



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

September 6, 2017

SUBJECT: FAI Route 74 (I-74)
Project NHPP-NHS-0074 (326)
Section (81-1)R-1 & 81-1(HBR, HBR-1, HBR-2)
Rock Island County
Contract No. 64E26
Item No. 51, September 22, 2017 Letting
Addendum B

NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised Schedule of Prices
2. Revised pages *iii* and *iv* of the Table of Contents to the Special Provisions
3. Revised pages 5-7, 13-14, 25-50, 77-82, 149-158, 191, and 200 of the Special Provisions
4. Deleted pages 201-212 of the Special Provisions
5. Added pages 308-328 to the Special Provisions
6. Revised sheets 9, 11-15, 17-19, 21, 23-29, 34, 35, 37-40, 50-53, 64-66, 68, 72, 75, 77, 80-81, 83, 84, 88, 90-91, 93-94, 96-98, 102-106, 108-109, 131, 133, 140-141, 205, 226, 230, 234, 239, 249, 416, 420, 479-480, 489, 503, 510-514, 533, 534, 584-586, 667, 684, 686, 711, 743, 745, 747, 749, 756, 760-765, 842, 1152-1153, 1220, 1222, 1223, 1225, 1254-1255, 1259-1261, 1285, 1897-1908
7. Added sheets 742A-742C to the Plans
8. Placed the Log of Contractors' Questions and Responses in the ADDITIONAL INFORMATION directory on the IDOT web site.

Prime contractors must utilize the enclosed material when preparing their bid and must include any changes to the Schedule of Prices in their bid.

Very truly yours,

Maureen M. Addis, P.E.
Engineer of Design and Environment

A handwritten signature in black ink, appearing to read 'Ted B. Walschleger P.E.' with a stylized flourish at the end.

By: Ted B. Walschleger, P. E.
Engineer of Project Management

cc: Kevin Marchek, Region 2, District 2; Tim Kell; D. Carl Puzey; Estimates
JW/ck

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT
 NUMBER - 64E26

State Job # - C-92-064-15

County Name - ROCK ISLAND - -

Code - 161 - -

District - 2 - -

Section Number - (81-1)R-1&81-1(HBR,HBR-1,HBR-2

Project Number
 NHPP-NHS-0074/326/
 *REVISED: SEPTEMBER 06, 2017

Route
 FAI 74

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X0301423	NOISE AB WALL GRD MT	SQ FT	24,127.000				
X0320050	CONSTRUCTN LAYOUT SPL	L SUM	1.000				
X0322281	W A VID DET SYS COM	EACH	1.000				
X0322352	SEEDING MOBILIZATION	EACH	3.000				
X0324013	NOISE AB WALL STR MT	SQ FT	1,478.000				
X0325482	REM EXIST ITS EQUIPMT	EACH	19.000				
X0326263	EQUIPMENT CABINET	EACH	3.000				
X0326382	CONC BARRIER BASE SPL	FOOT	1,567.000				
X0326649	LINEAR DELIN PANELS 6	EACH	180.000				
X0326677	REM HT CBL MEDIAN BAR	FOOT	6,781.000				
X0326687	REM HTC MED BAR TERM	EACH	9.000				
X0327006	ROADWAY LT POLE IO	EACH	81.000				
X0327139	AGG COLUMN GRND IMPRV	L SUM	1.000				
X0327748	REM & REPL ITS EQUIP	EACH	1.000				
X0327980	PAVMT MRKG REM WTR BL	SQ FT	94,552.000				

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X0566101	HMA CURB SPL	FOOT	33.000				
X0800004	AGG SUB IMPR 13 1/2	SQ YD	147,538.000				
X1200113	CB TB SPL T7G	EACH	2.000				
X1400227	ROADWAY LUM SPL IO	EACH	131.000				
X1400228	UNDERPASS LUM IO	EACH	18.000				
X1400229	MVDS COMM CABLE IO	FOOT	3,030.000				
X1400230	MVDS POWER CABLE IO	FOOT	1,515.000				
X1400231	45 STL ITS P BLK PT	EACH	1.000				
X1400250	POWER CONN EX METER	EACH	2.000				
X1400251	STL LUM MAA 15	EACH	2.000				
X1400253	UD 4#6 #8G XLP 1.25"P	FOOT	13,044.000				
X1400265	WRLSS LGHT CNTRL SYS	L SUM	1.000				
X1400266	CCTV CAMERA	CAL MO	60.000				
X2503110	MOWING SPL	ACRE	2.000				
X2810106	STONE RIPRAP CL A3 SP	SQ YD	8,792.000				

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X4400110	TEMP PAVT REMOVAL	SQ YD	24,142.000				
X4402805	ISLAND REMOVAL	SQ FT	1,097.000				
X5210140	HLMR BRG GUID EXP 350	EACH	6.000				
X5210160	HLMR BRG GUID EXP 450	EACH	16.000				
X5210325	HLMR BRNG FIXED 350K	EACH	14.000				
X5210335	HLMR BRNG FIXED 450K	EACH	8.000				
X5509900	ABANDON FILL SS	FOOT	211.000				
X5860110	GRANULAR BACKFILL STR	CU YD	1,593.000				
X6020090	MANOLE W/RESTRICT PLT	EACH	5.000				
X6029001	JUNCTION BOX N1	L SUM	1.000				
X6029002	JUNCTION BOX N2	L SUM	1.000				
X6029003	JUNCTION BOX N3	L SUM	1.000				
X6060500	CORRUGATED MED REM	SQ FT	9,068.000				
X6060714	CONC MEDIAN SPL	SQ FT	1,262.000				
X6061100	CONC MED TSB SPL	SQ FT	1,332.000				

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X6062700	CONC GUTTER TA SPL	FOOT	535.000				
X6370250	C BAR VAR X-SEC 42HT	FOOT	1,668.000				
X6370279	CONC BAR 1F 42HT SPL	FOOT	1,567.000				
X6370700	CONC BAR TRANS SPL	FOOT	323.000				
X6430120	REM IMP ATTEN NO SALV	EACH	1.000				
X7010216	TRAF CONT & PROT SPL	L SUM	1.000				
X7010410	SPEED DISPLAY TRAILER	CAL MO	36.000				
X7015005	CHANGEABLE MESSAGE SN	CAL DA	1,125.000				
X7040125	PIN TEMP CONC BARRIER	EACH	1,686.000				
X7260100	MILE POST MKR ASSY SP	EACH	4.000				
X7830070	GRV RCSD PVT MRKG 5	FOOT	23,671.000				
X7830072	GRV RCSD PVT MRKG 6	FOOT	50,974.000				
X7830074	GRV RCSD PVT MRKG 7	FOOT	14,950.000				
X7830076	GRV RCSD PVT MRKG 9	FOOT	14,425.000				
X7830078	GRV RCSD PVT MRKG 13	FOOT	863.000				

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X7830090	GRV RCSD PVT MRKG 25	FOOT	548.000				
X8100863	INTERCEPT EX CONDUIT	EACH	1.000				
X8110454	CON AT ST 1 SS	FOOT	10.000				
X8110458	CON AT ST 2 SS	FOOT	80.000				
X8140105	HANDHOLE SPL	EACH	3.000				
X8140115	HANDHOLE TO BE ADJUST	EACH	1.000				
X8360120	LIGHT POLE FDN SPL	EACH	12.000				
X8360310	LIGHT POLE FDN 30D SP	FOOT	18.000				
X8410102	TEMP LIGHTING SYSTEM	L SUM	1.000				
X8860400	DET LOOP SPL	FOOT	1,474.000				
Z0007124	STEEL RAILING SPL	FOOT	1,268.000				
Z0009900	CH LK FABRIC T1 4-0	FOOT	198.000				
Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000				
Z0018000	DRAINAGE SCUPPERS SPL	EACH	16.000				
Z0018800	DRAINAGE SYSTEM	L SUM	1.000				

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Z0024477	TUBULAR MARKER MAINT	EACH	21.000				
Z0025505	PROPERTY MARKERS	EACH	25.000				
Z0028415	GEOTECHNICAL REINF	SQ YD	213,028.000				
Z0030850	TEMP INFO SIGNING	SQ FT	443.000				
Z0046304	P UNDR FOR STRUCT 4	FOOT	4,525.000				
Z0049300	REF LAND SECT MARKERS	EACH	1.000				
Z0054400	ROCK FILL	CU YD	3,347.000				
Z0056608	STORM SEW WM REQ 12	FOOT	33.000				
Z0062456	TEMP PAVEMENT	SQ YD	20,851.000				
Z0073510	TEMP TR SIGNAL TIMING	EACH	3.000				
Z0076600	TRAINEES	HOUR	5,000.000		0.800		4,000.000
Z0076604	TRAINEES TPG	HOUR	5,000.000		15.000		75,000.000
20100110	TREE REMOV 6-15	UNIT	1,274.000				
20100210	TREE REMOV OVER 15	UNIT	212.000				
20100500	TREE REMOV ACRES	ACRE	2.750				

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20200100	EARTH EXCAVATION	CU YD	183,420.000				
20201200	REM & DISP UNS MATL	CU YD	100.000				
20700220	POROUS GRAN EMBANK	CU YD	142.000				
20800150	TRENCH BACKFILL	CU YD	17,931.000				
21101615	TOPSOIL F & P 4	SQ YD	115,907.000				
25000210	SEEDING CL 2A	ACRE	21.000				
25000310	SEEDING CL 4	ACRE	6.500				
25000400	NITROGEN FERT NUTR	POUND	2,485.000				
25000500	PHOSPHORUS FERT NUTR	POUND	2,485.000				
25000600	POTASSIUM FERT NUTR	POUND	2,485.000				
25000750	MOWING	ACRE	21.000				
25100125	MULCH METHOD 3	ACRE	36.500				
25100630	EROSION CONTR BLANKET	SQ YD	119,254.000				
25100900	TURF REINF MAT	SQ YD	13,875.000				
25200100	SODDING	SQ YD	714.000				

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25200200	SUPPLE WATERING	UNIT	6.400				
28000250	TEMP EROS CONTR SEED	POUND	109,500.000				
28000305	TEMP DITCH CHECKS	FOOT	3,090.000				
28000400	PERIMETER EROS BAR	FOOT	13,702.000				
28000500	INLET & PIPE PROTECT	EACH	24.000				
28000510	INLET FILTERS	EACH	234.000				
28100107	STONE RIPRAP CL A4	SQ YD	69.000				
28200200	FILTER FABRIC	SQ YD	10,708.000				
28500200	PREC BLOCK REV MAT	SQ YD	574.000				
30300001	AGG SUBGRADE IMPROVE	CU YD	16.000				
30300011	AGG SUBGRADE IMPROVE	TON	2,000.000				
30300112	AGG SUBGRADE IMPR 12	SQ YD	69,944.000				
31100800	SUB GRAN MAT A 9	SQ YD	2,095.000				
31200100	STAB SUBBASE 4	SQ YD	206,991.000				
40600295	P BIT MATLS TACK CT	POUND	13,583.000				

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40600825	P LEV BIND MM N50	TON	199.000				
40600845	P LEV BIND MM N90	TON	579.000				
40603535	P HMA SC "D" N50	TON	1,112.000				
40603570	P HMA SC "E" N90	TON	724.000				
42000060	WELDED WIRE REINF	SQ YD	220.000				
42000080	PVT CON PCC BR APP SL	SQ YD	4,008.000				
42000406	PCC PVT 9 1/4 JOINTD	SQ YD	36,000.000				
42000511	PCC PVT 10 1/2 JOINTD	SQ YD	154,317.000				
42001300	PROTECTIVE COAT	SQ YD	394,692.000				
42300300	PCC DRIVEWAY PAVT 7	SQ YD	635.000				
42400200	PC CONC SIDEWALK 5	SQ FT	31,822.000				
42400800	DETECTABLE WARNINGS	SQ FT	351.000				
44000100	PAVEMENT REM	SQ YD	108,671.000				
44000155	HMA SURF REM 1 1/2	SQ YD	10,890.000				
44000158	HMA SURF REM 2 1/4	SQ YD	9,729.000				

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44000161	HMA SURF REM 3	SQ YD	2,387.000				
44000200	DRIVE PAVEMENT REM	SQ YD	202.000				
44000500	COMB CURB GUTTER REM	FOOT	18,126.000				
44000600	SIDEWALK REM	SQ FT	28,480.000				
44001980	CONC BARRIER REMOV	FOOT	914.000				
44003100	MEDIAN REMOVAL	SQ FT	10,707.000				
44004000	PAVED DITCH REMOVAL	FOOT	3,022.000				
44004250	PAVED SHLD REMOVAL	SQ YD	40,055.000				
44200970	CL B PATCH T2 10	SQ YD	143.000				
44200974	CL B PATCH T3 10	SQ YD	130.000				
44200976	CL B PATCH T4 10	SQ YD	135.000				
44201294	CL B PATCH EXPAN JT	FOOT	232.000				
44201296	DEFORMED BARS EXP JT	EACH	238.000				
44201299	DOWEL BARS 1 1/2	EACH	500.000				
44213200	SAW CUTS	FOOT	1,782.000				

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44213204	TIE BARS 3/4	EACH	50.000				
48100500	AGGREGATE SHLDS A 6	SQ YD	4,757.000				
48203009	HMA SHOULDERS 3	SQ YD	2,095.000				
50100300	REM EXIST STRUCT N1	EACH	3.000				
50100400	REM EXIST STRUCT N2	EACH	1.000				
50100500	REM EXIST STRUCT N3	EACH	2.000				
50100600	REM EXIST STRUCT N4	EACH	1.000				
50102400	CONC REM	CU YD	606.000				
50104400	CONC HDWL REM	EACH	15.000				
50104650	SLOPE WALL REMOV	SQ YD	910.000				
50105220	PIPE CULVERT REMOV	FOOT	179.000				
50157300	PROTECTIVE SHIELD	SQ YD	12,356.000				
50200100	STRUCTURE EXCAVATION	CU YD	24,166.000				
50200450	REM/DISP UNS MATL-STR	CU YD	1,070.000				
50300225	CONC STRUCT	CU YD	5,202.000				

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50300255	CONC SUP-STR	CU YD	7,833.500				
50300260	BR DECK GROOVING	SQ YD	14,339.000				
50300285	FORM LINER TEX SURF	SQ FT	12,950.000				
50300300	PROTECTIVE COAT	SQ YD	22,584.000				
50500105	F & E STRUCT STEEL	L SUM	1.000				
50500505	STUD SHEAR CONNECTORS	EACH	67,995.000				
50800205	REINF BARS, EPOXY CTD	POUND	2,580,520.000				
50800515	BAR SPLICERS	EACH	1,246.000				
50800530	MECHANICAL SPLICERS	EACH	738.000				
51100100	SLOPE WALL 4	SQ YD	6,540.000				
51200957	FUR M S PILE 12X0.250	FOOT	10,232.000				
51201400	FUR STL PILE HP10X42	FOOT	587.000				
51201610	FUR STL PILE HP12X63	FOOT	3,492.000				
51201700	FUR STL PILE HP12X74	FOOT	2,473.000				
51201800	FUR STL PILE HP14X73	FOOT	5,480.000				

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51202000	FUR STL PILE HP14X102	FOOT	6,836.000				
51202305	DRIVING PILES	FOOT	29,100.000				
51203200	TEST PILE MET SHELLS	EACH	4.000				
51203610	TEST PILE ST HP12X63	EACH	2.000				
51203700	TEST PILE ST HP12X74	EACH	3.000				
51203800	TEST PILE ST HP14X73	EACH	4.000				
51204000	TEST PILE ST HP14X102	EACH	1.000				
51204650	PILE SHOES	EACH	214.000				
51500100	NAME PLATES	EACH	17.000				
52000110	PREF JT STRIP SEAL	FOOT	1,136.000				
52100010	ELAST BEARING ASSY T1	EACH	78.000				
52100020	ELAST BEARING ASSY T2	EACH	41.000				
52100510	ANCHOR BOLTS 3/4	EACH	100.000				
52100515	ANCHOR BOLTS 7/8	EACH	24.000				
52100520	ANCHOR BOLTS 1	EACH	264.000				

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52100530	ANCHOR BOLTS 1 1/4	EACH	96.000				
52200010	TEMP SHT PILING	SQ FT	2,450.000				
52200020	TEMP SOIL RETEN SYSTM	SQ FT	1,980.000				
52200100	FUR SOLDIER PILES HP	FOOT	8,821.000				
52200105	FUR SOLDIER PILES WS	FOOT	2,617.000				
52200200	DRILL SET SLD PI SOIL	CU FT	35,961.000				
52200250	UNTREATED TIMBER LAG	SQ FT	16,958.000				
52200500	MECH ST EARTH RET WL	SQ FT	72,233.000				
52200505	TMP MEC ST ERT RET WL	SQ FT	7,224.000				
54213657	PRC FLAR END SEC 12	EACH	3.000				
54213669	PRC FLAR END SEC 24	EACH	5.000				
54213675	PRC FLAR END SEC 30	EACH	1.000				
54213681	PRC FLAR END SEC 36	EACH	1.000				
54244805	INLET BOX 542501	EACH	1.000				
550A0340	STORM SEW CL A 2 12	FOOT	4,068.000				

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550A0360	STORM SEW CL A 2 15	FOOT	1,697.000				
550A0380	STORM SEW CL A 2 18	FOOT	2,853.000				
550A0400	STORM SEW CL A 2 21	FOOT	1,087.000				
550A0410	STORM SEW CL A 2 24	FOOT	1,669.000				
550A0420	STORM SEW CL A 2 27	FOOT	529.000				
550A0430	STORM SEW CL A 2 30	FOOT	172.000				
550A0450	STORM SEW CL A 2 36	FOOT	1,264.000				
550A0470	STORM SEW CL A 2 42	FOOT	311.000				
550A0480	STORM SEW CL A 2 48	FOOT	124.000				
550A0640	STORM SEW CL A 3 12	FOOT	26.000				
550A0660	STORM SEW CL A 3 15	FOOT	52.000				
550A0680	STORM SEW CL A 3 18	FOOT	374.000				
550A0710	STORM SEW CL A 3 24	FOOT	401.000				
550A0730	STORM SEW CL A 3 30	FOOT	25.000				
550A0750	STORM SEW CL A 3 36	FOOT	232.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
550A0980	STORM SEW CL A 4 18	FOOT	130.000				
550A1010	STORM SEW CL A 4 24	FOOT	161.000				
550A1300	STORM SEW CL A 5 30	FOOT	229.000				
550A1580	STORM SEW CL A 6 24	FOOT	47.000				
55100300	STORM SEWER REM 8	FOOT	114.000				
55100500	STORM SEWER REM 12	FOOT	2,637.000				
55100700	STORM SEWER REM 15	FOOT	121.000				
55100900	STORM SEWER REM 18	FOOT	896.000				
55101200	STORM SEWER REM 24	FOOT	1,431.000				
55101400	STORM SEWER REM 30	FOOT	347.000				
55101600	STORM SEWER REM 36	FOOT	284.000				
55101800	STORM SEWER REM 42	FOOT	120.000				
55102300	STORM SEWER REM 72	FOOT	198.000				
55200900	STORM SEWERS JKD 24	FOOT	346.000				
55201100	STORM SEWERS JKD 30	FOOT	87.000				

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58700300	CONCRETE SEALER	SQ FT	39,107.000				
59100100	GEOCOMPOSITE WALL DR	SQ YD	1,960.000				
60100060	CONC HDWL FOR P DRAIN	EACH	65.000				
60108200	PIPE UNDERDRAIN 6 SP	FOOT	1,852.000				
60108206	PIPE UNDERDR T 2 6	FOOT	63,113.000				
60218400	MAN TA 4 DIA T1F CL	EACH	35.000				
60218600	MAN TA 4 DIA T4F&G	EACH	9.000				
60219000	MAN TA 4 DIA T8G	EACH	3.000				
60219510	MAN TA 4 DIA T20F&G	EACH	28.000				
60221100	MAN TA 5 DIA T1F CL	EACH	10.000				
60221700	MAN TA 5 DIA T8G	EACH	3.000				
60222210	MAN TA 5 DIA T20F&G	EACH	2.000				
60223800	MAN TA 6 DIA T1F CL	EACH	6.000				
60224035	MAN TA 6 DIA T20F&G	EACH	4.000				
60224440	MAN TA 7 DIA T20F&G	EACH	2.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
60224446	MAN TA 7 DIA T1F CL	EACH	5.000				
60224448	MAN TA 7 DIA T8G	EACH	1.000				
60224464	MAN TA 8 DIA T20F&G	EACH	1.000				
60240301	INLETS TB T8G	EACH	8.000				
60240305	INLETS TB T10F&G	EACH	2.000				
60240324	INLETS TB T20F&G	EACH	65.000				
60240328	INLETS TB T24F&G	EACH	5.000				
60247160	DR STR T1 W/2 T20F&G	EACH	21.000				
60247170	DR STR T2 W/2 T22F&G	EACH	5.000				
60255500	MAN ADJUST	EACH	56.000				
60256910	MAN ADJ NEW T20F&G	EACH	2.000				
60260100	INLETS ADJUST	EACH	42.000				
60270050	DR STR T4 W/2 T20F&G	EACH	5.000				
60500040	REMOV MANHOLES	EACH	63.000				
60500050	REMOV CATCH BAS	EACH	9.000				

