FEDERAL PROJECT NO. STP-9901(673)

CITY OF SAINT LOUIS

DEPARTMENT OF THE PRESIDENT, BOARD OF PUBLIC SERVICE

****

ADDENDUM NO. 4

TO

PLANS AND SPECIFICATIONS

FOR

UNION/LINDELL BRIDGE REPLACEMENT

ST. LOUIS, MISSOURI

DATE: **10/30/26**
LETTING NUMBER: **8798**

The following changes and additions shall be made in the plans, specifications, and bid form. The cost thereof shall be included in the proposals submitted by the bidders.

Receipt of this addendum must be acknowledged on Bid Express.

REVISIONS TO THE BID FORM

- Revise the quantity of line item "2031000 – Class A Excavation" from 1,876 CY to 14,706 CY.
- Revise the quantity of line item "3040143 – Type 1 Aggregate for Base (4 In. Thick)" from 3,875 SY to 3,886 SY.
- Revise the quantity of line item "6086005 – Concrete Sidewalk, 5 In." from 3,668.3 SY to 2,342.8 SY.
- Revise the quantity of line item "6089905 – Concrete Sidewalk, 5 In. (Exposed Aggregate)" from 206.4 SY to 37.7 SY.
- Add the line item "6089906 – Concrete Sidewalk, 6 In.", with a quantity of 1,325.5 SY.

- Add the line item "6089916 – Concrete Sidewalk, 6 In. (Exposed Aggregate)", with a quantity of 175.0 SY.

- Revise the quantity of line item "9011030 – Lighting Pole, 30 Ft. or 9.0M, Type AT" from 12 EA to 11 EA.

- Revise the quantity of line item "9011311 – Luminaire, LED-A" from 15 EA to 14 EA.

- Revise the quantity of line item "9019904 – Stresscrete Groupe Luminaire, Installed" from 38 EA to 39 EA.

- Revise the quantity of line item "9019905 – Stresscrete Groupe Pole Single, Installed" from 8 EA to 9 EA.

REVISIONS TO THE PLANS

This addendum issues eight revised plan sheets and adds 31 new plan sheets to the contract documents.

- The following two plan sheets have been revised with updated bid quantities to reflect changes authorized on this addendum:
  - Plan Sheets 2B.1 & 2B.2
- The following six plan sheets have been revised with updated lighting details:
  - Plan Sheets LI5.1, LI5.3, and LI5.5 through LI5.8

- The following 31 plan sheets showing cross-sections are added to the contract.
  - Plan Sheets XS.1 through XS.31

REVISIONS TO THE PROJECT SPECIFICATIONS

- Revise "Roadway JSP KK – Exposed Aggregate Finishes, Sidewalks".
- Revise "Roadway JSP LLL – Bridge Lighting".
- Add "Roadway JSP NNNN – Concrete Sidewalk, 6 In." to the contract.

NOTE: The addendum includes the entire signed/sealed revised JSP packet for the roadway JSPs. Revised JSPs are identified in the table of contents, and all revised/added text are highlighted.

ADDITIONAL DOCUMENTS

The following documents are being provided to assist bidders with interpreting the plans and specifications:

- Plan Sheet C4.2 with notes related to the 12" and 20" water main relocation is included as the last attachment to this addendum.
- Metro Standard Drawing #433 (referenced in Note 2 on Sheet C4.11) is available to download from the "Plans, Specifications, & Addenda" section of the Bid Express page.

END OF ADDENDUM NO. 3

Attachments:

Plan Sheets (39 pages)
Roadway JSP Packet (188 pages)
Marked-Up Plan Sheet C4.2 (1 page)

REMOVAL OF IMPROVEMENTS

SHEET NO.	ROADWAY	STATION BEGIN	STATION END	SIDE	DESCRIPTION	QUANTITY	UNITS
	LINDELL	8+91.25		RT	SIGN	1	EACH
	LINDELL	8+91.80		RT	SIGN		EACH
	LINDELL	9+99		RT	SIGNAL PULL BOX	1	EACH
	LINDELL	10+45.37		RT	TREE	1	EACH
	LINDELL	10+77.94		RT	TREE	1	EACH
	LINDELL	10+28.22		LT	SIGNAL PULL BOX	1	EACH
	LINDELL	11+04.55		RT	TREE	1	EACH
	LINDELL	12+12.00	13+01.00	LT	EXIST. 36"X48" BRK SEWER	89	LF
	LINDELL	14+38.31		LT	RBO UTILITY POLE	1	EACH
	LINDELL	14+46.12		LT	SIGNAL POST	1	EACH
	LINDELL	15+97.33		LT	SIGNAL POST	1	EACH
	LINDELL	16+78.32		LT	PULL BOX	1	EACH
	LINDELL	14+42.01		RT	UTILITY POLE	1	EACH
	LINDELL	14+49.13		RT	SIGNAL POST	1	EACH
	LINDELL	15+88.60		RT	SIGNAL POLE	1	EACH
	UNION	8+38.65	8+72.83	LT	12" VCP	17.82'	LF
	UNION	8+72.83		LT	EXIST. INLET	1	EACH
	UNION	10+46.15		LT	RBO UTILITY POLE	1	EACH
	UNION	11+97.60		LT	RBO UTILITY POLE	1	EACH
	UNION	11+17.78		RT	RBO UTILITY POLE	1	EACH
	UNION	11+46.73	11+67.00	RT	EXIST. 48" RCP	21	LF
	UNION	11+67.00		RT	15'-6"W x 12'-6" BULKHEAD	1	EACH
	UNION	11+67.00	12+02.00	RT	15'-6"Wx12'-6" BRICK SEWER	35	LF
	UNION	11+91.09		RT	RBO UTILITY POLE	1	LF
	UNION	8+72.60		LT	EXIST. INLET	1	EACH
	UNION	8+72.61		RT	EXIST. UTILITY POLE	1	EACH
	UNION	14+31.24		RT	EXIST. SIGN	1	EACH
	UNION	16+24.94		RT	EXIST. SIGN	1	EACH
	UNION	13+82.30		LT	TREE	1	EACH
	UNION	14+02.51		RT	TREE	1	EACH
	FPP CONN.	21+26.03		RT	TREE	1	EACH
	FPP CONN.	21+85.54		LT	TREE	1	EACH
	FPP CONN.	21+91.57		LT	TREE	1	EACH
	FPP CONN.	22+25.30		RT	TREE	1	EACH
	FPP CONN.	22+42.30		LT	TREE	1	EACH
	FPP CONN.	22+52.59		RT	TREE	1	EACH
	FPP CONN.	22+53.75		RT	TREE	1	EACH
	FPP CONN.	22+70.91		RT	TREE	1	EACH
	FPP CONN.	22+79.98		LT	EXIST. INLET	1	EACH
	FPP	62+04.56	63+54.42	LT/RT	EXIST. GUARDRAIL	243.75	LF
	FPP CONN.	20+78.60	26+06.42	LT/RT	EXIST. GUARDRAIL	275	LF
	UNION	7+46.46	8+58.94	RT	EXIST. FENCE	98	LF
	FPP CONN.	20+59.89	23+04.93	LT/RT	EXIST. FENCE	361	LF
	FPP	70+69.68	77+38.76	LT	EXIST. FENCE	633	LF
	FPP	67+27.79		LT	EXIST. INLET	1	EACH
	FPP	68+19.69		LT	EXIST. DOUBLE INLET	1	EACH
	FPP	70+78.23		LT	EXIST. INLET	1	EACH
	FPP	70.97.45		LT	EXIST. DOUBLE INLET	1	EACH
	FPP	68+19.72		LT	EXIST. INLET	1	EACH
	FPP	73+71.93		LT	EXIST. INLET	1	EACH
	FPP	77+57.00	79+07.00	LT	EXIST. FENCE	150	LF
	FPP	78+05.00	78+59.00	LT	EXIST.CONC.PAVEMENT&CURB	54	LF
	W.B.TRACK 1	1332+52.00		RT	EXIST. GRATE INLET	1	EACH
	W.B.TRACK 1	1334+00.00		RT	EXIST. GRATE MANHOLE	1	EACH
	W.B.TRACK 1	1335+01.00		RT	EXIST. GRATE INLET	1	EACH
	W.B.TRACK 1	1332+52.00	1334+00.00	RT	EXIST. 12" VCP SEWER	146	LF
	W.B.TRACK 1	1335+01.00	1334+00.00	RT	EXIST. 27" VCP SEWER	100	LF
	W.B.TRACK 1	1324+45.00	1324+97.00	RT/LT	EXIST. CROSSING PANELS	52	LF
	W.B.TRACK 1	1324+45.00	1324+97.00	RT	EXIST. PAVEMENT & BASE	70	SY
	W.B.TRACK 1	1324+45.00	1324+97.00	RT	EXIST.RCP & END SECTIONS	52	LF
	E.B.TRACK 2	1324+41.00	1324+93.00	RT/LT	EXIST. CROSSING PANELS	52	LF
	E.B.TRACK 2	1324+41.00	1324+93.00	RT/LT	EXIST. PAVEMENT & BASE	150	SY
	E.B.TRACK 1	1324+45.00	1324+97.00	LT	EXIST.RCP & END SECTIONS	52	LF
			SUBTOTAL			1 LS	
			TOTAL			1 LS	

TEMPORARY TRAFFIC CONTROL
1 LUMP SUM

MOBILIZATION
1 LUMP SUM

BITUMINOUS PAVEMENT

SHEET NO.	ROADWAY	STATION	STATION	COLDMILLING	BITUMINOUS PAVEMENT MIXTURE PG58-28 (BP-1) 3"	TACK COAT	REMARKS
				(SY)	(TONS)	(GAL)	
	PARK RD	28+32.47	29+41.45	314	54.1	47	
	LINDELL	18+40.00	19+00.00	334	57.5	50	
	FPP	78+08.19	78+56.19			3	SUBTOTAL FROM 2B.3
			SUBTOTAL	648	111.6	100	
			TOTAL	648	111.6	100	

PAVEMENT AND BASE

SHEET NO.	ROADWAY	STATION	STATION	SIDE	FULL DEPTH SAWCUT	10" NRCCP	6" NRCCP ON BRIDGE DECK	TYPE 5 AGGREGATE FOR BASE (4")	TYPE "A" INTEGRAL CURB 6"	TYPE "O" INTEGRAL CURB 6"	TYPE "F" SEPARATED CURB 6"	PAVED APPROACH 7"	TYPE "A" INTEGRAL CURB 6" GRASS MEDIAN	FILL ON BRIDGE DECK	CONCRETE MEDIAN STRIP 6"
					(LF)	(SY)		(SY)	(LF)	(LF)	(LF)	(SY)	(LF)	(CY)	(SY)
	LINDELL	9+80.00	13+25.16	LT/RT	50	1970.8		1971	678						
	LINDELL	15+35.79	18+40.00	LT/RT	50	1876.7		1877	630						
	PARK RD								165						
	UNION	7+25.00	9+65.04	LT/RT	77	1685.9		1686	354						
	UNION	11+69.81	13+20.23	LT/RT		775.9		776	317						
	UNION	14+20.20	16+31.43	LT/RT	53	968.8		969	456						
	FPP CONN.	20+55.54	23+40.23	LT/RT	72	1581.7		1582	614						
	FPP CONN./UNI	13+20.23	14+20.20	LT/RT		734.8		735	220						
	FPP	62+00.00	66+50.00	LT/RT	65.5	3314.0		3314	144						
	FPP	66+50.00	77+38.40	LT/RT	1143	2268.0		2268	1110						
	LINDELL	13+23.37	14+23.45	LT/RT			595.4							105.2	
	UNION	10+69.46	11+71.55	LT/RT			543.3							150.3	
	LINDELL	14+23.45	15+37.57	LT/RT			1152.9							242.1	
	UNION	7+45.00		LT								32.6			
	UNION	7+48.75		RT								31.9			
	UNION	9+20.73	9+35.55	RT					15						
	UNION	9+48.51	9+71.97	RT						36					
	LINDELL	12+95.31	14+23.45	LT					129						
	LINDELL	12+82.58	13+12.66	LT					31						
	LINDELL	13+49.39	14+23.45	RT					75						
	LINDELL	14+36.95	14+60.93	RT						31					
	LINDELL	14+36.47	14+55.15	RT							24				
	UNION	10+55.71	11+37.39	RT					82						
	UNION	10+69.46	11+85.27	LT					116						
	LINDELL	15+26.74	15+49.28	RT						29					
	LINDELL	15+32.03	15+49.22	RT							22				
	LINDELL	15+62.25	15+66.80	RT					5						
	UNION	9+59.00	9+78.04	RT											16.7
	UNION	10+19.83	10+32.21	RT											14.3
	LINDELL	15+22.67	15+38.67	RT											15.0
	LINDELL	15+17.91	15+38.68	LT											16.1
	UNION	14+55.16	16+59.22	RT									389		
			SUBTOTAL		1511	15176.6	2291.6	15178	5141	96	46	64.5	389	497.6	62.1
	SUBTOTAL FROM SHEET 2B.3					12.0		269				197.7			
			TOTAL		1511	15188.6	2291.6	15447	5141	96	46	262.2	389	497.6	62.1

EARTHWORK

ROADWAY	STATION BEGIN	STATION END	SIDE	CLASS A EXCAVATION (*)	UNCLASSIFIED EXCAVATION (*)	FILL (**)	EARTH BALANCE WASTE (+) SHORTAGE (-) 20% SHRINKAGE	EMBANKMENT IN PLACE 20% SHRINKAGE	COMPACTING EMBANKMENT	COMPACTING IN CUT	WASTE	REMARKS
				(CY)		(CY)	(CY)	(CY)	(CY)	(STA)	(CY)	
LINDELL	9+80.00	19+00.00	RT/LT	720		2258	-1682.0	1845.6	600	4.60		
UNION	7+25.00	16+31.41	RT/LT	514		4513	-4101.8	4798.8	428.3	3.87		
FPP	62+00.00	77+38.40	RT/LT		10972	-	+8777.6	-	-	15.38	8777.6	
FPP CONN.	20+00.00	23+42.25	RT/LT	634		694	-186.8	72	528.3	2.22		
						890	-890	1068				ON BRIDGE
						101	-101	121				GRASS ON BRIDGE
				4951			+3960.8				3960.8	NORTH MSE WALL
				7887			+6309.6				6309.6	SOUTH MSE WALL
		SUBTOTAL		14706	10972			7905.4	1556.8	26.1	19048	
		TOTAL		14706	10972			7905.4	1556.8	26.1	19048	

(*) CUT FROM CROSS-SECTIONS
(**) FILL FROM CROSS-SECTIONS

4 REVISED

4 ADDED

4 REVISED

GUARDRAIL

ROADWAY	STATION BEGIN	STATION END	SIDE	MGS GUARDRAIL	TYPE E GUARD.	MGS VERTICAL BARRIER TRANSITION SECTION	BRIDGE ANCHOR SECTION (THRIE-BEAM) 12.5'	TRANSITION SECTION 6.25'	TYPE A CRASHWORTHY END TERMINAL (MASH)	MGS END ANCHOR	TYPE B CRASHWORTHY END TERMINAL (MASH)	REMARKS
				(LF)	(LF)	(EACH)	(EACH)	(EACH)	(EACH)	(EACH)		
LINDELL	15+97.08	16+65.83	RT	12.5			1	1		1		
LINDELL	12+42.26	12+73.51	LT	12.5			1	1		1		
UNION	8+98.11	8+23.11	RT			1			1			
FPP	61+59.71	62+85.47	RT	12.5		1			1			
FPP	62+00.00	63+30.00	LT		125		1					TYPE E
FPP	65+83.71	66+60.07	LT			1			1			
FPP	66+19.15	66+69.08	RT	12.5		1				1		INC. E. ANCHOR
FPP CONN.	22+79.86	23+07.39	RT	25					1			
FPP	68+48.55	69+38.29	CT								2	
		SUBTOTAL		75	125	5	3	2	5	3	2	
		TOTAL		75	125	5	3	2	5	3	2	

CONCRETE BARRIER AND FENCE

SHEET NO.	ROADWAY	STATION	STATION	SIDE	CONCRETE TRAFFIC BARRIER TYPE "C"	CONCRETE TRAFFIC BARRIER TYPE "D"	CHAIN LINK FENCE (72")	METRO GATE RELOCATION	REMARKS
					(LF)	(LF)	(LF)	(LS)	
	FPP	62+85.47	66+19.49	RT		335			
	FPP	63+30.90	65+84.34	LT		255			
	FPP	62+00.00	66+50.00	CENTER	450				
	FPP	65+83.36	77+38.40	LT			1210		
	UNION	12+16.32	12+86.78	LT		75			
	FPP		78+08.19	LT			81		
	FPP		79+09.00	LT			62		
	FPP		78+56.19	LT				1	
			TOTAL		450	665	1353	1	

4

CITY OF SAINT LOUIS
MISSOURI

DEPARTMENT OF THE PRESIDENT
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Chief of Design Division

ABNA Engineering, Inc. | HDR Engineering, Inc.

The professional whose personal seal and/or signature appears on this sheet assumes responsibility only for what appears on this sheet and disclaims (Pursuant to Section 327.411 RSMo) any responsibilities for all other drawings, supplemental drawings, plats, surveys, revisions, specifications, estimates, reports or other documents or instruments not sealed by the undersigned professional relating to or intended to be used for any part or parts of the project to which this sheet refers.

STATE OF MISSOURI
ABDELHAMID HADJRI
NUMBER E-29095
PROFESSIONAL ENGINEER

Abdelhamid Hadjri

Name

Lic. No.

ADDENDUM 4 10/30/26

Revision No. Date

STP-9901(663)

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

SUMMARY OF QUANTITIES 1 OF 4

SHEET NUMBER

2B.1

10/30/2026

Date

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

pw://gwhdrusceN01:HDR_US_Central_01/Documents/St Louis - Board of Public Service/STLBPS_Union Lindell/6.0_CAD_BIM/6.2_WIP/Sheets/Quantities/ADDENDUM 3&4_REVISION 2 TO Quantities-2B Sheets

DRAINAGE STRUCTURES

LOCATION	STATION	OFFSET	SIDE	STRUCTURE NUMBER	TO STRUCTURE	PIPE OPENINGS	CONNECTION TO EXISTING STRUCTURE	MSD CURB INLET, TRAPPED	MSD DOUBLE CURB INLET, UNTRAPPED	MSD AREA INLET, SINGLE, TRAPPED	MSD GRATED INLET, W/ SIDE INTAKE, TRAPPED	MSD MANHOLE	MSD SINGLE CURB INLET TOP	MSD DOUBLE CURB INLET TOP	MSD 2 GRATE INLET SEAT	MSD 2 GRATE INLET SEAT WITH SIDE INTAKE TOP	MSD MANHOLE TOP	12" PIPE	12" PVC PIPE	CLASS 3 EXC.	REMARKS
							(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(LF)	(LF)	(CUYD)	
LINDELL BLVD.	11+49.81	28.995	LT	E-2 CI (19G1-408C)	-	2		1					1							5.9	
LINDELL BLVD.	11+51.44	27.014	RT	E-1 CI	-	1		1					1							5.1	
FOREST PARK PKWY	62+71.47	31.925	RT	F-1 GI (19G1-411C)	-	2					1					1				4.9	
FOREST PARK PKWY	62+72.06	29.477	LT	F-2 GI (19G1-412C)	-	2					1					1				5.6	
FOREST PARK PKWY	63+37.91	29.286	LT	F-3 GI (19G1-413C)	-	2					1					1				5.9	
UNION BLVD.	8+74.37	23.49	LT	G-1 CI	-	1		1					1							8.8	
Park Rd	29+19.13	14.479	LT	J-1 CI	-	1		1					1							4.9	
UNION BLVD.	13+13.92	8.01	LT	D-5 CI	-	1		1					1							10.2	
UNION BLVD.	14+85.91	16.65	LT	D-4 MH	-	2						1					1			18.8	
UNION BLVD.	16+26.59	15.823	LT	D-2 DCI	-	3			1					1						10.8	
FOREST PARK PKWY	73+56.65	47.691	LT	I-1 CI	-	1		1					1							4.9	
FOREST PARK PKWY	72+04.00	47.709	LT	A-2 CI	-	1		1					1							4.5	
FOREST PARK PKWY	70+78.54	47.125	LT	A-1 CI	-	1		1					1							5.1	
FOREST PARK PKWY	66+45.27	31.046	RT	B-2 GI(19G1-0042D)	-	1					1					1				4.8	
FOREST PARK PKWY	67+15.77	38.146	LT	B-1 CI	-	1		1					1							4.9	
FOREST PARK CONN	22+99.62	36.509	RT	H-1 GI	-	2					1					1				6.5	
FOREST PARK CONN	22+99.92	15.017	LT	H-2 GI	-	1					1					1				5.9	
FOREST PARK CONN	22+94.39	27.493	LT	H-3 AI	-	1				1					1					8.1	
FOREST PARK PKWY	68+12.47	42.661	LT	C-1 CI	-	1		1					1							5.0	
FOREST PARK CONN	22+89.98	27.36	RT	H-4 GI	-	2					1					1				5.9	
Park Rd	29+34.99	15.97	LT	J-2 MH	-							1								13.4	
LINDELL BLVD.	11+51.44			E-1 CI	E-2 CI (19G1-408C)	-												56.0		43.1	PR SS-20
LINDELL BLVD.	11+49.81			E-2 CI (19G1-408C)	EXMH 19G1-407C	-	1												11.7	9.0	PR SS-21
FOREST PARK PKWY	62+71.47			F-1 GI (19G1-411C)	F-2 GI (19G1-412C)	-												61.4		47.3	PR SS-3
FOREST PARK PKWY	62+72.06			F-2 GI (19G1-412C)	F-3 GI (19G1-413C)	-												65.8		50.7	PR SS-4
FOREST PARK PKWY	63+37.91			F-3 GI (19G1-413C)	EXMH (19G1-143C)	-	1												11.6	8.9	PR SS-5
UNION BLVD.	13+13.92			D-5 CI	D-4 MH	-												176.0		135.6	PR SS-32
UNION BLVD.	14+85.91			D-4 MH	D-2 DCI	-												143.2		110.3	PR SS-1
UNION BLVD.	16+25.73			EXI 19G1-0378C	D-2 DCI	-												55.9		43.1	PR SS-39
UNION BLVD.	16+26.59			D-2 DCI	EXI 19G1-289C	-	1												59.1	45.5	PR SS-2
UNION BLVD.	8+74.37			G-1 CI	EXMH 19G1-0500C	-	1											57.0		43.9	PR SS-33
FOREST PARK PKWY	73+56.65			I-1 CI	EXI 19G1-0056D	-	1											83.8		64.6	PR SS-12
FOREST PARK PKWY	70+78.54			A-1 CI	EXI 19G1-0062D	-	1											93.0		71.6	PR SS-6
FOREST PARK CONN	22+94.39			H-3 GI	EXMH 19G1-0046D	-	1											58.8		45.3	PR SS-29
FOREST PARK PKWY	68+12.47			C-1 CI	EXI 19G1-0045D	-	1											46.1		35.5	PR SS-30
FOREST PARK PKWY	66+45.27			B-2 GI(19G1-0042D)	EXI 19G1-0041D	-	1											78.1		60.2	PR SS-24
FOREST PARK PKWY	67+15.77			B-1 CI	EXI 19G1-0041D	-	1											40.8		31.4	PR SS-25
FOREST PARK CONN	22+99.92			H-2 GI	H-4 GI	-												44.0		37.2	PR SS-28
FOREST PARK PKWY	61+15.72			EXI 19G1-410C	F-1 GI (19G1-411C)	-												155.8		120.0	PR SS-8
Park Rd	29+19.13			J-1 CI	J-2 MH	-	1												15.9	12.3	PR SS-35
FOREST PARK CONN	22+89.98			H-4 GI	H-1 GI	-												17.0		16.0	PR SS-27
					SUBTOTAL		11	10	1	1	7	2	10	1	1	7	1	1232.7	98.3	1181.5	
					SUBTOTAL FROM SHEET 2B.3												2			694.5	
					TOTAL		11	10	1	1	7	2	10	1	1	7	3	1233	99	1876	

SIDEWALK, CURB RAMP & BASE

ROADWAY	STATION	STATION	SIDE	CONCRETE SIDEWALK 5" STANDARD (SY)	CONCRETE SIDEWALK 5" EXPOSED AGG. (SY)	CONCRETE SIDEWALK 6" STANDARD (SY)	CONCRETE SIDEWALK 6" EXPOSED AGG. (SY)	TYPE 1 AGGREGATE FOR BASE (4") (SY)	CURB RAMP (SY)	FILL ON BRIDGE DECK (CY)
LINDELL	9+80.00	13+25.16	LT/RT	203.2		569.6		773		
LINDELL	15+35.79	18+40.40	LT/RT	268.1		289.9		579		
UNION	7+25.00	9+65.04	LT/RT	386.2	37.7			407		
UNION	11+69.81	18+40.00	LT/RT	1025.9				1026		
UNION	9+44.55		LT						13.3	
LINDELL	15+53.25		LT						12.2	
LINDELL	10+62.01		LT						6.8	
LINDELL	11+23.15		LT						11.4	
LINDELL	17+20.15		LT						14.3	
LINDELL	17+68.80		LT						13.9	
UNION	16+46.28		RT						12.5	
UNION	13+44.51		LT						10.4	
UNION	14+03.02		LT						13.3	
UNION	16+50.73		LT						7.1	
UNION	16+60.07		LT						5.8	
UNION	9+44.59		RT						13.0	3.5
LINDELL	14+32.60		LT						13.1	3.9
LINDELL	14+32.60		RT						12.7	3.8
UNION	10+46.71		RT						14.8	5.9
UNION	10+46.55		LT						16.6	8.3
LINDELL	15+53.22		RT						13.9	5.1
UNION	9+11.46	9+40.57	RT	27.1				27		5.9
LINDELL	14+23.45	14+28.56	LT	4.5				5		1.1
LINDELL	12+87.14	14+23.45	LT	124.1				124		46.2
LINDELL	13+54.50	14+23.45	RT			72.3		72		30.8
LINDELL	14+23.45	14+58.87	RT			49.8		50		21.2
UNION	10+69.46	11+32.58	RT			64.8		65		27.6
UNION	10+69.46	12+04.32	LT			143.0		143		70.2
UNION	10+24.93	10+69.46	LT			60.4		60		21.4
UNION	9+39.04	9+64.76	RT				52.9	53		33.1
LINDELL	14+23.47	14+48.87	RT				63.8	64		39.5
LINDELL	15+31.87	15+57.77	RT				58.3	58		41.8
UNION	9+49.06	9+71.86	RT			39.8		40		8.8
LINDELL	14+36.95	14+60.91	RT			19.3		19		6.9
LINDELL	15+26.74	15+48.83	RT			16.6		17		7.1
LINDELL	13+12.66	14+52.80	LT	303.7				304		
		SUBTOTAL		2342.8	37.7	1325.5	175.0	3886	205.1	392.1
		TOTAL		2342.8	37.7	1325.5	175.0	3886	205.1	392.1

TEMPORARY EROSION CONTROL

SHEET NO.	STATION	STATION	LOCATION	SIDE	SILT FENCE	SEDIMENT REMOVAL	CURB INLET CHECK	ALT. DITCH CHECK	REMARKS
					(LF)	(CY)	(EACH)	(LF)	
	11+44.62	13+85.36	LINDELL	RT	241	2.41	1		
	11+09.94	12+77.43	LINDELL	LT	168	1.68	1		
	15+49.05	17+03.32	LINDELL	LT	155	1.55			
	7+70.60	9+05.60	UNION	RT	136	1.36			
	7+52.80	9+40.28	UNION	LT	190	1.90	1		
	11+11.09	14+41.08	UNION	RT	295	2.95			
	12+30.00	13+34.47	UNION	LT	116	1.16	1		
	14+01.71	16+20.37	UNION	LT	232	2.32	2		
	20+38.34	22+60.33	FPP CONN.	RT	256	2.56	1		
	20+42.17	22+95.24	FPP CONN.	LT	210	2.10	1	200	
	65+91.35	69+24.03	FPP	LT	312	3.12	2		
	69+24.03	74+00.00	FPP	LT			3		
				SUBTOTAL	2311	23.11	13	200	
				TOTAL	2311	23.11	13	200	

PAVEMENT MARKING

SHEET NO.	STATION	STATION	LOCATION	4" YELLOW WATERBORNE PAINT WITH TYPE P BEADS	4" WHITE WATERBORNE PAINT WITH TYPE P BEADS	PREFORMED THERMOPLASTIC 12" WHITE	24" WHITE	LEFT/ RIGHT ARROW	MISC/ BICYCLE SYMBOL	GREEN AREA
				(LF)	(LF)	(LF)	(LF)	EACH	EACH	(SF)
	9+80.00	15+00.00	LINDELL	888	2738	131	103	4		
	15+00.00	19+00.00	LINDELL	678	2181	155	119	6		
	13+73.48	16+07.25	LINDELL							
	7+10.72	10+00.00	UNION	509	1354	112	130	5		
	10+00.00	16+71.84	UNION	522	1556	32	143	6		
	8+85.50	11+00.68	UNION							
	20+00.00	23+10.00	FPP CONN.	255	981		46	4		
	27+61.57	30+00.00	PARK RD.		184		97			
	61+33.55	77+38.44	FPP	3263	3639		36	6		
			SUBTOTAL	6115	12633	430	674	31	13	4981
			TOTAL	6115	12633	430	674	31	13	4981

3 REVISED
3 ADDED
2 ADDED
2 REVISED
REVISED 3
REVISED 2
3 REVISED
2 REVISED
3 REVISED
2 ADDED
4 REVISED
4 ADDED
4 REVISED

STP-9901(663)

CITY OF SAINT LOUIS MISSOURI

DEPARTMENT OF THE PRESIDENT
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ROOM 301 CITY HALL
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STATE OF MISSOURI
ABDELHAMID HADJRI
NUMBER E-29095
PROFESSIONAL ENGINEER

Abdelhamid Hadjri

Name
Lic. No.

ADDENDUM 2	10/09/26
ADDENDUM 3	10/26/26
ADDENDUM 4	10/30/26

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

SUMMARY OF QUANTITIES 2 OF 4

SHEET NUMBER

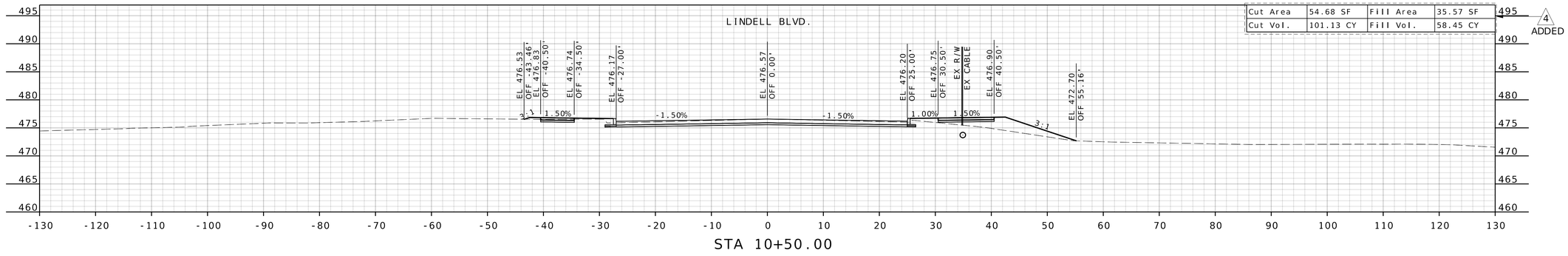
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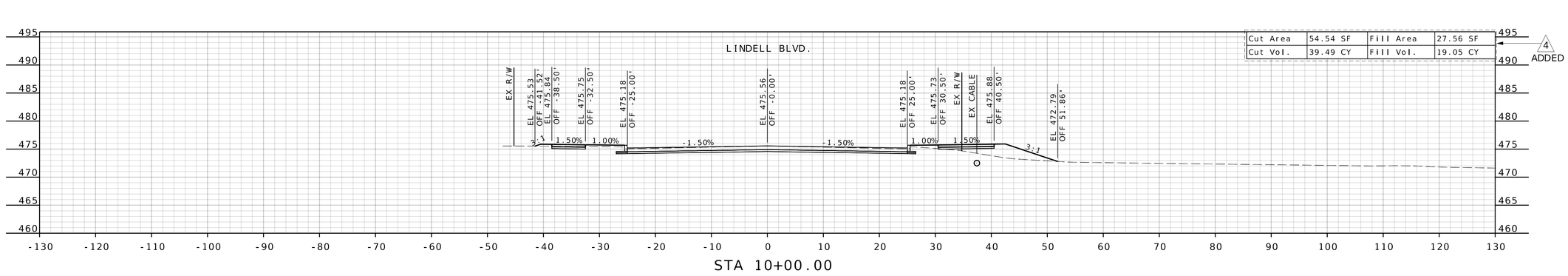
10/30/2026
Date

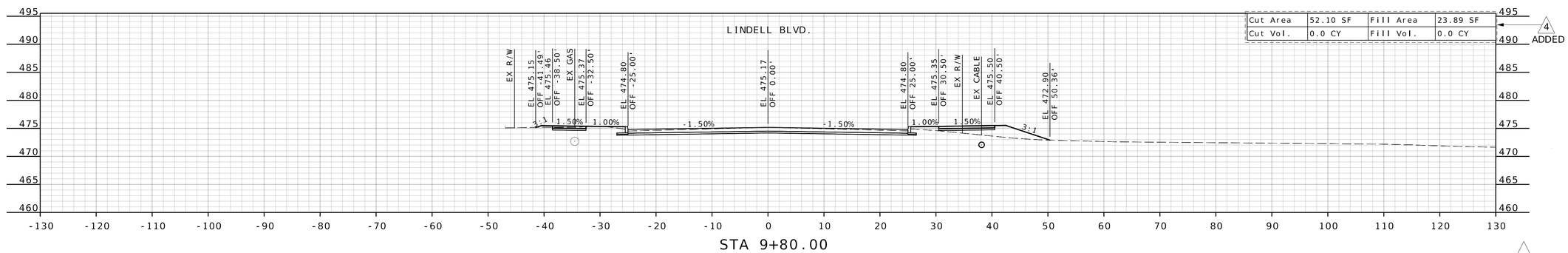
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4

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4

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ABDELHAMID HADJRI
NUMBER E-29095
PROFESSIONAL ENGINEER

Abdelhamid Hadjri

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Lic. No.

Revision No.	Date
4 ADDENDUM 4	10/30/26

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS LINDELL BLVD.

SHEET NUMBER

XS.1

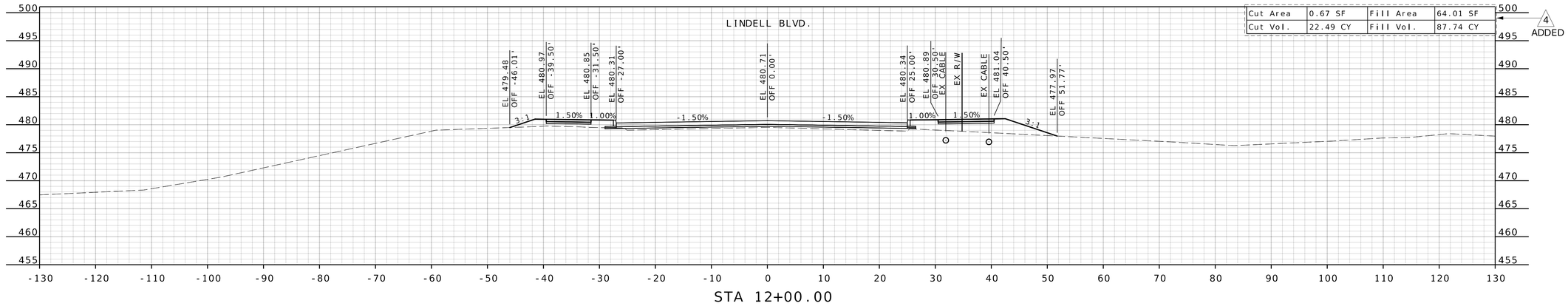
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Date

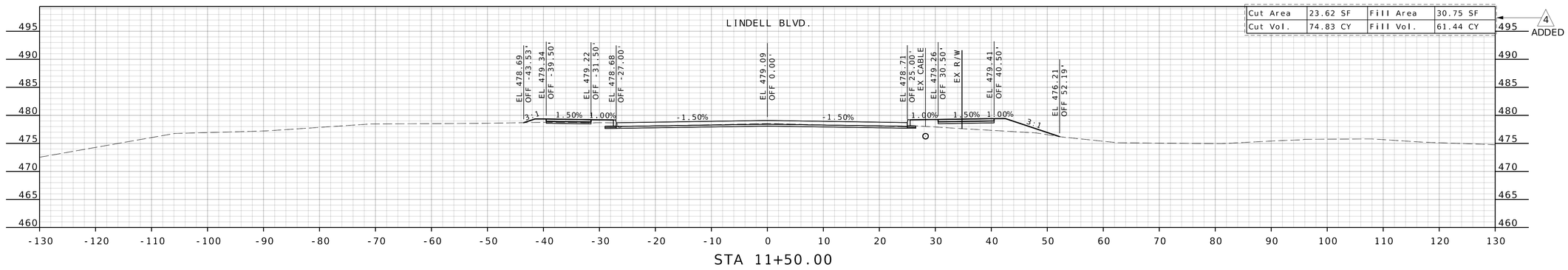
ABNA JOB NO. 22-6033

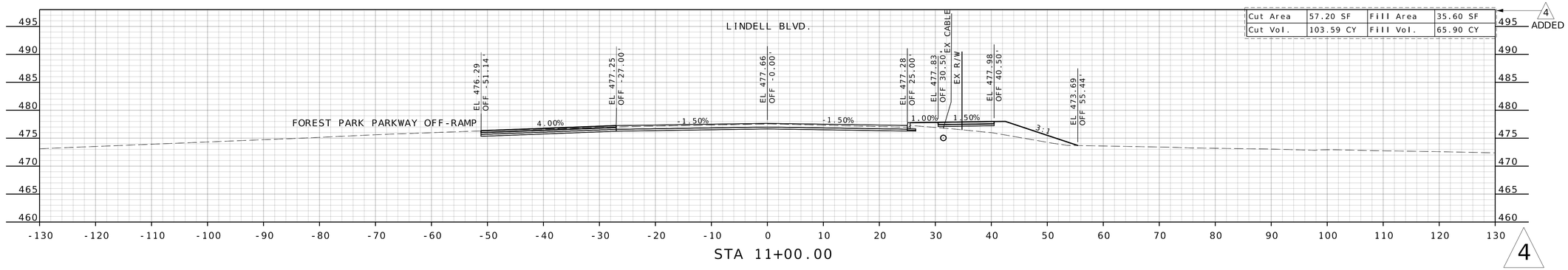
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D:\\owhdrusceno01\HDR_US_Central_01\Documents\St_Louis_-_Board_of_Public_Service\STLBPS_Union_Lindell\6.0_CAD_BIM\6.2_WIP\Sheets\Cross-Sections\ADDENDUM 4_REVISION 1 TO XS_Lindell







STP-9901(663)

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Revision No.	Date
ADDENDUM 4	10/30/26

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS LINDELL BLVD.

SHEET NUMBER

XS.2

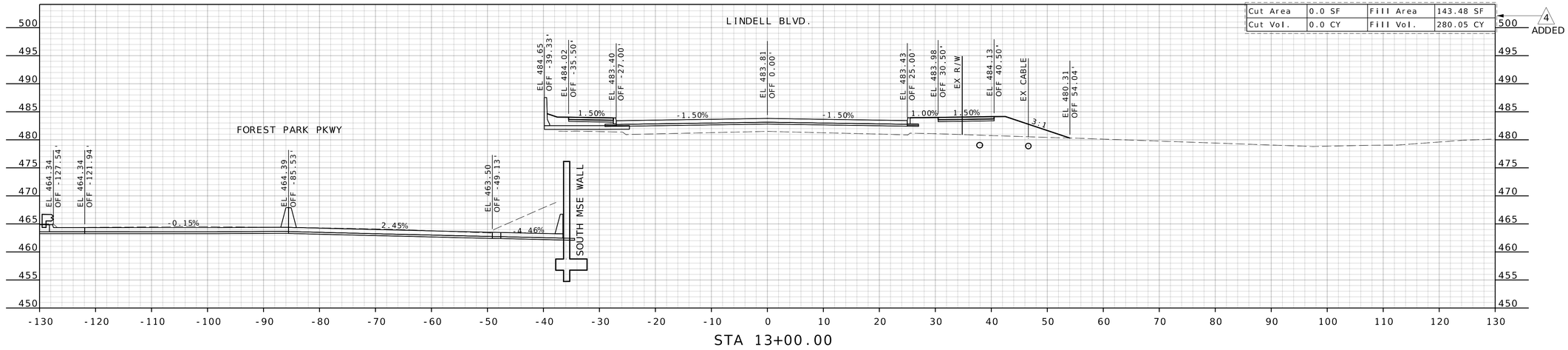
10/30/2026
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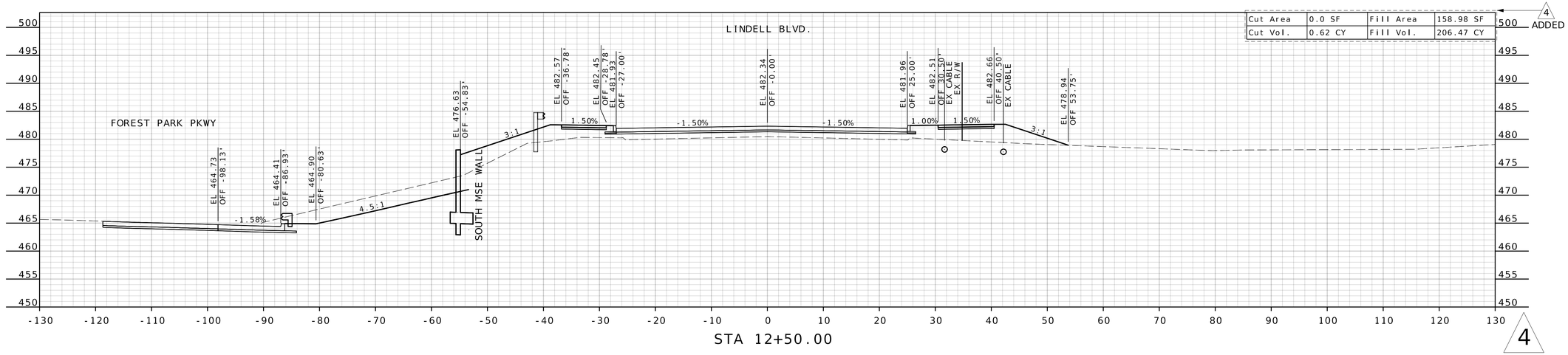
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Cut Area	0.0 SF	Fill Area	143.48 SF
Cut Vol.	0.0 CY	Fill Vol.	280.05 CY

4 ADDED



Cut Area	0.0 SF	Fill Area	158.98 SF
Cut Vol.	0.62 CY	Fill Vol.	206.47 CY

4 ADDED

4

STP-9901(663)

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ADDENDUM 4	10/30/26
Revision No.	Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS LINDELL BLVD.

SHEET NUMBER

XS.3

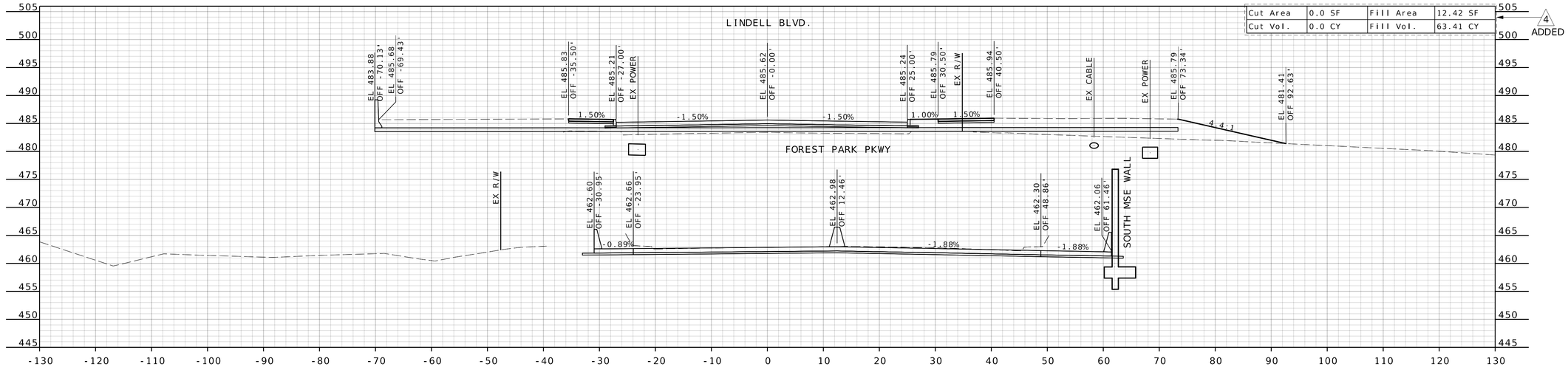
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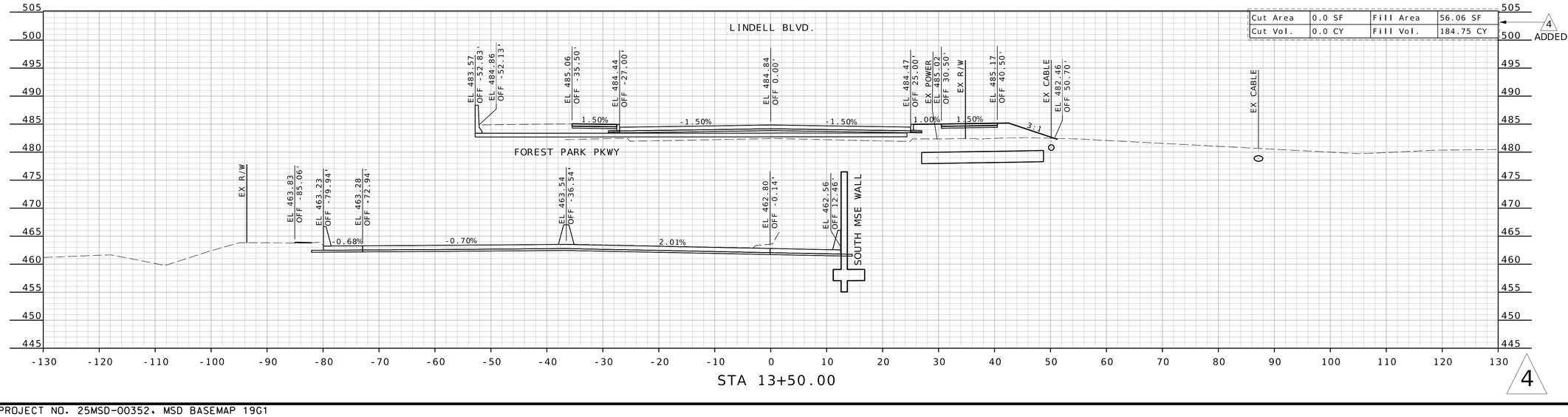
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

ABNA JOB NO. 22-6033





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ADDENDUM 4 10/30/26

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS LINDELL BLVD.

SHEET NUMBER

XS.4

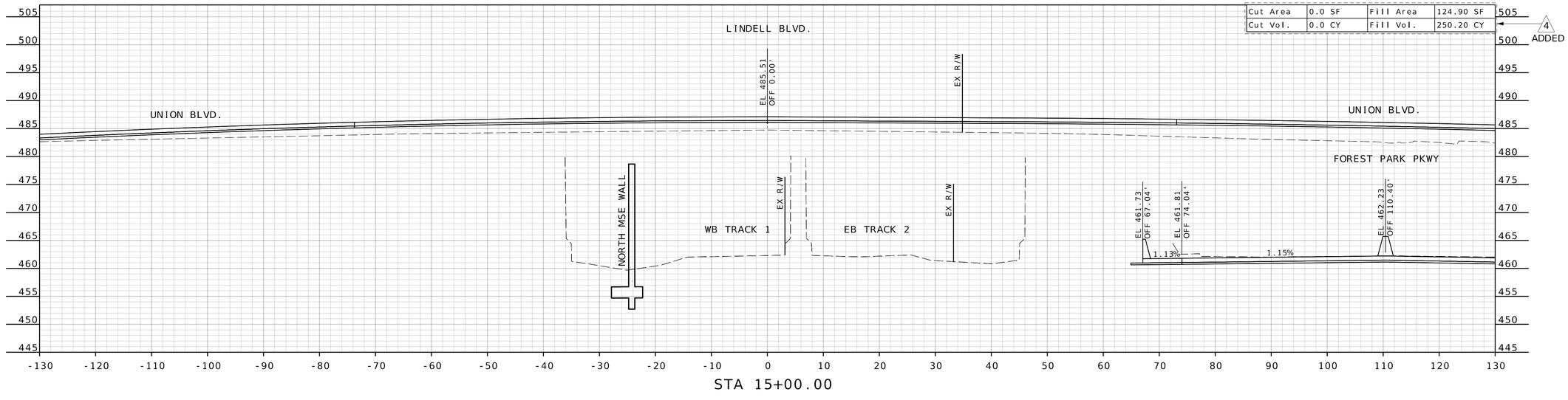
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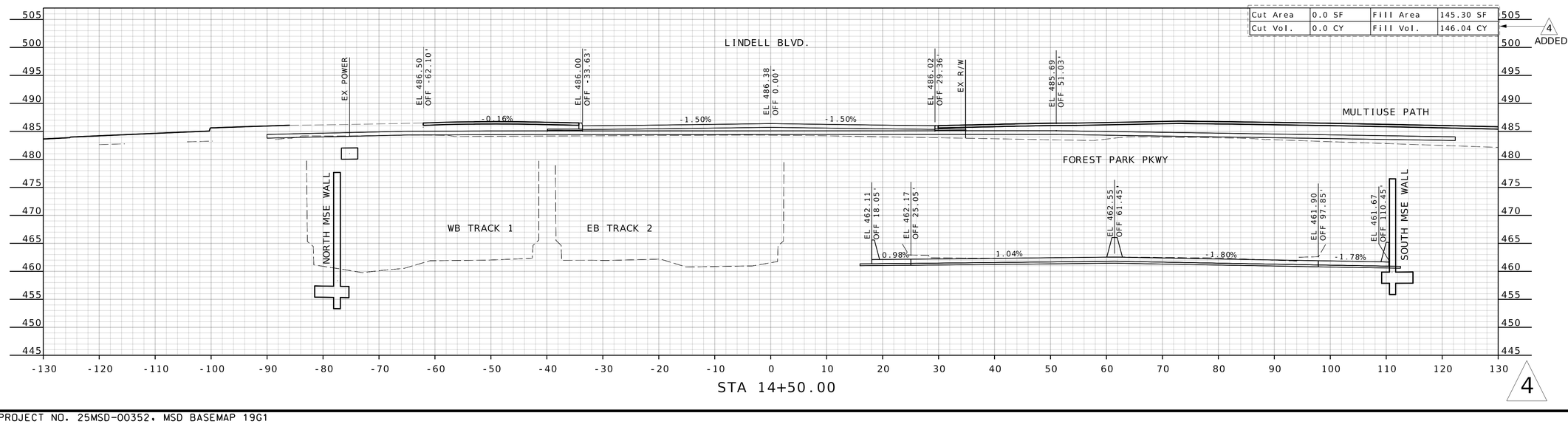
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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

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ADDENDUM 4 10/30/26

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS LINDELL BLVD.

SHEET NUMBER

XS.5

10/30/2026

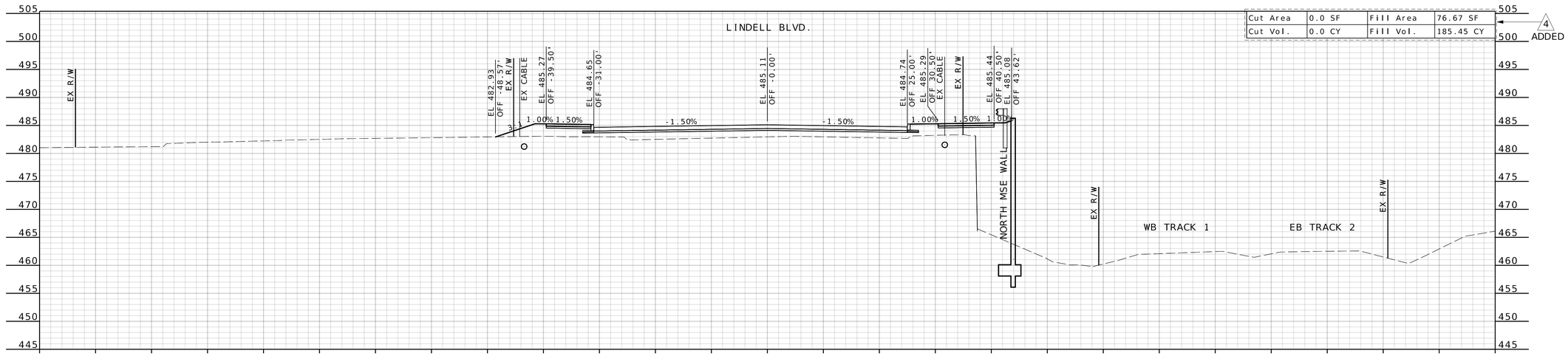
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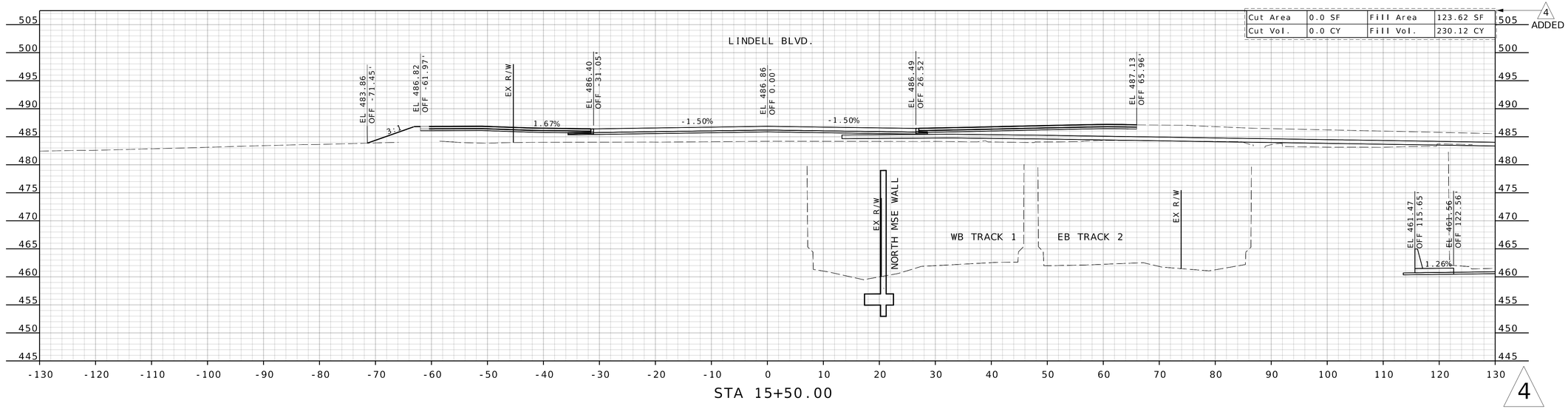
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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

ABNA JOB NO. 22-6033





4

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ADDENDUM 4	10/30/26

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SHEET TITLE

CROSS SECTIONS LINDELL BLVD.

