(2) 270 FT. UNDERGROUND CONDUIT, GS, 2" DIA.
EX. (1) 12 SMF
EX. (1) NO. 6 2/C & NO. 8
(3) 270 FT. REMOVE AND REINSTALL CABLE IN CONDUIT
NOTE 3

(1) 345 FT. UNDERGROUND CONDUIT, GALVANIZED STEEL, 3" DIA.
(1) 345 FT. FIBER OPTIC INNERDUCT 1-1/4" DIA.
(1) 345 FT. FIBER OPTIC CABLE, 96 FIBERS, SINGLE MODE
(1) 345 FT. ELECTRIC CABLE, NO. 19 25-PAIR
NOTE 2

(1) 70 FT. CONDUIT ATS, PVC COATED GS, 3" DIA.
(1) 70 FT. FIBER OPTIC INNERDUCT 1-1/4" DIA.
(1) 70 FT. FIBER OPTIC CABLE, 96 FIBERS, SINGLE MODE
(1) 70 FT. ELECTRIC CABLE, NO. 19 25-PAIR
NOTE 2

PR ℄ RAMP EN

HARRISON STREET

SB I-90/94

EX ℄ SB I-90/94

RAMP SE

PR ℄ RAMP SE

RAMP EN

NB I-90/94

PR ℄ RAMP EN

EX ℄ RAMP NW

RAMP NW

EX ℄ RAMP EN

EX ℄ NB I-90/94

I-90/94

I-90/94

(1) INTERCEPT EXISTING CONDUIT
(1) 15 FT. UNDERGROUND CONDUIT, GALVANIZED STEEL, 2" DIA.
(2) 15 FT. REMOVE AND REINSTALL CABLE IN CONDUIT, NOTE 3

(1) HDHH

(1) 65 FT. UNDERGROUND CONDUIT, GALVANIZED STEEL, 2" DIA.
(2) 90 FT. REMOVE AND REINSTALL CABLE IN CONDUIT, NOTE 3

(1) INTERCEPT EXISTING CONDUIT
(3) DRILL EXISTING HDHH
(1) CLEAN EXISTING HANDHOLE

(1) 10 FT. UNDERGROUND CONDUIT, GS, 2" DIA.
(2) 10 FT. ELECTRIC CABLE IN CONDUIT, NO. 6 1/C
(1) 10 FT. ELECTRIC CABLE IN CONDUIT, NO. 8 1/C

(1) DRILL EXISTING FOUNDATION

(1) 13 FT. UNDERGROUND CONDUIT, GS, 3" DIA.
(1) 13 FT. FIBER OPTIC INNERDUCT 1-1/4" DIA.
(1) 13 FT. FIBER OPTIC CABLE, 96 FIBERS, SM
(1) 13 FT. ELECTRIC CABLE, NO. 19 25-PAIR

(1) JB, SS, 24"x24"x10" ATS
(1) FIBER OPTIC SPLICE-MAINLINE
(1) 25 FT. FIBER OPTIC CABLE, 96 SMF SLACK
(1) 25 FT. NO. 19 25-PAIR SLACK
NOTES 1-2

EX. MEDIAN WALL JB
(1) DRILL EXISTING MEDIAN JUNCTION BOX
NOTE 1

EX. (1) 4" SCH. 80 CONDUIT SLEEVE
(2) 90 FT. ELECTRIC CABLE IN CONDUIT, NO. 6 1/C
(1) 90 FT. ELECTRIC CABLE IN CONDUIT, NO. 8 1/C
EX. (3) NO. 18 4/C, TW, SH
(3) 100 FT. REMOVE AND REINSTALL CABLE IN CONDUIT
NOTE 4

(1) DRILL EXISTING HDHH
(1) CLEAN EXISTING HANDHOLE

(1) HDHH
(2) INTERCEPT EXISTING CONDUIT

EX. (2) 2" PVC CONDUIT
EX. (1) 12 SMF
3X. (1) NO. 6 2/C & NO. 8
(3) 90 FT. REMOVE AND REINSTALL CABLE IN CONDUIT
NOTE 3

EX. 24"x24"x10" JB ATS
(1) DRILL EXISTING JUNCTION BOX
(1) 25 FT. FIBER OPTIC CABLE, 96 SMF SLACK
(1) 25 FT. NO. 19 25-PAIR SLACK TO BE MAINTAINED
(1) FIBER OPTIC SPLICE-MAINLINE

(1) 265 FT. UNDERGROUND CONDUIT, GS, 2" DIA.
(2) 265 FT. ELECTRIC CABLE IN CONDUIT, NO. 6 1/C
(1) 265 FT. ELECTRIC CABLE IN CONDUIT, NO. 8 1/C

(1) HDHH

(1) 170 FT. UNDERGROUND CONDUIT, GS, 2" DIA.
(2) 170 FT. ELECTRIC CABLE IN CONDUIT, NO. 6 1/C
(1) 170 FT. ELECTRIC CABLE IN CONDUIT, NO. 8 1/C

PIER 2

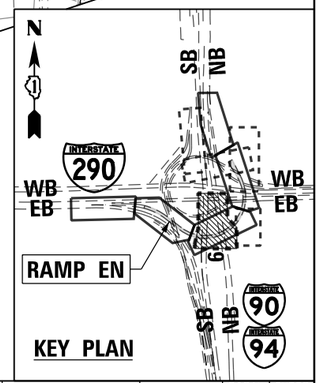
SEE SHEET NO. 399

NOTES:

1. PULL EXISTING CABLES THROUGH THE BACK OF THE EXISTING JUNCTION BOX. SPLICE EXISTING AND PROPOSED 96 SMF AND NO. 19 25-PAIR IN JUNCTION BOX. COIL 25 FT. MINIMUM OF SLACK FOR EACH CABLE IN THE JUNCTION BOX. SEE DETAIL ON SHEET ITS-18.
2. ROUTE CONDUIT FROM JUNCTION BOX ATTACHED TO BACKSIDE OF MEDIAN WALL THROUGH THE MEDIAN TO THE JUNCTION BOX ATTACHED TO THE EB I-290 PIER 1 STRUCTURE. SEE DETAIL ON SHEET ITS-18.
3. PULL EXISTING CCTV, DETECTION AND RVSD CABLES BACK PRIOR TO INSTALLING NEW CONDUIT. REINSTALL AND CONNECT CABLES IN NEW INFRASTRUCTURE UPON INSTALLATION OF NEW HANDHOLE AND CONDUIT. SEE SHHET ITS-18 FOR CONDUIT INSTALLATION DETAIL.
4. REMOVE DETECTOR CABLE FROM INNERDUCT AND INSTALL EXISTING CABLES OUTSIDE OF INNERDUCT. INSTALL NEW POWER CABLE IN THE EXISTING INNERDUCT.

N

0 20 40
SCALE: 1"=20'



KEY PLAN

ITS-14

AECOM
303 EAST WACKER DRIVE, SUITE 1400
CHICAGO, IL 60601-5276
PHONE: (312) 373-7700 FAX: (312) 373-6800

D160X79-sht-ITS-14	DESIGNED - PTJ	REVISED -
USER NAME = myersc	DRAWN - CAM	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - MJL	REVISED -
PLOT DATE = 7/26/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED ITS PLAN
RAMP EN

SCALE: 1"=20' | SHEET 14 OF 18 SHEETS | STA. 1608+00 | TO STA. 1611+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	401
		CONTRACT NO. 60X79		
		ILLINOIS FED. AID PROJECT		

FILE PATH = pw:\\617479-PWINT.aecomonline.local\AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\006_Roadway\Sheets\60X79_Contract\D160X79-sht-ITS-14

NOTES:

1. CONNECT NEW 96 FIBER OPTIC CABLE TO EX. PANEL USING EX. FIBER ASSIGNMENTS. CONNECT THE NEW NO. 19 25-PAIR CABLES TO THE EX. PANEL USING THE EX. ASSIGNMENTS.
2. THE CONTRACTOR SHALL COORDINATE ALL DISCONNECTION AND SPLICING WORK WITH IDOT/OAK PARK TSC. THIS WORK SHALL ONLY OCCUR OVERNIGHT AFTER THE PM PEAK HOUR AND BEFORE THE AM PEAK HOUR THE NEXT MORNING. ALL SPLICING AND TERMINATION WORK SHALL BE ACCOMPLISHED IN ONE NIGHT. ALL CABLE ASSIGNMENTS SHALL REMAIN THE SAME.
3. REMOVAL OF EXISTING AERIAL CABLES TO OCCUR ONLY WHEN NEW CABLES ARE INSTALLED AND READY FOR CONNECTION TO THE EXISTING SYSTEM.
4. PROPOSED CONDUITS ARE TO BE INSTALLED UNDER CONTRACT 60X93. COORDINATE PROPOSED CABLE INSTALLATIONS AFTER NOTIFICATION FROM ENGINEER THAT INSTALLATION BY OTHERS IS COMPLETE. COORDINATION WITH CONTRACT 60X93 IS REQUIRED.

0 20 40
SCALE: 1"=20'

RAMP NW
RAMP WS
RAMP SW
RAMP SE
VAN BUREN STREET
SB I-90/94
NB I-90/94
PR ℄ SB TAYLOR EXIT RAMP

EX. HDHH
NOTE 4

EX. 4" PVCC GS CONDUIT, ATS (NOTE 4)
EX. FIBER OPTIC INNERDUCT 1-1/4" DIA.
(1) 50 FT. FIBER OPTIC CABLE, 96 FIBERS, SINGLE MODE
(2) 50 FT. ELECTRIC CABLE IN CONDUIT, NO. 19 25-PAIR

EX. 4" PVCC GS CONDUIT, ATS
EX. FIBER OPTIC INNERDUCT 1-1/4" DIA.
(1) 55 FT. FIBER OPTIC CABLE, 96 FIBERS, SINGLE MODE
(2) 55 FT. ELECTRIC CABLE IN CONDUIT, NO. 19 25-PAIR

EX. 4" CONDUIT (NOTE 4)
EX. FIBER OPTIC INNERDUCT 1-1/4" DIA.
(1) 230 FT. FIBER OPTIC CABLE, 96 FIBERS, SINGLE MODE
(2) 230 FT. ELECTRIC CABLE IN CONDUIT, NO. 19 25-PAIR

EX. 4" CONDUIT
(1) 25 FT. FIBER OPTIC CABLE, 96 FIBERS, SINGLE MODE
(2) 25 FT. ELECTRIC CABLE IN CONDUIT, NO. 19 25-PAIR

EX. COMMUNICATIONS HUT
NOTE 1

MATCH LINE STA. 6400+25
(PR ℄ SB TAY. EXIT)

SEE SHEET NO. 400

ITS-15

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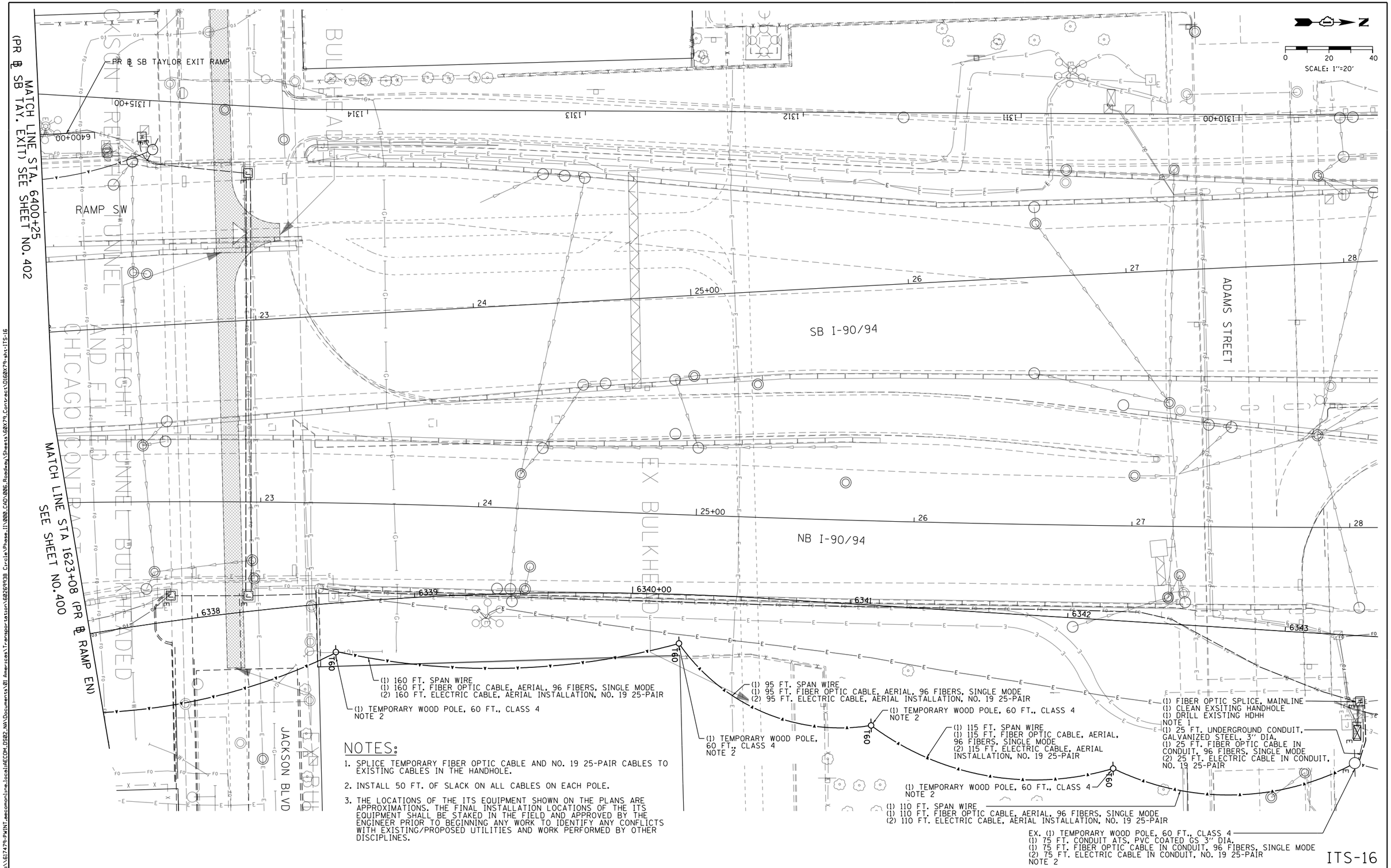
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED ITS PLAN
RAMP EN

SCALE: 1"=20' | SHEET 15 OF 18 SHEETS | STA. | TO STA. 6400+25

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	402
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



NOTES:

1. SPLICE TEMPORARY FIBER OPTIC CABLE AND NO. 19 25-PAIR CABLES TO EXISTING CABLES IN THE HANDHOLE.
2. INSTALL 50 FT. OF SLACK ON ALL CABLES ON EACH POLE.
3. THE LOCATIONS OF THE ITS EQUIPMENT SHOWN ON THE PLANS ARE APPROXIMATIONS. THE FINAL INSTALLATION LOCATIONS OF THE ITS EQUIPMENT SHALL BE STAKED IN THE FIELD AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING ANY WORK TO IDENTIFY ANY CONFLICTS WITH EXISTING/PROPOSED UTILITIES AND WORK PERFORMED BY OTHER DISCIPLINES.

ITS-16

AECOM
303 EAST WACKER DRIVE, SUITE 1400
CHICAGO, IL 60601-5276
PHONE: (312) 373-7700 FAX: (312) 373-6800

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PLOT DATE = 7/26/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED ITS PLAN
RAMP EN

SCALE: 1"=20' | SHEET 16 OF 18 SHEETS | STA. 6400+25 | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	403
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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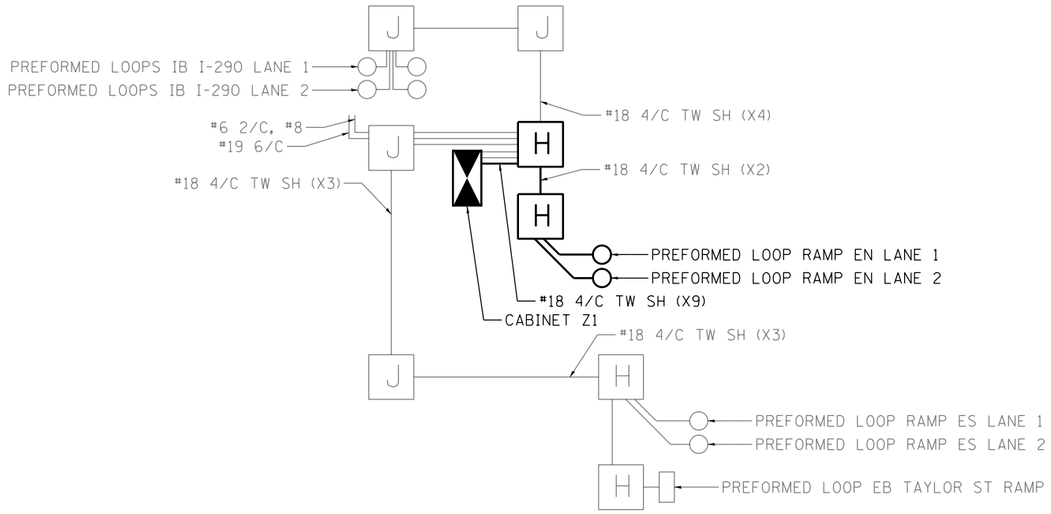
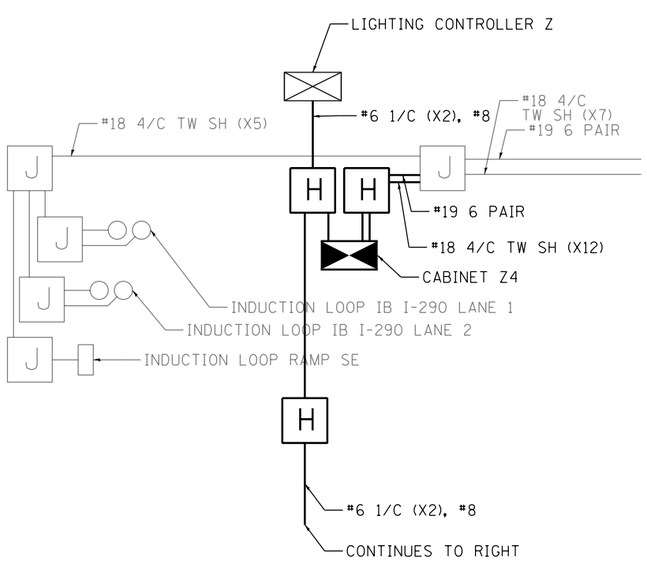
SHEET ITS-10



SHEET ITS-12



SYMBOLS LEGEND

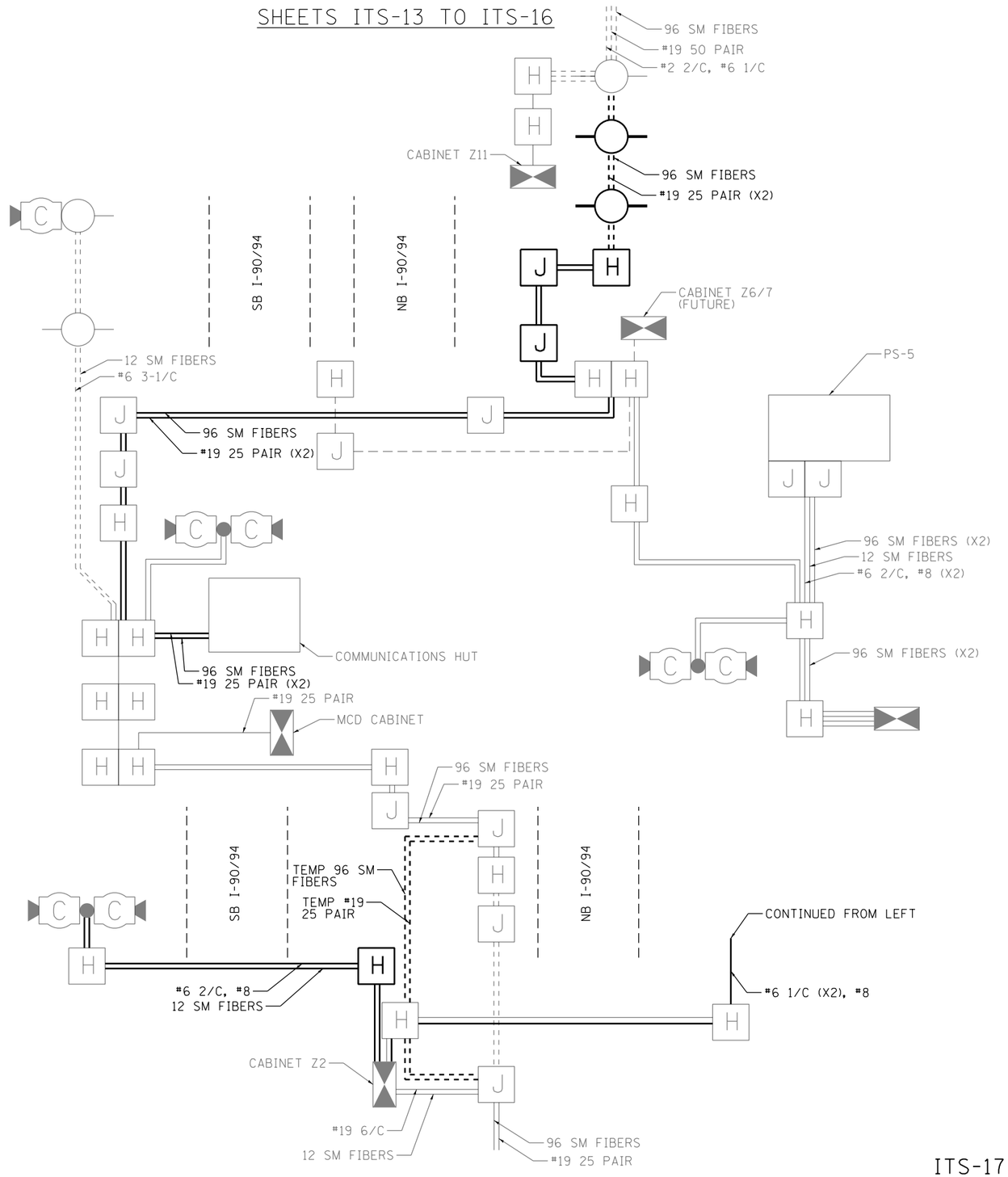
- H — HEAVY DUTY HANDHOLE
- H H — DOUBLE HANDHOLE
- J — JUNCTION BOX
- CONTROLLER CABINET
- C — CCTV CAMERA
- DETECTOR
- TEMPORARY WOOD POLE

NOT TO SCALE

NOTES:

1. CONTRACT RELATED LINEWORK APPEAR IN BOLD. ALL OTHER ITS INFRASTRUCTURE REPRESENTED ON THIS SHEET IS FOR REFERENCE.

SHEETS ITS-13 TO ITS-16



ITS-17

AECOM
303 EAST WACKER DRIVE, SUITE 1400
CHICAGO, IL 60601-5276
PHONE: (312) 373-7700 FAX: (312) 373-6800

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PLOT DATE = 7/26/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WIRING DIAGRAM

SCALE: N.T.S. | SHEET 17 OF 18 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	404
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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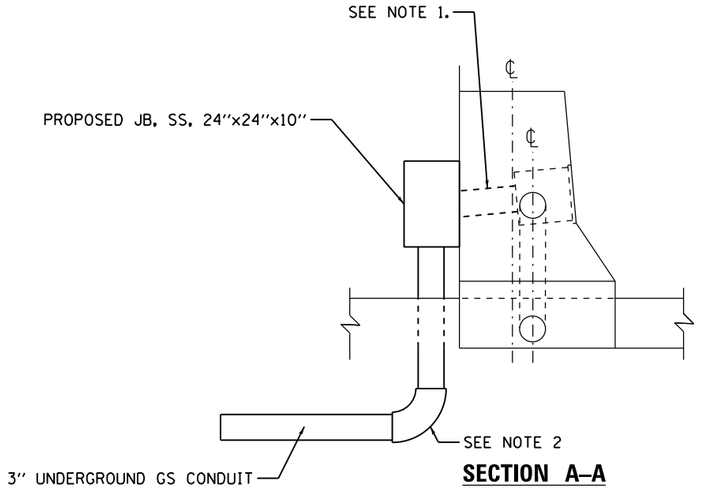
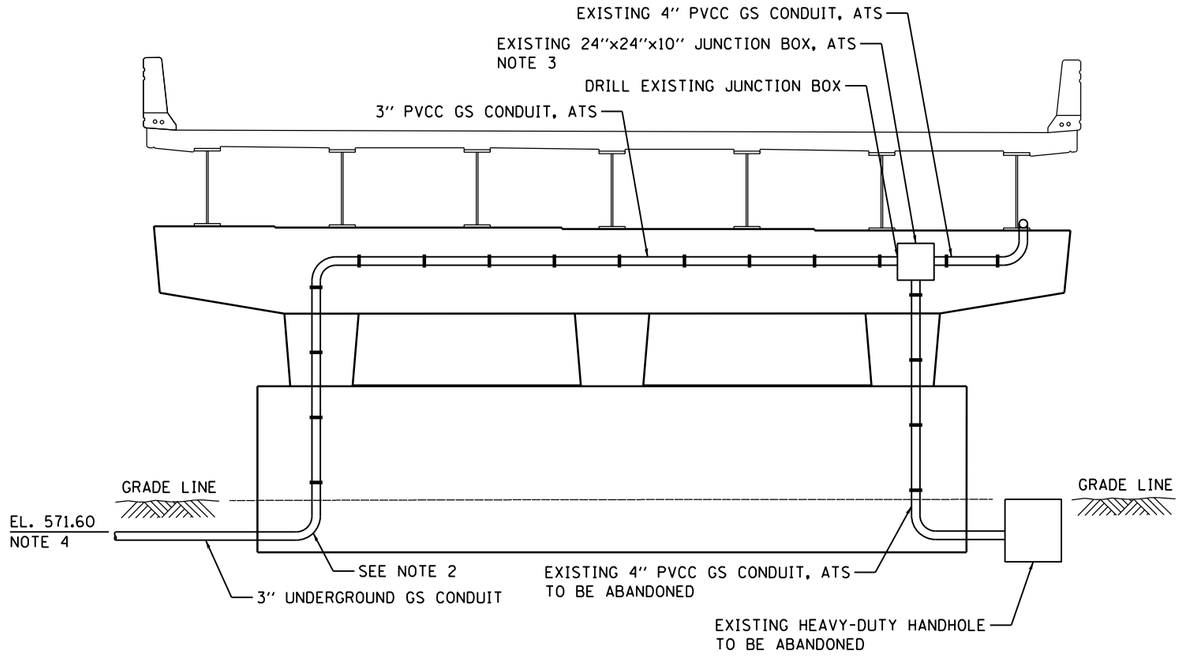
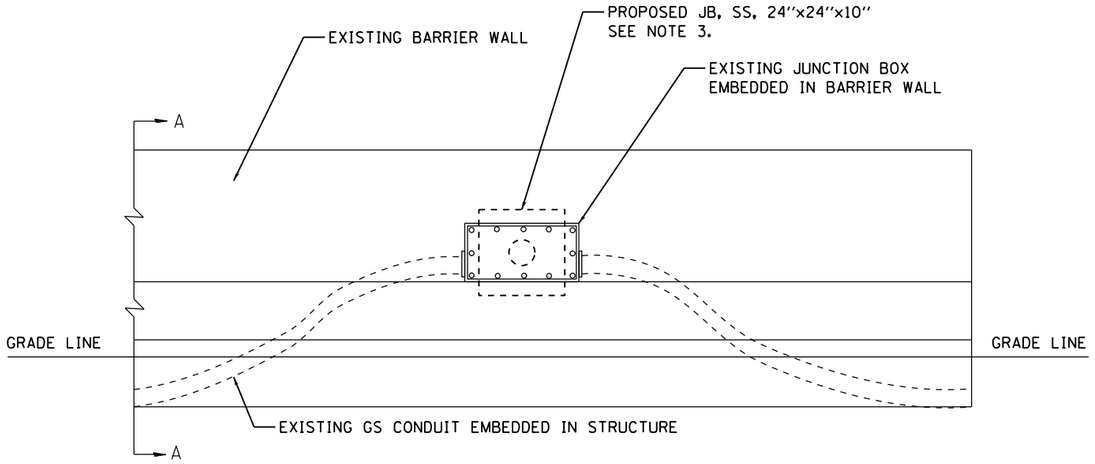


SECTION A–A



PIER 1 DETAIL, STRUCTURE NO. 016–1704
(LOOKING WEST)



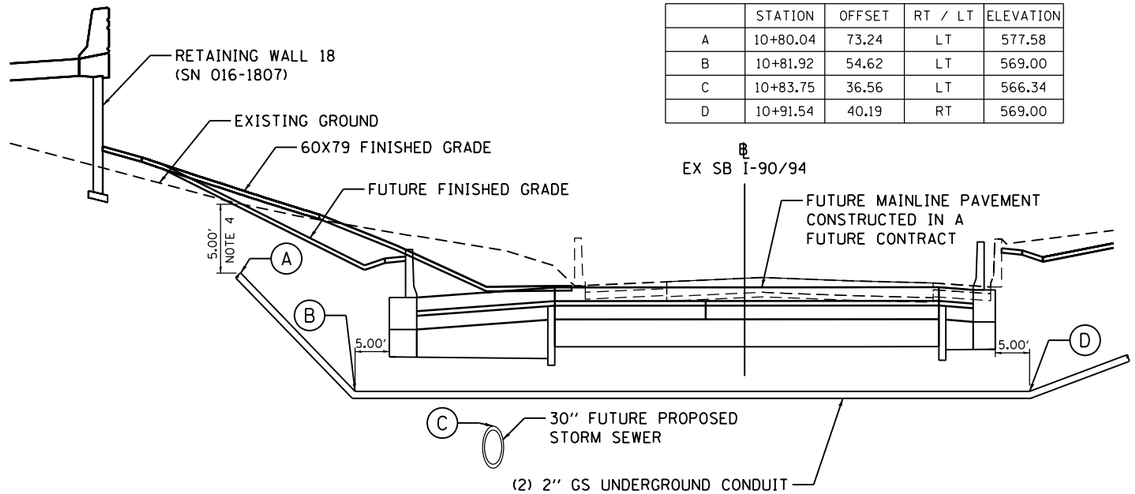
ELEVATION

ACCESS TO JUNCTION BOX EMBEDDED IN BARRIER WALL FOR ITS ROUTING

NOTES:

1. DRILL THROUGH THE MEDIAN BARRIER AND BACK OF THE EXISTING JUNCTION BOX TO ACCESS THE COMMUNICATION CABLES FOR REROUTING. MAINTAIN A WATER TIGHT SEAL.
2. MINIMUM CONDUIT BENDING RADIUS PER FIBER OPTIC CABLE MANUFACTURER'S INSTRUCTIONS.
3. PROPOSED OR EXISTING JUNCTION BOX TO STORE 25' OF SLACK FOR EACH ITS COMMUNICATION CABLE.
4. INSTALL CONDUIT AT OR BELOW THE ELEVATION NOTED IN THE PLANS TO AVOID DISTURBANCE IN FUTURE CONTRACTS.

	STATION	OFFSET	RT / LT	ELEVATION
A	10+80.04	73.24	LT	577.58
B	10+81.92	54.62	LT	569.00
C	10+83.75	36.56	LT	566.34
D	10+91.54	40.19	RT	569.00



CONDUIT ROUTING UNDER SB I-90/94
(E–KDR–SB)

ITS-18

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AECOM
303 EAST WACKER DRIVE, SUITE 1400
CHICAGO, IL 60601-5276
PHONE: (312) 373-7700 FAX: (312) 373-6800

D160X79-sht-ITS-18	DESIGNED - PTJ	REVISED -
USER NAME = myersc	DRAWN - CAM	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - MJL	REVISED -
PLOT DATE = 7/26/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ITS DETAILS

SCALE: N.T.S. | SHEET 18 OF 18 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	405
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

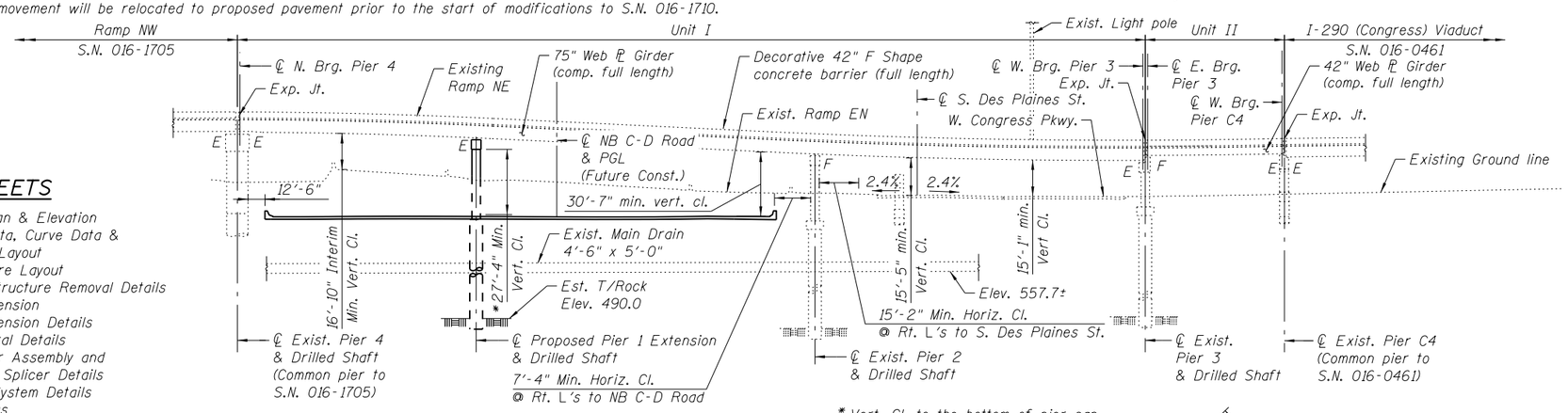
Bench Mark: Cut square at center of door entrance to 707 W. Harrison St; South side of Harrison St. ±90' west of west line of Des Plaines. Elevation 597.47.
A X cut in the SE anchor bolt at the 11th street light N. of Roosevelt on the W. side of Halsted. Elev. = 594.06

Existing Structure: S.N. 016-1710 was built under section 2015-080R&B in Chicago, Cook County, Illinois and carries F.A.I. Route 94 NB I-90/94 traffic to EB-I290. The existing structure has an overall length of approx. 543'-6" from centerline to centerline of piers and consists of four (4) span steel superstructure founded on reinforced concrete hammerhead, straddle and multicolumn piers. The entire structure is divided into two units. Unit I consists of three continuous spans of 124'-3 7/8", 160'-0", and 168'-10 1/2". Unit II consists of a single span of 85'-10 7/8". The bridge has an out-to-out deck width of 29'-2" for Unit I and varies from 29'-2" to 27'-6 3/8" for Unit II. The existing structure is to remain and Pier 1 is to be extended to allow for future construction of the NB C-D Road.

Traffic Control: Ramp NE will remain open during construction except for a weekend closure when the existing east column of Pier 1 is removed. Traffic will be detoured via local roads during the weekend closure.
Ramp EN movement will be relocated to proposed pavement prior to the start of modifications to S.N. 016-1710.

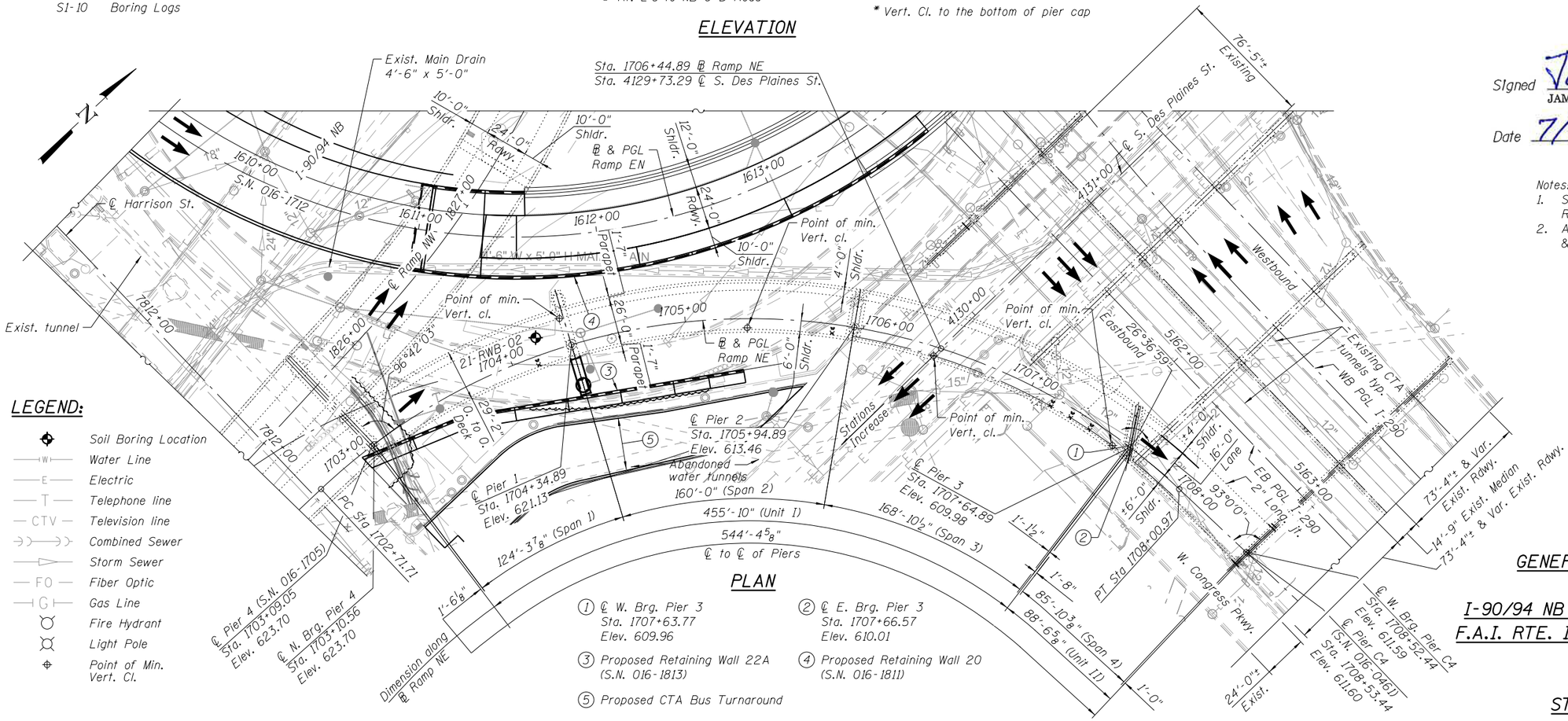
No Salvage.

INDEX OF SHEETS



* Vert. Cl. to the bottom of pier cap

ELEVATION



LEGEND:

- Soil Boring Location
- W — Water Line
- E — Electric
- T — Telephone line
- CTV — Television line
- Combined Sewer
- Storm Sewer
- FO — Fiber Optic
- G — Gas Line
- Fire Hydrant
- Light Pole
- Point of Min. Vert. Cl.

PLAN

① ℄ W. Brg. Pier 3
Sta. 1707+63.77
Elev. 609.96

② ℄ E. Brg. Pier 3
Sta. 1707+66.57
Elev. 610.01

③ Proposed Retaining Wall 22A (S.N. 016-1813)

④ Proposed Retaining Wall 20 (S.N. 016-1811)

⑤ Proposed CTA Bus Turnaround

DESIGN SPECIFICATIONS

2014 AASHTO LRFD Bridge Design Specifications
7th Edition

LOADING HL-93

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

DESIGN STRESSES

FIELD UNITS (New Construction)
f'c = 3,500 psi
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 (Reinforcement)
fy = 50,000 psi (M270 Grade 50)

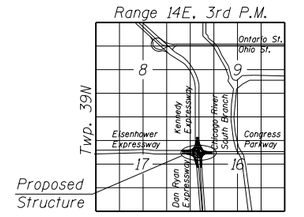
SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.085g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.144g
Soil Site Class = D

STATE OF ILLINOIS
JAMAL I. GRAINAWI
081-005161
CHICAGO, ILLINOIS
LICENSED STRUCTURAL ENGINEER

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

Notes:
1. Span lengths are measured along ℄ & PGL Ramp NE.
2. All piers are oriented perpendicular to ℄ & PGL unless noted otherwise.



LOCATION SKETCH

GENERAL PLAN AND ELEVATION
RAMP NE OVER
I-90/94 NB C-D ROAD/S. DES PLAINES ST.
F.A.I. RTE. I-90/94 - SECTION 2014-005R&B
COOK COUNTY
STATION 1704+73.63
STRUCTURE NO. 016-1710

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

USER NAME = Ibrahimm1	DESIGNED - IJL	REVISED -	
	CHECKED - PJL	REVISED -	
PLOT SCALE = N.T.S.	DRAWN - DCP	REVISED -	
PLOT DATE = 7-30-2018	CHECKED - JIG	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. S1-1 OF S1-10 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	406
		CONTRACT NO. 60X79		
		ILLINOIS FED. AID PROJECT		

0161710-60X79-S001-GPE.dgn

GENERAL NOTES:

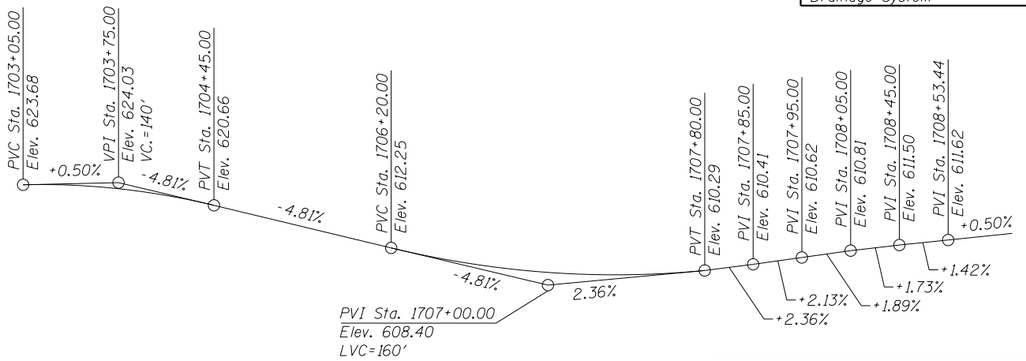
1. Reinforcement bars designated (E) shall be epoxy coated.
2. Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior 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.
3. Concrete Sealer shall be applied to the designated areas of the Pier.
4. Existing reinforcement shall be cleaned and incorporated into the new construction. Cost included with Concrete Removal.
5. 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.
6. 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.
7. 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.
8. Based on the high squeeze potential of the clay soils, the use of temporary casing will be required to Elev. ±540.2 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.
9. 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 (AT PIER 1)

1. Excavate area around Pier 1. The construction of Retaining Wall 20 (S.N. 016-1811) shall be completed prior to any work for Pier 1.
2. Construct proposed drilled shaft, column, and pier cap extension. The construction of the proposed Retaining Wall 22A (S.N. 016-1813) shall be coordinated with the construction of Pier 1 extension.
3. Install jacking system and jack existing superstructure.
4. Remove existing east column (temporary column) including drainage system.
5. Install shims as needed.
6. Release jacks and gradually transfer load to pier cap.
7. Install drainage system and connect to existing.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Concrete Removal	Cu. Yd.	-	33	33
Structure Excavation	Cu. Yd.	-	143	143
Concrete Structures	Cu. Yd.	-	69.3	69.3
Rubbed Finish	Sq. Ft.	-	700	700
Form Liner Textured Surface	Sq. Ft.	-	380	380
Reinforcement Bars	Pound	-	30,820	30,820
Reinforcement Bars, Epoxy Coated	Pound	-	16,590	16,590
Mechanical Splicers	Each	-	52	52
Drilled Shaft in Soil	Cu. Yd.	-	160	160
Drilled Shaft in Rock	Cu. Yd.	-	4	4
Concrete Sealer	Sq. Ft.	-	1,288	1,288
Jacking Existing Superstructure	L. Sum	1	-	1
Crosshole Sonic Logging Access Ducts	Foot	-	88	88
Crosshole Sonic Logging Testing	Each	-	1	1
Drainage System	L. Sum	-	0.2	0.2



EXISTING PROFILE GRADE

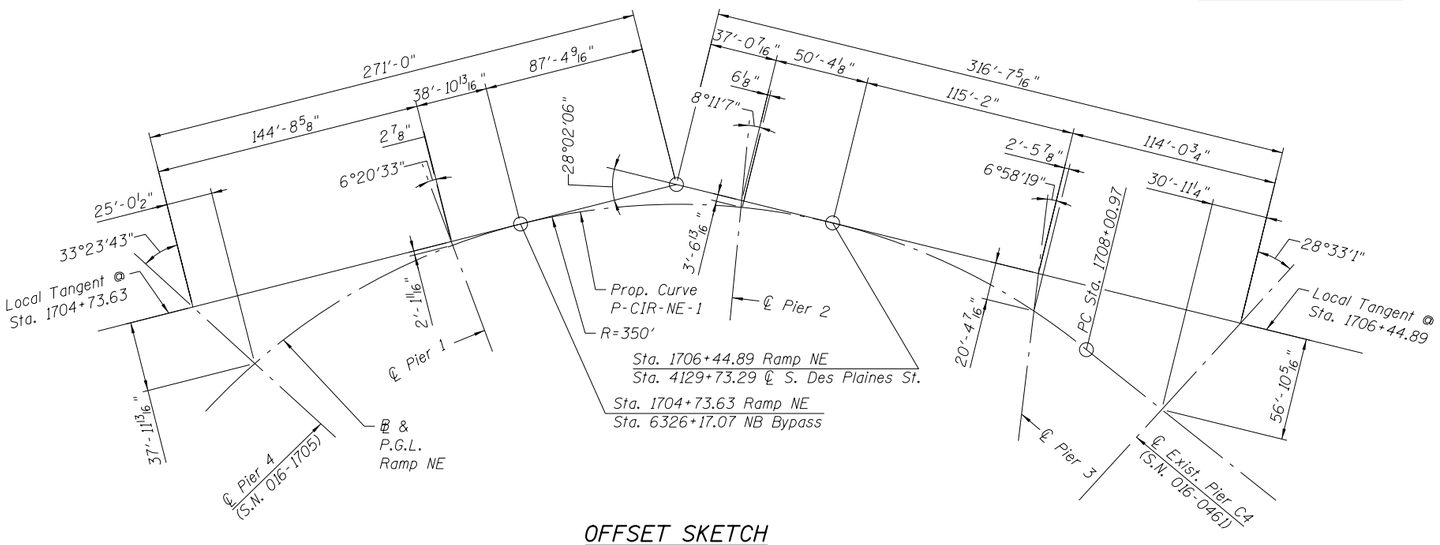
(Along ℄ Ramp NE)

For information only, part of future contract

CURVE DATA

(Ramp NE)

PROP. CURVE P-CIR-NE-1
P.I. Sta. = 1706+01.77
Δ = 86° 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



OFFSET SKETCH

CURVE DATA

(NB C-D Road)

PROP. CURVE P-NCD-NX-2
PI STA. = 6323+25.02
Δ = 8° 04′ 05" (RT)
D = 7° 17′ 22"
R = 786.00′
T = 55.43′
L = 110.68′
E = 1.95′
e = 5.80%
T.R. = 37′
S.E. RUN = 106′
P.C. STA. = 6322+69.59
P.T. STA. = 6323+80.27

CURVE DATA

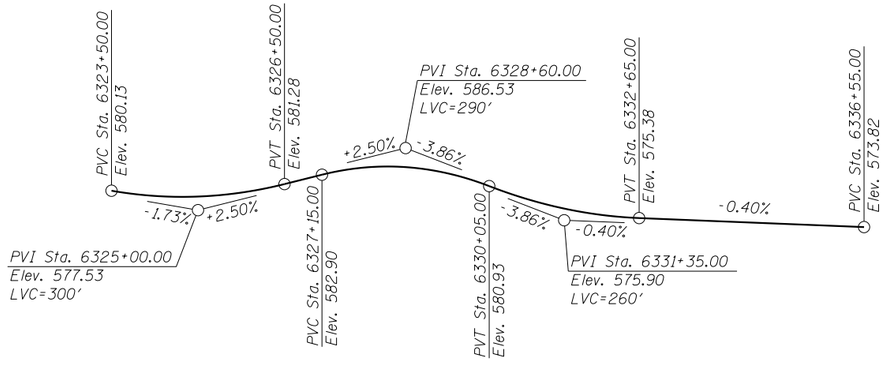
(NB C-D Road)

PROP. CURVE P-NCD-NX-3
PI STA. = 6324+41.27
Δ = 20° 56′ 44" (RT)
D = 17° 21′ 44"
R = 330.00′
T = 61.00′
L = 120.64′
E = 5.59′
e = 5.80%
T.R. = 37′
S.E. RUN = 106′
P.C. STA. = 6323+80.27
P.T. STA. = 6325+00.91

CURVE DATA

(NB C-D Road)

PROP. CURVE P-NCD-NX-4
PI STA. = 6328+76.78
Δ = 59° 05′ 41" (LT)
D = 14° 08′ 50"
R = 405.00′
T = 229.58′
L = 417.72′
E = 60.54′
e = 5.40%
T.R. = 37′
S.E. RUN = 99′
P.C. STA. = 6326+47.20
P.T. STA. = 6330+64.91



PROFILE GRADE

(Along ℄ NB C-D Road)

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

USER NAME = Ibrahimm1	DESIGNED - IJL	REVISED -	
	CHECKED - PJL	REVISED -	
PLOT SCALE = N.T.S.	DRAWN - DCP	REVISED -	
PLOT DATE = 7-30-2018	CHECKED - JIG	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL DATA, CURVE DATA & GEOMETRIC LAYOUT
STRUCTURE NO. 016-1710
SHEET NO. S1-2 OF S1-10 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	407
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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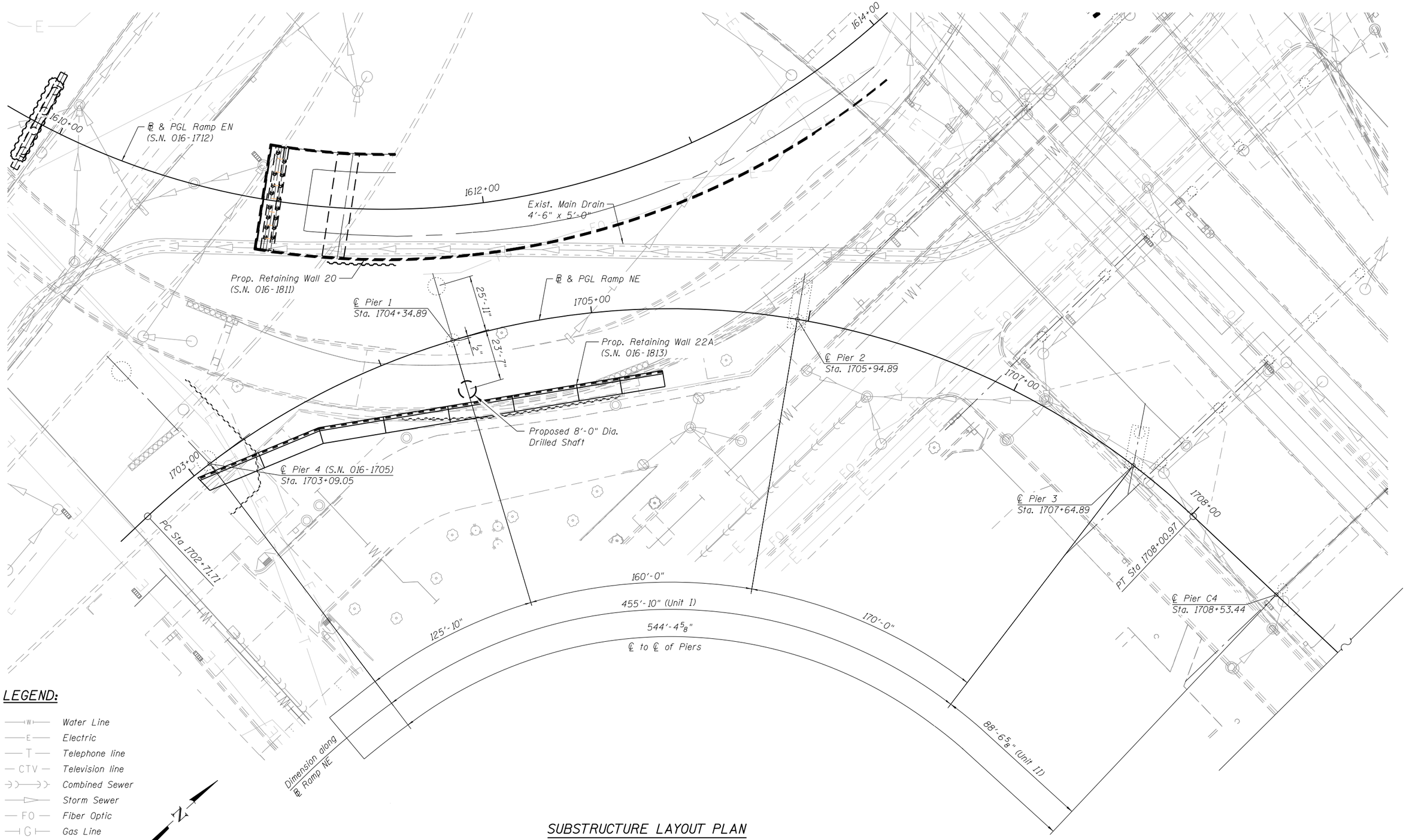

LEGEND:

- Water Line
- Electric
- Telephone line
- Television line
- Combined Sewer
- Storm Sewer
- Fiber Optic
- Gas Line
- Fire Hydrant
- Light Pole

SUBSTRUCTURE LAYOUT PLAN

WSP USA Inc.
30 N. LASALLE STREET
SUITE 4200
CHICAGO, IL 60602
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USER NAME = ibrahimm1	DESIGNED - JZ	REVISED -	
	CHECKED - AH	REVISED -	
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PLOT DATE = 7-30-2018	CHECKED - JIG	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE LAYOUT
STRUCTURE NO. 016-1710
SHEET NO. S1-3 OF S1-10 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	408
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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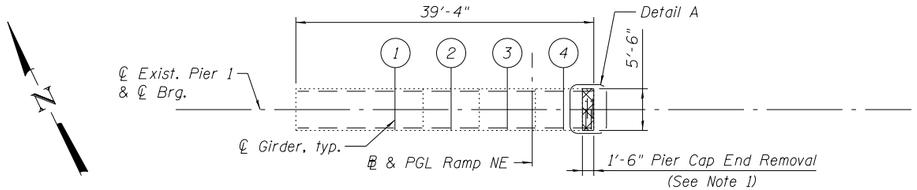
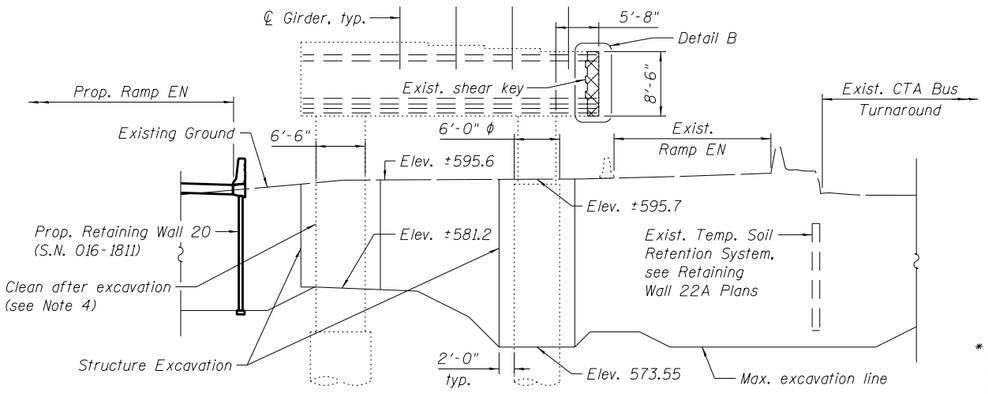
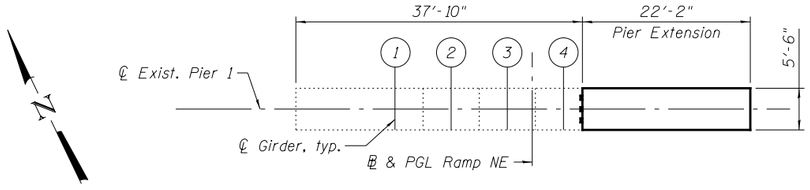


PLAN - PIER 1

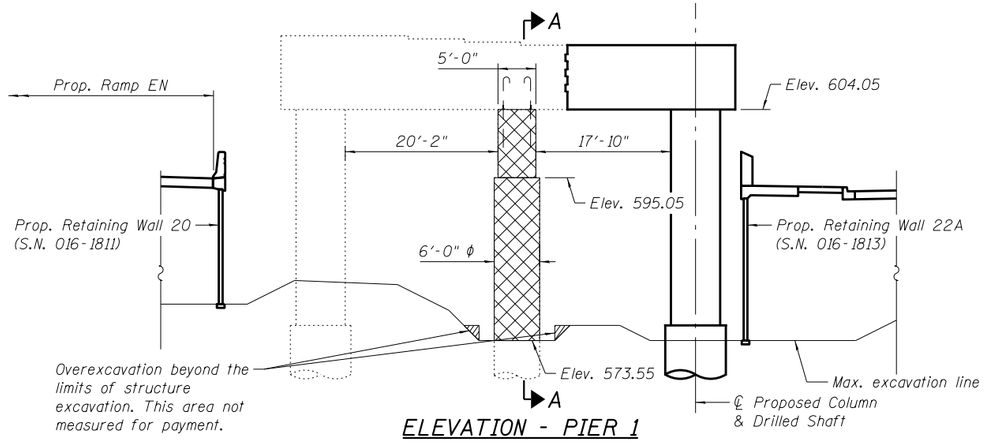


ELEVATION - PIER 1

(Looking upstation)
(Before Construction of Pier Extension)

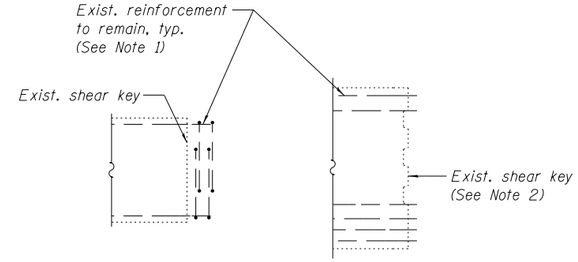


PLAN - PIER 1



ELEVATION - PIER 1

(Looking upstation)
(After Construction of Pier Extension)



DETAIL A

DETAIL B

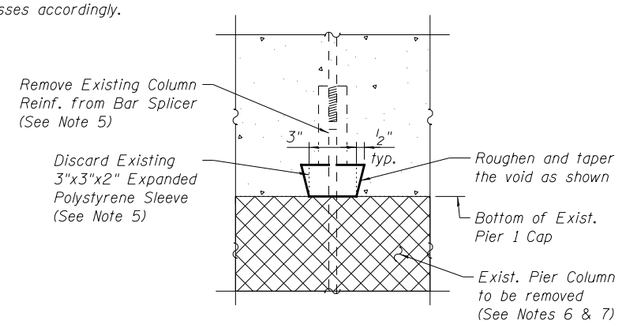
SHIM ℄ TABLE

Location	*Shim ℄ Thickness
Girder 1	N/A
Girder 2	1/16"
Girder 3	1/8"
Girder 4	3/16"

* Shim ℄ thicknesses are estimates. The Contractor shall measure the gaps as described in Note G of the suggested procedure for jacking and shall specify the shim ℄ thicknesses accordingly.

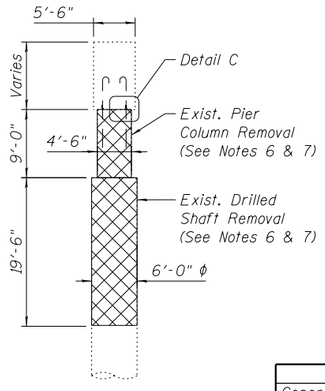
GIRDER SERVICE DEAD LOAD REACTIONS

Girder	R℄ (kips)	Min. Jack Capacity (kips)
1	234.2	355
2	256.1	385
3	231.4	350
4	292.5	440



DETAIL C

(22 Required)



SECTION A-A

LEGEND

Concrete Removal

BILL OF MATERIAL

Item	Unit	Total
Concrete Removal	Cu. Yd.	33
Structure Excavation	Cu. Yd.	74
Jacking Existing Superstructure	L. Sum.	1

JACKING EXISTING SUPERSTRUCTURE & COLUMN REMOVAL SUGGESTED PROCEDURE

A. The Contractor shall submit for approval by the Engineer, plans for jacking existing superstructure. See Special Provisions.
B. Jacking shall be done with existing deck remaining in place and without live load traffic.
C. See Girder Service Reactions Table for dead load reactions and minimum jack capacity per Girder.
D. Partially untighten nuts of the H.S. Threaded studs connecting the HLMR Brg. top plate with the girder bottom flange to allow vertical movement of 1/2" max. on all girders. Ensure that the HLMR Brg. top plates remain in place during jacking of girders.
E. Jack existing superstructure to remove all dead loads from bearings. Prior to jacking, hardwood timbers shall be installed tightly between the top and bottom flanges to prevent flange rotation. Measure gaps after jacking operation is complete and prior to column removal.
F. After jacking the existing superstructure is complete and the proposed pier cap extension and column reached a minimum compressive strength of 3500 psi or 28 days of age, remove existing center column below the cap to the limits shown, remove existing column reinforcement as shown, discard expanded polystyrene sleeve, and remove existing shaft to the limits shown.
G. After column removal, measure the final gaps between the bottom flange of girders and top of HLMR Brgs top plates. Install steel shims as required to fill the additional gaps beyond the gaps measured after jacking and prior to column removal. Cost of furnishing and installing shim ℄ is included in the cost of Jacking Existing Superstructure.
H. Gradually release the jacks to allow smooth load transfer from the superstructure to the proposed pier cap extension and column.

Notes:
1. Extreme care shall be taken to avoid damage to existing reinforcement while removing the existing pier cap end. Existing reinforcement will be spliced to bars p100(E), p101(E), p102(E), and h100(E) using Mechanical Splicer (E). In case of damage of existing reinforcement, additional removal of concrete shall be carried out as approved by the Engineer and at the Contractor's expense to provide enough length for splicing.
2. The surface of existing shear key shall be roughened after removal of existing pier cap.
3. Structure Excavation around Pier 1 shall be coordinated with the Structure Excavation for Retaining Wall 20 (S.N. 016-1811) and Retaining Wall 22A (S.N. 016-1813).
4. The exist. west column shall be unwrapped and cleaned after excavation. Cost is included in the cost of Structure Excavation.
5. Removal of existing pier cap end, existing pier column, and existing drilled shaft shall be included in the cost of Concrete Removal. Removal of existing column reinforcement in pier cap and discarding of existing expanded polystyrene sleeve shall be included in the cost of Concrete Removal.
6. Prior to removal of the existing pier column and existing drilled shaft, the Contractor shall jack existing superstructure per the suggested procedure shown on this sheet and in the Special Provisions.
7. Removal operations for existing column and drilled shaft shall not begin until new concrete on pier cap extension and column has reached a minimum compressive strength of 3,500 psi or 28 days of age.
8. Removal of existing drainage system shall be included in the cost of Drainge System.

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING STRUCTURE REMOVAL DETAILS
STRUCTURE NO. 016-1710
SHEET NO. S1-4 OF S1-10 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	409
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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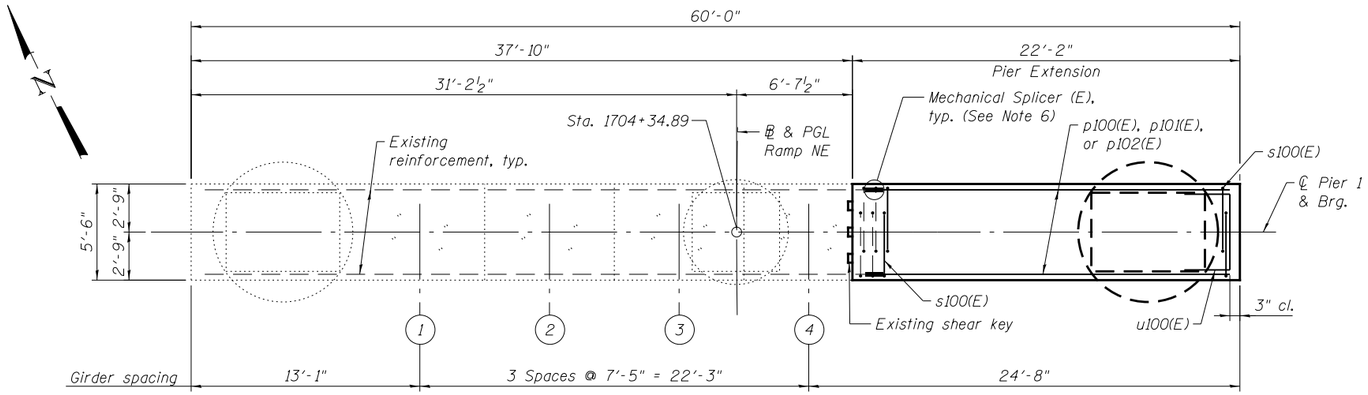
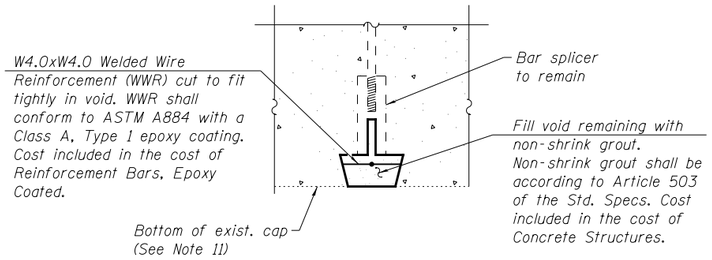
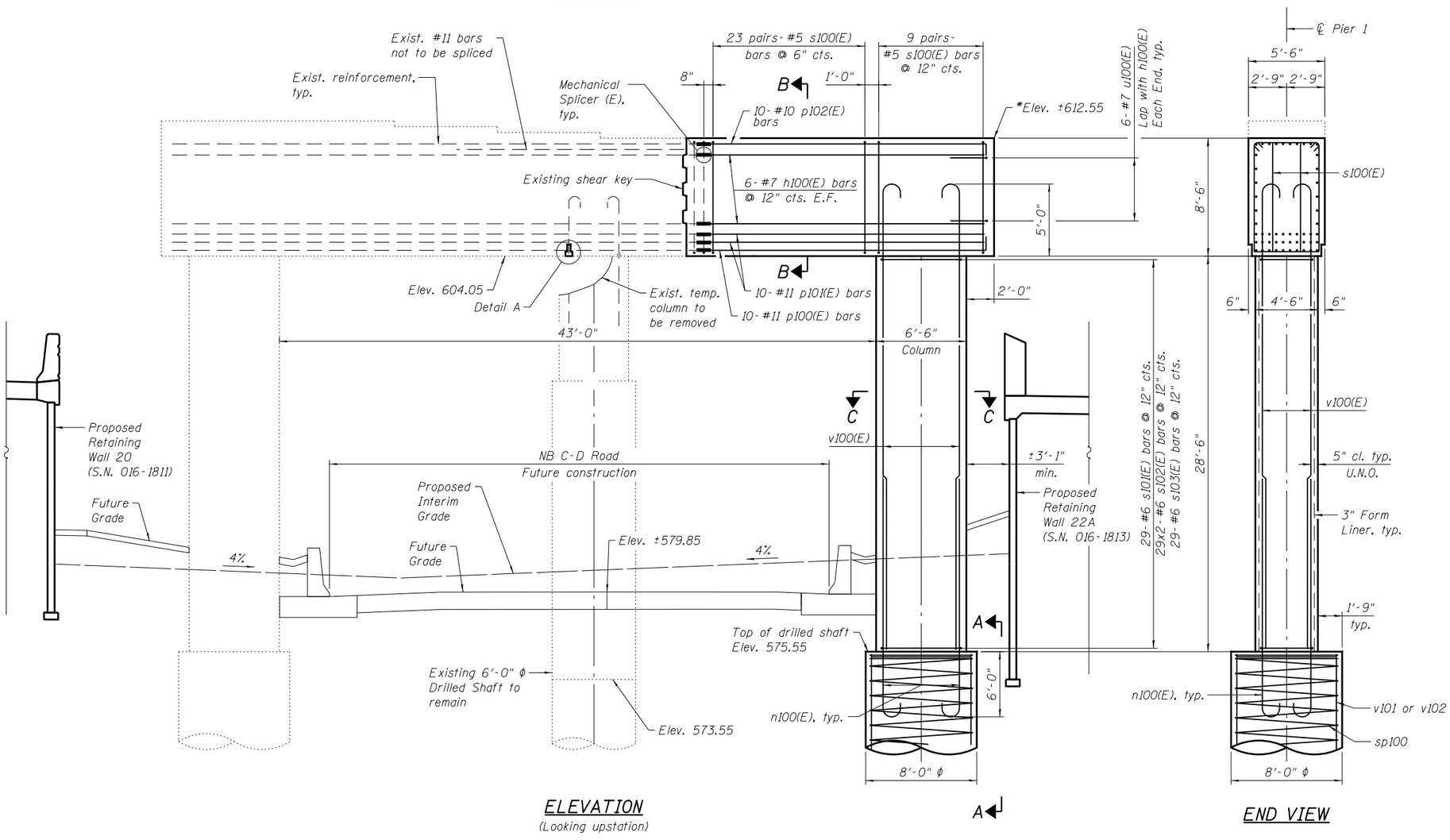


TOP PLAN



DETAIL A

(22 Required)



ELEVATION

(Looking upstation)

END VIEW

MINIMUM BAR LAP

#11 (E) bar = 13'-4"

*Match existing top of cap elevation

Notes:

1. See sheet S1-4 for details of removal.
2. See sheet S1-6 for Sections A-A, B-B, and C-C.
3. See sheet S1-8 for details of Mechanical Splicers.
4. For #6 sp100 spiral:
   1. Provide 1½ extra turns top and bottom. Provide 4-#4 spacers or equivalent.
   2. When splicing spiral reinforcement is necessary, the spiral shall be provided with 1½ 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.
5. Due to closely spaced spirals in the top 5'-0" of Drilled Shafts, special attention shall be given during concrete pour to avoid any voids between steel cage and side walls of shafts.
6. End of bars p100(E), p101(E), p102(E), and h100(E) to be spliced with existing reinforcement using Mechanical Splicer (E).
7. Drilled Shafts shall be tested in accordance with Special Provisions for "Crosshole Sonic Logging Testing of Drilled Shafts".
8. Bars equally spaced, unless otherwise noted.
9. All edges shall have standard ¾" chamfer.
10. The quantities and reinforcement detailing are based on the top of shaft and the estimated top of rock elevations shown and may change based on the actual top of rock elevations encountered at each shaft and the final top of shaft elevation.
11. Concrete Sealer shall be applied to all exposed faces of pier column and cap including at locations of non-shrink grout pockets at existing east column removal. Cost is included in the cost of Concrete Sealer.

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	CHECKED - JZ	REVISED -	
PLOT SCALE = N.T.S.	DRAWN - DCP	REVISED -	
PLOT DATE = 7-30-2018	CHECKED - JIG	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIER 1 EXTENSION
STRUCTURE NO. 016-1710
SHEET NO. S1-5 OF S1-10 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	410
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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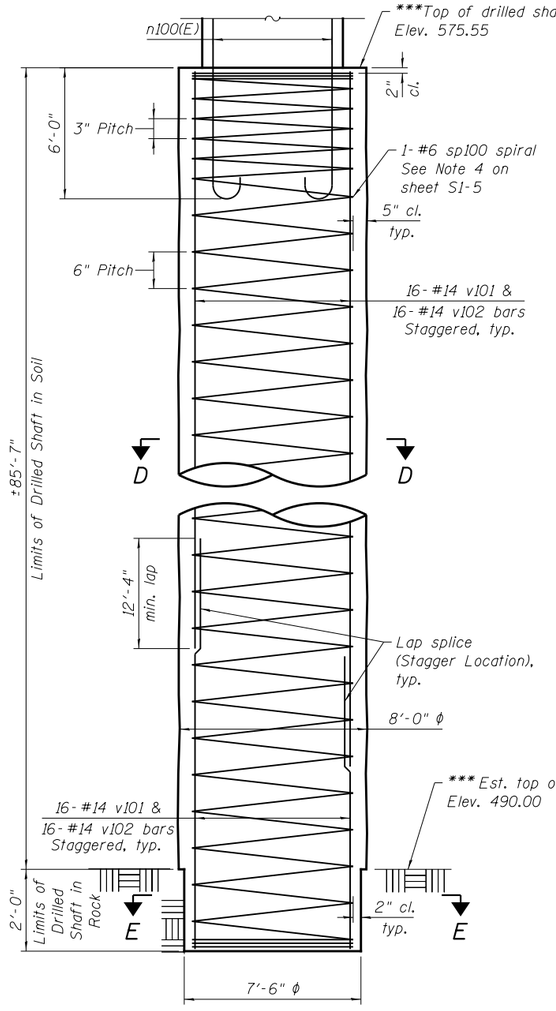
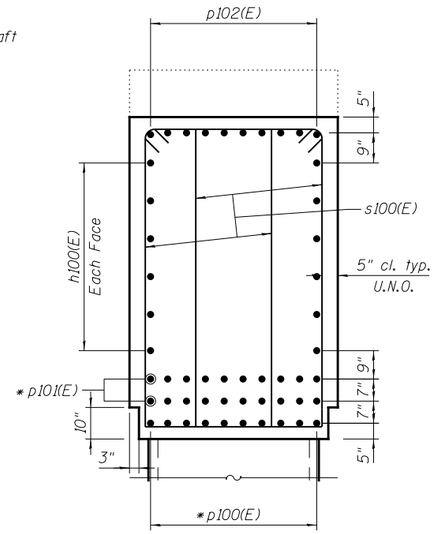


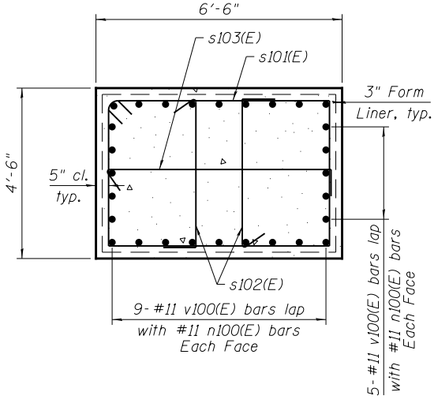
SECTION A-A

***See Note 10 on sheet S1-5

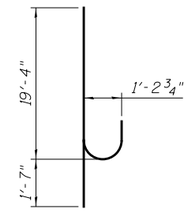


SECTION B-B

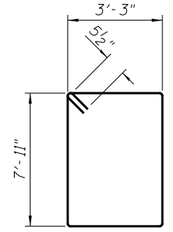
* Space to avoid column bars



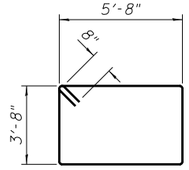
SECTION C-C



BAR n100(E)



BAR s100(E)



BAR s101(E)

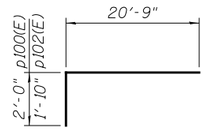
BILL OF MATERIAL

	Bar	No.	Size	Length	Shape
**	h100(E)	12	#7	20'-9"	
	n100(E)	28	#11	20'-11"	
**	p100(E)	10	#11	22'-9"	
**	p101(E)	20	#11	20'-9"	
**	p102(E)	10	#10	22'-7"	
	s100(E)	64	#5	23'-3"	
	s101(E)	29	#6	20'-0"	
	s102(E)	58	#6	5'-4"	
	s103(E)	29	#6	7'-4"	
*	sp100	1	#6	87'-5"	
	u100(E)	6	#7	12'-6"	
	v100(E)	28	#11	35'-1"	
	v101	32	#14	60'-0"	
	v102	32	#14	39'-11"	

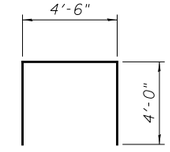
Structure Excavation	Cu. Yd.	69
Concrete Structures	Cu. Yd.	69.3
Reinforcement Bars	Pound	30,820
Reinforcement Bars, Epoxy Coated	Pound	16,590
Drilled Shaft in Soil	Cu. Yd.	160
Drilled Shaft in Rock	Cu. Yd.	4
Concrete Sealer	Sq. Ft.	1,288
Crosshole Sonic Logging Access Ducts	Foot	88
Crosshole Sonic Logging Testing	Each	1

* Length is height of spiral

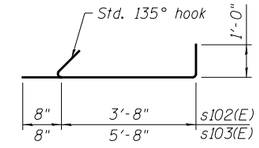
** Length is estimated and shall be verified based on Mechanical Splicer and condition of existing reinforcement



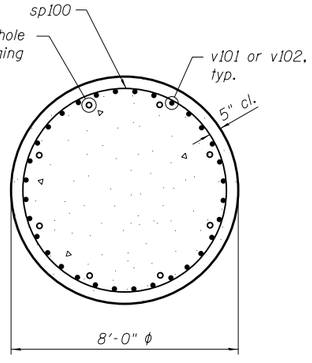
BARS p100(E) & p102(E)



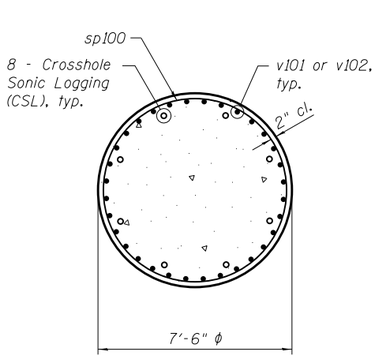
BAR u100(E)



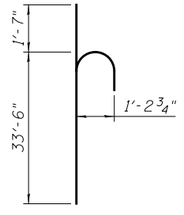
BARS s102(E) & s103(E)



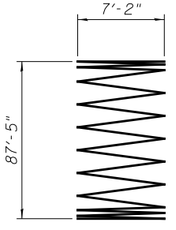
SECTION D-D



SECTION E-E



BAR v100(E)



BAR sp100

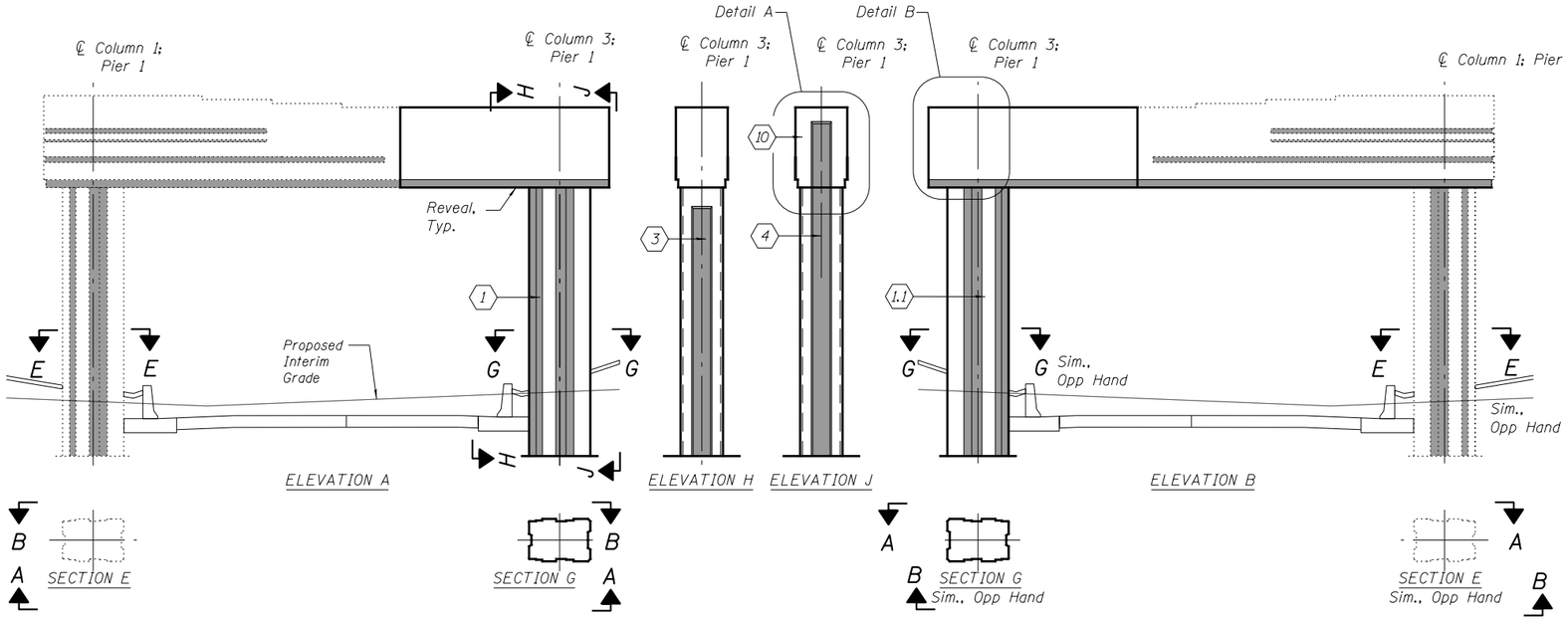
WSP USA Inc. 30 N. LASALLE STREET SUITE 4200 CHICAGO, IL 60602 TEL: (312) 782-8150 FAX: (312) 782-1684	USER NAME = ibrahimm1	DESIGNED - MS	REVISED -
		CHECKED - JZ	REVISED -
	PLOT SCALE = N.T.S.	DRAWN - DCP	REVISED -
	PLOT DATE = 7-30-2018	CHECKED - JIG	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

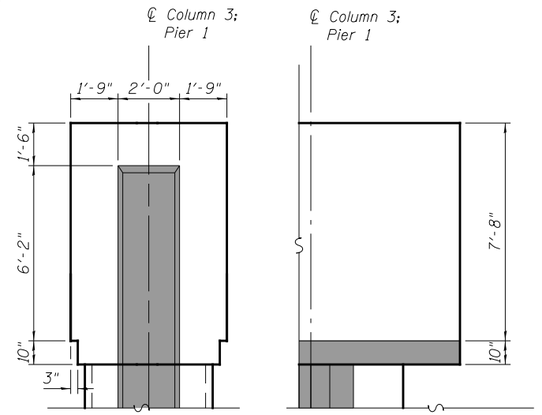
PIER 1 EXTENSION DETAILS
STRUCTURE NO. 016-1710
SHEET NO. S1-6 OF S1-10 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	411
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

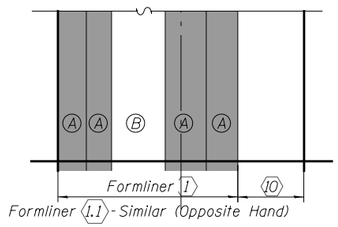
0161710-60X79-S006-DET.dgn



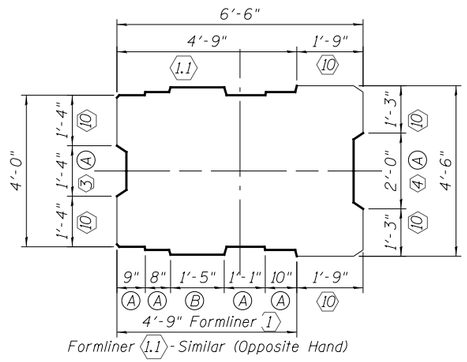
PIER 1



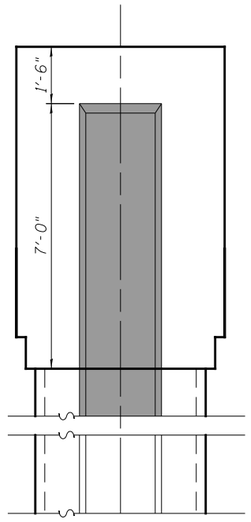
PIER CAP REVEAL DETAIL AT PIER 1



FORMLINER 1



FORMLINER LAYOUT - COLUMN 3 AT PIER 1



FORMLINER 4

LEGEND:

1 1.1 3 4 — Formliner Panel Designation

10 — 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: Min Depth: 0.0625" - Max Deth: 0.100"

B — Texture: Smooth

NOTES:

1. See sheet S1-5 for pier dimensions.
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. Work for reveals at pier cap shall not be paid separately. This work is included in Pay Item: Concrete Structures.
5. All reveals to receive Texture A.