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60500060	REMOV INLETS	EACH	19.000				
60600095	CLASS SI CONC OUTLET	CU YD	38.500				
60600605	CONC CURB TB	FOOT	135.000				
60602800	CONC GUTTER TB	FOOT	1,149.000				
60603800	COMB CC&G TB6.12	FOOT	250.000				
60605000	COMB CC&G TB6.24	FOOT	17,759.000				
60607400	COMB CC&G TB9.24	FOOT	93.500				
60608250	COMB CC&G TM2.06	FOOT	2,574.000				
60608582	COMB CC&G TM4.24	FOOT	789.000				
60610400	COMB CC&G TM6.24	FOOT	854.000				
60618300	CONC MEDIAN SURF 4	SQ FT	12,648.000				
60619600	CONC MED TSB6.12	SQ FT	2,264.000				
60620000	CONC MED TSB6.24	SQ FT	2,370.000				
60624600	CORRUGATED MED	SQ FT	7,990.000				
63000001	SPBGR TY A 6FT POSTS	FOOT	6,362.500				

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63100045	TRAF BAR TERM T2	EACH	4.000				
63100070	TRAF BAR TERM T5	EACH	10.000				
63100085	TRAF BAR TERM T6	EACH	11.000				
63100167	TR BAR TRM T1 SPL TAN	EACH	5.000				
63200310	GUARDRAIL REMOV	FOOT	10,577.000				
63500105	DELINEATORS	EACH	117.000				
63700275	CONC BAR 2F 42HT	FOOT	4,618.000				
63700900	CONC BARRIER BASE	FOOT	6,609.000				
64200116	SHOULDER RUM STRIP 16	FOOT	34,185.000				
64300260	IMP ATTN FRD NAR TL3	EACH	3.000				
64301090	ATTENUATOR BASE	SQ YD	28.000				
64401100	HT CBL MEDIAN BARRIER	FOOT	317.000				
64401300	HT CBL MED BAR TERM	EACH	2.000				
66400105	CH LK FENCE 4	FOOT	8,309.000				
66600105	FUR ERECT ROW MARKERS	EACH	10.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
66700305	PERM SURV MKRS T2	EACH	4.000				
66900200	NON SPL WASTE DISPOSL	CU YD	31,000.000				
66900450	SPL WASTE PLNS/REPORT	L SUM	1.000				
66900530	SOIL DISPOSAL ANALY	EACH	5.000				
67000400	ENGR FIELD OFFICE A	CAL MO	45.000				
67100100	MOBILIZATION	L SUM	1.000				
70100410	TRAF CONT-PROT 701416	EACH	1.000				
70100420	TRAF CONT-PROT 701411	EACH	3.000				
70100800	TRAF CONT-PROT 701401	L SUM	1.000				
70100820	TRAF CONT-PROT 701451	L SUM	1.000				
70100825	TRAF CONT-PROT 701456	L SUM	1.000				
70102620	TR CONT & PROT 701501	L SUM	1.000				
70102625	TR CONT & PROT 701606	L SUM	1.000				
70102630	TR CONT & PROT 701601	L SUM	1.000				
70102634	TR CONT & PROT 701611	L SUM	1.000				

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70102635	TR CONT & PROT 701701	L SUM	1.000				
70102640	TR CONT & PROT 701801	L SUM	1.000				
70103815	TR CONT SURVEILLANCE	CAL DA	366.000				
70200100	NIGHT WORK ZONE LIGHT	L SUM	1.000				
70300100	SHORT TERM PAVT MKING	FOOT	3,663.000				
70300150	SHRT TRM PAVT MK REM	SQ FT	1,221.000				
70300210	TEMP PVT MK LTR & SYM	SQ FT	344.000				
70300220	TEMP PVT MK LINE 4	FOOT	397,481.000				
70300240	TEMP PVT MK LINE 6	FOOT	58,657.000				
70300250	TEMP PVT MK LINE 8	FOOT	16,602.000				
70300260	TEMP PVT MK LINE 12	FOOT	5,216.000				
70300280	TEMP PVT MK LINE 24	FOOT	27.000				
70400100	TEMP CONC BARRIER	FOOT	32,525.000				
70400200	REL TEMP CONC BARRIER	FOOT	19,362.500				
70600241	IMP ATTN TEMP NRN TL2	EACH	7.000				

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70600250	IMP ATTN TEMP NRD TL3	EACH	6.000				
70600251	IMP ATTN TEMP NRN TL3	EACH	1.000				
70600255	IMP ATTN TEMP FRN TL2	EACH	2.000				
70600260	IMP ATTN TEMP FRN TL3	EACH	6.000				
70600270	IMP ATTN TEMP FRW TL3	EACH	1.000				
70600322	IMP ATTN REL FRN TL2	EACH	2.000				
70600341	IMP ATTN REL NRN TL2	EACH	13.000				
70600352	IMP ATTN REL NRN TL3	EACH	4.000				
72000100	SIGN PANEL T1	SQ FT	2,722.000				
72000200	SIGN PANEL T2	SQ FT	600.000				
72000300	SIGN PANEL T3	SQ FT	8,836.000				
72400100	REMOV SIN PAN ASSY TA	EACH	25.000				
72400200	REMOV SIN PAN ASSY TB	EACH	138.000				
72400310	REMOV SIGN PANEL T1	SQ FT	1,190.000				
72400320	REMOV SIGN PANEL T2	SQ FT	537.000				

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72400330	REMOV SIGN PANEL T3	SQ FT	6,936.000				
72400600	RELOC SIN PAN ASSY TB	EACH	1.000				
72400730	RELOC SIGN PANEL T3	SQ FT	401.000				
72501000	TERMINAL MARKER - DA	EACH	5.000				
72600100	MILEPOST MKR ASSEMBLY	EACH	18.000				
72700100	STR STL SIN SUP BA	POUND	43,414.000				
72800100	TELES STL SIN SUPPORT	FOOT	542.000				
73000100	WOOD SIN SUPPORT	FOOT	3,379.000				
73100100	BASE TEL STL SIN SUPP	EACH	1.000				
73300200	OVHD SIN STR-SPAN T2A	FOOT	243.000				
73300300	OVHD SIN STR-SPAN T3A	FOOT	90.000				
73301600	OSS BUTFLY TY I-B-A	FOOT	14.600				
73302210	OSS CANT 3CA 3-0X7-0	FOOT	33.000				
73400100	CONC FOUNDATION	CU YD	168.600				
73400200	DRILL SHAFT CONC FDN	CU YD	165.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
73600100	REMOV OH SIN STR-SPAN	EACH	4.000				
73600200	REMOV OH SIN STR-CANT	EACH	1.000				
73700100	REM GR MT SIN SUPPORT	EACH	110.000				
73700200	REM CONC FDN-GR MT	EACH	110.000				
73700300	REM CONC FDN-OVHD	EACH	17.000				
78008300	POLYUREA PM T2 LTR-SY	SQ FT	1,001.000				
78008310	POLYUREA PM T2 LN 4	FOOT	24,768.000				
78008320	POLYUREA PM T2 LN 5	FOOT	53,404.000				
78008330	POLYUREA PM T2 LN 6	FOOT	15,500.000				
78008340	POLYUREA PM T2 LN 8	FOOT	14,701.000				
78008350	POLYUREA PM T2 LN 12	FOOT	4,402.000				
78008370	POLYUREA PM T2 LN 24	FOOT	548.000				
78100100	RAISED REFL PAVT MKR	EACH	1,044.000				
78100200	TEMP RAIS REF PVT MKR	EACH	27.000				
78200005	GRDRAIL REF TYPE A	EACH	73.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
78200010	BARR WALL REF TYPE B	EACH	170.000				
78300200	RAISED REF PVT MK REM	EACH	212.000				
80400100	ELECT SERV INSTALL	EACH	2.000				
81028200	UNDRGRD C GALVS 2	FOOT	33.000				
81028320	UNDRGRD C PVC 1	FOOT	6.000				
81028350	UNDRGRD C PVC 2	FOOT	1,882.000				
81028370	UNDRGRD C PVC 3	FOOT	1,092.000				
81028390	UNDRGRD C PVC 4	FOOT	241.000				
81028750	UNDRGRD C CNC 2	FOOT	13,905.000				
81100300	CON AT ST 1 GALVS	FOOT	805.000				
81200210	CON EMB STR 1 PVC	FOOT	16.000				
81200230	CON EMB STR 2 PVC	FOOT	13,523.000				
81300220	JUN BX SS AS 6X6X4	EACH	11.000				
81300530	JUN BX SS AS 12X10X6	EACH	6.000				
81300550	JUN BX SS AS 12X12X6	EACH	6.000				

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81300986	JUN BX SS ES 8X24X10	EACH	2.000				
81400100	HANDHOLE	EACH	30.000				
81400300	DBL HANDHOLE	EACH	1.000				
81603040	UD 2#6 #8G XLP USE 1	FOOT	2,304.000				
81702100	EC C XLP USE 1C 12	FOOT	12,070.000				
81702110	EC C XLP USE 1C 10	FOOT	4,125.000				
81702120	EC C XLP USE 1C 8	FOOT	1,935.000				
81702130	EC C XLP USE 1C 6	FOOT	22,101.000				
81702140	EC C XLP USE 1C 4	FOOT	51,032.000				
82500300	LT CONT PM 240V 30	EACH	1.000				
82500370	LT CONT BASEM 240V200	EACH	1.000				
83600300	LIGHT POLE FDN 30D	FOOT	50.000				
83600357	LP F M 15BC 8" X 8'	EACH	44.000				
83800505	BKWY DEV COU AL SKIRT	EACH	100.000				
84200600	REM LT U NO SALV	EACH	128.000				

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84200804	REM POLE FDN	EACH	99.000				
84500110	REMOV LIGHTING CONTR	EACH	3.000				
84500120	REMOV ELECT SERV INST	EACH	3.000				
84500130	REMOV LTG CONTR FDN	EACH	3.000				
85000200	MAIN EX TR SIG INSTAL	EACH	2.000				
85700200	FAC T4 CAB	EACH	1.000				
86200200	UNINTER POWER SUP STD	EACH	1.000				
87301215	ELCBL C SIGNAL 14 2C	FOOT	942.000				
87301225	ELCBL C SIGNAL 14 3C	FOOT	962.000				
87301245	ELCBL C SIGNAL 14 5C	FOOT	2,879.000				
87301255	ELCBL C SIGNAL 14 7C	FOOT	299.000				
87301405	ELCBL C LEAD 16 1PR	FOOT	1,104.000				
87301815	ELCBL C SERV 6 3C	FOOT	47.000				
87301900	ELCBL C EGRDC 6 1C	FOOT	554.000				
87502510	TS POST GALVS 17	EACH	2.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
87602000	PED PUSHBUTTON POST	EACH	1.000				
87700160	S MAA & P 24	EACH	1.000				
87700170	S MAA & P 26	EACH	1.000				
87700200	S MAA & P 32	EACH	1.000				
87700210	S MAA & P 34	EACH	1.000				
87800100	CONC FDN TY A	FOOT	6.000				
87800150	CONC FDN TY C	FOOT	3.000				
87800400	CONC FDN TY E 30D	FOOT	20.000				
87800415	CONC FDN TY E 36D	FOOT	22.000				
87900200	DRILL EX HANDHOLE	EACH	5.000				
88040070	SH P LED 1F 3S BM	EACH	7.000				
88040090	SH P LED 1F 3S MAM	EACH	7.000				
88040150	SH P LED 1F 5S BM	EACH	1.000				
88040160	SH P LED 1F 5S MAM	EACH	1.000				
88102825	PED SH P LED 1F BM CT	EACH	4.000				

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88200110	TS BACKPLATE LOUVERED	EACH	16.000				
88800100	PED PUSH-BUTTON	EACH	4.000				
89502375	REMOV EX TS EQUIP	EACH	1.000				

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THIS IS THE TOTAL BID

\$ _____

NOTES:

- 1. Each PAY ITEM should have a UNIT PRICE and a TOTAL PRICE.**
- 2. The UNIT PRICE shall govern if no TOTAL PRICE is shown or if there is a discrepancy between the product of the UNIT PRICE multiplied by the QUANTITY.**
- 3. If a UNIT PRICE is omitted, the TOTAL PRICE will be divided by the QUANTITY in order to establish a UNIT PRICE.**
- 4. A bid may be declared UNACCEPTABLE if neither a unit price nor a total price is shown.**

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Flaggers:

Flagger at Sideroads and Commercial Entrances:

Effective: August 1, 2011

Revised: December 29, 2015

Flaggers shall comply with all requirements and signaling methods contained in the Department's "Traffic Control Field Manual" current at the time of letting. The flagger equipment listed for flaggers employed by the Illinois Department of Transportation shall apply to all flaggers.

All workers and flaggers shall wear ANSI Class E pants and an ANSI Class 2 vest that in combination meet the requirements of ANSI/ISEA 107-2004 for Conspicuity Class 3 garments during hours of darkness.

In addition to the flaggers shown on applicable standards, on major sideroads, flaggers shall be required on all legs of the intersection. Major sideroads for this project shall be 12th Avenue, 7th Avenue, 19th Street, and Avenue of the Cities.

In addition to the flaggers shown on applicable standards, a flagger shall be required on high volume commercial entrances listed below. High volume commercial entrances for this project shall be None.

When the mainline flagger is within 200 feet of an intersection, the sideroad flagger shall be required.

When the road is closed to through traffic and it is necessary to provide access for local traffic, all flaggers as shown on the applicable standards will be required. No reduction in the number of flaggers shall be allowed.

Revise Article 701.20(i) of the Standard/Supplemental Specifications to read:

"Signs, barricades, other traffic control devices, or flaggers required by the Engineer, over and above those shown in the contract documents, will be paid for according to Article 109.04."

Pavement Marking:

Temporary Pavement Markings on all ramps and I-74 shall be two coats of paint or as directed by the Resident Engineer. Temporary Pavement Markings on 11th Avenue A, 12th Avenue, 7th Avenue, 19th Street and Avenue of the Cities shall be one coat of paint or as directed by the Engineer.

Short term pavement markings on a milled surface shall be paint.

Temporary pavement markings shall not be included in the cost of the standard rather it shall be paid for separately at the contract unit prices of specified temporary pavement marking items.

Revised 9-6-17

Changeable Message Signs:

A changeable message sign shall be in place for a minimum of 2 weeks (10 business days) prior to the start of work, for a stage switch, for a major change in traffic patterns, new signals, and prior to beginning construction. Locations for change in traffic patterns have been shown on the plan sheets for the following locations:

- Southbound 19th Street approaching 12th Avenue intersection
- Southbound 19th Street approaching 7th Avenue intersection
- Westbound 7th Avenue approaching 19th Street intersection
- Eastbound 7th Avenue approaching 19th Street intersection
- Westbound Avenue of the Cities approaching NB 19th Street intersection
- Eastbound Avenue of the Cities approaching NB 19th Street intersection
- Northbound 19th Street (one-way) near Avenue of the Cities intersection
- Westbound 12th Avenue in advance of the 19th Street intersection
- Eastbound 12th Avenue in advance of the 19th Street intersection
- Stage 1-0 through 1-4 Eastbound I-74 and Westbound I-74
- Winter 1 westbound I-74
- Stage 2 Westbound I-74
- Winter 2 Westbound I-74
- Stage 3-1, 3-2, and 3-3 Westbound I-74

Additional changeable message signs may be required by the Resident Engineer.

Payment for changeable message signs that are not shown in an applicable Traffic Control and Protection Standard shall be paid for at the contract unit price per calendar day, or portion thereof, as CHANGEABLE MESSAGE SIGN.

Highway Standards Application:

Traffic Control and Protection Standard 701411:

Method of Measurement. Each ramp will be measured as a separate location and will be considered as a separate location for payment, regardless of the number of installations at that ramp.

This work shall be included in the contract unit price per Each for TRAFFIC CONTROL AND PROTECTION, STANDARD 701411.

Interstates and multi-lane divided highways: The Contractor shall equip all machinery and vehicles with flashing amber lights, installed so the illumination is visible from all directions.

The median crossover will generally not be available for Contractor use. It may be used only when both lanes adjacent to the median are closed. Under no condition shall left turn lanes be made to cross the median from lanes open to traffic. Where interchanges are not available, the Contractor shall only be allowed to turn around where left turn lanes are present.

Parking of personal vehicles within the interstate right-of-way will be strictly prohibited. Parking of construction equipment within the right-of-way will be permitted only at locations approved by the Engineer.

Traffic Control and Protection Standard 701416: This work shall be done according to Section 701 of the Standard Specifications and the Typical Application of Traffic Control Devices for Highway Construction, Standard 701416, Stage 3 staging plans and as specified herein.

This work shall be included in the contract unit price per Each for TRAFFIC CONTROL AND PROTECTION, STANDARD 701416.

Traffic Control and Protection Standard 701428: This work shall be done according to Section 701 of the Standard Specifications and the Typical Application of Traffic Control Devices for Highway Construction, Standard 701428, and as specified herein.

This standard shall be used, regardless of the ADT on the roadway.

This work will not be measured for payment.

Traffic Control and Protection Standards 701456: This work shall be done according to Standard 701456 and Section 701 of the Standard Specifications. Flagger is required only when actively working on the ramp.

This work shall be included in the contract unit price per Lump Sum for TRAFFIC CONTROL AND PROTECTION, STANDARD 701456.

Chromaticity Limits for Orange

	x	y	x	y	x	y	x	y	Total Luminance Factor Y (%) Min
Fluor Orange	0.595	0.351	0.645	0.355	0.583	0.416	0.542	0.403	30

The TEMPORARY LINEAR DELINEATION PANELS will not be paid for separately, but shall be included in the cost of TEMPORARY CONCRETE BARRIER.

There shall be no I-74 Lane Closures allowed at the following times when not staged as shown in the plans:

- Sunday: 10:00 am to 8:00 pm
- Monday through Friday: 6:00 am to 7:00 pm
- Saturday: 9:00 am to 6:00 pm

There shall be no Avenue of the Cities Lane Closures allowed at the following times when not staged as shown in the plans:

- During Stage 2 mainline detour
- Monday through Friday: 6:00 am to 9:00 am and 4:00pm to 6:00pm

Additional restrictions due to local events or inclement weather may also be imposed. Any additional lane closures on local roads other than what is shown on the plans shall be approved by Traffic Operations. Work hour restrictions may be impacted.

The following are requirements for the start dates of the I-74 traffic shifts:

Stage 1

Lane shifts and/or closures of Avenue of the Cities ramps and I-74 south of Avenue of the Cities, as shown in the plans, shall start no earlier than 12:01a.m., April 1, 2018.

Stage 2

Westbound I-74 shall be closed as shown in the plans, with detour and alternate route signage in place, no earlier than 12:01a.m., April 1, 2019, and no later than 2:00 p.m., April 1, 2019 or when the Traffic Operations Section has notified the Resident Engineer or personnel on the project..

Stage 3

Eastbound and Westbound I-74 traffic shall be shifted to the counterflow configuration on the new Westbound alignment as shown in the plans, with detour and alternate route signage in place, no earlier than 12:01a.m., April 1, 2020, and no later than 2:00 p.m., April 1, 2019 or when the Traffic Operations Section has notified the Resident Engineer or personnel on the project.

The Contractor shall coordinate with IDOT Traffic Operations (DOT.D2.TrafficNotice@illinois.gov), City of Moline, and the Quad Cities Marathon Director (<http://gcmarathon.org/>) to determine the potential for accommodating the marathon route each year during construction. Typically, the marathon is held in late September of each year. The 2017 race date is scheduled for September 24, 2017. Race dates are not yet scheduled at the time of letting for years 2018 through 2020. Accommodating the marathon route will be dependent on the timing of the marathon, construction progress, and work zone configuration.

Maintenance of Traffic:

The Contractor shall be required to notify the City of Moline, emergency response agencies (i.e.: fire, ambulance, police), school bus companies, MetroLINK and the Department of Transportation (Bureau of Project Implementation) regarding any changes in traffic control.

The Contractor shall submit maintenance of local traffic plan to the Engineer at the preconstruction meeting telling how local access will be maintained at each access location. It will show which locations will be completely closed, and which locations will be constructed utilizing Traffic Control Standards, and/or barricades. This traffic plan shall be approved by the Engineer before any roadway is closed to traffic.

Placing and removing pavement marking shall be completed using Traffic Control and Protection Standard 701311, 701401, 701426, 701427 or 701701.

The partial ramp closures shall be completed using Traffic Control and Protection Standard 701456 and as shown on the Staging Plans.

PRECAST BLOCK REVETMENT MAT

Effective: January 1, 2015

Revised: December 29, 2015

This work shall consist of furnishing and placing Precast Block Revetment Mat, as a permanent scour countermeasure in accordance with the grades, details and design dimensions as shown on the plans.

This work shall be completed according to Section 285 of the Standard Specifications and as specified herein:

The manufacturer shall use the alignment and cross-section of the channel, the design depth of flow, channel slope and design velocity provided in the plans to design the block size, block weight, block configuration, and mat configuration utilizing HEC 23 criteria.

The manufacturer shall be required to submit the design for the block mat, based on the existing field conditions and the hydraulic information for the various plan locations provided in the contract plans to the Resident Engineer, four weeks prior to delivery of the block to the jobsite.

Block used above normal pool elevation shall be open-cell to allow for vegetation growth. The block used below normal pool elevation shall be closed-cell block, unless otherwise noted in the plans.

Revised 9-6-17

CONSTRUCTION PROGRESS SCHEDULE

Effective June 16, 2017

General.

