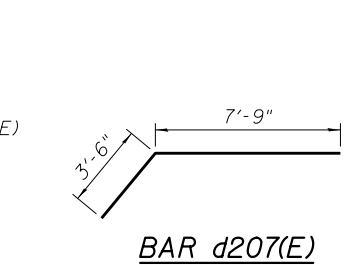
**PLAN**



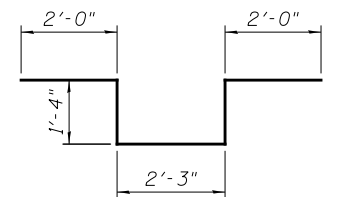
**SECTION E-E**



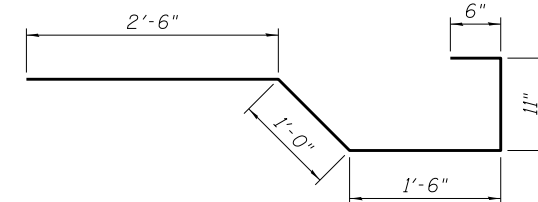
**BARS d202(E), d204(E) & d205(E)**



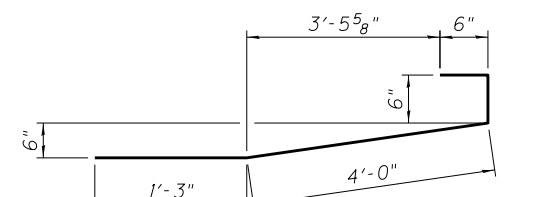
**BAR d207(E)**



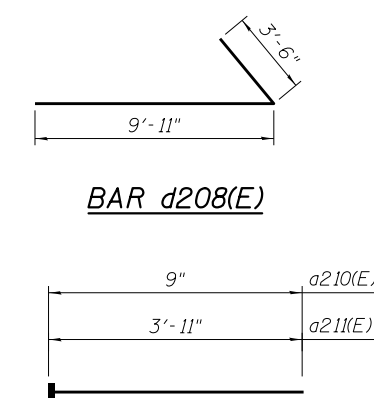
**BAR d203(E)**



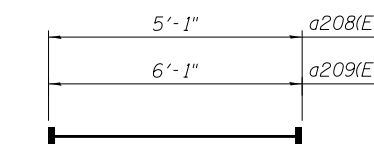
**BAR x200(E)**



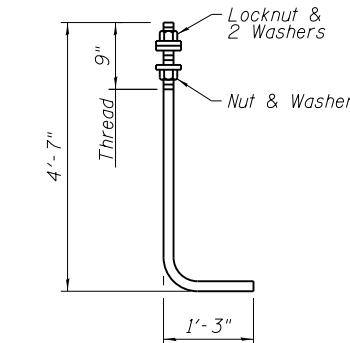
**BAR a207(E)**



**BARS a210(E) & a211(E)  
(Headed)**

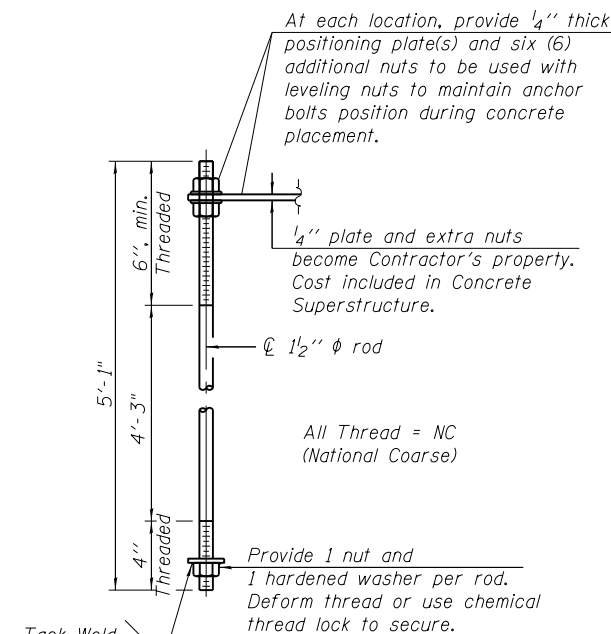


**BARS a208(E) & a209(E)  
(Headed)**



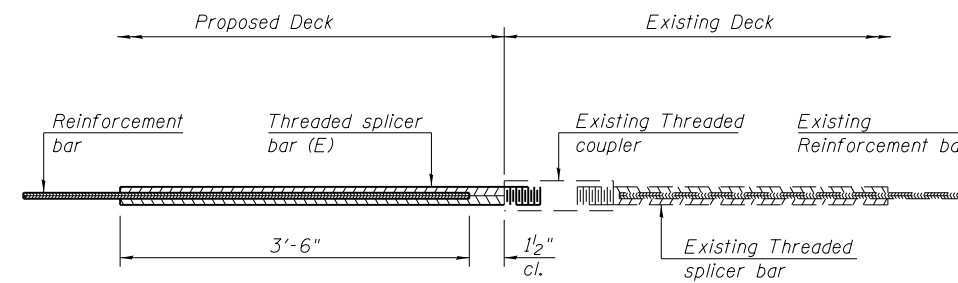
**ANCHOR ROD**

Diameter as specified for light poles. (ASTM F 1554 Grade 105) full length hot dipped galvanized. Cost included with cost of Concrete Superstructure.



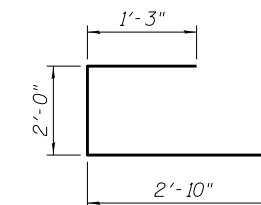
**ANCHOR ROD DETAIL**

(12 Straight Rods & 6 Bent Rods Req'd) Anchor rods shall conform to ASTM F1554 Grade 105 Galvanize upper 12" minimum per AASHTO M232. No welding shall be permitted on rods. Cost included with Concrete Superstructure.



**BAR SPLICERS, SPECIAL**

All reinforcement shall be lapped and tied to the splicer bars. See Sheets S5-28 and S5-29 for locations. See Special Provision.



**BAR d206(E)**

0160461-60X93-5032-DET.dgn



USER NAME =	ibrahim1	DESIGNED -	NJP	REVISED -	
CHECKED -	PAL	REVISIONS -			
PLOT SCALE =	N.T.S.	DRAWN -	NJP	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

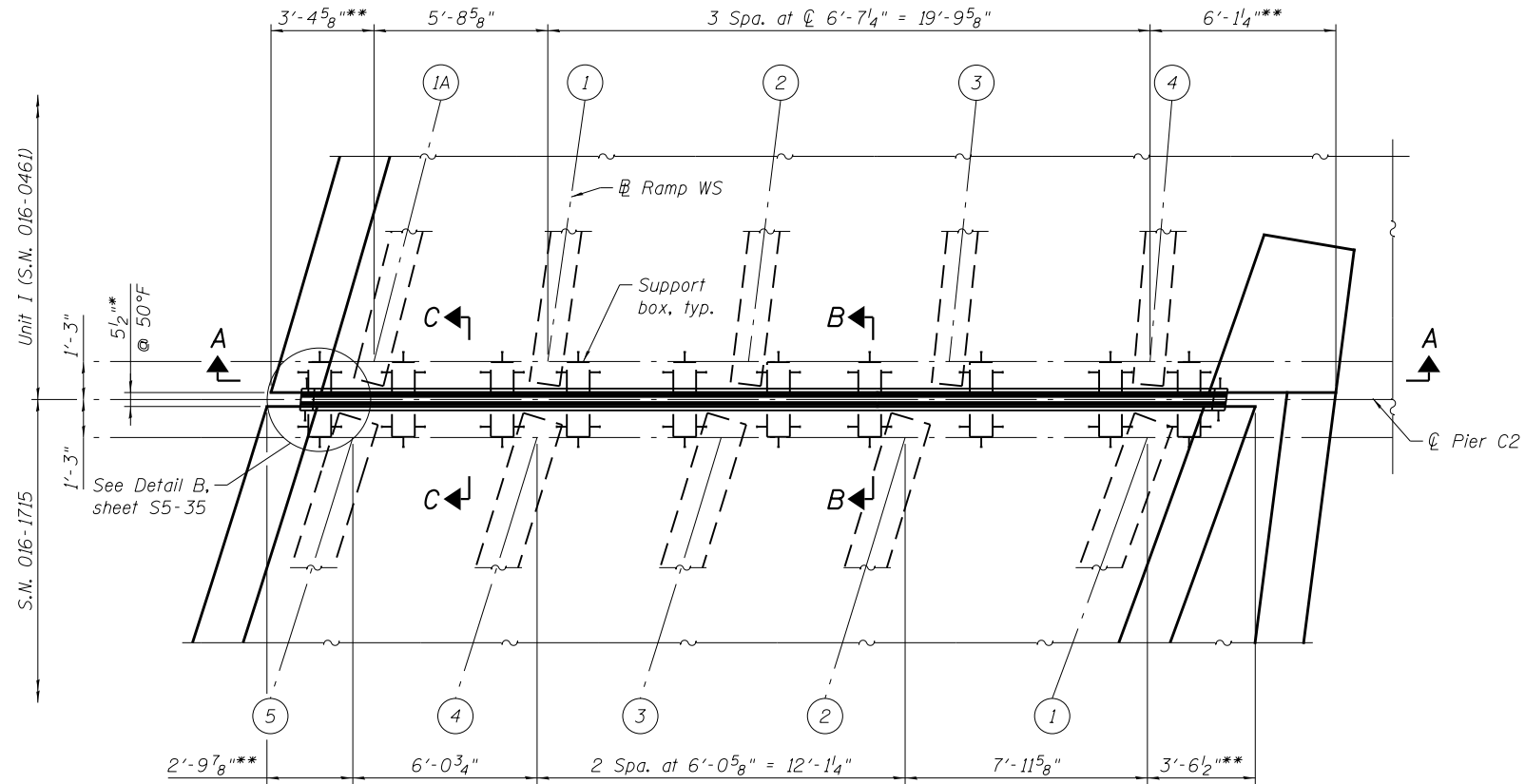
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**DECK DETAILS IV - UNIT II  
STRUCTURE NO. 016-0461**

SHEET NO. S5-32 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	984
CONTRACT NO. 60X93			ILLINOIS FED. AID PROJECT	

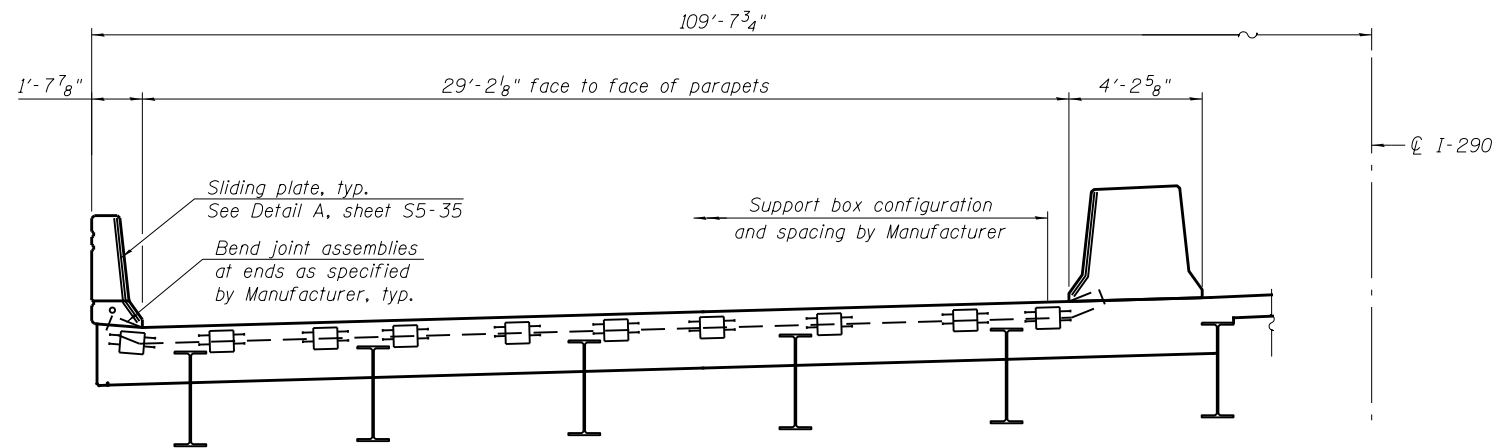




\* Actual dimension may vary depending on Manufacturer's design

\*\* Measured to edge of deck

**PLAN**



**SECTION A-A**

**Notes:**

1. See Sheet S5-33, for Modular Expansion Joint General Notes.
2. See sheet S5-35 for Sections B-B and C-C.
3. Modular Expansion Joint 6" shall provide a minimum total movement of 2".
4. Dimensions are measured along  $\mathcal{C}$  of joint, unless otherwise noted.

**BILL OF MATERIAL**

Item	Unit	Total
Modular Expansion Joint, 6"	Foot	31

0160461-60X93-5034-EXP.dgn



USER NAME = ibrahim1	DESIGNED - NJP	REVISED -
	CHECKED - P.JL	REVISED -
PLOT SCALE = N.T.S.	DRAWN - NJP	REVISED -
PLOT DATE = 7/30/2018	CHECKED - JIG	REVISED -

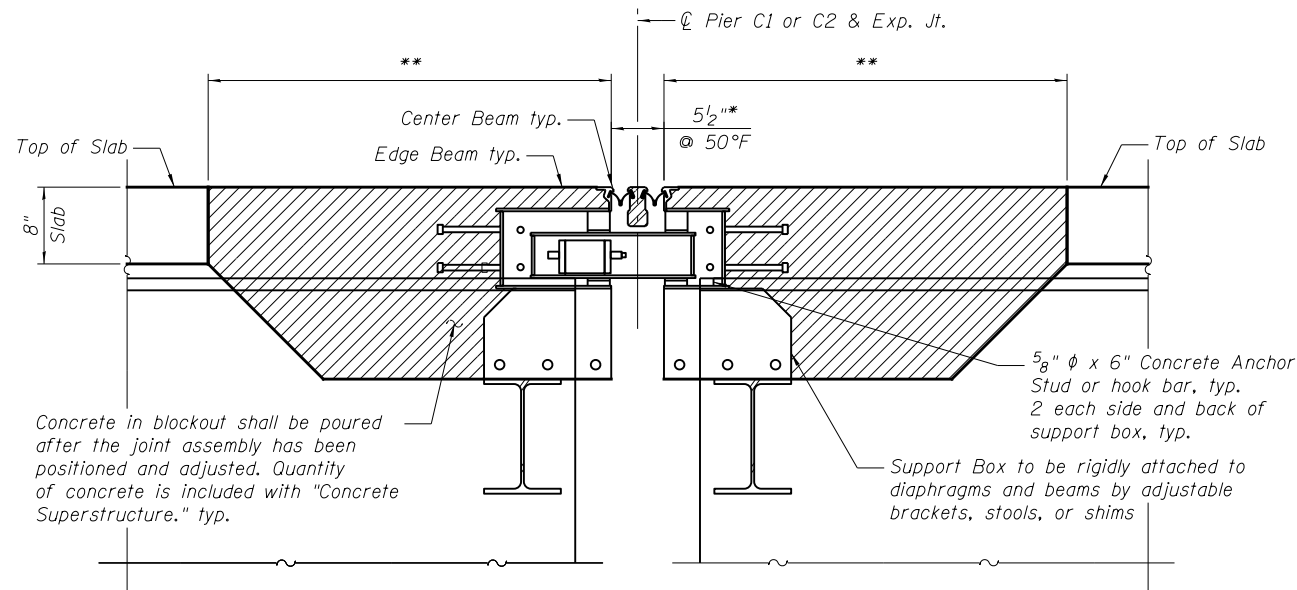
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**MODULAR EXPANSION JOINT - PIER C2  
STRUCTURE NO. 016-0461**

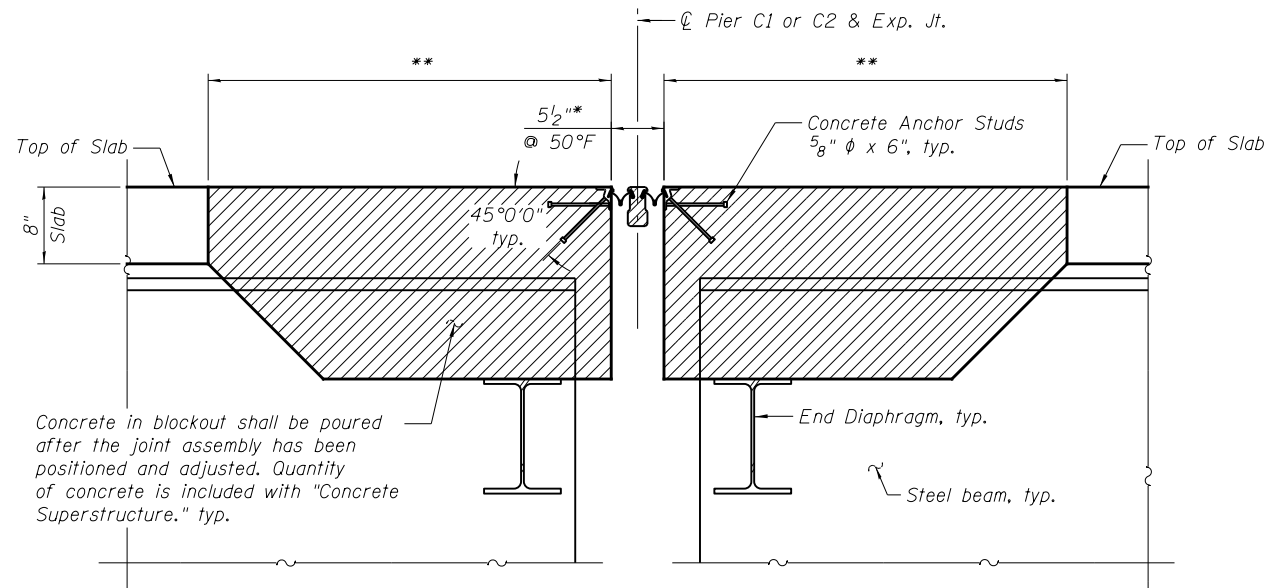
SHEET NO. S5-34 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	986
<b>CONTRACT NO. 60X93</b>				