SHEET NUMBER

XS.6

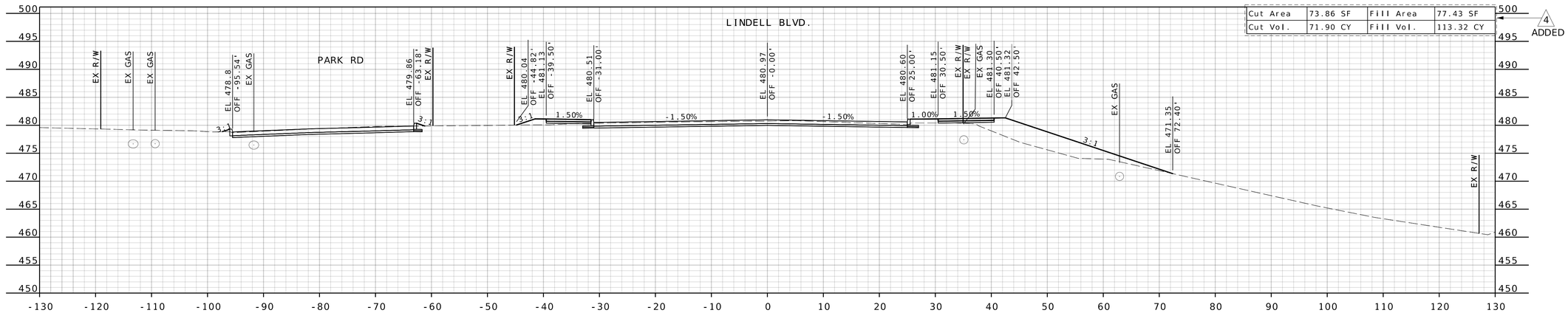
10/30/2026
Date

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pw://pwhdrusceN011:HDR_US_Central_01/Documents/St Louis - Board of Public Service/STLBPS_UnionLindell/6.0_CAD_BIM/6.2_WIP/Sheets/Cross-Sections/ADDENDUM 4_REVISION 1 TO XS_Lindell

MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

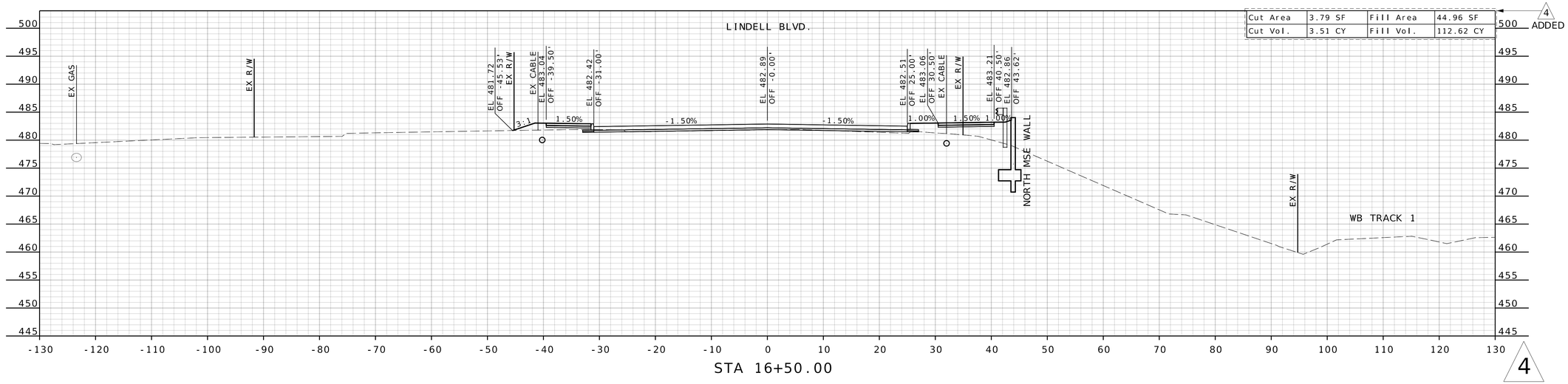
ABNA JOB NO. 22-6033



Cut Area	73.86 SF	Fill Area	77.43 SF
Cut Vol.	71.90 CY	Fill Vol.	113.32 CY

4 ADDED

STA 17+00.00



Cut Area	3.79 SF	Fill Area	44.96 SF
Cut Vol.	3.51 CY	Fill Vol.	112.62 CY

4 ADDED

STA 16+50.00

4

STP-9901(663)

CITY OF SAINT LOUIS
MISSOURI

DEPARTMENT OF THE PRESIDENT
BOARD OF PUBLIC SERVICE
ROOM 301 CITY HALL
ST. LOUIS, MISSOURI 63103
PHONE (314) 622-3535
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JAROSLAW CZERNIKIEWICZ, P.E.
Chief of Design Division

ABNA Engineering, Inc.
HDR Engineering, Inc.

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STATE OF MISSOURI
ABDELHAMID HADJRI
NUMBER E-29095
PROFESSIONAL ENGINEER

Abdelhamid Hadjri

Name

Lic. No.

ADDENDUM 4 10/30/26

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS LINDELL BLVD.

SHEET NUMBER

XS.7

10/30/2026

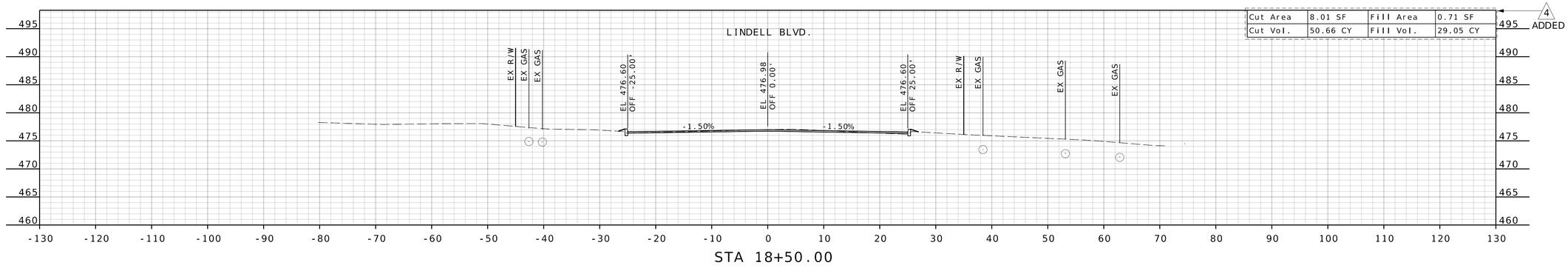
Date

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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

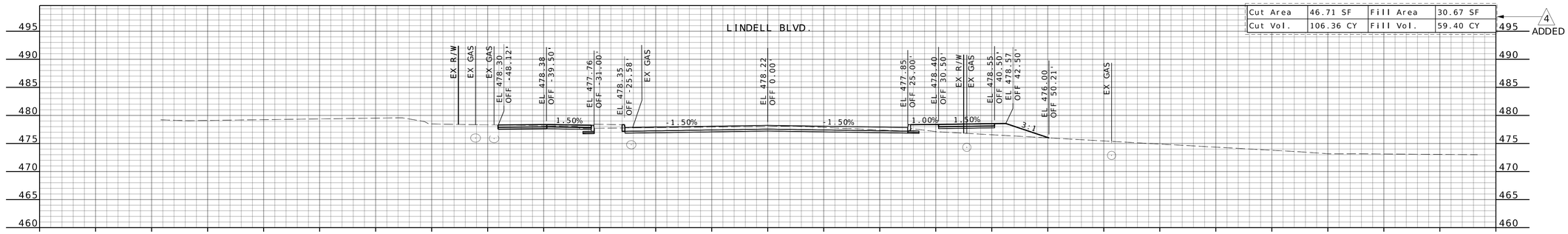
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STA 18+50.00

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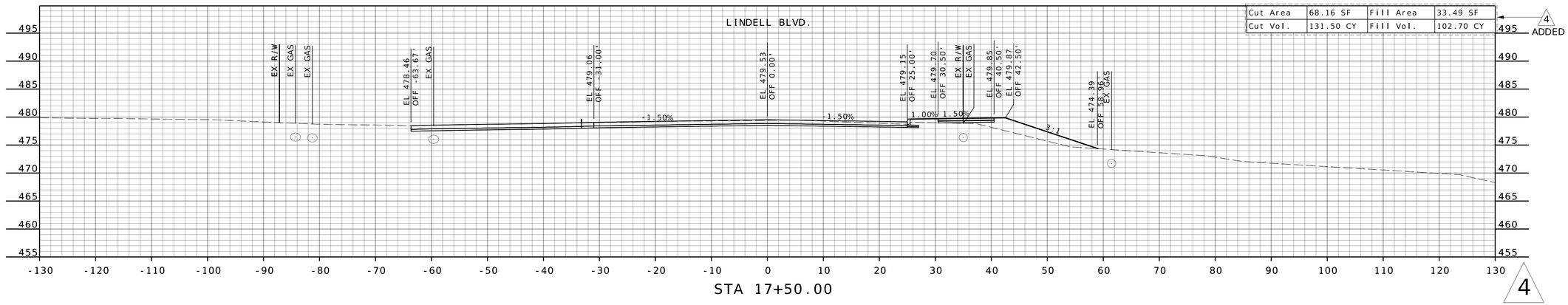
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STA 18+00.00

Cut Area	46.71 SF	Fill Area	30.67 SF
Cut Vol.	106.36 CY	Fill Vol.	59.40 CY

4 ADDED



STA 17+50.00

Cut Area	68.16 SF	Fill Area	33.49 SF
Cut Vol.	131.50 CY	Fill Vol.	102.70 CY

4 ADDED

4

STP-9901(663)

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PROFESSIONAL ENGINEER

Abdelhamid Hadjri

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Lic. No.

ADDENDUM 4	10/30/26
Revision No.	Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS LINDELL BLVD.

SHEET NUMBER

XS.8

10/30/2026
Date

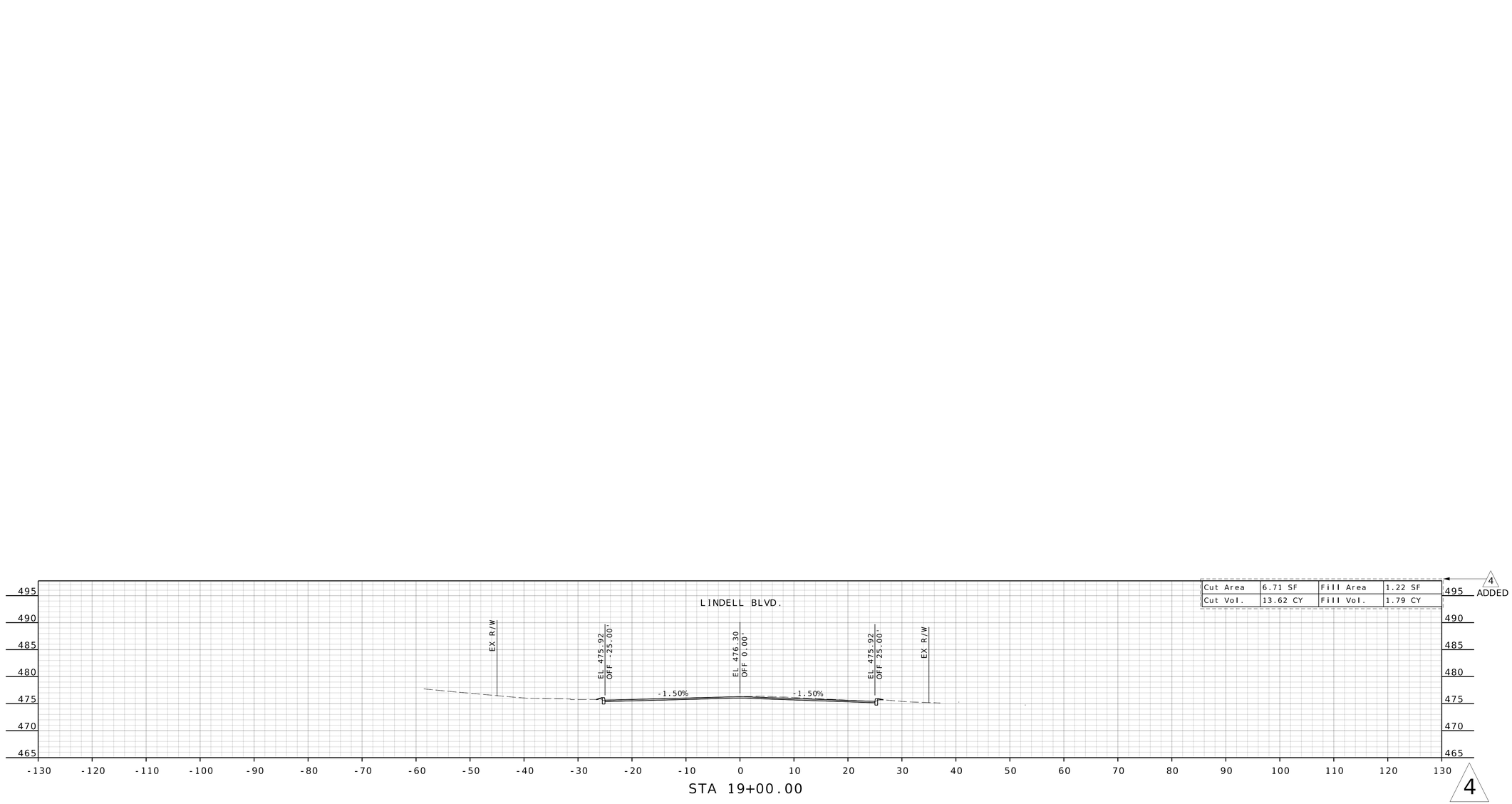
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

pw://pwhdrusceno01:HDR_US_Central_01/Documents/St_Louis_-_Board_of_Public_Service/STLBPS_Union_Lindell/6.0_CAD_BIM/6.2_WIP/Sheets/Cross-Sections/ADDENDUM 4_REVISION 1 TO XS_Lindell

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Cut Area	6.71 SF	Fill Area	1.22 SF
Cut Vol.	13.62 CY	Fill Vol.	1.79 CY

4 ADDED

4

STP-9901(663)

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CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

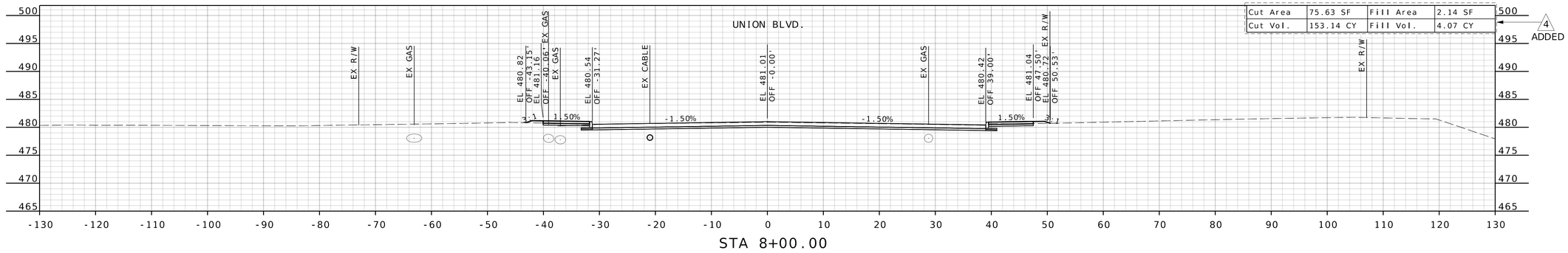
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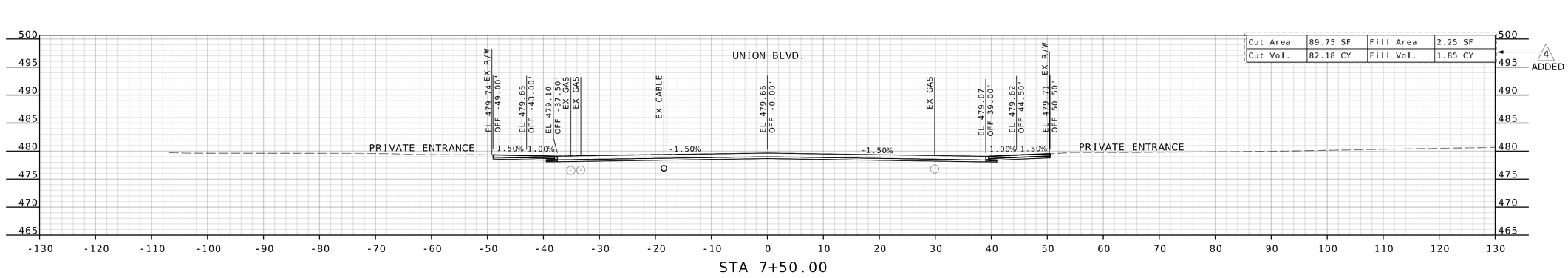
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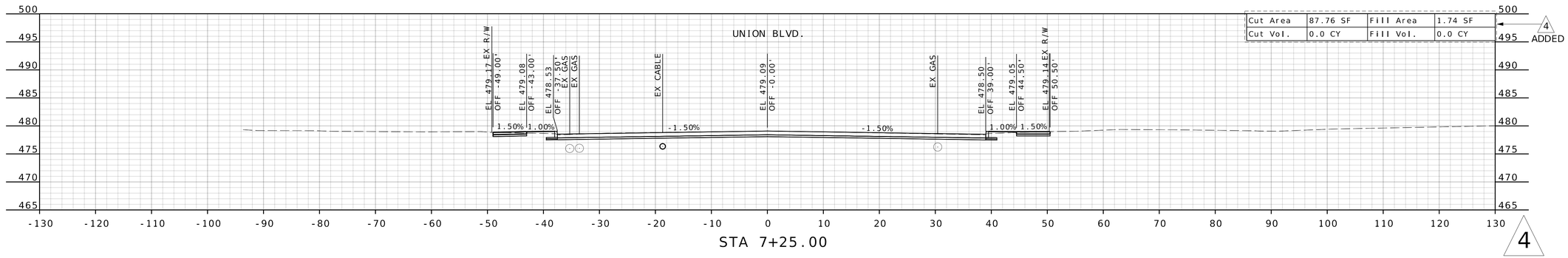
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10/30/2026
Date

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SHEET TITLE

CROSS SECTIONS UNION BLVD.

SHEET NUMBER

XS.10

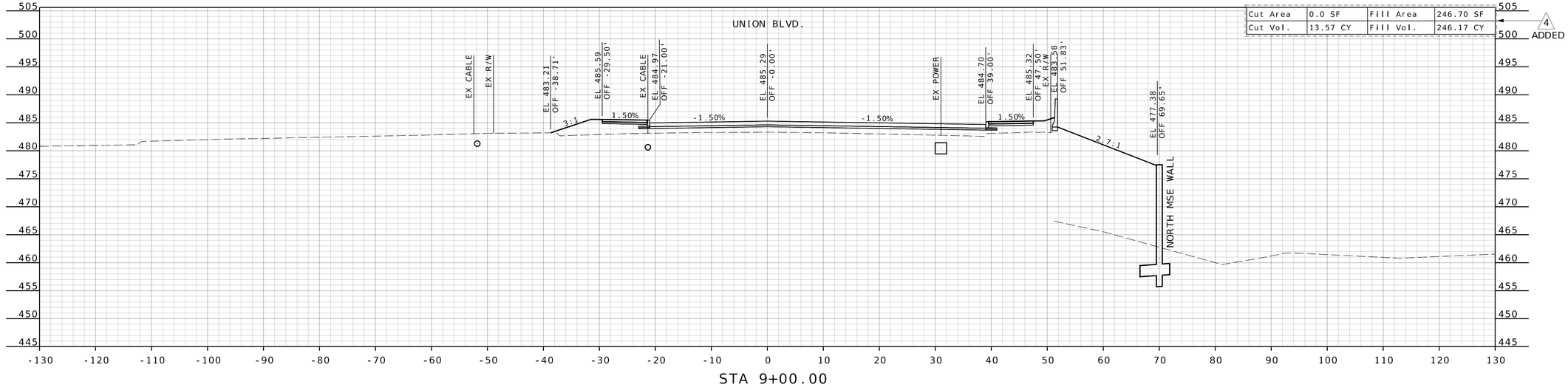
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Date

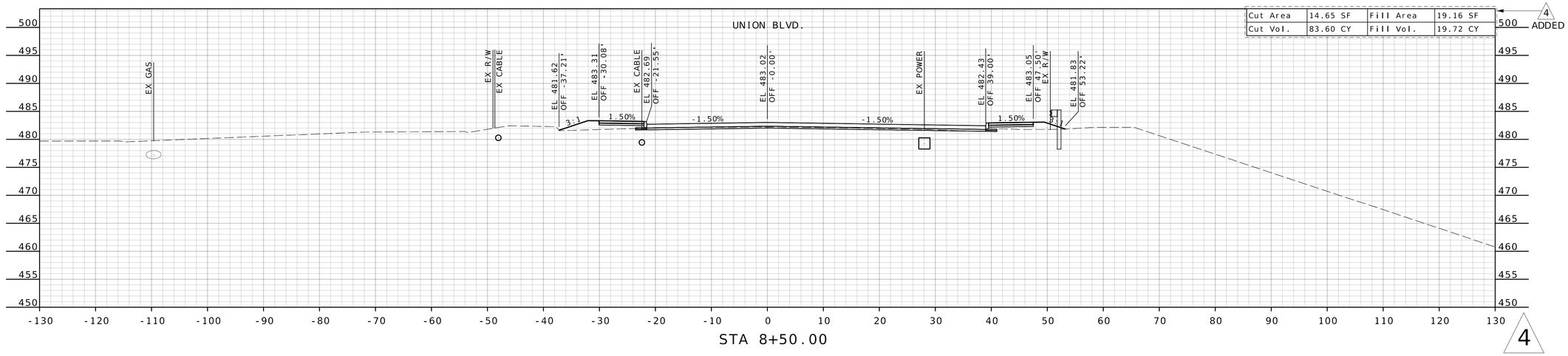
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MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

STP-9901(663)

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CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS UNION BLVD.

SHEET NUMBER

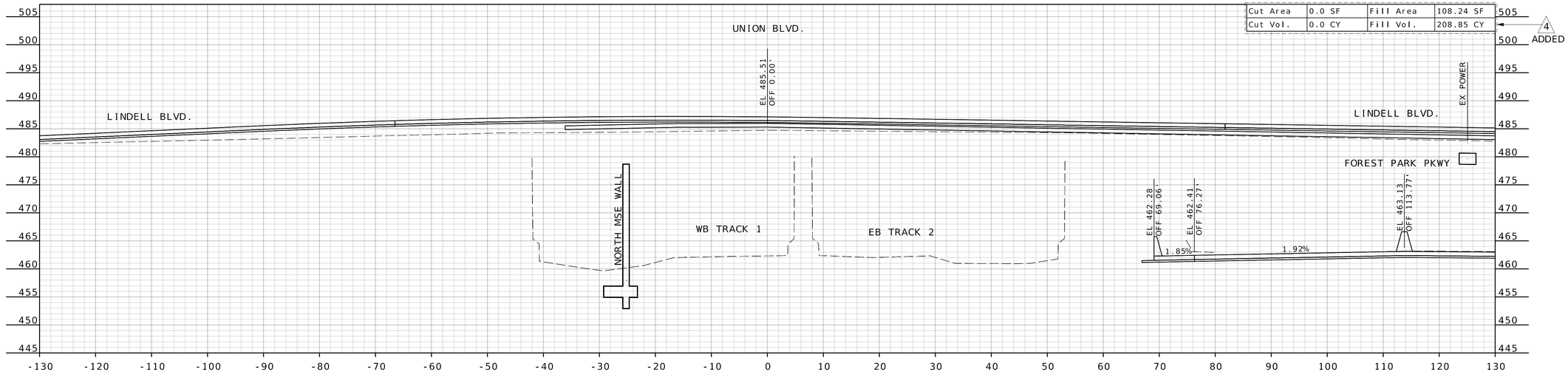
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10/30/2026
Date

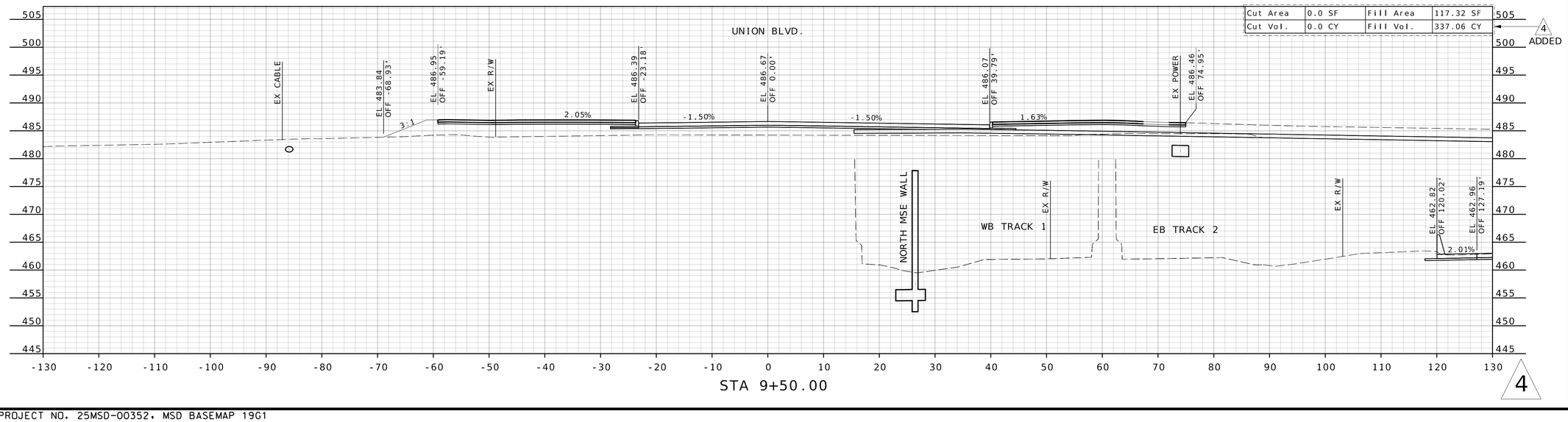
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

ABNA JOB NO. 22-6033

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STA 10+00.00



STA 9+50.00

4

STP-9901(663)

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CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS UNION BLVD.

SHEET NUMBER

XS.12

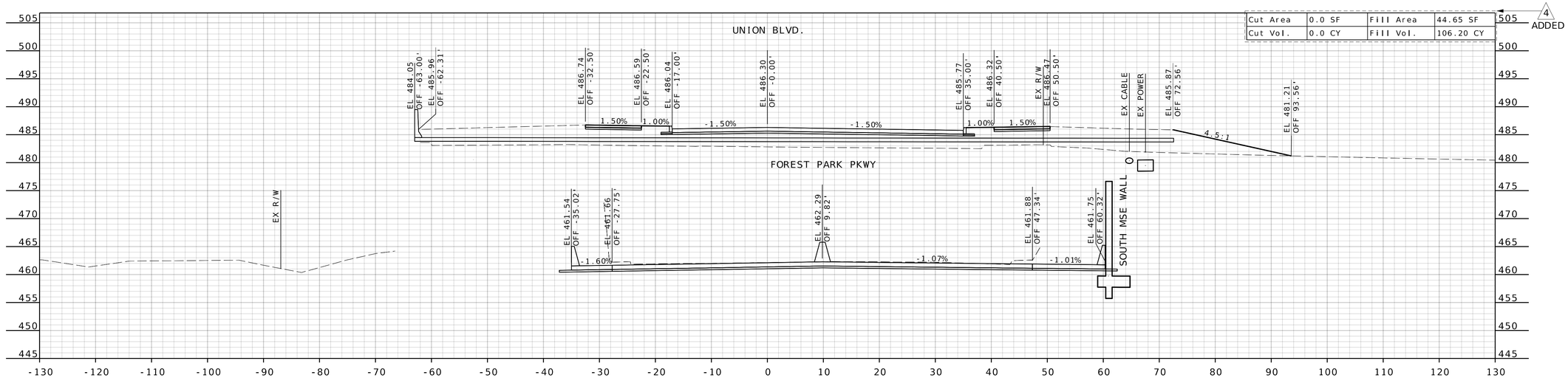
10/30/2026
Date

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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

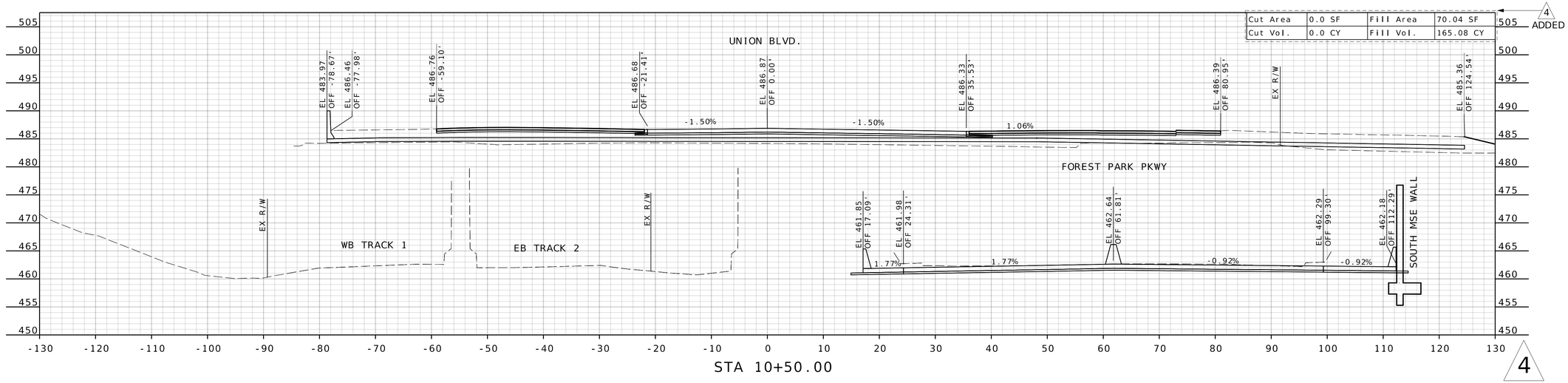
ABNA JOB NO. 22-6033



Cut Area	0.0 SF	Fill Area	44.65 SF
Cut Vol.	0.0 CY	Fill Vol.	106.20 CY

4 ADDED

STA 11+00.00



Cut Area	0.0 SF	Fill Area	70.04 SF
Cut Vol.	0.0 CY	Fill Vol.	165.08 CY

4 ADDED

STA 10+50.00

4

STP-9901(663)

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CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS UNION BLVD.

SHEET NUMBER

XS.13

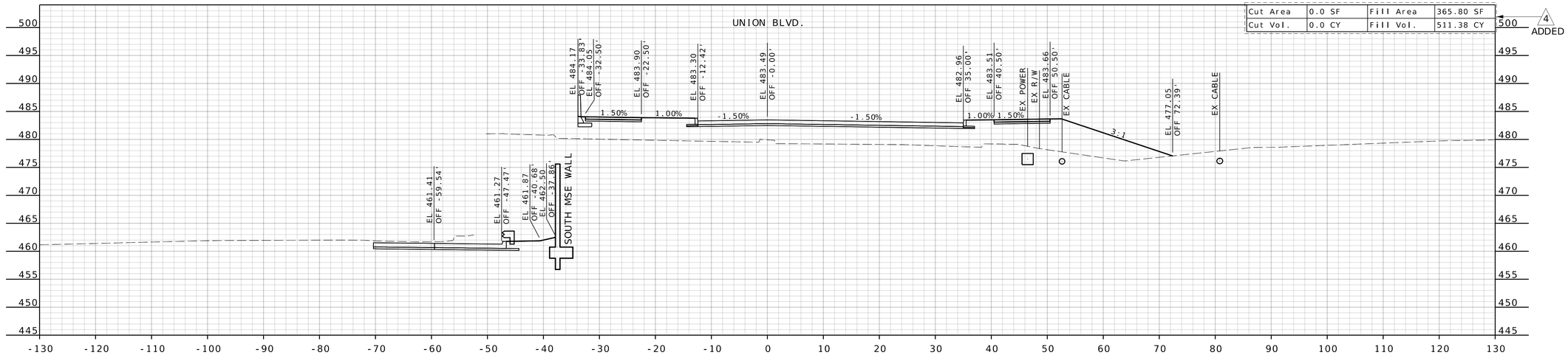
10/30/2026
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MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

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STP-9901(663)

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CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS UNION BLVD.

SHEET NUMBER

XS.14

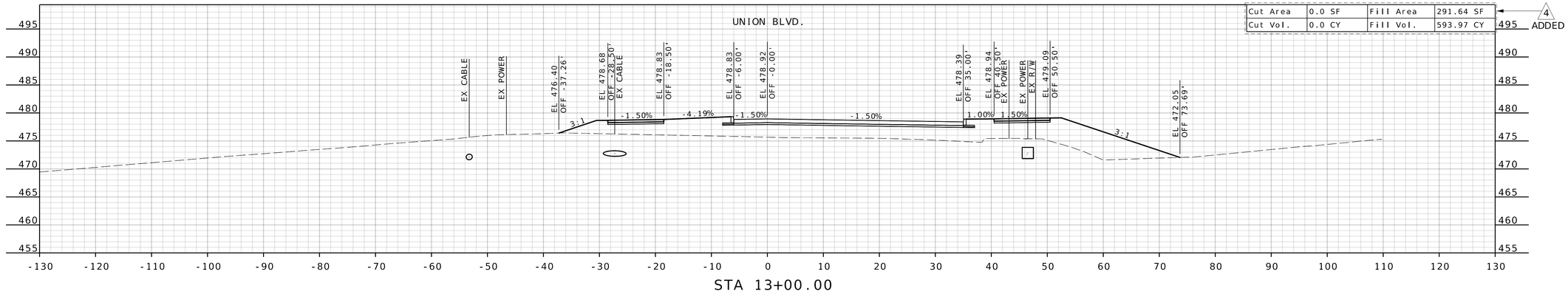
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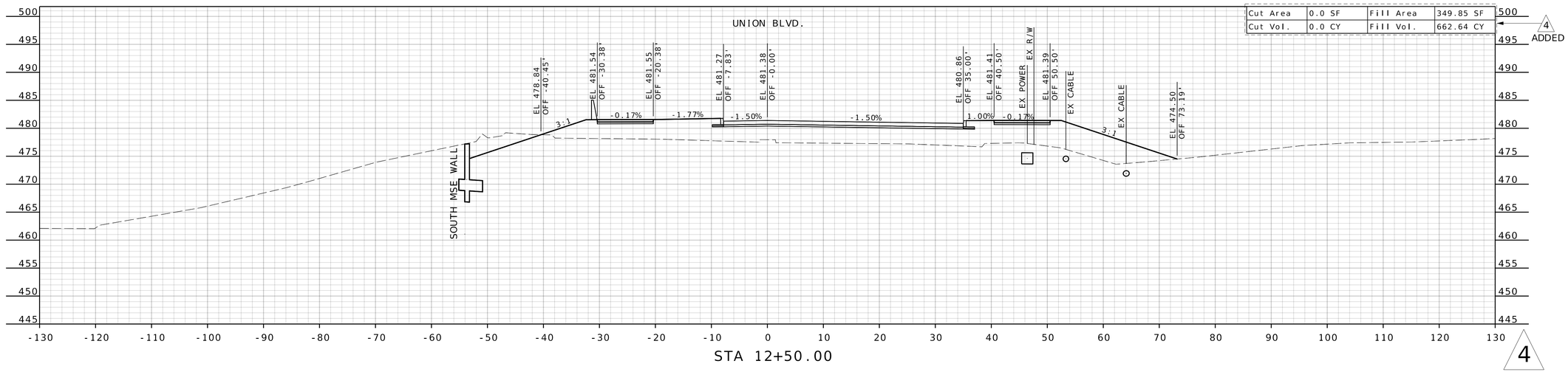
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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

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SHEET TITLE

CROSS SECTIONS UNION BLVD.

SHEET NUMBER

XS.15

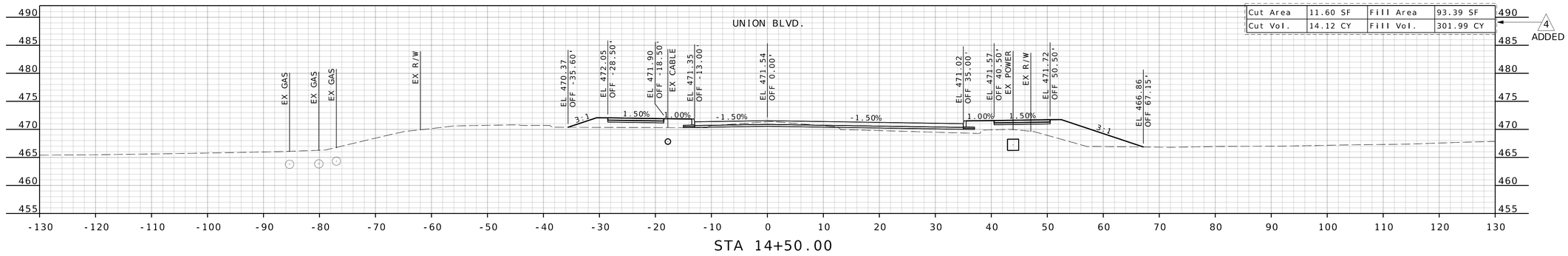
10/30/2026
Date

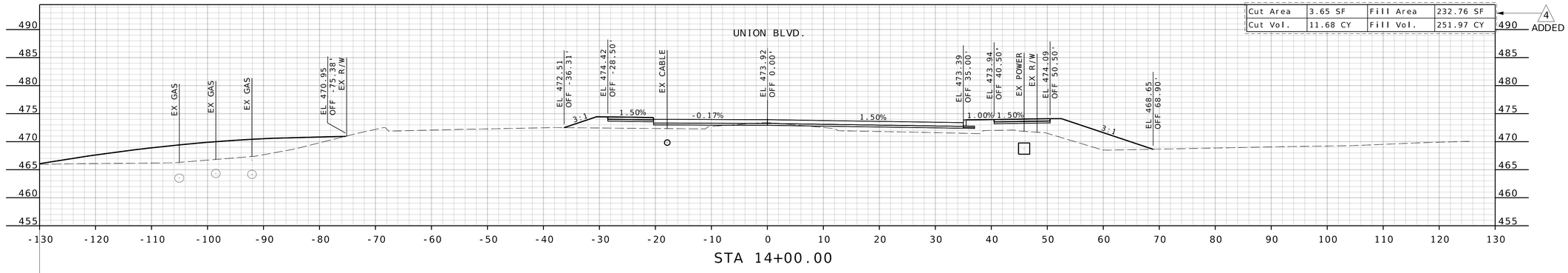
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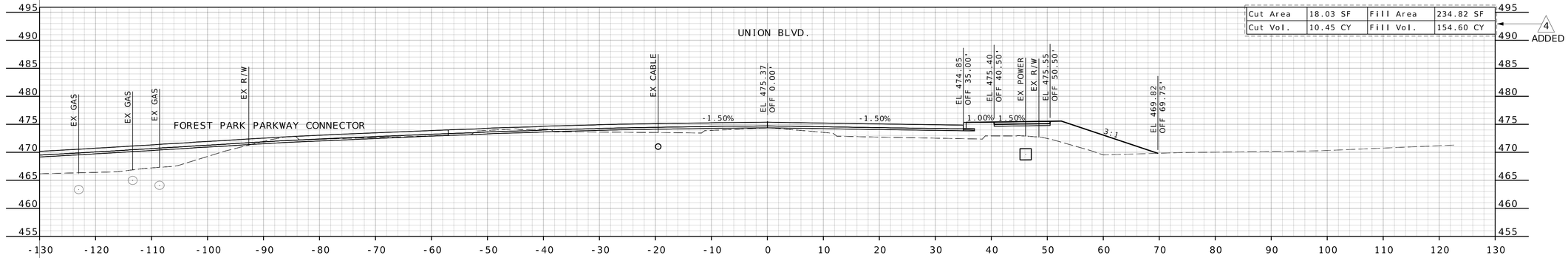
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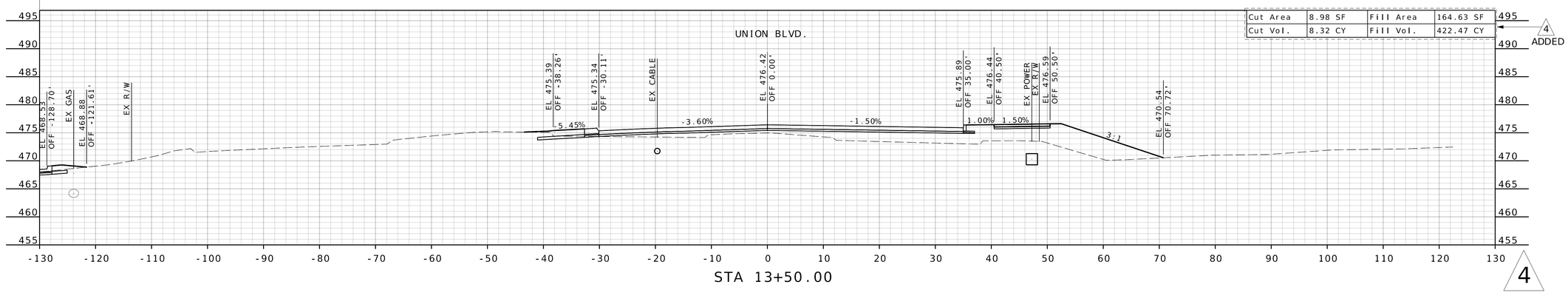
MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

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STP-9901(663)

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SHEET TITLE

CROSS SECTIONS UNION BLVD.

SHEET NUMBER

XS.16

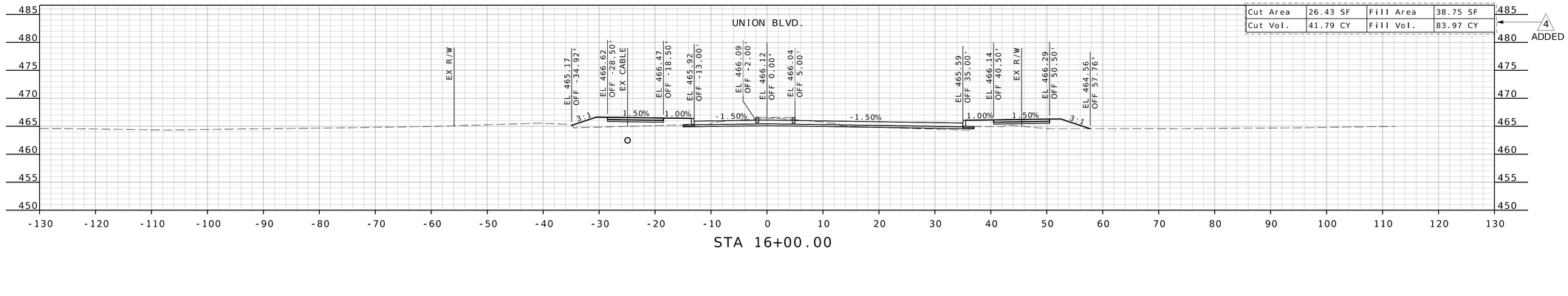
10/30/2026
Date

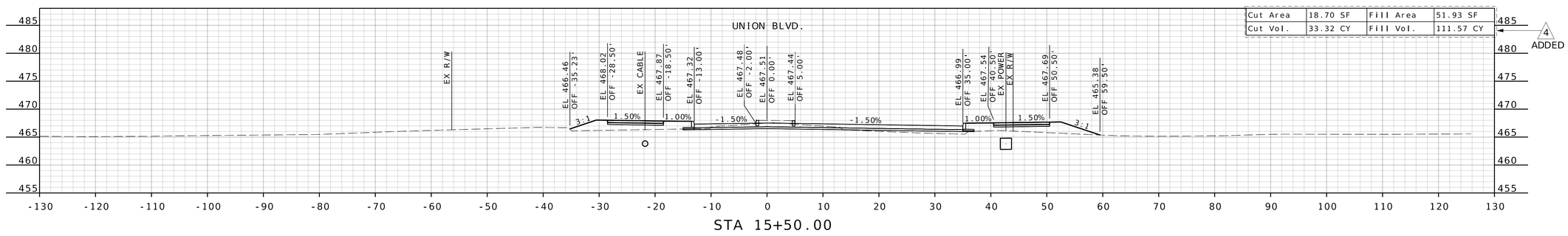
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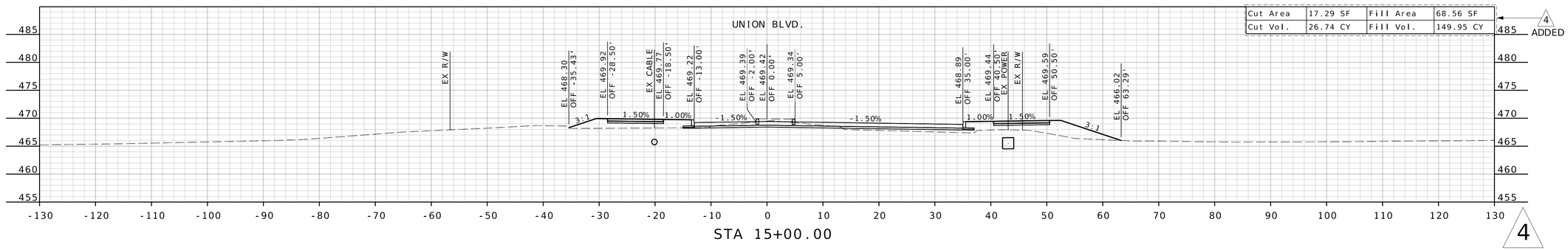
MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

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STP-9901(663)

CITY OF SAINT LOUIS
MISSOURI

DEPARTMENT OF THE PRESIDENT
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JAROSLAW CZERNIKIEWICZ, P.E.
Chief of Design Division

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STATE OF MISSOURI
ABDELHAMID HADJRI
NUMBER E-29095
PROFESSIONAL ENGINEER

Abdelhamid Hadjri

Name

Lic. No.

ADDENDUM 4 10/30/26

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS UNION BLVD.