- A.** Time is of the essence in this Contract. It may be necessary for the Contractor to work longer hours, use additional crews, and work during weekends in order to complete the work within the required time limit. The Contractor shall submit a Critical Path Method (CPM) Progress Schedule as described below for the Engineer's approval before the work can be started.
- B.** The Contractor will not be allowed any compensation for working longer hours or using extra shifts; and working on weekends or during Holidays; working during winter months, etc. to meet the specified Completion Date, except in cases of extra work approved by the Engineer that effects the controlling operation. In such cases where extra work is associated with a controlling operation, the contractor shall separate out the added costs of the extra work that keep the project on the Target Schedule when submitting extra work prices. If the contractor does not meet the specified Completion Date after this extra work is approved, the Contractor will reimburse the Contract Authority for the added costs paid on the extra work associated with keeping the project on schedule.
- C.** This work shall consist of preparing, revising and updating a detailed progress schedule based upon the Critical Path Method (CPM). This work shall also consist of performing time impact analysis of the progress schedule based upon the various revisions and updates as they occur.
- D.** The CPM progress schedule shall be used for coordination and monitoring of all work under the contract including all activities of subcontractors, vendors and suppliers. The CPM progress schedule shall include provisions for traffic control, staging, and other events to complete the contract work. This schedule shall be the Contractor's intended working schedule and shall be used to plan, organize and execute the work; record and report actual performance and progress; and forecast remaining work.

Submittal of a CPM Progress Schedule.

A. Submitting the Preliminary and Baseline CPM Progress Schedules.

The successful bidder for the project shall submit a Preliminary CPM progress schedule to the Contracts Engineer within 14 calendar days of the award of the contract. Due to the need for starting Pre-Stage work in a timely manner, the Preliminary baseline schedule is shall meet all requirements detailed below for the Pre-Stage part of the schedule only, while the remainder of the contact work may be presented in lesser detail. A Baseline CPM Schedule for the entire contract time shall be submitted to the Engineer within 30 calendar days after the Engineer's approval of the preliminary schedule.

B. Submittal Format

Any CPM progress schedule submittal – baseline, updated, revision or recovery – shall be in electronic form acceptable to the Engineer, as a pdf file including the complete CPM progress schedule and the current narrative report. In addition to the PDF submittal file specified, an electronic copy of the CPM progress schedule in the original software format shall be submitted for the Engineer's use in reviewing electronically.

C. Compliance with Intended Work.

Upon receipt of the CPM progress schedule, the schedule will be reviewed for compliance with the intended work and other requirements specified in the contract documents.

Review and Approval Process.

1. For the Preliminary Schedule only, the Engineer will notify the Contractor in writing, within three calendar days after receiving the preliminary CPM progress schedule submittal if the schedule is approved or if any corrections or revisions are required. For any other CPM progress schedule submittal (baseline, revision, update or recovery), the Engineer will notify the Contractor in writing, within 14 calendar days after receiving any CPM progress schedule submittal (baseline, revision, update or recovery), if the schedule is approved or if any corrections or revisions are required. If corrections or revisions are required to the submitted CPM progress schedule, the Contractor shall submit the revised CPM progress schedule to the Engineer within 7 calendar days (typically, but 3 calendar days for the Preliminary Schedule) after receiving the Engineer's request for corrections or revisions.
2. Submittals that are required to be revised and resubmitted shall have the revisions clouded or annotated to designate revisions. Resubmittals made in accordance with this provision will have a review time as stated above. Resubmittals that are not in accordance with this provision will be allowed a review time of 30 calendar days.
3. If the Contractor fails to submit a revised baseline CPM progress schedule as stated above, the Contractor will not be allowed to begin work on site until an acceptable Preliminary CPM progress schedule has been submitted and approved. The Completion date(s) will not be changed, and the Department will not pay for any accelerated work required to make up time lost for this reason. When the baseline CPM progress schedule is approved it will be designated as the "Target Schedule" and shall only be changed as specified below.

Requirements for the CPM Progress Schedule.

The CPM progress schedule shall be developed using the latest edition of Primavera project management software, published by Primavera Systems, Inc. or similar software that is 100% compatible with the latest edition of Primavera project management software and approved by the Engineer. The CPM progress schedule submitted shall be a Gantt chart with a tabular data report for each activity and accompanied by a narrative report.

A. Format.

The electronic schedule format shall contain the following on each page printed:

1. Project Name
2. Template: Construction.
3. Type and edition of software
4. Planning Unit: Days (calendar or working).
5. Number/Version: Original or update number.
6. Start Date of contract work
7. Completion Date as specified in contract documents.
8. Project Title: Contract number.
9. Company Name: Contractor's name.
10. Submittal date.
11. Data date.
12. Page number.

B. Calendars for Completion Date Contracts.

The base calendar shall show the proposed working days of the week and the proposed number of work hours per day.

C. Schedule Development.

1. The detailed schedule shall incorporate the entire contract time. The construction time, as determined by the CPM progress schedule, for the entire contract or any milestone, shall not exceed the specified contract period. The minimum number of activities shown on the schedule shall represent the work incorporating the bid items whose aggregate contract value constitutes 80% of the total contract value. These bid items shall be determined by starting with the bid item with the largest individual contract value and adding subsequent bid item contract values in descending order until 80% of the contract value has been attained. Any additional activities required to complete the contract beyond 95% and any additional activities required to maintain the continuity of the schedule logic shall also be shown.
2. The schedule shall be limited exclusively to Finish-to-Start (FS) relationships. Start-to-Start (SS), Start-to-Finish (SF) or Finish-to-Finish (FF) relationships will not be allowed. Activity constraints shall not be used without the approval of the Engineer. Lead or lag duration between schedule activities should generally be avoided and any employed shall be brought to the attention of the Engineer in the narrative.
3. The Contractor shall take account in the schedule for any critical closure periods and limitations of operations specified in Article 107.09 of the Standard Specifications or the contract documents.
4. Any work item that depends on work in another contract that is included in the I-74 over the Mississippi River Corridor Project (I-74 Project) shall be scheduled in cooperation with the other Contractor. Likewise, any work item upon which work in another I-74 Project contract depends shall be scheduled in cooperation with the other Contractor. All such interdependent work items shall be identified on the CPM progress schedule. Approval of any submittal of the CPM progress schedule will be contingent upon interdependent work items being appropriately coordinated.

5. In cases where interdependent contracts are awarded at different times, parts of the CPM progress schedule of the first contract that include work that is interdependent with an adjacent project or contract that will be awarded later, will be given conditional approval based on the Engineer's judgment. The CPM progress schedule of the first contract shall be reviewed in conjunction with the CPM progress schedule of the second contract, at the time when the CPM Schedule of the second contract is being developed, and revised as necessary, based on cooperative effort between the Contractors. The revised CPM progress schedule shall be submitted to the Engineer for approval. CPM progress schedule updates and revisions throughout the duration of the contract shall be coordinated with the CPM progress schedules of all adjacent contracts with interdependent work.
6. The tables in Appendix A of these Special Provisions show interdependent work that must be coordinated between I-74 Projects and Contracts. Items may be added to these tables, subject to agreement of the other affected Contractor and subject to the approval of the Engineer, if such additions contribute to the efficient progress of the I-74 Project. If any interdependent work has been omitted from the tables in Appendix A, such omission does not release the Contractors from the responsibility of coordinating such work.

D. Schedule Presentation - Gantt chart.

1. The following shall be included for each activity in the graphic part of the schedule in Gantt chart format:
 - a. Activity Identification (ID) Numbers. The Contract shall utilize numerical designations to identify each activity. Numbering of activities shall be in increments of not less than ten digits.
 - b. A description of the work represented by the activity (maximum forty-five characters). The use of descriptions referring to a percentage of a multi-element item (i.e., construct deck 50%) shall not be used. Separate activities shall be included to represent different elements of multi-element items (i.e., forms, reinforcing, concrete, etc.). Multiple activities with the same work description shall include a location as part of the description.
 - c. Proposed activity duration shall be shown in whole days. The Contractor shall provide production rates to justify the activity duration. Schedule duration shall be contiguous and not interruptible.
 - d. The sequence and interdependence of activities required for the prosecution of the work. The schedule logic shall not be violated.
 - e. The critical path to milestone and contract completion. Only one controlling item shall be designated at any point in time on the schedule
2. Activities shall be broken down such that each activity encompasses a single operation or tightly-integrated operations in a single, contiguous and continuous area of the project, with no activity exceeding \$200,000 without the consent of the Engineer.

3. Dates shall be included for the following:
 - a. Starting and completing the various stages of the work, including milestones identified in the contract document.
 - b. Placing material orders, delivery of materials and equipment.
 - c. Preparation, submittal and approval of all required submittals to the Contracting Authority
 - d. Procuring material and equipment furnished by I-74 Project supply contracts.
 - e. Interdependent activities performed by other contractors.
 - f. All work activities and field construction operations.
 - g. Equipment installation, testing and balancing.
4. Total Float shall be calculated as finish float. The schedule shall be calculated using retained logic. The Contractor shall not sequester float by calendar manipulations or extended duration. Float is not for the exclusive use or benefit of either the Department or the Contractor.
5. There shall be a legend with the CPM progress schedule defining all abbreviations, terms, or symbols used.

E. Schedule Presentation - Tabular Data Reports.

1. A tabular data report is required with each progress schedule submittal and may be printed on the same pages as the Gantt chart.
2. The heading of each tabular data report, if not printed on the same pages as the Gantt chart, shall include, but not be limited to, the project name, contract number, Contractor name, report (submittal) date, data date, report title and page number.
3. Each of the tabular reports shall contain the following minimum information for each activity:
 - a. Activity ID
 - b. Activity Description
 - c. Original Duration (calendar day/working day)
 - d. Remaining Duration (calendar day/working day)
 - e. Intended production rate
 - f. Early Start Date
 - g. Late Start Date
 - h. Early Finish Date
 - i. Late Finish Date
 - j. Percent Complete
 - k. Total Float
 - l. Calendar ID
 - m. Subcontractor identity if activity is performed by a subcontractor

F. Narrative Report.

The Contractor shall prepare a written narrative report to be included in each CPM progress schedule submittal.

1. Baseline Narrative.

The narrative report submitted with the baseline CPM progress schedule shall include the following information:

- a. Description of the critical path.
- b. Identification of potential problem areas.
- c. Proposed solutions to potential problems.
- d. Detailed description of the Contractors approach to weather days, including an estimated number of weather days for each month of the contract, and an explanation of how they are incorporated in the CPM Progress Schedule.

A weather day is defined as a day when adverse weather including rain, snow, wind, flood, extreme heat, and the results thereof, such as inaccessibility or non-workability of materials, do not allow productive work on the critical path, if that work would otherwise be performed by the Contractor on that day. Adverse weather days will not be considered justification for an extension of the contract time and thus must be planned for.

2. Update Narrative.

The narrative report submitted with each updated CPM progress schedule shall highlight the progress during the past update period. This written report must include the following information:

- a. Summary of work accomplished during the past update period.
- b. Contract milestone comparison chart, if applicable.
- c. Analysis of critical path.
- d. Analysis of time lost/gained during the update period.
- e. Identification of problem areas.
- f. Recommended solutions to current problems.
- g. Actual number of weather days during the update period compared to the baseline estimate. Documentation of weather days is for information only, and shall not be considered as justification for an extension of the contract time.

3. Recovery or Revision Narrative.

The narrative report submitted with any Recovery or Revised CPM progress schedule shall explain the reason(s) for the changes and how the submitted changes address the reason(s). This written report must include the following information:

- a. Summary reason(s) for the Recovery or Revised CPM progress schedule.
- b. Contract milestone comparison chart, if applicable.
- c. Analysis of critical path.
- d. Summary of how the Recovery or Revised CPM progress schedule resolves the issues/reasons requiring the submittal.

Use of CPM Progress Schedule in Construction Operations.

- A. No contract work shall be done without a CPM progress schedule approved by the Engineer. If the CPM progress schedule is approved, with parts of the CPM Progress Schedule conditionally approved, in accordance with Article .04, C of these Special Provisions, contract work may proceed.
- B. If the Contractor deviates from the current approved CPM progress schedule by not following the logical sequence of the critical path, payment will be withheld for the bid items for the affected activities until the Contractor submits a revised CPM progress schedule and this schedule is approved by the Engineer.
- C. Updates.
During the life of the project, the Contractor shall submit an updated CPM progress schedule monthly.
 - 1. All updates shall be plotted against the Target Schedule. The Contractor shall not make any changes to the original duration, activity relationships, constraints or costs, and shall not add or delete activities, or alter the Target Schedule's logic when updating the schedule.
 - 2. The updated information will include the original schedule detail and the following additional information:
 - a. Actual start dates
 - b. Actual finish dates
 - c. Activity percent completion
 - d. Remaining duration of activities in progress
 - e. Identified or highlighted critical activities
 - 3. The Engineer shall withhold progress payments if the Contractor does not submit scheduled updates as required.
 - 4. Upon receipt of the updated CPM progress schedule, the Engineer will review the schedule for conformance with the Contract Documents and degree of detail. The Engineer, within 14 calendar days after receipt of the updated CPM progress schedule and supporting documents, will approve or reject it with written comments. If the updated CPM progress schedule is rejected, the Contractor must submit a revised updated CPM progress schedule within seven calendar days after the date of rejection.
 - 5. The updated progress schedule must accurately represent the Project's current status.

D. Revisions.

Revisions to the Target Schedule may be initiated by a proposal by the Contractor or by direction from the Engineer.

1. Contractor Changes to the Target Schedule.

The Contractor shall comply with the following requirements regarding proposed changes to the Target Schedule:

- a. If the Contractor proposes to make any changes in the Target Schedule, the Contractor shall notify the Engineer in writing, stating the reasons for the change, identifying each changed activity (including duration and interrelationships between activities) and providing a submittal including compact discs and printed copies of the proposed revised schedule. Every effort must be made by the Contractor to retain the original Activity ID numbers.
- b. The Engineer has the authority to approve or reject the proposed change(s) in the Target Schedule and shall do so in writing within 14 calendar days after receipt of the Contractor's submittal. If the Engineer approves the change in the Target Schedule, all future monthly updates will be plotted against the new Target Schedule.
- c. If the Engineer approves a portion of the change to the Target Schedule, the Contractor shall submit a revised schedule incorporating such change(s) within seven calendar days after the partial approval along with a written description of the change(s) to the schedule.

2. Engineer Changes to the Target Schedule

- a. The Engineer may direct the Contractor to revise the approved baseline CPM progress schedule. Reasons for such direction may include, are limited to the following: (1) changes in the work, (2) re-phasing of the Project or any phase, (3) a change in the duration of the Project or phase, and (4) acceleration of the Project or phase.
- b. The Engineer will direct the Contractor to provide a revised CPM schedule in writing.
- c. The Contractor shall submit the revised CPM progress schedule within ten calendar days of receipt of the Engineer's written direction.
- d. The Engineer has the authority, in its sole discretion, to approve or reject the revised CPM progress schedule and will do so in writing within fourteen calendar days after receipt of the Contractor's submittal. If the Engineer approves the revised CPM progress schedule, such schedule will be designated the new "Target Schedule".
- e. If the Engineer approves a portion of the change to the Target Schedule, the Contractor shall submit a revised schedule incorporating such change(s) within seven calendar days after the partial approval along with a written description of the change(s) to the schedule.

E. Recovery.

1. The Contractor shall maintain an adequate work force and the necessary materials, supplies and equipment to meet the Target Schedule. In the event that the Contractor, in the judgment of the Engineer, is failing to meet the Target Schedule including any Contract milestones, the Engineer will direct the Contractor, in writing, to submit a recovery schedule.
 2. The Contractor shall submit the recovery schedule within ten calendar days of receipt of the Engineer's written direction.
 3. The recovery schedule shall set forth a plan to eliminate the schedule slippage (negative float). The plan must be specific to show the methods to achieve the recovery of time, i.e. increasing staffing, working overtime, weekend work, employing multiple shifts. All costs associated with implementing the recovery schedule shall be borne by the Contractor.
 4. Upon receipt of the CPM recovery schedule, the Engineer will review the schedule for conformance with the Contract Documents and degree of detail. The Engineer will approve the schedule or reject it with written comments within fourteen (14) calendar days of receipt of the recovery schedule. If the Engineer approves the CPM recovery schedule, such schedule will be designated the new Target Schedule.
 5. If the CPM recovery schedule is rejected, the Contractor must submit a revised CPM recovery schedule within seven calendar days of the date of rejection.
- F. Acceptance or approval of any progress schedule by the Engineer shall not be construed to imply approval of any particular method of construction, sequence of construction, any implied or stated rate of production. Acceptance will not act as a waiver of the obligation of the Contractor to complete the work in accordance with the contract proposal, plans and specifications, modify any rights or obligations of the Department as set forth in the contract, nor imply any obligation of a third party. Acceptance shall not be construed to modify or amend the contract or the time limit(s) therein. Acceptance shall not relieve the Contractor of the responsibility for the accuracy of any of the information included on the schedule. Failure of the Contractor to include in the schedule any element of work required for the performance of the contract, any sequence of work required by the contract, or any known or anticipated condition affecting the work shall not excuse the Contractor from completing all work required within the time limit(s) specified in the contract notwithstanding acceptance of the schedule by the Engineer.

Basis of Payment.

This work will not be paid for separately, but shall be considered as included in the costs of the various items of work in the contract.

APPENDIX A – CONTRACT INTERDEPENDENCIES

Projects and Contracts in the I-74 over the Mississippi River Corridor Project Active in Pre-Stage

- Iowa Project (197): IM-NHS-074-1(197)5--03-82, River Bridge Approach Spans
- Iowa Project (198): IM-NHS-074-1(198)5--03-82, River Bridge Arch Spans
- Iowa Project (199): IM-NHS-074-1(199)5--03-82, Westbound Iowa Viaduct and Ramps
- Iowa Project (260): IM-NHS-074-1(260)1--03-82, Grading and Sanitary Sewer
- Illinois Contract 64C08: Work in Moline from the Mississippi River to 7th Avenue

Projects and Contracts in the I-74 over the Mississippi River Corridor Project Active in Stage 1

- Iowa Project (197): IM-NHS-074-1(197)5--03-82, River Bridge Approach Spans
- Iowa Project (198): IM-NHS-074-1(198)5--03-82, River Bridge Arch Spans
- Iowa Project (199): IM-NHS-074-1(199)5--03-82, Westbound Iowa Viaduct and Ramps
- Iowa Project (260): IM-NHS-074-1(260)1--03-82, Grading and Sanitary Sewer
- Iowa Project (205): IM-NHS-074-1(205)5--03-82, US 67 Ramp D Grading and Paving
- Iowa Project (208): IMN-074-1(208)5--0E-82, Light Pole Supply
- Iowa Project (209): IMN-074-1(209)5--0E-82, Luminaire Supply
- Illinois Contract 64C08: Work in Moline from the Mississippi River to 7th Avenue
- Illinois Contract 64E26: Work in Moline from 7th Avenue to south of Avenue of the Cities

Projects and Contracts in the I-74 over the Mississippi River Corridor Project Active in Stage 2

- Iowa Project (197): IM-NHS-074-1(197)5--03-82, River Bridge Approach Spans
- Iowa Project (198): IM-NHS-074-1(198)5--03-82, River Bridge Arch Spans
- Iowa Project (199): IM-NHS-074-1(199)5--03-82, Westbound Iowa Viaduct and Ramps
- Iowa Project (260): IM-NHS-074-1(260)1--03-82, Grading and Sanitary Sewer
- Iowa Project (206): IM-NHS-074-1(206)5--03-82, Mainline and Ramps Grading and Paving Iowa
- Iowa Project (219): IM-NHS-074-1(220)5--03-82, Mainline and Ramps Traffic Signs
- Iowa Project (208): IMN-074-1(208)5--0E-82, Light Pole Supply
- Iowa Project (209): IMN-074-1(209)5--0E-82, Luminaire Supply
- Iowa Project (235): IMN-074-1(235)5--0E-82, Aesthetic Lighting Supply
- Iowa Project (221): ITS-074-1(221)5--25-82, ITS Integration and Deployment
- Iowa Project (222): ITS-074-1(222)5--25-82, ITS Fiber Optics
- Illinois Contract 64C08: Work in Moline from the Mississippi River to 7th Avenue
- Illinois Contract 64E26: Work in Moline from 7th Avenue to south of Avenue of the Cities

Projects and Contracts in the I-74 over the Mississippi River Corridor Project Active in Stage 3

- Iowa Project (197): IM-NHS-074-1(197)5--03-82, River Bridge Approach Spans
- Iowa Project (198): IM-NHS-074-1(198)5--03-82, River Bridge Arch Spans
- Iowa Project (200): IM-NHS-074-1(200)5--03-82, Eastbound Iowa Viaduct and Ramps
- Iowa Project (255): IM-074-1(255)1--13-82, Letdown Structure for Bike Trail
- Iowa Project (206): IM-NHS-074-1(206)5--03-82, Mainline and Ramps Grading and Paving
- Iowa Project (219): IM-NHS-074-1(220)5--03-82, Mainline and Ramps Traffic Signs
- Iowa Project (207): IM-NHS-074-1(206)5--03-82, Local Roads Grading and Paving
- Iowa Project (220): IM-NHS-074-1(220)5--03-82, Local Roads Traffic Signs
- Iowa Project (208): IMN-074-1(208)5--0E-82, Light Pole Supply
- Iowa Project (209): IMN-074-1(209)5--0E-82, Luminaire Supply
- Iowa Project (235): IMN-074-1(235)5--0E-82, Aesthetic Lighting Supply
- Iowa Project (221): ITS-074-1(221)5--25-82, ITS Integration and Deployment
- Iowa Project (222): ITS-074-1(222)5--25-82, ITS Fiber Optics
- Illinois Contract 64C08: Work in Moline from the Mississippi River to 7th Avenue
- Illinois Contract 64E26: Work in Moline from 7th Avenue to south of Avenue of the Cities

Summary of Milestone Completion Dates

Pre-Stage Milestone Completion Date	Tuesday, November 21, 2017
Stage 1 Milestone Completion Date	Tuesday, November 20, 2018
Stage 2 Milestone Completion Date	Tuesday, November 26, 2019
Winter Stage Completion Date	Tuesday, March 31, 2020
Stage 3 Milestone Completion Date	Tuesday, November 24, 2020

Note: In the following tables, completion of successor work may not be required in the same stage.

