CODE NUMBER	PAY ITEM		TOTAL QUANTITY	ROADWAY 90% FED 10% STATE 0004 URBAN	ROADWAY 100% STATE 0004 URBAN	BRIDGE 90% FED 10% STATE 0010 016-1710	BRIDGE 90% FED 10% STATE 0010 016-1712	RETAINING WALL 90% FED 10% STATE 0044 016-1807	RETAINING WALL 90% FED 10% STATE 0044 016-1811	RETAINING WALL 90% FED 10% STATE 0044 016-1813	RETAINING WALL 90% FED 10% STATE 0044 016-1814	RETAINING WALL 90% FED 10% STATE 0044 016-1839	LIGHTING/ ITS 90% FED 10% STATE 0021 URBAN
40200900	AGGREGATE SURFACE COURSE, TYPE B	CU YD	16	16									
40201000	AGGREGATE FOR TEMPORARY ACCESS	TON	250	250									
40601005	HOT-MIX ASPHALT REPLACEMENT OVER PATCHES	TON	4	4									
42000080	PAVEMENT CONNECTOR (PCC) FOR BRIDGE APPROACH SLAB	SQ YD	100	100									
42000300	PORTLAND CEMENT CONCRETE PAVEMENT 8"	SQ YD	156	156									
42000501	PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED)	SQ YD	664	664									
42000521	PORTLAND CEMENT CONCRETE PAVEMENT 11" (JOINTED)	SQ YD	2,772	2,772									
42001300	PROTECTIVE COAT	SQ YD	3,753	3,753									
42400200	PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH	SQ FT	2,108.5	2,108.5									
44000100	PAVEMENT REMOVAL	SQ YD	5,417	5,417									
44000200	DRIVEWAY PAVEMENT REMOVAL	SQ YD	162	162									
44000400	GUTTER REMOVAL	FOOT	1,717	1,717									
44000500	COMBINATION CURB AND GUTTER REMOVAL	FOOT	1,547	1,547									
44000600	SIDEWALK REMOVAL	SQ FT	2,196	2,196									

* DENOTES SPECIALTY ITEM ** DENOTES NON-PARTICIPATING ITEM % 0042

1 REV. 10-22-2018

	CODE NUMBER	PAY ITEM		TOTAL QUANTITY	ROADWAY 90% FED 10% STATE 0004 URBAN	ROADWAY 100% STATE 0004 URBAN	BRIDGE 90% FED 10% STATE 0010 016-1710	BRIDGE 90% FED 10% STATE 0010 016-1712	RETAINING WALL 90% FED 10% STATE 0044 016-1807	RETAINING WALL 90% FED 10% STATE 0044 016-1811	RETAINING WALL 90% FED 10% STATE 0044 016-1813	RETAINING WALL 90% FED 10% STATE 0044 016-1814	RETAINING WALL 90% FED 10% STATE 0044 016-1839	LIGHTING/ ITS 90% FED 10% STATE 0021 URBAN
	50300300	PROTECTIVE COAT	SQ YD	3,546				2,309	551	412	274			
	50301350	CONCRETE SUPERSTRUCTURE (APPROACH SLAB)	CU YD	145.2				145.2						
	50500105	FURNISHING AND ERECTING STRUCTURAL STEEL	L SUM	1				1						
	50500505	STUD SHEAR CONNECTORS	EACH	9,316				9,316						
	50800105	REINFORCEMENT BARS	POUND	1,124,240			30,820	61,510				687,470	344,440	
	50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	409,940	530		16,590	267,330	34,790	25,860	15,780	29,660	19,400	1 (rev.)
	50800515	BAR SPLICERS	EACH	96				96						
	50800530	MECHANICAL SPLICERS	EACH	1,204			52	120				792	240	
	51201710	FURNISHING STEEL PILES HP12X84	FOOT	1,734				1,734						
	51500100	NAME PLATES	EACH	6				1	1	1	1	1	1	
	51602000	PERMANENT CASING	FOOT	3,731				2,387				170	1,174	
*	51603000	DRILLED SHAFT IN SOIL	CU YD	5,022.0			160.0	226.0				2,937.4	1,698.6	
*	51604000	DRILLED SHAFT IN ROCK	CU YD	5.1			4.0	1.1						
	52000110	PREFORMED JOINT STRIP SEAL	FOOT	99				99						

* DENOTES SPECIALTY ITEM   ** DENOTES NON-PARTICIPATING ITEM   % 0042

1 REV. 10-22-2018

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TranSystems

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

SCALE: NONE | SHEET 5 OF 25 SHEETS | STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	10
		CONTRACT NO. 60X79		
		ILLINOIS FED. AID PROJECT		

REV. - MS

	CODE NUMBER	PAY ITEM		TOTAL QUANTITY	ROADWAY 90% FED 10% STATE 0004 URBAN	ROADWAY 100% STATE 0004 URBAN	BRIDGE 90% FED 10% STATE 0010 016-1710	BRIDGE 90% FED 10% STATE 0010 016-1712	RETAINING WALL 90% FED 10% STATE 0044 016-1807	RETAINING WALL 90% FED 10% STATE 0044 016-1811	RETAINING WALL 90% FED 10% STATE 0044 016-1813	RETAINING WALL 90% FED 10% STATE 0044 016-1814	RETAINING WALL 90% FED 10% STATE 0044 016-1839	LIGHTING/ ITS 90% FED 10% STATE 0021 URBAN
*	66900200	NON-SPECIAL WASTE DISPOSAL	CU YD	55,800	55,800									
*	66900450	SPECIAL WASTE PLANS AND REPORTS	L SUM	1	1									
*	66900530	SOIL DISPOSAL ANALYSIS	EACH	5	5									
						1								
	67100100	MOBILIZATION	L SUM	1	1									
	70103815	TRAFFIC CONTROL SURVEILLANCE	CAL DA	870	870									
	70300240	TEMPORARY PAVEMENT MARKING - LINE 6"	FOOT	9,219	9,219									
	70400100	TEMPORARY CONCRETE BARRIER	FOOT	2,825.0	2,825.0									
	70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	4,437.5	4,437.5									
	70600255	IMPACT ATTENUATORS, TEMPORARY (FULLY REDIRECTIVE, NARROW), TEST LEVEL 2	EACH	4	4									
	70600260	IMPACT ATTENUATORS, TEMPORARY (FULLY REDIRECTIVE, NARROW), TEST LEVEL 3	EACH	5	5									
	70600270	IMPACT ATTENUATORS, TEMPORARY (FULLY REDIRECTIVE, WIDE), TEST LEVEL 3	EACH	1	1									
	70600322	IMPACT ATTENUATORS, RELOCATE (FULLY REDIRECTIVE, NARROW), TEST LEVEL 2	EACH	3	3									
	70600332	IMPACT ATTENUATORS, RELOCATE (FULLY REDIRECTIVE, NARROW), TEST LEVEL 3	EACH	3	3									
	70800105	TEMPORARY WATER FILLED BARRIER	FOOT	525.0	525.0									

* DENOTES SPECIALTY ITEM ** DENOTES NON-PARTICIPATING ITEM % 0042

1 REV. 10-22-2018

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EROSION CONTROL GENERAL NOTES

1. THE CONSTRUCTION LIMITS WILL BE STAKED AND APPROVED BY THE ENGINEER PRIOR TO COMMENCING CONSTRUCTION. THE CONSTRUCTION LIMITS MAY BE ADJUSTED BY THE ENGINEER TO PRESERVE TREES AND NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR CHANGES IN CONSTRUCTION LIMITS.

2. EROSION CONTROL ITEMS ARE CONSIDERED HIGH PRIORITY ITEMS IN THIS CONTRACT. THE ENGINEER WILL IMPLEMENT ALL PROVISIONS OF SPECIFICATION TO NECESSARY ASSURE THAT EROSION CONTROL ITEMS ARE CONSTRUCTED AND MAINTAINED IN A TIMELY MANNER. THE CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE START OF CONSTRUCTION OPERATIONS WHICH WILL POTENTIALLY CREATE ERODIBLE CONDITIONS. PLACEMENT AND MAINTENANCE OF TEMPORARY EROSION CONTROL SYSTEMS WILL BE UTILIZED THROUGHOUT THE CONSTRUCTION LIMITS.

3. TEMPORARY EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. THE WORK SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 280 OF THE STANDARD SPECIFICATIONS, CONTRACT SPECIAL PROVISIONS AND THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP).

4. THE CONTRACTOR SHALL UTILIZE THE GENERAL MAINTENANCE GUIDELINES AS OUTLINED IN THE SWPPP TO ENSURE GOOD AND EFFECTIVE OPERATING CONDITION OF THE VEGETATION AND EROSION AND SEDIMENT CONTROL MEASURES.

5. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON SITE. ALL CHANGES TO THE SOIL EROSION AND SEDIMENT CONTROL PLAN SHALL BE NOTED ON THE SITE.

6. THE CONTRACTOR SHALL PERFORM ALL WORK AS DIRECTED BY THE ENGINEER AND AS SHOWN IN HIGHWAY STANDARD 280001.

7. THE EROSION CONTROL MEASURES SHOWN ARE BUT A GRAPHICAL REPRESENTATION OF SUGGESTED MEASURES. DEVIATIONS FROM THIS PLAN ARE TO BE EXPECTED PENDING A JOBSITE INSPECTION BETWEEN THE CONTRACTOR AND THE DEPARTMENT.

8. THE CONTRACTOR WILL BE REQUIRED TO IMPLEMENT AND MAINTAIN SEDIMENT CONTROL MEASURES PRIOR TO STRIPPING EXISTING VEGETATION.

9. ANY AREA WHERE THERE IS NO PROPOSED GRADING THE EXISTING GROUND COVER SHALL REMAIN.

10. TEMPORARY STOCKPILE LOCATIONS SHALL BE APPROVED BY THE ENGINEER AND WILL REQUIRE SILT FENCE AND TEMPORARY SEEDING.

11. THE CONTRACTOR SHALL INSTALL AND MAINTAIN INLET FILTERS AT ALL EXISTING INLETS ADJACENT TO THE EDGE OF PAVEMENT PRIOR TO THE START OF PRE-STAGE WORK. THE INLET FILTERS SHALL BE MAINTAINED AT EACH SUBSEQUENT STAGE UNTIL NO LONGER REQUIRED OR AS DIRECTED BY THE ENGINEER.

12. DURING CONSTRUCTION OPERATIONS, WHEN ANY LOOSE MATERIAL IS DEPOSITED IN THE FLOW LINE OF DITCHES, GUTTERS OR DRAINAGE STRUCTURES SO THAT THE NATURAL FLOW OF WATER IS OBSTRUCTED, THE MATERIAL SHALL BE REMOVED AT THE CLOSE OF EACH WORKING DAY.

13. AT THE CONCLUSION OF THE CONSTRUCTION OPERATIONS, ALL DRAINAGE STRUCTURES AN FLOW LINES ARE TO BE FREE FROM DIRT AND DEBRIS. THE CONTRACTORS FAILURE TO PROVIDE THE ABOVE WILL PRECLUDE ANY POSSIBLE ADDED COMPENSATION REQUESTED DUE TO DELAYS OR UNSUITABLE MATERIAL CREATED AS A RESULT THEREOF.

14. THE CONTRACTOR SHALL IMMEDIATELY INSTALL AND MAINTAIN INLET FILTERS AT ALL NEW INLETS AND DRAINAGE STRUCTURES. THE INLET FILTERS SHALL BE MAINTAINED AT EACH SUBSEQUENT STAGE UNTIL COMPLETION OF STAGING OR UNTIL NO LONGER REQUIRED.

15. LOCATIONS OF THE STABILIZED CONSTRUCTION ENTRANCES/EXITS SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE INSTALLATION OF THE ENTRANCE/EXITS SHALL BE IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL OR AS DIRECTED BY THE ENGINEER.

16. TEMPORARY OR PERMANENT STABILIZATION SHALL BE INSTALLED ON ALL AREAS DISTURBED DURING EACH STAGE OF CONSTRUCTION PRIOR TO SWITCHING TRAFFIC TO BEGIN THE SUBSEQUENT STAGE. ALSO, ALL EROSION CONTROL MEASURES PLACED DURING CONSTRUCTION SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL COMPLETION OF CONTRACT OR NO LONGER REQUIRED.

17. THE CONTRACTOR SHOULD PROVIDE TO THE RESIDENT ENGINEER A PLAN TO ENSURE THAT A STABILIZED FLOW LINE WILL BE PROVIDED DURING STORM SEWER CONSTRUCTION. THE USE OF A STABILIZED FLOW LINE BETWEEN INSTALLED STORM SEWER AND OPEN DISTURBANCE WILL REDUCE THE POTENTIAL FOR THE OFFSITE DISCHARGE OF SEDIMENT-BEARING WATERS, ESPECIALLY WHEN RAIN IS FORECASTED, SO THAT FLOW WILL NOT ERODE. LACK OF APPROVED PLAN OR FAILURE TO COMPLY WILL RESULT IN AN EROSION AND SEDIMENT CONTROL DEFICIENCY DEDUCTION.

18. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR PROLONG FINAL GRADING AND SHAPING SO THAT THE ENTIRE PROJECT CAN BE PERMANENTLY SEEDED AT ONE TIME.

19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING DRAINAGE OF THE ROADWAY DURING ALL STAGES OF CONSTRUCTION. A QUANTITY OF 12 INLETS, TYPE A, TYPE 1 FRAME OPEN LID AND 300 FT OF STORM SEWERS, CLASS A, TYPE 1 12" HAS BEEN PROVIDED FOR TEMPORARY USE. REMOVAL OF THESE ITEMS SHALL BE INCLUDED IN THEIR COST.

1 REVISED SHEET 10-22-2018

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TranSystems

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EROSION AND SEDIMENTATION CONTROL GENERAL NOTES

SCALE: NONE | SHEET 1 OF 1 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	230
		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

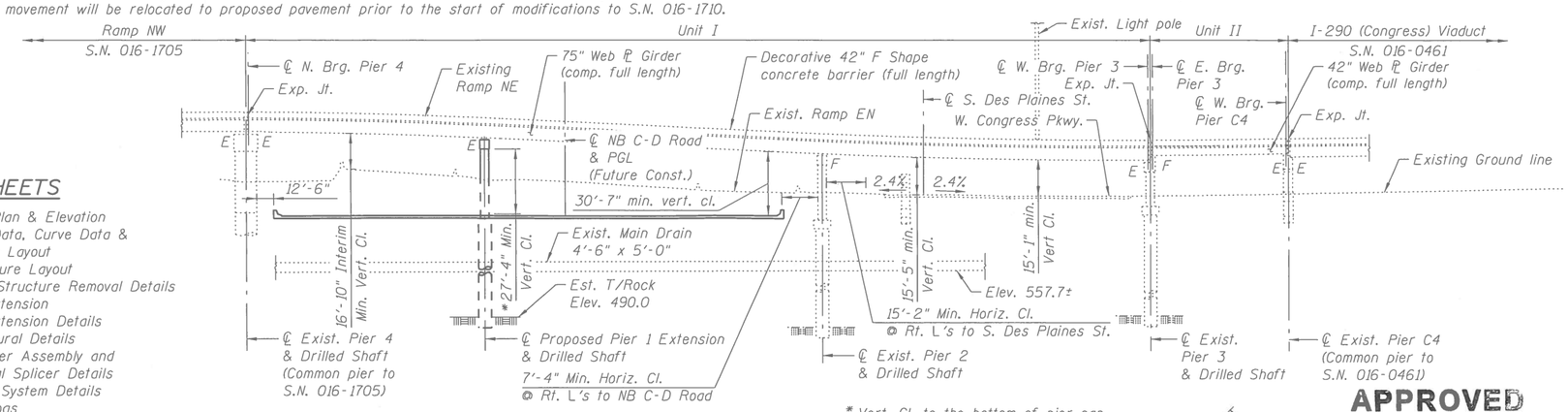
Existing Structure: S.N. 016-1710 was built under section 2015-080R&B in Chicago, Cook County, Illinois and carries F.A.I. Route 94 NB I-90/94 traffic to EB-I290. The existing structure has an overall length of approx. 543'-6" from centerline to centerline of piers and consists of four (4) span steel 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.

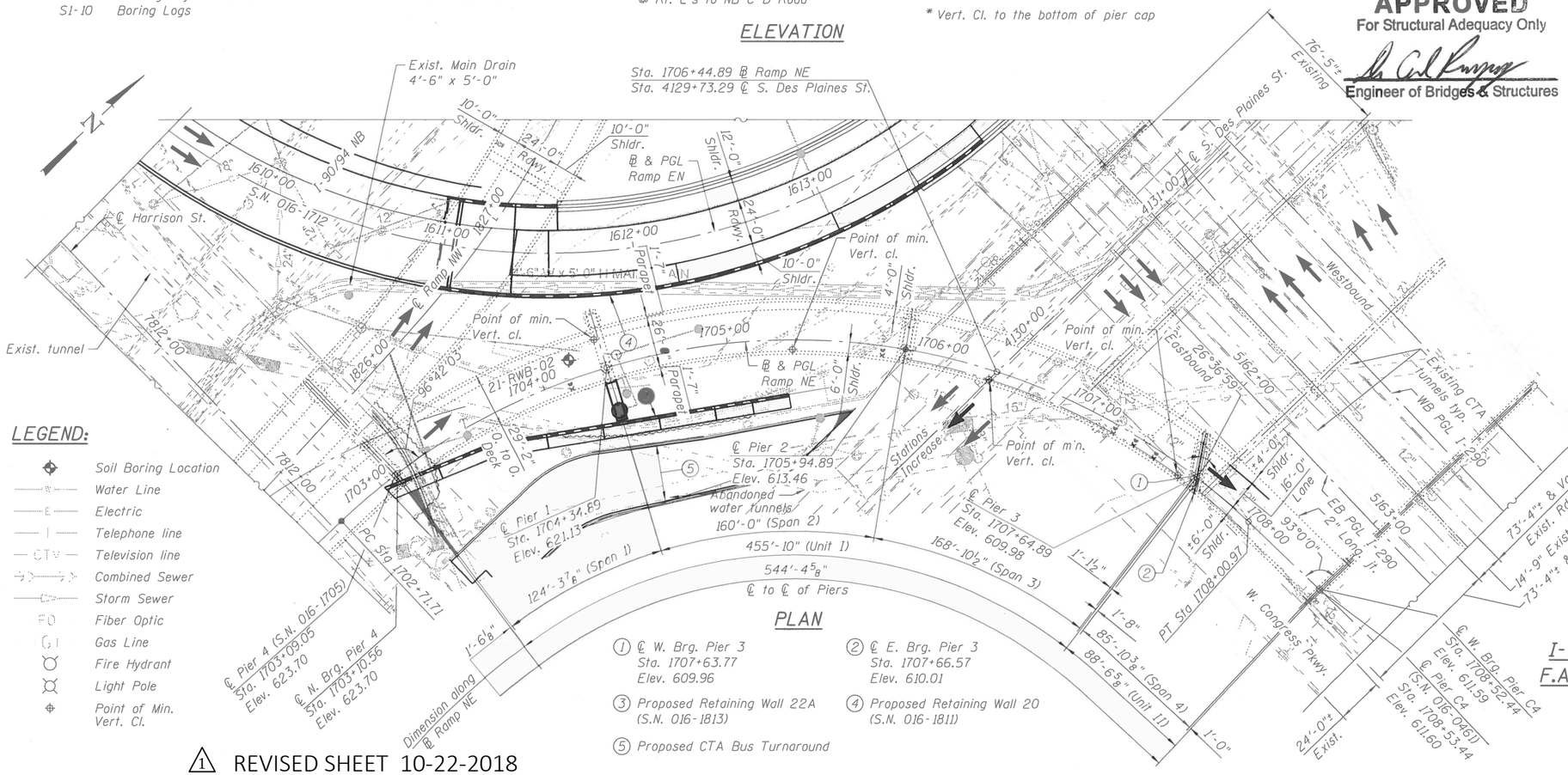
INDEX OF SHEETS

ELEVATION



* Vert. Cl. to the bottom of pier cap

PLAN



LEGEND:

- Soil Boring Location
- Water Line
- Electric
- Telephone line
- Television line
- Combined Sewer
- Storm Sewer
- Fiber Optic
- Gas Line
- Fire Hydrant
- Light Pole
- Point of Min. Vert. Cl.