SHEET NUMBER

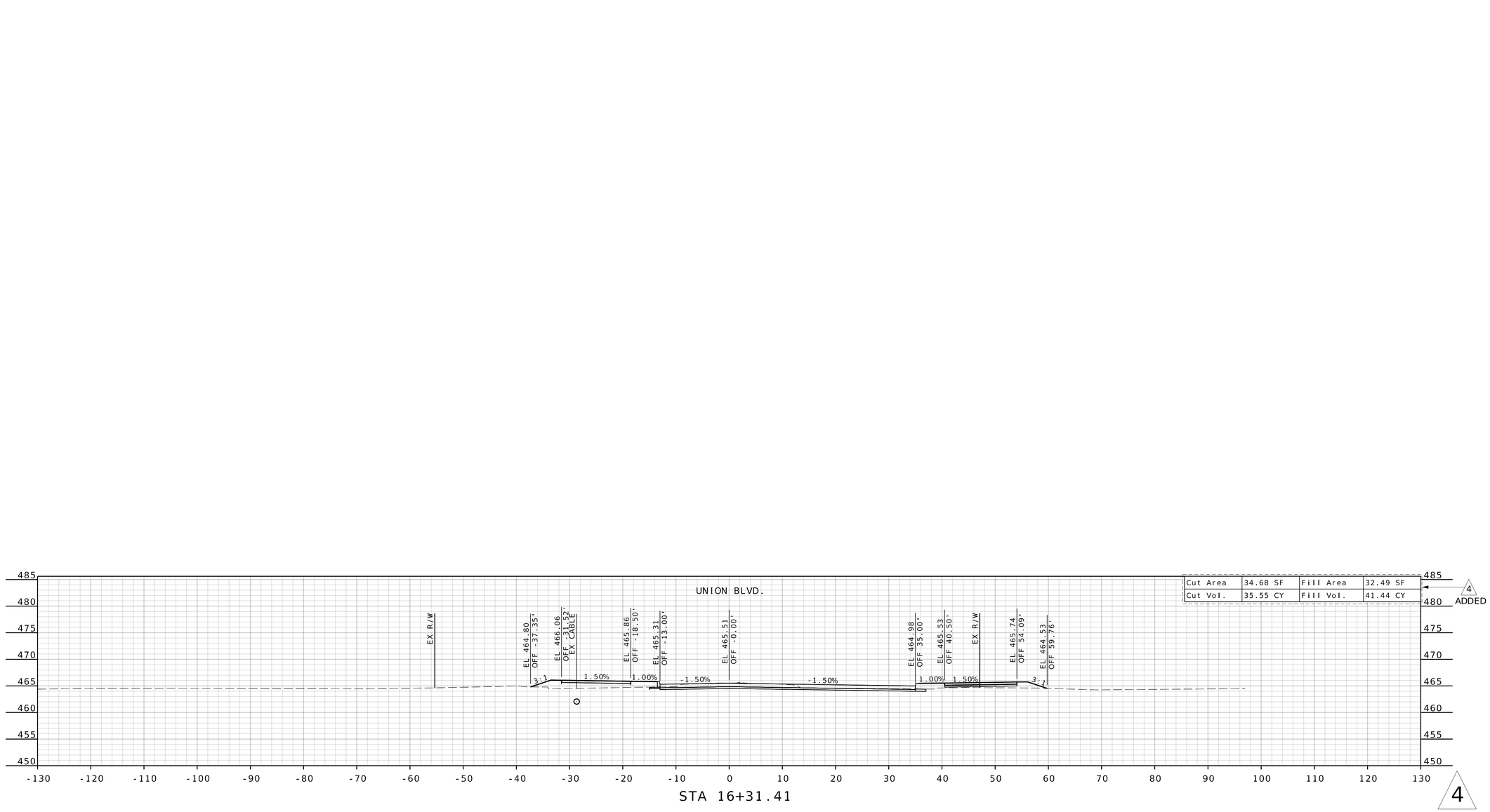
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10/30/2026
Date

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Cut Area	34.68 SF	Fill Area	32.49 SF
Cut Vol.	35.55 CY	Fill Vol.	41.44 CY

4 ADDED

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SHEET TITLE

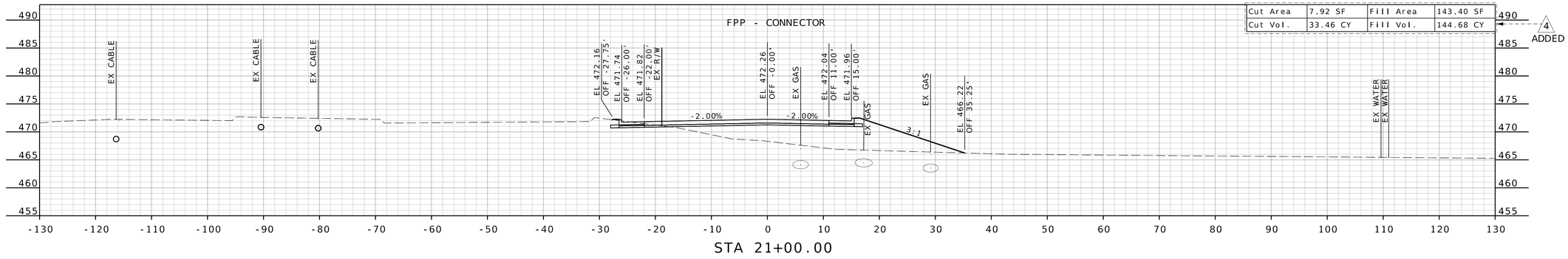
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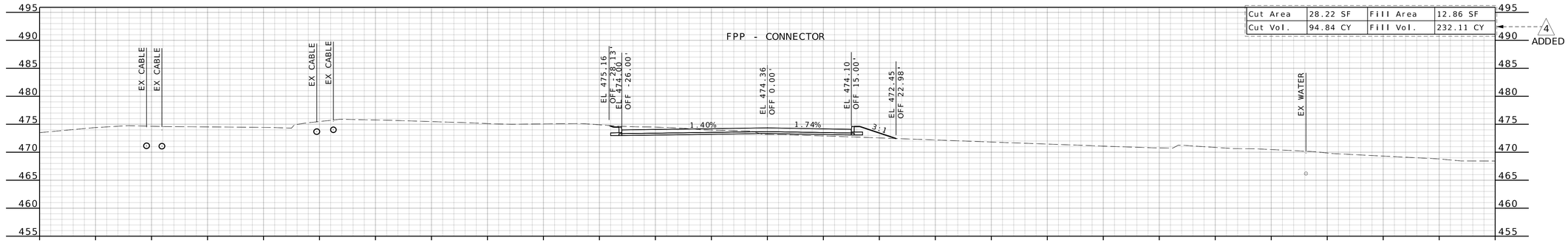
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10/30/2026
Date

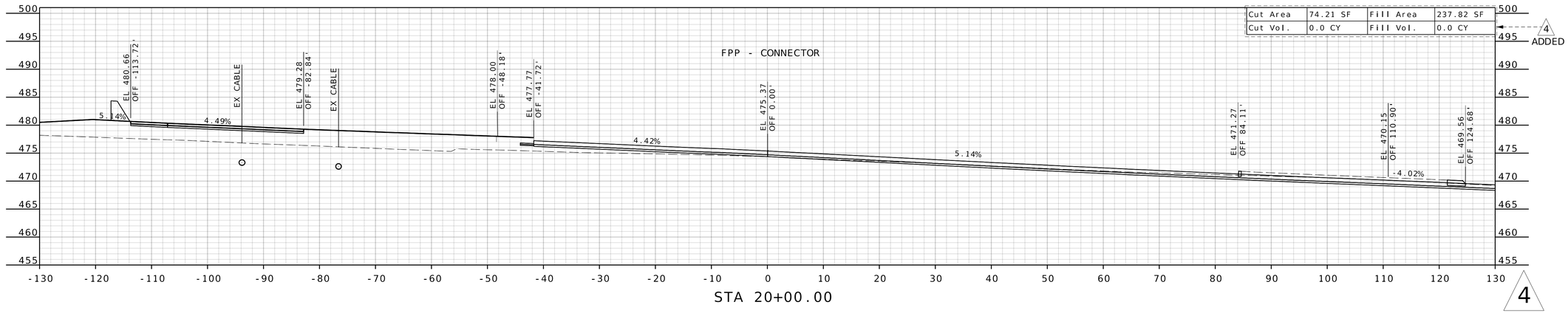
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STA 21+00.00



STA 20+50.00



STA 20+00.00

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Revision No.	Date
ADDENDUM 4	10/30/26

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY. CONNECTOR

SHEET NUMBER

XS.19

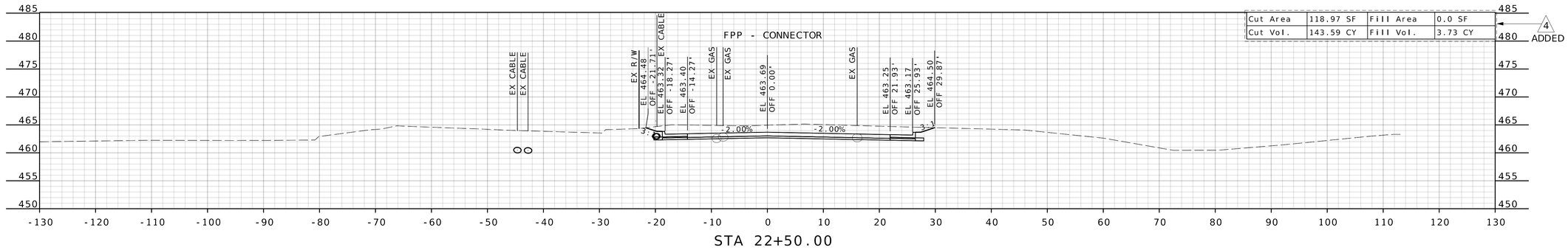
10/30/2026
Date

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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

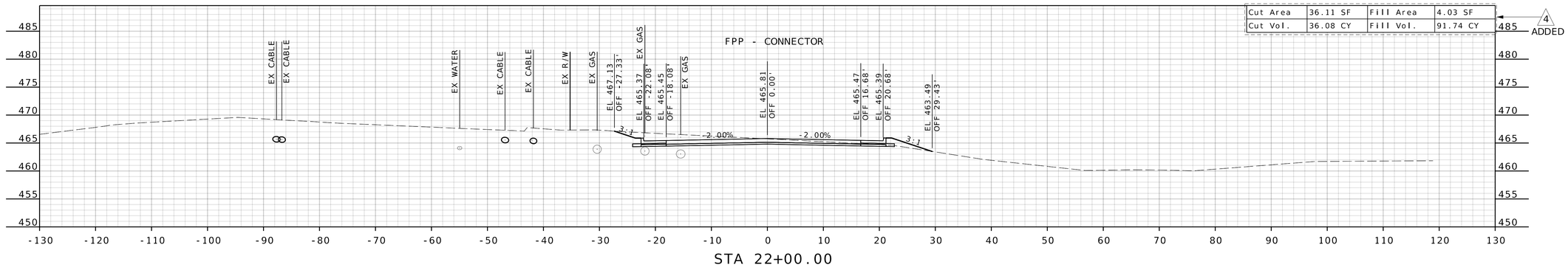
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STA 22+50.00

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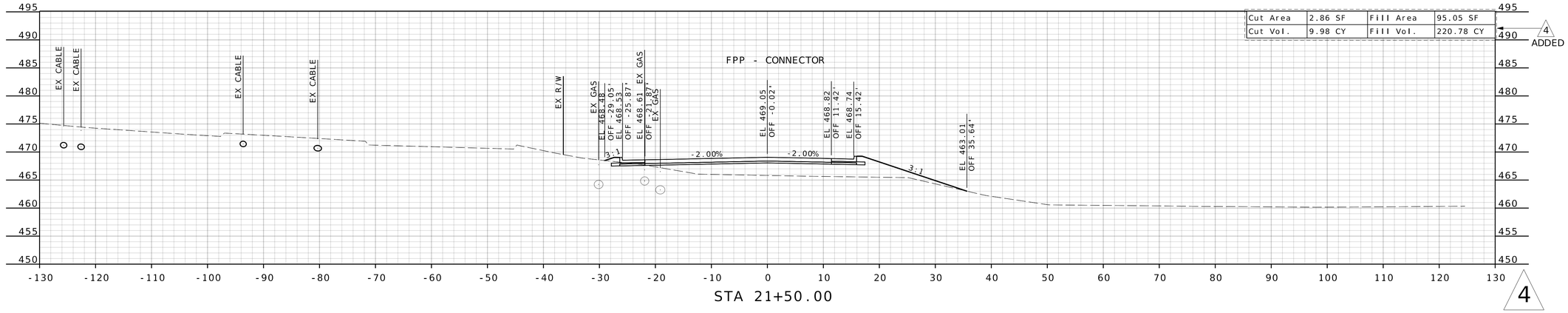
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STA 22+00.00

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Cut Vol.	36.08 CY	Fill Vol.	91.74 CY

4 ADDED



STA 21+50.00

Cut Area	2.86 SF	Fill Area	95.05 SF
Cut Vol.	9.98 CY	Fill Vol.	220.78 CY

4 ADDED

4

STP-9901(663)

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Lic. No.

ADDENDUM 4 10/30/26

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY. CONNECTOR

SHEET NUMBER

XS.20

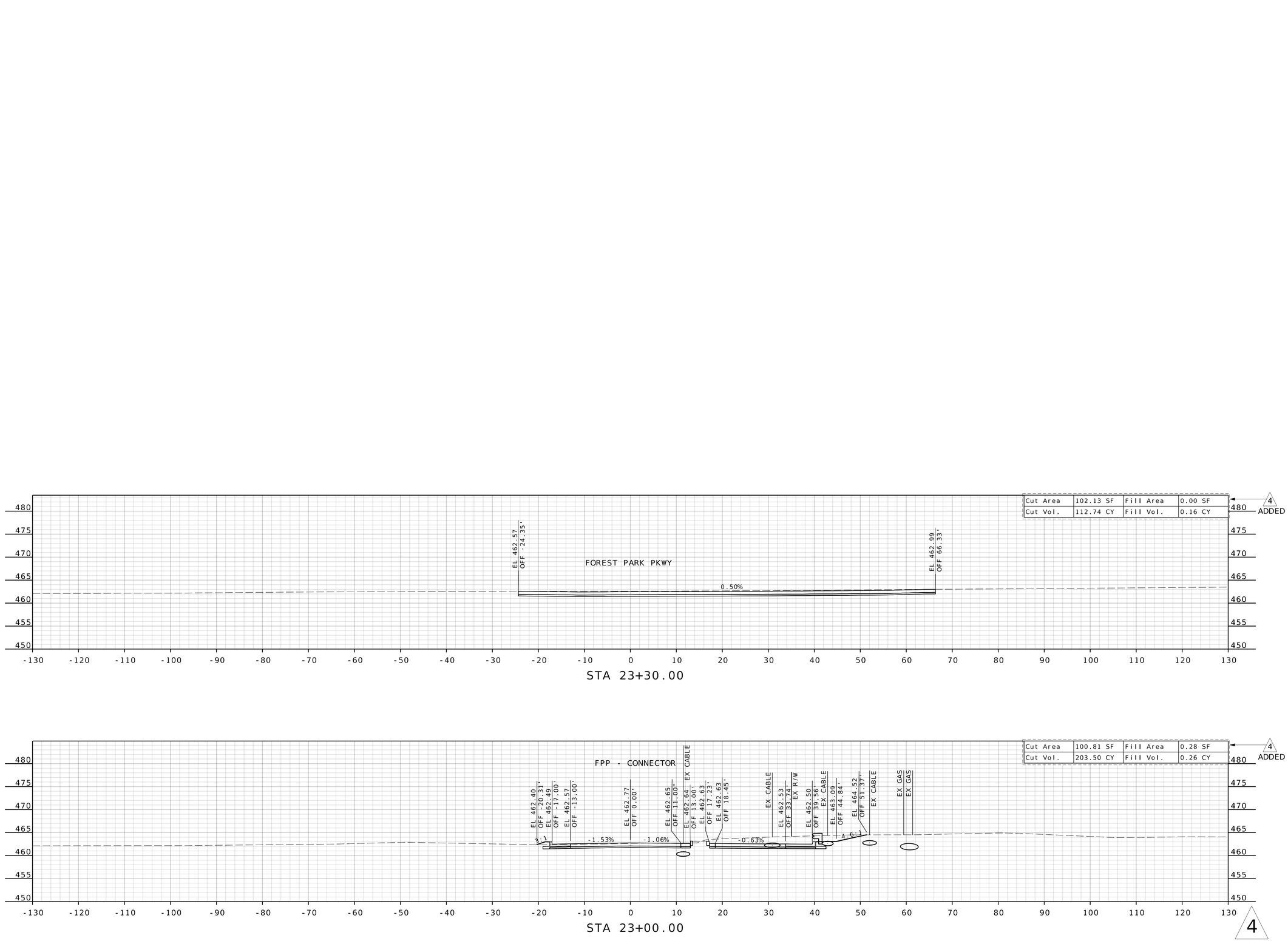
10/30/2026
Date

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MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

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STP-9901(663)

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UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY. CONNECTOR

SHEET NUMBER

XS.21

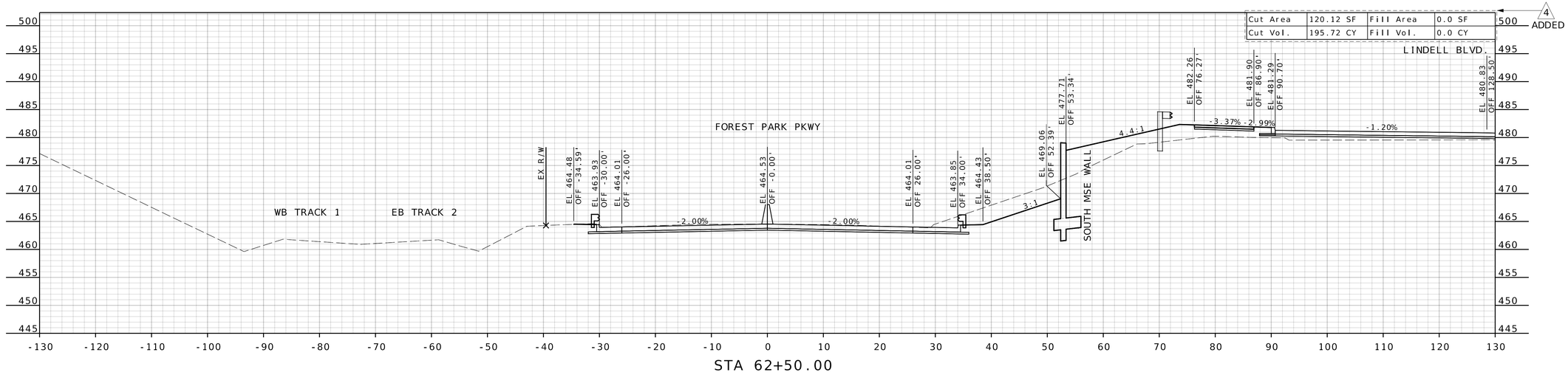
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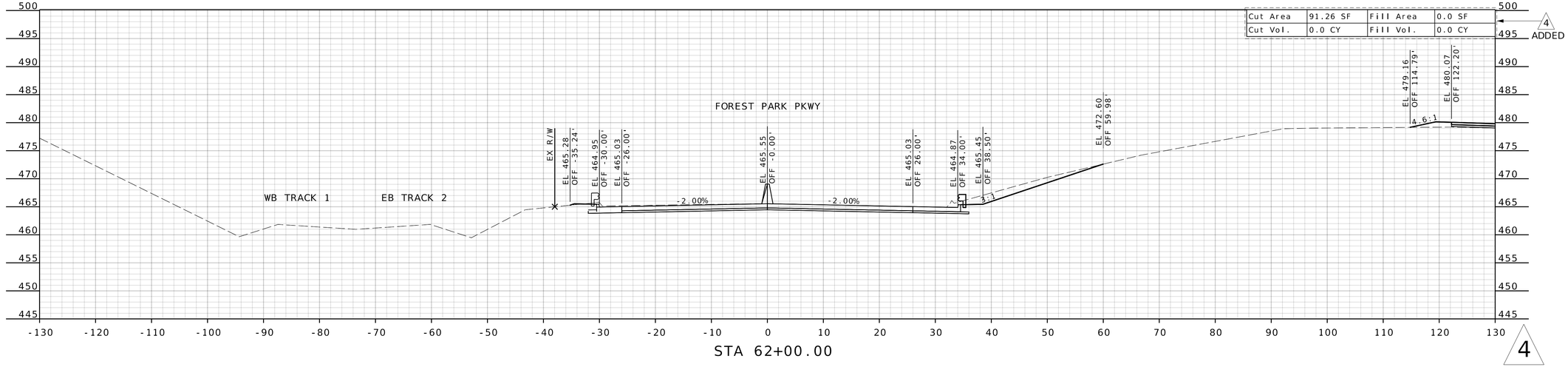
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ABNA JOB NO. 22-6033

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UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY

SHEET NUMBER

XS.22

10/30/2026

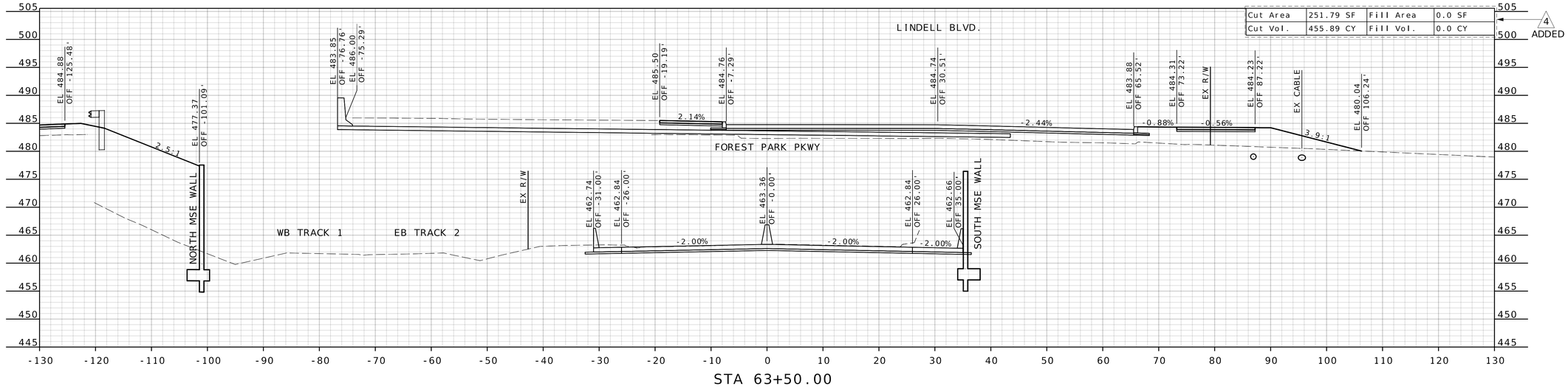
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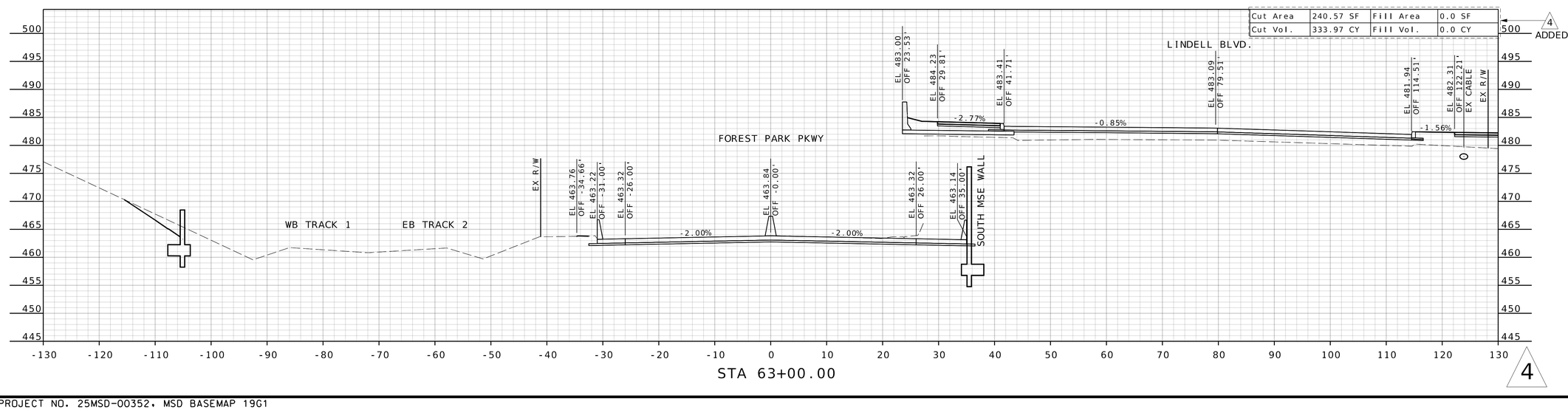
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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

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SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY

SHEET NUMBER

XS.23

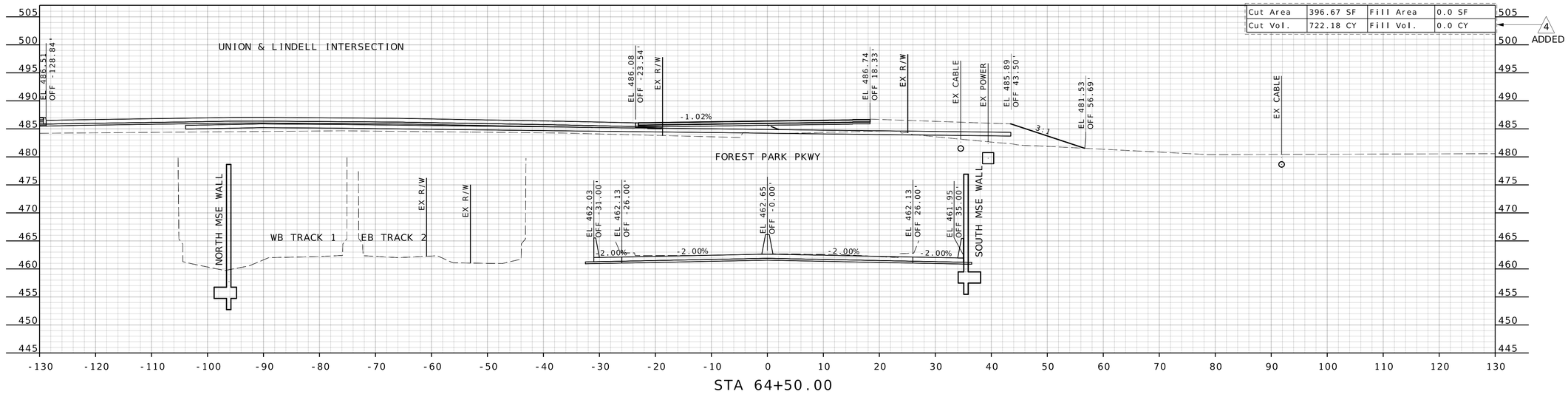
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Date

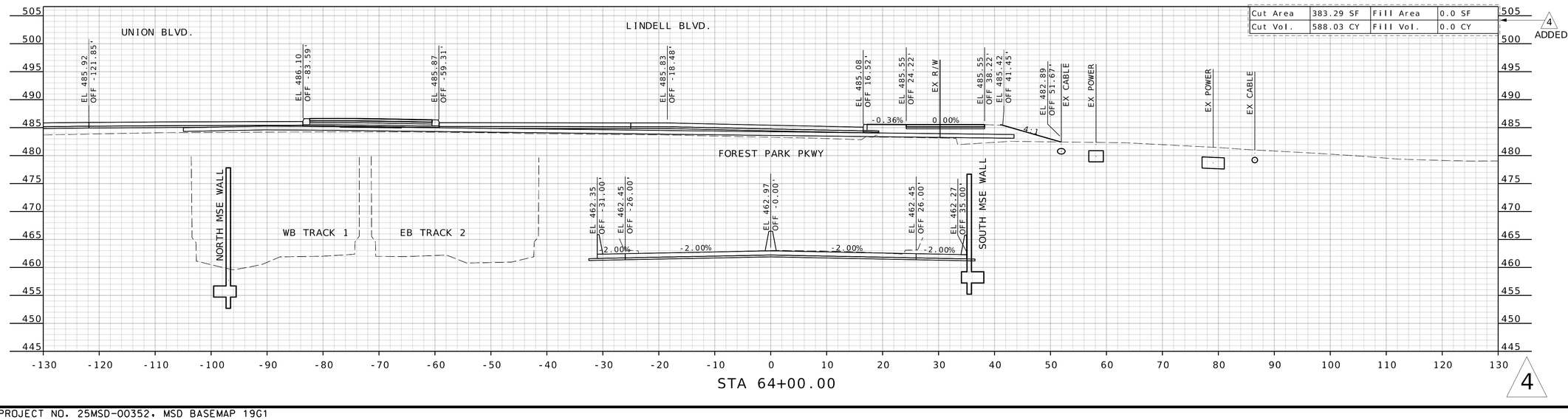
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SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY

SHEET NUMBER

XS.24

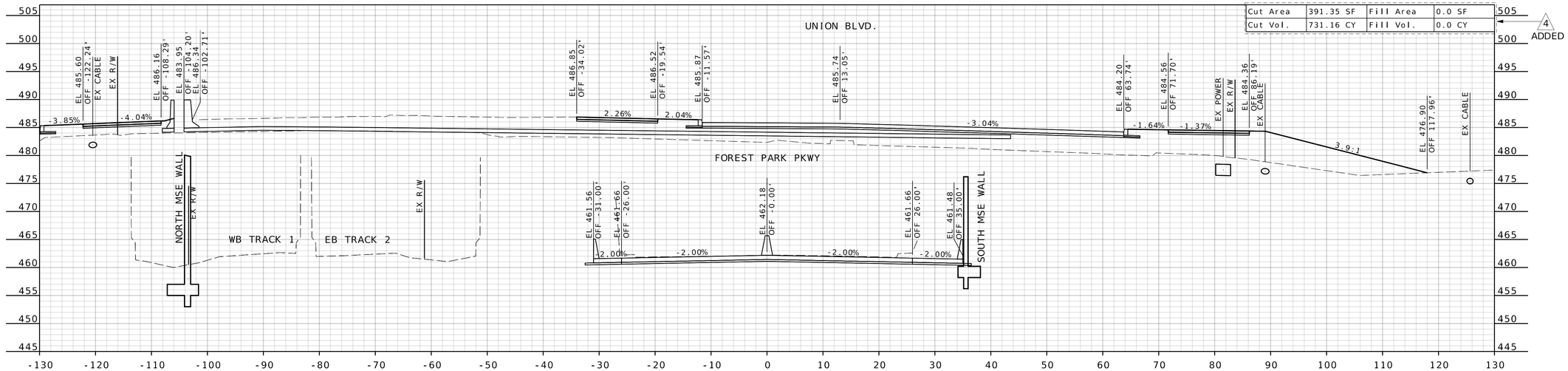
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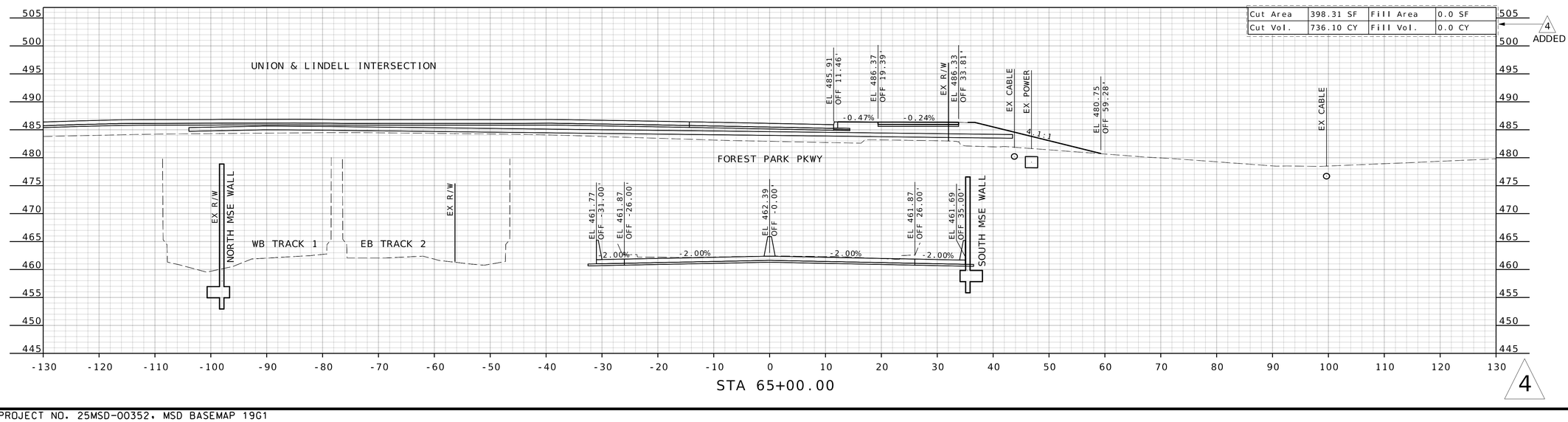
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SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY

SHEET NUMBER

XS.25

10/30/2026

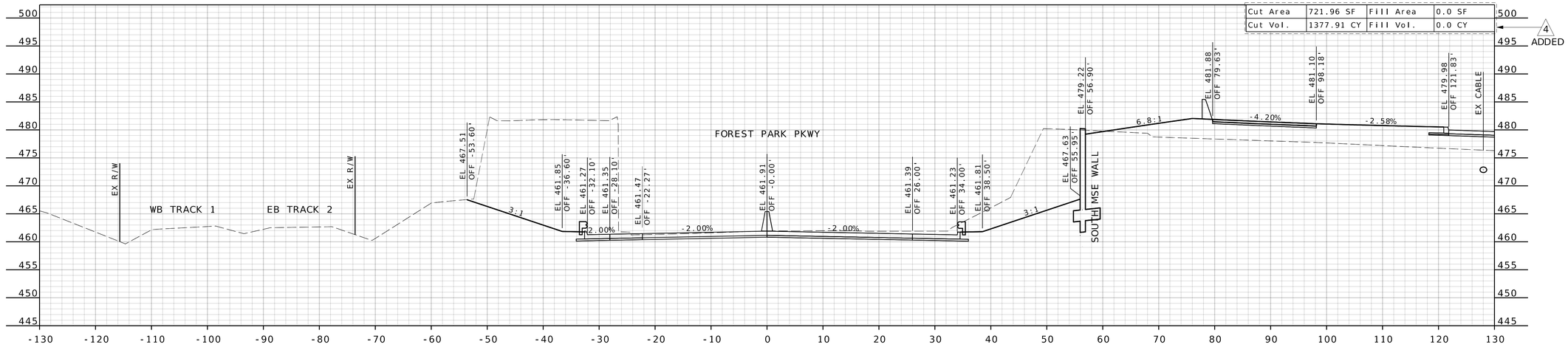
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MSD PROJECT NO. 25MSD-00352, MSD BASEMAP 19G1

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CROSS SECTIONS FOREST PARK PKWY

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XS.26

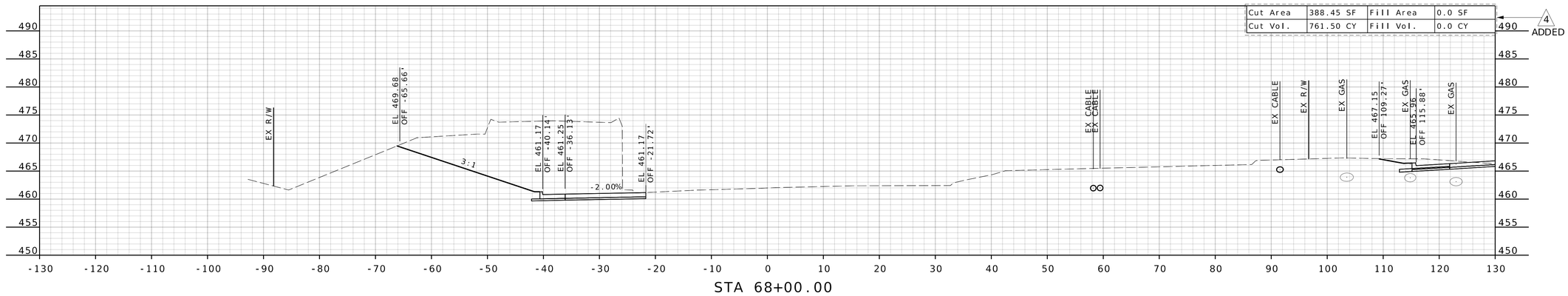
10/30/2026
Date

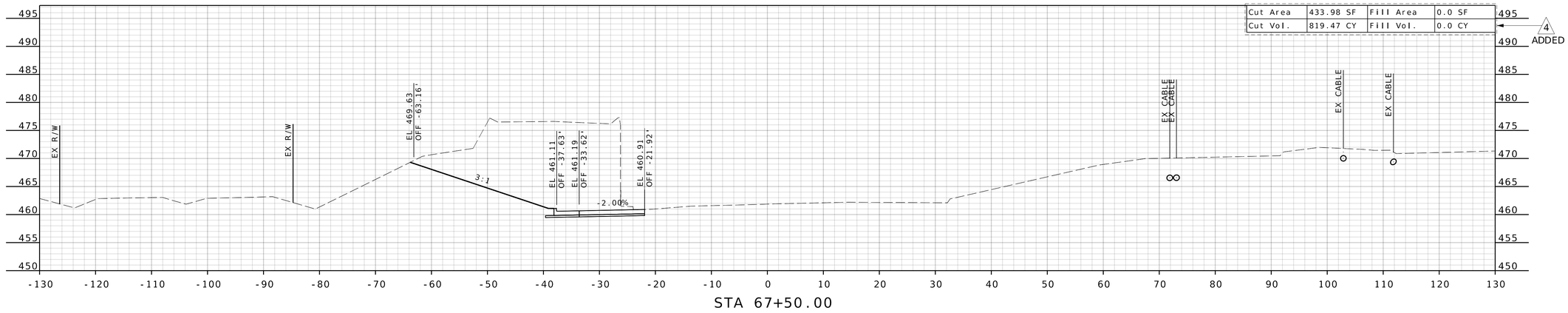
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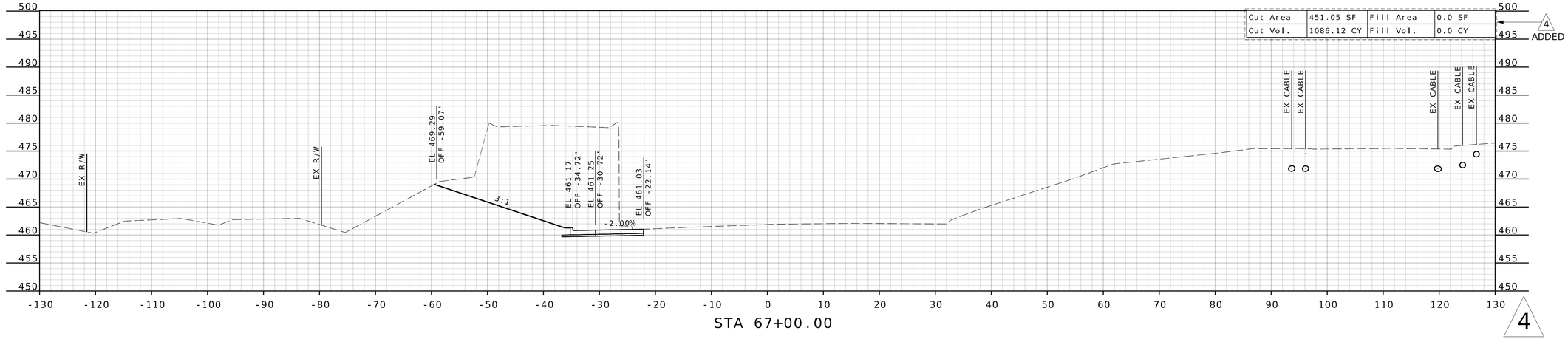
MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

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STP-9901(663)

CITY OF SAINT LOUIS
MISSOURI

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Chief of Design Division

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STATE OF MISSOURI
ABDELHAMID HADJRI
NUMBER E-29095
PROFESSIONAL ENGINEER

Abdelhamid Hadjri

Name

Lic. No.

ADDENDUM 4	10/30/26
Revision No.	Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY

SHEET NUMBER

XS.27

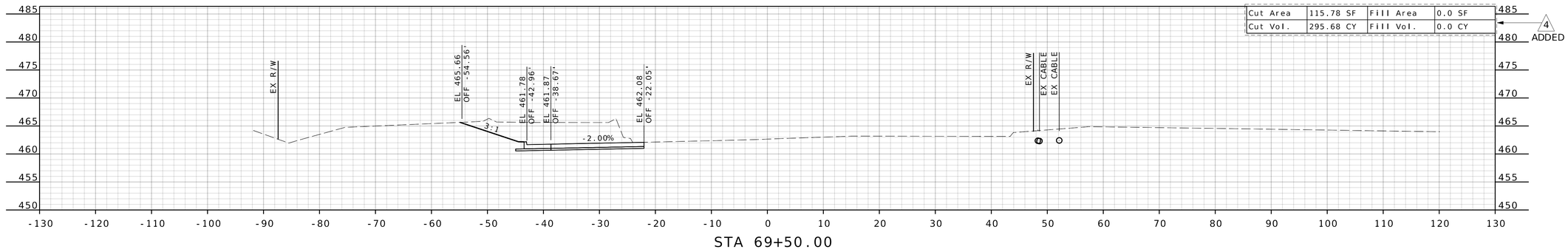
10/30/2026
Date

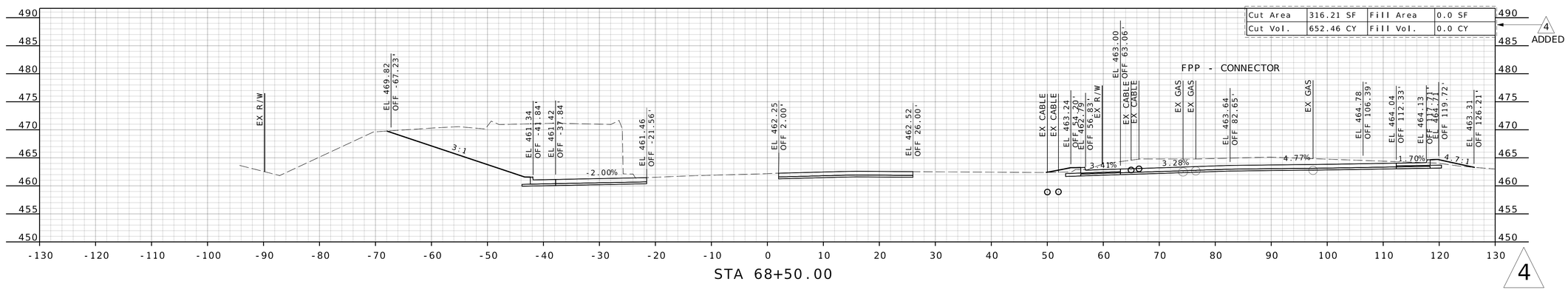
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MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

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UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY

SHEET NUMBER

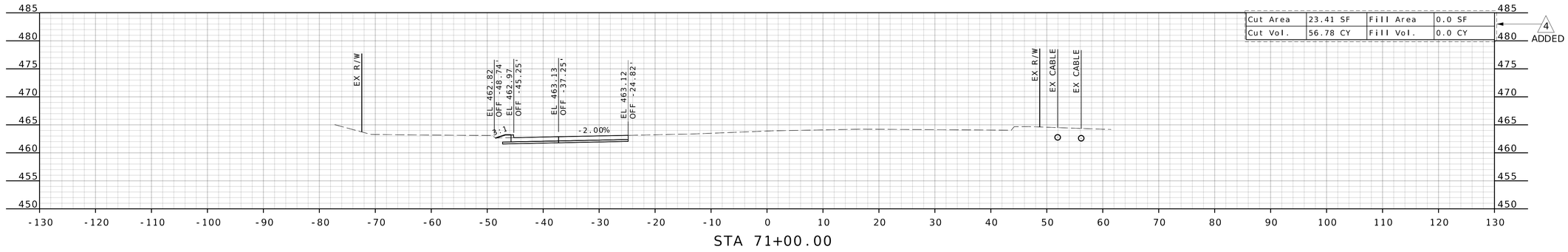
XS.28

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ABNA JOB NO. 22-6033

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Cut Vol.	56.78 CY	Fill Vol.	0.0 CY

4 ADDED

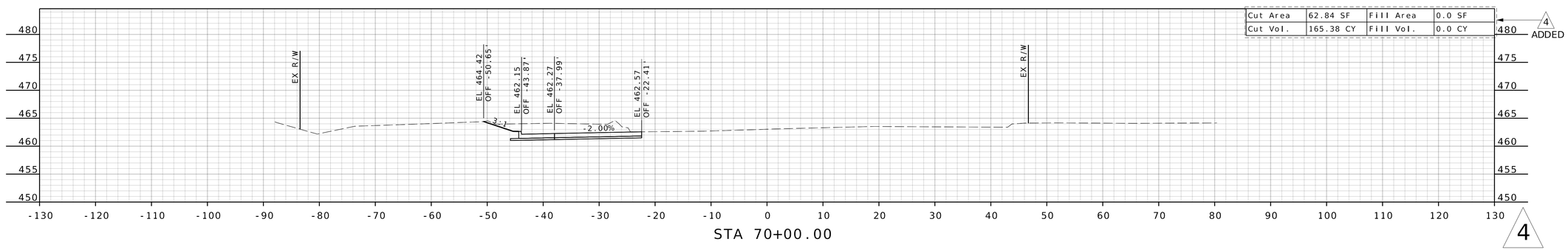
STA 71+00.00



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Cut Vol.	93.28 CY	Fill Vol.	0.0 CY

4 ADDED

STA 70+50.00



Cut Area	62.84 SF	Fill Area	0.0 SF
Cut Vol.	165.38 CY	Fill Vol.	0.0 CY

4 ADDED

STA 70+00.00

4

STP-9901(663)

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UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY

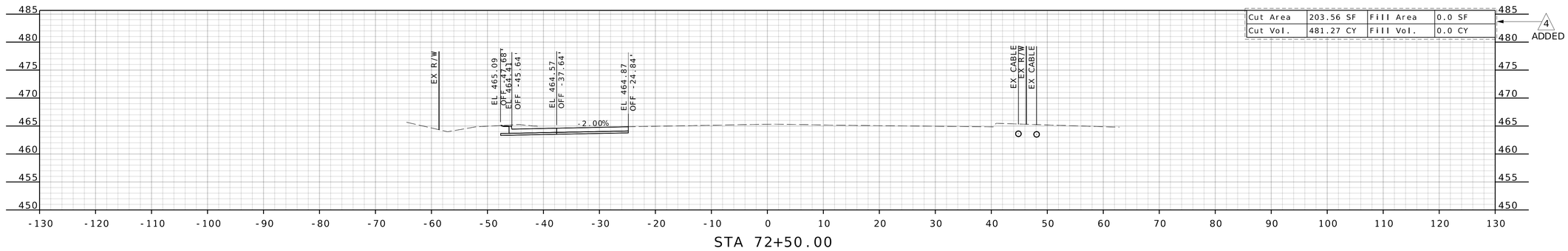
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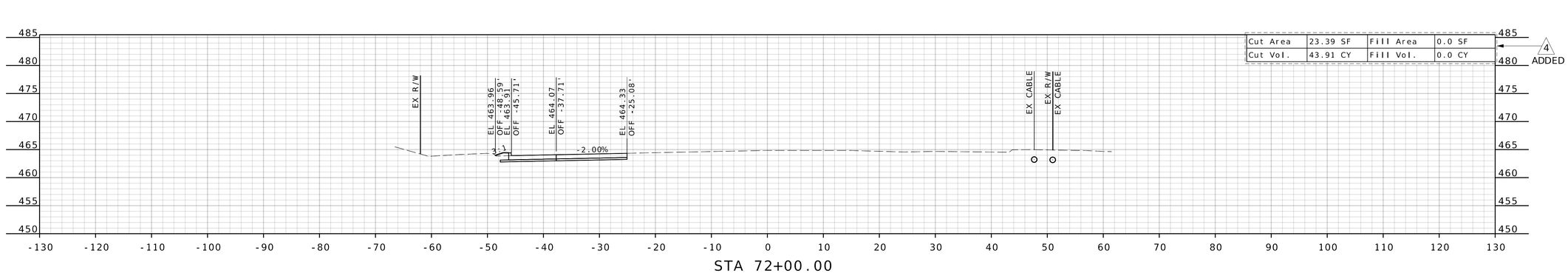
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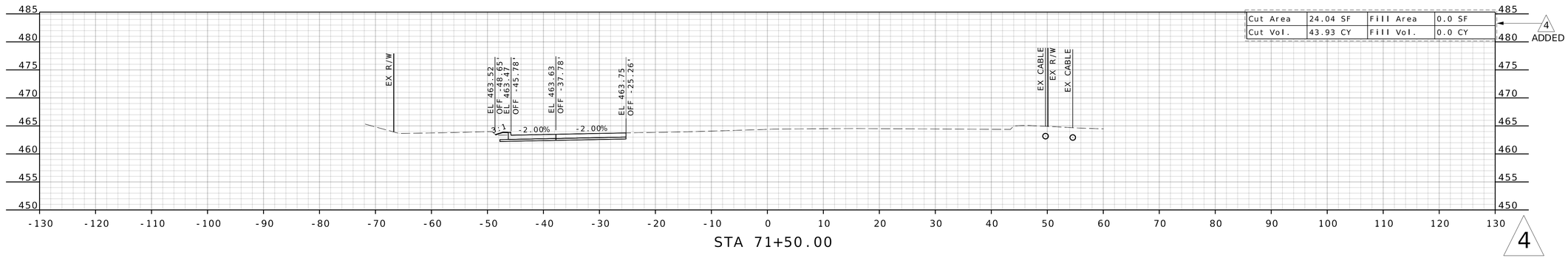
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ADDENDUM 4 10/30/26

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CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY

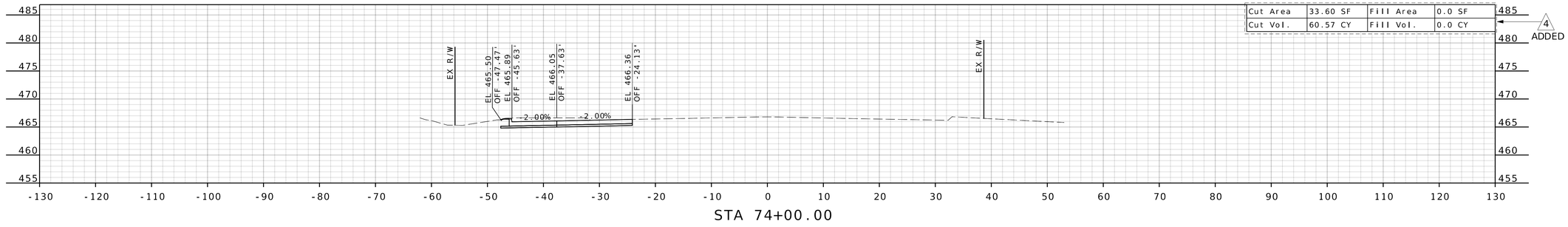
SHEET NUMBER

XS.30

10/30/2026
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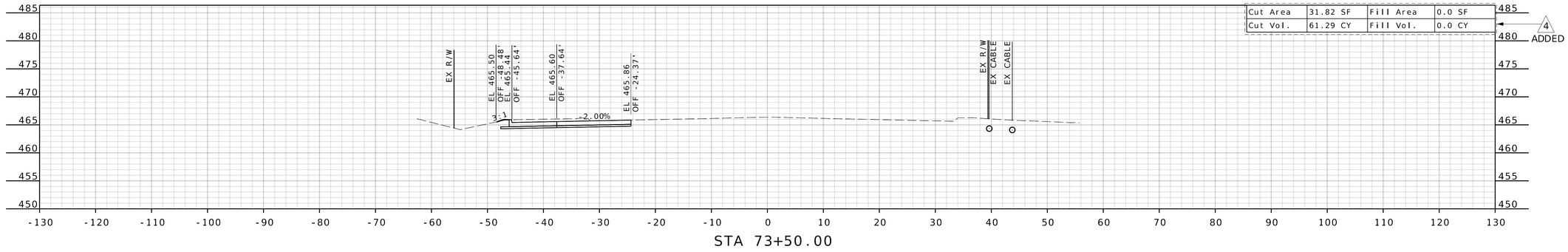
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4 ADDED

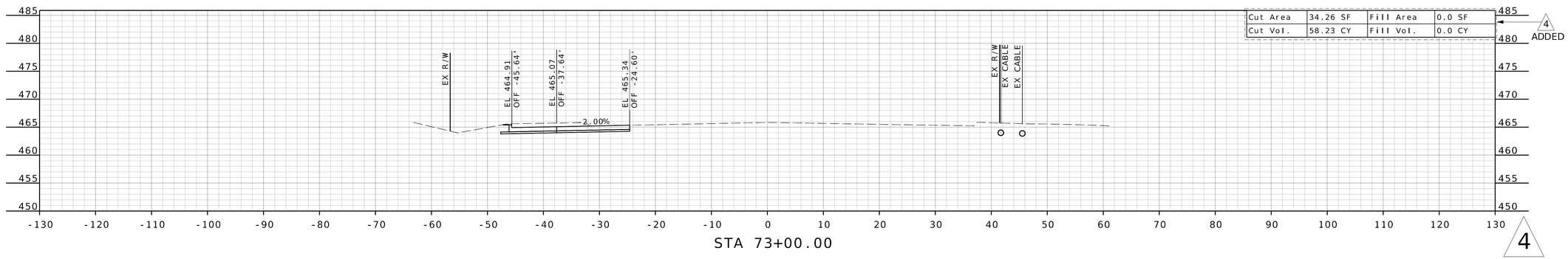
STA 74+00.00



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4 ADDED

STA 73+50.00



Cut Area	34.26 SF	Fill Area	0.0 SF
Cut Vol.	58.23 CY	Fill Vol.	0.0 CY

4 ADDED

STA 73+00.00

4

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ABDELHAMID HADJRI
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PROFESSIONAL ENGINEER

Abdelhamid Hadjri

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Lic. No.

ADDENDUM 4 10/30/26

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

CROSS SECTIONS FOREST PARK PKWY

SHEET NUMBER

XS.31

10/30/2026

Date

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MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

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LIGHTING LEGEND

- LED-A LUMINAIRE, CONCRETE LIGHT POLE, 30 FT. M.H., 6 FT., ARM — 4 REVISED
- LUMINAIRE (EXISTING)
- SINGLE PEDESTRIAN LUMINAIRE, CONCRET LIGHT POLE, 17 FT. M.H.
- DOUBLE PEDESTRIAN LUMINAIRE, CONCRET LIGHT POLE, 17 FT. M.H.
- TWIN LUMINAIRE (EXISTING)
- LED-A LUMINAIRE, ALUMINUM LIGHT POLE, 30 FT. M.H., 6 FT. TWIN ARM.
- PROPOSED WALL-MOUNT LED LUMINAIRE (WALLPACK), 9,000 LUMENS MINIMUM OUTPUT, 480V — 4 REVISED
- WALL PACK LUMINAIRE (EXISTING)
- CONTROLLER, LIGHTING (EXISTING)
- P.S. POWER SOURCE
- PULL BOX (EXISTING)
- PULL BOX PREFORMED TYPE 1
- JCT JUNCTION BOX
- UE UNDERGROUND CABLE (EXISTING)
- OE AERIAL CABLE (EXISTING)
- CONDUIT, RIGID (PUSHED)
- CONDUIT, RIGID (BRIDGE)
- CABLE-CONDUIT (EXISTING)
- CABLE-CONDUIT
- CONDUIT, RIGID (TRENCH)
- CONDUIT, RIGID (MEDIAN)

LIGHTING SCHEDULE — 4 ADDED

TYPE	LUMINAIRE TYPE	MANUFACTURER-CAT-NO	DESCRIPTION	LAMP	MOUNTING	IES CL	VOLT
TYPE 1	LED IN-GRADE YG1	B2000243 + 33298.000 + 33958.023	LED Tesis in-ground wall wash luminaire, 530 lumens, 30k, 90cri, 0-10v dimming + Recessed housing + connection sleeve for cable diameters of .25"=.80"	LED module:11.7 W 530 lm 3000K warm white	FLUSH	N/A	120-277V, 60Hz
TYPE 2	LED IN-GRADE YG2	B2000051 + 33299.000 + 33958.023	LED Tesis in-ground directional luminaire, 511 lumens, 30k, 90cri, 0-10v dimming + Recessed housing + connection sleeve for cable diameters of .25"=.80"	LED module:11.7 W 511 lm 3000K warm white	FLUSH	N/A	120-277V, 60Hz
TYPE 3	PEDESTRIAN	K118-P4GR-III-25-(SSL)-1030-480V-SST-KFSL1-K10-4K-WS	P4 LED ENGINE, Globe mounting set screw, Optical system flat array glass rippled, IES class type III, input wattage 25W, light source solid state lighting, CCT 4K, Paint(Finish) City of St. Louis special etch	2943 lumens	POST TOP	TYPE III	480V/ 60HZ
TYPE 4	PEDESTRIAN/ INTERSECTION	K118-P4GR-III-40-(SSL)-1030-480V-SST-KFSL3-4K-WS	P4 LED ENGINE, Globe mounting set screw, Optical system flat array glass rippled, IES class type III, input wattage 40W, light source solid state lighting, CCT 4K, Paint(Finish) City of St. Louis special etch	4222 lumens	POST TOP	TYPE III	480V/ 60HZ
TYPE 5	PEDESTRIAN/ INTERSECTION	K118-P4GR-IV-40-(SST)-7030-480V-SST-KFSL3-4K-WS	P4 LED ENGINE, Globe mounting set screw, Optical system flat array glass rippled, IES class type IV, input wattage 40W, light source solid state lighting, CCT 4K, Paint(Finish) City of St. Louis special etch	4410 lumens	POST TOP	TYPE IV	480V/ 60HZ
TYPE 6	STREET/ ROADWAY	ERL1H07E540D GRAY	Housing Aluminum die cast enclosure casting integral heat sink for maximum heat transfer,Lens Impact resistant tempered glass, IES class type II, input wattage 51W,CCT 4K, Paint gray finish	7000 lumens	Davit Arm	TYPE II	480V/ 60HZ
TYPE 7	UNDERPASS	Cooper - (WP Series) Holophane - (WallConnect Series) Hubbell - (PGM-150S Series) Lithonia - (TWR Series) Or Approved Equal	Die-cast aluminum housing, borosilicate prismatic glass or UV-stabilized polycarbonate lens, IES Type III distribution, CCT of 3000K, minimum 9,000 lumens, and architectural dark bronze paint finish.	9000 lumens (Min)	WALL MOUNT	TYPE III	480V/ 60HZ

4 REVISED

4 ADDED

NOTES:

1. CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO INSTALLATION OF POLES AND CONDUITS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION LAYOUT AND STAKING. MARK PROPOSED LIGHT POLE LOCATION AFTER UTILITIES ARE LOCATED FOR REVIEW BY THE ENGINEER BEFORE INSTALLATION BEGINS.
3. ROADWAY LUMINAIRES TO BE POSITIONED WITHIN 3 FT.FROM THE EDGE OF THE NEAREST TRAFFIC LANE.
5. ALL WIRING SHALL BE UNDERGROUND.
6. ALL ELECTRICAL EQUIPMENT AND PRODUCT SHALL BE UL LISTED AND LABELED.
7. LIGHTING SYSTEM INSTALLATION SHALL CONFORM TO THE LATEST MODOT CODES, STANDARDS AND NEC.