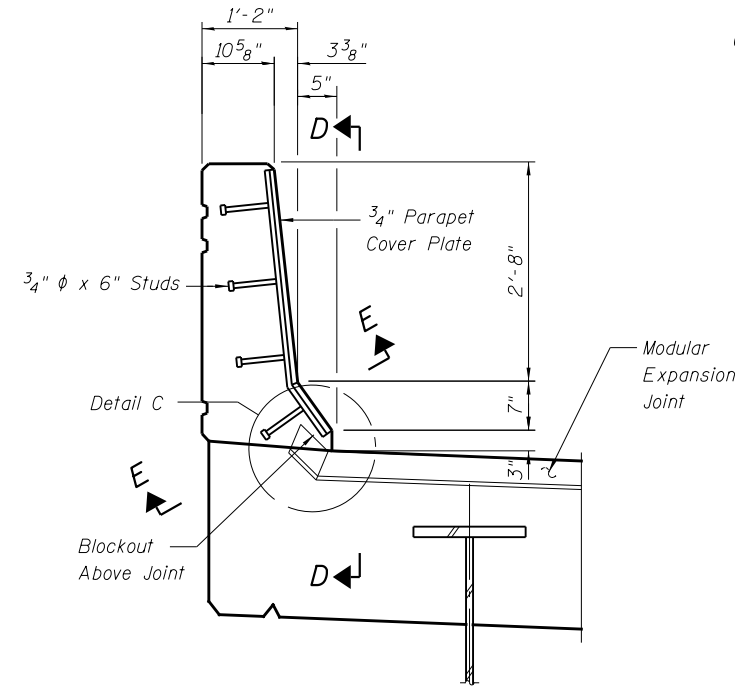
ILLINOIS FED. AID PROJECT



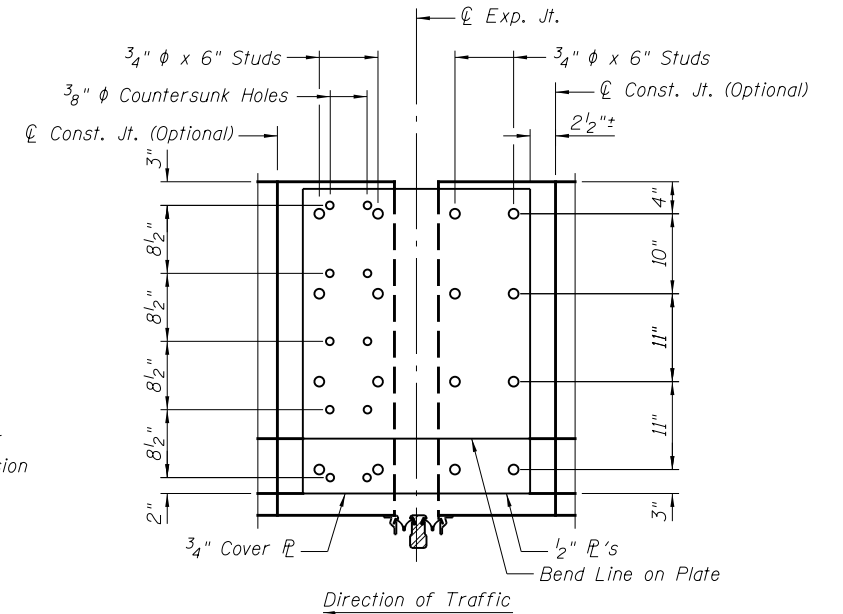
**SECTION B-B**



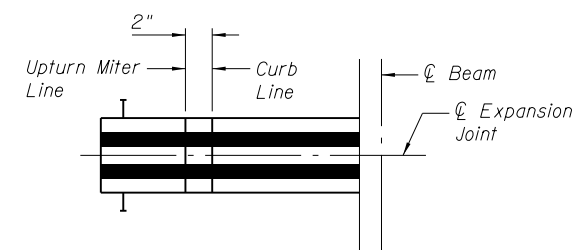
**SECTION C-C**



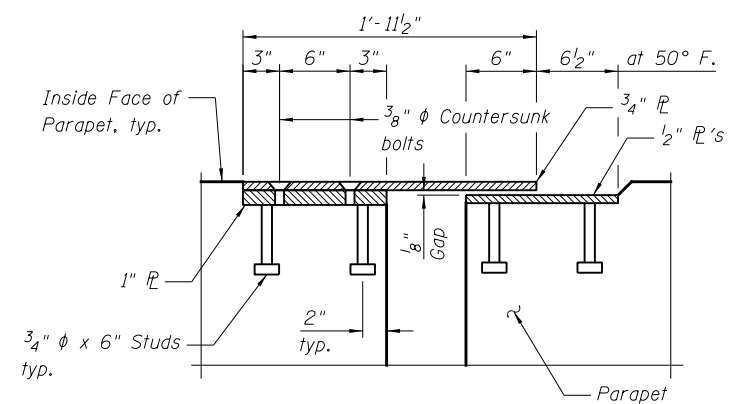
**DETAIL A**



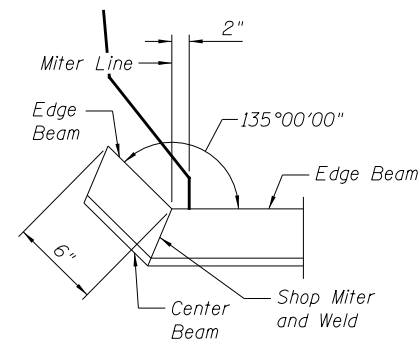
**SECTION D-D**



**DETAIL B**



**SECTION E-E**



**DETAIL C**

\* Number of beams and seals determined by manufacturer

\*\* Blockout dimensions to be verified by Contractor with Joint Manufacturer. See sheet S5-27 for blockout dimensions and additional details of edge beam at Pier C1 & C2.

Concrete in blockout shall be poured after the joint assembly has been positioned and adjusted. Quantity of concrete is included with "Concrete Superstructure." typ.

Support Box to be rigidly attached to diaphragms and beams by adjustable brackets, stools, or shims

Concrete in blockout shall be poured after the joint assembly has been positioned and adjusted. Quantity of concrete is included with "Concrete Superstructure." typ.

0160461-60X93-5035-EXP.dgn



USER NAME =	ibrahim1	DESIGNED -	NJP	REVISED -	
		CHECKED -	PJL	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	NJP	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

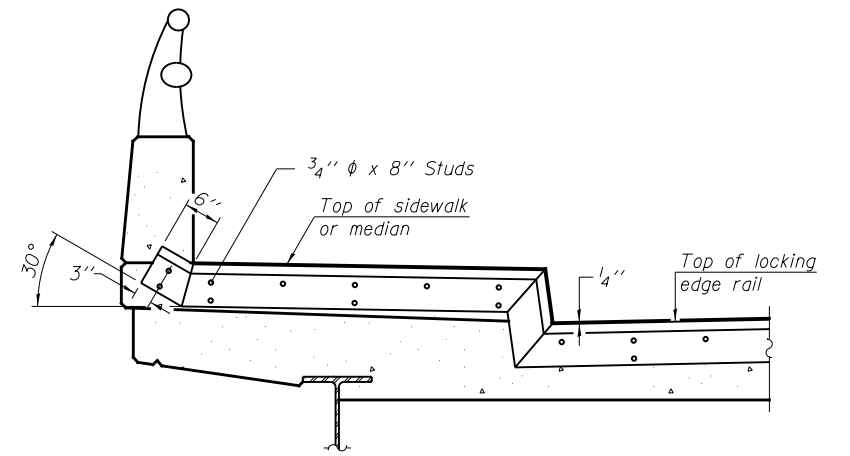
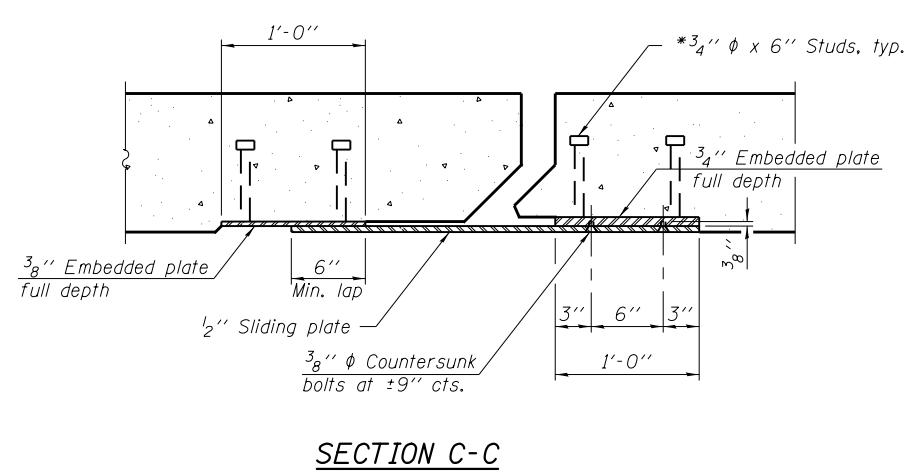
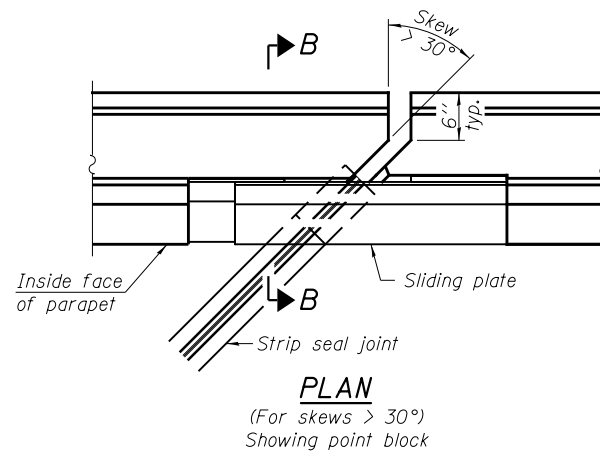
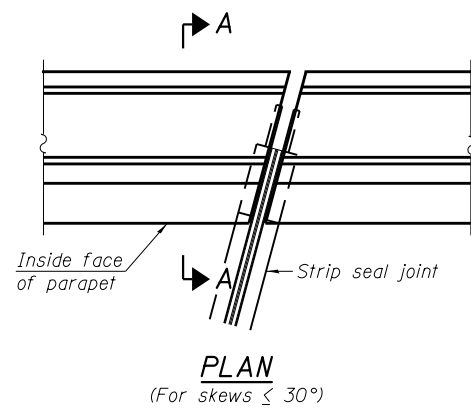
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**MODULAR EXPANSION JOINT DETAILS  
STRUCTURE NO. 016-0461**

SHEET NO. S5-35 OF S5-72 SHEETS

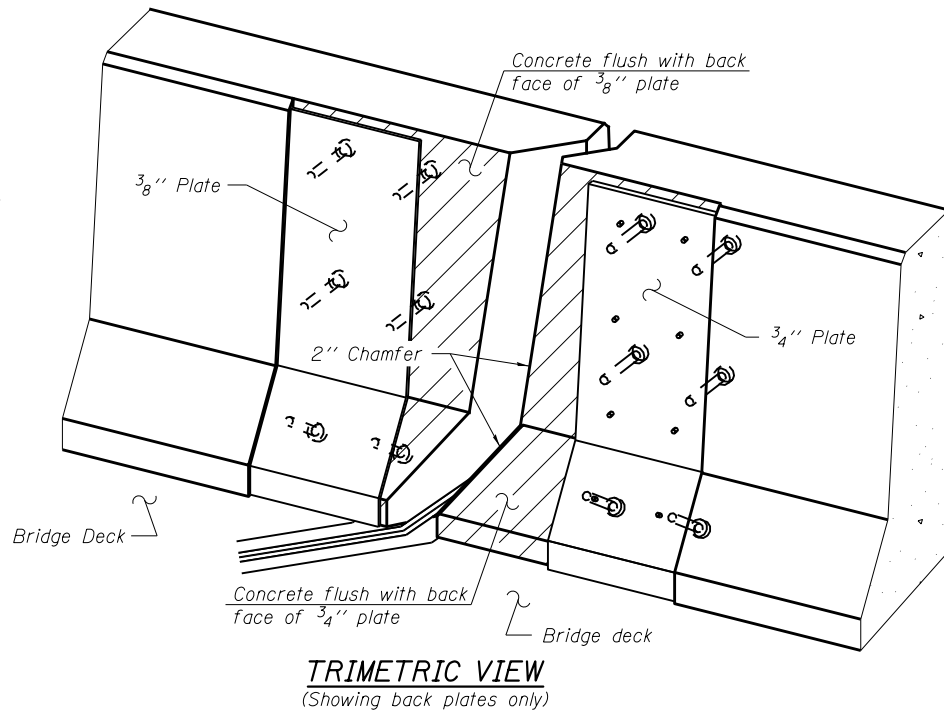
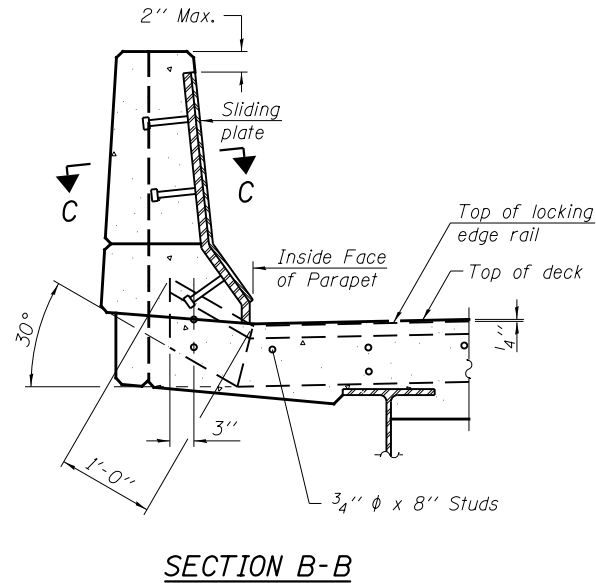
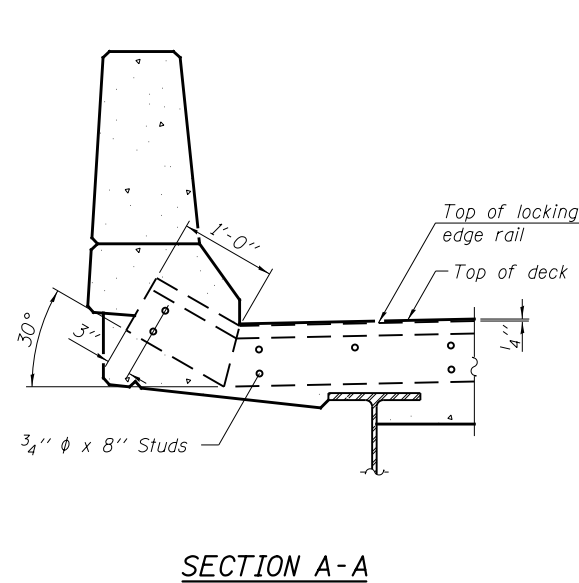
F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	987
<b>CONTRACT NO. 60X93</b>				

ILLINOIS FED. AID PROJECT



**TYPICAL END TREATMENT AT SIDEWALK OR MEDIAN**

Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.



**Notes:**  
The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.

The Locking Edge Rails depicted are conceptual only, except for the minimum dimensions shown. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities.

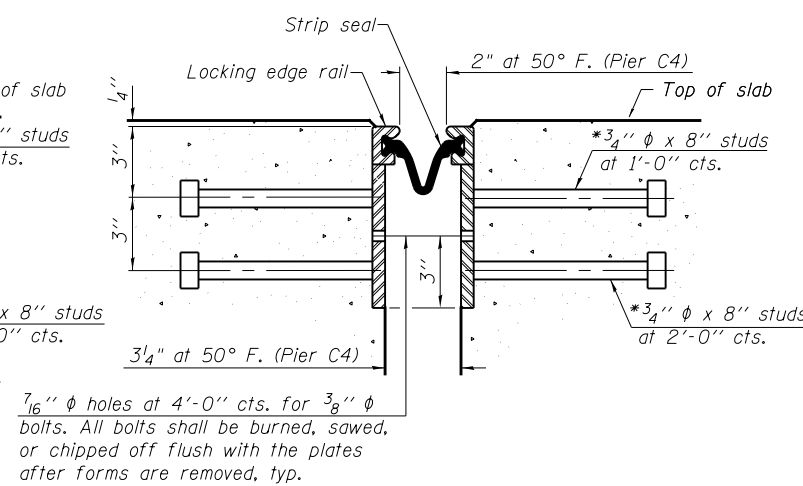
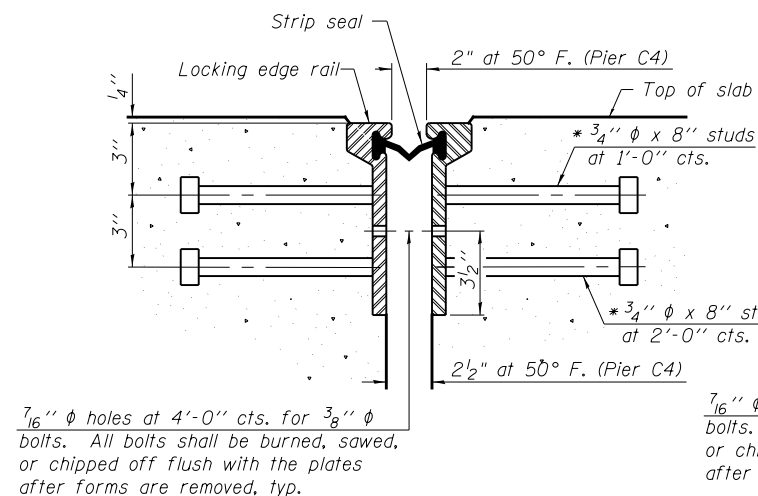
The manufacturer's recommended installation methods shall be followed.

The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.

All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications. Maximum space between rail segments shall be 3/16", sealed with a suitable sealant. Joints in rails within 10 ft. of curbs shall be welded.

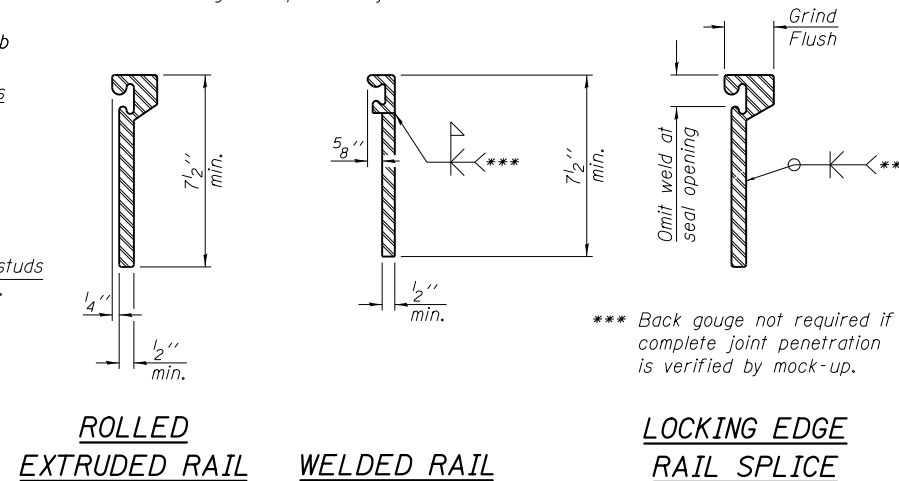
Parapet plates and anchorage studs for skews  $> 30^\circ$  included in the cost of Preformed Joint Strip Seal.

Remove existing strip seal from Contract 60X78 and install a new continuous strip seal for the full width of the bridge. The cost of removal and installation of continuous strip seal shall be included in the cost of Preformed Joint Strip Seal. This work shall be completed in stages utilizing nighttime or weekend allowable lane closures. No additional compensation will be allowed to perform this task. See Notes of MOT plans.



7/16"  $\phi$  holes at 4'-0" cts. for 3/8"  $\phi$  bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

7/16"  $\phi$  holes at 4'-0" cts. for 3/8"  $\phi$  bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.



\*\*\* Back gouge not required if complete joint penetration is verified by mock-up.

The inside of the locking edge rail groove shall be free of weld residue.  
Rolled rail shown, welded rail similar.