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

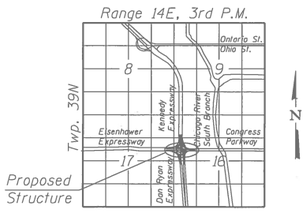
APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures

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 ℙ & PGL Ramp NE.
2. All piers are oriented perpendicular to ℙ & 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

⚠1 REVISED SHEET 10-22-2018

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

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	CHECKED - PJL	REVISED -	
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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			

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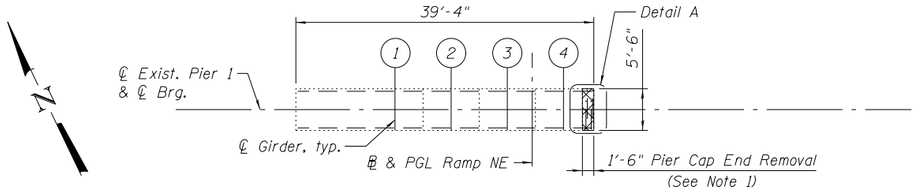
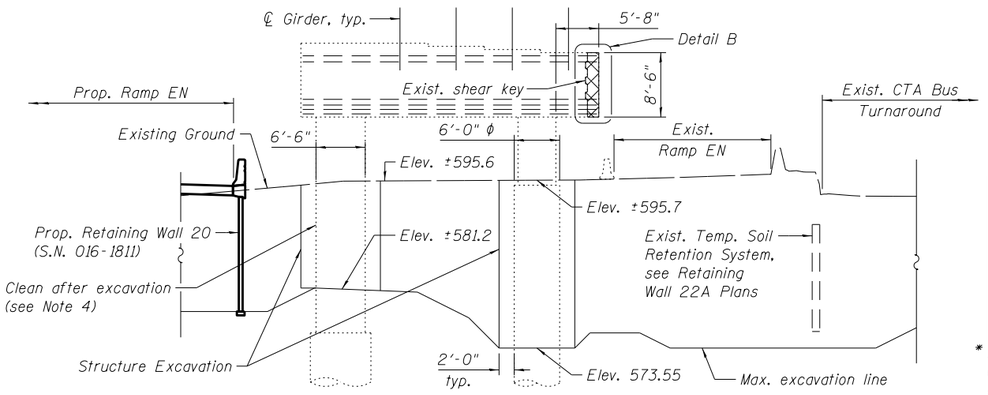
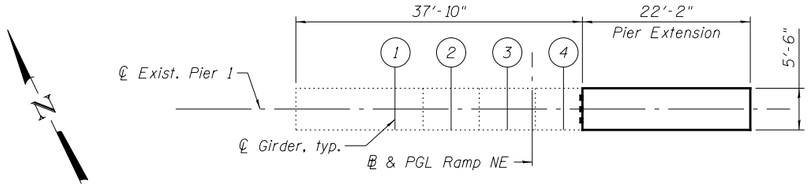


PLAN - PIER 1

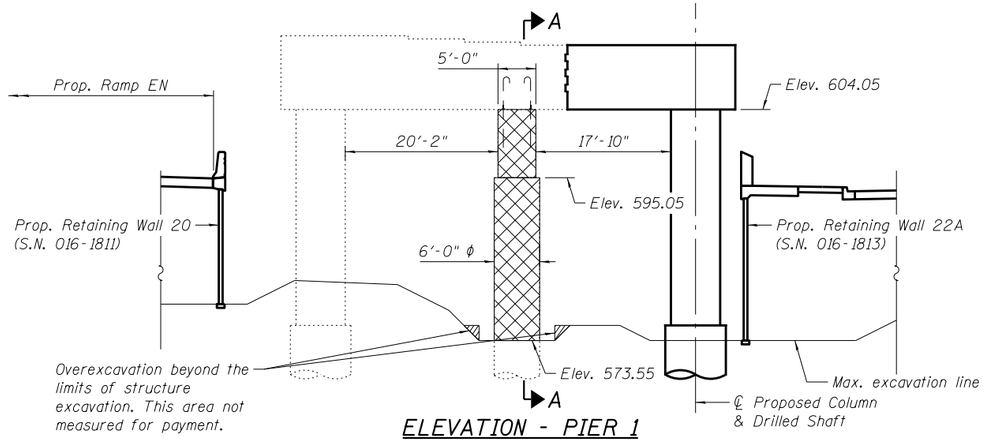


ELEVATION - PIER 1

(Looking upstation)
(Before Construction of Pier Extension)

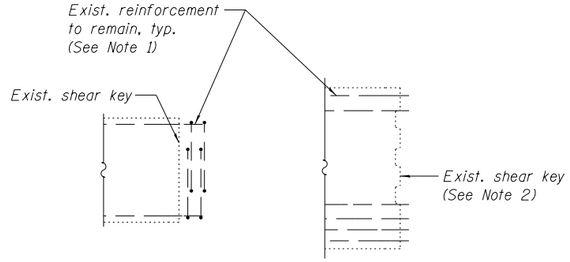


PLAN - PIER 1



ELEVATION - PIER 1

(Looking upstation)
(After Construction of Pier Extension)



DETAIL A

DETAIL B

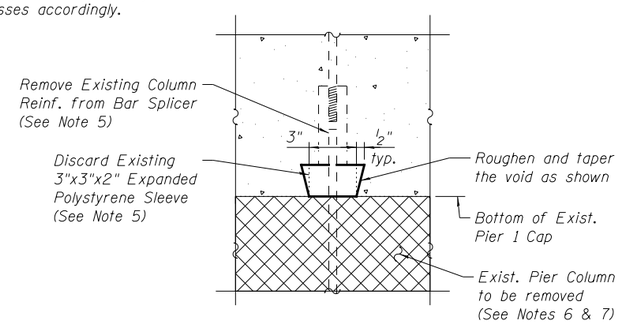
SHIM ℄ TABLE

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.

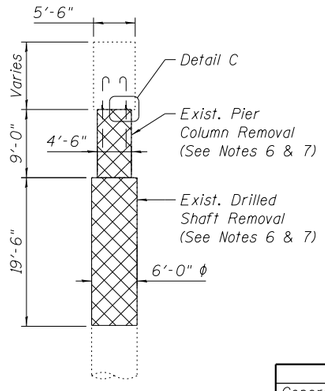
GIRDER SERVICE DEAD LOAD REACTIONS

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 between the bottom flange and top of the bearing top plate 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.

1 REVISED SHEET 10-22-2018

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

USER NAME = lbrahimmi	DESIGNED - IJL/MI	REVISED -	
	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			

0161710-60X79-S004-ESR.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)

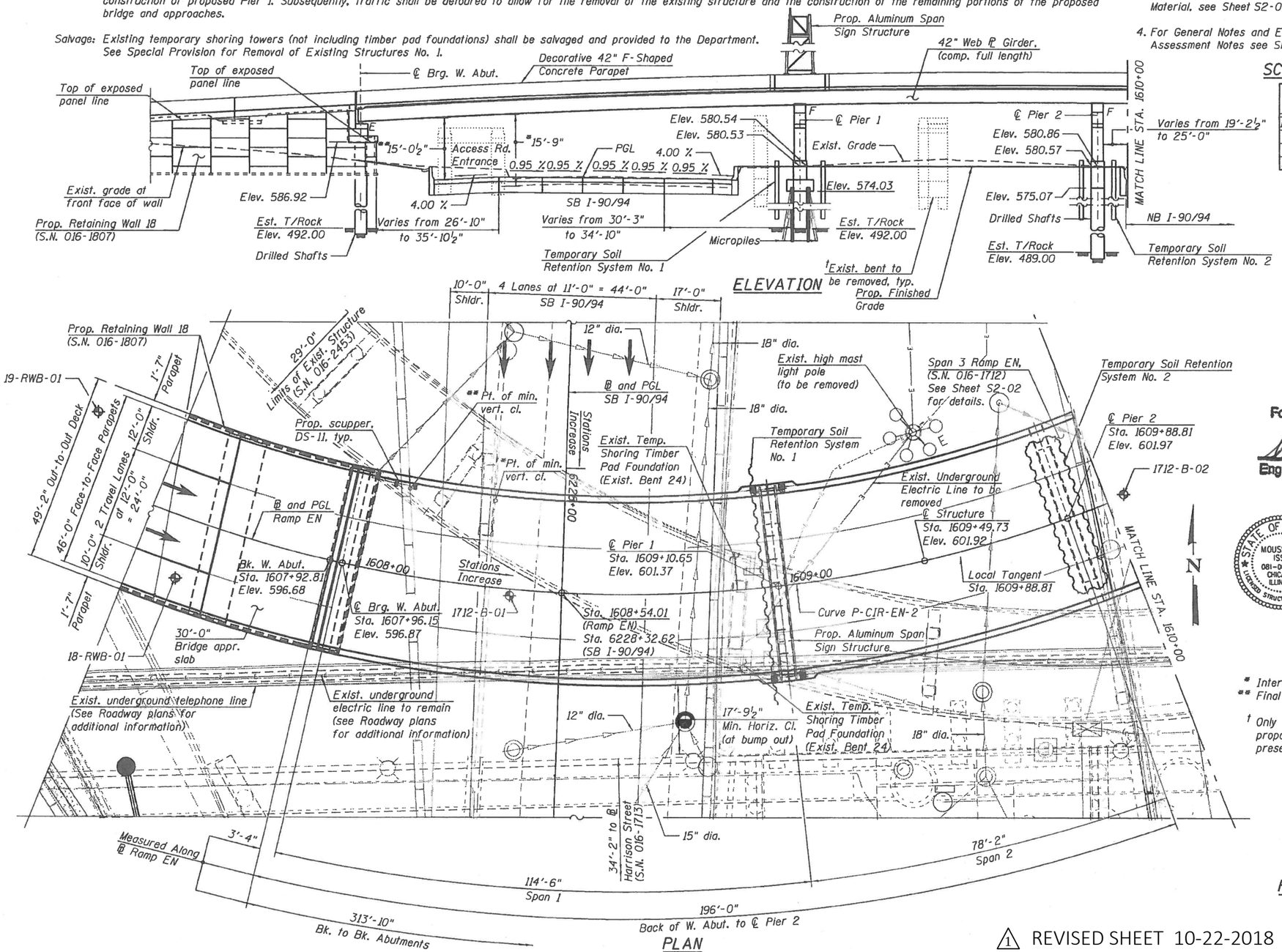
SEISMIC DATA

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

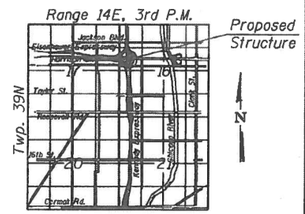
NAME PLATE

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

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures

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 S2-01 Thru S2-63

1 REVISED SHEET 10-22-2018

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 -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STRUCTURE NO. 016-1712	SHEET NO. S2-01 OF S2-63 SHEETS
	CHECKED - LAB, WM	REVISED -			
PLOT SCALE = N.T.S	DRAWN - JJS, WM, MA	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	416
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NADocuments\01 Americas\Transportation\60269938 CirclePhase_II\000_CAD\008_Structural\Structural\Structure_016-1712\016171Z-60X79-S001-GPE1
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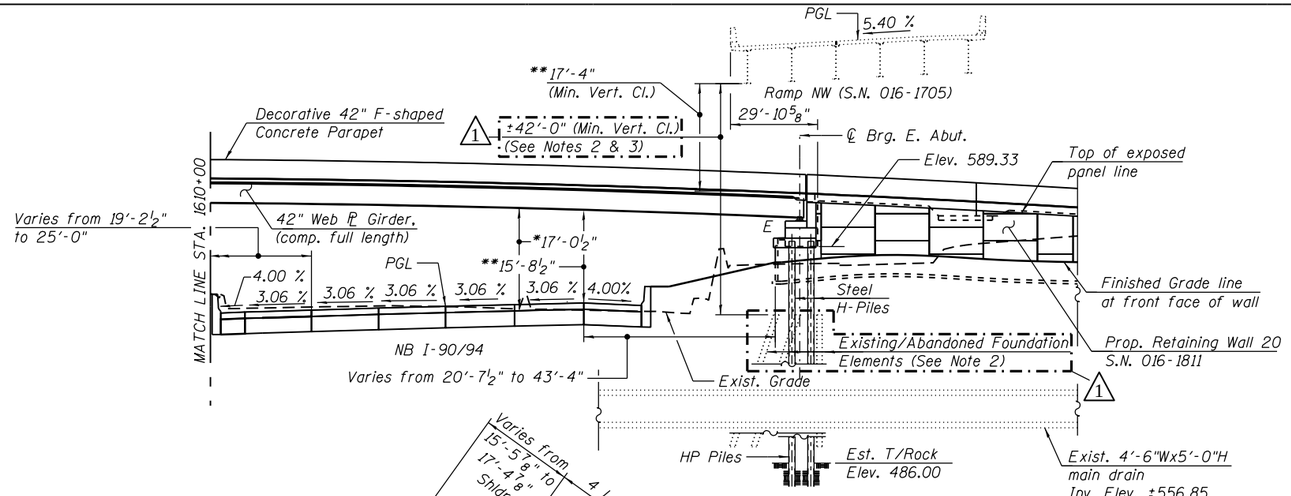
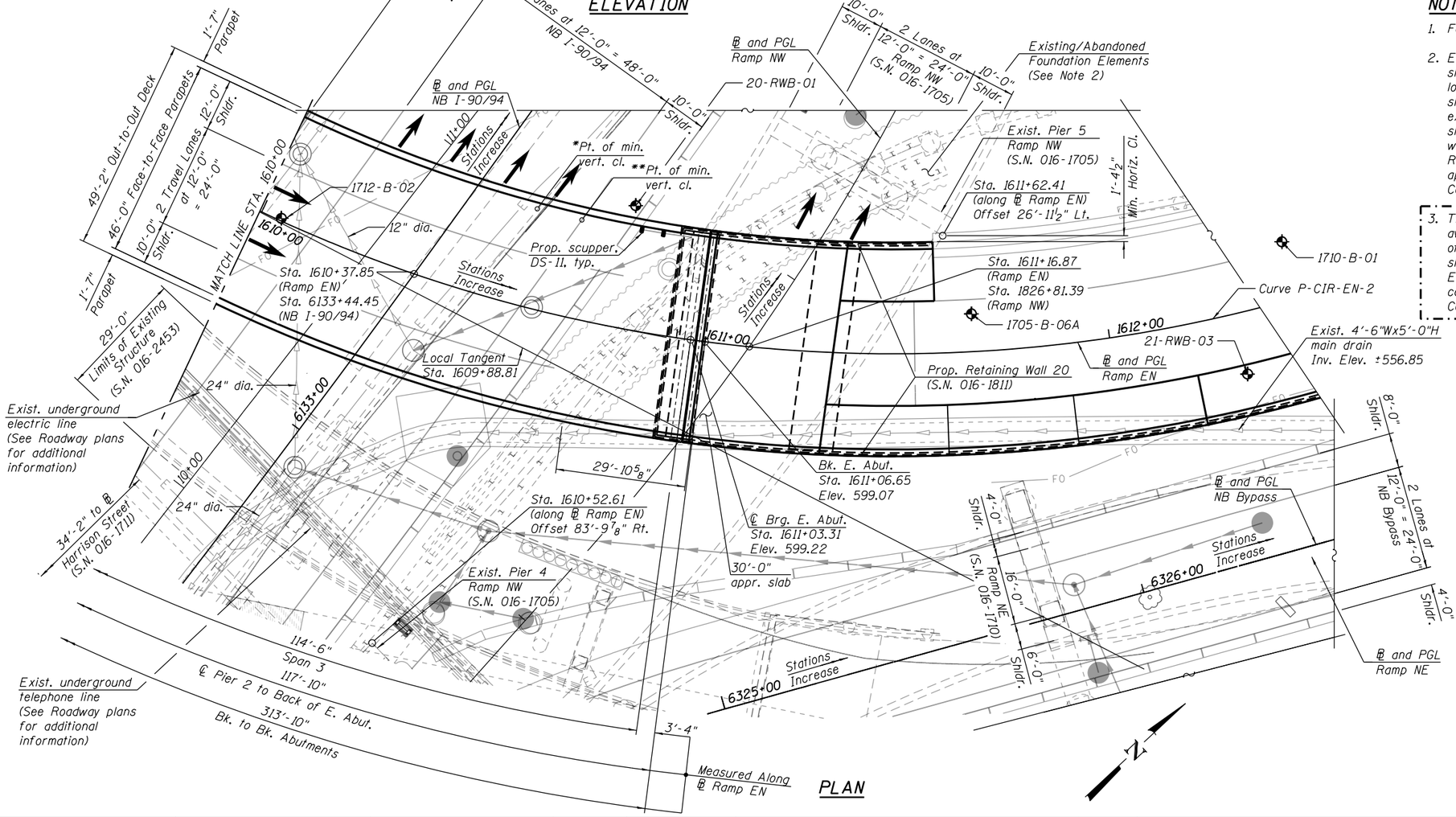


* Interim Min. Vert. Cl.
** Final Min. Vert. Cl.

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.
3. The Contractor is advised that there is limited vertical clearance available beneath existing Ramp NW (S.N. 016-1705) for the construction of the proposed steel H-Piles at the East Abutment. The Contractor shall take necessary measures for the construction of the proposed East Abutment. Finding suitable means and methods for the successful construction of the East Abutment is the responsibility of the Contractor. No additional costs shall be paid for this effort.