Contract Start Through Pre-Stage

Contract 64C08 Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Contract 64C08 Work
To the extent necessary for Project (197) critical path work to proceed in a timely manner: complete plug fill removal and placement of embankment, including special rock fill for piles in abutment area, and RWs 1, 2 and 16. Schedule coordination with the Contractor for Project (197) is required.	(197)	Drive piles for WB and EB River Approach Abutments 1A and 1B (I-74 and Ramps RD-H and RD-G)

Pre-Stage Milestone Completion Date: November 21, 2017

Contract Start Through Stage 2

Contract 64C08 Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Contract 64C08 Work
Remove existing WB IL Viaduct from Pier 23NB to S Abutment	64E26	Excavate and install ACGI at WB IL Viaduct S Abutment
Complete pile driving for WB IL Viaduct S Abutment	64E26	Construct MSE RW 05 (SN 081-6014), temporary wire face MSE wall at CL I-74 and backfill to elevation of bottom of WB IL Viaduct S Abutment
Complete WB IL Viaduct S Abutment	64E26	Complete MSE RW 05 (SN 081-6014), temp wire face MSE wall at CL I-74 and backfill for WB IL Viaduct S Abutment and approach slab
Complete WB River Bridge Approach Slabs	(197)	Construct barriers/parapets on WB Abutment wingwalls
Complete WB ITS infrastructure installation IL, River to 7th Ave	(222), (221)	Install Fiber Optics for WB, Deploy and Integrate ITS for WB
Complete WB IL Viaduct S approach slab footing	64E26	Construct WB Mainline pavement to N limit (joint with AB approach slab)

Stage 2 Milestone Completion Date: November 26, 2019

Contract Start Through Stage 3

Contract 64C08 Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Contract 64C08 Work
Remove existing EB IL Viaduct from Pier 24SB to S Abutment	64E26	Excavate and install ACGI at EB IL Viaduct S Abutment
Complete pile driving for EB IL Viaduct S Abutment	64E26	Construct MSE RW 05 (SN 081-6014) and backfill to elevation of bottom of EB IL Viaduct S Abutment
Complete EB IL Viaduct S Abutment	64E26	Complete MSE RW 05 (SN 081-6014) and backfill for EB IL Viaduct S Abutment and approach slab
Complete EB River Bridge Approach Slabs	(197)	Construct barriers/parapets on EB Abutment wingwalls
Complete Identity Element Foundations in IL (5 locations)	(206)	Install Identity Elements in Moline
Complete EB ITS infrastructure installation IL, River to 7th Ave	(222), (221)	Install Fiber Optics for EB, Deploy and Integrate ITS for EB
Complete EB IL Viaduct S approach slab footing	64E26	Construct EB Mainline pavement to N limit (joint with 64C08 approach slab)

Stage 3 Milestone Completion Date: November 24, 2020

Contract Start Through Stage 1

Contract 64E26 Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Contract 64E26 Work
Complete WB ITS infrastructure installation IL, Ave of the Cities to south project limit	(222), (221)	Install Fiber Optics; Deploy and Integrate ITS Ave of the Cities to south project limit

Stage 1 Milestone Completion Date: November 20, 2018

Contract Start Through Stage 2

Contract 64E26 Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Contract 64E26 Work
Complete ACGI at WB IL Viaduct S Abutment	64C08	Drive piles for WB IL Viaduct S Abutment
Construct WB RW 05 (SN 081-6014), temp wire face MSE wall at CL I-74 and backfill to elevation of bottom of WB IL Viaduct S Abutment	64C08	Construct WB IL Viaduct S Abutment
Complete WB RW 05 (SN 081-6014), temp wire face MSE wall at CL I-74 and backfill WB IL Viaduct S Abutment for approach slab	64C08	Construct WB IL Viaduct S approach footing and approach slab
Complete WB ITS infrastructure installation IL, 7th Ave to S end	(222), (221)	Install Fiber Optics for WB, Deploy & Integrate ITS for WB
Complete WB Mainline pavement to N limit (joint with 64C08 approach slab)	64C08	Install preformed joint seal at S end of WB IL Viaduct S approach slab (at 64E26 mainline pavement)

Stage 2 Milestone Completion Date: November 26, 2019

Contract Start Through Stage 3

Contract 64E26 Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Contract 64E26 Work
Complete ACGI at EB IL Viaduct S Abutment	64C08	Drive piles for EB IL Viaduct S Abutment
Construct MSE RW 05 (SN 081-6014) and backfill to elevation of bottom of EB IL Viaduct S Abutment	64C08	Construct EB IL Viaduct S Abutment
Complete EB MSE RW 05 (SN 081-6014) and backfill EB IL Viaduct S Abutment for approach slab	64C08	Construct EB IL Viaduct S approach footing and approach slab
Complete Identity Element Foundations at Avenue of the Cities	206	Install Identity Elements in Moline
Complete EB ITS infrastructure installation IL, 7th Ave to S end	(222), (221)	Install Fiber Optics for EB, Deploy & Integrate ITS for EB
Complete EB Mainline pavement to N limit (joint with 64C08 approach slab)	64C08	Install preformed joint seal at S end of EB IL Viaduct S approach slab (at 64E26 mainline pavement)

Stage 3 Milestone Completion Date: November 24, 2020

Contract Start Through Pre-Stage

Project (197) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (197) Work
Install floating silt curtain around Moline water supply intake and south of proposed river bridge spans 1-9	IL 64C08	Install storm sewer outlets into Mississippi River

Pre-Stage Milestone Completion Date: November 21, 2017

Contract Start Through Stage 2

Project (197) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (197) Work
Complete WB Pier 16	(199)	Set girders WB IA Viaduct span 16
Place upper portion of backwalls, WB Abutment, Units 1A and 1B	IL 64C08	Construct WB River Bridge mainline and Ramp RD-H remaining embankment and approach slabs in Moline
Install ITS infrastructure for Structural Health Monitoring devices and sensors on WB Approach Spans. *	(198)	Install Structural Health Monitoring devices and sensors on WB Approach Spans. *
Complete WB deck concrete placement at Pier 12 (with blockout for modular expansion joint)	(198)	Install modular expansion joint at WB Pier 12, including concrete in blockout areas both sides.
Complete WB deck concrete placement at Pier 16 (with blockout for finger plate expansion joint)	(199)	Install finger plate expansion joint at WB Pier 16, including concrete in blockout areas both sides.
Complete ITS infrastructure installation on WB Approach Spans	(222), (221)	Install Fiber Optics for WB, Deploy and Integrate ITS for WB

Stage 2 Milestone Completion Date: November 26, 2019

Contract Start Through Stage 3

Project (197) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (197) Work
Complete EB Pier 16	(200)	Set girders EB IA Viaduct span 16
Place upper portion of backwalls, EB Abutment 1, Units 1A and 1B	IL 64C08	Construct EB River Bridge mainline and Ramp RD-G) remaining embankment and approach slabs in Moline
Install ITS infrastructure for Structural Health Monitoring devices and sensors on EB Approach Spans. *	(198)	Install Structural Health Monitoring devices and sensors on EB Approach Spans. *
Complete EB deck concrete placement at Pier 12 (with blackout for modular expansion joint)	(198)	Install modular expansion joint at EB Pier 12, including concrete in blackout areas both sides.
Complete EB deck concrete placement at Pier 16 (with blackout for finger plate expansion joint)	(200)	Install finger plate expansion joint at EB Pier 16, including concrete in blackout areas both sides.
Complete ITS infrastructure installation on EB Approach Spans	(222), (221)	Install Fiber Optics for EB, Deploy and Integrate ITS for EB

Stage 3 Milestone Completion Date: November 24, 2020

* Structural Health Monitoring interdependencies require on-going coordination for installation of many separate and devices sensors. It is not required to list each one as a separate activity in the CPM Construction Schedule. See Special Provisions for Structural Health Monitoring and Instrumentation Coordination, Project (197), and Special Provisions for Structural Health Monitoring and Instrumentation, Project (198).

Contract Start Through Stage 2

Project (198) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (198) Work
Complete WB arch erection, remove temp works from WB Piers 10, 11, 14 and 15	(197)	Construct columns and caps, WB Piers 10, 11, 14 and 15
Complete WB deck concrete placement at Pier 13 (with blackout for finger plate expansion joint)	(197)	Install finger plate expansion joint at WB Pier 13, including concrete in blackout areas both sides
Complete ITS infrastructure installation on WB Arch Span	(222), (221)	Install Fiber Optics for WB, Deploy and Integrate ITS for WB

Stage 2 Milestone Completion Date: November 26, 2019

Contract Start Through Stage 3

Project (198) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (198) Work
Complete EB arch erection, remove temp works from EB Piers 10, 11, 14 and 15	(197)	Construct columns and caps, EB Piers 10, 11, 14 and 15
Complete EB deck concrete placement at Pier 13 (with blockout for finger plate expansion joint)	(197)	Install finger plate expansion joint at EB Pier 13, including concrete in blockout areas both sides
Complete ITS infrastructure installation on EB Arch Span	(222), (221)	Install Fiber Optics for EB, Deploy and Integrate ITS for EB

Stage 3 Milestone Completion Date: November 24, 2020

Contract Start Through Pre-Stage

Projects (199) and (260) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (199) or (260) Work
Relocate part of existing sanitary sewer	(197)	Construct drilled shaft foundation for WB Pier 16

Stage 1 Milestone Completion Date: November 20, 2018

Contract Start Through Stage 2

Projects (199) and (260) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (199) or (260) Work
Remove existing WB IA Viaduct north of Mississippi Blvd	(206)	Place embankment north of Mississippi Blvd for new WB Mainline pavement
Remove existing WB IA Viaduct from south of Gilbert St (Pier WB11) to S of Brown St	(200)	Construct EB IA Viaduct from Pier 17 to Pier 26 and US 67 Ramp C from Pier 21C to Abutment 23C
Complete ITS infrastructure installation on WB IA Viaduct	(222), (221)	Install Fiber Optics for WB, Deploy and Integrate ITS for WB

Stage 2 Milestone Completion Date: November 26, 2019

Contract Start Through Stage 3

Projects (200) and (255) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (200) or (255) Work
Drive US 67 Ramp A North Abutment piles in MSE zone	(206)	Construct MSE Retaining Wall 165
Remove remaining existing WB IA Viaduct existing WB exit ramp to State Street, from north of the river to Gilbert St	(206)	Place embankment for Ramp US 67 Ramp C
Remove existing EB IA Viaduct north of Mississippi Blvd.	(206)	Place embankment north of Mississippi Blvd for EB IA Viaduct Abutment 32 and approach pavement
Complete ITS infrastructure installation on EB IA Viaduct	(222), (221)	Install Fiber Optics for EB, Deploy and Integrate ITS for EB

Stage 3 Milestone Completion Date: November 24, 2020

Contract Start Through Stage 1

Project (205) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (205) Work
Complete pavement US 67 Ramp D between US 67 (Grant St) and Ramp D bridge	(199)	Construct bridge approach pavement, south of US 67 Ramp D bridge

Stage 1 Milestone Completion Date: November 20, 2018

Contract Start Through Stage 2

Project (206) or (219) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Contract (206) or (219) Work
Complete pavement US 67 Ramp B north of bridge to previous construction	(199)	Construct bridge approach pavement, north of US 67 Ramp B Bridge
Complete pavement US 67 Ramp D north of bridge to mainline	(199)	Construct bridge approach pavement, north of US 67 Ramp D Bridge
Complete embankment north of Mississippi Blvd for WB IA Viaduct Abutment 32 and approach pavement	(199)	(After 14 days settlement) Drive piles for and construct WB IA Viaduct Abutment 32
Complete pavement I-74 WB north of IA Viaduct Abutment 32	(199)	Construct bridge approach pavement, north of WB IA Viaduct Abutment 32
Complete ITS WB infrastructure installation in Iowa to north project limit	(222), (221)	Install Fiber Optics for WB, Deploy and Integrate ITS for WB

Stage 2 Milestone Completion Date: November 26, 2019

Contract Start Through Stage 3

Project (206) or (219) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Contract (206) or (219) Work
Complete MSE Retaining Wall 165 and embankment north of Mississippi Blvd for US 67 Ramp A North Abutment	(200)	Construct US 67 Ramp A North Abutment
Remove existing loop ramp and complete embankment south of Mississippi Blvd for US 67 Ramp A South Abutment	(200)	Construct US 67 Ramp A South Abutment
Complete US 67 Ramp A pavement, Mississippi Blvd to ramp bridge	(200)	Construct bridge approach pavement, north of US 67 Ramp A Bridge
Complete US 67 Ramp A pavement, south of ramp bridge to Grant St (US 67)	(200)	Construct bridge approach pavement, south of US 67 Ramp A Bridge
Complete embankment for US 67 Ramp C	(200)	(After 30 days settlement) Drive piles for and construct US 67 Ramp C Abutment 23C
Complete pavement US 67 Ramp C north of bridge to Grant St (US 67)	(200)	Construct bridge approach pavement, north of US 67 Ramp C Bridge
Complete embankment north of Mississippi Blvd for EB IA Viaduct Abutment 32-and approach pavement	(200)	(After 7 days settlement) Drive piles for and construct EB IA Viaduct Abutment 32
Complete pavement I-74 EB north of IA Viaduct Abut 32	(200)	Construct bridge approach pavement, north of EB IA Viaduct Abut 32
Complete ITS EB infrastructure installation in Iowa to north project limit	(222), (221)	Install Fiber Optics for EB, Deploy and Integrate ITS for EB

Stage 3 Milestone Completion Date: November 24, 2020

Contract Start Through Stage 1

Project (208) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (208) Work
Provide light poles for 7th Ave south of I-74	64C08	Install light poles 7th Ave south of I-74
Provide light poles for IL I-74 median barrier from Sta 129 to south end, Ramp AC-A and part south of Ramps AC-B and AC-C	64E26	Install light poles IL I-74 median barrier from Sta 129 to south end, Ramp AC-A and part south of Ramps AC-B and AC-C

Stage 1 Milestone Completion Date: November 20, 2018

Contract Start Through Stage 2

Project (208) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (208) Work
Provide light poles for WB IL viaduct (all spans), EB IL Viaduct Unit 1, Ramps RD-H, 6TH-D and 6TH-C, local roads east of I-74	64C08	Install light poles IL I-74 WB IL viaduct (all spans), EB IL Viaduct Unit 1, Ramps RD-H, 6TH-D and 6TH-C, local roads east of I-74
Provide light poles for IL I-74 WB from 7th Ave to Ave of the Cities (median barriers and bridges over 19th St, 12th Ave and 19th St SB), Ramps 7TH-A and AC-D	64E26	Install light poles IL I-74 WB from 7th Ave to Ave of the Cities (median barriers and bridges over 19th St, 12th Ave and 19th St SB), Ramps 7TH-A and AC-D
Provide light poles for Middle Road Ramp B	(206)	Install light poles Middle Road Ramp B
Provide light poles for WB River Bridge Approach Spans	(197)	Install light poles WB River Bridge Approach Spans
Provide light poles for WB River Bridge Arch Span	(198)	Install light poles WB River Bridge Arch Span
Provide light poles for WB IA Viaduct (all spans), US 67 Ramps B and D bridges	(199)	Install light poles WB IA Viaduct (all spans), US 67 Ramps B and D bridges
Provide light poles for US 67 Ramps B and D	(206)	Install light poles US 67 Ramps B and D

Stage 2 Milestone Completion Date: November 26, 2019

Contract Start Through Stage 3

Project (208) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (208) Work
Provide light poles for IL I-74 EB plug fill RT barrier, Ramp RD-G, and River Dr west of I-74	64C08	Install light poles IL I-74 EB plug fill RT barrier, Ramp RD-G, and River Dr west of I-74
Provide light poles for IL I-74 median at plug fill after crossover is removed	64C08	Install light poles for IL I-74 median at plug fill after crossover is removed
Provide light poles for Ramps 7TH-B and remaining Ramps AC-C and AC-B	64E26	Install light poles Ramps 7TH-B and remaining Ramps AC-C and AC-B
Provide light poles for remaining IL I-74 median south of Ave of the Cities after crossover is removed	64E26	Install light poles for remaining IL I-74 median south of Ave of the Cities after crossover is removed
Provide light pole for US 67 Ramp A bridge	(200)	Install light pole US 67 Ramp A bridge
Provide light poles for US 67 Ramp A and Middle Rd Ramp C	(206)	Install light poles US 67 Ramp A and Middle Rd Ramp C
Provide light poles for US 67 Ramp C	(206)	Install light poles US 67 Ramp C
Provide light poles for IA I-74 median, Mississippi Blvd to Middle Rd south of Ave of the Cities after crossover is removed	(206)	Install light poles IA I-74 median, Mississippi Blvd to Middle Rd south of Ave of the Cities after crossover is removed
Provide light poles for EB River Bridge Approach Spans	(197)	Install light poles EB River Bridge Approach Spans
Provide light poles for EB River Bridge Arch Span	(198)	Install light poles EB River Bridge Arch Span
Provide light poles for EB IA Viaduct (all spans), US 67 Ramp C bridges	(200)	Install light poles EB IA Viaduct (all spans), US 67 Ramp C bridges

Stage 3 Milestone Completion Date: November 24, 2020

Contract Start Through Stage 1

Project (209) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (209) Work
Provide luminaires for 7th Ave south of I-74; underdeck luminaires: WB over River Dr and Ramp 6TH-C, EB over River Dr	64C08	Install luminaires 7th Ave south of I-74; underdeck: WB over River Dr and Ramp 6TH-C, EB over River Dr
Provide luminaires for IL I-74 median barrier from Sta 129 to south end, Ramp AC-A and part south of Ramps AC-B and AC-C	64E26	Install luminaires IL I-74 median barrier from Sta 129 to south end, Ramp AC-A and part south of Ramps AC-B and AC-C
Provide luminaires for underdeck luminaires: US 67 Ramp B over Gilbert St	(199)	Install luminaires underdeck: US 67 Ramp B over Gilbert St

Stage 1 Milestone Completion Date: November 20, 2018

Contract Start Through Stage 2

Project (209) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (209) Work
Provide luminaires for WB IL viaduct (all spans), EB IL Viaduct Unit 1, Ramps RD-H, 6TH-D and 6TH-C, local roads east of I-74; underdeck luminaires: WB over River Dr and Ramp 6TH-C; underdeck luminaires: WB over 6th Ave and 7th Ave	64C08	Install luminaires IL I-74 WB IL viaduct (all spans), EB IL Viaduct Unit 1, Ramps RD-H, 6TH-D and 6TH-C, local roads east of I-74; underdeck: WB over River Dr and Ramp 6TH-C; underdeck luminaires: WB over 6th Ave and 7th Ave
Provide luminaires for IL I-74 WB from 7th Ave to Ave of the Cities (median barriers and bridges over 19th St, 12th Ave and 19th St SB), Ramps 7TH-A and AC-D; WB underdeck luminaires Ave of the Cities	64E26	Install luminaires IL I-74 WB from 7th Ave to Ave of the Cities (median barriers and bridges over 19th St, 12th Ave and 19th St SB), Ramps 7TH-A and AC-D; WB underdeck Ave of the Cities
Provide luminaires for Middle Road Ramp B	(206)	Install luminaires Middle Road Ramp B
Provide luminaires for WB River Bridge Approach Spans	(197)	Install luminaires WB River Bridge Approach Spans
Provide luminaires for WB River Bridge Arch Span	(198)	Install luminaires WB River Bridge Arch Span
Provide luminaires for WB IA Viaduct (all spans), US 67 Ramps B and D bridges; underdeck luminaires: WB IA Viaduct over Gilbert St and over US 67 (Grant St)	(199)	Install luminaires WB IA Viaduct (all spans), US 67 Ramps B and D bridges; underdeck: WB IA Viaduct over Gilbert St and over US 67 (Grant St)
Provide luminaires for US 67 Ramps B and D	(206)	Install luminaires US 67 Ramps B and D