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Rubbed Finish	Sq. Ft.	700
Form Liner Textured Surface	Sq. Ft.	380

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

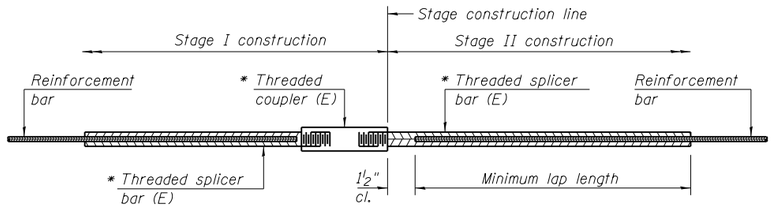
USER NAME = Ibrahimm1	DESIGNED - HA	REVISED -	
	CHECKED - JIG	REVISED -	
PLOT SCALE = N.T.S.	DRAWN - DCP	REVISED -	
PLOT DATE = 7-30-2018	CHECKED - JIG	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ARCHITECTURAL DETAILS
STRUCTURE NO. 016-1710
SHEET NO. S1-7 OF S1-10 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	412
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

0161710-60X79-S007-ADT.dgn

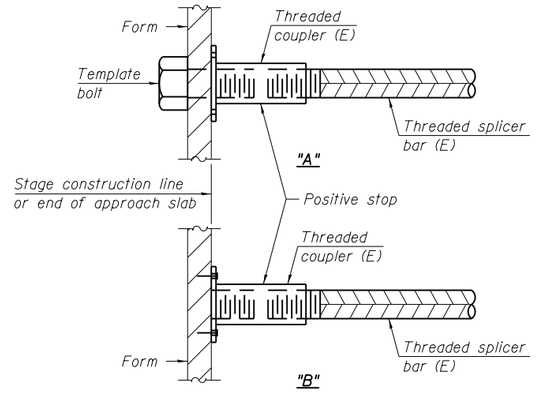


STANDARD BAR SPLICER ASSEMBLY

Threaded splicer bar length = min. lap length + 1½" + thread length

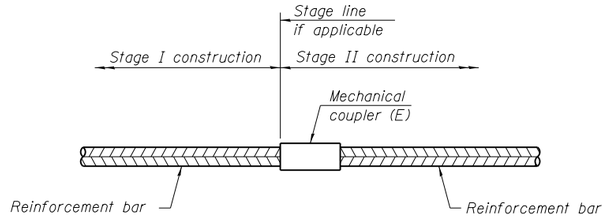
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Minimum lap length



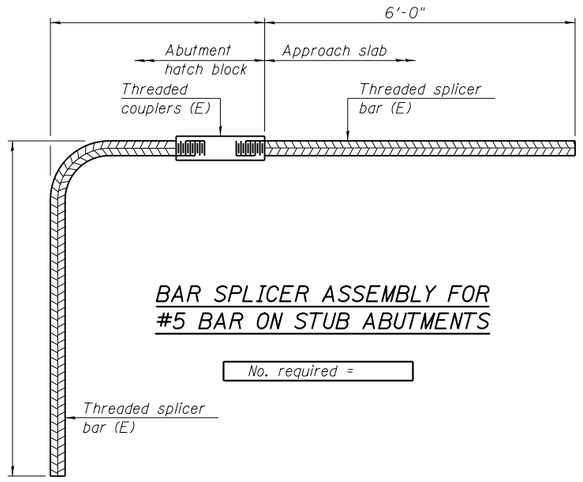
INSTALLATION AND SETTING METHODS

"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
Pier 1 Cap Extension	#7	12
Pier 1 Cap Extension	#10	10
Pier 1 Cap Extension	#11	30



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required =

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

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

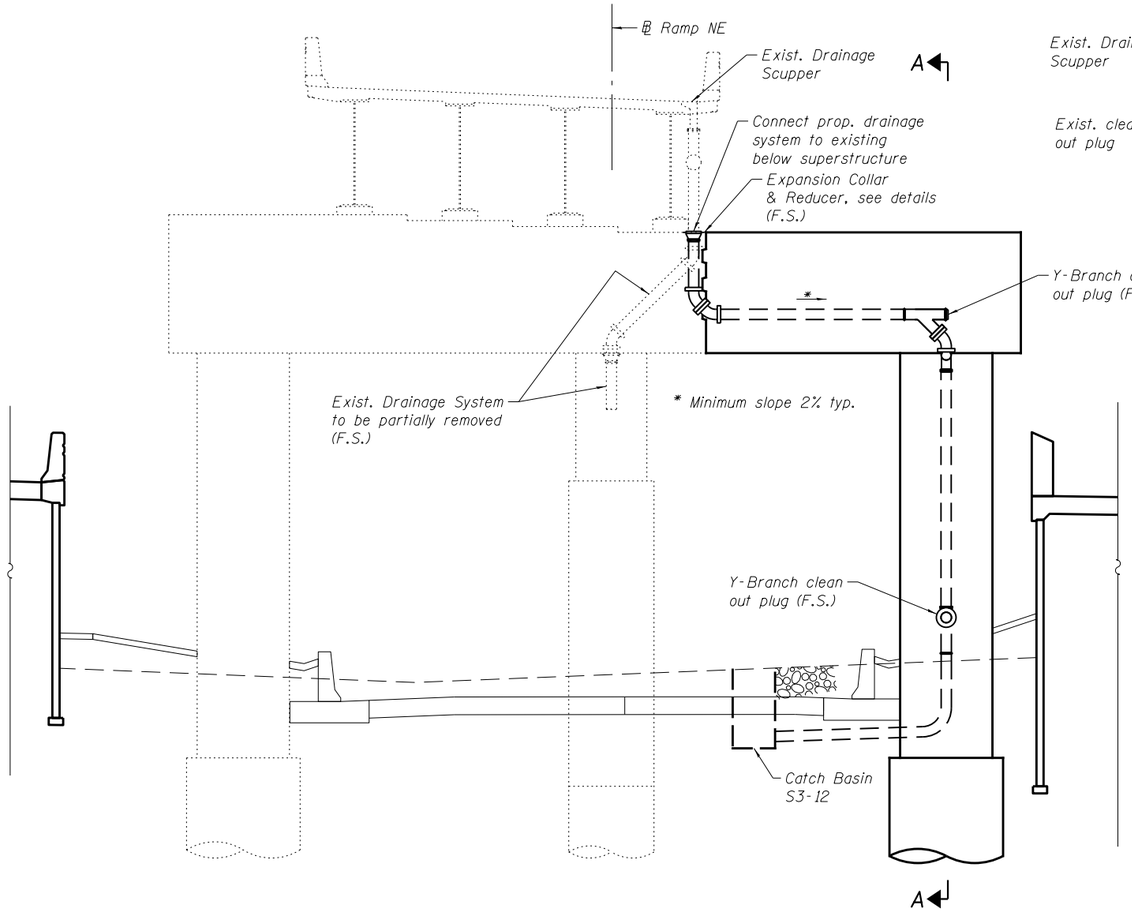
USER NAME = Ibrahimm1	DESIGNED - MI	REVISED -	
	CHECKED - PJL	REVISED -	
PLOT SCALE = N.T.S.	DRAWN - MI	REVISED -	
PLOT DATE = 7-30-2018	CHECKED - JIG	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS
STRUCTURE NO. 016-1710
SHEET NO. S1-8 OF S1-10 SHEETS

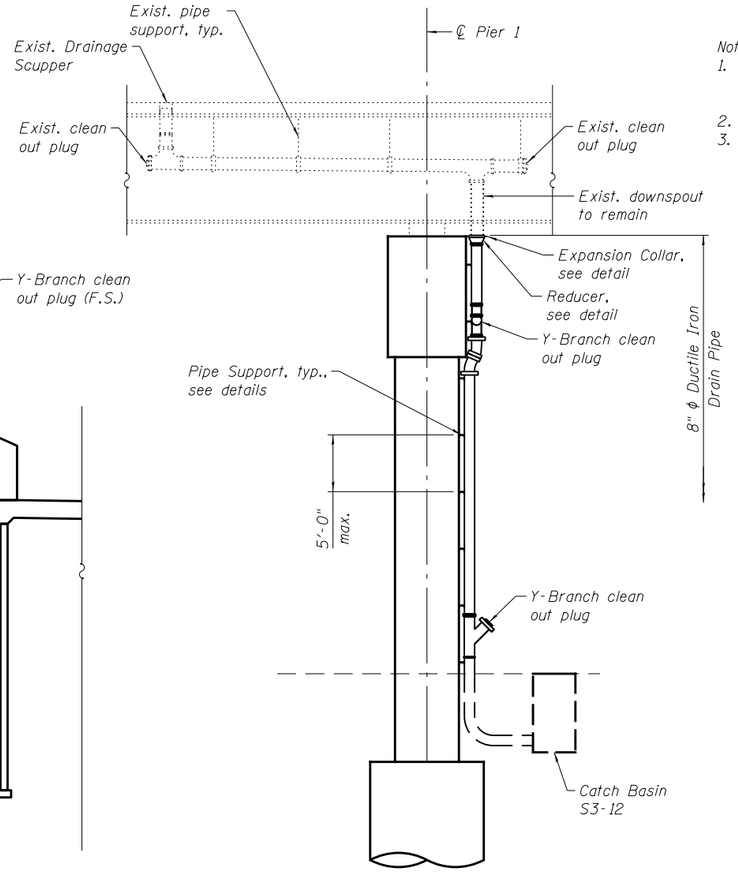
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	413
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

0161710-60X79-S008-MSD.dgn



ELEVATION PIER 1

(Looking North)



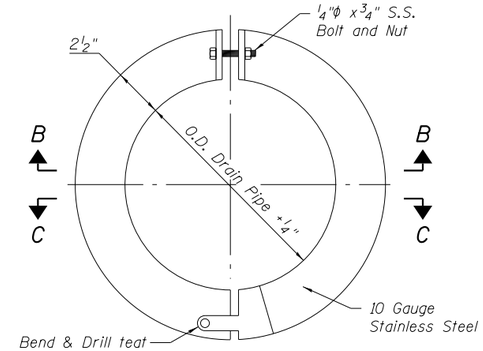
SECTION A-A

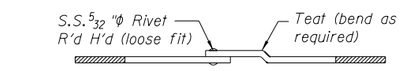
(Looking West)

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.
3. All pipe, pipe fittings and brackets needed shall be included with cost of Drainage System. All work associated with partial removal of existing drainage system and connecting proposed Drainage System to existing shall be included with cost of Drainage System. See Special Provision.

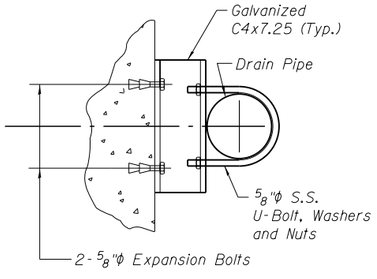
SECTION B-B



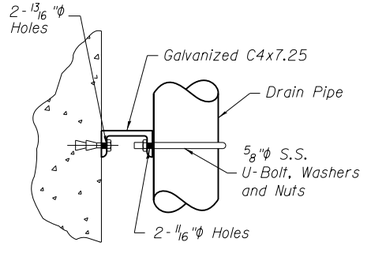


SECTION C-C

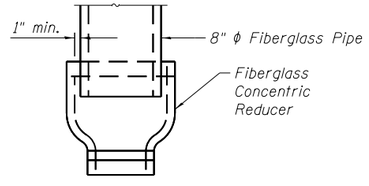
DETAIL OF EXPANSION COLLAR



PLAN



ELEVATION



REDUCER DETAIL

PIPE SUPPORT DETAIL

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Drainage System	L. Sum	0.2

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

USER NAME = ibrahimm1	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

DRAINAGE SYSTEM DETAILS
STRUCTURE NO. 016-1710

SHEET NO. S1-9 OF S1-10 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	414
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

0161710-60X79-S009-DRN.dgn

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

BORING LOG 21-RWB-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: 596.95 ft
North: 1897705.23 ft
East: 1171851.95 ft
Station: 1611+67.44
Offset: 53.9743 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	596.0	12-inch thick, brown LOAM, trace gravel							
		--TOPSOIL--							
		Hard, gray CLAY LOAM, trace gravel				1	13 11 11	7.79 S	16
		--FILL--							
	591.5		5			2	5 9 11	5.33 S	13
		Stiff to medium stiff, gray and brown, SILTY CLAY, trace gravel, slag, brick and wood				3	2 2 4	1.23 B	19
		--FILL--							
			10			4	2 2 4	1.15 B	19
						5	3 5 5	0.98 B	21
	584.0	Very stiff, brown and gray SILTY CLAY, trace gravel							
			15			6	3 5 7	3.53 B	25
	581.5	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel				7	0 2 2	0.66 B	24
			20			8	1 1 2	< 0.25 P	29
						9	1 1 1	< 0.25 P	25
			25			10	0 0 0	0.16 B	22
			30			11	0 0 0	0.16 B	25
						12	0 0 0	0.25 B	25
			35			13	0 0 0	< 0.25 P	26
			40			14	0 1 3	0.49 B	25
			45			15	2 2 2	0.25 P	25
			50			16	1 2 3	< 0.25 P	25

GENERAL NOTES

Begin Drilling: 09-25-2013 Complete Drilling: 09-30-2013
Drilling Contractor: Wang Testing Services Drill Rig: CME-55 TMR
Driller: R&J Logger: A. Tomaras Checked by: L. Iordache
Drilling Method: 2.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: MUD
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.

WANGENGINC 1100401.GPJ WANGENG.GDT 5/6/14

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

BORING LOG 21-RWB-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: 596.95 ft
North: 1897705.23 ft
East: 1171851.95 ft
Station: 1611+67.44
Offset: 53.9743 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	540.2	Stiff to hard, gray SILTY CLAY LOAM, trace gravel							
			55			17	1 3 3	0.66 B	21
			60			18	15 17 21	> 4.50 P	15
			65			19	11 10 16	4.33 N/6	
			70			20	10 12 19	4.76 B	19
			75			21	6 10 12	1.80 B	24
	515.2	Very dense, gray SILTY LOAM, little to some gravel and cobbles							
			80			22	6 8 10	3.00 N/6	19
			85			23	13 31 41	NP	14
		--HARD DRILLING-- --Possible Cobbles--	90			24	18 35 48	9.35 S	10
			95			25	20 36 50/4"	9.10 S	13
			100			26	50/5"	NR	

GENERAL NOTES

Begin Drilling: 09-25-2013 Complete Drilling: 09-30-2013
Drilling Contractor: Wang Testing Services Drill Rig: CME-55 TMR
Driller: R&J Logger: A. Tomaras Checked by: L. Iordache
Drilling Method: 2.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: MUD
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.

WANGENGINC 1100401.GPJ WANGENG.GDT 5/6/14

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

BORING LOG 21-RWB-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: 596.95 ft
North: 1897705.23 ft
East: 1171851.95 ft
Station: 1611+67.44
Offset: 53.9743 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type	Recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING-- --Possible Cobbles--							
						27	50/4"	NP	11
		--HARD DRILLING-- --Possible Cobbles--	105						
	490.0	--ROLLER BIT REFUSAL--							
		Boring terminated at 107.00 ft							
			110						
			115						
			120						
			125						

GENERAL NOTES

Begin Drilling: 09-25-2013 Complete Drilling: 09-30-2013
Drilling Contractor: Wang Testing Services Drill Rig: CME-55 TMR
Driller: R&J Logger: A. Tomaras Checked by: L. Iordache
Drilling Method: 2.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: MUD
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.

WANGENGINC 1100401.GPJ WANGENG.GDT 5/6/14

Note:
1. Boring Log 21-RWB-02 station & offset along baseline Ramp NE is Sta. 1704+17.34, Offset 9.92' (Lt).

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

USER NAME = Ibrahimm1	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

BORING LOGS
STRUCTURE NO. 016-1710
SHEET NO. S1-10 OF S1-10 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	415
		CONTRACT NO. 60X79		
ILLINOIS	FED. AID PROJECT			

0161710-60X79-S010-BOR.dgn

Benchmark: Cut square on center of door entrance to 707 W. Harrison St. (south side of Harrison St., approx. 90' west of west line of Des Plaines St.). Elevation 597.47.

Existing Structure: S.N. 016-2453 was originally constructed in 1960 as an eight-span structure carrying one lane of traffic from eastbound I-290 to northbound I-90/94 (FAI Route No. 94; Section 0101.6-1P). Rehabilitation was performed under various contracts including removal and replacement of the Spans 1 thru 3 superstructure (from existing Bent 26 to Abutment 29), Piers 27 and 28, and the Abutment 29 backwall in 1987. The bridge has an overall length of approximately 429'-0" (41'-8 3/8" / 70'-5 3/16" / 53'-11 1/2" / 49'-0 5/8" / 54'-2 5/16" / 79'-5 13/16" / 40'-9 1/2" / 40'-0" spans), an overall width of 29'-0" (out-to-out superstructure) and consists of a minimum 7 1/2"-thick reinforced concrete deck with overlay supported on five (5) steel girders. The existing substructure consists of reinforced concrete piers and abutments on drilled shafts and includes temporary steel shoring towers on timber pad foundations at Existing Bent 24. This structure will be removed and replaced. Traffic shall be maintained on the existing structure during the construction of the proposed MSE walls, abutments, and Pier 2 and the partial construction of proposed Pier 1. Subsequently, traffic shall be detoured to allow for the removal of the existing structure and the construction of the remaining portions of the proposed bridge and approaches.

Salvage: Existing temporary shoring towers (not including timber pad foundations) shall be salvaged and provided to the Department. See Special Provision for Removal of Existing Structures No. 1.

NOTES:

1. For Legend, see Sheet S2-02.
2. For Offset Sketch, Profile Grade Lines and Curve Data, see Sheet S2-03.
3. For Index of Sheets and Total Bill of Material, see Sheet S2-04.
4. For General Notes and Existing Structure Assessment Notes see Sheet S2-05.

DESIGN SPECIFICATIONS

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

LOADING HL-93

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

SCUPPER LOCATION

Station	Offset
1608+05.83	24.00' Lt.
1608+11.21	24.00' Lt.
1610+87.71	24.00' Lt.
1610+93.09	24.00' Lt.

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)

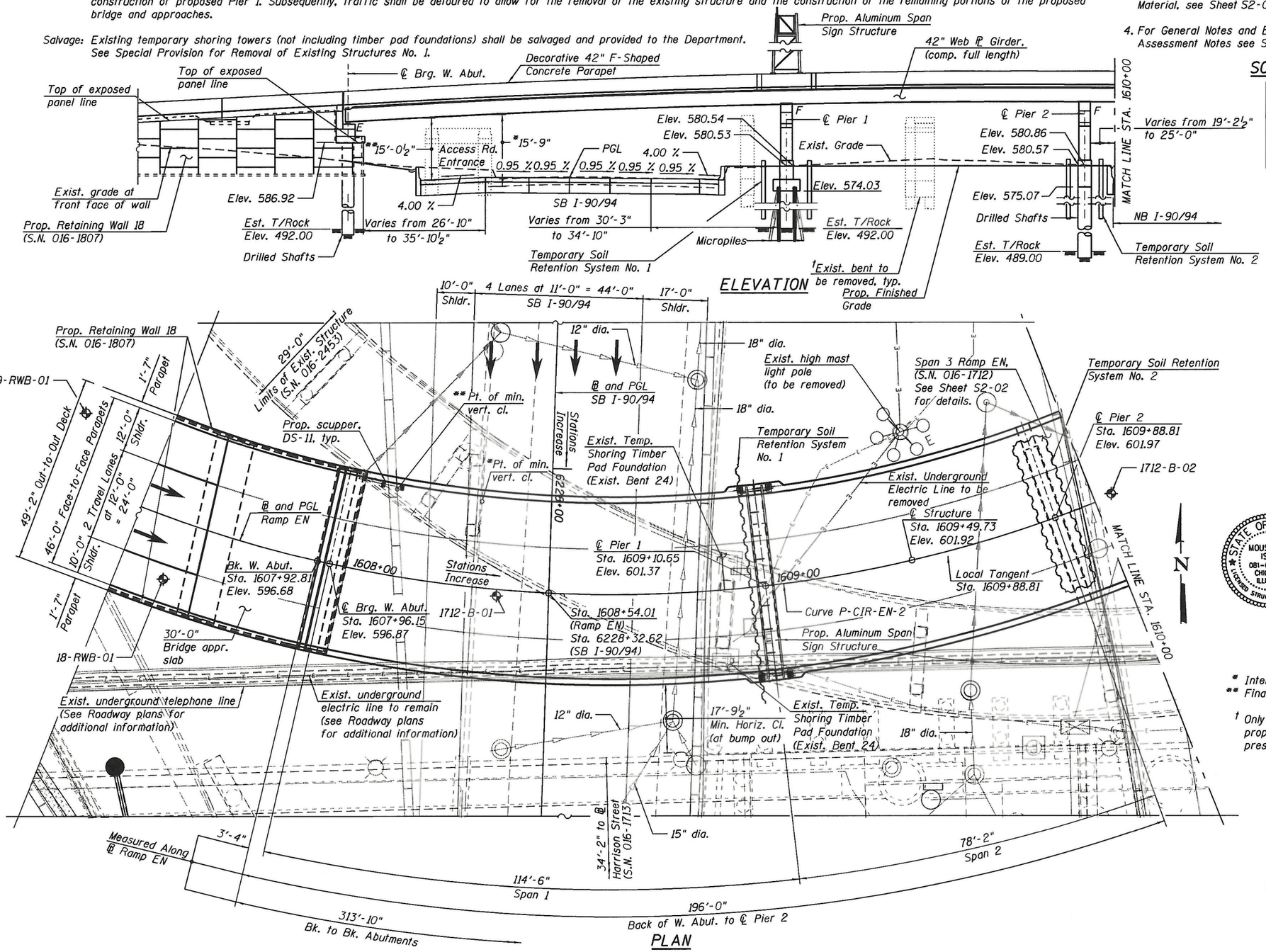
SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.085g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.144g
Soil Site Class = D

STATION 1609+49.73
BUILT BY
STATE OF ILLINOIS
F.A.I. RTE. 90/94/290 - SEC. 2014-005R&B
LOADING HL-93
STRUCTURE NO. 016-1712

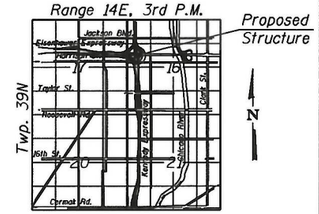
NAME PLATE

See Std. 515001



* Interim Min. Vert. Cl.
** Final Min. Vert. Cl.

† Only exist. bents interfering with proposed superstructure have been presented for clarity



LOCATION SKETCH

Signed Moussa A. Issa
Dr. Moussa A. Issa, S.E. Il. Lic. No. 081-005738
Expires 11-30-2018
Date 07/30/18 For Sheets S2-01 Thru S2-63

GENERAL PLAN AND ELEVATION I
RAMP EN OVER F.A.I. RTE. 90/94
(DAN RYAN EXPRESSWAY)
F.A.I. RTE. 90/94/290 - SECTION 2014-005R&B
COOK COUNTY
STATION 1609+49.73
STRUCTURE NO. 016-1712

HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURE NO. 016-1712
SHEET NO. S2-01 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	416
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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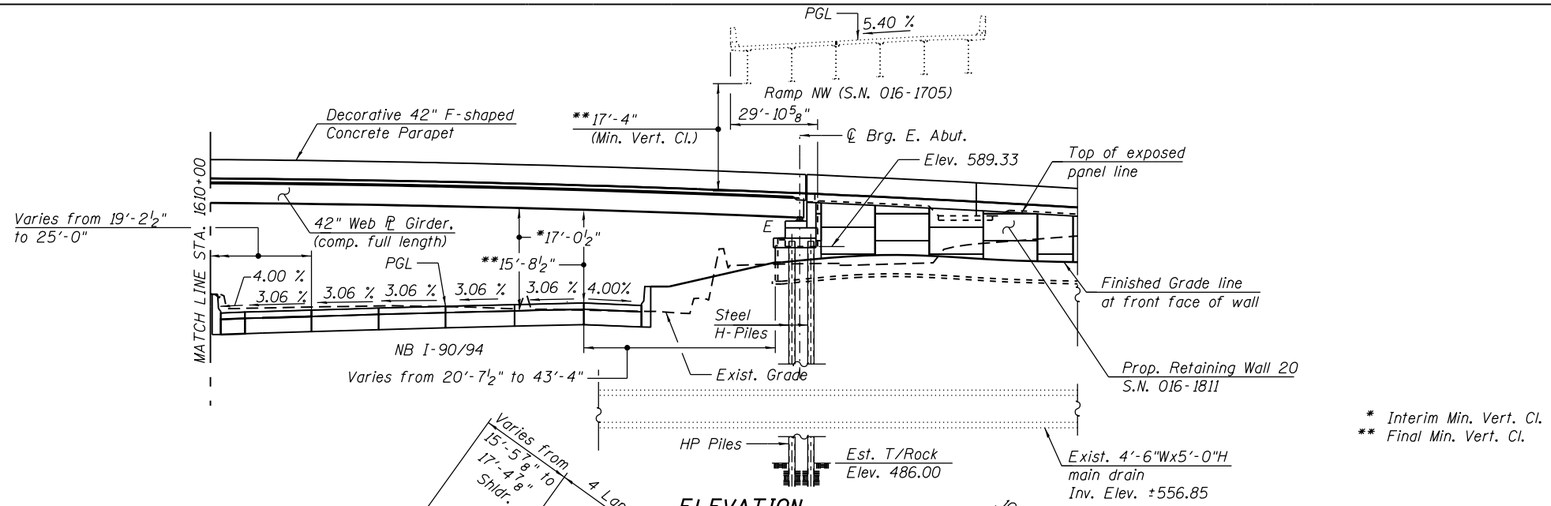
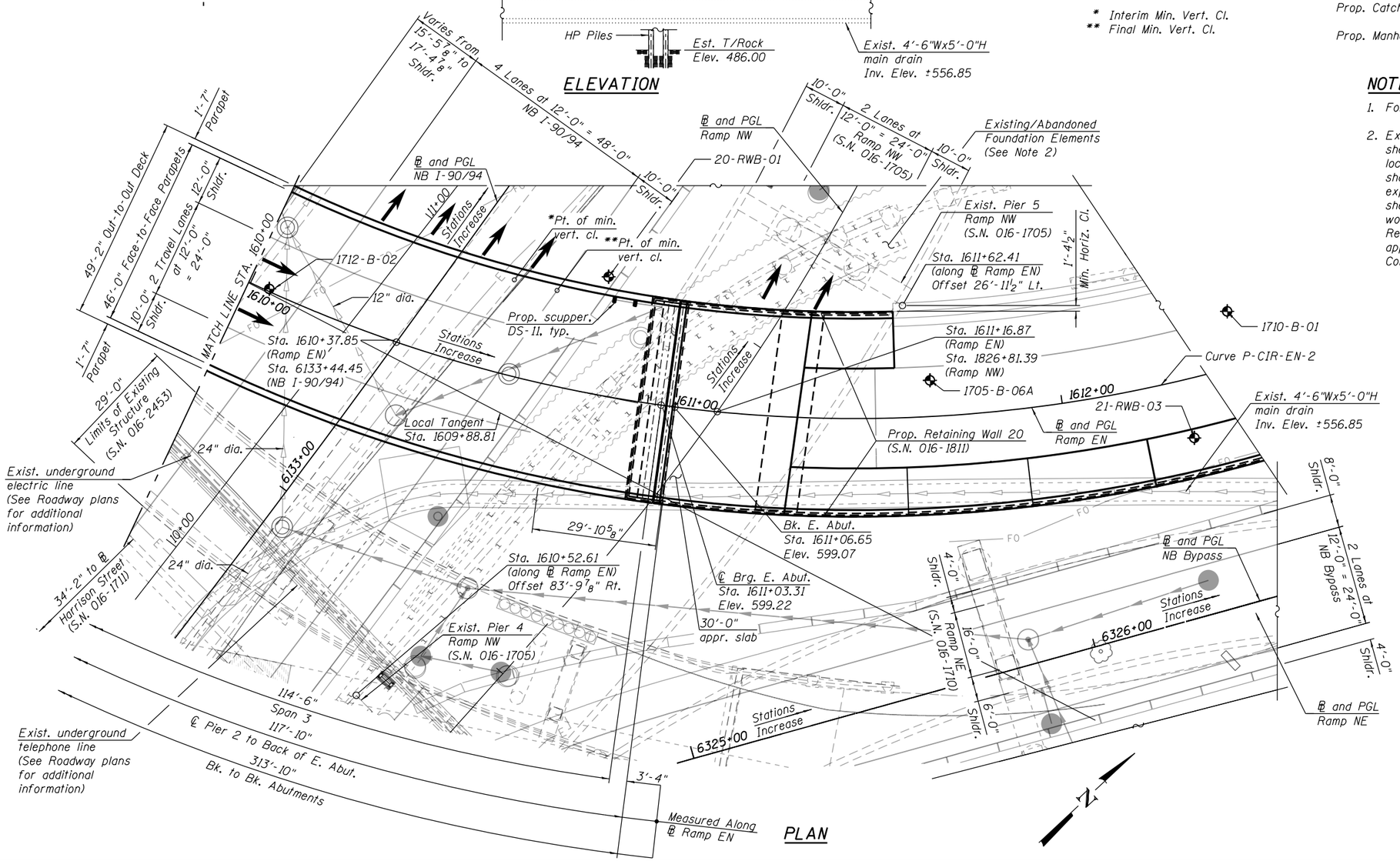


ELEVATION



PLAN

LEGEND:

- Soil Boring
- Exist. High Mast Light Pole (to be removed)
- Exist. Traffic Signal/ Light Pole (to be removed)
- Fire Hydrant
- Junction Box
- Exist. Manhole
- Exist. Catch Basin
- Prop. Catch Basin
- Prop. Manhole
- Combined Sewer
- Electric
- Fiber Optic
- Exist. Storm Sewer
- Prop. Storm Sewer
- Water Line
- Telephone
- Temporary Soil Retention System
- Aband. Temp Soil Retention System/Sheet Piling

NOTES:

1. For Notes, see Sheet S2-01 .
2. Existing/Abandoned foundation elements including, but not limited to, sheet piles, drilled shafts and steel piles, are present at the proposed location of the Ramp EN (S.N. 016-1712) East Abutment. The Contractor shall remove the existing reinforced concrete pile cap and mud slab to expose all existing piles and shall also expose all drilled shafts and sheet piles to an elevation 1 foot below the top of these elements. All work for removal of existing items shall be paid for as Concrete Removal, Special, Sheet Pile Removal, Special and/or Pile Removal as appropriate. See Sheet S2-06, Foundation Obstruction Sheets and Contract Special Provisions for additional information.

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HBM ENGINEERING GROUP, LLC

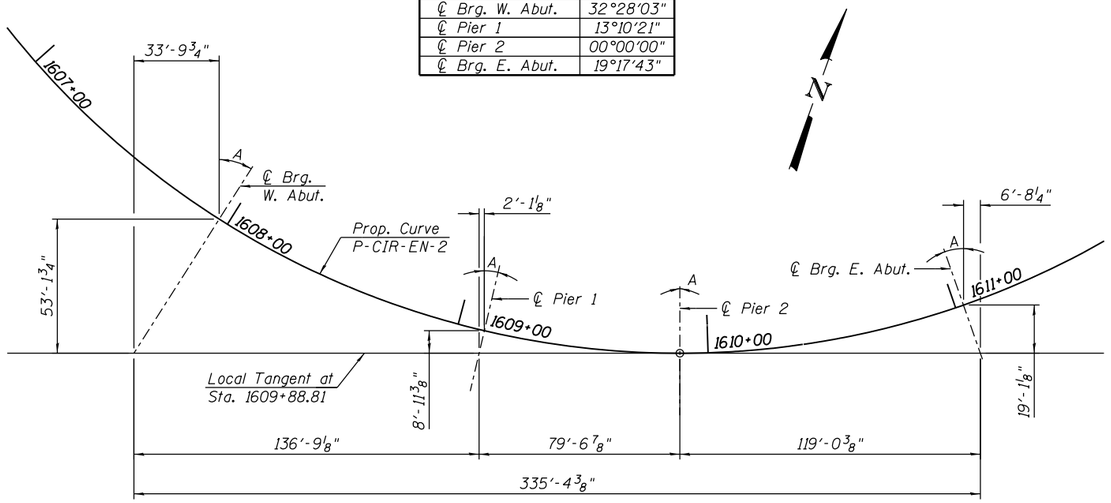
USER NAME = ahmad.issa		DESIGNED - MI, JJS		REVISED -	
		CHECKED - LAB, WM		REVISED -	
PLOT SCALE = N.T.S		DRAWN - JJS, WM, MA		REVISED -	
PLOT DATE = 7/30/2018		CHECKED - MI, MAI		REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

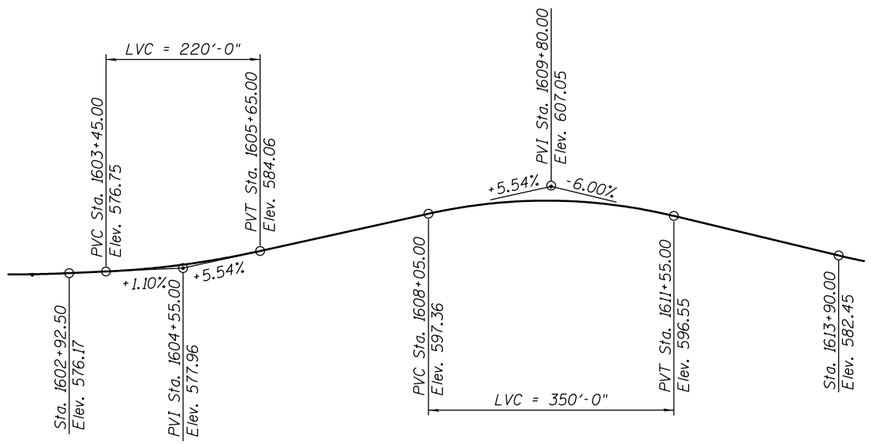
GENERAL PLAN AND ELEVATION II
STRUCTURE NO. 016-1712
SHEET NO. S2-02 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	417
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

Location	A
℄ Brg. W. Abut.	32°28'03"
℄ Pier 1	13°10'21"
℄ Pier 2	00°00'00"
℄ Brg. E. Abut.	19°17'43"



OFFSET SKETCH



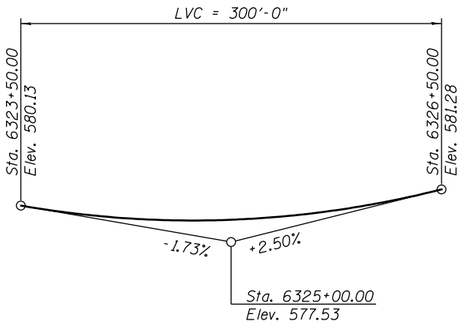
PROFILE GRADE

(Along ℄ Ramp EN)

CURVE DATA

(RAMP EN)
(PROP. CURVE P-CIR-EN-2)

PI STA. = 1624+41.43
Δ = 158° 32' 09" (LT)
D = 16° 51' 06"
R = 340.00'
T = 1,793.89'
L = 940.77'
E = 1,485.82'
e = 5.60%
T.R. = 37'
S.E. RUN = 103'
P.C. STA. = 1606+47.54
P.T. STA. = 1615+88.31
DS = 30
PS = 30



PROFILE GRADE

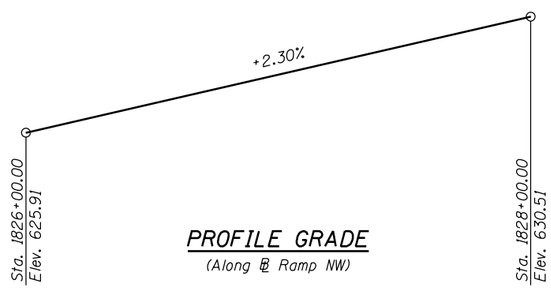
(Along ℄ NB Bypass)

CURVE DATA

(NB Bypass)

PROP. CURVE P-NCD-NX-2
PI STA. = 6323+25.02
Δ = 8° 04' 05" (RT)
D = 7° 17' 22"
R = 786.00'
T = 55.43'
L = 110.68'
E = 1.95'
e = 5.80%
T.R. = 69'
S.E. RUN = 105'
P.C. STA. = 6322+69.59
P.T. STA. = 6323+80.27
DS = 35
PS = 30

PROP. CURVE P-NCD-NX-3
PI STA. = 6324+41.27
Δ = 20° 56' 44" (RT)
D = 17° 21' 44"
R = 330.00'
T = 61.00'
L = 120.64'
E = 5.59'
e = 5.80%
T.R. = NA
S.E. RUN = 105'
P.C. STA. = 6323+80.27
P.T. STA. = 6325+00.91
DS = 30
PS = 30



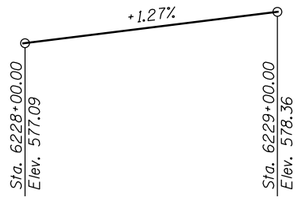
PROFILE GRADE

(Along ℄ Ramp NW)

CURVE DATA

(RAMP NW)
(Prop. Curve P-CIR-NW-6)

P.I. Sta. = 1831+44.22
Δ = 88° 30' 25" (LT)
D = 10° 36' 37"
R = 540.00'
T = 526.11'
L = 834.16'
E = 213.92'
e = 5.40%
T.R. = 39'
S.E. Run = 105'
P.C. Sta. = 1826+18.11
P.T. Sta. = 1834+52.27
DS = 35
PS = 35



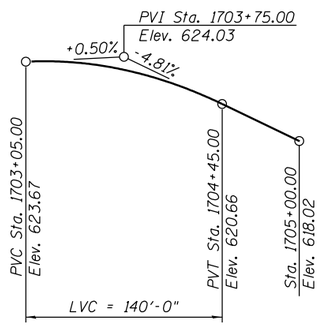
PROFILE GRADE

(Along ℄ SB I-90/94)

CURVE DATA

(SB I-90/94)
(PROP. CURVE P-KDR-SB-4)

PI STA. = 6231+84.46
Δ = 13° 18' 21" (LT)
D = 2° 44' 34"
R = 2,089.00'
T = 243.66'
L = 485.13'
E = 14.16'
e = 4.40%
T.R. = NA
S.E. RUN = 164'
P.C. STA. = 6229+40.80
P.T. STA. = 6234+25.93
DS = 60
PS = 45



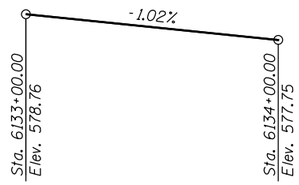
PROFILE GRADE

(Along ℄ Ramp NE)

CURVE DATA

(Ramp NE)
(PROP. CURVE P-CIR-NE-1)

PI STA. = 1706+01.77
Δ = 86° 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
DS = 30
PS = 30



PROFILE GRADE

(Along ℄ NB I-90/94)

CURVE DATA

(NB I-90/94)
(PROP. CURVE P-KDR-NB-3)

PI STA. = 6129+99.47
Δ = 11° 38' 44" (LT)
D = 1° 33' 16"
R = 3,686.00'
T = 375.89'
L = 749.19'
E = 19.12'
e = 3.80%
T.R. = 107'
S.E. RUN = 204'
P.C. STA. = 6126+23.58
P.T. STA. = 6133+72.77
DS = 60
PS = 45

HBM ENGINEERING GROUP, LLC

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

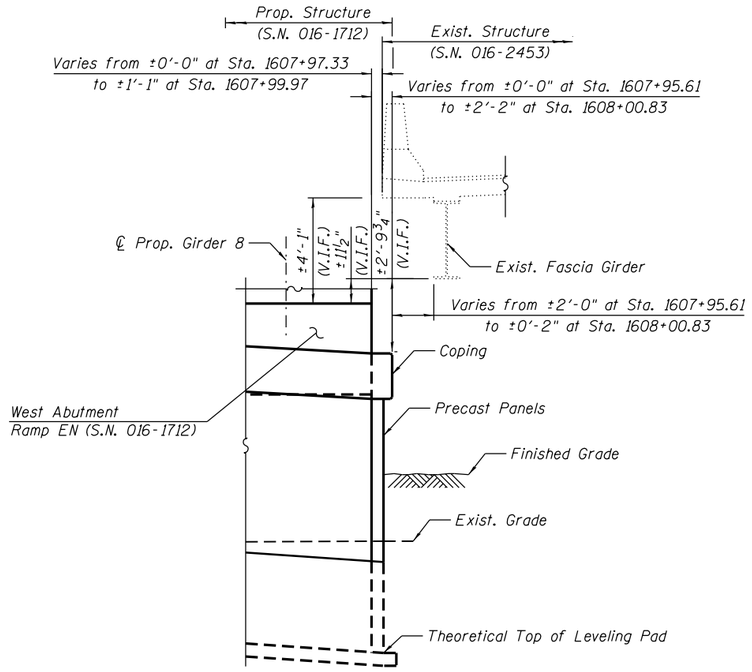
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

OFFSET SKETCH, PROFILE GRADE LINES AND CURVE DATA
STRUCTURE NO. 016-1712

SHEET NO. S2-03 OF S2-63 SHEETS

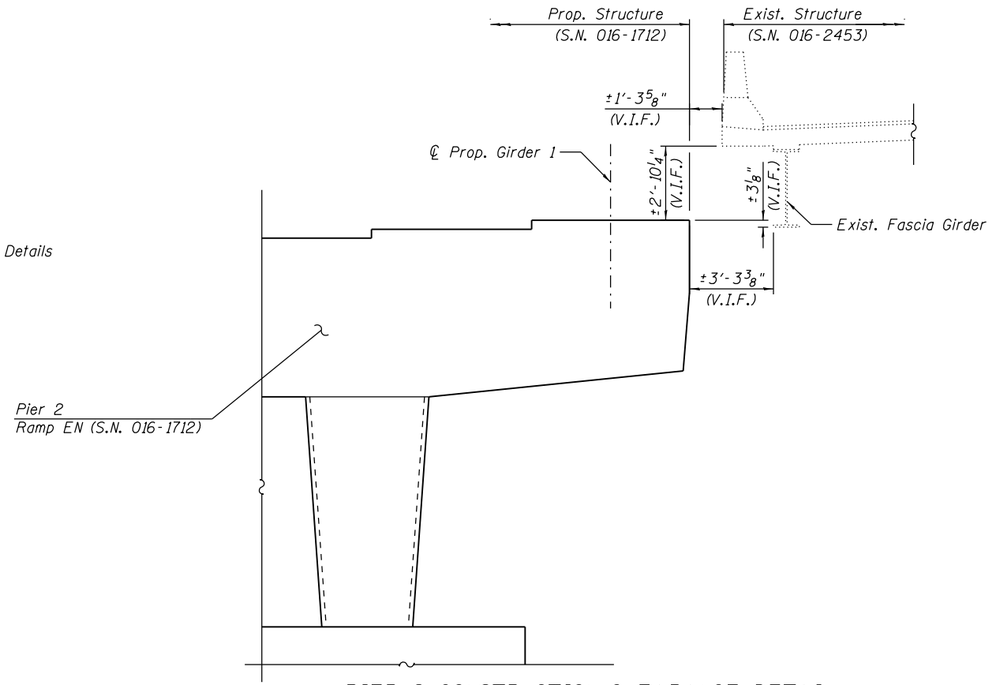
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	418
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

INDEX OF SHEETS



WEST ABUTMENT CONSTRUCTION CLEARANCE DETAIL

(Looking West)



PIER 2 CONSTRUCTION CLEARANCE DETAIL

(Looking East)

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Removal Of Existing Structures No. 1	Each	1	-	1
Protective Shield	Sq Yd	482	-	482
Structure Excavation	Cu Yd	-	133	133
Concrete Structures	Cu Yd	-	322.4	322.4
Rubbed Finish	Sq Ft		2,298	2,298
Concrete Superstructure	Cu Yd	514.9	-	514.9
Form Liner Textured Surface	Sq Ft	-	1,125	1,125
Protective Coat	Sq Yd	2,309	-	2,309
Concrete Superstructure (Approach Slab)	Cu Yd	162.8	-	162.8
Furnishing And Erecting Structural Steel	L Sum	1.0	-	1.0
Stud Shear Connectors	Each	9,316	-	9,316
Reinforcement Bars	Pound	-	61,510	61,510
Reinforcement Bars, Epoxy Coated	Pound	208,120	63,310	271,430
Bar Splicers	Each	-	96	96
Mechanical Splicers	Each	-	120	120
Furnishing Steel Piles HP12X84	Foot	-	1,734	1,734
Name Plates	Each	1	-	1
Permanent Casing	Foot	-	2,387	2,387
Drilled Shaft In Soil	Cu Yd	-	226.0	226.0
Drilled Shaft In Rock	Cu Yd	-	2.0	2.0
Preformed Joint Strip Seal	Foot	99	-	99
Anchor Bolts, 1 1/4"	Each	64	-	64
Anchor Bolts, 1 1/2"	Each	96	-	96
Temporary Soil Retention System	Sq Ft	-	839	839
Concrete Sealer	Sq Ft	-	4,463	4,463
Crosshole Sonic Logging Access Ducts	Foot	-	763	763
Crosshole Sonic Logging Testing	Each	-	2	2
Micro-Piles	Each	-	16	16
Micropile Load Test	Each	-	1	1
Micropile Proof Load Test	Each	-	1	1
Foundation Construction At Existing Obstructions	Each	-	3	3
Concrete Removal (Special)	Cu Yd	-	40.0	40.0
Bridge Deck Grooving (Longitudinal)	Sq Yd	1,762	-	1,762
High Load Multi-Rotational Bearings, Guided Expansion, 250K	Each	16	-	16
High Load Multi-Rotational Bearings, Fixed - 400K	Each	16	-	16
Granular Backfill For Structures	Cu Yd	-	318	318
Drainage Scuppers, DS-11	Each	4	-	4
Drainage System	L Sum	0.8	-	0.8
Setting Piles In Rock	Each	-	16	16

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HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MI, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	INDEX OF SHEETS, TOTAL BILL OF MATERIAL AND MISC. DETAILS STRUCTURE NO. 016-1712	
	CHECKED - MI, LAB	REVISED -			
PLOT SCALE = N.T.S	DRAWN - JJS	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-04 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	419
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

GENERAL NOTES

1. Fasteners shall be ASTM A325 Type 1, hot-dipped galvanized bolts. Bolts $\frac{7}{8}$" ϕ, holes $\frac{15}{16}$" ϕ, unless otherwise noted.
2. Calculated weight of Structural Steel = 726,890 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. Expansion joint plates and attached bars shall be shop-painted with the inorganic zinc-rich primer.
9. Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$ in. (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
10. Concrete Sealer shall be applied to the designated areas of the abutments and piers.
11. The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
12. 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".
13. The Existing/Abandoned foundation elements, present at the proposed location of East Abutment, include drilled shafts with belled bases which may obstruct pile installation. The Contractor shall provide equipment, labor and materials as required to install proposed foundation elements 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.
14. The Contractor shall install Protective Shield System to protect public from falling objects during removal of existing EN Ramp (S.N. 016-2453). See Sheet S2-07 for limits of protective shield.
15. 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.
16. The Contractor shall field-verify the locations 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 to the Department.
17. Slipforming of the parapet is not allowed.
18. For the Conduits Embedded in Structure details and quantities, see Roadway and Electrical Plans.
19. 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.
20. 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.
21. Existing plans are provided as part of this contract plan set for information only. See Existing As-Builts for S.N. 016-2453.
22. 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.
23. 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 (approximate Elevation 540.0 feet) 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.
24. The Contractor shall provide vibration and displacement monitoring at the locations specified in the Special Provision 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.
25. 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, buildings, main drain 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. Driving piles and temporary sheet piling is not allowed.
26. The Contractor shall coordinate the construction of the proposed structure with the construction of proposed Retaining Walls 18 (S.N. 016-1807) and 20 (S.N. 016-1811), Ramp SE (S.N. 016-1714), Ramp WS (S.N. 016-1715), SB Taylor St. Exit Ramp (S.N. 016-1718) and the removal of existing Ramp EN (S.N. 016-2453). See MOT plan sheets and Contract Special Provisions, including the Available Work Areas and Sequencing Requirements Special Provision, for additional construction and coordination requirements.
27. 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.

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. 016-1711 (Harrison St. over NB I-90/94)
   Inventory Rating Factor: 2.14 (HL-93)
   Operating Rating Factor: 2.78 (HL-93)
   Live Load Restriction: None

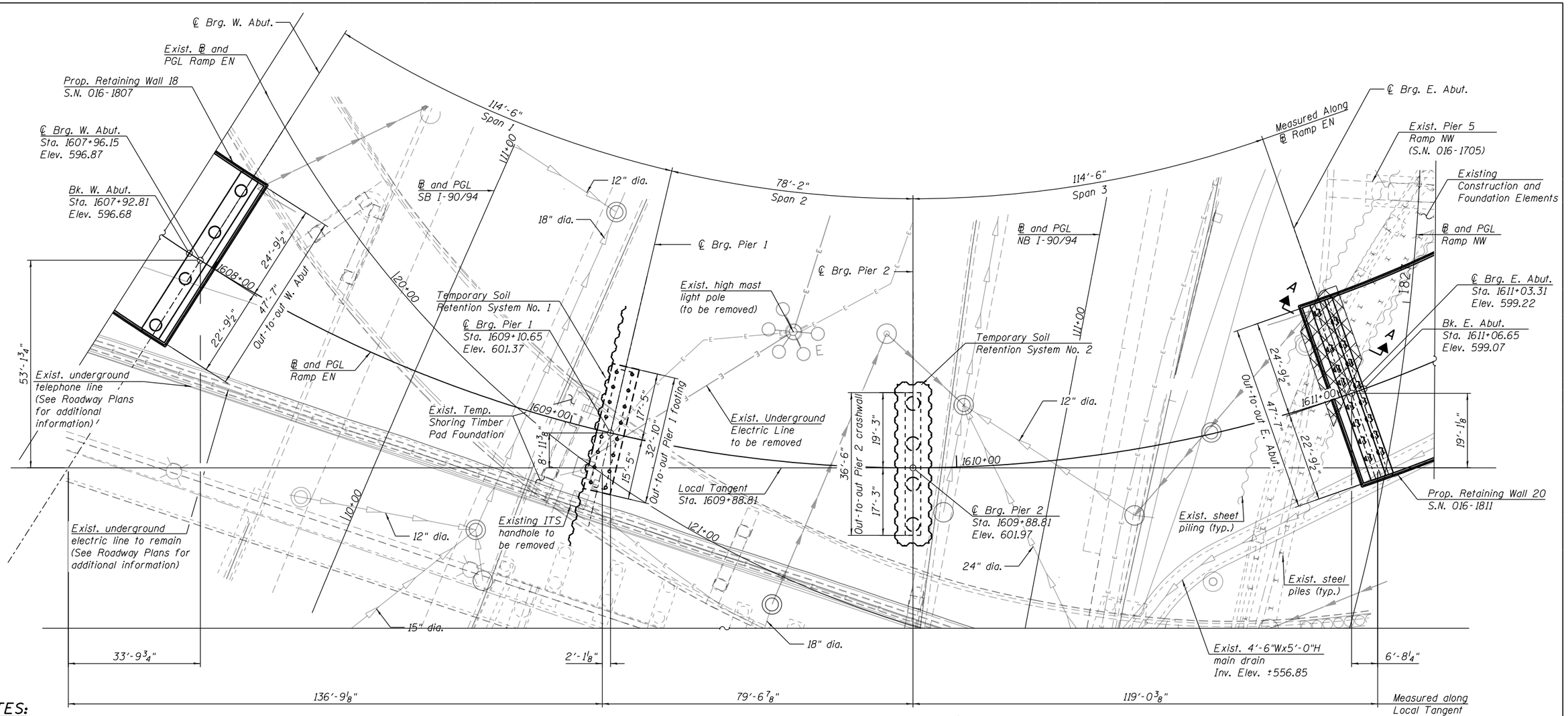
   S.N. 016-1713 (Harrison St. over SB I-90/94)
   Inventory Rating Factor: 2.19 (HL-93)
   Operating Rating Factor: 2.84 (HL-93)
   Live Load Restriction: None

   S.N. 016-1716 (Halsted St. over I-290 & CTA)
   Inventory Rating Factor: 1.12 (HL-93)
   Operating Rating Factor: 1.45 (HL-93)
   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.

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MI, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL NOTES AND EXISTING STRUCTURE ASSESSMENT NOTES STRUCTURE NO. 016-1712
	CHECKED - MI, LAB	REVISED -		
PLOT SCALE = N.T.S	DRAWN - JJS	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-05 OF S2-63 SHEETS

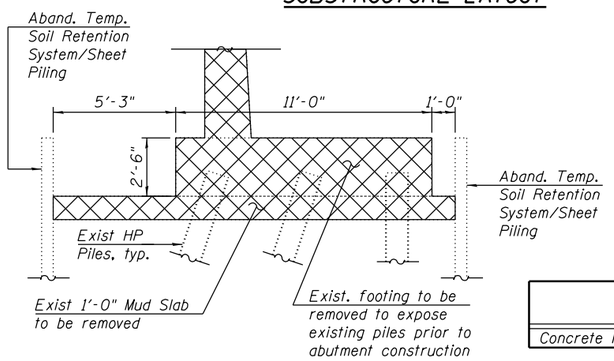
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	420
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



NOTES:

1. All substructure units are oriented radially to the ℄ unless noted otherwise.
2. For Temporary Soil Retention System details, see Sheet S2-07.
3. The Contractor shall take all necessary precautions during removal and construction operations to avoid damaging the existing ramp structure (S.N. 016-2453) while the existing bridge is still in-service. The temporary shoring towers and timber bearing pads at existing Ramp EN (S.N. 016-2463) Bent 24 shall be protected. Any damage to the existing structure and/or temporary shoring elements caused by the Contractor during removal or construction, shall be repaired by the Contractor, to the satisfaction of the Engineer, at no cost to the Department.
4. Existing/Abandoned foundation elements including, but not limited to, sheet piles, drilled shafts and steel piles, are present at the proposed location of the Ramp EN (S.N. 016-1712) East Abutment. The Contractor shall remove the existing reinforced concrete pile cap and mud slab to expose all existing piles and shall also expose all drilled shafts and sheet piles to an elevation 1 foot below the top of these elements. All work for removal of existing items shall be paid for as Concrete Removal, Special, Sheet Pile Removal, Special and/or Pile Removal as appropriate. If field adjustment is required, the Contractor shall submit a revised foundation layout plan comparing the assumed and actual existing pile/drilled shaft/sheet pile locations and the revised foundation plan to the Engineer for approval prior to constructing the proposed foundations or the start of drilling.

SECTION A-A



SUBSTRUCTURE LAYOUT

N

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Concrete Removal (Special)	CU YD	40

LEGEND:

- Exist. High Mast Light Pole (to be removed)
- Exist. Traffic Signal/ Light Pole (to be removed)
- Fire Hydrant
- Junction Box
- Manhole
- Exist. Temp. Soil Retention System/Sheet Piling
- Concrete Removal (Special)
- Combined Sewer
- Electric
- Fiber Optic
- Exist. Storm Sewer
- Prop. Storm Sewer
- Water Line
- Telephone
- Temp. Soil Retention System
- Exist. Steel Pile

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - KJD, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SUBSTRUCTURE LAYOUT STRUCTURE NO. 016-1712
	CHECKED - MI, JJS	REVISED -		SHEET NO. S2-06 OF S2-63 SHEETS
PLOT SCALE = N.T.S	DRAWN - KJD	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	421
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 CircletPhase_IN\000_CAD\008_StructuralStructure_016-1712\016171712-60X79-S006-SubLayout

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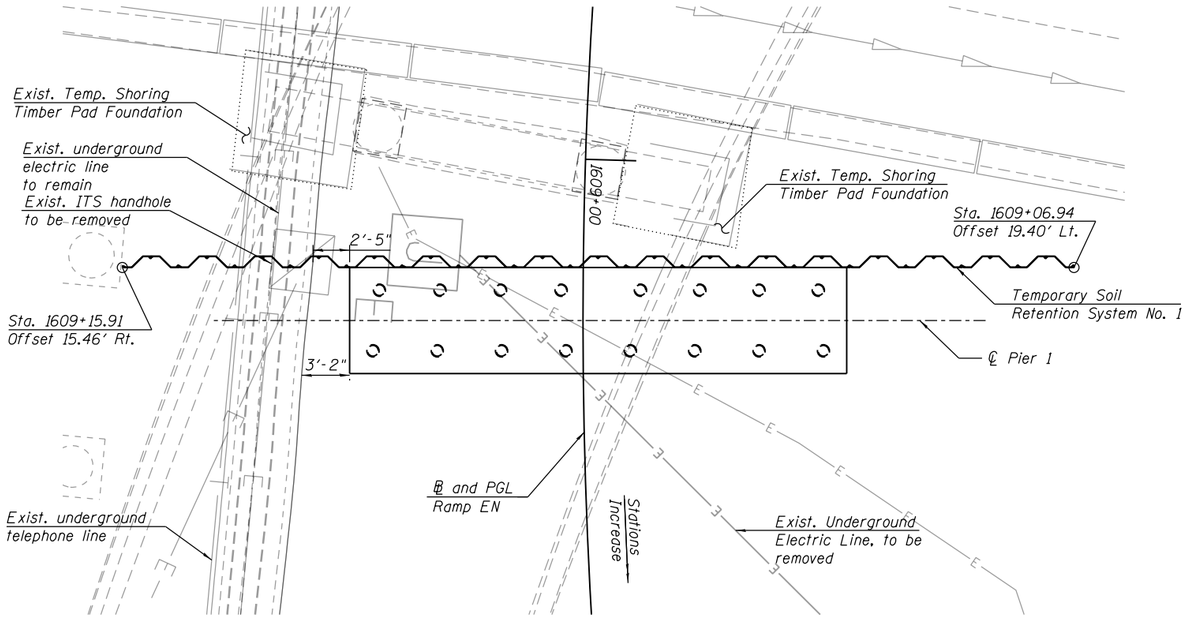
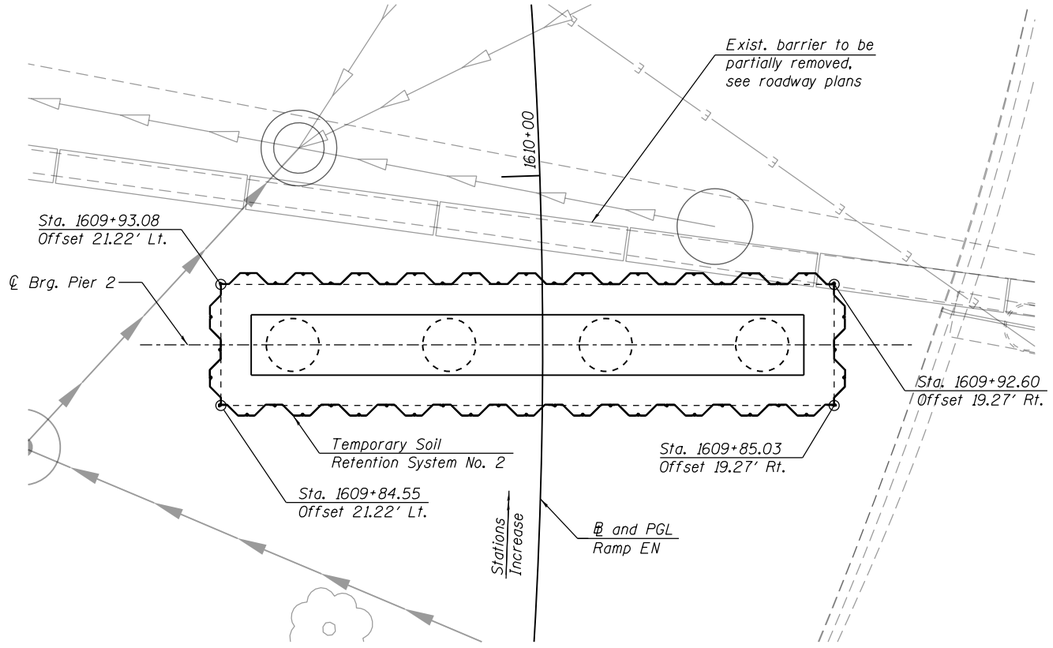
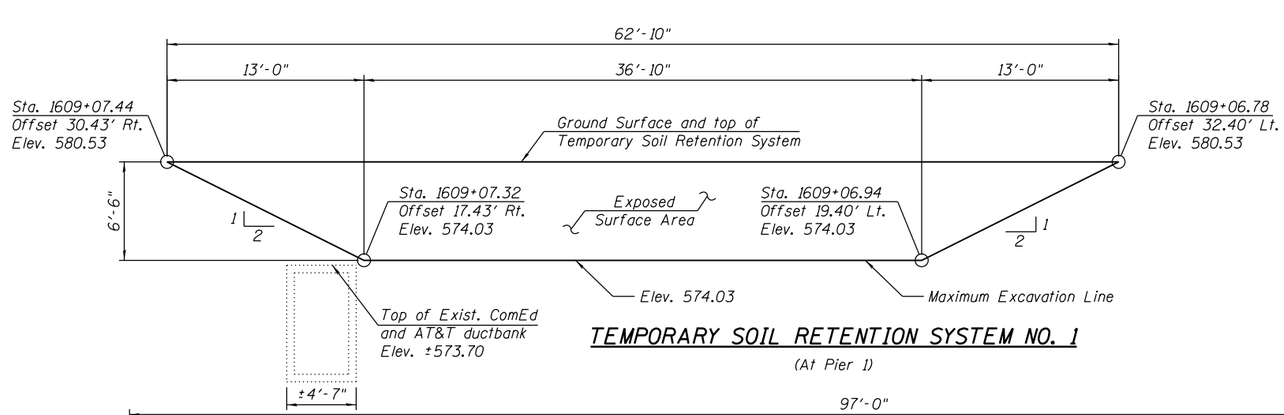


PARTIAL PLAN AT TEMPORARY SOIL RETENTION SYSTEM NO. 1

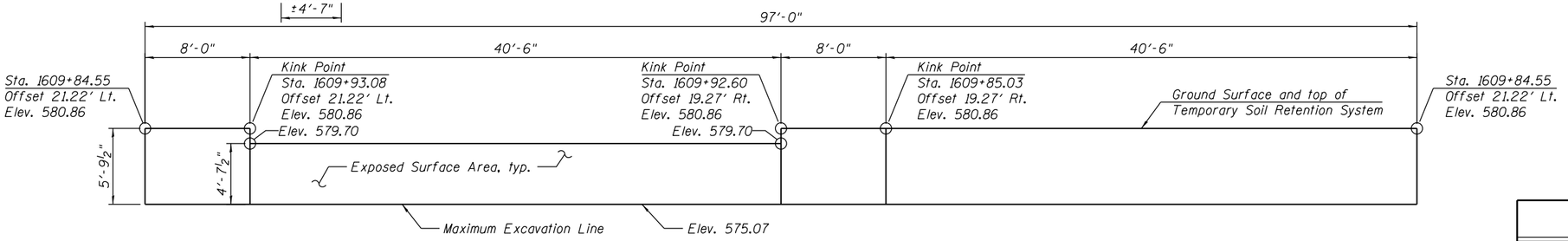


PARTIAL PLAN AT TEMPORARY SOIL RETENTION SYSTEM NO. 2



TEMPORARY SOIL RETENTION SYSTEM NO. 1

(At Pier 1)



TEMPORARY SOIL RETENTION SYSTEM NO. 2

(At Pier 2)

LEGEND:

- Manhole
- Electric
- Exist. Storm Sewer
- Prop. Storm Sewer
- Telephone
- Temporary Soil Retention System

NOTES

1. A cantilevered 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.
2. 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 is 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.
3. The maximum allowable excavation slope is 1:2 (V:H).

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Temporary Soil Retention System	Sq. Ft.	839

FILE NAME: pw:\\61747g-PWINT.aecomonline.local:AECOM_D502_NAIDocuments\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_StructuralStructure_016-1712\016171 2-60X79-S007-TSRS

8:32:29 AM

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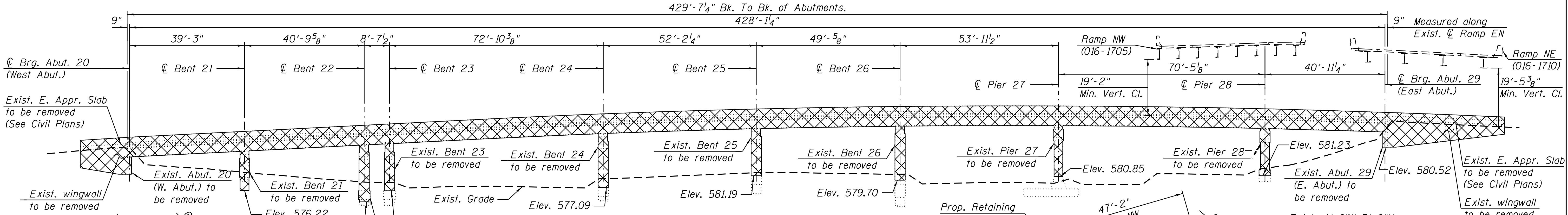
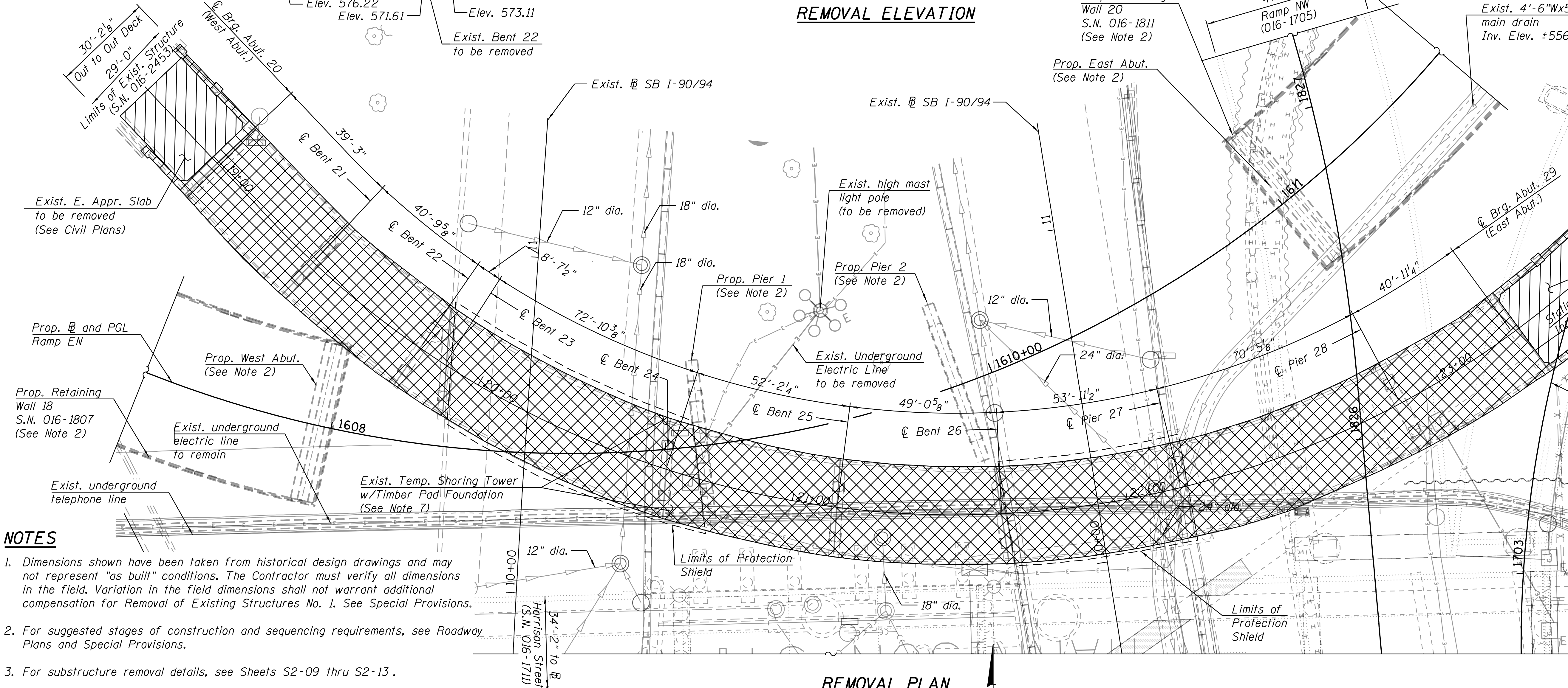
USER NAME = ahmad.issa	DESIGNED - KJD, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	TEMPORARY SOIL RETENTION SYSTEM DETAILS STRUCTURE NO. 016-1712
	CHECKED - MI, JJS	REVISED -		
PLOT SCALE = N.T.S	DRAWN - KJD	REVISED -		SHEET NO. S2-07 OF S2-63 SHEETS
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	422
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



REMOVAL ELEVATION



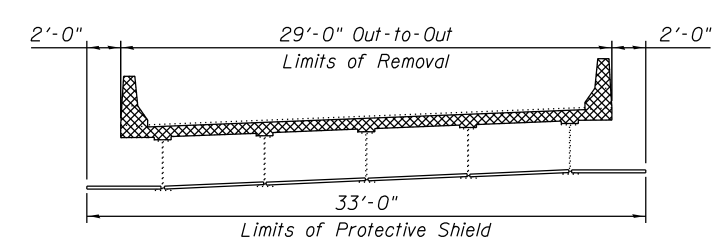
REMOVAL PLAN

NOTES

1. Dimensions shown have been taken from historical design drawings and may not represent "as built" conditions. The Contractor must verify all dimensions in the field. Variation in the field dimensions shall not warrant additional compensation for Removal of Existing Structures No. 1. See Special Provisions.
2. For suggested stages of construction and sequencing requirements, see Roadway Plans and Special Provisions.
3. For substructure removal details, see Sheets S2-09 thru S2-13 .
4. For Temporary Soil Retention System details, see Sheet S2-07.
5. The Contractor shall take all necessary precautions to protect existing utilities, foundations and adjacent structures during removal/construction of the bridge.
6. For approach slab removal, see Roadway Plans.
7. The Contractor shall salvage the existing temporary shoring towers; however, the timber pad foundations shall not be salvaged. The Steel shall be transported and unloaded by the Contractor to the District Bridge Yard in Elk Grove at 1101 Biesterfield Road during the weekdays (Monday Thru Friday) and between the hours of 8AM to 2PM. The Contractor shall notify John Bilski at the District Bridge office 48 hours in advance of the delivery at (847) 956-1444 or (847) 946-6517. Cost included in Removal of Existing Structures No. 1.