1 REV. 10-30-2018

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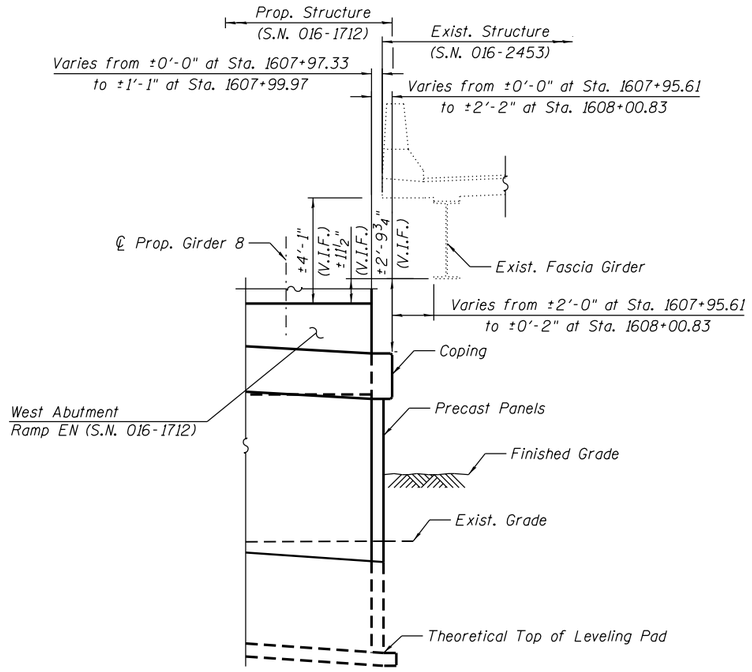
HBM ENGINEERING GROUP, LLC	USER NAME = john.saraceno	DESIGNED - MI, JJS	REVISED - 1 10/22/2018 JJS	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL PLAN AND ELEVATION II STRUCTURE NO. 016-1712
		CHECKED - LAB, WM	REVISED -		SHEET NO. S2-02 OF S2-63 SHEETS
	PLOT SCALE = N.T.S	DRAWN - JJS, WM, MA	REVISED -		
	PLOT DATE = 10/29/2018	CHECKED - MI, MAI	REVISED -		

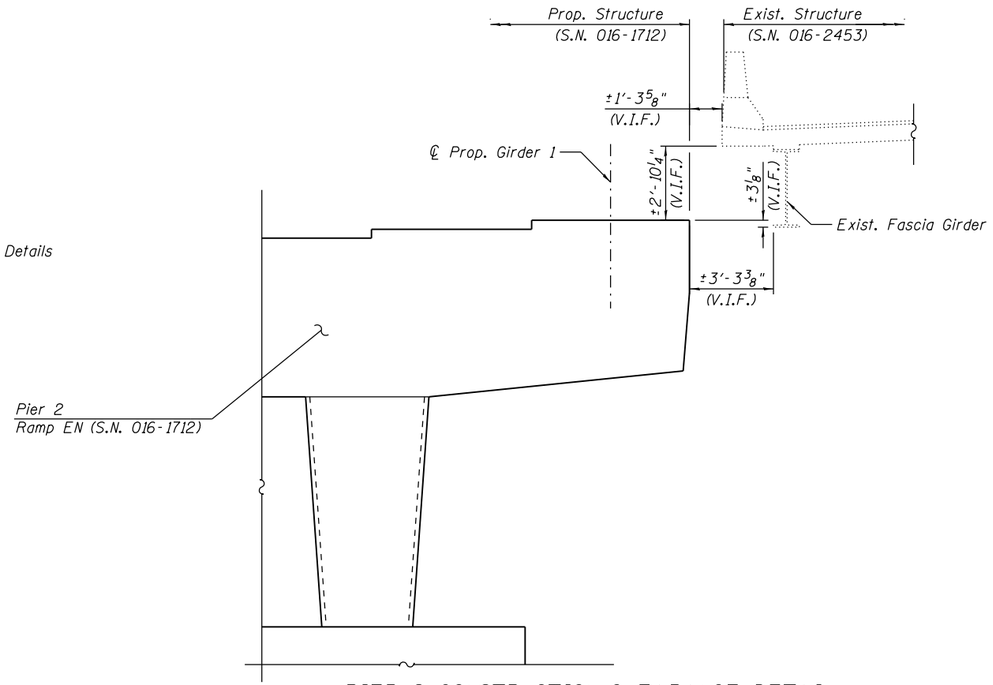
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	417
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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	145.2	-	145.2
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	204,020	63,310	267,330
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	-	1.1	1.1
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

⚠1 REVISED SHEET 10-22-2018

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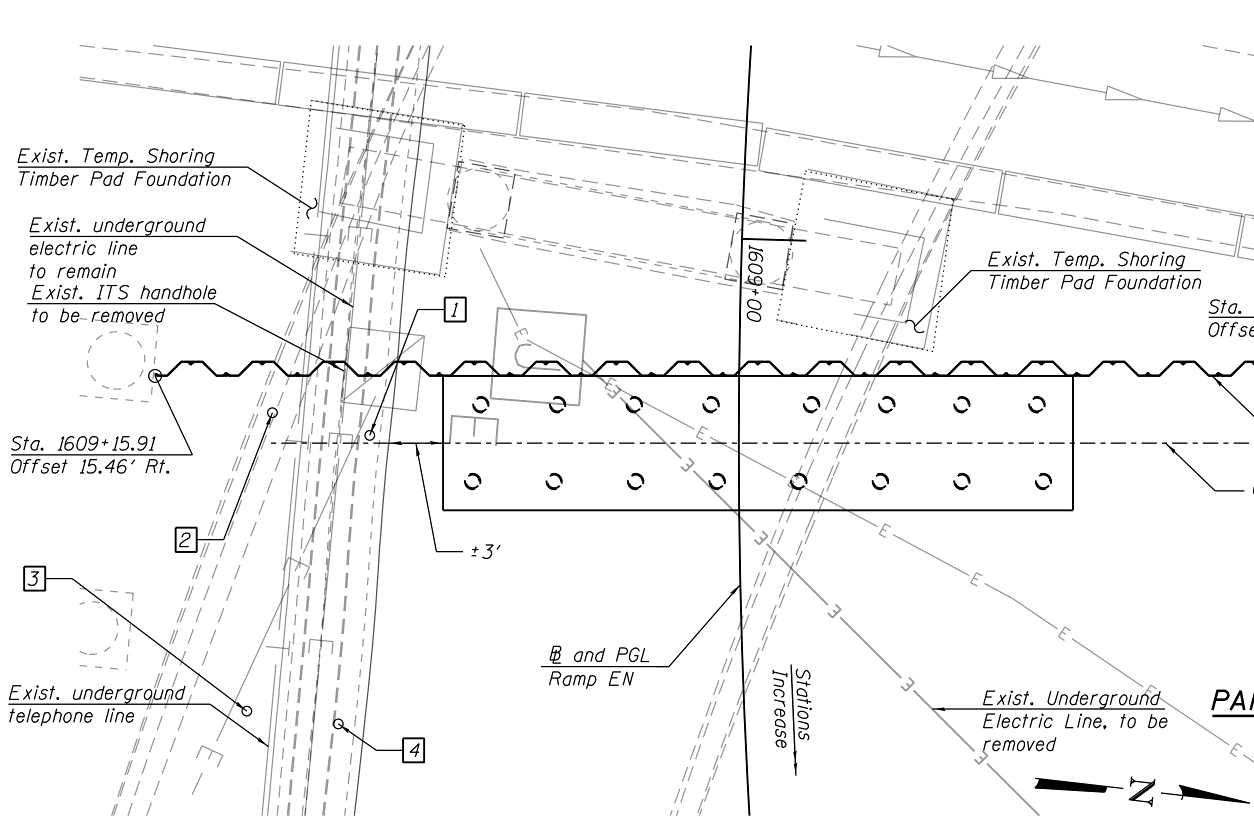
HBM ENGINEERING GROUP, LLC

USER NAME = marian.agamy	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 = 9/20/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-04 OF S2-63 SHEETS	

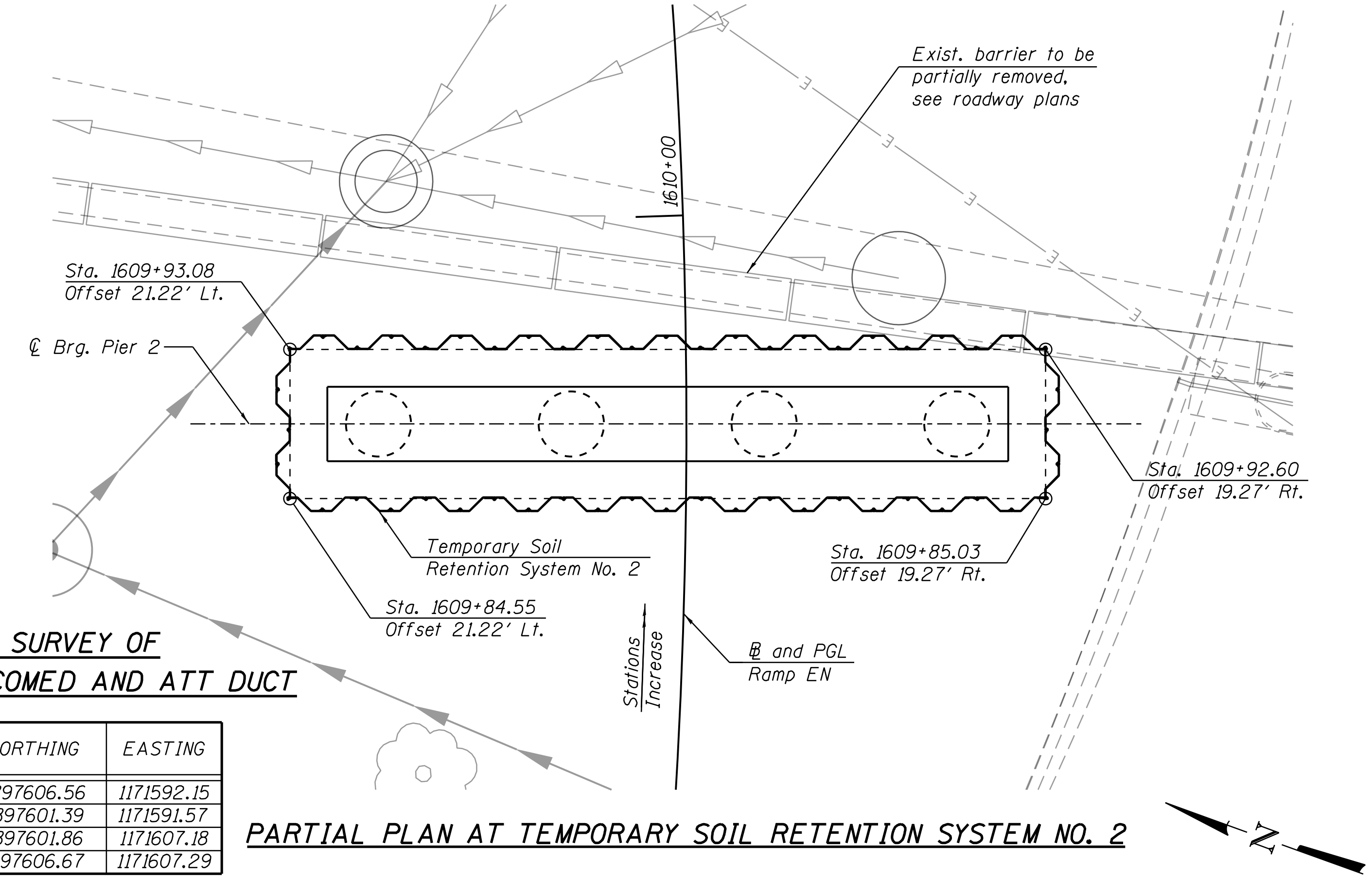
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	419
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



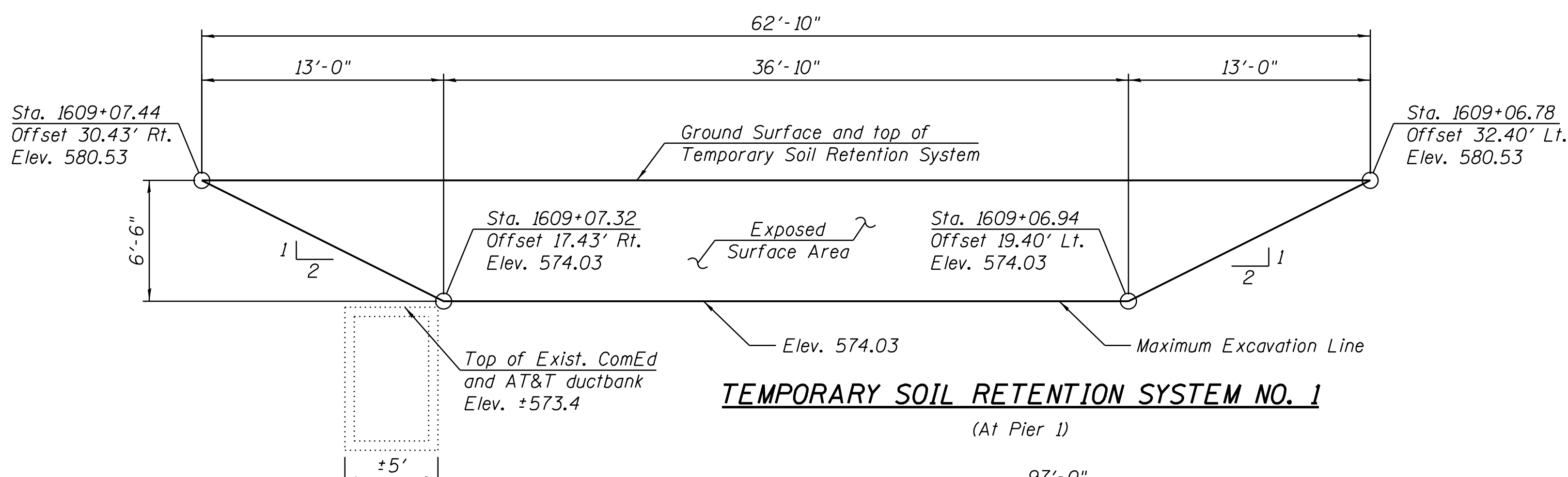
PARTIAL PLAN AT TEMPORARY SOIL RETENTION SYSTEM NO. 1

AUGUST 2018 SURVEY OF PARTIALLY EXPOSED COMED AND ATT DUCT

POINT	ELEVATION	NORTHING	EASTING
1	573.34	1897606.56	1171592.15
2	573.29	1897601.39	1171591.57
3	573.43	1897601.86	1171607.18
4	573.42	1897606.67	1171607.29

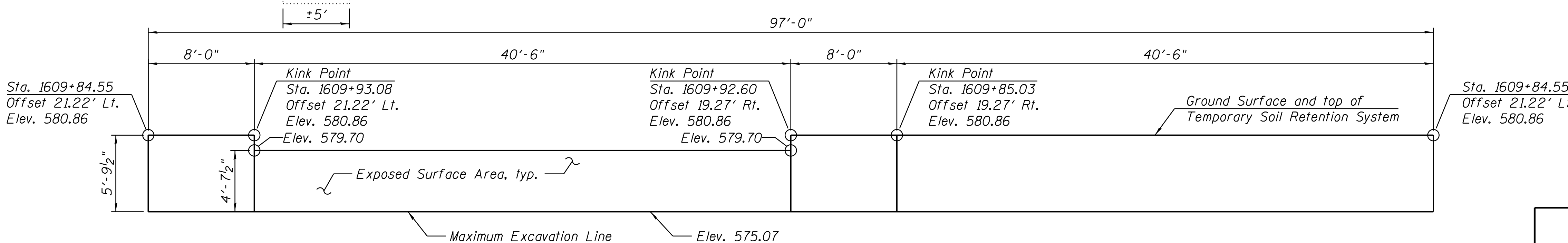


PARTIAL PLAN AT TEMPORARY SOIL RETENTION SYSTEM NO. 2



TEMPORARY SOIL RETENTION SYSTEM NO. 1

(At Pier 1)



TEMPORARY SOIL RETENTION SYSTEM NO. 2

(At Pier 2)

LEGEND:

Manhole	◎
Electric	—E——E—
Exist. Storm Sewer	——▷—
Prop. Storm Sewer	——▶——
Telephone	—T——T—
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).

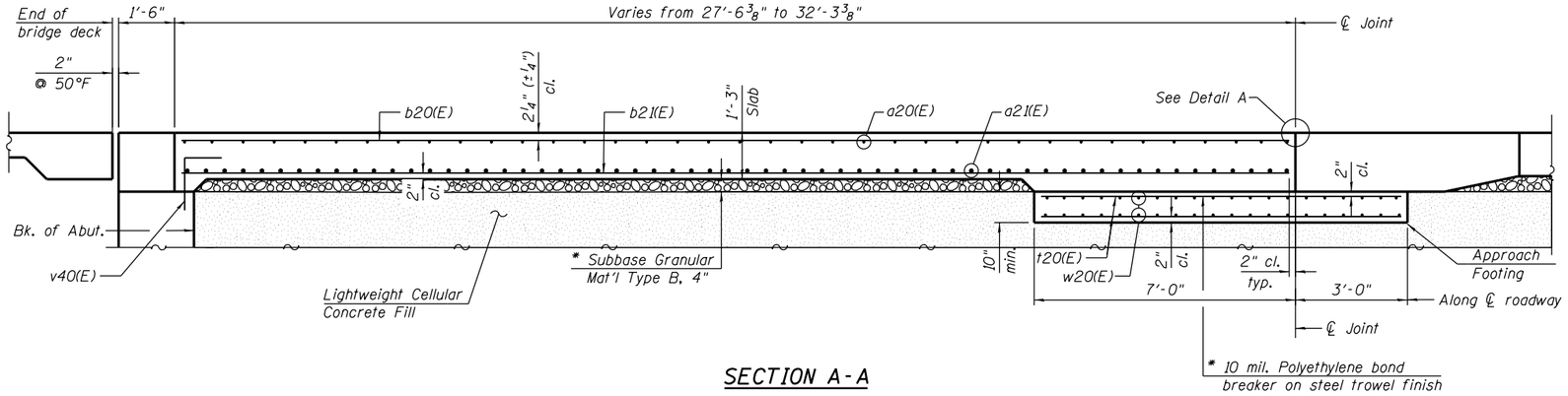
BILL OF MATERIAL

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

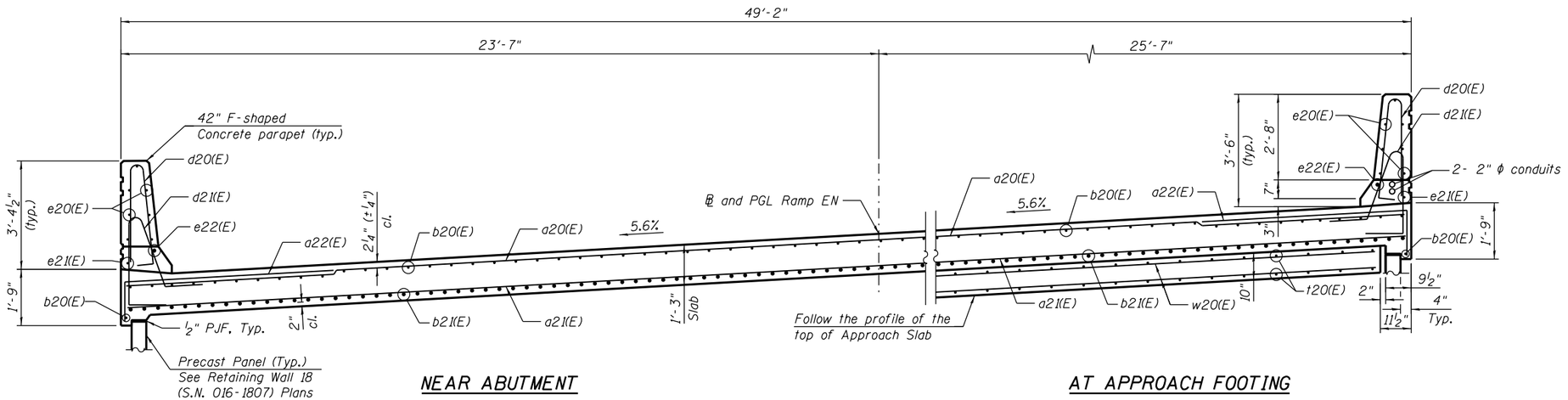
⚠1 REVISED SHEET 10-22-2018

HBM ENGINEERING GROUP, LLC	USER NAME = will.mardauss	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 -			
	PLOT DATE = 9/13/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-07 OF S2-63 SHEETS	

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		



SECTION A-A



NEAR ABUTMENT

AT APPROACH FOOTING

SECTION B-B

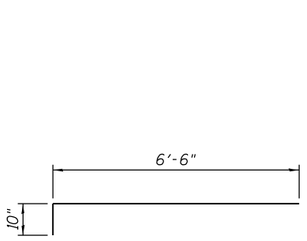
NOTES:

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.

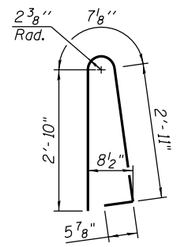
* Cost included with Concrete Superstructure (Approach Slab).