4

STP-9901(663)

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STATE OF MISSOURI
FRANKLIN P. EPPERT
NUMBER E-14674
PROFESSIONAL ENGINEER

Seal

Name

Lic. No.

ADDENDUM 4 10/29/26

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

LIGHTING PLAN GENERAL NOTES LINDELL BLVD.

SHEET NUMBER

LI5.1

10/29/2026

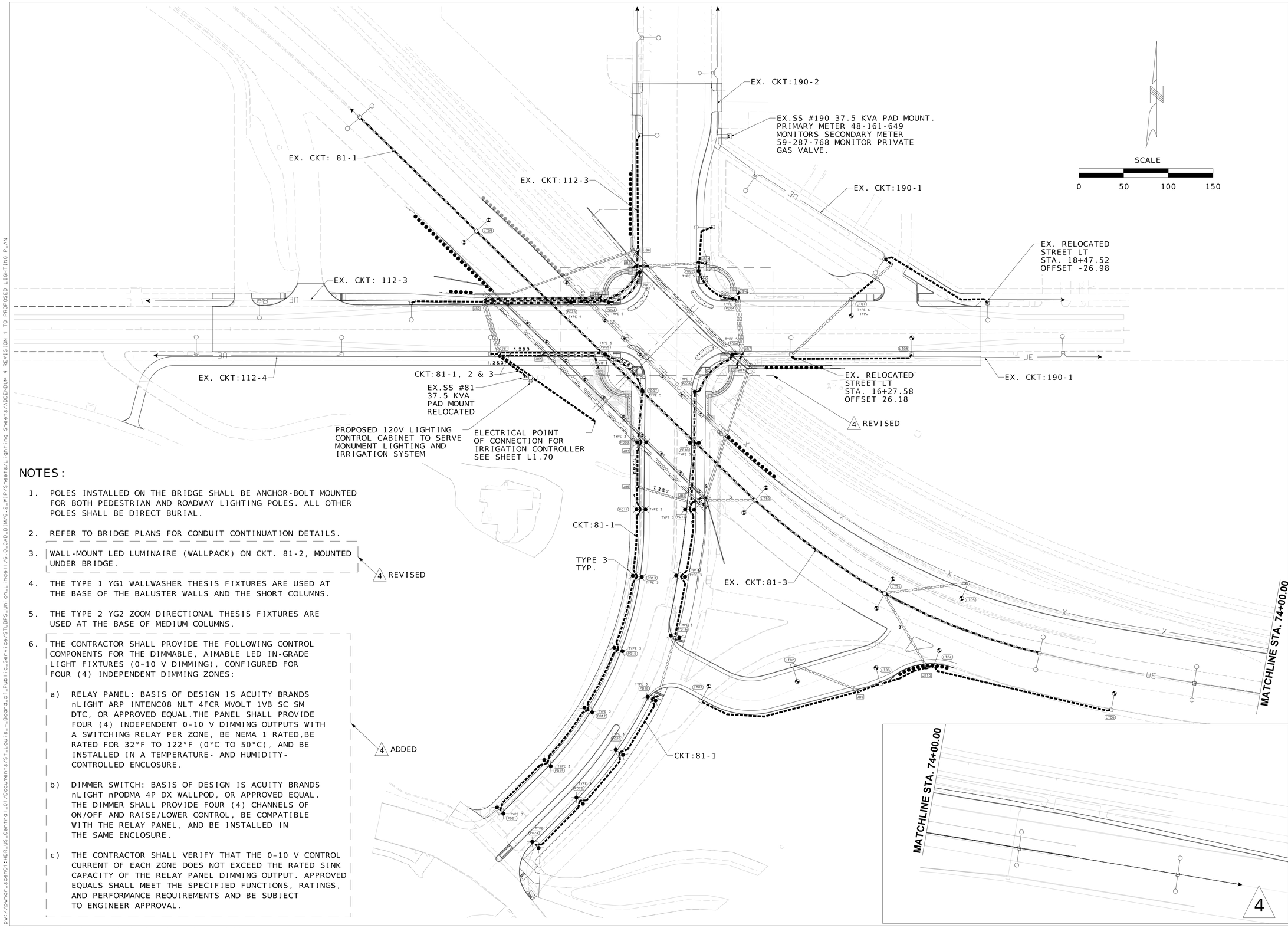
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MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

ABNA JOB NO. 22-6033

Date/Time:Thursday, October 30, 2025 - 8:01:00 AM User:cwhite Drawing:C:\Users\cwhite\Documents\St Louis - Board of Public Service\STLBPS_Union_Lindell\6.0_CAD_BIM\6.2_WIP\Sheets\Lighting Sheets\ADDENDUM 4 REVISION 1 TO Lighting-Cnotes



NOTES:

1. POLES INSTALLED ON THE BRIDGE SHALL BE ANCHOR-BOLT MOUNTED FOR BOTH PEDESTRIAN AND ROADWAY LIGHTING POLES. ALL OTHER POLES SHALL BE DIRECT BURIAL.

2. REFER TO BRIDGE PLANS FOR CONDUIT CONTINUATION DETAILS.

3. WALL-MOUNT LED LUMINAIRE (WALLPACK) ON CKT. 81-2, MOUNTED UNDER BRIDGE. — 4 REVISED

4. THE TYPE 1 YG1 WALLWASHER THESIS FIXTURES ARE USED AT THE BASE OF THE BALUSTER WALLS AND THE SHORT COLUMNS.

5. THE TYPE 2 YG2 ZOOM DIRECTIONAL THESIS FIXTURES ARE USED AT THE BASE OF MEDIUM COLUMNS.

6. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING CONTROL COMPONENTS FOR THE DIMMABLE, AIMABLE LED IN-GRADE LIGHT FIXTURES (0-10 V DIMMING), CONFIGURED FOR FOUR (4) INDEPENDENT DIMMING ZONES: — 4 ADDED

   a) RELAY PANEL: BASIS OF DESIGN IS ACUITY BRANDS nLIGHT ARP INTENC08 NLT 4FCR MVOLT 1VB SC SM DTC, OR APPROVED EQUAL.THE PANEL SHALL PROVIDE FOUR (4) INDEPENDENT 0-10 V DIMMING OUTPUTS WITH A SWITCHING RELAY PER ZONE, BE NEMA 1 RATED,BE RATED FOR 32°F TO 122°F (0°C TO 50°C), AND BE INSTALLED IN A TEMPERATURE- AND HUMIDITY-CONTROLLED ENCLOSURE.

   b) DIMMER SWITCH: BASIS OF DESIGN IS ACUITY BRANDS nLIGHT nPODMA 4P DX WALLPOD, OR APPROVED EQUAL. THE DIMMER SHALL PROVIDE FOUR (4) CHANNELS OF ON/OFF AND RAISE/LOWER CONTROL, BE COMPATIBLE WITH THE RELAY PANEL, AND BE INSTALLED IN THE SAME ENCLOSURE.

   c) THE CONTRACTOR SHALL VERIFY THAT THE 0-10 V CONTROL CURRENT OF EACH ZONE DOES NOT EXCEED THE RATED SINK CAPACITY OF THE RELAY PANEL DIMMING OUTPUT. APPROVED EQUALS SHALL MEET THE SPECIFIED FUNCTIONS, RATINGS, AND PERFORMANCE REQUIREMENTS AND BE SUBJECT TO ENGINEER APPROVAL.

STP-9901(663)

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ADDENDUM 4	10/29/26

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

PROPOSED LIGHTING PLAN

SHEET NUMBER

LI5.3

10/29/2026
Date

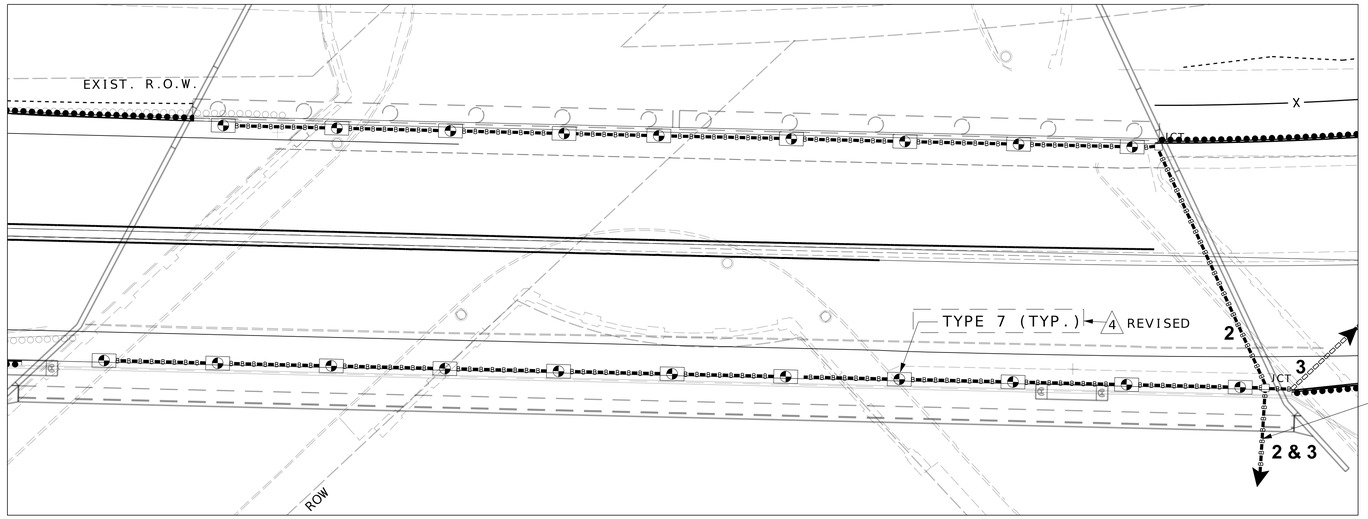
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CKT: 81-2 & 3

SCALE

0 20 40 60

NOTES:

1. THE EXISTING UNDERPASS LUMINARES SHALL BE EXCHANGED WITH THE PROPOSED UNDERPASS LED LUMINAIRES.
2. THE PROPOSED WALL-MOUNTED UNDERPASS LED LUMINAIRES SHALL BE INSTALLED AND CONNECTED TO THE NEW CONDUITS AND CABLES FROM THE EXISTING LIGHTING CONTROL CABINET, CKT 81-2, ONCE THE NEW BRIDGE IS IN PLACE. — 4 REVISED
3. THE PROPOSED WALL PACK MOUNT UNDERPASS LED LUMINAIRES SHALL BE INSTALLED ON THE MSE WALL AND SPACE AT 30 FEET, WITH A MOUNTING HEIGHT OF 16 FEET.

4

MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

STP-9901(663)

CITY OF SAINT LOUIS
MISSOURI

DEPARTMENT OF THE PRESIDENT
BOARD OF PUBLIC SERVICE
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JAROSLAW CZERNIKIEWICZ, P.E.
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ABNA Engineering, Inc. | HDR Engineering, Inc.

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STATE OF MISSOURI
FRANKLIN P. EPPERT
NUMBER E-14674
PROFESSIONAL ENGINEER

Seal

Name

Lic. No.

ADDENDUM 4 10/29/26

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

UNDERPASS LIGHTING PLAN FOREST PARK PKWY

SHEET NUMBER

LI5.5

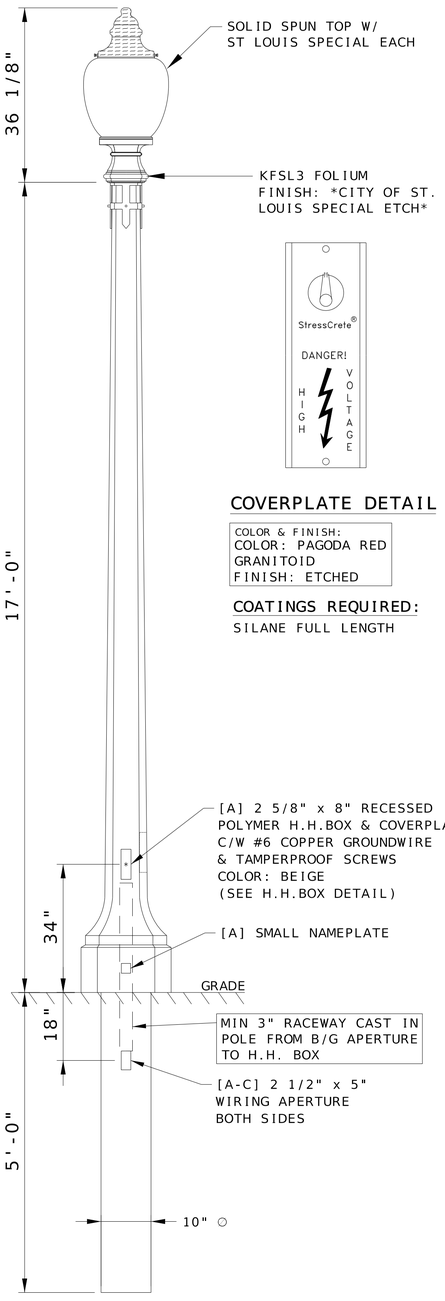
10/29/2026

Date

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ABNA JOB NO. 22-6033

POLE TOP: 6" FL/FL



COVERPLATE DETAIL

COLOR & FINISH:
COLOR: PAGODA RED GRANITOID
FINISH: ETCHED

COATINGS REQUIRED:

SILANE FULL LENGTH

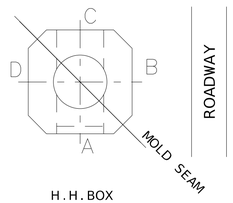
POLE SPECIFICATIONS

CATALOG NO.:	KLH17-G-E61-DB S/F KFSL3
QUANTITY:	
SECTION:	TAPERED SQUARE
COLOR:	PAGODA RED GRANITOID
FINISH:	ETCHED
POLE TOP:	6" FL/FL
POLE BUTT:	10" ∅
POLE LENGTH:	22' 0"
APPROX WEIGHT:	1,850 lbs.
POLE WARRANTY:	LIFETIME

LUMINAIRE SPECIFICATIONS

CATALOG NO.:	K118-P4GR-III-40-(SSL)-1030 -480V-SST-KFSL3-4K-WS K118-P4GR-IV-40-(SST)-7030 -480V-SST-KFSL3-4K-WS
QUANTITY:	
GLOBE MOUNTING:	SET SCREW
OPTICAL SYSTEM:	FLAT ARRAY GLASS RIPPLED
IES CLASS:	TYPE III & IV
INPUT WATTAGE:	40W (1030 & 7030 SERIES)
LIGHT SOURCE:	SOLID STATE LIGHTING
CCT:	3000K ☐ 4000K ☒
LINE VOLTAGE:	480V
POLE ADAPTOR:	KFSL3
PAINT:	*CITY OF ST. LOUIS SPECIAL ETCH*
OPTIONS:	SOLID SPUN TOP

OPTIONS
QUICK DISCONNECT ☒
C/W SILICONE OPTICS



H.H.BOX
NAMEPLATE
THRU APERTURE

TOP VIEW

4 REVISED

Specification Details

Description	Catalog Number	"A" Pole Height Above Grade	"D" Tip Dimension	"C" Stepped Section Height	"E" Flare	"B" Direct Burial Length & "F" Dia.	Pole Weight Direct Burial	Pole Weight Base Plate
St Louis 10'	KLC10	10' 0"	6 1/4"	11 3/8"	18"	5' 0" x 10"	1220 lbs	1075 lbs
St Louis 13'	KLC13	13' 0"	5 3/4"	11 3/8"	18"	5' 0" x 10"	1300 lbs	1155 lbs
St Louis 15'	KLC15	15' 0"	5 1/4"	11 3/8"	18"	5' 0" x 10"	1345 lbs	1200 lbs
St Louis 18'	KLH18	18' 0"	5 3/4"	13 3/4"	22"	5' 6" x 10"	1875 lbs	1715 lbs
St Louis 20'	KLH20	20' 0"	5 1/4"	13 3/4"	22"	5' 6" x 10"	1920 lbs	1760 lbs
St Louis 22'	KLH22	22' 0"	4 3/4"	13 3/4"	22"	5' 6" x 10"	1955 lbs	1795 lbs

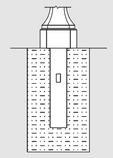
How to Catalog for St. Louis Concrete Pole

Pole Style	Height	Finish	Color**	Footing Details	Tenon (Post Top Mount)	Coating	Options*
KLC KLH	5' - 22'	E – Etched Finish S – Polished Finish	10 – Midnight Lace 11 – Eclipse Black 30 – Salt & Pepper 40 – Pearl Gray 90 – Saluki bronze	DB – Direct Buried FBP – Flush Baseplate SBP – Stub Baseplate	Specify Tenon Size For example 140 30/30 = 2 7/8" OD & 3" long	NA – Non Acrylic A – Acrylic AG – Anti Graffiti Coating***	DR – Duplex Receptacle GFI – Ground Fault Duplex Receptacle SR – 1 Outlet LRN – Ladder Rest BPC – Base Plate Cover AB – Anchor Bolts BA – Banner Arms FH – Flag Holders
KLH	22'	E	40	DB	140 30/30	GFI	NA

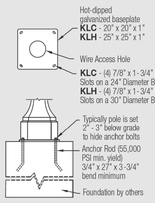
* Consult website for full listings. ** See decor colors on page 2 for full selection of colors.
***Anti Graffiti Coating is extra, consult factory for more details.

Footing Details

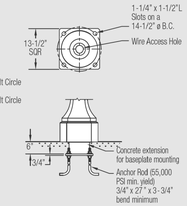
Direct Buried
(Simple and Cost Effective)
1. Auger the setting hole.
2. Set pole in hole and plumb straight.
3. Backfill* with required backfill tamping every 4" to 6".



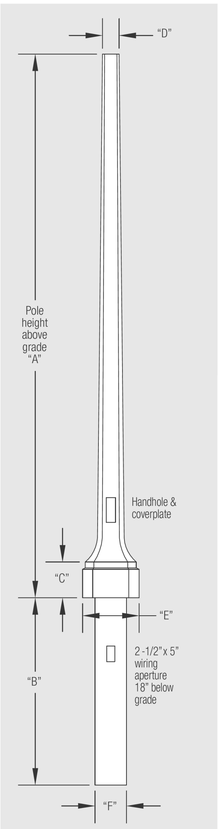
Baseplate Option 1: FBP



Baseplate Option 2: SBP



*Generally the excavated material can be used for backfill, in some situations better backfill may be required.





Typical Pole Cross Section

www.scgrp.com

4

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STATE OF MISSOURI
FRANKLIN P. EPPERT
NUMBER E-14674
PROFESSIONAL ENGINEER

Seal

Name
Lic. No.

Revision No.	Date
ADDENDUM 4	10/29/26

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

LIGHT POLE DETAILS

SHEET NUMBER

LI5.6

10/29/2026
Date

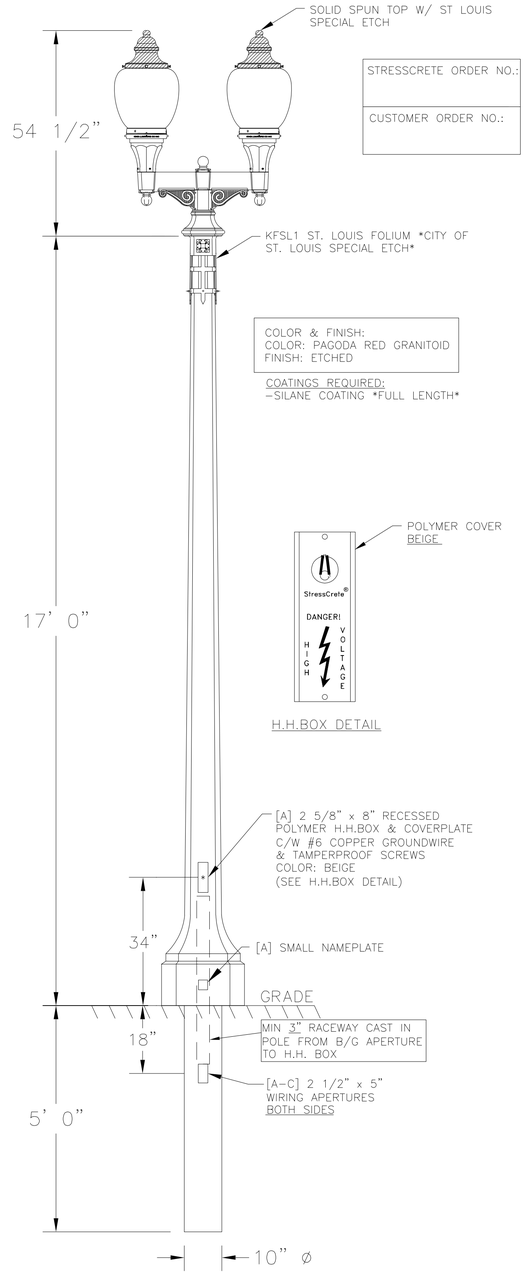
ABNA JOB NO. 22-6033

MSD PROJECT NO. 25MSD-00352. MSD BASEMAP 19G1

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POLE TOP: 6" FL/FL



STRESSCRETE ORDER NO.:
CUSTOMER ORDER NO.:

H.H.BOX DETAIL

COLOR & FINISH:
COLOR: PAGODA RED GRANITOID
FINISH: ETCHED

COATINGS REQUIRED:
-SILANE COATING *FULL LENGTH*

POLE SPECIFICATIONS

CATALOG NO.:	KLH17-G-E61-DB C/W 140 (35/120) S/F KFSL1
QUANTITY:	
SECTION:	TAPERED SQUARE
SECTION:	PAGODA RED GRANITOID
FINISH:	ETCHED
POLE TOP:	6" FL/FL
POLE BUT:	10" Ø
POLE LENGTH:	22' 0"
APPROX WEIGHT:	1,850 lbs.
POLE WARRANTY:	LIFETIME

LUMINAIRE SPECIFICATIONS

CATALOG NO.:	K118-P4GR-III-25-(SSL)-1030 -480V-SST-KFSL1-K10-4K-WS
QUANTITY:	
GLOBE MOUNTING:	SET SCREW
OPTICAL SYSTEM:	FLAT ARRAY RIPPLED GLASS GLOBE
IES CLASS.:	TYPE III
INPUT WATTAGE:	25W(1030 SERIES)
LIGHT SOURCE:	SOLID STATE LIGHTING
CCT:	3000K ☐ 4000K ☒
LINE VOLTAGE:	480V ☒
ARM ADAPTOR:	K10
PAINT:	*CITY OF ST. LOUIS SPECIAL ETCH*
SURGE PROTECTION:	20KV/10KA PER IEEE C62.41.2 C HIGH
OPTIONS:	SOLID SPUN TOP

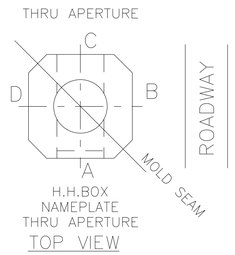
OPTIONS
QUICK DISCONNECT ☒
C/W SILICONE OPTICS

4 REVISED

ARM SPECIFICATIONS

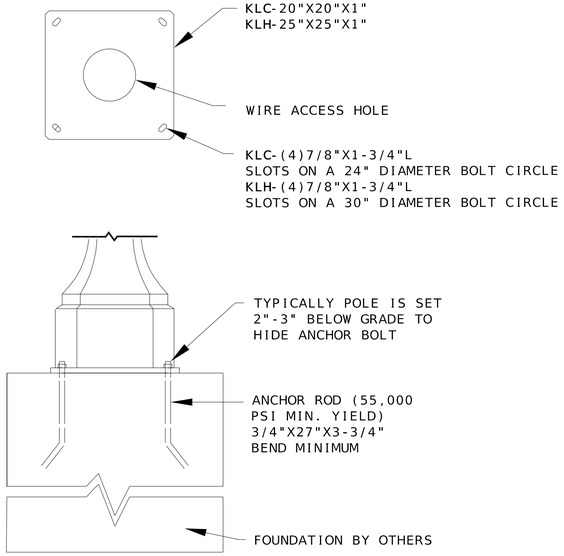
CATALOG NO.:	KA21-A-T-2-XX-KFSL1
QUANTITY:	
MATERIAL:	ALUMINUM
PAINT:	*CITY OF ST. LOUIS SPECIAL ETCH*

OPTIONS:



H.H.BOX NAMEPLATE THRU APERTURE
TOP VIEW

BASEPLATE
OPTION 1: FBP



4

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ADDENDUM 4 10/29/26

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UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

LIGHT POLE DETAILS

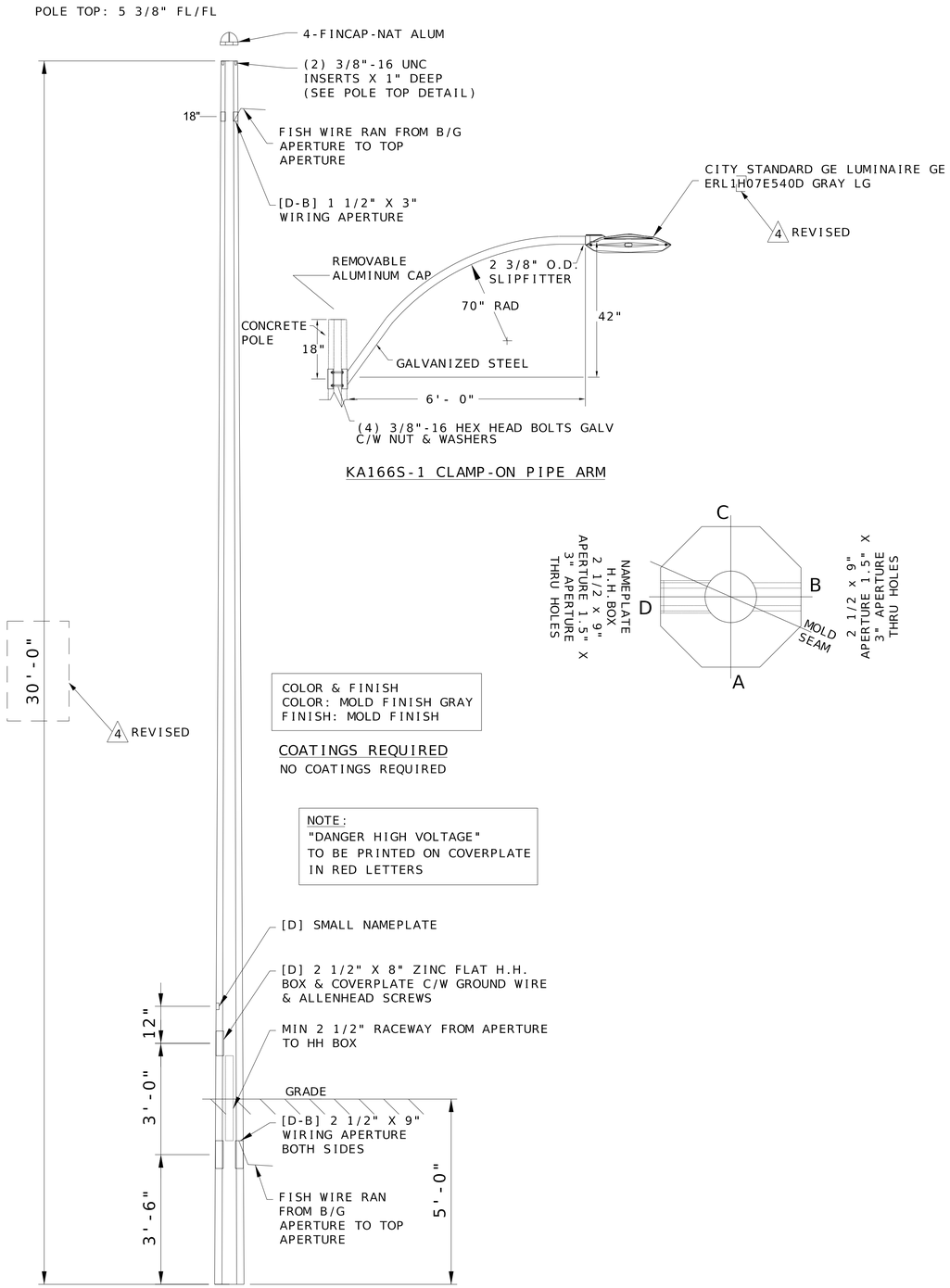
SHEET NUMBER

LI5.7

10/29/2026
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STREET LIGHT POLE DETAILS

PANEL SCHEDULE SUBSTATION #81 UNION & LINDELL OLD

		P1							240/480 V					200A ML TYPE 3R			
LOAD TYPE	CIRCUIT DESCRIPTION	CONN KVA	CONN APMS	CIRCUIT BREAKER AMP	CIRCUIT BREAKER POLE	CIRCUIT BREAKER CKT	1 PH	3 PH	CIRCUIT BREAKER CKT	CIRCUIT BREAKER POLE	CIRCUIT BREAKER AMP	CONN APMS	CONN KVA	CIRCUIT DESCRIPTION		LOAD TYPE
LTS	UNION & LINDELL BLVD.	3.07	6.40	30	2	1	X		2	2	30			OFF		LTS
LTS	FOREST PARK PARKWY	7.73	16.10	30	2	3	X		4	2	30	3.71	1.78	UNION & LINDELL BLVD.		LTS
	OFF			30	N/A	5	X			N/A						
			22.50									**3.71**		**TOTAL**	**26.21**	
		10.80											**1.78**	**TOTAL**	**12.58**	

PANEL SCHEDULE SUBSTATION #81 UNION & LINDELL NEW

		P1							240/480 V					200A ML TYPE 3R			
LOAD TYPE	CIRCUIT DESCRIPTION	CONN KVA	CONN APMS	CIRCUIT BREAKER AMP	CIRCUIT BREAKER POLE	CIRCUIT BREAKER CKT	1 PH	3 PH	CIRCUIT BREAKER CKT	CIRCUIT BREAKER POLE	CIRCUIT BREAKER AMP	CONN APMS	CONN KVA	CIRCUIT DESCRIPTION		LOAD TYPE
LTS	UNION & LINDELL BLVD.	1.43	2.99	30	2	1	X		2	2	30	3.96	1.90	4 REVISED FOREST PARK PARKWY UNDERPASS		LTS
LTS	FOREST PARK PARKWY /JUG - HANDLE	7.34	15.30	30	2	3	X		4	2	30	3.71	1.78	UNION & LINDELL BLVD.		LTS
	OFF REVISED 4			30	N/A	5	X		6	N/A						
			18.29									**7.66**		**TOTAL**	**25.95**	
	REVISED 4	**8.78**											**3.68**	**TOTAL**	**12.46**	

PROPOSED PANEL SCHEDULE IN-GRADE LED & IRRIGATION Lindell & Union

		P2							120/240 V					200A ML TYPE 3R			
LOAD TYPE	CIRCUIT DESCRIPTION	CONN KVA	CONN APMS	CIRCUIT BREAKER AMP	CIRCUIT BREAKER POLE	CIRCUIT BREAKER CKT	1 PH	3 PH	CIRCUIT BREAKER CKT	CIRCUIT BREAKER POLE	CIRCUIT BREAKER AMP	CONN APMS	CONN KVA	CIRCUIT DESCRIPTION		LOAD TYPE
LTS	NW STONE MONUMENT	0.27	2.24	30	1	1A	X		2A	1	30	2.24	0.27	NE STONE MONUMENT		LTS
LTS	SW STONE MONUMENT	0.39	3.22	30	1	3A	X		4A	1	30	3.41	0.41	SE STONE MONUMENT		LTS
IRR LINE	ICC2	0.168	1.40	30	1	5A	X		6A	N/A				SPARE		
			6.86									**5.66**		**TOTAL**	**12.52**	
		0.82											**0.68**	**TOTAL**	**1.50**	

4

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ADDENDUM 4 10/29/26

Revision No. Date

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CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

LIGHT POLE DETAILS

SHEET NUMBER

LI5.8

10/29/2026

Date

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TECHNICAL SPECIFICATIONS (ROADWAY)

Sections below are listed here for reference but are included in The BPS Standard Specifications:

007200 General Conditions 007200-1 to 007200-24
015000 Temporary Facilities and Controls 015000-1 to 015000-2
015526 Traffic Control 015526-1 to 015526-5
017010 Mobilization 017010-1
017124 Construction Stakeout 017124-1
024100 Removals 024100-1 to 024100-4
310000 Earthwork 310000-1 to 310000-10
311000 Site Clearing 311000-1 to 311000-3
321216 Asphalt Paving 321216-1 to 321216-8
321313 Concrete Paving
321726 Tactile Warning Surface 321726-1 to 321726-4
323113 Chain Link Fences and Gates 323113-1 to 323113-5
344100 Roadway Signaling and Control Equipment 344100-1

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3 ADDED NNNN. CONCRETE SIDEWALK, 6 IN.....182



This Sheet Has Been Signed, Sealed and Dated Electronically

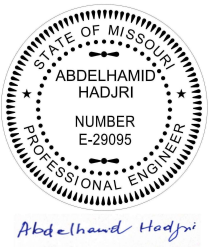
DEPARTMENT OF THE PRESIDENT
BOARD OF PUBLIC SERVICE
ROOM 301, CITY HALL
ST. LOUIS, MO 63103
Phone (314) 622-3535

HDR Engineering, Inc.
1001 Highlands Plaza Drive, Suite 200
St. Louis, MO 63110
Certificate of Authority: 000856
Consultant Phone: 314-425-8300

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JOB NO. STP-9901 (663)
St. Louis, MO
Date Prepared: 10/30/2026

Only the following items of the Job Special Provisions (Roadway) are authenticated by this seal:
N, WW through GGG, HHHH through MMMM





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ABNA

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JOB NO. STP-9901 (663)
St. Louis, MO
Date Prepared: 10/30/2026

Only the following items of the Job Special Provisions (Roadway) are authenticated by this seal: A through M, O through VV, HHH through MMM, NNNN

Union-Lindell Bridge Reconstruction
Federal Project Number: STP-9901(663)
TIP Number: 7123A-22
St. Louis City, Missouri



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CBB

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JOB NO. STP-9901 (663)
St. Louis, MO
Date Prepared: 10/30/2026

Only the following items of the Job Special Provisions (Roadway) are authenticated by this seal: NNN through WWW



8-6-2026

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ST. LOUIS, MO 63103
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SWT

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JOB NO. STP-9901 (663)
St. Louis, MO
Date Prepared: 10/30/2026

Only the following items of the Job Special Provisions (Roadway) are authenticated by this seal: XXX through GGGG

A. ADDITIONAL GENERAL SPECIFICATIONS

1.0 Description

Information provided in this Special Provision is in addition to or supersedes Section 01200 – "General Provisions" of the Specifications of the Department of the President, Board of Public Service, City of St. Louis, Missouri. This section also provides modifications to Division 0100 of the Missouri Standard Specifications for Highway Construction applicable to this project.

2.0 Work To Be Done

The work to be performed under this Contract will consist of furnishing all materials, equipment, tools and labor and executing all work necessary for: Union & Lindell bridge reconstruction over Forest Park Parkway and MetroLink in strict accordance with the requirements of these specifications and the drawings made a part hereof.

The Union & Lindell Bridge Reconstruction over Forest Park Parkway and MetroLink project includes the demolition of both the Union & Lindell bridges over the Forest Park Parkway and MetroLink and the construction of a new single bridge over both facilities. Improvements include enhanced bicycle and pedestrian facilities, new signals, lighting and landscaping features.

3.0 List Of Drawings:

The Contract Drawings or "Plans" on which the bids and contracts are based are listed for information and reference, as follows:

SHEET TITLE	SHEET NO.
COVER SHEET	COVER
GENERAL NOTES	C1.1
SUMMARY OF QUANTITIES	2B.1 – 2B.4
TYPICAL SECTIONS	C2.1 – C2.14
COORDINATE POINTS	C3.1
KEY MAP	C3.2
PLANS	C4.1 – C4.11
PROFILES	C4.12 – C4.25
PAVEMENT MARKING PLANS	C5.1 – C5.10
DETOUR PLANS	C6.1 – C6.2
DRAINAGE PLANS	C7.1 – C7.14
DETAIL SHEETS	D1.1 – D1.5
EROSION CONTROL PLANS	E1.1
LIGHTING PLANS	LI5.1 – LI5.9
CROSS SECTIONS	XS.1 – XS.31

TRAFFIC SIGNAL PLANS	TS1.1 – TS5.12
TRAFFIC CONTROL PLANS	TC.1 – TC.9
LANDSCAPE ARCHITECT PLANS	L0.01 – L5.20
BRIDGE PLANS	B-001 – B-067
SOUTH MSE WALL PLANS	SW-01 – SW-012
NORTH MSE WALL PLANS	NW-01 – NW-08

4.0 STANDARD SPECIFICATIONS TO GOVERN

The Special Provisions noted for this project supplement the City of St. Louis, Board of Public Service "Standard Specifications, Bid Items and Standard Details for Street and Alley Construction", November 2015; hereinafter called the City Specifications as supplemented or amended, hereinafter and applicable sections of the Missouri Standard Specifications for Highway Construction, current Edition, with latest supplements, and the Metropolitan St. Louis Sewer District Standard Construction Specifications for Sewers and Drainage Facilities, 2009 Edition.

The Missouri Standard Specifications for Highway Construction are periodically amended by the Missouri Highway and Transportation Department. Since these provisions are subject to change, the Contractor shall be responsible for the content of the current provisions, which fully amend the Standard Specifications at the time of the project. The Missouri Highway and Transportation Department makes this information available at their Jefferson City Office.

Where reference is made to the "Commission" in the Missouri Standard Specifications for Highway Construction this reference shall mean, Board of Public Service of the City of St. Louis, Missouri. Where reference is made to the Engineer, this reference shall mean the President of the Board of Public Service (PRESIDENT) or his designated representative.

5.0 CONSTRUCTION STANDARDS

Construction on this project shall meet the standard specifications of the following:

1. City of St. Louis, Board of Public Service, "Standard Specifications, Bid Items and Standard Details for Street and Alley Construction", November 2015, for most City street items or current edition.

2. Missouri Standard Specifications for Highway Construction, current Edition as supplemented

3. Metropolitan St. Louis Sewer District Standard Construction Specifications for Sewers and Drainage Facilities, 2009 edition or current edition.

4. City of St. Louis Water Division, Regulations for the Installation of Large Connections

and the Laying of Water Mains and Information on Small Service Connections, February, 2001, for most water line items, or current edition.

5. Standard Traffic Signal Specifications for The City of St. Louis, June 18, 2004, or current edition.

6.0 HIERARCHY OF STANDARD SPECIFICATIONS

If a conflict is found between the requirements of the standard specifications is noted the following principles shall be used to resolve the conflict in the order stated.

1. Explicit language of any Job Special provisions shall govern.
2. If the conflict involves work that will be dedicated as public sewer or accepted for maintenance by the Metropolitan St. Louis Sewer District (MSD) then the MSD specifications shall govern.
3. For other work that is on a Federal Aid Route, the Missouri Standard Specifications for Highway Construction shall govern. (River Des Peres Boulevard and Chippewa Street are Federal Aid Routes)
4. For work on local streets, Board of Public Service specifications shall govern.

Decisions of the PRESIDENT shall be final.

7.0 EXCLUSIONS AND MODIFICATIONS TO THE MISSOURI STANDARD SPECIFICTIONS FOR HIGHWAY CONSTRUCTION.

1. Sections 102.3, 102.7.2, 102.7.11, 102.7.12, 102.9, 102.10.1. Excluded, see Request for Bid for bidding instructions to include bid guaranty requirements.

2. Section 103.4 Contract Bond Required In addition to the requirements stated in Section 103.4, the following requirement will be met:

   Performance and payment bonds shall be submitted as guarantee that the bidder will enter into a contract and obtain, and furnish proof of, the required bonding and insurance. Said bonds must be executed by a surety company satisfactory to the City of St. Louis and duly authorized to transact business in Missouri as evidenced by a Certificate of Authority granted by the Director, Department of Insurance for the State of Missouri. In addition, the surety company must have a policy holder's rating of "A-" or better and a financial rating of V or higher as indicated in the latest edition of Best's Key Rating Guide. The bonding company issuing a Bid Bonds must also meet the above requirements.

3. Section 103.5: Change the time for the contractor to execute the contract and bond and return to the Board of Public Service to 10 days.

4. Sections 105.16, 105.17, 105.18 are excluded. See General Conditions issued by the Board of Public Service regarding resolution of claims.

5. Section 107.1.2 is excluded. The project is subject to all codes, regulations and ordinances of the City of Saint Louis.

6. Section 107.13 The following changes will apply:

a. Change the address for submission of evidence of insurance to Room 301 City Hall, ATTN: Contracts Section, 1200 Market Street, Saint Louis MO 63103.

b. Additional insureds shall be the following as literally stated, "the Missouri Highway and Transportation Commission and its members, Missouri Department of Transportation and its employees, and the City of St. Louis.

8.0 PROJECT CONTACT

All questions concerning this project during the bidding process shall be submitted to the "Q&A" section of the "Bid Express Online Portal" at https://www.bidexpress.com/businesses/20618/home.

9.0 SUBMITTALS

Prior to start of work, and not later than 21 days after the official Notice To Proceed from the President, the Contractor shall submit to the President a satisfactory progress schedule, using the Critical Path Method, which shall show the proposed sequence of work and how the Contractor proposes to complete the various items of work.

The Contractor shall assume, and the schedule shall so reflect, that all work specified shall be completed under this Contract. The schedule shall be used as a basis for establishing the controlling items (critical path) of construction operations and for checking the progress of the work. The controlling item(s) shall be defined as the item(s) which must be completed either partially or completely to permit continuation of progress. The detailed schedule and work plan shall include the following:

1. A detailed schedule showing anticipated time of commencement and completion of the various operations to be performed and completed under this Contract.

2. The sequence and inter-relationships of each work operation to each other.

3. The estimated time required for the fabrication and delivery of all materials and equipment required for this work.

Prior to start of the work, and not later than fourteen (14) days after submittal of the progress schedule, the Contractor shall submit to the President for review and approval a detailed list and schedule of all required submittals. This list and schedule of submittals, which include such items as work plans, shop drawings, product data sheets, material certifications, design, test reports, and any other type submittal as may be required and specified in these Specifications shall correspond to the Contractor's approved progress schedules as specified above.

All submittals requiring preparation by a Professional Engineer shall be so registered in the State of Missouri, and the submittals shall bear the Engineer's seal and signature.

Such submittals, including those work plans and shop drawings as may be required and specified herein and in the Specifications shall be submitted in triplicate to the Engineer for review before the work is begun. The Engineer will review and shall return one (1) print duly marked within thirty (30) calendar days after receipt from the Contractor.

Should changes be necessary, the Contractor shall so correct and resubmit. After review in which the Engineer returns to the Contractor prints stamped reviewed with no further corrections required, the Contractor shall submit six (6) copies of the final reviewed drawings/submittal to the Engineer.

The Contractor shall thoroughly review all submittals for compliance with the contract drawings and specifications, and shall stamp such submittals indicating his approval, prior to transmittal to the Engineer. Such stamped submittals shall certify that:

1. Materials, quantities, field measurements and field construction criteria related to the submittal have been confirmed;

2. Materials have been verified for fabrication, shipping, handling, storage, assembly and construction;

3. The Contractor has checked and coordinated the information contained in the submittal with the requirements as specified in the specifications;

4. The Contractor has verified the quantities, dimensions, specified performance criteria, installation and construction requirements, and all deviations have been noted.

10.0 FIELD VERIFICATIONS

Plan details for this Contract work are based upon available plans, utility maps, geotechnical investigations, and field surveys performed in conjunction with plan preparation for this proposed work. No warranty is made on either the accuracy or completeness of these available documents. The President will make available, in Room 301, City Hall, for the Contractor's information and review, all available plans of the existing structure, inspection reports, the geotechnical report, and the plans for all previous rehabilitation contracts. The Contractor should be aware that rehabilitation projects have occurred over the years and are not necessarily documented by available plans and working drawings.

It is the Contractor's (Bidder's) responsibility to assess the actual field conditions and verify the location of overhead and underground utilities and verify whichever dimensions are required for the performance of the work. The Contractor should be aware that field verification will be required during phases of the work.

11.0 CONTROL AND CARE OF SITE

The Contractor shall become fully acquainted concerning means and availability of access during the course of this construction work. Location of area of work relating to lay-down area for storage of material, field offices and equipment storage shall be limited as shown in

the drawings as Temporary Construction Easements.

All costs resulting from the maintenance or improvement of construction easements, such as securing permits or licenses, incidental grading, and the repair of any damage by the Contractor shall be borne by the Contractor.

The Contractor shall carry on all construction operations within the area shown on the drawings, and shall not obstruct the adjacent roads, railroad tracks and walks with materials and equipment. The Contractor shall properly barricade and provide all guards, lights, etc. for the safety of the public as required by law and as directed by the President.

12.0 HAULING OVER CITY STREETS

City streets over which hauling is performed shall be kept reasonably clean of spilled or tracked- on materials at all times and shall be thoroughly cleaned of such materials daily, within one (1) hour after the suspension of hauling operations if said street is used by the traveling public.

The Contractor will be required to secure from the proper City Authority permits which may be required to haul over city streets, and any hauling operation shall be subject to the requirements of such permits and to any applicable City regulations and ordinances governing hauling and the movement of equipment over said city streets.

The Contractor will be expected to maintain these streets open to traffic at all times during the work under this Contract. During certain phases of the Contractor's work, during periods of equipment repositioning, or when certain operations are in progress that cannot be safely accomplished under traffic, and with prior approval of the President, the vehicular traffic may be temporarily halted for short intervals. During all legal holiday periods listed in Article 101 of the Missouri Standard Specifications and during peak traffic hours defined as being from 5:00 a.m. to 7:00 p.m., such temporary closures shall not exceed twenty (20) minutes in duration.

Traffic closure intervals greater than twenty (20) minutes during off-peak may be considered. All temporary traffic closures shall require prior approval by the President from the Contractor. Requests for approval must be submitted at least seven (7) days prior to each closure. The Contractor shall allow traffic to clear and run freely for thirty (30) minutes or as otherwise directed by the President before affecting another such temporary stoppage.

The Contractor must be aware that emergency vehicles may be required to pass during such interruptions, and the Contractor shall be in a position to allow passage to such emergency vehicles.

During temporary halting of traffic for short intervals, and in accordance with the details on the Traffic Control Plans, the Contractor shall conform to the following requirements:

1. Flaggers will be required at each temporary closure.

2. Advance warning signs, such as FLAGMEN AHEAD, and ROAD CONSTRUCTION AHEAD shall be positioned in accordance with the traffic control plans.

3. The Contractor shall be responsible for maintaining the roadway surface on these streets.

4. Except during working hours, the Contractor shall not park vehicles or store equipment or materials closer than thirty (30) feet to the edge of pavement carrying traffic, unless the equipment, vehicles, or materials are located in a properly protected area or an off-site storage area or as otherwise directed by the Engineer. All signing and pavement marking shall be returned to their pre-construction condition during non-working hours.

No direct payment will be made for any expense incurred by the Contractor by reason of his compliance with any of the above requirements except for the items that have been included in the Contract as a pay item.

13.0 NIGHT CONSTRUCTION

The Contractor may perform the construction operations during nighttime hours. The Contractor shall provide the lighting and take precautions to protect the workmen and work from harm.

No direct payment will be made for any additional cost resulting from construction operations during night hours.

14.0 EXISTING UTILITIES

The Contractor's work shall be in accordance with the State of Missouri "Underground Facility Safety and Damage Prevention Act" provision. For a list of known utility companies in the area of the construction work for this improvement, see UTILITIES Job Special Provision G.

Underground facilities, structures and utilities have been plotted from available surveys and records, and; therefore, their locations must be considered approximate only. It is possible there may be others, the existence of which is presently not known or shown. It is the Contractor's responsibility to determine their existence and exact location and to avoid damage thereto.

Contractor shall verify the vertical and horizontal location of the overhead power lines prior to the initiation of equipment mobilization and take such location into account for the selection of equipment to be used for this project. As a minimum, the Contractor shall meet the minimum clearance standards and procedures established by Ameren U.E. for all work within the vicinity of overhead electric lines.

During contract work, the Contractor shall avoid damaging existing street lighting/traffic underground conduits. The City's Traffic Division shall assist in locating and marking existing underground conduits before the actual construction begins. Contact Rich Hulsey of the Traffic Division at 647-3111 ext. 1104. The Traffic and Lighting Divisions are not members of the Missouri "One Call".

The Contractor shall obtain all necessary permits from the Streets Department prior to the start of work. All trenching, excavation, sidewalk, etc., permits shall be obtained at the Street Department, 1900 Hampton.

All costs incurred by the Contractor in complying with the requirements specified in this

Section, shall be considered as completely covered by the Contract unit prices bid for the various items of work in this Contract, except as otherwise specified.

15.0 INSPECTIONS

The Contractor shall assure that representatives of the City of St. Louis, the Missouri Highway and Transportation, the Metropolitan St. Louis Sewer District and the Federal Highway Administration shall have the privilege of inspecting and reviewing the work done by the Contractor or his subcontractors during any and all stages of this contract work. The Contractor shall coordinate with the City relative to all work efforts on this contract, and any inspection or review comments by any other agency shall be directed to the City of St. Louis, except where otherwise specified elsewhere throughout these specifications.

The Contractor shall maintain, and shall also assure that all of the Contractor's subcontractors, if any, maintain all books, documents, papers, and other evidence pertaining to costs incurred in connection with this contract, and make such materials available at such Contractor's office at all reasonable times during the course of the contract period, and for three (3) years from the date of final payment under the contract, for the inspection by the Federal Highway Administration or any authorized representative of the Federal Government and the State of Missouri and copies thereof shall be furnished, upon request, to authorized representatives of the State, Federal Highway Administration or other Federal agency.

16.0 TESTING

All testing on this project will be performed by a third party lab under contract by the City. Technicians performing the tests will be qualified by the certifying authority for that specific technical area and identified by a certified card according to EPG 136.11.17.

17.0 DUST CONTROL

The Contractor shall be responsible for controlling the dust and air-borne dirt generated by his/her construction activities.

The Engineer may require the implementation of dust control procedures if wind and dry soil conditions reduce visibility on adjacent roads and property. Concerns for health and safety to the public using adjacent facilities will be grounds for the Engineer to request implementation of a dust control plan.

When circumstances warrant, a specific dust control plan shall be developed. The Contractor and the Engineer shall meet to review the nature and extent of dust generating activities and cooperatively develop specific types of control techniques appropriate to that specific situation. Sample techniques that may warrant consideration include such measures as:

1. Minimize track out of soil onto nearby publicly traveled roads.
2. Reduce vehicle speed on unpaved surfaces.
3. Cover haul vehicles.
4. Apply chemical dust suppressants or water to exposed surfaces, particularly to surfaces on which construction vehicles travel.

Dust control measures as indicated in the Dust Control Plan, or as directed by the Engineer shall be readily available for use on the project site.

The cost of this work shall be included in the unit prices bid and no additional compensation will be allowed.

18.0 REMOVAL OF IMPROVEMENTS

Section 02220 – "Removals" of the Specifications of the Department of the President, Board of Public Service, City of St. Louis, Missouri and the Drawings shall apply with exception of the following:

All existing signs and supports removed and not reused shall be delivered to the City of St. Louis
- Street Department Facility at 1900 Hampton Ave.

Prior to removing the existing trees, the Contractor shall obtain a tree removal permit from the City of St. Louis, Forestry Department. There is no charge for this permit**.**

Payment for the REMOVAL OF IMPROVEMENTS shall include all material disposal, equipment, tools, labor, and any work incidental thereto shall be made and considered completely covered by the Contract LUMP SUM price.

Contractor is directed to the City of St. Louis' Standard Specifications, Section 02860 – Granite Curb, for specific instructions for removal and storage of existing Granite Curb. Per the Specification, existing Granite Curb not reused shall be carefully removed and delivered at the Contractor's expense to the storage facility at 9400 Riverview Blvd. or another area as designated by the Engineer. The contractor shall be responsible for unloading and proper stacking of granite curb at the 9400 Riverview Blvd. storage facility. Payment for removal of granite curb and hauling it to the storage yard will be made at the contract price per lineal foot for "REMOVAL OF EXISTING GRANITE CURB".

19.0 RIGHT OF WAY AND EASEMENTS

All improvements shall be constructed within the existing Right-of-Way.

Upon completion of the work, the Contractor shall restore, without additional cost to the City, all public Right-of-Way and easements to substantially the same condition as they were at commencement of the construction work.

Easements shall not be used for the storage of vehicles, materials, or supplies without prior approval of the Project Engineer.

Contractor shall provide and maintain all necessary barricades, lights, fences, orange safety fencing and other materials and equipment while occupying the easements to separate and protect owner's property from construction activities.

All cost resulting from the maintenance or improvements of construction easements shall be borne by the Contractor.

No permanent or temporary easements will be acquired for construction of the improvements.

20.0 PROJECT CLOSEOUT

All arrangements for all final inspections will be made by the City's Project Engineer. The Contractor shall closeout the project in the following manner or as directed by the Project Engineer:

1. Final inspection and approval by the Department of Public Utilities, Department of Streets, and the Department of Parks, Recreation, and Forestry.

2. Final inspection and approval by the Metropolitan Sewer District of all sewers constructed under this Contract.

3. Final inspection and approval by all Federal, State and City Agencies involved in the project.

4. Any claim from his/her Subcontractor or adjacent property owners must be cleared.

5. Final inspection and acceptance by the Project Engineer.

The Contractor shall maintain a set of drawings at the site and mark thereon any changes or revisions as the work proceeds. Upon completion of the work, these changes or revisions shall be transferred, with the changes clearly identified, to reproducible transparencies, which will be furnished by the City. The drawings submitted shall be clean, neat, legible, and complete. These revised reproducible transparencies, along with a set of prints there from, shall be delivered to the President and the traffic Division for review and approval prior to final payment.