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Removal of Existing Structures No. 1	Each	1
Protective Shield	Sq Yd	482



EXISTING CROSS SECTION

LEGEND:

- Exist. High Mast Light Pole (to be removed)
- Exist. Traffic Signal/ Light Pole (to be removed)
- Fire Hydrant
- Manhole
- Temporary Soil Retention System
- Limits of Protective Shield
- Electric
- Fiber Optic
- Exist. Storm Sewer
- Water Line
- Telephone
- Removal of Existing Structures No. 1
- Approach Slab Removal (See Roadway Plans)

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - KJD, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXISTING STRUCTURE REMOVAL PLAN AND ELEVATION STRUCTURE NO. 016-1712
		CHECKED - MI, JJS	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - KJD, HI	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-08 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	423
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1712\0161712-60X79-S008-RemovalPlan

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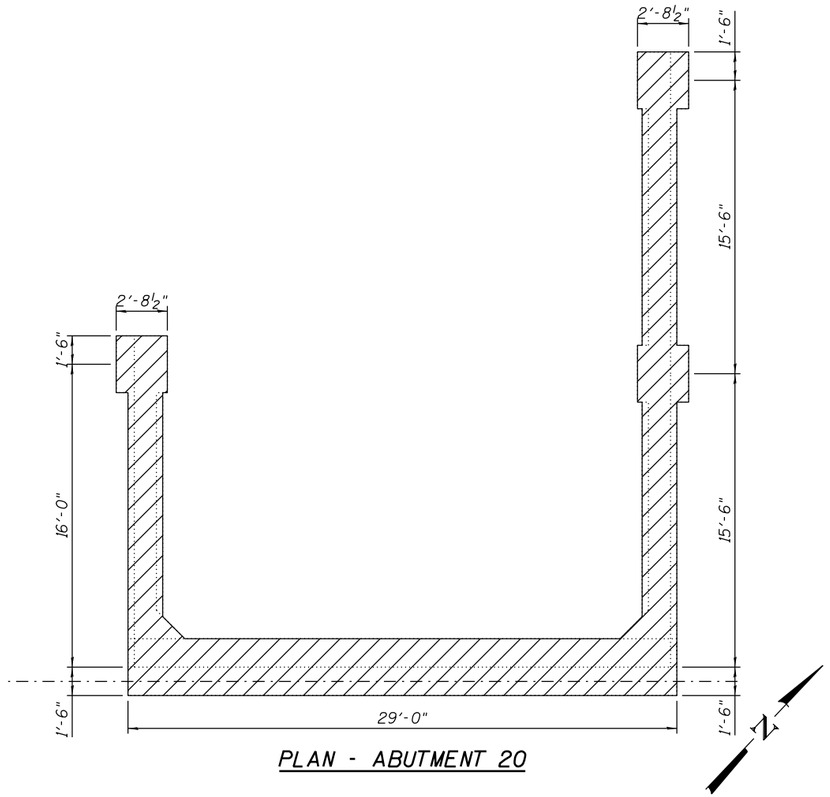
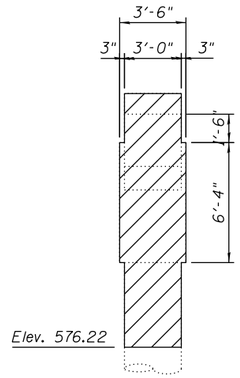
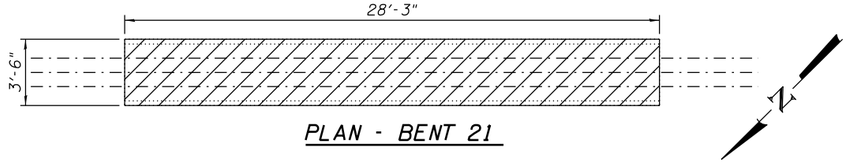


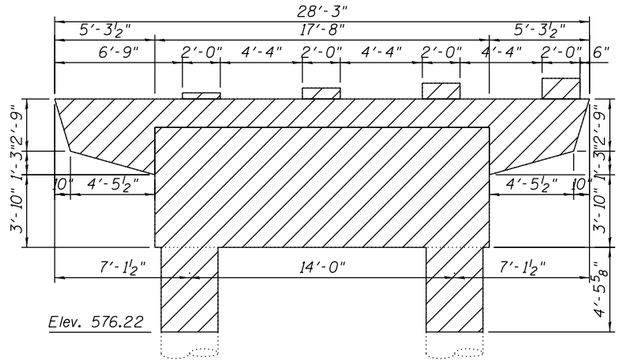
PLAN - ABUTMENT 20



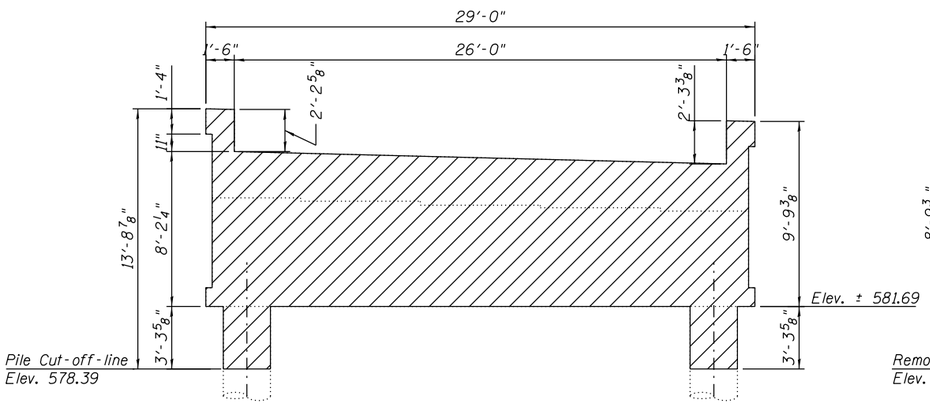
SIDE ELEVATION
BENT 21
(Looking North)



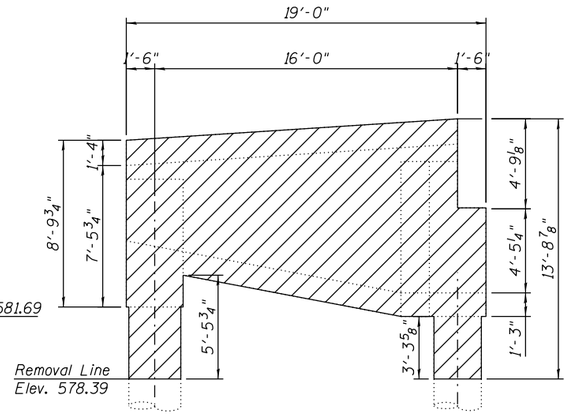
PLAN - BENT 21



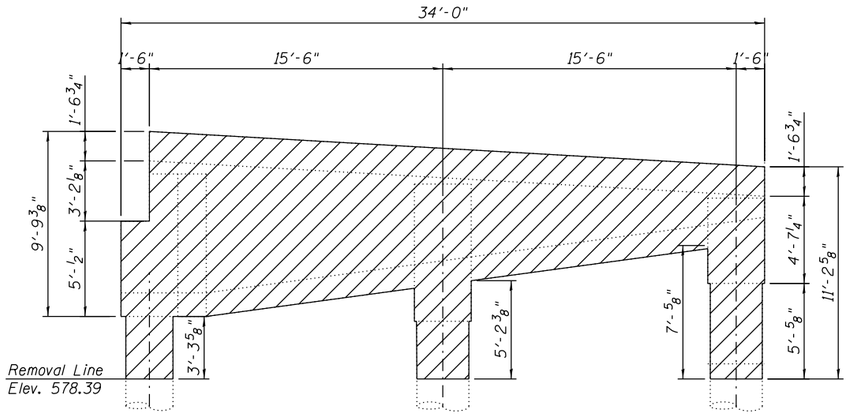
ELEVATION - BENT 21 REMOVAL
(Looking Upstation)



ELEVATION - ABUTMENT 20 REMOVAL



ELEVATION - SOUTH WINGWALL REMOVAL



ELEVATION - NORTH WINGWALL REMOVAL

LEGEND

Removal of Existing Structures No. 1

FILE NAME: pw:\\617479-PWINT.aecomonline.local\AECOM_D502_NAIDocuments\01 Americas\Transportation\60269938 CirclePhase_II\000_CAD\008_StructuralStructure_016-1712\016171260X79-5009-RemovalDet1
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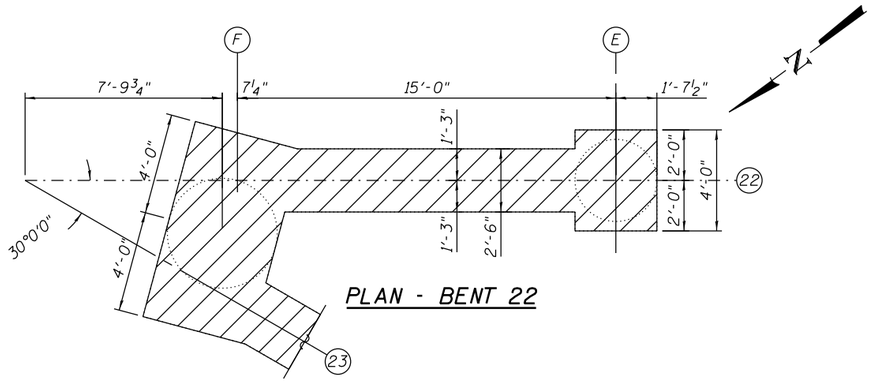
HBM ENGINEERING GROUP, LLC

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

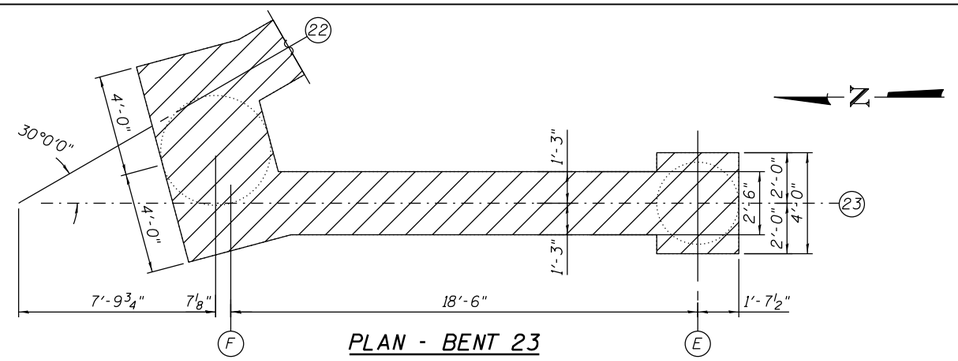
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING STRUCTURE REMOVAL - ABUTMENT 20 AND BENT 21
STRUCTURE NO. 016-1712
SHEET NO. S2-09 OF S2-63 SHEETS

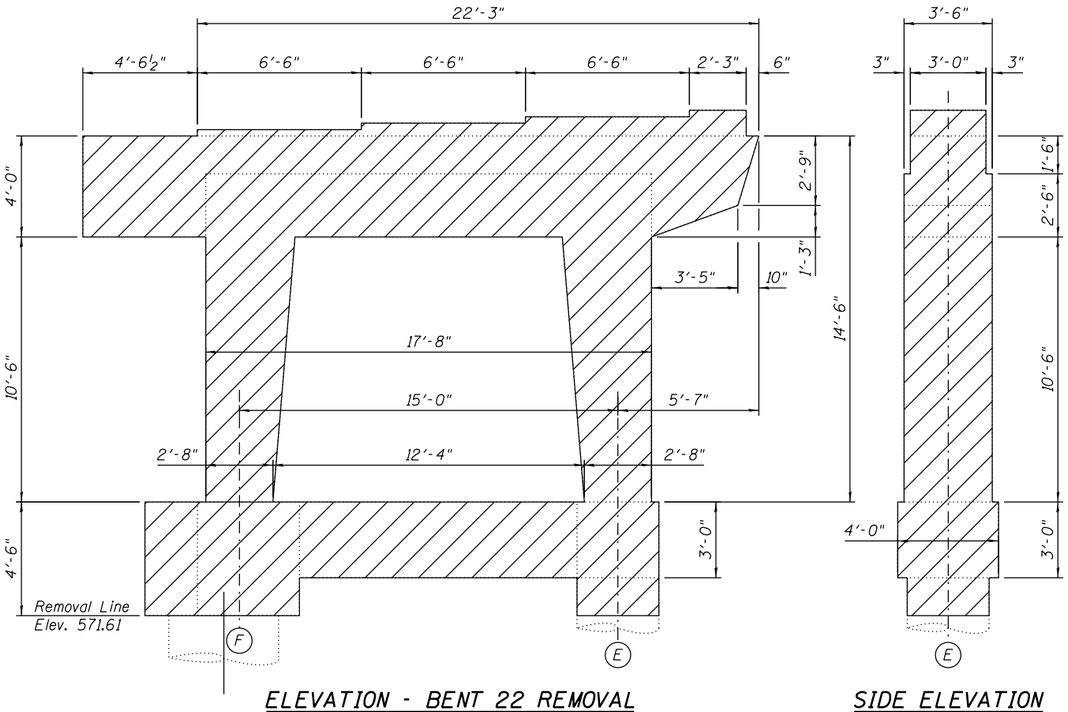
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	424
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



PLAN - BENT 22



PLAN - BENT 23

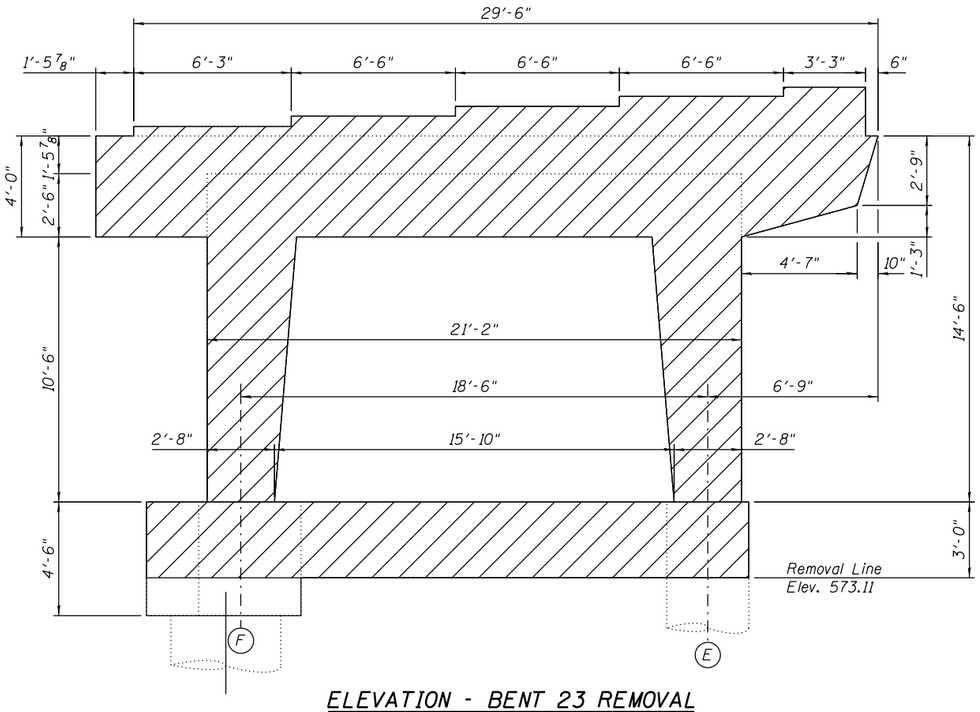


ELEVATION - BENT 22 REMOVAL

(Looking Upstation)

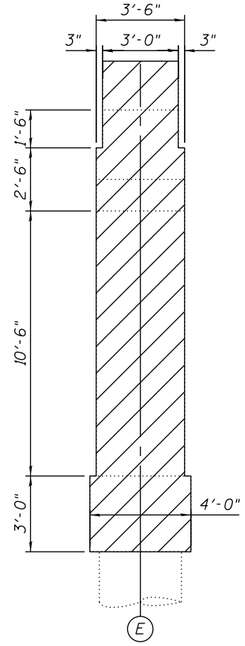
SIDE ELEVATION
BENT 22

(Looking North)



ELEVATION - BENT 23 REMOVAL

(Looking Upstation)



SIDE ELEVATION
BENT 23

(Looking North)

LEGEND

Removal of Existing Structures No. 1

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad,issa	DESIGNED - KJD, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXISTING STRUCTURE REMOVAL - BENT 22 AND BENT 23 STRUCTURE NO. 016-1712
		CHECKED - MI, JJS	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - KJD, HI	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-10 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	425
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 CirclePhase_II\000_CAD\008_StructuralStructure_016-1712\016171712-60X79-S010-RemovalDet2

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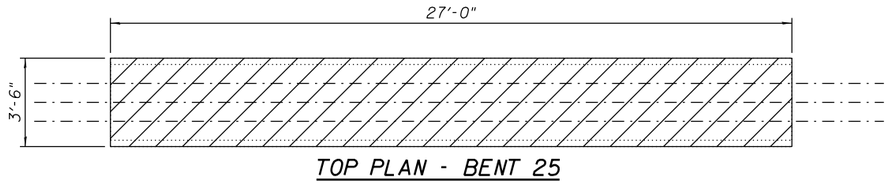
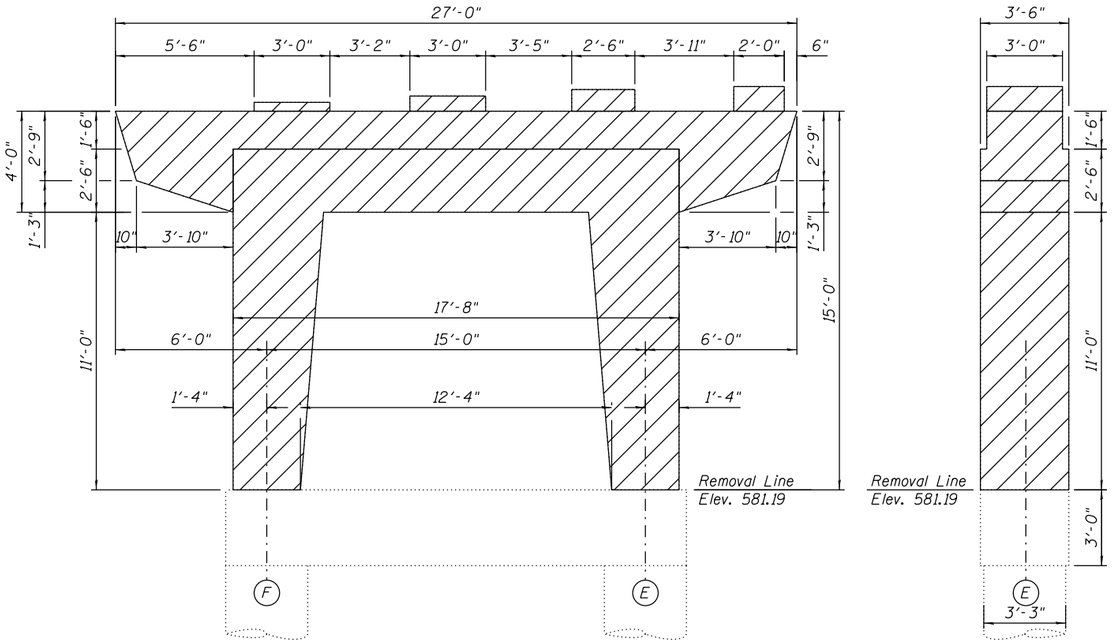


TOP PLAN - BENT 25

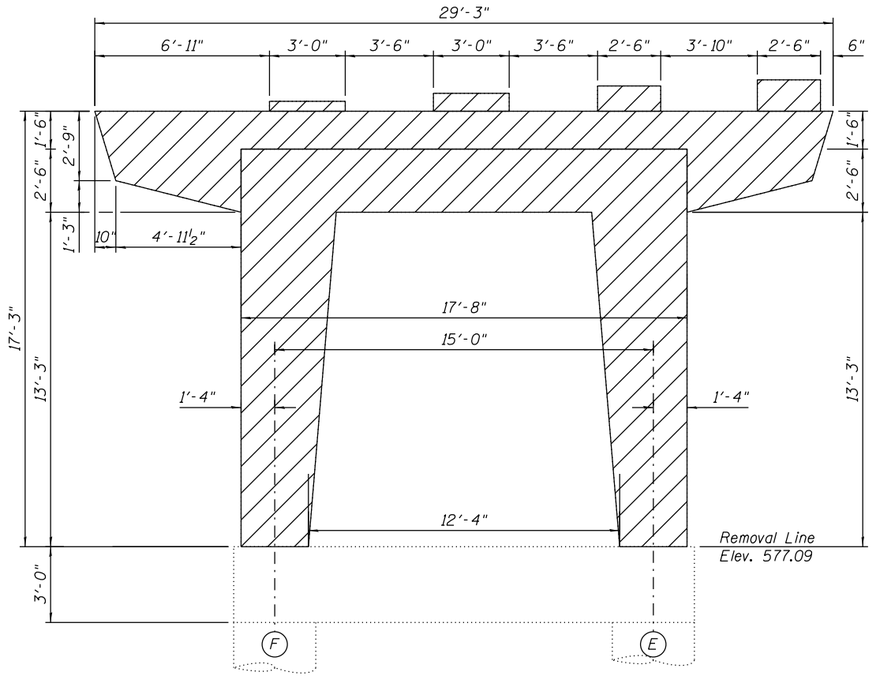


ELEVATION - BENT 25 REMOVAL

(Looking Upstation)

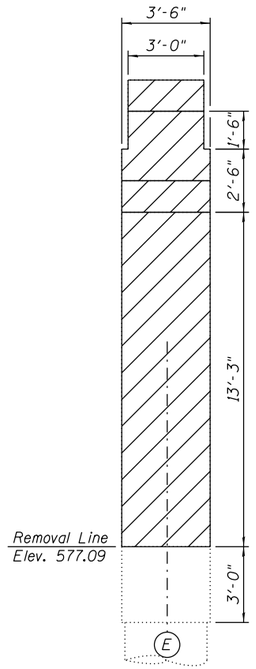
SIDE ELEVATION
BENT 25

TOP PLAN - BENT 24



ELEVATION - BENT 24 REMOVAL

(Looking Upstation)



SIDE ELEVATION
BENT 24

LEGEND

Removal of Existing Structures No. 1

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - KJD, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXISTING STRUCTURE REMOVAL - BENT 24 AND BENT 25 STRUCTURE NO. 016-1712
		CHECKED - MI, JJS	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - KJD, HI	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-11 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	426
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\617479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1712\016171260X79-S0111-RemovalDet3

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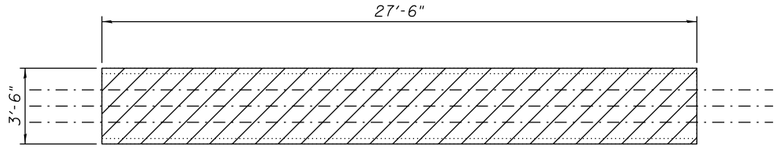
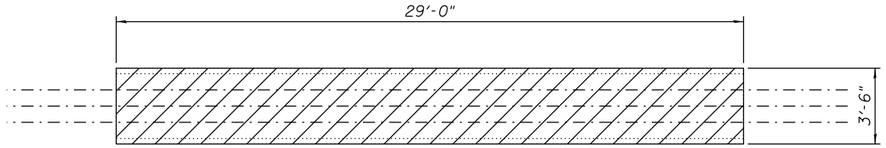


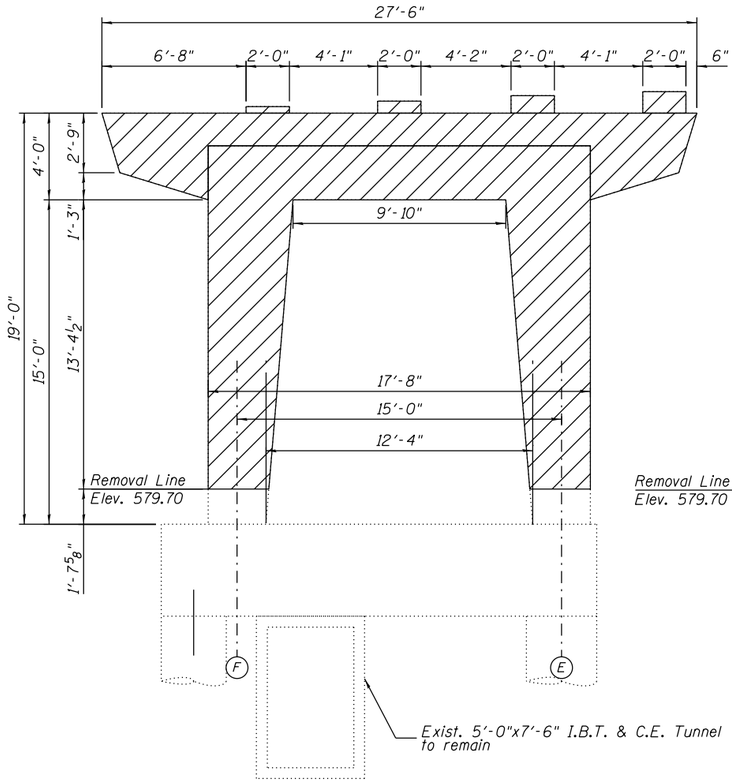
TOP PLAN - BENT 26

N



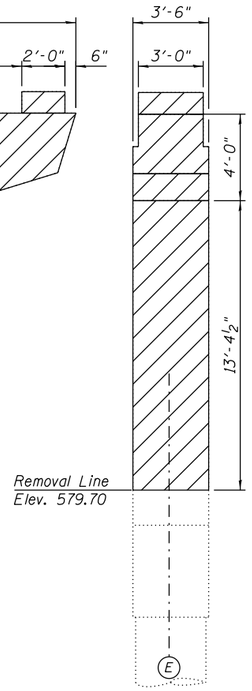
TOP PLAN - BENT 27

N

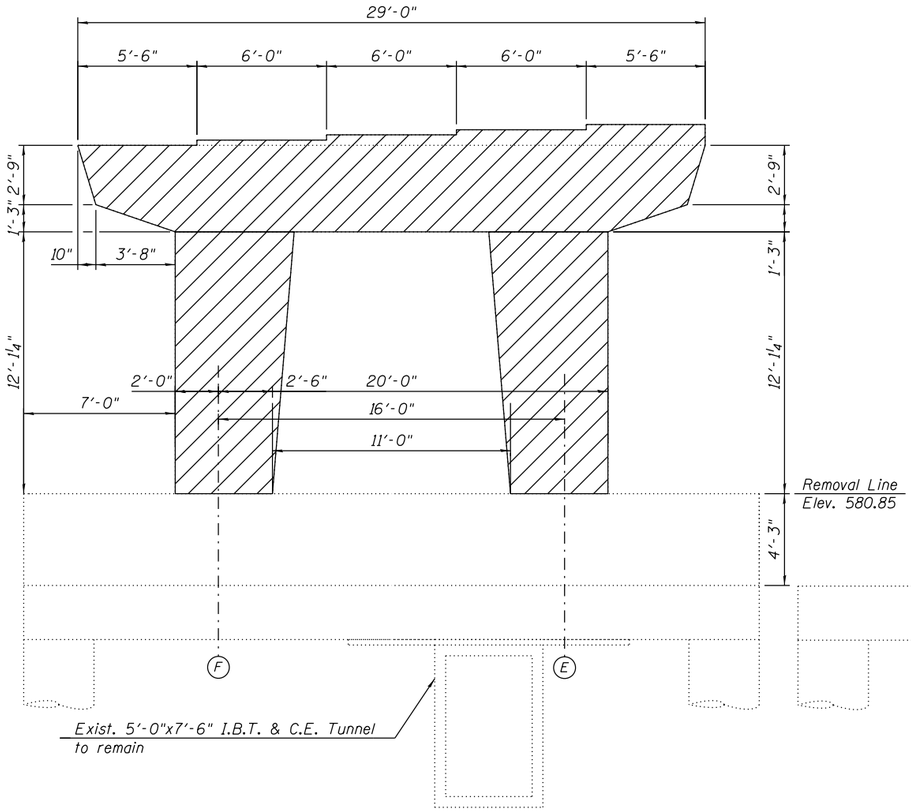


ELEVATION - BENT 26 REMOVAL

(Looking Upstation)

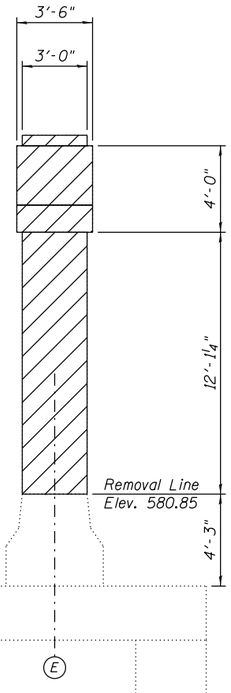


SIDE ELEVATION
BENT 26



ELEVATION - BENT 27 REMOVAL

(Looking Upstation)



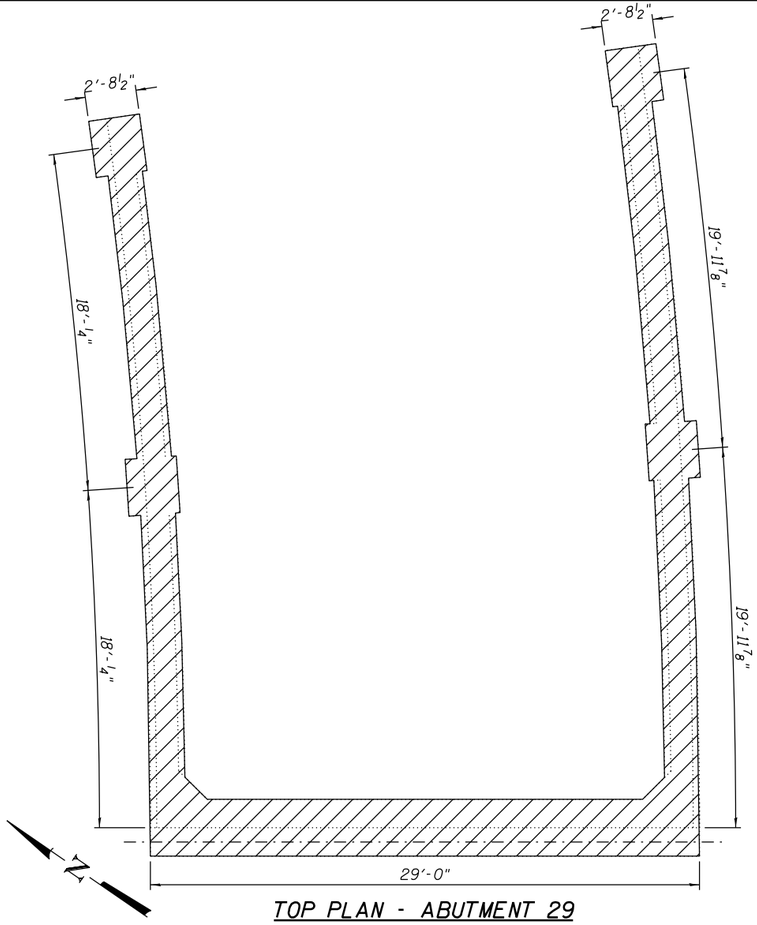
SIDE ELEVATION - PIER 27

LEGEND:

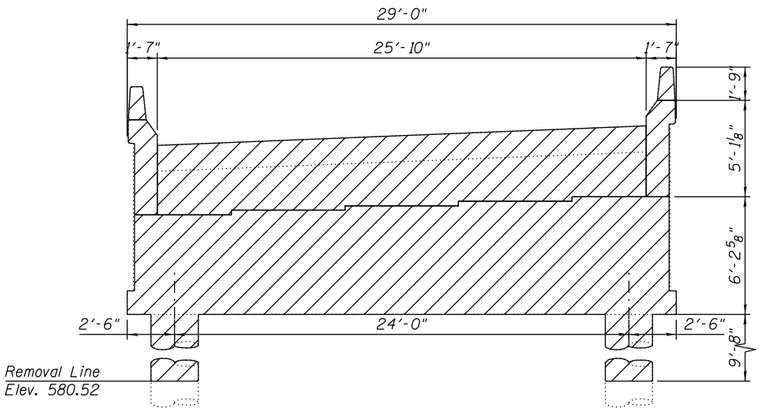
Removal of Existing Structures No. 1

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - KJD, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXISTING STRUCTURE REMOVAL - BENT 26 AND PIER 27 STRUCTURE NO. 016-1712
		CHECKED - MI, JJS	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - KJD, HI	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-12 OF S2-63 SHEETS

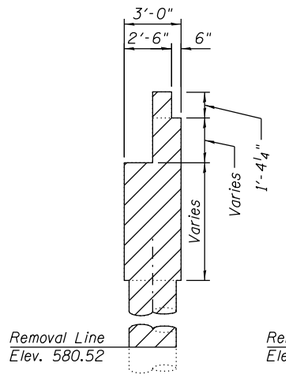
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	427
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



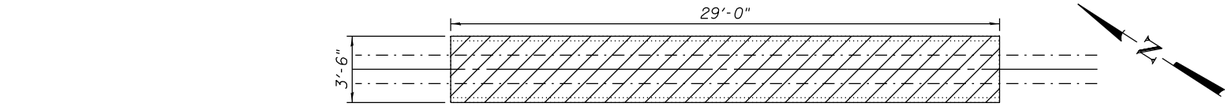
TOP PLAN - ABUTMENT 29



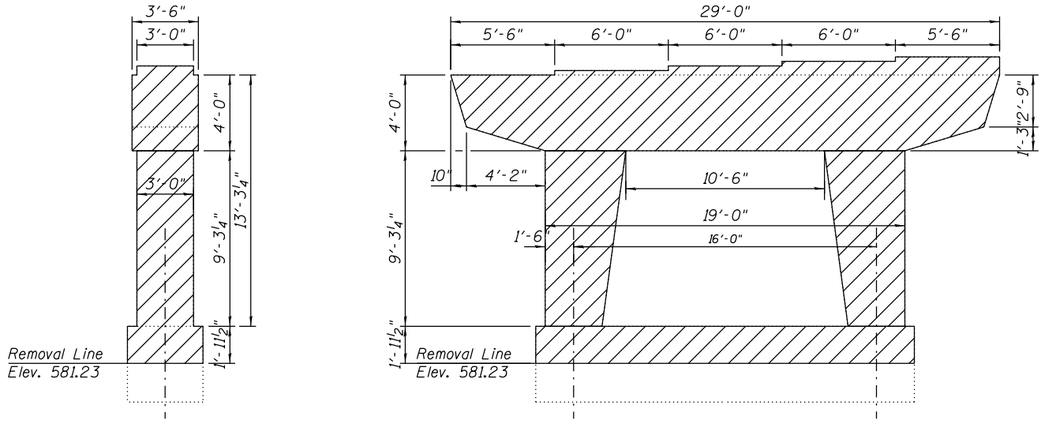
ELEVATION - ABUTMENT 29 REMOVAL
(Looking Upstation)



ABUTMENT SECTION

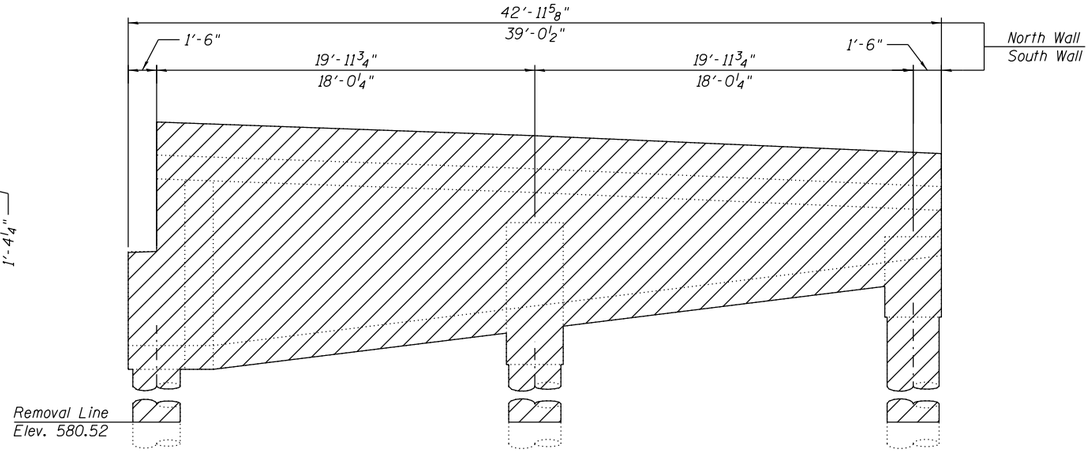


TOP PLAN - PIER 28



SIDE ELEVATION
PIER 28

ELEVATION - PIER 28 REMOVAL
(Looking Upstation)



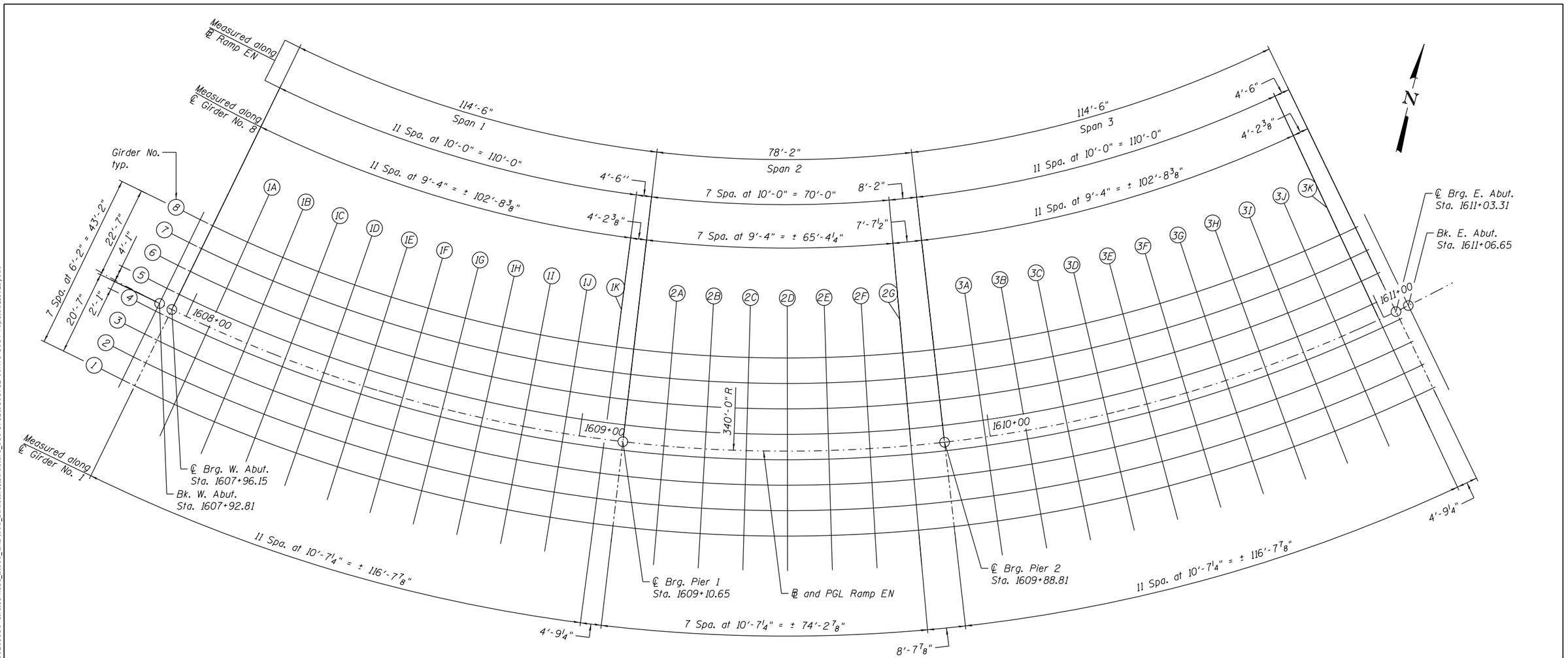
ELEVATION - WINGWALL REMOVAL

LEGEND

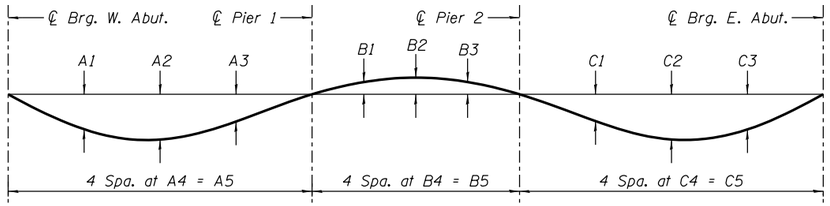
Removal of Existing Structures No. 1

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - KJD, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXISTING STRUCTURE REMOVAL - PIER 28 AND ABUTMENT 29 STRUCTURE NO. 016-1712
		CHECKED - MI, JJS	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - KJD, HI	REVISED -		SHEET NO. S2-13 OF S2-63 SHEETS
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	428
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



PLAN

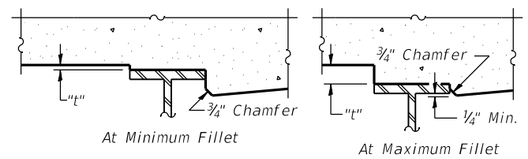


DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete only.)

Note:
The below 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. See Sheets S2-15 thru S2-17.

Girder No.	DEAD LOAD DEFLECTIONS - CONCRETE WEIGHT ONLY														
	Span 1					Span 2					Span 3				
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	3 5/8"	4 5/8"	2 3/4"	30'-4 1/4"	121'-5 1/8"	1 1/8"	1 1/2"	1 1/8"	20'-8 3/4"	82'-10 3/4"	2 3/4"	4 5/8"	3 5/8"	30'-4 1/4"	121'-5 1/8"
2	3 1/8"	4"	2 3/8"	29'-10 1/8"	119'-4 1/4"	1"	1 1/4"	1"	20'-4 1/2"	81'-5 3/4"	2 3/8"	4"	3 1/8"	29'-10 1/8"	119'-4 1/4"
3	2 7/8"	3 5/8"	2 1/8"	29'-3 7/8"	117'-3 3/8"	0 7/8"	1 1/8"	0 7/8"	20'-0 1/4"	80'-0 3/4"	2 1/8"	3 5/8"	2 7/8"	29'-3 7/8"	117'-3 3/8"
4	2 5/8"	3 3/8"	2"	28'-9 5/8"	115'-2 3/8"	0 3/4"	1"	0 3/4"	19'-7 7/8"	78'-7 3/4"	2"	3 3/8"	2 5/8"	28'-9 5/8"	115'-2 3/8"
5	2 5/8"	3 3/8"	2"	28'-3 3/8"	113'-1 1/2"	0 5/8"	0 7/8"	0 5/8"	19'-3 5/8"	77'-2 3/4"	2"	3 3/8"	2 5/8"	28'-3 3/8"	113'-1 1/2"
6	2 5/8"	3 1/4"	1 7/8"	27'-9 1/8"	111'-0 5/8"	0 5/8"	0 7/8"	0 5/8"	18'-11 3/8"	75'-9 3/4"	1 7/8"	3 1/4"	2 5/8"	27'-9 1/8"	111'-0 5/8"
7	2 1/2"	3 1/8"	1 7/8"	27'-2 7/8"	108'-11 5/8"	0 5/8"	0 3/4"	0 5/8"	18'-7 1/8"	74'-4 3/4"	1 7/8"	3 1/4"	2 1/2"	27'-2 7/8"	108'-11 5/8"
8	2 3/8"	3"	1 7/8"	26'-8 5/8"	106'-10 3/4"	0 5/8"	0 3/4"	0 5/8"	18'-2 7/8"	72'-11 3/4"	1 7/8"	3 1/8"	2 3/8"	26'-8 5/8"	106'-10 3/4"



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 S2-15 thru S2-17. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" in tables (see Sheets S2-15 thru S2-17) minus slab thickness, equals the fillet heights "t" above top flange of beams.

FILLET HEIGHTS

HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TOP OF SLAB ELEVATIONS LAYOUT
STRUCTURE NO. 016-1712
SHEET NO. S2-14 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	429
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\\61479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 CircletPhase_II\000_CAD\008_Structural\Structure_016-1712\016171712-60X79-S0114-TopSlabElevLayout
8:33:03 AM

GIRDER 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	1607+92.81	20.58	597.84	597.84
℄ Brg. W. Abut	1607+96.14	20.58	598.02	598.02
1A	1608+06.14	20.58	598.58	598.70
1B	1608+16.14	20.58	599.11	599.34
1C	1608+26.14	20.58	599.61	599.92
1D	1608+36.14	20.58	600.08	600.45
1E	1608+46.14	20.58	600.51	600.90
1F	1608+56.14	20.58	600.91	601.29
1G	1608+66.14	20.58	601.28	601.62
1H	1608+76.14	20.58	601.62	601.89
1I	1608+86.14	20.58	601.92	602.12
1J	1608+96.14	20.58	602.19	602.30
1K	1609+06.14	20.58	602.43	602.46
℄ Brg. Pier 1	1609+10.64	20.58	602.52	602.52
2A	1609+20.64	20.58	602.71	602.65
2B	1609+30.64	20.58	602.87	602.77
2C	1609+40.64	20.58	602.99	602.87
2D	1609+50.64	20.58	603.08	602.95
2E	1609+60.64	20.58	603.14	603.02
2F	1609+70.64	20.58	603.16	603.07
2G	1609+80.64	20.58	603.15	603.11
℄ Brg. Pier 2	1609+88.81	20.58	603.12	603.12
3A	1609+98.81	20.58	603.05	603.13
3B	1610+08.81	20.58	602.95	603.11
3C	1610+18.81	20.58	602.82	603.06
3D	1610+28.81	20.58	602.65	602.96
3E	1610+38.81	20.58	602.45	602.82
3F	1610+48.81	20.58	602.22	602.61
3G	1610+58.81	20.58	601.95	602.33
3H	1610+68.81	20.58	601.65	601.99
3I	1610+78.81	20.58	601.32	601.59
3J	1610+88.81	20.58	600.95	601.12
3K	1610+98.81	20.58	600.55	600.61
℄ Brg. E. Abut	1611+03.31	20.58	600.36	600.36
Bk. E. Abut	1611+06.64	20.58	600.22	600.22

GIRDER 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	1607+92.81	14.42	597.49	597.49
℄ Brg. W. Abut	1607+96.14	14.42	597.68	597.68
1A	1608+06.14	14.42	598.23	598.33
1B	1608+16.14	14.42	598.76	598.96
1C	1608+26.14	14.42	599.26	599.54
1D	1608+36.14	14.42	599.73	600.05
1E	1608+46.14	14.42	600.17	600.51
1F	1608+56.14	14.42	600.57	600.90
1G	1608+66.14	14.42	600.94	601.23
1H	1608+76.14	14.42	601.27	601.51
1I	1608+86.14	14.42	601.58	601.75
1J	1608+96.14	14.42	601.84	601.94
1K	1609+06.14	14.42	602.08	602.11
℄ Brg. Pier 1	1609+10.64	14.42	602.18	602.18
2A	1609+20.64	14.42	602.37	602.32
2B	1609+30.64	14.42	602.52	602.44
2C	1609+40.64	14.42	602.65	602.54
2D	1609+50.64	14.42	602.74	602.63
2E	1609+60.64	14.42	602.79	602.69
2F	1609+70.64	14.42	602.82	602.74
2G	1609+80.64	14.42	602.81	602.77
℄ Brg. Pier 2	1609+88.81	14.42	602.78	602.78
3A	1609+98.81	14.42	602.71	602.77
3B	1610+08.81	14.42	602.61	602.74
3C	1610+18.81	14.42	602.47	602.68
3D	1610+28.81	14.42	602.30	602.58
3E	1610+38.81	14.42	602.10	602.42
3F	1610+48.81	14.42	601.87	602.21
3G	1610+58.81	14.42	601.60	601.94
3H	1610+68.81	14.42	601.30	601.60
3I	1610+78.81	14.42	600.97	601.21
3J	1610+88.81	14.42	600.61	600.75
3K	1610+98.81	14.42	600.21	600.26
℄ Brg. E. Abut	1611+03.31	14.42	600.02	600.02
Bk. E. Abut	1611+06.64	14.42	599.87	599.87

GIRDER 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	1607+92.81	8.25	597.15	597.15
℄ Brg. W. Abut	1607+96.14	8.25	597.33	597.33
1A	1608+06.14	8.25	597.88	597.98
1B	1608+16.14	8.25	598.42	598.59
1C	1608+26.14	8.25	598.92	599.16
1D	1608+36.14	8.25	599.39	599.67
1E	1608+46.14	8.25	599.82	600.13
1F	1608+56.14	8.25	600.22	600.52
1G	1608+66.14	8.25	600.59	600.86
1H	1608+76.14	8.25	600.93	601.14
1I	1608+86.14	8.25	601.23	601.38
1J	1608+96.14	8.25	601.50	601.59
1K	1609+06.14	8.25	601.74	601.76
℄ Brg. Pier 1	1609+10.64	8.25	601.83	601.83
2A	1609+20.64	8.25	602.02	601.98
2B	1609+30.64	8.25	602.18	602.11
2C	1609+40.64	8.25	602.30	602.21
2D	1609+50.64	8.25	602.39	602.30
2E	1609+60.64	8.25	602.45	602.36
2F	1609+70.64	8.25	602.47	602.41
2G	1609+80.64	8.25	602.46	602.43
℄ Brg. Pier 2	1609+88.81	8.25	602.43	602.43
3A	1609+98.81	8.25	602.36	602.42
3B	1610+08.81	8.25	602.26	602.38
3C	1610+18.81	8.25	602.13	602.32
3D	1610+28.81	8.25	601.96	602.21
3E	1610+38.81	8.25	601.76	602.05
3F	1610+48.81	8.25	601.52	601.83
3G	1610+58.81	8.25	601.26	601.56
3H	1610+68.81	8.25	600.96	601.23
3I	1610+78.81	8.25	600.63	600.84
3J	1610+88.81	8.25	600.26	600.39
3K	1610+98.81	8.25	599.86	599.91
℄ Brg. E. Abut	1611+03.31	8.25	599.67	599.67
Bk. E. Abut	1611+06.64	8.25	599.53	599.53

GIRDER 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	1607+92.81	2.08	596.80	596.80
℄ Brg. W. Abut	1607+96.14	2.08	596.99	596.99
1A	1608+06.14	2.08	597.54	597.63
1B	1608+16.14	2.08	598.07	598.24
1C	1608+26.14	2.08	598.57	598.80
1D	1608+36.14	2.08	599.04	599.31
1E	1608+46.14	2.08	599.48	599.77
1F	1608+56.14	2.08	599.88	600.16
1G	1608+66.14	2.08	600.25	600.50
1H	1608+76.14	2.08	600.58	600.79
1I	1608+86.14	2.08	600.88	601.03
1J	1608+96.14	2.08	601.15	601.23
1K	1609+06.14	2.08	601.39	601.41
℄ Brg. Pier 1	1609+10.64	2.08	601.49	601.49
2A	1609+20.64	2.08	601.68	601.64
2B	1609+30.64	2.08	601.83	601.77
2C	1609+40.64	2.08	601.95	601.88
2D	1609+50.64	2.08	602.05	601.97
2E	1609+60.64	2.08	602.10	602.03
2F	1609+70.64	2.08	602.13	602.07
2G	1609+80.64	2.08	602.12	602.09
℄ Brg. Pier 2	1609+88.81	2.08	602.09	602.09
3A	1609+98.81	2.08	602.02	602.07
3B	1610+08.81	2.08	601.92	602.03
3C	1610+18.81	2.08	601.78	601.96
3D	1610+28.81	2.08	601.61	601.85
3E	1610+38.81	2.08	601.41	601.69
3F	1610+48.81	2.08	601.18	601.47
3G	1610+58.81	2.08	600.91	601.20
3H	1610+68.81	2.08	600.61	600.87
3I	1610+78.81	2.08	600.28	600.48
3J	1610+88.81	2.08	599.92	600.04
3K	1610+98.81	2.08	599.52	599.56
℄ Brg. E. Abut	1611+03.31	2.08	599.33	599.33
Bk. E. Abut	1611+06.64	2.08	599.18	599.18

℄ AND PGL RAMP EN

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	1607+92.81	0.00	596.68	596.68
℄ Brg. W. Abut	1607+96.14	0.00	596.87	596.87
1A	1608+06.14	0.00	597.42	597.51
1B	1608+16.14	0.00	597.96	598.12
1C	1608+26.14	0.00	598.46	598.69
1D	1608+36.14	0.00	598.92	599.20
1E	1608+46.14	0.00	599.36	599.65
1F	1608+56.14	0.00	599.76	600.04
1G	1608+66.14	0.00	600.13	600.38
1H	1608+76.14	0.00	600.47	600.67
1I	1608+86.14	0.00	600.77	600.91
1J	1608+96.14	0.00	601.04	601.12
1K	1609+06.14	0.00	601.27	601.30
℄ Brg. Pier 1	1609+10.64	0.00	601.37	601.37
2A	1609+20.64	0.00	601.56	601.52
2B	1609+30.64	0.00	601.72	601.65
2C	1609+40.64	0.00	601.84	601.76
2D	1609+50.64	0.00	601.93	601.85
2E	1609+60.64	0.00	601.99	601.91
2F	1609+70.64	0.00	602.01	601.95
2G	1609+80.64	0.00	602.00	601.97
℄ Brg. Pier 2	1609+88.81	0.00	601.97	601.97
3A	1609+98.81	0.00	601.90	601.95
3B	1610+08.81	0.00	601.80	601.91
3C	1610+18.81	0.00	601.66	601.84
3D	1610+28.81	0.00	601.50	601.73
3E	1610+38.81	0.00	601.30	601.57
3F	1610+48.81	0.00	601.06	601.35
3G	1610+58.81	0.00	600.80	601.08
3H	1610+68.81	0.00	600.50	600.75
3I	1610+78.81	0.00	600.16	600.36
3J	1610+88.81	0.00	599.80	599.93
3K	1610+98.81	0.00	599.40	599.44
℄ Brg. E. Abut	1611+03.31	0.00	599.21	599.21
Bk. E. Abut	1611+06.64	0.00	599.07	599.07

GIRDER 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	1607+92.81	-4.08	596.46	596.46
℄ Brg. W. Abut	1607+96.14	-4.08	596.64	596.64
1A	1608+06.14	-4.08	597.19	597.28
1B	1608+16.14	-4.08	597.73	597.89
1C	1608+26.14	-4.08	598.23	598.45
1D	1608+36.14	-4.08	598.70	598.96
1E	1608+46.14	-4.08	599.13	599.41
1F	1608+56.14	-4.08	599.53	599.81
1G	1608+66.14	-4.08	599.90	600.14
1H	1608+76.14	-4.08	600.24	600.43
1I	1608+86.14	-4.08	600.54	600.68
1J	1608+96.14	-4.08	600.81	600.89
1K	1609+06.14	-4.08	601.05	601.07
℄ Brg. Pier 1	1609+10.64	-4.08	601.14	601.14
2A	1609+20.64	-4.08	601.33	601.29
2B	1609+30.64	-4.08	601.49	601.43
2C	1609+40.64	-4.08	601.61	601.54
2D	1609+50.64	-4.08	601.70	601.63
2E	1609+60.64	-4.08	601.76	601.69
2F	1609+70.64	-4.08	601.78	601.73
2G	1609+80.64	-4.08	601.77	601.74
℄ Brg. Pier 2	1609+88.81	-4.08	601.74	601.74
3A	1609+98.81	-4.08	601.67	601.72
3B	1610+08.81	-4.08	601.57	601.68
3C	1610+18.81	-4.08	601.44	601.61
3D	1610+28.81	-4.08	601.27	601.49
3E	1610+38.81	-4.08	601.07	601.33
3F	1610+48.81	-4.08	600.83	601.12
3G	1610+58.81	-4.08	600.57	600.84
3H	1610+68.81	-4.08	600.27	600.51
3I	1610+78.81	-4.08	599.94	600.13
3J	1610+88.81	-4.08	599.57	599.69
3K	1610+98.81	-4.08	599.17	599.21
℄ Brg. E. Abut	1611+03.31	-4.08	598.98	598.98
Bk. E. Abut	1611+06.64	-4.08	598.84	598.84

GIRDER 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	1607+92.81	- 10.25	596.11	596.11
℄ Brg. W. Abut	1607+96.14	- 10.25	596.29	596.29
1A	1608+06.14	- 10.25	596.85	596.93
1B	1608+16.14	- 10.25	597.38	597.54
1C	1608+26.14	- 10.25	597.88	598.10
1D	1608+36.14	- 10.25	598.35	598.61
1E	1608+46.14	- 10.25	598.79	599.06
1F	1608+56.14	- 10.25	599.19	599.45
1G	1608+66.14	- 10.25	599.56	599.79
1H	1608+76.14	- 10.25	599.89	600.08
1I	1608+86.14	- 10.25	600.19	600.33
1J	1608+96.14	- 10.25	600.46	600.54
1K	1609+06.14	- 10.25	600.70	600.72
℄ Brg. Pier 1	1609+10.64	- 10.25	600.80	600.80
2A	1609+20.64	- 10.25	600.99	600.95
2B	1609+30.64	- 10.25	601.14	601.09
2C	1609+40.64	- 10.25	601.26	601.20
2D	1609+50.64	- 10.25	601.35	601.29
2E	1609+60.64	- 10.25	601.41	601.35
2F	1609+70.64	- 10.25	601.44	601.38
2G	1609+80.64	- 10.25	601.43	601.40
℄ Brg. Pier 2	1609+88.81	- 10.25	601.40	601.40
3A	1609+98.81	- 10.25	601.33	601.38
3B	1610+08.81	- 10.25	601.23	601.33
3C	1610+18.81	- 10.25	601.09	601.26
3D	1610+28.81	- 10.25	600.92	601.14
3E	1610+38.81	- 10.25	600.72	600.98
3F	1610+48.81	- 10.25	600.49	600.76
3G	1610+58.81	- 10.25	600.22	600.49
3H	1610+68.81	- 10.25	599.92	600.16
3I	1610+78.81	- 10.25	599.59	599.78
3J	1610+88.81	- 10.25	599.23	599.35
3K	1610+98.81	- 10.25	598.83	598.87
℄ Brg. E. Abut	1611+03.31	- 10.25	598.64	598.64
Bk. E. Abut	1611+06.64	- 10.25	598.49	598.49

GIRDER 7

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	1607+92.81	- 16.42	595.76	595.76
℄ Brg. W. Abut	1607+96.14	- 16.42	595.95	595.95
1A	1608+06.14	- 16.42	596.50	596.59
1B	1608+16.14	- 16.42	597.04	597.19
1C	1608+26.14	- 16.42	597.54	597.75
1D	1608+36.14	- 16.42	598.01	598.26
1E	1608+46.14	- 16.42	598.44	598.71
1F	1608+56.14	- 16.42	598.84	599.10
1G	1608+66.14	- 16.42	599.21	599.44
1H	1608+76.14	- 16.42	599.55	599.73
1I	1608+86.14	- 16.42	599.85	599.98
1J	1608+96.14	- 16.42	600.12	600.19
1K	1609+06.14	- 16.42	600.35	600.37
℄ Brg. Pier 1	1609+10.64	- 16.42	600.45	600.45
2A	1609+20.64	- 16.42	600.64	600.61
2B	1609+30.64	- 16.42	600.80	600.74
2C	1609+40.64	- 16.42	600.92	600.86
2D	1609+50.64	- 16.42	601.01	600.94
2E	1609+60.64	- 16.42	601.07	601.01
2F	1609+70.64	- 16.42	601.09	601.04
2G	1609+80.64	- 16.42	601.08	601.05
℄ Brg. Pier 2	1609+88.81	- 16.42	601.05	601.05
3A	1609+98.81	- 16.42	600.98	601.03
3B	1610+08.81	- 16.42	600.88	600.99
3C	1610+18.81	- 16.42	600.75	600.91
3D	1610+28.81	- 16.42	600.58	600.79
3E	1610+38.81	- 16.42	600.38	600.63
3F	1610+48.81	- 16.42	600.14	600.41
3G	1610+58.81	- 16.42	599.88	600.14
3H	1610+68.81	- 16.42	599.58	599.81
3I	1610+78.81	- 16.42	599.25	599.43
3J	1610+88.81	- 16.42	598.88	599.00
3K	1610+98.81	- 16.42	598.48	598.52
℄ Brg. E. Abut	1611+03.31	- 16.42	598.29	598.29
Bk. E. Abut	1611+06.64	- 16.42	598.15	598.15

GIRDER 8

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. W. Abut	1607+92.81	- 22.58	595.42	595.42
℄ Brg. W. Abut	1607+96.14	- 22.58	595.60	595.60
1A	1608+06.14	- 22.58	596.16	596.24
1B	1608+16.14	- 22.58	596.69	596.84
1C	1608+26.14	- 22.58	597.19	597.40
1D	1608+36.14	- 22.58	597.66	597.90
1E	1608+46.14	- 22.58	598.09	598.35
1F	1608+56.14	- 22.58	598.50	598.75
1G	1608+66.14	- 22.58	598.86	599.09
1H	1608+76.14	- 22.58	599.20	599.38
1I	1608+86.14	- 22.58	599.50	599.63
1J	1608+96.14	- 22.58	599.77	599.84
1K	1609+06.14	- 22.58	600.01	600.03
℄ Brg. Pier 1	1609+10.64	- 22.58	600.11	600.11
2A	1609+20.64	- 22.58	600.29	600.26
2B	1609+30.64	- 22.58	600.45	600.40
2C	1609+40.64	- 22.58	600.57	600.52
2D	1609+50.64	- 22.58	600.66	600.60
2E	1609+60.64	- 22.58	600.72	600.66
2F	1609+70.64	- 22.58	600.75	600.70
2G	1609+80.64	- 22.58	600.74	600.71
℄ Brg. Pier 2	1609+88.81	- 22.58	600.70	600.70
3A	1609+98.81	- 22.58	600.64	600.68
3B	1610+08.81	- 22.58	600.53	600.64
3C	1610+18.81	- 22.58	600.40	600.56
3D	1610+28.81	- 22.58	600.23	600.44
3E	1610+38.81	- 22.58	600.03	600.27
3F	1610+48.81	- 22.58	599.80	600.06
3G	1610+58.81	- 22.58	599.53	599.79
3H	1610+68.81	- 22.58	599.23	599.46
3I	1610+78.81	- 22.58	598.90	599.08
3J	1610+88.81	- 22.58	598.53	598.65
3K	1610+98.81	- 22.58	598.14	598.17
℄ Brg. E. Abut	1611+03.31	- 22.58	597.95	597.95
Bk. E. Abut	1611+06.64	- 22.58	597.80	597.80

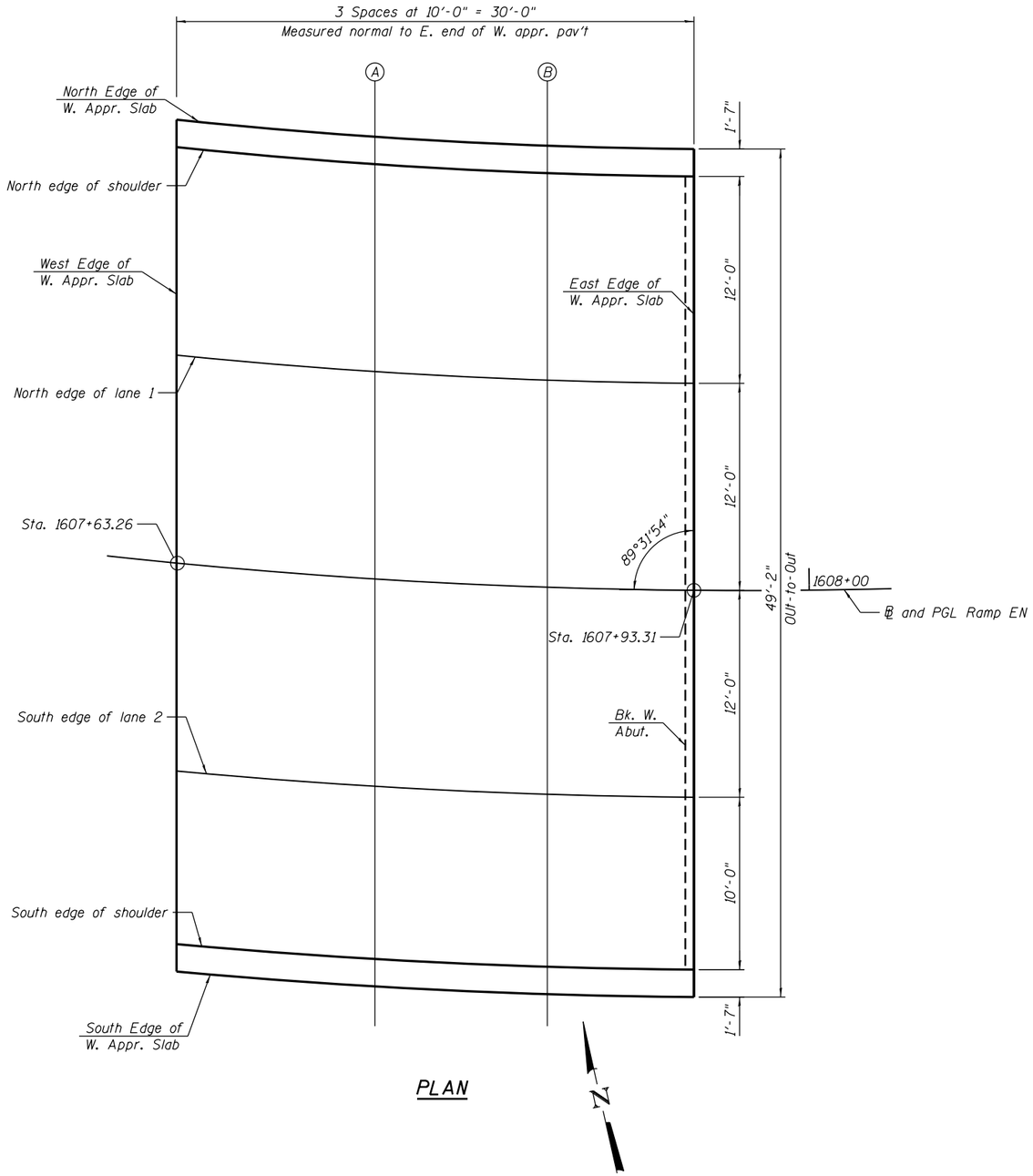
HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TOP OF SLAB ELEVATIONS III
STRUCTURE NO. 016-1712
SHEET NO. S2-17 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	432
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



PLAN

NORTH EDGE OF SHOULDER

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of W. Appr. Slab	1607+60.76	-24.00'	593.57
A	1607+73.18	-24.00'	594.25
B	1607+83.95	-24.00'	594.85
E. End of W. Appr. Slab	1607+93.10	-24.00'	595.36

NORTH EDGE OF LANE 1

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of W. Appr. Slab	1607+62.06	-12.00'	594.31
A	1607+74.02	-12.00'	594.97
B	1607+84.40	-12.00'	595.55
E. End of W. Appr. Slab	1607+93.21	-12.00'	596.04

BASELINE AND PGL RAMP EN

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of W. Appr. Slab	1607+63.26	0.00'	595.05
A	1607+74.80	0.00'	595.69
B	1607+84.81	0.00'	596.24
E. End of W. Appr. Slab	1607+93.31	0.00'	596.71

SOUTH EDGE OF LANE 2

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of W. Appr. Slab	1607+64.39	12.00'	595.78
A	1607+75.53	12.00'	596.40
B	1607+85.20	12.00'	596.94
E. End of W. Appr. Slab	1607+93.41	12.00'	597.39

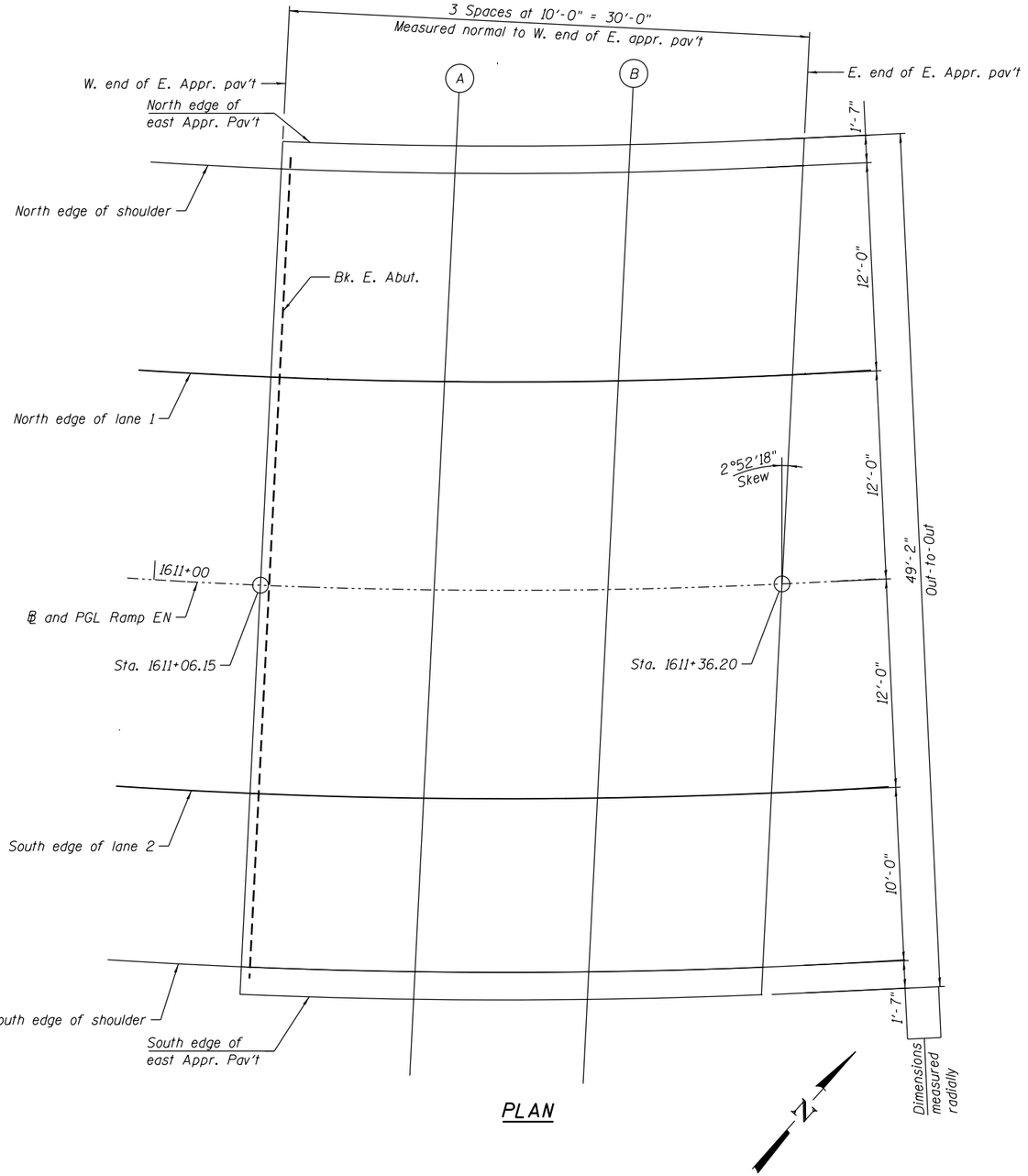
SOUTH EDGE OF SHOULDER

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of W. Appr. Slab	1607+65.27	22.00'	596.39
A	1607+76.10	22.00'	596.99
B	1607+85.50	22.00'	597.51
E. End of W. Appr. Slab	1607+93.49	22.00'	597.95

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - LAB	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	TOP OF WEST APPROACH SLAB ELEVATIONS STRUCTURE NO. 016-1712	
	CHECKED - WM	REVISED -			
PLOT SCALE = N.T.S	DRAWN - LAB	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-18 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	433
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



PLAN

NORTH EDGE OF SHOULDER

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of E. Appr. Slab	1611+06.36	-24.00'	597.73
A	1611+17.13	-24.00'	597.24
B	1611+27.90	-24.00'	596.71
E. End of E. Appr. Slab	1611+38.71	-24.00'	596.14

NORTH EDGE OF LANE 1

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of E. Appr. Slab	1611+06.25	-12.00'	598.41
A	1611+16.62	-12.00'	597.94
B	1611+27.00	-12.00'	597.43
E. End of E. Appr. Slab	1611+37.41	-12.00'	596.88

BASELINE AND PGL RAMP EN

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of E. Appr. Slab	1611+06.15	0.00'	599.09
A	1611+16.15	0.00'	598.63
B	1611+26.17	0.00'	598.14
E. End of E. Appr. Slab	1611+36.20	0.00'	597.62

SOUTH EDGE OF LANE 2

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of E. Appr. Slab	1611+06.05	12.00'	599.76
A	1611+15.71	12.00'	599.32
B	1611+25.39	12.00'	598.85
E. End of E. Appr. Slab	1611+35.08	12.00'	598.35

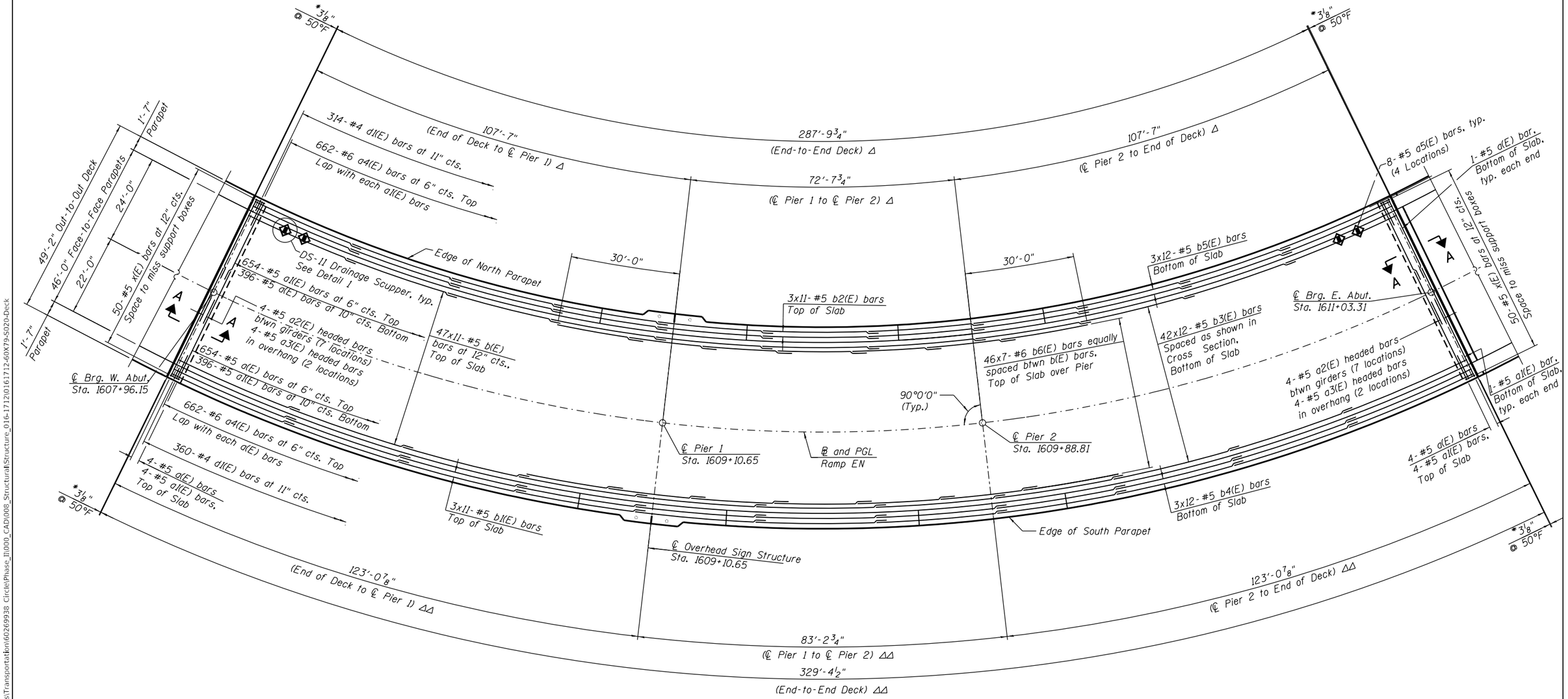
SOUTH EDGE OF SHOULDER

LOCATION	STATION	OFFSET	THEORETICAL GRADE ELEVATIONS
W. End of E. Appr. Slab	1611+05.98	22.00'	600.33
A	1611+15.37	22.00'	599.90
B	1611+24.77	22.00'	599.45
E. End of E. Appr. Slab	1611+34.20	22.00'	598.96

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - LAB	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	TOP OF EAST APPROACH SLAB ELEVATIONS STRUCTURE NO. 016-1712	
	CHECKED - WM	REVISED -			
PLOT SCALE = N.T.S	DRAWN - LAB	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-19 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	434
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



NOTES:

1. Stations are along ℄ Ramp EN unless noted otherwise.
2. Dimensions radial to ℄ Ramp EN unless noted otherwise.
3. Bars indicated thus: 3x11 - #5 indicates 3 lines of #5 bars with 11 lengths per line.
4. For Deck Cross Section, see Sheet S2-21 .
5. For parapet elevations and reinforcement, see Sheet S2-22 .
6. For parapet details, see Sheet S2-23 .
7. For Section A-A, Detail 1, Sections thru Parapet, bar diagrams and Bill of Material, see Sheet S2-24 .
8. Δ Dimensions along inside face of north parapet.
9. ΔΔ Dimensions along inside face of south parapet.

DECK PLAN

N

*Dimension showing concrete opening. For joint opening see sheet S2-29 .

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - SK, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	DECK PLAN STRUCTURE NO. 016-1712	SHEET NO. S2-20 OF S2-63 SHEETS
	CHECKED - MI, LAB	REVISED -			
PLOT SCALE = N.T.S	DRAWN - SK	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -			

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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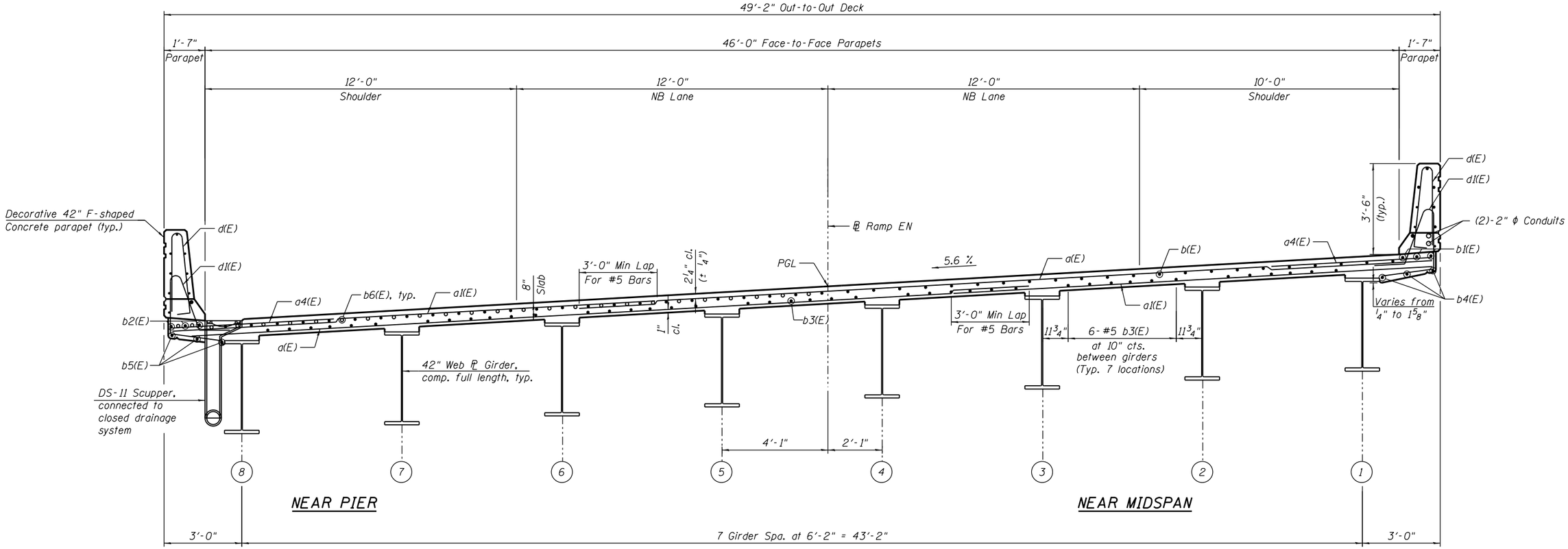
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



DECK CROSS SECTION

(Looking Upstation)
(Dimensions measured perpendicular to baseline)

NOTE:

1. For Deck Plan and additional notes, see Sheet S2-20 .

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - SK, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	DECK CROSS SECTION STRUCTURE NO. 016-1712	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CHECKED - MI, LAB	REVISED -			90/94/290	2014-005R&B	COOK	888	436
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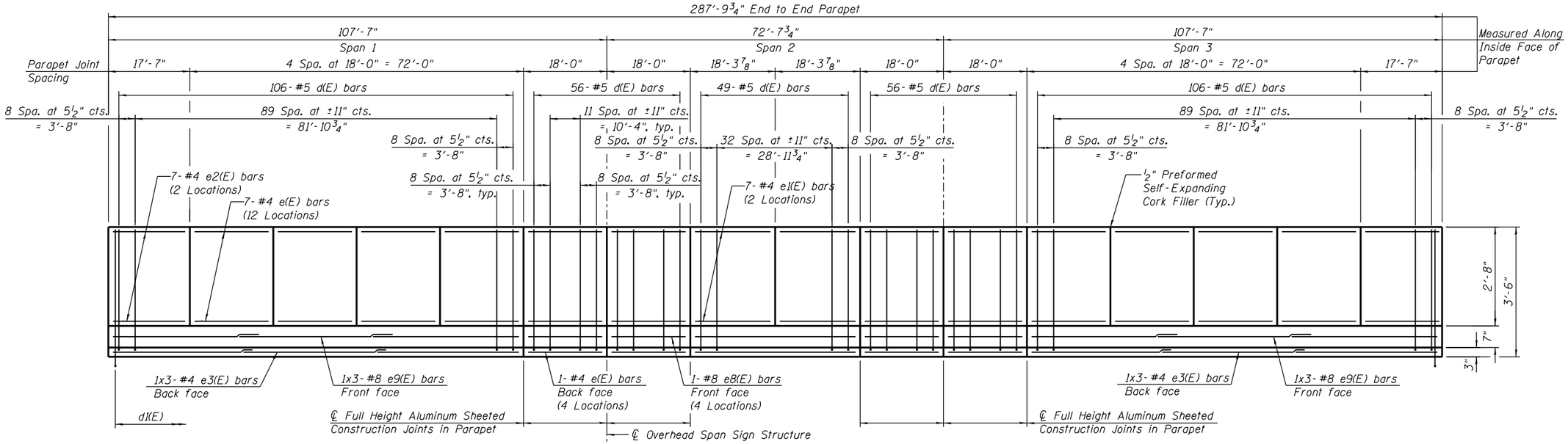
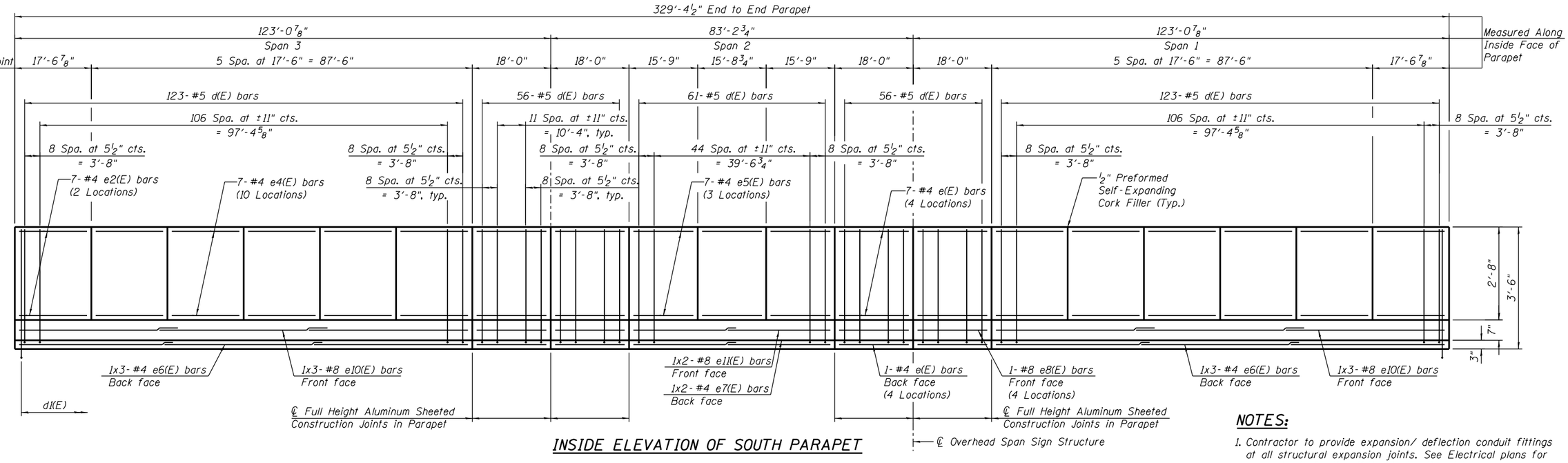


INSIDE ELEVATION OF NORTH PARAPET



INSIDE ELEVATION OF SOUTH PARAPET

NOTES:

1. Contractor to provide expansion/ deflection conduit fittings at all structural expansion joints. See Electrical plans for expansion/deflection fitting installation details.
2. Bars indicated locations: 1x3 - #8 etc. indicates one line of bars with 3 lengths per line.
3. For parapet details, see Sheet S2-23.
4. For electrical junction box locations and conduit stub out details, see Electrical plans.

HBM ENGINEERING GROUP, LLC

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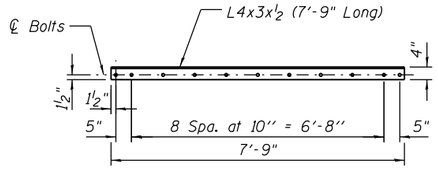
PLOT SCALE = N.T.S	DRAWN - SK	REVISED -	
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PARAPET ELEVATIONS
STRUCTURE NO. 016-1712
SHEET NO. S2-22 OF S2-63 SHEETS

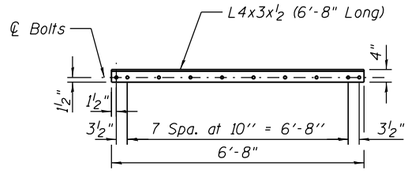
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	437
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



Note:
Fasteners shall be AASHTO M164 Type 1 mechanically galvanized bolts. Bolts $\frac{7}{8}$" ϕ, holes $\frac{15}{16}$" ϕ, unless noted otherwise.