WEST APPROACH BILL OF MATERIAL

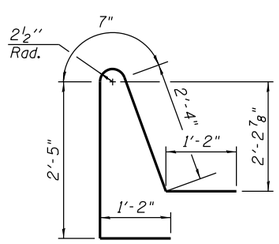
Bar	No.	Size	Length	Shape
a20(E)	92	#5	25'-11"	
a21(E)	122	#8	27'-10"	
a22(E)	92	#5	7'-4"	
b20(E)	74	#5	29'-8"	
b21(E)	118	#9	29'-8"	
d20(E)	88	#5	6'-10"	
d21(E)	70	#5	7'-8"	
e20(E)	28	#4	15'-5"	
e21(E)	2	#4	31'-3"	
e22(E)	2	#8	31'-3"	
t20(E)	96	#4	9'-8"	
w20(E)	80	#5	25'-0"	
Concrete Structures		Cu. 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.	72.6	
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"

⚠1 REVISED SHEET 10-22-2018

HBM ENGINEERING GROUP, LLC

USER NAME = will.mardauss		DESIGNED - SK, JJS		REVISED -
		CHECKED - MI, LAB		REVISED -
PLOT SCALE = N.T.S		DRAWN - SK		REVISED -
PLOT DATE = 8/29/2018		CHECKED - MI, MAI		REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST APPROACH SLAB DETAILS
STRUCTURE NO. 016-1712
SHEET NO. S2-26 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	441
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

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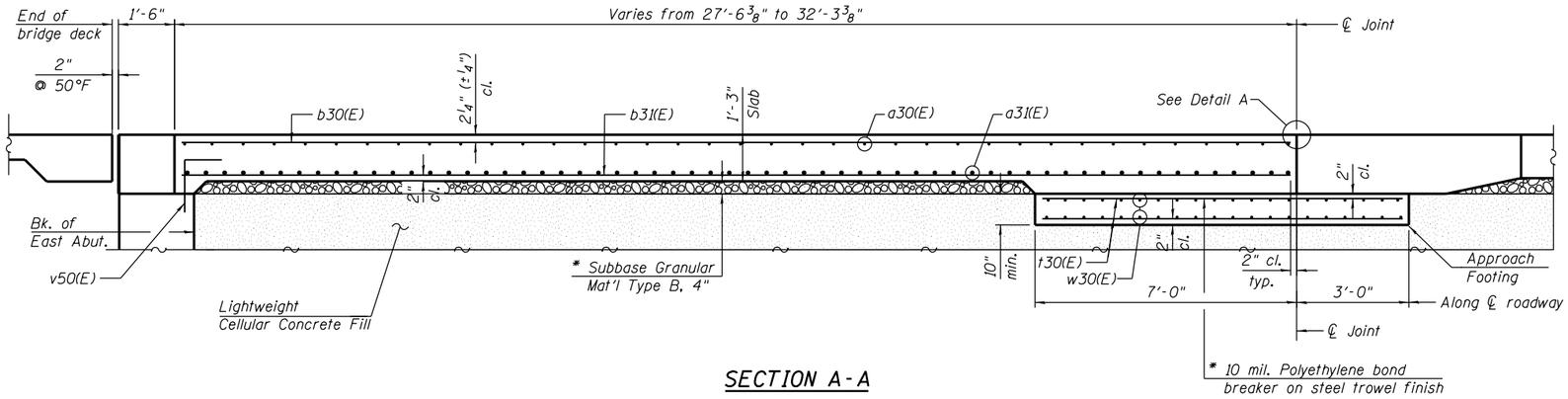
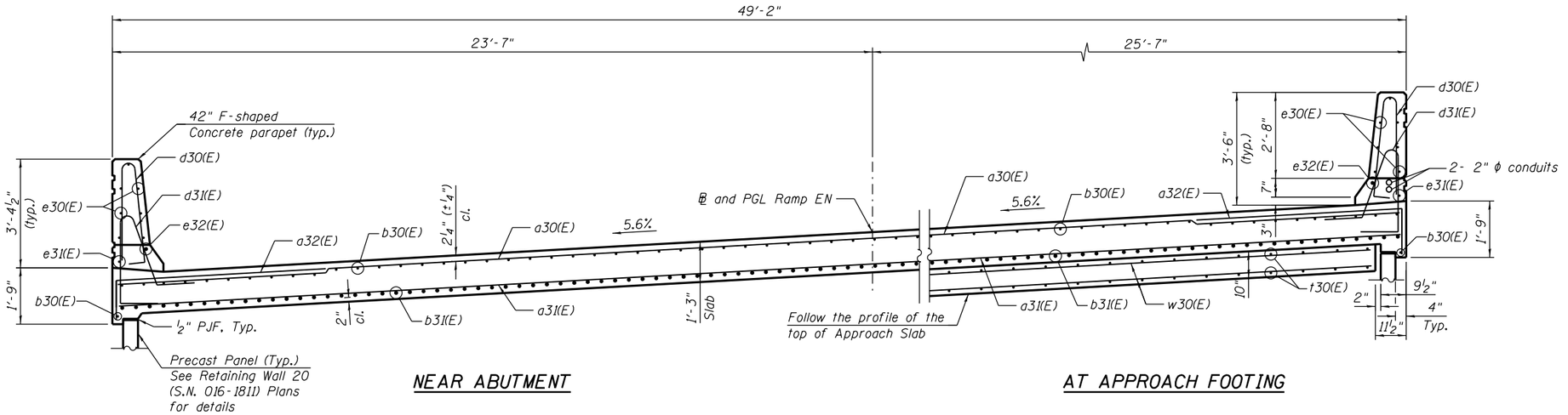


SECTION A-A



NEAR ABUTMENT

AT APPROACH FOOTING

SECTION B-B

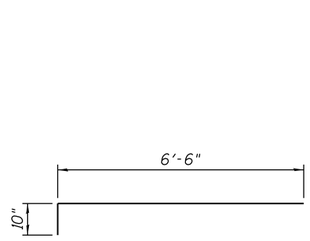
NOTES:

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.

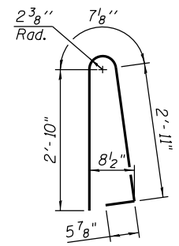
* Cost included with Concrete Superstructure (Approach Slab).

EAST APPROACH BILL OF MATERIAL

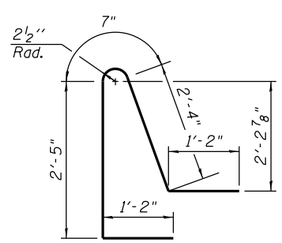
Bar	No.	Size	Length	Shape
a30(E)	92	#5	25'-11"	
a31(E)	122	#8	27'-10"	
a32(E)	92	#5	7'-4"	
b30(E)	74	#5	29'-8"	
b31(E)	118	#9	29'-8"	
d30(E)	88	#5	6'-10"	
d31(E)	70	#5	7'-8"	
e30(E)	28	#4	15'-5"	
e31(E)	2	#4	31'-3"	
e32(E)	2	#8	31'-3"	
t30(E)	96	#4	9'-8"	
w30(E)	80	#5	25'-0"	
Concrete Structures		Cu. 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.	72.6	
Reinforcement Bars, Epoxy Coated		Pound	30,840	



BAR a32(E)



BAR d30(E)



BAR d31(E)

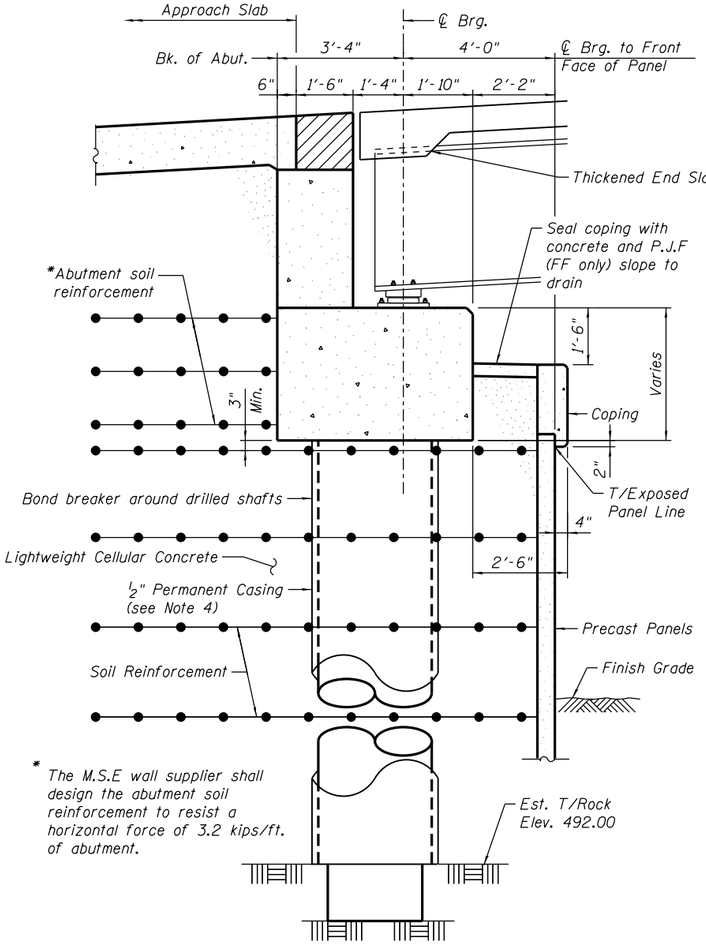
Minimum Bar Laps	
Bar	Lap
#5	3'-0"
#8	6'-9"

1 REVISED SHEET 10-22-2018

HBM ENGINEERING GROUP, LLC

USER NAME = will.mardauss	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 = 8/29/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-28 OF S2-63 SHEETS	

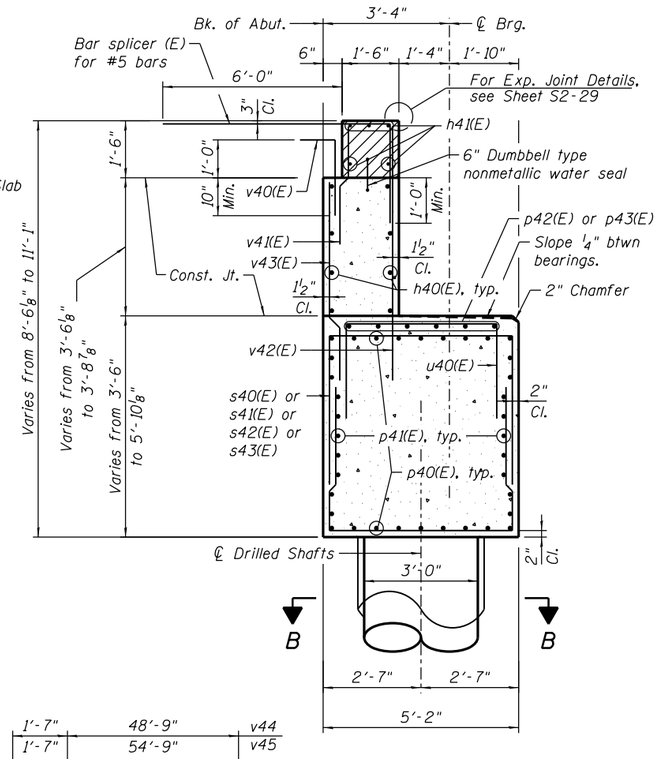
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	443
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

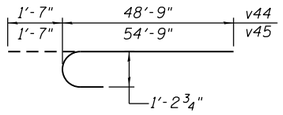


* The M.S.E wall supplier shall design the abutment soil reinforcement to resist a horizontal force of 3.2 kips/ft. of abutment.

SECTION THRU ABUTMENT

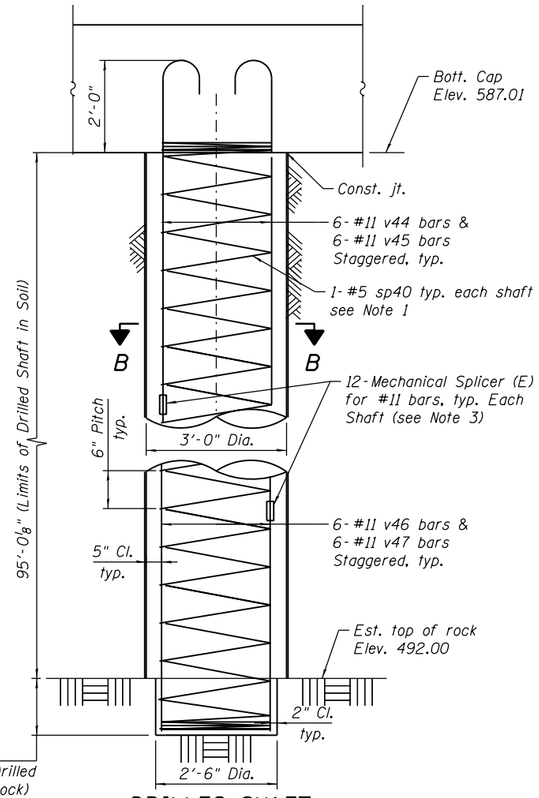
(Showing soil reinforcement and coping with precast panels)





BAR v44 & BAR v45

SECTION A-A



DRILLED SHAFT

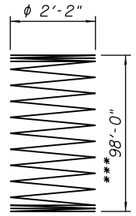
** The quantities and detailing are based on the estimated elevations shown on the plans. The actual elevations may differ at each shaft and corresponding adjustments shall be made to the drilled shaft and reinforcement quantities and payment limits.

BILL OF MATERIAL

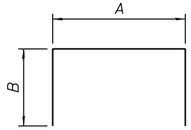
	Bar	No.	Size	Length	Shape
	h40(E)	8	#5	47'-3"	
	h41(E)	5	#6	48'-10"	
	p40(E)	18	#9	47'-3"	
	p41(E)	18	#5	47'-3"	
	p42(E)	6	#5	5'-0"	
	p43(E)	42	#5	7'-0"	
	s40(E)	40	#5	13'-4"	
	s41(E)	42	#5	12'-8"	
	s42(E)	42	#5	11'-8"	
	s43(E)	40	#5	11'-4"	
***	sp40	4	#5	96'-6"	
	u40(E)	50	#5	7'-10"	
	u41(E)	22	#6	12'-6"	
	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	100.0	
	Drilled Shaft in Rock		Cu Yd	1.1	
	Concrete Sealer		Sq Ft	456	
	Crosshole Sonic Logging Access Ducts		Foot	399	
	Crosshole Sonic Logging Testing		Each	1	

***Length is height of spiral

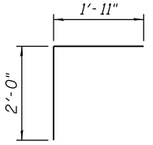
Minimum Bar Laps	
Bar	Lap
#5	3'-2"



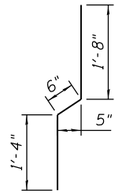
BAR sp40



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)

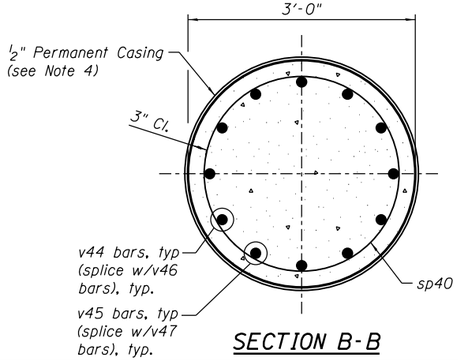


BAR V41(E)

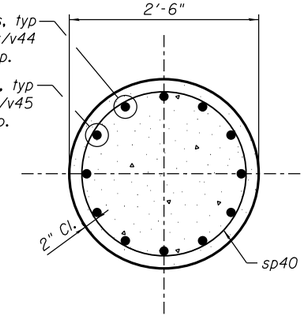
NOTES:

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 Testing of Drilled Shafts.

1 REVISED SHEET 10-22-2018



SECTION B-B



SECTION C-C

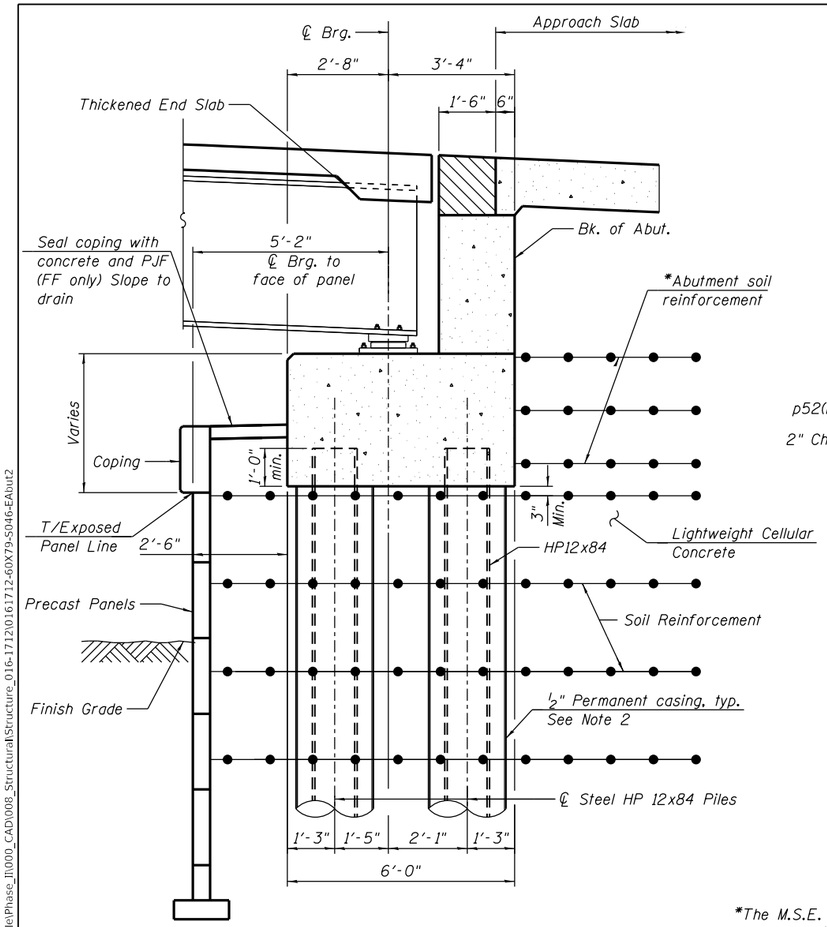
HBM ENGINEERING GROUP, LLC

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

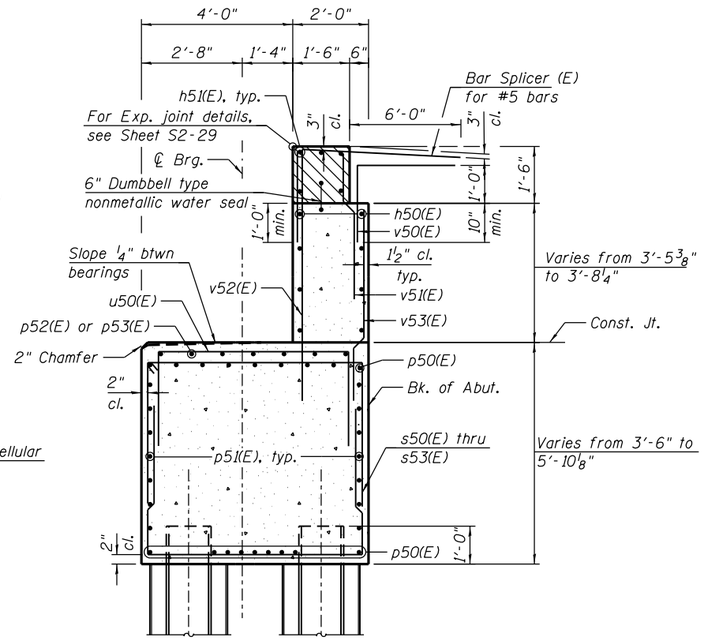
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT DETAILS
STRUCTURE NO. 016-1712
SHEET NO. S2-44 OF S2-63 SHEETS

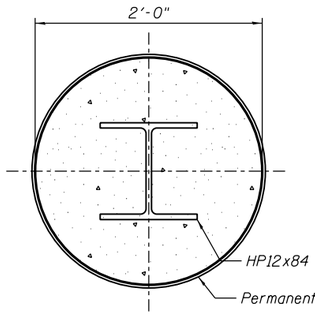
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	459
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



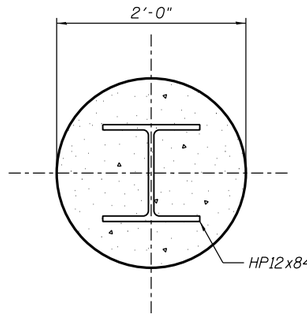
SECTION A-A

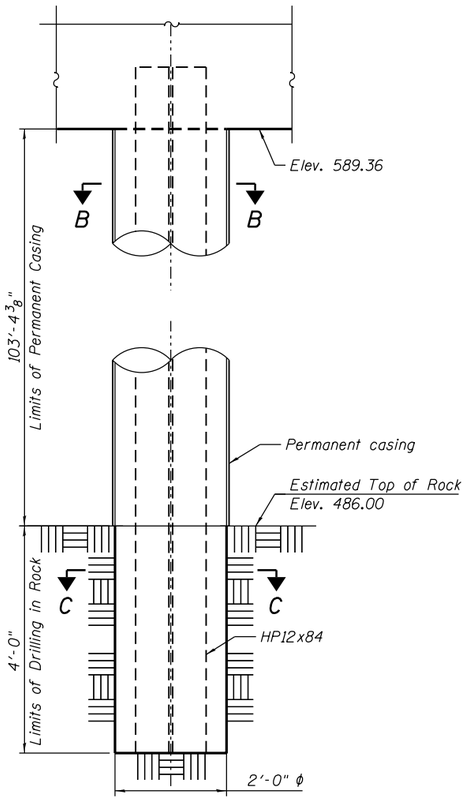


SECTION B-B



SECTION C-C





H-PILE

BILL OF MATERIAL

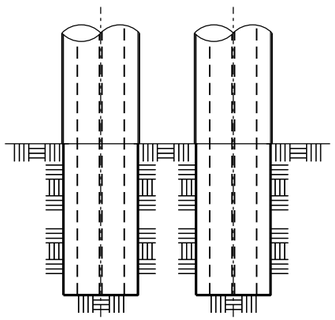
Bar	No.	Size	Length	Shape
h50(E)	8	#5	47'-3"	
h51(E)	5	#6	48'-10"	
p50(E)	18	#10	47'-3"	
p51(E)	18	#5	47'-3"	
p52(E)	6	#5	5'-0"	
p53(E)	42	#5	7'-0"	
s50(E)	40	#5	13'-4"	
s51(E)	54	#5	12'-8"	
s52(E)	38	#5	11'-8"	
s53(E)	48	#5	11'-4"	
u50(E)	50	#5	7'-10"	
u51(E)	22	#6	12'-6"	
v50(E)	48	#5	3'-11"	
v51(E)	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	3	
Setting Piles in Rock		Each	16	

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

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

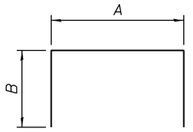
NOTES:

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.