B. SUPPLEMENTAL REVISIONS JSP-18-01KK

- Compliance with 2 CFR 200.216 – Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment.

The Missouri Highways and Transportation Commission shall not enter into a contract (or extend or renew a contract) using federal funds to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as substantial or as critical technology as part of any system where the video surveillance and telecommunications equipment was produced by Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

- Stormwater Compliance Requirements

1.0 Description. This provision requires the contractor to provide a Water Pollution Control Manager (WPCM) for any project that includes land disturbance on the project site and the total area of land disturbance, both on the project site, and all Off-site support areas, is one (1) acre or more. Regardless of the area of Off-site disturbance, if no land disturbance occurs on the project site, these provisions do not apply. When a WPCM is required, all sections within this provision shall be applicable, including assessment of specified Liquidated Damages for failure to correct

Stormwater Deficiencies, as specified herein. This provision is in addition to any other stormwater, environmental, and land disturbance requirements specified elsewhere in the contract.

1.1 Definitions. The project site is defined as all areas designated on the plans, including temporary and permanent easements. The project site is equivalent to the "permitted site", as defined in MoDOT's State Operating Permit. An Off-site area is defined as any location off the project site the contractor utilizes for a dedicated project support function, such as, but not limited to, staging area, plant site, borrow area, or waste area.

1.2 Reporting of Off-Site Land Disturbance. If the project includes any planned land disturbance on the project site, prior to the start of work, the contractor shall submit a written report to the engineer that discloses all Off-site support areas where land disturbance is planned, the total acreage of anticipated land disturbance on those sites, and the land disturbance permit number(s). Upon request by the engineer, the contractor shall submit a copy of its land disturbance permit(s) for Off-site locations. Based on the total acreage of land disturbance, both on and Off-site, the engineer shall determine if these Stormwater Compliance Requirements shall apply. The contractor shall immediately report any changes to the planned area of Off-site land disturbance. The contractor is responsible for obtaining its own separate land disturbance permit for Off-site areas.

2.0 Water Pollution Control Manager (WPCM). The contractor shall designate a competent person to serve as the Water Pollution Control Manager (WPCM) for projects meeting the description in Section 1.0. The contractor shall ensure the WPCM completes all duties listed in Section 2.1.

2.1 Duties of the WPCM:

(a) Be familiar with the stormwater requirements including the current MoDOT State Operating Permit for construction stormwater discharges/land disturbance activities; MoDOT's statewide Stormwater Pollution Prevention Plan (SWPPP); the Corps of Engineers Section 404 Permit, when applicable; the project specific SWPPP, the Project's Erosion & Sediment Control Plan; all applicable special provisions, specifications, and standard drawings; and this provision;

(b) Successfully complete the MoDOT Stormwater Training Course within the last 4 years. The MoDOT Stormwater Training is a free online course available at MoDOT.org;

(c) Attend the Pre-Activity Meeting for Grading and Land Disturbance and all subsequent Weekly Meetings in which grading activities are discussed;

(d) Oversee and ensure all work is performed in accordance with the Project-specific SWPPP and all updates thereto, or as designated by the engineer;

(e) Review the project site for compliance with the Project SWPPP, as needed, from the start of any grading operations until final stabilization is achieved, and take necessary actions to correct any known deficiencies to prevent pollution of the waters of the state or adjacent property owners prior to the engineer's weekly inspections;

(f) Review and acknowledge receipt of each MoDOT Inspection Report (Land Disturbance Inspection Record) for the Project within forty-eight (48) hours of receiving the report and

ensure that all Stormwater Deficiencies noted on the report are corrected as soon as possible, but no later than stated in Section 5.0.

3.0 Pre-Activity Meeting for Grading/Land Disturbance and Required Hold Point. A Pre-Activity meeting for grading/land disturbance shall be held prior to the start of any land disturbance operations. No land disturbance operations shall commence prior to the Pre-Activity meeting except work necessary to install perimeter controls and entrances. Discussion items at the pre-activity meeting shall include a review of the Project SWPPP, the planned order of grading operations, proposed areas of initial disturbance, identification of all necessary BMPs that shall be installed prior to commencement of grading operations, and any issues relating to compliance with the Stormwater requirements that could arise in the course of construction activity at the project.

3.1 Hold Point. Following the pre-activity meeting for grading/land disturbance and subsequent installation of the initial BMPs identified at the pre-activity meeting, a Hold Point shall occur prior to the start of any land disturbance operations to allow the engineer and WPCM the time needed to perform an on-site review of the installation of the BMPs to ensure compliance with the SWPPP is met. Land disturbance operations shall not begin until authorization is given by the engineer.

4.0 Inspection Reports. Weekly and post run-off inspections will be performed by the engineer and each Inspection Report (Land Disturbance Inspection Record) will be entered into a web-based Stormwater Compliance database. The WPCM will be granted access to this database and shall promptly review all reports, including any noted deficiencies, and shall acknowledge receipt of the report as required in Section 2.1 (f.).

5.0 Stormwater Deficiency Corrections. All stormwater deficiencies identified in the Inspection Report shall be corrected by the contractor within 7 days of the inspection date or any extended period granted by the engineer when weather or field conditions prohibit the corrective work. If the contractor does not initiate corrective measures within 5 calendar days of the inspection date or any extended period granted by the engineer, all work shall cease on the project except for work to correct these deficiencies, unless otherwise allowed by the engineer. All impact costs related to this halting of work, including, but not limited to stand-by time for equipment, shall be borne by the contractor. Work shall not resume until the engineer approves the corrective work.

5.1 Liquidated Damages. If the contractor fails to complete the correction of all Stormwater Deficiencies listed on the MoDOT Inspection Report within the specified time limit, the Commission will be damaged in various ways, including but not limited to, potential liability, required mitigation, environmental clean-up, fines, and penalties. These damages are not reasonably capable of being computed or quantified. Therefore, the contractor will be charged with liquidated damages specified in the amount of $2,000 per day for failure to correct one or more of the Stormwater Deficiencies listed on the Inspection Report within the specified time limit. In addition to the stipulated damages, the stoppage of work shall remain in effect until all corrections are complete.

6.0 Basis of Payment. No direct payment will be made for compliance with this provision.

- ***Delete Sec 106.9 in its entirety and substitute the following:***

106.9 Buy America Requirements.
Buy America Requirements are waived if the total amount of Federal financial assistance applied to the project, through awards or subawards, is below $500,000.

106.9.1 Buy America Requirements for Iron or Steel Products.
The contractor's attention is directed to Title 23 CFR 635.410 *Buy America Requirements*. Where articles, materials or supplies that consist wholly or predominantly of iron or steel or a combination of both are to be permanently incorporated into the contract work, steel and iron material shall be manufactured, from the initial melting stage through the application of coatings, in the USA except for "minimal use" as described herein. Predominantly of iron or steel or a combination of both means that the cost of the iron and steel content exceeds 50 percent of the total cost of all its components. Under a general waiver from FHWA the use of pig iron and processed, pelletized, and reduced iron ore manufactured outside of the USA will be permitted in the domestic manufacturing process for steel or iron material.

106.9.1.1 Any sources other than the USA as defined will be considered foreign. The required domestic manufacturing process shall include formation of ingots and any subsequent process. Coatings shall include any surface finish that protects or adds value to the product.

106.9.1.2 "Minimal use" of foreign steel, iron or coating processes will be permitted, provided the cost of such products does not exceed 1/10 of one percent (0.1 percent) of the total contract cost or $2,500.00, whichever is greater. If foreign steel, iron, or coating processes are used, invoices to document the cost of the foreign portion, as delivered to the project, shall be provided and the engineer's written approval obtained prior to placing the material in any work.

106.9.1.3 Buy America requirements include a step certification for all fabrication processes of all steel or iron materials that are accepted per Sec 1000. The AASHTO Product Evaluation and Audit Solutions compliance program verifies that all steel and iron products fabrication processes conform to 23 CFR 635.410 Buy America Requirements and is an acceptable standard per 23 CFR 635.410(d). AASHTO Product Evaluation and Audit Solutions compliant suppliers will not be required to submit step certification documentation with the shipment for some selected steel and iron materials. The AASHTO Product Evaluation and Audit Solutions compliant supplier shall maintain the step certification documentation on file and shall provide this documentation to the engineer upon request.

106.9.1.3.1 Items designated as Category 1 will consist of steel girders, piling, and reinforcing steel installed on site. Category 1 items require supporting documentation prior to incorporation into the project showing all steps of manufacturing, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements. This includes the Mill Test Report from the original producing steel mill and certifications documenting the manufacturing process for all subsequent fabrication, including coatings. The certification shall include language that certifies all steel and iron materials permanently incorporated in this project was procured and processed domestically and all manufacturing processes, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410.

106.9.1.3.2 Items designated as Category 2 will include all other steel or iron products not in Category 1 and permanently incorporated in the project. Category 2 items shall consist of, but not be limited to items such as fencing, guardrail, signing, lighting and signal supports. The prime contractor is required to submit a material of origin form certification prior to incorporation into the project from the fabricator for each item that the product is domestic. The Certificate of Materials Origin form (link to certificate form) from the fabricator must show all steps of manufacturing, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements and be signed by a fabricator representative. The

engineer reserves the right to request additional information and documentation to verify that all Buy America requirements have been satisfied. These documents shall be submitted upon request by the engineer and retained for a period of 3 years after the last reimbursement of the material.

106.9.1.3.3 Any minor miscellaneous steel or iron items that are not included in the materials specifications shall be certified by the prime contractor as being procured domestically. Examples of these items would be bolts for sign posts, anchorage inserts, etc. The certification shall read "I certify that all steel and iron materials permanently incorporated in this project during all manufacturing processes, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements procured and processed domestically in accordance with CFR Title 23 Section 635.410 Buy America Requirements. Any foreign steel used was submitted and accepted under minor usage". The certification shall be signed by an authorized representative of the prime contractor.

106.9.1.4 When permitted in the contract, alternate bids may be submitted for foreign steel and iron products. The award of the contract when alternate bids are permitted will be based on the lowest total bid of the contract based on furnishing domestic steel or iron products or 125 percent of the lowest total bid based on furnishing foreign steel or iron products. If foreign steel or iron products are awarded in the contract, domestic steel or iron products may be used; however, payment will be at the contract unit price for foreign steel or iron products.

106.9.2 Buy America Requirements for Construction Materials other than iron or steel products.

Construction materials mean articles, materials, or supplies that consist of only one of the items listed. Minor additions of articles, materials, supplies, or binding agents to a construction material do not change the categorization of the construction material. Upon request by the engineer, the contractor shall submit a domestic certification for all construction materials listed that are incorporated into the project.

(a) Non-ferrous metals
(b) Plastic and Polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables)
(c) Glass (including optic glass)
(d) Fiber optic cable (including drop cable)
(e) Optical fiber
(f) Lumber
(g) Engineered wood
(h) Drywall

106.9.3 Buy America Requirements for Manufactured Products.

Manufactured products mean articles, materials or supplies that have been processed into a specific form and shape, or combined with other articles, materials or supplies to create a product with different properties than the individual articles, materials or supplies. If an item is classified as an iron or steel product, an excluded material, or other product category as specified by law or in 2 CFR part 184, then it is not a manufactured product. However, an article, material or supply classified as a manufactured product may include components that are iron or steel products, excluded materials, or other product categories as specified by law or in 2 CFR part 184. Mixtures of excluded materials delivered to a work site without final form for incorporation into a project are not a manufactured product.

106.9.3.1 Produced in the United States, in the case of manufactured products, means:
(A) For projects obligated on or after October 1, 2025, the product was manufactured in the United States; and
(B) For projects obligated on or after October 1, 2026, the product was manufactured in the United States and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product.

106.9.3.2 (i) With respect to precast concrete products that are classified as manufactured products, components of precast concrete products that consist wholly or predominantly of iron or steel or a combination of both shall meet the requirements of paragraph (b) of this section. The cost of such components shall be included in the applicable calculation for purposes of determining whether the precast concrete product is produced in the United States.
(ii) With respect to intelligent transportation systems and other electronic hardware systems that are installed in the highway right of way or other real property and classified as manufactured products, the cabinets or other enclosures of such systems that consist wholly or predominantly of iron or steel or a combination of both shall meet the requirements of paragraph (b) of this section. The cost of cabinets or other enclosures shall be included in the applicable calculation for purposes of determining whether systems referred to in the preceding sentence are produced in the United States.

106.9.4 Waiver for De Minimis Costs for Manufactured and Construction Materials other than iron or steel products.
"The total value of the non-compliant products is no more than the lesser of $1,000,000 or 5% of total applicable costs for the project." The contractor shall submit to the engineer any non-domestic materials and their total material cost to the engineer. The contractor and the engineer will both track these totals to assure that the minimal usage allowance is not exceeded.

- Third-Party Test Waiver for Concrete Aggregate

1.0 Description. Third party tests may be allowed for determining the durability factor for concrete pavement and concrete masonry aggregate.

2.0 Material. All aggregate for concrete shall be in accordance with Sec 1005.

2.1 MoDOT personnel shall be present at the time of sampling at the quarry. The aggregate sample shall be placed in an approved tamper-evident container (provided by the quarry) for shipment to the third-party testing facility.

2.2 AASHTO T 161 Method B Resistance of Concrete to Rapid Freezing and Thawing, shall be used to determine the aggregate durability factor. All concrete beams for testing shall be 3-inch wide by 4-inch deep by 16-inch long or 3.5-inch wide by 4.5-inch deep by 16-inch long. All beams for testing shall receive a 35-day wet cure fully immersed in saturated lime water prior to initiating the testing process.

2.3 Concrete test beams shall be made using a MoDOT approved concrete pavement mix design.

3.0 Testing Facility Requirements. All third-party test facilities shall meet the requirements outlined in this provision.

3.1 The testing facility shall be AASHTO accredited.

3.1.1 For tests ran after January 1, 2025, accreditation documentation shall be on file with the Construction and Materials Division prior to any tests being performed.

3.1.2 Construction and Materials Division may consider tests completed prior to January 1, 2025, to be acceptable if all sections of this provision are met, with the exception of 3.1.1. Accreditation documentation shall be provided with the test results for tests completed prior to January 1, 2025. No tests completed prior to September 1, 2024, will be accepted.

3.2 The testing facility shall provide their testing process, list of equipment, equipment calibration documentation, and testing certifications or qualifications of technicians performing the AASHTO T 161 Procedure B tests. The testing facility shall provide details on their freezing and thawing apparatus including the time and temperature profile of their freeze-thaw chamber. The profile shall include the temperature set points throughout the entirety of the freeze-thaw cycle. The profile shall show the cycle time at which the apparatus drains/fills with water and the cycle time at which the apparatus begins cooling the specimens.

3.3 Results, no more than five years old, from the third-party test facility shall compare within ±2.0 percent of an independent test from another AASHTO accredited test facility or with MoDOT test records, in order to be approved for use (e.g. test facility results in a durability factor of 79, MoDOT's recent durability test factor is 81; this compared within +2 percent). The independent testing facility shall be in accordance with this provision. The comparison test can be from a different sample of the same ledge combination.

3.4 When there is a dispute between the third party durability test results and MoDOT durability test results, the MoDOT durability test result shall govern.

3.5 Test results shall be submitted to MoDOT's Construction and Materials division electronically for final approval. Test results shall include raw data for all measurements of relative dynamic modulus of elasticity and percent length change for each individual concrete specimen. Raw data shall include initial measurements made at zero cycles and every subsequent measurement of concrete specimens. Raw data shall include the cycle count and date each measurement was taken. Test results shall also include properties of the concrete mixture as required by AASHTO T 161. This shall include the gradation of the coarse aggregate sample. If AASHTO T 152 is used to measure fresh air content, then the aggregate correction factor for the mix determined in accordance with AASHTO T 152 shall also be included.

4.0 Method of Measurement. There is no method of measurement for this provision. The testing requirements and number of specimens shall be in accordance with AASHTO T 161 Procedure B.

5.0 Basis of Payment. No direct payment will be made to the contractor or quarry to recover the cost of aggregate samples, sample shipments, testing equipment, labor to prepare samples or test samples, or developing the durability report.

- ***Delete paragraph 15.0 of the General Provision Disadvantaged Business Enterprise (DBE) Program Requirements and substitute the following*:**

15.0 Bidder's List Quote Summary. MoDOT is a recipient of federal funds and is required by 49 CFR 26.11 to provide data about its DBE program. All bidders who seek to work on federally assisted contracts must submit data about all DBE and non-DBEs in accordance with Sec

102.7.9. MoDOT will not compare the submitted Bidder's List Quote Summary to any other documents or submittals, pre or post award. All information will be used by MoDOT in accordance with 49 CFR 26.11 for reporting to USDOT and to aid in overall DBE goal setting**.**

- ***Add Sec 102.7.9 to include the following:***

102.7.9 Bidder's List Quote Summary. Each bidder shall submit with each bid a summary of all subcontractors, material suppliers, and service providers (e.g. hauling) considered on federally funded projects pursuant to 49 CFR 26.11. The bidder will provide the firm's name, the corresponding North American Industry Classification System (NAICS) code(s) the firm(s) were considered for, and whether or not they were used in the bid. The information submitted should be the most complete information available at the time of bid. The information shall be disclosed on the Bidder's List Quote Summary form provided in the bidding documents and submitted in accordance with Sec 102.10. Failure to disclose this information may result in a bid being declared irregular.

C. OFFICE FOR ENGINEER

1.0 Description. This work shall consist of the furnishing and maintaining of an office for the Project Engineer in accordance with this provision. The Contractor shall provide a temporary office trailer available for exclusive use by the Project Engineer within two (2) weeks after the official Notice to Proceed. The trailer shall remain on site determined by the President for the project duration.

The trailer shall meet the following qualifications:
A. Trailer size – 12 ft. x 60 ft., for the exclusive use of the Engineer, suitably furnished, equipped, heated, naturally ventilated, air conditioned, lighted and wired with electrical power;

1. Trailer Security:
Locking doors with external bar(s) across the door secured with padlocks;
All door padlocks are keyed alike;
All external padlocks are keyed alike;
Metal Grates on windows that do not prevent opening of windows are required;
Construct an 8 ft. high chain link security fence around the office trailer providing space for outdoor facilities and parking, as required by the Engineer; provide one vehicular gate secured by padlock
Deliver all keys to the Project Engineer; provide copies as required.
B. Move engineer and staff from existing facility to new trailer, including desks, files, tables, chairs, etc. Move engineer and staff, etc., to other facility at completion of project.
C. Provide and maintain for the duration of the project:
3 desks and 6 chairs (3-chairs shall be padded, executive type, swivel chairs, mounted on casters) if required by Engineer;
Two (2), 4-drawer legal size filing cabinets as required by Engineer;
Two (2) Fire Extinguishers;
First Aid Kit;
Bottled water with hot and cold dispenser;
Portable toilet with hand washing station;
Internet:
Provide LTE or better internet from a major internet provider as approved by the Engineer
Hardline internet from a major internet provider is preferred

Provide LAN access for wireless connectivity within the trailer
Copier – 8-1/2 x 11, 8-1/2 x 14, 11 x 17 plain paper copier/printer with scanning capability and LAN connection so all those who are connected can scan and print. Copier maintenance service shall be provided;
Plan table, wall mounted, 3' x 6', capable of supporting 60 lbs.;
Provide shelving where directed;
Provide one trash can per work station;
Provide door mats and boot scrapers at each trailer door;
Provide provisions to display the project bulletin board (if applicable);
Provide one refrigerator, 3.0 cubic feet minimum for refrigerator compartment;
Weekly janitorial services
Items C.5 and C.6, above, can be eliminated if the trailer is equipped with sanitary facilities, water service is connected to the trailer and there is an approved connection to an MSD sewer. If so, the trailer, itself, need not have sanitary facilities.
Office space with equivalent or better amenities and furnishings will be considered by the Project Engineer upon request.

2.0 Method of Measurement. The work will be considered a monthly unit with a total of 18 months. The work will be covered under PAY ITEM 615-99.01, OFFICE FOR ENGINEER, PER MONTH.

D. LPA BUY AMERICA REQUIREMENTS LPA-18-08B

106.9 Buy America Requirements.
Buy America Requirements are waived if the total amount of Federal financial assistance applied to the project, through awards or subawards, is below $500,000.

106.9.1 Buy America Requirements for Iron or Steel Products.
The contractor's attention is directed to Title 23 CFR 635.410 *Buy America Requirements*. Where articles, materials or supplies that consist wholly or predominantly of iron or steel or a combination of both are to be permanently incorporated into the contract work, steel and iron material shall be manufactured, from the initial melting stage through the application of coatings, in the USA except for "minimal use" as described herein. Predominantly of iron or steel or a combination of both means that the cost of the iron and steel content exceeds 50 percent of the total cost of all its components. Under a general waiver from FHWA the use of pig iron and processed, pelletized, and reduced iron ore manufactured outside of the USA will be permitted in the domestic manufacturing process for steel or iron material.

106.9.1.1 Any sources other than the USA as defined will be considered foreign. The required domestic manufacturing process shall include formation of ingots and any subsequent process. Coatings shall include any surface finish that protects or adds value to the product.

106.9.1.2 "Minimal Use" of foreign steel, iron or coating processes will be permitted, provided the cost of such products does not exceed 1/10 of one percent (0.1 percent) of the total contract cost or $2,500.00, whichever is greater. If foreign steel, iron or coating processes are used, invoices to document the cost of the foreign portion, as delivered to the project, shall be provided and the engineer's written approval obtained prior to placing the material in any work.
106.9.1.3 Buy America requirements include a step certification for all fabrication processes of all

steel or iron materials that are accepted per Sec 1000. The AASHTO Product Evaluation and Audit Solutions compliance program verifies that all steel and iron products fabrication processes conform to 23 CFR 635.410 Buy America Requirements and is an acceptable standard per 23 CFR 635.410(d). AASHTO Product Evaluation and Audit Solutions compliant suppliers will not be required to submit step certification documentation with the shipment for some selected steel and iron materials. The AASHTO Product Evaluation and Audit Solutions compliant supplier shall maintain the step certification documentation on file and shall provide this documentation to the engineer upon request.

106.9.1.3.1 Items designated as Category 1 will consist of steel girders, piling, and reinforcing steel installed on site. Category 1 items require supporting documentation prior to incorporation into the project showing all steps of manufacturing, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements. This includes the Mill Test Report from the original producing steel mill and certifications documenting the manufacturing process for all subsequent fabrication, including coatings. The certification shall include language that certifies all steel and iron materials permanently incorporated in this project was procured and processed domestically and all manufacturing processes, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410.

106.9.1.3.2 Items designated as Category 2 will include all other steel or iron products not in Category 1 and permanently incorporated in the project. Category 2 items shall consist of, but not be limited to items such as fencing, guardrail, signing, lighting and signal supports. The prime contractor is required to submit a material of origin form certification prior to incorporation into the project from the fabricator for each item that the product is domestic. The Certificate of Materials Origin form (link to certificate form) from the fabricator must show all steps of manufacturing, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements and be signed by a fabricator representative. The engineer reserves the right to request additional information and documentation to verify that all Buy America requirements have been satisfied. These documents shall be submitted upon request by the engineer and retained for a period of 3 years after the last reimbursement of the material.

106.9.1.3.3 Any minor miscellaneous steel or iron items that are not included in the materials specifications shall be certified by the prime contractor as being procured domestically. Examples of these items would be bolts for sign posts, anchorage inserts, etc. The certification shall read "I certify that all steel and iron materials permanently incorporated in this project during all manufacturing processes, including coating, as being completed in the United States and in accordance with CFR Title 23 Section 635.410 Buy America Requirements procured and processed domestically in accordance with CFR Title 23 Section 635.410 Buy America Requirements. Any foreign steel used was submitted and accepted under minor usage". The certification shall be signed by an authorized representative of the prime contractor.

106.9.1.4 When permitted in the contract, alternate bids may be submitted for foreign steel and iron products. The award of the contract when alternate bids are permitted will be based on the lowest total bid of the contract based on furnishing domestic steel or iron products or 125 percent of the lowest total bid based on furnishing foreign steel or iron products. If foreign steel or iron products are awarded the contract, domestic steel or iron products may be used; however, payment will be at the contract unit price for foreign steel or iron products.

106.9.2 Buy America Requirements for Construction Materials other than iron or steel

products.
Construction materials mean articles, materials, or supplies that consist of only one of the items listed. Minor additions of articles, materials, supplies, or binding agents to a construction material do not change the categorization of the construction material. Upon request by the engineer, the contractor shall submit a domestic certification for all construction materials listed that are incorporated into the project.

(i) Non-ferrous metals
(j) Plastic and Polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables)
(k) Glass (including optic glass)
(l) Fiber optic cable (including drop cable)
(m) Optical fiber
(n) Lumber
(o) Engineered wood
(p) Drywall

106.9.3 Buy America Requirements for Manufactured Products.
Manufactured products mean articles, materials or supplies that have been processed into a specific form and shape, or combined with other articles, materials or supplies to create a product with different properties than the individual articles, materials or supplies. If an item is classified as an iron or steel product, an excluded material, or other product category as specified by law or in 2 CFR part 184, then it is not a manufactured product. However, an article, material or supply classified as a manufactured product may include components that are iron or steel products, excluded materials, or other product categories as specified by law or in 2 CFR part 184. Mixtures of excluded materials delivered to a work site without final form for incorporation into a project are not a manufactured product.

106.9.3.1 Produced in the United States, in the case of manufactured products, means:
(A) For projects obligated on or after October 1, 2025, the product was manufactured in the United States; and
(B) For projects obligated on or after October 1, 2026, the product was manufactured in the United States and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product.

106.9.3.2 (i) With respect to precast concrete products that are classified as manufactured products, components of precast concrete products that consist wholly or predominantly of iron or steel or a combination of both shall meet the requirements of paragraph (b) of this section. The cost of such components shall be included in the applicable calculation for purposes of determining whether the precast concrete product is produced in the United States.
(ii) With respect to intelligent transportation systems and other electronic hardware systems that are installed in the highway right of way or other real property and classified as manufactured products, the cabinets or other enclosures of such systems that consist wholly or predominantly of iron or steel or a combination of both shall meet the requirements of paragraph (b) of this section. The cost of cabinets or other enclosures shall be included in the applicable calculation for purposes of determining whether systems referred to in the preceding sentence are produced in the United States.

106.9.4 Waiver for De Minimis Costs for Manufactured and Construction Materials other than iron or steel products.
“The total value of the non-compliant products is no more than the lesser of $1,000,000 or 5% of

total applicable costs for the project." The contractor shall submit to the engineer any non-domestic materials and their total material cost to the engineer. The contractor and the engineer will both track these totals to assure that the minimal usage allowance is not exceeded.

106.9.5 Basis of Payment. Any costs incurred by the contractor by reason of compliance with the above requirements shall be considered as included in and completely covered by the unit price bid for the various items of work included in the contract.

E. CONTRACT LIQUIDATED DAMAGES JSP-13-01E

1.0 Description. Liquidated Damages for failure or delay in completing the work on time for this contract shall be in accordance with Sec 108.8. The liquidated damages include separate amounts for road user costs and contract administrative costs incurred by the Commission.

2.0 Period of Performance. Prosecution of work is expected to begin on the date specified below in accordance with Sec 108.2. Regardless of when the work is begun on this contract, all work on all projects shall be completed on or before the date specified below. Completion by this date shall be in accordance with the requirements of Sec 108.7.1.

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3.0 Liquidated Damages for Contract Administrative Costs. Should the contractor fail to complete the work on or before the contract completion date specified in Section 2.0, or within the number of calendar days specified in Section 2.1, whichever occurs first, the contractor will be charged contract administrative liquidated damages in accordance with Sec 108.8 in the amount of **$3,000** per calendar day for each calendar day, or partial day thereof, that the work is not fully completed. For projects in combination, these damages will be charged in full for failure to complete one or more projects within the specified contract completion date or calendar days.

4.0 Liquidated Damages for Road User Costs. Should the contractor fail to complete the work on or before the contract completion date specified in Section 2.0, or within the number of calendar days specified in Section 2.1, whichever occurs first, the contractor will be charged road user costs in accordance with Sec 108.8 in the amount specified in Section 2.1 for each calendar day, or partial day thereof, that the work is not fully completed. These damages are in addition to the contract administrative damages and any other damages as specified elsewhere in this contract.

F. LIQUIDATED DAMAGES FOR PEDESTRIAN IMPACTS

1.0 Description. Providing work zone protection for pedestrians will be a primary component of this project. The Lindell-Union Bridge Reconstruction is located adjacent to Forest Park, one of the City's most heavily used public amenities. Pedestrian traffic along Union Boulevard and Lindell Boulevard provides primary access to Forest Park's trail network, recreational facilities, and cultural institutions. This work shall consist of staging and managing construction timelines to minimize the project's impacts to pedestrian traffic where construction activities make walkways, crosswalks, or other pedestrian facilities impassible. Nothing in this provision shall be construed to limit contractor innovation in mitigating pedestrian traffic impacts.

2.0 Prosecution of Work. At locations where construction makes walkways impassible, the Contractor shall have all necessary personnel, equipment, and materials at hand for all work at

each location before the work begins so that work may proceed without delay. Work requiring the mitigation of pedestrian traffic impacts includes, but shall not be limited to, removal of sidewalk, curb ramp, crosswalk, shared-use path connection, or other paved pedestrian pathway providing access to or from Forest Park and its trail system.

3.0 Time of Disruption of Pedestrian Facilities. Regardless of construction methods chosen, once a section of sidewalk or pedestrian facility has been closed to pedestrian traffic, the Contractor shall prosecute the work so as to minimize delays and inconvenience to the traveling public, including pedestrians and cyclists accessing Forest Park. The Contractor, with approval from the Engineer, shall specify the length of a given sidewalk section or pedestrian facility to be reconstructed. Once a pedestrian facility has been closed to traffic, the Contractor shall have a maximum of four (4) weeks, regardless of weather or other delays, to reopen that section to pedestrian traffic.

4.0 Work Area Safety. The Contractor shall maintain a work area that is safe for pedestrians at all times. In order to provide this, the Contractor shall maintain a continuous, accessible pedestrian route along at least one side of Union Boulevard and Lindell Boulevard at all times during construction, preserving pedestrian connectivity to Forest Park and its trail network. The areas adjacent to the Contractor's physical work site shall also be maintained to provide access to adjoining properties and to Forest Park entry points, regardless of whether a detour route is in place. All holes shall be covered with secured plywood or steel plates, and the work area walkways shall be free of trip hazards, loose debris, vehicles, materials, and equipment when the Contractor is not in the work area. A 3-foot minimum path shall be maintained on any use-in-place walkway needed for access. The Contractor shall not be permitted to park on any walkway. Pedestrian detour routes shall be signed, ADA-accessible, and shall provide a reasonably direct path to Forest Park access points.

5.0 Liquidated Damages. If work associated with new sidewalk, curb ramps, or pedestrian facilities along Union Boulevard or Lindell Boulevard begins, but is not complete and open to pedestrian traffic within four (4) weeks of commencement, the City, the traveling public, and state and local police and governmental authorities will be damaged in various ways, including but not limited to, increased construction administration cost, potential liability, traffic and traffic flow regulation cost, restricted public access to Forest Park, and pedestrian delay with its resulting cost to the traveling public. These damages are not reasonably capable of being computed or quantified. Therefore, the Contractor will be charged with liquidated damages in the amount of $500 per day of delay that closes a walkway in excess of four (4) weeks. The Contractor's superintendent and the Engineer shall be on site at the time of any closures and shall both record an agreed time when the walkway was closed. It shall be the responsibility of the Engineer to determine the quantity of excess closure time.

5.1 The said liquidated damages specified will be assessed regardless of whether it would otherwise be charged as liquidated damages under the Missouri Standard Specifications for Highway Construction. There shall be no permitted excuse for delay of the work, including weather.

6.0 Basis of Payment. No direct payment will be made to the Contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract documents.

G. REQUIRED SAFETY TRAINING

1.0 Description. The Contractor shall note that the Construction Safety Training Act, Section 292.675 RSMo, applies to the Lindell-Union Bridge Reconstruction project. All contractors and subcontractors working on or adjacent to the bridge structure, roadway approaches, sidewalks, and associated facilities shall train their on-site employees regarding the hazards they may encounter. The training may be accomplished by providing a standard OSHA 10-hour construction program (taught by an OSHA-authorized instructor) or a similar program approved by the Missouri Division of Labor Standards. MoDOT also has safety training programs available.

1.1 Project-Specific Considerations. Given the nature of the Lindell-Union Bridge Reconstruction, which involves work over and adjacent to active MetroLink rail lines, Forest Park Parkway, and areas with high pedestrian and vehicular traffic, all on-site employees shall have completed the required safety training prior to performing any work on the project. The Contractor shall maintain current documentation of safety training completion for all on-site employees and shall make such documentation available to the Engineer upon request.
On-site employees include:

- Workers directly engaged in construction at the project site, including but not limited to the bridge structure, roadway approaches, sidewalks, curb ramps, retaining walls, and utility relocations.
- Workers at nearby or adjacent facilities used by the Contractor or subcontractor for construction, including staging areas and material storage sites.
- Workers engaged in the transportation of materials, fuel, or equipment from one location on the site of construction to another location on-site.
- Drivers who deliver materials, fuel, or equipment to the site if they assist in loading or unloading the delivery vehicle once at the project site, or engage in any other work at the site.
- Flaggers and other personnel performing traffic control or pedestrian management duties on or adjacent to the project site.

On-site employees who have not completed the required safety training within 60 days of beginning work on the project shall be removed from the project, and the employer will be subject to penalties as described in the Act. On-site employees who cannot provide proper documentation of completion of required safety training when requested will be given 20 days to produce the documentation before being removed from the project and before their employers will be subject to penalties.
Training programs may be conducted without prior Division approval. Any training program found to be non-compliant by the Division will result in disqualification of all employees who attended the training program, and the penalties for non-compliance will apply.
The penalty for violation of the Act is $2,500 plus $100 for each calendar day, or portion of a day, that any non-compliant employee worked on the site. Additionally, each contractor and subcontractor is jointly liable for the penalties incurred by its subcontractors that have non-compliant employees.

2.0 Method of Measurement. No measurement shall be made to satisfy this provision.

3.0 Basis of Payment. No direct payment will be made to the Contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions.

H. SECTION 106 NATIONAL REGISTER OF HISTORIC PLACES REQUIREMENTS

1.0 Description. The Contractor shall note that this project is located adjacent to the Central West End Local Historic District and in proximity to properties listed on the National Register of Historic Places. The project site lies at the western boundary of the Central West End Historic District, established by City Ordinance in 1974 and subsequently updated. In addition, the Cabanne House (circa 1876), located within Forest Park, is individually listed on the National Register of Historic Places for its architectural significance. Forest Park itself is a historically significant landscape, having served as the site of the 1904 Louisiana Purchase Exposition. Because this project utilizes federal funding, it is subject to Section 106 of the National Historic Preservation Act, which requires federal agencies to consider the effects of federally funded undertakings on historic properties.

1.1 General Requirements. The Contractor shall conduct all work in a manner that avoids, minimizes, or mitigates adverse effects to historic properties and the historic character of the surrounding area. The Contractor shall comply with all stipulations, conditions, and commitments identified in the Section 106 consultation process, including any Memorandum of Agreement (MOA) or project-specific conditions established between the Federal Highway Administration (FHWA), the Missouri State Historic Preservation Office (SHPO), and the City of St. Louis.

1.2 Protection of Historic Infrastructure. The Contractor shall exercise care to protect existing historic-age infrastructure, streetscape features, and character-defining elements within and adjacent to the project limits. This includes, but is not limited to, existing masonry, ornamental ironwork, stone curbing, retaining walls, light standards, monuments, and statuary. Any existing infrastructure within or adjacent to the historic district, as well as previously constructed new infrastructure that has hardened, shall be protected by ½-inch expansion joints against all new work and sealed with a high-quality sealant along the entire length. At curves, drainage structure flumes, ADA ramps, and other features of the project that require special geometry, the Contractor shall match materials and finishes consistent with the historic character of the district to the greatest extent practicable.

1.3 Unanticipated Discoveries. The Contractor shall not demolish, remove, alter, or damage any structure, feature, or element identified as historically significant or contributing to the historic character of the area without prior written consent from the Engineer. Should the Contractor encounter any previously unidentified archaeological resources, historic materials, or cultural artifacts during construction, the Contractor shall immediately cease work in the affected area, secure the site, and notify the Engineer. Work in the affected area shall not resume until the Engineer provides written authorization following consultation with the Missouri SHPO.

1.4 Cabanne House and Forest Park. The Contractor shall take all necessary precautions to protect the Cabanne House and its surrounding landscape from construction-related impacts, including vibration, dust, debris, and stormwater runoff. The Contractor shall not stage equipment, store materials, or route construction traffic in a manner that adversely affects the Cabanne House or other historically significant features within Forest Park without prior written approval from the Engineer and the City of St. Louis Parks Department.

1.5 Aesthetic Requirements. The Contractor shall ensure that all bridge elements, approach roadway features, sidewalks, railings, light fixtures, and other visible improvements within or adjacent to the historic district are constructed in accordance with the aesthetic treatments and design details shown on the plans. No substitutions of materials, finishes, or design elements shall be made without prior written consent from the Engineer.

2.0 Method of Measurement. No measurement shall be made to satisfy this provision.
3.0 Basis of Payment. No direct payment will be made to the Contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions.

I. WORK ZONE TRAFFIC MANAGEMENT PLAN JSP-02-06N

1.0 Description. Work zone traffic management shall be in accordance with applicable portions of Division 100 and Division 600 of the Standard Specifications, and specifically as follows.

1.1 Maintaining Work Zones and Work Zone Reviews. The Work Zone Specialist (WZS) shall maintain work zones in accordance with Sec 616.3.3 and as further stated herein. The WZS shall coordinate and implement any changes approved by the engineer. The WZS shall ensure all traffic control devices are maintained in accordance with Sec 616, the work zone is operated within the hours specified by the engineer, and will not deviate from the specified hours without prior approval of the engineer. The WZS is responsible to manage work zone delay in accordance with these project provisions. When requested by the engineer, the WZS shall submit a weekly report that includes a review of work zone operations for the week. The report shall identify any problems encountered and corrective actions taken. Work zones are subject to unannounced inspections by the engineer and other departmental staff to corroborate the validity of the WZS's review and may require immediate corrective measures and/or additional work zone monitoring.

1.2 Work Zone Deficiencies. Failure to make corrections on time may result in the engineer suspending work. The suspension will be non-excusable and non-compensable regardless if road user costs are being charged for closures.

2.0 Traffic Management Schedule.

2.1 Traffic management schedules shall be submitted to the engineer for review prior to the start of work and prior to any revisions to the traffic management schedule. The traffic management schedule shall include the proposed traffic control measures, the hours traffic control will be in place, and work hours.

2.2 The traffic management schedule shall conform to the limitations specified in Sec 616 regarding lane closures, traffic shifts, road closures and other width, height and weight restrictions.

2.3 The engineer shall be notified as soon as practical of any postponement due to weather, material or other circumstances.

2.4 In order to ensure minimal traffic interference, the contractor shall schedule lane closures for the absolute minimum amount of time required to complete the work. Lanes shall not be closed until material is available for continuous construction and the contractor is prepared to diligently pursue the work until the closed lane is opened to traffic.

2.5 Traffic Congestion. The contractor shall, upon approval of the engineer, take proactive measures to reduce traffic congestion in the work zone. The contractor shall immediately implement appropriate mitigation strategies whenever traffic congestion reaches an excess of 10 minutes to prevent congestion from escalating to 15 minute or above threshold. If disruption of the traffic flow occurs and traffic is backed up in queues of 15 minute delays or longer, then the contractor shall immediately review the construction operations which contributed directly to

disruption of the traffic flow and make adjustments to the operations to prevent the queues from reoccurring. Traffic delays may be monitored by physical presence on site or by utilizing real-time travel data through the work zone that generates text and/or email notifications where available. The engineer monitoring the work zone may also notify the contractor of delays that require prompt mitigation. The contractor may work with the engineer to determine what other alternative solutions or time periods would be acceptable.

2.5.1 Traffic Safety.

2.5.1.1 Recurring Congestion. Where traffic queues routinely extend to within 1000 feet of the ROAD WORK AHEAD, or similar, sign on a divided highway or to within 500 feet of the ROAD WORK AHEAD, or similar, sign on an undivided highway, the contractor shall extend the advance warning area, as approved by the engineer.

2.5.1.2 Non-Recurring Congestion. When traffic queues extend to within 1000 feet of the ROAD WORK AHEAD, or similar, sign on a divided highway or to within 500 feet of the ROAD WORK AHEAD, or similar, sign on an undivided highway infrequently, the contractor shall deploy a means of providing advance warning of the traffic congestion, as approved by the engineer. The warning location shall be no less than 1000 feet and no more than 0.5 miles in advance of the end of the traffic queue on divided highways and no less than 500 feet and no more than 0.5 miles in advance of the end of the traffic queue on undivided highways.

2.6 Transportation Management Plan. The contractor Work Zone Specialist (WZS) shall review the Transportation Management Plan (TMP), found as an electronic deliverable on MoDOT's Online Plans Room and discuss the TMP with the engineer during the preconstruction conference. Throughout the construction project, the WZS is responsible for updating any changes or modifications to the TMP and getting those changes approved by the engineer a minimum of two weeks in advance of implementation. The WZS shall participate in the post construction conference and provide recommendations on how future TMPs can be improved

3.0 Work Hour Restrictions.

3.1 Except for emergency work, as determined by the engineer, and long term lane closures required by project phasing, all lanes shall be scheduled to be open to traffic during the five major holiday periods shown below, from 12:00 noon on the last working day preceding the holiday until 6:00 a.m. on the first working day subsequent to the holiday unless otherwise approved by the engineer.
Memorial Day
Labor Day
Thanksgiving
Christmas
New Year's Day

3.1.1 Independence Day. The lane restrictions specified in Section 3.1 shall also apply to Independence Day, except that the restricted periods shall be as follows:

When Independence Day falls on:	The Holiday is Observed on:	Halt Lane Closures beginning at:	Allow Lane Closures to resume at:
Sunday	Monday	Noon on Friday	6:00 a.m. on Tuesday
Monday	Monday	Noon on Friday	6:00 a.m. on Tuesday
Tuesday	Tuesday	Noon on Monday	6:00 a.m. on Wednesday

Wednesday	Wednesday	Noon on Tuesday	6:00 a.m. on Thursday
Thursday	Thursday	Noon on Wednesday	6:00 a.m. on Friday
Friday	Friday	Noon on Thursday	6:00 a.m. on Monday
Saturday	Friday	Noon on Thursday	6:00 a.m. on Monday

3.2 The contractor shall not perform any construction operation on the roadway, roadbed or active lanes, including the hauling of material within the project limits, during restricted periods, holiday periods or other special events specified in the contract documents.

3.3 Daytime Restrictions. The contractor should be aware that traffic data indicates construction operations on the roadbed between the hours of 6:00 a.m. and 9:00 a.m., and between 3:00 p.m. and 7:00 p.m. Monday through Friday may result in traffic queues greater than 20 minutes in some parts of the project. Based on this data, the contractor's operations will be restricted to be off the active roadbed and outside the roadway's clear zone, unless it can be successfully demonstrated that their operations can be performed without a 20-minute traffic queue. It shall be the engineer's responsibility to determine if the above work hours are modified.

3.3.1 Non-Resurfacing Work and Resurfacing Available Work Hours.
Non-resurfacing Work:
6:00 a.m. – 8:00 p.m. (Monday thru Friday and Saturday)
Sundays excluded

Resurfacing Work:
9:00 a.m. – 3:00 p.m. (Monday – Friday)
7:00 p.m. – 6:00 a.m. (Monday – Friday
All day (Saturday)
Sundays excluded

In addition to the work hour restrictions above, see JSP "WORK HOUR RESTRICTIONS – CITYPARK – MARKET TO OLIVE" JSP for more specifics on work between Market Street and Olive Street.

3.4 Any work outside of normal working hours shall be requested in writing and approved by the City prior to commencing work.

4.0 Detours and Lane Closures.

4.1 When a changeable message sign (CMS) is provided, the contractor shall use the CMS to notify motorists of future traffic disruption and possible traffic delays one week before traffic is shifted to a detour or prior to lane closures. The CMS shall be installed at a location as approved or directed by the engineer. If a CMS with Communication Interface is required, then the CMS shall be capable of communication prior to installation on right of way. All messages planned for use in the work zone shall be approved and authorized by the engineer or its designee prior to deployment. When permanent dynamic message signs (DMS) owned and operated by MoDOT are located near the project, they may also be used to provide warning and information for the work zone. Permanent DMS shall be operated by the TMC, and any messages planned for use on DMS shall be approved and authorized by the TMC at least 72 hours in advance of the work.

4.2 At least one lane of traffic in each direction shall be maintained at all times, except for brief intervals of time required when the movement of the contractor's equipment will seriously hinder

the safe movement of traffic. Periods during which the contractor will be allowed to interrupt traffic will be designated by the engineer.

5.0 Basis of Payment. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract document. All authorized changes in the traffic control plan shall be provided as specified in Sec 616.

J. TEMPORARY TRAFFIC CONTROL

1.0 Description. All work necessary to maintain safe and efficient traffic flow through the work areas shall be provided by the contractor. This will include furnishing, relocating, and removing temporary traffic control devices, truck mounted attenuators and equipment, and the removal and relocation or covering and uncovering of existing signs and other traffic control devices in accordance with the contract documents or as directed by the engineer.

2.0 Work Requirements. Work shall be in accordance with MoDOT's latest Specification Sections 612, 616, 619, 620 and as suggested in the contract plans.

3.0 Method of Measurement. The quantities shown on the plans shall be considered an estimate and may be subject to change based on field conditions. This work will not be measured for payment, but will be considered a lump sum unit. Any Value Engineering proposals to the temporary traffic control will not be paid for through value engineering but will be covered under PAY ITEM 616-99.01, TEMPORARY TRAFFIC CONTROL, LUMP SUM.

4.0 Basis of Payment.

4.1 Partial payments will be made as follows:

(a) The first partial payment will be made when five percent of the original contract amount is earned. This payment will be the lesser of 50 percent of the contract price for the item of temporary traffic control or 5 percent of the original contract price.

(b) The second partial payment will be made when 50 percent of the original contract amount is earned. This payment will be the lesser of 25 percent of the original contract price for the item of temporary traffic control or 2.5 percent of the original contract price.

(c) The third partial payment will be made when 75 percent of the original contract amount is earned. This payment will be the lesser of 20 percent of the original contract price for the item of temporary traffic control or 2 percent of the original contract price.

(d) When the engineer has accepted the contract for maintenance in accordance with Sec 105, the remaining contract price for the item of temporary traffic control will be paid.

(e) The above partial payment schedule may be adjusted by the engineer if proof of invoices submitted by the contractor demonstrate additional temporary traffic control costs were incurred earlier than the above proposed schedule. The total payment for temporary traffic control will not exceed the bid amount for Temporary Traffic Control, lump sum, unless covered by a cost change order as referenced in the following Section 4.3.

4.1.1 For the purposes of this provision, the term “original contract price” will be construed as the total dollar value of the construction items (excluding temporary traffic control) of the original contract.

4.2 Temporary traffic control will be paid for at the contract lump sum price for Item 616-99.01, Temporary Traffic Control. No direct payment will be made for the following:

(a) Incidental items necessary to complete the work, unless specifically provided as a pay item in the contract.
(b) Installing, operating, maintaining, cleaning, repairing, removing or replacing traffic control devices.
(c) Covering and uncovering existing signs and other traffic control devices.
(d) Relocating temporary traffic control devices, including permanent traffic control devices temporarily relocated, unless specifically included as a pay item in the contract.
(e) Providing channelizers.
(f) Worker apparel.
(g) Flaggers, pilot vehicles, and appurtenances at flagging stations.
(h) Furnishing, installing, operating, maintaining, and removing construction-related vehicle and equipment lighting.
(i) Construction and removal of temporary equipment crossovers, including restoring pre-existing crossovers.
(j) Removing existing pavement markings, installing temporary pavement markings, and removing and relocating temporary pavement markings as necessary for staging operations.
(k) Maintaining at least one side of continuous lighting along the entire corridor at all times. Contractor shall reference the Lighting Maintenance of Traffic Plans located in the construction plans for a suggestion on how to complete the work, while maintaining at least one side of existing lights.

4.3 Any additional work deemed necessary by the engineer that requires temporary traffic control and is not covered by the contract plans will be included in the cost change order for the additional work. However, if the added work is required in a stage where temporary traffic control is already in place, no additional traffic control pay will be allowed in this case.

K. PROJECT CONTACT FOR CONTRACTOR/BIDDER QUESTIONS

All questions concerning this project during the bidding process shall be forwarded to the project contact listed below.

Ms. Melvine Nassi
1200 Market Street, Room 301 City Hall
St. Louis, MO 63103
(314) 589-6214
(314) 622-4028
NassiM@stlouis-mo.gov

L. EMERGENCY PROVISIONS AND INCIDENT MANAGEMENT JSP-90-11A

1.0 The Contractor shall have communication equipment on the construction site or immediate

access to other communication systems to request assistance from the police or other emergency agencies for incident management. In case of traffic accidents or the need for police to direct or restore traffic flow through the job site, the Contractor shall notify police or other emergency agencies immediately as needed. Given the project's proximity to active MetroLink rail lines, the Contractor shall also immediately notify Metro Transit (Bi-State Development Agency) of any incident that may affect MetroLink operations, track access, or overhead catenary systems. The BPS office shall also be notified when the Contractor requests emergency assistance.

2.0 In addition to the 911 emergency telephone number for ambulance, fire or police services, the following agencies may also be notified for accident or emergency situations within the project limits.

Missouri Highway Patrol:	*55 Regular Phone or Cell
City of St. Louis Police:	314-231-1212
AmerenUE	1-800-552-7583
Metro Transit / Bi-State Development Agency	
MetroLink Operations Center	314-982-1400
Metro Public Safety	314-289-6873

2.1 This list is not all inclusive. Notification of the need for wrecker or tow truck services will remain the responsibility of the appropriate police agency.

2.2 The Contractor shall notify enforcement and emergency agencies, including Metro Transit (Bi-State Development Agency), before the start of construction to request their cooperation and to provide coordination of services when emergencies arise during the construction at the project site. The Contractor shall coordinate with Metro to establish protocols for incidents occurring on or near MetroLink right-of-way, including procedures for emergency track closures or de-energization of overhead catenary lines. When the Contractor completes this notification with enforcement and emergency agencies, a report shall be furnished to the Engineer on the status of incident management.

3.0 No direct payment will be made to the Contractor to recover the cost of communication equipment, labor, materials, or time required to fulfill the above provisions.

M. MULTIPLE PROJECT COORDINATION

1.0 Description. Multiple projects may be under construction concurrently with STP-9901(663). MoDOT will have eastbound I-64 closed between Vandeventer and Compton from Fall 2027 through Fall 2028, and westbound I-64 will be subject to periodic single-lane closures between Compton and Boyle from Winter 2028 through Winter 2029. The Contractor shall coordinate traffic control, staging, and any other items as directed by the Engineer between this project, the ongoing Union/Lindell Boulevard Bridge project, and any additional MoDOT or City of St. Louis projects in the vicinity that may arise during construction.

Projects requiring coordination include:

- The Grand Drive Bridge Project
  - Bridge Reconstruction, Sidewalks, curbs, pavement, drainage, trees, lighting, signing, and signals along Grand Drive.
- The Grand Drive Bridge over Metrolink and Forest Park Parkway bridge replaces two back-to-back bridges spanning Forest Park Parkway as well as eastbound and westbound MetroLink tracks.

- Contact: Kevin Trapp, P.E., trappk@stlouis-mo.gov, 314-589-6606
- Other City projects and developments as they arise during the duration of this project.
- Contact: Kevin Trapp, P.E., trappk@stlouis-mo.gov, 314-589-6606

- MoDOT projects J6I3502 I-64 Eastbound Bridge Replacement and J6I3574 I-64 Westbound Bridge Rehabilitation.
- Contact: Scott Washausen, MoDOT Resident Engineer, 314-370-9874 (mobile).

2.0 Basis of Payment. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials or time required to fulfill the above provision.

N. UTILITIES

1.0 For informational purposes only, the following is a list of names, addresses, and telephone numbers of the known utility companies in the area of construction work for this improvement:

Utility Name	Known Required Adjustment	Type
Karlynnta Oredugba **Ameren-Missouri (Distribution)** 12851 Manchester Rd. Des Peres, MO 63131 Telephone: (314) 250-6896 Email: koredugba@ameren.com	Yes	Power
John Rowland **Ameren-Missouri (Distribution)** 12851 Manchester Rd. Des Peres, MO 63131 Telephone: (314) 267-7924 Email: jrowland@ameren.com	Yes	Power
Nathan Shoemaker **AT&T Distribution** 402 North 3rd St St. Charles, MO 63301 Telephone: (314) 402-1274 Email: ns9624@att.com	Yes	Communications
Terry Harrison **Bluebird MNA** 10024 Office Center Ave, Ste. 201 St. Louis, MO 63128 Telephone: (314) 603-3399 Email: terry.harrison@bluebirdfiber.com	No	Communications
Joshua Roberts **City of St. Louis – Water Division** 4600 McRee Ave. St. Louis, MO 63110 Telephone: (314) 633-9037 Email: jroberts@stlwater.com	Yes Work Included in Contract	Water

Len Efthim **City of St. Louis –Lighting** 1900 Hampton St. Louis, MO 63139 Telephone: (314) 647-3111 Email: efthiml@stlouiscity.com	Yes Work Included in Contract	Traffic/Lighting
Justin DeCarlo **City of St. Louis – Lighting** 1900 Hampton St. Louis, MO 63139 Telephone: (314) 803-0248 Email: decarloj@stlouis-mo.gov	Yes Work included in contract	Traffic/Lighting
Domenic Nicastro **MCI (Verizon)** 500 Technology Drive Weldon Springs, MO 63304 Telephone: (636) 459-1600 Email: Domenic.nicastro@verizon.com	No	Communications
Timothy Nittler **MetroLink** 700 S. Ewing Ave. St. Louis, MO 63103 Telephone: (314) 982-1400 x 1306 Email: tfnittler@metrostlouis.org	Yes Work included in Contract	Communications/Power
Nick Eggert **Spire Energy** 6400 Graham Rd Berkeley, MO 63134 Telephone: (314) 330-5720 Email: Nicholas.eggert@SpireEnergy.com	Yes	Gas
Brian Langenbacher **Spire Energy** 6400 Graham Rd Berkeley, MO 63134 Telephone: (314) 713-6572 Email: brian.langenbacher@SpireEnergy.com	Yes	Gas
Carl Vandeloo **Washington University** 700 Rosedale Avenue St. Louis, MO 63112 Telephone: 314-550-7152 Email: cvandeloo@wustl.com	No	Communications
Craig Hager **Washington University** 700 Rosedale Avenue St. Louis, MO 63112 Telephone: Email: craighager@wustl.edu	No	Communications

1.1 The existence and approximate location of utility facilities known to exist, as shown on the

plans, are based upon the best information available to the Commission at this time. This information is provided by the Commission "as-is" and the Commission expressly disclaims any representation or warranty as to the completeness, accuracy, or suitability of the information for any use. Reliance upon this information is done at the risk and peril of the user, and the Commission shall not be liable for any damages that may arise from any error in the information. It is, therefore, the responsibility of the contractor to verify the above listing information indicating existence, location, and status of any facility. Such verification includes direct contact with the listed utilities.