**LOCKING EDGE RAILS**

**BILL OF MATERIAL**

Item	Unit	Total
Preformed Joint Strip Seal	Foot	36

\* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PREFORMED JOINT STRIP SEAL - PIER C4  
STRUCTURE NO. 016-0461

SHEET NO. S5-36 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	988
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

0160461-60X93-S036-EXP.dgn



USER NAME = ibrahiml  
DESIGNED - NJP  
CHECKED - PJL  
PLOT SCALE = N.T.S.  
DRAWN - NJP  
PLOT DATE = 7/30/2018  
CHECKED - JIG

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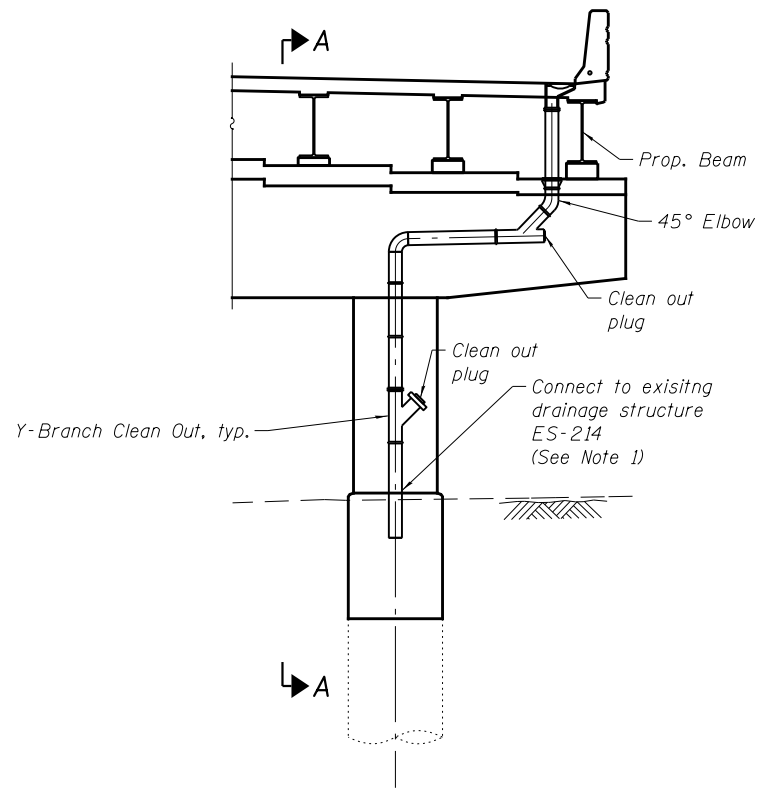
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PREFORMED JOINT STRIP SEAL - PIER C4  
STRUCTURE NO. 016-0461

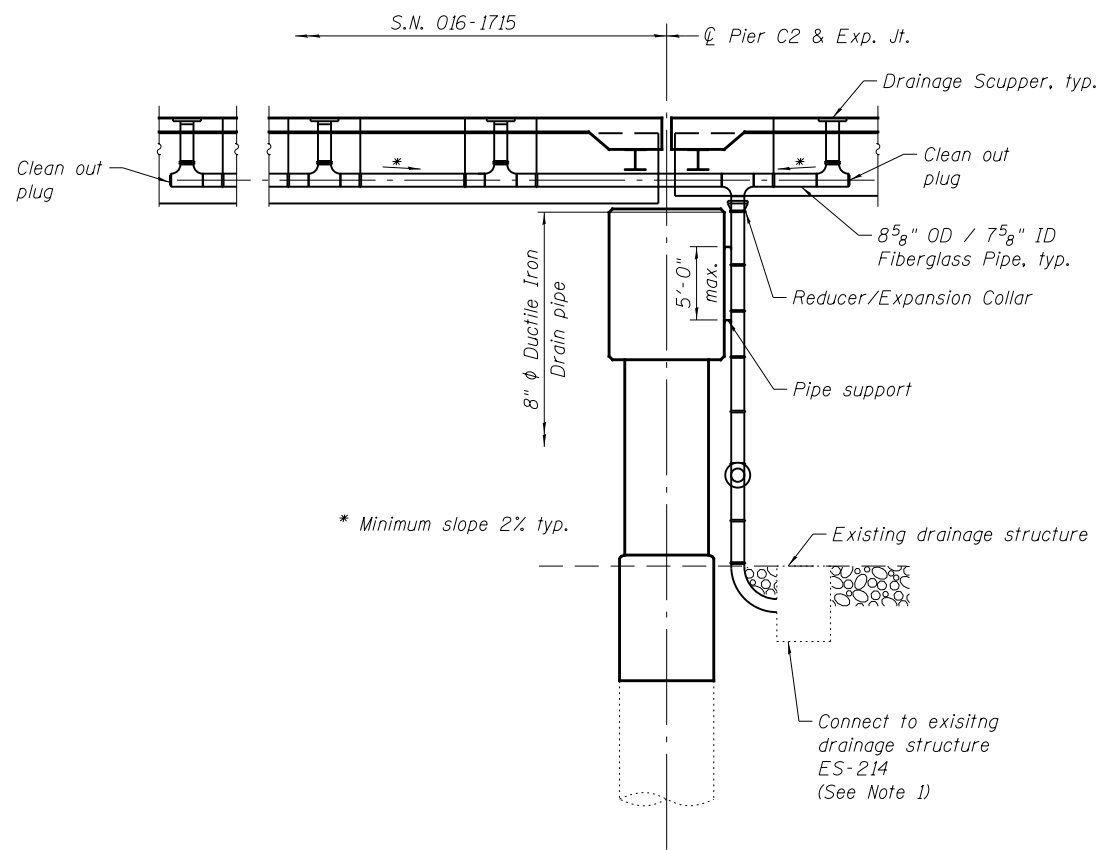
SHEET NO. S5-36 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	988
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

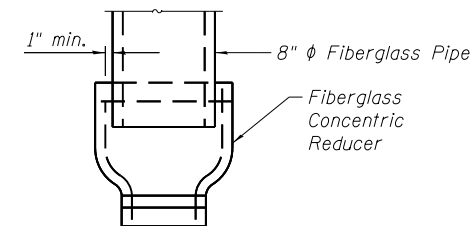




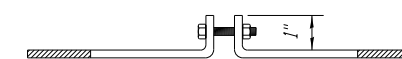
**ELEVATION PIER C2**  
(Looking West)



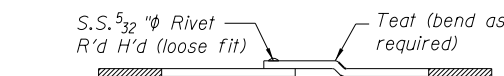
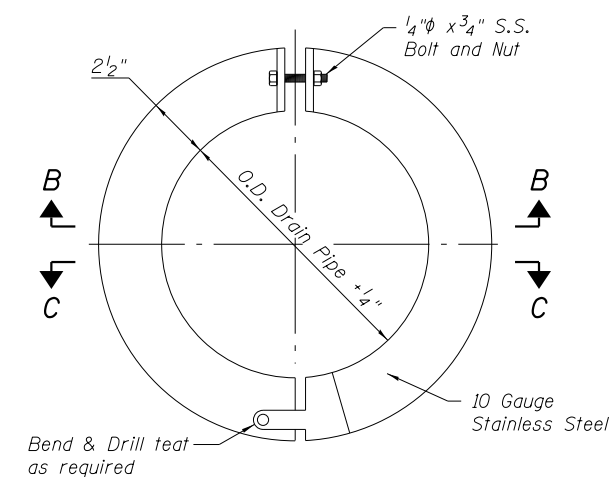
**SECTION A-A**



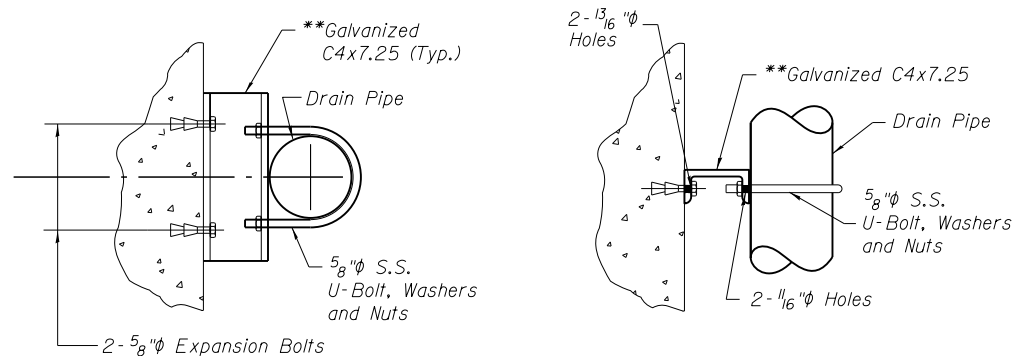
**REDUCER DETAIL**



**SECTION B-B**



**SECTION C-C**  
**DETAIL OF EXPANSION COLLAR**

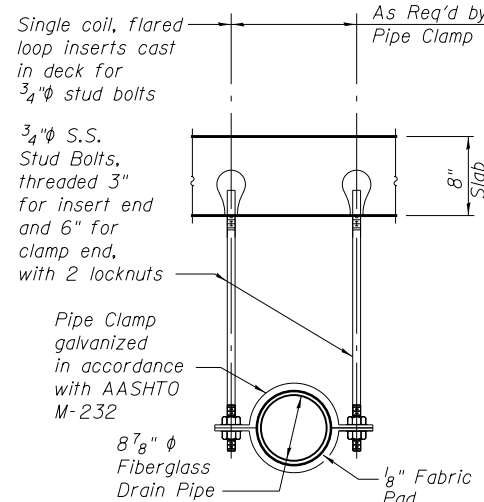


**PLAN**

**ELEVATION**

**PIPE SUPPORT DETAIL**

\*\* Provide curved C6x8.2 to fit Round Pier Columns where needed



**PIPE SUPPORT DETAIL**

- Notes:
1. Drainage system shall connect to drainage structure. See drainage schedule for stationing and offsets of drainage structure.
  2. S.S. denotes Stainless Steel.

0160461-60X93-5037-DRN.dgn



WSP USA Inc. 30 N. LASALLE STREET SUITE 4000 CHICAGO, IL 60602 TEL: (312) 782-8150 FAX: (312) 782-1684	USER NAME = ibrahiml	DESIGNED - NJP	REVISED -
		CHECKED - P.JL	REVISED -
	PLOT SCALE = N.T.S.	DRAWN - NJP	REVISED -
	PLOT DATE = 7/30/2018	CHECKED - JIG	REVISED -

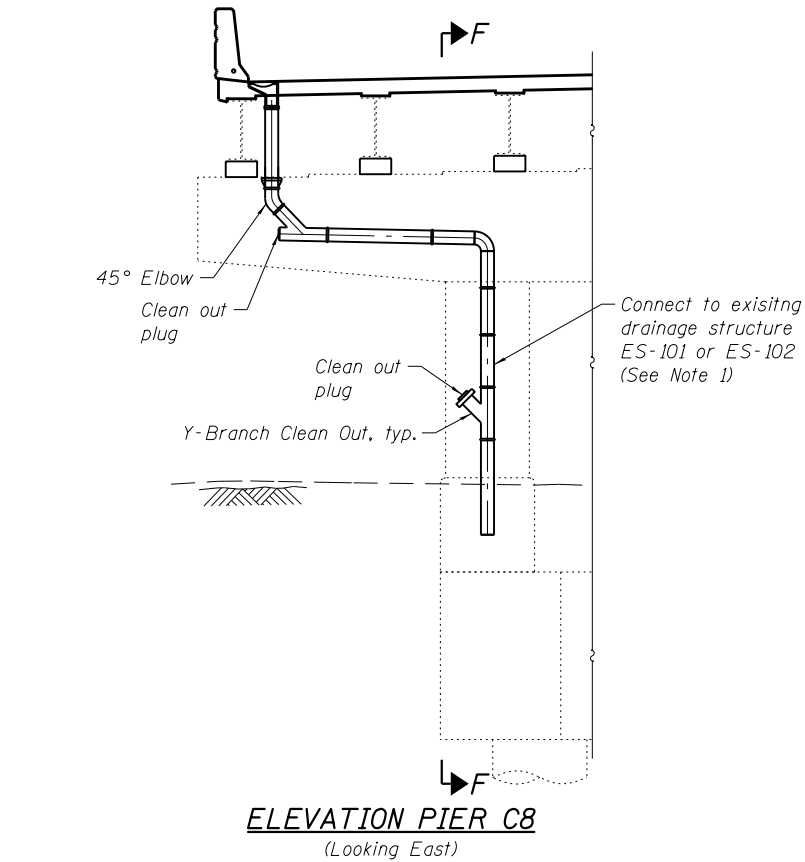
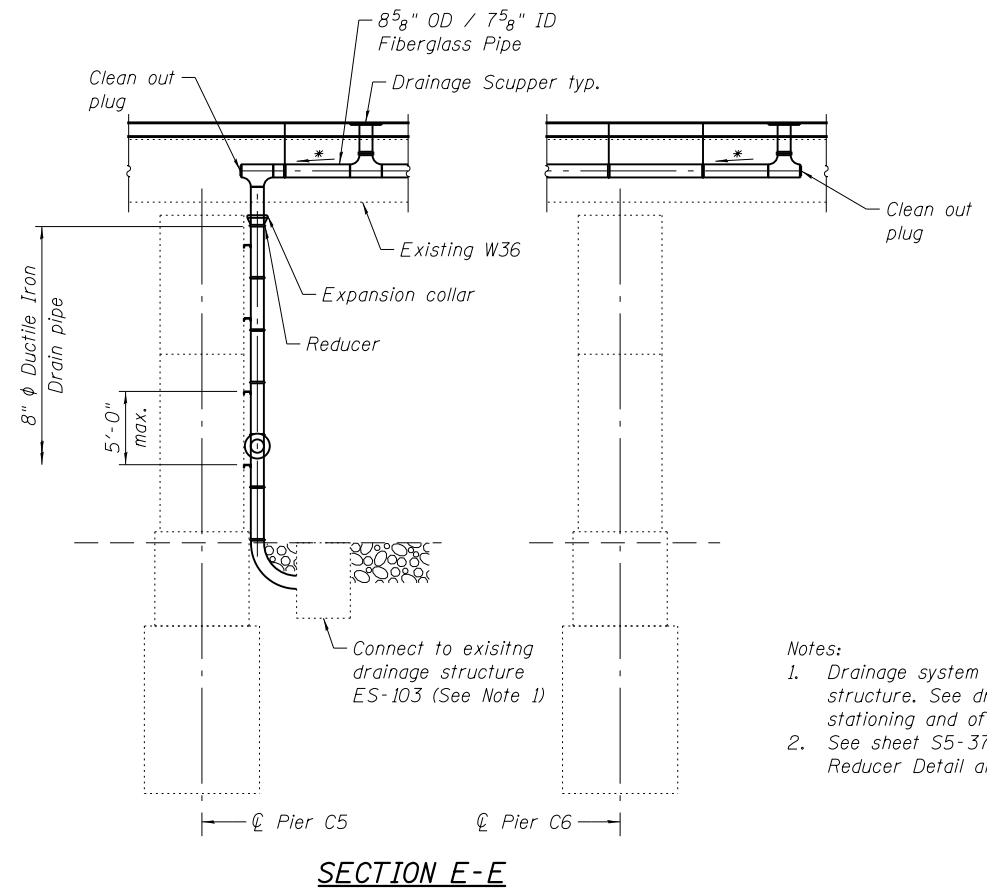
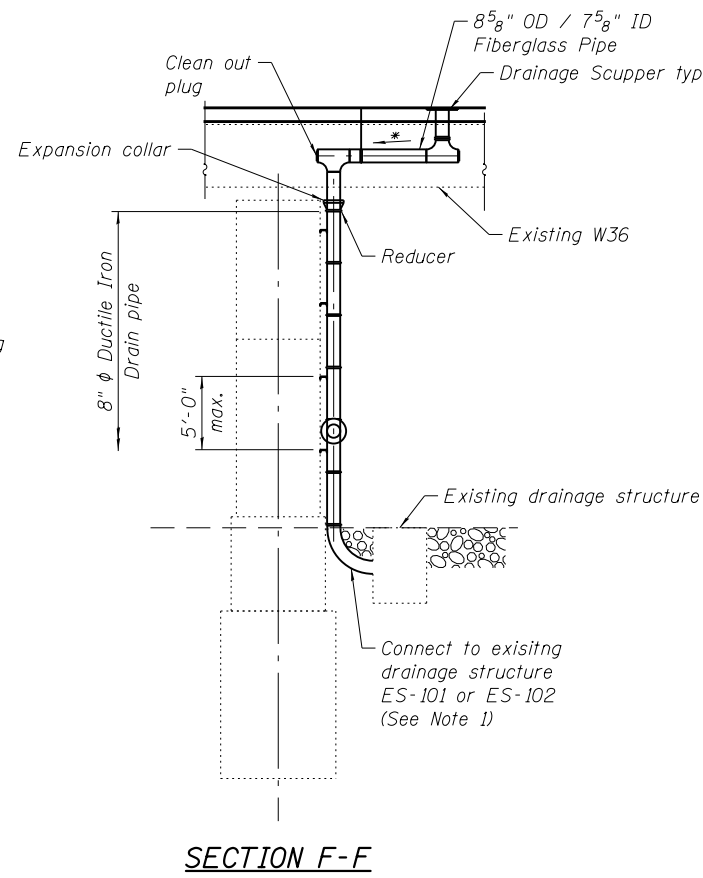
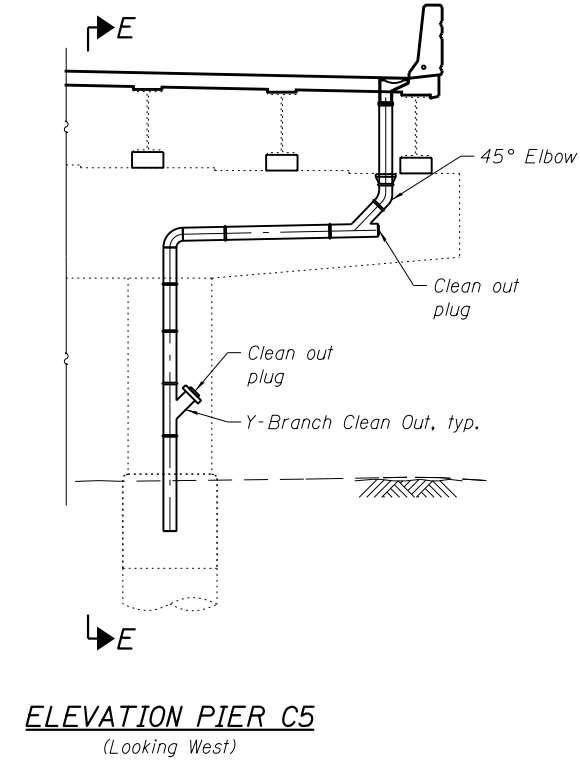
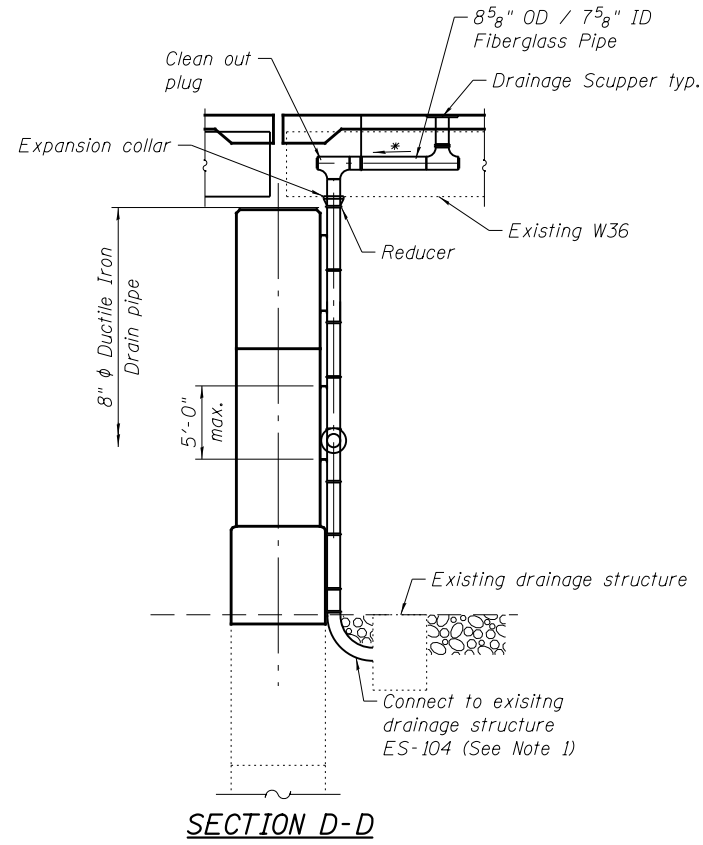
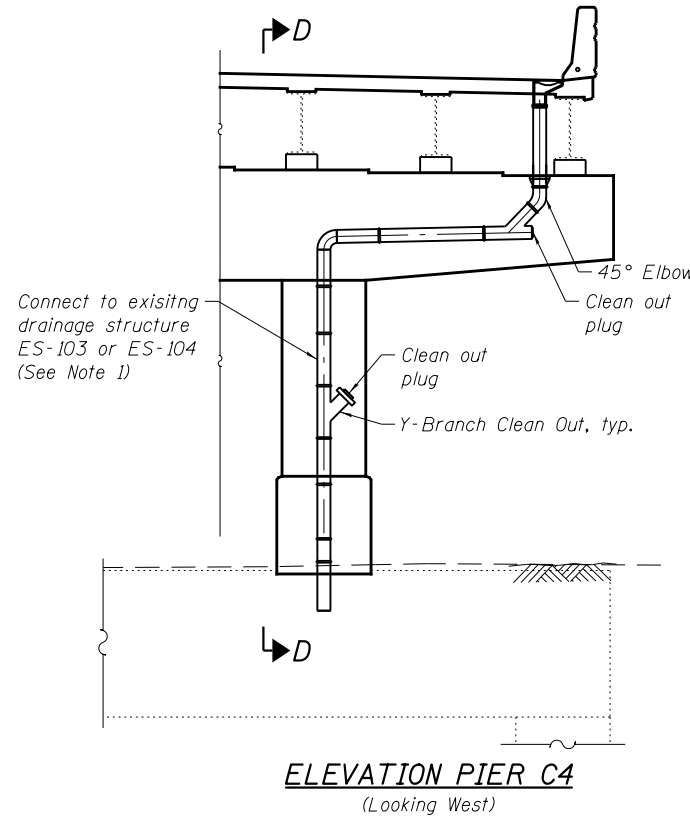
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**DRAINAGE SYSTEM DETAILS I**  
**STRUCTURE NO. 016-0461**

SHEET NO. S5-37 OF S5-72 SHEETS

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	989
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				

\* Minimum slope 2% typ.



**BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Drainage System	L. Sum	0.1

- Notes:
1. Drainage system shall connect to drainage structure. See drainage schedule for stationing and offsets of drainage structure.
  2. See sheet S5-37 for Expansion Collar Detail, Reducer Detail and Pipe Support Detail.

0160461-60X93-5038-DRN.dgn



WSP USA Inc.  
30 N. LASALLE STREET  
SUITE 4000  
CHICAGO, IL 60602  
TEL: (312) 782-8150  
FAX: (312) 782-1684

USER NAME = ibrahiml  
DESIGNED - NJP  
CHECKED - PJL  
PLOT SCALE = N.T.S.  
DRAWN - NJP  
PLOT DATE = 7/30/2018  
CHECKED - JIG

DESIGNED - NJP  
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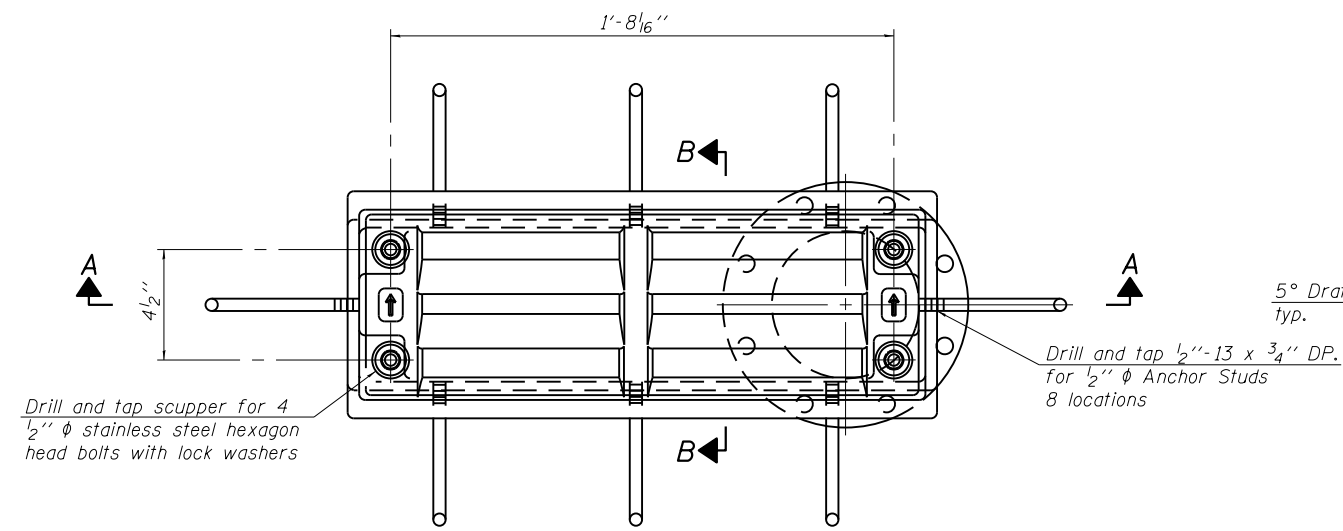
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**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

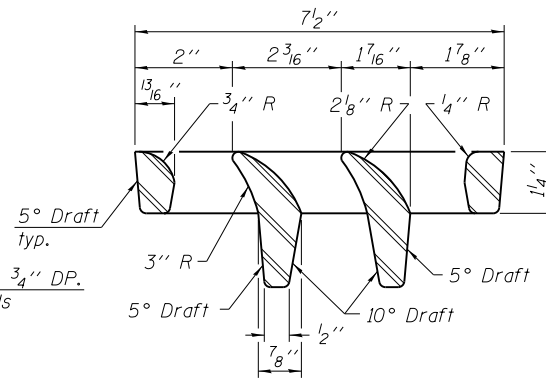
**DRAINAGE SYSTEM DETAILS II  
STRUCTURE NO. 016-0461**

SHEET NO. S5-38 OF S5-72 SHEETS

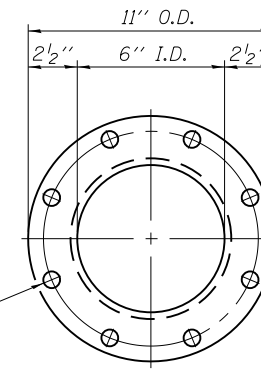
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90/94/290	2014-013R&B-R	COOK	1972	990
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				



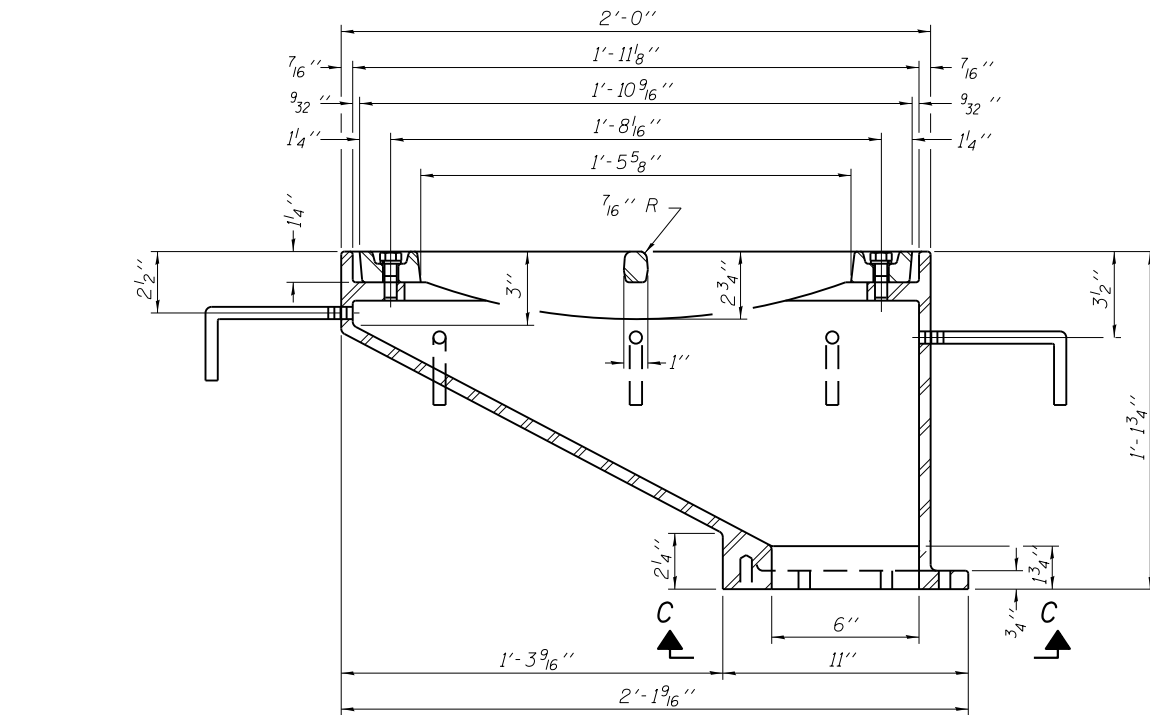
PLAN



VANE GRATE DETAIL

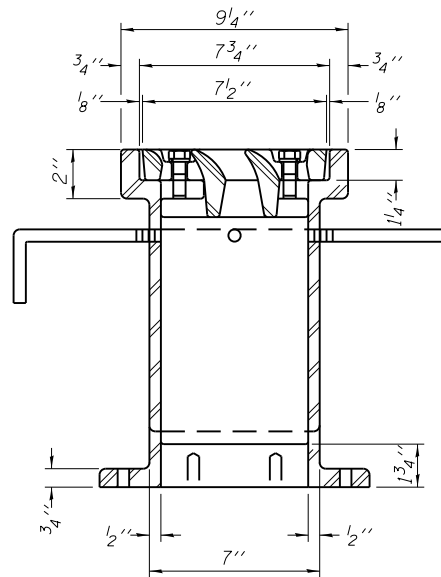


VIEW C-C

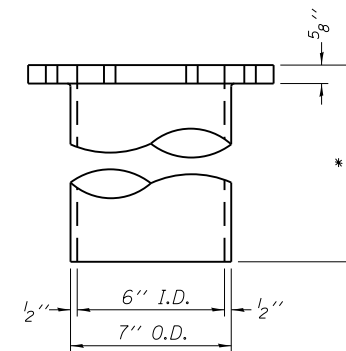


SECTION A-A

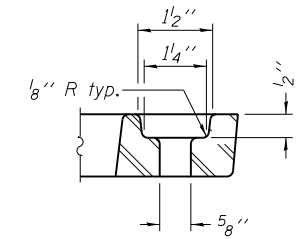
See sheet S5-27 & S5-32 for scupper location relative to parapet.



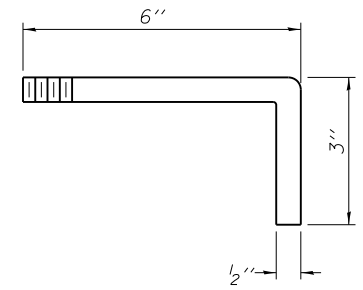
SECTION B-B



DOWNSPOUT



BOLT HOLE DETAIL



ANCHOR STUD DETAIL

Drill and tap 8 holes for 1/2"-13 bolts on a 9<sup>1</sup>/<sub>2</sub>" φ bolt circle. (2 blind holes are 1/4" deep, 6 thru holes)

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-12.

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.

\* Length of downspout to be coordinated with Drainage System

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Drainage Scupper, DS-12	Each	5

DS-12

7-1-10



USER NAME = ibrahimmi  
 DESIGNED - NJP  
 CHECKED - PJL  
 PLOT SCALE = N.T.S.  
 DRAWN - NJP  
 PLOT DATE = 7/30/2018  
 CHECKED - JIG

DESIGNED - NJP  
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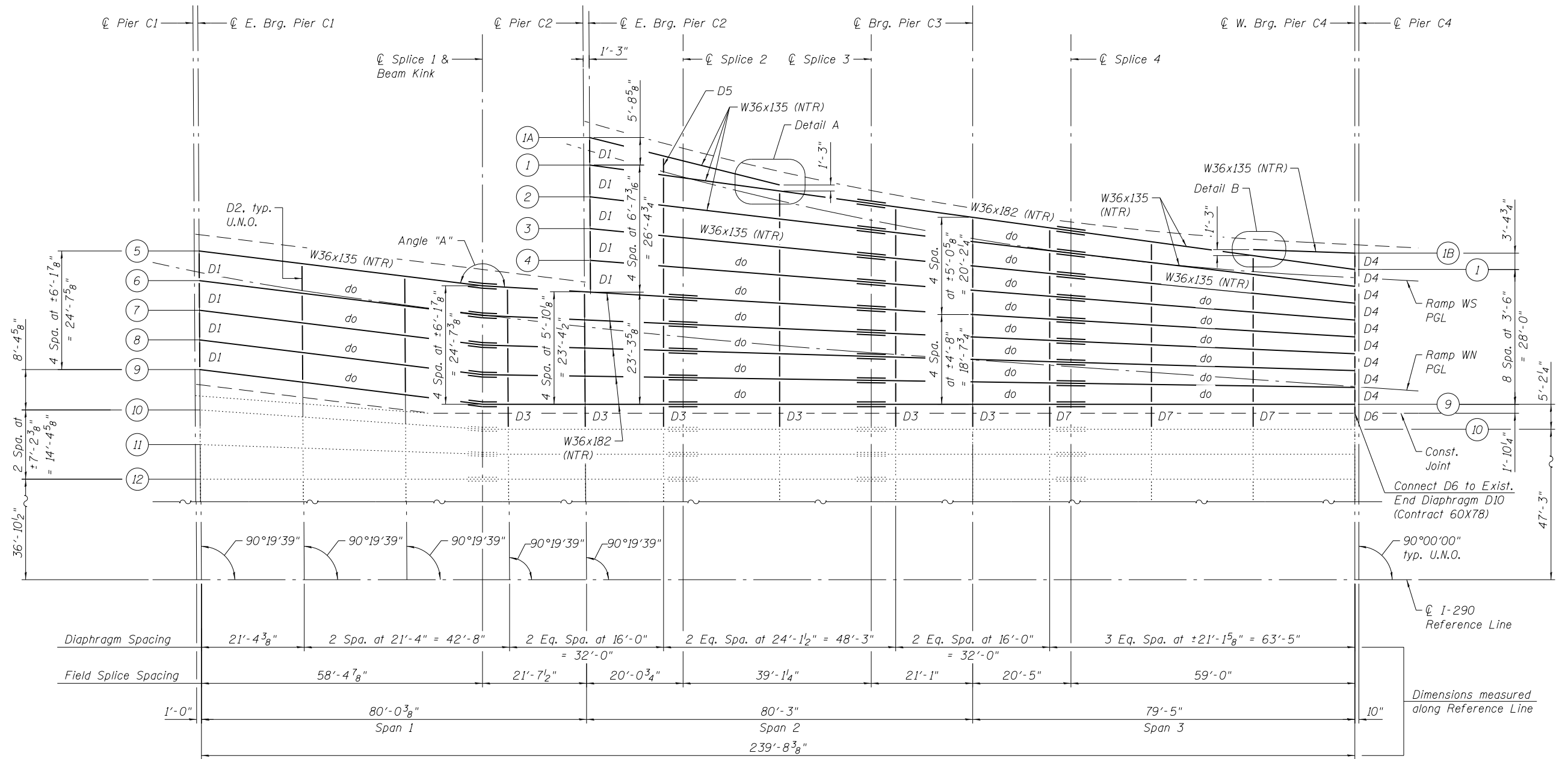
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

DRAINAGE SCUPPER, DS-12  
 STRUCTURE NO. 016-0461

SHEET NO. S5-39 OF S5-72 SHEETS

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	991
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

0160461-60X93-5039-DRN.dgn



FRAMING PLAN - UNIT I

**KINKED BEAM ANGLES  
AT FIELD SPLICE 1**

Beam	Angle "A"
5	176°21'03"
6	175°30'54"
7	174°40'39"
8	173°50'20"
9	172°59'59"

**TOP OF BEAM ELEVATIONS**  
(For fabrication only)

	Beam 1A	Beam 1B	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6	Beam 7	Beam 8	Beam 9
℄ E. Brg. Pier C1	---	---	---	---	---	---	604.93	605.23	605.60	605.98	606.35
℄ Splice 1	---	---	---	---	---	---	607.13	607.28	607.63	607.99	608.33
℄ Brg. Pier 2	---	---	---	---	---	---	607.54	607.62	607.88	608.17	608.46
℄ E. Brg. Pier C2	606.51	---	606.81	607.15	607.50	607.60	---	---	---	---	---
℄ Splice 2	---	---	---	---	---	---	607.94	607.95	608.12	608.34	608.59
℄ Conn. Beam 1	607.07	---	607.13	---	---	---	---	---	---	---	---
℄ Splice 3	---	---	607.28	607.60	607.95	608.27	608.63	608.79	608.96	609.12	609.28
℄ Brg. Pier C3	---	---	607.94	607.28	607.28	608.79	609.07	609.23	609.37	609.51	609.65
℄ Splice 4	---	---	608.58	607.94	607.94	609.29	609.50	609.66	609.77	609.88	610.00
℄ Conn. Beam 1	---	609.48	609.42	---	---	---	---	---	---	---	---
℄ W. Brg. Pier C4	---	609.81	609.89	609.23	610.06	610.15	610.23	610.32	610.37	610.44	610.51

Notes:

1. See sheet S5-41 for beam elevations.
2. See sheet S5-42 for moment and reaction tables.
3. See sheet S5-43 for diaphragm details.
4. See sheet S5-44 for Detail A & B and splice details.
5. All beams and splice plates shall be AASHTO M270 Grade 50.
6. All diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
7. Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.
8. All structural steel shall be hot dipped galvanized. Cost included with Furnishing and Erecting Structural Steel.