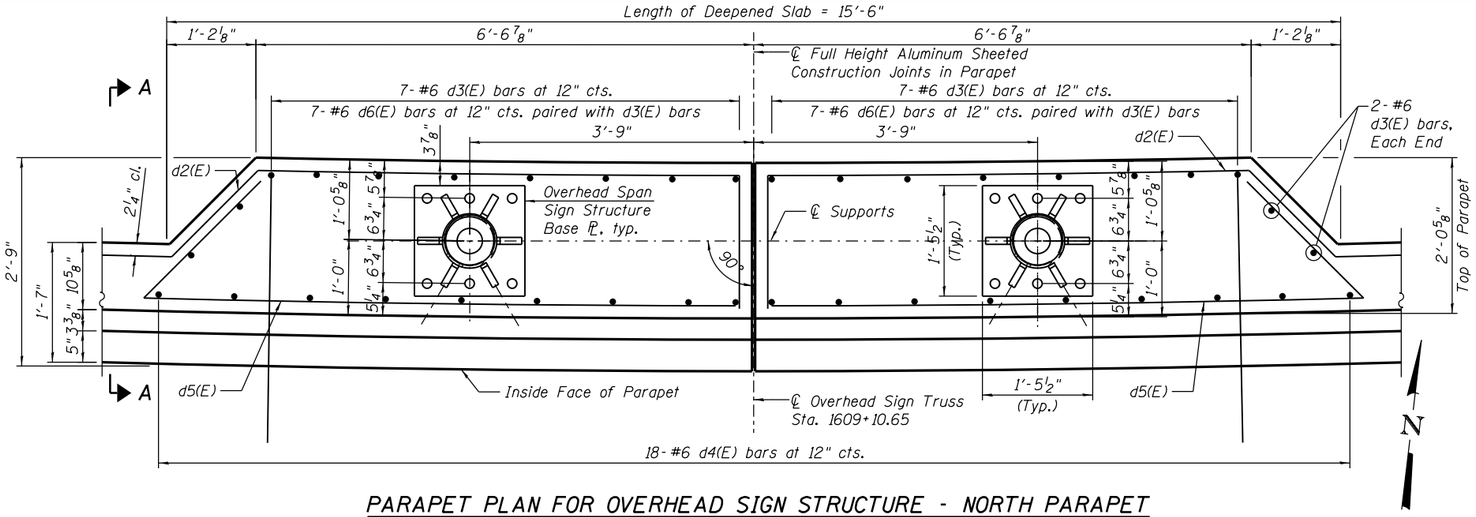
L4x3x½ DETAIL - NORTH AND SOUTH PARAPETS

2 Angles and 11 Bolts Required Each Parapet on East side of the bearing stiffener
Cost included in Concrete Superstructure

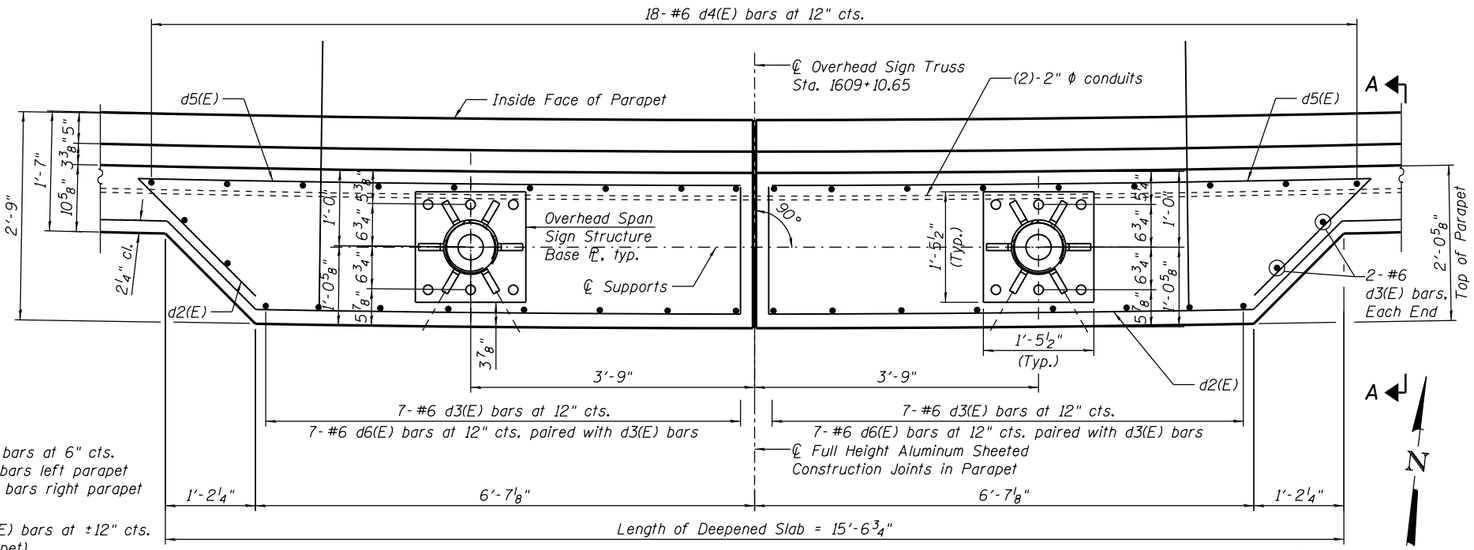


L4x3x½ DETAIL - NORTH AND SOUTH PARAPETS

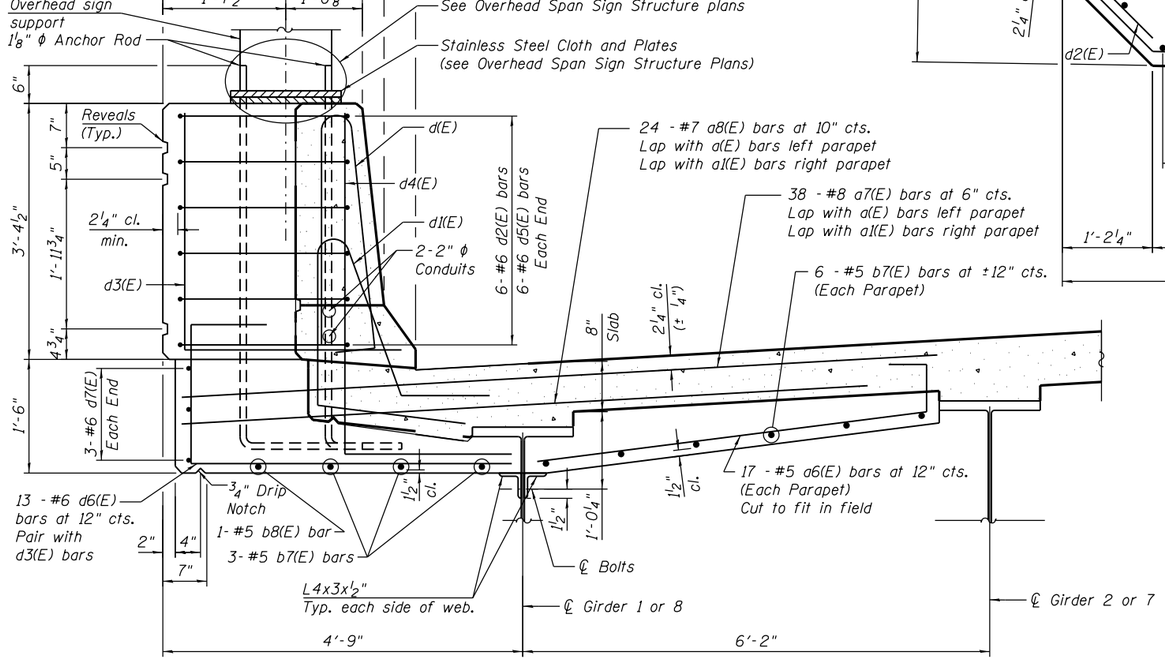
2 Angles and 9 Bolts Required Each Parapet on West side of the jacking stiffener
Cost included in Concrete Superstructure



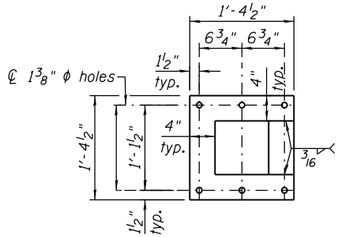
PARAPET PLAN FOR OVERHEAD SIGN STRUCTURE - NORTH PARAPET



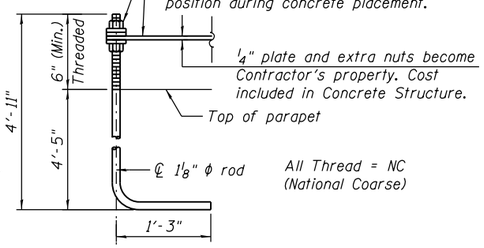
PARAPET PLAN FOR OVERHEAD SIGN STRUCTURE - SOUTH PARAPET



SECTION A-A



POSITIONING PLATE(S)



ANCHOR ROD DETAIL

Cost included in Concrete Superstructure (24 Total)
(ASTM F 1554 Grade 105)
Full length hot dipped galvanized

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_D502_NAIDocuments\01 Americas\Transportation\60269938 CirclePhase_II\000_CAD\008_StructuralStructure_016-1712\016171260X79-5023-DeckDet-1
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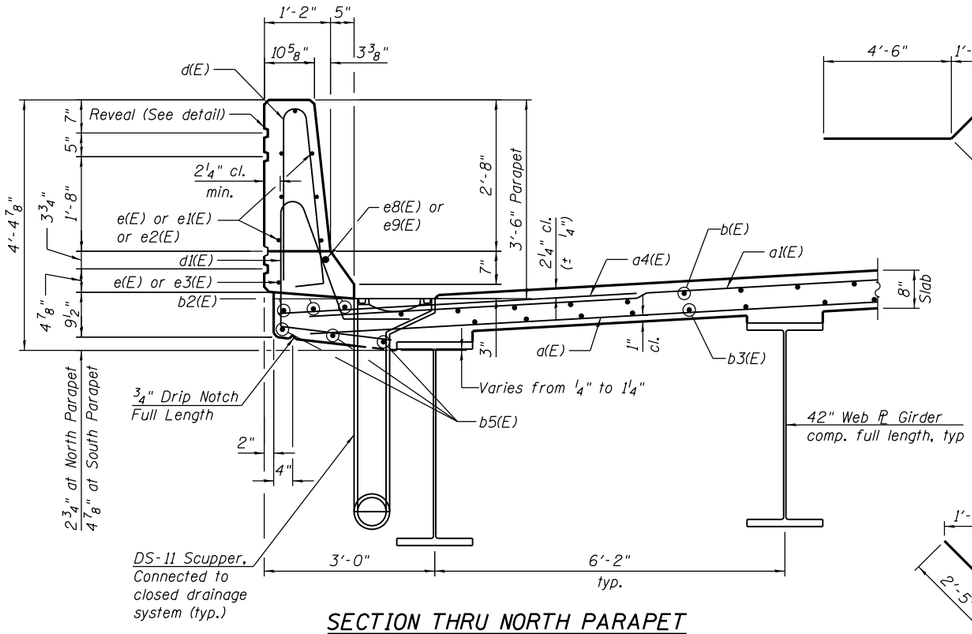
HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

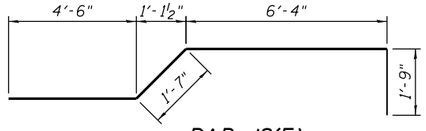
PARAPET DETAILS
STRUCTURE NO. 016-1712
SHEET NO. S2-23 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	438
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

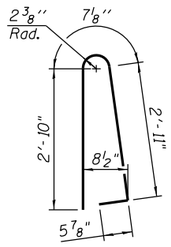


SECTION THRU NORTH PARAPET

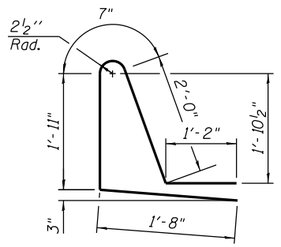
(Near midspan)



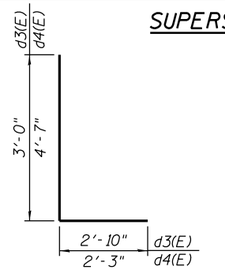
BAR d2(E)



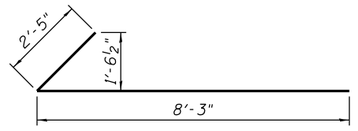
BAR d(E)



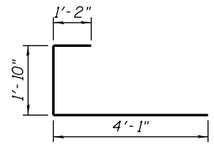
BAR d1(E)



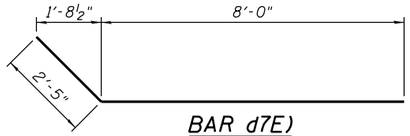
BARS d3(E) and d4(E)



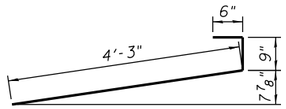
BAR d5E)



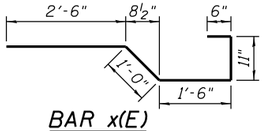
BAR d6(E)



BAR d7E)



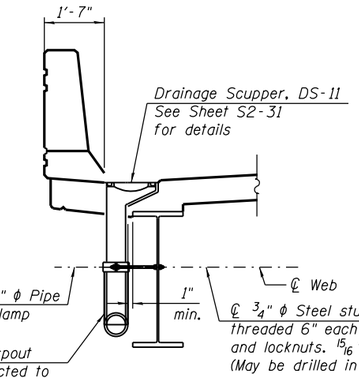
BAR d6(E)



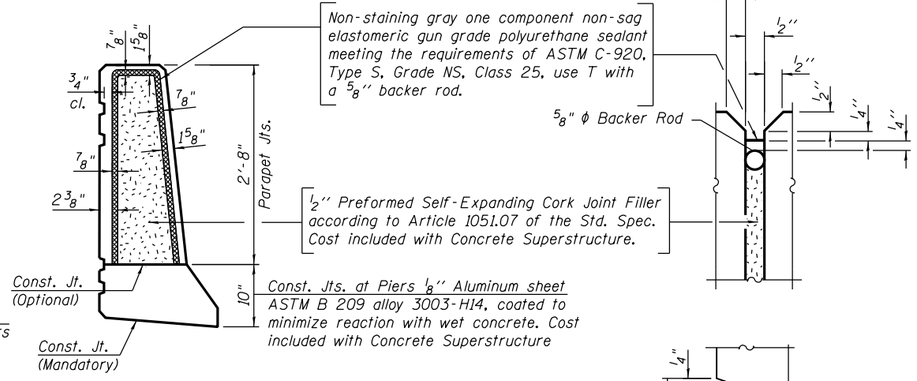
BAR x(E)

SUPERSTRUCTURE BILL OF MATERIAL

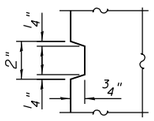
Bar	No.	Size	Length	Shape
d(E)	1060	#5	30'-0"	
d1(E)	1060	#5	21'-10"	
d2(E)	56	#5	5'-10"	
d3(E)	16	#5	2'-8"	
d4(E)	1324	#6	6'-6"	
d5(E)	32	#5	1'-6"	
d6(E)	34	#5	5'-6"	
d7(E)	76	#8	9'-10"	
d8(E)	48	#7	8'-10"	
b(E)	517	#5	33'-1"	
b1(E)	33	#5	33'-3"	
b2(E)	33	#5	29'-4"	
b3(E)	504	#5	30'-6"	
b4(E)	36	#5	30'-7"	
b5(E)	36	#5	27'-3"	
b6(E)	322	#6	23'-11"	
b7(E)	18	#5	15'-3"	
b8(E)	2	#5	15'-0"	
d(E)	792	#5	6'-10"	
d1(E)	674	#5	7'-4"	
d2(E)	24	#6	14'-2"	
d3(E)	42	#6	5'-10"	
d4(E)	36	#6	6'-10"	
d5(E)	24	#6	10'-8"	
d6(E)	30	#6	7'-1"	
d7(E)	12	#6	10'-5"	
e(E)	120	#4	17'-8"	
e1(E)	14	#4	18'-0"	
e2(E)	28	#4	17'-3"	
e3(E)	6	#4	31'-7"	
e4(E)	70	#4	17'-2"	
e5(E)	21	#4	15'-5"	
e6(E)	6	#4	36'-9"	
e7(E)	2	#4	24'-10"	
e8(E)	8	#8	17'-8"	
e9(E)	6	#8	33'-9"	
e10(E)	6	#8	38'-11"	
e11(E)	2	#8	26'-5"	
x(E)	100	#5	6'-5"	
Concrete Superstructure			Cu. Yd.	491.3
Bridge Deck Grooving (Longitudinal)			Sq. Yd.	1470
Protective Coat			Sq. Yd.	1933
Reinforcement Bars, Epoxy Coated			Pound	142,340



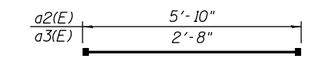
SECTION B-B



PARAPET JOINT DETAILS

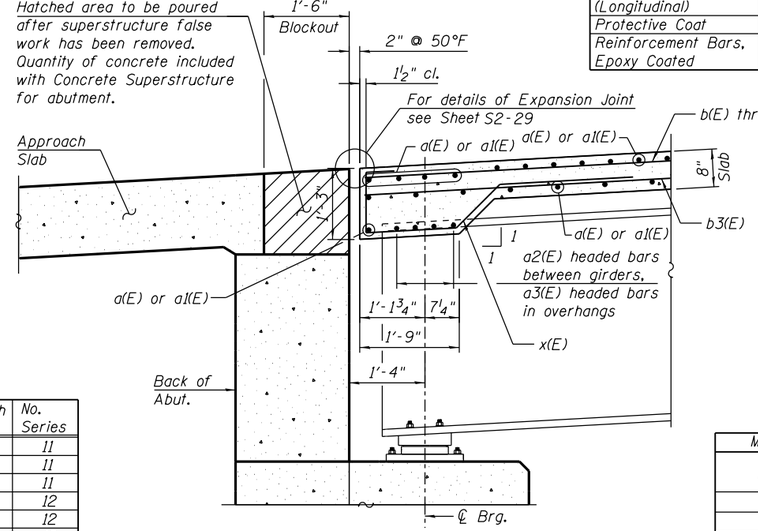


REVEAL DETAIL



a2(E) and a3(E) BARS

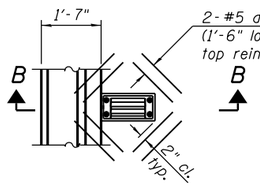
(Headed)



SECTION A-A

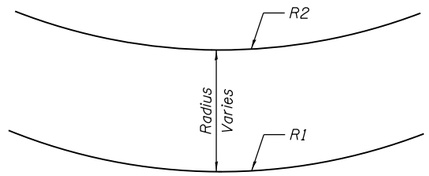
(Horiz. Dims. @ RT L's to ℄ Brg.)

Minimum Bar Laps	
Bar	Lap
#4	2'-5"
#5	3'-0"
#6	3'-7"
#8	4'-9"



DETAIL 1

Note:
Cut longitudinal reinforcement to clear drainage scuppers.



BARS b(E) thru b6(E)

Bar	No. Per Series	R1	R2	Bar Length	No. Series
b(E)	47	361'-10"	316'-2"	32'-8"	11
b1(E)	3	363'-5"	362'-2"	32'-9"	11
b2(E)	3	315'-10"	314'-7"	28'-10"	11
b3(E)	42	361'-10"	316'-2"	30'-2"	12
b4(E)	3	363'-5"	362'-2"	30'-3"	12
b5(E)	3	315'-10"	314'-7"	26'-8"	12
b6(E)	46	361'-4"	316'-8"	23'-11"	7

HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DECK CROSS SECTIONS, DETAILS AND BILL OF MATERIAL
STRUCTURE NO. 016-1712
SHEET NO. S2-24 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	439
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		ILLINOIS	FED. AID PROJECT	

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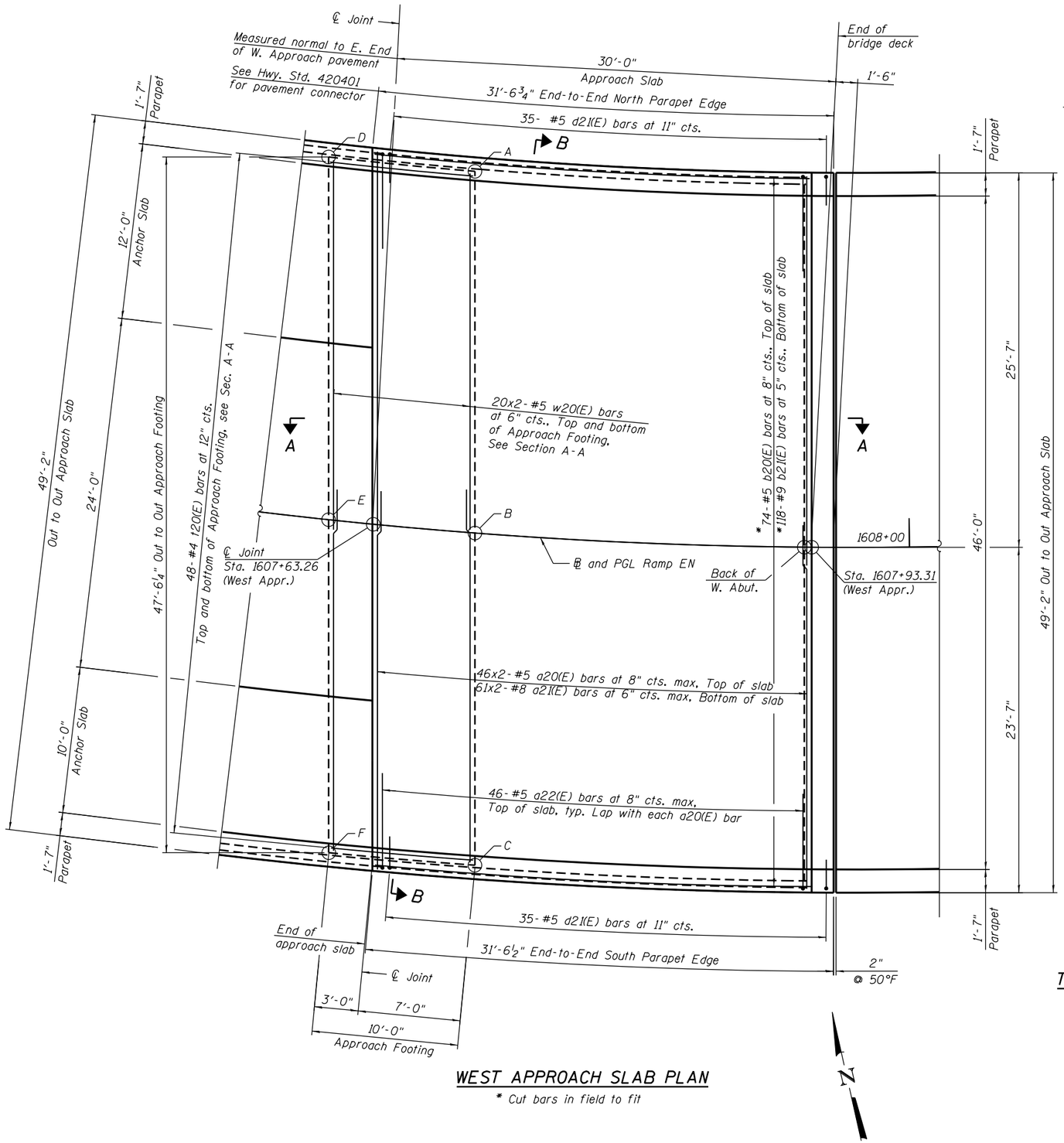
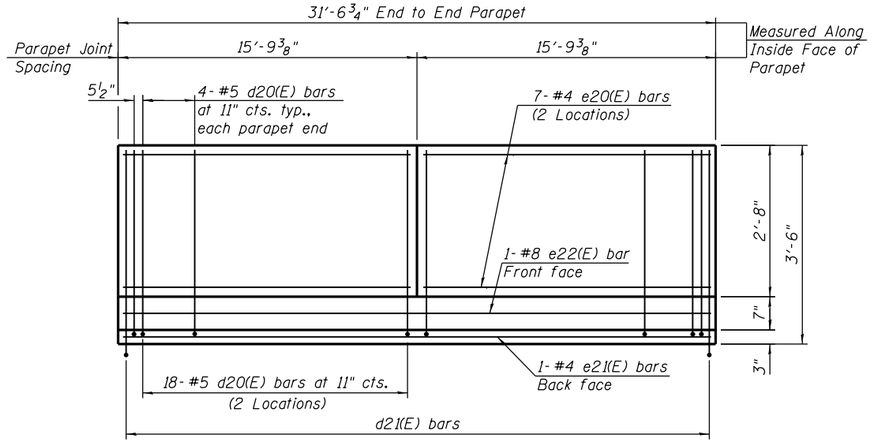


WEST APPROACH SLAB PLAN

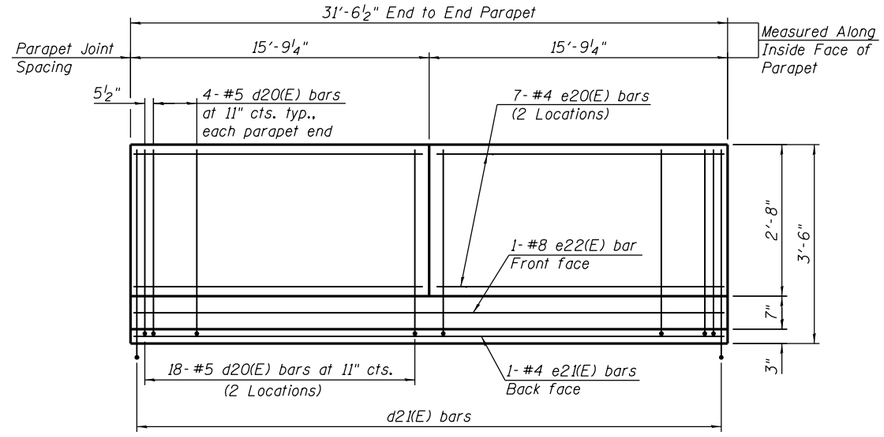
* Cut bars in field to fit

NOTE:

1. For Sections A-A and B-B, see Sheet S2-26



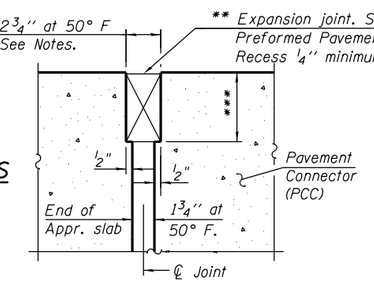
INSIDE ELEVATION OF NORTH PARAPET



INSIDE ELEVATION OF SOUTH PARAPET

TOP AND BOTTOM ELEVATIONS FOR APPROACH FOOTING

	West Approach	
Point	Top	Bottom
A	593.95	591.86
B	595.44	593.35
C	596.80	594.71
D	593.35	591.26
E	594.88	592.80
F	596.27	594.19



DETAIL A

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

*** Per manufacturer recommendations.

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - SK, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	WEST APPROACH SLAB PLAN STRUCTURE NO. 016-1712	
	CHECKED - MI, LAB	REVISED -			
PLOT SCALE = N.T.S	DRAWN - SK	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-25 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	440
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	ILLINOIS FED. AID PROJECT			

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 CirclePhase_II\000_CAD\008_StructuralStructure_016-1712\016171 2-60X79-S025-West Appr Slab Plan

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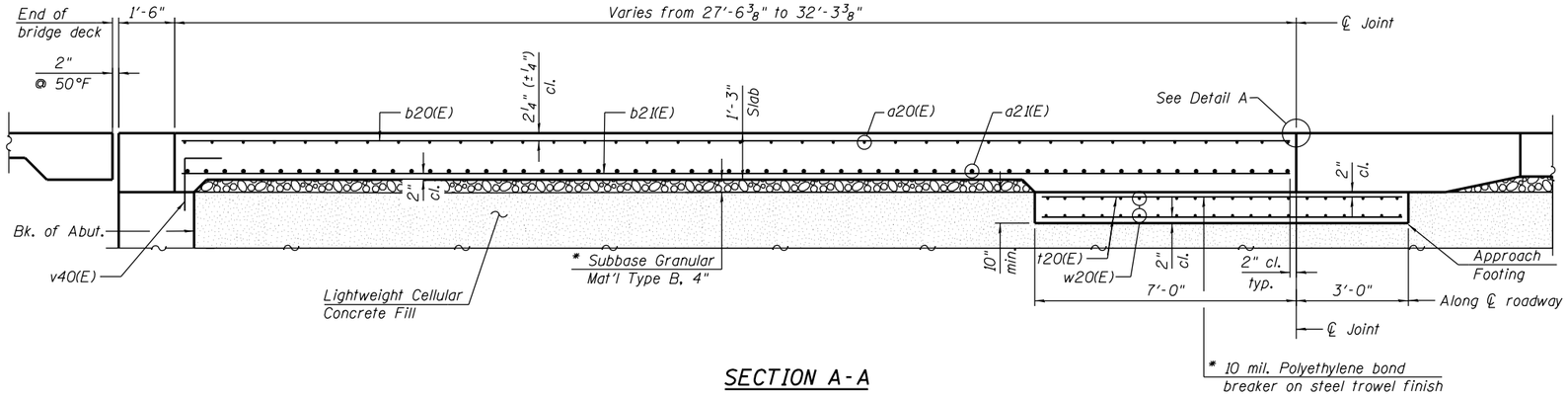
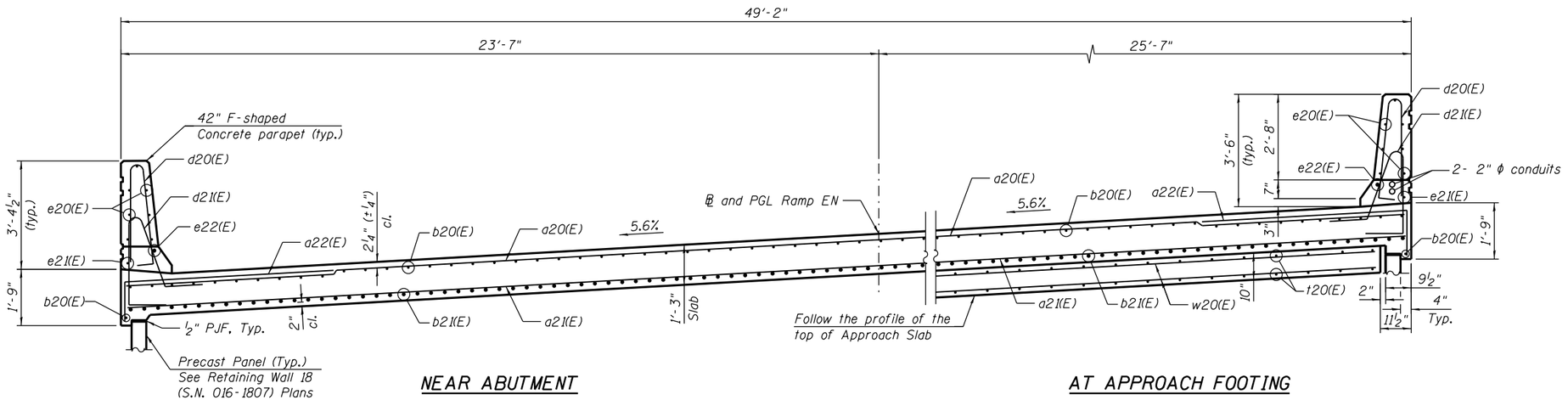


SECTION A-A



NEAR ABUTMENT

AT APPROACH FOOTING

SECTION B-B

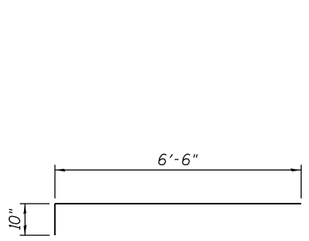
NOTES:

1. For Detail A, see Sheet S2-25.
2. Parapet Concrete shall be paid as Concrete Superstructure.
3. Approach slab concrete shall be paid for as Concrete Superstructure (Approach Slab).
4. Approach footing concrete shall be paid as Concrete Structures.
5. Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
6. For v40(E) bar details, see Sheet S2-44.
7. The approach footing maximum applied bearing pressure (Qmax) = 2.0 ksf.
8. For bar splicer details, see Sheet S2-54.
9. For Lightweight Cellular Concrete Fill and Anchorage Slab Details, see Retaining Wall 18 (S.N. 016-1807) plans.

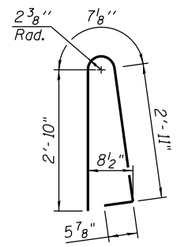
* Cost included with Concrete Superstructure (Approach Slab).

WEST APPROACH BILL OF MATERIAL

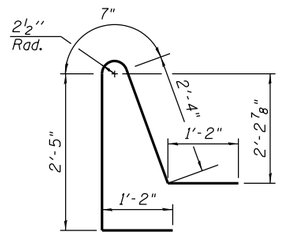
Bar	No.	Size	Length	Shape
a20(E)	92	#5	25'-11"	
a21(E)	122	#8	27'-10"	
a22(E)	92	#5	7'-4"	
b20(E)	74	#5	29'-8"	
b21(E)	118	#9	29'-8"	
d20(E)	88	#5	6'-10"	
d21(E)	70	#5	7'-8"	
e20(E)	28	#4	15'-5"	
e21(E)	2	#4	31'-3"	
e22(E)	2	#8	31'-3"	
t20(E)	96	#4	9'-8"	
w20(E)	80	#5	25'-0"	
Concrete Structures		Cu. Yd.	14.3	
Concrete Superstructure		Cu. Yd.	7.7	
Bridge Deck Grooving (Longitudinal)		Sq. Yd.	146	
Protective Coat		Sq. Yd.	188	
Concrete Superstructure (Approach Slab)		Cu. Yd.	81.4	
Reinforcement Bars, Epoxy Coated		Pound	30,840	



BAR a22(E)



BAR d20(E)



BAR d21(E)

Minimum Bar Laps	
Bar	Lap
#5	3'-0"
#8	6'-9"

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - SK, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	WEST APPROACH SLAB DETAILS STRUCTURE NO. 016-1712	
	CHECKED - MI, LAB	REVISED -			
PLOT SCALE = N.T.S	DRAWN - SK	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-26 OF S2-63 SHEETS	

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

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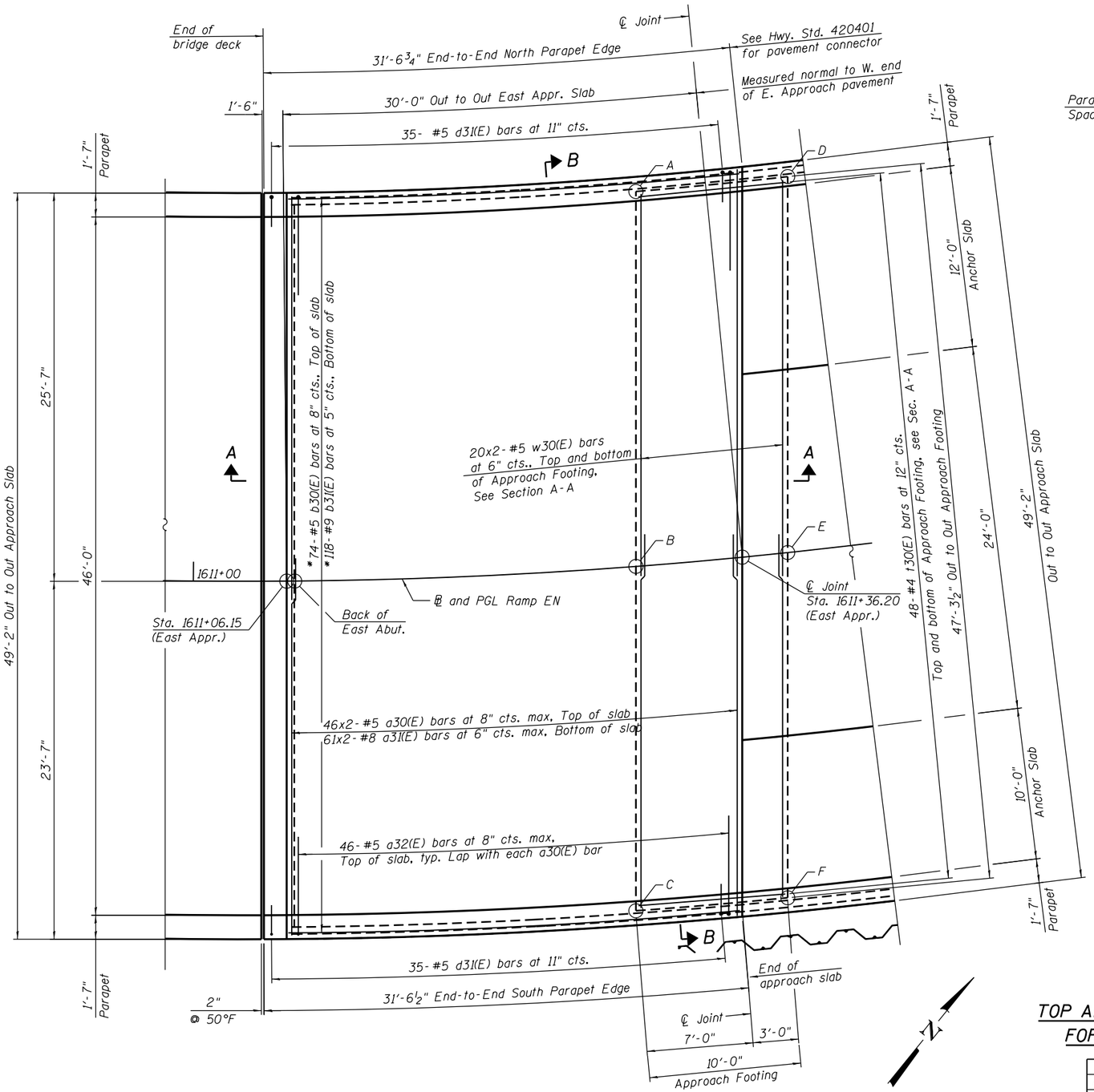
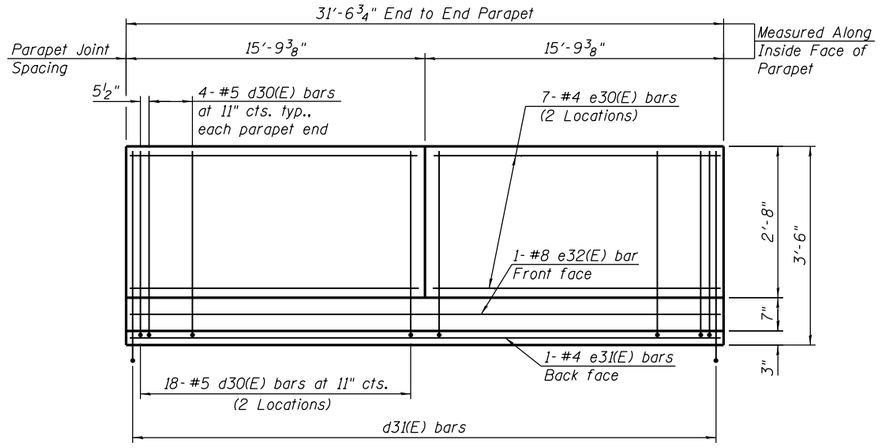


EAST APPROACH SLAB PLAN

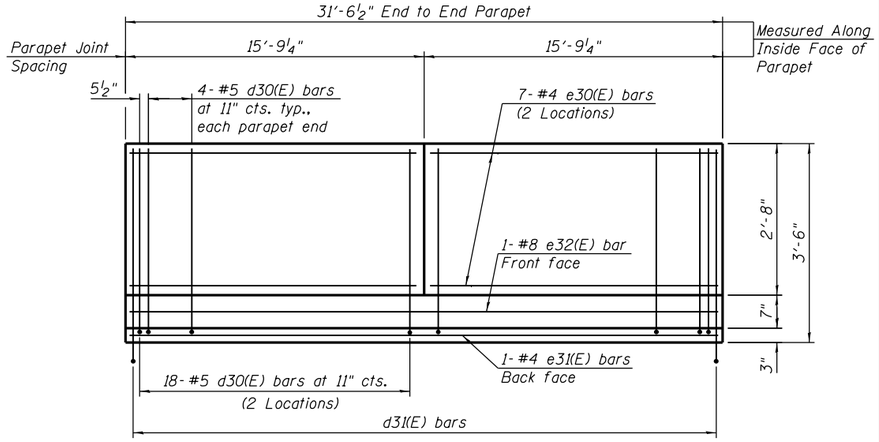
* Cut bars in field to fit.

NOTE:

1. For Sections A-A and B-B, see Sheet S2-28



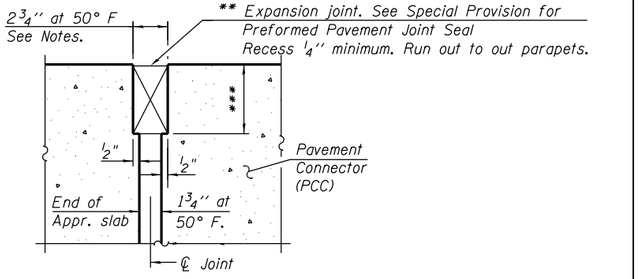
INSIDE ELEVATION OF NORTH PARAPET



INSIDE ELEVATION OF SOUTH PARAPET

TOP AND BOTTOM ELEVATIONS FOR APPROACH FOOTING

	East Approach	
Point	Top	Bottom
A	596.51	594.42
B	597.99	595.91
C	599.34	597.26
D	595.92	593.84
E	597.46	595.37
F	598.85	596.76



DETAIL A

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

*** Per Manufacturer recommendations.

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - SK, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EAST APPROACH SLAB PLAN STRUCTURE NO. 016-1712	
	CHECKED - MI, LAB	REVISED -			
PLOT SCALE = N.T.S	DRAWN - SK	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-27 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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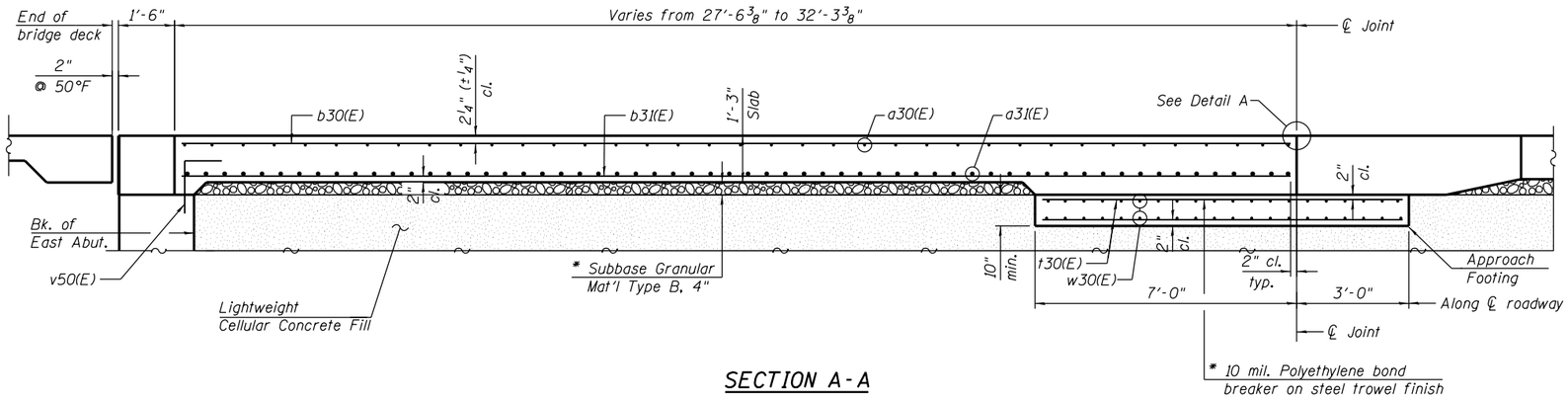
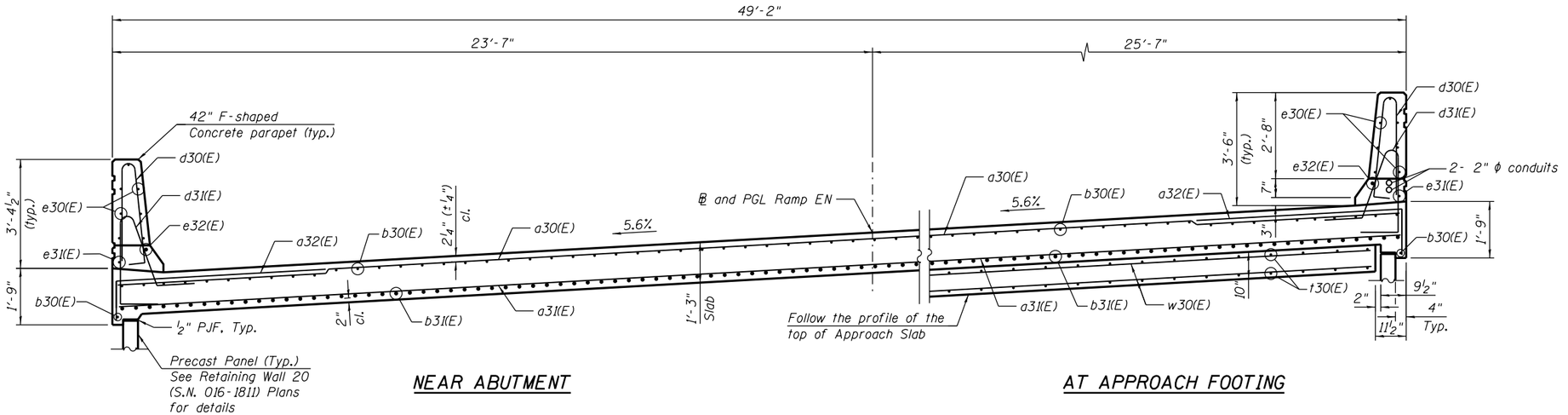


SECTION A-A



NEAR ABUTMENT

AT APPROACH FOOTING

SECTION B-B

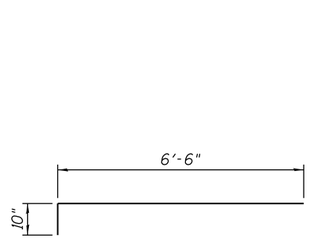
NOTES:

1. For Detail A, see Sheet S2-27.
2. Parapet Concrete shall be paid as Concrete Superstructure.
3. Approach slab concrete shall be paid for as Concrete Superstructure (Approach Slab).
4. Approach footing concrete shall be paid as Concrete Structures.
5. Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
6. For v50(E) bar details, see Sheet S2-46.
7. The approach footing maximum applied bearing pressure (Qmax) = 2.0 ksf.
8. For bar splicer details, see Sheet S2-54.
9. For Lightweight Cellular Concrete Fill and Anchorage Slab details, see Retaining Wall 20 (S.N. 016-1811) plans.

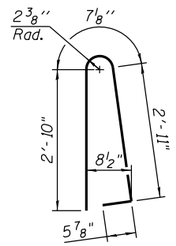
* Cost included with Concrete Superstructure (Approach Slab).

EAST APPROACH BILL OF MATERIAL

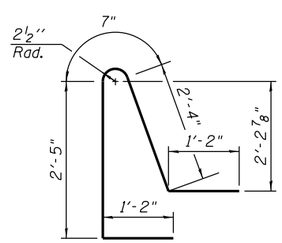
Bar	No.	Size	Length	Shape
a30(E)	92	#5	25'-11"	
a31(E)	122	#8	27'-10"	
a32(E)	92	#5	7'-4"	
b30(E)	74	#5	29'-8"	
b31(E)	118	#9	29'-8"	
d30(E)	88	#5	6'-10"	
d31(E)	70	#5	7'-8"	
e30(E)	28	#4	15'-5"	
e31(E)	2	#4	31'-3"	
e32(E)	2	#8	31'-3"	
t30(E)	96	#4	9'-8"	
w30(E)	80	#5	25'-0"	
Concrete Structures		Cu. Yd.	14.3	
Concrete Superstructure		Cu. Yd.	7.7	
Bridge Deck Grooving (Longitudinal)		Sq. Yd.	146	
Protective Coat		Sq. Yd.	188	
Concrete Superstructure (Approach Slab)		Cu. Yd.	81.4	
Reinforcement Bars, Epoxy Coated		Pound	30,840	



BAR a32(E)



BAR d30(E)



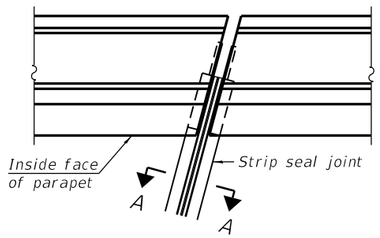
BAR d31(E)

Minimum Bar Laps	
Bar	Lap
#5	3'-0"
#8	6'-9"

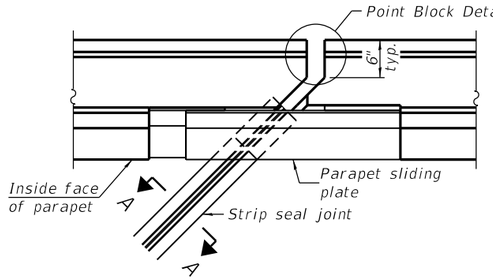
HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - SK, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EAST APPROACH SLAB DETAILS STRUCTURE NO. 016-1712	
	CHECKED - MI, LAB	REVISED -			
PLOT SCALE = N.T.S	DRAWN - SK	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-28 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	443
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

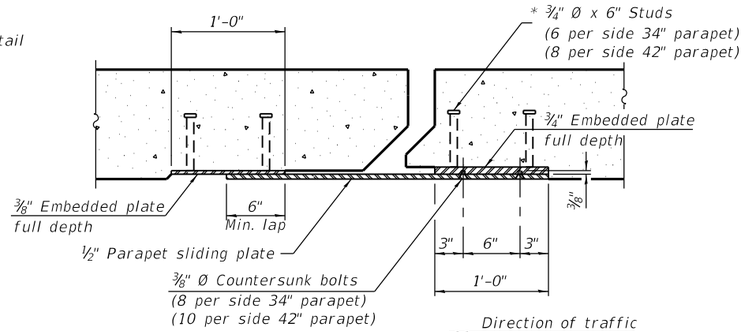


FOR SKEWS ≤ 30°



FOR SKEWS > 30°

PLAN AT PARAPET



SECTION B-B

Notes:

The strip seal shall be made continuous and shall have a minimum thickness of ¼". 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 configured for typical applications and are conceptual only. The actual configuration of the locking edge rails and matching strip seal may vary from manufacturer to manufacturer provided they fit the application and meet the minimum anchorage shown. Flanged edge rails, however, will not be allowed. Locking edge rails may exceed the 4½" maximum depth provided the anchorage system is revised according to the manufacturer's recommendation.

The manufacturer's recommended installation methods shall be followed.

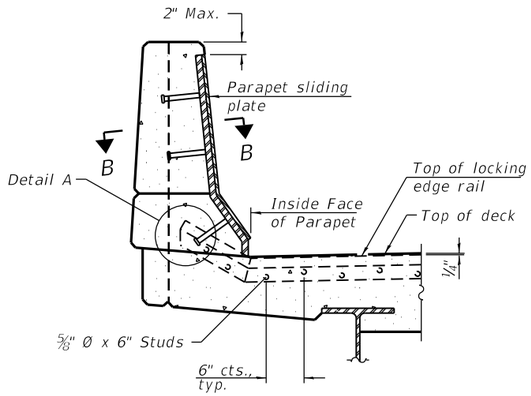
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

The Maximum space between locking edge rail segments shall be 3/16" and sealed with a suitable sealant; however, any rail joint within 10' measured perpendicular to the face of the curb or parapet shall be welded as shown in the locking edge rail splice detail.

Cost of parapet sliding plates, embedded plates, and anchorage studs included with Preformed Joint Strip Seal.

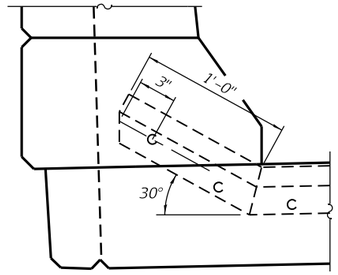
34" F-shape barrier shown, 42" F-shape similar as noted.

The concrete opening below the strip seal will vary based on the locking edge rail chosen by the Contractor. Deck and parapet lengths shown elsewhere in the plans are dimensioned to the concrete opening, not the joint opening, and are based on the rolled locking edge rail. If the Contractor elects to use a different locking edge rail, dimensional adjustments may be required. One exception to this would be the strip seal joint at the end of the precast bridge approach slab. For these cases the pavement connector length shall be adjusted, not the length of the bridge approach slab.

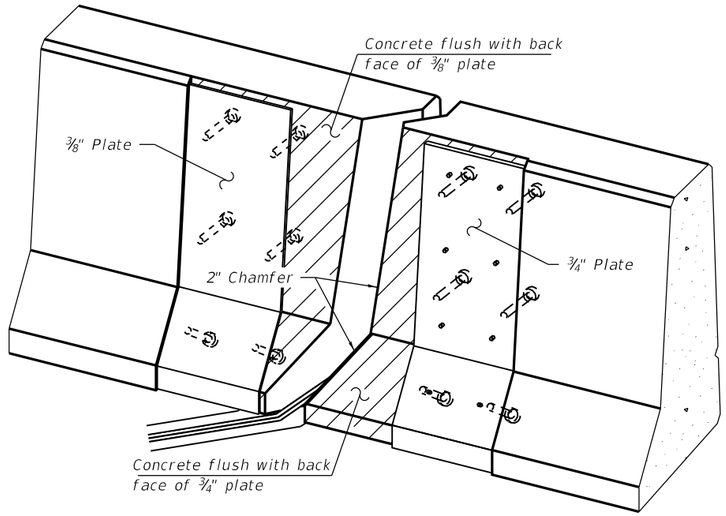


ELEVATION AT PARAPET

(Skews > 30° shown. Skews ≤ 30° similar except as shown in plan view.)

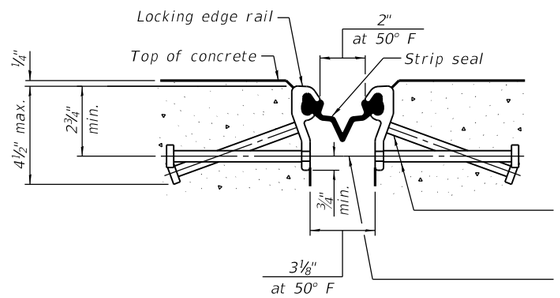


DETAIL A



TRIMETRIC VIEW

(Showing embedded plates only)



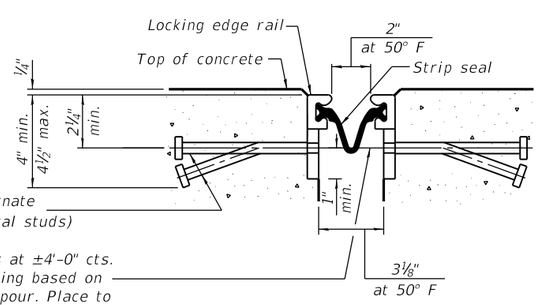
SHOWING ROLLED RAIL JOINT

* ⅝" Ø x 6" studs @ 6" cts. (alternate angled/bent studs with horizontal studs)

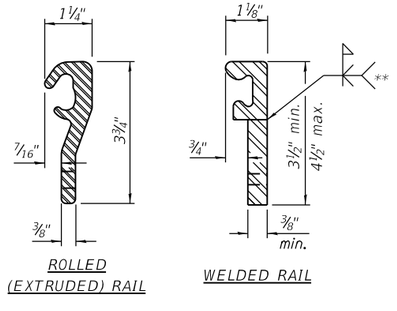
⅜" ϕ threaded rods in 7/16" ϕ holes at ±4'-0" cts. for holding the proper joint opening based on the temperature during the deck pour. Place to miss studs. All rods shall be burned, or sawed off flush with the plates after concrete is set.

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 RAIL SPLICE

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

LOCKING EDGE RAILS

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

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	99

EJ-SS

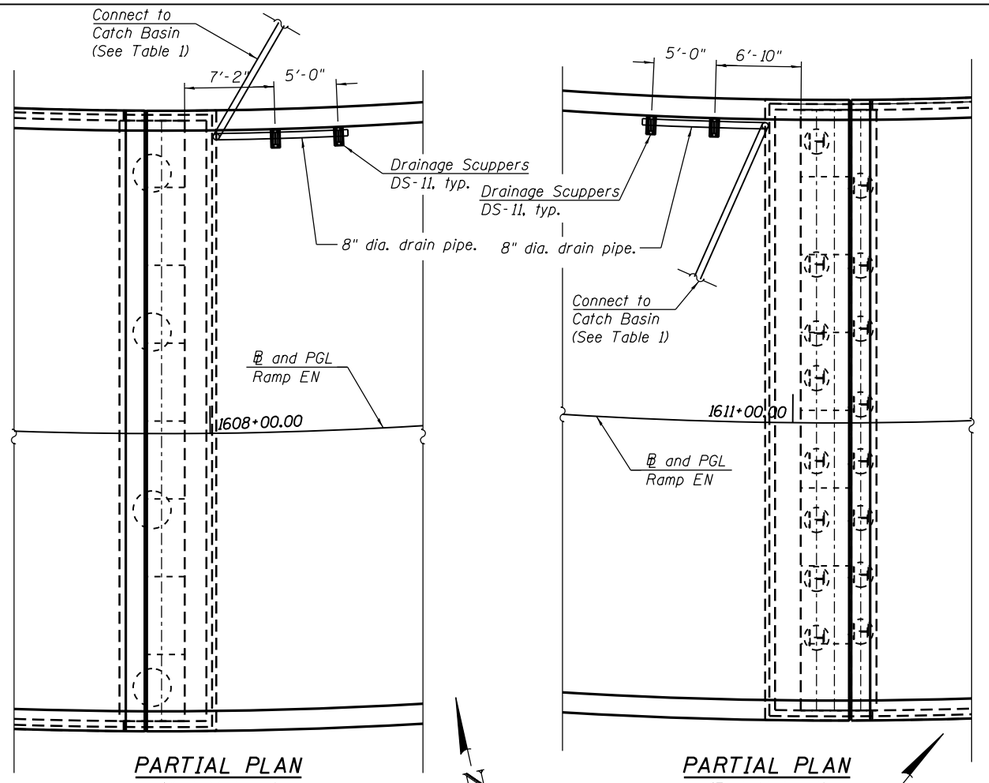
8-11-17

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - SK, JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXPANSION JOINT DETAILS STRUCTURE NO. 016-1712
		CHECKED - MI, LAB	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - JJS	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-29 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	444
			CONTRACT NO. 60X79	
		ILLINOIS	FED. AID PROJECT	

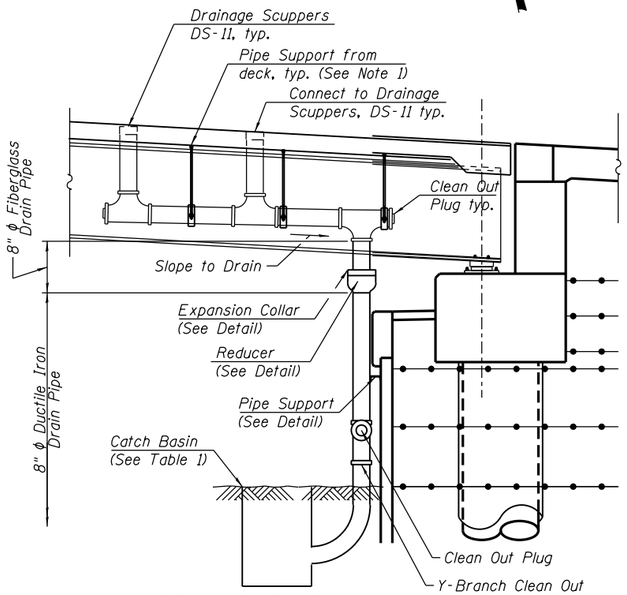
FILE NAME: pw:\617479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1712\016171 2-60X79-S029-Expjoint

8:33:51 AM

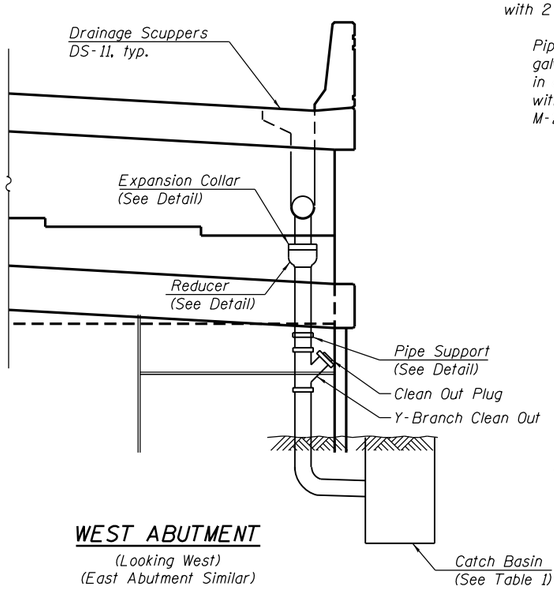


PARTIAL PLAN
(West Abutment)

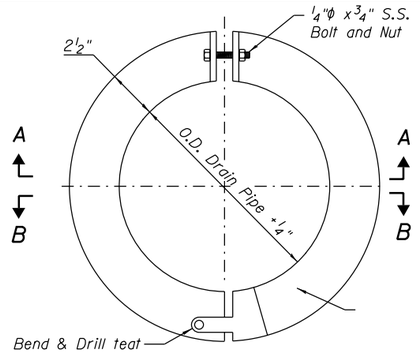
PARTIAL PLAN
(East Abutment)

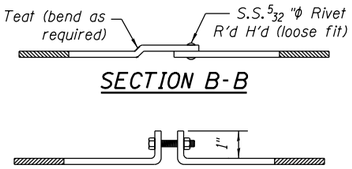


PARTIAL ELEVATION
(West Abutment Looking South)
(East Abutment Similar)



WEST ABUTMENT
(Looking West)
(East Abutment Similar)

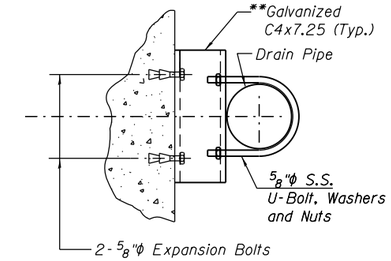




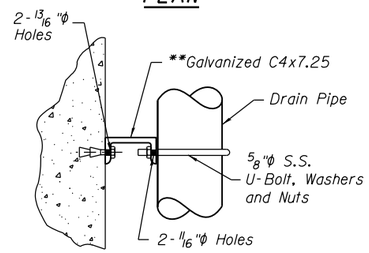
SECTION B-B

SECTION A-A

DETAIL OF EXPANSION COLLAR



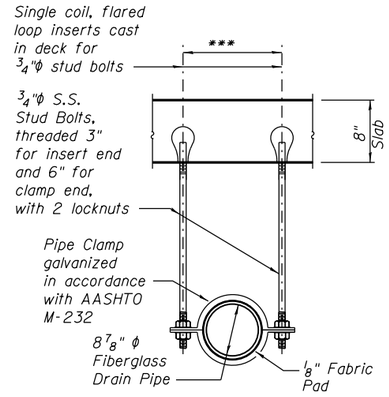
PLAN



ELEVATION

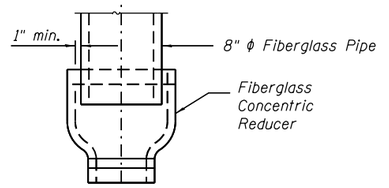
PIPE SUPPORT DETAIL

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



PIPE SUPPORT DETAIL

*** Dimension as required by Pipe Clamp



REDUCER DETAIL

TABLE 1

Catch Basin Location	Drainage Structure Number
West Abut.	ES301
East Abut.	ES305

SCUPPER LOCATION TABLE

Station	Offset
1608+05.83	24.00' LT
1608+11.21	24.00' LT
1610+87.71	24.00' LT
1610+93.09	24.00' LT

NOTES:

1. Provide structural support from proposed deck slab for drain pipe per manufacturer's recommendation, not to exceed 5' 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 S2-31 .

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Drainage System	L. Sum	0.80

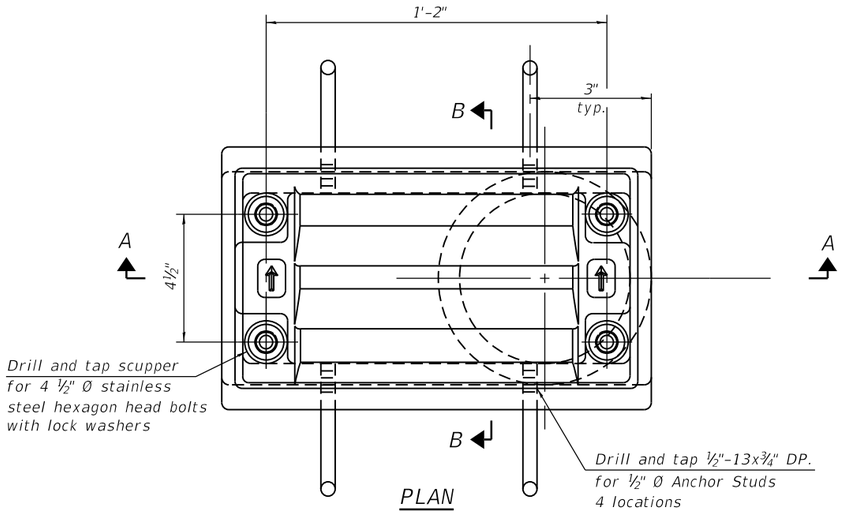
HBM ENGINEERING GROUP, LLC

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

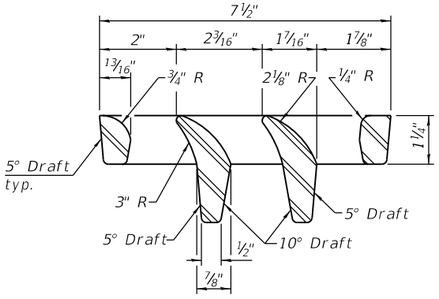
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BRIDGE DRAINAGE SYSTEM
STRUCTURE NO. 016-1712
SHEET NO. S2-30 OF S2-63 SHEETS

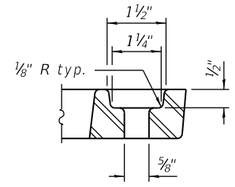
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	445
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



PLAN



VANE GRATE DETAIL



BOLT HOLE DETAIL

Notes:

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

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

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

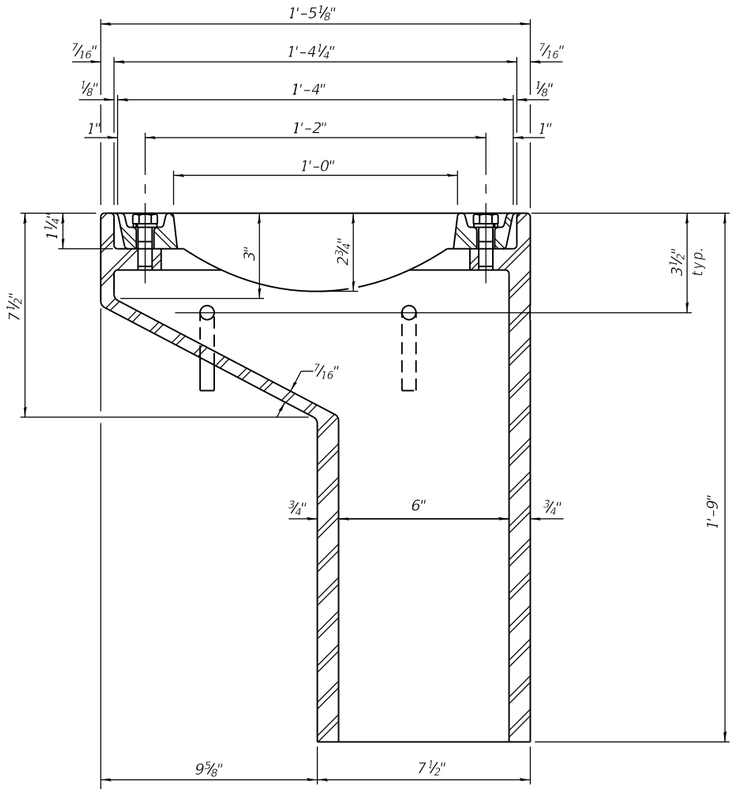
As an alternate, bolts, anchor studs, washers and nuts may be stainless steel according to Article 1006.29(d) of the Standard Specifications.

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

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

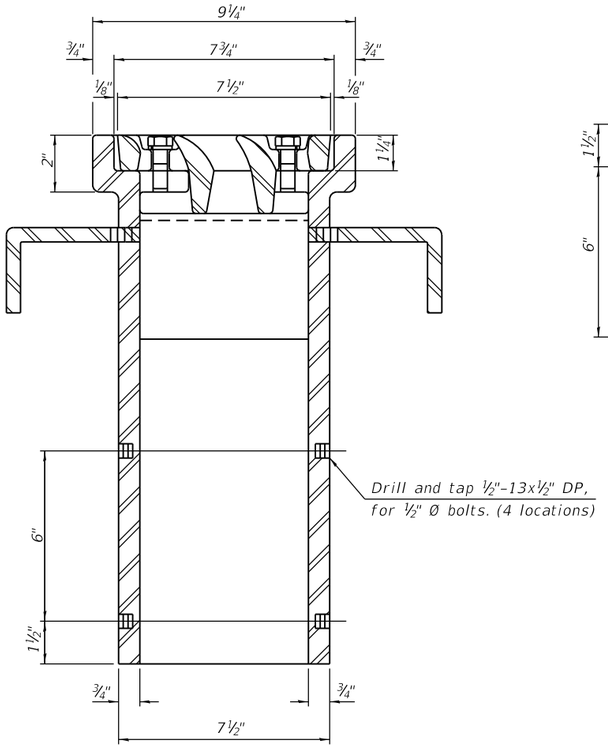
Cost of the Grate, Frame, Downspout, Anchor Studs, Bolts, Washers and Nuts including complete installation of the scupper shall be paid for at the contract unit price each for Drainage Scupper, DS-11.

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

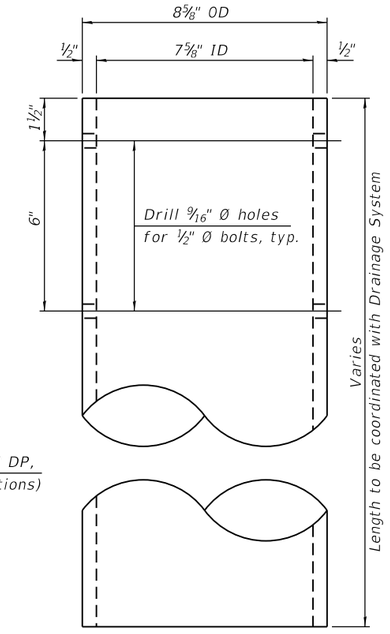


SECTION A-A

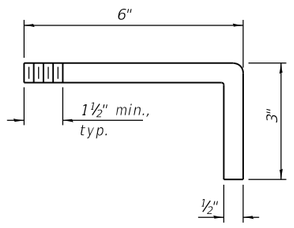
See Sheet S2-30 for scupper location relative to parapet.



SECTION B-B



DOWNSPOUT



ANCHOR STUD DETAIL

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Drainage Scupper, DS-11	Each	4

DS-11

2-17-2017

HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE SCUPPER, DS-11
STRUCTURE NO. 016-1712
SHEET NO. S2-31 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	446
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

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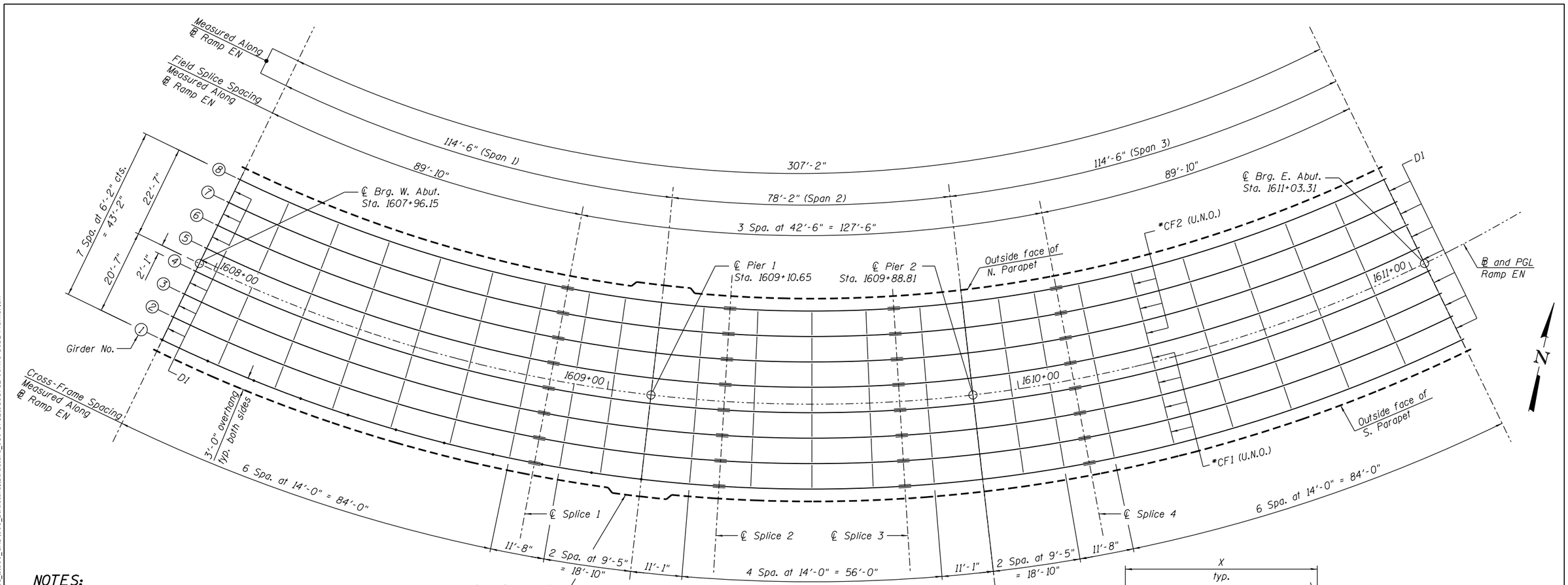
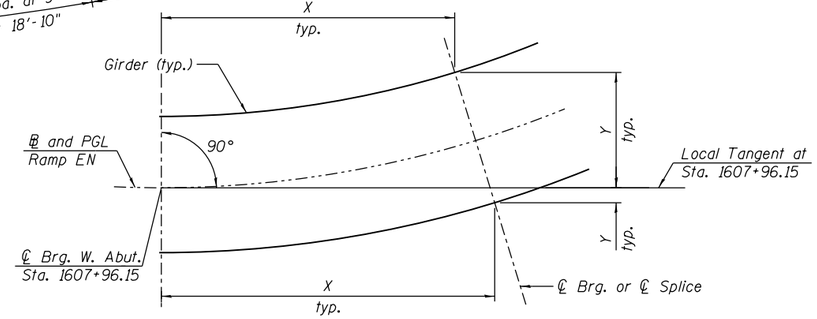


GIRDER FRAMING PLAN



CURVED GIRDER LAYOUT

(X Measured along Local Tangent)

NOTES:

1. For Girder Elevation, and flange stiffener and girder dimensions, see Sheet S2-33 .
2. For camber and top of web elevations, see Sheet S2-34.
3. For moment and reaction tables, see Sheet S2-35.
4. For end diaphragms and cross frames, see Sheet S2-36.
5. For girder bolted field splice details, see Sheet S2-37.
6. Girder spacings, and cross frame and diaphragm orientations, are radial to the ℄ Ramp EN.
7. All structural steel shall be AASHTO M270 Grade 50.
8. 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.

* Cross Frame CF1 are between Girders 1-2, 2-3, 3-4 and 4-5, all spans.
Cross Frame CF2 are between Girders 5-6, 6-7 and 7-8, all spans.

GIRDER COORDINATES

(All Dimensions in Feet)

Girder	℄ Brg. W. Abutment		℄ Splice 1		℄ Pier 1		℄ Splice 2		℄ Splice 3		℄ Pier 2		℄ Splice 4		℄ Brg. E. Abutment	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
1	0.000	-20.582	94.167	-8.070	119.149	-0.329	136.828	6.386	177.354	26.048	193.569	35.778	215.112	50.609	283.222	116.828
2	0.000	-14.414	92.557	-2.118	117.112	5.491	134.488	12.091	174.321	31.417	190.259	40.980	211.433	55.558	278.378	120.645
3	0.000	-8.248	90.946	3.835	115.074	11.312	132.148	17.797	171.288	36.786	186.949	46.183	207.754	60.507	273.535	124.462
4	0.000	-2.082	89.336	9.788	113.036	17.132	129.808	23.502	168.254	42.155	183.638	51.386	204.075	65.456	268.691	128.278
5	0.000	4.085	87.725	15.740	110.999	22.952	127.468	29.208	165.221	47.525	180.328	56.589	200.397	70.405	263.848	132.095
6	0.000	10.252	86.115	21.693	108.961	28.773	125.128	34.913	162.188	52.894	177.017	61.792	196.718	75.355	259.004	135.912
7	0.000	16.418	84.505	27.646	106.923	34.593	122.788	40.618	159.155	58.263	173.707	66.943	193.039	80.304	254.160	139.728
8	0.000	22.585	82.894	33.598	104.886	40.413	120.448	46.324	156.122	63.632	170.397	72.197	189.360	85.253	249.317	143.545

HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN
STRUCTURE NO. 016-1712
SHEET NO. S2-32 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	447
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

FILE NAME: pw:\\617479-PWINT.aecomonline.local\AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 CircletPhase_II\000_CAD\008_StructuralStructure_016-1712\016171712-60X79-S032-FramePlan
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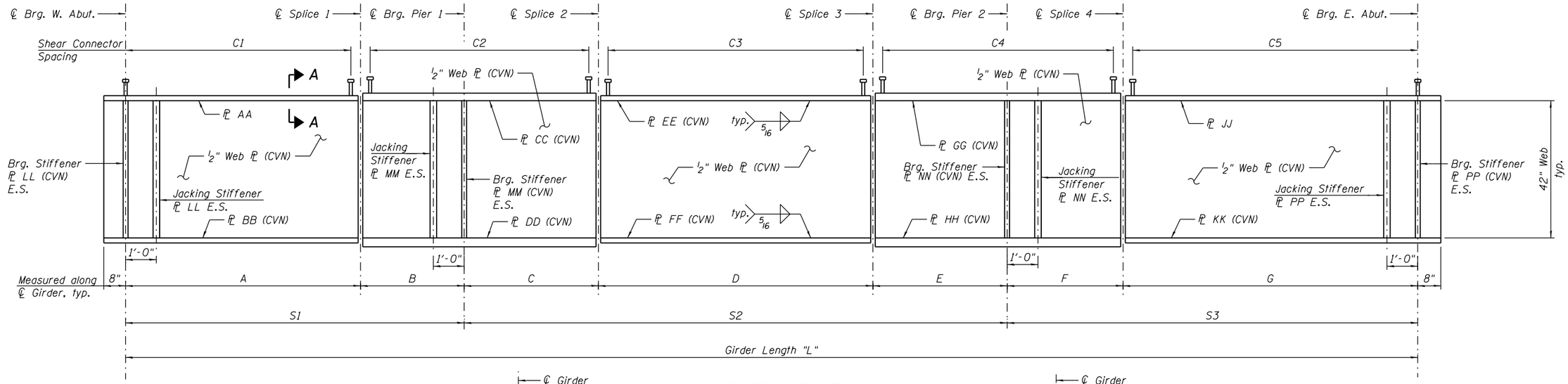
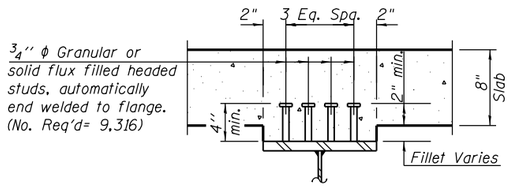
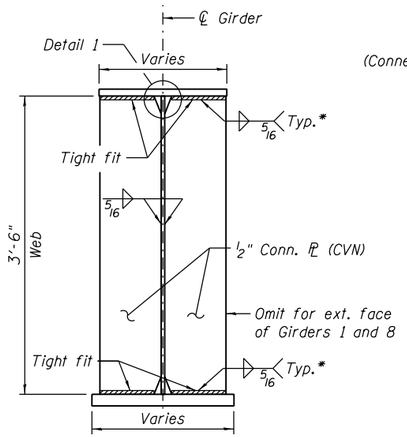


GIRDER ELEVATION

(Connection and splice ℄s not shown for clarity)

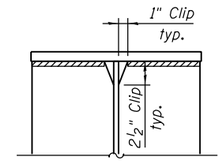


SECTION A-A



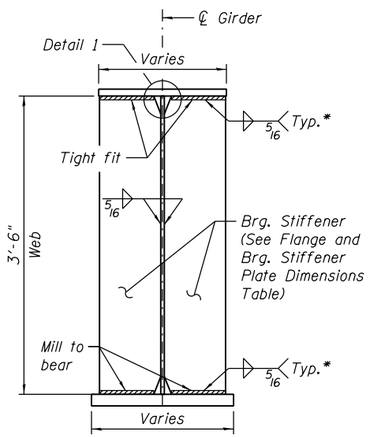
CONNECTION PLATE DETAIL

(No. Req'd = 294)



DETAIL 1

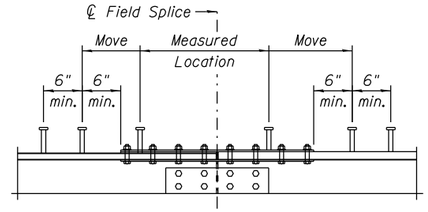
(Typical at top & bottom flanges)



BEARING STIFFENER DETAIL

(No. Req'd = 64)

* Terminate weld ¼" from edges of stiffener ℄



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.

FLANGE AND BRG. STIFFENER PLATE DIMENSIONS

Girder	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP
1, 2, 3	1"x16"	1 ⅞"x20"	1 ½"x20"	2 ⅛"x22"	1 ½"x20"	1 ½"x18"	1 ½"x20"	2 ⅛"x22"	1"x16"	1 ⅞"x20"	¾"x7 ½"	1"x9 ½"	1"x9 ½"	¾"x7 ½"
4, 5, 6, 7, 8	1"x16"	1"x16"	1"x16"	1 ¼"x18"	1"x16"	1"x16"	1"x16"	1 ¼"x18"	1"x16"	1"x16"	¾"x7 ½"	1"x7 ½"	1"x7 ½"	¾"x7 ½"

GIRDER DIMENSIONS

(All dimensions in feet unless otherwise noted)

Girder	Radius	L*	S1	S2	S3	A	B	C	D	E	F	G	C1	C2	C3	C4	C5
1	360.583	325.762	121.432	82.899	121.432	95.272	26.160	18.913	45.073	18.913	26.160	95.272	140 Spa. @ 8"	62 Spa. @ 8"	41 Spa. @ 12"	62 Spa. @ 8"	140 Spa. @ 8"
2	354.417	320.191	119.355	81.481	119.355	93.642	25.713	18.589	44.302	18.589	25.713	93.642	74 Spa. @ 15"	33 Spa. @ 15"	27 Spa. @ 18"	33 Spa. @ 15"	74 Spa. @ 15"
3	348.250	314.620	117.278	80.063	117.278	92.013	25.265	18.266	43.531	18.266	25.265	92.013	91 Spa. @ 12"	40 Spa. @ 12"	30 Spa. @ 16"	40 Spa. @ 12"	91 Spa. @ 12"
4	342.083	309.049	115.202	78.646	115.202	90.384	24.818	17.943	42.760	17.943	24.818	90.384	67 Spa. @ 16"	30 Spa. @ 16"	30 Spa. @ 16"	30 Spa. @ 16"	67 Spa. @ 16"
5	335.917	303.478	113.125	77.228	113.125	88.754	24.370	17.619	41.990	17.619	24.370	88.754	88 Spa. @ 12"	39 Spa. @ 12"	37 Spa. @ 13"	39 Spa. @ 12"	88 Spa. @ 12"
6	329.750	297.906	111.048	75.810	111.048	87.125	23.923	17.296	41.219	17.296	23.923	87.125	86 Spa. @ 12"	39 Spa. @ 12"	36 Spa. @ 13"	39 Spa. @ 12"	86 Spa. @ 12"
7	323.583	292.335	108.971	74.392	108.971	85.496	23.476	16.972	40.448	16.972	23.476	85.496	84 Spa. @ 12"	38 Spa. @ 12"	35 Spa. @ 13"	38 Spa. @ 12"	84 Spa. @ 12"
8	317.417	286.764	106.895	72.975	106.895	83.866	23.028	16.649	39.677	16.649	23.028	83.866	66 Spa. @ 15"	37 Spa. @ 12"	25 Spa. @ 18"	37 Spa. @ 12"	66 Spa. @ 15"

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

NOTES:

1. All structural steel shall be AASHTO M270 Grade 50.
2. "CVN" denotes Charpy-V-Notch Impact Energy Requirements, Zone 2.

HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER ELEVATION
STRUCTURE NO. 016-1712
SHEET NO. S2-33 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	448
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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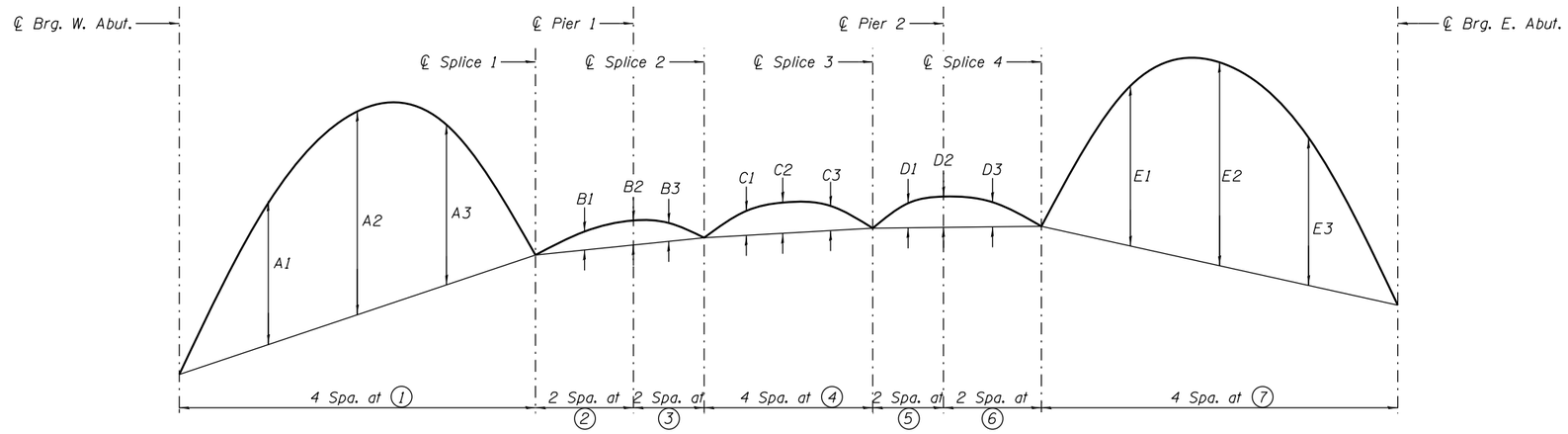

CAMBER DIAGRAM

TOP OF WEB ELEVATIONS*								
Girder	℄ Brg. W. Abut	℄ Splice 1	℄ Brg. Pier 1	℄ Splice 2	℄ Splice 3	℄ Brg. Pier 2	℄ Splice 4	℄ Brg. E. Abut
1	597.15	601.19	601.61	601.74	602.06	602.21	602.16	599.49
2	596.80	600.82	601.26	601.41	601.74	601.86	601.79	599.14
3	596.46	600.45	600.92	601.08	601.40	601.51	601.43	598.80
4	596.11	600.14	600.61	600.80	601.12	601.21	601.11	598.45
5	595.77	599.78	600.27	600.46	600.78	600.87	600.76	598.11
6	595.42	599.43	599.92	600.12	600.44	600.52	600.41	597.76
7	595.07	599.07	599.58	599.77	600.10	600.18	600.05	597.42
8	594.73	598.72	599.23	599.43	599.76	599.83	599.69	597.07

*For fabrication use only.