1.2 The contractor agrees that any effects of the presence of the utilities, their relocation, contractor's coordination of work with the utilities and any delay in utility relocation shall not be compensable as a suspension of work, extra work, a change in the work, as a differing site condition or otherwise including but, without limitation, delay, impact, incidental or consequential damages. The contractor's sole remedy for the effects of the presence of utilities, delay in their relocation or any other effects shall be an excusable delay as provided in Section 105.7.3. The contractor waives, for itself, its subcontractors and suppliers the compensability of the presence of utilities, delay in their relocation and any cost to the contractor, its subcontractors and suppliers in any claim or action arising out of or in relation to the work under the contract.

1.3 The contractor shall be solely responsible and liable for incidental and consequential damage to any utility facilities or interruption of the service caused by it or its subcontractors' operation. The contractor shall hold and save harmless the Commission from damages to any utility facilities interruption of service by it or its subcontractor's operation.

2.0 It shall be noted by the contractor that MoDOT is a member of Missouri One Call (800 Dig Rite). Some work on this project may be in the vicinity of MoDOT utility facilities, which includes but is not limited to traffic signal cables, highway lighting circuits, ITS cables, cathodic protection cables, etc. Prior to beginning work, the contractor shall request locates from Missouri One Call. The contractor shall also complete the Notice of Intent to Perform Work form located at the Missouri Department of Transportation website:

http://www.modot.mo.gov/asp/intentToWork.shtml

The contractor shall submit the form over the web (preferred method) or by fax to the numbers on the printed form. The notice must be submitted a minimum of 2 and a maximum of 10 working days prior to excavation, just as Missouri One Call requires.

3.0 AMEREN DISTRIBUTION

Ameren Distribution has the following existing facilities within the project limits:

Union Blvd

- Manhole at Sta. 7+34, 37' RT falls in the proposed roadway resurfacing area.
    - Ameren will adjust this facility to grade, as needed, during construction in coordination with the contractor.
- Manhole at Sta. 7+42, 4' RT falls in the proposed roadway resurfacing area.

  - Ameren will adjust this facility to grade, as needed, during construction in coordination with the contractor.
- Power pole at Sta. 7+44, 50’ LT falls within the slope limits for the project.
  - No impact to this facility is anticipated.
- Buried power duct crossing Union between Sta. 7+41, 29’ Rt and 7+41, 51’ LT.
  - No impact to this facility is anticipated.
- Buried power duct crossing the Centerline of Union at approximately Sta. 7+95 and continuing east and running under Park Dr.
  - No impact to this facility is anticipated.
- Manhole at Sta. 9+03, 30’ RT falls in proposed excavation limits for proposed retaining walls.
  - Ameren will abandon this structure prior to construction as part of their overall relocation plan.
    - This overall relocation is in progress as of October 2026.
    - Contractor should contact Ameren directly to determine status of relocation and abandonment of existing facilities prior to excavation in this area.
- Buried duct package running along the west side of Union from the western side of the existing bridge to Grand Dr.
  - Buried facilities are in conflict with proposed bridge replacement.
    - Ameren to relocate this facility as part of their overall relocation plan. This relocation is in progress as of October 2026.
    - Contractor should contact Ameren directly to determine status of relocation and abandonment of existing facilities prior to excavation in this area.
- Buried duct package crossing the centerline of Union just north of Grand Dr.
  - Proposed drainage crosses facility at Sta. 15+90, 16’ LT.
    - Ameren to relocate this facility as part of overall relocation plan. This relocation is in progress as of October 2026.
    - Contractor should contact Ameren directly to determine status of relocation and abandonment of existing facilities prior to excavation in this area.

Lindell & Park Rd

- Buried duct run crossing the Centerline of Lindell at Sta. 13+74.
  - This duct run will be relocated as part of Ameren’s overall relocation for the project. This relocation is in progress as of October 2026.
- Buried duct run crossing Lindell on the west side of the proposed bridge. This is a large relocation package for this project and the plan of adjustment was prepared in coordination with the design team and no impact is anticipated once installed. This system will continue south on the west side of the Cabanne House and continue outside of the western project limits to Grand Dr.
  - As of October 2026, this relocation is in progress. As-builts will be available for review prior to the start of construction.
  - Contractor should contact Ameren directly to determine status of relocation and abandonment of existing facilities prior to excavation in this area.
    - No additional impacts are anticipated with the relocated facilities.
- Buried power in the southwest quadrant of Union and Lindell running to the Cabanne House.

  - This service will be relocated during construction as part of Ameren's overall relocation.
- Power pole at Sta. 13+90, 61' RT falls in the proposed excavation area for the PR bridge.
  - Ameren will relocate this pole as part of the overall relocation for the project. This work will be done during construction in coordination with the contractor.
- Manhole at Sta. 14+03, 31' LT will be impacted by removal of the existing bridge.
  - Ameren will abandon this manhole as part of their overall relocation for this project. As of October 2026, this relocation is in progress.

The contractor shall coordinate with Ameren-Missouri as necessary and take measures to protect in place their existing facilities during construction. The contractor shall coordinate directly with Ameren-Missouri. Ameren-Missouri's representative for this will be as follows:

- John Rowland Email: jrowland@ameren.com Phone: (314) 267-7924

The contractor shall directly contact Ameren-Missouri to verify the locations of their facilities.

The contractor shall discuss the planned work as it relates to Ameren Missouri's energized power lines and coordinate with Ameren Missouri for the installation of any insulation covers over the lines and/or any other designated requirements. Please note Ameren Missouri has revised its policy regarding the charges for placement, length of use and relocation of covers. The contractor is advised to contact Ameren Missouri regarding the current policy so the anticipated cost to the contractor can be estimated and a tentative schedule for this payment can be established. The Contractor shall contact Ameren Missouri at least two weeks in advance of when construction work is scheduled to begin to request covers to be placed at a given location.

No direct payment will be made for this provision. The contractor is responsible for any charges from Ameren Missouri for this provision and payment will be directly to Ameren Missouri.

The Commission cannot warrant the information above which was provided by Ameren-Missouri (Distribution & Transmission).

4.0 AT&T Distribution

AT&T-Distribution has the following existing facilities within the project limits:

Union Blvd

- Buried facilities crossing Union from a manhole at Sta. 7+44, 18' LT and continuing east to a power pole on the east side of Union.
  - No impact to these facilities is anticipated.
- Buried facilities running south under the northbound lanes of Union between a Manhole at Sta. 7+44, 18' LT to a Manhole at Sta. 9+31, 39' LT.
  - These facilities have been relocated, and the existing conduit run has been abandoned in place.
- Manhole at Sta. 7+44, 18' LT falls in the proposed resurfacing area of the roadway.

  - ATT will adjust this manhole to grade during construction in coordination with the contractor.
- Manhole at Sta. 9+31, 39' LT is in conflict with the proposed hardscape arch in the NE quadrant of Union and Lindell.
  - Per ATT, this manhole has been abandoned for the project and does not contain working facilities.
  - Contractor to remove these facilities as part of the removals for the project.
- Buried facilities running north-south under the northbound lanes of Union between a manhole on the north side of the existing bridge at Sta. 9+31 and a manhole south of Grand Dr at Sta. 12+74.
  - This duct run was in conflict with the proposed bridge and the buried facilities running between the two manholes were abandoned in place.
  - The working facilities were relocated as follows:
    - Buried facilities between a Power Pole at Sta. 7+45, 50' LT in the NE project limits and a power pole on the north side of Lindell at Sta. 16+76, 46' LT.
    - Buried facilities running between the temporary pole at Sta. 12+75, 92' LT and the manhole at Sta.12+74, 22' LT.
  - ATT-D will permanently relocate the aerial/buried facilities in a dedicated conduit in the easternmost bay of the proposed bridge.
    - This relocation to the proposed bridge will take place during construction in coordination with the Contractor.
- Buried facilities exiting a manhole at Sta. 12+74, 22' LT and crossing the centerline of Union at Sta. 12+00 as it runs east to the Cabanne House. This facility will be impacted by excavation for the proposed bridge.
    - As of October 2026, ATT-D is developing a plan of relocation for this service and anticipate completing this relocation prior to construction, or early 2027.
- Buried facilities running south under the northbound lanes of Union from a manhole at Sta. 12+74, 22' LT and continuing south through the southern project limits at Grand Dr.
  - Proposed drainage structure (manhole) falls within 1' from buried ATT conduit run between Sta. 14+82, 20' LT to 14+89, 20' LT.
    - ATT-D potholed this facility and determined that its facility can be protected in place.
    - Contractor to coordinate with ATT (contact info below) prior to installation of the proposed drainage pipe to allow for monitoring of installation of this proposed pipe.
  - The proposed 12" drainage pipe at Sta. 16+52, 53' LT RT crosses this duct.
    - ATT-D potholed this facility and determined that its facility can be protected in place.
    - Contractor to coordinate with ATT (contact info below) prior to installation of the proposed drainage pipe to allow for monitoring of installation of this proposed pipe.
- Manhole at Sta. 12+74, 22' LT falls in the proposed resurfacing area for the project.
  - ATT-D will adjust this manhole to grade during construction in coordination with the contractor.

- Buried facilities exiting a handhole at Sta. 13+13, 49' RT and running south along the back of the existing sidewalk on the east side of Union until exiting the southern project limits at Grand Dr.
    - This cable crosses the proposed RCP drainage pipe at Sta. 16+59, 53' LT.
        - ATT-D potholed this facility and determined that its facility can be protected in place.
        - Contractor to coordinate with ATT (contact info below) prior to installation of the proposed drainage pipe to allow for monitoring of installation of this proposed pipe.
- Buried facilities exiting a handhole at Sta. 13+13, 49' RT and continuing east along the south side of Forest Park Parkway through the eastern project limits.
    - No impact within the Union alignment is anticipated.
    - See Forest Park Parkway Connector entry below for more details on this facility.
- Handhole at Sta. 13+13, 49' LT falls within slope limits for project.
    - No impact to this facility anticipated.

Lindell Blvd

- A temporary aerial crossing of Lindell and Forest Park Parkway from a utility pole at Sta. 16+76, 46' LT and utility pole at Sta. 12+75, 92' LT (Union Alignment).
- Temporary utility poles at Sta. 16+76, 30' RT and 16+76, 30' RT are part of a temporary ATT aerial relocation and will be removed during construction.
    - ATT-D will relocate the aerial facilities and extract this pole as part of the relocation to the proposed bridge.

Forest Park Parkway Connector & Forest Park Parkway

- Handhole at Sta. 20+36, 73' LT [Sta. 13+49, 49' LT on Union] falls within the project limits.
    - No impact to this facility is anticipated.
- Buried facilities exiting a handhole at Sta. 20+36, 73' LT and running east along the south side of the ramp to Forest Park Parkway, where it continues east along the south side of Forest Park Parkway though the eastern project limits.
    - Proposed cut and improvements for Connector between Sta. 21+72, 48' LT and Sta. 23+13, 70' RT will impact buried facilities.
        - ATT-D is developing a plan of relocation for this facility, and they anticipate completing this relocation prior to construction.

The contractor shall coordinate directly with ATT-D for any adjustments required during construction. AT&T's representative for this will be as follows:

Nathan Shoemaker
Phone: 314-402-1274
Email: ns9624@att.com

The contractor shall coordinate with AT&T as necessary and take measures to protect in place their existing facilities during construction. AT&Ts' representative for this will be as follows:

The contractor shall contact AT&T directly to verify the locations of their facilities.

The Commission cannot warrant the information above which was provided by AT&T.

5.0 Bluebird MNA

Bluebird has the following existing facilities within project limits:

Lindell Blvd

- Buried facilities running east-west along the south side of Lindell throughout the entire project limits within the Lindell alignment.
    - These buried facilities were determined to be in conflict with the proposed multi-use trail and bridge construction between Sta. 9+00, 27' RT and Sta. 17+00, 31' RT.
        - Bluebird has abandoned all existing facilities within the project limits and no additional conflicts remain.
        - Bluebird's fiber optic cables were abandoned in place.
        - Bluebird to abandon and mark their existing handhole at Sta. 19+07, 28' RT as TBR (To be Removed). Cables & conduits in the handhole will be cut as part of abandonment.
            - Contractor to remove these facilities as part of the removals process for the project.
        - Contractor to coordinate with Bluebird (contact info below) prior to removal of the abandoned equipment to confirm status of facilities.

Bluebird's representative for any issues that arise during construction will be as follows:

- Terry Harrison (Phone: (314) 603-3399; Email: terry.harrison@bluebirdfiber.com)

The contractor shall coordinate with Bluebird as necessary and take measures to protect in place their existing facilities during construction.

The contractor shall directly contact Bluebird to verify the locations of their facilities.

The Commission cannot warrant the information above which was provided by Bluebird.

6.0 CITY OF ST. LOUIS CITY - WATER DIVISION

St. Louis City Water has the following existing facilities in conflict within the project limits:

Union Blvd

- 20" water main running south under the southbound lanes of Union from south of the Union-Lindell bridge and continuing south to Sta. 14+64, 29' RT, where it turns east and crosses Union to a valve on the east side of Union at Sta. 14+81, 116' LT.
    - This main will be impacted by excavation for the proposed retaining walls and bridge between Sta. 13+00, 15' RT (Lindell) and Sta. 12+00, 30' RT (Union).
        - The contractor will relocate this portion of the main as part of the project.
        - As of October 2026, City Water is reviewing the relocation concept. Full details will be available to the Contractor prior to the letting date.

    - A proposed 12” drainage pipe crosses the main at Sta. 14+68, 12’ LT.
        - A pothole was performed at this location and the drainage was adjusted during design to allow for 2’ clearance.
            - No additional impact is anticipated.
- 30” water main running northwest from Park Rd and turning north and running north under the northbound lanes of Union through the northern project limits.
    - No impact to this main is anticipated.

Lindell & Park Rd

- 20” water main running east to west under the eastbound lanes of Lindell from the western project limits to the west side of the existing bridge. The main turns southeast and runs diagonally in the southwest quadrant of Union and Lindell to the southbound lanes of Union south of the existing bridge.
    - Main is in conflict with excavation for the retaining walls and proposed bridge between Sta. 12+00, 30’ RT (Union) and Sta. 13+00, 15’ RT (Lindell).
        - Contractor to relocate this portion of the main during construction in coordination with City Water as part of project. The approximate linear footage for this relocated main is 300.’
            - As of October 2026, City Water is reviewing the relocation concept.
            - Contractor should coordinate directly with City Water to determine the requirements and schedule of this relocation and the abandonment and/or removal of the existing facilities.
- Hydrant and valve at Sta. 13+28, 27’ RT will be impacted by the excavation for the retaining walls and proposed bridge. The associated 20” main will be relocated as part of the project.
        - Contractor to relocate this hydrant, hydrant valve and hydrant lead during construction as part of project.
        - As of October 2026, City Water is reviewing the relocation concept.
            - Contractor should coordinate directly with City Water to determine the requirements and schedule of this relocation and the abandonment and/or removal of the existing facilities.
- Water service to the Cabanne House at 5300 Lindell—running from a tie-in on the 20” main at approximately Sta. 13+ 35, 39’ LT—will be impacted by the excavation for the retaining walls and proposed bridge. The associated 20” main will be relocated as part of the project.The approximate lineal footage for this service line is 125’.
        - Contractor to relocate this portion of the main and associated service during construction as part of project.
            - As of October 2026, City Water is reviewing the relocation concept.
            - Contractor should coordinate directly with City Water to determine the requirements and schedule of this relocation and the abandonment and/or removal of the existing facilities.
- 30” water main running diagonally northwest from a valve on the south side of Lindell at Sta. 18+9, 48’ RT, crossing the center of Lindell at Sta. 17+85 and continuing northwest under the southbound lanes of Park Rd to Union. (See the Union, FPP Connector and Forest Park Parkway entries for information on this main within those alignments.)
    - Main runs within 1’ of the end of the proposed drainage pipe at Sta. 17+63, 18’ LT.

    - No impact to this main is anticipated within the Lindell alignment.
- 20” water main running east from a water valve at Sta. 18+35, 47’ RT on the south side of Lindell. This main runs east along the south side of Lindell through the eastern project limits.
    - No impact to this main is anticipated.
- 6” water main running east-west under the westbound lanes of Lindell from the eastern project limits to a valve at Sta. 18+16, 15’ LT, at the intersection of Park Rd and Lindell. The main turns and heads to the northwest under the northbound travel lane of Park Rd.
    - Main crosses proposed 12” pipe at Sta. 17+65, 39’ LT.
        - City Water reviewed this location and determined that no conflict is anticipated.
- Water valve at Sta. 18+13, 30’ LT falls in the proposed curb.
    - Contractor will adjust this valve to grade during construction.
- Water manhole at Sta. 18+16, 15’ LT falls in the proposed resurfacing area.
    - Contractor will adjust this manhole to grade during construction, as needed.

Forest Park Parkway Connector

- 30” water main running north-south along the east side of Union under the proposed Connector. The main starts at a valve at Sta. 14+81, 116’ LT (Union alignment) and runs northeast crossing Forest Park Parkway and continuing under Lindell and Park Rd. The main crosses the proposed Connector at Sta. 21+31. (See the Forest Park Parkway, Lindell and Park entries for information on this main within those alignments.)
    - Proposed cut for the Connector road over the main at Sta. 21+60, 25’ LT.
        - A pothole was performed at this location and City Water reviewed the results and determined that there are no conflicts anticipated.
- Water Manhole at Sta. 21+48, 12’ LT falls in the proposed pavement for the Connector road.
    - Contractor will adjust manhole to grade as part of project.
- Water Manhole at Sta. 21+64, 35’ LT falls within slope limits of project.
    - Contractor will adjust manhole to grade as part of project.
- Water Meter at Sta. 22+92, 37’ RT falls just outside the slope limits.
    - No impact to this facility is anticipated.

Forest Park Parkway & MetroLink ROW

- 30” water main running north-south on the east side of Union under the proposed Connector and Forest Park Parkway. The main crosses the centerline of Forest Park Parkway at Sta. 67+77. (See the Connector and Lindell entries for information on this main within those alignments.)
    - No impact to this main is anticipated within the Forest Park Parkway alignment.

St. Louis City Water has at-grade access points for its facilities at various locations throughout the project. Many of these access points will need to be adjusted to new grades, replaced, rebuilt, or relocated. St. Louis City Water also has several hydrants at various locations throughout the project that will need to be relocated or adjusted. The cost for adjustment of

these appurtenances will be included in the contract and completed by contractor. The contractor shall coordinate directly with City Water for these adjustments. City Water's representative for this will be as follows:

- Joshua Roberts (ph: (314) 633-9037, email: jroberts@stlwater.com)

The contractor shall coordinate with St. Louis City Water as necessary and take measures to protect in place their existing facilities during construction.

The contractor shall directly contact St. Louis City Water to verify the locations of their facilities.

The Commission cannot warrant the information above which was provided by St. Louis City Water.

6.1 Water Main Relocation Payment. Payment per linear foot of the various types and diameters of pipe will be made at the contract unit price. This payment shall constitute full compensation for all costs of labor, equipment, materials, supervision and all such incidentals as may be required.

6.2 Water Division Fees. The City of St. Louis Water Division will invoice the Contractor for the work completed by the City Water Division, which includes capping the existing mains and making the final connections between the new water lines and the existing mains. Water Division Fees will be paid for at the contract lump sum price.

6.3 Water Hydrant Relocation Payment. Payment for all fire hydrants to be relocated will be paid for at the contract unit price. This payment will constitute full compensation for all costs of labor, equipment, materials, supervision and all such incidentals to complete this item.

7.0 CITY OF ST. LOUIS CITY – TRAFFIC AND LIGHTING DIVISION

St. Louis City Traffic & Lighting has existing facilities in conflict within the project limits that will be impacted by the project, and the removals, relocations, and adjustments to these facilities will be completed by the Construction Contractor. Please see the Signals and Lighting sheets and JSPs for details of this work.

City Traffic and Lighting representatives for consultation on any work required during construction will be as follows:

Len Efthim	Justin DeCarlo
Phone: 314-647-3111	(314) 803-0248
Email: efthiml@stlouiscity.com	decarloj@stlouis-mo.gov

The contractor shall coordinate with St. Louis City Traffic and Lighting as necessary and take measures to protect in place their existing facilities during construction.

The contractor shall directly contact St. Louis City Traffic and Lighting to verify the locations of their facilities.

The Commission cannot warrant the information above which was provided by St. Louis City Traffic and Lighting.

8.0 MCI (VERIZON)

MCI (Verizon) has the following existing facilities within the project limits:

Union Blvd

- Buried facilities running along the east side of Union in the NE quadrant of Union and Lindell. This facility turns and runs southeast to a handhole on the north side of Lindell.
    - No impact to this facility is anticipated.
- Handhole at Sta. 9+20, 57' LT falls within slope limits.
    - No impact to this facility is anticipated.

Lindell & Park Rd

- Buried facilities exiting a handhole at Sta. 16+77, 40' LT on the north side of Lindell east of the existing bridge. These facilities cross the centerline of Lindell at Sta. 17+00 and continue south to the south side of Lindell and then runs east along the south side of Lindell through the eastern project limits.
    - No impact to this facility is anticipated.

MCI has at-grade access points for its facilities at various locations throughout the project. Some of these access points may need to be adjusted to new grades. The contractor shall coordinate directly with MCI for these adjustments. MCI's representative for this will be as follows:

- Domenic Nicastro (Phone: 636.459.1600, email: Domenic.nicastro@verizon.com)

The contractor shall coordinate with MCI as necessary and take measures to protect in place their existing facilities during construction.

The contractor shall directly contact MCI to verify the locations of their facilities.

The Commission cannot warrant the information above which was provided by MCI.

9.0 METROLINK

MetroLink has the following existing utility facilities within the project limits:

Forest Park Parkway & MetroLink ROW

- Buried cables at track level running along the north side of westbound Track 1 tracks on the north side of Forest Park Parkway. These facilities cross under the proposed bridge and will be impacted by the proposed bridge structure and associated construction.
    - The contractor will relocate this portion of the Communications and Signals cables as part of the project in coordination with MetroLink.
- Aerial catenary power cable system running along the tracks on the north side of Forest Park Parkway. These facilities cross under the proposed bridge.

- Cables will be moved to new poles. Contractor to install pole foundations as indicated on the plans and in structures special provisions and coordinate pole installation and cable transfer with MetroLink.

The contractor shall coordinate with MetroLink as necessary and take measures to protect in place their existing facilities during construction. Metrolink's representatives for this will be:

- Timothy Nittler (Telephone: 314-982-1400 ext. 1306, Email: tfnittler@metrostlouis.org)

The contractor shall directly contact MetroLink to verify the locations of their facilities.

The Commission cannot warrant the information above which was provided by Metro.

10.0 SPIRE

Spire has the following existing facilities within the project limits:

Union Blvd

- 12" steel gas main running northwest from Park Rd and turning north and running under the northbound lanes of Union through the northern project limits.
  - No impact to this main is anticipated.
- 8" plastic gas main running northwest from Park Rd and turning north and running north under the northbound lanes of Union through the northern project limits.
  - No impact to this main is anticipated.
- 8" plastic main crossing Union between Lindell and Grand Dr. Spire main crosses proposed 12" drainage pipe at Sta. 15+14, 14' LT.
  - Spire has reviewed this location and determined that no impact to these facilities is anticipated.
- 20" steel main crossing Union between Lindell and Grand Dr. Spire main crosses proposed 12" drainage pipe at Sta. 14+83, 15' LT.
  - Spire has reviewed this location and determined that no impact to these facilities is anticipated.

Lindell & Park Rd

- 12" steel gas main along the north side of Park Rd between Union and Lindell and continuing east to a valve at Sta. 18+93, 32' LT on the north side of Lindell.
  - Main falls within 1' of proposed drainage structure at Sta. 17+16, 59' LT to 17+70, 56'.
    - Per Spire, main to be retired and abandoned prior to construction.
    - As of October 2026, this relocation and abandonment project is in progress.
    - Contractor should contact Spire directly to determine status of relocation and abandonment of existing facilities prior to excavation in this area.
- 12" steel gas main crossing Lindell just east of Park Rd.
  - No impact this main is anticipated.
- 8" plastic gas main crossing the centerline of Lindell at Sta. 18+16 and continuing to the northwest under the center of Park Rd from Lindell to Union.

  - Main crosses proposed 12” drainage pipe at Sta. 17+65, 36’ LT.
    - Spire has reviewed this location and determined that no impact to these facilities is anticipated.
- 2” plastic gas main running along the north side of the existing sidewalk between Sta. 16+62, 140’ LT on Park Rd and a valve at Sta. 18+93, 35’ LT on the north side of Lindell.
  - No impact to this main is anticipated.
- 4” plastic gas main running east along the north side of Lindell from a valve at Sta. 18+93, 35’ LT.
  - No impact to this main is anticipated.
- 20” steel gas main running along the south side of Lindell from the southeast quadrant of Union and Lindell and continuing east through the eastern project limits.
  - No impact to this main is anticipated.
- 12” steel main running east-west along the south side of Lindell from just east of the existing bridge to the eastern project limits.
  - No impact to these facilities is anticipated.
- A Regulator Station and associated appurtenances are currently being constructed on the south side of Lindell east of Union. The existing regulator station will be abandoned. This work was ongoing as of the time this JSP was submitted.
  - This relocation was not triggered by the Union/Lindell Bridge project, but Spire coordinated with this design team when planning the location of these facilities.
    - No impact is anticipated once constructed and in operation.
    - As of October 2026, this relocation and abandonment project is in progress.
    - Contractor should contact Spire directly to determine status of relocation and abandonment of existing facilities prior to excavation in this area.

Forest Park Parkway Connector

- 8” plastic main running southeast along the southeast side of the existing ramp to FPP from the south side of Union to the south side of Forest Park Parkway.
  - Cut for proposed Connector Road and associated improvements (e.g., guardrail) will impact main between Sta. 21+05, 1’ LT and Sta. 22+95, 44’ RT.
    - As of October 2026, Spire is actively working on their Relocation Plan and it is at the 60% stage.
      - If possible, the final relocation plan will be provided to the Construction Contractor prior to the start of construction.
      - Contractor should coordinate directly with Spire to determine the schedule and status of this relocation and the existing facilities.
- 20” steel main running southeast along the southeast side of the existing ramp to FPP from the south side of Union to the south side of Forest Park Parkway.
  - Cut for proposed Connector Road and associated improvements (e.g., guardrail) will impact main between Sta. 21+14, 1’ LT and Sta. 22+66, 36’ RT.
    - As of October 2026, Spire is actively working on their Relocation Plan and it is at the 60% stage.
      - If possible, the final relocation plan will be provided to the Construction Contractor prior to the start of construction.
      - Contractor should coordinate directly with Spire to determine the schedule and status of this relocation and the existing facilities.

Forest Park Parkway & MetroLink ROW

- 8" plastic main crossing Forest Park Parkway from the east side of the existing ramp from Union and continuing north under the Metro ROW to Lindell.
    - No impact to this main is anticipated within the FPP alignment.
- 20" steel main crossing Forest Park Parkway from the east side of the existing ramp from Union and continuing north under the Metro ROW to Lindell.
    - No impact to this main is anticipated within the FPP alignment.

Spire has at-grade access points for its facilities at various locations throughout the project. Some of these access points may need to be adjusted to new grades. In addition, Spire has services for properties at various locations throughout the project. These lines may be impacted by proposed improvements. The contractor shall coordinate directly with Spire for any necessary adjustments required for the project. Spire's representatives for this will be as follows:

- Brian Langenbacher (ph: 314.713.6572, email: brian.langenbacher@spireenergy.com)
- Nick Eggert (ph. (314) 330-5720, email: Nicholas.eggert@SpireEnergy.com)

The contractor shall contact Spire a minimum of 4 weeks ahead of need for adjustment. The contractor shall coordinate with Spire as necessary and take measures to protect in place their existing facilities during construction.

The contractor shall contact Spire Energy directly to verify location of facilities.

The Commission cannot warrant the information above which was provided by Spire Energy.

11.0 WASHINGTON UNIVERSITY

Washington University has the following existing facilities within the project limits:

Union

- Buried facilities running east-west under Union south of the existing bridge and crossing the centerline of Union at Sta. 12+82. This FO continues south into the proposed Connector. See Connector for more details on this facility.
    - Washington University relocated this facility throughout the project limits as part of their overall relocation plan.
    - These facilities were abandoned in place and no additional impacts are anticipated.
        - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities.
- Handhole at Sta. 12+95, 87' LT was abandoned by Wash U as part of the overall relocation for the project.
    - Contractor to remove these facilities as part of the removals process for the project.
        - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities prior to removal.
- Buried facilities exiting from a handhole at Sta. 12+97, 50' RT and running east-west under Union south of the existing bridge and crossing the centerline of Union at Sta. 13+03. This

FO continues south into the proposed Connector. See Connector for more details on this facility.
    - Washington University has relocated these facilities as part of the overall relocation for the project.
    - These facilities were abandoned in place and no additional impacts are anticipated.
        - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities.
- Handhole at Sta. 12+97, 50' RT falls in the proposed sidewalk. This handhole was abandoned by Wash U as part of the overall relocation for the project.
    - Contractor to remove these facilities as part of the removals process for the project.
        - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities.
- Buried facilities running east-west and crossing the centerline of Union at Sta. 14+18, south of the Cabanne House. These facilities cross the proposed 12" RCP pipe at Sta. 14+18, 5' LT. The cables continue east just south of the slope limits for the project throughout the eastern limits.
    - These facilities were relocated for this project with the guidance of the project team.
    - No impact to these facilities is anticipated, but Washington University has requested that the Contractor contact the Wash U Representative shown below two weeks prior to installation of the 12" RCP at this location so a Wash U can be present to monitor the installation of the pipe.

Wash U Representative: Carl Vandeloo,
Telephone: 314-550-7152
Email: cvandeloo@wustl.com

Lindell Blvd

- Handhole at Sta. 9+97, 38' RT falls in the proposed Shared Use Path on the south side of Lindell.
    - Washington University installed a relocated handhole outside of the slope limits just south of this location and this existing handhole was abandoned.
        - Contractor to remove these facilities as part of the removals process for the project.
            - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities.
- Buried facilities west of the existing bridge running north-south along the east side of the ramp from Forest Park Parkway to Lindell. These facilities cross the centerline of Lindell at 11+76. This facility turns and runs east after crossing Lindell and runs east-west along the south side of Lindell to the west side of the proposed bridge.
    - Facility falls under the proposed multi-use trail and within the excavation limits for the proposed bridge.
        - Washington University relocated this facility as part of the overall relocation for the project. No additional impacts are anticipated.
- Buried facilities running east-west along the south side of Lindell from the western project limits to a handhole on the west side of the existing bridge.

  - Washington University relocated these buried facilities as part of their overall relocation for the project.
  - These facilities were abandoned in place and no additional impacts are anticipated.
    - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities.
- Handhole at Sta. 13+04, 40' RT on the west side of the existing bridge falls in the grading limits for the proposed bridge.
  - Washington University relocated the associated buried facilities as part of their overall relocation for the project.
  - These facilities were abandoned in place.
    - Contractor to remove these facilities as part of the removals process for the project.
    - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities prior to removal.
- Handhole at Sta. 13+43, 83' RT falls at the edge of the excavation limits for the project.
  - No impact to this facility is anticipated.

Forest Park Parkway Connector

- Buried facilities running along the north side of the existing ramp from Union to eastbound FPP to the south side of Forest Park Parkway.
  - Proposed cut and improvements (e.g. guardrail) impact buried facilities between Sta. 22+50, 20' LT and Sta.22+95, 45' RT
    - Washington University relocated these facilities as part of their overall relocation plan.
      - These facilities were abandoned in place and no additional impacts are anticipated.
        - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities.
- Buried facilities running along the south side of the existing ramp from Union to eastbound FPP to the south side of Forest Park Parkway.
  - Proposed cut and improvements (e.g. guardrail and drainage) impact buried facilities between Sta. 22+72, 20' LT and Sta. 23+08, 56' RT.
    - Washington University relocated these facilities as part of their overall relocation plan.
      - These facilities were abandoned in place and no additional impacts are anticipated.
        - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities.
- Handhole at Sta. 20+54, 112' LT [Union alignment Sta. 12+95, 87' LT] falls within slope limits for the project.
  - This facility was abandoned by Wash U as part of the overall relocation for the project.
    - Contractor to remove these facilities as part of the removals process for the project.

- Contractor to coordinate with Wash U (contact info below) to confirm status of facilities prior to removal.

Forest Park Parkway & MetroLink ROW

- Two separate fiber optic runs along the south side of Forest Park Parkway between the existing ramp from Union to eastbound FFP and continuing east through the eastern project limits.
    - Washington University relocated these facilities as part of their overall relocation plan.
        - These facilities were abandoned in place and no additional impacts are anticipated.
            - Contractor to coordinate with Wash U (contact info below) to confirm status of facilities.

Washington University has at-grade access points for its facilities at various locations throughout the project. Some of these access points may need to be adjusted to new grades. The contractor shall coordinate directly with Washington University for these adjustments. Washington University's representative for this will be as follows:

- Carl Vandeloo (ph: 314-550-7152; email: cvandeloo@wustl.com)

The contractor shall coordinate with Washington University as necessary and take measures to protect in place their existing facilities during construction.

The contractor shall directly contact Washington University to verify the locations of their facilities.

The Commission cannot warrant the information above which was provided by Washington University.

13.0 Existing Utility Facilities Located in Close Proximity to Proposed Work

The contractor is advised there are existing utility facilities located in close proximity to proposed work. The contractor may need to use shoring to avoid conflicts with utility facilities. The contractor is advised that the cost for this shoring is incidental. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials or time required to fulfill the above provision.

14.0 Utility Coordination by Contractor and any Necessary Potholing of Utility Facilities

Utility Companies with utility adjustments advised they anticipate completing their relocation work during construction in coordination with the contractor. The contractor shall take an active role in verifying that the utility work is complete. The contractor shall directly contact each utility company about the status of their relocation work. The contractor shall submit/coordinate one call tickets early enough at specific locations of planned work to verify everything is marked and if there are questions about old and relocated facilities, so the issues can be addressed in field by utility locators in a timely manner.

The contractor shall also pothole any necessary buried utility facilities in the project limits to verify the buried facilities are deep enough for the roadway improvements and not damage the utility facility. Any utilities determined to be in conflict or that appear to be in conflict with construction shall be brought to the attention of the Engineer immediately. The Engineer shall determine course of action to remedy the situation. It may be necessary to shallow up rock lining, rock blanket or shift pipe installation to avoid a utility relocation.

No direct payment will be made to the contractor to recover the cost of equipment, labor, materials or time required to fulfill the above provision.

O. CONTRACTOR – UTILITY COORDINATION

1.0 Description. There are many utility relocations in the job limits located in close proximity to the contractor's work. The contractor shall take an active role on this project in managing the utility conflicts relocation of that interferes with progress of this project. When utility relocations slow or halt progress in one area of the project, the contractor shall assist with any removal of improvements, traffic control, etc. that could help expedite the relocation. If work on one area slows, or is halted, due to a utility conflict, the contractor shall revise the work plan and traffic plan to keep the project moving. Each week any utility relocation is slowing or halting work in one area of the project, the contractor shall send an e-mail notice to the engineer and the utility company describing the exact nature of the conflict. This e-mail notice shall be provided weekly to both parties until the relocation issue is resolved. The contractor shall also hold utility relocation meetings weekly to manage and help coordinate any utility relocation issues on the jobsite if any utility work is in conflict with construction or appears to conflict with proposed construction activities. The engineer, the utility, the subcontractors, BPS, SLDC and other interested parties shall all be invited to attend. The contractor shall take minutes and provide these minutes by e-mail to engineer and utility within a week of the meeting. The contractor shall take every step possible to help manage and expedite any utility relocations. The contractors schedule shall be updated to include all utility relocation schedules as provided by utilities on a monthly basis with copies provided to the engineer and any utility companies upon request. The contractor shall work closely with the utilities to minimize any impact on the overall schedule. The contractor shall be required to remove existing improvements, clear the right of way of trees, or complete partial grading for work in subsequent stages or phases in order to allow utility adjustment work to proceed. There will be no direct pay for this work.

2.0 Basis of Payment. All labor, equipment, materials and effort required to keep the utility coordination progress moving forward.

Pay Item Number	Description	Unit
902-99.01	Contractor Utility Coordination	Lump Sum

P. WINTER MONTHS REQUIREMENTS JSP-15-07A

1.0 Description. This project contains work which spans the winter months.

2.0 Work to be Completed. When the contractor ceases operations for the winter months, any paving operation performed by the contractor shall not result in a lane height differential between adjacent lanes.

3.0 Maintenance of Pavement Marking. Prior to ceasing operations for winter months, a permanent or temporary stripe shall be provided on any completed length to the point that the original stripe was obliterated or obscured by the contractor's operation. Temporary striped areas shall be re-striped with the remaining route upon performance of the final striping.

4.0 Winter Related Maintenance Activities. The contractor shall have the project in a condition as not to interfere with the plowing of snow. The contractor shall also provide a taper at the end of his paving that will not be damaged by the plowing of snow.

5.0 Basis of Payment. There will be no direct pay for compliance with this provision.

Q. WORK HOUR RESTRICTIONS – FOREST PARK VENUES AND EVENTS

1.0 Description. Union Boulevard and Lindell Boulevard will be closed to through traffic approximately 200 feet from the intersection in all directions for the duration of bridge reconstruction. Because this closure eliminates a primary access route to Forest Park and its institutions, the Contractor shall take all necessary measures to ensure that signed detour routes remain clear, functional, and free of construction-related obstructions at all times. Except for emergency work, the Contractor shall observe the following additional work restrictions on designated detour routes and within the project limits to minimize impacts to Forest Park venues and events:

1.1 The Muny (Municipal Theatre). During the Muny's annual performance season, the Contractor shall not perform construction work on designated detour routes that would further restrict vehicular or pedestrian access to Forest Park during performance hours. Performance hours are generally 7:00 PM through 11:30 PM, with the Contractor ceasing any traffic-impacting operations on detour routes no later than 4:00 PM on performance days to allow for pre-show traffic and parking. The Contractor shall ensure that all detour signage directing traffic to Forest Park and the Muny is visible, legible, and properly maintained throughout the performance season.

Mid-June 2027 through Mid-August 2027 — Muny Season
Mid-June 2028 through Mid-August 2028 — Muny Season

1.2 St. Louis Zoo, Missouri History Museum, and Forest Park Attractions. During weekends and City-recognized holidays from March through October, the Contractor shall not perform work on designated detour routes that would further restrict traffic flow between the hours of 8:00 AM and 6:00 PM without prior written approval from the Engineer. The St. Louis Zoo, Missouri History Museum, and other Forest Park attractions generate significant vehicular and pedestrian traffic that will be rerouted due to the intersection closure. The Contractor shall keep all detour routes and alternate access points to Forest Park clear of equipment, materials, and construction debris during these periods.

1.3 Major Forest Park Events. The Contractor shall not perform work on detour routes or within the project limits that further restricts traffic movement or pedestrian access during major Forest Park events including, but not limited to, the Great Forest Park Balloon Race, Shakespeare Festival, St. Louis Symphony outdoor concerts, and other special events as identified by the Engineer. The Engineer will provide the Contractor with a schedule of known major events no less than 30 days in advance. The Contractor shall plan work operations to avoid conflicts with

these events and shall ensure that detour signage is supplemented as needed for event-specific traffic patterns.

1.4 Barnes-Jewish Hospital / Washington University Medical Center. The Contractor shall maintain unimpeded emergency vehicle access to and from the Barnes-Jewish Hospital and Washington University Medical Center complex at all times. The intersection closure shall not impede emergency vehicle response times. The Contractor shall coordinate with local emergency services to establish and maintain alternate emergency vehicle routes for the duration of construction. No construction activity shall block or delay designated emergency vehicle detour routes along Forest Park Parkway or adjacent streets without an approved traffic control plan that provides for immediate clearance of emergency vehicles.

1.5 Pedestrian Access and Wayfinding. Throughout the duration of the intersection closure, the Contractor shall maintain a continuous, accessible pedestrian route providing connectivity to Forest Park. Pedestrian detour routes shall be signed, well-lit, ADA-accessible, and shall provide a reasonably direct path to Forest Park entry points. The Contractor shall coordinate with the Engineer, BPS, and Forest Park Forever to ensure pedestrian wayfinding signage is adequate and updated as construction phases progress.

These dates and restrictions may be revised by the Engineer in the event that venue schedules, event dates, or playing seasons are changed for any reason (such as extended runs, playoffs, or rescheduled events).

The intent of this Job Special Provision is to minimize the impacts of the Union Boulevard and Lindell Boulevard intersection closure on Forest Park and its institutions. While through traffic at the intersection will be closed for the duration of bridge reconstruction, designated detour routes shall remain free and clear of additional construction obstacles, and adequate parking capacity, pedestrian connectivity, and vehicular access to Forest Park shall be maintained at all times via alternate routes. The Contractor may perform work during restricted periods, with prior written approval from the Engineer, if that work does not further inhibit access to Forest Park venues and events.

2.0 Method of Measurement. No measurement shall be made to satisfy this provision.

3.0 Basis of Payment. No payment shall be made to satisfy this provision.

R. SAWCUTS

1.0 Description. Sawcuts will be required for removal of any pavement, driveways, paved approaches, shoulder, median, curb, curb and gutter, sidewalk, curb ramp, drainage structures or other items adjacent to the pavement, shoulder, median, curb, curb and gutter, sidewalk or other item to remain in place or for permanent construction.

2.0 Basis of Payment. All sawcuts required on this job shall be completely covered by the contract unit price for Pay Item No. 202-20.10, Removal of Improvements, per lump sum. All sawcuts required will be included in the contract unit price for item 202-20.10, Removal of Improvements, per lump sum. No additional compensation will be made to the contractor for any additional sawcuts required.

S. PAYMENT OF EARTHWORK AND GRADING

Roadway earthwork and grading for this project will be paid for under the following pay items, each measured and paid for per cubic yard (CUYD):

203-10.00	Class A Excavation
203-50.00	Unclassified Excavation
203-55.00	Embankment in Place
203-60.00	Compacting Embankment

Excess dirt remaining after construction shall be hauled off at the Contractor's expense.

T. ADA COMPLIANCE AND FINAL ACCEPTANCE OF CONSTRUCTED FACILITIES LPA-15-07B

1.0 Description. The contractor shall comply with all laws pertaining to the Americans with Disabilities Act (ADA) during construction of pedestrian facilities on public rights of way for this project. An ADA Checklist is provided herein to be utilized by the contractor for verifying compliance with the ADA law. The contractor is expected to familiarize himself with the plans involving pedestrian facilities and the ADA Post Construction Checklist prior to performing the work.

2.0 ADA Checklist. The contractor can locate the ADA Checklist form on the Missouri Department of Transportation website:

www.modot.org/business/contractor_resources/forms.htm

2.1 The ADA Checklist is not to be considered all-inclusive, nor does it supersede any other contract requirements. The ADA checklist is a required guide for the contractor to use during the construction of the pedestrian facilities and a basis for the City's acceptance of work. Prior to work being performed, the contractor shall bring to the engineer's attention any planned work that is in conflict with the design or with the requirement shown in the checklist. This notification shall be made in writing. Situations may arise where the checklist may not fully address all requirements needed to construct a facility to the full requirements of current ADA law. In those situations, the contractor shall propose a solution to the engineer that is compliant with current ADA law using the following hierarchy of resources: 2010 ADA Standards for Accessible Design, Draft Public Rights of Way Accessibility Guidelines (PROWAG) dated November 23, 2005, MoDOT's Engineering Policy Guidelines (EPG), or a solution approved by the U.S. Access Board.
2.2 It is encouraged that the contractor monitor the completed sections of the newly constructed pedestrian facilities in attempts to minimize negative impacts that his equipment, subcontractors or general public may have on the work. Completed facilities must comply with the requirements of ADA and the ADA Checklist or have documented reasons for the non-compliant items to remain.

3.0 Coordination of Construction.

3.1 Prior to construction and/or closure on an existing pedestrian path of travel, the contractor shall submit a schedule of work to be constructed, which includes location of work performed, the duration of time the contractor expects to impact the facility and an accessible signed pedestrian detour compliant with MUTCD Section 6D that will be used during each stage of construction. This plan shall be submitted to the engineer for review and approval at or prior to

the pre-construction conference. Accessible signed detours shall be in place prior to any work being performed that has the effect of closing an existing pedestrian travel way.

3.2 When consultant survey is included in the contract, the contractor shall use their survey crews to verify that the intended design can be constructed to the full requirements as established in the 2010 ADA Standards. When 2010 ADA Standards do not give sufficient information to construct the contract work, the contractor shall refer to the PROWAG.

3.3 When consultant survey is not included in the contract, the contractor shall coordinate with the engineer, prior to construction, to determine if additional survey will be required to confirm the designs constructability.

4.0 Final Acceptance of Work. The contractor shall provide the completed ADA Checklist to the engineer at the semi-final inspection. ADA improvements require final inspection and compliance with the ADA requirements and the ADA Checklist. Each item listed in the checklist must receive either a "YES" or an "N/A" score. Any item receiving a "NO" will be deemed non-compliant and shall be corrected at the contractor's expense unless deemed otherwise by the engineer. Documentation must be provided about the location of any non-compliant items that are allowed to remain at the end of the construction project. Specific details of the non-compliant items, the ADA requirement that the work was not able to comply with, and the specific reasons that justify the exception are to be included with the completed ADA Checklist provided to the engineer.

4.1 Slope and grade measurements shall be made using a properly calibrated, 2 foot long, electronic digital level approved by the engineer.

5.0 Basis of Payment. The contractor will receive full pay of the contract unit cost for all sidewalk, ramp, curb ramp, median, island, approach work, cross walk striping, APS buttons, pedestrian heads, detectible warning systems and temporary traffic control measures that are completed during the current estimate period as approved by the engineer. Based upon completion of the ADA Checklist, the contractor shall complete any necessary adjustments to items deemed non-compliant as directed by the engineer.

5.1 No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract documents.

U. ADA RAMPS – APPROVAL FROM INSPECTOR

1.0 Description. The Contractor shall notify the Construction Inspector (CI) prior to forming any and all ADA curb ramps on the project. The Contractor shall not begin pouring concrete for the curb ramps until the CI has inspected the formwork for ADA compliance, approved the grades in the field book, and confirmed the curb height transitions and ramps/landings/transition panel layout to the Intersection Detail (ID) sheets of the plans.

2.0 Method of Measurement. No measurement shall be made to satisfy this provision.

3.0 Basis of Payment. No payment shall be made to satisfy this provision.

V. BUS SERVICE

1.0 The Contractor shall be aware that Metro Bus Service operates several routes along Union Boulevard and Lindell Boulevard through the project corridor. Because Union Boulevard and Lindell Boulevard will be closed to through traffic approximately 200 feet from the intersection for the duration of bridge reconstruction, bus routes serving this corridor will require temporary rerouting. The Contractor shall coordinate with Metro Transit (Bi-State Development Agency) and the Engineer a minimum of 30 days prior to any closure that affects existing bus routes to allow Metro adequate time to implement service changes and notify riders.

1.1 The Contractor shall maintain pedestrian access to each active bus stop within and adjacent to the project limits at all times, unless an alternate stop location has been approved by the Engineer and Metro. Where bus stops must be temporarily relocated due to the intersection closure or construction staging, the Contractor shall coordinate with Metro to ensure relocated stops are positioned on safe, accessible surfaces with ADA-compliant pedestrian connections. All active bus stop signs, shelters, and amenities shall remain visible and accessible at all times during construction. Where bus stops are relocated, temporary signage directing riders to the alternate stop shall be provided by the Contractor in coordination with Metro.

1.2 Should any existing bus stop signs, posts, shelters, or amenities be damaged by the Contractor's negligence, they shall be replaced at the Contractor's expense. The Contractor shall not stage equipment, store materials, or obstruct any active bus stop, whether permanent or temporarily relocated, without prior written approval from the Engineer and Metro.

1.3 The Contractor shall contact Roderick Thomas of Metro at 314-923-3000 (office), 314-280-3622 (mobile), or rhthomas@metrostlouis.org regarding the requirements of this section and to coordinate all bus route modifications, stop relocations, and service impacts.

2.0 No direct payment will be made to the Contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract documents.

W. PARKED VEHICLES

1.0 Description. Along certain portions of the project, on-street parking is permitted. It will be necessary for the contractor to coordinate with the police department in the area along with the City Streets Department to arrange for proper posting of temporary "No Parking" signs, and for any required towing of vehicles to allow the project to be completed in a sequential manner.

The Contractor shall take all necessary precautions for the protection of any parked vehicles contiguous to the work.

The Contractor shall be responsible for the damage or destruction of the parked cars of any character resulting from neglect, misconduct, or omission in his/her manner or method of execution or nonexecution of the work, or caused by defective work or the use of unsatisfactory materials or equipment, and such responsibility shall not be released until the work has been completed and accepted and the requirements of the Specifications complied with.

Whenever parked vehicles are so damaged or destroyed, the Contractor shall, at no additional cost to the City, restore such vehicle to a condition equal to that existing before such damage or

injury was done by repairing, rebuilding, or replacing it as may be directed, or the Contractor shall otherwise make good such damage or destruction in an acceptable manner. If the Contractor fails to do so, the Engineer may, after the expiration of a period of 48 hours after giving the Contractor notice in writing, proceed to repair, rebuild, or otherwise restore such vehicle as may be deemed necessary, and the cost thereof will be deducted from any compensation due, or which may become due, the Contractor under this or any other contract between the City and the Contractor.

2.0 Basis of Payment. No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless specified elsewhere in the contract documents.

X. PROPERTY OWNER NOTIFICATION

1.0 Description. It shall be the contractor's responsibility to inform and notify the adjacent property owner 48 hours prior to starting any construction activities that may impact driveway and parking lot access or occur along the frontage of the property owner's parcel. Notification shall be in written form and include the contractor's contact information, the Engineer's contact information, and an estimated schedule of work and the associated impacts.

2.0 Basis of Payment. No direct payment will be made to the contractor for the labor, equipment, material, or time required to comply with this provision.

Y. ACCESS TO COMMERCIAL AND PRIVATE ENTRANCES

1.0 Description. While working on entrances or adjacent properties, the contractor shall make every reasonable effort to minimize any interference to the properties and to complete the work diligently. Under no circumstances shall the contractor block ingress/egress to and from businesses during the normal business hours of each business unless as approved by the property owner and engineer.

2.0 Construction Requirements. On all commercial entrances the contractor shall keep one-half of the entrance open at all times. On commercial entrances less than 20' wide it may be necessary for the contractor to provide temporary aggregate to provide access to the property. The contractor shall remove and dispose of the temporary aggregate following completion of the entrance. For properties with more than one entrance the contractor may construct one entire entrance at a time with the approval of the property owner and the engineer.

On all private (including residential) entrances, the contractor shall notify the owner 48 hours prior to the removal and replacement work being performed (see PROPERTY OWNER NOTIFICATION JSP), stating the Contractor's intent to perform work, when the entrance is expected to be closed, and when the entrance is anticipated to be drivable.

2.1 The contractor shall complete the entrances as quickly as possible and shall take no longer than 2 week to complete any one commercial entrance, so long as one half of the entrance is usable at any given time. For private (including residential) entrances which are too narrow to separate into two pours, or where temporary access is not feasible due to fencing or other physical constraints, the contractor shall take no longer than 48 hours for this work at a given entrance. All

entrances are High-Early Strength concrete for this reason.

3.0 Property Owner Agreements. Agreements made with property owners during the negotiations
of easements and rights of way listed in other special provisions, if any, shall be adhered to and shall supersede the requirements in the Access to Commercial and Private Entrances special provision. All pedestrian access to commercial and private shall follow the requirements set forth in the Liquidated Damages for Pedestrian Impacts special provision, which requires a 3-foot minimum path to be maintained leading to any use-in-place walkways that are used for access.

4.0 Basis of Payment. No direct payment will be made to the contractor for any expenses incurred for compliance with this provision.