Stage 2 Milestone Completion Date: November 26, 2019

Contract Start Through Stage 3

Project (209) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (209) Work
Provide luminaires for IL I-74 EB plug fill RT barrier, Ramp RD-G, and River Dr west of I-74; underdeck luminaires: EB over Ramp 6TH-C, 6th Ave and 7th Ave	64C08	Install luminaires IL I-74 EB plug fill RT barrier, Ramp RD-G, and River Dr west of I-74; underdeck: EB over Ramp 6TH-C, 6th Ave and 7th Ave
Provide luminaires for IL I-74 median at plug fill after crossover is removed	64C08	Install luminaires for IL I-74 median at plug fill after crossover is removed
Provide luminaires for Ramps 7TH-B and remaining Ramps AC-C and AC-B; EB underdeck luminaires Ave of the Cities	64E26	Install luminaires Ramps 7TH-B and remaining Ramps AC-C and AC-B; EB underdeck Ave of the Cities
Provide luminaires for remaining IL I-74 median south of Ave of the Cities after crossover is removed	64E26	Install luminaires for remaining IL I-74 median south of Ave of the Cities after crossover is removed
Provide luminaire for US 67 Ramp A bridge	(200)	Install luminaire US 67 Ramp A bridge
Provide luminaires for US 67 Ramp A and Middle Rd Ramp C	(206)	Install luminaires US 67 Ramp A and Middle Rd Ramp C
Provide luminaires for US 67 Ramp C	(206)	Install luminaires US 67 Ramp C
Provide luminaires for IA I-74 median, Mississippi Blvd to Middle Rd south of Ave of the Cities after crossover is removed	(206)	Install luminaires IA I-74 median, Mississippi Blvd to Middle Rd south of Ave of the Cities after crossover is removed
Provide luminaires for EB River Bridge Approach Spans	(197)	Install luminaires EB River Bridge Approach Spans
Provide luminaires for EB River Bridge Arch Span	(198)	Install luminaires EB River Bridge Arch Span
Provide luminaires for EB IA Viaduct (all spans), US 67 Ramp C bridges; underdeck luminaires: EB IA Viaduct over Gilbert St and over US 67 (Grant St), US 67 over Gilbert St	(200)	Install luminaires EB IA Viaduct (all spans), US 67 Ramp C bridges; underdeck luminaires: EB IA Viaduct over Gilbert St and over US 67 (Grant St), US 67 over Gilbert St

Stage 3 Milestone Completion Date: November 24, 2020

Contract Start Through Stage 2

Project (235) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (235) Work
Provide aesthetic lighting material - WB IL Viaduct	64C08	Install aesthetic lighting on WB IL Viaduct piers
Provide aesthetic lighting material - WB Approach piers	(197)	Install aesthetic lighting on WB Approach piers
Provide aesthetic lighting material - WB Arch	(198)	Install aesthetic lighting on WB Arch
Provide aesthetic lighting material - WB IA Viaduct	(199)	Install aesthetic lighting on WB IA Viaduct piers

Stage 2 Milestone Completion Date: November 26, 2019

Contract Start Through Stage 3

Project (235) Work to be Completed	Adjacent Contract / Project	Adjacent Successor Work Dependent on Completed Project (235) Work
Provide aesthetic lighting material - EB IL Viaduct	64C08	Install aesthetic lighting on EB IL Viaduct piers
Provide aesthetic lighting material - EB Approach piers	(197)	Install aesthetic lighting on EB Approach piers
Provide aesthetic lighting material - EB Arch, Overlook and EB piers	(198)	Install aesthetic lighting on EB Arch, Overlook and EB piers
Provide aesthetic lighting material - EB IA Viaduct	(200)	Install aesthetic lighting on EB IA Viaduct piers

Stage 3 Milestone Completion Date: November 24, 2020

The grounding wire shall be bonded to the grounded conductor at the service disconnect per the NEC.

The Contractor shall provide a sufficient length of cable to ground each existing handhole lid and frame. The length of wire required to ground each handhole will not be measured for payment, but shall be included in the unit bid price for this pay item.

The Contractor shall provide grounding bushings on all metallic service conduits in the controller bases. All clamps, hardware, and other materials required shall be included in the bid price.

BASIS OF PAYMENT. This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, of the type specified (SERVICE or EQUIPMENT GROUNDING CONDUCTOR), NO. 6, and number of conductors specified.

ELECTRIC CABLE IN CONDUIT, LEAD-IN, NO. 16 1 PAIR

This work shall be in accordance with the applicable Articles of Sections 807, 817, 873 and 1066 of the Standard Specifications with the following modifications:

This cable shall be from the proposed advanced detector loops on Northbound 19th Street. The two through lane loops shall be connected to one Lead-In cable, and the left turn lane detector loop shall be connected to the other Lead-In cable.

The Lead-In cables shall span from the new handhole nearest the loops to the controller without splicing.

BASIS OF PAYMENT. This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, LEAD-IN, NO. 16 1 PAIR.

ENVIRONMENTAL PROTECTION

DESCRIPTION. The work under this contract is located in an environmentally sensitive area within or near the Mississippi River (the River). The Contractor's work area shall be restricted to the minimum to construct the project and to accomplish related work. Contractor shall make every reasonable effort to execute the construction in a manner so as to minimize any adverse impact of the construction or work on fish, mussels, wildlife, or natural areas. The Contractor shall abide by all permit restrictions and conditions imposed by regulatory agencies.

Areas disturbed by excavation for construction of haul roads, docks and other permanent or temporary structures, shall be restored to original contours as noted in contract documents. Areas required for equipment movement, offices, stockpiling, service repairs, and storage shall be kept to a minimum and shall be restricted to the boundaries noted in the plans and contract documents.

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WORK ZONE REQUIREMENTS.

- A. The I-74 corridor project area crosses the Mississippi River which is an environmentally sensitive resource. All construction activity in the Mississippi River, along its riverbank, and within the area that drains into the Mississippi River should be considered work in an environmentally sensitive area. Work on the Illinois side of the river should be considered work in a particularly sensitive area.
- B. Any construction related conditions deemed to be potentially damaging to environmentally sensitive resources by the Engineer shall be rectified immediately or construction will cease until such time as the condition is rectified. At the discretion of the Engineer, construction activities may resume once provisions to rectify the situation are made. The Contractor shall confine equipment and operations to the project right-of-way shown in the contract documents. These designated construction zones shall be protected with temporary sediment control measures in accordance with the details in the contract documents. No work shall commence on this contract until temporary erosion control and sediment control measures identified in the plans have been installed.
- C. Any erosion control and sediment control measures implemented, on land or water, shall remain in place and maintained until construction in the area is completed.
- D. No tributaries, oxbows or other backwater areas will be “cut off” or blocked from normal flow conditions. Recreational boat traffic closures may be necessary in the area of Sylvan Slough due to construction activities. The contractor is required to secure necessary permits and clearances for closure of any portion of the River.
- E. Any sediment control measures implemented, on land or water, shall remain in place and maintained until construction in the area is completed. For areas on the river bank, sediment control measures shall remain in place and be maintained until the area has been stabilized with temporary or permanent seeding. All earthwork operations on shore will be carried out in such a manner to ensure no sediment runoff and soil erosion will enter the river.
- F. Temporary sediment control measures removed or damaged due to construction activities or high water levels shall be replaced or repaired, where possible, within the emergency mobilization time of 8 hours or within standard mobilization time of 72 hours. If it is not possible to meet the designated time frames, sediment controls shall be replaced prior to recommencing work that would cause turbidity issues in the water.

- G. The clearing of vegetation will be limited to that which is absolutely necessary for construction and operation of the project. All areas disturbed by construction activities and not covered with riprap shall be re-seeded with Class 4 native grass mix according to Section 250 of the Standard Specifications, unless otherwise specified in the contract documents. All re-vegetated areas shall be monitored to make certain they succeed.
- H. Removal and replacement of any revetment stone placed as part of the project should yield a structure with no significant change in gradation. Any damaged stone shall be replaced with new stone to ensure proper gradation.
- I. Any and all barges and other water craft used for construction activities, shall be inspected for the presence of zebra mussels prior to placing the barges into the Mississippi River. Barges shall be completely out of the water for 10 days with all compartments opened that could potentially contain water and therefore harbor adult, larval or juvenile zebra mussel. This will ensure proper drying of the barge(s) and reduction of potential infestation. If the barge is obtained from a local source, United States Fish and Wildlife Service, Illinois Department of Natural Resources and Iowa Department of Natural Resources staff must still be contacted to discuss previous locations at which the barge has been used.
- J. The U.S. Army Corps of Engineers (USACE) shall be notified if temporary work is constructed and when it is removed from the river. All temporary construction required shall be removed from the River in its entirety once it is no longer needed for construction of the project.
- K. Temporary construction in the River may include an appropriate combination of barges, temporary slips, temporary supports (falsework), temporary bridge/work platform and temporary cofferdams. **An elevated earthen/sand/rock work platform (causeway or equipment pad) shall not be used for any construction; fills in the River for temporary crossings, causeway, or equipment pad structures are not permitted.** Contractor's construction operations in the River shall be in conformance with the Special Provision for Mussel Conservation.
- L. A plan for all temporary construction operations needed shall be submitted to and approved by the USACE and the Engineer prior to installation. The plan must include but is not limited to the location identified on an aerial photo, the dimensions, construction methods, duration of use and measures that will be used to control turbidity and/or sedimentation. The Contractor shall submit the plan for all temporary construction operations to the Engineer, the Illinois Environmental Protection Agency (EPA) and the USACE for approval 45 days prior to starting work on the temporary construction.

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- M. If dredging is needed to convey barges the discharge will not be placed back into the River. The USACE shall be notified of the location of dredging, amount to be dredged, and any Section 401 water quality testing required by the Iowa Department of Natural Resources prior to any discharge of dredged material. Should dredged or excavated material be deposited on the shore before being hauled away, silt fences, perimeter and slope sediment control devices, or low silt berms shall be required to limit the reentry of sediments into the river. In addition, the materials shall be placed in a confined area, not classified as a wetland. Only mechanical dredging is allowed.
- N. Native materials removed from cofferdams may be replaced in the cofferdam. Other than replacing native materials, any fill materials introduced into the River must be clean (meaning less than 10% fines that would pass through a #200 sieve). Areas disturbed by dredging shall be backfilled with special revetment. Dredging and backfill is included in project IM-NHS-074-1(197)5--03-82 and project IM-NHS-074-1(198)5--03-82.
- O. The Contractor shall remove any debris from the water or the river bed as soon as practicable during the same work day in order to prevent the accumulation of unsightly, deleterious, and /or potentially polluted materials, as directed by the Engineer. The Contractor shall also implement measures to prevent debris from falling into the river. Should debris enter the river, it shall be retrieved immediately. Debris will not be allowed to collect on the bottom of the river.
- P. No materials, including cleared and grubbed vegetation or construction debris, shall be disposed of in such a way that it could enter a wetland or waterway.
- Q. The contractor shall perform his work in such a way to ensure that no wet or dried concrete shall enter the River, any waterway or wetlands. If concrete does enter these areas the Contractor shall be solely responsible for any remediation necessary. Wash concrete trucks out in such a manner that wash water cannot enter the River, waterway, or wetlands. If a designated area is constructed or identified, that location shall be included in the temporary construction plans.
- R. Care shall be taken to prevent materials spilled or stored on site from washing into any wetland or waterway as a result of cleanup activities, natural runoff, or flooding, and that, during construction, any materials, which are accidentally spilled into these areas, will be retrieved.
- S. No fuels, lubricants, form oil, or similar products shall be stored in an area that has not been protected by a berm or other spill materials within the project area. All handling and storage of these materials must be done in such a manner as to comply with federal Spill Prevention Control and Countermeasure regulations and protect all water bodies from accidental spills and leaks.

- T. The contractor shall perform his work in such a way as to prevent materials spilled or stored on site from washing into the River or any wetland or waterway as a result of cleanup activities, natural runoff, or flooding. If, during construction, any materials are accidentally spilled into these areas, the materials will be retrieved and/or remediated immediately.
- U. Spill protection material (i.e., spill kit) shall be readily available at the project site, and on work barges, to contain and absorb accidental spills of fluids from construction equipment. Personnel trained in the implementation of the spill kit shall be readily available onsite to respond to accidental spills.
- V. Open burning within the project limits is prohibited.

PROTECTED SPECIES

- A. Sylvan Slough, downstream of the project area, has been identified by the US Fish and Wildlife service as an Essential Habitat Area for the federally endangered Higgins eye pearly mussels. In addition, Sylvan Slough is inhabited by two other federally endangered mussels, spectacle case mussel and sheepsnose mussel. Please refer to Special Provision for Mussel Conservation for more information on protecting threatened and endangered species.
- B. Attention is directed to the Migratory Bird Treaty Act (15 USC 703-711) 50 CFR Part 21 and 50 CFR Part 10 that protect migratory birds, their occupied nests, and their eggs from disturbance or destruction. Activities that are likely to result in disturbance or destruction of migratory birds include but are not limited to clearing and grubbing, as well as structure cleaning, painting, demolition or reconstruction where bird nests are present. To protect migratory birds, do not conduct construction activities where active nests are present between the dates April 1 and July 15 inclusive or until the birds have fledged and left the structure. If evidence of migratory bird nesting is discovered after beginning work or in the event that migratory bird nests become established, immediately stop work and notify the Engineer.
- C. If during the course of construction, any discoveries of protected plant or animals are made in the project area, the Contractor should notify the Engineer immediately.

CLEAN WATER ACT COMPLIANCE.

- A. A Clean Water Act Section 404 Permit has been obtained by the Contracting Authority that authorizes all construction-related activities affecting waters of the U.S. The 404 Permit contains numerous special conditions, all of which may not have been included in this Special Provision. Failure to follow the provisions of the 404 Permit or this Special Provision may result in enforcement actions being initiated by the USACE. Enforcement actions may include an order to immediately cease all construction activity and/or fines.

- B. It will be the Contractor's responsibility to ensure that the day-to-day operations of the project comply with this Special Provision. The Engineer will be available throughout the project to offer guidance to the Contractor regarding compliance with this Special Provision and the Clean Water Act.
- C. Included with the Clean Water Act Section 404 Permit are Section 401 Water Quality Certifications from Iowa Department of Natural Resources and the Illinois Environmental Protection Agency, which contain numerous special conditions that are included by reference in this Special Provision.
- D. It is the goal of Iowa's and Illinois' Water Quality Standards that all uses of the Mississippi River be maintained and protected. The dredging will cease if the water quality standards of either the State of Iowa or the State of Illinois are violated.

BASIS OF PAYMENT. No separate payment will be made for costs incurred due to compliance with this Special Provision.

No additional time will be provided to the contract unless approved in writing by the Engineer.

MECHANICALLY STABILIZED EARTH RETAINING WALLS

Effective: February 3, 1999

Revised: August 28, 2017

The following shall be used in the place of Article 522 in the Standard Specifications for Road and Bridge Construction, adopted April 1, 2016.

Description. This work shall consist of preparing the design, furnishing the materials, and constructing the mechanically stabilized earth (MSE) retaining wall with precast concrete face panels or with a cast in place (CIP) concrete facing to the lines, grades and dimensions shown in the contract plans and as directed by the Engineer.

General. The MSE wall with precast concrete face panels consists of a concrete leveling pad, precast concrete face panels, a soil reinforcing system, select fill and concrete coping (when specified). The MSE wall with CIP facing consists of a sacrificial fascia, permanent CIP facing, a soil reinforcing system and select fill. The soil reinforcement shall have sufficient strength, quantity, and pullout resistance, beyond the failure surface within the select fill, as required by design. The material, fabrication, and construction shall comply with this Special Provision and the requirements specified by the supplier of the wall system selected by the Contractor for use on the project.

The MSE retaining wall shall be one of the following pre-approved wall systems:

Company Name: Wall System

Earth Tec International, LLC: EarthTrac HA

Sanders Pre-Cast Concrete Systems Company: Sanders MSE Wall

Shaw Technologies: Strengthened Soil

Sine Wall, LLC: Sine Wall

SSL Construction Products: MSE Plus

Vist-A-Wall Systems, LLC: Vist-A-Wall

Tensor Earth Technologies : ARES Wall

The Reinforced Earth Company: GeoMega System

The Reinforced Earth Company: Reinforced Earth

The Reinforced Earth Company: Retained Earth

Tricon Precast: Tricon Retained Soil

Tricon Precast: Tri-Web Retained Soil

Pre-approval of the wall system does not include material acceptance at the jobsite.

Submittals. The wall system supplier shall submit complete design calculations and shop drawings to the Engineer according to Article 1042.03(b) of the Standard Specifications no later than 90 days prior to beginning construction of the wall. No work or ordering of materials for the structure shall be done by the Contractor until the submittal has been approved in writing by the Engineer. The contractor shall submit separate design calculations and shop drawings for the sacrificial fascia and precast panel MSE wall systems and the CIP facing design. All submittals shall be sealed by an Illinois Licensed Structural Engineer and shall include all details, dimensions, quantities and cross sections necessary to construct the wall and shall include, but not be limited to, the following items:

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Precast panel MSE wall shop drawings:

- (a) Plan, elevation and cross section sheet(s) for each wall showing the following:
- (1) A plan view of the wall indicating the offsets from the construction centerline to the face of the wall at all changes in horizontal alignment. The plan view shall show the limits of soil reinforcement and stations where changes in length and/or size of reinforcement occur. The centerline shall be shown for all drainage structures or pipes behind or passing through and/or under the wall.
 - (2) An elevation view of the wall indicating the elevations of the top of the panels. These elevations shall be at or above the top of exposed panel line shown on the contract plans. This view shall show the elevations of the top of the leveling pads, all steps in the leveling pads and the finished grade line. Each panel type, the number, size and length of soil reinforcement connected to the panel shall be designated. The equivalent uniform applied service (unfactored) nominal bearing pressure shall be shown for each designed wall section.
 - (3) A listing of the summary of quantities shall be provided on the elevation sheet of each wall.
 - (4) Typical cross section(s) showing the limits of the reinforced select fill volume included within the wall system, soil reinforcement, embankment material placed behind the select fill, precast face panels, and their relationship to the right-of-way limits, excavation cut slopes, existing ground conditions and the finished grade line.
 - (5) All general notes required for constructing the wall.
- (b) All details for the concrete leveling pads, including the steps, shall be shown. The top of the leveling pad shall be located at or below the theoretical top of the leveling pad line shown on the contract plans. The theoretical top of leveling pad line shall be 3.5 ft. (1.1 m) below finished grade line at the front face of the wall, unless otherwise shown on the plans.
- (c) Where concrete coping or barrier is specified, the panels shall extend up into the coping or barrier as shown in the plans. The top of the panels may be level or sloped to satisfy the top of exposed panel line shown on the contract plans. Cast-in-place concrete will not be an acceptable replacement for panel areas below the top of exposed panel line. As an alternative to cast in place coping, the Contractor may substitute a precast coping, the details of which must be included in the shop drawings and approved by the Engineer.
- (d) All panel types shall be detailed. The details shall show all dimensions necessary to cast and construct each type of panel, all reinforcing steel in the panel, and the location of soil reinforcement connection devices embedded in the panels. These panel embed devices shall not be in contact with the panel reinforcement steel.
- (e) All details of the wall panels and soil reinforcement placement around all appurtenances located behind, on top of, or passing through the soil reinforced wall volume such as parapets with anchorage slabs, coping, foundations, and utilities etc. shall be clearly indicated. Any modifications to the design of these appurtenances to accommodate a particular system shall also be submitted.
- (f) When specified on the contract plans, all details of architectural panel treatment, including color, texture and form liners shall be shown.

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- (g) The details for the connection between concrete panels, embed devices, and soil reinforcement shall be shown.
- (h) When pile sleeves are specified, the pile sleeve material, shape, and wall thickness shall be submitted to the Engineer for approval. It shall have adequate strength to withstand the select fill pressures without collapse until after completion of the wall settlement. The annulus between the pile and the sleeve shall be as small as possible while still allowing it to be filled with loose dry sand after wall erection.

Sacrificial fascia MSE wall shop drawings:

- (a) Plan, elevation and cross section sheet(s) for each wall showing the following:
 - (1) A plan view of the wall indicating the offsets from the construction centerline to the face of the wall at all changes in horizontal alignment. The plan view shall show the limits of soil reinforcement and stations where changes in length and/or size of reinforcement occur. The centerline shall be shown for all drainage structures or pipes behind or passing through and/or under the wall.
 - (2) An elevation view of the wall indicating the elevations of the top of the sacrificial fascia. These elevations shall be at or above the top of exposed CIP facing line shown on the contract plans. This view shall show the elevations of the bottom of the sacrificial fascia, all steps in the base of the wall and the finished grade line. Each sacrificial fascia type, the number, size and length of soil reinforcement connected to the sacrificial fascia and CIP facing shall be designated. The equivalent uniform applied service (unfactored) nominal bearing pressure shall be shown for each designed wall section.
 - (3) A listing of the summary of quantities shall be provided on the elevation sheet of each wall.
 - (4) Typical cross section(s) showing the limits of the reinforced select fill volume included within the wall system, soil reinforcement, embankment material placed behind the select fill, sacrificial fascia, CIP facing, and their relationship to the right-of-way limits, excavation cut slopes, existing ground conditions and the finished grade line.
 - (5) All general notes required for constructing the wall.
- (b) All details for any concrete leveling pads, when required by contractor, shall be shown. The bottom of the sacrificial fascia shall be located at or below the theoretical bottom of CIP facing line shown on the contract plans. The theoretical bottom of CIP facing line shall be 3.5 ft. (1.1 m) below finished grade line at the front face of the wall, unless otherwise shown on the plans.
- (c) All details of the sacrificial fascia and soil reinforcement placement around all appurtenances located behind, on top of, or passing through the soil reinforced wall volume such as parapets with anchorage slabs, coping, foundations, and utilities etc. shall be clearly indicated. Any modifications to the design of these appurtenances to accommodate a particular system shall also be submitted.
- (d) The details for the connection between the CIP facing, sacrificial fascia, and soil reinforcement shall be shown. These connections must be detailed to extend past the rear row of reinforcement bars in the CIP concrete facing by at least 1 in. (25 mm). The shop drawing must also show these connections can be extended in the field when the as built distance between the sacrificial fascia and the rear row of reinforcement is larger than 1 in. (25 mm). Any temporary connection between the CIP facing forming system and the sacrificial fascia or soil reinforcement must be shown and approved on the sacrificial fascia MSE wall shop drawings.