CAMBER ORDINATES														
Girder	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3
1	6 1/4"	8 3/4"	7"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	7"	9"	6 1/4"
2	6"	8 1/2"	6 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	6 1/2"	8 1/2"	6"
3	5 3/4"	8"	6 1/2"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	6 1/2"	8 1/4"	5 3/4"
4	5 1/2"	7 3/4"	6"	0 3/4"	1"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1"	0 3/4"	6"	7 3/4"	5 1/2"
5	5 1/4"	7 1/2"	5 3/4"	0 3/4"	1"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1"	0 3/4"	6"	7 1/2"	5 1/2"
6	5 1/4"	7 1/2"	5 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	5 3/4"	7 1/2"	5 1/2"
7	5 1/4"	7 1/4"	5 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	5 3/4"	7 1/4"	5 1/4"
8	5"	7"	5 1/2"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	0 3/4"	1 1/4"	0 3/4"	5 1/2"	7"	5 1/4"

	4 Spaces @	2 Spaces @	2 Spaces @	4 Spaces @	2 Spaces @	2 Spaces @	4 Spaces @
Girder	①	②	③	④	⑤	⑥	⑦
1	23.818	13.080	9.456	11.268	9.456	13.080	23.818
2	23.411	12.856	9.295	11.076	9.295	12.856	23.411
3	23.003	12.633	9.133	10.883	9.133	12.633	23.003
4	22.596	12.409	8.971	10.690	8.971	12.409	22.596
5	22.189	12.185	8.810	10.497	8.810	12.185	22.189
6	21.781	11.962	8.648	10.305	8.648	11.962	21.781
7	21.374	11.738	8.486	10.112	8.486	11.738	21.374
8	20.967	11.514	8.324	9.919	8.324	11.514	20.967

*For fabrication use only.

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HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER CAMBER AND TOP OF WEB ELEVATIONS
STRUCTURE NO. 016-1712
SHEET NO. S2-34 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	449
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

EXTERIOR GIRDER 1 MOMENT TABLE						
		0.4 Sp. 1	*Pier 1	0.5 Sp. 2	*Pier 2	0.6 Sp. 3
Is	(in^4)	25,467	38,589	30,008	38,589	25,467
Ic(n)	(in^4)	64,622	–	–	–	64,622
Ic(3n)	(in^4)	44,881	–	–	–	44,881
Ic(cr)	(in^4)	–	44,097	33,870	44,097	–
Ss	(in^3)	1,548	1,463	1,286	1,463	1,548
Sc(n)	(in^3)	1,989	–	–	–	1,989
Sc(3n)	(in^3)	1,837	–	–	–	1,837
Sc(cr)	(in^3)	–	1,799	1,340	1,799	–
Sxc	(in^3)	1,835	1,700	1,328	1,700	1,835
DC1	(k/')	1.00	1.09	1.00	1.09	1.00
MDC1	('k)	1,553	1,441	903	1,439	1,551
DC2	(k/')	0.39	0.39	0.39	0.39	0.39
MDC2	('k)	357	473	188	468	358
DW	(k/')	0.23	0.23	0.23	0.23	0.23
MDW	('k)	401	405	288	406	402
M_{L+IM}	('k)	1,917	1,829	1,062	1,830	1,923
fℓ (Strength I)	(ksi)	1.54	1.59	6.70	1.59	1.54
Mu + ⅓fℓ Sxc	('k)	7,286	7,102	6,621	7,096	7,297
Øf Mn	('k)	–	–	–	–	–
fs DC1	(ksi)	12.04	11.82	8.43	11.80	12.02
fs DC2	(ksi)	2.33	3.15	1.68	3.12	2.34
fs DW	(ksi)	2.62	2.70	2.58	2.71	2.63
fs (L+IM)	(ksi)	11.57	12.20	9.51	12.21	11.60
fℓ (Service II)	(ksi)	1.17	1.27	5.07	1.27	1.17
fs+ $f_f/_2$ (Service II)	(ksi)	32.61	34.17	27.59	34.14	32.66
0.95Rh Fyf	(ksi)	47.50	47.50	47.50	47.50	47.50
fs + $f_f/_3$ (Total)(Strength I)	(ksi)	42.65	44.65	35.39	44.61	42.71
Øf Fn	(ksi)	50.00	50.00	50.00	50.00	50.00
Vf	(k)	52.47	70.84	38.30	76.19	52.61

*Top Flange Stress controls

INTERIOR GIRDER 2 MOMENT TABLE						
		0.4 Sp. 1	*Pier 1	0.5 Sp. 2	*Pier 2	0.6 Sp. 3
Is	(in^4)	25,467	38,589	30,008	38,589	25,467
Ic(n)	(in^4)	64,894	–	–	–	64,894
Ic(3n)	(in^4)	45,082	–	–	–	45,082
Ic(cr)	(in^4)	–	44,167	33,919	44,167	–
Ss	(in^3)	1,548	1,463	1,286	1,463	1,548
Sc(n)	(in^3)	1,990	–	–	–	1,990
Sc(3n)	(in^3)	1,839	–	–	–	1,839
Sc(cr)	(in^3)	–	1,804	1,340	1,804	–
Sxc	(in^3)	1,853	1,695	1,331	1,695	1,853
DC1	(k/')	0.93	1.01	0.93	1.01	0.93
MDC1	('k)	1,415	1,551	746	1,553	1,417
DC2	(k/')	0.13	0.13	0.13	0.13	0.13
MDC2	('k)	167	296	141	302	167
DW	(k/')	0.31	0.31	0.31	0.31	0.31
MDW	('k)	390	498	228	499	389
M_{L+IM}	('k)	1,450	1,520	726	1,520	1,444
fℓ (Strength I)	(ksi)	1.22	1.65	4.96	1.65	1.22
Mu + ⅓fℓ Sxc	('k)	5,854	6,648	4,922	6,660	5,844
Øf Mn	('k)	–	–	–	–	–
fs DC1	(ksi)	10.97	12.72	6.96	12.74	10.98
fs DC2	(ksi)	1.09	1.97	1.26	2.01	1.09
fs DW	(ksi)	2.54	3.31	2.04	3.32	2.54
fs (L+IM)	(ksi)	8.74	10.11	6.50	10.11	8.71
fℓ (Service II)	(ksi)	0.92	1.32	3.76	1.32	0.92
fs+ $f_f/_2$ (Service II)	(ksi)	26.43	31.81	20.59	31.87	26.39
0.95Rh Fyf	(ksi)	47.50	47.50	47.50	47.50	47.50
fs + $f_f/_3$ (Total)(Strength I)	(ksi)	34.60	41.58	26.37	41.66	34.54
Øf Fn	(ksi)	50.00	50.00	50.00	50.00	50.00
Vf	(k)	32.00	50.68	26.36	50.33	31.56

*Top Flange Stress controls

EXTERIOR GIRDER 1 REACTION TABLE					
		W. Abut.	Pier 1	Pier 2	E. Abut.
RDC1	(k)	62.5	88.9	88.6	63.2
RDC2	(k)	17.5	49.4	29.8	17.6
RDW	(k)	15.9	18.5	18.5	16.0
R_{L+IM}	(k)	90.4	124.2	124.2	90.5
RTotal	(k)	186.2	281.0	261.2	187.3

EXTERIOR GIRDER 8 REACTION TABLE					
		W. Abut.	Pier 1	Pier 2	E. Abut.
RDC1	(k)	34.4	105.5	105.8	34.9
RDC2	(k)	11.3	54.5	35.3	11.2
RDW	(k)	8.4	29.3	29.3	8.5
R_{L+IM}	(k)	58.8	120.3	120.8	58.7
RTotal	(k)	112.8	309.6	291.3	113.3

INTERIOR GIRDER 2 REACTION TABLE					
		W. Abut.	Pier 1	Pier 2	E. Abut.
RDC1	(k)	57.2	130.0	130.6	54.3
RDC2	(k)	6.1	15.3	23.6	5.9
RDW	(k)	15.9	38.1	38.1	15.4
R_{L+IM}	(k)	65.9	135.5	137.2	64.9
RTotal	(k)	145.1	318.9	329.5	140.6

INTERIOR GIRDER 6 REACTION TABLE					
		W. Abut.	Pier 1	Pier 2	E. Abut.
RDC1	(k)	35.6	89.5	90.2	35.6
RDC2	(k)	2.7	5.7	3.9	2.7
RDW	(k)	12.0	30.9	31.0	12.1
R_{L+IM}	(k)	71.0	113.4	115.8	71.2
RTotal	(k)	121.3	239.6	240.8	121.6

EXTERIOR GIRDER 8 MOMENT TABLE						
		0.4 Sp. 1	*Pier 1	0.5 Sp. 2	*Pier 2	0.6 Sp. 3
Is	(in^4)	17,882	20,668	17,882	20,668	17,882
Ic(n)	(in^4)	39,028	–	–	–	39,028
Ic(3n)	(in^4)	29,285	–	–	–	29,285
Ic(cr)	(in^4)	–	25,293	21,709	25,293	–
Ss	(in^3)	813	847	813	847	813
Sc(n)	(in^3)	1,053	–	–	–	1,053
Sc(3n)	(in^3)	970	–	–	–	970
Sc(cr)	(in^3)	–	1,169	876	1,169	–
Sxc	(in^3)	979	1,066	871	1,066	980
DC1	(k/')	0.92	0.95	0.92	0.95	0.92
MDC1	('k)	715	900	177	901	708
DC2	(k/')	0.39	0.39	0.39	0.39	0.39
MDC2	('k)	202	267	3	269	199
DW	(k/')	0.23	0.23	0.23	0.23	0.23
MDW	('k)	187	291	88	291	184
M_{L+IM}	('k)	1,027	1,099	421	1,100	1,013
fℓ (Strength I)	(ksi)	1.95	1.90	2.67	1.90	1.95
Mu + ⅓fℓ Sxc	('k)	3,860	4,494	1,869	4,499	3,819
Øf Mn	('k)	–	–	–	–	–
fs DC1	(ksi)	10.56	12.75	2.61	12.76	10.45
fs DC2	(ksi)	2.50	2.74	0.04	2.76	2.46
fs DW	(ksi)	2.31	2.99	1.21	2.99	2.28
fs (L+IM)	(ksi)	11.70	11.28	5.77	11.29	11.54
fℓ (Service II)	(ksi)	1.47	1.52	1.98	1.52	1.47
fs+ $f_f/_2$ (Service II)	(ksi)	31.32	33.91	12.35	33.96	30.93
0.95Rh Fyf	(ksi)	47.50	47.50	47.50	47.50	47.50
fs + $f_f/_3$ (Total)(Strength I)	(ksi)	40.92	44.22	16.11	44.29	40.41
Øf Fn	(ksi)	50.00	50.00	50.00	50.00	50.00
Vf	(k)	31.63	50.91	23.89	48.16	31.59

*Top Flange Stress controls

INTERIOR GIRDER 6 MOMENT TABLE						
		0.4 Sp. 1	*Pier 1	0.5 Sp. 2	*Pier 2	0.6 Sp. 3
Is	(in^4)	17,882	20,668	17,882	20,668	17,882
Ic(n)	(in^4)	39,152	–	–	–	39,152
Ic(3n)	(in^4)	29,392	–	–	–	29,392
Ic(cr)	(in^4)	–	25,350	21,756	25,350	–
Ss	(in^3)	813	847	813	847	813
Sc(n)	(in^3)	1,054	–	–	–	1,054
Sc(3n)	(in^3)	971	–	–	–	971
Sc(cr)	(in^3)	–	1,173	876	1,173	–
Sxc	(in^3)	980	1,071	872	1,071	981
DC1	(k/')	0.85	0.88	0.85	0.88	0.85
MDC1	('k)	725	884	200	886	717
DC2	(k/')	0.00	0.00	0.00	0.00	0.00
MDC2	('k)	77	63	40	64	75
DW	(k/')	0.31	0.31	0.31	0.31	0.31
MDW	('k)	247	343	101	343	243
M_{L+IM}	('k)	948	1,022	410	1,023	933
fℓ (Strength I)	(ksi)	1.96	2.07	2.76	2.07	1.96
Mu + ⅓fℓ Sxc	('k)	3,672	4,226	1,971	4,231	3,628
Øf Mn	('k)	–	–	–	–	–
fs DC1	(ksi)	10.70	12.52	2.95	12.55	10.59
fs DC2	(ksi)	0.95	0.64	0.55	0.65	0.93
fs DW	(ksi)	3.05	3.51	1.38	3.51	3.00
fs (L+IM)	(ksi)	10.79	10.45	5.62	10.46	10.62
fℓ (Service II)	(ksi)	1.48	1.66	2.07	1.66	1.48
fs+ $f_f/_2$ (Service II)	(ksi)	29.48	31.09	13.22	31.14	29.06
0.95Rh Fyf	(ksi)	47.50	47.50	47.50	47.50	47.50
fs + $f_f/_3$ (Total)(Strength I)	(ksi)	38.69	40.70	17.20	40.77	38.14
Øf Fn	(ksi)	50.00	50.00	50.00	50.00	50.00
Vf	(k)	28.00	40.24	23.88	41.92	28.00

*Top Flange Stress controls

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.⁴ and in.³).

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.⁴ and in.³).

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.⁴ and in.³).

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.⁴ and in.³).

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.³).

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_{L+IM}: Un-factored live load moment plus dynamic load allowance (impact)(kip-ft.).

Mu (Strength I): Factored design moment (kip-ft.).
$1.25\ (MDC1+\ MDC2) + 1.5\ MDW + 1.75\ M_{L+IM}$

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 (L+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_{L+IM} / Sc(n) or M_{L+IM} / Sc(cr) as applicable.

fs + $f_f/_2$ (Service II): Sum of stresses as computed below (ksi).
fsDC1 + fsDC2 + fsDW + 1.3 fs($_{L+IM}$) + $f_f/_2$

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

fs + $f_f/_3$ (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).
$1.25\ (fsDC1 + fsDC2) + 1.5\ fsDW + 1.75\ fs(_{L+IM}) + f_f/_3$

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_L and R_L include the effects of centrifugal force and superelevation.

FILE NAME: pw:\\617479-PWINT.aecomonline.localbAECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1712\60X79-S035-MomentReactionTables

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER MOMENT AND REACTION TABLES
STRUCTURE NO. 016-1712
SHEET NO. S2-35 OF S2-63 SHEETS

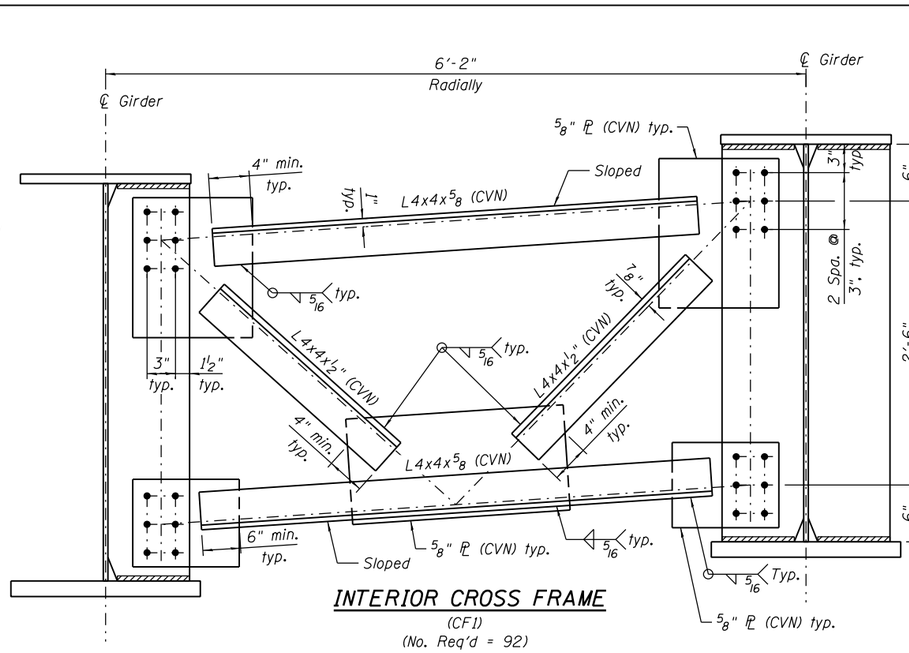
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	450
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

NOTES:

1. See Sheet S2-32 for location of girder cross frames.
2. AASHTO M270 Grade 50 steel shall be used for all cross frames, connection plates, bearing stiffeners and jacking stiffeners, unless otherwise noted.
3. "CVN" denotes Charpy-V-Notch Impact Energy Requirements, Zone 2.
4. All cross frame members, bearing stiffeners, jacking stiffeners, connection plates and gusset plates shall comply with "CVN".
5. Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts. Bolts $\frac{7}{8}$" ϕ, holes $\frac{15}{16}$" ϕ.
6. If any field reaming is required, two hardened washers are required for each oversized bolt hole.
7. Bolt spacing shall be 3" min. and edge distances shall be 2" min.
8. Erection shall be accomplished by a steel erection contractor or sub-contractor 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".
9. All cross frames or diaphragms shall be installed as steel that is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
10. The Contractor shall either:

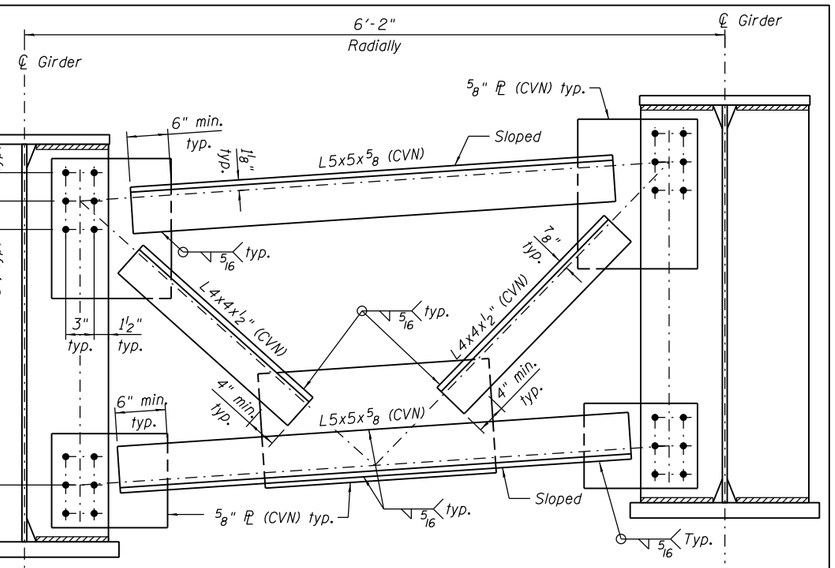
    a. Ream cross frame connection holes during shop assembly, or

    b. 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(I) of the Standard Specifications.



INTERIOR CROSS FRAME

(CF1)
(No. Req'd = 92)



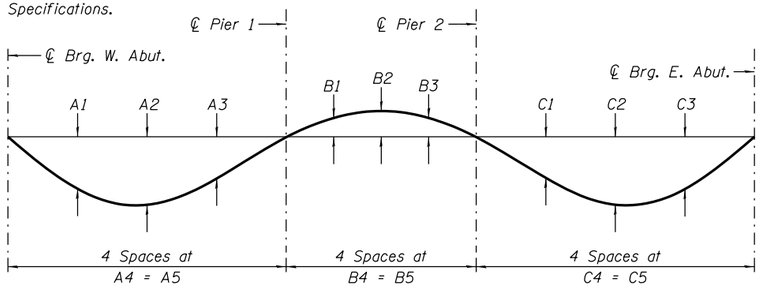
INTERIOR CROSS FRAME

(CF2)
(No. Req'd = 69)

SECTION A-A

(Bott. flange of plate girder not shown for clarity)
(Typ. at top and bott. of each end)

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.



DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of structural steel only)

END DIAPHRAGM

(D1)
(No. Req'd = 14)

Girder No.	DEAD LOAD DEFLECTIONS - STEEL SELF WEIGHT ONLY															
	Span 1					Span 2					Span 3					
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	
1	1 3/8"	1 3/4"	1 1/8"	30'-4 1/4"	121'-5 1/8"	0 1/2"	0 5/8"	0 1/2"	20'-8 3/4"	82'-10 3/4"	1 1/8"	1 3/4"	1 3/8"	30'-4 1/4"	121'-5 1/8"	
2	1 1/4"	1 5/8"	1"	29'-10 1/8"	119'-4 1/4"	0 3/8"	0 1/2"	0 3/8"	20'-4 1/2"	81'-5 3/4"	1"	1 5/8"	1 1/4"	29'-10 1/8"	119'-4 1/4"	
3	1 1/8"	1 3/8"	0 7/8"	29'-3 7/8"	117'-3 3/8"	0 3/8"	0 3/8"	0 3/8"	20'-0 1/4"	80'-0 3/4"	0 7/8"	1 3/8"	1 1/8"	29'-3 7/8"	117'-3 3/8"	
4	1"	1 1/4"	0 3/4"	28'-9 5/8"	115'-2 3/8"	0 1/4"	0 3/8"	0 1/4"	19'-7 7/8"	78'-7 3/4"	0 3/4"	1 1/4"	1"	28'-9 5/8"	115'-2 3/8"	
5	0 7/8"	1 1/8"	0 3/4"	28'-3 3/8"	113'-1 1/2"	0 1/4"	0 3/8"	0 1/4"	19'-3 5/8"	77'-2 3/4"	0 3/4"	1 1/8"	0 7/8"	28'-3 3/8"	113'-1 1/2"	
6	0 7/8"	1 1/8"	0 5/8"	27'-9 1/8"	111'-0 5/8"	0 1/4"	0 1/4"	0 1/4"	18'-11 3/8"	75'-9 3/4"	0 5/8"	1 1/8"	0 7/8"	27'-9 1/8"	111'-0 5/8"	
7	0 3/4"	1"	0 5/8"	27'-2 7/8"	108'-11 5/8"	0 1/4"	0 1/4"	0 1/4"	18'-7 1/8"	74'-4 3/4"	0 5/8"	1"	0 3/4"	27'-2 7/8"	108'-11 5/8"	
8	0 5/8"	0 7/8"	0 1/2"	26'-8 5/8"	106'-10 3/4"	0 1/8"	0 1/4"	0 1/8"	18'-2 7/8"	72'-11 3/4"	0 1/2"	0 7/8"	0 3/4"	26'-8 5/8"	106'-10 3/4"	

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	CHECKED - MI, LAB	REVISED -		
PLOT SCALE = N.T.S	DRAWN - JJS, WM	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-36 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	451
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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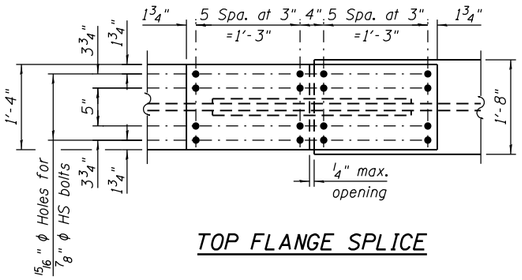
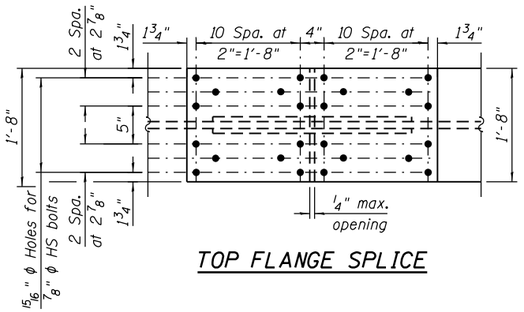


TOP FLANGE SPLICE



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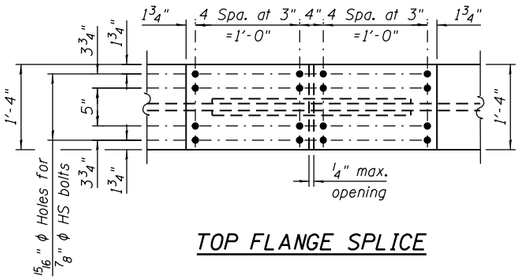

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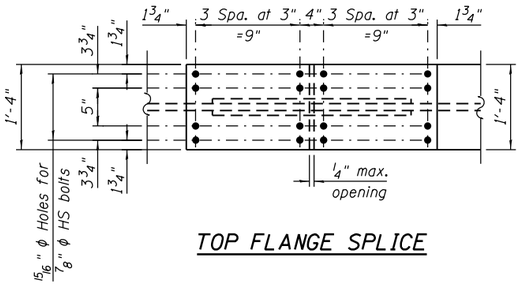

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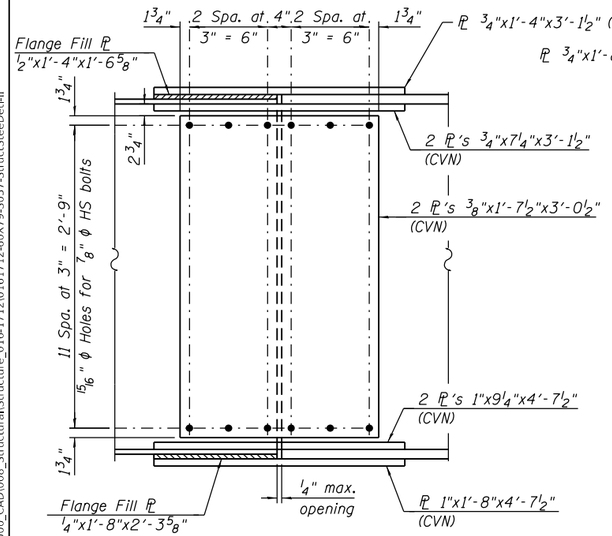
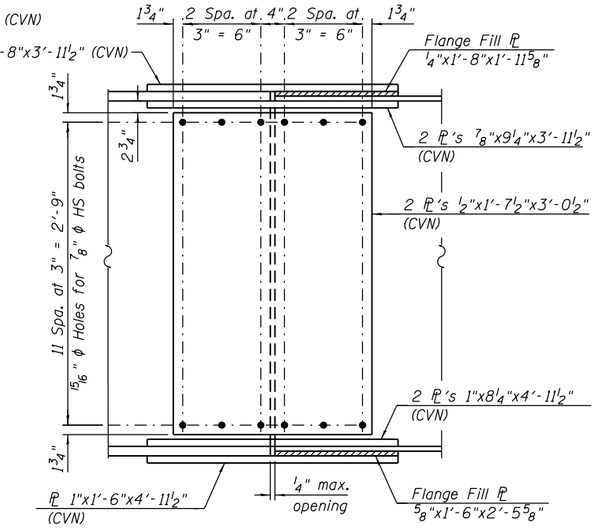


WEB SPLICE



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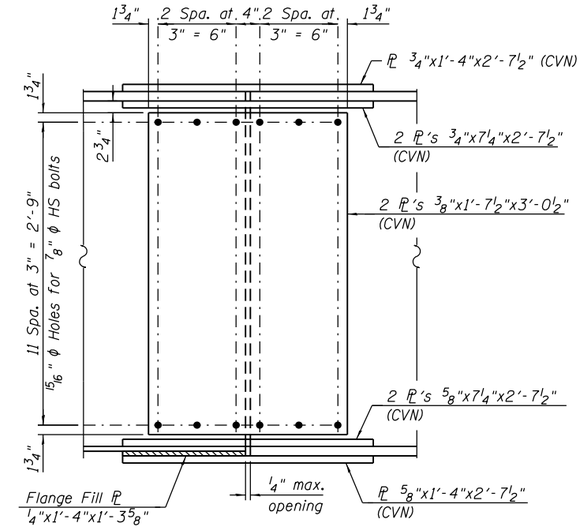

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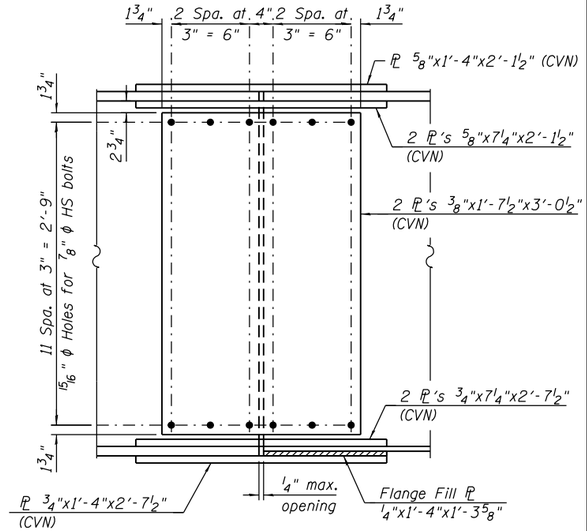

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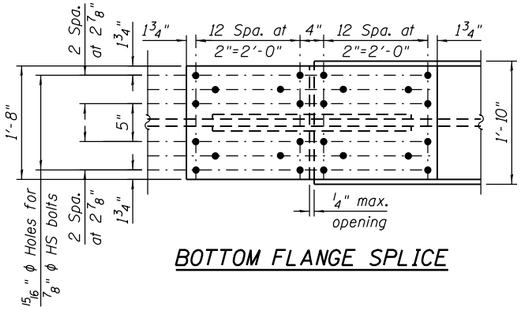

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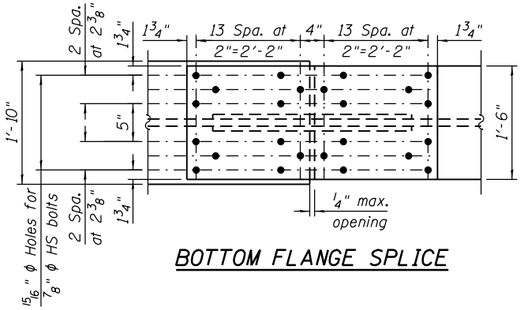

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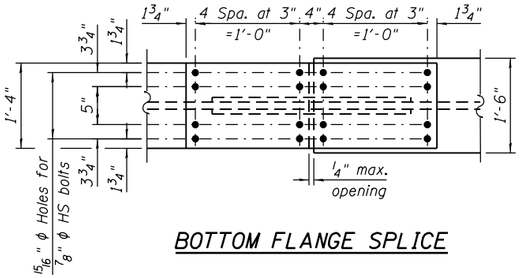

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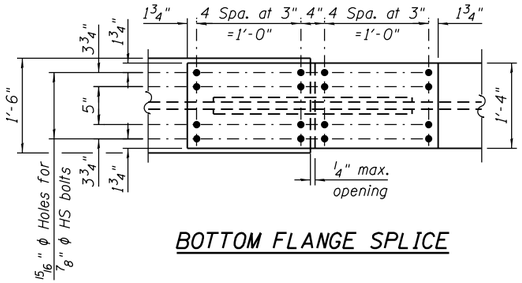

BOTTOM FLANGE SPLICE

SPLICES 1 AND 4 (GIRDERS 1 THRU 3)

Splice 1 shown, Splice 4 opposite hand
(6 Required)

SPLICES 2 AND 3 (GIRDERS 1 THRU 3)

Splice 2 shown, Splice 3 opposite hand
(6 Required)

SPLICES 1 AND 4 (GIRDERS 4 THRU 8)

Splice 1 shown, Splice 4 opposite hand
(10 Required)

SPLICES 2 AND 3 (GIRDERS 4 THRU 8)

Splice 2 shown, Splice 3 opposite hand
(10 Required)

NOTES:

1. See Sheet S2-32for 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 S2-33

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL DETAILS II
STRUCTURE NO. 016-1712
SHEET NO. S2-37 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	452
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_StructuralStructure_016-1712\016171260X79-S037-StructSteelDet-II

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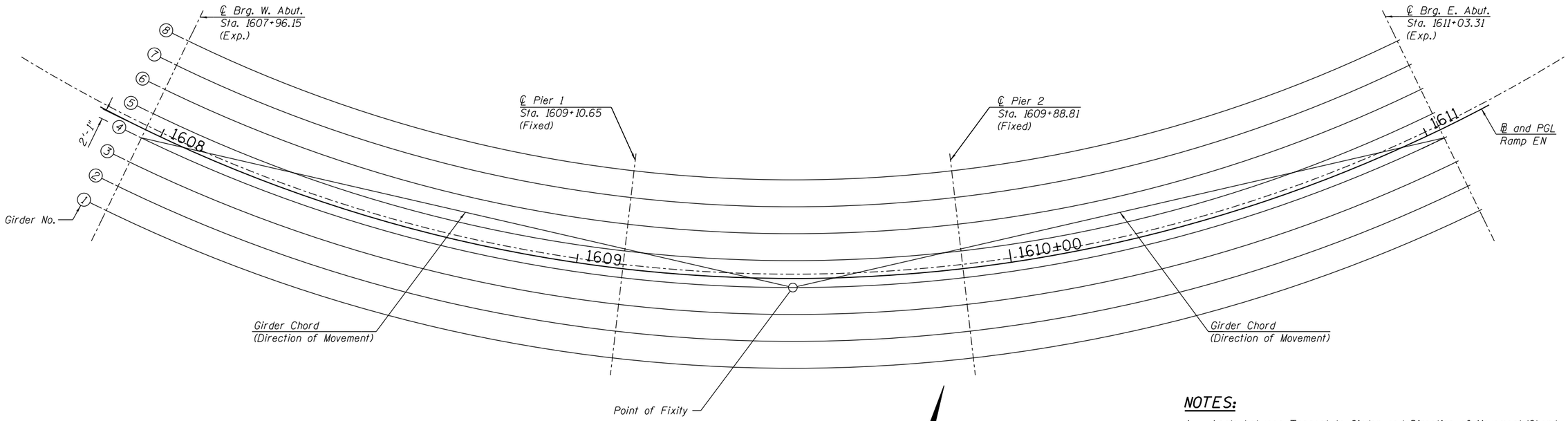


BEARING LAYOUT

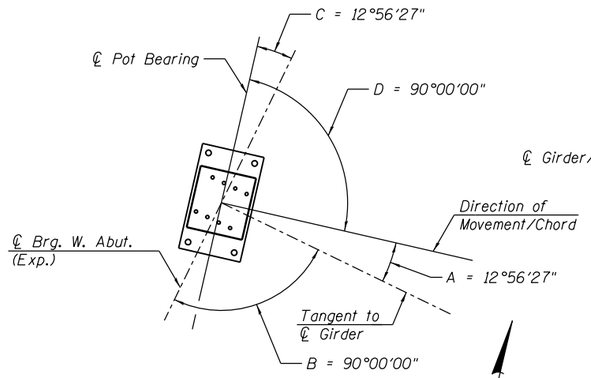
NOTES:

A = Angle between Tangent to Girder and Direction of Movement/Chord

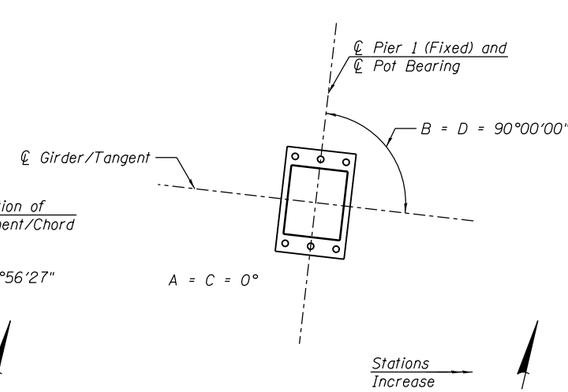
B = Angle between Tangent to Girder and ℄ of Pier or Abutment

C = Setting Angle between ℄ of Bearing Base P̄L̄ and ℄ of Pier or Abutment

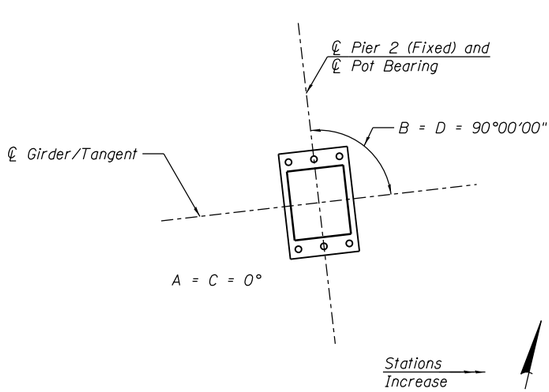
D = Set Bearing Base P̄L̄s at right angles to Direction of Movement/Chord



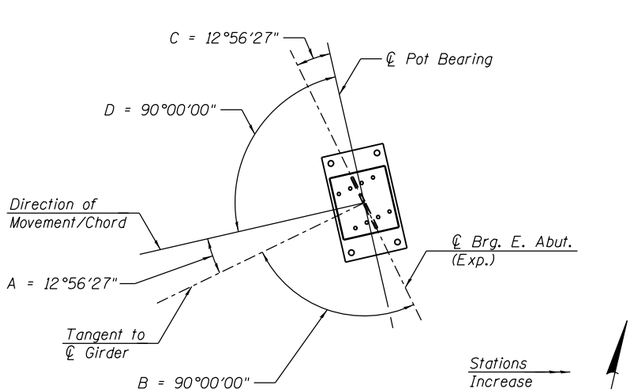
WEST ABUTMENT



PIER 1



PIER 2



EAST ABUTMENT

BEARING ORIENTATION

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - JJS	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BEARING LAYOUT AND ORIENTATION STRUCTURE NO. 016-1712
		CHECKED - MI, LAB	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - JJS	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-38 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	453
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 CircletPhase_II\000_CAD\008_StructuralStructure_016-1712\016171 2-60X79-S038-BrgLayout

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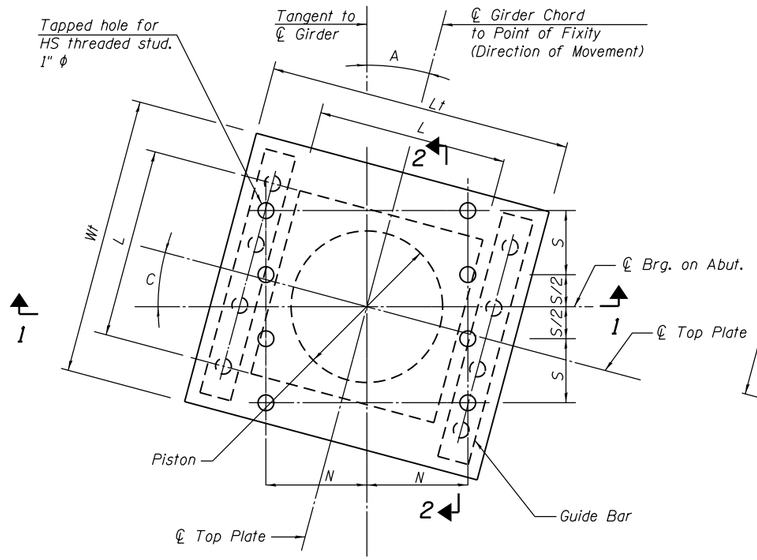
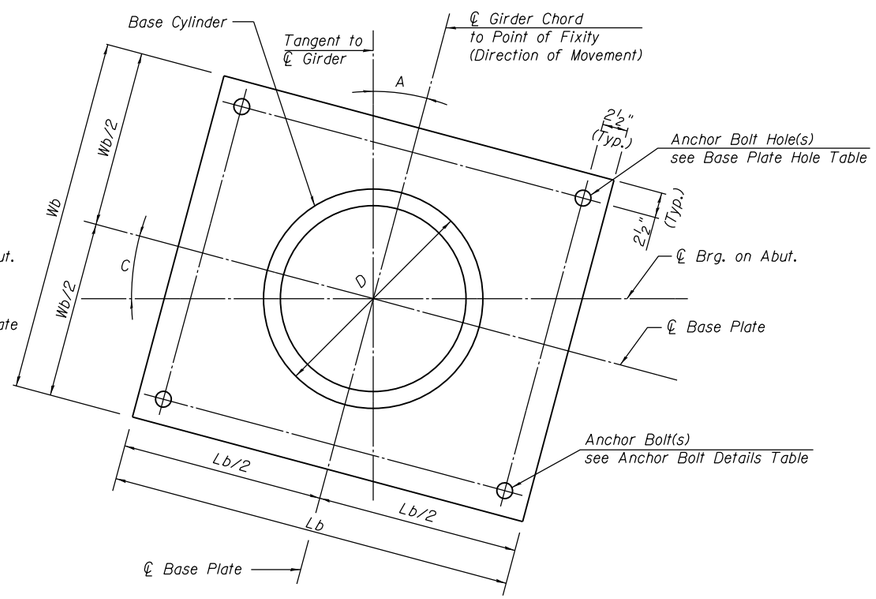


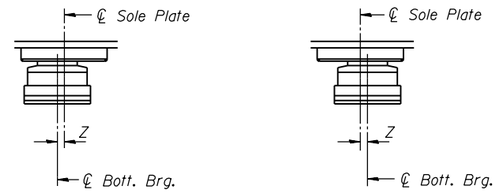
TOP BEARING ℄ AND PISTON PLAN



BOTTOM BEARING ℄ AND BASE CYLINDER PLAN

NOTES:

1. The Structural Steel for the top & bottom bearing plates shall be AASHTO M270 Grade 50.
2. For anchor bolt diameter/grade and location details, see Guided Expansion Bearing Dimensions Table and Anchor Bolt Location Detail, respectively, on Sheet S2-40 .
3. Top & bottom plates, threaded studs, washers & shim plates are included in the cost of the High Load Multi-Rotational Bearings, Guided Expansion.
4. 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.
5. Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
6. The $\frac{1}{8}$'' 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.
7. Two $\frac{1}{8}$ in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
8. Work this sheet with Sheet S2-40.
9. All (embedded and separate) bearing plates, anchor bolts, nuts, washers and pintles shall be galvanized according to AASHTO M111 or M232 as applicable.
10. 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.

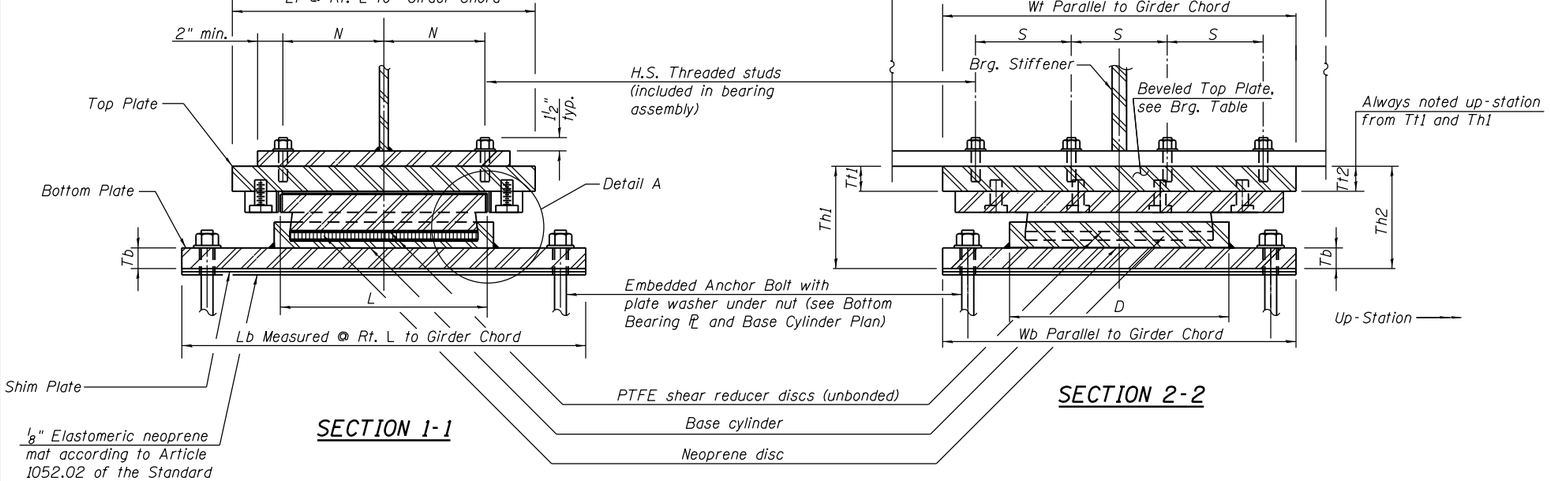


BELOW 50° F.
(move Bott. Brg. away from Fixed Brg.)

ABOVE 50° F.
(move Bott. Brg. toward Fixed Brg.)

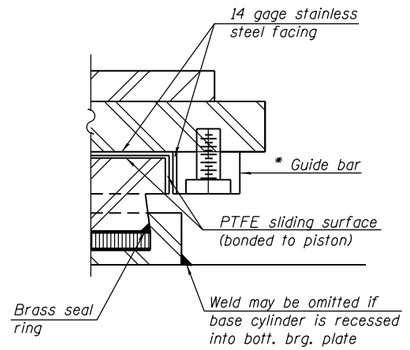
SETTING ANCHOR BOLTS AT EXP. BRG.

$Z = \frac{1}{8}$'' per each 100° of expansion for every 15° temp. change from the normal temp. of 50° F.



SECTION 1-1

SECTION 2-2



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.

ANCHOR BOLT DETAILS

Bolt Dia. x Length**	Plate Washer
$1\frac{1}{4}$" x 15"	$2\frac{3}{4}$"x$2\frac{3}{4}$"x$\frac{5}{16}$"

**Length shown is minimum required embedment length.

BASE PLATE HOLE TABLE

Anchor Bolt ϕ	Max. Hole ϕ
$1\frac{1}{4}$"	$1\frac{3}{4}$"

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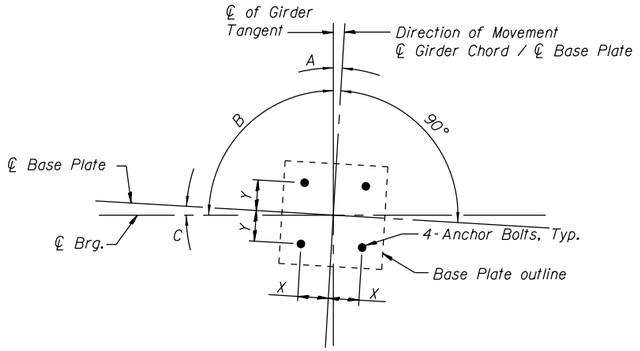
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXPANSION POT BEARING DETAILS I
STRUCTURE NO. 016-1712
SHEET NO. S2-39 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	454
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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						
W. Abut	250	50	1 7/8"	2"	2'-10"	1'-8"	1 1/2"	2 1/2"	1'-8"	1'-6"	6"	4"	7"	8"	1'-1 1/4"	11 1/4"	1 1/4"	F1554, Grade 36
E. Abut	250	50	1 7/8"	2"	2'-10"	1'-8"	2 3/8"	1 1/2"	1'-8"	1'-6"	6"	4"	7 7/8"	7"	1'-1 1/4"	11 1/4"	1 1/4"	F1554, Grade 36



ANCHOR BOLT LOCATION DETAIL

Location	X	Y	A	B	C
W. Abut.	1'-2 1/2"	7 1/2"	12° 56' 27"	90° 00' 00"	12° 56' 27"
E. Abut.	1'-2 1/2"	7 1/2"	12° 56' 27"	90° 00' 00"	12° 56' 27"

NOTES:

1. All HLMR bearings shall be designed to carry minimum Factored Ultimate (Strength) Design Rotation of 0.02 radians. See Special Provision.
2. 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.
3. Work this sheet with Sheet S2-39.
4. See Sheet S2-38 for bearing layout & orientation.

BILL OF MATERIAL

Item	Unit	Total
Anchor Bolts, 1 1/4"	Each	64
High Load Multi-Rotational Bearings, Guided Expansion, 250K	Each	16

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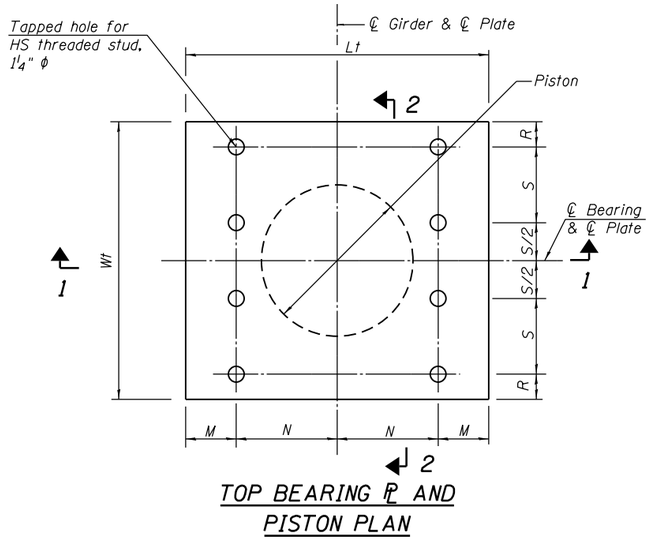
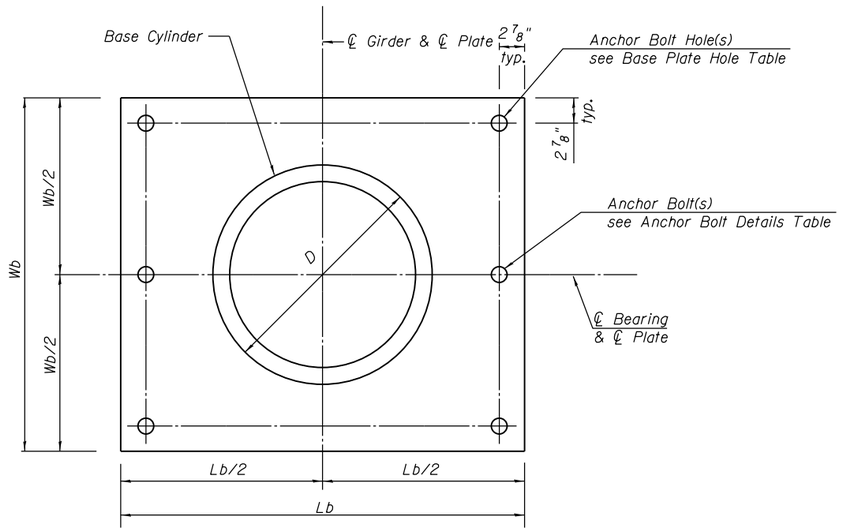
	CHECKED - MI, LAB	REVISED -		
PLOT SCALE = N.T.S	DRAWN - JJS	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-40 OF S2-63 SHEETS

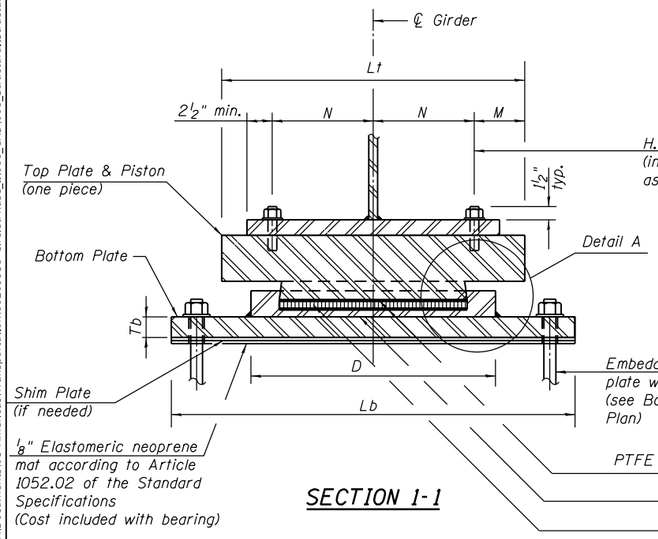
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	455
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



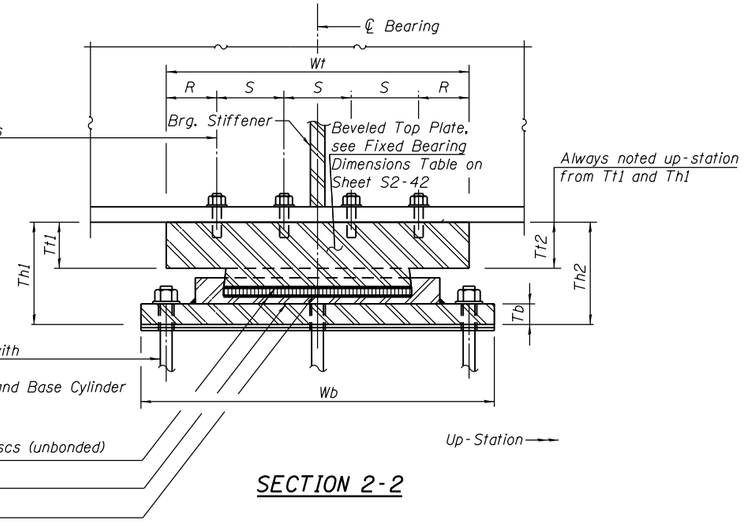
TOP BEARING ℄ AND PISTON PLAN



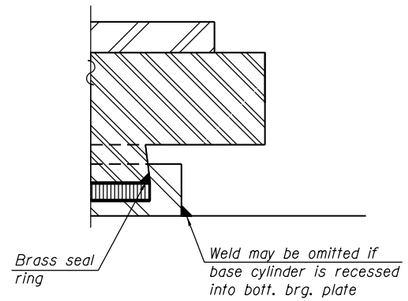
BOTTOM BEARING ℄ AND BASE CYLINDER PLAN



SECTION 1-1



SECTION 2-2



DETAIL A

ANCHOR BOLT DETAILS

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

**Length shown is minimum required embedment length.

BASE PLATE HOLE

Anchor Bolt ϕ	Max. Hole ϕ
1½"	2"

NOTES:

1. The Structural Steel for the top & bottom bearing plates shall be AASHTO M270 Grade 50.
2. For anchor bolt diameter/grade and location details, see Fixed Bearing Dimensions Table and Anchor Bolt Location Detail, respectively, on Sheet S2-42 .
3. Top & bottom plates, threaded studs, washers & shim plates are included in the cost of the High Load Multi-Rotational Bearings, Fixed.
4. 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.
5. Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
6. Two ⅛ in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
7. Work this sheet with Sheet S2-42 .
8. All (embedded and separate) bearing plates, anchor bolts, nuts, washers and pintles shall be galvanized according to AASHTO M111 or M232 as applicable.
9. 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.

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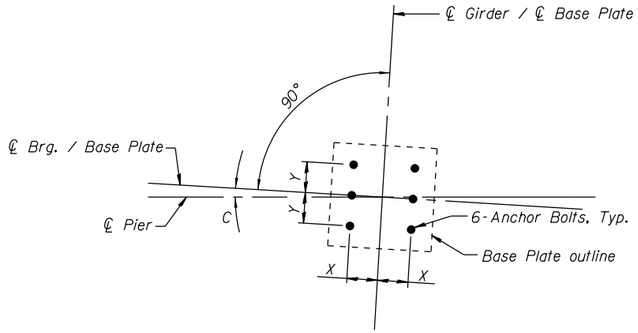
		CHECKED - MI, LAB	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - JJS	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-41 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	456
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FIXED BEARING DIMENSIONS TABLE

Brg. Location	Vertical Design Load (kips)	Lateral Design Load (kips)	Bottom Bearing Plate			Top Bearing Plate								Th1	Th2	D	Anchor Bolt Dia.	Anchor Bolt Specification Grade
			Tb	Lb	Wb	Tt1	Tt2	Lt	Wt	M	N	R	S					
Pier 1	400	80	2"	2'-9 1/2"	1'-10"	2 1/2"	2 7/8"	1'-10"	1'-6"	2 1/2"	8 1/2"	2 1/4"	4 1/2"	9 3/8"	9 3/4"	1'-6"	1 1/2"	F1554, Grade 36
Pier 2	400	80	2"	2'-9 1/2"	1'-10"	2 3/4"	2 1/2"	1'-10"	1'-6"	2 1/2"	8 1/2"	2 1/4"	5 1/2"	9 5/8"	9 3/8"	1'-6"	1 1/2"	F1554, Grade 36



ANCHOR BOLT LOCATION DETAIL

Location	X	Y	C
Pier 1	$1'\text{-}1\frac{7}{8}"$	$8\frac{1}{8}"$	0° 00′ 00"
Pier 2	$1'\text{-}1\frac{7}{8}"$	$8\frac{1}{8}"$	0° 00′ 00"

NOTES:

1. All HLMR bearings shall be designed to carry minimum Factored Ultimate (Strength) Design Rotation of 0.02 radians. See Special Provision.
2. 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.
3. Work this sheet with Sheet S2-41 .
4. See Sheet S2-38 for bearing layout & orientation.

BILL OF MATERIAL

Item	Unit	Total
Anchor Bolts, $1\frac{1}{2}"$	Each	96
High Load Multi-Rotational Bearings, Fixed - 400K	Each	16

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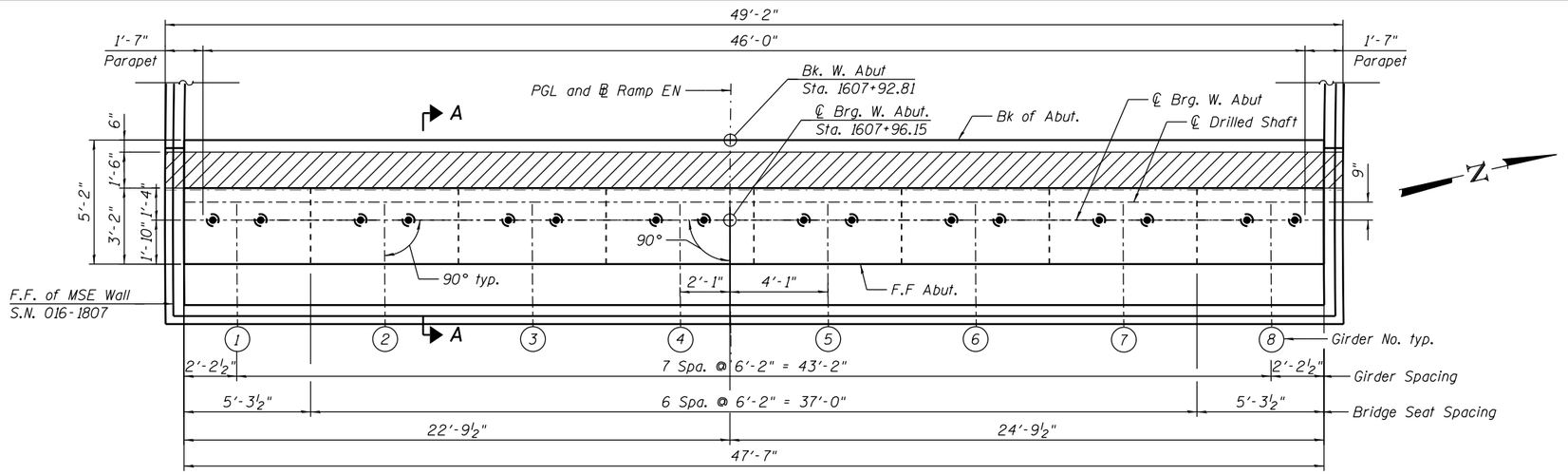
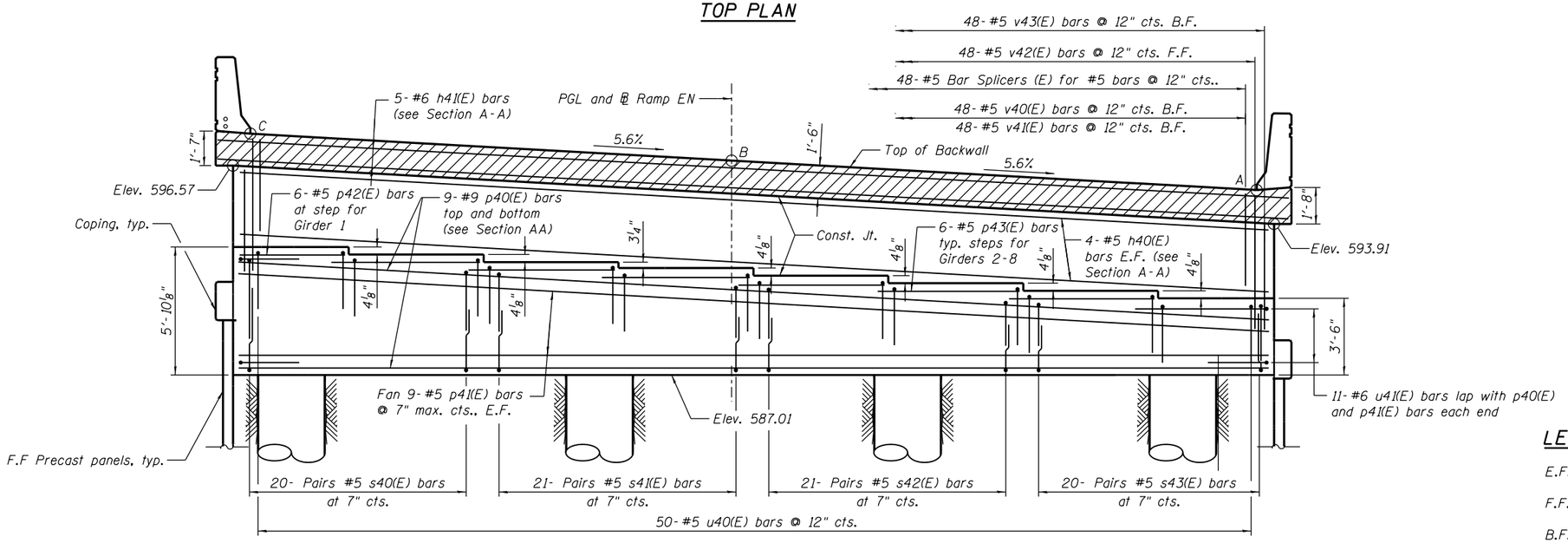
	CHECKED - MI, LAB	REVISED -			
PLOT SCALE = N.T.S	DRAWN - JJS	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-42 OF S2-63 SHEETS	

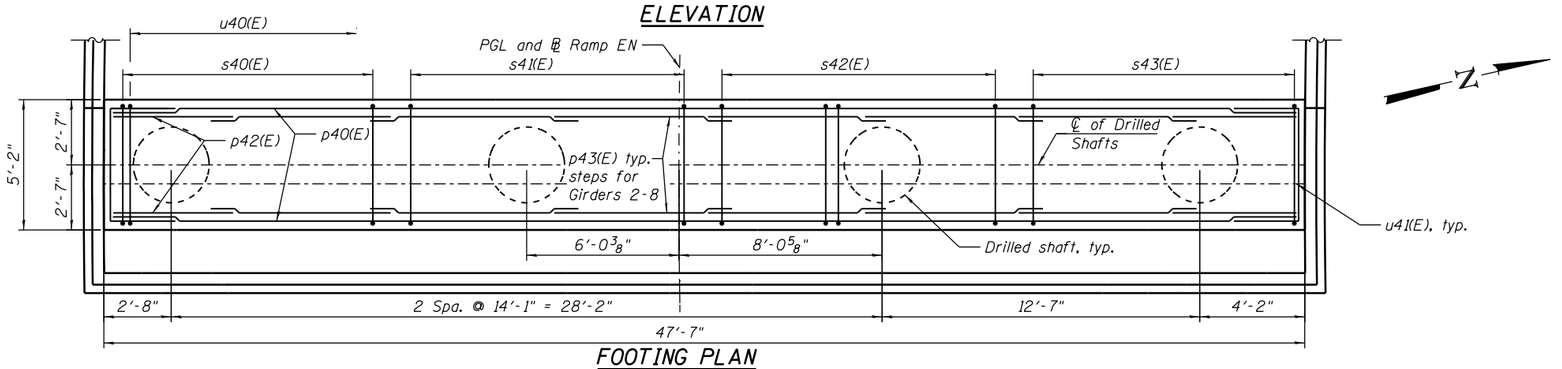
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	457
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



TOP PLAN



ELEVATION



FOOTING PLAN

TOP OF SEAT ELEVATION

Girder No.	Seat Elevation
1	592.85
2	592.51
3	592.16
4	591.89
5	591.55
6	591.20
7	590.86
8	590.51

TOP OF BACKWALL (CLOSURE POUR) ELEVATIONS

POINTS	FRONT FACE	BACK FACE
A - North Curb Line	595.45	595.36
B - Crown	596.80	596.71
C - South Curb Line	598.03	597.95

LEGEND:

E.F. - Each Face

F.F. - Front Face

B.F. - Back Face

NOTES:

1. Pour steps monolithically with cap.
2. For Anchor Bolt Details, see Sheet S2-40 .
3. Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure.
4. Concrete Sealer shall be applied to abutment backwall, bearing seats and exposed faces of abutment cap.
5. Space bars in cap to miss anchor bolts.
6. For Section A-A, see Sheet S2-44 .

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USER NAME = ahmad.issa	DESIGNED - WM, MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	WEST ABUTMENT PLAN AND ELEVATION STRUCTURE NO. 016-1712
	CHECKED - MI, LAB	REVISED -		SHEET NO. S2-43 OF S2-63 SHEETS
PLOT SCALE = N.T.S	DRAWN - WM, MAA	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	458
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

FILE NAME: pw:\617479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1712\016171 2-60X79-S043-WAbut1

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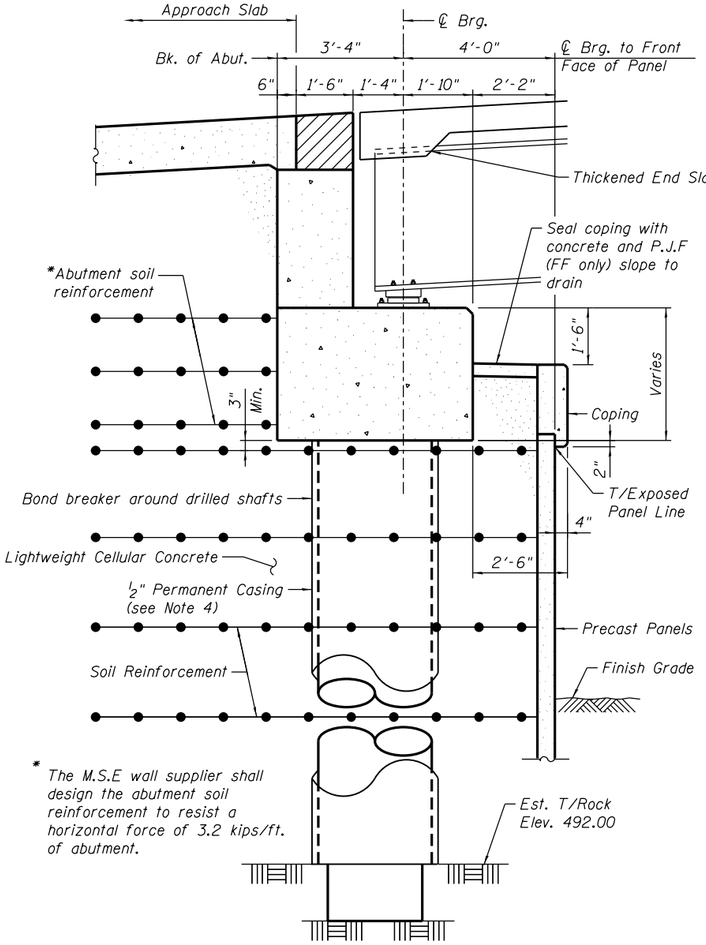
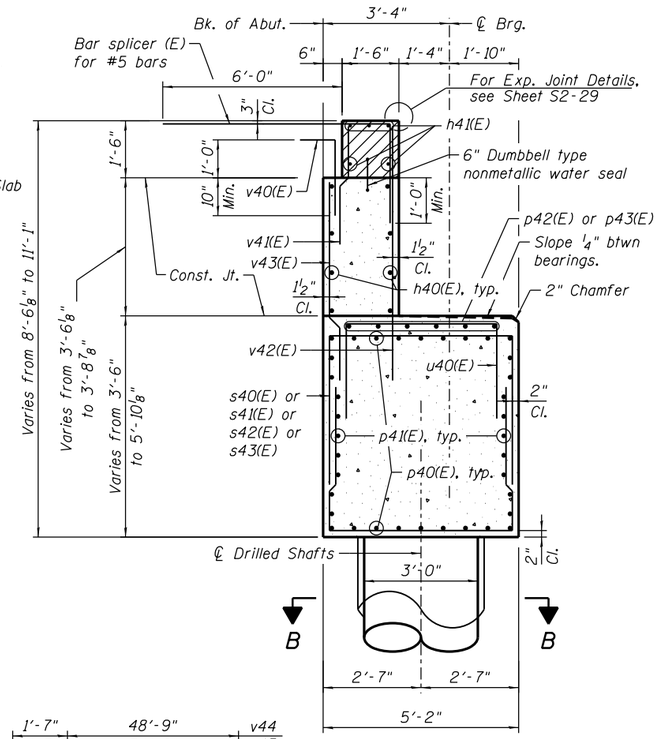


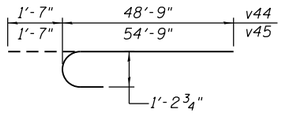
* The M.S.E wall supplier shall design the abutment soil reinforcement to resist a horizontal force of 3.2 kips/ft. of abutment.

SECTION THRU ABUTMENT

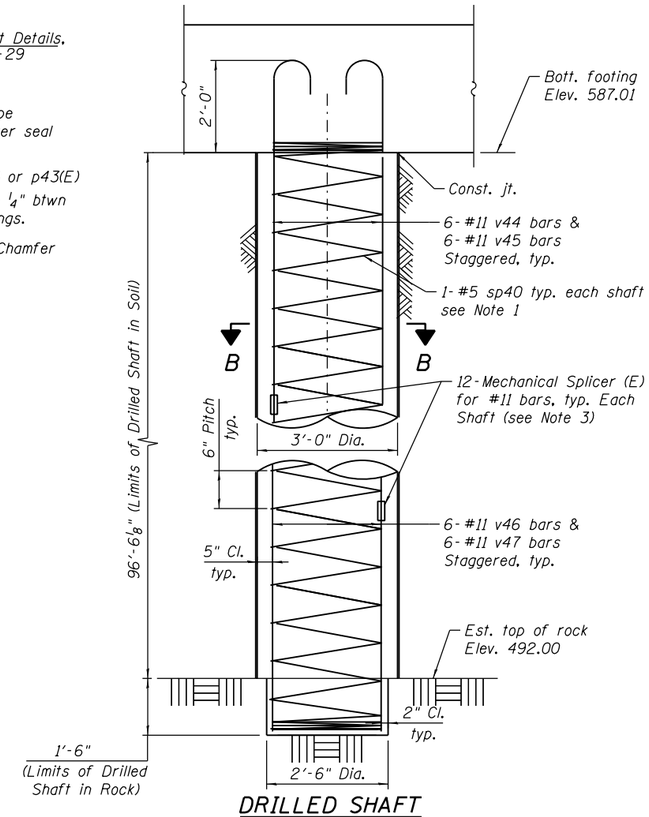
(Showing soil reinforcement and coping with precast panels)



SECTION A-A



BAR v44 & BAR v45



DRILLED SHAFT

** 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.

BILL OF MATERIAL

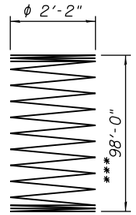
	Bar	No.	Size	Length	Shape
	h40(E)	8	#5	47'-3"	
	h41(E)	5	#6	48'-10"	
	p40(E)	18	#9	47'-3"	
	p41(E)	18	#5	47'-3"	
	p42(E)	6	#5	5'-0"	
	p43(E)	42	#5	7'-0"	
	s40(E)	40	#5	13'-4"	
	s41(E)	42	#5	12'-8"	
	s42(E)	42	#5	11'-8"	
	s43(E)	40	#5	11'-4"	
***	sp40	4	#5	96'-6"	
	u40(E)	50	#5	7'-10"	
	u41(E)	22	#6	12'-6"	
	v40(E)	48	#5	3'-11"	
	v41(E)	48	#5	3'-6"	
	v42(E)	48	#5	7'-3"	
	v43(E)	48	#5	6'-9"	
	v44	24	#11	50'-4"	
	v45	24	#11	56'-4"	
	v46	24	#11	49'-6"	
	v47	24	#11	43'-6"	
	Concrete Structures			Cu Yd	55.4
	Concrete Superstructure			Cu Yd	4.1
	Reinforcement Bars			Pound	31,130
	Reinforcement Bars, Epoxy Coated			Pound	8,870
	Permanent Casing			Foot	381
	Drilled Shaft in Soil			Cu Yd	100
	Drilled Shaft in Rock			Cu Yd	2
	Concrete Sealer			Sq Ft	456
	Crosshole Sonic Logging Access Ducts			Foot	399
	Crosshole Sonic Logging Testing			Each	1

***Length is height of spiral

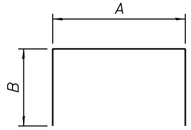
Minimum Bar Laps	
Bar	Lap
#5	3'-2"

NOTES:

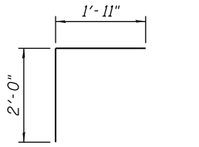
1. #5 sp40 spiral, each drilled shaft
   (a) Provide 1 1/2 extra turns, shop welded together per AWS D1.4 top and bottom. Extend spiral 3" into pier cap. Provide 4-#4 spacers or equivalent.
   (b) When splicing spiral reinforcement is necessary, the spiral shall be provided with 1 1/2 extra turns at 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.
2. For details and quantity of Bar Splicers and Mechanical Splicers, see Sheet S2-54.
3. 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.
4. 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.
5. A drilled shaft shall be tested in accordance with the Special Provisions for Crosshole Sonic Logging.



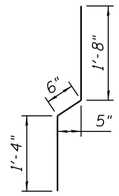
BAR sp40



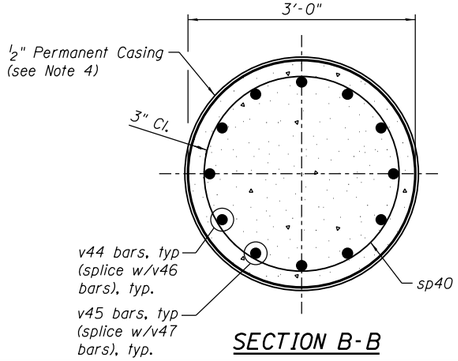
Bar	A	B
s40(E)	4'-10"	4'-3"
s41(E)	4'-10"	3'-11"
s42(E)	4'-10"	3'-5"
s43(E)	4'-10"	3'-3"
u40(E)	4'-10"	1'-6"
u41(E)	4'-10"	3'-10"



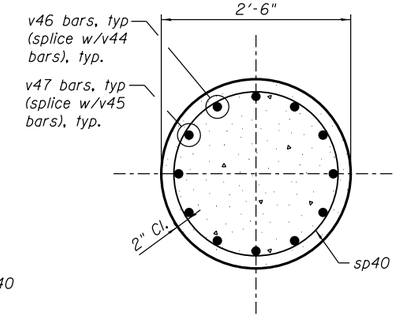
BAR V40(E)



BAR V41(E)



SECTION B-B



SECTION C-C

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - WM, MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	WEST ABUTMENT DETAILS STRUCTURE NO. 016-1712
		CHECKED - MI, LAB	REVISED -		SHEET NO. S2-44 OF S2-63 SHEETS
	PLOT SCALE = N.T.S	DRAWN - WM, MAA	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	459
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\\617479-PWINT.aecomonline.local\AECOM_D502_NAIDocuments\01 Americas\Transportation\60269938 CirclePhase_II\000_CAD\008_StructuralStructure_016-1712\01617\12-60X79-S044-WAbut2

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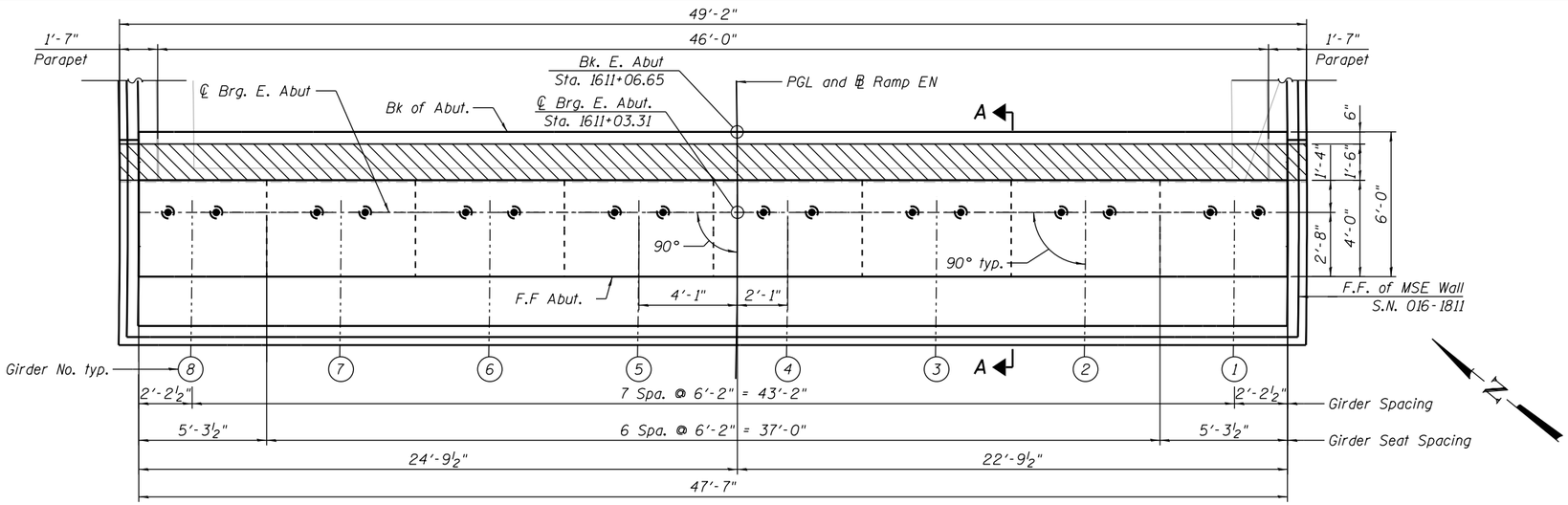
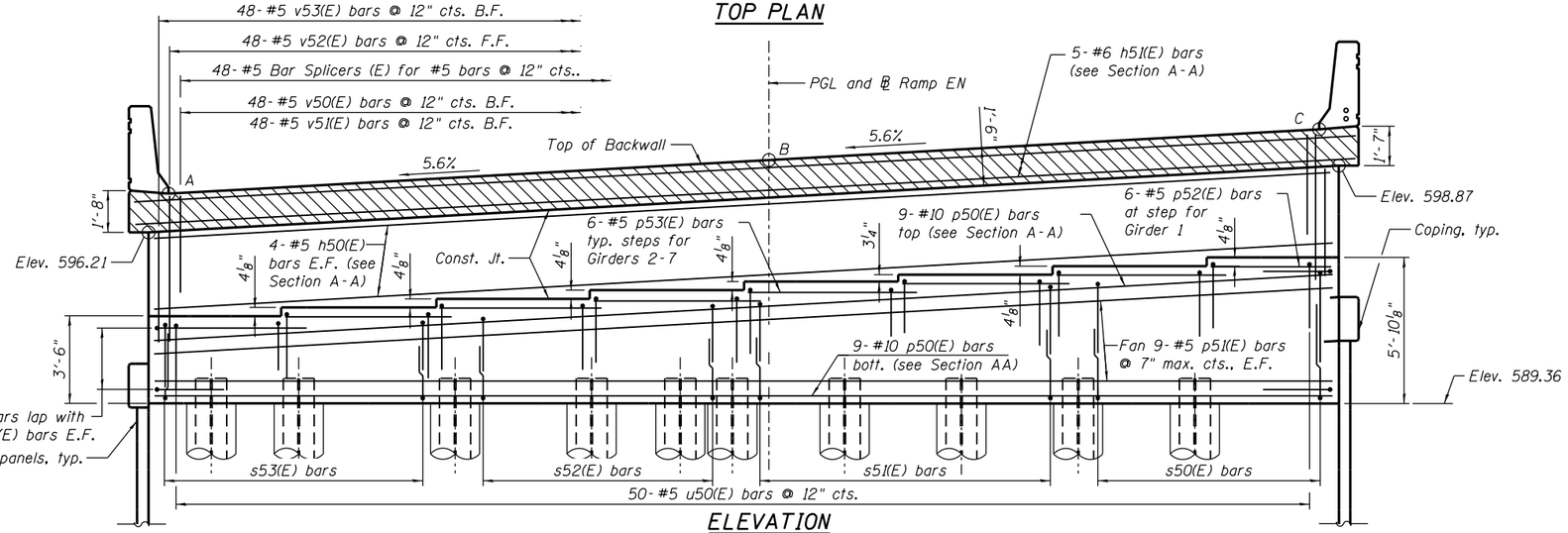
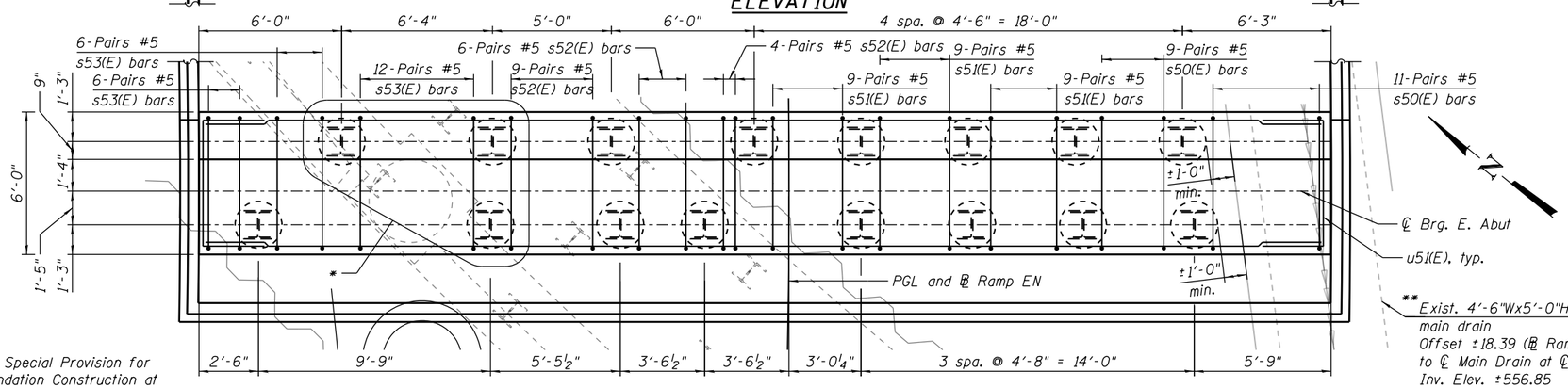


TOP PLAN



ELEVATION



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

PLAN - PILE CAP

TOP OF BACKWALL (CLOSURE POUR) ELEVATIONS

POINTS	FRONT FACE	BACK FACE
A - North Curb Line	597.80	597.73
B - Crown	599.15	599.09
C - South Curb Line	600.39	600.33

PILE DATA:

Type: Steel HP12x84
Nominal Req'd Bearing: Set in Rock
Factored Resistance Available: 924 kips
Est. Length: 102'
No. Production Piles: 16
No. Test Piles: 0
Estimated Top of Rock Elev.: 488.00
Rock Socket Depth: 4'-0"
Rock Socket Dia.: 2'-0"

TOP OF SEAT ELEVATION

Girder No.	Seat Elevation
1	595.20
2	594.86
3	594.51
4	594.24
5	593.89
6	593.55
7	593.20
8	592.86

NOTES:

1. Pour steps monolithically with cap.
2. For Anchor Bolt Details, see Sheet S2-40 .
3. Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure.
4. Concrete Sealer shall be applied to abutment backwall, bearing seats and exposed faces of abutment cap. Space bars in cap to miss anchor bolts.
5. For Section A-A, see Sheet S2-46 .
6. The Contractor shall field locate existing retaining wall (S.N. 016-Z024) piles prior to drilling and installing the proposed steel H-piles.
7. The Contractor shall expose all existing piles, drilled shafts and sheet piles to an elevation 1 foot below the top of these elements. If field adjustment is required, the Contractor shall submit a revised foundation layout plan comparing the assumed and actual existing pile/drilled shaft/sheet pile locations and the revised foundation plan to the Engineer for approval prior to constructing the proposed foundations or the start of drilling.
8. s50(E), s51(E), s52(E) and s53(E) bars shall be equally spaced unless noted otherwise.