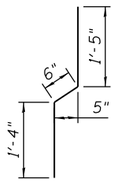


SECTION THRU ABUTMENT

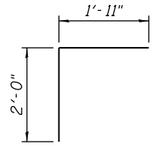
Showing Soil reinforcement and coping with precast panels



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 V51(E)



BAR V50(E)

1 REVISED SHEET 10-22-2018

HBM ENGINEERING GROUP, LLC	USER NAME = will.mardauss	DESIGNED - WM MAA	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EAST ABUTMENT DETAILS STRUCTURE NO. 016-1712
		CHECKED - MI, LAB	REVISED -		
	PLOT SCALE = N.T.S	DRAWN - WM, MAA	REVISED -		
	PLOT DATE = 8/29/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S2-46 OF S2-63 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	461
		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\016171712-60X79-S046-EAbut2

2:37:15 PM

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

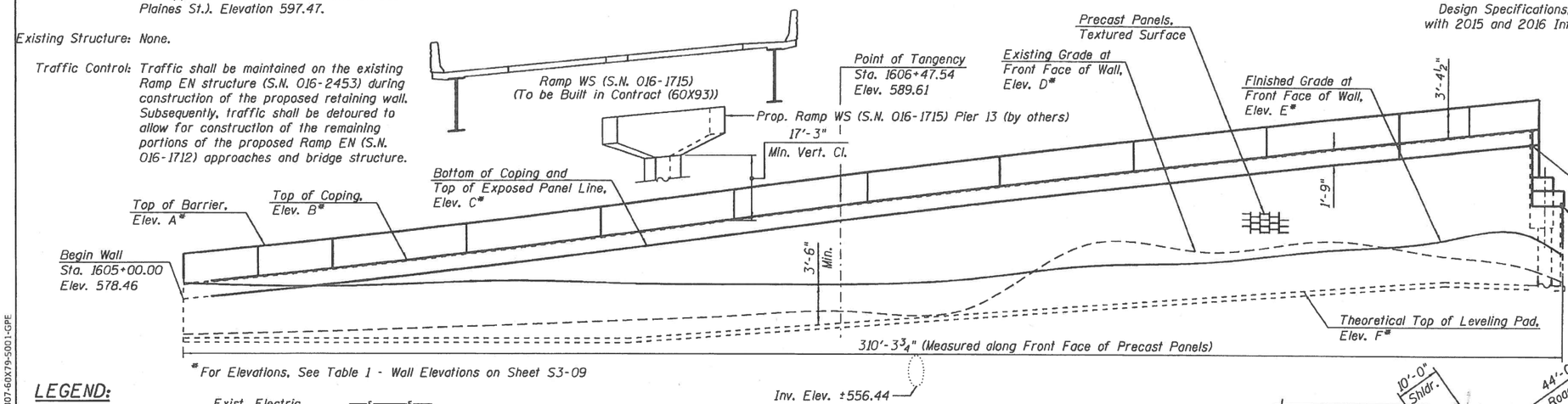
f'c = 3,500 psi
f'c = 4,000 psi (Superstructure)
fy = 60,000 psi (Reinforcement)

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

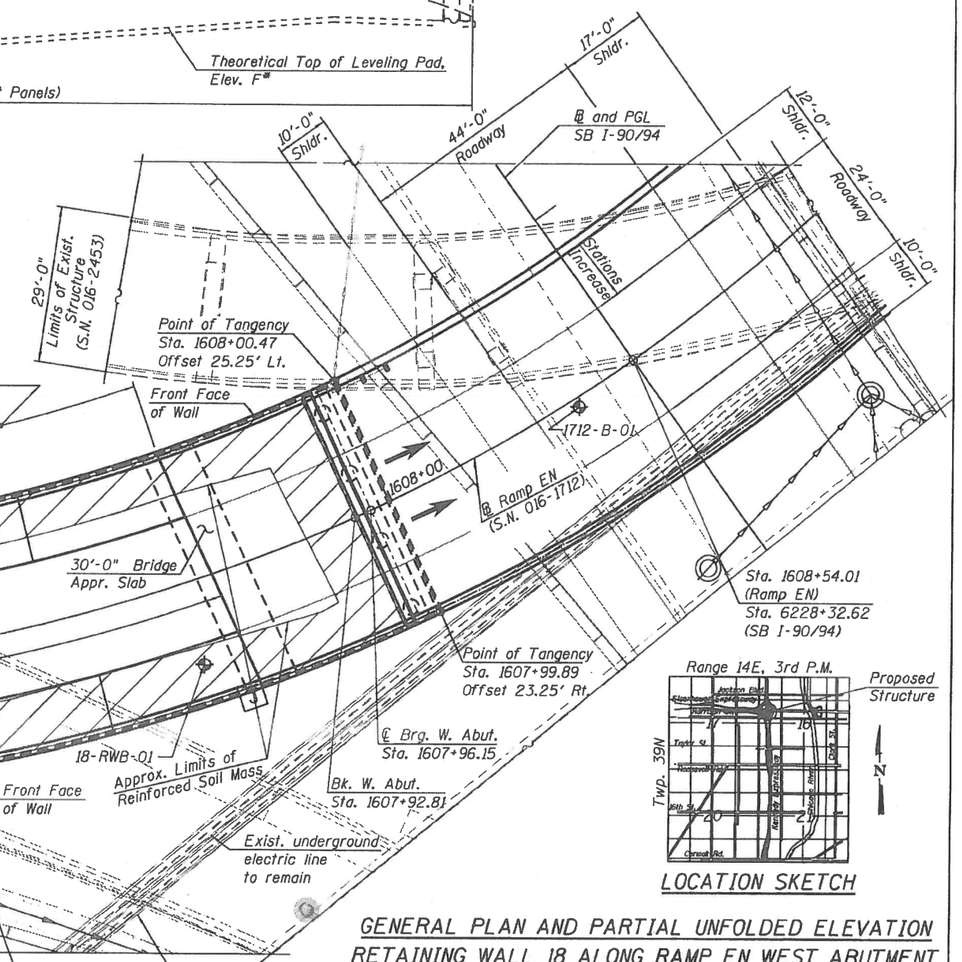
PARTIAL UNFOLDED ELEVATION

(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

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures



PLAN

LOCATION SKETCH

Signed Moussa A. Issa
Dr. Moussa A. Issa, S.E. Il. Lic. No. 081-005738
Expires 11-30-2018

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

Date 07/30/18 For Sheets S3-01 Thru S3-16

⚠1 REVISED SHEET 10-22-2018

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

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

STRUCTURE NO. 016-1807
SHEET NO. S3-01 OF S3-16 SHEETS

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	

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9:28:19 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.	200
Structure Excavation	Cu. Yd.	657
Concrete Superstructure	Cu. Yd.	228.3
Protective Coat	Sq. Yd.	551
Reinforcement Bars, Epoxy Coated	Pound	34,790
Name Plates	Each	1
Concrete Sealer	Sq. Ft.	6,704
Lightweight Cellular Concrete Fill	Cu. Yd.	3,217.4
Bridge Deck Grooving (Longitudinal)	Sq. Yd.	324
Mechanically Stabilized Earth Retaining Wall, Special	Sq. Ft.	4,597

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).

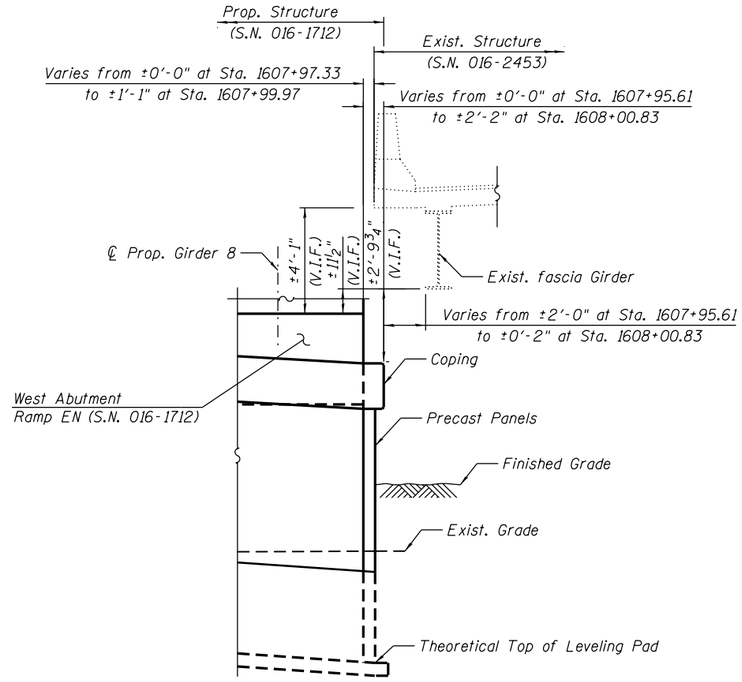
6. Begin placing lightweight cellular concrete fill.

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.

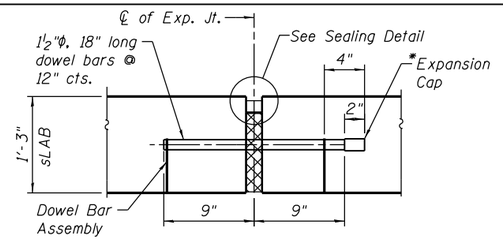
10. No portions of the retaining wall shall be compromised by excavation for other elements of work, including the construction of proposed Ramp EN (S.N. 016-1712), under the contract. If the sequencing of work requires that the retaining wall construction is staged, the stage line shall be located at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



WEST ABUTMENT CONSTRUCTION CLEARANCE DETAIL

(Looking West)

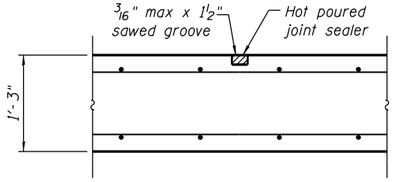
1 REVISED SHEET 10-22-2018



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.



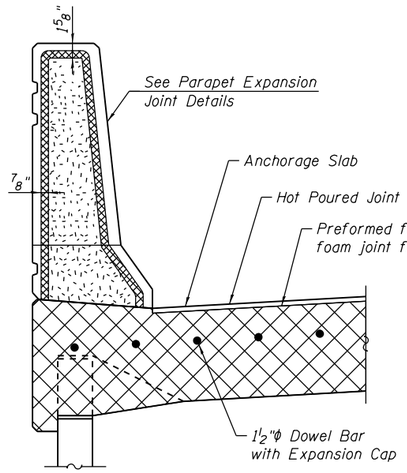
TRANSVERSE CONTRACTION JOINT

See Article 420.05 & 420.12 of the Standard Specifications

BILL OF MATERIAL

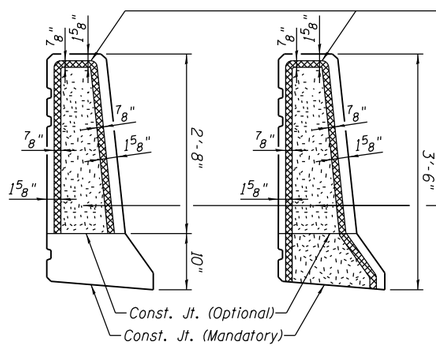
Bar	No.	Size	Length	Shape
a(E)	559	#6	12'-7"	
a1(E)	338	#5	11'-3"	
a2(E)	120	#6	14'-7"	
a3(E)	73	#5	13'-3"	
a4(E)	16	#5	4'-0"	
b(E)	19	#5	33'-3"	
b1(E)	38	#5	33'-7"	
b2(E)	42	#5	32'-3"	
b3(E)	72	#5	32'-3"	
b4(E)	40	#5	31'-7"	
b5(E)	2	#5	29'-7"	
d(E)	445	#5	6'-10"	
d1(E)	451	#5	7'-4"	
e(E)	14	#4	16'-6"	
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.	228.3
Protective Coat			Sq. Yd.	551
Reinforcement Bars, Epoxy Coated			Pound	34,790
Bridge Deck Grooving (Longitudinal)			Sq. Yd.	324

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

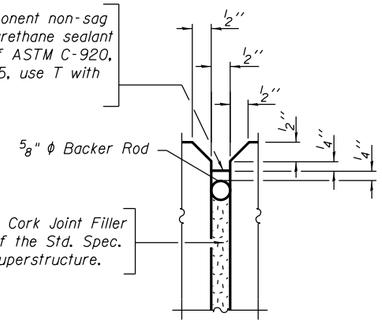


TRANSVERSE EXPANSION JOINT SECTION

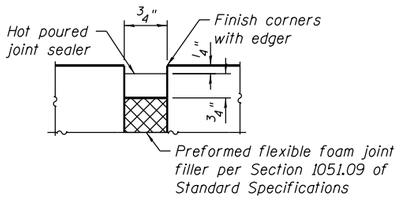
* M.S.E. supplier to design load transfer system to accommodate concrete pipe and catch basin.



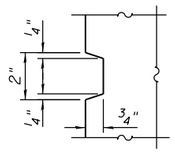
CONTRACTION EXPANSION



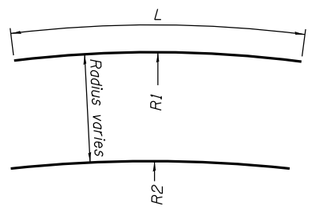
PARAPET JOINT DETAILS



SEALING DETAIL



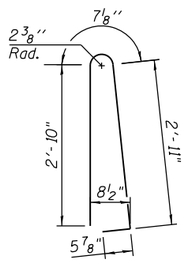
REVEAL DETAIL



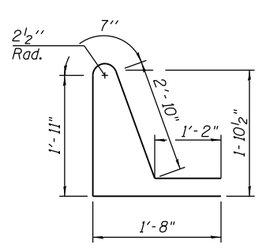
BARS b3(E) or b4(E)

TABLE 1

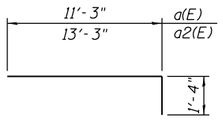
Bar	No. Per Series	R1	R2	L	No. Series
b3(E)	9	363'-5"	352'-2"	32'-3"	8
b4(E)	10	327'-10"	314'-7"	31'-7"	4



BAR d(E)



BAR d1(E)



BARS d(E) or a2(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.

1 REVISED SHEET 10-22-2018

HBM ENGINEERING GROUP, LLC

USER NAME = marlan.agamy	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 = 9/10/2018	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		

FILE NAME: pw:\617479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_Structural\Structure_016-1807\Sheet\016-1807-60X79-S007 SlabDet

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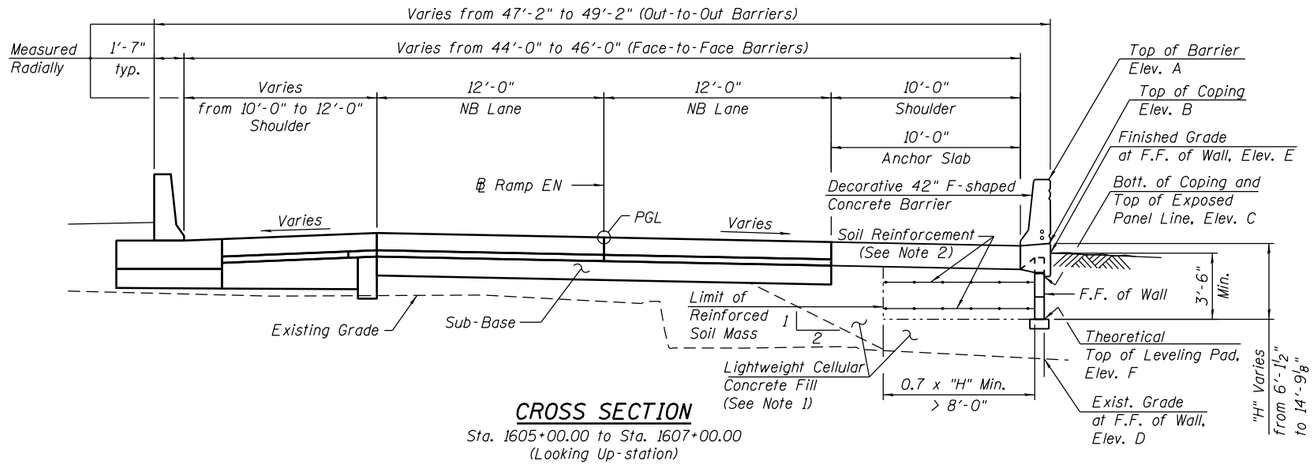