Z. ELECTRONIC INFORMATION FOR BIDDER'S AUTOMATION

1.0 Description. Electronic information, consisting of survey and design information including but not limited to cross-section models, alignment data, and plan view geometry, does not constitute part of the bid or contract documents. This electronic information shall be distributed with the cross-sections or upon the contractor's request. This information, used for project design and quantity estimation purposes, is provided for the bidder's use in automation of bid estimating, grading and contractor staking if provided in the contract. This information shall not be considered a representation of actual conditions to be encountered during construction. Furnishing this information does not relieve a bidder or contractor from the responsibility of making an investigation of conditions to be encountered including, but not limited to site visits, and basing the bid on information obtained from these investigations, and the professional interpretations and judgment of the bidder or contractor. The bidder or contractor shall assume the risk of error if the information is used for any purposes for which the information was not intended. The City makes no representation as to the accuracy or reliability of the information, since the information may not be representative of the sealed contract documents. Any assumptions the bidder or contractor may make from this electronic information is at the bidder or contractor's risk; none are intended by the City. The bidder or contractor assumes the sole risk of liability or loss if the bidder or contractor does rely on this electronic information to its detriment, delay or loss.

2.0 Basis of Payment. There will be no direct payment made to the contractor for complying with this provision.

AA. FIELD VERIFICATION

1.0 Description. Plan details for this contract work are based upon available plans, marked utilities and field surveys performed in conjunction with plan preparation for this proposed work. No warranty is made on either the accuracy or completeness of these available documents. It is the Contractor's (Bidder's) responsibility to assess the actual field conditions and verify the location of all utilities and verify whichever dimensions are required for the performance of the work.

2.0 Basis of Payment. There will be no direct payment made to the contractor for complying with this provision.

BB. LOCATION OF EXISTING EDGE OF PAVEMENT

1.0 Description. It shall be the contractor's responsibility to accurately determine the location of the existing edge of pavement at locations where it is necessary to make saw cuts to construct new paved approaches, curbs, and curb ramps. No compensation shall be made for any expenses directly or indirectly incurred, resulting from the contractor's failure to accurately locate the pavement edge.

2.0 Basis of Payment. There will be no direct payment made to the contractor for complying with this provision.

CC. CAST IRON TRUNCATED DOMES

1.0 Description. This work shall consist of furnishing and installing precast cast iron truncated domes, as located in the plans and quantity schedules, in compliance with Section 4.29 of the ADA Accessibility Guidelines and Section 705 of the 2010 ADA Standards for Accessible Design.

2.0 Materials. Truncated dome detectable warning panels shall be a precast cast gray iron conforming to ASTM A-48 class 30A minimum. The coefficient of friction on the detectable warning panel shall be measured at 0.9.

3.0 Truncated Dome Pattern and Dimensions. Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inches (23 mm) minimum and 1.4 inches (36 mm) maximum, a top diameter of 50 percent of the base diameter minimum, to 65 percent on the base diameter maximum, and a height of 0.2 inches (5.1 mm). Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches (41 mm) minimum and 2.4 inches (61 mm) maximum, and a base-to-base spacing of 0.65 inches (17 mm) minimum, measured between the most adjacent domes on a square grid.

4.0 Color Contrast. No paint or surface cover will be placed on the cast iron's detectable warning surface.

5.0 Construction Requirements. The construction requirements shall conform to the manufacturer's requirements and recommendations.

6.0 Method of Measurement. The measurement of Cast Iron Truncated Domes will be measured to the nearest square foot in place.

7.0 Basis of Payment. The contract unit price shall be considered as full compensation for all labor, equipment, materials and other construction involved to complete the work. The following is the Pay Item Number:
608-99.04, Cast Iron Truncated Domes, per Square Foot.

DD. POTHOLING UTILITY FACILITIES

1.0 Description. The contractor is advised that utility companies in the project limits will not "pothole" their underground utility facilities for the contractor on this project. The contractor shall be responsible to "pothole" any existing utilities under the pavement or outside the pavement for all the contractor's needs to construct work associated with the project. Core drilling pavement prior to pot holing may be necessary.

2.0 Basis of Payment. All labor, equipment, materials and restoration necessary to pothole buried utilities shall be paid for under:

Pay Item Number	Description	Unit
902-99.01	Utility Potholing	Lump Sum

EE. CONTRACTOR VERIFICATION OF SIGNAL, LIGHT BASE LOCATIONS & DRAINAGE STRUCTURES/STORM PIPES

1.0 Description. The Contractor shall field verify that the proposed traffic signal and Light base locations will not need to be shifted to avoid utilities prior to ordering the traffic signal equipment. The Contractor shall also field verify that the proposed drainage pipe and manhole locations will not need to be shifted to avoid utilities prior to ordering the drainage items. The Contractor shall be proactive in the discovery of potential utility conflicts. The Contractor shall submit One Call tickets where existing utilities are located in close proximity to proposed signal base locations and proposed drainage items and coordinate with the utility company and the Engineer to determine if a conflict will be encountered due to the work proposed in the contract. If a conflict is anticipated, the Contractor shall perform test holes to field verify no conflicts exist with proposed traffic signal base locations or proposed storm work.

If a conflict is determined, the Contractor shall shift the signal base location, as approved by the Engineer and/or have the drainage designed revisited by the Engineer. The Contractor shall coordinate construction activities with the utilities and take measures to ensure the integrity of the existing facilities are not disturbed during construction. The contractor will be compensated for the additional mast arm length if required. The Contractor shall not order materials until measurements are field verified.

2.0 Basis of Payment. All labor, equipment, materials and restoration necessary to pot hole buried utilities at proposed signal base locations shall be paid for under:

Pay Item Number	Description	Unit
902-99.01	Utility Potholing	Lump Sum

FF. GENERAL CITY PERMITS

1.0 Description. The contractor shall be responsible to secure required permits to construct the project. These permits include a street blocking permit, an excavation permit and a sidewalk permit. All permits are issued by the City Streets Department and must be issued prior to the contractor starting any work. The contractor performing the work will be issued the permit and shall comply with all requirements of the permit.

2.0 Basis of Payment. All work necessary for compliance with this provision will be considered incidental to the project. No direct payment will be made for compliance with this provision.

GG. CONTRACTOR FURNISHED SURVEYING AND STAKING FOR UTILITIES

1.0 The Contractor shall provide the necessary surveying and staking for all the utility companies to relocate their services for this project as listed in the special provision UTILITIES. All work associated shall comply with Section 627 CONTRACTOR SURVEYING AND STAKING in the standard specifications.

2.0 No direct payment will be made for this item and shall be considered incidental to CONTRACTOR FURNISHED SURVEYING AND STAKING.

HH. HAULING OVER CITY STREETS

City streets over which hauling is performed shall be kept reasonably clean of spilled or tracked-on materials at all times and shall be thoroughly cleaned of such materials daily, within one (1) hour after the suspension of hauling operations if said street is used by the traveling public.

The Contractor will be required to secure from the proper City Authority permits which may be required to haul over city streets, and any hauling operation shall be subject to the requirements of such permits and to any applicable City regulations and ordinances governing hauling and the movement of equipment over said city streets.

The Contractor will be expected to maintain these streets open to traffic at all times during the work under this Contract. During certain phases of the Contractor's work, during periods of equipment repositioning, or when certain operations are in progress that cannot be safely accomplished under traffic, and with prior approval of the President, the vehicular traffic may be temporarily halted for short intervals. During all legal holiday periods listed in Article 101 of the Missouri Standard Specifications and during peak traffic hours defined as being from 5:00 a.m. to 7:00 p.m., such temporary closures shall not exceed twenty (20) minutes in duration.

Traffic closure intervals greater than twenty (20) minutes during off-peak may be considered. All temporary traffic closures shall require prior approval by the President from the Contractor.

Requests for approval must be submitted at least seven (7) days prior to each closure. The Contractor shall allow traffic to clear and run freely for thirty (30) minutes or as otherwise directed by the President before affecting another such temporary stoppage.

The Contractor must be aware that emergency vehicles may be required to pass during such interruptions, and the Contractor shall be in a position to allow passage to such emergency vehicles.

During temporary halting of traffic for short intervals, and in accordance with the details on the Traffic Control Plans, the Contractor shall conform to the following requirements:

1. Flaggers will be required at each temporary closure.

2. Advance warning signs, such as FLAGMEN AHEAD, and ROAD CONSTRUCTION AHEAD shall be positioned in accordance with the traffic control plans.

3. The Contractor shall be responsible for maintaining the roadway surface on these streets.

4. Except during working hours, the Contractor shall not park vehicles or store equipment or

materials closer than thirty (30) feet to the edge of pavement carrying traffic, unless the equipment, vehicles, or materials are located in a properly protected area or an off-site storage area or as otherwise directed by the Engineer. All signing and pavement marking shall be returned to their pre-construction condition during non-working hours.

No direct payment will be made for any expense incurred by the Contractor by reason of his compliance with any of the above requirements except for the items that have been included in the Contract as a pay item.

II. STORM WATER POLLUTION PREVENTION PLAN

1.0 Description. This work shall consist of furnishing all materials necessary to design, implement, maintain, and complete the Stormwater Pollution Prevention Plan (SWPPP). Maintenance of the SWPPP includes adjustments to the SWPPP deemed necessary by the Engineer and any adjustments necessary to control and prevent stormwater pollution due to activities related to the Project.

2.0 Material.

2.1 Apply for and obtain land disturbance permits from all necessary agencies, including the Missouri Department of Natural Resources.

2.2 All material shall be in accordance with Division 1000, Material Details and the latest edition of the Model Best Management Practices for Land Disturbance: Sediment and Erosion Control (BMP Manual), as published by the St. Louis County Department of Highways and Traffic. In the event of conflict, the BMP Manual shall govern.

3.0 Construction Requirements.

3.1 The SWPPP shall meet all applicable requirements of the BMP Manual and Section 806 of the Standard Specifications. In the event of conflict, the BMP Manual shall govern.

3.2 Design, install, and maintain the SWPPP and BMPs during construction as necessary to control and prevent pollution of stormwater. Adjust the SWPPP as directed by the Engineer and as necessary to prevent stormwater pollution. At an appropriate time after project completion, and only after all disturbed areas are fully vegetated or otherwise permanently protected from erosion, remove SWPPP BMPs. BMPs shall be maintained by the Contractor until removal.

3.3 Contractor shall submit SWPPP to Engineer for approval one week prior to mobilization.

4.0 Method of Measurement. The work provided in accordance with this Job Special Provision will not be measured for payment but will be considered a lump sum unit.

5.0 Basis of Payment. Payment for the SWPPP will be made in partial progress payments which will total the cumulative sum of the following pay items.

806-10.06, Alternate Ditch Check, Linear Feet
806-10.07A, Curb Inlet Check, Each
806-10.16, Sediment Removal, Cubic Yards
806-10.19, Silt Fence

5.1 It will be considered full compensation for all expenses required to:

- Supplement the provided erosion control plans as needed, per Engineer;
- Obtain all necessary land disturbance, erosion control, grading, and other permits;
- Implement and maintain the SWPPP as described in this Job Special Provision; and
- Remove the stormwater BMPs at the appropriate time.

JJ. DAILY DRAINAGE DUTY

1.0 Description. On a daily basis, the contractor shall be responsible for maintaining drainage patterns that avoid the ponding of drainage water.

2.0 Basis of Payment. No direct payment will be made for any work with this JSP. Any costs associated with it including all labor, materials, equipment, and hauling shall be considered incidental to the project.

KK. EXPOSED AGGREGATE FINISHES, SIDEWALKS.

1.0 Description. This specification is to describe the unique mixture of sidewalks, exposed aggregate.

2.0 Construction Requirements. Sidewalk work for the pay item below shall be in accordance with Section 608 and any necessary information for exposed aggregate finishes shall follow City of St. Louis Standard Specification Section 321313, including the requirement for the Contractor to provide a sample panel of the exposed aggregate finish prior to installation of any exposed aggregate finishes on the project.

Pay Item: Concrete Sidewalk, 5 In. (Exposed Aggregate)
This pay item consists of 5 inch thick, ADA-compliant concrete sidewalks with an exposed aggregate finish. This does not include curb ramps, which are standard finish.

Pay Item: Concrete Sidewalk, 6 In. (Exposed Aggregate)
This pay item consists of 6 inch thick, ADA-compliant concrete sidewalks with an exposed aggregate finish. This does not include curb ramps, which are standard finish.

3.0 Method of Measurement. This work shall be measured for payment per tenth of a square yard for the pay item.

4.0 Basis of Payment. All costs for coordination, materials, equipment, samples, and labor to attain the city standard exposed aggregate finish on the specified items shown in the plans shall be included in full for the unit price cost of the pay items described in Section 2.0, paid per tenth of a square yard.

Pay Item No. 608-99.05, Concrete Sidewalk, 5 In. (Exposed Aggregate), per square yard.
Pay Item No. 608-99.16, Concrete Sidewalk, 6 In. (Exposed Aggregate), per square yard.

LL. REPLACEMENT OF DAMAGED LANDSCAPING

1.0 Description. The Contractor shall replace any landscaping hardscapes or greenscapes damaged which is not intended to be disturbed, as shown in the plan documents.

2.0 Materials. Replacement hardscapes shall match the color, size, and aesthetic as close as possible. Replacement greenspace items (shrubs, mulch, etc.) shall match the plant species and maturity, where possible, and be of equal or better quality.

3.0 No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions.

MM. VERIFICATION OF PROPOSED DRAINAGE STRUCTURE CONNECTIONS AND LOCATIONS

1.0 Description.

1.1 The contractor shall verify the sizes, locations and elevations of the existing pipes to be connected to the proposed drainage structures before ordering the proposed drainage structures in order to ensure that the existing pipes and proposed drainage structures join correctly.

1.2 The contractor shall verify the locations of all proposed and existing drainage structures (station, offset and elevation) with the proposed roadway plan geometry, proposed light bases, proposed signal bases, proposed signs, proposed landscaping/trees, and other roadside improvements prior to the installation of any and all drainage structures.

2.0 Basis of Payment. No direct payment shall be made to the contractor to fulfill the above provision. No additional compensation will be allowed for modifying proposed drainage structures because of the contractor's failure to meet this requirement.

NN. CURB INLETS

1.0 Description. This work covers the furnishing and installation of curb inlets as shown in the plans and details. See St. Louis BPS Standard Specifications for Material and Construction requirements.

2.0 Method of Measurement.

2.1 Measurement of curb inlets shall be the difference in feet from the top of the inlet stone to the lowest flowline of the inlet, subtracting 5 inches for the inlet top, regardless of basin style used (rectangular vs. circular) and shall also include pipe joints as required by MSD's Standard Construction Specifications Section H.

2.2 Contractor shall note, before ordering drainage structures, that the Culvert Section sheets on this project use ground elevation data fields and not lid elevation data fields in the table information, and that "actual" depth (i.e. from top of lid to lowest invert) can be calculated by adding the necessary height to the ground elevations shown in the Culvert Section sheets. Ground elevation in the culvert section sheets refers to the tipping point of the weir for curb opening style inlets. Contractor shall add 11 inches to ground elevation for Single Curb Inlets and

Double Curb Inlets to acquire lid elevations (6 inch opening plus 5 inch thick stone).

2.3 Inlet tops shall be paid for separately and include any necessary covers, inlet stones, inlet stone units, sills, and other incidentals required per the appropriate MSD standard drawing.

2.4 Excavation for all drainage structures is paid for separately as Class 3 Excavation. See plans for quantities.

3.0 Basis of Payment. The contract unit price shall be considered as full compensation for all labor, equipment, materials, or other construction involved to complete the work. No direct pay shall be made for reinforcement, steps, inlet sill, stone, mortar, dowels, pipe joint material, cover or other incidental items necessary to complete this work. The following is the Pay Item No. for each type of structure listed above:

Pay Item No. 614-99.02, MSD Curb Inlet, Trapped, per each.
Pay Item No. 614-99.02, MSD Double Curb Inlet, Trapped, per each.
Pay Item No. 614-99.02, MSD Curb Inlet, Top, per each.
Pay Item No. 614-99.02, MSD Double Curb Inlet, Top, per each.

OO. MANHOLES & MANHOLE LIDS/COVERS

1.0 Description. This work covers the furnishing and installation of curb inlets as shown in the plans and details. See St. Louis BPS Standard Specifications for Material and Construction requirements.

2.0 Method of Measurement.

2.1 Measurement of manholes shall be the difference in feet from the lid elevation to the lowest flowline of the manhole, subtracting 9 1/16 inches for the cast iron manhole frame (MSD Standard Detail Sheet 52).

2.2 Manhole frames and covers shall be paid for separately from the manhole itself and shall include any necessary mastic layers, mortar bed layers, or other incidentals required per the appropriate MSD standard drawing.

2.4 Excavation for all drainage structures is paid for separately as Class 3 Excavation. See plans for quantities.

3.0 Basis of Payment. The contract unit price shall be considered as full compensation for all labor, equipment, materials, or other construction involved to complete the work. No direct pay shall be made for reinforcement, steps, stone, mortar, dowels, pipe joint material, or other incidental items necessary to complete this work. The following is the Pay Item No. for each type of structure listed above:

Pay Item No. 731-99.02, MSD Manhole, per each.
Pay Item No. 731-99.02, MSD Manhole Top, per each.

PP. GRATED INLETS AND AREA INLETS

1.0 Description. This work covers the furnishing and installation of grate inlets, grate inlets with side intake, and 4-way area inlets as shown in the plans and details. See St. Louis BPS Standard Specifications for Material and Construction requirements.

2.0 Method of Measurement.

2.1 Measurement of each type of inlet shall use the following pay limits:

Area Inlet Precast Concrete

- 1 each Precast Concrete Unit for 4 Way Area Inlet (MSD Standard Detail Sheet 40)
- Precast Concrete Manhole [42/48/60] In., per foot, including any adapter rings, measured from the top of the Precast Unit (lid elevation) to the lowest flowline, subtracting 15 ¼ inches to account for thickness of the Precast Concrete Unit

2 Grate Inlet with Side Intake

- 1 each 6 Grate Inlet with Side Intake Top, which includes the seat (MSD Standard Detail Sheet 32), grates, as well as the cast iron side intake unit (MSD Standard Detail Sheet 51)
- Precast Concrete Manhole [42/48/60] In., per foot, including any adapter rings, measured from the top of the grates to the lowest flowline, subtracting 13 inches to account for the thickness of the 2 Grate Inlet with Side Intake Top.

2 Grate Inlet

- 1 each 2 Grate Inlet Seat, which includes the seat (MSD Standard Detail Sheet 35) and grates.
- Precast 2 Grate Inlet Base, per foot, including any adapter rings, subtracting 8 ½ inches for the thickness of the 2 Grate Inlet Seat.

2.2 Area inlet top units and grate inlet seats shall be paid for separately and include any necessary grates, mortar beds, mastic layers, and other incidentals required per the appropriate MSD standard drawing.

2.3 Excavation for all drainage structures is paid for separately as Class 3 Excavation. See plans for quantities.

3.0 Basis of Payment. The contract unit price shall be considered as full compensation for all labor, equipment, materials, or other construction involved to complete the work. No direct pay shall be made for reinforcement, steps, inlet sill, stone, mortar, dowels, pipe joint material, cover or other incidental items necessary to complete this work. The following is the Pay Item No. for each type of structure listed above:

Pay Item No. 731-99-02, MSD Area Inlet, Single, Trapped, per each.
Pay Item No. 731-99.02, MSD Grate Inlet W/ Side Intake, Trapped, per each.
Pay Item No. 731-99.02, MSD 2 Grate Inlet Seat, per each
Pay Item No. 731-99.02, MSD 2 Grate Inlet Seat W/ Side Intake Top, per each.

QQ. DRAINAGE STRUCTURES TO BE REMOVED AND REPLACED, OR ABANDONED

1.0 Description. Drainage structures labeled to be removed and replaced (TBR&R) may be partially reconstructed based on the recommendation of MSD's inspector. The contractor is to coordinate MSD's inspection with the Engineer of all TBR&R structures prior to fabrication or ordering materials. Structures to remain partially in place will be paid for at the contract unit cost.

RR. METROPOLITAN SEWER DISTRICT OF ST. LOUIS PERMIT (P NO. 25MSD-00352)

1.0 Description. Metropolitan St. Louis Sewer District (MSD) has issued permit 25MSD-00352 for improvements associated with this entire project. A copy of the approved plans and permit requirements are available for download at https://aca3.accela.com/STLMSD/.

2.0 The Contractor shall comply with all General Construction Permitting Requirements indicated in the approved permit to include payment of all permit fees.

3.0 No direct payment will be made to the contractor to recover the cost of equipment, labor, materials, or time required to fulfill the above provisions, unless

SS. METROPOLITAN SEWER DISTRICT OF ST. LOUIS AS-BUILT SUBMITTALS (P NO. 25MSD-00352)

1.0 Description. Metropolitan St. Louis Sewer District (MSD) requires as-built drawings of the constructed drainage facilities to be submitted for their records. The contractor shall perform all work necessary to produce and submit the final as-built drainage plans to MSD, per MSD's as-built submittal requirements. The contractor shall submit the MSD as-built drawings for MSD P No. 25MSD-00352 and subsequent revisions after all drainage structures related to the project have been constructed or adjusted.

1.1 MSD Electronic Plans Submittal Process. MSD requires that permits be submitted electronically using their new online paperless system Accela. The contractor will be required to login on to this system and upload as-builts and/or shop drawings as necessary. Additional information can be found here:

https://msdprojectclear.org/doing-business/development-review/

A direct link to the new online system can be found here:

https://aca-prod.accela.com/STLMSD/Login.aspx

In order to access the permit, the contractor will first need to call MSD in order to obtain access for the particular job mentioned above.

1.2 The contractor shall provide a copy of the as-built drainage plans to the BPS engineer at the time of the MSD submittal.

2.0 The Contractor shall comply with all General Construction Permitting Requirements indicated in the approved permit, which includes payment of all permit fees.

3.0 Basis of Payment. No direct payment will be made for compliance with this provision.

TT. PAVEMENT MARKING – BICYCLE AND PEDESTRIAN MARKINGS

1.0 Description. The contractor shall install crosswalk marking and bicycle symbols at locations shown on the plans. The contractor shall also install the various colored crosswalk markings as detailed on the plans.

2.0 Materials. The symbols and blocks shall be comprised of white, yellow, orange or green preformed thermoplastic pavement marking, and shall conform to all requirements for preformed thermoplastic pavement marking in Section 620. Sizes shall be as detailed on the plan.

3.0 Method of Measurement. Measurement will be made per each bicycle symbol or each crosswalk block.

4.0 Basis of Payment. All labor, equipment and material to complete the described work will be paid for at the contract unit price as shown below:

Pay Item Number	Description	Unit
620-99.02	Misc. Bicyclist Symbol Preformed Thermoplastic Pavement Marking, White	Each
620-99.02	24-in Crosswalk Block, White	Each
620-99.02	Misc. 12-in Crosswalk Block, Orange	Each
620-99.02	Misc. 24-in Crosswalk Block, Cycle Track	Each

UU. GREEN-COLORED PAVEMENT MARKINGS AT PEDESTRIAN/BICYCLE CONFLICT ZONES

1. Description. This work consists of furnishing and applying green-colored pavement markings at the locations shown in the Contract Plans. Green-colored pavement is used to enhance the conspicuity of conflict zones where pedestrian and bicycle movements intersect with vehicular traffic, specifically at shared-use path crossings, bicycle lane extensions through intersections, and multi-use trail crossings of the roadway.
Green-colored pavement installed under this provision supplements, and does not replace, the standard white crosswalk and lane markings shown in the plans. All standard white pavement markings shall be installed in accordance with Section 620 of the Missouri Standard Specifications for Highway Construction.

2. Project-Specific Locations. Green-colored pavement markings shall be installed at the following locations as identified in the Contract Plans. These locations represent high-conflict zones where pedestrians and bicyclists cross active travel lanes:
Intersection Union Blvd and Lindell Blvd.

3. Materials

3.1 Approved Material Types. Green-colored pavement markings shall be one of the following approved material types as shown in the Contract Plans or as approved by the Engineer:
Waterborne Paint (Acrylic Latex): Green-pigmented, water-based acrylic latex with drop-on retroreflective glass beads per MoDOT Section 620. Minimum dry film thickness: 15 mils. For use

on asphalt surfaces in conflict zones with normal traffic volumes.

3.2 Color Standard. Green color shall conform to Federal Standard 595C Color No. 14109 (Signal Green) or equivalent, and shall match the chromaticity coordinates for traffic control device green as defined in the Appendix to Subpart F of 23 CFR 655. Color samples shall be submitted to the Engineer for approval prior to ordering materials.

3.3 Retroreflectivity. Green-colored pavement markings are not required to be retroreflective per MUTCD Chapter 3H. However, glass beads shall be incorporated (intermix and drop-on) to maintain skid resistance consistency with adjacent white markings and to provide incidental retroreflectivity. Glass beads shall conform to MoDOT Section 1000.

4.0 Construction Requirements

4.1 Sequencing. Green-colored pavement markings shall be installed after all standard white and yellow pavement markings at the same location have been installed and have fully cured. Green markings shall not be applied over fresh pavement markings. A minimum 48-hour cure period is required for waterborne paint and 24 hours for thermoplastic before green markings are applied.

4.2 Surface Preparation. Pavement surfaces shall be clean, dry, and free of dirt, oil, grease, dust, and other contaminants before application. Pavement surface temperature shall be a minimum of 50°F and rising at time of application. Air temperature shall be a minimum of 50°F. Relative humidity shall not exceed 85%. No markings shall be applied when rain is imminent or when the pavement is wet, icy, or frost-covered.
On new asphalt pavement, markings shall not be applied until a minimum of 30 days after placement of the final asphalt surface, unless otherwise approved by the Engineer in writing.

4.3 Application Dimensions. Unless otherwise shown in the Contract Plans, green-colored pavement markings shall be applied as follows:
Full-coverage bicycle lane extension through intersection: Green fill shall be applied within the dotted line extensions (between dotted line segments and to the curb/edge of roadway where applicable), covering the full width of the bike lane extension for the full length of the conflict zone.
Shared-use path and trail crossings: Green fill shall cover the full width of the crossing as delineated in the plans, and shall extend a minimum of 6 feet upstream and downstream of the crosswalk lines.
Conflict zone markings: Green fill shall be applied for the full width of the bicycle facility through the conflict zone. Minimum longitudinal extent shall be as shown on the plans but not less than 10 feet. Green markings shall maintain a minimum 6-inch gap between the edge of the green fill and the adjacent white transverse or longitudinal marking lines to preserve contrast and marking legibility.

4.4 Application Method. Waterborne paint shall be applied by approved mechanical spray equipment. Hand application is not permitted unless approved by the Engineer for areas inaccessible to mechanical equipment. Two coats of waterborne paint shall be applied, with a minimum 30-minute drying time between coats.

4.5 Retroreflective Glass Beads. Drop-on glass beads shall be applied at a minimum rate of 8 lbs per 100 sq ft for waterborne paint and 6 lbs per 100 sq ft for thermoplastic, applied uniformly to the surface immediately after marking application while material is still wet/tacky. Intermix beads

shall be pre-blended in accordance with manufacturer's recommendations.

5. Measurement and Payment

5.1 Measurement. Green-colored pavement markings will be measured by the square foot (SF) of marking material applied and accepted, as shown in the Contract Plans or as directed by the Engineer. No measurement will be made for masking, surface preparation, or materials used for trial applications.

5.2 Pay Items. Green-Colored Pavement Marking, Waterborne Paint

5.3 Basis of Payment. Payment at the contract unit price per square foot shall be full compensation for all labor, materials, equipment, surface preparation, masking, glass beads, two-coat application where required, and incidental work necessary to complete the green-colored pavement markings as shown in the plans and specified herein.

VV. LOCAL ROADS PERMIT FOR WORK ON MODOT RIGHT OF WAY

This Project includes work on MoDOT ROW, therefore a MoDOT permit must be issued prior to the Contractor starting any work on MoDOT ROW. The Contractor performing the work will be issued the permit and shall comply with all requirements of the permit. There is no cost to obtain the MoDOT permit and no additional surety deposit or bond is required. The Permit Request form shall be submitted to the MoDOT Local Programs Construction Contact at https://www6.modot.mo.gov/ElectronicPermittingExternal/PermitRequest.aspx

The Contractor shall notify MoDOT prior to any temporary or long-term lane closure, shoulder closure, sidewalk closure or other work that impacts MoDOT's roadway. Notification shall be made using MoDOT's online "Lane Closure Request" form at www.modot.org/form/lane-closure-request-form . Notification is required a minimum of two (2) business days prior to any lane and/or shoulder closures. Failure to properly notify MoDOT prior to any closure may result in suspension or revocation of the permit.

The following documents are included at the end of these special provisions:

1. MoDOT Local Programs Permit Information (How to obtain a Local Programs Permit).
2. MoDOT Local Programs Permit Request Form.
3. Sample Permit.
4. Personal Protective Equipment Requirements for Work on MoDOT ROW.
5. Sample "Lane Closure Request" Form www.modot.org/form/lane-closure-request-form
6. Permit Completion Report.

WW. METROLINK REQUIREMENTS

1.0 Applicable MetroLink Specifications Sections and Standard Operating Procedures.
1.1 Contract Specifications should incorporate the Metro Specification Sections, MetroLink Operation Standard Operating Procedures (SOPs) and Fees listed below within SOP 101.17 and other related specifications:

(a) Related Specification Sections

- Section 01 35 23.13 Project Safety Requirements for Work on or Adjacent to an Active Railroad
- Section 01 35 23.16 Railroad Flagging Requirements and Track Access

(b) Related MetroLink SOPs (See SOPs for more details)

- 101.17 Work Performed on MetroLink Right of Way
- 101.23 Permit Numbers and Track Allocation
- 102.17 Track Car Operations
- 103.04 Flag Person Duties
- 104.01 Catenary Red Tag Procedure (Working Near Overhead Power Lines)

These details can be found at https://www.metrostlouis.org/contractor-resources/

2.0 General Requirements for Metro Track and ROW Access.

2.1 All work within the "MetroLink ROW" is subject to Metro approval. MetroLink SOP 101.17 describes the work permit submittal requirements. Detailed work and safety plans must be submitted for Metro approval to Metro contact listed in Utilities JSP. Weekly track allocation meetings are held at the MetroLink Ewing Facility (Room MO9) on Thursdays at 8:30am. A Contractor representative must attend to discuss the following week's work. Metro SOP 101.23 describes the track allocation process.

2.2 All personnel working on the MetroLink Right of Way must be Metro Safety trained to a minimum of Tier 1. Flaggers must be Metro safety trained to a minimum of Tier 2. Hi-rail vehicle operators must be Metro Safety trained to Tier 3 and successfully complete the Track Car Training Evaluation outlined in SOP 102.17. Refer to Metro SOP 101.17 and 102.17 for more information and costs.

2.3 Work within the "MetroLink Operating ROW" (within 20ft of the centerline of an in-service track) will require a restriction and flag protection per MetroLink SOP 101.17. Contractor is responsible for providing Tier 2 qualified Flaggers for the project at the Contractor's expense.

2.4 Work within 10 feet of the overhead lines (catenary or conductor rail) or that otherwise could come in contact with the overhead lines requires de-energization of the lines. Exceptions must be approved by Metro.

3.0 Allowed MetroLink Work Windows.

3.1 Work Under a Restriction (Work performed within 20 feet of the track, but not requiring de-energization of overhead wire, and without risk of falling debris onto trackway).

(a) Work under a restriction is allowed from 7:30AM to 3:30PM daily. Other times may be approved by Metro. Train Headway on each track: Peak 6min / Off-Peak 10min. Peak Service Hours: M-F 5am-10am and 2pm -8pm.

3.2 Work with Both Tracks Out of Service Nightly (After Revenue Service).

(a) Work with both tracks out of service is allowed nightly after revenue service approximately 1:15am-4:00am, Monday through Friday nights, and approximately 1:15am-4:30am for Saturday and Sunday nights.

(b) If work requires de-energization of the overhead wire, allow twenty (20) minutes each for a power down and a power up.

3.3 Work With One Track Out of Service (Single Track)

(a) (With two (2) weeks' notice, Metro Operations may allow removing one track from service and operate on a single track beginning at 8:00pm or 11:30pm nightly on non-special event nights.

(b) With two (2) weeks' notice, Metro Operations may allow removing one track from service and operate on a single track all day Saturday and Sunday on non-special event days.

(c) Limits of Single Track will be the Forest Park Interlocking FP (MP8.49) to the Central West End Interlocking (MP 10.6).

(d) Single tracking will not be allowed on special event days. Special Events include, but are not limited to Cardinal games, Blues games, concerts, Mardi Gras, Race for the Cure, and Fair of St. Louis. Metro reserves the right to determine other special event dates.

(e) If work requires de-energization of the overhead wire, allow twenty (20) minutes each for a power down and a power up.

(f) Allow one (1) hour at the end of the outage for a Metro Test Train, if required.

(g) Work windows will need to be coordinated with other MetroLink Construction and Maintenance work.

(h) Nightly or weekend single tracks may be allowed in accordance with these guidelines, however, requests may not be approved if in conflict with other MetroLink projects.

3.4 Work with Both Tracks Out of Service (Weekend Shutdown with Station Shuttle)

(a) With a minimum of two (2) months' notice, Metro Operations may allow removing both tracks from service on non-special event weekends. All weekend shutdown requests are subject to Metro approval. A minimum two (2) months' notice is required to allow for Metro Operations to plan for shuttling customers between stations and advance customer communication. Special Events include, but are not limited to, Cardinals games, Blues games, concerts, Mardi Gras, Race for the Cure, and Fair St. Louis. Metro reserves the right to determine other special event dates.

(b) Three (3) weekend shutdowns are anticipated to accommodate demolition and construction for this project. Cost for these weekend shutdowns is $65,000 per shutdown.

(c) Specific to this project location, both tracks will be removed from service after revenue service on Friday night (approximately 1:15am) and returned to service prior to the beginning of revenue service on Monday morning (approximately 4:00am), providing the contractor approximately fifty (50) hours of work window with no train service within the project limits.

(d) If work requires de-energization of the overhead wire, allow twenty (20) minutes each for a power down and a power up.

(e) Allow eight (8) hours at the end of the outage for restoration of rail systems and operation of a Metro Test Train, as required.

4.0 General Requirements for Work Affecting MetroLink ROW.

4.1 A project Work Plan, Schedule, Safety Plan and Job Hazard Analysis shall be submitted to Metro for review a minimum of 2 weeks in advance of the proposed work. Weekly project progress schedule updates must be submitted to Metro for review for the duration of the project. Work plan, schedule, job hazard analysis, and weekly project progress schedule updates to be submitted to Metro contact listed in Utilities JSP.

4.2 Removal of existing bridge 0250.09 over tracks must occur over a weekend shutdown with station shuttle service. Both tracks will be removed from service after revenue service on Friday night (approximately 1:15am) and returned to service prior to beginning of revenue service on Monday morning (approximately 4:00am), providing the contractor approximately fifty (50) hours of work window with no train service within the project limits. If work requires de-energization of the overhead wire, allow twenty (20) minutes each for a power down and a power up. Allow eight (8) hours at the end of the outage for restoration of rail system and operation of a Metro Test Train, as required. The Overhead Catenary System (OCS) must remain in place and undamaged throughout bridge removal operation. Therefore, at minimum, the removal of Bridge 0250.09 must occur from on top of bridge by lifting it out in sections.

Removal of the intermediate concrete bent between the MetroLink tracks needs to take place either during a 50-hour weekend shutdown, single tracking or during ARS-BRS. Contractor to coordinate this removal with OCS transfer to new poles (performed by others).

Excavation for the new MSE wall and drainage system adjacent to the MetroLink tracks will need to adhere to all applicable SOPs. The excavation and installation of shoring systems will need to take place either during a 50-hour weekend shutdown, single tracking or during ARS-BRS. It is the Contractor's responsibility to verify the location of all utilities and protect said utilities from damage during excavation.

The MetroLink tracks, conduits, and OCS shall be protected from dust, dirt and damage from debris throughout the removal and replacement operations.

5.0 Method of Measurement. No measurement will be made for flagging or other items related to MetroLink Requirements. Shuttle services will be measured per each 50-hour weekend shutdown.

6.0 Basis of Payment. All costs associated with material, equipment, labor, and any other incidental work necessary to provide flagging and other items related to meeting Metro's requirements to work within their right-of-way are considered completely covered by the contract lump sum price for MetroLink Requirements. All costs associated with providing shuttle services during 50-hour weekend shutdowns shall be considered completely covered by the contract unit price for MetroLink Shuttle Service.

XX. GEOFOAM EPS 29

1.0 Description. These specifications are provided for the construction of the portion of the

project which is constructed with Geofoam EPS 29. The work provided herein consists of furnishing all labor, material, and equipment for placement of EPS fill, also referred to in this specification as expanded polystyrene (EPS), complete, as specified herein, shown on the plans, or as directed by the Engineer.

2.0 Materials.

2.1 Expanded Polystyrene:

(a) The general extent of EPS Fill is shown on the Drawings and may include, but is not necessarily limited to the following:
1. EPS shall not be classified as a specific Density or Type.

2. EPS blocks shall conform to the specified type category in ASTM D-6817 and have the following physical properties:

Physical Property	ASTM Designation	Acceptance Value
Type	Not Classified	Not Classified
Density	D1622	Not Classified
Compressive Resistance, at yield of 1% deformation	D1621	10.9 psi Minimum
Flexural Strength	C203	50 psi Minimum

(a) EPS shall be fabricated using virgin feedstock manufactured into sections having no more than five percent regrind content. Sections shall have a height of at least 32 inches (16" half block), a width of at least 48 inches, and length of at least 96 inches. All blocks shall be shop-trimmed as necessary so that all surfaces are smooth and flat, and are within tolerances of 0.5% as necessitated by the contract plans geometry of the fill being constructed. Additional field cutting may be required as necessitated by the geometry of the fill being constructed.

(b) The EPS shall contain a flame retardant additive and should be considered combustible and should not be exposed to open flame or any source of ignition.

(c) Contractor shall furnish the Engineer with two copies of third party certified test report showing that the EPS material meets the physical properties per ASTM D6817.

3.0 Construction.

3.1 Placement.

(a) EPS fill shall be placed to the lines and grades shown in the plans and as directed by the Engineer. The surface of a layer of EPS blocks to receive additional EPS blocks shall be constructed with a variation in surface tolerance of no more than 0.5 inch in any 10-foot interval. All blocks shall accurately fit relative to adjacent blocks. No gaps greater than 2.0 inches will be allowed on vertical joints.

(b) Blocks placed in a row in a particular layer shall be offset a minimum of 2.0 feet relative to blocks placed in adjacent rows of the same layer. In order to avoid continuous joints, each subsequent layer of blocks shall be rotated on the horizontal plane 90 degrees from the

direction of placement of the previous layer placed. Connector plates are not necessary or recommended for this project. Blocks shall be cut using a hot wire.

(c) Because of the light unit weight of the EPS material, it is the Contractor's responsibility to provide temporary weighting and/or guying as necessary until all the blocks are built into a homogeneous mass.

(d) Provide all construction surveys as required.

(e) Contractor may use alternate EPS block thickness or dimensions as long as an EPS layout is reviewed and approved by the Quality Control Engineer and submitted to engineer for approval prior to installation.

3.2 Protection.

(a) The Contractor shall prevent damage to the EPS during delivery, storage, and construction. Prior to delivery of EPS fill to the project site, the Contractor shall review and be thoroughly knowledgeable with the manufacturer's care and handling recommendations. Any EPS fill to be exposed to sun light for more than 90 days shall be covered with opaque material which will prevent ultraviolet light degradation. Any damage to the EPS resulting from the contractor's vehicles, equipment, or operations, shall be replaced by the Contractor.

(b) Placement of embankment will require special procedures and careful selection of appropriate construction equipment to prevent damage to the EPS fill. No heavy construction equipment or vehicles shall be allowed directly on the EPS. EPS must be protected from petroleum based solvents such as gasoline and diesel fuel.

(c) Damage to EPS shall be corrected as follows:

1. Slight damage (<0.12 cubic feet with no linear dimension >1 ft) may be left in place as-is.

2. Moderate damage (<0.35 cubic feet with no linear dimension >3.3 ft) at the discretion of the Engineer shall be removed or left in place.

3. EPS blocks with excessive damage (i.e., exceeding the "moderate" category) shall be replaced with EPS blocks which meet the damage criteria. EPS blocks not meeting the damage criteria may be cut to eliminate the excessive damage and the remaining undamaged portion of the block may be used within the fill, provided the undamaged portion of the block meets all other requirements.

4.0 Quality Assurance.

4.1 Quality Assurance Requirements.

(a) The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designations only.

1. American Society for Testing and Materials (ASTM)

(b) The following are testing procedures required by Contractor for project specific requirements.

1. ASTM D1621 - Standard Test Method for Compressive Resistance

(c) The following are testing procedures required by EPS molder/Contractor for Industry specific requirements.

1. ASTM C203 - Standard Test Method for Flexural Strength

2. ASTM D1623 - Standard Test Method for Tensile Strength

3. ASTM C272 - Standard Test Method for Water Absorption

4. ASTM D1622 - Standard Test Method for Density

(d) Manufacturer Qualifications: A firm experienced in manufacturing Expanded Polystyrene similar to those indicated for this project and with a record of successful in-service performance, as well as sufficient production capacity to produce required quantity.

(e) Installation Qualifications: The firm responsible for installing the EPS fill shall be required to employ a Quality Control Engineer (QCE) responsible for QC inspection to assure the quality of the installed EPS fill. The QCE shall have experience in responsible charge installing and handling EPS on at least three projects of a similar nature within the past five years. The QCE shall be on site prior to any EPS being installed and shall remain on site during all installation activities. The QCE shall perform any inspections as necessary to assure work being performed conforms to the contract documents and at the discretion of the engineer shall have full authority to reject material and workmanship not meeting specified performance criteria or conforming to the contract documents or recognized good practice at any time during installations of the work. The QCE shall be responsible for ensuring all required testing is performed, documented and submitted to the engineer.

1. Contractor shall submit the name and resume of the proposed QCE along with three (3) associated project references for approval by the engineer prior to construction.

(f) Submittals:
1. Product Data: Signed by manufacturers of EPS certifying that products furnished comply or exceed the acceptance criteria of ASTM D6817 for EPS.

2. Testing Compliance: Signed by testing agency certifying that product delivered to the project site meets an/or exceeds criteria of specification found within these project documents.

4.2 Sampling and Testing.

(a) Quality assurance testing and sampling, to monitor the conformance of the EPS fill with the specification requirements, will be completed as directed by the Engineer. Density and geometry (dimensional tolerances) testing shall be conducted using full-sized blocks. Blocks in conformance with contract requirements can be used to make required fills.

(b) Testing to monitor the quality of the EPS shall be done at the discretion of the Engineer. Engineer has the right to random sample the manufacturing plant. If any block does not conform to the physical requirements or if it is damaged in any way, it may be rejected by the Engineer.

(c) Manufacturing facility shall arrange and perform compressive resistance testing on every lot of material produced, and shall provide a signed certificate prior to each delivery certifying 1% compressive performance and cubic yards of each lot per delivery. In addition, the manufacturing facility shall be available to the Engineer to perform manufacturer site testing and verification of testing processes.

5.0 Method of Measurement. Geofoam EPS 29 will be measured by the cubic yard in place within the limits indicated in the plans.

6.0 Basis of Payment. Payment for performing the work as specified, including block placement, providing construction survey for EPS fill, and testing and all quality control and assurance activities shall be considered completely covered by the contract unit price per cubic yard for Geofoam EPS 29.

YY. LIGHTWEIGHT AGGREGATE FILL

1.0 Description. Lightweight aggregate fill – Sidewalk on Bridge and lightweight aggregate fill – Pavement on Bridge as shall be constructed with lightweight aggregate fill material and placed at the locations and limits as indicated on the plans or as determined by the Engineer.

2.0 Material.

2.1 Lightweight Aggregate Fill – Sidewalk on Bridge shall meet the following:

1) The in-place and compacted maximum unit weight shall not exceed 120 pcf.

2) The compaction requirements shall meet or exceed the requirements for Type 1 Aggregate Base as shown in Section 304 – Aggregate Base Course of MoDOT's Standard Specifications.

3) The gradation shall meet the requirement for Type 1 Aggregate Base as shown in Section 1007 – Aggregate for Base of MoDOT's Standard Specifications.

2.2 Lightweight Aggregate Fill – Pavement on Bridge shall meet the following:

1) The in-place and compacted maximum unit weight shall not exceed 100 pcf.

2) The compaction requirements shall meet or exceed the requirements for Type 5 Aggregate Base as shown in Section 304 – Aggregate Base Course of MoDOT's Standard Specifications.

3) The gradation shall meet the requirement for Type 5 Aggregate Base as shown in Section 1007 – Aggregate for Base of MoDOT's Standard Specifications.

2.3 Possible materials and their source for lightweight aggregate fill are as follows:

Buildex Inc.
2526 Highway 59
Ottawa, KS 66067
www.buildex.com
Phone (785) 242-2177

AERO Aggregates
1500 Chester Pike
Eddystone, PA 19022
www.aeroaggregates.com
Phone (883) 261-8499

Norlite, LLC
628 South Saratoga St.
Cohoes, NY 12047
www.norliteagg.com
Phone (518) 235-0030

3.0 Construction Requirements. None of the above materials have an automatic approval for use on this project. The contractor shall submit to the Engineer for review 6 weeks in advance of use, the type of material recommended for use as lightweight aggregate fill material, source of supply, methods of handling and transporting to the job site along with specifications for the lightweight aggregate fill material and methods for obtaining the material and design properties shown either in this job special provision and as shown on the plans. The contractor shall submit the method of placement and compaction above the bridge deck for the lightweight aggregate fill material. The contractor shall abide by all environmental rules and regulations for transporting and placing the lightweight aggregate fill material and shall provide to the engineer any executed documents necessary for environmental clearance. If the material, specifications and method of placement are satisfactory to the engineer, the lightweight aggregate fill material will be approved for use.

4.0 Method of Measurement. Measurement of lightweight aggregate fill complete in place will be made to the nearest cubic yard. Final measurement will not be made except for authorized changes during construction or where appreciable errors are found in the contract quantity.

5.0 Basis of Payment. Payment for complying with this job special provision shall include all costs incurred for acquiring, handling, transporting, placing, and compacting the lightweight aggregate fill material above the bridge deck and any other incidental work necessary to complete this item. The cost of the Lightweight Aggregate Fill material shown on the plans, complete in place, will be considered completely covered by the contract unit price per cubic yard for the bid items:

304-99.07	Lightweight Aggregate Fill – Sidewalk on Bridge
304-99.07	Lightweight Aggregate Fill – Pavement on Bridge

ZZ. EARTHWORK AND GRADING

1.0 Disposition of Surplus (Unsuitable) excavation. Any material that does not meet the specifications for embankments (Brocken concrete, asphalt) must be disposed of. The contractor shall designate the waste site for approval by the Engineer prior to its use.

2.0 Basis of Payment. All disposition of Surplus excavation required on this job shall be completely covered by the contract unit price for Pay Item No. 203-50.00, Unclassified Excavation.

3.0 Compacting Embankment. All material placed in accordance with Section 203.3 of the standard specifications is included in the measurement of compacting embankment, including Class C excavation. Compacting embankment also includes compacting the backfill in undegraded cuts.

4.0 Basis of Payment. Basis of Payment is at contract unit price for Pay Item No. 203-60.00, Compacting Embankment.

AAA. CONCRETE ENCASEMENT

1.0 Description. This work shall provide all material to concrete encase pipe sewers as shown in the construction plans. The layout and all material shall meet or exceed material, performance, and design characteristics included in The Metropolitan St. Louis Sewer District (MSD) Standard Construction Specifications for Sewers and Drainage Facilities, 2023 or current addition at time of construction.

2.0 Method of Measurement. The work provided in accordance with this Job Special Provision will not be measured for concrete encasement complete in place will be made to the nearest cubic yard. Final measurement will not be made except for authorized changes during construction or where appreciable errors are found in the contract quantity.

3.0 Basis of Payment. The Contractor will be paid for at the contract cubic yard unit bid price for bid item 203-99.07 - Concrete Encasement.

BBB. MSD CONCRETE BULKHEAD

1.0 Description. This work shall consist of furnishing all labor, materials, testing, design, submittals, tools, and equipment necessary to construct the bulkhead in accordance with the plans or as directed by the Engineer.

2.0 Material. All material shall meet or exceed material, performance, and design characteristics included in current edition at the time of construction of The Metropolitan St. Louis Sewer District (MSD) Standard Construction Specifications for Sewers and Drainage Facilities.

3.0 Design Requirements. The contractor shall be responsible for providing a geotechnical/structural engineer licensed in the state of Missouri to perform the design of the pipe bulkhead.

3.1 The contractor will be solely responsible for the content of the design plans, details and computations that are submitted, and for the performance of the bulkhead.

3.2 All design plans, details, and computations submitted for distribution shall be signed, sealed and stamped in accordance with the laws relating to architects and

professional engineers (Chapter 327,RSMo).

4.0 Submittals. The contractor shall submit six complete signed and sealed sets of design plans, details and computations to MSD and the Engineer prior to construction of the bulkhead or any activities that may impact the existing bulkhead. All submitted information shall be legible and of sufficient contrast to be suitable for archiving. Submitted information determined to be unsuitable for archiving purposes will be returned for corrective action.

5.0 Approval. Prior to any construction of the bulkhead or activities that may impact the existing bulkhead the contractor shall provide the Engineer with MSD's approval in writing, a sealed set of design plans, details, and computations. The work described in this provision shall remain exposed until inspection and approval of the bulkhead by the Engineer and MSD inspector. Only after approval can backfilling shall be accomplished. Please contact MSD's construction management division at (314) 335-2072 for questions.

6.0 Method of Measurement. The work provided in accordance with this Job Special Provision will not be measured for payment but will be considered a Lump Sum.

1) No measurement will be made for any required excavation beyond what is included in the plans for the construction of the 48-inch pipe and steel casing pipe connecting to the bulkhead.

2) No measurement will be made for any required temporary shoring to construct the bulkhead in accordance with the plans or as directed by the Engineer.

3) No measurement will be made for the removal of the existing horseshoe-shaped brick sewer to construct the bulkhead in accordance with the plans or as directed by the Engineer.

4) No measurement will be made for any drainage system required by the bulkhead design.

5) No measurement will be made for the backfill and required compaction effort to restore the elevations back to existing grades.

7.0 Basis of Payment. The Contractor will be paid for at the contract lump sum price for bid item 720-99.01 – MSD Concrete Bulkhead to recover the cost of all labor, materials, testing, engineering design, submittals, coordination, tools, equipment, and incidental construction needed to comply with the above provisions.

CCC. PRE- AND POST-CONSTRUCTION SEWER INSPECTION

1.0 Description. This work shall consist of pre-construction and post-construction inspection of the MSD and other facilities indicated on the plan sheets or as directed by The Metropolitan St. Louis Sewer District (MSD) or engineer. The required inspection limits for the 16' W x 14' H Reinforce Concrete Horse-shoe Shaped Sewer

shall be 100 feet upstream and downstream of the project limits. The required inspection limits downstream of the pipe bulkhead on the existing 15-6" W x 12'-6" H Horseshoe Shaped Brick Sewer shall be 100 feet.

1.1 Contractor(s) operating within 45' of the centerline of MSD facilities or other sewer facilities indicated for inspection on the plan sheets or directed by MSD or the engineer must ensure that no damage occurs to the facilities as a result of their activities/operations. This work shall consist of excavation, backfill, paving, staging, or other construction activities.

2.0 Construction Requirements.

2.1 The contractor shall perform a pre-construction inspection of MSD facilities per Standard Practice and acceptable to MSD. Contractor shall submit to MSD for review prior to the start of any work. CCTV inspection is acceptable. Please contact MSD's district construction management division at (314) 335-2072 for any questions.

2.2 The contractor shall repair any damage to MSD facilities as directed by MSD.

2.3 The contractor shall perform a post-construction inspection of MSD facilities per Standard Practice and acceptable to MSD. Contractor shall submit to MSD for review prior to final payment. CCTV inspection is acceptable. Please contract MSD's district construction management division at (314) 335-2072 for any questions.

2.4 All construction shall be in accordance with applicable section of the MSD Standard Specifications and Standard Drawings.

2.5 All work performed with the limits of the MSD sewers indicated on the plan sheets shall be directed and monitored by geotechnical/structural engineer **working for** the contractor to ensure no damage to MSD facilities or other sewer facilities. Contractor shall notify the assigned MSD managing engineer of the geotechnical/structural engineer retained for this service and to provide an outline of the monitoring process to be followed to ensure no damage to MSD or other sewer facilities.

2.6 If required by drawings, work performed within project shall be at a minimum based on the MSD recommendations performed according to the following but doesn't relieve the Contractor for responsibly of resulting damages.

2.6.1 As directed by MSD or engineer, work near or above MSD facilities or other sewer facilities shall be performed utilizing low ground pressure equipment as approved by MSD.

2.6.2 Vibratory rollers should not be operated without a specific study to determine perk particle velocity for the proposed equipment and soil conditions.

2.6.3 Contractor shall not induce unbalanced lateral earth pressures on the side of any of the MSD facilities indicated on the plans. Either by excavation or placement of fill on, near, or adjacent to the facilities.

2.6.4 Any excavation performed above MSD facilities shall be performed with

extreme caution. Excavations within two (2) feet of the top of facilities shall be performed with mini-excavator or manually unless approved by contractor's geotechnical/structural engineer.

3.0 Method of Measurement. The work provided in accordance with this Job Special Provision will not be measured for payment but will be considered a Lump Sum.

4.0 Basis of Payment. The Contractor will be paid for at the contract lump sum price for bid item 615-99.01 - Pre- & Post-Construction Sewer Inspection to recover the cost of equipment, labor, materials, engineering fees, coordination, submittals or time required to fulfill the above provisions and any required repairs required as directed by MSD or Engineer. Final Payment will not be made until the Engineers and MSD's review and acceptance of no damages and/or MSD's acceptance of any required repairs following the post-construction inspection submittal.