**Exist. Main Drain Assumed Wall Thickness is 1'-0"

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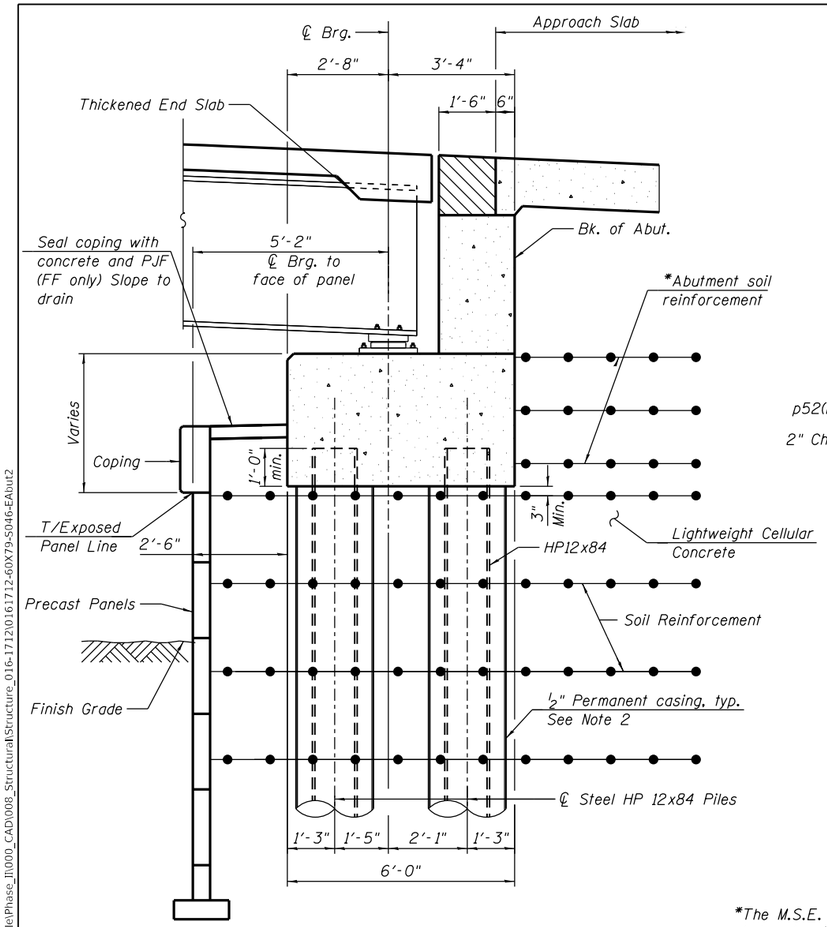
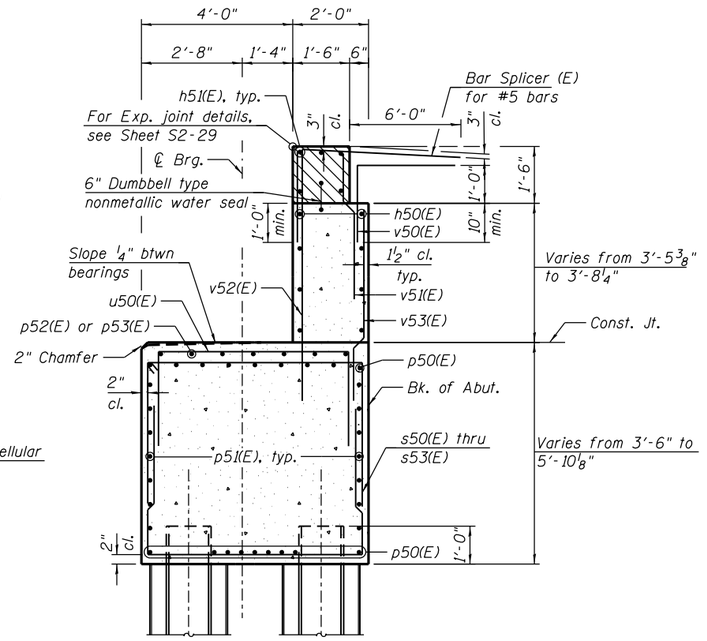
8:36:04 AM

HBM ENGINEERING GROUP, LLC

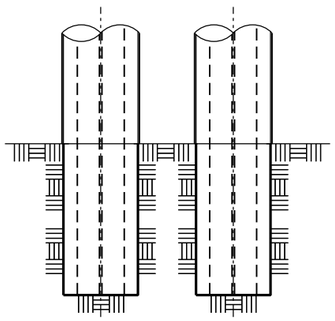
USER NAME = ahmad.issa	DESIGNED - WM, MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EAST ABUTMENT PLAN AND ELEVATION STRUCTURE NO. 016-1712	F.A.I. RTE. 90/94/290
	CHECKED - MI, LAB	REVISED -		SHEET NO. S2-45 OF S2-63 SHEETS	SECTION 2014-005R&B
PLOT SCALE = N.T.S	DRAWN - WM, MAA	REVISED -			COUNTY COOK
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -			TOTAL SHEETS 888
					SHEET NO. 460
					CONTRACT NO. 60X79
					ILLINOIS FED. AID PROJECT





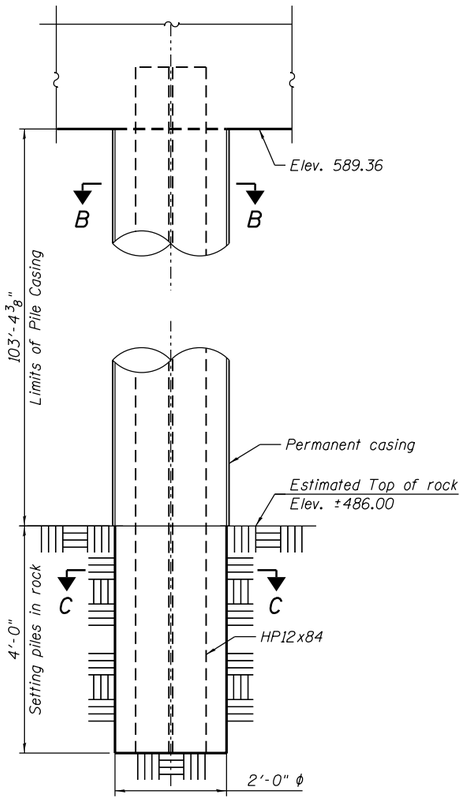
SECTION A-A

*The M.S.E. wall supplier shall design the abutment soil reinforcement to resist a horizontal force of 3.2 kips/ft of abutment.



SECTION THRU ABUTMENT

Showing Soil reinforcement and coping with precast panels



H-PILE

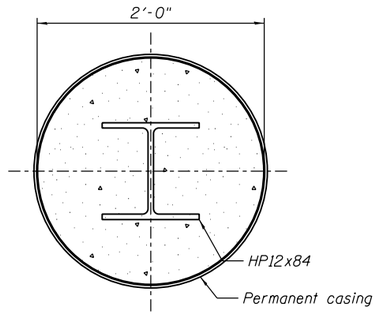
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h50(E)	8	#5	47'-3"	
h51(E)	5	#6	48'-10"	
p50(E)	18	#10	47'-3"	
p51(E)	18	#5	47'-3"	
p52(E)	6	#5	5'-0"	
p53(E)	42	#5	7'-0"	
s50(E)	40	#5	13'-4"	
s51(E)	54	#5	12'-8"	
s52(E)	38	#5	11'-8"	
s53(E)	48	#5	11'-4"	
u50(E)	50	#5	7'-10"	
u51(E)	22	#6	12'-6"	
v50(E)	48	#5	3'-11"	
v51(E)	48	#5	3'-6"	
v52(E)	48	#5	7'-3"	
v53(E)	48	#5	6'-9"	
Concrete Structures		Cu. Yd.	55.4	
Concrete Superstructures		Cu. Yd.	4.1	
Reinforcement Bars, Epoxy Coated		Pound	9,080	
Furnishing Steel Piles HP12x84		Foot	1,734	
Permanent Casing		Foot	1,654	
Concrete Sealer		Sq. Ft.	456	
Foundation Construction at Existing Obstructions		Each	9	
Setting Piles in Rock		Each	16	

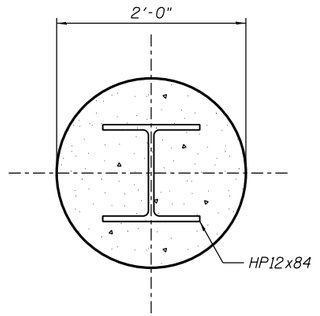
Minimum Bar Laps	
Bar	Lap
#5	3'-2"

NOTES:

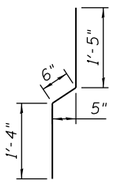
1. For details and quantity of Bar Splicers, see Sheet S2-54.
2. Contractor may need to increase the casing thickness to withstand the installation process. The Estimated Top of Rock/Bottom of Permanent Casing Elevation is shown. The limits of casing shall be adjusted as necessary, and as approved, such 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.



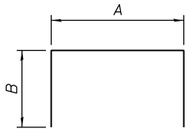
SECTION B-B



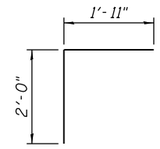
SECTION C-C



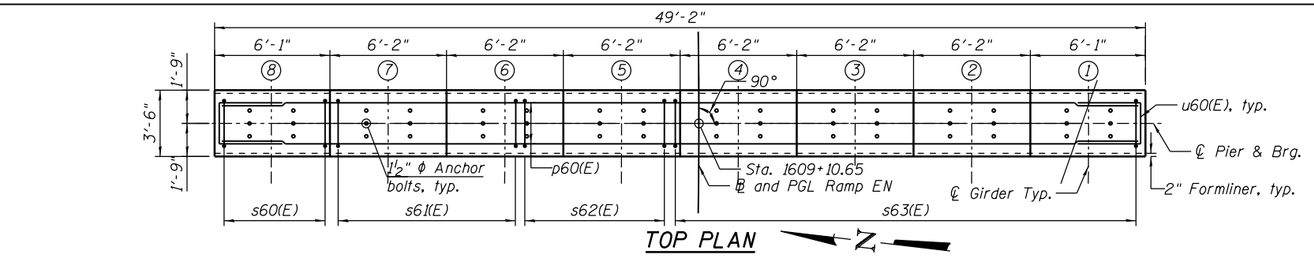
BAR V51(E)



Bar	A	B
s50(E)	5'-8"	4'-3"
s51(E)	5'-8"	3'-11"
s52(E)	5'-8"	3'-5"
s53(E)	5'-8"	3'-3"
u50(E)	5'-8"	1'-6"
u51(E)	5'-8"	4'-5"

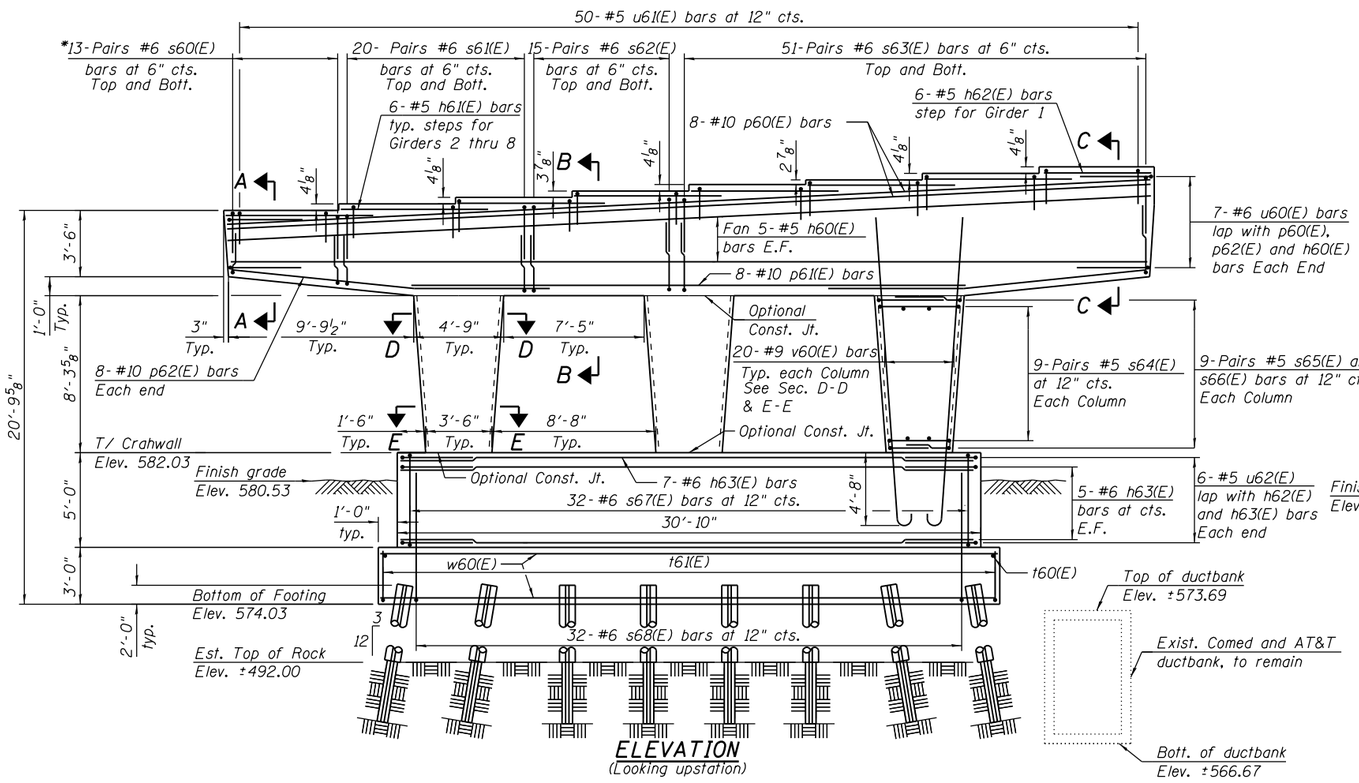


BAR V50(E)

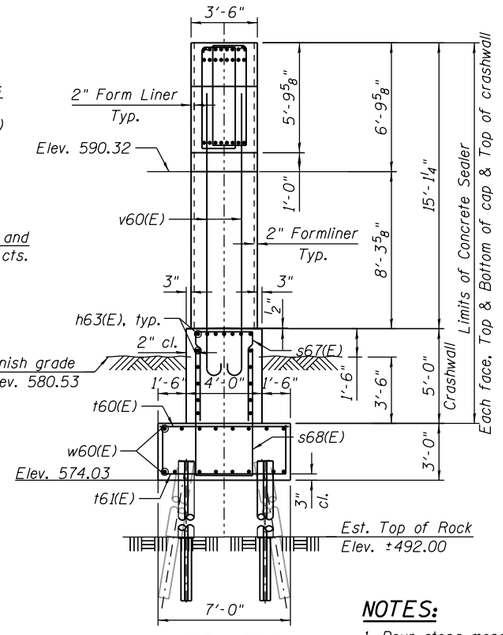


TOP PLAN

*cut vertical legs of bars to fit



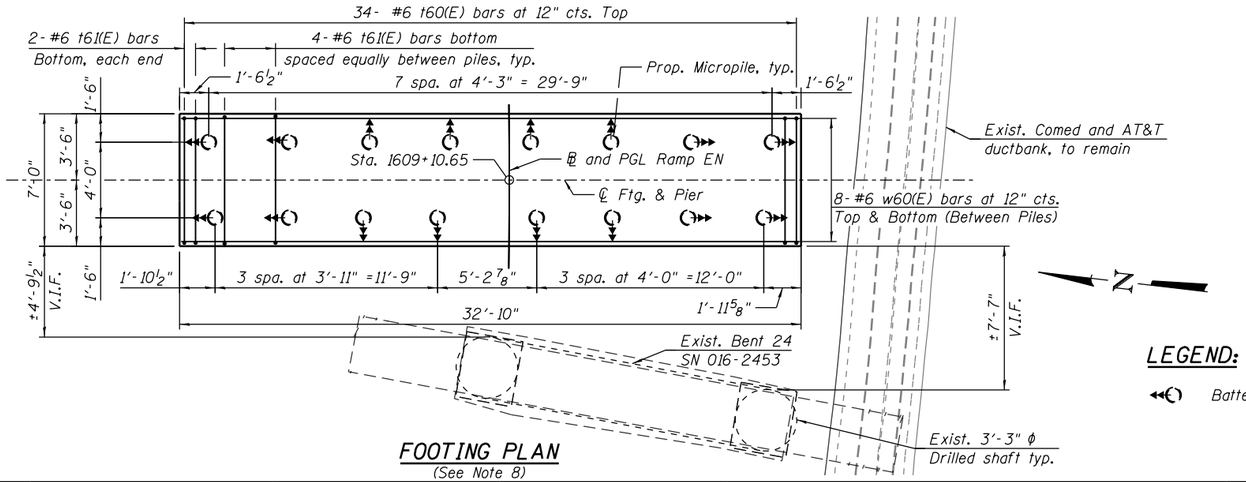
ELEVATION
(Looking upstation)



END VIEW
(See Note 8)

TOP OF SEAT ELEVATION

Girder No.	Seat Elevation
1	597.13
2	596.78
3	596.44
4	596.19
5	595.85
6	595.52
7	595.17
8	594.83



FOOTING PLAN
(See Note 8)

LEGEND:

Battered Piles at 3:12 Batter

NOTES:

1. Pour steps monolithically with cap.
2. Space reinforcement in cap to miss anchor bolts.
3. For Anchor Bolt Details, see Sheet S2-42 .
4. For details of piles and Sections A-A thru E-E, see Sheet S2-48 .
5. The Contractor shall field locate existing Bent 24 drilled shafts (SN 016-2453) prior to installing the micropiles.
6. The Contractor may need to field adjust the proposed pile locations to avoid conflict with existing Bent 24 drilled shafts. Any relocation of piles shall be submitted to the Engineer for approval.
7. See Special Provision for Micropiles for micropiles construction, material requirements, and load and proof testing.
8. The Temporary shoring and TSRS are not shown for clarity. See Sheets #SUBs and #TSRs.
9. It is anticipated that micropile installation will be performed in advance of excavation for construction of the reinforced concrete pile cap. Installation shall be coordinated with the micropile manufacturer and the contract suggested stages of construction and sequencing requirements. See Roadway Plans and Contract Special Provisions for details.

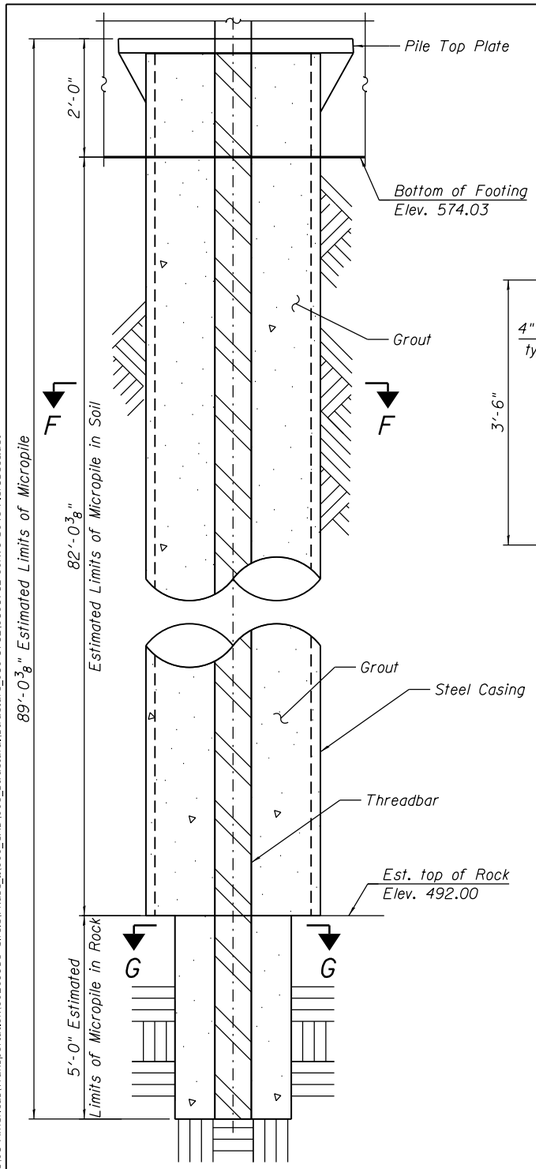
HBM ENGINEERING GROUP, LLC

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

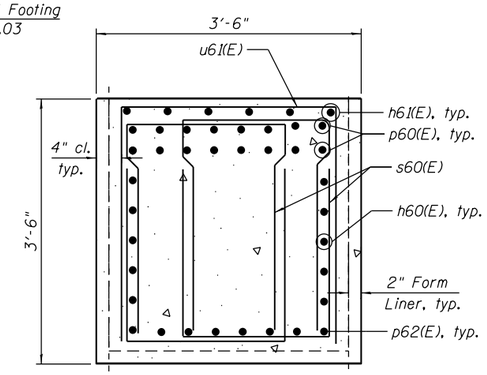
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIER 1 PLAN AND ELEVATION
STRUCTURE NO. 016-1712
SHEET NO. S2-47 OF S2-63 SHEETS

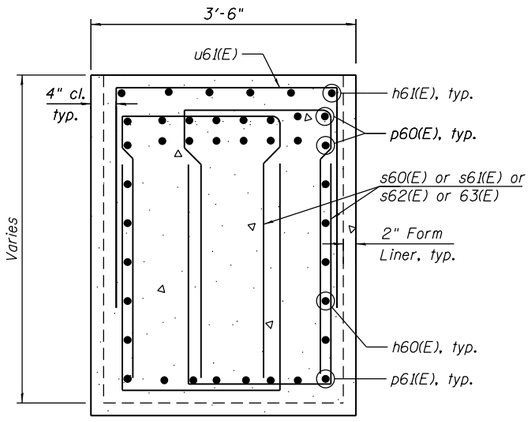
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	462
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



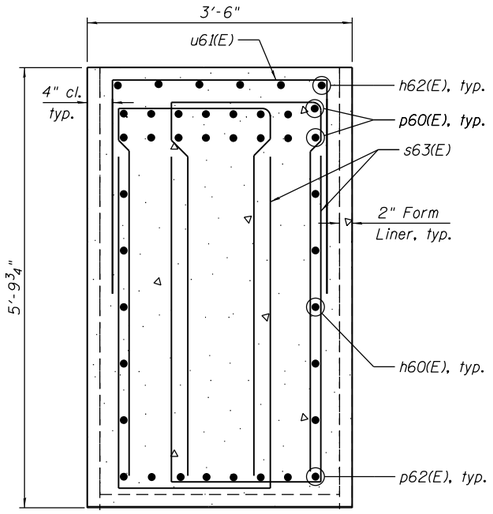
MICROPILE



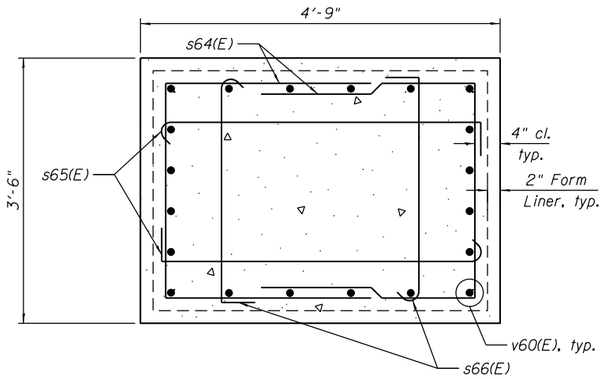
SECTION A-A
(At end of cap)



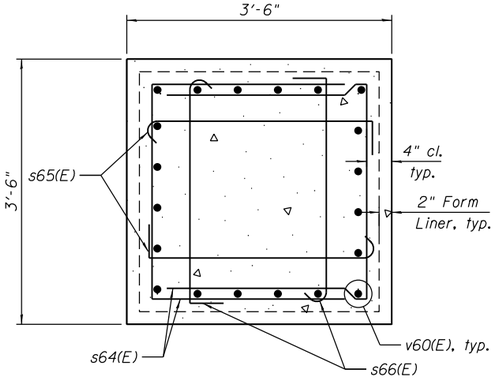
SECTION B-B



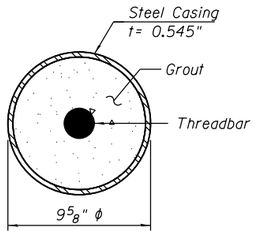
SECTION C-C
(At end of cap)



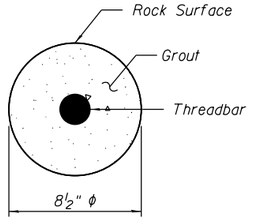
SECTION D-D
At Top of Column



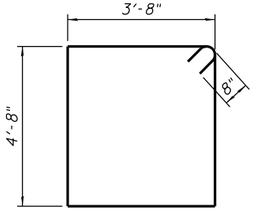
SECTION E-E
At Bottom of Column



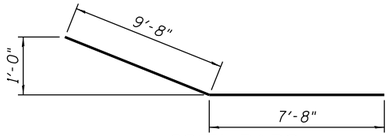
SECTION F-F



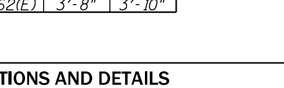
SECTION G-G



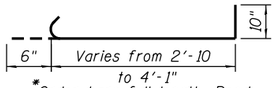
s67(E) BARS



p62(E) BARS

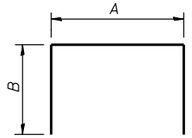


s65(E) BARS



*Order bars full length. Bend and cut to fit in field.

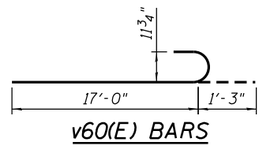
s66(E) BARS



BARS
See Table 2

TABLE 2

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



v60(E) BARS

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h60(E)	10	#5	49'-2"	
h61(E)	42	#5	7'-1"	
h62(E)	6	#5	5'-11"	
h63(E)	17	#6	30'-6"	
p60(E)	16	#10	48'-10"	
p61(E)	8	#10	29'-3"	
p62(E)	16	#10	17'-4"	
s60(E)	52	#6	8'-7"	
s61(E)	80	#6	9'-9"	
s62(E)	60	#6	10'-1"	
s63(E)	204	#6	10'-11"	
s64(E)	54	#5	7'-9"	
s65(E)	54	#5	4'-2"	
s66(E)	54	#5	5'-5"	
s67(E)	32	#6	18'-0"	
s68(E)	32	#6	16'-10"	
t60(E)	11	#6	6'-6"	
t61(E)	50	#9	11'-6"	
u60(E)	14	#6	10'-6"	
u61(E)	50	#5	5'-10"	
u62(E)	12	#5	11'-4"	
v60(E)	54	#9	18'-3"	
w60(E)	16	#6	32'-4"	
Structure Excavation		Cu. Yd.	80	
Concrete Structures		Cu. Yd.	96.4	
Reinforcement Bars, Epoxy Coated		Pound	22,570	
Concrete Sealer		Sq. Ft.	1,643	
Micro-Piles		Each	16	
Granular Backfill for Structures		Cu. Yd.	186	

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

NOTES:

1. For additional notes, see Sheet S2-47.
2. All micropile loads are given at B/Cap level.
3. Contractor to verify micropile design.
4. Micropile types refer to FHWA NHI-05-039: Micropile Design and Construction Reference Manual.

MICROPILE DATA

Type and Size: Micropile, Contractor Designed
Nominal Required Bearing: Set in Rock
Maximum Factored Compression Load : 270 kips
Maximum Service Compression Load : 210 kips
Estimated Length: 89'
Number Required: 16
Estimated Top of Rock Elev. : 492.0
Rock Socket Depth: 5'-0"

Note: The Factored and Service Loads shall be used for testing requirements according to the Special Provision Micropiles, Special. For test pile and proof test requirements, see special provision.

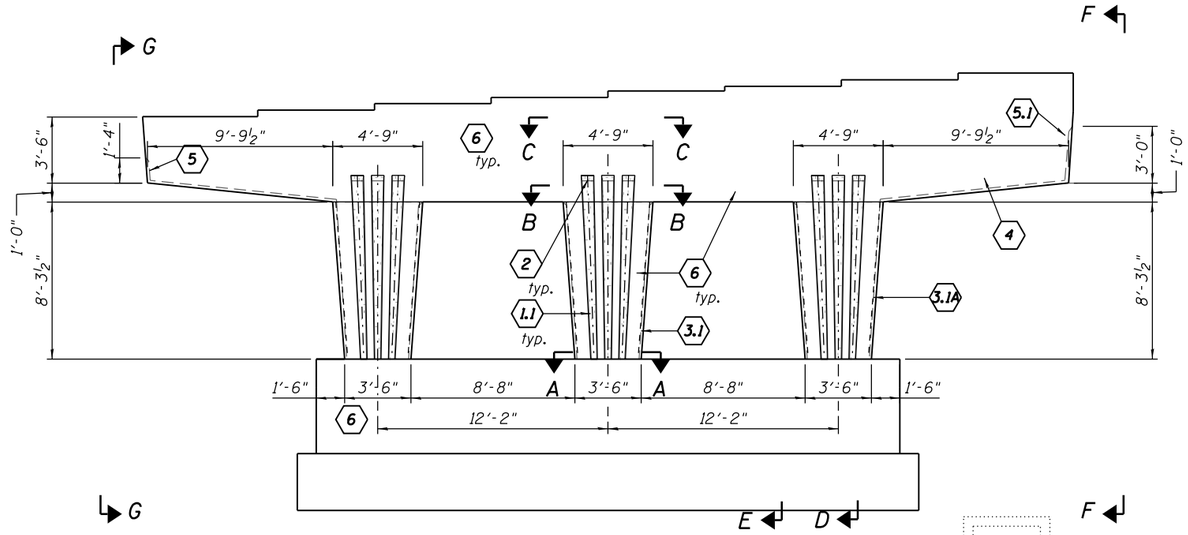
HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

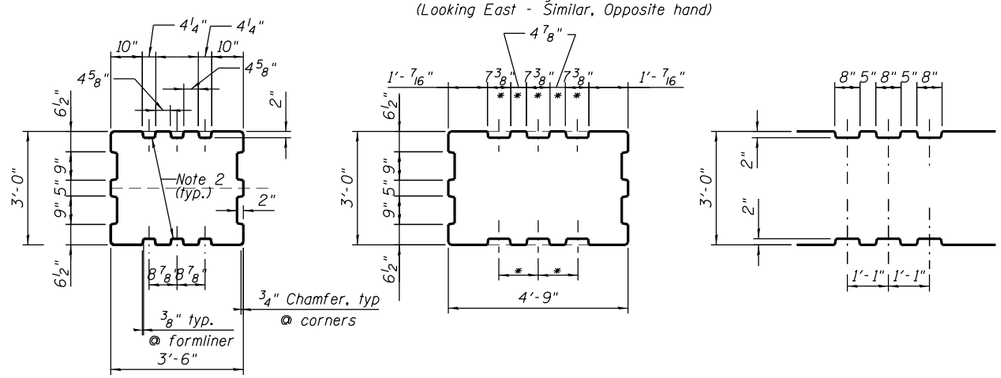
PIER 1 SECTIONS AND DETAILS
STRUCTURE NO. 016-1712
SHEET NO. S2-48 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	463
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



PIER 1 ELEVATION

(Looking West)
(Looking East - Similar, Opposite hand)



SECTION A-A

At Bottom of Column

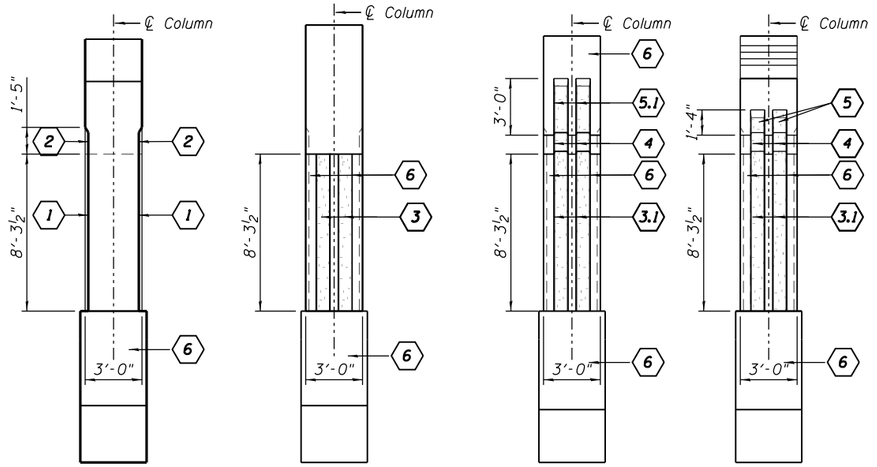
SECTION B-B

At Top of Column

SECTION C-C

In Cap

* Dimensions of formliner at top of column (panel 1) to match dimensions of formliner at bottom of pier cap (panel 2).



SECTION D

SECTION E

END VIEW F

END VIEW G

NOTES:

1. Surface indicated as ⟨6⟩ represents all surface except formliner and shall have smooth rubbed finish. Cost included with pay item Rubbed Finish.
2. Tapered fluting - dimensions vary, see elevation profile.
3. Form liner panel ⟨2⟩ is continuation of panel ⟨1.1⟩. Keep adjacent form liners aligned.
4. Hand clean and smooth the surface of the construction joint between the pier and cap.
5. Texture 1: Light Sandblast, 1/16" depth, as selected from samples provided by the Contractor.
   Texture 2: Smooth

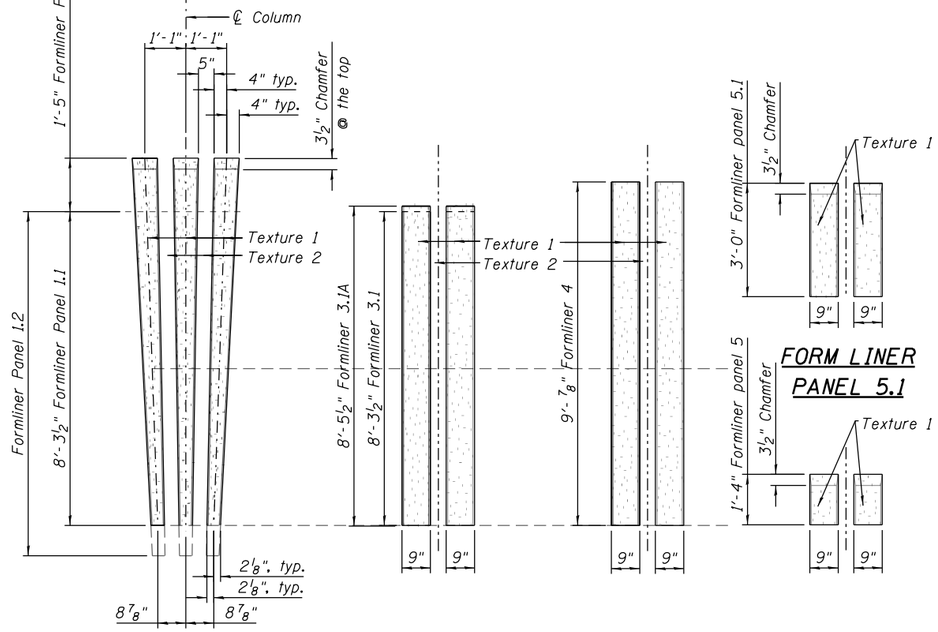
LEGEND

⟨1.1⟩ ⟨2⟩ ⟨3.1⟩ ⟨3.1A⟩ ⟨4⟩ ⟨5⟩ ⟨5.1⟩ — Textured Form Liner

⟨6⟩ — Rubbed finish Contractor's Form

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Form Liner Textured Surface	Sq. Ft.	549
Rubbed Finish	Sq. Ft.	1029



FORM LINER PANEL 1.1 & 2

FORM LINER PANEL 3.1 & 3.1A

FORM LINER PANEL 4

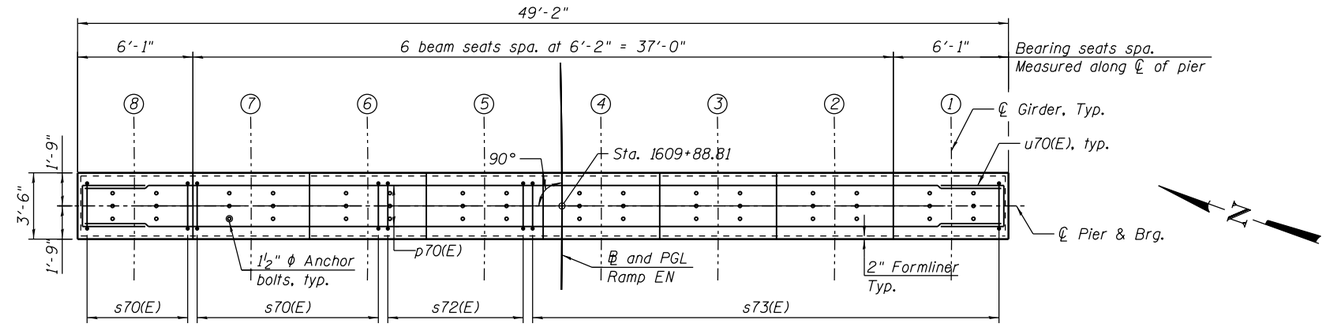
FORM LINER PANEL 5

FORM LINER PANEL 5.1

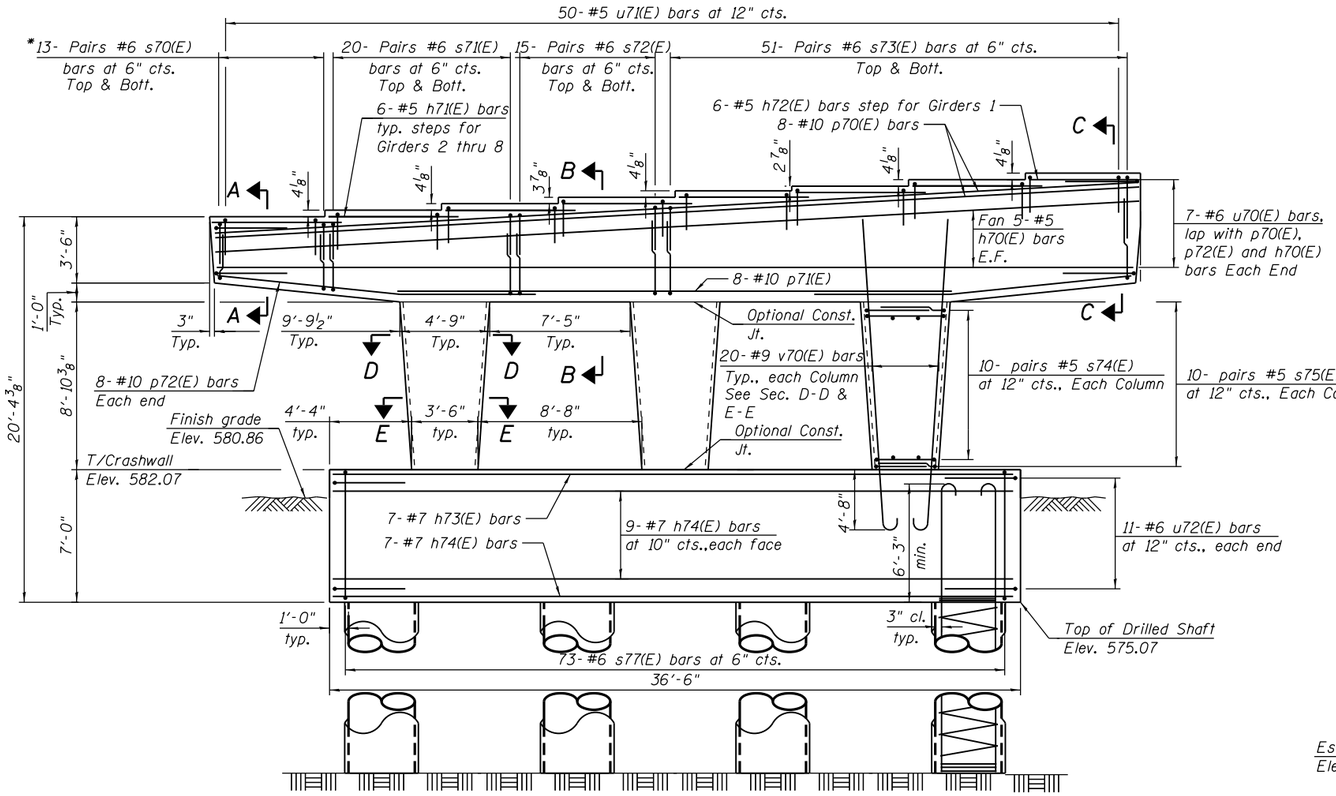
HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - MR	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
		CHECKED - JJS	REVISED -	
	PLOT SCALE = N.T.S	DRAWN - MR	REVISED -	
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -	

PIER 1 ARCHITECTURAL DETAILS
STRUCTURE NO. 016-1712
SHEET NO. S2-49 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	464
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

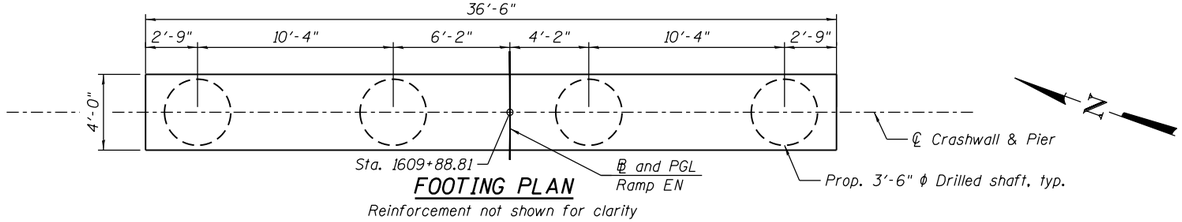


TOP PLAN



ELEVATION

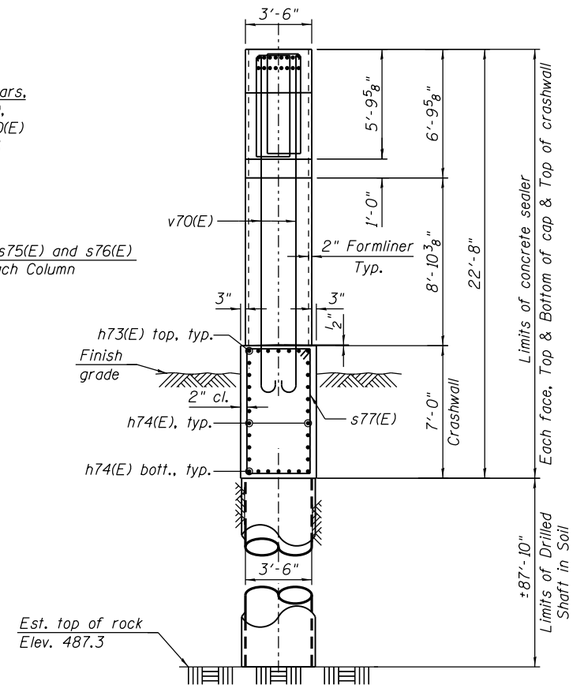
(Looking upstation)



FOOTING PLAN

Reinforcement not shown for clarity

* Cut vertical legs of bars to fit.



END VIEW

NOTES:

1. Pour steps monolithically with cap.
2. Space reinforcement in cap to miss anchor bolts.
3. For Anchor Bolt Details see Sheet S2-42.
4. For details of drilled shafts and Sections A-A thru E-E, see Sheet S2-51.
5. For mechanical splicers details and quantities see Sheet S2-54.

TOP OF SEAT ELEVATION

Girder No.	Seat Elevation
1	597.73
2	597.39
3	597.04
4	596.80
5	596.45
6	596.12
7	595.78
8	595.43

FILE NAME: pw:\617479-PWINT.aecomonline.local\AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_IN\000_CAD\008_StructuralStructure_016-1712\016171712-60X79-S050-Pier2GPE
8:36:25 AM

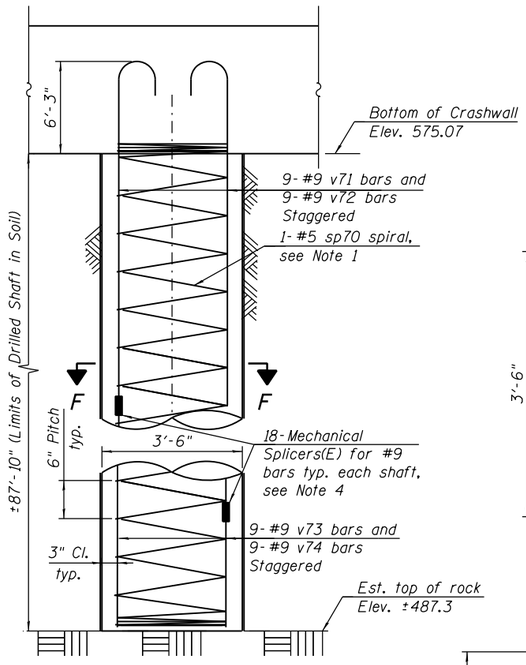
HBM ENGINEERING GROUP, LLC

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

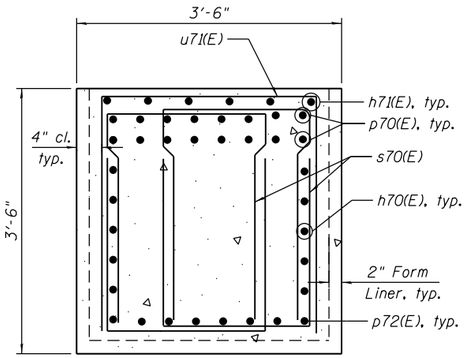
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIER 2 PLAN AND ELEVATION
STRUCTURE NO. 016-1712
SHEET NO. S2-50 OF S2-63 SHEETS

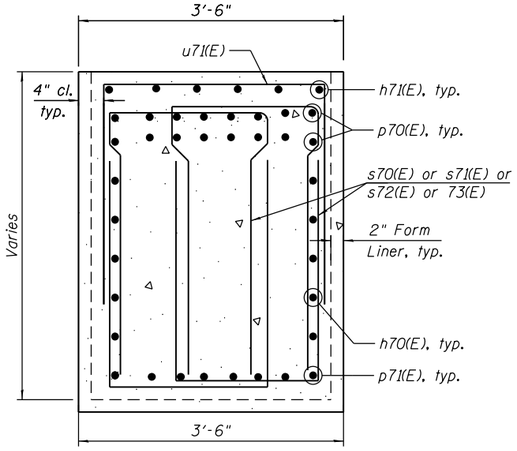
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	465
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	



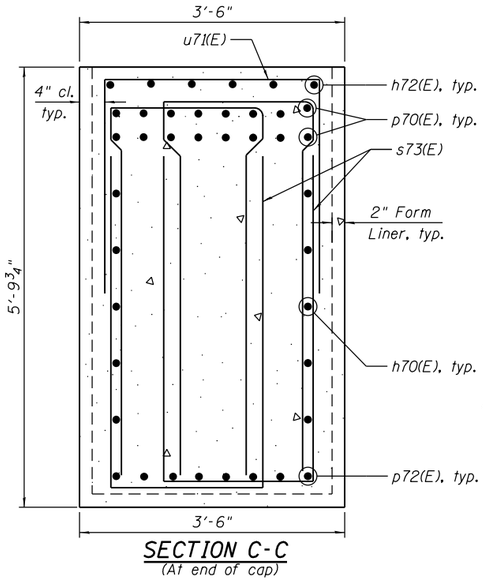
DRILLED SHAFT



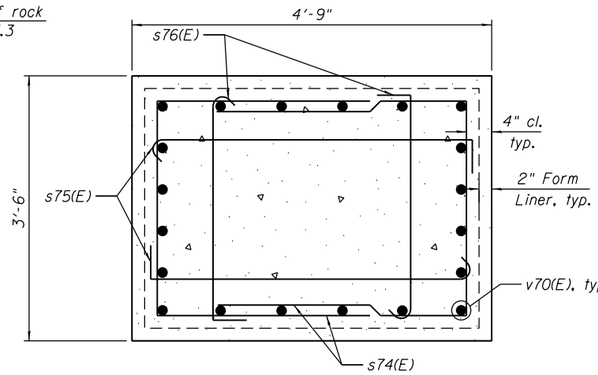
SECTION A-A
(At end of cap)



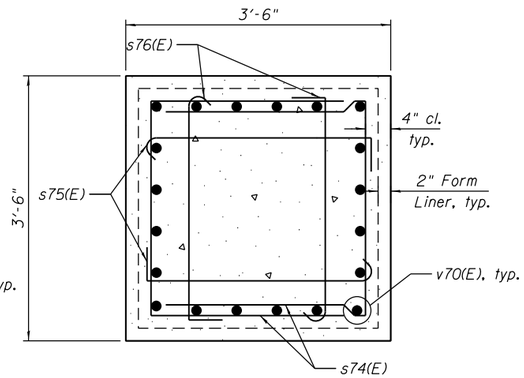
SECTION B-B



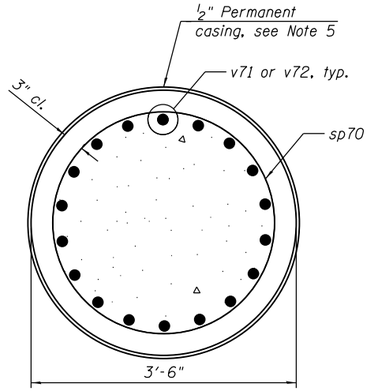
SECTION C-C
(At end of cap)



SECTION D-D
(At Top of Column)



SECTION E-E
(At Bottom of Column)



SECTION F-F

NOTES:

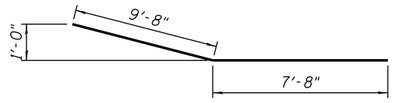
1. #5 sp70 spiral, each drilled shaft:
   (a) Provide $1\frac{1}{2}$ extra turns, shop welded together per AWS D1.4 top and bottom. Extend spiral 3" into pier cap. Provide 4- #4 spacers or equivalent.
   (b) When splicing spiral reinforcement is necessary, the spiral shall be provided with $1\frac{1}{2}$ 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.
2. 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.
3. For details and quantity of Bar Splicers and Mechanical Splicers, see Sheet S2-54.
4. 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.
5. 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.
6. A drilled shaft shall be tested in accordance with the Special Provisions for Crosshole Sonic Logging.

BILL OF MATERIAL

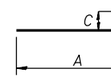
	Bar	No.	Size	Length	Shape
	h70(E)	10	#5	49'-2"	
	h71(E)	42	#5	7'-1"	
	h72(E)	6	#5	5'-11"	
	h73(E)	7	#7	36'-2"	
	h74(E)	25	#7	36'-2"	
	p70(E)	16	#10	48'-10"	
	p71(E)	8	#10	28'-9"	
	p72(E)	16	#10	17'-4"	
	s70(E)	52	#6	8'-7"	
	s71(E)	80	#6	9'-9"	
	s72(E)	60	#6	10'-1"	
	s73(E)	204	#6	10'-11"	
	s74(E)	60	#5	7'-9"	
	s75(E)	60	#5	4'-2"	
	s76(E)	60	#5	5'-5"	
	s77(E)	73	#6	21'-10"	
**	sp70	4	#5	87'-10"	
	u70(E)	14	#6	10'-6"	
	u71(E)	50	#5	5'-10"	
	u72(E)	22	#6	11'-4"	
	v70(E)	60	#9	17'-4"	
	v71	36	#9	45'-3"	
	v72	36	#9	51'-3"	
	v73	36	#9	50'-1"	
	v74	36	#9	44'-1"	
	Structure Excavation		Cu. Yd.	53	
	Concrete Structures		Cu. Yd.	86.6	
	Reinforcement Bars		Pound	30,380	
	Reinforcement Bars, Epoxy Coated		Pound	22,790	
	Permanent Casing		Foot	352	
	Drilled Shaft in Soil		Cu. Yd.	126	
	Concrete Sealer		Sq. Ft.	1,908	
	Crosshole Sonic Logging Access Ducts		Foot	364	
	Crosshole Sonic Logging Testing		Each	1	
	Granular Backfill for Structures		Cu. Yd.	132	

**Length is height of spiral.

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



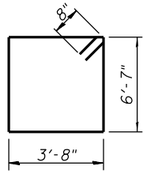
p62(E) BARS



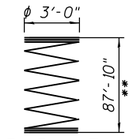
BARS
See Table 1

TABLE 1

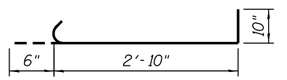
Bar	A	B	C
v70(E)	16'-1"	1'-3"	$11\frac{3}{4}$"
v71	44'-0"	1'-3"	$11\frac{3}{4}$"
v72	50'-0"	1'-3"	$11\frac{3}{4}$"



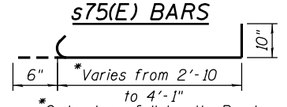
BAR s77(E)



BAR sp70

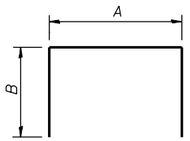


s75(E) BARS



*Order bars full length. Bend and cut to fit in field.

s76(E) BARS



BARS
See Table 2

TABLE 2

Bar	A	B
s70(E)	2'-1"	3'-3"
s71(E)	2'-1"	3'-10
s72(E)	2'-1"	4'-0"
s73(E)	2'-1"	4'-5"
s74(E)	2'-1"	2'-10"
s78(E)	3'-8"	6'-7"
u70(E)	2'-10"	3'-10"
u71(E)	2'-10"	1'-6"
u72(E)	3'-8"	3'-10"

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - WM, MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PIER 2 SECTIONS AND DETAILS STRUCTURE NO. 016-1712	
	CHECKED - MI, JJS	REVISED -			
PLOT SCALE = N.T.S	DRAWN - WM, MAA	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-51 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	466
		CONTRACT NO. 60X79		
		ILLINOIS FED. AID PROJECT		

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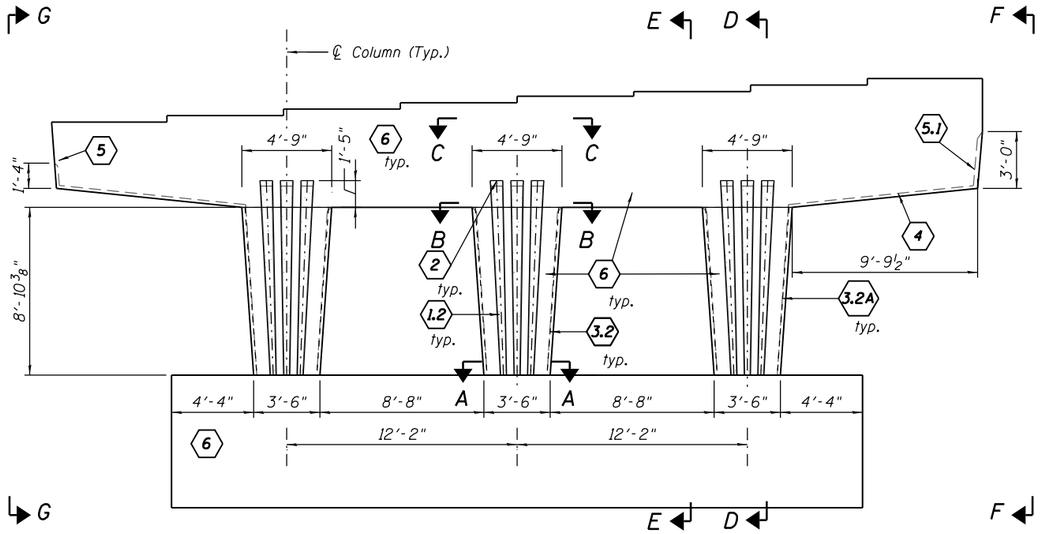
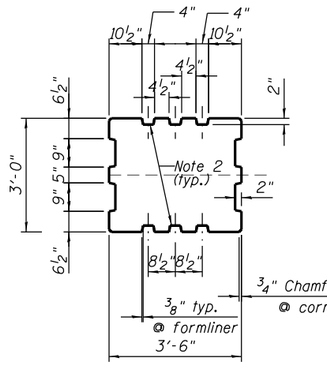


PIER 2 ELEVATION

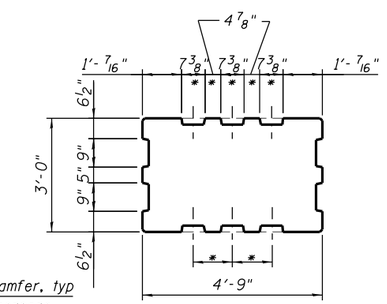
(Looking West)

(Looking East - Similar, Opposite hand)



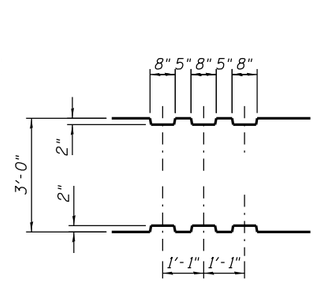
SECTION A-A

At Bottom of Column



SECTION B-B

At Top of Column



SECTION C-C

In Cap

* Dimensions of formliner at top of column (panel 1) to match dimensions of formliner at bottom of pier cap (panel 2).

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Form Liner Textured Surface	Sq. Ft.	576
Rubbed Finish	Sq. Ft.	1269

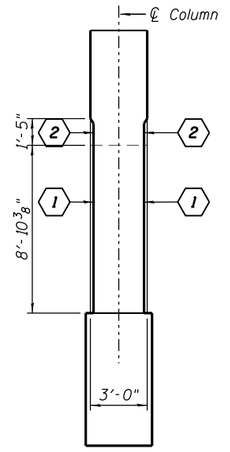
NOTES:

1. Surface indicated as (6) represents all surface except formliner and shall have smooth rubbed finish. Cost included with pay item Rubbed Finish.
2. Tapered fluting - dimensions vary, see elevation profile.
3. Form liner panel (2) is continuation of panel (1.2). Keep adjacent form liners aligned.
4. Hand clean and smooth the surface of the construction joint between the pier and cap.
5. Texture 1: Light Sandblast, 1/16" depth, as selected from samples provided by the Contractor.
   Texture 2: Smooth

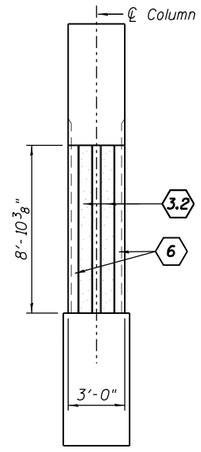
LEGEND

(1.2) (2) (3.2) (3.2A) (4) (5) (5.1) — Textured Form Liner

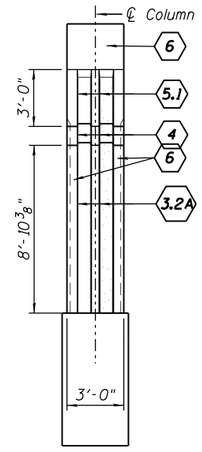
(6) — Rubbed finish Contractor's Form



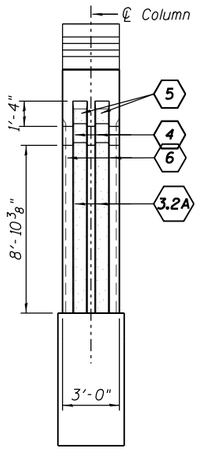
SECTION D



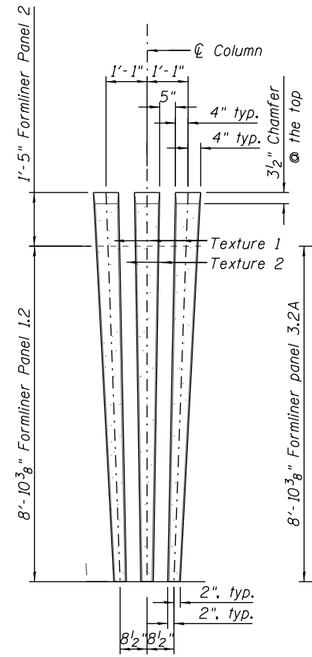
SECTION E



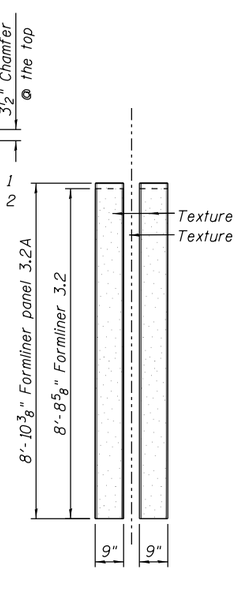
END VIEW F



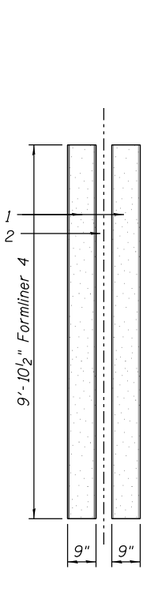
END VIEW G



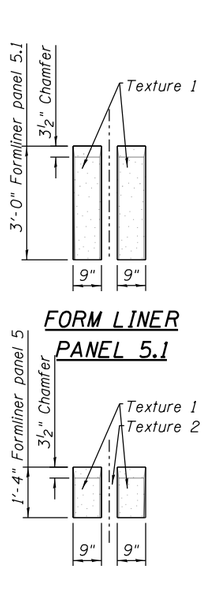
FORM LINER PANEL 1.2 & 2



FORM LINER PANEL 3.2 & 3.2A



FORM LINER PANEL 4



FORM LINER PANEL 5.1

FORM LINER PANEL 5

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIER 2 ARCHITECTURAL DETAILS
STRUCTURE NO. 016-1712
SHEET NO. S2-52 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	467
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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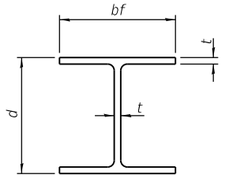
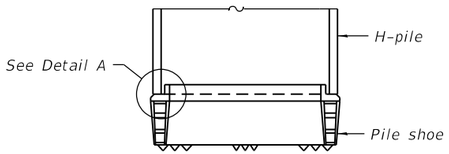
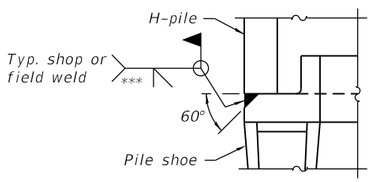


STEEL PILE TABLE

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



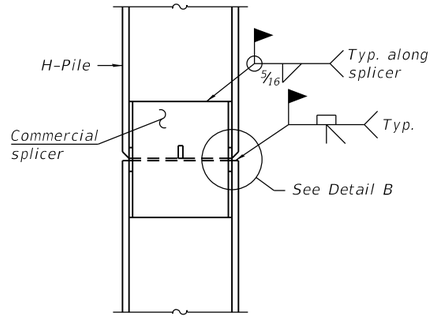
ELEVATION



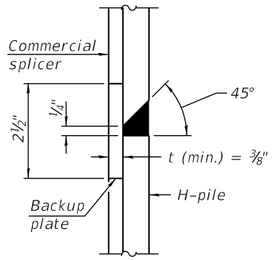
DETAIL A

SHOE ATTACHMENT

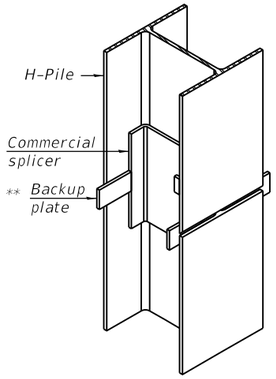
Note:
The steel H-piles shall be according to AASHTO M270 Grade 50.



ELEVATION

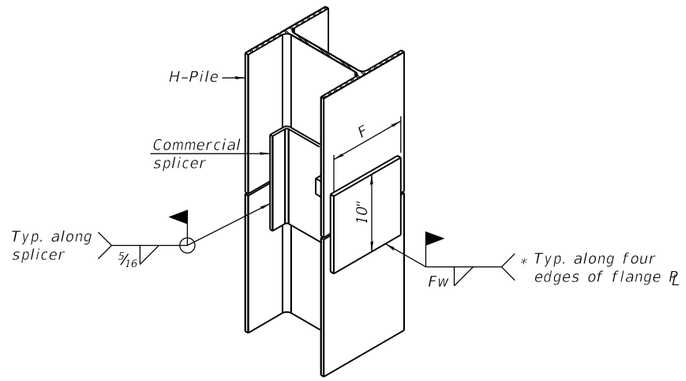


DETAIL "B"



ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE



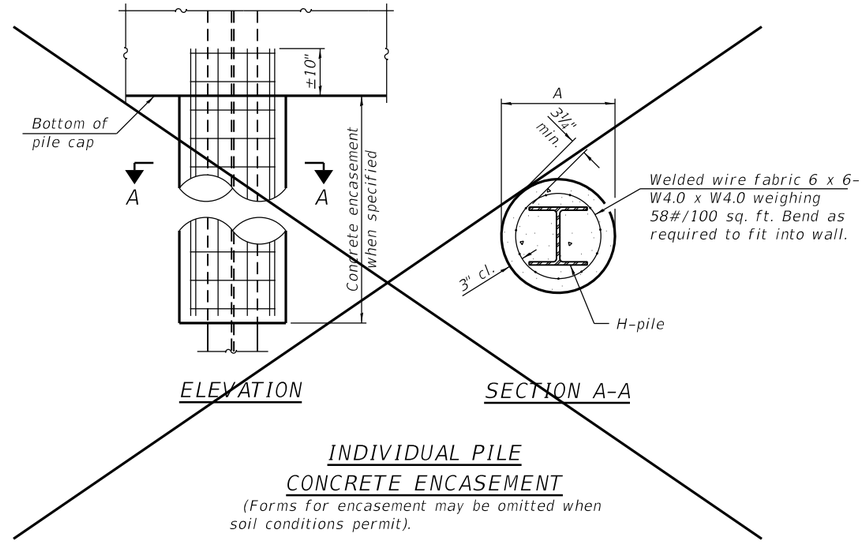
ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

* Interrupt welds 1/4" from end of web and/or each flange.

** Remove portions of backup plates that extend outside the flanges.

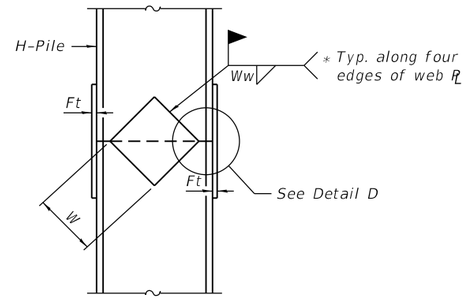
*** Weld size per pile shoe manufacturer (5/16" min.).



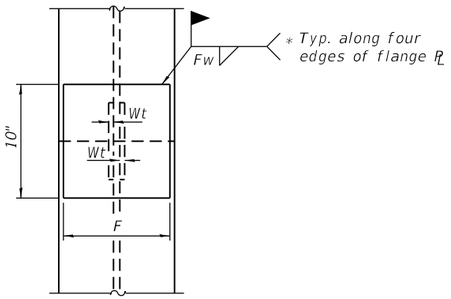
ELEVATION SECTION A-A

INDIVIDUAL PILE CONCRETE ENCASEMENT

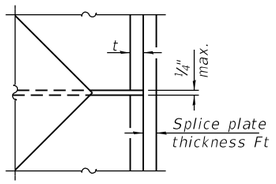
(Forms for encasement may be omitted when soil conditions permit).



ELEVATION



END VIEW



DETAIL D

Designation	F	Ft	Fw	W	Wt	Ww
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	11/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	11/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	11/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

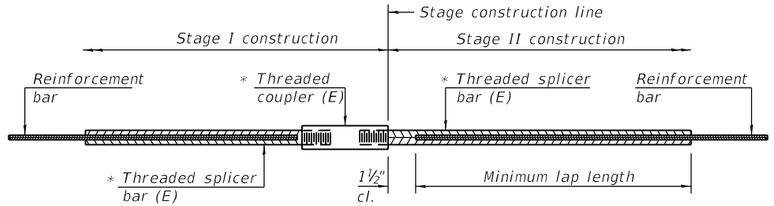
WELDED PLATE FIELD SPLICE

F-HP 8-11-2017

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	HP PILE DETAILS STRUCTURE NO. 016-1712
	CHECKED - MI, WM	REVISED -		
PLOT SCALE = N.T.S	DRAWN - MAA	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-53 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	468
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

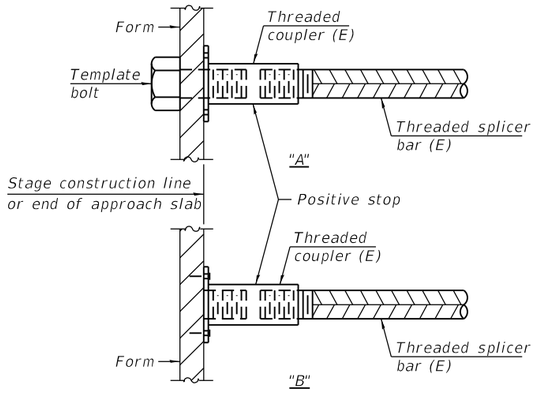


STANDARD BAR SPLICER ASSEMBLY

Threaded splicer bar length = min. lap length + 1½" + thread length

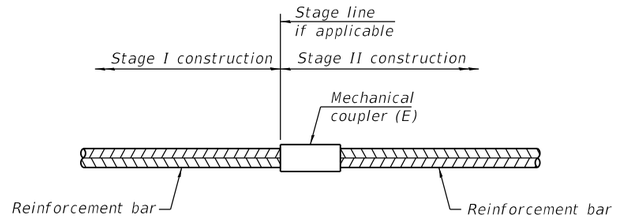
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Minimum lap length



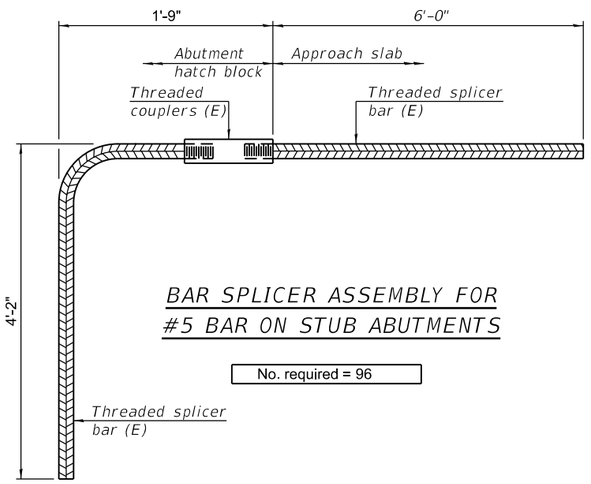
INSTALLATION AND SETTING METHODS

"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
W. Abut.	#11	48
Pier 2	#9	72



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

HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS
STRUCTURE NO. 016-1712
SHEET NO. S2-54 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	469
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_StructuralStructure_016-1712\016171260X79-S0054-BarSplice
8:36:38 AM

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: 1103+77.81
Offset: 27.3835 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		Hard, brown SILTY CLAY LOAM, trace gravel --FILL--	5		1	7 6 6	> 4.50 P	16
	580.2	Soft, gray SILTY CLAY LOAM			2	1 2 3	0.41 B	23
	576.7	--In-Situ Vane Shear, 10.5 feet-- --$S_{u\ undis}$ = 972.0 psf-- --$S_{u\ remold}$ = 611.6 psf-- --Sensitivity = 1.6--	10		1	VS		
		--In-Situ Vane Shear, 13.0 feet-- --$S_{u\ undis}$ = 982.9 psf-- --$S_{u\ remold}$ = 589.7 psf-- --Sensitivity = 1.7--	15		2	VS		
		--In-Situ Vane Shear, 15.5 feet-- --$S_{u\ undis}$ = 873.7 psf-- --$S_{u\ remold}$ = 513.3 psf-- --Sensitivity = 1.7--			3	VS		
		--In-Situ Vane Shear, 18.0 feet-- --$S_{u\ undis}$ = 928.3 psf-- --$S_{u\ remold}$ = 360.4 psf-- --Sensitivity = 2.6--	20		4	VS		
		--In-Situ Vane Shear, 20.5 feet-- --$S_{u\ undis}$ = 775.4 psf-- --$S_{u\ remold}$ = 360.4 psf-- --Sensitivity = 2.2--			5	VS		
		--In-Situ Vane Shear, 23.0 feet-- --$S_{u\ undis}$ = 600.6 psf-- --$S_{u\ remold}$ = 305.8 psf-- --Sensitivity = 2.0--	25		6	VS		
		--In-Situ Vane Shear, 25.5 feet-- --$S_{u\ undis}$ = 578.8 psf-- --$S_{u\ remold}$ = 316.7 psf-- --Sensitivity = 1.8--			7	VS		
		--In-Situ Vane Shear, 28.0 feet-- --$S_{u\ undis}$ = 611.6 psf-- --$S_{u\ remold}$ = 338.5 psf-- --Sensitivity = 1.8--	30		8	VS		
		--In-Situ Vane Shear, 30.5 feet-- --$S_{u\ undis}$ = 786.3 psf-- --$S_{u\ remold}$ = 382.2 psf-- --Sensitivity = 2.1--			9	VS		
		--In-Situ Vane Shear, 33.0 feet-- --$S_{u\ undis}$ = 698.9 psf-- --$S_{u\ remold}$ = 404.1 psf-- --Sensitivity = 1.7--	35		10	VS		
		--In-Situ Vane Shear, 35.5 feet-- --$S_{u\ undis}$ = 808.1 psf-- --$S_{u\ remold}$ = 502.4 psf-- --Sensitivity = 1.6--			11	VS		
		--In-Situ Vane Shear, 38.0 feet-- --$S_{u\ undis}$ = 982.9 psf-- --$S_{u\ remold}$ = 546.0 psf-- --Sensitivity = 1.8--	40		12	VS		

GENERAL NOTES

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

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.

WANGENGINC 1100401.GPJ WANGENG.GDT 8/30/17

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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: 1103+77.81
Offset: 27.3835 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--In-Situ Vane Shear, 40.5 feet-- --$S_{u\ undis}$ = 906.4 psf-- --$S_{u\ remold}$ = 524.2 psf-- --Sensitivity = 1.7--	40		13	VS		
	542.2	--In-Situ Vane Shear, 43.0 feet-- --$S_{u\ undis}$ = 677.1 psf-- --$S_{u\ remold}$ = 393.1 psf-- --Sensitivity = 1.7--			14	VS		
		Boring terminated at 43.50 ft	45					
			50					
			55					
			60					

GENERAL NOTES

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

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.

WANGENGINC 1100401.GPJ WANGENG.GDT 8/30/17

NOTES:

1. Boring Log VST-06 station & offset along Proposed ℄ Ramp EN is: Sta. 1615+39.21, Offset 40.21' Rt.

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS I STRUCTURE NO. 016-1712
		CHECKED - WM	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - MAA	REVISED -		SHEET NO. S2-55 OF S2-63 SHEETS
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	470
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_D502_NAIDocuments\01 AmericasTransportation\60269938 CirclePhase_II\000_CAD\008_StructuralStructure_016-1712\016171 2-60X79-5055-Boring_Logs-I

8:36:41 AM

BORING LOG 1705-B-06A

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

WEI Job No.: 1100-04-01

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

Datum: NAVD 88
Elevation: 591.98 ft
North: 1897749.88 ft
East: 1171805.18 ft
Station: 1816+91.99
Offset: 2.3899 LT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
591.5	6-inch thick, black SILTY LOAM --TOPSOIL--					
	Medium dense to dense, brown LOAM, little gravel and brick fragments --FILL--		1	9 17 13	NP	6
		5	2	2 15 9	NP	14
586.5	Very stiff, gray SILTY CLAY LOAM, trace gravel		3	2 3 4	2.95 B	17
		10	4	2 4 4	2.54 B	22
581.5	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel		5	3 3 3	< 0.25 P	21
		15	6	0 2 2	0.41 B	24
			7	0 1 1	0.25 B	22
		20	8	0 0 2	0.41 B	26
			9	0 0 1	0.08 B	26
		25	10	0 0 2	0.25 B	26
			11	0 0 3	0.25 B	28
		30	12	0 1 2	0.57 B	23
		35	13	0 1 2	0.50 P	21
		40	14	0 3 2	0.49 B	24

GENERAL NOTES

Begin Drilling 07-25-2013 Complete Drilling 07-26-2013
Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR
Driller R&J Logger A. Tomaras Checked by C. Marin
Drilling Method 2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling NA
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.

WANGENGINC 11000401.GPJ WANGENG.GDT 1/9/14

BORING LOG 1705-B-06A

Wang Engineering
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Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

WEI Job No.: 1100-04-01

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

Datum: NAVD 88
Elevation: 591.98 ft
North: 1897749.88 ft
East: 1171805.18 ft
Station: 1816+91.99
Offset: 2.3899 LT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		45	15	0 2 2	0.41 B	25
		50	16	1 1 2	0.33 B	25
540.2	Very stiff to hard, gray SILTY CLAY, trace gravel					
		55	17	6 7 13	3.36 B	19
		60	18	13 18 21	4.84 B	14
		65	19	10 12 19	4.92 B	18
525.2	Very stiff, gray CLAY, trace gravel					
	--L_L(%)=41, P_L(%)=18-- --%Gravel=0.1-- --%Sand=3.0-- --%Silt=46.6-- --%Clay=50.3-- --A-7-6 (23)--	70	20	6 9 10	2.54 B	24
518.2	Loose, gray SILT --Wet--	75	21	2 4 5	NP	19
515.2	Hard, gray SILTY CLAY, trace gravel					
		80	22	13 20 28	8.94 S	13

GENERAL NOTES

Begin Drilling 07-25-2013 Complete Drilling 07-26-2013
Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR
Driller R&J Logger A. Tomaras Checked by C. Marin
Drilling Method 2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling NA
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.

WANGENGINC 11000401.GPJ WANGENG.GDT 1/9/14

BORING LOG 1705-B-06A

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

WEI Job No.: 1100-04-01

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

Datum: NAVD 88
Elevation: 591.98 ft
North: 1897749.88 ft
East: 1171805.18 ft
Station: 1816+91.99
Offset: 2.3899 LT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
510.2	Very dense to hard, gray SILTY LOAM to SILTY CLAY LOAM, trace gravel					
		85	23	33 46 50/6	> 4.50 P	10
		90	24	13 20 26	8.61 S	11
	--HARD DRILLING-- --Possible Cobbles--					
499.0	Very dense, SANDY GRAVEL, with rock fragments	95	25	21 24 29	NP	11
	--HARD DRILLING-- --Possible Cobbles--	100				
			26	50/6	NP	17
490.0	Strong, fair to good rock quality, light gray, fresh, joint breaks with little to no infill, slightly vuggy DOLOSTONE with stylolites --Run 1 - RECOVERY=100%-- --RQD (top 5ft)=45%-- --RQD= (10ft)=62%--	105	1	CORE	NP	
		110				
480.0	Boring terminated at 112.00 ft					
		115				
		120				

GENERAL NOTES

Begin Drilling 07-25-2013 Complete Drilling 07-26-2013
Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR
Driller R&J Logger A. Tomaras Checked by C. Marin
Drilling Method 2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling NA
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.