CIP concrete facing shop drawings:

- (a) The top of the CIP facing shall not be stepped but shall be placed parallel to the top of exposed CIP facing line shown on the contract plans. Any sacrificial fascia extending above this pour shall be cut flush with the top of the CIP facing.
- (b) Complete CIP concrete facing diagrams shall be shown indicating the elevations of all break points along the top and bottom of the facing, details of any steps, reinforcement sizes and spacing, expansion and construction joint locations and details. The facing thickness and reinforcement cover shall also be shown in cross section and a table summarizing the total concrete and bar quantities. The bottom of the CIP facing must be located at or below the theoretical bottom of CIP facing shown on the contract plans.
- (c) All details of the CIP facing placement around all appurtenances located behind, on top of, or passing through the soil reinforced wall volume such as parapets with anchorage slabs, foundations, and utilities etc. shall be clearly indicated. Any modifications to the design of these appurtenances to accommodate a particular system shall also be submitted.
- (d) When specified on the contract plans, all details of architectural CIP facing treatment, including color, texture and form liners shall be shown.

The submittal process for the calculations and shop drawings for the precast panel MSE wall, the sacrificial MSE wall, and the CIP concrete facing shall each follow the process outlined below. The initial submittal shall include three sets of shop drawings and one set of calculations. One set of drawings will be returned to the Contractor with any corrections indicated. After approval, the Contractor shall furnish the Engineer with ten (10) sets of corrected plan prints for distribution by the Department. No work or ordering of materials for the structure shall be done until the submittal has been approved by the Engineer.

Materials. The MSE walls shall conform to the supplier's standards as previously approved by the Department, and the following:

- (a) The soil reinforcing system, which includes the soil reinforcement, CIP facing embeds, and all connection devices, shall be according to the following:
 - (1) Inextensible Soil Reinforcement. Steel reinforcement shall be according ASTM A 572 Grade 65 (450), ASTM A1064, ASTM A 1011 or ASTM A 463 Grade 50 (345). The steel reinforcement shall be either epoxy coated, aluminized Type 2, or galvanized. Epoxy coatings shall be according to Article 1006.10(a)(2), except the minimum thickness of epoxy coating shall be 18 mils (457 microns). No bend test will be required. Aluminized Type 2-100 shall be according to ASTM A 463. Galvanizing shall be according to AASHTO M 111 or ASTM A 653 with touch up of damage according to ASTM A 780.
 - (2) Extensible Soil Reinforcement. Geosynthetic reinforcement shall be monolithically fabricated from virgin high density polyethylene (HDPE) or high tenacity polyester (HTPET) resins having the following properties verified by mill certifications:

<u>Property for Geosynthetic Reinforcement</u>	<u>Value</u>	<u>Test</u>
Minimum Tensile Strength	**	ASTM D 6637

** as specified in the approved design calculations and shown on the shop drawings.

<u>Property for HDPE</u>	<u>Value</u>	<u>Test</u>
Melt Flow Rate (g/cm)	0.060 – 0.150	ASTM D 1238, Procedure B
Density (g/cu m)	0.941 – 0.965	ASTM D 792
Carbon Black	2% (min)	ASTM D 4218

<u>Property for HTPET</u>	<u>Value</u>	<u>Test</u>
Carboxyl End Group (max) (mmol/kg)	<30	GRI-GG7
Molecular Weight (Mn)	>25,000	GRI-GG8

(3) Precast Panel, CIP Facing and Sacrificial Fascia Embed/Connection Devices. Precast panel, CIP facing and sacrificial fascia embeds and connection devices shall be according to the following.

a. Metallic embed/connection devices and connection hardware shall be galvanized according to AASHTO M 232 and shall be according to the following.

Mesh and Loop Embeds	ASTM A1064 or ASTM A 706 Grade 60 (420)
Tie Strip Embeds	AASHTO M 270/M 270M Grade 50 (345) or ASTM A 1011 HSLAS Grade 50 (345) Class 2

b. Nonmetallic embed/connection devices typically used with geosynthetic soil reinforcement shall be manufactured from virgin or recycled polyvinyl chloride having the following properties:

<u>Property for Polyvinyl Chloride</u>	<u>Value</u>	<u>Test</u>
Heat Deflection Temperature (°F)	155 - 164	ASTM D 1896
Notched IZOD 1/8 inch @ 73°F (ft-lb/in)	4 – 12	ASTM D 256
Coefficient of Linear Exp. (in/in/°F)	3.5 – 4.5	ASTM D 696
Hardness, Shore D	79	ASTM D 2240

<u>Property for Polypropylene</u>	<u>Value</u>	<u>Test</u>
Melt Flow Rate (g/cm)	0.060 – 0.150	ASTM D 1238, Procedure B
Density (g/cu m)	0.88 – 0.92	ASTM D 792

(b) The select fill, defined as the material placed in the reinforced volume behind the wall, shall be according to Sections 1003 and 1004 of the Standard Specifications and the following:

(1) Select Fill Gradation. Either a coarse aggregate or a fine aggregate may be used. For coarse aggregate, gradations CA 6 thru CA 16 may be used. If an epoxy coated or geosynthetic reinforcing is used, the coarse aggregate gradations shall be limited to CA 12 thru CA 16. For fine aggregate, gradations FA 1, FA 2, or FA 20 may be used.

(2) Select Fill Quality. The coarse or fine aggregate shall have a maximum sodium sulfate (Na₂SO₄) loss of 15 percent according to Illinois Modified AASHTO T 104.

(3) Select Fill Internal Friction Angle. The effective internal friction angle for the coarse or fine aggregate shall be a minimum 34 degrees according to AASHTO T 236 on samples compacted to 95 percent density according to Illinois Modified AASHTO T 99. The AASHTO T 296 test with pore pressure measurement may be used in lieu of AASHTO T 236. If the vendor's design uses a friction angle higher than 34 degrees, as indicated on the approved shop drawings, this higher value shall be taken as the minimum required.

- (4) Select Fill and Steel Reinforcing. When steel reinforcing is used, the select fill shall meet the following requirements.
- a. The pH shall be 5.0 to 10.0 according to Illinois Modified AASHTO T 289.
 - b. The resistivity according to Illinois Modified AASHTO T 288 shall be greater than 3000 ohm centimeters for epoxy coated and galvanized reinforcement, and 1500 ohm centimeters for Aluminized Type 2. However, the resistivity requirement is not applicable to CA 7, CA 8, CA 11, CA 13, CA 14, CA 15, and CA 16.
 - c. The chlorides shall be less than 100 parts per million according to Illinois Modified AASHTO T 291 or ASTM D 4327. For either test, the sample shall be prepared according to Illinois Modified AASHTO T 291.
 - d. The sulfates shall be less than 200 parts per million according to Illinois Modified AASHTO T 290 or ASTM D 4327. For either test, the sample shall be prepared according to Illinois Modified AASHTO T 290.
 - e. The organic content shall be a maximum 1.0 percent according to Illinois Modified AASHTO T 267.
- (5) Select Fill and Geosynthetic Reinforcing. When geosynthetic reinforcing is used, the select fill pH shall be 4.5 to 9.0 according to Illinois Modified AASHTO T 289.
- (6) Test Frequency. Prior to start of construction, the Contractor shall provide internal friction angle and pH test results, to show the select fill material meets the specification requirements. In addition, resistivity, chlorides, sulfates, and organic content test results will be required if steel reinforcing is used. The laboratory performing the Illinois Modified AASHTO T 288 test shall be approved by the Department according to the current Bureau of Materials and Physical Research Policy Memorandum "Minimum Laboratory Requirements for Resistivity Testing". All test results shall not be older than 12 months. In addition, a sample of select fill material will be obtained for testing and approval by the Department. Thereafter, the minimum frequency of sampling and testing by the department at the jobsite will be one per 40,000 tons (36,300 metric tons) of select fill material. Testing to verify the internal friction angle will be required when the wall design utilizes a minimum effective internal friction angle greater than 34 degrees, or when crushed coarse aggregate is not used.
- (c) The embankment material behind the select fill shall be according to Section 202 and/or Section 204. An embankment unit weight of 120 lbs/cubic foot (1921 kg/cubic meter) and an effective friction angle of 30 degrees shall be used in the wall system design, unless otherwise indicated on the plans.
- (d) The geosynthetic filter fabric material used across the precast panel joints and as part of the sacrificial fascia shall be either a non-woven needle punch polyester or polypropylene or a woven monofilament polypropylene. When used across the precast panel joints, the filter fabric shall have a minimum width of 12 in. (300 mm) and a minimum non-sewn lap of 6 in. (150 mm) where necessary. As part of the sacrificial fascia, the filter fabric shall have a minimum non-sewn lap of 12 in. (300 mm) where necessary.
- (e) The bearing pads shall be rubber, neoprene, polyvinyl chloride, or polyethylene of the type and grade as recommended by the wall supplier.

- (f) All precast panels shall be manufactured with Class PC concrete according to Section 504, Article 1042.02, Article 1042.03, and the following requirements:
- (1) The minimum panel thickness shall be 5 1/2 in. (140 mm).
 - (2) The minimum reinforcement bar cover shall be 1 1/2 in. (38 mm).
 - (3) The panels shall have a ship lap or tongue and groove system of overlapping joints between panels designed to conceal joints and bearing pads.
 - (4) The panel reinforcement shall be according to Article 1006.10(a)(2) or 1006.10(b)(1) except the welded wire fabric shall be epoxy coated according to ASTM A884.
 - (5) All dimensions shall be within 3/16 in. (5 mm).
 - (6) Angular distortion with regard to the height of the panel shall not exceed 0.2 inches in 5 ft (5 mm in 1.5 m).
 - (7) Surface defects on formed surfaces measured on a length of 5 ft. (1.5 m) shall not be more than 0.1 in. (2.5 mm).
 - (8) The panel embed/connection devices shall be cast into the facing panels with a tolerance not to exceed 1 in. (25 mm) from the locations specified on the approved shop drawings.

Unless specified otherwise, concrete surfaces exposed to view in the completed wall shall be finished according to Article 503.15(a). The back face of the panel shall be roughly screeded to eliminate open pockets of aggregate and surface distortions in excess of 1/4 in. (6 mm).

- (g) Portland cement concrete and epoxy coated reinforcement bars for the CIP facing shall be according to Section 503.

Design Criteria. The design shall be according to the appropriate AASHTO Design Specifications noted on the plans for Mechanically Stabilized Earth Walls and for Reinforced Concrete, except as modified herein. The wall supplier shall be responsible for all internal stability aspects of the wall design and shall supply the Department with computations for each designed wall section. The analyses of settlement, bearing capacity and overall slope stability will be the responsibility of the Department.

External loads, such as those applied through structure foundations, from traffic or railroads, slope surcharge etc., shall be accounted for in the internal stability design. The presence of all appurtenances behind, in front of, mounted upon, or passing through the wall volume such as drainage structures, utilities, structure foundation elements or other items shall be accounted for in the internal stability design of the wall. The design shall also account for loads caused by any connection from the CIP facing forming system to the sacrificial fascia or soil reinforcement.

The design of the soil reinforcing system shall be according to the applicable AASHTO or AASHTO LRFD Design Specifications for "Inextensible" steel or "Extensible" geosynthetic reinforcement criteria. The reduced section of the soil reinforcing system shall be sized to allowable stress levels at the end of a 75 year design life.

Steel soil reinforcing systems shall be protected by one of the following; epoxy coating, galvanizing or aluminizing. The design life for epoxy and aluminizing shall be assumed to be 16 years. The corrosion protection for the balance of the 75 year total design life shall be provided using a sacrificial steel thickness computed for all exposed surfaces according to the applicable AASHTO or AASHTO LRFD Design Specifications.

Geosynthetic soil reinforcing systems shall be designed to account for the strength reduction due to long-term creep, chemical and biological degradation, as well as installation damage.

The embed/soil reinforcement connection capacity shall be determined according to the applicable AASHTO or AASHTO LRFD Design Specifications.

The factor of safety for pullout resistance in the select fill shall not be less than 1.5, based on the pullout resistance at 1/2 in. (13 mm) deformation. Typical design procedures and details, once accepted by the Department, shall be followed. All wall system changes shall be submitted in advance to the Department for approval.

To prevent out of plane precast panel rotations, the soil reinforcement shall be connected to the standard panels in at least two different elevations, vertically spaced no more than 30 in. (760 mm) apart.

For aesthetic considerations and differential settlement concerns, the precast panels shall be erected in such a pattern that the horizontal panel joint line is discontinuous at every other panel. This shall be accomplished by alternating standard height and half height panel placement along the leveling pad. Panels above the lowest level shall be standard size except as required to satisfy the top of exposed panel line shown on the contract plans.

At locations where the plans specify a change of precast panel alignment creating an included angle of 150 degrees or less, precast corner joint elements will be required. This element shall separate the adjacent panels by creating a vertical joint secured by means of separate soil reinforcement.

Isolation or slip joints, which are similar to corner joints in design and function, may be required to assist in differential settlements at locations indicated on the plans or as recommended by the wall supplier. Precast panels with areas greater than 30 sq. ft. (2.8 sq. m) may require additional slip joints to account for differential settlements. The maximum standard panel area shall not exceed 60 sq. ft. (5.6 sq. m).

The sacrificial fascia and its connection to the soil reinforcement shall be sized for a minimum design life of 3 years. The CIP facing connection to the soil reinforcement shall be sized for a design life of 75 years.

All soil reinforcement elements shall be directly connected to the CIP facing and shall have an allowable pullout capacity, from the concrete facing, based on the maximum tensile loading occurring in the soil reinforcement. The soil reinforcements maximum vertical center to center spacing shall be 20 in. (500 mm) and in the horizontal direction, the clear distance between the edge of one soil reinforcement to the next must not exceed 2.5 ft. (760 mm).

The design constraints for the CIP facing shall include the following minimums; thickness of the concrete facing, bar clearances, reinforcement bar size and spacing as shown on the contract plans. The maximum distance between expansion joints shall be 30 ft. (9 m) unless noted otherwise in the contract plans. The CIP facing shall also be designed assuming 100 percent of the horizontal earth pressure occurring at the internal failure surface is applied to the facing in addition to all other external applied surcharge loadings.

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Construction. The Contractor shall obtain technical assistance from the supplier during wall erection to demonstrate proper construction procedures and shall include any costs related to this technical assistance in the unit price bid for this item.

The foundation soils supporting the structure shall be graded for a width equal to or exceeding the length of the soil reinforcement. Prior to wall construction, the foundation shall be compacted with a smooth wheel vibratory roller. Any foundation soils found to be unsuitable shall be removed and replaced, as directed by the Engineer, and shall be paid for separately according to Section 202.

When structure excavation is necessary, it shall be made and paid for according to Section 502 except that the horizontal limits for structure excavation shall be from the rear limits of the soil reinforcement to a vertical plane 2 ft. (600 mm) from the finished face of the wall. The depth shall be from the top of the original ground surface to the top of the leveling pad. The additional excavation necessary to place the concrete leveling pad will not be measured for payment but shall be included in this work.

The concrete leveling pads shall have a minimum thickness of 6 in. (150 mm) and shall be placed according to Section 503.

As select fill material is placed behind a precast panel/sacrificial fascia element, the precast panel/sacrificial fascia element shall be maintained in its proper inclined position according to the supplier specifications and as approved by the Engineer. Vertical tolerances and horizontal alignment tolerances shall not exceed 3/4 in. (19 mm) when measured along a 10 ft. (3 m) straight edge. The maximum allowable offset in any precast panel/sacrificial fascia element joint shall be 3/4 in. (19 mm). The overall vertical tolerance of the wall, (plumbness from top to bottom) shall not exceed 1/2 in. per 10 ft. (13 mm per 3 m) of wall height.

The precast face panels shall be erected to insure that they are located within 1 in. (25 mm) from the contract plan offset at any location to insure proper wall location at the top of the wall. Failure to meet this tolerance may cause the Engineer to require the Contractor to disassemble and re-erect the affected portions of the wall. A 3/4 in. (19 mm) joint separation shall be provided between all adjacent face panels to prevent direct concrete to concrete contact. This gap shall be maintained by the use of bearing pads and/or alignment pins.

The sacrificial fascia shall be erected to insure that it is located within 3 in. (75 mm) from the nominal contract plan offset at any location to insure proper CIP facing concrete cover and soil reinforcement anchorage.

The back of all precast panel joints shall be covered by a geotextile filter material attached to the panels with a suitable adhesive. No adhesive will be allowed directly over the joints.

The select fill and embankment placement shall closely follow the erection of each lift of precast panels/sacrificial fascia. At each soil reinforcement level, the fill material should be roughly leveled and compacted before placing and attaching the soil reinforcing system. The soil reinforcement and the maximum lift thickness shall be placed according to the supplier's recommended procedures except, the lifts for select fill shall not exceed 10 in. (255 mm) loose measurement or as approved by the Engineer.

If a fine aggregate is used for the select fill, the maximum lift thickness placed within the zone 3 ft. (1 m) behind the sacrificial fascia shall be reduced to 5 in. (125 mm). As an alternative, a coarse aggregate can be used for this zone without a reduced lift thickness.

Embankment shall be constructed according to Section 205.

At the end of each day's operations, the Contractor shall shape the last level of select fill to permit runoff of rainwater away from the wall face. Select fill shall be compacted according to the project specifications for embankment except the minimum required compaction shall be 95 percent of maximum density as determined by Illinois Modified AASHTO T 99. Select fill compaction shall be accomplished without disturbance or distortion of soil reinforcing system and precast panels/sacrificial fascia. Compaction in a strip 3 ft. (1 m) wide adjacent to the backside of the precast panels/sacrificial fascia shall be achieved using a minimum of 3 passes of a light weight mechanical tamper, roller or vibratory system. The Engineer will perform one density test per 5000 cu yd (3800 cu m) and not less than one test per 2 ft (0.6 m) of lift.

The CIP facing shall not be placed until all sacrificial fascia elements, within the limits of the pour, have been erected and allowed to settle for at least thirty calendar days, unless otherwise indicated on the plans.

Method of Measurement. Mechanically Stabilized Earth Retaining Wall will be measured for payment in square feet (square meters). The MSE retaining wall with precast concrete face panels will be measured from the top of exposed panel line to the theoretical top of leveling pad line for the length of the wall as shown on the contract plans. The MSE retaining wall with CIP facing will be measured from the top of exposed CIP facing line to the theoretical bottom of CIP facing line for the length of the wall as shown on the contract plans.

Basis of Payment. This work, including placement of the select fill within the soil reinforced wall volume shown on the approved shop drawings, precast face panels, sacrificial fascia, soil reinforcing system, concrete leveling pad, CIP facing and accessories will be paid for at the contract unit price per square foot (square meter) for MECHANICALLY STABILIZED EARTH RETAINING WALL.

Concrete coping when specified on the contract plans will be included for payment in this work. Other concrete appurtenances such as anchorage slabs, parapets, abutment caps, etc. will not be included in this work, but will be paid for as specified elsewhere in this contract, unless otherwise noted on the plans.

Excavation necessary to place the select fill for the MSE wall shall be paid for as STRUCTURE EXCAVATION and/or ROCK EXCAVATION FOR STRUCTURES as applicable, according to Section 502.

Fill placed within the foot print of the reinforced soil mass, above the top layer of soil reinforcement and below the bottom of the subgrade or top soil, shall be included in the cost of the MSE wall.

Embankment placed outside of the select fill volume will be measured and paid for according to Sections 202 and/or 204 as applicable.

GEOTECHNICAL INVESTIGATION LABORATORY DATA

Description. The following data was collected during preliminary engineering and is attached herein for the Contractor's information.

Data included is in reference to the following structures which require Aggregate Column Ground Improvements:

- SN 081-6014 – Retaining Wall 05
- SN 081-6015 – Retaining Wall 06
- SN 081-6017 – Retaining Wall 11
- SN 081-6020 – Retaining Wall 13

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Method of Measurement. Pipe Underdrains for Structures shall be measured for payment in feet (meters), in place. Measurement shall be along the centerline of the pipe underdrains. All connectors, outlet pipes, elbows, and all other miscellaneous items shall be included in the measurement. Concrete headwalls shall be included in the cost of Pipe Underdrains for Structures, but shall not be included in the measurement for payment.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for PIPE UNDERDRAINS FOR STRUCTURES of the diameter specified. Furnishing and installation of the drainage aggregate, geotechnical fabric, forming holes in structural elements and any excavation required, will not be paid for separately, but shall be included in the cost of the pipe underdrains for structures.

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E-BUILDER

Effective June 16, 2017

General.

This specification covers the contractor's mandatory use of an electronic Project Management Information System (PMIS) called e-Builder for the purpose of communication, transparency, accountability, document management, review of documents and shared collaboration. The website www.e-Builder.net, is an internet based software system with controlled access through licensed accounts. The software is designed for contract management between the Department and the Contractor to act in accordance with their respective roles.