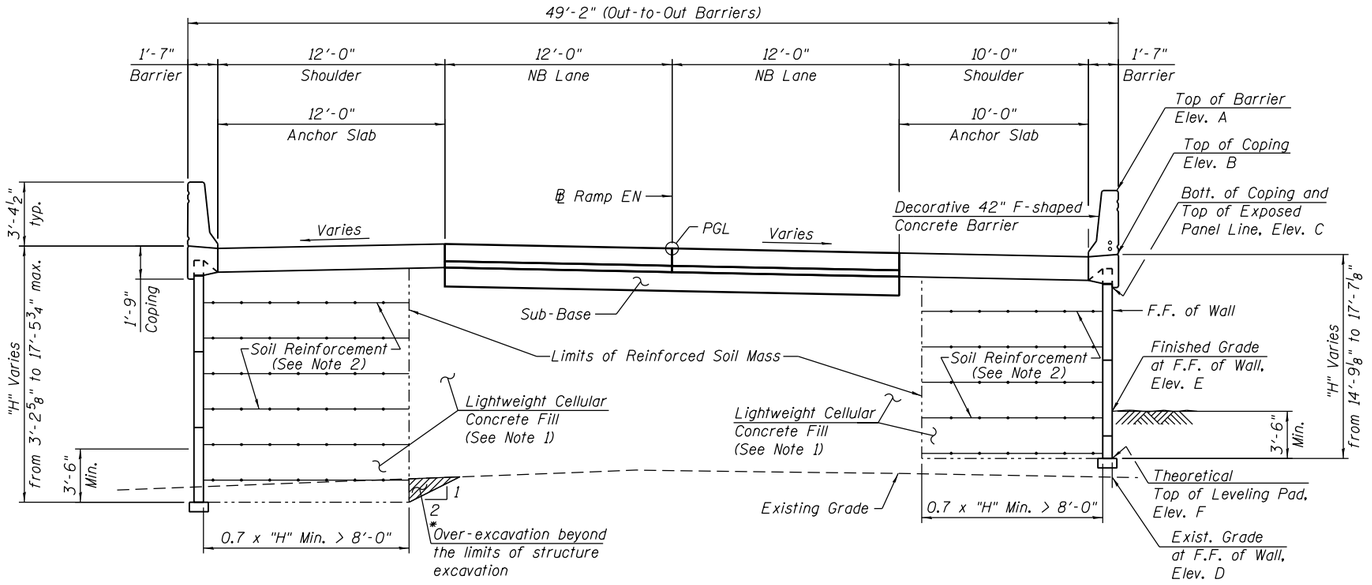
CROSS SECTION

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

TABLE 1 - WALL ELEVATIONS

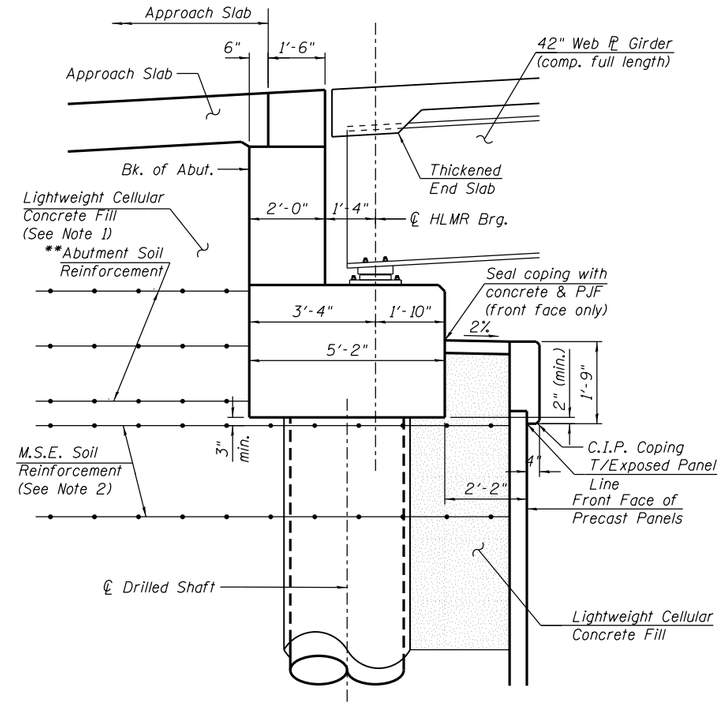
Station	Offset	Elevation A	Elevation B	Elevation C	Elevation D	Elevation E	Elevation F
1605+00.00	23.25 RT.	583.59	580.21	578.46	576.25	580.31	574.08
1605+25.00	23.25 RT.	584.85	581.48	579.73	576.78	579.95	574.08
1605+50.00	23.25 RT.	586.25	582.87	581.12	576.59	580.19	574.08
1605+75.00	23.25 RT.	587.76	584.38	582.63	576.72	580.61	574.08
1606+00.00	23.25 RT.	589.41	586.03	584.28	576.92	580.28	574.08
1606+25.00	23.25 RT.	591.07	587.70	585.95	577.16	580.17	574.99
1606+50.00	23.25 RT.	592.74	589.37	587.62	577.46	580.20	575.90
1606+75.00	23.25 RT.	594.41	591.03	589.28	578.22	580.85	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	582.26	586.06	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	580.81	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.

1 REVISED SHEET 10-22-2018

HBM ENGINEERING GROUP, LLC	USER NAME = Stoyanka,Kotorokova	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	MSE CROSS SECTION AND DETAILS 1 STRUCTURE NO. 016-1807	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CHECKED - MI, KJD	REVISED -			90/94/290	2014-005R&B	COOK	888	487
	PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -						CONTRACT NO. 60X79	
	PLOT DATE = 9/4/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S3-09 OF S3-16 SHEETS			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_016-1807\Sheet\016-1807-60X79-S008 XSec_Det1
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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

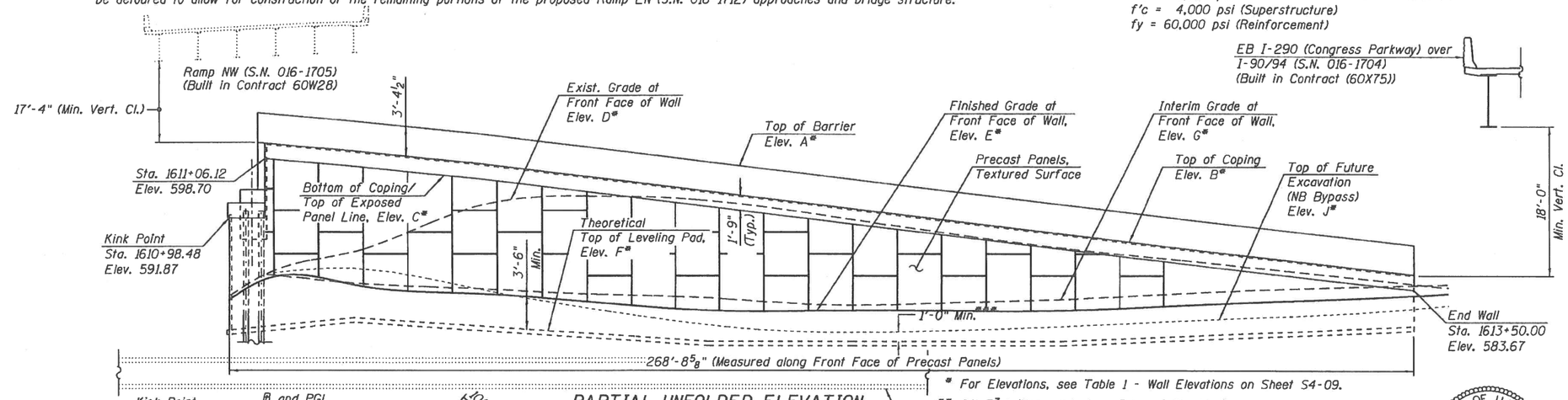
FIELD UNITS	PRECAST UNITS
f'c = 3,500 psi	f'c = 4,500 psi
f'c = 4,000 psi (Superstructure)	
fy = 60,000 psi (Reinforcement)	

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.



PARTIAL UNFOLDED ELEVATION

(Looking at Front Face of Wall)

* 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

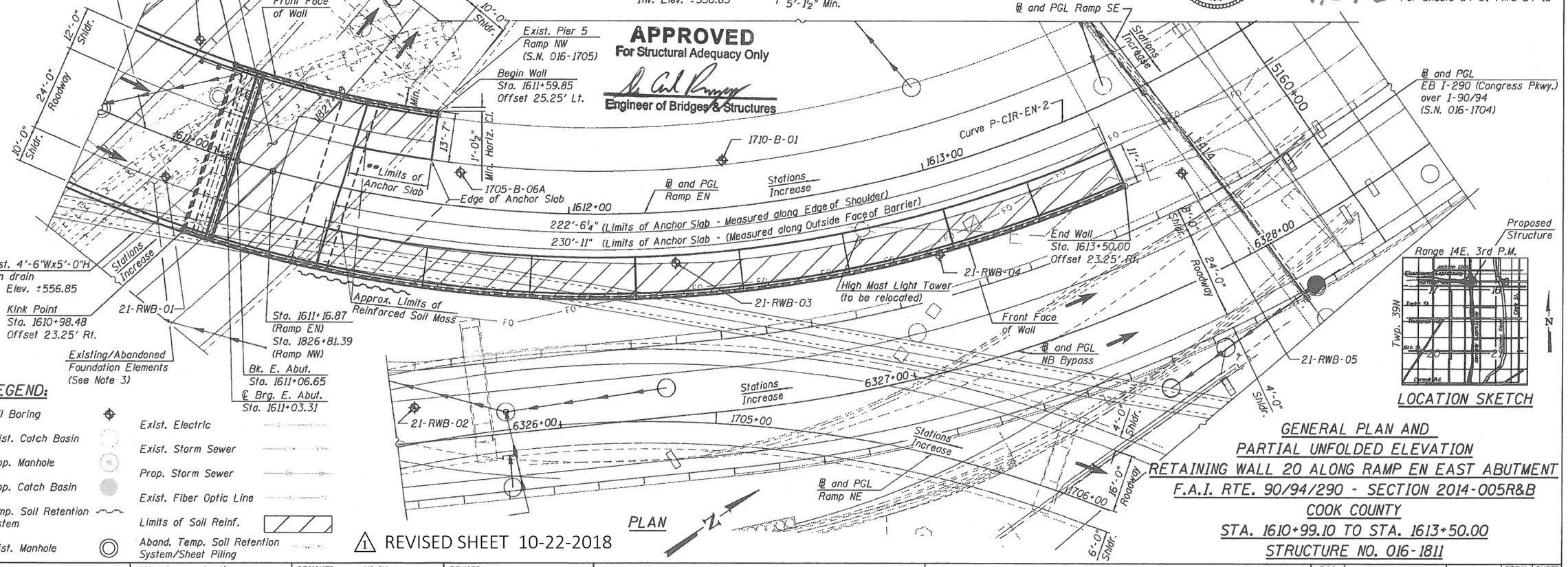
† 5'-1½" Min.

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

Signed Mousa 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

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures



PLAN

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

⚠1 REVISED SHEET 10-22-2018

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 -	
		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

STRUCTURE NO. 016-1811
SHEET NO. S4-01 OF S4-18 SHEETS

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		

FILE NAME: pw:\\617479-PWINT.aecomonline.local:AECOM_DS02_NA\Documents\01 Americas\Transportation\60269938 CirclePhase_II\000_CAD\008_Structural\StructuralStructure_016-1811\Sheet\016181l-60X79-S001 GPE
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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.

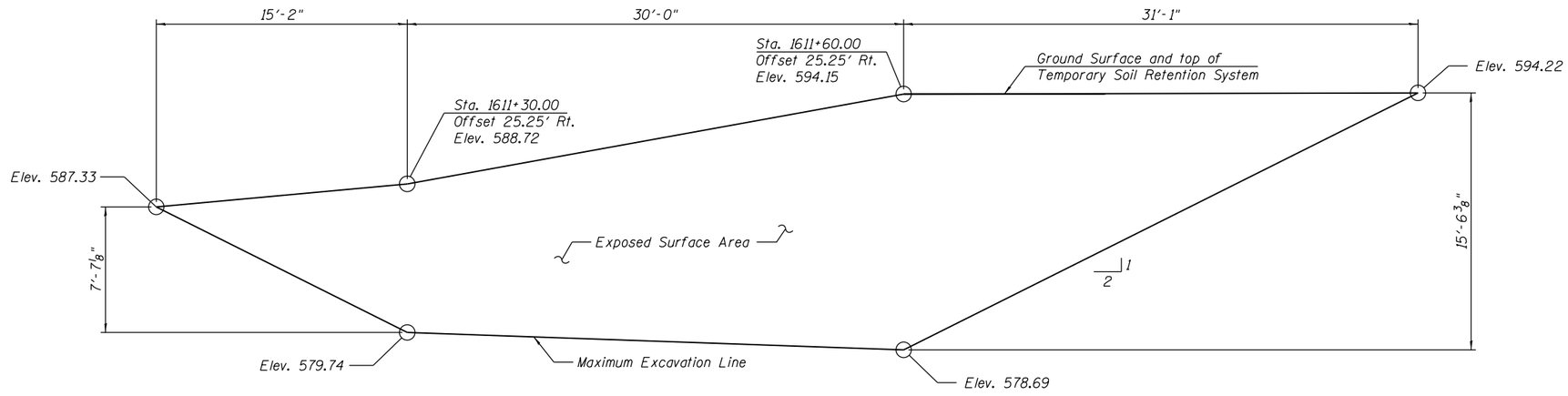
STATION 1610+98.45 TO 1613+50.00
BUILT 20-- BY
STATE OF ILLINOIS
F.A.I. RT. 90/94/290 SEC. 2014-005R&B
STRUCTURE NO. 016-1811

NAME PLATE

See Std. 515001

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	129
Structure Excavation	Cu. Yd.	1,608
Concrete Superstructure	Cu. Yd.	169.7
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.	6,443
Lightweight Cellular Concrete Fill	Cu. Yd.	3,282
Bridge Deck Grooving (Longitudinal)	Sq. Yd.	239
Mechanically Stabilized Earth Retaining Wall, Special	Sq. Ft.	4,694



TEMPORARY SOIL RETENTION SYSTEM

1 REVISED SHEET 10-22-2018

HBM ENGINEERING GROUP, LLC	USER NAME = Stoyanka.Kotorokova	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 = 9/4/2018	CHECKED - MI, MAI	REVISED -	

GENERAL NOTES, INDEX OF SHEETS AND TOTAL BILL OF MATERIAL
STRUCTURE NO. 016-1811
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		

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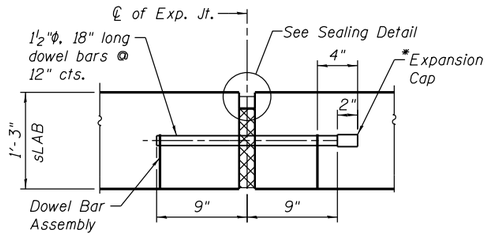
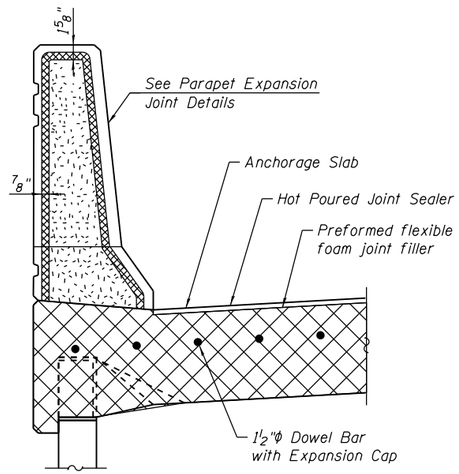


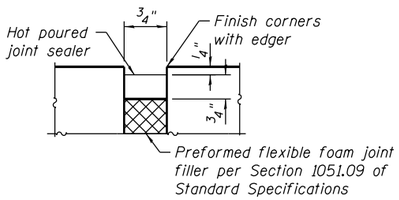
TRANSVERSE EXPANSION JOINT

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

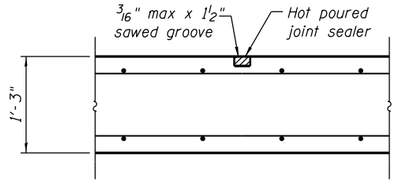
* Expansion Caps shall be installed on the exposed end of each dowel bar once header has been removed and the joint filler material has been installed.



TRANSVERSE EXPANSION JOINT SECTION

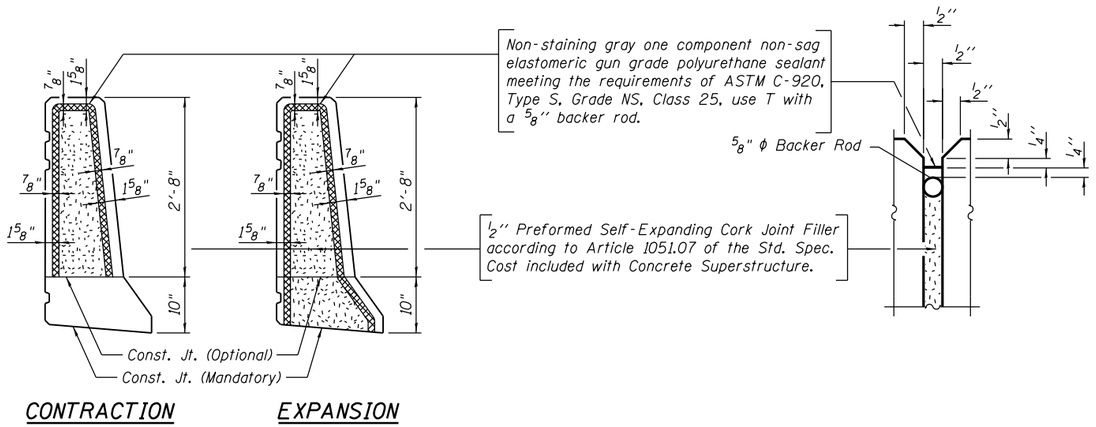


SEALING DETAIL



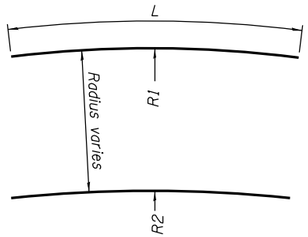
TRANSVERSE CONTRACTION JOINT

See Article 420.05 & 420.12 of the Standard Specifications



CONTRACTION EXPANSION

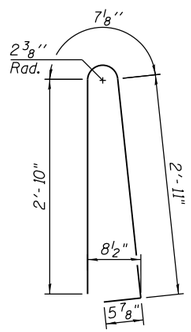
PARAPET JOINT DETAILS



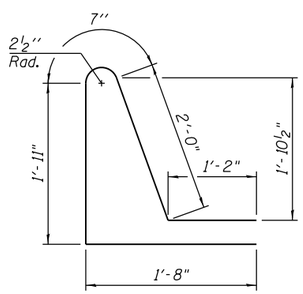
BARS b(E), b2(E), or b4(E)

TABLE 1

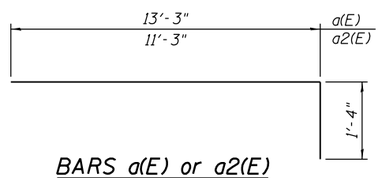
Bar	No. Per Series	R1	R2	L	No. Series
b(E)	10	327'-10"	314'-7"	21'-4"	2
b2(E)	9	363'-5"	352'-2"	32'-3"	12
b4(E)	9	363'-5"	352'-2"	27'-1"	4



BAR d(E)



BAR d1(E)



BARS a(E) or a2(E)

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

NOTES:

1. See Ramp EN (S.N. 016-1712) plans for approach slab details and civil plans for roadway details.
2. Protective Coat shall be applied after Bridge Deck Grooving (Longitudinal) is complete.