WANGENGINC 11000401.GPJ WANGENG.GDT 1/9/14

NOTES:

1. Boring Log 1705-B-06A station & offset along Proposed ℄ Ramp EN is: Sta. 1611+68.52, Offset 8.70' Lt.

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1145 N Main Street
Lombard, IL 60148
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BORING LOG 1712-B-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: 577.47 ft
North: 1897623.12 ft
East: 1171520.05 ft
Station: 3644+00.68
Offset: 14.2717 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bl/w 6 in)	Qu (tsf)	Moisture Content (%)
	577.47	12-inch thick ASPHALT --PAVEMENT--						
	576.5	10-inch thick CONCRETE --PAVEMENT--						
	576.0	CRUSHED STONE --BASE COURSE--						
	574.5	Hard, black SILTY CLAY --FILL--						
		Very soft to medium stiff, CLAY to SILTY CLAY, trace gravel						
					1	7 6 6	4.25 B	12
			5		2	4 3 3	0.66 B	16
					3	1 2 3	0.49 B	16
			10		4	1 2 3	0.33 B	20
					5	1 1 2	0.16 B	25
			15		6	1 2 2	0.25 B	26
					7	1 1 2	0.16 B	25
			20		8	1 2 1	0.25 B	26
	543.5	Loose, gray SILT						
	540.7	Very stiff to hard, gray SILTY CLAY, trace gravel						
					9	1 2 2	< 0.25 P	25
			25		10	1 2 3	0.25 B	25
					11	1 2 3	0.33 B	16
			30		12	2 2 3	0.33 B	25
					13	3 5 4	NP	23
			35		14	4 6 10	2.62 B	21
			40					

GENERAL NOTES

Begin Drilling: 10-27-2013 Complete Drilling: 10-28-2013
Drilling Contractor: GSG Drill Rig: D-50 TMR
Driller: J&J Logger: C. Davis Checked by: DRAFT
Drilling Method: 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 57.00 ft
At Completion of Drilling: ▼ MUD (3')
Time After Drilling: 24 hours
Depth to Water: ▼ 45.00 ft
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENG INC 1109401 GPJ WANGENG GDT 1/9/14

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BORING LOG 1712-B-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: 577.47 ft
North: 1897623.12 ft
East: 1171520.05 ft
Station: 3644+00.68
Offset: 14.2717 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bl/w 6 in)	Qu (tsf)	Moisture Content (%)
	515.7	Hard, gray SILTY CLAY LOAM, trace gravel						
			45		15	4 7 10	4.35 B	13
	510.7	Very dense, gray SILTY LOAM, little gravel						
			50		16	4 8 12	4.02 B	20
	525.7	Soft, gray CLAY with SILT lamination --Wet--						
			55		17	3 3 4	0.49 B	26
	520.5	Loose, gray, coarse SAND, some gravel --Saturated--						
			60		18	7 3 3	NP	16
		--HARD DRILLING-- --Possible Cobbles--						
			65		19	16 20 46	10.25 B	13
			70		20	34 50 50/4	NP	11
			75		21	30 32 33	NP	12
			80		22	50/1		14

GENERAL NOTES

Begin Drilling: 10-27-2013 Complete Drilling: 10-28-2013
Drilling Contractor: GSG Drill Rig: D-50 TMR
Driller: J&J Logger: C. Davis Checked by: DRAFT
Drilling Method: 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 57.00 ft
At Completion of Drilling: ▼ MUD (3')
Time After Drilling: 24 hours
Depth to Water: ▼ 45.00 ft
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENG INC 1109401 GPJ WANGENG GDT 1/9/14

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Fax: 630 953-9938

BORING LOG 1712-B-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: 577.47 ft
North: 1897623.12 ft
East: 1171520.05 ft
Station: 3644+00.68
Offset: 14.2717 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bl/w 6 in)	Qu (tsf)	Moisture Content (%)
					23	50/2		11
		--ROLLER BIT REFUSAL--	85					
	492.0	--WEATHERED BEDROCK--						
	490.5	Strong, light gray, good rock mass quality, bedded, fresh DOLOSTONE, 2- to 18-inch beds, 2- to 18-inch spaced joints, horizontal and vertical joints with less than 0.2-inch infilling, hard joint wall, with stylolitic surfaces, and moderately vuggy porosity, <1.5 inch vugs. --Run 1 - RECOVERY=100%-- --RQD=88%--						
			90					
			95					
	480.5	Boring terminated at 97.00 ft						
			100					

GENERAL NOTES

Begin Drilling: 10-27-2013 Complete Drilling: 10-28-2013
Drilling Contractor: GSG Drill Rig: D-50 TMR
Driller: J&J Logger: C. Davis Checked by: DRAFT
Drilling Method: 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 57.00 ft
At Completion of Drilling: ▼ MUD (3')
Time After Drilling: 24 hours
Depth to Water: ▼ 45.00 ft
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENG INC 1109401 GPJ WANGENG GDT 1/9/14

NOTES:

1. Boring Log 1712-B-01 station & offset along Proposed ℄ Ramp EN is: Sta. 1608+40.39, Offset 1.73' Rt.

FILE NAME: pw:\\61479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 CircletPhase_II\000_CAD\008_StructuralStructure_016-1712\016-1712-60X79-S057-Boring_Logs-III

8:36:52 AM

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS III STRUCTURE NO. 016-1712
	CHECKED - WM	REVISED -		
PLOT SCALE = N.T.S	DRAWN - MAA	REVISED -		SHEET NO. S2-57 OF S2-63 SHEETS
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	472
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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BORING LOG 1712-B-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: 578.30 ft
North: 1897649.82 ft
East: 1171680.84 ft
Station: 3545+38.58
Offset: 8.9694 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (0.w/6 in)	Qu (tsf)	Moisture Content (%)
	577.2	13.5-inch thick CONCRETE --PAVEMENT--						
	576.9	4-inch thick ASPHALT --PAVEMENT--						
		Medium dense, brown SANDY GRAVEL --BASE COURSE--			1	12 11 4	NP	9
	574.9	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel	5		2	1 2 2	0.25 B	20
					3	0 0 0	0.16 B	21
			10		4	0 1 3	0.33 B	17
					5	1 1 2	0.57 B	22
			15		6	0 0 1	0.16 B	25
					7	0 0 1	0.08 B	25
	541.6	Very stiff, gray SILTY CLAY, trace gravel	20		8	0 0 0	0.16 B	26
	539.8	Gray SANDY LOAM						
		--L_L(%)=35, P_L(%)=18-- --%Gravel=3.5-- --%Sand=14.0-- --%Silt=50.3-- --%Clay=32.2-- --A-6(13)--	25		9	0 0 0	0.16 B	22
					10	0 0 1	0.16 B	27
			30		11	0 0 2	0.33 B	23
					12	1 2 2	0.25 B	25
			35		13	1 2 1	0.41 B	28
			40		14	5 13 18	2.62 B	16

GENERAL NOTES

Begin Drilling: 10-15-2013 Complete Drilling: 10-16-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-50 TMR
Driller: R&R Logger: D. Kolpacki Checked by: DRAFT
Drilling Method: 2.25" SSA to 10', mud rotary thereafter, boring
backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 57.00 ft
At Completion of Drilling: ▼ 82.00 ft
Time After Drilling: NA
Depth to Water: ▼ NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 1100940.GPJ WANGENG.GDT 1/9/14

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BORING LOG 1712-B-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: 578.30 ft
North: 1897649.82 ft
East: 1171680.84 ft
Station: 3545+38.58
Offset: 8.9694 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (0.w/6 in)	Qu (tsf)	Moisture Content (%)
		--Moist--						
	536.6	Hard, gray SILTY LOAM to SILTY CLAY LOAM, trace gravel						
		--L_L(%)=27, P_L(%)=16-- --%Gravel=8.1-- --%Sand=26.9-- --%Silt=51.7-- --%Clay=13.3-- --A-6(5)--	45		15	9 22 26	6.23 B	15
			50		16	12 17 23	4.50 P	15
	526.6	Very stiff, gray CLAY						
		--L_L(%)=36, P_L(%)=19-- --%Gravel=0.1-- --%Sand=2.0-- --%Silt=49.4-- --%Clay=48.5-- --A-6(17)--	55		17	4 7 9	2.62 B	25
	521.6	Medium dense, gray SANDY LOAM, trace gravel --Saturated--						
			60		18	4 6 9	NP	20
	516.6	Gray, coarse SAND, some gravel						
	513.8	Very dense, gray SILTY LOAM, trace gravel	65		19	20 20 18	NP	12
		--L_L(%)=19, P_L(%)=14-- --%Gravel=7.4-- --%Sand=21.3-- --%Silt=59.7-- --%Clay=11.7-- --A-4(1)--	70		20	32 50/5	NP	11
			75		21	24 44 50/3	9.59 S	12
			80		22	50/3	NP	16

GENERAL NOTES

Begin Drilling: 10-15-2013 Complete Drilling: 10-16-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-50 TMR
Driller: R&R Logger: D. Kolpacki Checked by: DRAFT
Drilling Method: 2.25" SSA to 10', mud rotary thereafter, boring
backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 57.00 ft
At Completion of Drilling: ▼ 82.00 ft
Time After Drilling: NA
Depth to Water: ▼ NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 1100940.GPJ WANGENG.GDT 1/9/14

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BORING LOG 1712-B-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: 578.30 ft
North: 1897649.82 ft
East: 1171680.84 ft
Station: 3545+38.58
Offset: 8.9694 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (0.w/6 in)	Qu (tsf)	Moisture Content (%)
	496.6	Very dense, gray SILT --Saturated--						
		--%Gravel=0.0-- --%Sand=1.7-- --%Silt=91.5-- --%Clay=6.8-- --A-4(0)--	85		23	20 34 50	NP	10
	487.3	Strong, light gray, fair rock mass quality, thin bedded, fresh DOLOSTONE, 2- to 44-inch beds, 2- to 44-inch spaced joints, horizontal and vertical joints with less than 0.2-inch infilling, hard joint wall, with stylolitic surfaces, and moderately vuggy porosity, <0.5 inch vugs. --Run 1 - RECOVERY=100%-- --RQD=71%--	90		24	30 50/5	NP	15
			95		1	CORE		
			100					
	477.3	Boring terminated at 101.00 ft	105					
			110					
			115					
			120					

GENERAL NOTES

Begin Drilling: 10-15-2013 Complete Drilling: 10-16-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-50 TMR
Driller: R&R Logger: D. Kolpacki Checked by: DRAFT
Drilling Method: 2.25" SSA to 10', mud rotary thereafter, boring
backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 57.00 ft
At Completion of Drilling: ▼ 82.00 ft
Time After Drilling: NA
Depth to Water: ▼ NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 1100940.GPJ WANGENG.GDT 1/9/14

NOTES:

1. Boring Log 1712-B-02 station & offset along Proposed ℄ Ramp EN is: Sta. 1610+04.69, Offset 0.58' Lt.

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 CirclePhase_II\000_CAD\008_StructuralStructure_016-1712\016171 2-60X79-S058-Boring_Logs-IV

8:36:59 AM

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS IV STRUCTURE NO. 016-1712	
	CHECKED - WM	REVISED -			
PLOT SCALE = N.T.S	DRAWN - MAA	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-58 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	473
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

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BORING LOG 18-RWB-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: 585.35 ft
North: 1897627.54 ft
East: 1171433.33 ft
Station: 5240+15.29
Offset: 14.5957 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (b/w/6 in)	Qu (tsf)	Moisture Content (%)
	585.0	4-inch thick, black SILTY LOAM --TOPSOIL--						
		Very stiff to hard, brown and gray SILTY CLAY LOAM, trace gravel --FILL--			1	13 11 12	> 4.50 P	17
			5		2	5 6 8	3.44 B	17
	579.8	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			3	2 2 3	0.41 B	20
			10		4	2 2 3	0.49 B	20
					5	0 1 2	0.25 B	25
			15		6	2 3 4	0.66 B	21
					7	2 3 4	0.57 B	22
			20		8	1 3 3	0.49 B	25
			25		9	1 2 3	0.41 B	24
					10	1 2 2	0.33 B	26
			30		11	1 1 2	0.25 B	27
					12	1 1 2	0.16 B	25
			35		13	2 2 4	0.66 B	24
			40		14	2 3 4	0.49 B	26

WANGENGINC 1100401.GPJ WANGENG.GDT 1/9/14

GENERAL NOTES

Begin Drilling: 10-16-2013 Complete Drilling: 10-17-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV
Driller: P&N Logger: F.Bozga Checked by: DRAFT
Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 52.00 ft
At Completion of Drilling: ▼ MUD (3')
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 18-RWB-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: 585.35 ft
North: 1897627.54 ft
East: 1171433.33 ft
Station: 5240+15.29
Offset: 14.5957 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (b/w/6 in)	Qu (tsf)	Moisture Content (%)
	543.6	Very stiff to hard, gray SILTY CLAY LOAM, trace gravel						
			45		15	5 6 14	3.12 B	14
			50		16	9 14 18	4.76 B	14
	533.6	Gray, medium to coarse SAND, trace gravel --Wet--						
	531.3	Very stiff to hard, gray SILTY CLAY, trace gravel	55		17	13 22 32	5.00 B	18
			60		18	11 11 23	3.85 B	22
	523.6	Dense to very dense, gray GRAVELLY SAND --Wet--	65		19	17 19 17	NP	13
			70		20	26 26 21	NP	12
		--HARD DRILLING-- --Possible Cobbles--			21	22 50/3	NR	
	510.3	Boring terminated at 75.00 ft	75					
			80					

WANGENGINC 1100401.GPJ WANGENG.GDT 1/9/14

GENERAL NOTES

Begin Drilling: 10-16-2013 Complete Drilling: 10-17-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV
Driller: P&N Logger: F.Bozga Checked by: DRAFT
Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 52.00 ft
At Completion of Drilling: ▼ MUD (3')
Time After Drilling: NA
Depth to Water: ▽ NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

NOTES:

1. Boring Log 18-RWB-01 station & offset along Proposed ℄ Ramp EN is: Sta. 1607+56.64, Offset 15.84' Rt.

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 CircletPhase_II\000_CAD\008_StructuralStructure_016-1712\016712-60X79-S059-Boring_Logs-V

8:37:05 AM

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS V STRUCTURE NO. 016-1712
	CHECKED - WM	REVISED -		
PLOT SCALE = N.T.S	DRAWN - MAA	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-59 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	474
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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BORING LOG 19-RWB-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: 588.28 ft
North: 1897570.99 ft
East: 1171413.08 ft
Station: 5136+72.05
Offset: 86.2604 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bw/6 in)	Qu (tsf)	Moisture Content (%)
	588.0	4-inch thick, dark brown SILTY LOAM --TOPSOIL--						
		Dense, dark brown SILTY LOAM, trace gravel --FILL--			1	6 23 22	NP	
	585.3							
		Stiff, brown and gray SILTY CLAY LOAM, trace gravel	5		2	3 5 7	1.07 B	17
					3	3 3 4	1.15 B	21
	580.3							
		Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel	10		4	1 2 3	0.33 B	24
					5	1 1 1	0.08 B	25
			15		6	1 1 2	0.25 B	29
					7	1 4 10	NA	
			20		8	4 3 4	0.49 B	17
			25		9	4 6 5	NA	
					10	1 1 2	0.16 B	27
			30		11	1 1 2	0.25 B	27
					12	1 1 2	0.33 B	27
			35		13	0 2 2	0.25 B	27
			40		14	2 2 3	0.55 B	26

WANGENG 1100401 GPJ WANGENG GDT 1/9/14

GENERAL NOTES

Begin Drilling: 10-14-2013 Complete Drilling: 10-16-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV
Driller: P&N Logger: F.Bozga Checked by: DRAFT
Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 67.00 ft
At Completion of Drilling: ▼ MUD (6')
Time After Drilling: 48 hours
Depth to Water: ▼ 15.00 ft
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 19-RWB-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: 588.28 ft
North: 1897570.99 ft
East: 1171413.08 ft
Station: 5136+72.05
Offset: 86.2604 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bw/6 in)	Qu (tsf)	Moisture Content (%)
	541.5	Stiff to hard, gray SILTY CLAY to SILTY CLAY LOAM, trace gravel	45		15	2 2 5	0.41 B	21
			50		16	3 5 8	1.48 B	23
			55		17	6 11 19	4.84 B	14
			60		18	14 23 31	5.41 B	18
	521.5	Dense, gray, medium SAND --Saturated--	65		19	5 5 7	2.13 B	30
			70		20	11 13 17	NP	19
	515.3	Hard, gray SILTY CLAY LOAM, trace gravel	75		21	17 32 50/4	7.71 B	15
	511.5	Very dense, gray SILTY LOAM, trace gravel	80		22	37 50/5	NP	10

WANGENG 1100401 GPJ WANGENG GDT 1/9/14

GENERAL NOTES

Begin Drilling: 10-14-2013 Complete Drilling: 10-16-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV
Driller: P&N Logger: F.Bozga Checked by: DRAFT
Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 67.00 ft
At Completion of Drilling: ▼ MUD (6')
Time After Drilling: 48 hours
Depth to Water: ▼ 15.00 ft
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 19-RWB-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: 588.28 ft
North: 1897570.99 ft
East: 1171413.08 ft
Station: 5136+72.05
Offset: 86.2604 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bw/6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING-- --Possible Cobbles--	85		23	29 34 40	NP	11
	501.5	Very dense, gray SILT	90		24	15 50/5	NP	18
	494.4	2-inch thick, DOLOSTONE fragments	95		25	50/4	NP	17
	493.3	--HARD DRILLING-- --WEATHERED BEDROCK-- Boring terminated at 95.00 ft						
			100					

WANGENG 1100401 GPJ WANGENG GDT 1/9/14

GENERAL NOTES

Begin Drilling: 10-14-2013 Complete Drilling: 10-16-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV
Driller: P&N Logger: F.Bozga Checked by: DRAFT
Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 67.00 ft
At Completion of Drilling: ▼ MUD (6')
Time After Drilling: 48 hours
Depth to Water: ▼ 15.00 ft
The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

NOTES:

1. Boring Log 19-RWB-01 station & offset along Proposed ℄ Ramp EN is: Sta. 1607+21.40, Offset 16.64' Lt.

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1712\016171216-60X79-S060-Boring_Logs-VI

8:37:10 AM

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS VI STRUCTURE NO. 016-1712
	CHECKED - WM	REVISED -		
PLOT SCALE = N.T.S	DRAWN - MAA	REVISED -		SHEET NO. S2-60 OF S2-63 SHEETS
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	475
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

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Fax: 630 953-9938

BORING LOG 20-RWB-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: 577.12 ft
North: 1897711.41 ft
East: 1171734.33 ft
Station: 7308+20.74
Offset: 20.9635 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bl/w 6 in)	Qu (tsf)	Moisture Content (%)
	577.1	13.5-inch thick CONCRETE --PAVEMENT--						
	576.0	4.5-inch thick ASPHALT --PAVEMENT--						
	575.5	Dense, white CRUSHED STONE --BASE COURSE--						
	574.1	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel						
					1	25 30 11	NP	
			5		2	2 1 1	0.25 B	27
					3	2 2 1	0.15 B	28
			10		4	1 1 2	0.41 B	24
					5	1 2 1	0.33 B	24
			15		6	1 1 2	0.41 B	24
					7	2 1 2	0.15 B	18
	549.4	Stiff to hard, gray SILTY CLAY to SILTY CLAY LOAM, trace gravel	20		8	0 1 1	0.15 B	25
					9	0 1 1	0.15 B	25
			25		10	0 1 2	0.15 B	26
					11	1 2 2	0.15 B	25
			30		12	2 2 1	0.57 B	27
					13	1 2 2	0.08 B	26
			35		14	3 5 10	1.72 B	23
			40					

GENERAL NOTES

Begin Drilling 10-28-2013 Complete Drilling 11-03-2013
Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR
Driller R&J Logger A.Tomaras Checked by DRAFT
Drilling Method 2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ NA
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.

WANGENG INC 1100401 GPJ WANGENG GDT 1/9/14

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Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

BORING LOG 20-RWB-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: 577.12 ft
North: 1897711.41 ft
East: 1171734.33 ft
Station: 7308+20.74
Offset: 20.9635 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bl/w 6 in)	Qu (tsf)	Moisture Content (%)
			45		15	7 8 15	5.74 B	13
	514.1	--HARD DRILLING-- --Possible Cobbles--						
		Very dense, gray, coarse SAND						
			50		16	6 9 12	3.94 B	20
	510.1	--HARD DRILLING-- --Possible Cobbles--						
		Hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel						
			55		17	6 8 9	1.56 B	21
	520.4	Loose, gray SILT --Saturated--						
			60		18	3 3 5	1.31 S	29
	500.4	Very dense, gray SILTY LOAM, trace gravel						
			65		19	19 48 50/5"	NP	11
			70		20	32 45 45	5.41 S	10
			75		21	20 18 35	7.30 S	17
			80		22	39 47 48	NP	15

GENERAL NOTES

Begin Drilling 10-28-2013 Complete Drilling 11-03-2013
Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR
Driller R&J Logger A.Tomaras Checked by DRAFT
Drilling Method 2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ NA
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.

WANGENG INC 1100401 GPJ WANGENG GDT 1/9/14

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BORING LOG 20-RWB-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: 577.12 ft
North: 1897711.41 ft
East: 1171734.33 ft
Station: 7308+20.74
Offset: 20.9635 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bl/w 6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING-- --Possible Cobbles--						
	495.4	Very dense, gray GRAVELLY SAND, some cobbles						
			85		23	50/1	NA	
	487.6	--BEDROCK--	90		24	39 50/5"	NP	11
	486.1	Boring terminated at 91.00 ft						
			95					
			100					

GENERAL NOTES

Begin Drilling 10-28-2013 Complete Drilling 11-03-2013
Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR
Driller R&J Logger A.Tomaras Checked by DRAFT
Drilling Method 2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ NA
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.

WANGENG INC 1100401 GPJ WANGENG GDT 1/9/14

NOTES:

1. Boring Log 20-RWB-01 station & offset along Proposed ℄ Ramp EN is: Sta. 1610+85.06, Offset 28.38' Lt.

FILE NAME: pw:\\61779-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 CircletPhase_II\000_CAD\008_StructuralStructure_016-1712\016712-60X79-S061-Boring_Logs-VII

8:37:17 AM

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS VII STRUCTURE NO. 016-1712	
	CHECKED - WM	REVISED -			
PLOT SCALE = N.T.S	DRAWN - MAA	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-61 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	476
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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BORING LOG 21-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: 591.97 ft
North: 1897787.89 ft
East: 1171858.64 ft
Station: 1610+92.09
Offset: 7.9354 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bl/6 in)	Qu (tsf)	Moisture Content (%)
		Very stiff to hard, brown CLAY LOAM, trace brick fragments --FILL--			1	3 4 8	3.50 P	11
			5		2	5 5 7	3.12 B	14
		--3-inch thick, red, crushed Brick--			3	13 8 6	NP	19
			10		4	5 5 7	6.55 B	15
	581.5	Stiff, gray SILTY CLAY, trace gravel			5	2 3 4	1.97 B	23
	579.9	Very soft to medium stiff, gray CLAY, trace gravel			6	2 1 3	0.57 B	25
			15		7	2 1 2	0.49 B	25
			20		8	2 2 2	< 0.25 P	28
			25		9	0 0 0	0.33 B	23
					10	0 0 2	0.25 B	26
					11	0 1 2	0.45 B	25
			30		12	2 2 2	< 0.25 P	25
			35		13	1 2 2	0.57 B	24
			40		14	2 3 3	0.49 B	25

GENERAL NOTES

Begin Drilling: 09-23-2013 Complete Drilling: 09-23-2013
Drilling Contractor: Wang Testing Services Drill Rig: CME-55 TMR
Driller: R&J Logger: A. Tomaras Checked by: L. Iordache
Drilling Method: 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: MUD
At Completion of Drilling: MUD
Time After Drilling: NA
Depth to Water: NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 1100401.GPJ WANGENG.GDT 10/1/14

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BORING LOG 21-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: 591.97 ft
North: 1897787.89 ft
East: 1171858.64 ft
Station: 1610+92.09
Offset: 7.9354 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bl/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	2 3 3	< 0.25 P	27
			50		16	0 2 2	0.41 B	28
			55		17	4 5 8	1.48 B	22
	540.2	Very stiff to hard, SILTY CLAY to SILTY CLAY LOAM, trace gravel			18	14 12 15	3.00 P	16
			65		19	15 17 24	4.10 B	27
			70		20	16 17 20	8.53 B	12
	520.2	Dense, gray SILT			21	20 26 23	NP	21
	515.2	Hard, gray SILTY CLAY LOAM, trace gravel			22	19 20 28	8.51 S	14

GENERAL NOTES

Begin Drilling: 09-23-2013 Complete Drilling: 09-23-2013
Drilling Contractor: Wang Testing Services Drill Rig: CME-55 TMR
Driller: R&J Logger: A. Tomaras Checked by: L. Iordache
Drilling Method: 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: MUD
At Completion of Drilling: MUD
Time After Drilling: NA
Depth to Water: NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 1100401.GPJ WANGENG.GDT 10/1/14

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Fax: 630 953-9938

BORING LOG 21-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: 591.97 ft
North: 1897787.89 ft
East: 1171858.64 ft
Station: 1610+92.09
Offset: 7.9354 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (bl/6 in)	Qu (tsf)	Moisture Content (%)
	510.2	Very dense, gray SILT --HARD DRILLING--			23	31 32 50/5	NP	15
	505.2	Very dense, gray SILTY LOAM, trace gravel			24	23 33 29	6.81 S	21
			95		25	66/5 44/3	NP	15
	495.2	--HARD DRILLING-- Very dense, brown SANDY GRAVEL			26	30 70/5	NP	6
	490.2	Very dense, weathered DOLOSTONE fragments --WEATHERED BEDROCK--			27	50/1	NP	
	487.5	--ROLLER BIT REFUSAL-- Boring terminated at 104.50 ft	105					

GENERAL NOTES

Begin Drilling: 09-23-2013 Complete Drilling: 09-23-2013
Drilling Contractor: Wang Testing Services Drill Rig: CME-55 TMR
Driller: R&J Logger: A. Tomaras Checked by: L. Iordache
Drilling Method: 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: MUD
At Completion of Drilling: MUD
Time After Drilling: NA
Depth to Water: NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 1100401.GPJ WANGENG.GDT 10/1/14

NOTES:

1. Boring Log 21-RWB-03 station & offset along Proposed ℄ Ramp EN is: Sta. 1612+29.02, Offset 14.16' Rt.

FILE NAME: pw:\617479-PWINT.aecomonline.local\AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1712\0161712-60X79-S062-Boring_Logs-VIII

8:37:23 AM

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS VIII STRUCTURE NO. 016-1712	
	CHECKED - WM	REVISED -			
PLOT SCALE = N.T.S	DRAWN - MAA	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-62 OF S2-63 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	477
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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Telephone: 630 953-9928
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BORING LOG 1705-B-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: 591.98 ft
North: 1897750.88 ft
East: 1171805.18 ft
Station: 1815+16.38
Offset: 1.5565 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (b/w/6 in)	Qu (tsf)	Moisture Content (%)
		Drilled without sampling	0					
		--In-Situ Vane Shear, 15.5 feet--	15		1			
		--$S_{u\,undis}$ = 1344.0 psf--						
		--$S_{u\,remold}$ = 775.0 psf--						
		--Sensitivity = 1.73--						
		--In-Situ Vane Shear, 20.5 feet--	20					
		--$S_{u\,undis}$ = 569.8 psf--						
		--$S_{u\,remold}$ = 310.8 psf--						
		--Sensitivity = 1.83--			2			
		--In-Situ Vane Shear, 25.5 feet--	25					
		--$S_{u\,undis}$ = 1165.5 psf--						
		--$S_{u\,remold}$ = 543.9 psf--						
		--Sensitivity = 2.14--			3			
		--In-Situ Vane Shear, 30.5 feet--	30					
		--$S_{u\,undis}$ = 880.6 psf--						
		--$S_{u\,remold}$ = 543.9 psf--						
		--Sensitivity = 1.62--			4			
		--In-Situ Vane Shear, 35.5 feet--	35					
		--$S_{u\,undis}$ = 1295.0 psf--						
		--$S_{u\,remold}$ = 828.8 psf--						
		--Sensitivity = 1.56--			5			
		--In-Situ Vane Shear, 40.5 feet--	40					

WANGENG\NC 11000401 GPJ WANGENG GDT 1/9/14

GENERAL NOTES

Begin Drilling 07-26-2013 Complete Drilling 07-26-2013
Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR
Driller R&J Logger A. Tomaras Checked by C. Marin
Drilling Method 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ NA
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 1705-B-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: 591.98 ft
North: 1897750.88 ft
East: 1171805.18 ft
Station: 1815+16.38
Offset: 1.5565 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (b/w/6 in)	Qu (tsf)	Moisture Content (%)
		--$S_{u\,undis}$ = 1113.7 psf--	45					
		--$S_{u\,remold}$ = 621.6 psf--						
		--Sensitivity = 1.79--			6			
		--In-Situ Vane Shear, 45.5 feet--						
		--$S_{u\,undis}$ = 1191.4 psf--						
		--$S_{u\,remold}$ = 621.6 psf--						
		--Sensitivity = 1.92--			7			
		Boring terminated at 50.00 ft	50					
			55					
			60					

WANGENG\NC 11000401 GPJ WANGENG GDT 1/9/14

GENERAL NOTES

Begin Drilling 07-26-2013 Complete Drilling 07-26-2013
Drilling Contractor Wang Testing Services Drill Rig CME-55 TMR
Driller R&J Logger A. Tomaras Checked by C. Marin
Drilling Method 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ NA
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.

NOTES:

1. Boring Log 1705-B-06 station & offset along Proposed E Ramp EN is: Sta. 1611+67.74, Offset 8.06' LT.

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS IX STRUCTURE NO. 016-1712
		CHECKED - WM	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - MAA	REVISED -		SHEET NO. S2-63 OF S2-63 SHEETS
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	478
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

Benchmark: Cut square on center of door entrance to 707 W. Harrison St. (south side of Harrison St., approx. 90' west of west line of Des Plaines St.). Elevation 597.47.

Existing Structure: None.

Traffic Control: Traffic shall be maintained on the existing Ramp EN structure (S.N. 016-2453) during construction of the proposed retaining wall. Subsequently, traffic shall be detoured to allow for construction of the remaining portions of the proposed Ramp EN (S.N. 016-1712) approaches and bridge structure.

DESIGN SPECIFICATIONS

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

DESIGN STRESSES

FIELD UNITS

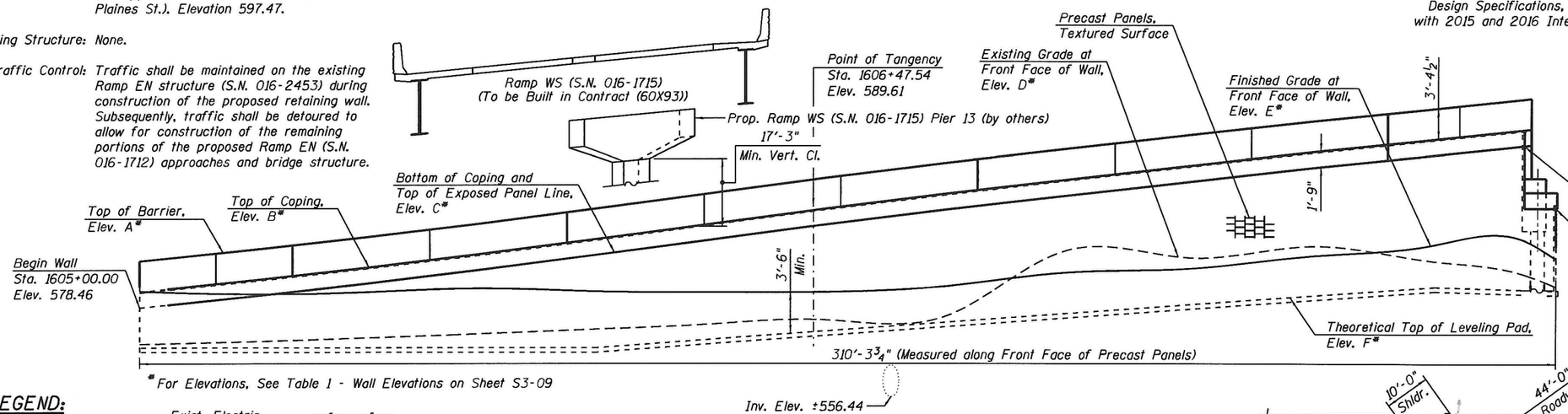
f'c = 3,500 psi
f'c = 4,000 psi (Superstructure)
fy = 60,000 psi (Reinforcement)

PRECAST UNITS

f'c = 4,500 psi

NOTES:

1. For Table 1 - Wall Elevations, see Sheet S3-09.
2. For Profile Grade Lines and Curve Data, see Sheet S3-02.
3. Stations and offsets are measured along ℄ Ramp EN to the front face of precast panels.



*For Elevations, See Table 1 - Wall Elevations on Sheet S3-09

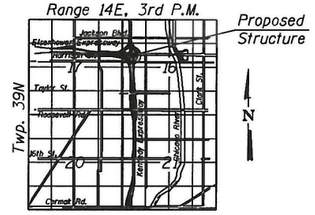
PARTIAL UNFOLDED ELEVATION

(Looking at Front Face of Wall)

LEGEND:

- Soil Boring
- Exist. Catch Basin
- Prop. Manhole
- Prop. Catch Basin
- Exist. Manhole
- Exist. Electric
- Exist. Storm Sewer
- Prop. Storm Sewer
- Exist. Telephone
- Limits of Soil Reinforcement

PLAN



LOCATION SKETCH

GENERAL PLAN AND PARTIAL UNFOLDED ELEVATION RETAINING WALL 18 ALONG RAMP EN WEST ABUTMENT F.A.I. RTE. 90/94/290 - SECTION 2014-005R&B COOK COUNTY STA. 1605+00.00 TO 1607+99.89 STRUCTURE NO. 016-1807

STATE OF ILLINOIS
MOUSSA A. ISSA
081-005738
CHICAGO, ILLINOIS
LICENSED STRUCTURAL ENGINEER

Signed Moussa A. Issa
Dr. Moussa A. Issa. S.E. Il. Lic. No. 081-005738
Expires 11-30-2018
Date 07/30/18 For Sheets S3-01 Thru S3-16

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STRUCTURE NO. 016-1807	
	CHECKED - MI, KJD	REVISED -		SHEET NO. S3-01 OF S3-16 SHEETS	
PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -			

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	479
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

FILE NAME: pw:\617479-PWINT.aecomonline.local\AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structural\Structure_016-1807\Sheet\016807-60X79-S001-GPE
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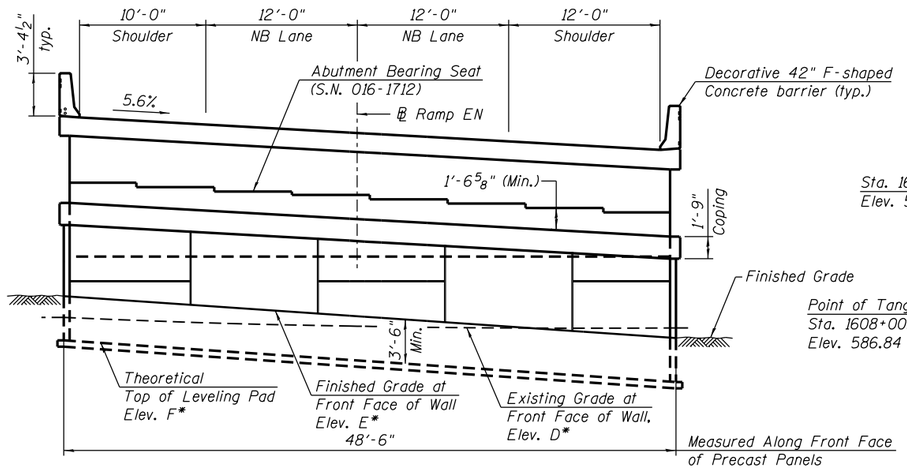
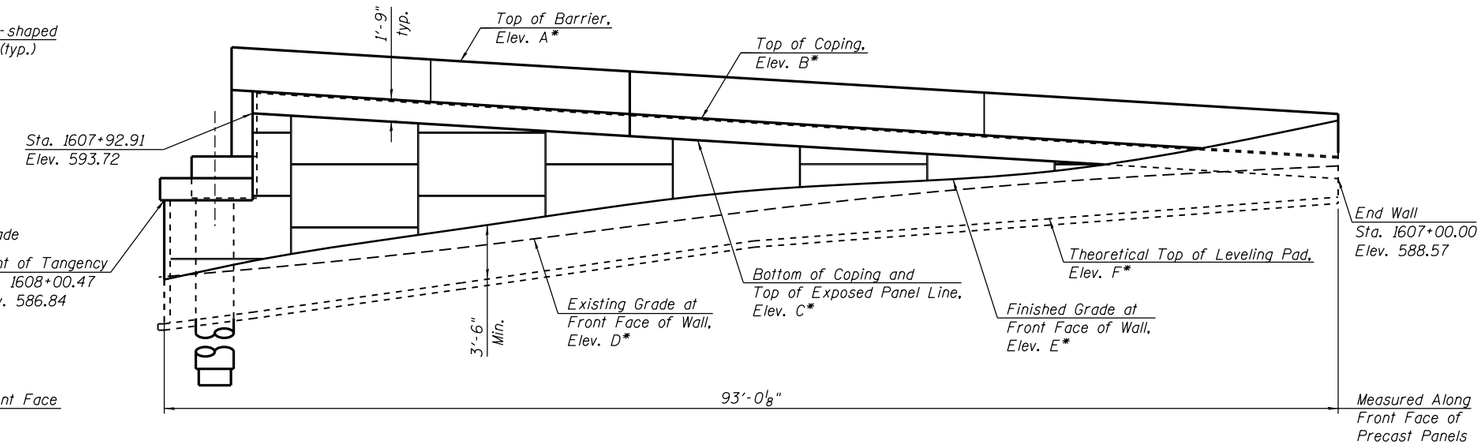


PARTIAL UNFOLDED ELEVATION

(Looking at Front Face of Wall)



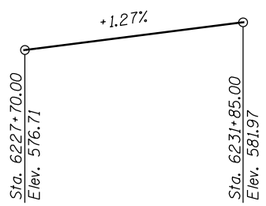
PARTIAL UNFOLDED ELEVATION

(Looking at Front Face of Wall)

* For Elevations, See Table 1 - Wall Elevations on Sheet S3-09

CURVE DATA

(SB I-90/94)
(PROP. CURVE P-KDR-SB-4)
PI STA. = 6231+84.46
Δ = 13° 18′ 21" (LT)
D = 2° 44′ 34"
R = 2,089.00′
T = 243.66′
L = 485.13′
E = 14.16′
e = 4.40%
T.R. = NA
S.E. RUN = 164′
P.C. STA. = 6229+40.80
P.T. STA. = 6234+25.93
DS = 60
PS = 45

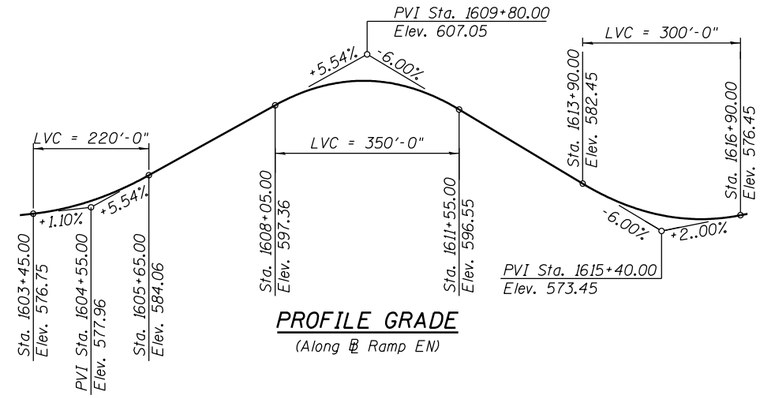


PROFILE GRADE

(Along ℄ SB I-90/94)

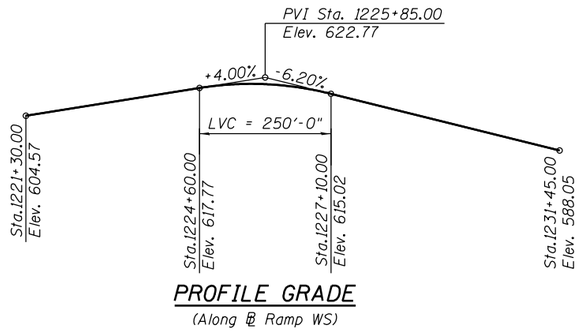
CURVE DATA

(RAMP EN)
(PROP. CURVE P-CIR-EN-2)
PI STA. = 1624+41.43
Δ = 158° 32′ 09" (LT)
D = 16° 51′ 06"
R = 340.00′
T = 1,793.89′
L = 940.77′
E = 1,485.82′
e = 5.60%
T.R. = 37′
S.E. RUN = 103′
P.C. STA. = 1606+47.54
P.T. STA. = 1615+88.31
DS = 30
PS = 30



PROFILE GRADE

(Along ℄ Ramp EN)



PROFILE GRADE

(Along ℄ Ramp WS)

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PARTIAL UNFOLDED ELEVATIONS AND PROFILE GRADE LINES STRUCTURE NO. 016-1807
		CHECKED - MI, KJD	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -		SHEET NO. S3-02 OF S3-16 SHEETS
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	480
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1807\Sheet\016-1807-60X79-S002-GPE2
9:28:55 AM

GENERAL NOTES:

1. Reinforcement bars designated (E) shall be epoxy coated.

2. 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.

3. Concrete Sealer shall be applied to the exposed front face surfaces of the precast concrete panels, anchorage slab and parapet. Protective Coat shall be applied to the top and back face of the parapet and top of exposed anchorage slab.

4. The Contractor shall field verify locations of existing underground utilities. The Contractor shall take all necessary precautions to protect existing utilities during construction of the wall. Any damage to the existing utilities shall be the responsibility of the Contractor.

5. The Contractor shall take all necessary precautions during construction operations to avoid damaging the existing ramp structure (SN 016-2453) which will remain in-service during retaining wall construction. Any damage to the existing structure caused by the Contractor in the performance of his or her work, shall be repaired by the Contractor, to the satisfaction of the Engineer, at no cost to the Department.

6. The Contractor shall exercise extreme caution during construction to make certain that construction activities, live load surcharge, structure excavation and other loads applied will not have detrimental effects on the existing underground electric and telephone facilities (to remain) at the southeast end of retaining wall. Any damage to the existing underground electric and telephone facilities during construction shall be repaired by the Contractor, at his/her expense, and at no charge to the Department.

7. Slipforming of the parapet is not allowed.

8. Stations and offsets are measured along the Baseline of Ramp EN to the front face of precast panels.

9. All Lightweight Cellular Concrete Fill shall be Class III. See Special Provision for details.

10. The MSE wall supplier's internal stability design shall account for the anchorage slab's bearing pressure surcharge of 1.0 ksf and horizontal sliding force of 0.83 kips/ft of wall.

11. MSE Wall supplier shall design the MSE Wall using granular reinforced mass with minimum effective internal friction angle of 34 degrees and unit weight of 120 lbs./cu. ft. For embankment behind granular reinforced mass, an embankment unit weight of 120 lbs./cu. ft and an effective friction angle of 30 degrees shall be used in the wall system design.

STATION 1605+00.00 TO 1608+00.47
BUILT 20-- BY
STATE OF ILLINOIS
F.A.I. RT. 90/94/290 SEC. 2014-005R&B
STRUCTURE NO. 016-1807

NAME PLATE

See Std. 515001

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	64
Structure Excavation	Cu. Yd.	735
Concrete Superstructure	Cu. Yd.	224.5
Protective Coat	Sq. Yd.	551
Reinforcement Bars, Epoxy Coated	Pound	34,450
Name Plates	Each	1
Concrete Sealer	Sq. Ft.	6,625
Lightweight Cellular Concrete Fill	Cu. Yd.	3,005
Bridge Deck Grooving (Longitudinal)	Sq. Yd.	324
Mechanically Stabilized Earth Retaining Wall, Special	Sq. Ft.	4,587

INDEX OF SHEETS

SUGGESTED SEQUENCE OF CONSTRUCTION

1. Locate existing utilities that are to remain. The Contractor shall coordinate any required improvements to, or removals of, existing utilities with utility owner(s). See Utility Plans and ITS Plans.

2. Coordinate with Contractor responsible for removal of Existing Ramp WS (S.N. 016-2450) and associated approach walls, and construction of proposed Ramp WS (S.N. 016-1715) Pier 13, under Contract 60X93. All work required for removal of Existing Ramp WS (S.N. 016-2450) and associated approach walls construction of proposed Ramp WS (S.N. 016-1715) Pier 13 foundation and column (including, but not limited to, excavation, drilling and concrete placement) shall be performed by others prior to commencement of Retaining Wall 18 (S.N. 016-1807) construction in this area. See Contractor Cooperation and available work areas and sequencing special provision.

3. Excavate as required for construction of proposed Retaining Wall 18 (S.N. 016-1807).

4. Install West Abutment drilled shafts and stub wall for proposed Ramp EN (S.N. 016-1712) over F.A.I. Rte. 90/94 (Dan Ryan Expressway).

5. Construct Retaining Wall 18 (S.N. 016-1807).

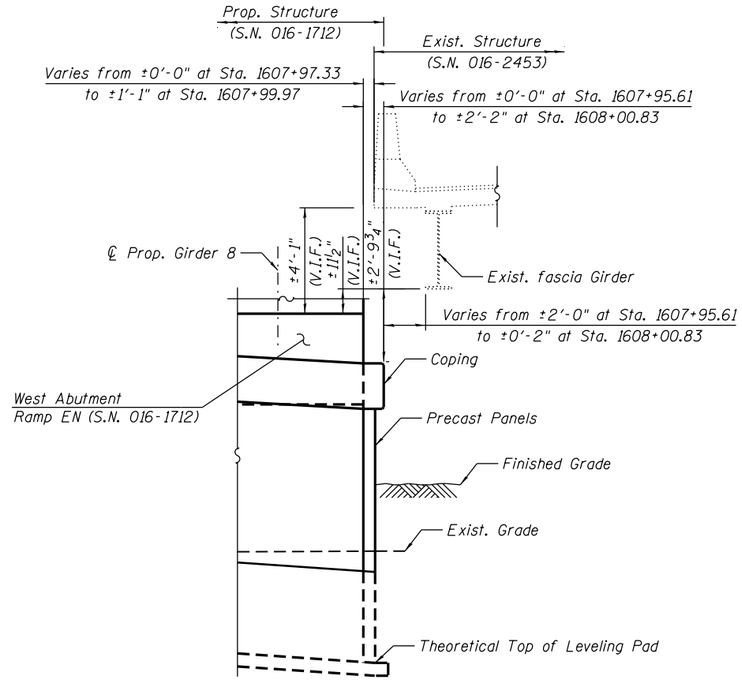
6. Begin placing lightweight cellular concrete fill.

7. Complete construction of proposed Ramp EN (S.N. 016-1712) West Abutment.

8. Complete placement of lightweight cellular concrete fill.

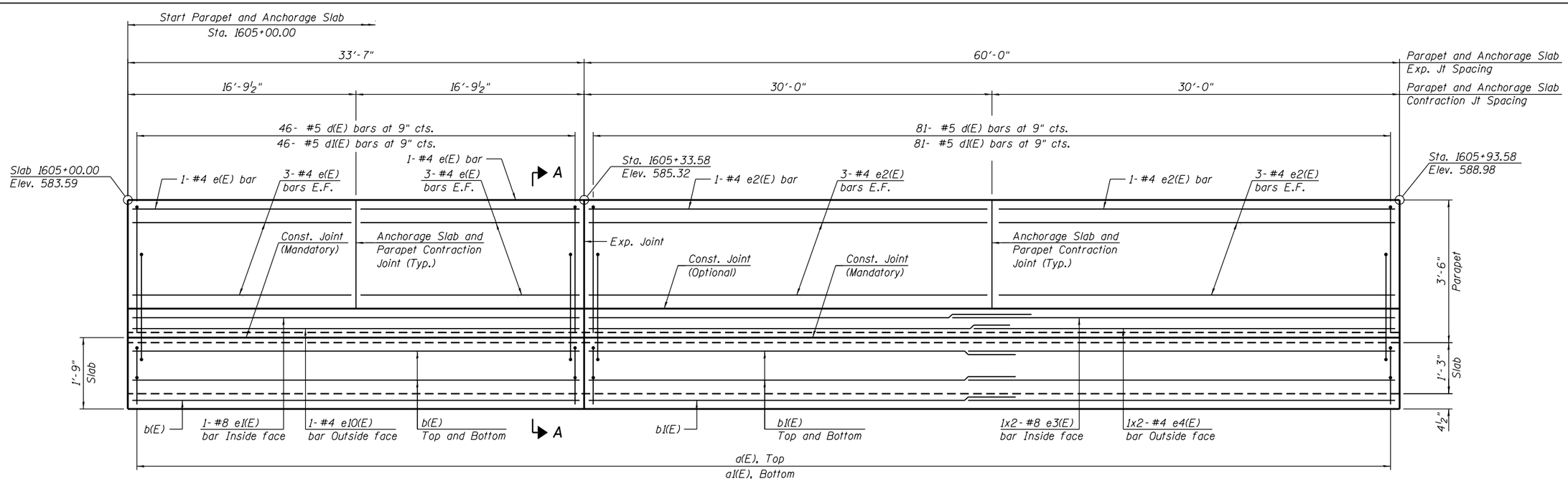
9. Construct Anchorage slabs, Approach slab and Roadway pavement.

10. No portions of the retaining wall shall be compromised by excavation for other elements of work, including the construction of proposed Ramp EN (S.N. 016-1712), under the contract. If the sequencing of work requires that the retaining wall construction is staged, the stage line shall be located at a panel edge with any exposed lightweight cellular concrete fill protected from damage.



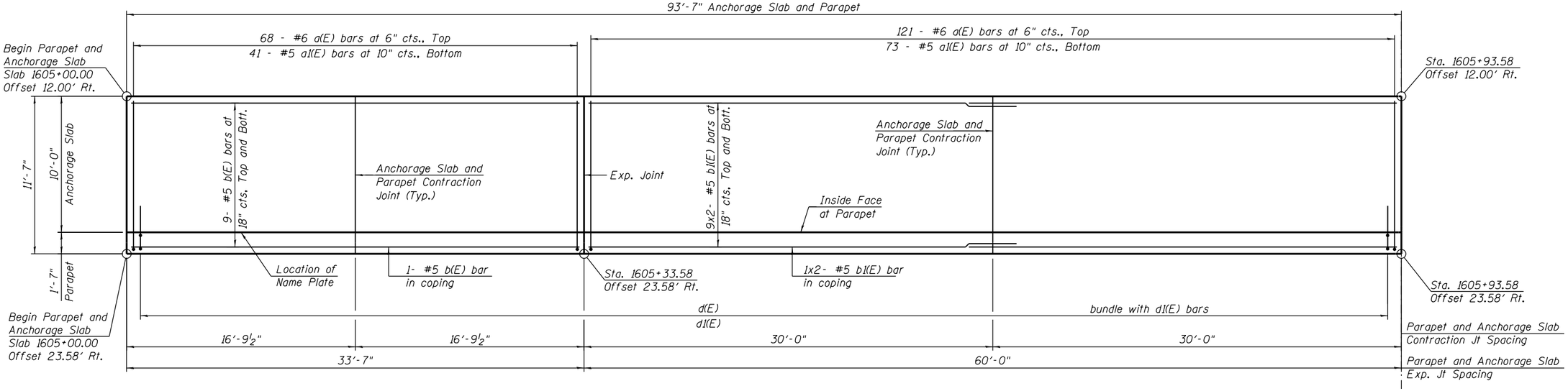
WEST ABUTMENT CONSTRUCTION CLEARANCE DETAIL

(Looking West)



OUTSIDE ELEVATION OF PARAPET AND ANCHORAGE SLAB

(Segment 1)



PARAPET AND ANCHORAGE SLAB PLAN

(Segment 1)

N

NOTES:

1. For Section A-A, see Sheet S3-07 For Bar Diagram, Expansion and Contraction Joints Details, and Bill of Material, see Sheet S3-08
2. Preformed Flexible Foam Expansion Joint Filler (called as PJF in plans) shall follow Article 1051.09 of IDOT Standard Specifications. Cost included in Concrete Superstructure.
3. Anchorage slab shall be constructed in final stage.
4. For drainage structure, frame and grate dimensions and details, see Drainage Plans.
5. Bars noted thus, 9x3-#5 indicates 9 lines of #4 bars with 2 lengths per line.

FILE NAME: pw:\\6117479-PWINT.aecomonline.local\AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_StructuralStructure_016-1807\Sheet\016 1807-60X79-S003 SlabPlan_Elev1
9:29:01 AM

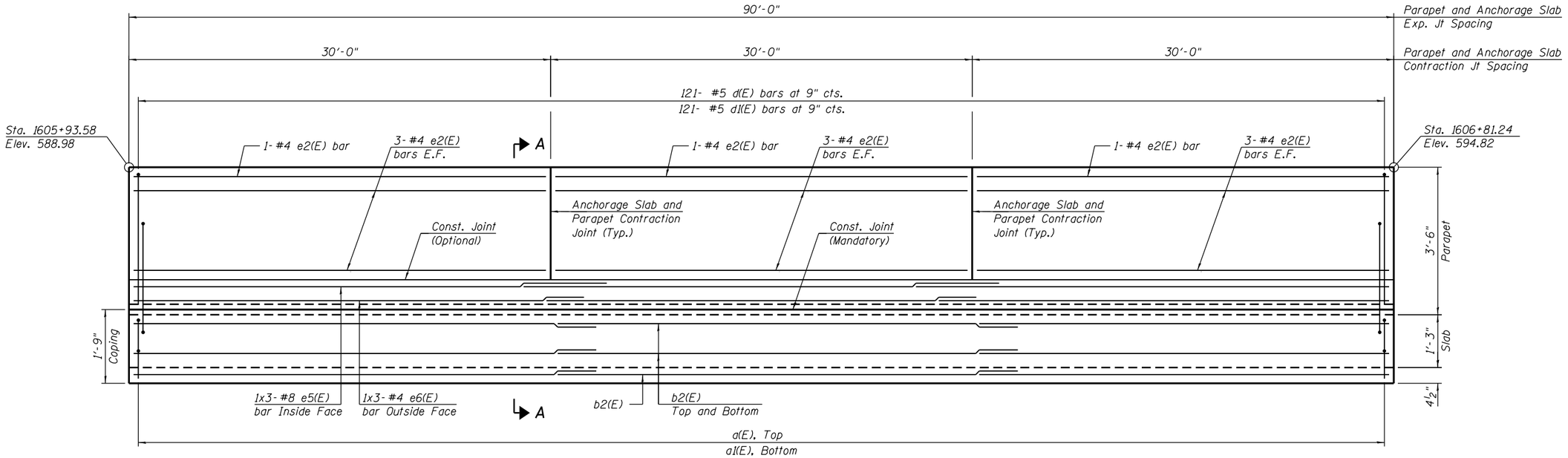
HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

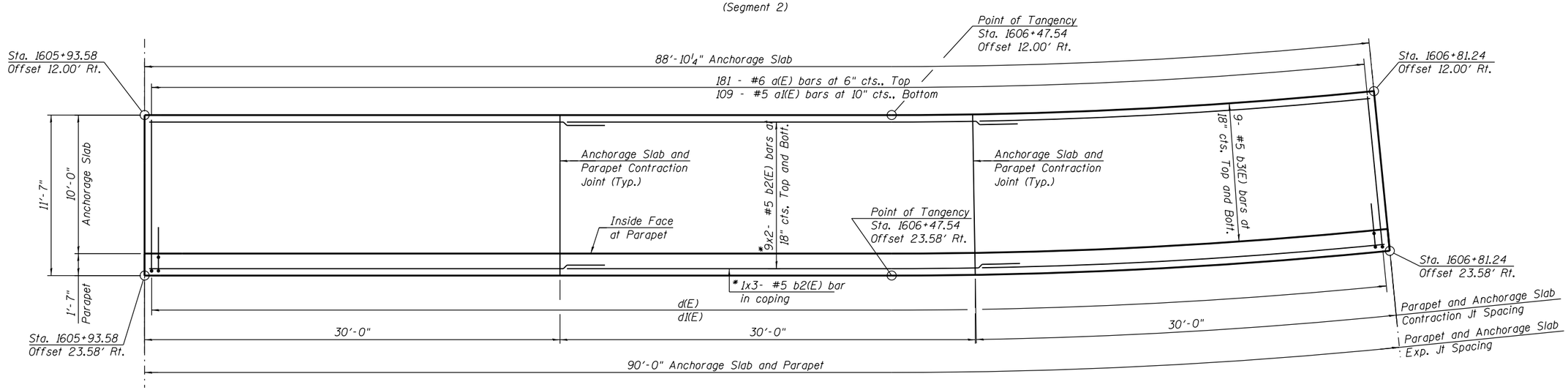
PARAPET AND ANCHORAGE SLAB PLAN AND ELEVATION 1
STRUCTURE NO. 016-1807
SHEET NO. S3-04 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	482
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



OUTSIDE ELEVATION OF PARAPET AND ANCHORAGE SLAB

(Segment 2)



PARAPET AND ANCHORAGE SLAB PLAN

(Segment 2)

N

* Bend in field as needed

NOTES:

1. For Section A-A, see Sheet S3-07. For Bar Diagram, Expansion and Contraction Joints Details, and Bill of Material, see Sheet S3-08.
2. Preformed Flexible Foam Expansion Joint Filler (called as PJF in plans) shall follow Article 1051.09 of IDOT Standard Specifications. Cost included in Concrete Superstructure.
3. Anchorage slab shall be constructed in final stage.
4. Bars noted thus, 9x3- #5 indicates 9 lines of #4 bars with 2 lengths per line.

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad,issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
		CHECKED - MI, KJD	REVISED -	
	PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -	
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -	

PARAPET AND ANCHORAGE SLAB PLAN AND ELEVATION 2
STRUCTURE NO. 016-1807
SHEET NO. S3-05 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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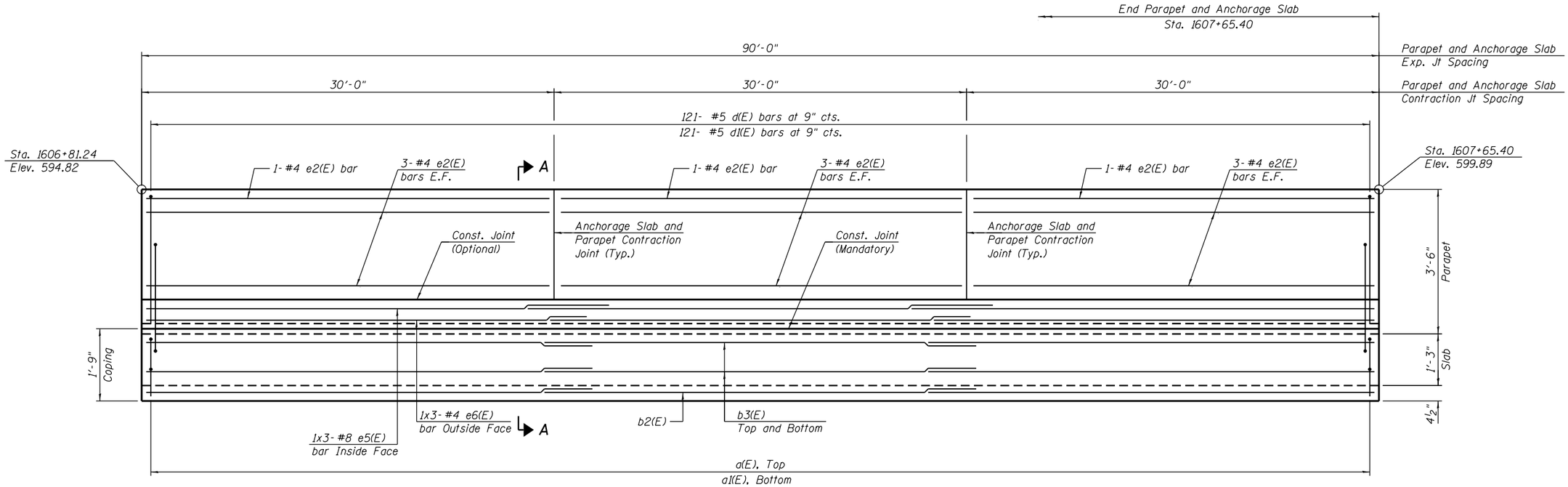
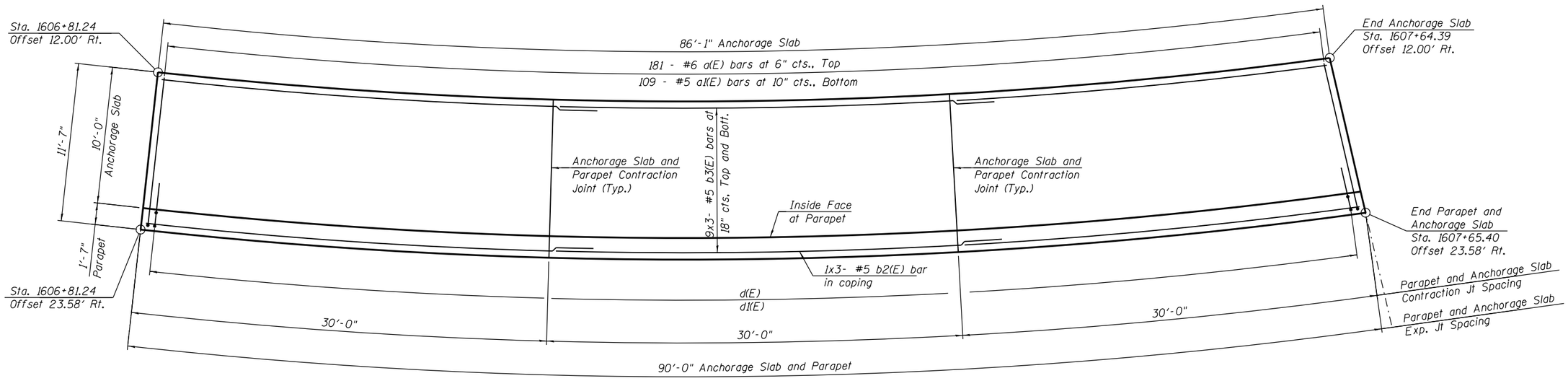


OUTSIDE ELEVATION OF PARAPET AND ANCHORAGE SLAB

(Segment 3)



NOTES:

1. For Section A-A, see Sheet S3-07 For Bar Diagram, Expansion and Contraction Joints Details, and Bill of Material, see Sheet S3-08
2. Preformed Flexible Foam Expansion Joint Filler (called as PJF in plans) shall follow Article 1051.09 of IDOT Standard Specifications. Cost included in Concrete Superstructure.
3. Anchorage slab shall be constructed in final stage.
4. Bars noted thus, 9x3-#5 indicates 9 lines of #4 bars with 2 lengths per line.

PARAPET AND ANCHORAGE SLAB PLAN

(Segment 3)

N

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

PARAPET AND ANCHORAGE SLAB PLAN AND ELEVATION 3
STRUCTURE NO. 016-1807
SHEET NO. S3-06 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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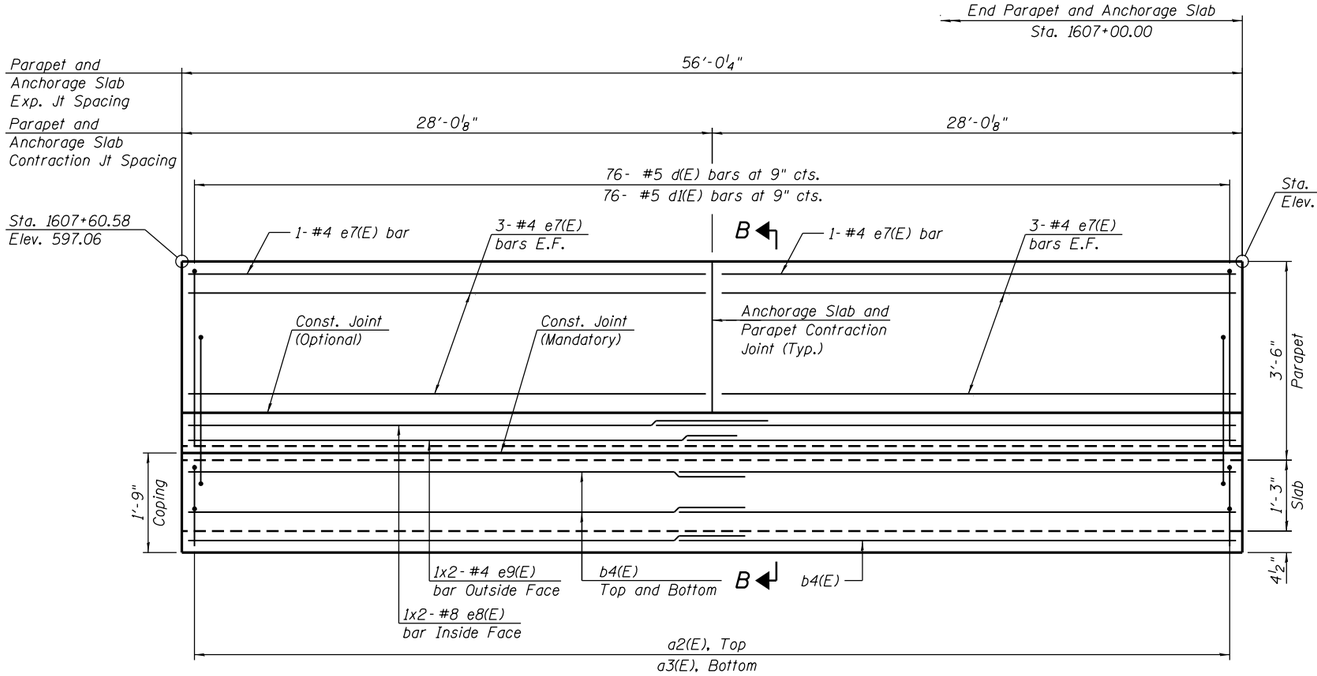
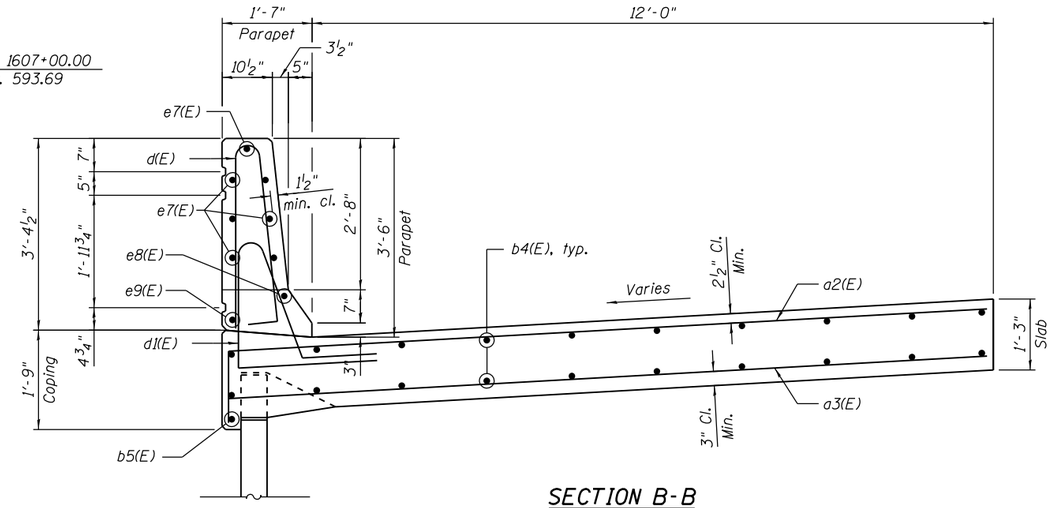
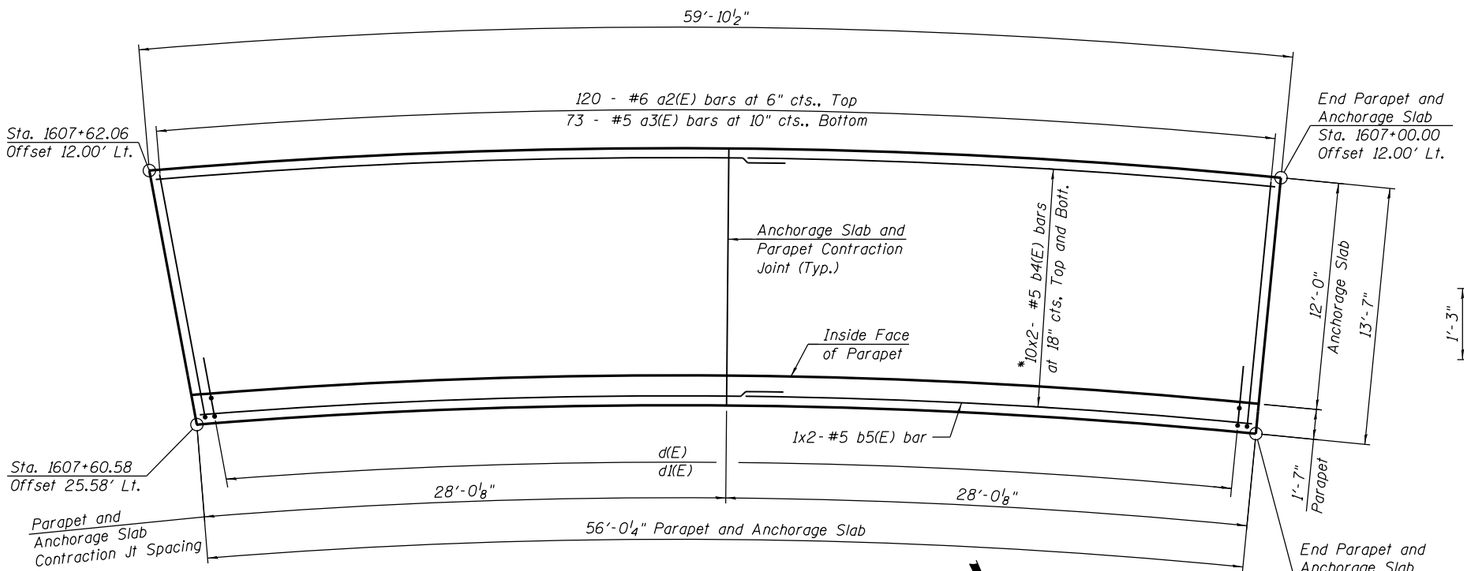


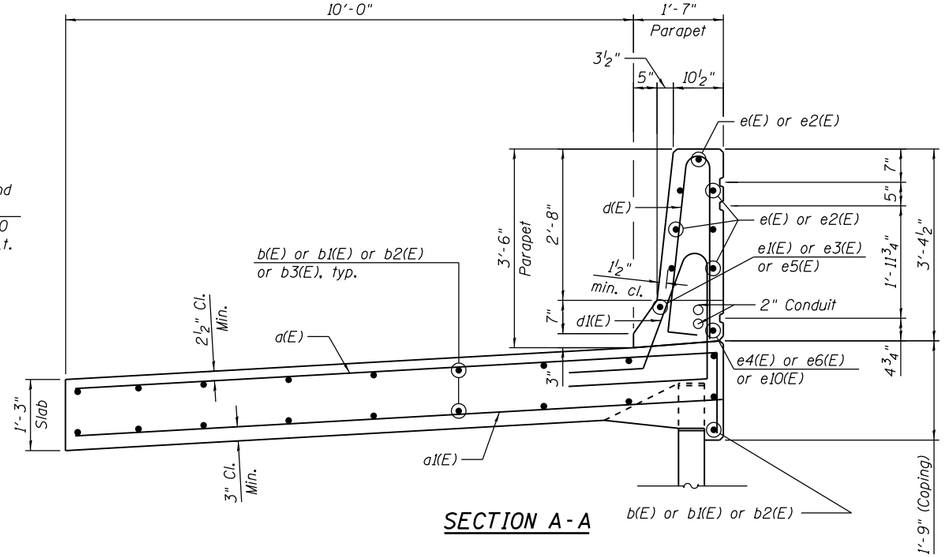
OUTSIDE ELEVATION OF PARAPET AND ANCHORAGE SLAB



SECTION B-B



PARAPET AND ANCHORAGE SLAB PLAN



SECTION A-A

*Order Bars full length, cut to fit in field.

NOTES:

1. For Bar Diagram, Expansion and Contraction Joint Details and Bill of Material, see Sheet S3-08
2. Preformed Flexible Foam Expansion Joint Filler shall follow Article 1051.09 of IDOT Standard Specifications. Cost included in Concrete Superstructure.
3. Anchorage slab shall be constructed in final stage.
4. Bars noted thus, 9x3-#5 indicates 9 lines of #4 bars with 2 lengths per line.

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HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PARAPET AND ANCHORAGE SLAB PLAN AND ELEVATION 4
STRUCTURE NO. 016-1807
SHEET NO. S3-07 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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		CONTRACT NO. 60X79		
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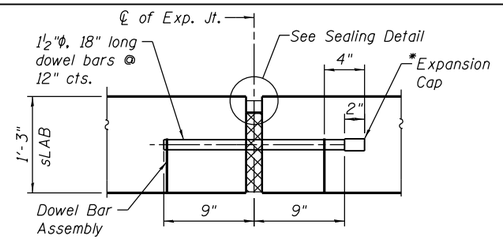
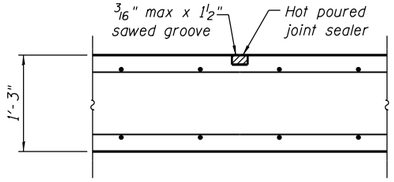


TRANSVERSE EXPANSION JOINT

Expansion Joint filler, sealer, Dowel Bars, Dowel Bar Assembly, and Expansion Caps included in cost of Concrete Superstructure.

* Expansion Caps shall be installed on the exposed end of each dowel bar once header has been removed and the joint filler material has been installed.



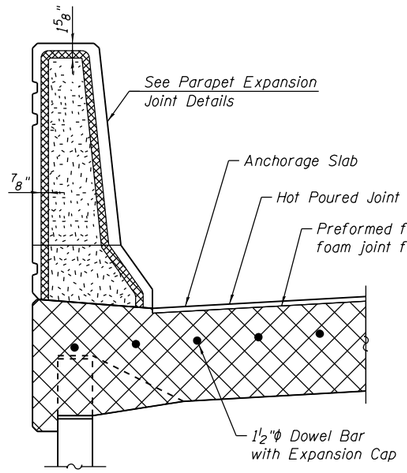
TRANSVERSE CONTRACTION JOINT

See Article 420.05 & 420.12 of the Standard Specifications

BILL OF MATERIAL

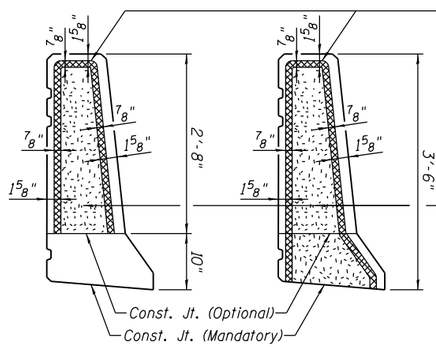
Bar	No.	Size	Length	Shape
d(E)	559	#6	12'-7"	
a1(E)	338	#5	11'-3"	
a2(E)	120	#6	14'-7"	
a3(E)	73	#5	13'-3"	
a4(E)	16	#5	4'-0"	
b(E)	19	#5	33'-3"	
b1(E)	38	#5	33'-7"	
b2(E)	42	#5	32'-3"	
b3(E)	72	#5	32'-3"	
b4(E)	40	#5	31'-7"	
b5(E)	2	#5	29'-7"	
d(E)	445	#5	6'-10"	
d1(E)	451	#5	7'-4"	
e(E)	14	#4	16'-6"	
e1(E)	1	#8	33'-3"	
e2(E)	56	#4	29'-8"	
e3(E)	2	#8	32'-10"	
e4(E)	2	#4	31'-2"	
e5(E)	6	#8	33'-10"	
e6(E)	6	#4	31'-8"	
e7(E)	14	#4	27'-8"	
e8(E)	2	#8	30'-10"	
e9(E)	2	#4	29'-2"	
e10(E)	1	#4	33'-3"	
Concrete Superstructure			Cu. Yd.	224.5
Protective Coat			Sq. Yd.	551
Reinforcement Bars, Epoxy Coated			Pound	34,450
Bridge Deck Grooving (Longitudinal)			Sq. Yd.	324

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

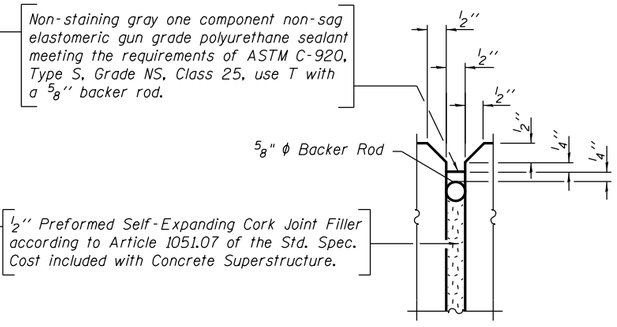


TRANSVERSE EXPANSION JOINT SECTION

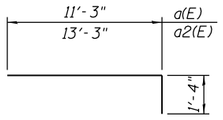
* M.S.E. supplier to design load transfer system to accommodate concrete pipe and catch basin.



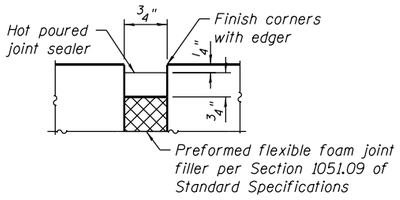
CONTRACTION EXPANSION



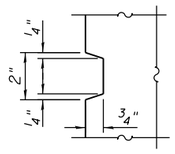
PARAPET JOINT DETAILS



BARS d(E) or a2(E)



SEALING DETAIL



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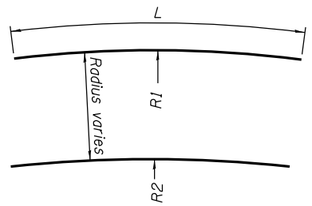
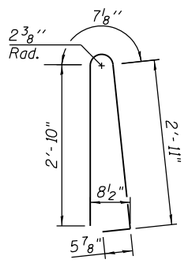


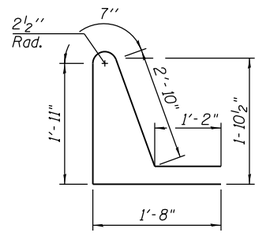
BARS b3(E) or b4(E)

TABLE 1

Bar	No. Per Series	R1	R2	L	No. Series
b3(E)	9	363'-5"	352'-2"	32'-3"	8
b4(E)	10	327'-10"	314'-7"	31'-7"	4



BAR d(E)



BAR d1(E)

NOTES:

1. See bridge plans (SN 016-1712) for approach slab details and civil plans for roadway details.
2. Protective Coat is applied to top of of Anchorage Slab, inside vertical and top faces of parapet, and to the exposed faces of MSE coping. Apply after Bridge Deck Grooving (Special) is complete.

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PARAPET AND ANCHORAGE SLAB DETAILS AND BOM STRUCTURE NO. 016-1807
	CHECKED - MI, KJD	REVISED -		
PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S3-08 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	486
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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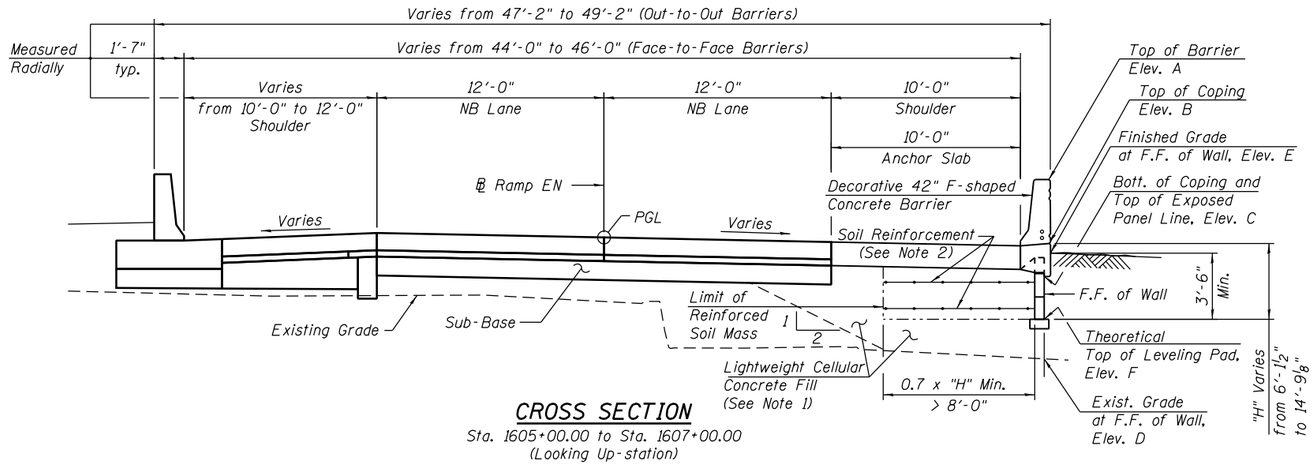


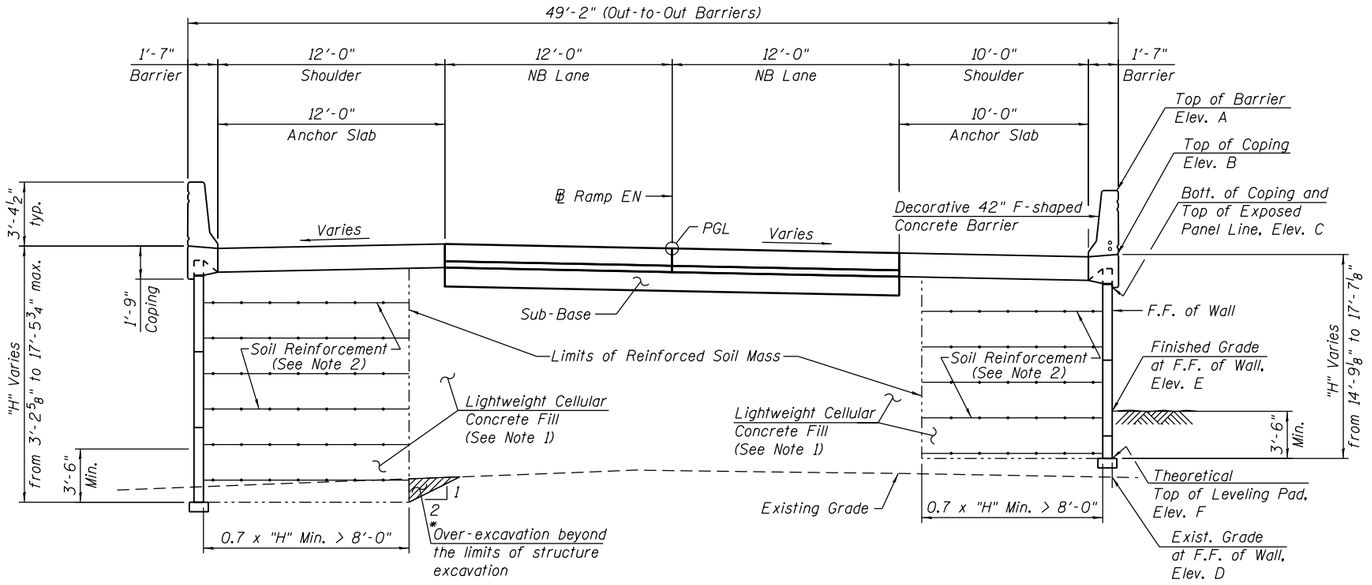
CROSS SECTION

Sta. 1605+00.00 to Sta. 1607+00.00
(Looking Up-station)

TABLE 1 - WALL ELEVATIONS

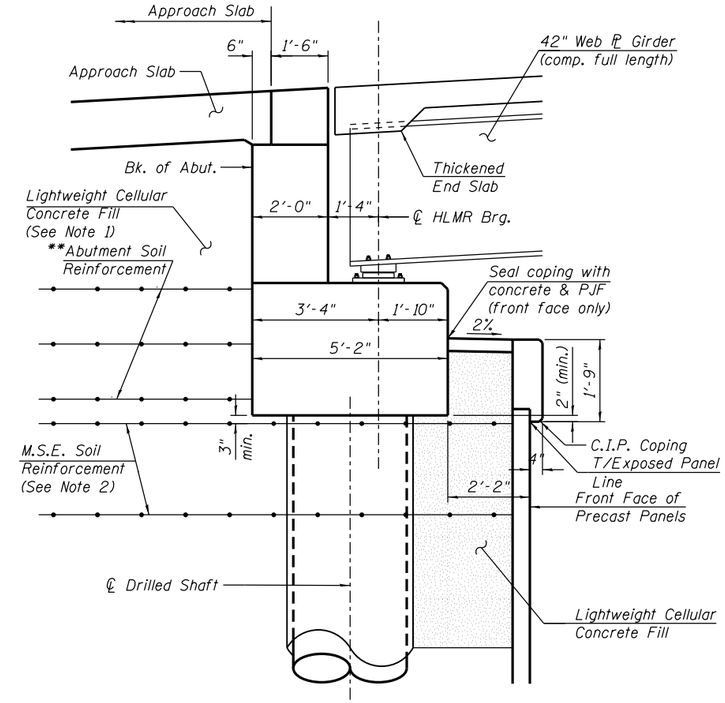
Station	Offset	Elevation A	Elevation B	Elevation C	Elevation D	Elevation E	Elevation F
1605+00.00	23.25 RT.	583.59	580.21	578.46	574.47	580.25	574.08
1605+25.00	23.25 RT.	584.85	581.48	579.73	574.75	579.95	574.08
1605+50.00	23.25 RT.	586.25	582.87	581.12	575.16	580.18	574.08
1605+75.00	23.25 RT.	587.76	584.38	582.63	575.60	580.59	574.08
1606+00.00	23.25 RT.	589.41	586.03	584.28	576.12	580.26	574.08
1606+25.00	23.25 RT.	591.07	587.70	585.95	576.65	580.16	574.99
1606+50.00	23.25 RT.	592.74	589.37	587.62	577.13	580.19	575.90
1606+75.00	23.25 RT.	594.41	591.03	589.28	577.60	580.83	576.88
1607+00.00	23.25 RT.	595.97	592.60	590.85	584.83	582.35	577.84
1607+25.00	23.25 RT.	597.49	594.12	592.37	583.96	582.77	578.82
1607+50.00	23.25 RT.	599.01	595.64	593.89	585.25	584.19	579.79
1607+75.00	23.25 RT.	600.43	597.05	595.30	583.61	585.44	580.77
1607+93.34	23.25 RT.	601.44	598.07	596.32	582.17	585.95	580.48
1607+99.89	23.25 RT.	-	591.26	589.51	581.71	583.87	580.37
1607+00.00	25.25 LT.	593.69	590.32	588.57	589.57	593.17	587.10
1607+25.00	25.25 LT.	595.08	591.71	589.96	588.25	589.10	585.36
1607+50.00	25.25 LT.	596.46	593.09	591.34	586.00	587.62	583.62
1607+75.00	25.25 LT.	597.85	594.48	592.73	583.09	584.59	580.31
1607+92.91	25.25 LT.	598.84	595.47	593.72	581.42	582.05	577.99
1608+00.47	25.25 LT.	-	588.59	586.84	580.8	580.56	577.06

Elevation A - Top of Barrier
Elevation B - Top of Coping
Elevation C - Bottom of Coping/Top of Exposed Panel Line
Elevation D - Exist. Grade at Front Face of Wall
Elevation E - Finished Grade at Front Face of Wall
Elevation F - Theoretical Top of Leveling Pad



CROSS SECTION

Sta. 1607+00.00 to Sta. 1608+00.47
(Looking Up-station)



SECTION THRU WEST ABUTMENT

(Horiz. Dims. @ Rt. L's to ℄ Brg.)