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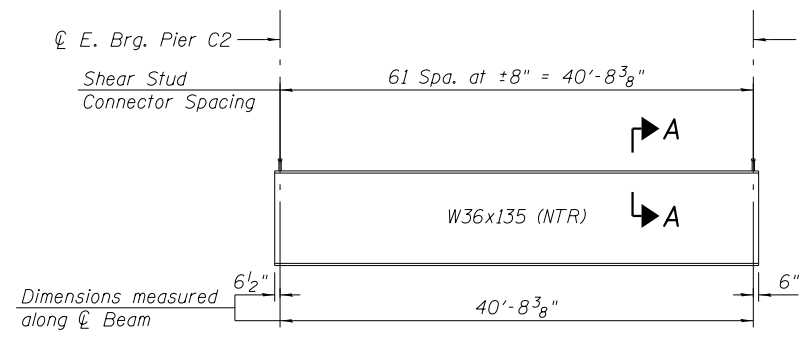
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DESIGNED - LFC/PJL  
CHECKED - RA  
PLOT SCALE = N.T.S.  
DRAWN - LFC/PJL  
PLOT DATE = 7/30/2018  
DESIGNED - RA  
CHECKED - JIG

STATE OF ILLINOIS  
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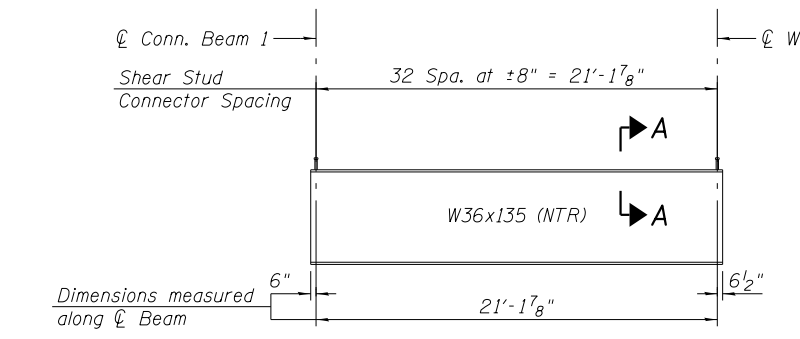
FRAMING PLAN - UNIT I  
STRUCTURE NO. 016-0461

SHEET NO. S5-40 OF S5-72 SHEETS

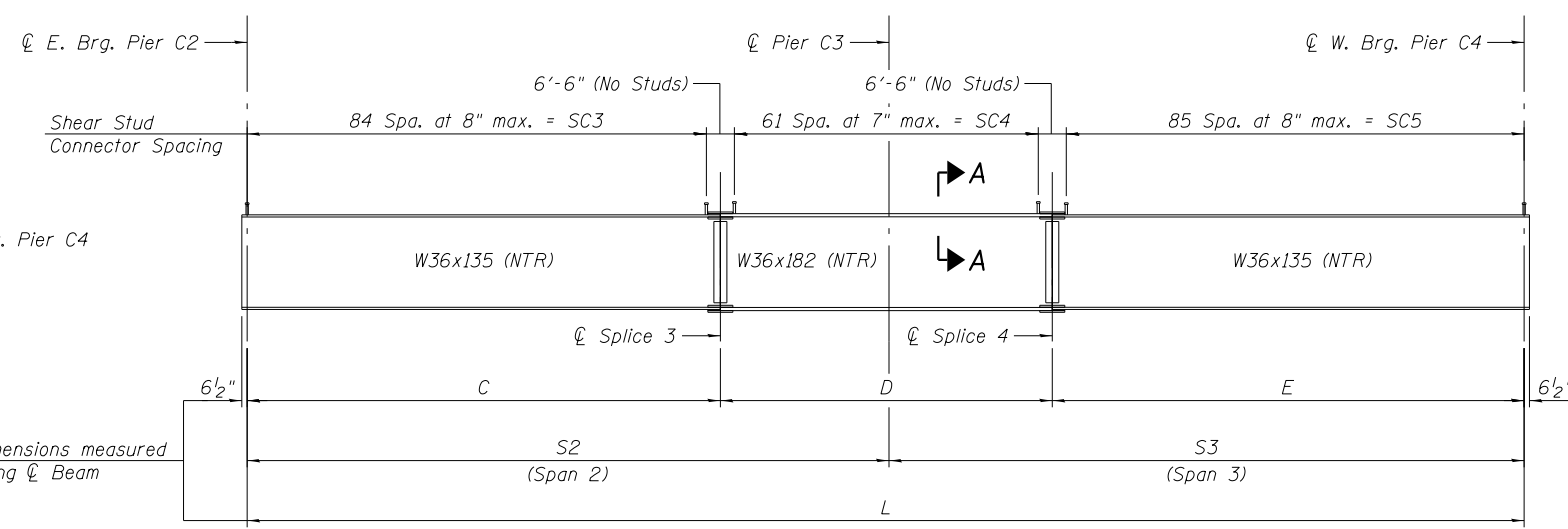
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90/94/290	2014-013R&B-R	COOK	1972	992
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



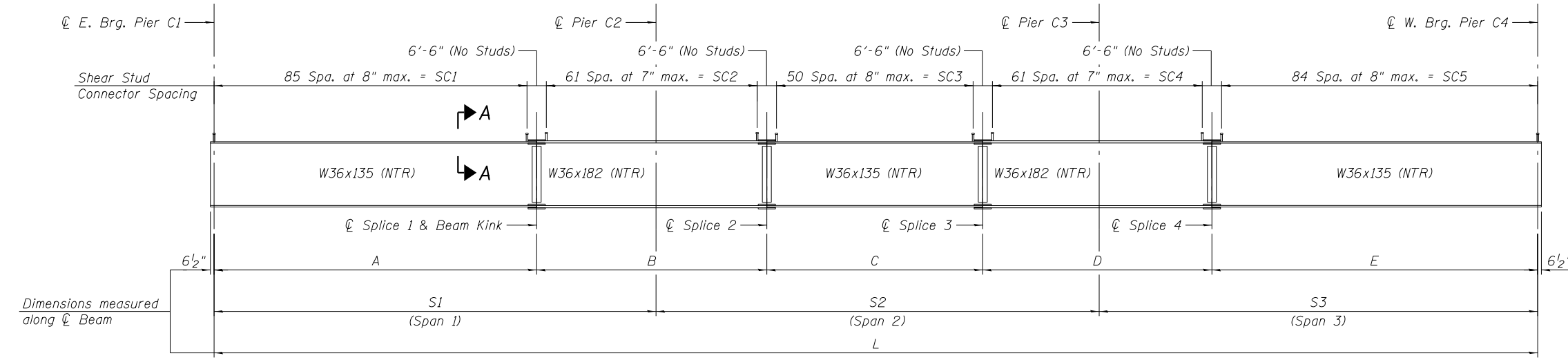
**ELEVATION - BEAM 1A**



**ELEVATION - BEAM 1B**



**ELEVATION - BEAMS 1 THRU 4**

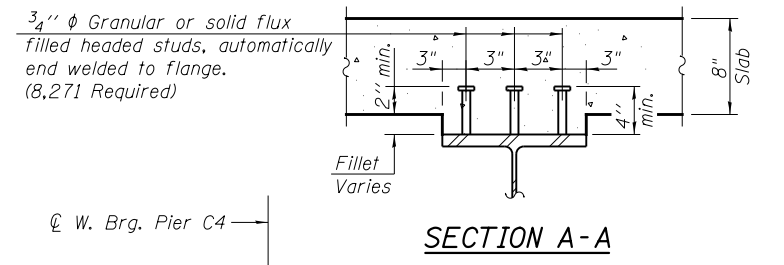


**ELEVATION - BEAMS 5 THRU 9**

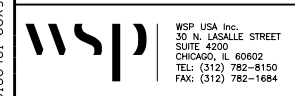
**BEAM DIMENSIONS & STUD SHEAR CONNECTOR SPACING**

Beam	L	S1	S2	S3	A	B	C	D	E	SC1	SC2	SC3	SC4	SC5
1	160'-5 5/8"	---	80'-3 7/8"	80'-1 7/8"	---	---	59'-0 1/2"	41'-10 5/8"	59'-6 5/8"	---	---	55'-9 1/2"	35'-4 5/8"	56'-3 5/8"
2	160'-0 1/2"	---	80'-1"	79'-11 1/2"	---	---	58'-10 1/4"	41'-9 3/8"	59'-4 7/8"	---	---	55'-7 1/4"	35'-3 3/8"	56'-1 7/8"
3	159'-8 9/8"	---	79'-10 5/8"	79'-9 1/2"	---	---	58'-8 3/8"	41'-8 3/8"	59'-3 3/8"	---	---	55'-5 3/8"	35'-2 3/8"	56'-0 3/8"
4	159'-4 3/8"	---	79'-8 1/2"	79'-7 7/8"	---	---	58'-6 3/4"	41'-7 7/8"	59'-2 1/8"	---	---	55'-3 3/4"	35'-1 1/2"	55'-11 1/8"
5	240'-11 1/4"	80'-6 3/4"	80'-9 1/8"	79'-6 5/8"	59'-4"	41'-9 1/8"	39'-2"	41'-6 7/8"	59'-1 1/4"	56'-1"	35'-3 1/2"	32'-8"	35'-0 7/8"	55'-10 1/4"
6	240'-9 1/8"	80'-6 1/2"	80'-8 3/4"	79'-5 7/8"	59'-3 5/8"	41'-8 3/4"	39'-1 3/4"	41'-6 1/2"	59'-0 5/8"	56'-0 5/8"	35'-2 3/4"	32'-7 3/4"	35'-0 1/2"	55'-9 5/8"
7	240'-7 1/2"	80'-6 3/8"	80'-7 3/4"	79'-5 3/8"	59'-3 1/8"	41'-8 3/8"	39'-1 1/2"	41'-6 1/4"	59'-0 1/4"	56'-0 1/8"	35'-2 3/8"	32'-7 1/2"	35'-0 1/4"	55'-9 1/4"
8	240'-6 3/8"	80'-6 1/4"	80'-7 1/8"	79'-5 1/8"	59'-2 3/4"	41'-8 1/4"	39'-1 1/4"	41'-6"	59'-0 1/8"	55'-11 3/4"	35'-2 1/4"	32'-7 1/4"	35'-0"	55'-9 1/8"
9	240'-5 3/4"	80'-6 1/4"	80'-6 5/8"	79'-5"	59'-2 1/4"	41'-8 1/4"	39'-1 1/4"	41'-6"	59'-0"	55'-11 1/4"	35'-2 1/4"	32'-7 1/4"	35'-0"	55'-9"

Notes:  
 1. Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.



0160461-60X93-5041-DET.dgn



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 CHECKED - JIG

REVISED -  
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**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**SUPERSTRUCTURE STEEL DETAILS I - UNIT I  
 STRUCTURE NO. 016-0461**

SHEET NO. S5-41 OF S5-72 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	993
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

EXT. BEAM MOMENT TABLE - UNIT I	BEAM 1A 0.5 L	BEAM 1B 0.5 L	
$I_s$	(in <sup>4</sup> ) 7,800	7,800	
$I_c(n)$	(in <sup>4</sup> ) 18,137	16,668	
$I_c(3n)$	(in <sup>4</sup> ) 13,328	12,179	
$I_c(cr)$	(in <sup>4</sup> )		
$S_s$	(in <sup>3</sup> ) 439	439	
$S_c(n)$	(in <sup>3</sup> ) 608	592	
$S_c(3n)$	(in <sup>3</sup> ) 548	531	
$S_c(cr)$	(in <sup>3</sup> )		
DC1	(k/')	0.56 0.44	
M <sub>DC1</sub>	(k)	202 25	
DC2	(k/')	0.06 0.06	
M <sub>DC2</sub>	(k)	19 3	
DW	(k/')	0.13 0.09	
M <sub>DW</sub>	(k)	41 5	
LLDF		0.474 0.427	
M <sub>ψ</sub> + IM	(k)	523 137	
M <sub>u</sub> (Strength I)	(k)	1,253 282	
φ <sub>r</sub> M <sub>n</sub>	(k)	3,083 2,937	
f <sub>s</sub> DC1	(ksi)	5.5 0.7	
f <sub>s</sub> DC2	(ksi)	0.4 0.1	
f <sub>s</sub> DW	(ksi)	0.9 0.1	
f <sub>s</sub> (ψ+IM)	(ksi)	10.3 2.8	
f <sub>s</sub> (Service II)	(ksi)	20.2 4.5	
0.95R <sub>n</sub> F <sub>yr</sub>	(ksi)	47.5 47.5	
f <sub>s</sub> (Total)(Strength I)	(ksi)	26.8 6.0	
φ <sub>r</sub> F <sub>n</sub>	(ksi)		
V <sub>r</sub>	(k)	20.1 6.0	

EXT. BEAM 1 MOMENT TABLE - UNIT I	0.5 Sp. 2	Pier C3	0.6 Sp. 3
$I_s$	(in <sup>4</sup> ) 7,800	11,300	7,800
$I_c(n)$	(in <sup>4</sup> ) 23,646		21,664
$I_c(3n)$	(in <sup>4</sup> ) 17,399		15,460
$I_c(cr)$	(in <sup>4</sup> )	13,624	
$S_s$	(in <sup>3</sup> ) 439	623	439
$S_c(n)$	(in <sup>3</sup> ) 694		674
$S_c(3n)$	(in <sup>3</sup> ) 626		600
$S_c(cr)$	(in <sup>3</sup> )	684	
DC1	(k/')	0.84 0.65 0.64	
M <sub>DC1</sub>	(k)	475 684 230	
DC2	(k/')	0.06 0.06 0.06	
M <sub>DC2</sub>	(k)	40 63 28	
DW	(k/')	0.12 0.11 0.10	
M <sub>DW</sub>	(k)	89 116 38	
LLDF		0.602 0.433 0.458	
M <sub>ψ</sub> + IM	(k)	903 898 717	
M <sub>u</sub> (Strength I)	(k)	2,358 2,679 1,634	
φ <sub>r</sub> M <sub>n</sub>	(k)	3,284 3,432 3,352	
f <sub>s</sub> DC1	(ksi)	13.0 13.2 6.3	
f <sub>s</sub> DC2	(ksi)	0.8 1.1 0.6	
f <sub>s</sub> DW	(ksi)	1.7 2.0 0.8	
f <sub>s</sub> (ψ+IM)	(ksi)	15.6 15.7 12.8	
f <sub>s</sub> (Service II)	(ksi)	35.8 36.8 24.2	
0.95R <sub>n</sub> F <sub>yr</sub>	(ksi)	47.5 47.5 47.5	
f <sub>s</sub> (Total)(Strength I)	(ksi)	47.0 48.5 32.4	
φ <sub>r</sub> F <sub>n</sub>	(ksi)		
V <sub>r</sub>	(k)	28.5	25.0

INT. BEAMS 2 THRU 4 MOMENT TABLE - UNIT I	0.4 Sp. 2	Pier C3	0.6 Sp. 3
$I_s$	(in <sup>4</sup> ) 7,800	11,300	7,800
$I_c(n)$	(in <sup>4</sup> ) 22,938		20,833
$I_c(3n)$	(in <sup>4</sup> ) 16,669		14,738
$I_c(cr)$	(in <sup>4</sup> )	13,962	
$S_s$	(in <sup>3</sup> ) 439	623	439
$S_c(n)$	(in <sup>3</sup> ) 687		666
$S_c(3n)$	(in <sup>3</sup> ) 617		589
$S_c(cr)$	(in <sup>3</sup> )	693	
DC1	(k/')	0.76 0.71 0.57	
M <sub>DC1</sub>	(k)	369 632 224	
DC2	(k/')	0.06 0.06 0.06	
M <sub>DC2</sub>	(k)	29 58 28	
DW	(k/')	0.13 0.11 0.10	
M <sub>DW</sub>	(k)	69 105 37	
LLDF		0.496 0.453 0.388	
M <sub>ψ</sub> + IM	(k)	845 858 661	
M <sub>u</sub> (Strength I)	(k)	2,080 2,522 1,527	
φ <sub>r</sub> M <sub>n</sub>	(k)	3,362 3,500 3,240	
f <sub>s</sub> DC1	(ksi)	10.1 12.2 6.1	
f <sub>s</sub> DC2	(ksi)	0.6 1.0 0.6	
f <sub>s</sub> DW	(ksi)	1.3 1.8 0.8	
f <sub>s</sub> (ψ+IM)	(ksi)	14.8 14.9 11.9	
f <sub>s</sub> (Service II)	(ksi)	31.2 34.3 22.9	
0.95R <sub>n</sub> F <sub>yr</sub>	(ksi)	47.5 47.5 47.5	
f <sub>s</sub> (Total)(Strength I)	(ksi)	41.2 45.2 30.3	
φ <sub>r</sub> F <sub>n</sub>	(ksi)		
V <sub>r</sub>	(k)	29.1	29.3

$I_s, S_s$ : 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.).

LLDF: Live load distribution factor.

M<sub>ψ</sub> + IM: 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<sub>DC1</sub> + M<sub>DC2</sub>) + 1.5 M<sub>DW</sub> + 1.75 M<sub>ψ</sub> + 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<sub>DC1</sub> / S<sub>nc</sub>

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<sub>DC2</sub> / S<sub>c</sub>(3n) or M<sub>DC2</sub> / S<sub>c</sub>(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<sub>DW</sub> / S<sub>c</sub>(3n) or M<sub>DW</sub> / S<sub>c</sub>(cr) as applicable.

f<sub>s</sub> (ψ+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<sub>ψ</sub> + IM / S<sub>c</sub>(n) or M<sub>ψ</sub> + IM / S<sub>c</sub>(cr) as applicable.

f<sub>s</sub> (Service II): Sum of stresses as computed below (ksi).

f<sub>sDC1</sub> + f<sub>sDC2</sub> + f<sub>sDW</sub> + 1.3 f<sub>s</sub> (ψ+IM)

0.95R<sub>n</sub>F<sub>yr</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<sub>sDC1</sub> + f<sub>sDC2</sub>) + 1.5 f<sub>sDW</sub> + 1.75 f<sub>s</sub> (ψ+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.

REACTION TABLE-UNIT I	BEAM 1A Pier C2/Fascia	BEAM 1B Fascia/Pier C3
LLDF	0.521/0.349	0.287/0.306
R <sub>DC1</sub>	(k) 19.0/15.0	4.5/4.7
R <sub>DC2</sub>	(k) 1.7/1.5	0.6/0.6
R <sub>DW</sub>	(k) 3.8/3.3	0.9/0.9
R <sub>ψ</sub> + IM	(k) 57.7/43.1	19.3/21.2
R <sub>Total</sub>	(k) 82.2/62.9	25.3/27.4

EXT. BEAM 1 REACTION TABLE - UNIT I	Pier C2	Pier C3	Pier C4
LLDF	0.676	0.549	0.497
R <sub>DC1</sub>	(k) 18.1	76.1	16.6
R <sub>DC2</sub>	(k) 1.5	7.3	1.9
R <sub>DW</sub>	(k) 3.6	13.4	2.8
R <sub>ψ</sub> + IM	(k) 67.1	94.7	49.6
R <sub>Total</sub>	(k) 90.3	191.5	70.9

INT. BEAMS 2 THRU 4 REACTION TABLE - UNIT I	Pier C2	Pier C3	Pier C4
LLDF	0.733	0.616	0.514
R <sub>DC1</sub>	(k) 27.3	73.4	17.1
R <sub>DC2</sub>	(k) 2.0	6.7	1.9
R <sub>DW</sub>	(k) 4.9	12.2	2.6
R <sub>ψ</sub> + IM	(k) 87.0	85.2	50.8
R <sub>Total</sub>	(k) 121.2	177.5	72.4

INT. BEAMS 6 THRU 8 MOMENT TABLE - UNIT I	0.4 Sp. 1	Pier C2	0.5 Sp. 2	Pier C3	0.6 Sp. 3
$I_s$	(in <sup>4</sup> ) 7,800	11,300	7,800	11,300	7,800
$I_c(n)$	(in <sup>4</sup> ) 23,102		22,221		20,613
$I_c(3n)$	(in <sup>4</sup> ) 16,834		15,973		14,556
$I_c(cr)$	(in <sup>4</sup> )	14,358		13,781	
$S_s$	(in <sup>3</sup> ) 439	623	439	623	439
$S_c(n)$	(in <sup>3</sup> ) 689		680		663
$S_c(3n)$	(in <sup>3</sup> ) 619		607		586
$S_c(cr)$	(in <sup>3</sup> )	702		688	
DC1	(k/')	0.78 0.79 0.69 0.67 0.56			
M <sub>DC1</sub>	(k)	374 622 49 418 296			
DC2	(k/')	0.23 0.23 0.06 0.06 0.06			
M <sub>DC2</sub>	(k)	130 119 -25 19 37			
DW	(k/')	0.14 0.13 0.12 0.11 0.10			
M <sub>DW</sub>	(k)	69 96 16 69 44			
LLDF		0.505 0.498 0.453 0.429 0.379			
M <sub>ψ</sub> + IM	(k)	857 868 612 722 612			
M <sub>u</sub> (Strength I)	(k)	2,233 2,589 1,125 1,913 1,553			
φ <sub>r</sub> M <sub>n</sub>	(k)	3,346 3,527 3,436 3,464 3,213			
f <sub>s</sub> DC1	(ksi)	10.2 12.0 1.3 8.1 8.1			
f <sub>s</sub> DC2	(ksi)	2.5 2.0 -0.5 0.3 0.8			
f <sub>s</sub> DW	(ksi)	1.3 1.6 0.3 1.2 0.9			
f <sub>s</sub> (ψ+IM)	(ksi)	14.9 14.8 10.8 12.6 11.1			
f <sub>s</sub> (Service II)	(ksi)	33.5 35.0 15.2 26.0 24.2			
0.95R <sub>n</sub> F <sub>yr</sub>	(ksi)	47.5 47.5 47.5 47.5 47.5			
f <sub>s</sub> (Total)(Strength I)	(ksi)	44.1 46.0 20.4 34.3 31.8			
φ <sub>r</sub> F <sub>n</sub>	(ksi)				
V <sub>r</sub>	(k)	29.7	29.4	24.9	