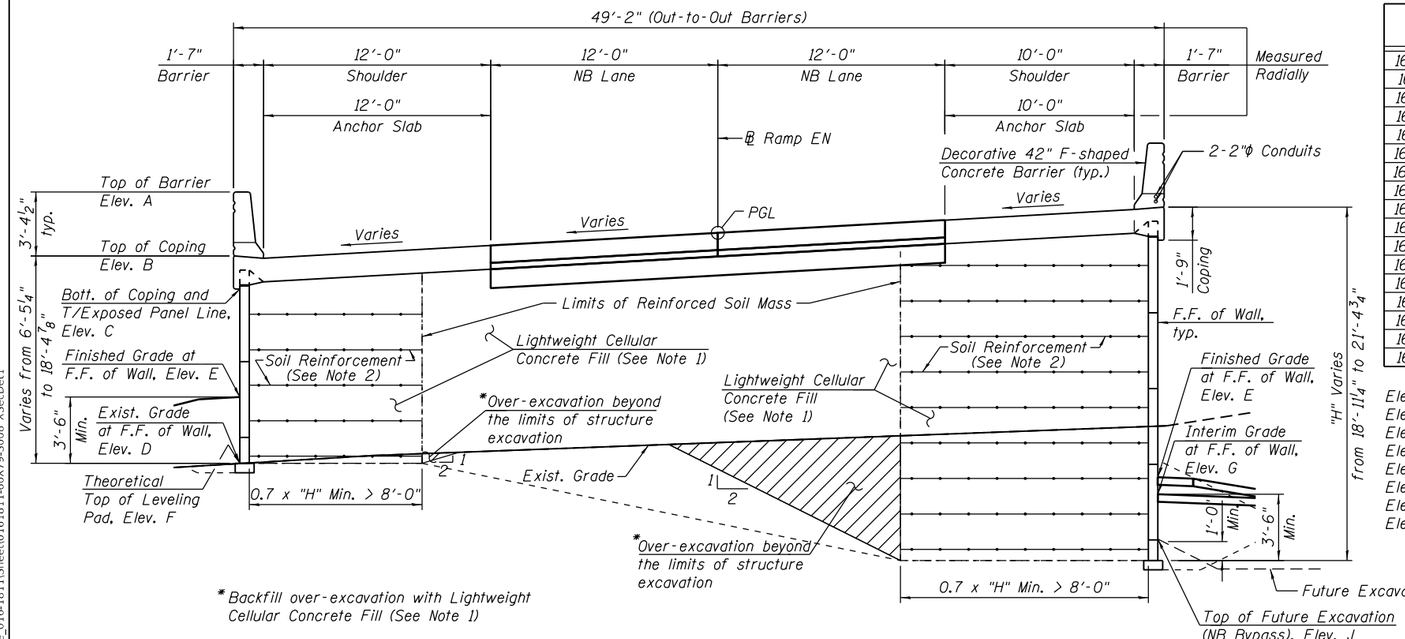
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a(E)	44	#6	14'-7"	
a1(E)	27	#5	13'-3"	
a2(E)	465	#6	12'-7"	
a3(E)	280	#5	11'-3"	
b(E)	20	#5	21'-4"	
b1(E)	1	#5	19'-1"	
b2(E)	108	#5	32'-3"	
b3(E)	6	#5	32'-3"	
b4(E)	36	#5	27'-1"	
b5(E)	2	#5	27'-1"	
d(E)	338	#5	6'-10"	
d1(E)	338	#5	7'-4"	
e(E)	8	#4	19'-1"	
e1(E)	1	#8	19'-1"	
e2(E)	42	#4	29'-8"	
e3(E)	6	#8	33'-10"	
e4(E)	6	#4	31'-8"	
e5(E)	14	#4	25'-2"	
e6(E)	2	#8	28'-3"	
e7(E)	2	#4	26'-8"	
Concrete Superstructure			Cu Yd	169.7
Protective Coat			Sq Yd	412
Reinforcement Bars, Epoxy Coated			Pound	25,860
Bridge Deck Grooving (Longitudinal)			Sq Yd	239

⚠1 REVISED SHEET 10-22-2018

HBM ENGINEERING GROUP, LLC

USER NAME = marian.agamy	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PARAPET AND ANCHORAGE SLAB DETAILS AND BOM STRUCTURE NO. 016-1811	F.A.I. RTE. 90/94/290
	CHECKED - MI, KJD	REVISED -			SECTION 2014-005R&B
PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -			COUNTY COOK
PLOT DATE = 9/10/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S4-08 OF S4-18 SHEETS	TOTAL SHEETS 888
					SHEET NO. 502
					CONTRACT NO. 60X79
					ILLINOIS FED. AID PROJECT



*Backfill over-excavation with Lightweight Cellular Concrete Fill (See Note 1)

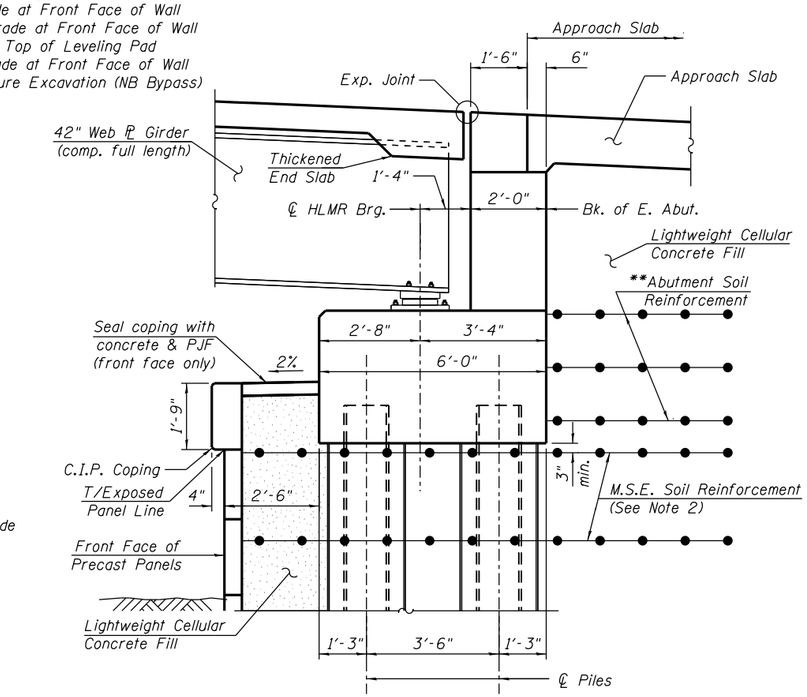
CROSS SECTION

Sta. 1610+98.48 to Sta. 1611+59.85
(Looking Up-station)

TABLE 1 - WALL ELEVATIONS

Station	Offset	Elevation A	Elevation B	Elevation C	Elevation D	Elevation E	Elevation F	Elevation G	Elevation J
1610+98.48	23.25 RT.	-	593.62	591.87	584.44	582.55	579.05	-	-
1611+06.12	23.25 RT.	603.83	600.45	598.70	585.49	585.40	579.05	-	-
1611+25.00	23.25 RT.	602.94	599.57	597.82	587.99	583.95	579.05	584.40	586.07
1611+50.00	23.25 RT.	601.58	598.21	596.46	593.08	583.05	579.05	583.78	583.82
1611+75.00	23.25 RT.	599.95	596.58	594.83	594.40	582.17	577.96	583.14	581.46
1612+00.00	23.25 RT.	598.31	594.94	593.19	593.85	581.29	577.70	582.71	579.62
1612+25.00	23.25 RT.	596.68	593.31	591.56	592.13	581.28	577.60	581.93	578.81
1612+50.00	23.25 RT.	595.04	591.67	589.92	590.16	581.28	577.50	582.13	579.00
1612+75.00	23.25 RT.	593.41	590.04	588.29	588.41	581.28	577.50	582.54	579.42
1613+00.00	23.25 RT.	591.79	588.42	586.67	587.02	581.85	578.08	583.21	580.08
1613+25.00	23.25 RT.	590.29	586.92	585.17	585.69	583.85	579.18	583.79	580.66
1613+50.00	23.25 RT.	588.79	585.42	583.67	584.32	585.82	580.28	584.18	581.50
1610+97.73	25.25 LT.	-	590.94	589.19	582.95	582.29	578.25	-	-
1611+06.56	25.25 LT.	601.23	597.86	596.11	583.99	584.91	579.45	-	-
1611+25.00	25.25 LT.	600.36	596.99	595.24	586.02	587.66	582.58	-	-
1611+50.00	25.25 LT.	599.01	595.64	593.89	588.26	593.61	586.90	-	-
1611+59.85	25.25 LT.	598.42	595.05	593.30	588.86	594.59	588.61	-	-

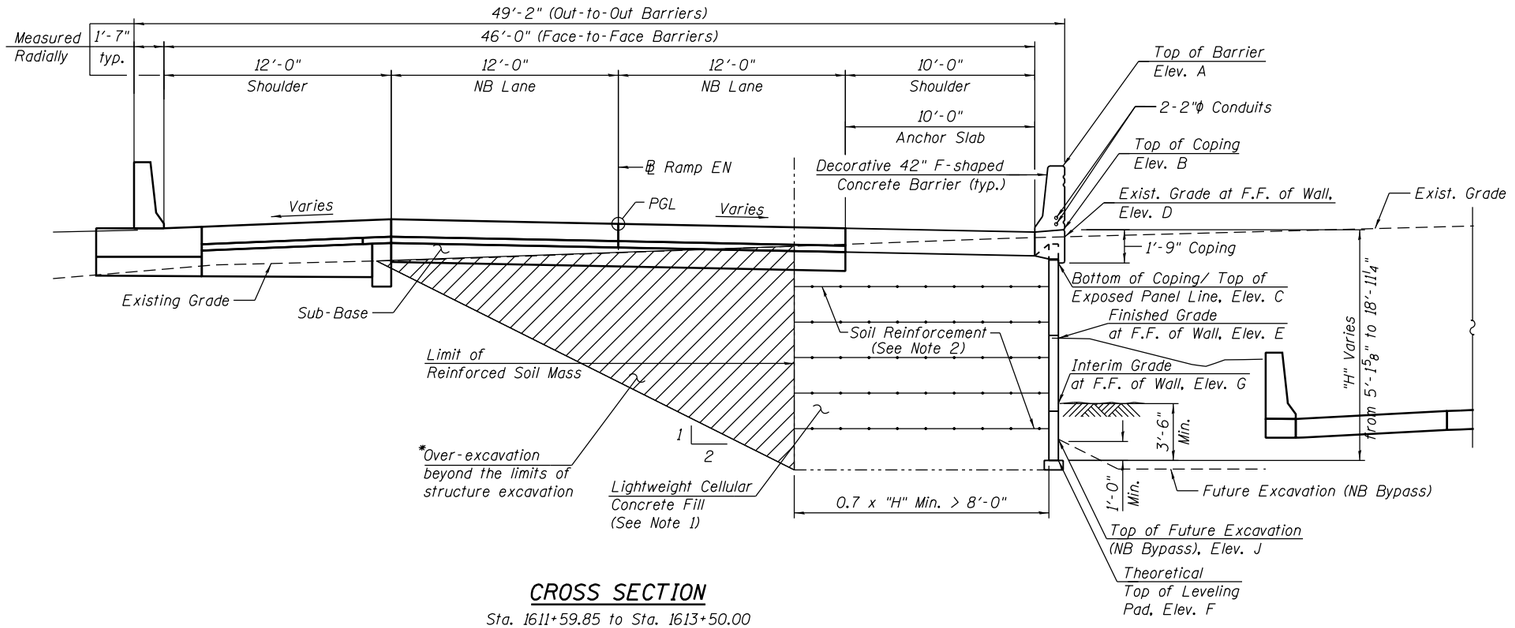
Elevation A - Top of Barrier
Elevation B - Top of Coping
Elevation C - Bottom of Coping/Top of Exposed Panel Line
Elevation D - Exist. Grade at Front Face of Wall
Elevation E - Finished Grade at Front Face of Wall
Elevation F - Theoretical Top of Leveling Pad
Elevation G - Interim Grade at Front Face of Wall
Elevation J - Top of Future Excavation (NB Bypass)



SECTION THRU EAST ABUTMENT

(Horiz. Dims. @ Rt. L's to ℄ Brg.)

** Abutment soil reinforcement to resist lateral loads in lieu of steel piles



CROSS SECTION

Sta. 1611+59.85 to Sta. 1613+50.00
(Looking Up-station)

1 REVISED SHEET 10-22-2018

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.

HBM ENGINEERING GROUP, LLC

USER NAME = Stoyanka,Kotorokova	DESIGNED - JJS, SK	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	MSE CROSS SECTION AND DETAILS STRUCTURE NO. 016-1811	
	CHECKED - MI, KJD	REVISED -			
PLOT SCALE = N.T.S	DRAWN - SK, KJD	REVISED -			
PLOT DATE = 9/4/2018	CHECKED - MI, MAI	REVISED -		SHEET NO. S4-09 OF S4-18 SHEETS	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	503
		CONTRACT NO. 60X79		
		ILLINOIS	FED. AID PROJECT	

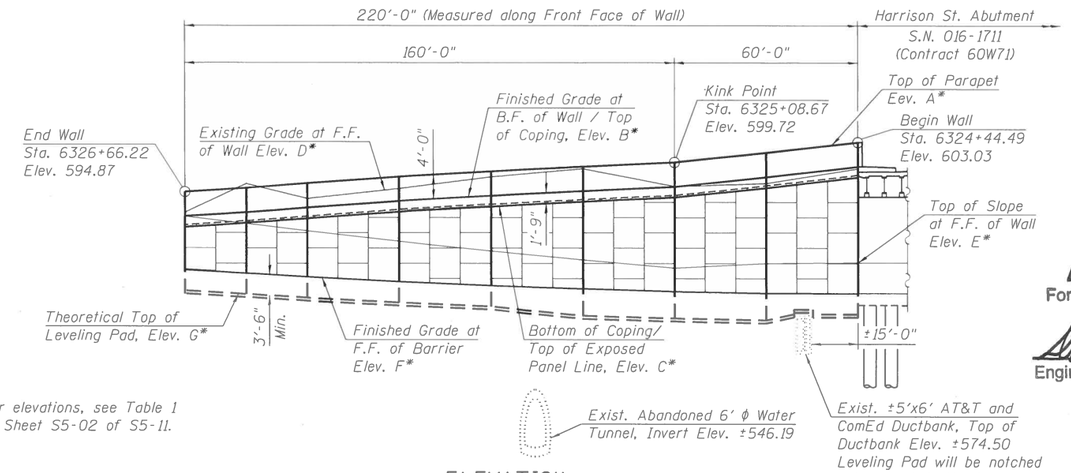
FILE NAME: pw:\\6117479-PWINT.aecomonline.local:AECOM_D502_NA\Documents\01 Americas\Transportation\60269938 Circle\Phase_II\000_CAD\008_StructuralStructure_016-1811\Sheet\016181 1-60X79-S008 XSecDet1
4:46:52 PM

Bench Mark: Chisel "X" on chain bolt of fire hydrant in front of 555 W. Harrison St. Elev. 594.46

Existing Structure: Existing Sheet Pile Wall along Existing Ramp EN.

Traffic on Ramp NE, Des Plaines Street, and Harrison Street will be maintained with stage construction. The Existing CTA Bus turn around will be closed during construction.

No Salvage.

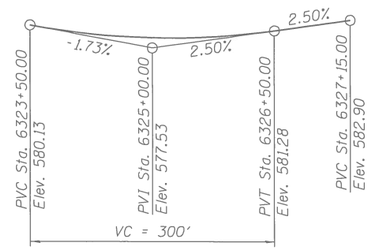


* For elevations, see Table 1 on Sheet S5-02 of S5-11.

ELEVATION

(Looking Southeast at F.F. of Wall, Proposed Concrete Barrier not shown for clarity.)

Notes:
Wall offsets are measured from the ℄ of Proposed NB C-D Road to the front face of precast panels.
F.F. denotes Front Face.
B.F. denotes Back Face.



PROFILE GRADE

(℄ NB C-D Road)

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures

MATTHEW D. SANTEFORD
081-007244
LICENSED STRUCTURAL ENGINEER OF
STATE OF ILLINOIS

07/30/2018

MATTHEW D. SANTEFORD, P.E., S.E.
NO. 081-007244
EXP. DATE 11/30/2018

CURVE DATA

(NB C-D Road)
Prop. Curve P-NCD-NX-3
P.I. 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

(NB C-D Road)
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

DESIGN SPECIFICATIONS

2017 AASHTO LRFD Bridge Design Specifications 8th Edition

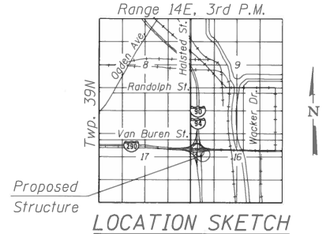
DESIGN STRESSES

FIELD UNITS

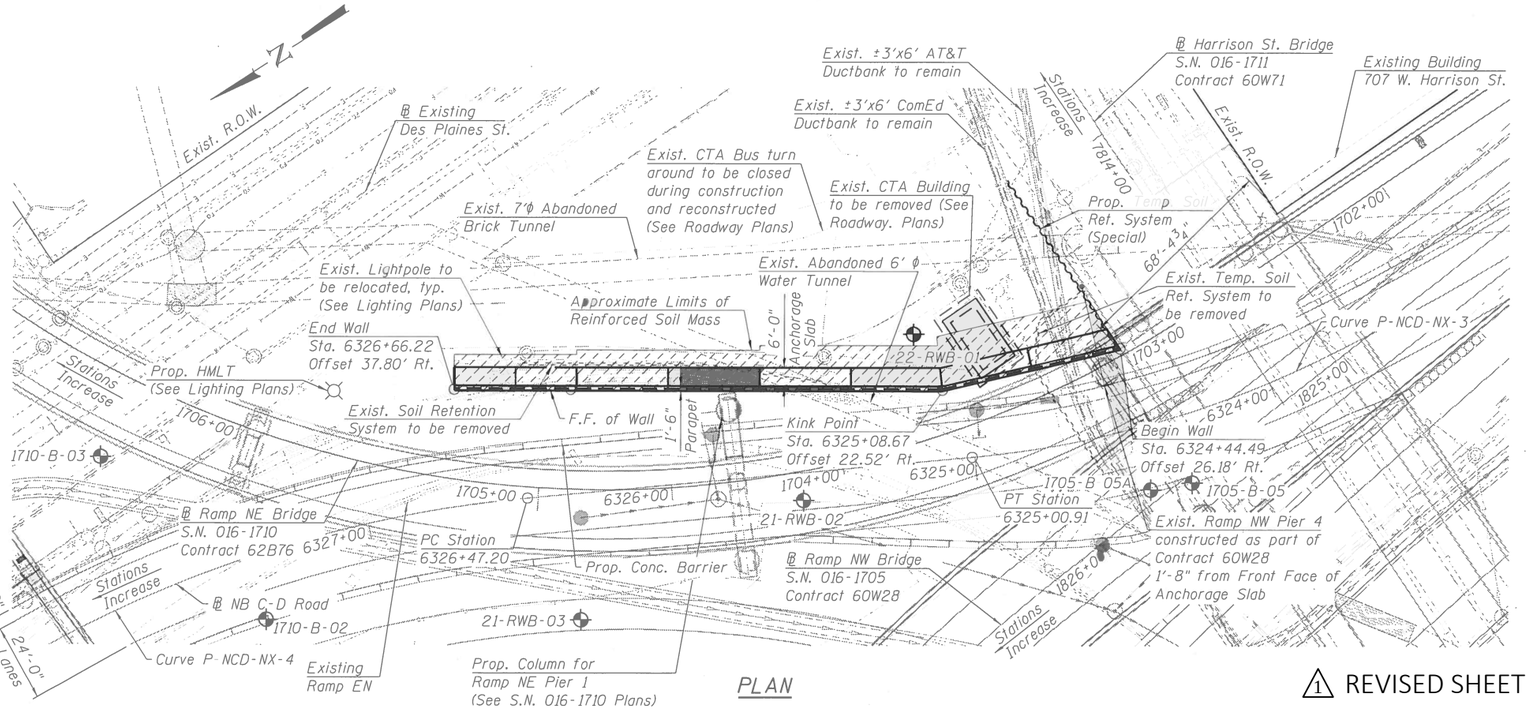
f'c = 4,000 psi
fy = 60,000 psi (Reinforcement)

PRECAST UNITS

f'c = 4,500 psi



LOCATION SKETCH



PLAN

LEGEND:

Ex. Chain Link Fence	— x — x — x —	Soil Boring	
Combined Sewer		Existing Catch Basin	
Electric	E E	Proposed Catch Basin	
Ex. Storm Sewer		Existing Manhole	
Prop. Storm Sewer		Proposed Manhole	
Ex. ITS Cable		Proposed Inlet	
Ex. Gas Line	G	Limits of Soil Reinforcement	
Ex. Fiber Optic	FO FO		
Ex. AT&T Line	T T		

GENERAL PLAN AND ELEVATION
RETAINING WALL 22A ALONG NB C-D ROAD
F.A.I. RTE. 90/94 (KENNEDY EXPRESSWAY)
SECTION 2014-005R&B
COOK COUNTY
STATION 6324+44.49 TO STATION 6326+66.22
STRUCTURE NO. 016-1813

⚠1 REVISED SHEET 10-22-2018

3:20:25 PM
0161813-60X79-S001-GPE.dgn

Tran Systems

USER NAME = wjcollett	DESIGNED - DJG	REVISED -	
	CHECKED - KRS	REVISED -	
PLOT SCALE = 48.00 ' / in.	DRAWN - MJR	REVISED -	
PLOT DATE = 7/26/2018	CHECKED - KRS/WJC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. S5-01 OF S5-11 SHEETS

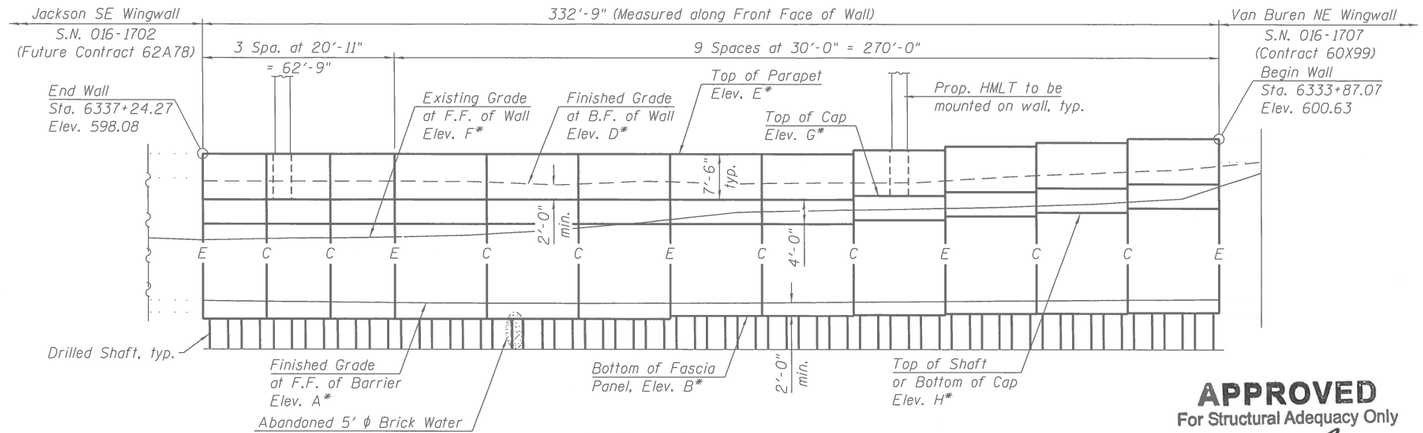
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	2014-005R&B	COOK	888	513
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

Bench Mark: Set "X" on east barrier wall of I-90 at ℄ of Adams Street. Elev. 581.17.