NOTES:

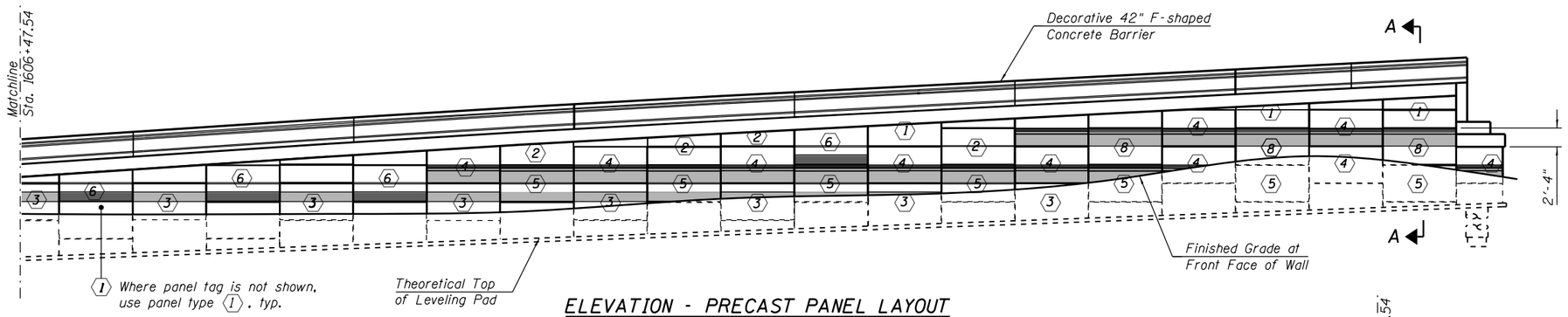
1. All Lightweight Cellular Concrete Fill shall be Class III.
2. The MSE wall supplier's internal stability design shall account for the anchorage slab's bearing pressure surcharge of 1.0 ksf and horizontal sliding force of 0.83 kips/ft of wall.
3. F.F. denotes front face.
4. The minimum factored bearing resistance for fill material at locations where the proposed theoretical leveling pad is above the existing ground line, shall equal or exceed 2,100 psf.
5. MSE wall supplier to design load transfer system to accommodate drainage structure.

* Backfill over-excavation with lightweight cellular concrete fill (See Note 1).

** Abutment soil reinforcement to resist lateral loads in lieu of drilled shafts.

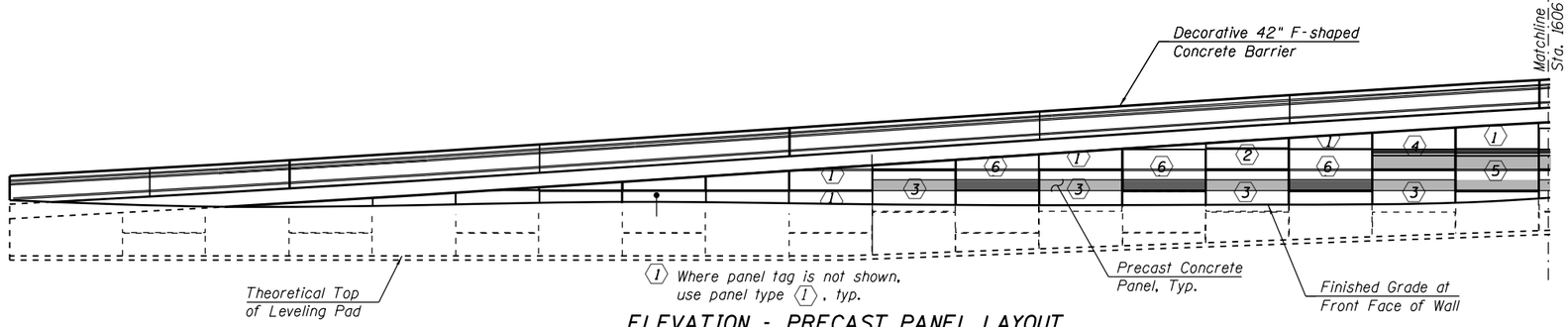
HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	MSE CROSS SECTION AND DETAILS 1 STRUCTURE NO. 016-1807
		CHECKED - MI, KJD	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S3-09 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	487
			CONTRACT NO. 60X79	
		ILLINOIS	FED. AID PROJECT	



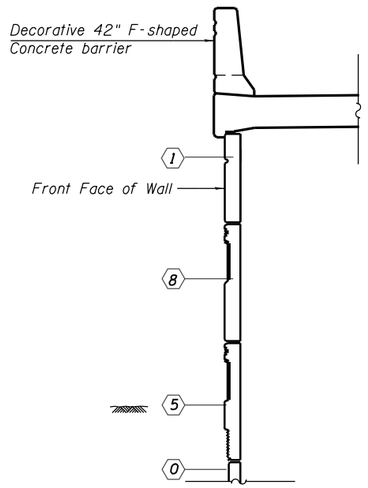
ELEVATION - PRECAST PANEL LAYOUT

(Looking North at F.F. of Wall)

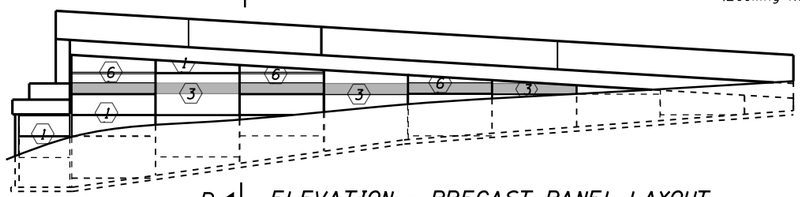


ELEVATION - PRECAST PANEL LAYOUT

(Looking North at F.F. of Wall)

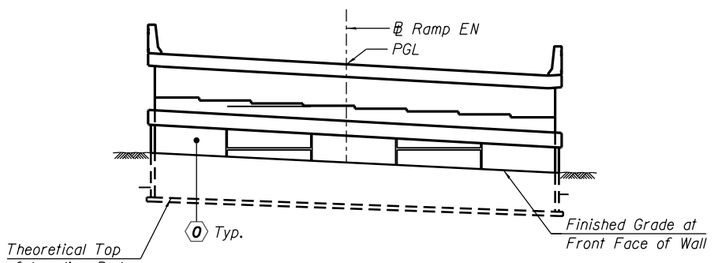


SECTION A-A



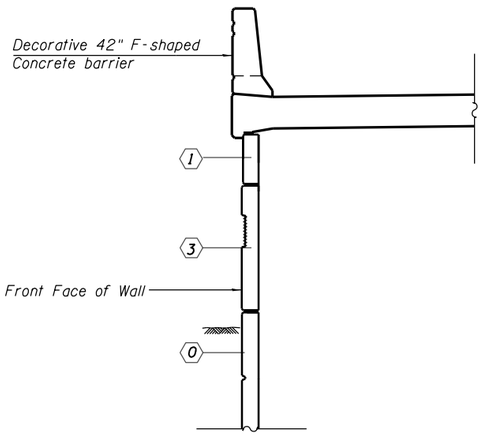
ELEVATION - PRECAST PANEL LAYOUT

(Looking South at F.F. of Wall)



ELEVATION - PRECAST PANEL LAYOUT

(Looking West at F.F. of Wall)



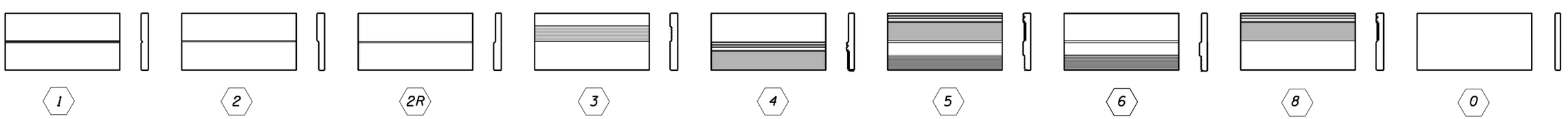
SECTION B-B

LEGEND:

0 1 2 2R 3 4 5 6 8 Precast Panel Type Designation Based on Formliner Layout

NOTES:

1. Reveals in concrete barrier shall not be paid separately but shall be included in the cost of "Concrete Superstructure".
2. Textured formliner for precast panels shall not be paid separately but shall be included in the cost of "Mechanically Stabilized Earth Retaining Wall, Special".
3. For formliner details for precast panels, see Sheet S3-11.
4. Verify / coordinate all dimensions with bridge plans for Ramp EN (S.N. 016-1712).
5. MSE Supplier to determine precast panel dimensions based on proprietary design. The suggested 10'-0" Nom. width shown here may change depending on supplier. If this is the case, it will be addressed by the Engineer and coordinated with the supplier during the Shop Drawing submittal and review.

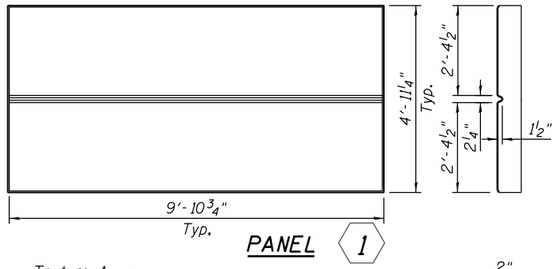


PRECAST PANEL TYPES

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MR	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	ARCHITECTURAL DETAILS 1 STRUCTURE NO. 016-1807	
	CHECKED -	REVISED -			
PLOT SCALE = N.T.S	DRAWN - MR	REVISED -			
PLOT DATE = 7/30/2018	CHECKED -	REVISED -		SHEET NO. S3-10 OF S3-16 SHEETS	

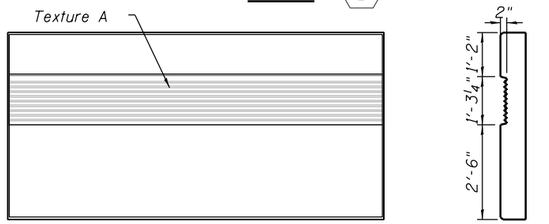
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	488
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



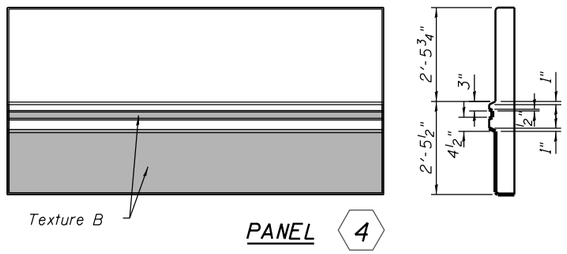
PANEL 1

PANEL 2

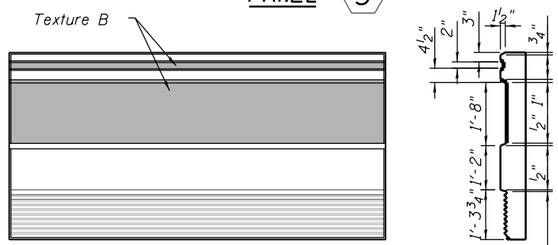
PANEL 2 R



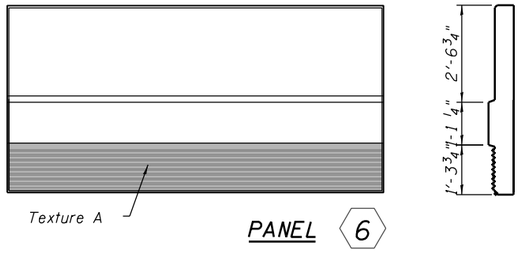
PANEL 3



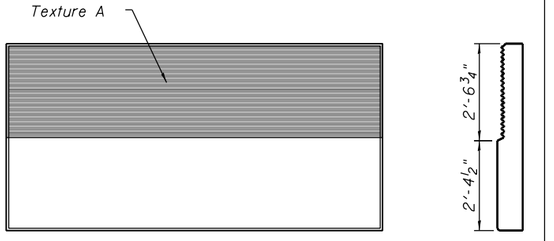
PANEL 4



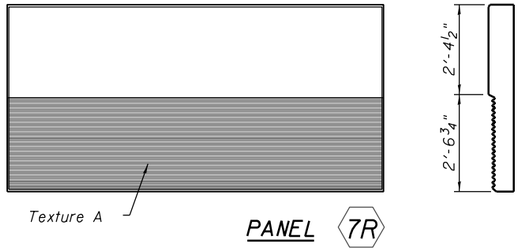
PANEL 5



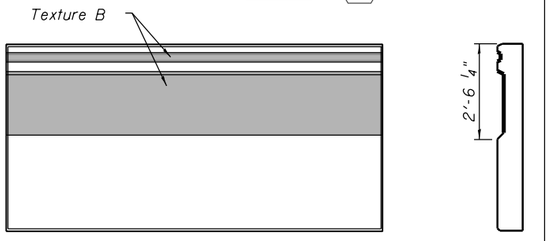
PANEL 6



PANEL 7

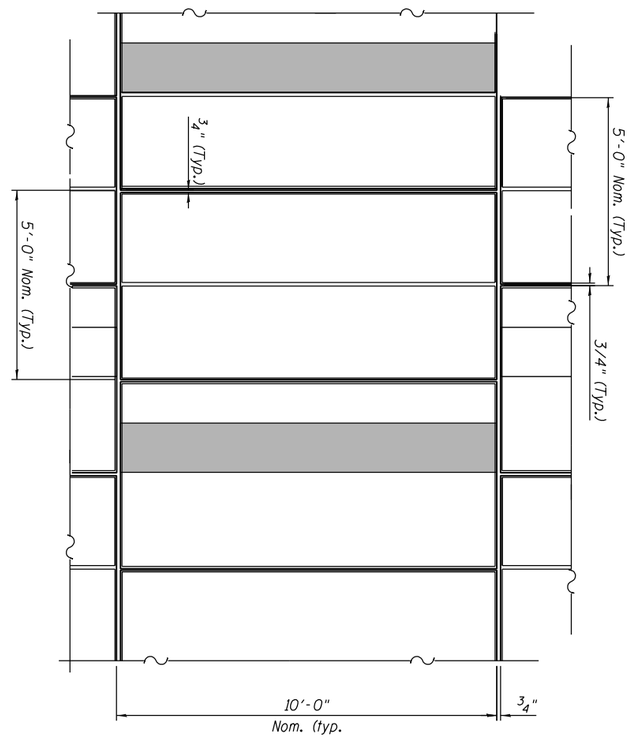


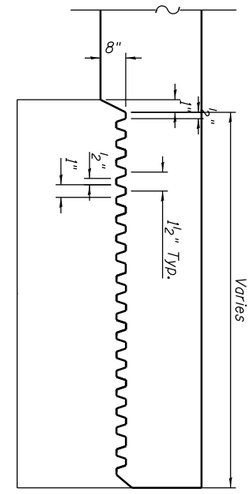
PANEL 7R



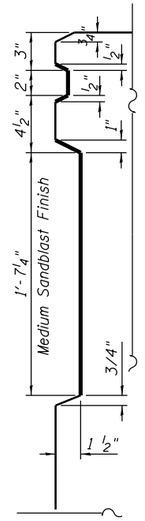
PANEL 8

PANEL 0





FORMLINER TEXTURE A



FORMLINER TEXTURE B

DETAIL NOTES:

1. Textured formliner for precast panels shall not be paid separately but shall be included in the cost of "Mechanically Stabilized Earth Retaining Wall, Special".
2. Formliner layout numbering is typical for all MSE retaining walls in this Contract. Formliner details for precast panels are typical for all panels shown in this Contract.
3. Verify / coordinate all dimensions with bridge plans for Ramp EN (S.N. 016-1712).
4. MSE Supplier to determine precast panel dimensions based on proprietary design. The suggested 10'-0" Nom. width shown here may change depending on supplier. If this is the case, it will be addressed by the Engineer and coordinated with the supplier during the Shop Drawing submittal and review.

TYPICAL CONCRETE PANELS DETAILS

PRECAST PANEL TYPES

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - MR	REVISED -		
	CHECKED -	REVISED -		
PLOT SCALE = N.T.S	DRAWN - MR	REVISED -		
PLOT DATE = 7/30/2018	CHECKED -	REVISED -		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ARCHITECTURAL DETAILS 2
STRUCTURE NO. 016-1807
SHEET NO. S3-11 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	489
		CONTRACT NO. 60X79		
		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 18-RWB-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: 585.35 ft
North: 1897627.64 ft
East: 1171433.33 ft
Station: 1607+57.15
Offset: 14.1384 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	585.0	4-inch thick, black SILTY LOAM --TOPSOIL--						
		Very stiff to hard, brown and gray SILTY CLAY LOAM, trace gravel --FILL--			1	13 11 12	> 4.50 P	17
			5		2	6 6 8	3.44 B	17
	579.8	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			3	2 2 3	0.41 B	20
			10		4	2 2 3	0.49 B	20
					5	0 1 2	0.25 B	25
			15		6	2 3 4	0.66 B	21
					7	2 3 4	0.57 B	22
			20		8	1 3 3	0.49 B	25
			25		9	1 2 3	0.41 B	24
					10	1 2 2	0.33 B	26
			30		11	1 1 2	0.25 B	27
					12	1 1 2	0.16 B	25
			35		13	2 2 4	0.66 B	24
			40		14	2 3 4	0.49 B	26

GENERAL NOTES

Begin Drilling: 10-16-2013 Complete Drilling: 10-17-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV [93%]
Driller: P&N Logger: F. Bozga Checked by: C. Marin
Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 52.00 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.

Wang Engineering
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1145 N Main Street
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BORING LOG 18-RWB-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: 585.35 ft
North: 1897627.64 ft
East: 1171433.33 ft
Station: 1607+57.15
Offset: 14.1384 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	543.6	Very stiff to hard, gray SILTY CLAY LOAM, trace gravel						
			45		15	5 6 14	3.12 B	14
	533.6	Gray, medium to coarse SAND, trace gravel --Wet--	50		16	9 14 18	4.76 B	14
	531.3	Very stiff to hard, gray SILTY CLAY, trace gravel	55		17	13 22 32	5.00 B	18
			60		18	11 11 23	3.85 B	22
	523.6	Dense to very dense, gray GRAVELLY SAND --Wet--	65		19	17 19 17		NP 13
			70		20	26 26 21		NP 12
		--HARD DRILLING-- *--Possible Cobbles--*			21	22 50/3		NR
	510.3	Boring terminated at 75.00 ft	75					
			80					

GENERAL NOTES

Begin Drilling: 10-16-2013 Complete Drilling: 10-17-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-25 ATV [93%]
Driller: P&N Logger: F. Bozga Checked by: C. Marin
Drilling Method: 2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 52.00 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.

Wang Engineering
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1145 N Main Street
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Telephone: 630 953-9928
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BORING LOG 18-RWB-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: 575.58 ft
North: 1897703.15 ft
East: 1171280.67 ft
Station: 1224+34.52
Offset: 9.451 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	575.33	3-inch thick ASPHALT --PAVEMENT--						
	574.8	9-inch thick CONCRETE --PAVEMENT--			1	11 10 6	NP	14
		Medium dense, brown SANDY GRAVEL --FILL--						
	572.6	Soft to medium stiff, gray SILTY CLAY LOAM, trace gravel			2	2 2 3	0.83 N/6	
		--L_L(%)=30, P_I(%)=14-- --%Gravel=3.5-- --%Sand=15.1-- --%Silt=56.3-- --%Clay=25.2-- --A-6 (10)--	5		3	1 1 2	0.25 B	23
	567.6	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			4	1 1 2	0.25 B	26
		--L_L(%)=37, P_I(%)=18-- --%Gravel=3.2-- --%Sand=10.5-- --%Silt=47.4-- --%Clay=38.9-- --A-6 (16)--	10		5	0 0 2	0.03 B	28
			15		6	0 1 1	0.25 B	26
					7	0 1 2	0.25 B	26
	538.8	Very stiff, gray SILTY CLAY, trace gravel	20		8	0 0 0	0.16 B	27
			25		9	0 0 0	0.16 B	27
					10	0 0 2	0.33 B	25
			30		11	0 2 2	0.33 B	25
					12	0 0 1	0.33 B	27
			35		13	1 2 3	0.49 B	19
			40		14	4 9 10	3.12 B	17

GENERAL NOTES

Begin Drilling: 10-14-2013 Complete Drilling: 10-14-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-50 TMR [78%]
Driller: R&N Logger: D. Kolpacki Checked by: C. Marin
Drilling Method: 3.25" HSA, 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.

NOTES:

1. *Boring Log 18-RWB-01 station and offset is measured along baseline of Ramp EN.*
2. *Boring Log 18-RWB-02 station and offset along basline Ramp EN is STA. 1605+92.80 Offset 31.29' Rt.*

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS - I STRUCTURE NO. 016-1807
	CHECKED - KJD	REVISED -		
PLOT SCALE = N.T.S	DRAWN - SK	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S3-12 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	490
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 CirclePhase_II\000_CAD\008_Structural\Structure_016-1807\Sheet\016807-60X79-S012 Boring1
9:29:25 AM

BORING LOG 18-RWB-02

Wang Engineering

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

WEI Job No.: 1100-04-01

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

Datum: NAVD 88
Elevation: 575.58 ft
North: 1897703.15 ft
East: 1171280.67 ft
Station: 1224+34.52
Offset: 9.451 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--L_L(%)=35, P_L(%)=17-- --%Gravel=2.2-- --%Sand=9.4-- --%Silt=51.7-- --%Clay=36.7-- --A-6 (15)-	45		15	4 8 10	2.95 B	19
	525.6		50		16	6 17 14	3.20 B	17
		Boring terminated at 50.00 ft						
			55					
			60					

GENERAL NOTES

Begin Drilling: 10-14-2013 Complete Drilling: 10-14-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-50 TMR [78%]
Driller: R&N Logger: D. Kolpacki Checked by: C. Marin
Drilling Method: 3.25" HSA, 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 18-RWB-03

Wang Engineering

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

WEI Job No.: 1100-04-01

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

Datum: NAVD 88
Elevation: 573.93 ft
North: 1897759.34 ft
East: 1171203.61 ft
Station: 1604+97.68
Offset: 33.9208 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	573.6	4-inch thick ASPHALT --PAVEMENT--						
	572.9	8-inch thick CONCRETE --PAVEMENT--						
		Medium dense, brown SANDY GRAVEL and CRUSHED STONE --FILL--			1	12 14 12	NP	7
			5		2	4 5 6	NP	11
	568.4	Very soft to soft, gray CLAY to SILTY CLAY, trace gravel			3	2 1 1	0.25 B	22
			10		4	0 1 1	0.33 B	26
					5	0 0 0	0.16 B	27
		--L_L(%)=33, P_L(%)=19-- --%Gravel=2.2-- --%Sand=9.4-- --%Silt=51.7-- --%Clay=36.7-- --A-6 (10)-	15		6	0 0 0	0.16 B	27
					7	0 0 0	0.16 B	24
			20		8	0 1 1	0.25 B	27
	542.2	Stiff to hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel						
			25		9	0 0 2	0.25 B	26
					10	0 1 2	0.33 B	25
			30		11	0 1 2	0.33 B	25
					12	0 0 0	0.25 B	29
			35		13	3 5 10	3.85 B	15
		--L_L(%)=24, P_L(%)=15-- --%Gravel=8.4-- --%Sand=24.5--	40		14	8 12 14	4.35 B	14

GENERAL NOTES

Begin Drilling: 10-14-2013 Complete Drilling: 10-14-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-50 TMR [78%]
Driller: R&N Logger: D. Kolpacki Checked by: C. Marin
Drilling Method: 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 3.50 ft
At Completion of Drilling: ▼ 40.00 ft
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 18-RWB-03

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WEI Job No.: 1100-04-01

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

Datum: NAVD 88
Elevation: 573.93 ft
North: 1897759.34 ft
East: 1171203.61 ft
Station: 1604+97.68
Offset: 33.9208 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--%Silt=49.1-- --%Clay=18.1-- --A-4 (3)--	45		15	5 8 12	3.03 B	22
	523.9		50		16	5 8 10	1.97 B	23
		Boring terminated at 50.00 ft						
			55					
			60					

GENERAL NOTES

Begin Drilling: 10-14-2013 Complete Drilling: 10-14-2013
Drilling Contractor: Wang Testing Services Drill Rig: D-50 TMR [78%]
Driller: R&N Logger: D. Kolpacki Checked by: C. Marin
Drilling Method: 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ 3.50 ft
At Completion of Drilling: ▼ 40.00 ft
Time After Drilling: NA
Depth to Water: ▼ NA

The stratification lines represent the approximate boundary between soil types: the actual transition may be gradual.

NOTES:

1. *Boring Log 18-RWB-02 station and offset along basline Ramp EN is STA. 1605+92.80 Offset 31.29' Rt.*
2. *Boring Log 18-RWB-03 station and offset is measured along baseline of Ramp EN.*

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BORING LOGS - II STRUCTURE NO. 016-1807
	CHECKED - KJD	REVISED -		
PLOT SCALE = N.T.S	DRAWN - SK	REVISED -		
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S3-13 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	491
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

Page 1 of 3

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BORING LOG 19-RWB-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: 588.28 ft
North: 1897670.99 ft
East: 1171413.08 ft
Station: 1607+21.55
Offset: 18.1192 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	588.0	4-inch thick, dark brown SILTY LOAM --TOPSOIL--						
		Dense, dark brown SILTY LOAM, trace gravel --FILL--			1	6 23 22	NP	16
	585.3	Stiff, brown and gray SILTY CLAY LOAM, trace gravel	5		2	3 6 7	1.97 B	17
	582.8	Very soft to stiff, gray CLAY to SILTY CLAY, trace gravel --L_L(%)=31, P_L(%)=17-- --%Gravel=2.2-- --%Sand=18.3-- --%Silt=47.1-- --%Clay=32.3-- --A-6 (10)--			3	3 3 4	1.15 B	21
			10		4	1 2 3	0.33 B	24
					5	1 1 1	0.08 B	25
		--L_L(%)=31, P_L(%)=18-- --%Gravel=4.1-- --%Sand=13.3-- --%Silt=51.6-- --%Clay=31.0-- --A-6 (9)--	15		6	1 1 2	0.25 B	29
	571.5	Soft, gray SILTY LOAM, trace gravel			7	1 4 10	NA	
		--L_L(%)=23, P_L(%)=16-- --%Gravel=6.9-- --%Sand=23.7--	20		8	4 3 4	0.49 B	17
	566.5	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel						
		--%Silt=57.5-- --%Clay=11.8-- --A-4 (2)--			9	4 6 5	NA	
			25		10	1 1 2	0.16 B	27
					11	1 1 2	0.25 B	27
			30		12	1 1 2	0.33 B	27
					13	0 2 2	0.25 B	27
		--L_L(%)=34, P_L(%)=18-- --%Gravel=2.9-- --%Sand=13.1--	40		14	2 2 3	0.66 B	26

GENERAL NOTES

Begin Drilling 10-14-2013 Complete Drilling 10-16-2013
Drilling Contractor Wang Testing Services Drill Rig D-25 ATV [93%]
Driller P&N Logger F. Bozga Checked by C. Marin
Drilling Method 2.25" HSA to 10', mud rotary thereafter, boring
backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ 67.00 ft
At Completion of Drilling ▼ mud in the borehole
Time After Drilling 48 hours
Depth to Water ▼ 15.00 ft

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 11000401.GPJ WANGENG.GDT 9/20/17

Page 2 of 3

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BORING LOG 19-RWB-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: 588.28 ft
North: 1897670.99 ft
East: 1171413.08 ft
Station: 1607+21.55
Offset: 18.1192 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--%Silt=49.6-- --%Clay=34.3-- --A-6 (12)--						
			45		15	2 2 5	0.41 B	21
	541.5	Stiff to hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel						
			50		16	3 5 8	1.48 B	23
		--L_L(%)=25, P_L(%)=16-- --%Gravel=6.5-- --%Sand=26.5-- --%Silt=49.4-- --%Clay=17.6-- --A-4 (3)--	55		17	6 11 19	4.84 B	14
			60		18	14 23 31	5.41 B	18
	526.5	Very stiff, gray CLAY, trace gravel						
		--L_L(%)=44, P_L(%)=20-- --%Gravel=1.2-- --%Sand=5.0-- --%Silt=39.6-- --%Clay=54.2-- --A-7-6 (24)--	65		19	5 6 7	2.13 B	30
	521.5	Dense, gray, medium SAND --Saturated--						
			70		20	11 13 17		NP 19
		--Change in drilling conditions at 73 ft--						
	515.3	Hard, gray SILTY CLAY LOAM, trace gravel --L_L(%)=29, P_L(%)=16-- --%Gravel=3.6-- --%Sand=13.5-- --%Silt=56.0-- --%Clay=26.9-- --A-6 (9)--	75		21	17 32 50/4	7.71 B	15
	511.5	Very dense, gray SILTY LOAM, trace gravel						
			80		22	37 50/5		NP 10

GENERAL NOTES

Begin Drilling 10-14-2013 Complete Drilling 10-16-2013
Drilling Contractor Wang Testing Services Drill Rig D-25 ATV [93%]
Driller P&N Logger F. Bozga Checked by C. Marin
Drilling Method 2.25" HSA to 10', mud rotary thereafter, boring
backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ 67.00 ft
At Completion of Drilling ▼ mud in the borehole
Time After Drilling 48 hours
Depth to Water ▼ 15.00 ft

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 11000401.GPJ WANGENG.GDT 9/20/17

Page 3 of 3

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BORING LOG 19-RWB-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: 588.28 ft
North: 1897670.99 ft
East: 1171413.08 ft
Station: 1607+21.55
Offset: 18.1192 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING-- *--Possible Cobbles--*						
			85		23	29 34 40	NP	11
	501.5	Very dense, gray SILT						
			90		24	15 50/5	NP	18
	494.6	DOLOSTONE fragments --DIFFICULT DRILLING-- --WEATHERED BEDROCK--	95		25	50/4	NP	17
	493.3	Boring terminated at 95.00 ft						
			100					

GENERAL NOTES

Begin Drilling 10-14-2013 Complete Drilling 10-16-2013
Drilling Contractor Wang Testing Services Drill Rig D-25 ATV [93%]
Driller P&N Logger F. Bozga Checked by C. Marin
Drilling Method 2.25" HSA to 10', mud rotary thereafter, boring
backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ 67.00 ft
At Completion of Drilling ▼ mud in the borehole
Time After Drilling 48 hours
Depth to Water ▼ 15.00 ft

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 11000401.GPJ WANGENG.GDT 9/20/17

NOTES:

1. Boring Log 19-RWB-01 station and offset is measured along baseline of Ramp EN.

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - SK	REVISED -	**STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION**	**BORING LOGS - III STRUCTURE NO. 016-1807**	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CHECKED - KJD	REVISED -			90/94/290	2014-005R&B	COOK	888	492
	PLOT SCALE = N.T.S	DRAWN - SK	REVISED -							CONTRACT NO. 60X79
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S3-14 OF S3-16 SHEETS			ILLINOIS	FED. AID PROJECT	

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1807\Sheet\016807-60X79-S014 Boring3

9:29:37 AM

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BORING LOG 1087-B-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: 577.83 ft
North: 1897618.19 ft
East: 1171373.71 ft
Station: 1225+43.65
Offset: 53.5267 LT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
577.5	4-inch thick ASPHALT --PAVEMENT--						
	15-inch thick CONCRETE --PAVEMENT--						
576.2	Medium dense CRUSHED STONE --FILL--			1	10 9 12	NP	
		5		2	4 2 3	NP	7
572.3	Medium stiff, gray SILTY CLAY, trace gravel			3	2 3 2	0.74 B	20
569.8	Soft to medium stiff, gray CLAY, trace gravel			4	2 2 3	0.33 B	21
	--L_L(%)=32, P_L(%)=17-- --%Gravel=1.9-- --%Sand=15.6-- --%Silt=52.2-- --%Clay=30.3-- --A-6 (11)--			5	2 1 2	0.25 B	24
		15		6	1 2 1	0.16 B	27
				7	1 2 1	0.25 B	27
541.1	Hard, gray SILTY LOAM, trace gravel and sand lenses			8	1 2 2	0.25 P	28
		25		9	0 2 1	0.25 B	27
				10	0 0 3	0.41 B	26
				11	1 1 2	0.41 B	25
		30		12	1 2 2	0.57 B	26
		35		13	0 1 1	0.49 B	29
		40		14	9 10 13	7.79 B	18

GENERAL NOTES

Begin Drilling: 03-06-2013 Complete Drilling: 03-14-2013
Drilling Contractor: Wang Testing Services Drill Rig: B-57 TMR [100%]
Driller: R&J Logger: D. Kolpacki Checked by: C. Marin
Drilling Method: 2.25" SSA to 20', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: 3.50 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 1087-B-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: 577.83 ft
North: 1897618.19 ft
East: 1171373.71 ft
Station: 1225+43.65
Offset: 53.5267 LT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	--L_L(%)=24, P_L(%)=13-- --%Gravel=3.5-- --%Sand=28.1-- --%Silt=52.4-- --%Clay=16.0-- --A-6 (5)--	45		15	7 10 18	6.47 B	13
530.8	Very stiff to hard, gray SILTY CLAY, trace gravel						
		50		16	7 12 20	6.72 B	20
	--L_L(%)=40, P_L(%)=15-- --%Gravel=0.4-- --%Sand=3.8-- --%Silt=49.8-- --%Clay=46.1-- --A-6 (24)--	55		17	6 6 7	2.05 S	24
520.8	Medium dense, gray, SANDY LOAM						
	--%Gravel=0.0-- --%Sand=74.0-- --%Silt=25.1--	60		18	5 7 10	NP	23
	--%Clay=0.9-- --A-2-4 (0)--						
515.8	Hard, gray SILTY LOAM, trace gravel						
		65		19	12 20 25	10.25 B	13
	--L_L(%)=22, P_L(%)=12-- --%Gravel=4.6-- --%Sand=19.7-- --%Silt=61.8-- --%Clay=13.9-- --A-4 (5)--	70		20	19 30 34	5.00 S	13
		75		21	27 34 47	> 4.50 P	18
500.8	Very dense, gray GRAVELLY SANDY LOAM, some dolostone fragments						
		80		22	50/3"	NP	15

GENERAL NOTES

Begin Drilling: 03-06-2013 Complete Drilling: 03-14-2013
Drilling Contractor: Wang Testing Services Drill Rig: B-57 TMR [100%]
Driller: R&J Logger: D. Kolpacki Checked by: C. Marin
Drilling Method: 2.25" SSA to 20', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: 3.50 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 1087-B-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: 577.83 ft
North: 1897618.19 ft
East: 1171373.71 ft
Station: 1225+43.65
Offset: 53.5267 LT

Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	--HARD DRILLING--	85		23	50/3"	NR	
488.8	Strong, good rock quality, light gray, fresh, slightly fractured, joint breaks with little to no infill, slightly vuggy DOLOSTONE Run#1: 89 to 99 feet --RECOVERY=100%-- --RQD=84%--	90	CORE				
	ROCK MASS RATING: Strength of rock material = 12 Drill core quality RQD = 17 Spacing of joints = 20 Condition of joints =20 Groundwater condition =10	95	CORE	24			
478.8	Boring terminated at 99.00 ft	100					

GENERAL NOTES

Begin Drilling: 03-06-2013 Complete Drilling: 03-14-2013
Drilling Contractor: Wang Testing Services Drill Rig: B-57 TMR [100%]
Driller: R&J Logger: D. Kolpacki Checked by: C. Marin
Drilling Method: 2.25" SSA to 20', mud rotary thereafter, boring backfilled upon completion

WATER LEVEL DATA

While Drilling: 3.50 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.

NOTES:

1. Boring Log 1087-B-02 station and offset along basline Ramp EN is STA. 1607+09.95 Offset 48.13' Rt.

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
		CHECKED - KJD	REVISED -	
	PLOT SCALE = N.T.S	DRAWN - SK	REVISED -	
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -	

BORING LOGS - IV
STRUCTURE NO. 016-1807
SHEET NO. S3-15 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	493
			CONTRACT NO. 60X79	
		ILLINOIS	FED. AID PROJECT	

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BORING LOG 1712-B-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: 577.47 ft
North: 1897623.12 ft
East: 1171520.05 ft
Station: 1608+41.31
Offset: 0.4228 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	577.3	2-inch thick ASPHALT --PAVEMENT--						
	576.5	10-inch thick CONCRETE --PAVEMENT--						
	576.0	CRUSHED STONE --BASE COURSE--						
	574.5	Hard, black SILTY CLAY --FILL--						
		Very soft to medium stiff, CLAY to SILTY CLAY, trace gravel		1		7 6 6	4.26 B	12
			5	2		4 3 3	0.66 B	16
				3		1 2 3	0.49 B	16
			10	4		1 2 3	0.33 B	20
				5		1 1 2	0.16 B	25
			15	6		1 2 2	0.25 B	26
				7		1 1 2	0.16 B	25
			20	8		1 2 1	0.25 B	26
	543.5	Loose, gray SILT						
	540.7	Very stiff to hard, gray SILTY CLAY, trace gravel						
				9		1 2 2	< 0.25 P	25
			25	10		1 2 3	0.25 B	25
				11		1 2 3	0.33 B	16
			30	12		2 2 3	0.33 B	26
				13		3 5 4	NP	23
			35	14		4 6 10	2.62 B	21
			40					

GENERAL NOTES

Begin Drilling 10-27-2013 Complete Drilling 10-28-2013
Drilling Contractor GSG Drill Rig D-50 TMR [78%]
Driller J&J Logger C. Davis Checked by C. Marin
Drilling Method 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ 57.00 ft
At Completion of Drilling ▼ mud in the borehole
Time After Drilling 24 hours
Depth to Water ▼ 45.00 ft

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1712-B-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: 577.47 ft
North: 1897623.12 ft
East: 1171520.05 ft
Station: 1608+41.31
Offset: 0.4228 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	525.7	Soft, gray CLAY with SILT lamination --Wet--						
	520.5	Loose, gray, coarse SAND, some gravel --Saturated--						
			45	15		4 7 10	4.35 B	13
			50	16		4 8 12	4.02 B	20
			55	17		3 3 4	0.49 B	26
			60	18		7 3 3	NP	16
	515.7	Hard, gray SILTY CLAY LOAM, trace gravel						
	510.7	Very dense, gray SILTY LOAM, little gravel						
		--HARD DRILLING-- *--Possible Cobbles--*	65	19		16 26 46	10.25 B	13
			70	20		34 50 50/4	NP	11
		--HARD DRILLING-- *--Possible Cobbles--*	75	21		30 32 33	NP	12
		--HARD DRILLING-- *--Possible Cobbles--*	80	22		50/1		14

GENERAL NOTES

Begin Drilling 10-27-2013 Complete Drilling 10-28-2013
Drilling Contractor GSG Drill Rig D-50 TMR [78%]
Driller J&J Logger C. Davis Checked by C. Marin
Drilling Method 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ 57.00 ft
At Completion of Drilling ▼ mud in the borehole
Time After Drilling 24 hours
Depth to Water ▼ 45.00 ft

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1712-B-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: 577.47 ft
North: 1897623.12 ft
East: 1171520.05 ft
Station: 1608+41.31
Offset: 0.4228 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			85	23		50/2		11
	492.0	--DIFFICULT DRILLING-- --WEATHERED BEDROCK--						
	490.5	Strong, light gray, good rock mass quality, bedded, fresh DOLOSTONE, 2- to 18-inch beds, 2- to 18-inch spaced joints, horizontal and vertical joints with less than 0.2-inch infilling, hard joint wall, with stylolitic surfaces, and moderately vuggy porosity, <1.5 inch vugs. --Run 1 - RECOVERY=100%-- --RQD=88%--	90	1		CORE		
	480.5	Boring terminated at 97.00 ft	95					
			100					

GENERAL NOTES

Begin Drilling 10-27-2013 Complete Drilling 10-28-2013
Drilling Contractor GSG Drill Rig D-50 TMR [78%]
Driller J&J Logger C. Davis Checked by C. Marin
Drilling Method 3.25" HSA, boring backfilled upon completion

WATER LEVEL DATA

While Drilling ▽ 57.00 ft
At Completion of Drilling ▼ mud in the borehole
Time After Drilling 24 hours
Depth to Water ▼ 45.00 ft

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

NOTES:

1. Boring Log 1712-B-01 station and offset is measured along baseline of Ramp EN.

HBM ENGINEERING GROUP, LLC

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS - V
STRUCTURE NO. 016-1807
SHEET NO. S3-16 OF S3-16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	494
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

Benchmark: Cut square on center of door entrance to 707 W. Harrison St. (south side of Harrison St., approx. 90' west of west line of Des Plaines St.). Elevation 597.47.

Existing Structure: None. Traffic shall be maintained on the existing Ramp EN Structure (S.N. 016-2453) during construction of the proposed retaining wall. Subsequently, traffic shall be detoured to allow for construction of the remaining portions of the proposed Ramp EN (S.N. 016-1712) approaches and bridge structure.

DESIGN STRESSES

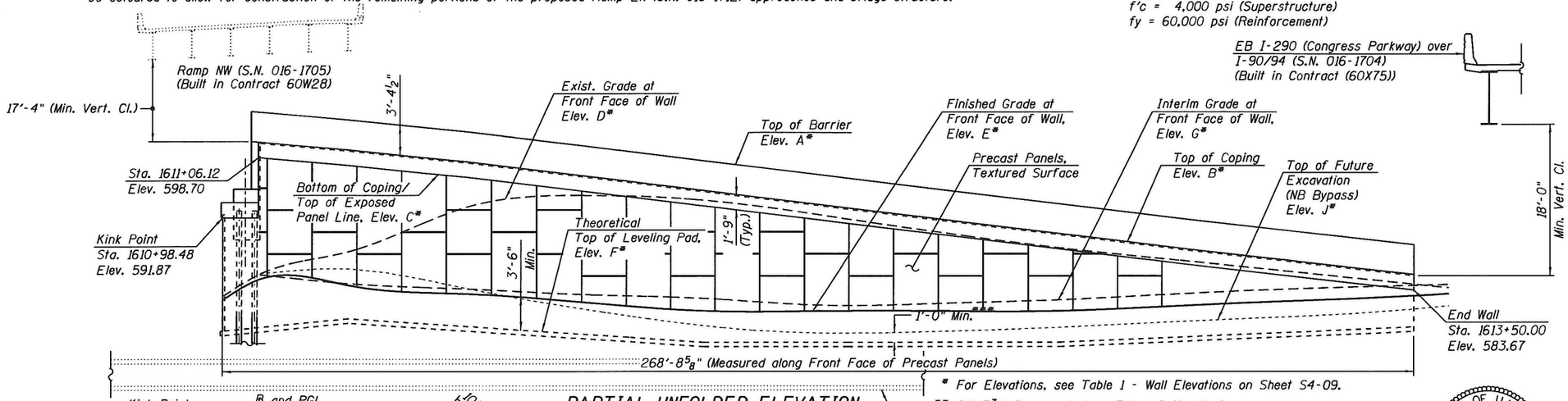
FIELD UNITS	PRECAST UNITS
f'c = 3,500 psi	f'c = 4,500 psi
f'c = 4,000 psi (Superstructure)	
fy = 60,000 psi (Reinforcement)	

DESIGN SPECIFICATIONS

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

NOTES:

1. For Table 1 - Wall Elevations, see Sheet S4-09.
2. Stations and offsets are measured along ℄ Ramp EN to the front face of precast panels.
3. Existing/Abandoned foundation elements including, but not limited to, sheet piles, drilled shafts and steel piles, are present at the north portion of proposed Retaining Wall 20 (S.N. 016-1811). The Contractor may need to remove portions of these elements to avoid conflict with proposed retaining wall construction. All work for removal of these items shall be paid for as Concrete Removal, Special, Sheet Pile Removal, Special and/or Pile Removal as appropriate. See Foundation Obstruction sheets, Ramp EN (S.N. 016-1712) Plans and Contract Special Provisions for additional information.



* For Elevations, see Table 1 - Wall Elevations on Sheet S4-09.

** 21'-7¾" (Measured along Edge of Shoulder)
19'-4½" (Measured along Outside Face of Barrier)

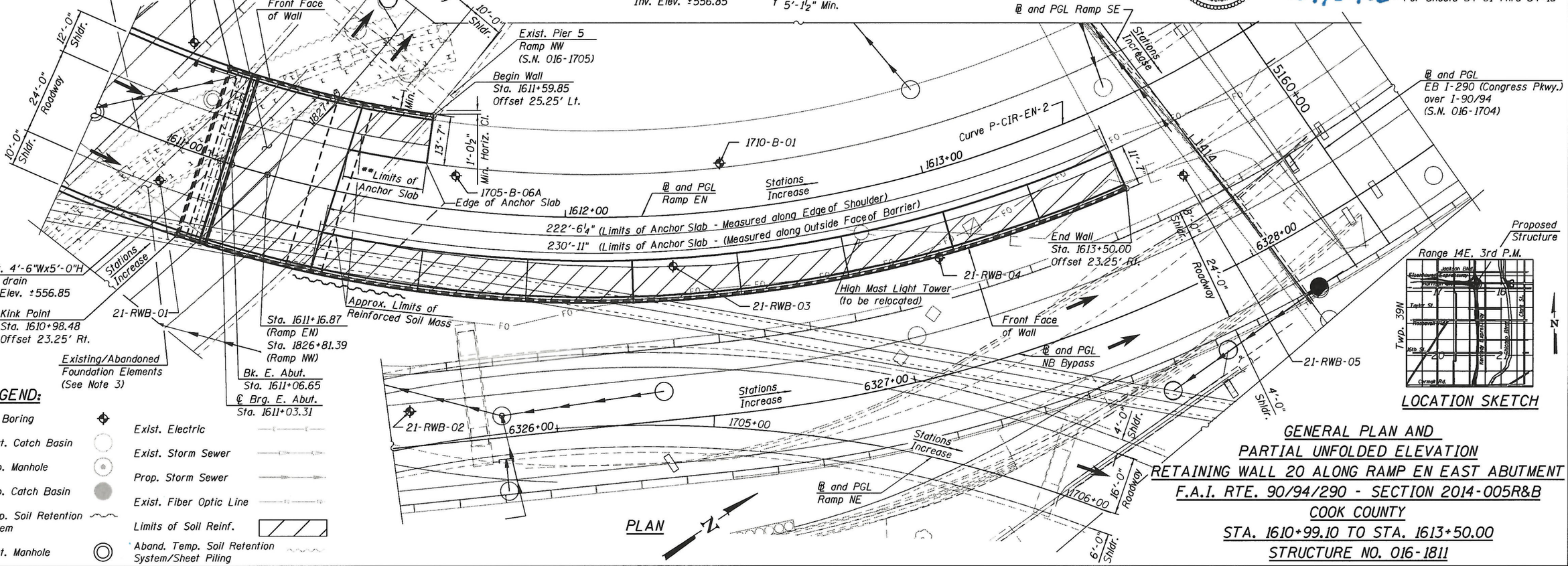
*** Theoretical Top of Leveling Pad determined such that 1'-0" minimum fill is present above leveling pad toe during future excavation for prop. NB Bypass Ramp

† 5'-1½" Min.

PARTIAL UNFOLDED ELEVATION

(Looking at Front Face of Wall)

Exist. 4'-6"Wx5'-0"H main drain Inv. Elev. ±556.85



LOCATION SKETCH

LEGEND:

- Soil Boring
- Exist. Catch Basin
- Prop. Manhole
- Prop. Catch Basin
- Temp. Soil Retention System
- Exist. Manhole
- Exist. Electric
- Exist. Storm Sewer
- Prop. Storm Sewer
- Exist. Fiber Optic Line
- Limits of Soil Reinf.
- Aband. Temp. Soil Retention System/Sheet Piling

STATE OF ILLINOIS
MOUSSA A. ISSA
081-005738
CHICAGO, ILLINOIS
LICENSED STRUCTURAL ENGINEER

Signed Moussa A. Issa
Dr. Moussa A. Issa, S.E. Il. Lic. No. 081-005738
Expires 11-30-2018
Date 07/30/18

For Sheets S4-01 Thru S4-18

GENERAL PLAN AND PARTIAL UNFOLDED ELEVATION RETAINING WALL 20 ALONG RAMP EN EAST ABUTMENT

F.A.I. RTE. 90/94/290 - SECTION 2014-005R&B
COOK COUNTY
STA. 1610+99.10 TO STA. 1613+50.00
STRUCTURE NO. 016-1811

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STRUCTURE NO. 016-1811	
	CHECKED - MI, KJD	REVISED -		SHEET NO. S4-01 OF S4-18 SHEETS	
PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -			

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	495
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

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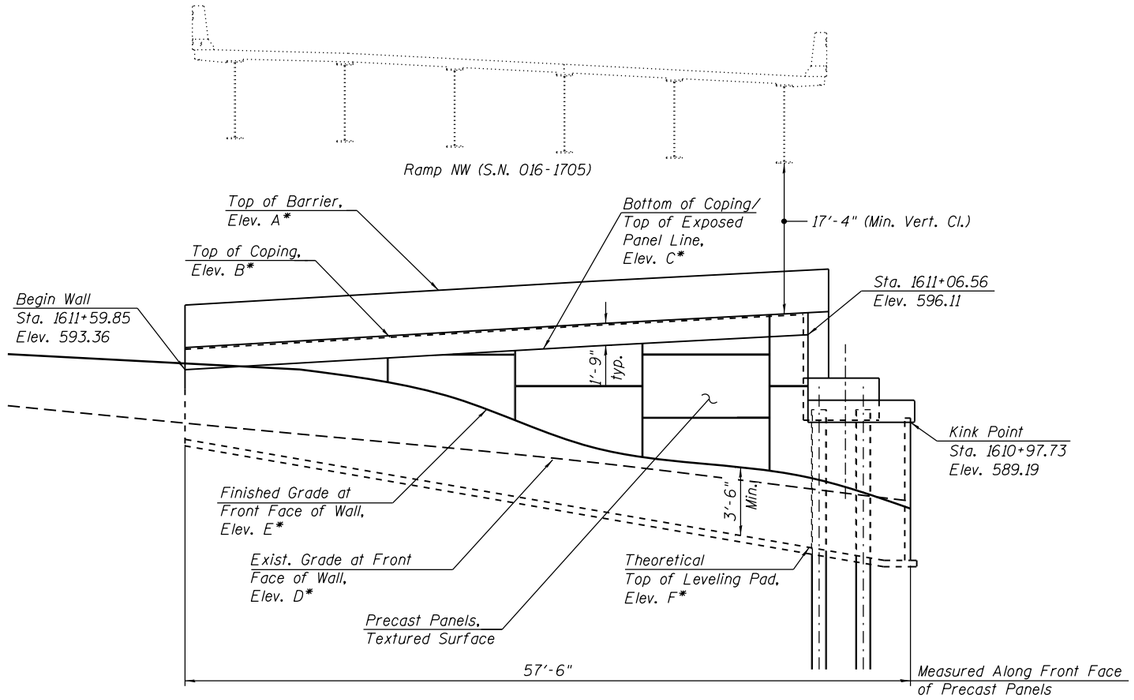
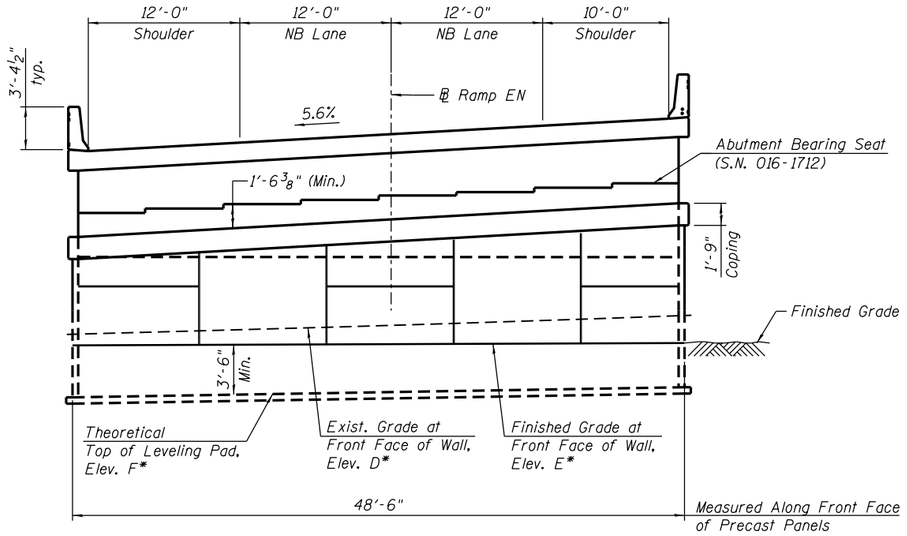


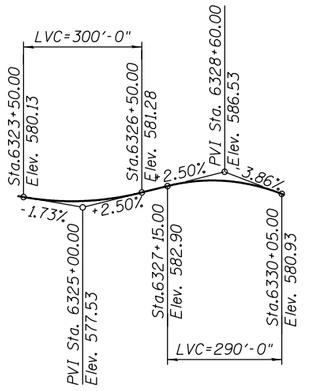


* For Elevations, see Table 1 - Wall Elevations on Sheet S4-09

Exist. main Drian Top Elev. ±564.0

PARTIAL UNFOLDED ELEVATION

(Looking at Front Face of Wall)



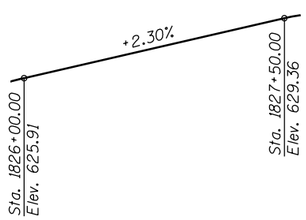
PROFILE GRADE

(Along ℄ NB Bypass)

CURVE DATA

(RAMP NB Bypass)
(Prop. Curve P-NCD-NX-4)

P.I. Sta. = 6328+76.78
Δ = 59° 05' 41" (LT)
D = 14° 08' 50"
R = 405.00'
T = 229.58'
L = 417.72'
E = 60.54'
e = 5.40%
T.R. = 36'
S.E. Run =98'
P.C. Sta. = 6326+47.20
P.T. Sta. = 6330+64.91
DS = 30
PS = 30



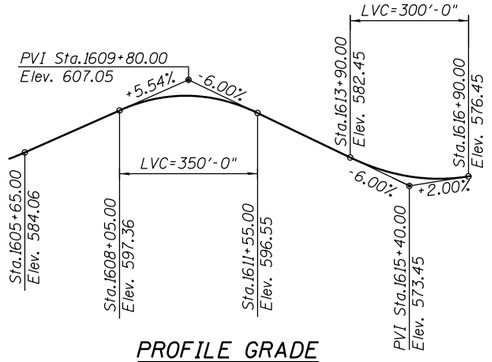
PROFILE GRADE

(Along ℄ Ramp NW)

CURVE DATA

(RAMP NW)
(Prop. Curve P-CIR-NW-6)

P.I. Sta. = 1831+44.22
Δ = 88° 30' 25" (LT)
D = 10° 36' 37"
R = 540.00'
T = 526.11'
L = 834.16'
E = 213.92'
e = 5.40%
T.R. = 39'
S.E. Run = 105'
P.C. Sta. = 1826+18.11
P.T. Sta. = 1834+52.27
DS = 35
PS = 35



PROFILE GRADE

(Along ℄ Ramp EN)

CURVE DATA

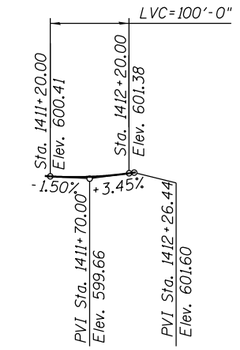
(RAMP EN)
(PROP. CURVE P-CIR-EN-2)

PI STA. = 1624+41.43
Δ = 158° 32' 09" (LT)
D = 16° 51' 06"
R = 340.00'
T = 1,793.89'
L = 940.77'
E = 1,485.82'
e = 5.60%
T.R. = 37'
S.E. RUN = 103'
P.C. STA. = 1606+47.54
P.T. STA. = 1615+88.31
DS = 30
PS = 30

CURVE DATA

(RAMP SE)
PROP. CURVE P-CIR-SE-2

PI STA. = 1415+83.08
Δ = 157° 44' 18" (LT)
D = 24° 48' 12"
R = 231.00'
T = 1,174.08'
L = 635.96'
E = 965.59'
e = 5.60%
T.R. = NA
S.E. RUN = 128'
P.C. STA. = 1404+09.00
P.T. STA. = 1410+44.95
DS = 25
PS = 25



PROFILE GRADE

(Along ℄ Ramp SE)

HBM ENGINEERING GROUP, LLC

USER NAME = ahmad,issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PARTIAL UNFOLDED ELEVATIONS AND PROFILE GRADE LINES STRUCTURE NO. 016-1811	
	CHECKED - MI, KJD	REVISED -			
PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S4-02 OF S4-18 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	496
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

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GENERAL NOTES:

1. Reinforcement bars designated (E) shall be epoxy coated.

2. Plan dimensions and details relative to existing plans are subjected 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 materials. Such variations shall not be cause for additional compensation for a change in scope of work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

3. Concrete Sealer shall be applied to the exposed front face surfaces of the precast concrete panels, anchorage slab and parapet. Protective Coat shall be applied to the top and back face of the parapet and top of exposed anchorage slab.

4. 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 building foundations and the existing main drain. Any damage during construction shall be repaired by the Contractor at his expense and no charge to the Department.

5. The Contractor shall provide vibration and displacement monitoring at the locations specified in the Special Provision for Construction Vibration Monitoring, 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.

6. Slipforming of parapets is not allowed.

7. The Contractor shall field verify locations of existing underground utilities. The Contractor shall take all precautions to protect existing utilities during construction of the wall. Any damage to the existing utilities shall be responsibility of the Contractor.

8. MSE Wall supplier shall design the MSE Wall using granular reinforced mass with minimum effective internal friction angle of 34 degrees and unit weight of 120 lbs./cu. ft. For embankment behind granular reinforced mass, an embankment unit weight of 120 lbs./cu. ft and an effective friction angle of 30 degrees shall be used in the wall system design.

INDEX OF SHEETS

SUGGESTED SEQUENCE OF CONSTRUCTION

1. Locate existing utilities that are to remain. The Contractor shall coordinate any required improvements to, or removals of, existing utilities with utility owner(s). See Utility Plans and ITS Plans.

2. Excavate as required for construction of proposed Retaining Wall 20 (S.N. 016-1811). Remove portions of abandoned foundation elements as required (See Roadway Plans for additional information).

3. Install East Abutment drilled shafts and stub wall for proposed Ramp EN (S.N. 016-1712) over F.A.I. Rte. 90/94 (Dan Ryan Expressway).

4. Construct Retaining Wall 20 (S.N. 016-1811).

5. Begin placing lightweight cellular concrete fill.

6. Complete construction of proposed Ramp EN (S.N. 016-1712) East Abutment.

7. Complete placement of lightweight cellular concrete fill.

8. Construct Anchorage slabs, Approach slab and Roadway pavement.

9. No portions of the retaining wall shall be compromised by excavation for other elements of work, including the construction of proposed Ramp EN (S.N. 016-1712), under the contract. If the sequencing of work requires that the retaining wall construction is staged, the stage line shall be located at a panel edge with any exposed lightweight cellular concrete fill protected from damage.

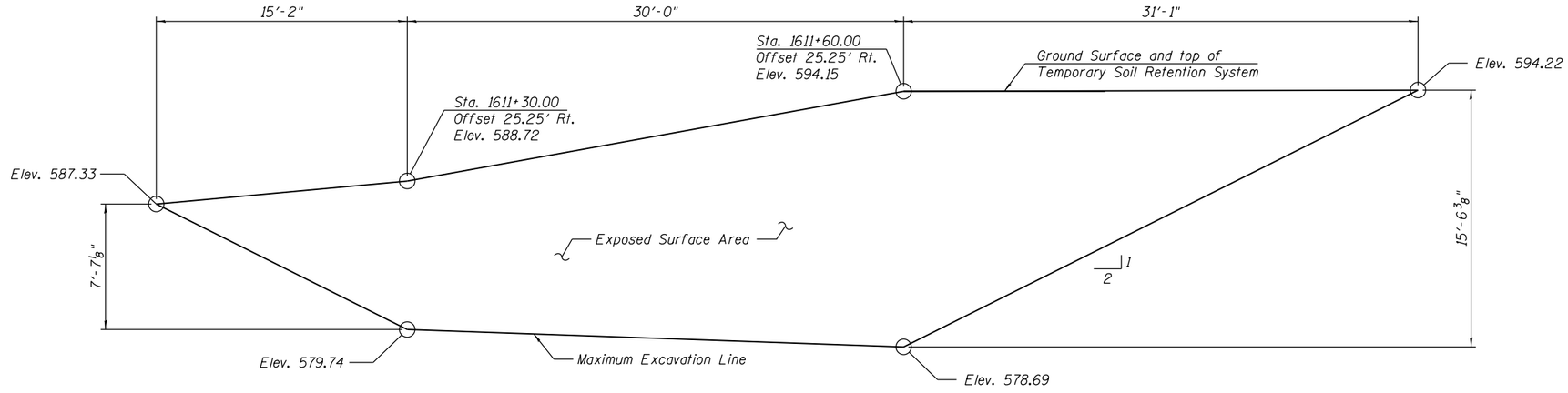
STATION 1610+98.45 TO 1613+50.00
BUILT 20-- BY
STATE OF ILLINOIS
F.A.I. RT. 90/94/290 SEC. 2014-005R&B
STRUCTURE NO. 016-1811

NAME PLATE

See Std. 515001

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	61
Structure Excavation	Cu. Yd.	1,526
Concrete Superstructure	Cu. Yd.	166.8
Protective Coat	Sq. Yd.	412
Reinforcement Bars, Epoxy Coated	Pound	25,860
Name Plate	Each	1
Temporary Soil Retention System	Sq. Ft.	675
Concrete Sealer	Sq. Ft.	6,245
Lightweight Cellular Concrete Fill	Cu. Yd.	2,801
Bridge Deck Grooving (Longitudinal)	Sq. Yd.	239
Mechanically Stabilized Earth Retaining Wall, Special	Sq. Ft.	4,622



TEMPORARY SOIL RETENTION SYSTEM

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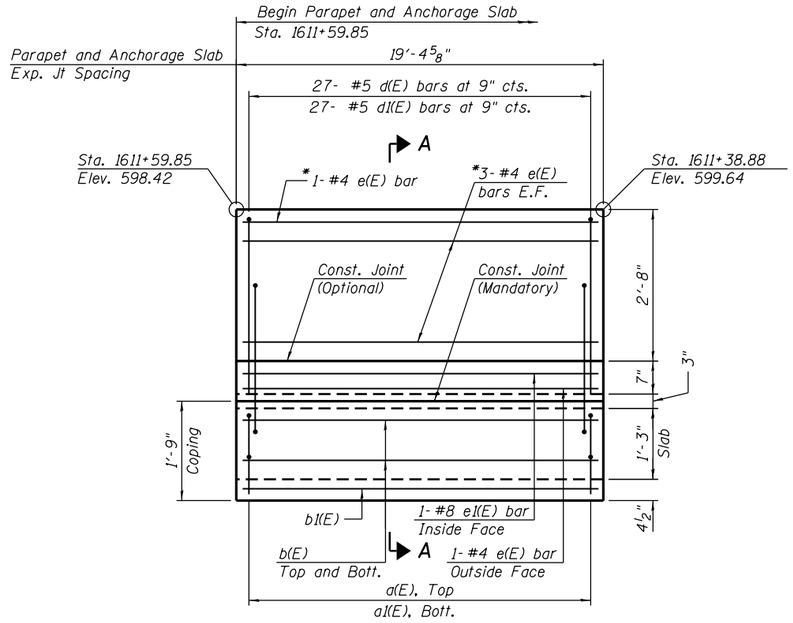
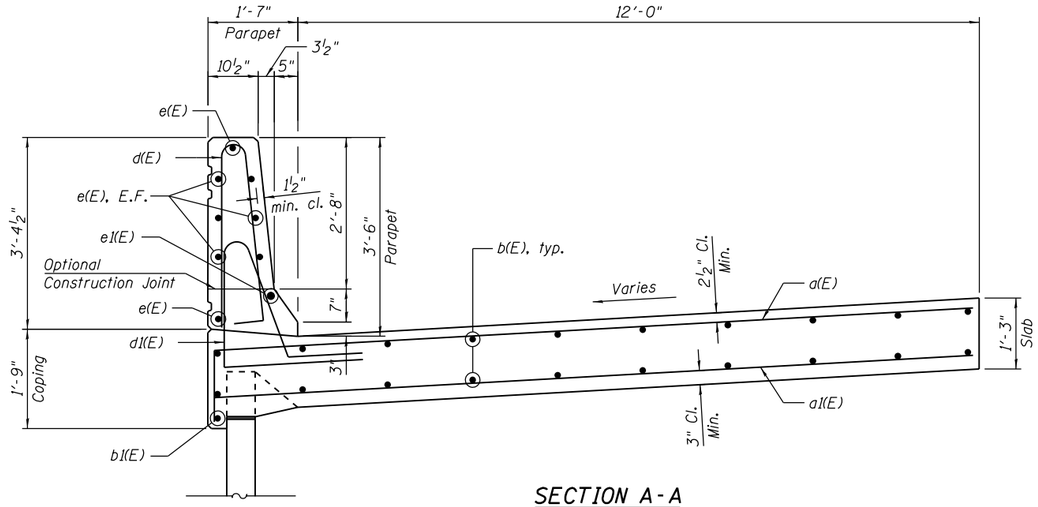
HBM ENGINEERING GROUP, LLC

USER NAME = ahmad.issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL NOTES, INDEX OF SHEETS AND TOTAL BILL OF MATERIAL STRUCTURE NO. 016-1811	
	CHECKED - MI, KJD	REVISED -			
PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -			
PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S4-03 OF S4-18 SHEETS	

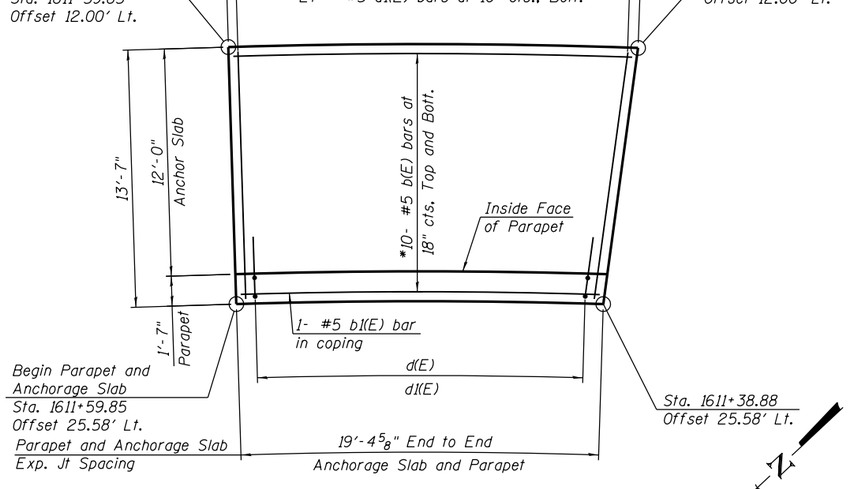
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	497
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



OUTSIDE ELEVATION OF PARAPET AND ANCHORAGE SLAB

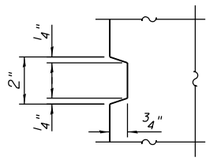


SECTION A-A



PARAPET AND ANCHORAGE SLAB PLAN

* Cut in field to fit



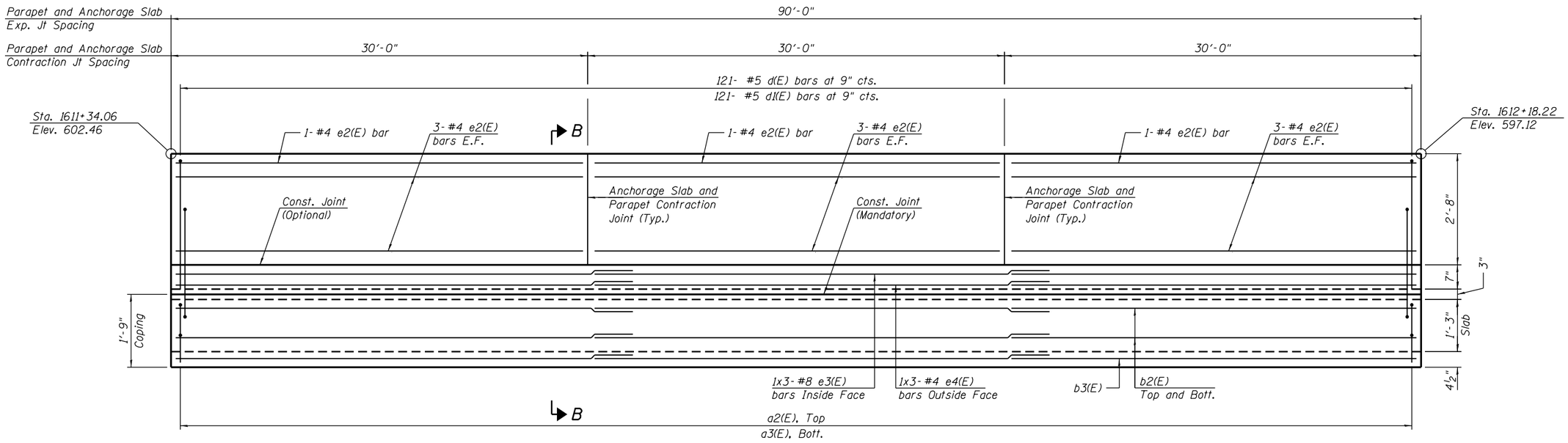
REVEAL DETAIL

NOTES:

1. For Bar Diagram, Expansion and Contraction Joints Details, and Bill of Material, see Sheet S4-08.
2. Preformed Flexible Foam Expansion Joint Filler (called as PJF in plans) shall follow Article 1051.09 of IDOT Standard Specifications. Cost included in Concrete Superstructure.
3. Anchorage slab shall be constructed in final stage.
4. See Ramp EN (S.N. 016-1712) plans for East Abutment.
5. Bars noted thus, 9x3-#5 indicates 9 lines of #4 bars with 2 lengths per line.

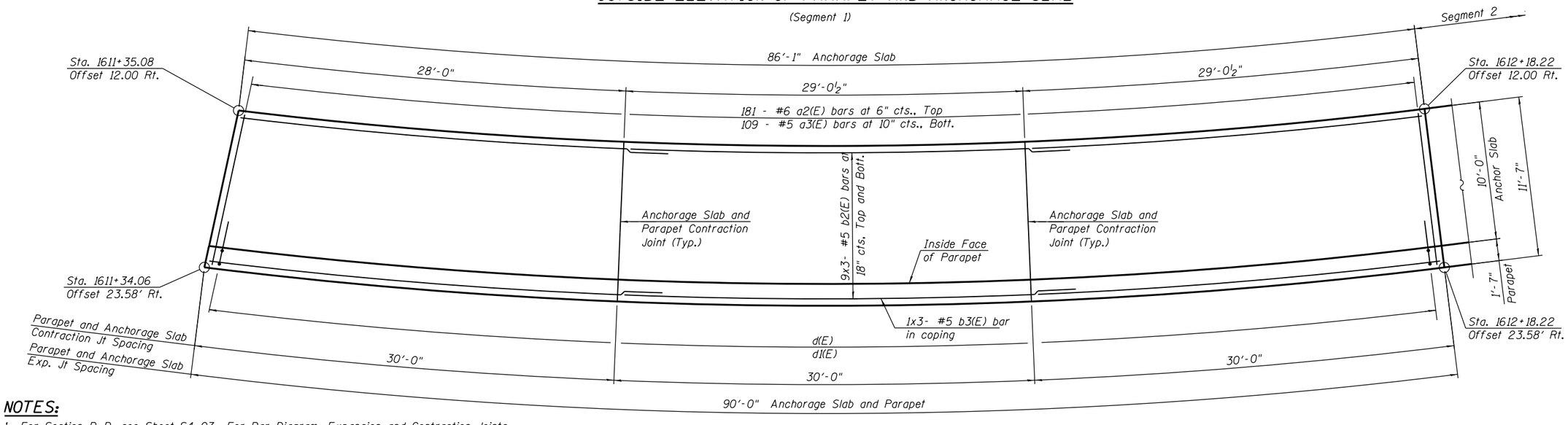
HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PARAPET AND ANCHORAGE SLAB PLAN AND ELEVATION 1 STRUCTURE NO. 016-1811
		CHECKED - MI, KJD	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -		
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S4-04 OF S4-18 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	498
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



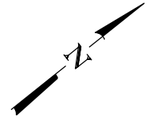
OUTSIDE ELEVATION OF PARAPET AND ANCHORAGE SLAB

(Segment 1)



PARAPET AND ANCHORAGE SLAB PLAN

(Segment 1)



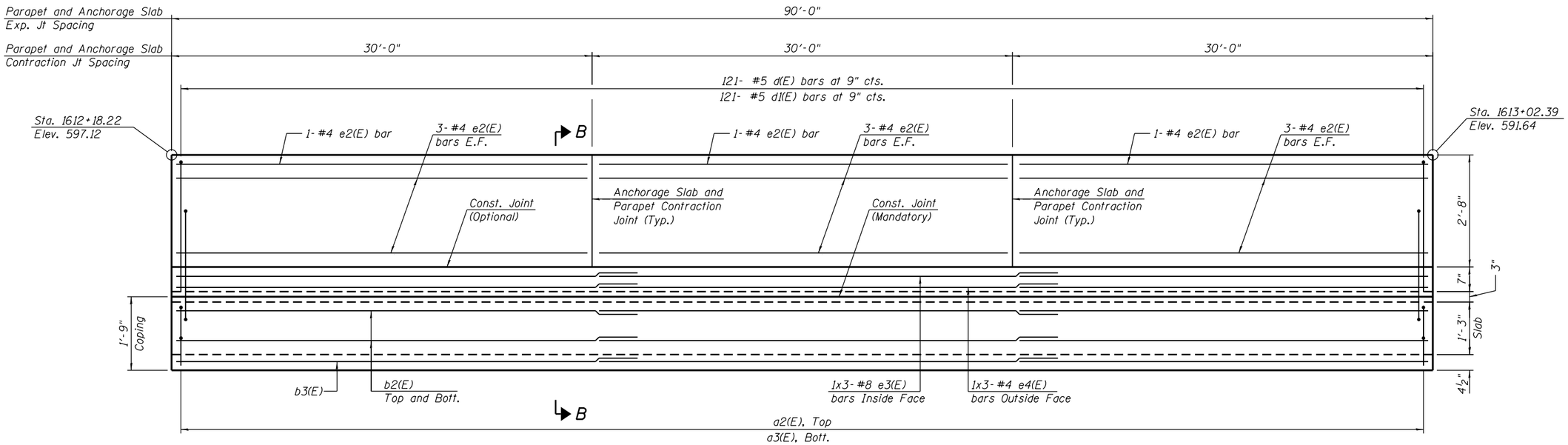
NOTES:

1. For Section B-B, see Sheet S4-07. For Bar Diagram, Expansion and Contraction Joints Details, and Bill of Material, see Sheet S4-08.
2. Preformed Flexible Foam Expansion Joint Filler (called as PJF in plans) shall follow Article 1051.09 of IDOT Standard Specifications. Cost included in Concrete Superstructure.
3. Anchorage slab shall be constructed in final stage.
4. For Segment 2, see Sheet S4-06 .
5. See Ramp EN (S.N. 016-1712) plans for East Abutment.
6. Bars noted thus, 9x3- #5 indicates 9 lines of #4 bars with 2 lengths per line.

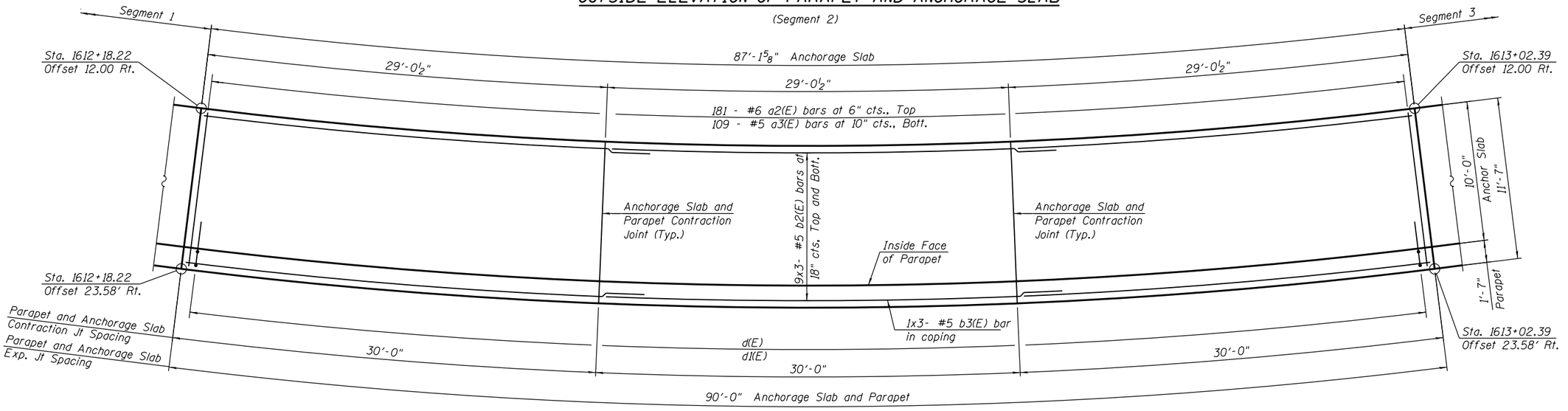
HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
		CHECKED - MI, KJD	REVISED -	
	PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -	
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -	

PARAPET AND ANCHORAGE SLAB PLAN AND ELEVATION 2
STRUCTURE NO. 016-1811
SHEET NO. S4-05 OF S4-18 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	499
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



OUTSIDE ELEVATION OF PARAPET AND ANCHORAGE SLAB



NOTES:

1. For Bar Diagram, Expansion and Contraction Joints Details, and Bill of Material, see Sheet S4-08.
2. Preformed Flexible Foam Expansion Joint Filler (called as PJF in plans) shall follow Article 1051.09 of IDOT Standard Specifications. Cost included in Concrete Superstructure.
3. Anchorage slab shall be constructed in final stage.
4. See Sheet S4-05 for Segment 1 and SheetS4-07 for Segment 3.
5. Bars noted thus, 9x3-#5 indicates 9 lines of #4 bars with 2 lengths per line.

PARAPET AND ANCHORAGE SLAB PLAN

(Segment 2)

HBM ENGINEERING GROUP, LLC	USER NAME = ahmad.issa	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
		CHECKED - MI, KJD	REVISED -	
	PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -	
	PLOT DATE = 7/30/2018	CHECKED - MI, MAI	REVISED -	

PARAPET AND ANCHORAGE SLAB PLAN AND ELEVATION 3
STRUCTURE NO. 016-1811
SHEET NO. S4-06 OF S4-18 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	500
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		