EXT. BEAM 9 TABLE - UNIT I	0.4 Sp. 1	Pier C2	0.5 Sp. 2	Pier C3	0.6 Sp. 3
$I_s$	(in <sup>4</sup> ) 7,800	11,300	7,800	11,300	7,800
$I_c(n)$	(in <sup>4</sup> ) 23,166		22,753		22,096
$I_c(3n)$	(in <sup>4</sup> ) 16,899		16,485		15,855
$I_c(cr)$	(in <sup>4</sup> )	14,483		14,200	
$S_s$	(in <sup>3</sup> ) 439	623	439	623	439
$S_c(n)$	(in <sup>3</sup> ) 689		685		679
$S_c(3n)$	(in <sup>3</sup> ) 620		614		605
$S_c(cr)$	(in <sup>3</sup> )	704		698	
DC1	(k/')	0.78 0.82 0.74 0.76 0.67			
M <sub>DC1</sub>	(k)	389 665 25 429 322			
DC2	(k/')	0.23 0.23 0.06 0.06 0.06			
M <sub>DC2</sub>	(k)	132 133 -27 20 41			
DW	(k/')	0.14 0.13 0.12 0.11 0.10			
M <sub>DW</sub>	(k)	70 100 16 72 48			
LLDF		0.588 0.479 0.451 0.444 0.415			
M <sub>ψ</sub> + IM	(k)	937 917 643 798 684			
M <sub>u</sub> (Strength I)	(k)	2,396 2,752 1,147 2,066 1,723			
φ <sub>r</sub> M <sub>n</sub>	(k)	3,334 3,605 3,525 3,548 3,372			
f <sub>s</sub> DC1	(ksi)	10.6 12.8 0.7 8.3 8.8			
f <sub>s</sub> DC2	(ksi)	2.6 2.3 -0.5 0.3 0.8			
f <sub>s</sub> DW	(ksi)	1.4 1.7 0.3 1.2 1.0			
f <sub>s</sub> (ψ+IM)	(ksi)	16.3 15.6 11.3 13.7 12.1			
f <sub>s</sub> (Service II)	(ksi)	35.7 37.1 15.1 27.7 26.3			
0.95R <sub>n</sub> F <sub>yr</sub>	(ksi)	47.5 47.5 47.5 47.5 47.5			
f <sub>s</sub> (Total)(Strength I)	(ksi)	47.1 48.7 20.4 36.6 34.6			
φ <sub>r</sub> F <sub>n</sub>	(ksi)				
V <sub>r</sub>	(k)	32.7	29.6	26.1	

INT. BEAMS 6 THRU 8 REACTION TABLE - UNIT I	Pier C1	Pier C2	Pier C3	Pier C4
LLDF	0.704	0.664	0.575	0.504
R <sub>DC1</sub>	(k) 25.2	72.4	56.5	19.0
R <sub>DC2</sub>	(k) 7.7	14.3	3.8	2.1
R <sub>DW</sub>	(k) 4.3	12.0	9.5	2.8
R <sub>ψ</sub> + IM	(k) 81.9	90.6	78.1	62.7
R <sub>Total</sub>	(k) 119.1	189.3	147.9	86.6

EXT. BEAM 9 REACTION TABLE - UNIT I	Pier C1	Pier C2	Pier C3	Pier C4
LLDF	0.607	0.636	0.591	0.547
R <sub>DC1</sub>	(k) 25.9	75.8	59.1	20.7
R <sub>DC2</sub>	(k) 7.9	16.2	3.9	2.3
R <sub>DW</sub>	(k) 4.4	12.7	9.7	2.9
R <sub>ψ</sub> + IM	(k) 73.3	102.7	91.2	68.7
R <sub>Total</sub>	(k) 111.5	207.4	163.9	94.6

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CHECKED - JIG

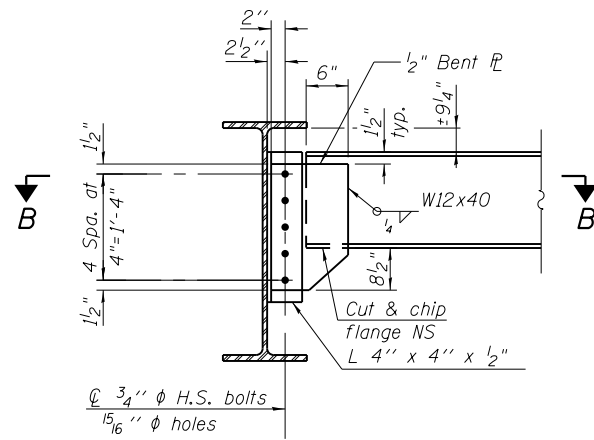
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE STEEL DETAILS II - UNIT I  
STRUCTURE NO. 016-0461

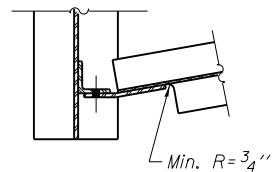
SHEET NO. S5-42 OF S5-72 SHEETS

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	994
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

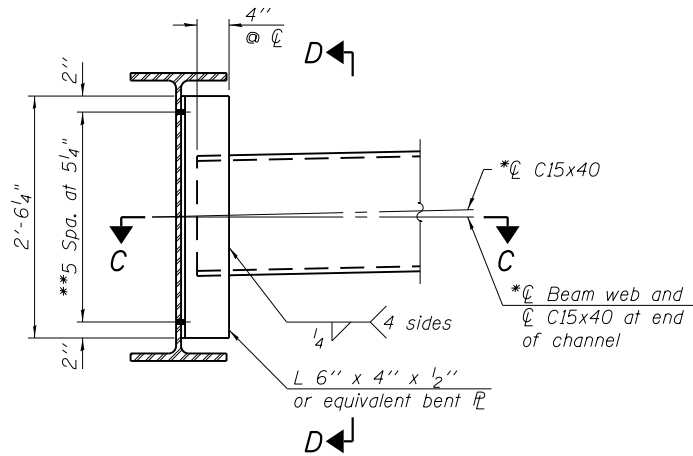


**END DIAPHRAGM**

D1 (4 Required at Pier C1)  
D1 (5 Required at Pier C2)

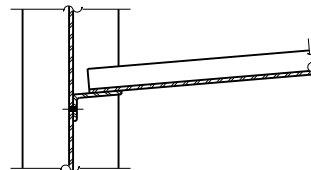


**SECTION B-B**

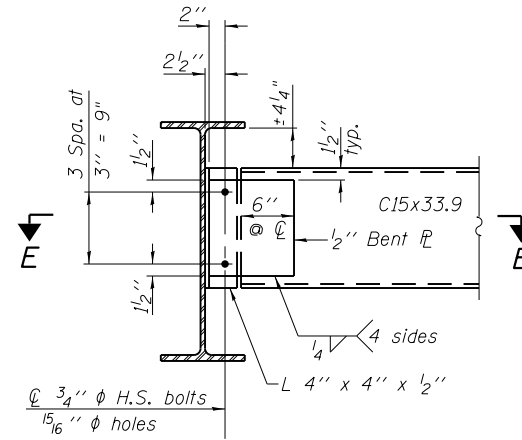


**INTERIOR DIAPHRAGM**

D2 (72 Required)  
D3 (6 Required)  
D7 (3 Required)

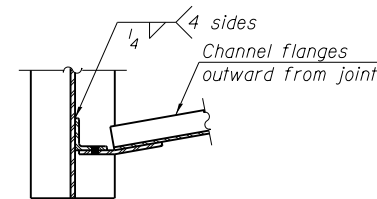


**SECTION C-C**

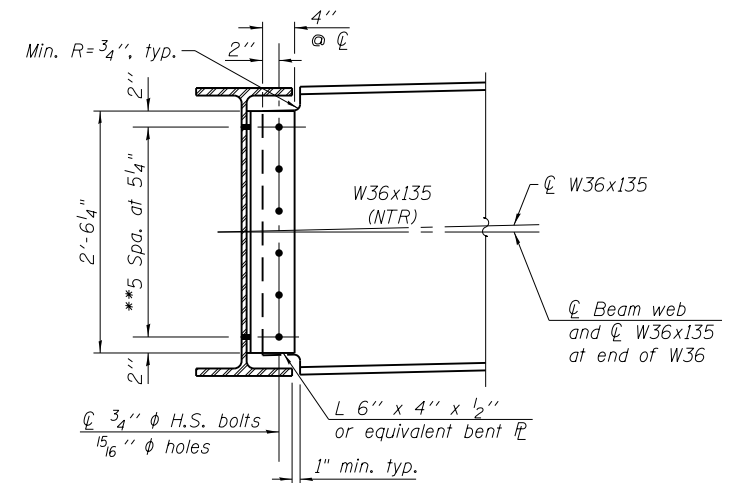


**END DIAPHRAGM**

D4 (9 Required at Pier C4)



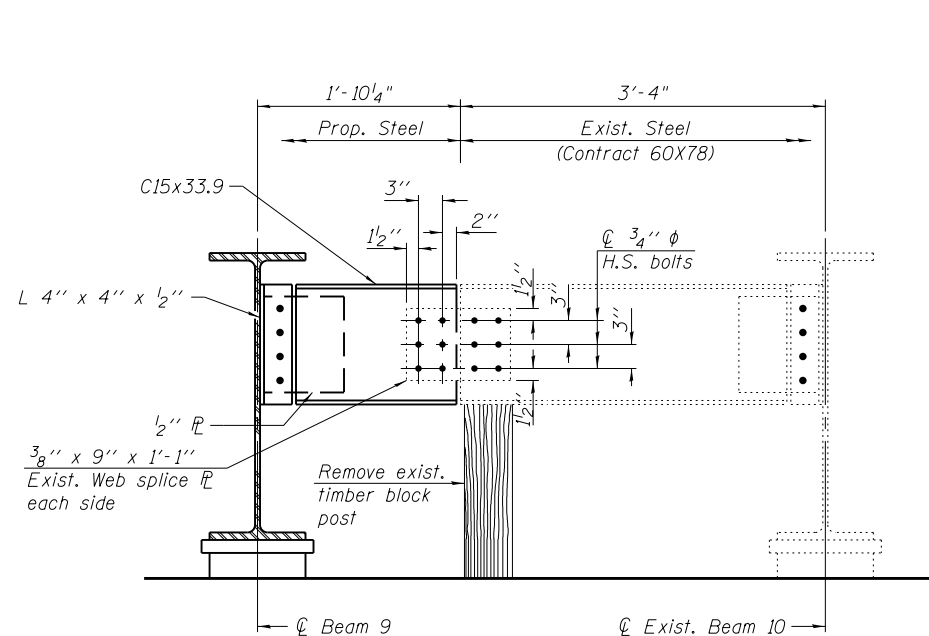
**SECTION E-E**



**INTERIOR DIAPHRAGM**

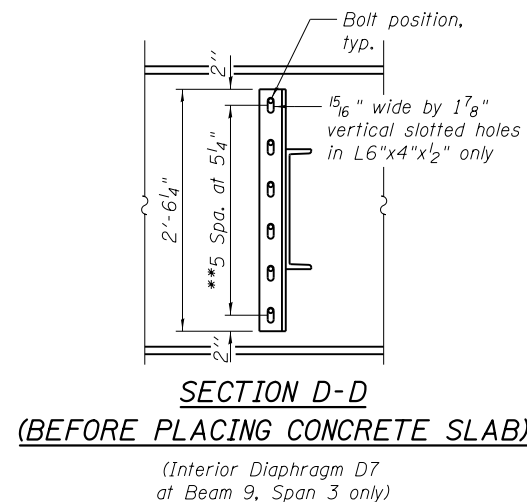
D5 (1 Required)

\* Alternate channel C15x50 are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section. The alternate, if utilized, shall be provided at no additional cost to the Department.  
\*\* 3/4" φ H.S. bolts, 15/16" φ holes except at Interior Diaphragm D7 as shown in Section D-D.



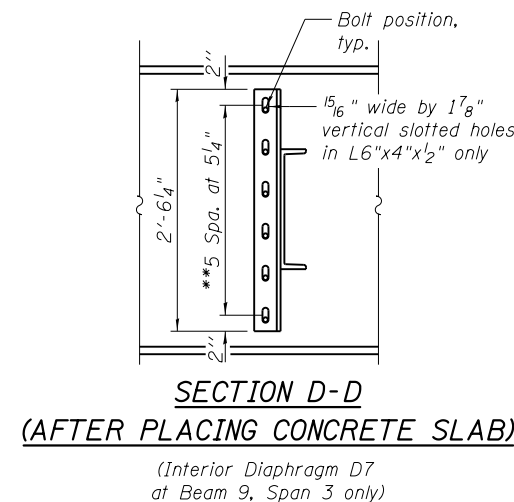
**END DIAPHRAGM AT CONSTRUCTION JOINT**

(Looking East)  
D6 (1 Required at Pier C4)  
See D4 for additional details



**SECTION D-D (BEFORE PLACING CONCRETE SLAB)**

(Interior Diaphragm D7 at Beam 9, Span 3 only)



**SECTION D-D (AFTER PLACING CONCRETE SLAB)**

(Interior Diaphragm D7 at Beam 9, Span 3 only)

**SUGGESTED SEQUENCE OF CONSTRUCTION FOR INTERIOR DIAPHRAGMS AT EXISTING DECK**

- Prior to deck work connect Interior Diaphragm D7 to Exist. Beam 10. Bolts in slots of Beam 9 and in diaphragm connection angle shall be finger tight until the deck pour is complete. Position slots so bolts start at one end with no concrete load and finish near the opposite end under deck load.
- Set slab forms and place reinforcement.
- Place concrete slab. Once Beam 9 deflects, tighten bolts as required.

- Notes:
- Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.
  - Two hardened washers required for each set of oversized holes.

0160461-60X93-5043-DET.dgn



USER NAME = ibrahim1  
DESIGNED - LFC/PJL  
CHECKED - RA  
DRAWN - LFC/PJL  
CHECKED - JIG

DESIGNED - LFC/PJL  
CHECKED - RA  
DRAWN - LFC/PJL  
CHECKED - JIG

REVISED -  
REVISED -  
REVISED -  
REVISED -

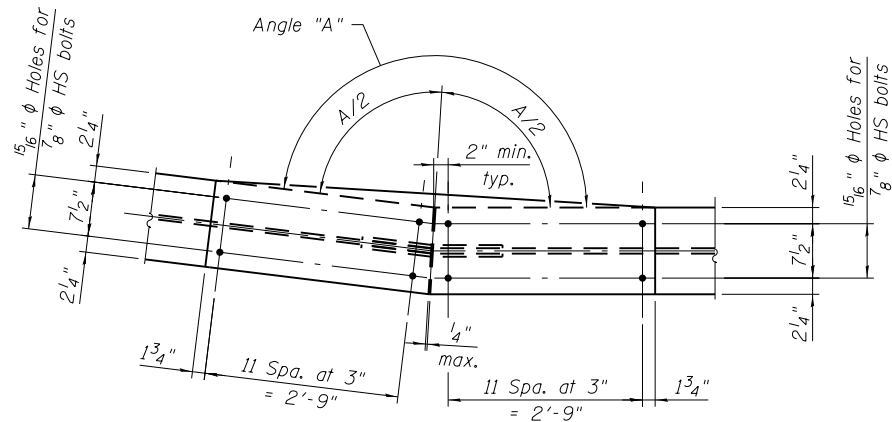
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SUPERSTRUCTURE STEEL DETAILS III - UNIT I  
STRUCTURE NO. 016-0461**

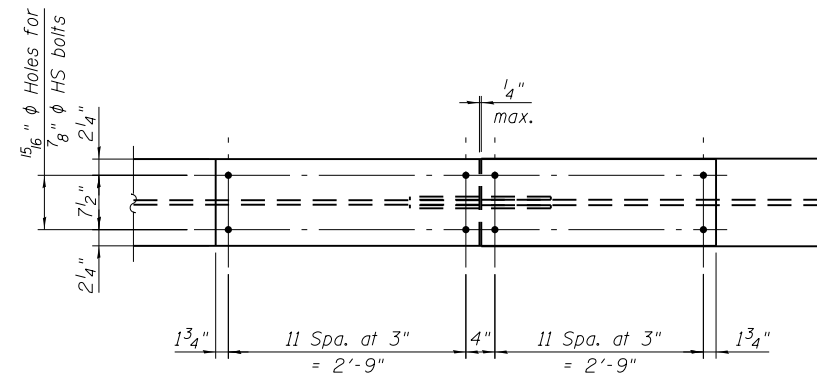
SHEET NO. S5-43 OF S5-72 SHEETS

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	995
CONTRACT NO. 60X93				

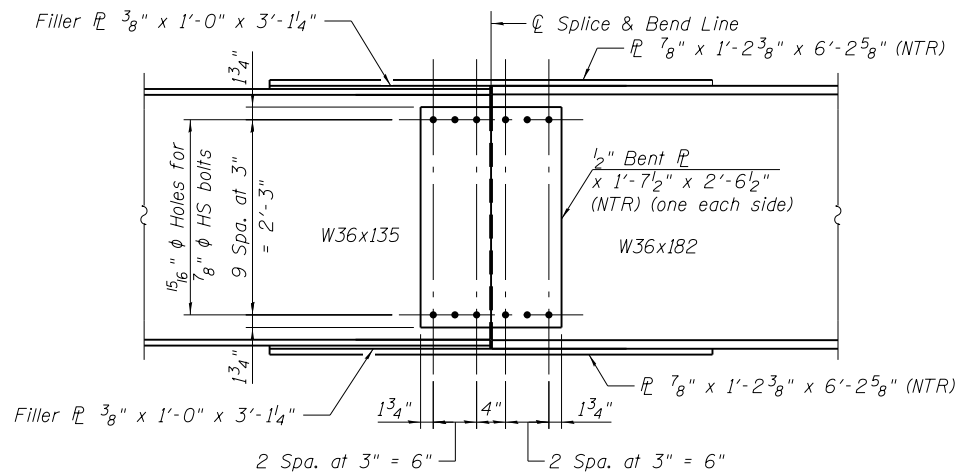
ILLINOIS FED. AID PROJECT



PLAN



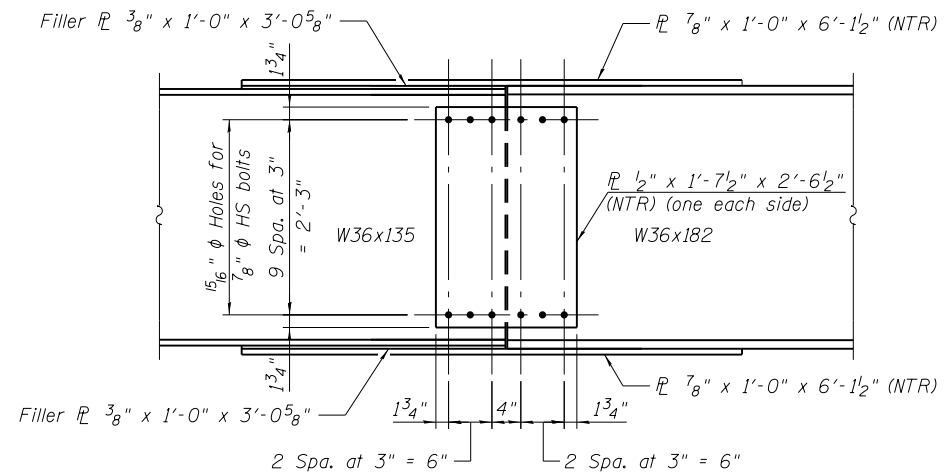
PLAN



ELEVATION

SPLICE 1 DETAIL

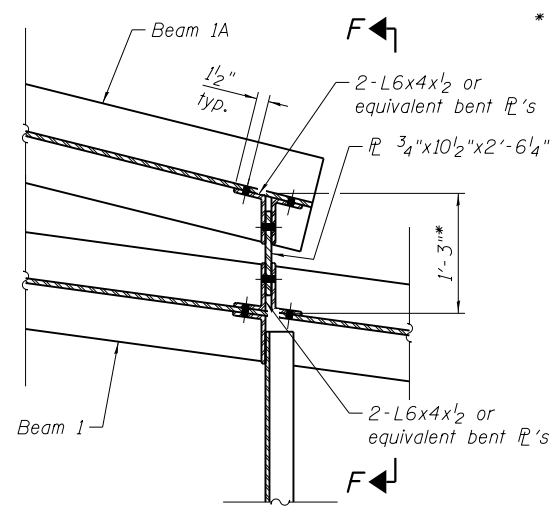
(5 Required)