Existing Structure: None.

Traffic on I-90/94 will be maintained with stage construction. Existing Ramp WN and Ramp EN will be closed to traffic for a portion of construction.

No Salvage.



* For elevations, see Table 1 on Sheet S6-02 of S6-16.

ELEVATION
(Looking East at F.F. of Wall, Proposed Concrete Barrier not shown for clarity.)

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures

Notes:
Wall offsets are measured from the ℄ of Proposed NB C-D Road to the front face of cast-in-place fascia panels.
C denotes Construction Joint.
E denotes Expansion Joint.
F.F. denotes Front Face.
B.F. denotes Back Face.
Wall to be built along straight chords between construction joints.

CURVE DATA

(NB C-D Road)
Prop. Curve P-NCD-NX-5
P.I. Sta. = 6336+57.47
Δ = 35° 13' 41" (RT)
D = 4° 12' 24"
R = 1,362.00'
T = 432.42'
L = 837.42'
E = 67.00'
e = 4.20%
T.R. = 41'
S.E. Run = 87'
P.C. Sta. = 6332+25.05
P.T. Sta. = 6340+62.48

MATTHEW D. SANTEFORD
081-007244
LICENSED STRUCTURAL ENGINEER
OF
STATE OF ILLINOIS

07/30/2018

MATTHEW D. SANTEFORD, P.E., S.E.
NO. 081-007244
EXP. DATE 11/30/2018

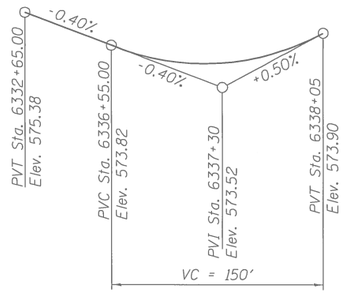
DESIGN SPECIFICATIONS

2017 AASHTO LRFD Bridge Design Specifications 8th Edition

DESIGN STRESSES

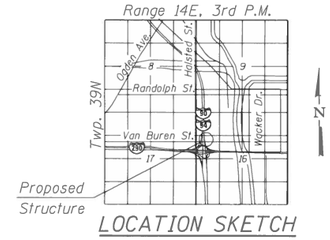
FIELD UNITS

f'c = 7,000 psi (Drilled Shafts)
f'c = 3,500 psi (All other concrete)
fy = 60,000 psi (Reinforcement)

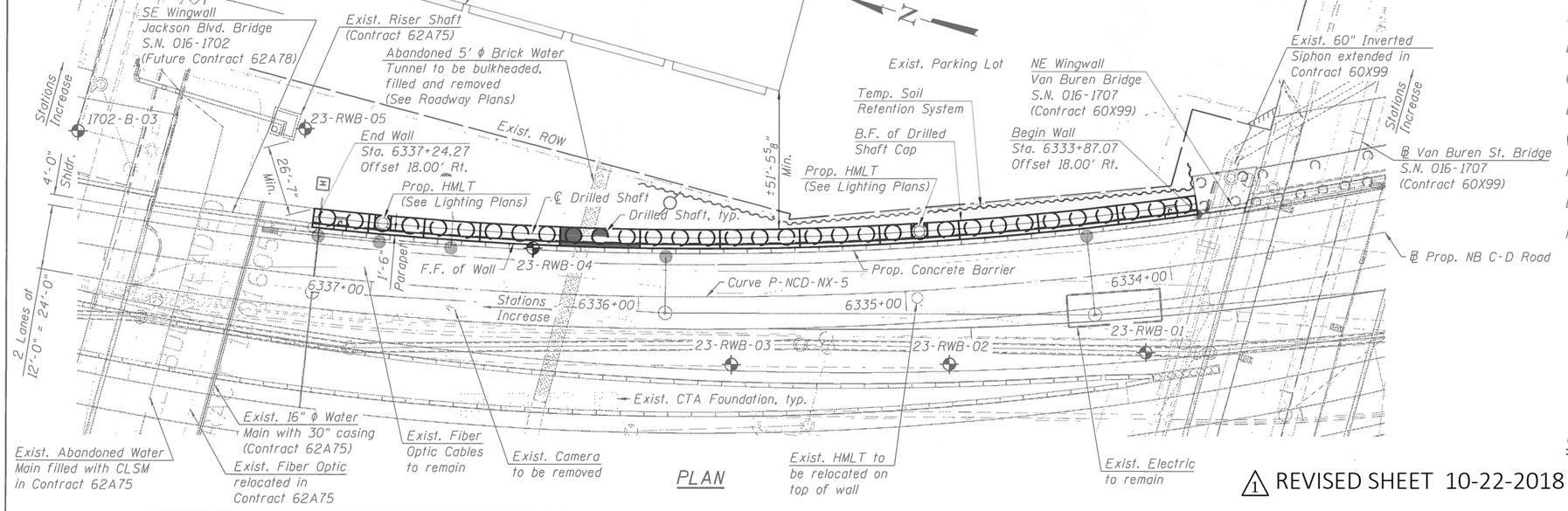


PROFILE GRADE

(Along ℄ NB C-D Road)



LOCATION SKETCH



PLAN

LEGEND:

Ex. Chain Link Fence	———	Soil Boring	⊕
Combined Sewer	———	Existing Catch Basin	○
Electric	———	Proposed Catch Basin	●
Water	———	Existing Manhole	◎
Fiber Optic	———	Proposed Inlet	▬
Ex. Storm Sewer	———		
Prop. Storm Sewer	———		

GENERAL PLAN AND ELEVATION
RETAINING WALL 23 ALONG NB C-D ROAD
F.A.I. RTE. 90/94 (KENNEDY EXPRESSWAY)
SECTION 2014-005R&B
COOK COUNTY
STATION 6333+87.07 TO STATION 6337+24.27
STRUCTURE NO. 016-1814

⚠1 REVISED SHEET 10-22-2018

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0161814-60X79-S001-GPE.dgn

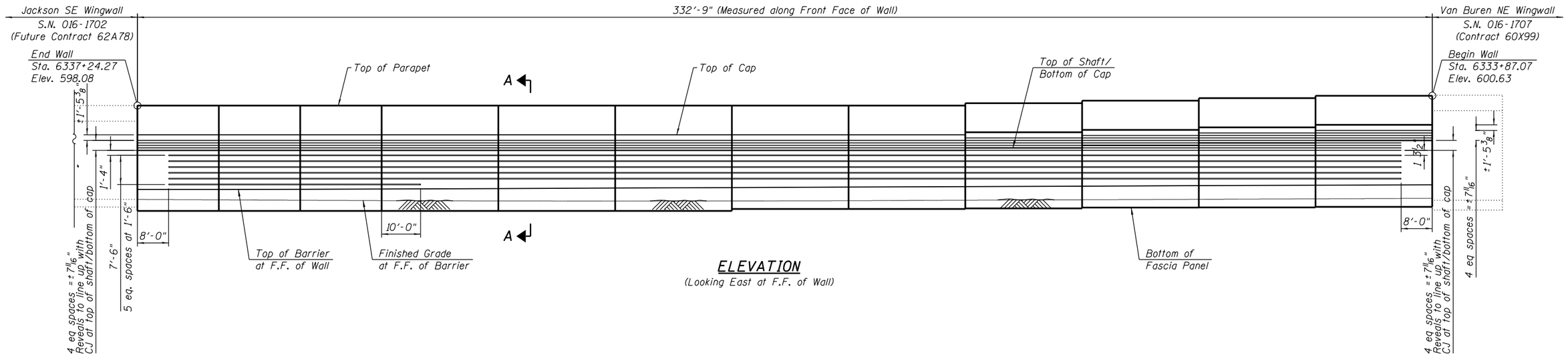
TranSystems

USER NAME = wjcolletti	DESIGNED - KRS	REVISED -
	CHECKED - DJG	REVISED -
PLOT SCALE = 48.00 '/ in.	DRAWN - MJR	REVISED -
PLOT DATE = 7/26/2018	CHECKED - KRS/WJC	REVISED -

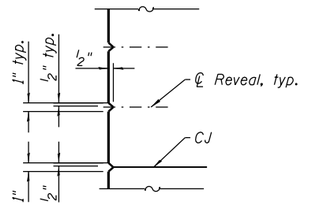
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. S6-01 OF S6-16 SHEETS

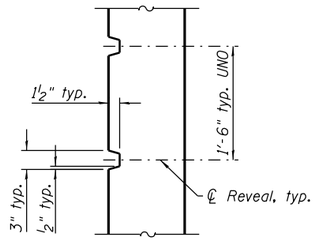
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	2014-005R&B	COOK	888	524
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



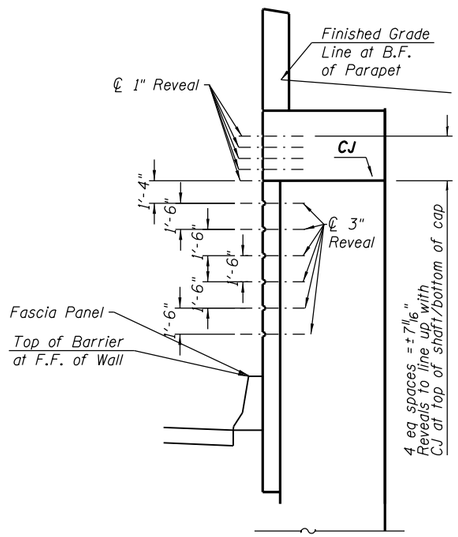
ELEVATION
(Looking East at F.F. of Wall)



1" REVEAL DETAIL



3" REVEAL DETAIL



SECTION A-A

Notes:
1. Coordinate / verify all dimensions with structural drawings.
2. Reveals will not be paid separately and shall be included in the cost of pay item Class SI Concrete (Miscellaneous).

1 REVISED SHEET 10-22-2018

9:11:25 PM
01814 60X79-S010-ArchDetails_1.dgn

TranSystems

USER NAME = RistovskaM	DESIGNED - WJC	REVISED -
	CHECKED - KRS	REVISED -
PLOT SCALE = 0.17 ' / in.	DRAWN - MJR	REVISED -
PLOT DATE = 9/9/2018	CHECKED - KRS/WJC	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ARCHITECTURAL DETAILS
RETAINING WALL 23 (STRUCTURE NO. 016-1814)
SHEET NO. S6-10 OF S6-16 SHEETS

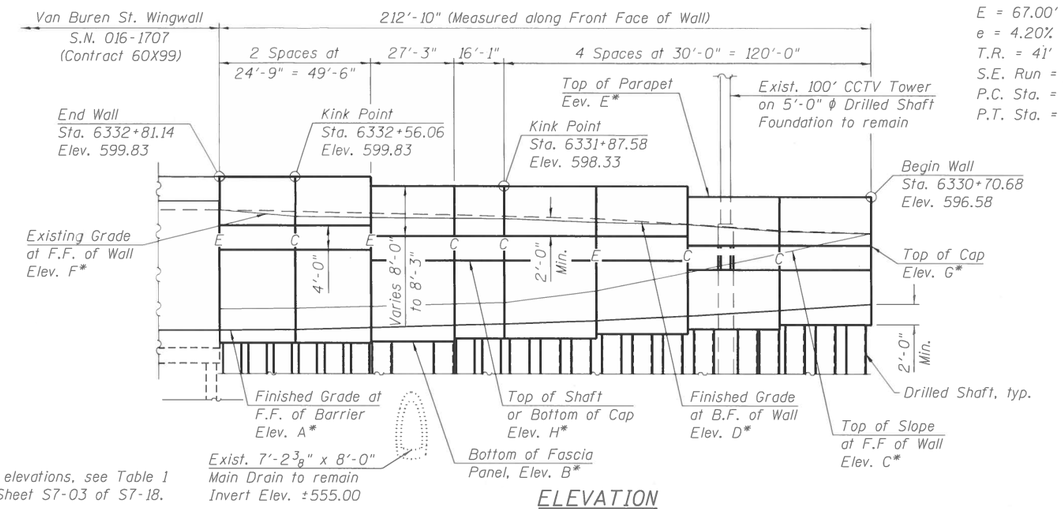
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	2014-005R&B	COOK	888	533
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

Bench Mark: Set "X" on east barrier wall of I-90 at ℄ of Adams Street. Elev. 581.17.

Existing Structure: None.

Ramp WN and Ramp EN will be closed to traffic and detoured during construction as necessary.

No Salvage.



* For elevations, see Table 1 on Sheet S7-03 of S7-18.

ELEVATION

(Looking East at F.F. of Wall, Proposed Concrete Barrier not shown for clarity.)

CURVE DATA

(NB C-D Road)

Prop. Curve P-NCD-NX-5
P.I. Sta. = 6336+57.47
Δ = 35° 13' 41" (RT)
D = 4° 12' 24"
R = 1,362.00'
T = 432.42'
L = 837.42'
E = 67.00'
e = 4.20%
T.R. = 41'
S.E. Run = 87'
P.C. Sta. = 6332+25.05
P.T. Sta. = 6340+62.48

CURVE DATA

(NB C-D Road)

Prop. Curve P-NCD-NX-4
P.I. Sta. = 6328+76.78
Δ = 59° 05' 41" (RT)
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

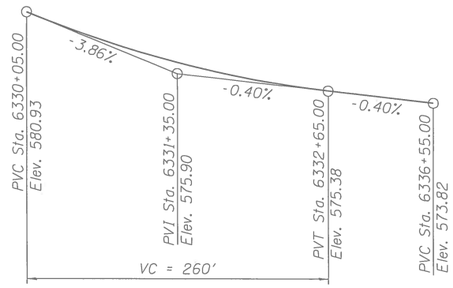
DESIGN SPECIFICATIONS

2017 AASHTO LRFD Bridge Design Specifications 8th Edition

DESIGN STRESSES

FIELD UNITS

f'c = 7,000 psi (Drilled Shafts)
f'c = 4,000 psi (All other concrete)
fy = 60,000 psi (Reinforcement)



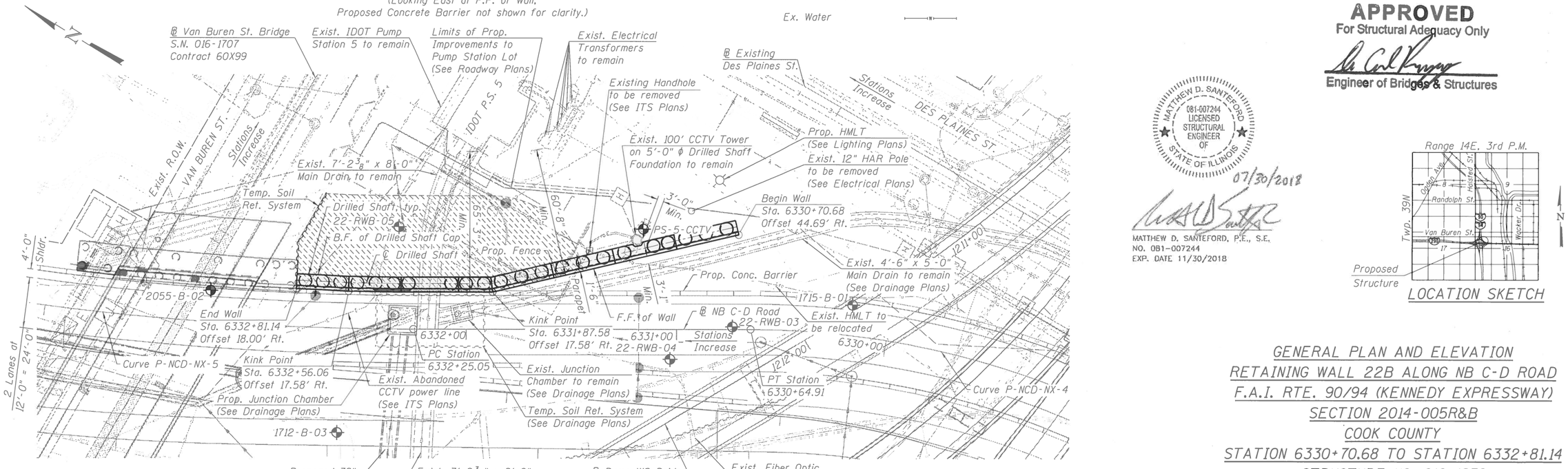
PROFILE GRADE

(℄ NB C-D Road)

LEGEND:

Ex. Chain Link Fence	— x — x —	Soil Boring	⌖
Combined Sewer		Existing Catch Basin	○
Electric	—E—	Proposed Catch Basin	●
Ex. Storm Sewer		Existing Manhole	◎
Prop. Storm Sewer		Proposed Manhole	◉
Ex. ITS Cable		Proposed Inlet	▬
Ex. Gas Line	—G—	Limits of Excavation and LCCF	▨
Ex. Fiber Optic	—FO—		
Ex. Water	—W—		

Notes:
Wall offsets are measured from the ℄ of Proposed NB C-D Road to the front face of cast-in-place fascia panels.
C denotes Construction Joint.
E denotes Expansion Joint.
F.F. denotes Front Face.
B.F. denotes Back Face.
Wall to be built along straight chords between beginning station, kink points, and end station.
There shall be a minimum clear distance of 2' between the proposed drilled shafts and the existing main drain.



PLAN

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures

MATTHEW D. SANTEFORD
081-007244
LICENSED STRUCTURAL ENGINEER OF
STATE OF ILLINOIS

07/30/2018

MATTHEW D. SANTEFORD, P.E., S.E.
NO. 081-007244
EXP. DATE 11/30/2018

LOCATION SKETCH

GENERAL PLAN AND ELEVATION
RETAINING WALL 22B ALONG NB C-D ROAD
F.A.I. RTE. 90/94 (KENNEDY EXPRESSWAY)
SECTION 2014-005R&B
COOK COUNTY
STATION 6330+70.68 TO STATION 6332+81.14
STRUCTURE NO. 016-1839

⚠1 REVISED SHEET 10-22-2018

8:14:35 AM
0161839-60X79-S001-GPE.dgn

Tran Systems	USER NAME = wjcolletti	DESIGNED - KRS	REVISED -
		CHECKED - DJG	REVISED -
	PLOT SCALE = 48.00 ' / in.	DRAWN - MJR	REVISED -
	PLOT DATE = 7/27/2018	CHECKED - KRS/WJC	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. S7-01 OF S7-18 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94	2014-005R&B	COOK	888	540
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			