E-BUILDER LICENSE.

The Department will provide three total licenses to the Contractor; one each for the project manager, assistant project manager and clerical administrator. The Contractor may at their expense purchase additional licenses from e-Builder which the Department will allow access to the contract. The three named parties will be provided to the Department within 3 working days of the signed contract. In the event of personnel changes experienced by the Contractor, the licenses can be re-assigned by the Contractor with approval of the Department. Upon completion of the contract the three licenses will be removed from Contractor. The Department will provide support to the Contractor for the successful migration of the contract data to an electronic storage system of the Contractor's choosing and at the Contractor's expense.

ACCESS AND SOFTWARE.

Recommended base minimum desktop standard to maintain optimal performance for an operating system is: Windows XP SP3+ or Mac OS X. See more information at: www.e-builder.net/support/optimization for supported internet browsers and required browser plug-ins. The Contractor shall be responsible for possessing the materials and broadband internet connection for accessing the website to fully comply with the specifications.

E-BUILDER TRAINING AND SUPPORT.

- A.** Within 7 working days of the signed contract the first of two mandatory trainings will be scheduled and conducted by the Department for the Contractor. The training will be scheduled for 8 hours and held at the I-74 Expanded Central Section Program Office located at 1443 Brown Street, Bettendorf, Iowa 52722.
- B.** The training will provide the Contractor with the knowledge and skill set to become familiar with the software, provided supplemental training materials and support contacts. The training is a hands-on environment requiring a computer. The Contractor shall notify the Department if they will require a computer provided for them for the purpose of the training only.

- C. The second mandatory training will be provided by the Department as a follow-up training for the Contractor for a date and length of time to be determined by the Department. The Department will provide at least 2 weeks notice to the Contractor. The Contractor will have access to the Department's support personnel for assistance in effectively utilizing the software and providing technical support when appropriate. Internet connectivity, connection speed and computer hardware are the responsibility of the Contractor and outside the bounds of Department support. The Contractor will be provided direct contact information for direct e-Builder support if requested and deemed warranted.

PURPOSE AND USE.

The primary purpose of the website is to facilitate electronic communication between the Contractor and Department. The PMIS electronic system allows enhanced reporting capabilities through e-Builder whereby providing transparency, visibility, and collaboration to the Department and the Contractor for more timely and responsive partnering.

- A. The e-Builder website will manage Requests for Information (RFIs), submittals, shop drawings and working drawings, required by the contract documents and at the discretion of the Department. This functionality of e-Builder will allow Contractor participants to create and upload all submittals, shop drawings, working drawings, RFIs, for review.
- B. Review and approval of all submitted documents will occur in e-Builder with all participants notified of the results of reviews via e-Builder email notifications. Participants shall interface with e-Builder on a regular basis to ensure they are aware of current information. The capabilities of the website will allow participants to track the progress of all submittals and documents under review. All other contract documents, change orders, material certification, payrolls, meeting minutes etc. will be submitted through Doc Express following the requirements of Section 1113 of the Standard Specifications.
- C. Additional functions and exceptions of the website may be made on a case by case basis at the Department's discretion. In the case of an emergency where the timeframe of a review does not allow it to be processed through e-Builder the Contractor will be required to retroactively document the submission and approval process through e-Builder.
- D. No confidential information shall be placed on e-Builder. Information residing on the website is the property of the Department. The Contracting Authority reserves the right to revoke access to the website for unauthorized or inappropriate use and dissemination of user passwords.

SUBMITTALS.

- A. Submittals shall be submitted in Adobe Acrobat PDF format sized to print 11 inches by 17 inches or 8.5 inches by 11 inches. Each party uploading submittals and other shall ensure it is legible. A minimum resolution of 300 dpi is recommended. Shop drawings submittals requiring the Engineer’s review stamp shall contain white space sized 3 inches horizontally by 2.5 inches vertically for the stamp and shall be located in the same spot on each page in a given submittal.

- B. Submittal schedule and review period shall follow Article 1105.03 of the Standard Specifications along with Special Provisions for Progress Scheduling. Submittals without a defined review period in the Standard Specifications shall be 30 calendar days.

Timeline.

EVENT TRIGGERS	DURATION	OUTCOME
Signed contract	Within 3 Working Days	Contractor to provide three names and email addresses for project manager, assistant project manager and clerical administrator.
	Within 7 Working Days	Contractor attends Department scheduled mandatory training for 8 hours at the I-74 Program Office.
Date to be determined Second mandatory Department scheduled training	Department provides 2 calendar week notice to the Contractor	Contractor attends Department scheduled mandatory training for a time duration to be determined by the Department.

Basis of Payment.

Costs for complying with this specification shall be considered incidental to the contract and no separate payment will be made.

WIRELESS LIGHTING CONTROL SYSTEM

Description. This work shall consist of furnishing and installing a fully functional wireless lighting control system (WLCS). The system shall include wireless control modules (nodes), a gateway located at the proposed lighting controller in the Avenue of the Cities interchange, a central communication system including the necessary software (installed at the District 2 office as directed by the Engineer), as well as all accessories required for a complete operational system. Components of the system shall be UL listed, and the system shall be compatible with LED luminaires from more than one manufacturer.

The system shall be installed at the proposed luminaire locations as shown on the plans. It shall control 190 LED roadway luminaires and two lighting controller cabinets (all Illinois DOT) along the I-74 corridor from south of 27th Street to the south abutment of the Mississippi River Bridge. The system shall be stand-alone, all initial setup and necessary adjustments shall be performed locally on site. The system shall be accessible through a handheld mobile device via a web browser/native application that allows on-site setup and adjustments. Failure of the system or its components shall result in the default condition of full power to the luminaires.

The Contractor shall also initiate cellular service with a cellular carrier compatible with IDOT's network and approved by the Engineer. The Contractor shall make monthly payments until the cellular service account is transferred to IDOT. At least one month before the end of the contract, the contractor shall coordinate with the Engineer to obtain the name of the party to whom the service is to be transferred. The monthly cellular service until the end of this contract shall be included in this pay item.

Materials

NTCIP Compatibility. All components specified below shall utilize National Transportation Communications for ITS Protocol (NTCIP) 1213 – Object Definitions for Electrical and Lighting Management Systems (ELMS) and be fully compliant. Please see the Protocol Requirements List Table for detailed compatibility requirements.

Dimming. The wireless lighting control system shall provide a dimming control signal that is compliant with the 0-10V protocol (as specified in IEC 60929 Annex E, as applicable). Dimming shall be provided for lighting curfews or adaptive light levels as directed by the Engineer.

Constant Light Output (CLO). The wireless lighting control system shall provide a constant light output over the life of the luminaires to adjust for lumen depreciation as the luminaires age.

Central Management System. The Central Management System (CMS) shall be accessible to individual users only by name and password. The CMS shall be capable of restricting user access to specific functions. The functions shall include creating and managing users and groups, defining luminaire groups, configurations, monitoring, control, and basic and custom report generation. The CMS shall be accessible through a handheld mobile device via a web browser/native application that renders content in a format designed to accommodate the size and user interface of the mobile device. All asset data shall be stored in the CMS. The CMS shall be capable of storing the following:

1. Pole number
2. Pole type
3. Pole GPS location
4. Pole grouping
5. Luminaire make and model
6. Luminaire nominal input voltage
7. Luminaire wattage
8. Luminaire installation date
9. Utility billing account number

The CMS shall be capable of retrieving and storing all remote monitoring data. The CMS shall ensure secure communication between itself and all field devices by logically enabling security features inherent to the underlying communications protocols. The CMS shall be capable of detecting communication failures between field devices and the CMS. The CMS shall be capable of delivering field device firmware upgrades over the backhaul communication network. The CMS shall be capable of remotely monitoring field device performance, in order to identify and report any exception to normal field device operation.

The CMS shall be capable of retrieving and storing the controller/node status, luminaire status, average input voltage in ON state, average input current in ON state, average true power in ON state, average input power factor in ON state, cumulative ON state time, cumulative energy consumption, and GPS location. The CMS shall be capable of creating programs for time-based scheduled control that are defined on a daily recurring basis.

The CMS shall be capable of manual control, whereby the ON/OFF and dimmed state of a single luminaire or group of luminaires is modified in response to commands created by the CMS. The CMS shall be capable of creating programs for prioritized control, whereby the scheduled control of individual luminaires or groups of luminaires is modified or overridden according to input from sensors and/or commands from the CMS/ emergency personnel. The CMS shall be capable of creating programs for scheduled control, whereby the ON/OFF and dimmed state of a single luminaire or a group of luminaires is modified according to a predefined schedule.

The CMS shall be capable of creating customized asset reports. The CMS shall be capable of comparing all reported control point parameters with optional pre-defined maximum and minimum thresholds, and generating error messages in real-time (based on reported data availability) for any condition that violates a specified threshold a specified number (1 or more) of times. The CMS shall be capable of creating pre-defined monitoring reports containing;

The instances of communication loss between field devices (Gateway and Node) and the CMS

- (a) Control points with error conditions sorted by error type and/or electrical service point location
- (b) Energy consumption data for individual luminaires or groups of luminaires

The system shall generate notifications, whereby specified remote monitoring reports are sent to assigned users or user groups via text message and/or email.

Protocol Requirements List (PRL) Table

User Need ID	User Need	FR ID	Functional Requirement	Conformance	Project Requirement	Additional Project Requirements
2.4.1	Operational User Needs			M	Yes	
2.4.1.1	Provide Live Data			M	Yes	
		3.3.1.1	Retrieve Data	M	Yes	
		3.3.1.2	Deliver Data	M	Yes	
		3.3.1.3	Data Retrieval and Data Delivery Action Performance	M	Yes	
		3.5.5.1	Live Data Response Time	M	Yes	
2.4.1.2	Provide Off-line Log Data			O	Yes	
		3.3.2.1	Retrieve Configuration of Logging service	M	Yes	
		3.3.2.2	Configure Logging Service	M	Yes	
		3.3.2.4	Clear Log	M	Yes	
		3.3.2.5	Retrieve Capabilities of Event Logging Services	M	Yes	
		3.3.2.6	Retrieve Number of Events Currently Logged	M	Yes	
		3.3.2.7	Set Time	M	Yes	
		3.3.2.8	Retrieve Current Time	M	Yes	
		3.3.2.9	Set Daylight Savings Time Mode	M	Yes	
		3.3.2.10	ELMS Pre-defined Event Configurations	M	Yes	
		3.3.2.10.1	Supported Event Classes	M	Yes	
		3.5.4	Supplemental Requirements for Event Logs	M	Yes	
2.4.1.2.1	Provide Luminaire Switch State Logging			O	Yes	
		3.3.2.10.2	Luminaire Switch State Log	O	Yes	
2.4.1.2.2	Provide Luminaire Lamp Condition Logging			O	Yes	
		3.3.2.10.3	Luminaire Lamp Condition Log	O	Yes	
2.4.1.2.3	Provide Luminaire Burn Condition Logging			O	Yes	
		3.3.2.10.4	Luminaire Burn Condition Log	O	Yes	
2.4.1.2.4	Provide Periodic Luminaire Burn Time Logging			O	Yes	
		3.3.2.10.5	Periodic Luminaire Burn Time Log	O	Yes	
2.4.1.2.5	Provide Luminaire Temperature Logging			O	Yes / No	
		3.3.2.10.6	Luminaire Temperature Log	O	Yes / No	
2.4.1.2.6	Provide Luminaire Pole Condition Logging			O	Yes	
		3.3.2.10.7	Luminaire Pole Condition Log	O	Yes	
2.4.1.2.7	Provide Relay Switch State Logging			O	Yes	
		3.3.2.10.8	Relay Switch State Log	O	Yes	
2.4.1.2.8	Provide Power Meter Switch State Logging			O	Yes	
		3.3.2.10.9	Power Meter Switch State Log	O	Yes	
2.4.1.2.9	Provide Periodic Power Meter Measurement Logging			O	Yes	
		3.3.2.10.10	Periodic Power Meter Measurement Log	O	Yes	

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User Need ID	User Need	FR ID	Functional Requirement	Conformance	Project Requirement	Additional Project Requirements
2.4.1.2.10	Provide Power Meter Condition Logging			O	Yes	
		3.3.2.10.11	Power Meter Condition Log	O	Yes	
2.4.1.2.11	Provide Ground Fault Switch State Logging			O	No	
		3.3.2.10.12	Ground Fault Switch State Log	O	No	
2.4.1.2.12	Provide Periodic Ground Fault Measurement Logging			O	No	
		3.3.2.10.13	Periodic Ground Fault Measurement Log	O	No	
2.4.1.2.13	Retrieve Logged Data			M	Yes	
		3.3.2.3	Retrieve Logged Data	M	Yes	
2.4.1.3	Monitor Exceptional Conditions			O	Yes	
		3.3.3.1	Retrieve Current Configuration of Exception Reporting Service	M	Yes	
		3.3.3.2	Configure Events	M	Yes	
		3.3.3.3	Provide Automatic Reporting of Events (SNMP Traps)	M	Yes	
		3.3.3.4	Manage Exception Reporting	M	Yes	
		3.3.3.5	Retrieve Capabilities of Exception Reporting Service	M	Yes	
		3.3.3.6	Retrieve Current Number of Exception Events	M	Yes	
		3.3.3.7	Record and Timestamp Events	M	Yes	
2.4.2	Features			M	Yes	
2.4.2.1	Configure ELMS Device			M	Yes	
2.4.2.1.1	Configure Luminaire			M	Yes	
2.4.2.1.1.1	Retrieve Luminaire Information			M	Yes	
		3.4.1.1.1.1	Retrieve Luminaire Pole Identifier	O	Yes	
		3.4.1.1.1.2	Retrieve Luminaire Location	M	Yes	
		3.4.1.1.1.3	Retrieve Luminaire Mode	M	Yes	
		3.4.1.1.1.4	Retrieve Luminaire Zone	O	Yes	
		3.4.1.1.1.5	Retrieve Luminaire Vendor Information	M	Yes	
2.4.2.1.1.2	Configure Luminaire Identification Information			M	Yes	
		3.4.1.1.1.2.1	Specify Location in Longitude/Latitude Coordinates	O	Yes	
		3.4.1.1.1.2.2	Specify Location Information Using Textual Description of a Road/Street/Block Name/Number	M	Yes	The ELMS device shall support a location name of at least 128 Characters.
		3.4.1.1.1.2.3	Specify Location in local reference coordinate grid	O	No	
		3.4.1.1.2.1	Configure Luminaire Pole Identifier	O	Yes	
		3.4.1.1.2.2	Configure Luminaire Location	M	Yes	
2.4.2.1.1.3	Configure Luminaire Mode			M	Yes	
		3.4.1.1.3	Configure Luminaire Mode	M	Yes	

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User Need ID	User Need	FR ID	Functional Requirement	Conformance	Project Requirement	Additional Project Requirements
2.4.2.1.2	Configure Electrical Service			O	Yes	
2.4.2.1.2.1	Retrieve Electrical Service Information			O	Yes	
		3.4.1.2.1.1	Retrieve Electrical Service Location	M	Yes	
		3.4.1.2.1.2	Retrieve Electrical Service Zone	O	Yes	
		3.4.1.2.1.3	Retrieve Electrical Service Pole Identifier	O	No	
		3.4.1.2.2.1	Configure Electrical Service Location	M	Yes	
		3.4.1.2.2.2	Configure Electrical Service Pole Identifier	O	No	
2.4.2.1.3	Configure for Light Activated Operation			O	Yes	
		3.4.1.3.1	Configure Luminaire for Light Activated Operations	M	Yes	
		3.4.1.3.2	Configure Electrical Service for Light Activated Operations	O	Yes	
		3.4.1.3.3	Configure Branch Circuit for Light Activated Operations	O	Yes	
		3.4.1.3.4	Configure Devices in Zone for Light Activated Operations	O	Yes	
2.4.2.1.4	Configure for Scheduled Operation			O	Yes	
		3.4.1.4.1.	Configure Luminaire for Scheduled Operations	O.1 (1..*)	Yes	
		3.4.1.4.2	Configure Electrical Service for Scheduled Operations	O.2 (1..*)	Yes	
		3.4.1.4.3.	Configure Branch Circuit for Scheduled Operations	O.3 (1..*)	Yes	
		3.4.1.4.4.	Configure Devices in Zone for Scheduled Operations	O.4 (1..*)	Yes	
		3.4.1.4.5	Schedule ELMS Device Event	M	Yes	
		3.4.1.4.6	Retrieve a Schedule	M	Yes	
		3.5.1	Supplemental Requirements for Scheduled Operations	M	Yes	
2.4.2.1.5	Configure Zones			O	Yes	
		3.4.1.5.1	Configure Luminaire Zone	M	Yes	
		3.4.1.5.2	Configure Electrical Service Zone	O	Yes	
		3.4.1.5.3	Configure Branch Circuit Zone	O	Yes	
		3.4.1.5.4	Define Zones	M	Yes	
		3.5.2	Supplemental Requirements for Zones	M	Yes	
2.4.2.1.6	Configure for Manual Operation			M	Yes	
		3.4.1.8.1	Configure Luminaire for Manual Operation	M	Yes	
		3.4.1.8.2	Configure Electrical Service for Manual Operations	O	Yes	
		3.4.1.8.3	Configure Branch Circuit for Manual	O	Yes	
			Operations			
		3.4.1.8.4	Configure Devices in Zone for Manual Operations	O	Yes	

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User Need ID	User Need	FR ID	Functional Requirement	Conformance	Project Requirement	Additional Project Requirements
2.4.2.1.7	Configure Stagger Interval			O	Yes	
		3.4.1.6.1	Configure Luminaire Stagger Interval	M	Yes	The ELMS device shall support a stagger interval with a maximum value of 30 seconds.
		3.4.1.6.2	Configure Branch Circuit Stagger Interval	O	Yes	The ELMS device shall support a stagger interval with a maximum value of 30 seconds.
2.4.2.1.8	Configure Dim Levels			O	Yes	
		3.4.1.7.1	Configure Luminaire Dim Level	M	Yes	
		3.4.1.7.2	Configure Electrical Service Dim Level	O	Yes	
		3.4.1.7.3	Configure Branch Circuit Dim Level	O	Yes	
		3.4.1.7.4	Configure Dim Level for Devices in Zone	O	Yes	
		3.5.3	Supplemental Requirements for Dim Levels	M	Yes	
2.4.2.1.9	Configure Electrical Service Monitoring and Metering Equipment			O	No	
		3.4.1.9.1	Configure Branch Circuit Ground Fault Detector	O	No	
		3.4.1.9.2	Configure Branch Circuit Power Meter	O	No	
		3.4.1.9.3	Configure Branch Circuit Arc Fault Detector	O	No	
2.4.2.1.10	Configure Branch Circuit			O	Yes	
2.4.2.1.10.1	Retrieve Branch Circuit Information			O	Yes	
		3.4.1.10.1.1	Retrieve Branch Circuit Zone	O	Yes	
		3.4.1.10.1.2	Retrieve Branch Circuit Location	O	Yes	
		3.4.1.10.1.3	Retrieve Branch Circuit Pole Identifier	O	Yes	
2.4.2.1.10.2	Configure Branch Circuit			O	Yes	
		3.4.1.10.2.1	Configure Branch Circuit Location	O	Yes	
		3.4.1.10.2.2	Configure Branch Circuit Pole Identifier	O	Yes	
2.4.2.2	Control Device			M	Yes	
2.4.2.2.1	Control Luminaire			M	Yes	
		3.4.2.1.1	Control Luminaire by Permanent/Continuous Override	M	Yes	
		3.4.2.1.2	Control Luminaire by Transitory Override	O	Yes	
		3.4.2.1.3	Control Luminaire by Timed Override	O	Yes	
		3.4.2.1.4	Control Luminaire in Stagger Mode	O	Yes	
2.4.2.2.2	Control Electrical Service			O	Yes	
		3.4.2.2.1	Control Electrical Service by Permanent/Continuous Override	M	Yes	

FAI Route 74 (I-74)
Project NHPP-NHS-0074 (326)
Section (81-1)R-1 & 81-1(HBR, HBR-1, HBR-2)
Rock Island County
Contract No. 64E26

		3.4.2.2.2	Control Electrical Service by Transitory Override	O	Yes	
		3.4.2.2.3	Control Electrical Service by Timed Override	O	Yes	
		3.4.2.3.4	Control Electrical Service in Stagger Mode	O	Yes	

FAI Route 74 (I-74)
 Project NHPP-NHS-0074 (326)
 Section (81-1)R-1 & 81-1(HBR, HBR-1, HBR-2)
 Rock Island County
 Contract No. 64E26