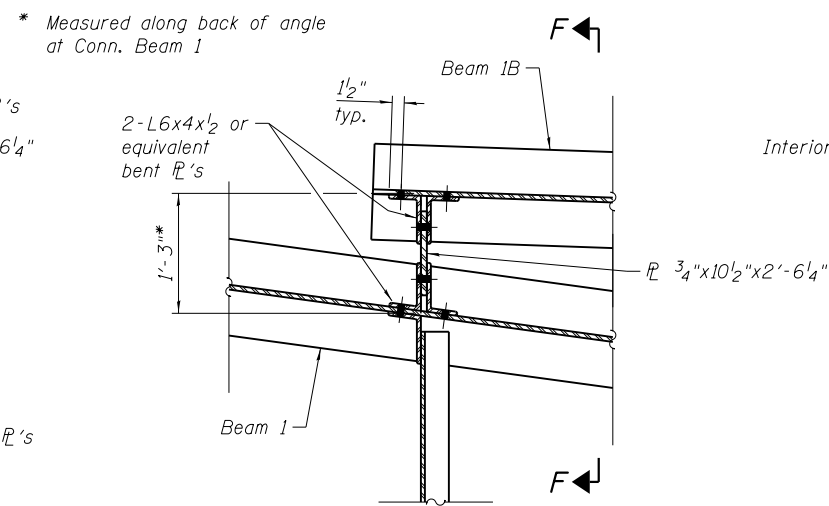
ELEVATION

SPLICE 2, 3 & 4 DETAIL

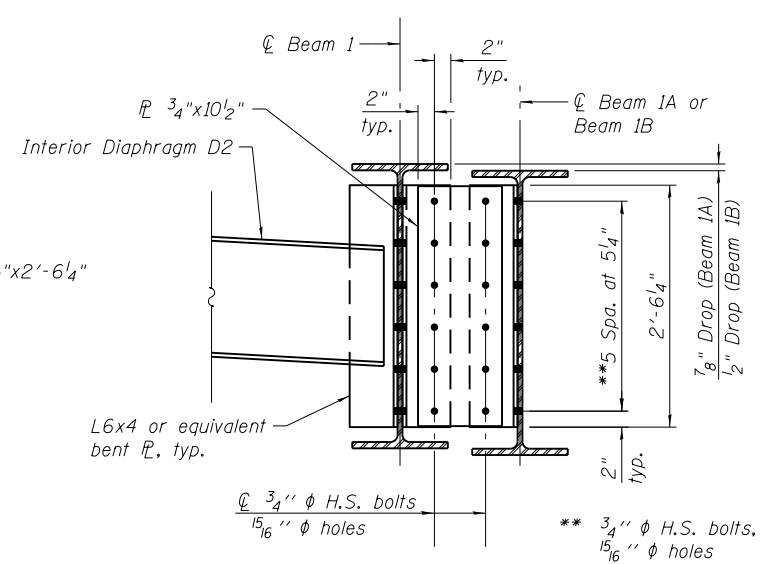
(23 Required)  
(Splice 3 shown, Splice 2 & 4 opposite hand)



DETAIL A



DETAIL B



SECTION F-F

- Notes:
1. See sheet S5-40 for Angle "A" and for locations of Details A & B.
  2. Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.
  3. Two hardened washers required for each set of oversized holes.

0160461-60X93-S044-DET.dgn



USER NAME = ibrahim1	DESIGNED - LFC/PJL	REVISED -
PLOT SCALE = N.T.S.	CHECKED - RA	REVISED -
PLOT DATE = 7/30/2018	DRAWN - LFC/PJL	REVISED -
	CHECKED - JIG	REVISED -

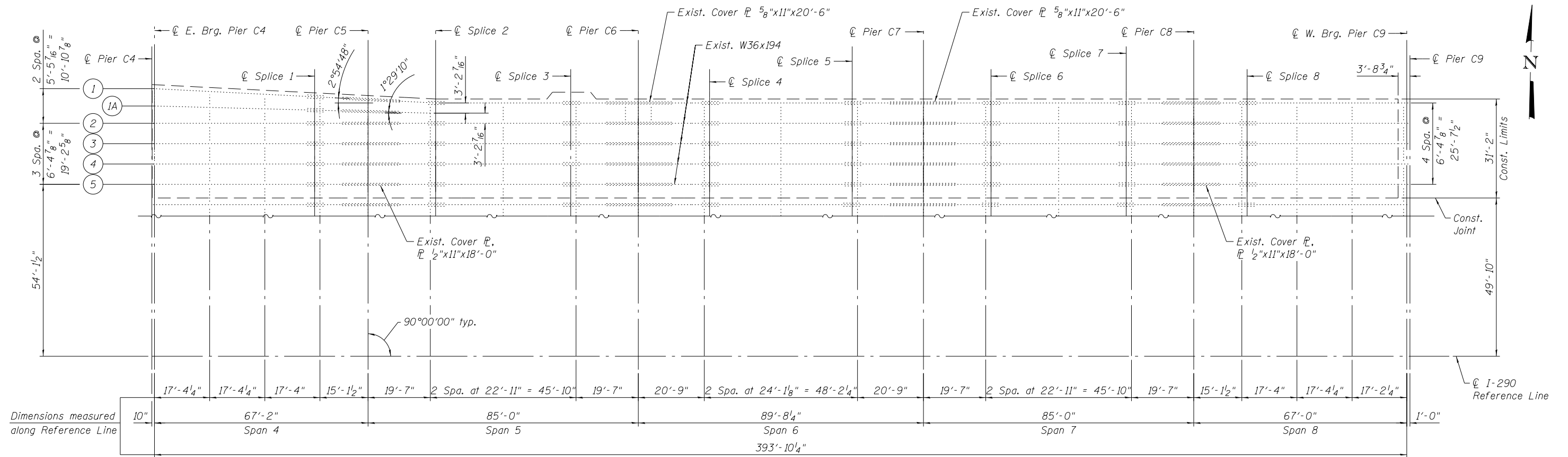
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE STEEL DETAILS IV - UNIT I  
STRUCTURE NO. 016-0461

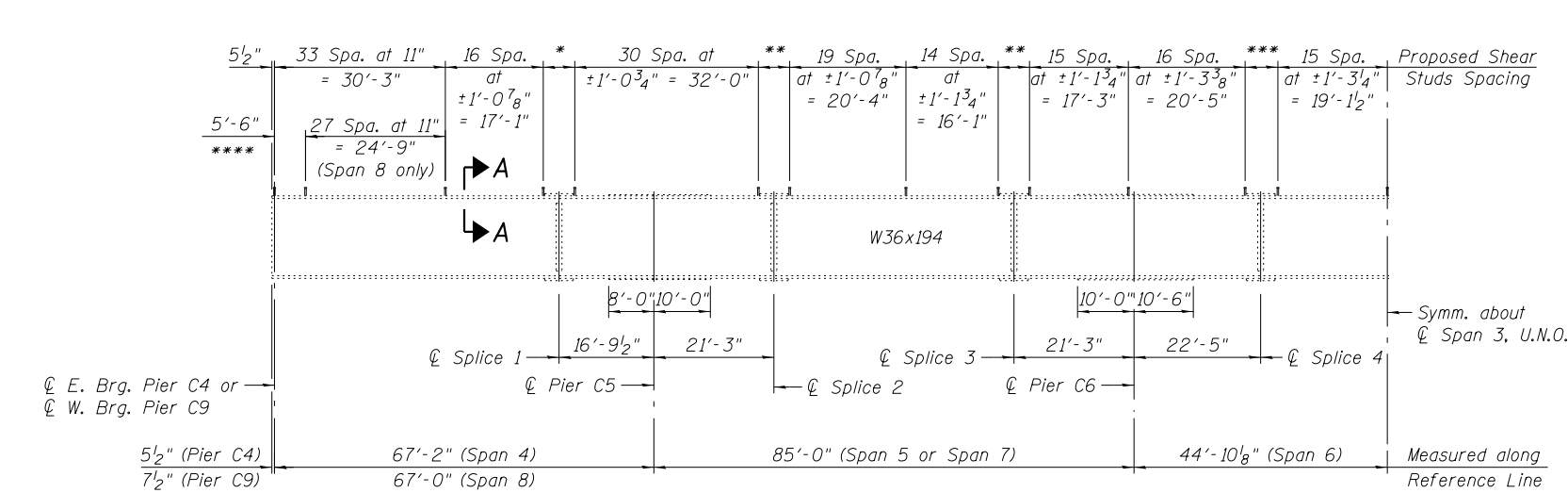
SHEET NO. S5-44 OF S5-72 SHEETS

F.A.I. R.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				





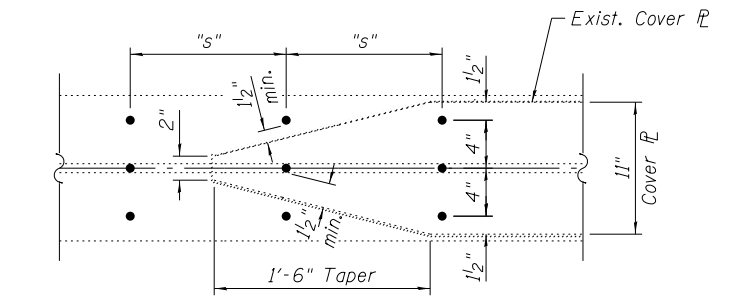
**EXISTING FRAMING PLAN - UNIT II**



**ELEVATION - EXISTING BEAMS 1 THRU 5**

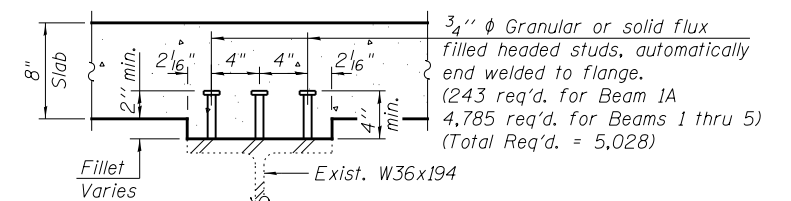
(For Exist. Beam 1A details, see sheet S5-46)

- \* 6'-1" (No Studs)
- \*\* 6'-0<sup>1</sup>/<sub>2</sub>" (No Studs)
- \*\*\* 6'-3<sup>5</sup>/<sub>8</sub>" (No Studs)
- \*\*\*\* Omit studs in 5'-6" from  
 @ W. Brg. Pier C9  
 previously installed in  
 Contract 60X78.



**SHEAR STUDS AT ENDS OF COVER PLATE**

Shear connector spacing, "s", may be adjusted up to 3" to maintain minimum clearances.



**SECTION A-A**

- Notes:
- For top of existing beam elevations, notes and tables, see sheet S5-46.

0160461-60X93-5045-FRM.dgn



WSP USA Inc.  
 30 N. LASALLE STREET  
 SUITE 4000  
 CHICAGO, IL 60602  
 TEL: (312) 782-8150  
 FAX: (312) 782-1884

USER NAME =	ibrahim1	DESIGNED -	IJL	REVISED -	
		CHECKED -	PJL	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	IJL	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**FRAMING PLAN - UNIT II  
 STRUCTURE NO. 016-0461**

SHEET NO. S5-45 OF S5-72 SHEETS

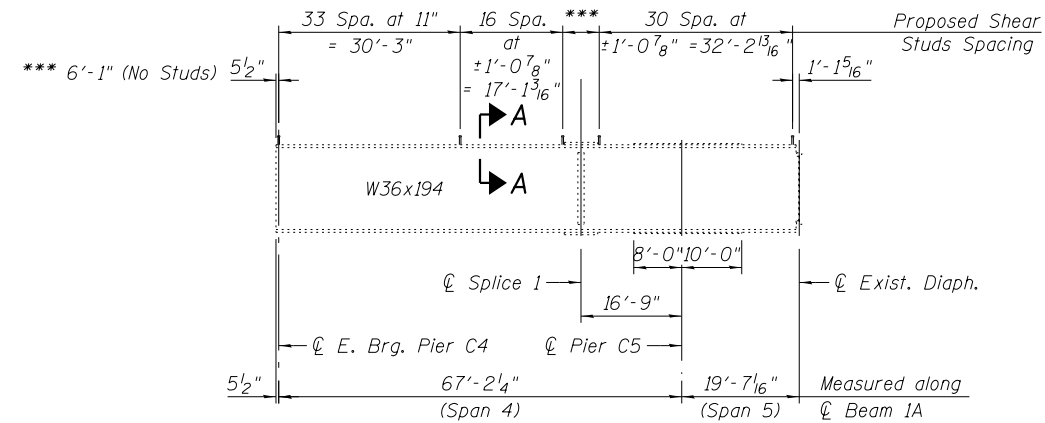
F.A.I. R.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	997
<b>CONTRACT NO. 60X93</b>				
ILLINOIS FED. AID PROJECT				

INTERIOR BEAM MOMENT TABLE						
	0.4 Sp. 4 or 0.6 Sp. 8	Pier C5 or Pier C8	0.5 Sp. 5 or 0.5 Sp. 7	Pier C6 or Pier C7	0.5 Sp. 6	
$I_s$	(in <sup>4</sup> )	12,100	15,865	12,100	16,838	12,100
$I_c(n)$	(in <sup>4</sup> )	30,740	---	30,740	---	30,740
$I_c(3n)$	(in <sup>4</sup> )	21,792	---	21,792	---	21,792
$I_c(cr)$	(in <sup>4</sup> )	---	19,320	---	20,304	---
$S_s$	(in <sup>3</sup> )	664	846	664	892	664
$S_c(n)$	(in <sup>3</sup> )	977	---	977	---	977
$S_c(3n)$	(in <sup>3</sup> )	866	---	866	---	866
$S_c(cr)$	(in <sup>3</sup> )	---	1,157	---	1,201	---
$\phi$	(k/ft <sup>3</sup> )	0.879	0.920	0.879	0.931	0.879
$M\phi$	(k)	268	523	237	598	290
$s\phi$	(k/ft)	0.230	0.230	0.230	0.230	0.230
$M_s\phi$	(k)	70	135	63	155	77
$M_t$	(k)	435	416	450	479	475
$M_I$	(k)	113	103	107	113	111
$^{5}_3 [M_t + M_I]$	(k)	913	865	928	987	977
$M_a$	(k)	1,627	1,980	1,597	2,262	1,747
$M_u$	(k)	---	---	---	---	---
$f_s \phi$ non-comp	(ksi)	4.8	7.4	4.3	8.0	5.2
$f_s \phi$ (comp)	(ksi)	1.0	1.4	0.9	1.5	1.1
$f_s \ ^{5}_3 [M_t + M_I]$	(ksi)	11.2	9.0	11.4	9.9	12.0
$f_s$ (Overload)	(ksi)	17.0	17.8	16.6	19.4	18.3
$f_s$ (Total)	(ksi)	22.1	23.1	21.58	25.2	23.79
VR	(k)	54.5	58.7	41.9	57.2	41.9

\* Compact section  
 \*\* Braced non-compact and partially braced section

INTERIOR BEAM REACTION TABLE					
	Pier C4 & C9	Pier C5 & C8	Pier C6	Pier C7	
$R\phi$	(k)	28.3	94.0	106.6	99.4
$R_t$	(k)	45.4	59.0	62.4	62.4
$R_I$	(k)	11.8	14.7	14.7	14.7
$R_{Total}$	(k)	85.6	167.7	183.7	176.5

$I_s, S_s$ : Non-composite moment of inertia and section modulus of the steel section used for computing  $f_s$  (Total and Overload) 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 and Overload) 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 and Overload) 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 and Overload) due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.<sup>4</sup> and in.<sup>3</sup>).  
 Z: Plastic Section Modulus of the steel section in non-composite areas (in.<sup>3</sup>).  
 $\phi$ : Un-factored non-composite dead load (kips/ft.).  
 $M\phi$ : Un-factored moment due to non-composite dead load (kip-ft.).  
 $s\phi$ : Un-factored long-term composite (superimposed) dead load (kips/ft.).  
 $M_s\phi$ : Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).  
 $M_t$ : Un-factored live load moment (kip-ft.).  
 $M_I$ : Un-factored moment due to impact (kip-ft.).  
 $M_a$ : Factored design moment (kip-ft.).  
 $1.3 [M\phi + M_s\phi + \frac{2}{3} (M_t + M_I)]$   
 $M_u$ : Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).  
 $f_s$  (Overload): Sum of stresses as computed from the moments below (ksi).  
 $M\phi + M_s\phi + \frac{2}{3} (M_t + M_I)$   
 $f_s$  (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).  
 $1.3 [M\phi + M_s\phi + \frac{2}{3} (M_t + M_I)]$   
 VR: Maximum  $t +$  impact shear range within the composite portion of the span for stud shear connector design (kips).



ELEVATION - EXISTING BEAM 1A

FOR INFORMATION ONLY

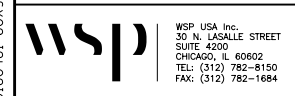
TOP OF EXISTING BEAM ELEVATION \*\*\*\*

	Beam 1	Beam 1A	Beam 2	Beam 3	Beam 4	Beam 5
⊕ E. Brg. Pier C4	609.90	610.02	610.13	610.27	610.40	610.53
⊕ Splice 1	610.40	610.49	610.58	610.71	610.84	610.98
⊕ Brg. Pier C5	610.54	610.62	610.70	610.83	610.96	611.10
⊕ Splice 2	610.72	---	610.85	610.98	611.12	611.25
⊕ Splice 3	610.94	---	611.07	611.20	611.34	611.47
⊕ Brg. Pier C6	611.00	---	611.14	611.27	611.40	611.54
⊕ Splice 4	611.07	---	611.21	611.34	611.48	611.61
⊕ Splice 5	611.12	---	611.25	611.39	611.52	611.65
⊕ Brg. Pier C7	611.09	---	611.23	611.36	611.49	611.63
⊕ Splice 6	611.07	---	611.20	611.34	611.47	611.60
⊕ Splice 7	610.94	---	611.07	611.20	611.34	611.47
⊕ Brg. Pier C8	610.86	---	611.00	611.13	611.26	611.40
⊕ Splice 8	610.80	---	610.94	611.07	611.21	611.34
⊕ W. Brg. Pier C9	610.73	---	610.87	611.00	611.13	611.27

\*\*\*\* Elevations have been converted from the City of Chicago Datum on the original construction plans dated June 26, 1950 to the current NAVD 88 datum using a conversion of 579.19 feet.

Note:  
 1. See sheet S5-45 for Section A-A.

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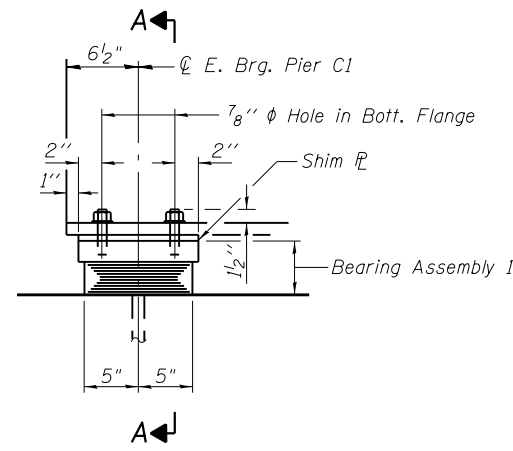
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PLOT SCALE = N.T.S.	CHECKED - P.JL	REVISED -
PLOT DATE = 7/30/2018	DRAWN - IJL	REVISED -
	CHECKED - JIG	REVISED -

STATE OF ILLINOIS  
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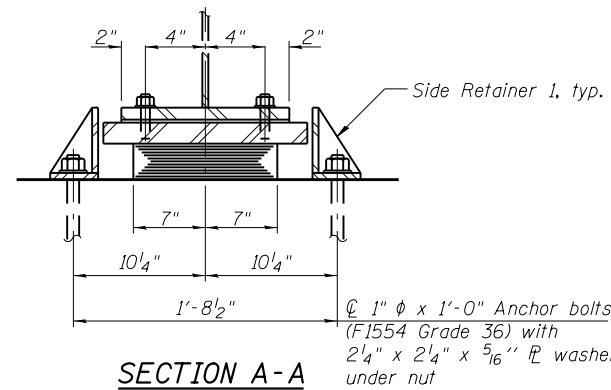
SUPERSTRUCTURE STEEL DETAILS - UNIT II  
 STRUCTURE NO. 016-0461

SHEET NO. S5-46 OF S5-72 SHEETS

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	998
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				



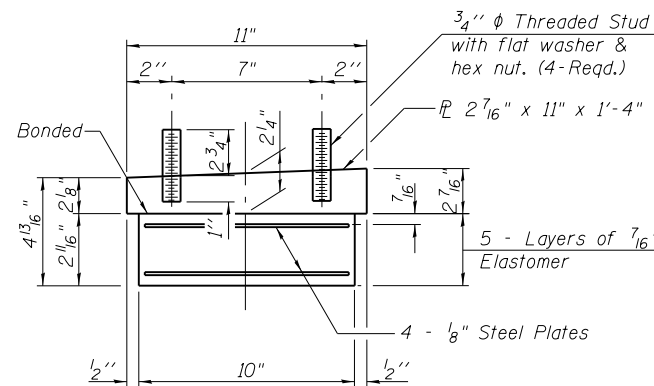
ELEVATION AT E. BRG. PIER C1



SECTION A-A

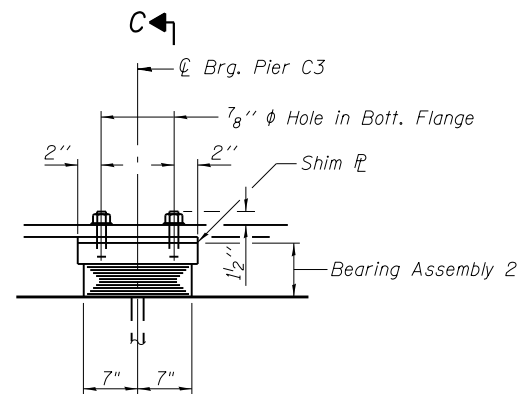
**TYPE I ELASTOMERIC EXP. BRG. AT E. BRG. PIER C1**

(5 Required)



BEARING ASSEMBLY 1

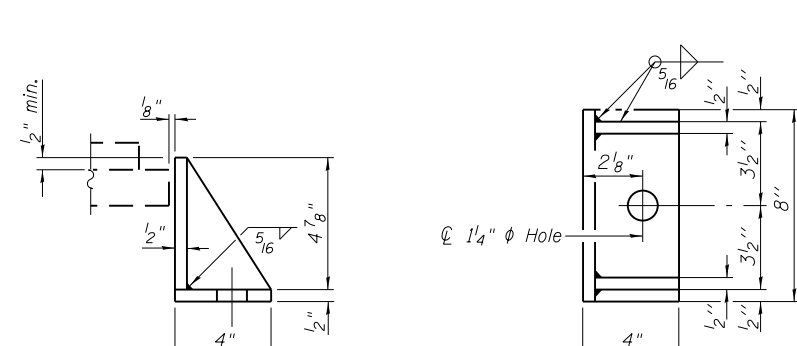
Note:  
Shim plates shall not be placed under Bearing Assembly.



ELEVATION AT PIER C3

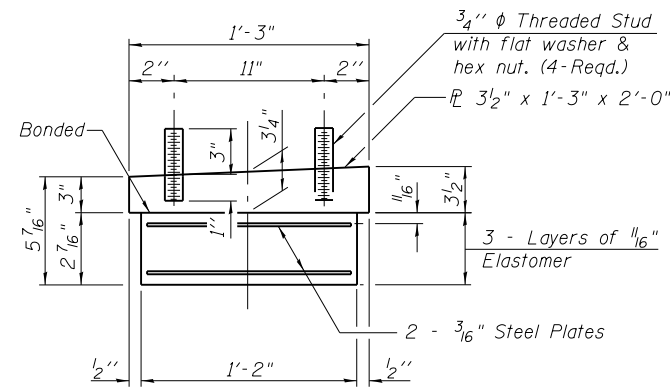
**TYPE I ELASTOMERIC EXP. BRG. AT PIER C3**

(9 Required)



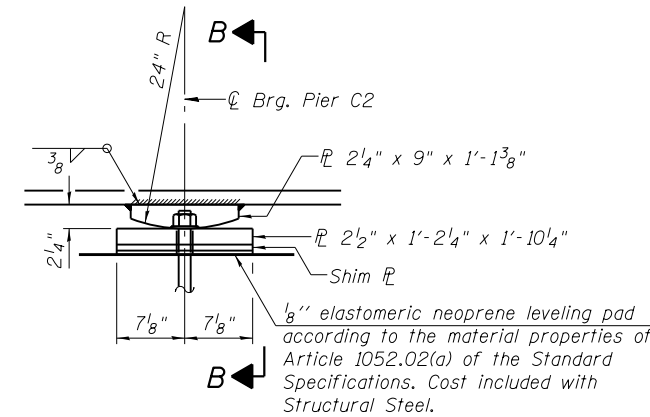
SIDE RETAINER 1

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



BEARING ASSEMBLY 2

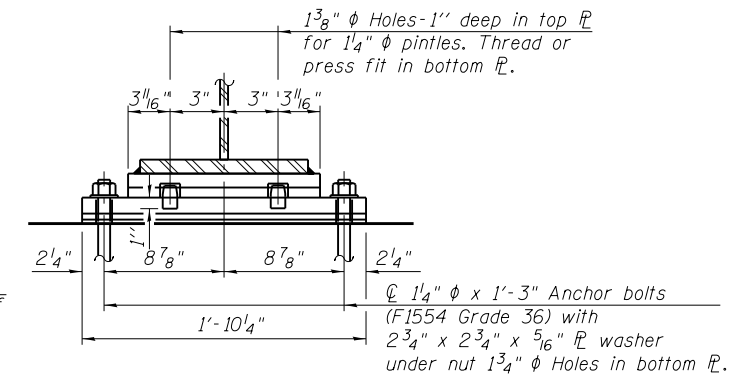
Note:  
Shim plates shall not be placed under Bearing Assembly.



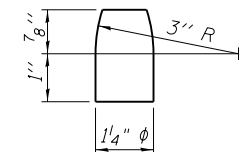
ELEVATION AT PIER C2

**FIXED BEARING AT PIER C2**

(5 Required, Beams 5 thru 9)



SECTION B-B



PINTLE

Notes:  
For fixed bearings at E. Brg. Pier C2 for Beam 1A and Beams 1 thru 4, see sheet S5-48.  
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 at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.  
Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.

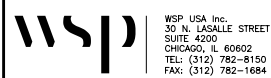
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.  
Side retainers and other steel members required for the elastomeric bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.  
Fixed Bearing Assembly shall be included in the cost of Furnishing and Erecting Structural Steel.

Two 1/8 inch adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.  
All (embedded and separate) bearing plates, side retainers, anchor bolts, nuts, washers and pintles shall be galvanized according to AASHTO M111 or M232 as applicable.

**BILL OF MATERIAL**

Item	Unit	Total
Elastomeric Bearing Assembly, Type I	Each	14
Anchor Bolts 1"	Each	28
Anchor Bolts 1 1/4"	Each	10

0160461-60X93-5047-BRG.dgn



WSP USA Inc.  
30 N. LASALLE STREET  
SUITE 4000  
CHICAGO, IL 60602  
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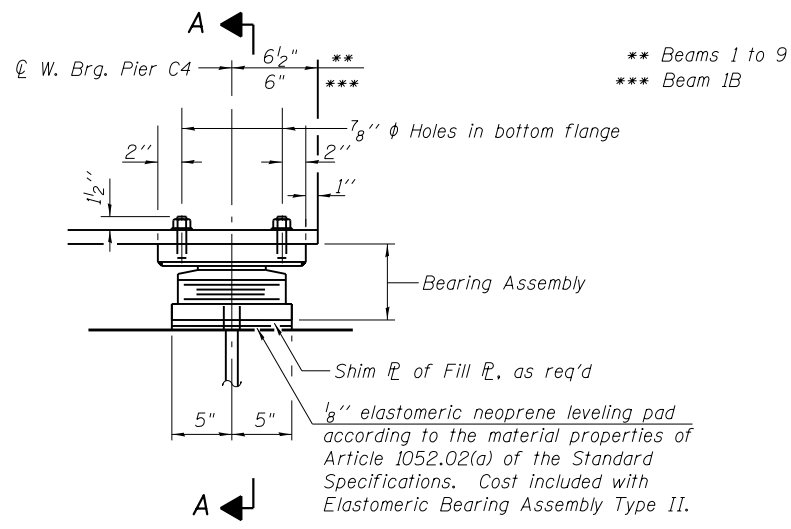
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		CHECKED -	PJL	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	IJL/DCP	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

BEARING DETAILS I - UNIT I  
STRUCTURE NO. 016-0461

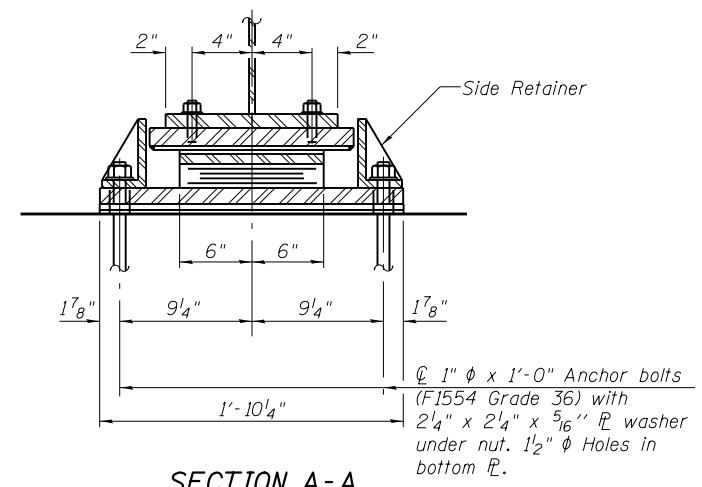
SHEET NO. S5-47 OF S5-72 SHEETS

F.A.I. R.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				

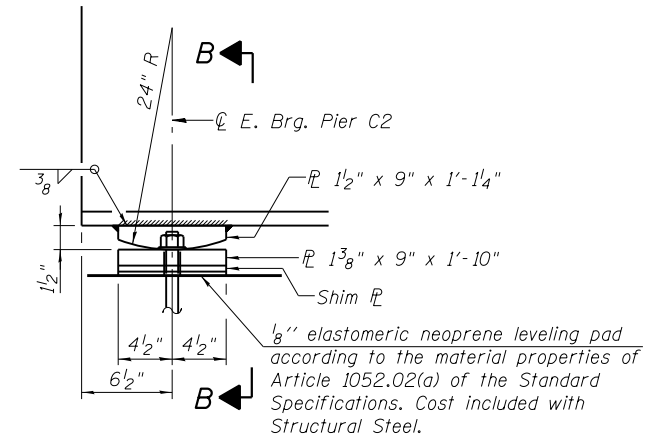


ELEVATION AT W. BRG. PIER C4

TYPE II ELASTOMERIC EXP. BRG. AT W. BRG. PIER C4  
(10 Required)

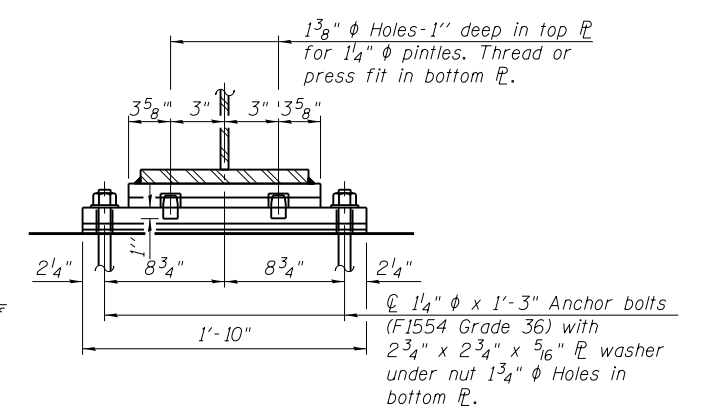


SECTION A-A

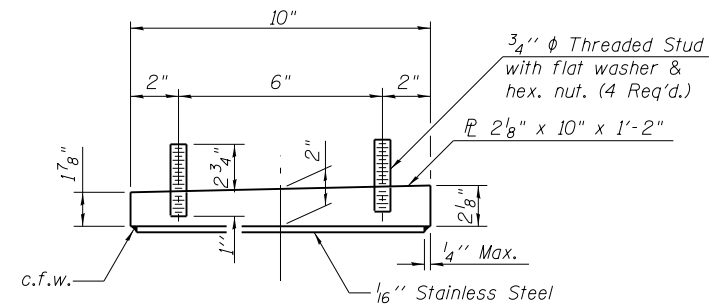


ELEVATION AT E. BRG. PIER C2

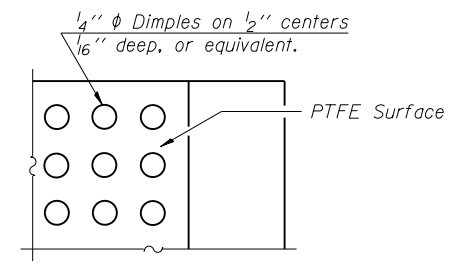
FIXED BEARING AT E. BRG. PIER C2  
(5 Required, Beams 1A and 1 thru 4)



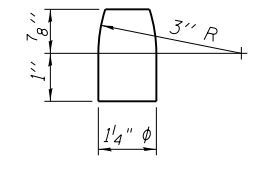
SECTION B-B



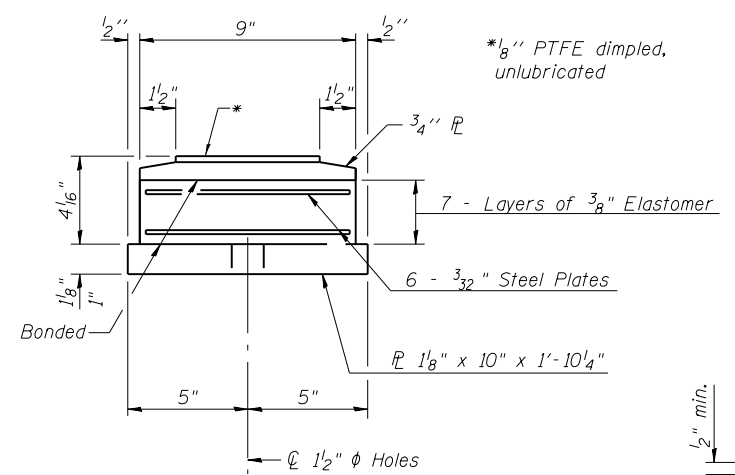
TOP BEARING ASSEMBLY



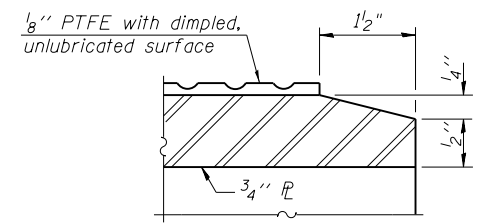
PLAN-PTFE SURFACE



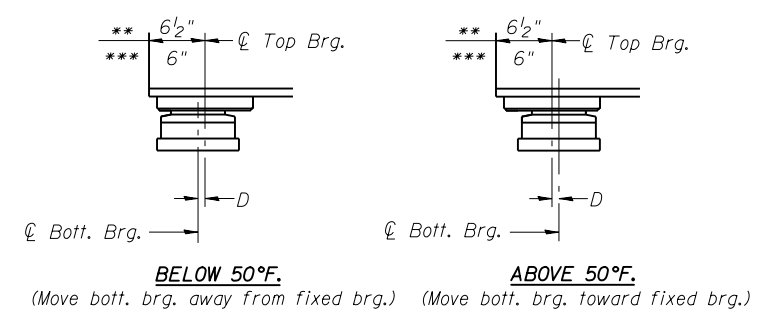
PINTLE



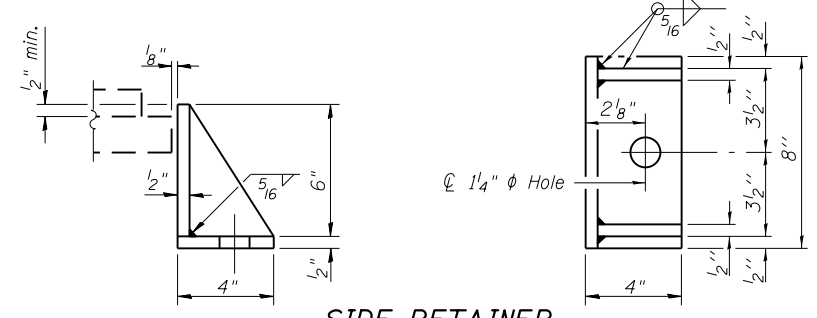
BOTTOM BEARING ASSEMBLY



SECTION THRU PTFE



SETTING ANCHOR BOLTS AT EXP. BRG.  
D=1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

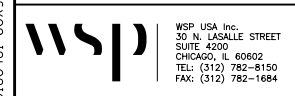
FILL PLATE THICKNESS TABLE AT W. BRG. PIER C4

Beam No.	Thickness
7	5/8"

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly, Type II	Each	10
Anchor Bolts 1"	Each	20
Anchor Bolts 1 1/4"	Each	10

0160461-60X93-5048-BRG.dgn



WSP USA Inc.  
30 N. LASALLE STREET  
SUITE 4000  
CHICAGO, IL 60602  
TEL: (312) 782-8150  
FAX: (312) 782-1684

USER NAME =	ibrahim1	DESIGNED -	IJL	REVISED -	
		CHECKED -	PJL	REVISED -	
PLOT SCALE =	N.T.S.	DRAWN -	IJL/DCP	REVISED -	
PLOT DATE =	7/30/2018	CHECKED -	JIG	REVISED -	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

BEARING DETAILS II - UNIT I  
STRUCTURE NO. 016-0461  
SHEET NO. S5-48 OF S5-72 SHEETS

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-013R&B-R	COOK	1972	1000
CONTRACT NO. 60X93				
ILLINOIS FED. AID PROJECT				