User Need ID	User Need	FR ID	Functional Requirement	Conformance	Project Requirement	Additional Project Requirements
2.4.2.2.3	Control Branch Circuit			O	Yes	
		3.4.2.3.1	Control Branch Circuit by Permanent/Continuous Override	M	Yes	
		3.4.2.3.2	Control Branch Circuit by Transitory Override	O	Yes	
		3.4.2.3.3	Control Branch Circuit by Timed Override	O	Yes	
		3.4.2.3.4	Control Branch Circuit in Stagger Mode	O	Yes	
2.4.2.3	Control Devices by Zone			O	Yes	
		3.4.2.4.1	Control Devices in Zone by Permanent/Continuous Override	M	Yes	
		3.4.2.4.2	Control Devices in Zone by Transitory Override	O	Yes	
		3.4.2.4.3	Control Devices in Zone by Timed Override	O	Yes	
2.4.2.4	Monitor Device Status			M	Yes	
2.4.2.4.1	Monitor Luminaire			M	Yes	
		3.4.3.1.1	Retrieve Luminaire Switch Status	M	Yes	
		3.4.3.1.2	Retrieve Luminaire Temperature	O	No	Units are in tenths of degrees Celsius
		3.4.3.1.3	Retrieve Luminaire Burn Time Statistics	O	Yes	
		3.4.3.1.4	Retrieve Luminaire Pole Status	O	Yes	
		3.4.3.1.5	Retrieve Luminaire Dimming Level Output	O	Yes	
		3.4.3.1.6	Retrieve Luminaire Lamp Status	O	Yes	
		3.4.3.1.7	Retrieve Luminaire Power Usage Statistics	O	Yes	
		3.4.3.1.8	Retrieve Luminaire Ballast Status	O	Yes	
		3.4.3.1.9	Retrieve Luminaire Starter Status	O	Yes	
2.4.2.4.2	Monitor Electrical Service			O	Yes	
		3.4.3.2.1	Retrieve Electrical Service Ground Fault Status	O	No	
		3.4.3.2.2	Retrieve Electrical Service Hours	O	Yes	
		3.4.3.2.3	Retrieve Electrical Service Operational Status	M	Yes	
		3.4.3.2.4	Retrieve Electrical Service Power Readings	O	Yes	
		3.4.3.2.5	Retrieve Electrical Service Main Breaker Status	O	Yes	
		3.4.3.2.6	Retrieve Electrical Service Arc Fault Status	O	No	
2.4.2.4.3	Monitor Branch Circuit			O	Yes	
		3.4.3.3.1	Retrieve Branch Circuit Power Readings	O	No	
		3.4.3.3.2	Retrieve Branch Circuit Arc Fault Status	O	No	
		3.4.3.3.3	Retrieve Branch Circuit Breaker Status	O	Yes	
		3.4.3.3.4	Retrieve Branch Circuit Operational Status	M	Yes	
		3.4.3.3.5	Retrieve Branch Circuit Hours	O	No	
		3.4.3.3.6	Retrieve Branch Circuit Ground Fault Status	O	No	

3.2.6 Supplemental Requirements Table

This table includes all of the supplemental requirements that a referenced within the PRL. Some of the supplemental requirements require input from the user in order to further specify ranges or values of specific features. In the event that the additional project

Supplemental Requirement ID	Supplemental Requirement	Conformance	Project Requirement	Additional Project Requirements
3.5	Supplemental Requirements	M	Yes	
	Supplemental Requirements for Scheduled Operations			
3.5.1		M	Yes	
3.5.1.1	Support a Number of Actions	M	Yes	The ELMS Device shall support at least 128 Actions.
3.5.1.2	Support a Number of Day Plans	M	Yes	The ELMS Device shall support at least 64 Day Plans.
3.5.1.3	Perform Action at Scheduled Time	M	Yes	
3.5.2	Supplemental Requirements for Zones	M	Yes	
	Define Number of Zones Supported by an ELMS Device			The ELMS Device shall support at least (0..65535) Zones.
3.5.2.1		O	No	
3.5.2.2	Define Number of ELMS Devices for a Zone	O	No	At least (0..65535) ELMS devices shall be able to be assigned to a single zone.
3.5.3	Supplemental Requirements for Dim Levels	M	Yes	
	Define Dim Levels as a percentage of maximum brightness			
3.5.3.1		O	Yes	
3.5.4	Supplemental Requirements for Event Logs	M	Yes	
	Configure Number of Events in Event Log			The ELMS device shall support at least (1..255) events.
3.5.4.1		O	No	
3.5.4.2	Configure Number of Event Classes	O	No	The ELMS device shall support at least (1..255) classes.
3.5.4.3	Configure Number of Event Types	O	No	The ELMS device shall support at least (1..255) event types.
3.5.5	Supplemental Requirements for Live Data	M	Yes	
				The device shall initiate the transmission of the appropriate response (assuming that the device has permission to transmit) within
3.5.5.1	Live Data Response Time	M	Yes	
				millisecond(s) of receiving the last byte of the request, plus 1 millisecond for each byte in the response variable-bindings field

Backhaul Communication Network. The Backhaul Communication Network (BCN) shall be able to link the CMS to one or more networks of field devices (controllers and gateway). The BCN shall be a wireless cellular connection. Backhaul equipment shall operate between universal input 120-277V. Backhaul equipment shall be sealed and UL listed for wet location and shall have a minimum IEC ingress protection rating of IP 65.

The cellular modem configuration will be determined by the Engineer. The monthly cellular data charges will be initiated and paid for by the Contractor. The Contractor will cancel the cellular service at the end of the contract, so that IDOT can commence payments for the monthly cellular data charges. The modem shall be furnished with the necessary mounting hardware, antennas, antenna mounting hardware, and antenna cables.

The BCN shall use an open, standard-based physical layer for communication such as IEEE 802.15.4g for wireless mesh networks or Global System for Mobile communications (GSM) standards for cellular networks. The BCN shall be capable of connecting to CMSs using open, standard-based networking technologies such as http, https, SMTP, SNMP, COAP, TCP, UDP or FTP.

All data communications over the BCN between the gateway and the CMS shall be secured using a standard-based security protocol and shall be capable of communicating using Internet Protocol version 6 (IPv6). Every device must be addressable via an assigned IPv6 address.

The BCN shall allow only authenticated and authorized access to network services by a CMS or gateway. The BCN shall be capable of maintaining time either on its own or by synchronizing with a remote service.

The BCN shall provide a detailed view of network performance, including available bandwidth, gateway reachability, round-trip times, path costs, and packet delivery success/failure. BCN components shall be capable of logging time-stamped activity. The logging level shall be configurable. Any write and execute operations completed by the device shall be recorded together with the source IP address.

The BCN shall provide basic firewall capabilities, including filtering by port, protocol, source IP address, and destination IP address. The BCN shall be capable of two-way communication and shall support failover to alternate routes. The BCN shall be capable of automatic retries during message/packet delivery attempts. The BCN shall be capable of generating asynchronous alerts and routing both its own alerts and other devices' alerts to the CMS.

The BCN shall be able to prioritize the delivery of specified traffic types (e.g. high priority) over others (e.g. low priority). The BCN shall be capable of addressing groups of gateways for bulk messages including remote firmware upgrades and configuration changes.

Gateway. The gateway shall operate between universal input 120-277V. The power consumption shall not exceed 4 Watts. The gateway shall be capable of normal operation within a temperature range of -40 degrees Celsius to 70 degrees Celsius. All electronic components and PCB's shall be conformally coated.

The gateway shall be equipped with an internal GPS receiver for location reporting with an accuracy of +/- 1 meter. The gateway enclosure shall be sealed and UL listed for wet location and shall have a minimum IEC 529 or ANSI C136.25 ingress protection rating of IP 65. The Contractor shall mount the gateway in a location and in a method as approved by the manufacturer and as directed by the Engineer. The gateway's rated life shall be 15 years or more at an average ambient temperature of 25 degrees Celsius.

Controller (Node). The controller (node) shall be mounted on the luminaires and the lighting controller cabinets in a manner that does not reduce the IP protection rating. Controllers shall be integrated (mechanically and electrically connected) at control points external to luminaires, using a A N S I C136.41 standard polarized, 7-pin twist-lock photocell receptacle for both electrical and dimming control signal connectivity. Controller shall operate between universal input 120-277V. The total power consumption for the controller shall not exceed 3W. The Controller shall be capable of normal operation within a temperature range of -40 degrees C to 70 degrees C. All electronic components and PCB's shall be conformally coated.

All controllers shall continuously adjust the load consumption within 2% of the user defined target over the full temperature range. All controllers shall utilize a power change ramp rate of 1 second per 1% of total load wattage change. All controllers shall support constant light output over the life of the load (lumen maintenance default is LM70). The controller shall be capable of actuating a luminaire dimmed state by creating a 0-10V control signal as per IEC 60929.

The controller shall be capable of measuring and monitoring RMS input voltage, RMS input current, apparent power (VA), true input power (watts) and power factor. The controller shall be capable of logging cumulative hours of luminaire ON state and cumulative energy consumption. All controllers shall contain a metrology subsystem that complies with ANSI 12.20- 0.5% metering accuracy class. The controller shall in all cases report the combined total of all energy consumed by both the controller and the load. Energy metering shall start within 3 seconds of power being applied to the controller and power outage recovery events shall not result in more than 3 seconds of unmetered energy consumption. The system shall report the total energy consumption in 15 minute intervals that shall end on the 1/4 hour GMT (IE 00:15:30:45).

The controller shall be capable of communicating the loss of electrical service and stored data to the CMS. The controller shall be able to differentiate between the power outage and power off (normal operation during the day time). The controller shall be capable of manual and schedule control of a single luminaire or group of luminaires. The controller shall be capable of adaptive control, whereby the ON/OFF and dimmed state of a single luminaire or a group of luminaires is modified in response to dynamic inputs from integral sensors and/or the CMS.

The controller shall continue to operate according to the most recently programmed schedule control during offline operation. The controller shall be capable of automatically maintaining constant luminaire output (lumens) over time by compensating for luminaire lumen depreciation.

The controller shall be equipped with an internal GPS receiver for location reporting with an accuracy of +/- 1 meter. All registered controllers will be prominently displayed on the plan/map view of the graphic user interface.

The controller rated life shall be 15 years or more at an average ambient temperature of 25 degrees Celsius.

System requirement. The Contractor shall provide all labor and equipment necessary to furnish and install a complete and fully functional WLCS for LED roadway lighting. Any added features or deviation in performance characteristics of the controller, gateway, BCN, or CMS as required above shall be clearly communicated in writing and included with the shop drawing submittal package.

Construction Requirements

System Installation. The WLCS component installation shall be performed by the Contractor. The WLCS manufacturer shall provide the Contractor all training manuals, instructions and support necessary to install the system.

Maintenance of Traffic. Any and all maintenance of traffic required for the installation of the wireless lighting control shall be included in this pay item. Maintenance of traffic shall be according to Section 701 of the Standard Specifications. The Contractor shall reference and utilize the following Illinois DOT highway standards for the proper setup of the maintenance of traffic:

1. 701011-04
2. 701101-05
3. 701301-04
4. 701400-09
5. 701406-11
6. 701421-08
7. 701426-09
8. 701428-01
9. 701456-04
10. 701901-06

Cellular Modem Installation. After installation of the wireless lighting control system is complete, the Contractor shall coordinate with the Engineer to ensure system functionality and to verify that the cellular modem will operate with the cellular service. Subsequently, Contractor shall provide the Engineer with the pertinent characteristics of the cellular modem (e.g., serial number, ESN, mac address) in the format specified by the Engineer. IDOT will then integrate the communications with their network. Contact information will be given by the Engineer.

System Start-up. System startup shall include the Contractor and a manufacturer's representative on site to support system startup and cover the following:

1. Power-up and power-down sequences.
2. Hardware configuration, calibration, and testing.
3. Software and firmware configuration, testing, and updating.
4. Troubleshooting.

System startup shall include a recorded training session made available to the Engineer as a DVD video file. Startup personnel shall provide instructions (at a minimum) on the following:

1. Inspect the installed system and identify any issues that need to be remedied.
2. Schedule with the Engineer and COM Center personnel in order to demonstrate and explain the operational characteristics of the system.
3. Reconfigure any and all hardware, firmware, or software as necessary to enable all system components to operate as intended.
4. Successfully demonstrate all system functions and report capabilities during system startup training.

Warranty. All wireless lighting control system equipment and related components shall be warranted and guaranteed against defects and/or failure in design, materials, and workmanship for a period of five (5) years. The Contractor shall submit the warranty terms as part of each material item's shop drawing submittal for approval.

The warranty shall provide that, in the event of a malfunction during the warranty period, the defective system component shall be replaced with a new component by the manufacturer or his/her representative.

Any system component that, in the opinion of the Engineer, fails three (3) times prior to the expiration of the warranty will be judged as an unsuitable system and shall require the entire system be replaced by the device manufacturer or representative with a new system of the same type at no additional cost to the Department. The unsuitable system shall be permanently removed from the project. A failure shall also be defined as the device becoming unable to comply with all applicable standards at the time of original construction.

All manufacturer's equipment guarantees or warranties shall be included in the maintenance manuals for the subject equipment.

Method of Measurement. The wireless lighting control system will be measured on a lump sum basis, complete. All related work, apparatus, wiring and testing shall be included.

Basis of Payment. This work will be paid for at the contract lump sum price for WIRELESS LIGHTING CONTROL SYSTEM, which shall be payment in full for a complete wireless lighting control system as stated herein.

CLOSED CIRCUIT TELEVISION CAMERA SYSTEM

Description. This item shall include the installation of two video cameras located within the I-74 IL corridor project limits from the Mississippi River to south of Avenue of the Cities. Cameras shall be located to provide full coverage of contract 64C08 and 64E26 construction sites. The cameras shall be equipped with robotic pan, tilt, zoom control that will be remotely operated through a website. The video images will also be stored.

Materials.

- Camera system, power supply and surge suppressors
- Cables for power, video, and camera control in accordance with the camera manufacturer's recommendations
- All mounting equipment required including pole installation if necessary to achieve full coverage of the project site

Camera system.

EarthCam GigapixelCam X1 Model # ECCS99974

1. The Contractor shall provide a Robotic High Definition Megapixel Webcam for users to remotely view the project on a secure connection via a network connection. The camera will provide a full view of the work area on the construction site.

CONTACT SYSTEM VENDOR: EarthCam / Peter Tolstyk +1(312)-239-3133 Email: ptolstyk@earthcam.com

2. The camera shall meet or exceed the following requirements:
 - 2.1 Thermostatically controlled IP66/IP67 rated environmentally sealed black powder coated enclosure with stainless steel hardware
 - 2.2 User controlled window wiper (optional)
 - 2.3 Industrial grade solid state embedded Linux System
 - 2.4 4K Broadcast Quality H264 Streaming Video, 1/2.3 CMOS Sensor
 - 2.5 Lens: F/1.8-F/2.0, 3.9-46.8mm, 12x Optical Zoom, 12x Digital Zoom, 144x Combined Zoom
 - 2.6 Auto Features: ISO, Shutter, White Balance and Focus
 - 2.7 Advanced Picture Control: Gamma Correction, Defog Mode, Noise Reduction, Chroma Suppress and Color Phase
 - 2.8 MJPEG Live streaming video preview with on-demand 4K broadcast quality video clip capability
 - 2.9 Ultra-precise, Pan/Tilt robotic base designed to provide consistent imaging in all environments
 - 2.10 Pan/Tilt: Pan Range 360° Continuous Pan, Tilt: +90° to -90° non-continuous pan mode. Motor Type: Stepper
 - 2.11 Ultra-expanded field of view
 - 2.12 12 Megapixel Archives
 - 2.13 Up to 5 Gigapixel (5000 megapixels) auto-generated 360° panoramas

- 2.14 Communications: 10base-T/100base-TX Ethernet, IP Addressing: Dynamic or Static
 - 2.15 32GB On-Board Data Backup to provide a minimum of thirty days of on-board image retention
 - 2.16 Short term power device to send alerts if camera goes offline
 - 2.17 120VAC, 220-230VAC or 12VDC power
 - 2.18 Designed for EarthCam Control Center
3. Internet Based Online Interface: The camera will be accessible via an internet based Software as a Service (SaaS) solution. This online interface will be managed and supported by the System Vendor. The service will be available for the term of the project and allow the viewing of live video and High Definition digital still images captured and stored of the project on both mobile and desktop platforms.

The Internet Based Online Interface shall include the following features:

- 3.1 Responsive HTML5 design for cross-platform access on desktop and mobile devices
- 3.2 Display project name and logo
- 3.3 Project Dashboard for viewing and accessing multiple cameras
- 3.4 Real-time live video viewing
- 3.5 User-controllable Robotic Pan, Tilt and Zoom
- 3.6 User-controllable settings for creating and editing multiple preset compositions
- 3.7 Automatically generated daily panoramas
- 3.8 Quarterly and on demand Gigapixel panoramas
- 3.9 Onscreen control button for wiper and washer control to allow for remote cleaning of the viewing window
- 3.10 Picture in picture capability for viewing live video and High Definition Megapixel images simultaneously
- 3.11 Digital Pan, Tilt and Zoom capability within a High Definition images
- 3.12 Instant live snapshot capability in addition to preset scheduled archives
- 3.13 Timeline navigation system for selecting specific images and times
- 3.14 Multifunction Image Browsing
- 3.15 Time-lapse feature with optional time date overlay for instant time-lapse viewing, downloading and embedding
- 3.16 Full Screen Mode for displaying complete image without any graphical frame
- 3.17 Photo Filters and Graphical Markup Tools for detailing and creating notes with graphical overlays on images, including project title, logo and time date stamp
- 3.18 Image Comparison Tool for comparing two images taken at different times, overlaid on top of each other
- 3.19 Share Image Tool for saving, printing, emailing and posting to Hall of Fame
- 3.20 Marketing Section for posting and sharing camera images with notes
- 3.21 Social Media Integration Tools for sharing project images and notes on Facebook and Twitter
- 3.22 Automatically generated daily/weekly project progress update email with camera image and weather

- 3.23 Graphical Weather applet displaying local weather data with satellite and updating radar imaging
 - 3.24 Integration of maps, aerial and satellite imagery
 - 3.25 Graphical Data Management Tools showing archived and current system status of solar amperage, battery power remaining, wireless radio connectivity and device location
 - 3.26 Automatically generated Progress Reports (in PDF and PowerPoint formats) using daily, or weekly camera images with associated weather data, notes, and client logo
4. Access to account protected by Account Security feature which includes four levels of password protection, IP address block/permission and SSL protection of user login password.
 5. The system shall capture and upload images every 15 minutes, 24 hours per day.
 6. The system shall have M2M – Machine to Machine 24/7 Support with active self-healing technology and automatic software upgrades to maintain the quality, consistency and reliability of all images.
 7. Images will be maintained on the System Vendor's servers for reference available at all times during the life of the project and for no less than 60 days after completion. All images will be protected on servers owned and operated by the System Vendor and located in a secure area at the System Vendor's location.
 8. The Contractor shall provide all service and maintenance, including cleaning, of the camera system throughout the life of the project including making appropriate arrangements for camera to remain in operation up to and through finalization of all structural, landscaping and "completed state" condition necessary for beginning-to-end time-lapse record.
 9. The System Vendor shall provide custom public website development. Website shall be separate from the Online Interface, match the look and colors of the project's website, and be delivered as embed code or standalone web page. Additional features include Facebook and Twitter integration, full screen mode, image comparison, weather, multiple logos, graphical background image and project description.
 10. The System Vendor shall provide time-lapse movie(s) at the end of the project. Time-lapses shall be professionally edited by a video editor using image stabilization software. The movie will start with a graphic, incorporating project title, date and logo. Periods of bad weather or inactivity shall be removed to produce a compelling and consistent movie. A machine edited movie will not be acceptable.
 11. The Contractor shall secure a nearby structure for camera mounting or provide a fixed pole (40 foot / 12 meters height recommended) and 3 inch / 8 centimeters minimum diameter as per System Vendor's instruction. The Contractor shall supply all equipment required for safe and secure access to the camera location for technicians performing installation and maintenance services, including building access, bucket truck and/or lift. The System Vendor will consult on and provide recommendations for optimal camera placement and provide professional installation services as required.

Requirements. Restrict the camera's field of view, if necessary, so that a user cannot use the cameras to look in the windows of dwellings, to the extent that it does not interfere with the use of the camera for construction viewing purposes; ensure that a camera cannot be used to view residential property. Prior to creating these restrictions, submit to the engineer a written description of the proposed restrictions to be installed at each camera, and the proposed method of achieving them. It shall not be possible for an operator to override these restrictions without intervention by his or her supervisor. Affixing a mask to the inside of the clear dome shall be an acceptable method to achieve this. Highlight situations in which there is a conflict between the need to protect privacy and the need to know about construction situations. Revise the field of view restrictions as directed by the engineer.

To ensure a prompt response to incidents involving the integrity of the camera and feed, the Contractor shall provide a telephone number where a responsible individual can be contacted. The Contractor shall dispatch sufficient resources within a 12 hour period. If the Contractor fails to restore the feed to full operation within the time limit specified above the engineer will impose a \$200 daily monetary deduction for each 24-hour period (or portion thereof) the deficiency exists. This time period will begin with the time of notification to the contractor and end with the Resident Engineer's acceptance of the corrections.

Website. The images and video streaming from the video camera shall be viewable from a website. This website shall have the capabilities to allow 10 different password users to operate the pan, tilt, and zoom features of the camera with a keyboard:

1. Construction Resident Engineer
2. Construction Field Engineer
3. Construction Engineer
4. Studies and Plans Project Manager
5. Illinois Bureau of Bridges and Structures
6. Iowa Department of Transportation
7. FHWA
8. AMEC (GEC)
9. TBD
10. TBD

IDOT also reserve the right to link to the website to use the images for display on the department internet or intranet web servers.

The images from the video camera are solely the Department of Transportation's property. These images shall not be used or reproduced without the written consent of the department.

Basis of Payment.

Measurement and payment for all work associated with the closed circuit television camera system including installation and maintenance shall be paid for/under each camera assembly per calendar month for CLOSED CIRCUIT TELEVISION CAMERA.