DDD. TEMPORARY BYPASS PUMPING

1.0 Description. This work shall consist of the requirements for temporary pumping in collection systems such as sanitary sewers, combined sewers, and storm sewers.

2.0 Construction Requirements.

1) Contractor shall provide all labor, materials, tools, equipment, and incidentals shown or indicated for temporary pumping and handling of fluids during the Project.

2) The means and methods of accomplishing and maintaining the bypassing shall be the sole responsibility of the Contractor.

3) No interruption of sewage flow shall be permitted throughout the duration of the project.

4) The Contractor is advised that the bypass plans must provide accessibility to pedestrians and vehicular traffic in accordance with local agency/property owner requirements.

5) Bypass Operation will be required during the period of installation of manholes, sewers, bulkheads and/or piping connecting to the combined, sanitary sewer system where flows are occurring. The bypass pumps and piping flow shall be continuously monitored by a competent operator.

6) Bypass Operation may also be required for storm water runoff along the north side of Metros tracks during the removal of existing grate inlets (M-31 and M-32) and manhole (M-30). The bypass pumps and piping flow shall be continuously monitored by a competent operator, so as not impact Metro services beyond what has been agreed upon in other specifications.

3.0 Administrative Requirements for Scheduling and Sequencing:

1) Include on the Progress Schedule with separate activities for set up, check out, and testing of each temporary pumping system; operation of each temporary pumping system; removal of temporary pumping system; and associated restoration.

2) Where necessary include on the Progress Schedule separate activities for shutdowns, installation, and removal of temporary plugs, bulkheads, and line stops, and other Work associated with temporary pumping.

3) Submit Progress Schedule with required temporary pumping activities prior to furnishing temporary pumping Submittal required by this Section.

3.1 Quality Assurance

3.1.1 Regulatory Requirements:

1) Provide, operate, and maintain temporary pumping systems in accordance with Laws and Regulations.

2) Comply with Laws and Regulations relative to locations of temporary pumping systems (including effect, if any, on public transportation routes and facilities and private property), secondary containment (regarding temporary fuel storage), air quality (relative to emissions from internal combustion engines), water quality (regarding leakage and cleanout of temporary pumping systems), compliance with facility operating permits, and other matters.

3.1.2 Qualifications for Temporary Pumping System Supplier or Subcontractor:

1) Retain a single Supplier or Subcontractor to furnish, install, operate, and remove temporary pumping systems required for the Project.

2) Supplier or Subcontractor shall possess not less than five years of experience providing temporary pumping systems similar in size or larger than those required for the Project.

3) Upon request, submit evidence of having previously provided not less than five temporary pumping systems on other projects similar in size (or larger) and similar in service to temporary pumping systems required for the Project.

3.2 Special Precautions

3.2.1 The Contractor is notified that maintaining the sewer flows to be bypassed is critical and must be maintained at all times. If the Contractor fails to maintain the sewage flows with the temporary pumping systems, the Contractor shall be

responsible for any fines levied on Owner by the Missouri Department of Natural Resources, or any other applicable agency or entity. The Contractor will be responsible for any sewage backups or bypasses (overflows) that occur as a result of the bypass pumping operation and pay all costs for cleanup, repairs, restitution, damage, fines, etc., whether from private or public customers of the Owner or from public agencies.

3.3 Submittals

3.3.1 The Contractor shall provide the Engineer and MSD the following for review and approval prior to any construction activities that impact sanitary sewer, combined sewers, or storm sewers. Please contact MSD's district construction management division at (314) 335-2072 for any questions.

3.3.2 Draft Notification Letter: Draft of typical notice letters for property owners and occupants of buildings and structures.

3.3.3 Temporary pumping plan: Submit the following for each required temporary pumping system not less than 30 days prior to delivery of temporary pumping system to the Site:

1) Layout Drawings:

a) Sketches showing proposed layout of temporary pumping system, including locations of temporary plugs, bulkheads, and line stops; suction and discharge locations; location of pumps and associated piping and valves; and source of power for temporary pumping system. Sketches shall be scale drawings acceptable to Engineer, and shall include site plans similar to those in the Contract Documents.

b) Details of system suction and discharge locations. Discharge details shall include measures to protect the receiving structure and dissipate energy.

c) Where temporary lines will be buried, submit trench details. Submit sketches and information on other types of protection proposed for temporary piping.

2) Basis for capacity of proposed temporary pumping system. No flow monitoring data is available for this project.

3) System curve of flow plotted against total dynamic head, and calculations that substantiate the proposed temporary pumping system, including comparison of net positive suction head required and net positive suction head available.

4) Manufacturer's data and specifications on each type and size of pump proposed and its capacity, including pump curves.

5) Manufacturer's data and specifications for engines and other equipment required for temporary pumping system, including expected exhaust emissions data. Furnish information on emissions air pollution control systems, when proposed, together with expected air quality of emissions.

6) Technical information and specifications on noise controls for noise-emitting equipment.

7) Technical data on temporary piping, pipe joints, valves, pipe supports, controls, flow meter, secondary containment for fuel tanks, and other information pertinent to the temporary pumping system.

8) Temporary Plugs, Bulkheads, and Line Stops: Manufacturer's literature and fabrication drawings showing type of plug, bulkhead or line stop as applicable, materials, and hydrostatic head that the plug, bulkhead, or line stop is designed to withstand. Submit complete technical information for Contractor-proposed line stops, line stop manufacturer's name and product data for line stops proposed, installation procedures, name of proposed line stop installer, and documentation of experience on at least five similar projects.

   a) For plugs larger than 24-inches, include Plug Use Plan (PUP)

9) Narrative describing proposed operation of temporary pumping system, including who will operate system, staffing, planned frequency of fueling, contingency plan in event of pump failure, and statement of existing systems that may be affected during operation of temporary pumping system. Where temporary pumping system's instrumentation and controls will be connected to utility system owner's existing monitoring and control system, clearly indicate how and where such temporary connection will be performed and other information necessary to demonstrate compliance with the Contract Documents.

10) Plug Use Plan (PUP) – PUP shall include, but not be limited to, the following:

   a) Calculations of maximum anticipated head pressure on the plug and the resultant tensile force required to restrain the plug prior to plug inflation and during plug removal sealed and signed by a professional engineer registered in the state the project is located within.

   b) Calculations of the required inflation pressure of the plug sealed and signed by a professional engineer registered in the state the project is located within.

c) Detail the plug selection including given conditions, pipe size and anticipated pressure requirements. Include whether sleeves will be used.

d) Provide an inspection form detailing manufacturer's recommendations for plug inspection of plug condition before and after use; form to be signed by contractor staff responsible for plug installation prior to and after plug installation.

e) Provide a monitoring plan for observing the plug inflation pressure gauges and hoses. Monitoring shall be for 24-hours per day during the plug use duration. Plan shall include a response for when plug loses pressure and a plug retrieval plan.

f) Include plug restraint details, including means and methods for anchoring, support and bracing appropriate for anticipated operating pressure conditions.

g) Provide manufacturer's literature on proper plug use and safety precautions.

3.3.4 Disclaimer and Limitations of MSD's and the Engineer's review: Review, comments (if any), and acceptance (or other appropriate action) on the temporary pumping plan Submittal are only for the limited purposes of endeavoring to verify compliance with the Contract Documents. Review will not address calculations for the temporary pumping system, sizing of components of temporary pumping systems, or other matters that are part of Contractor's construction means, methods, procedures, techniques, and sequences, for which Contractor remains solely responsible, together with associated safety and protection measures. When the Contract Documents require Contractor to determine the appropriate capacity for the temporary pumping system, Contractor remains solely responsible for such determination and the consequences of furnishing temporary pumping system with inadequate capacity.

3.3.5 Qualifications Statements from temporary pumping system Supplier or Subcontractor.

4.0 Products.

4.1 Temporary Pumping Systems: Subject to compliance with the Contract Documents, provide temporary pumping systems by one of the following:

1) Godwin, a Xylem brand.

2) Western Oilfields Supply Company doing business as Rain for Rent.

3) Or equal.

4.2 Description: Design, provide, and maintain temporary pumping systems, including temporary plugs, bulkheads, and line stops as necessary or required; pumps; piping, supports, restraints, and valves; temporary instrumentation and control systems; fuel and electricity; personnel; and appurtenances. System shall be suitable for its service and operating environment.

4.3 Performance Criteria:

4.3.1 Capacity.

1) Provide temporary pumping system of necessary capacity with not less than one of the largest pumps out of service.

2) Pay costs associated with repairing damage to property, including cleaning, caused by undersized or inadequate temporary pumping systems.

3) Engineer's acceptance of temporary pumping submittals does not relieve or mitigate Contractor from responsibility for the temporary pumping system in accordance with the Contract Documents.

4.3.2 Temporary Pumping Capacity for Collector Sewers and Larger Sewers:

1) Required capacity of each temporary pumping system shall be determined by Contractor.

2) Each temporary pumping system shall be adequate to convey the discharge rate conveyed through the associated permanent conduits. Temporary pumping systems shall not result in: flow backups into buildings or structures; overflows to storm sewers or receiving waters; or adverse effects on system of Owner, utility owners, or owners of transportation systems (including streets and roads).

3) The Contractor may develop a plan for diverting flow around or through the construction operations affecting the sewer to maintain the capacity of the 48-inch through 84-inch sewer in lieu of the primary or backup temporary pumping systems, or both. These plans must be submitted for approval providing adequate detail of hydraulic computations to allow for review by Engineer.

4.3.3 Temporary Pumping Capacity for Collector Sewers and Larger Sewers:

1) Maintain flow through service laterals for buildings or structures that discharge to permanent pipe or conduit that has been temporarily removed from service.

2) When capacity for temporary pumping for certain service laterals is not stipulated in the Contract Documents, capacity for temporary pumping systems shall be determined by Contractor.

3) Temporary pumping systems for service laterals shall be adequate to pump the discharge rate conveyed through the service lateral. Temporary pumping systems shall not result in: flow backups into buildings or structures; overflows to storm sewers or receiving waters; and adverse effects on property owner's systems, utility owners, or owners of transportation systems (including streets and roads).

4.3.2 System components shall be suitable for continuous operation with the fluid pumped.

4.3.3 Noise Controls: Provide noise controls for temporary pumping systems. Noise emitted from temporary pumping systems shall comply with Laws and Regulations, including local City Code, and shall not exceed 70 decibels at a distance of thirty feet from noise source.

1) Pumps and generators shall be equipped with devices such as (but not limited to) mufflers and/or plywood/Styrofoam noise panels enclosing the engines.

4.3.4 Fuel-consuming temporary pumping system components intended for use when Contractor is not present shall include fuel tanks sized for not less than 24 hours of uninterrupted operation at system's operating capacity and means to automatically notify Contractor upon high and low suction water level and low fuel level.

4.4 Operation: Instrumentation and Controls.

1) Controls: Provide controls for temporary pumping system to maintain suction structure liquid level that does not result in flow backups and that does not adversely affect Owner, utility system owner, and private property.

4.5 Temporary Piping Systems:

1) Piping shall be high density polyethylene, steel, ductile iron, or other material accepted by Engineer, and suitable for system operating pressures. Aluminum piping and PVC piping not mechanically restrained are unacceptable. Durable hoses can be used only for short sections and with acceptance by Engineer.

2) Lay flat hose cannot be used for major bypass pumping.

3) Piping systems shall have watertight joints of the following types: fused joints, restrained couplings, flanged coupling

adapters, quick-connects by Camlok or equal, flanged joints, grooved and shouldered end-type couplings, or other watertight joints accepted by Engineer. Bypass lines, fittings, and all accessories shall withstand twice the maximum pressure of the system or 150 psi whichever is greater.

4) Size discharge piping for flow velocity of not more than 10 feet per second.

5) Provide check valves or appropriate pump control valves as necessary.

6) Provide air valves on discharge piping as necessary. Air valves shall expel air upon pipe filling and admit air upon pipe dewatering, and release small quantities of entrained air during operation. Air valves shall be suitable for service with the pumped fluid.

7) Discharge from temporary pumping systems shall not adversely affect collection system structures, piping or conduits, Owner's operations, operations of other utility owners, and private property, and shall not result in flow backups, flooding, or damage. Provide energy-dissipating measures at discharge point as necessary.

4.6 Temporary Plugs, Bulkheads, and Line Stops:

1) Acceptable temporary plugs and bulkheads include inflatable dams specifically designed for such service, brick bulkheads, timber bulkheads, sandbags, and other bulkhead methods suitable for the service and conduit conditions. Temporary line stops, where necessary or required, shall be manufactured units specifically intended for use as line stops.

2) Each temporary plug, bulkhead, and line stop shall be suitable for the maximum pressure encountered.

3) Where temporary plugs and bulkheads are under pressure or surcharged, provide either two plugs or a plug and temporary bulkhead.

5.0 Execution.

5.1 Preparation and Installation of Temporary Pumping Systems:

1) Provide written notice delivered to owners and occupants of each building and structure affected by temporary pumping, in accordance with the "Coordination" provision of this Section's "Quality Assurance" Article.

2) Temporary piping shall be located off roads, drives, other

travelled ways, and sidewalks. Piping shall not be located in environmentally sensitive areas such as wetlands.

3) Where shown or indicated in the Contract Documents, bury temporary piping that would otherwise inhibit access to buildings, structures, roads, drives, and travelled ways. In paved areas, provide temporary surfacing, sufficient for AASHTO H-20 wheel loads over buried temporary piping.

4) Install temporary pumping systems in accordance with written instructions of manufacturer of system component, Laws and Regulations, and requirements of temporary pumping system Supplier.

5) Hydrostatic Testing of Temporary Piping System:

a. Perform successful hydrostatic testing of temporary piping systems using clean water at pressure equal to 1.2 times highest expected system operating pressure, for one hour while maintaining test pressure within 3.0 psig of required test pressure.

b. Hydrostatic test criteria for acceptance: No leakage.

6) Verify that entire temporary pumping system is ready for operation before commencing shutdown of Owner's operations, facilities, or systems. Verify that temporary pumping system controls and flow meter are properly connected and functional.

5.2 During Operation of Temporary Pumping Systems:

1) Temporary pumping system shall operate continuously unless otherwise indicated. In the event of equipment failure, immediately make repairs or replace equipment. Provide spare parts and redundant units as necessary for continuous operation.

2) Work stoppage may be required due to rain events common to the seasons for which the Work is scheduled. Bypass pumping shall only occur when dry weather is occurring and anticipated for the duration of the operation.

3) Provide personnel to monitor, operate, and maintain temporary pumping system 24 hours per day when system is in service. Personnel shall be qualified to both operate and repair any and all problems that may occur. Personnel shall have a cellular phone for communication between the Engineer and the site in the event of emergencies. The cellular phone number shall be provided to the Engineer at the beginning of the project.

4) The Contractor shall notify the Engineer 48 hours prior to bypassing or diverting flow in any pipelines or laterals.

5) Do not disconnect bypass pumping until after acceptance testing and Engineer has accepted work.

5.3 Upon Conclusion of Temporary Pumping:

1) Remove temporary plugs, bulkheads, and line stops in manner that allows flow to slowly return to normal, without surging, surcharging, and adverse effects on existing system. Completely remove all elements of temporary plugs, bulkheads, and line stops.

2) Flush out temporary pumping system with clean water discharged to an appropriate location.

3) Remove temporary pumping system and appurtenances from the Site.

4) When Contractor has obtained permit(s) for temporary pumping from authorities having jurisdiction, furnish written notice to such authorities that temporary pumping has been completed.

6.0 Method of Measurement. The work provided in accordance with this Job Special Provision will not be measured for payment but will be considered a Lump Sum.

7.0 Basis of Payment. The Contractor will be paid for at the contract lump sum price for bid item 720-99.01 - Temporary Bypass Pumping to recover cost of equipment, labor, materials, remobilization, submittals, coordination and engineering to comply with the above provisions.

EEE. METRO CROSSING PAD

1.0 Description. This work shall consist of furnishing all labor, materials, testing, design, submittals, coordination, tools, and equipment necessary to construct the Metro Crossing Pads in accordance with the plans or as directed by the Engineer.

2.0 Construction Requirements. The construction of the Crossing Pads and all materials shall meet or exceed material, performance, and design characteristics included in Metro's current Standard Drawings and Standard Specifications.

3.0 Method of Measurement. The work provided in accordance with this Job Special Provision will not be measured for payment but will be considered a Lump Sum.

3.1 The contractor shall be responsible for furnishing all labor, materials, tools, and equipment necessary to construction the crossing pads within the "Limits of Grade

Crossing" shown on the plans. This work shall conform to all Metro's Standard Drawings and Standard Specifications or as directed by the Engineer.

3.2 Any additional labor, materials, tools, and equipment necessary to construction the crossing pads beyond the "Limits of Grade Crossing" shown of the plans and not covered by a separated bid item shall be considered incidental construction needed to comply with this provision.

4.0 Basis of Payment. The Contractor will be paid for at the contract lump sum price for bid item 643-99.01 - Metro Crossing Pad to recover the cost of all labor, materials, testing, submittals, coordination, tools, equipment, storage, and incidental construction needed to comply with the above provisions.

FFF. METRO GATE

1.0 Description. This section addresses requirement for the removal and relocation of the metal fence gate as called out in the construction plans. The gate shall be removed from the existing Metro Crossing Pad and relocated to the proposed Metro Crossing Pad as shown in the construction plans or as directed by the Engineer.

2.0 Construction Requirements. The removal, relocation, and all materials shall meet or exceed material, performance, and design characteristics included in Metro's current Standard Drawings and Standard Specifications.

2.1 Any damage to existing gate or other materials resulting from the Contractor's operations, shall be repaired or replaced at the Contractor's expense and to the satisfaction of the Engineer.

2.2 All labor, materials, tools, equipment, and incidental construction needed to close the opening created by the removal of the existing Metro Gate and to tie into the relocated Metro Gate shall be paid in full under bid item 607-10.13A – Chain Link Fence (72 IN.).

3.0 Method of Measurement. The work provided in accordance with this Job Special Provision will not be measured for payment but will be considered a Lump Sum.

3.1 Basis of Payment. The Contractor will be paid for at the contract lump sum price for bid item 607-99.01 - Metro Gate to recover the cost of all labor, materials, testing, submittals, tools, equipment, storage, and incidental construction needed to comply with the above provisions.

GGG. MODIFIED LINEAR GRADING, CLASS 2

1.0 Description. Modified Linear Grading, Class 2, shall consist of contractor-furnished fill, embankment construction, excavating and grading existing shoulders and ditches to facilitate placement of concrete pavement, paved approach, curb, asphalt pavement, base, culverts, grading of ditches and slopes, and final shaping necessary to conform to the lines and grades in the plans, and shall conform to all

applicable portions of Sec 207 of MoDOT's Standard Specifications and specifically as follows.

2.0 Construction Requirements.

2.1 It may be necessary to go outside the limits of the right of way to obtain additional material. All contractor furnished materials shall be approved by the Engineer prior to being incorporated into the project.

2.2 The Engineer shall have sole discretion in determining whether excess material may be incorporated within right-of-way or must be disposed of outside of right-of-way.

2.3 All areas to be graded shall be cleared and grubbed in accordance with Sec 201 of MoDOT's Standard Specifications as directed by the Engineer. No measurement or payment will be made for clearing and grubbing.

2.4 Roadside and Metro track ditches shall be graded to match the existing flowline unless shown otherwise in the plans. Grading for culverts shall match the projected flowline of the existing diches.

2.5 Any damage to existing drainage structures, existing pavement, curb, or other facilities resulting from the Contractor's operations, shall be repaired at the Contractor's expense and to the satisfaction of the Engineer.

3.0 Method of Measurement. Measurements will be made to the nearest 1/10 station for the length of grading measured along the centerline of the traveled way.

4.0 Basis of Payment. All costs incurred by the Contractor to comply with this provision shall be considered completely covered by the contract unit price for Item 207-99.09 - Modified Linear Grading, Class 2. No direct payment will be made for contractor furnished material or disposal of excess material.

HHH. JUNCTION BOX, PREFORMED (12" x 12")

1.0 Description. This item shall consist of furnishing and installing a preformed junction box (12"x12") as shown in the lighting plans to facilitate the maintenance of existing lighting circuitry when splicing together existing with proposed or as a means of repair. The junction boxes shall be made of preformed fiberglass, walls flared or vertical, fitted with a bolt down cover, displaying the name "CITY LIGHTING".
2.0 Materials. All materials and work shall conform to Section 901 & 902 of the Missouri Standard Specifications for Highway Construction, current edition, and the City of St. Louis Traffic Division Standard and Specifications.

3.0 Method of Measurement. Measurement for this item shall be per each.

4.0 Basis of Payment. Payment will be considered full compensation for the labor and material necessary for installation and shall be included under the contract unit price under bid item Junction Box, Preformed (12"x12").

III. RELOCATED CITY SUB-STATION

1.0 Description. This item shall consist of relocating the substation located at the Southwest corner of the intersection on Union and Lindel to the new location in the same vicinity behind the proposed bike trail.

2.0 Method of Measurement. Measurement for this item shall be per each.

4.0 Basis of Payment. Payment will be considered full compensation for the labor and material necessary for installation and shall be included under the contract unit price under bid item Relocated City Sub-Station.

JJJ. CONDUIT, 2 IN., RIGID BRIDGE

1.0 Description. This work shall consist of furnishing and placing all material and equipment and performing all work necessary to create a complete conduit system, including expansion fittings as shown on the plans.

2.0 Materials. All materials shall be in accordance with Division 1000, Materials Details, and specifically as follows:

Item	Section
Conduit System on Structure	707
Highway Lighting	901

3.0 Method of Measurement. Measurement for this item shall be per linear foot of conduit.

4.0 Basis of Payment. Payment for the above-described work, including all material, equipment, labor and any incidental work necessary to complete this item, will be considered completely covered by the Bid item 9019908 conduit, 2 in., rigid, bridge per linear foot.

KKK. LIGHT POLES & LUMINAIRES

1.0 Description. This provision covers the items lists below, consisting of furnishing and installing light poles, luminaires and specialized assemblies as indicated in the lighting plans.

- City Roadway Light Pole: Pole shall be Stress Crete pole in Granitoid, 22’ with 5’ embedded base and anchor bolts (bolt down base). Catalog No: KLH17-G-E61-DB S/F KFSL3 and KLH17-G-E61-DB C/W 140(35/120) S/F KFSL1
- King Luminaire: K118-P4GR-III-25-(SSL)-1030-480V-SST-KFSL1-K10-4K (75W equivalent)
- King Luminaire: K118-P4GR-III-40-(SSL)-1030-480V-SST-KFSL3-4K (75W equivalent)
- King Luminaire: K118-P4GR-IV-40-(SST)-7030-480V-SST-KFSL3-4K (75W equivalent)
- GE Luminaire: ERL1O07E540D GRAY (150W equivalent)

2.0 Materials. All materials and work shall conform to Section 901 of the Missouri Standard Specifications for Highway Construction, current edition, and the City of St. Louis Traffic Division Standard and Specifications.

3.0 Method of Measurement. Measurement for this item shall be per each for each item:

- Stresscrete Groupe Luminaire, Installed
- Stresscrete Group Pole Single, Installed
- Stresscrete Group Pole Double, Installed

4.0 Basis of Payment. Payment will be considered full compensation for the excavation, labor, mounting hardware, and material necessary for installation and full functionality of these items and shall be included under the contract unit price for each item.

LLL. BRIDGE LIGHTING

1.0 Description. This item shall consist of installing lighting under the proposed Union-Lindell Bridge. The proposed wall pack mount underpass led luminaires shall be installed and reconnected to the new conduits and cables on the existing lighting control cabinet, CKT: 81-2 when the proposed bridge is constructed.

2.0 Materials. Luminaires shall be wall-pack mounted underpass LED fixtures meeting not less than the following requirements:

- Housing: Die-cast aluminum housing with a corrosion-resistant powder coat finish
- Optical Assembly: Borosilicate prismatic glass or UV-stabilized polycarbonate lens designed for asymmetric underpass distribution. The luminaire shall provide an IES Type III distribution.
- Electrical: Integral electronic LED driver operating at 480V, with a minimum 10 kV surge protection device (SPD).
- Ratings: UL Listed for wet locations; IP65/IP66-rated optical chamber; DesignLights Consortium (DLC) qualified.
- Performance: Minimum delivered output of 9000 lumens; color rendering index (CRI) of not less than 70; correlated color temperature (CCT) of 3000 K.

2.1 Manufacturers. Subject to compliance with requirements, provide products with one of the following:

- Cooper – (Model: WP Series)
- Holophane – (Model: WallConnect Series)
- Hubbell – (Model: PGM-150S Series)
- Lithonia – (Model: TWR Series)
- Approved Equal.

3.0 Construction Requirements. Provisions shall be made to attach the units directly to the MSE wall and bridge substructure with non-ferrous metal or stainless-steel hardware.

4.0 Method of Measurement. No measurement will be made.

5.0 Basis of Payment. Payment will be considered full compensation for all labor, equipment, materials and incidentals necessary to furnish, install and connect the underpass luminaires,

conduit, and cabling to the existing lighting control cabinet. All work shall be included in the contract lump sum price for Bridge Lighting.

MMM. DIMMABLE, AIMABLE, LED IN-GRADE LIGHT FIXTURE

1.0 Description. This provision covers furnishing and installing dimmable, aimable, LED in-grade light fixtures and associated specialized assemblies, as indicated in the lighting plans, complete and operational, in accordance with this Special Provision.

2.0 Manufacturers. The luminaires shall be ERCO Tesis New In-Ground luminaires, or an approved equal meeting the requirements of this Special Provision. The work includes the following luminaire types:

1. Type YG1 – Fixed In-Grade Wall wash Luminaire.
2. Type YG2 – Aimable (Zoom/Directional) In-Grade Luminaire.

The luminaire identified on the plans is the basis of design. Alternate products meeting all requirements of this Special Provision may be submitted to the Engineer and the City of St. Louis for review, subject to final approval by the City of St. Louis, prior to procurement.

3.0 Materials. Unless otherwise specified herein, all materials and workmanship shall conform to Section 901 of the Missouri Standard Specifications for Highway Construction, the City of St. Louis Traffic Division Standards and Specifications, and the National Electrical Code (NEC).

Requirement	**Type YG1**	**Type YG2**
LED Input Power	11.7 W	11.7 W
Delivered Lumens (minimum)	530	511
Correlated Color Temperature	3000 K	3000 K
Color Rendering Index	90 minimum	90 minimum
Dimming	0–10 V	0–10 V
Ingress Protection	IP68	IP68
Optical Distribution	Fixed Wall wash	Adjustable Zoom
Rotation	360°	360°
Tilt Adjustment	Not Required	0°–30°
Static Load Rating	20 kN minimum	20 kN minimum

Luminaires shall be listed by a Nationally Recognized Testing Laboratory (NRTL) in accordance with UL 1598 and UL 8750 or approved equivalent standards.
Integral surge protection, where furnished, shall comply with ANSI C136.2 or an approved equivalent.

4.0 Submittal Requirements. Prior to procurement, the Contractor shall submit the following:

1. Manufacturer's catalog cuts and ordering information.
2. Electrical data, including input voltage, input current, and wattage.
3. Photometric data, including delivered lumens and IES files.
4. Documentation verifying compliance with the specified IP68 and 20 kN load

rating.
5. Documentation demonstrating compatibility with the specified 0–10 V dimming system.
6. Documentation confirming surge protection device (SPD) compliance with ANSI C136.2 or an approved equivalent, where furnished.
7. Manufacturer's installation instructions and written warranty. The warranty shall provide a minimum period of 10 years, covering the luminaire, LED driver, and light source against defects in material and workmanship.

5.0 Installation Requirements. Install luminaires in accordance with the manufacturer's written recommendations, the contract plans, Section 901 of the Missouri Standard Specifications, and this Special Provision.

1. Install recessed housings level and at the manufacturer's recommended depth.
2. Install fixtures flush with adjacent finished surfaces, consistent with ADA/PROWAG accessibility requirements.
3. Type YG1 luminaires shall be installed at the locations shown on the plans and rotated in the field to direct illumination onto the intended wall surface, as directed by the Engineer.
4. Type YG2 luminaires shall be field aimed as directed by the Engineer and secured using the manufacturer's locking mechanism.
5. Field wiring connections shall maintain the specified IP68 rating.
6. Replace damaged or defective fixtures at no additional cost to the City of St. Louis.

6.0 Method of Measurement. Measurement shall be made per each (EA) complete luminaire furnished, installed, tested, accepted, and placed into service under the contract pay item Dimmable, Aimable, LED In-Grade Light Fixture (City LED Fixture).

7.0 Basis of Payment. Payment will be considered full compensation for furnishing and installing the luminaire, complete with recessed housing, connection sleeve, integral LED driver, and all labor and materials necessary for installation, and shall be included under the contract unit price under bid item Dimmable, Aimable, LED In-Grade Light Fixture.

NNN. RELOCATE SLMPD EQUIPMENT

1.0 Description. The work shall consist of relocating equipment owned by the St. Louis Metropolitan Police Department (SLMPD). Existing LPR & PTZ camera assemblies shall be moved to the proposed locations as shown in the plans. This pay item should include all time, labor, mounting hardware, and cabling to reestablish connection to the devices. Full functionality of the units shall be demonstrated to the City’s inspector and SLMPD representative prior to acceptance of the work.

The LPR and PTZ assemblies shall be relocated to a new camera pole. The pole shall be a standard City Stresscrete 33’ light pole with aggregate finish. Once integration is complete, the security system integrator shall conduct a demonstration of the full working capabilities of all newly installed and relocated PTZ and LPR devices on-site at the RTCC to include in attendance (but not limited to) City of St. Louis Police, City Traffic, ITSA, and the BPS inspector or their representatives.

2.0 Basis of payment. All costs for materials, equipment, labor, and installation shall be included in the cost for Pay Item No. 902-99.01, “Relocate SLMPD Equipment”, paid at the contract unit price, lump sum and Pay Item No. 902-99.02, “Camera Pole”, paid at the contract unit price, per each.

OOO. MODIFY EXISTING PULLBOX

1.0 Description. This work shall consist of modifying existing pullboxes, such as drilling opening(s) in the existing pull boxes or adjusting to grade, as noted on the plans. The number of openings to be drilled is indicated on the signal plan sheets. The size of opening shall be drilled only to accommodate the size of conduit; remainder of opening to be filled with waterproof material prior to backfilling the area. Upon completion of the conduit work, the pullbox shall be adjusted to the finished grade.

2.0 Basis of payment. All costs for materials, equipment, labor, and installation shall be included in the cost for Pay Item No. 902-99.02, “Modify Existing Pullbox”, and be paid at the contract unit price, per each.

PPP. FIBER CABINET

1.0 Description. This item shall consist of providing and installing a ground mounted, powered fiber distribution cabinet. Connecting power to the cabinet, foundation for the cabinet, and supplying all necessary internal components to accommodate the project (such as, but not limited to fiber enclosures) will be considered incidental to this item. Network switches shown on the fiber connection diagram are covered under separate pay items. Any relocated equipment or fiber spliced due to relocation shall be considered incidental to the cabinet. Panels and housings must accommodate ST connectors. All work shall conform to Section 902 of the Missouri Standard Specifications for Highway Construction, current edition.

2.0 Basis of payment. All costs for materials, equipment, labor, and installation shall be included in the cost for Pay Item No. 902-99.02, “Fiber Cabinet”, and be paid at the contract unit price, per each.

QQQ. APS SYSTEM (INTERSECTION)

1.0 Description. This work shall consist of furnishing and installing an APS detection system. Equipment for this item will include the pushbutton with integrated audible feature, speaker wire, power adaptors, sign mounting backplate, and one central control unit (per intersection). If the audible signals are integrated into the pushbutton assembly, no payment for standard pushbuttons will be allowed at those locations. Payment for signing will be per square foot under separate pay as shown on the signal plans. Pushbutton extenders shall be included with this item to provide for a maximum side reach of 10”. Such locations include those with curbs or other obstructions adjacent to signal poles housing pushbuttons.

2.0 Materials.

Walk Indications. Accessible pedestrian signals shall have both audible and vibrotactile walk indications.

Vibrotactile. Vibrotactile walk indications shall be provided by a tactile arrow on the pushbutton that vibrates during the walk interval. Tactile arrow shall be located on the pushbutton that vibrates during the walk interval. Tactile arrow shall be located on the pushbutton, have high visual contrast (light on dark or dark on light), and shall be aligned parallel to the direction of travel on the associated crosswalk.

Audible. Accessible pedestrian signals shall have an audible walk indication during the walk interval only. The audible walk indication shall be audible from the beginning of the associated crosswalk.

Pushbutton signage. In addition to standard pedestrian sign requirements, all pushbuttons for the locations mentioned in 1.0 shall have additional signage to indicate crosswalk direction by use of a tactile arrow and the name of the street containing the crosswalk served by the audible pedestrian signal. The sign shall be located immediately above the push button mechanism and parallel to the crosswalk controlled by the button. The street name shall be the name of the street or reasonable abbreviation whose crosswalk is controlled by the push button. Signage shall comply with ADA Accessibility Guidelines (ADAAG) 703.2 specifications for Braille and raised print.

Arrow. Signs shall include a tactile arrow aligned parallel to the crosswalk direction. The arrow shall be raised 0.8 mm (.03 inch) minimum and shall be 4 mm (1.5 in) minimum in length. The arrowhead shall be open at 45 degrees to the shaft and shall be 33 percent of the length of the shaft. Stroke width shall be 10 percent minimum and 15 percent maximum of arrow length. The arrow shall contrast with the background.

Street Name. Accessible pedestrian signals (APS) shall include street name information aligned parallel to the crosswalk direction and shall comply with Revised Draft Guidelines for Accessible Public Rights-of-Way R409.3 or shall provide street name information in audible format.

All materials and work shall conform to Section 902 of the Missouri Standard Specifications for Highway Construction, current edition, and the City of St. Louis Traffic Division Standard and Specifications.

3.0 Construction Requirements.

Audible Locator Tone. Locator tone that tells the pedestrian that the intersection is equipped with APS and where it is. Pushbutton locator tones shall have a duration of 0.15 seconds or less and shall repeat at 1-second intervals. Pushbutton locator tones shall be intensity responsive to ambient sound, and be audible 6 to 12 feet from the pushbutton, or to the building line. The locator tone shall operate during the DON'T WALK and flashing DON'T WALK intervals only and shall be deactivated when the pedestrian signal is not operative.

Verbal Wait Message. Acknowledge tone that tells the pedestrian that they have placed a call and informational message that tells the pedestrian to “Wait to cross” street name at intersecting street name.

Verbal Walk Message. The verbal messages shall provide a clear message that the walk interval is in effect, as well as to which crossing it applies. If available, the audio tone feature will not be used. The verbal message that is provided at regular intervals throughout the timing

of the walk interval shall be the term “walk sign,” which will be followed by the name of the street to be crossed.

Volume. Automatic volume adjustment in response to ambient traffic sound level will be provided up to a maximum volume of 100 dB. The units shall be responsive to ambient noise level changes up to no more than 5 dB louder than ambient sound. Tone or voice volume measured at 36 inches from the unit, shall be 2dB minimum and 5dB maximum above ambient noise level. At installation, signal system is to be adjusted to be audible at no more than 5 to 12 feet from the system.

Documentation and Support. The contractor shall provide to the Engineer: two copies of the operation and maintenance manuals for each station, and two copies of USB data card that contains files for the manufacturer’s audible message for complete operation of all APS signals at all stations.

4.0 Basis of payment. All costs for materials, equipment, labor, and installation shall be included in the cost for Pay Item No. 902-99.02, “APS System (Intersection)”, and be paid at the contract unit price, per each.

RRR. WIRELESS DETECTION SYSTEM

1.0 Description. Wireless Detection System: This item shall consist of furnishing and installing a wireless detection system suitable for vehicle stop bar detection as well as data collection. All equipment necessary for a fully functional system shall be installed, including but not limited to, in-pavement wireless sensors, APCCs, SPP radios, repeaters, and any other hardware/miscellaneous equipment for delivery of a fully functioning stop bar detection system. Equipment in the signal cabinet shall be connected via SDLC. Data collected from the wireless detectors must be taken back to the City’s Traffic Operations Center (TOC) via the existing and proposed fiber optic communication system. Testing of the connection to the City’s TOC and demonstration to City personnel of a completely functioning detection system will be required for acceptance. Programming of the City’s existing data server must be performed by the equipment manufacturer and will be considered incidental to this pay item. Coordination with City Traffic personnel prior to equipment installation is required for field verification of exact placement and locations. Total number of in-pavement sensors = 26. Breakdown at intersections as follows: Union & Lindell (0), Union & Forest Park Pkwy Connector (12), Forest Park Pkwy & Forest Park Pkwy Connector (14).

2.0 Basis of payment. All costs for materials, equipment, labor, and installation shall be included in the cost for Pay Item No. 902-99.02, “Wireless Detection System”, and be paid at the contract unit price, per each.

SSS. PTZ CAMERA ASSEMBLY WITH HI-VIZ ENCLOSURE

1.0 Description. This item shall consist of furnishing and installing an Axis Q6075-E camera assembly, with minimum requirements of 32x zoom (1080p). The PTZ camera should accommodate and be equipped with a minimum 128GB memory card for backup recording, supported by POE. A hardened Axis T8144 POE and Axis DIN CP-D 24/4.2 100 W power supply shall be provided. Outdoor rated CAT6E cable will be used for power & communication, connected to the signal controller cabinet. These cables should be considered incidental to this

pay item. Software license to be included in the cost of the camera, as well Square D SDSA1175 surge protection devices. The cameras shall be mounted to the hi-viz enclosure and positioned on the poles as shown in the plans per the camera mounting details section. Hi-viz enclosue and all related components will be considered incidental to this item. The camera must be compatible with the City Traffic's and SLMPD's existing security camera system. Catalog cuts of the camera and components (including mounting brackets, hi-viz enclosure, POE and power supply) must be submitted and approved by the City's inspector prior to procurement.

2.0 Basis of payment. All costs for materials, equipment, labor, and installation shall be included in the cost for Pay Item No. 910-99.02, "PTZ Camera Assembly With Hi-Viz Enclosure", and be paid at the contract unit price, per each.

TTT. LPR CAMERA

1.0 Description. This item shall consist of furnishing and installing a license plate camera capable of license plate monitoring installed at locations as specified on the plans, model Genetec Autovu Sharp V. The plan sheets indicate for which direction of traffic the camera is to be aimed. The cameras shall be mounted to the signal poles as shown in the plans per the camera mounting details section. Outdoor rated CAT6 cable will be used for power & communication, connected to the fiber or signal controller cabinet, routed through the device cabinet enclosures. All camera cabling, device cabinets, and mounting hardware should be considered incidental to this pay item. Software license to be included in the cost of the camera. Surge suppressors to be included with the camera installation are the Axis T8061 Ethernet Surge Protector and the Square D SDSA1175 Surge Protection Device, or approved equivalent. The camera must be compatible with the City's and Police Department's existing security camera system.

2.0 Basis of payment. All costs for materials, equipment, labor, and installation shall be included in the cost for Pay Item No. 910-99.02, "LPR Camera", and be paid at the contract unit price, per each.

UUU. NETWORK SWITCH

1.0 Description. This work shall consist of furnishing and installing field hardened managed network switches and related hardware in existing and proposed signal and device cabinets. Cisco IE-1000-8P2S-LM for 2 or less SFP connections and Cisco IE-4000-4GC4GP4G-E for 3 or more SPF connections shall be used for compatibility with the City's existing ITS network. The switches shall include small form-factor pluggable transceivers, rated for rugged conditions, to accommodate needed fiber pairs with rated speed no less than 1 GB unless otherwise indicated. The contractor shall also provide and install manufacturer provided Cisco PWR-IE65W-PC-AC power supplies. All devices are to be provided to ITSA staff for programming prior to installation. The contractor shall then install the programmed device per the manufacturer's specifications. Jumpers between the patch panel and switch must have LC and ST connectors. All equipment must also be installed to the satisfaction of the Inspector or ITSA and City Traffic personnel. Any existing or replaced network switch shall be returned to the BPS inspector. All work necessary to produce a fully functional product will be considered incidental to this pay item.

2.0 Basis of payment. All costs for materials, equipment, labor, and installation shall be included in the cost for Pay Item No. 910-99.02, “Network Switch” and be paid at the contract unit price, per each.

VVV. FIBER OPTIC CABLE

1.0 Description. This work shall consist of furnishing and installing fiber optic cables of composition, quantity and locations as indicated in the plans. The fusion splices, terminations and termination housings necessary for a fully functioning connection shall be included as part of the work and cost of this item.

2.0 Materials.

2.1 Cable. Fiber optic cable shall be manufactured by Corning, outdoor rated, loose tube, dielectric cable. The cable shall be listed in the latest edition of the Rural Utilities Service (RUS) List of Materials Acceptable for Use on Telecommunications Systems of RUS Borrowers, category oc-d-F, and shall have a short-term tensile rating of at least 600 lbs. The cable sheath shall have length markings in feet, and shall indicate that the unit of measure is feet. The cable shall have an operating temperature range of -40º C to 70º C.
2.1.1 All fibers shall be suitable for transmission using both 1310 nm and 1550 nm wavelengths. Attenuation shall not exceed 0.35 dB/km and 0.25 dB/km for 1310 nm and 1550 nm signals, respectively.
2.1.2 The cables shall be constructed with twelve fibers per tube.

2.2 Splice Tray. Splice trays shall be 11.7” long, 3.9” wide, and 0.2” tall. They shall be aluminum with clear plastic covers, designed for outdoor use. Each shall accommodate 24 fusion splices. The trays shall have a black powder coat finish. The trays shall have both perforations for cable ties and crimpable metal tabs for buffer tube strain relief.

2.3 Connector. Connectors shall be ST compatible, with ceramic ferrules. They shall be suitable for use in traffic cabinets and shall be designed for single mode fibers.

2.4 Pigtail. Pigtails shall be factory-made, buffered, and strengthened with aramid yarn to reduce the possibility that accidental mishandling will damage the fiber or connection. Pigtails shall be yellow. They must use the type of connector specified in Sec 2.3 of this provision. Each must contain one fiber. Length shall suffice to provide two feet of slack after installation.

2.5 Jumper. Jumpers shall meet the requirements for pigtails, but shall have a connector on each end. The second connector shall be as specified in Sec 2.3 of this provision except where a different connector is required for compatibility with the equipment to which the jumper connects. Length shall suffice to provide approximately five feet of slack after installation.

2.6 Patch Panel Module. Other contractors have equipped some cabinets with rack-mounted patch panel enclosures. Provide patch panel modules to increase the capacity of the enclosure, as needed. The modules shall be from the same manufacturer as the enclosure, and shall be compatible with the connectors specified in Sec 2.3 of this provision.

2.7 Rack-Mounted Interconnect Center. An interconnect center is a splice enclosure that has a patch panel built into one of its walls. Within the interconnect center, fibers in cables are spliced to pigtails and the pigtails are plugged into the patch panel from the inside. This allows

jumper cables (not part of the interconnect center) to plug into the patch panel from the outside, connecting the fibers to equipment in the cabinet or to other fibers on the patch panel. Within an interconnect center, some fibers may be spliced to the corresponding fiber in a mating cable, rather than to a pigtail. Still other fibers may be coiled, un-terminated.
The enclosure shall have brackets and all other hardware required for rack mounting in an EIA standard 19-in. equipment rack. It shall take up no more than three rack units (1¾ inch each) in the cabinet. It shall have front and rear doors. It shall be made of powder-coated aluminum.
The enclosure shall hold at least four splice trays meeting the requirements of Sec 2.2 of this provision. Provide enough trays for all splices made in the interconnect center. The enclosure's patch panel shall have at least 24 positions, compatible with the connectors specified in Sec 2.3 of this provision. It shall have provisions for cable strain relief and for connector labeling.

2.8 Wall-Mounted Interconnect Center. An interconnect center is a splice enclosure that has a patch panel built into one of its walls. Within the interconnect center, fibers in cables are spliced to pigtails and the pigtails are plugged into the patch panel from the inside. This allows jumper cables (not part of the interconnect center) to plug into the patch panel from the outside, connecting the fibers to equipment in the cabinet or to other fibers on the patch panel. Within an interconnect center, some fibers may be spliced to the corresponding fiber in a mating cable, rather than to a pigtail. Still other fibers may be coiled, un-terminated.
The enclosure shall be designed for wall or panel mounting and occupy no more than 350 square inches of wall space. It shall be made of powder coated aluminum and have a gasketted, hinged door.
It shall have provisions for cable strain relief and for connector labeling.
It shall have a patch panel with at least 24 positions compatible with the connectors specified in Section 2.3 of this provision. It shall accommodate at least six splice trays as specified in Section 2.2 of this provision and shall be equipped with enough trays for all the splices made in the interconnect center.

3.0 Construction Requirements.

3.1 Cable Installation. Prior to installation, perform such tests as indicated in Sec 4.0 of this provision to confirm that the cable is in good condition and complies with the specifications. Any defects found after installation will be deemed the fault of the contractor.
3.1.1 Install the cable such that the optical and mechanical characteristics of the fiber are not degraded. Do not violate the minimum bend radius or the maximum tension, both during and after installation.
3.1.2 Before any cable installation is performed, provide the engineer with four copies of the cable manufacturer's recommended maximum pulling tensions for each cable size. These pulling tensions shall be specified for pulling from the cable's outer jacket. Also, provide a list of the minimum allowable cable bending radius and the cable manufacturer's approved pulling lubricants. Only those lubricants approved by the cable manufacturer will be permitted.
3.1.3 If the cable is pulled by mechanical means, use a clutch device to ensure the allowable pulling tension is not exceeded. Also, attach a strain gauge to the pulling line at the cable exit location, and at a sufficient distance from the take-up device, such that the strain gauge can be read throughout the entire cable pulling operation.
3.1.4 Do not leave the let-off reel unattended during a pull, in order to minimize the chance of applying excess force, center pull, or back feeding.
3.1.5 Use an approved lubricant, in the amount recommended by the cable manufacturer, to facilitate pulling the cable. After the cable has been installed, wipe the exposed cable in a pull box, junction box, or cabinet clean of cable lubricant with a cloth before leaving the pull box, junction box, or cabinet.

3.1.6 In every intermediate pull box, store 50 feet of slack fiber optic cable for every cable that passes through the pull box, unless otherwise noted on plans. Additional slack storage, as indicated on the plans, is required in designated pull boxes. At cabinet locations, where cable runs from the pull box directly to an equipment cabinet, store 100 feet of slack fiber optic cable in the pull box, unless otherwise noted on plans. Additionally, treat the cable returning from the cabinet to the pull box as a separate cable, and store 100 feet of slack for these links, unless otherwise noted on plans. Store slack cable neatly on the walls of the pull box using racking hardware acceptable to the engineer.
3.1.7 Seal the fiber optic cable ends to prevent the escape of the filling compound and the entry of water.

3.2 Splicing. Splice all optical fibers, including spares, to provide continuous runs. Splices shall be allowed only in equipment cabinets except where shown on the plans.

Methods below shall be followed for the various types of termination performed.

FUSION SPLICE TERMINATIONS
This work shall consist of contractor furnishing and installing fiber optic fusion splice terminations as shown in the fiber splicing and cabinet details. Splices shall be performed using a fusion splicer that automatically positions the fibers using either the Light Injection and Detection (LID) system or the High Resolution Direct Core Mounting (HDCM) system. Provide all equipment and consumable supplies for this task. Secure each spliced fiber in a protective groove. Completely re-coat bare fibers with a protective room temperature vulcanizing (RTV) coating, gel, or similar substance, prior to insertion into the groove, so as to protect the fiber from scoring, dirt, or microbending. Use a different splice tray for each buffer tube color. If an enclosure contains multiple buffer tubes of the same color, but none of the fibers in one of the tubes are spliced to fibers other tubes of the same color, use a separate splice tray for that tube.

PIGTAIL TERMINATIONS
This work shall consist of contractor furnishing and installing fiber optic pigtails as shown in the fiber splicing and cabinet details. Pigtails themselves shall be factory-made, buffered, and strengthened with aramid yarn to reduce the possibility that accidental mishandling will damage the fiber or connection. Pigtails shall be yellow for single mode connections. They must be ST type connectors and contain one fiber each. Length shall suffice to provide two feet of slack after installation.

FIBER OPTIC CABLE JUMPER
This work shall consist of contractor furnishing and installing fiber optic cable jumpers as shown in the fiber splicing and cabinet details. Jumpers themselves shall be factory-made, buffered, and strengthened with aramid yarn to reduce the possibility that accidental mishandling will damage the fiber or connection. Jumpers shall be yellow for single mode connections. They must be ST type connectors and contain two fibers each. Length shall suffice to provide five feet of slack after installation.

DOCUMENTATION OF FIBER OTIC CABLE
This work shall consist of contractor furnishing Visio and PDF as-built files documenting the work associated with installation of fiber optic cable. No additional compensation will be provided for this task.

4.0 Basis of payment. All costs for materials, equipment, labor, and installation shall be included in the cost for Pay Item No. 910-99.03, “Fiber Optic Cable, 48SM/24MM”, and be paid

at the contract unit price in lineal feet. All splicing, terminations, pigtails and jumpers shall be considered incidental to this item.

WWW. TRAFFIC SIGNAL MAINTENANCE & PROGRAMMING

1.0 Description. Traffic signal maintenance, progamming, and timing for this project shall be in accordance with Section 902 of the Standard Specifications, and specifically as follows.

2.0 Existing Traffic Signals and Communication System

2.1 The contractor will provide at least 2 weeks notice to the engineer before removing the fiber optic connections at signalized intersections. If necessary, the City will provide the contractor with digital cellular modems to be installed in signal cabinet. Once connected to the existing controllers and communication is established, the contractor will be allowed to remove the fiber connection. The modem shall remain the property and maintenance of the City, and shall be returned once the project has been accepted. The contractor will be responsible for re-establishing communication through the modem to controller used at this location for the duration of the project.

2.2 Once any part of an existing traffic signal or its controller within the limits of this project has been modified or adjusted by the contractor, or the contractor makes any roadway changes to reduce the traffic capacity through a signalized intersection within the limits of the project, or the contractor begins work at an intersection with signals already in operation, the contractor shall then be solely responsible for that signal's controller programming and all signal maintenance as specified in 902.2 and 902.3, except for power costs, until final acceptance of the project. This provision applies to the following intersections:

- Union & Lindell
- Union & Forest Park Pkwy Connector
- Forest Park Pkwy & Forest Park Pkwy Connector
- Union & Pershing
- Lindell & West Pine
- Lindell & DeBaliviere

2.3 The engineer shall provide to the contractor at the start of the project a detailed report on the existing phasing and timing of the traffic signal, which shall be the contractor's responsibility to program. The engineer shall be available to the contractor before any changes are made to a signal or controller to answer any questions about the report. Once the contractor has modified a signal or controller for any reason, the contractor shall be solely responsible for the existing timing plans and all subsequent timing changes.

2.4 The contractor will notify the engineer of the changes no later than 1 working day after changes are programmed if unable to provide advance notice as specified in 902.2.

3.0 Basis of Payment. All costs be included under Pay Item No. 902-99.01, "Traffic Signal Maintenance & Programming", lump sum.

XXX. LANDSCAPE SUBDRAINAGE

1.0 Description. The work of this Section includes, but is not limited to:
(a) Providing and installing landscape underdrainage piping.
(b) Protecting and maintaining the drainage system and the completed work.
(c) Coordination with other trades.
(d) Site clean-up.

1.1 Definitions.
(a) AASHTO: American Association of State Highway and Transportation Officials.
(b) ASTM: American Society of Testing Materials.
(c) Landscape Underdrainage: Underdrainage system associated with planting soils.
(d) MSD: Metropolitan St. Louis Sewer District
(e) PVC: Polyvinyl chloride plastic.

1.2 Informational Submittals.
1.2.1 Qualification Data. Provide installer's years of experience, and a minimum of three project reference indicating size, scale and complexity of work performed.

1.2.2 Product Certificates. For each product used in the construction.
1.2.3 Material Certificates. For each aggregate material used in the construction.
1.3 Delivery, Storage, and Handling. Do not store plastic pipe and fittings in direct sunlight. Protect pipe, pipe fittings, and seals from dirt and damage.

1.4 Project Conditions. Site Information: Verify all existing utility locations.

2.0 Materials.

2.1 Standards. Follow all MSD standards for storm sewer materials, unless directed otherwise by the project documents.

2.2 Submittals.

2.2.1 Product Data. For the following:
(a) Landscape underdrainage piping (solid).
(b) Landscape underdrainage piping (perforated).
(c) Pipe filtration aggregate (name of material, source of material, sieve analysis).
(d) Non-Woven filter fabric.

2.2.2 Product Samples. For the following:
(a) Underdrainage piping perforated and non-perforated, 24 inches in length.
(b) Pipe Filtration Aggregate: 1 gallon bag.
(c) Non-Woven Filter Fabric.

2.3 Products.

2.3.1 PVC Sewer Pipe and Fittings: According to the following:
(1) PVC Sewer Pipe and Fittings, to be 4 inch in diameter unless indicated otherwise, in lawn and landscaping areas: ASTM D 3034, SDR 35, solvent-cemented or gasketed joints.
- Gaskets: ASTM F 477, elastomeric seals.
- Perforated: Provide under planted areas. Perforations shall be at minimum, ½ inch inflow holes at 6 inch on center, located at the 4 and 8 o'clock position

on the installed pipe.
- Non-Perforated: Provide for risers and at connections into drainage structures.

(2) PVC Sewer Pipe and Fittings, to be 4 inch in diameter unless indicated otherwise, under pavements areas: ASTM D 3034, SDR 26, solvent-cemented or gasketed joints.
(3) Gaskets: ASTM F 477, elastomeric seals.

2.3.2 Pipe to Concrete Structure Cold Connector. Utilize product approved by MSD. Size fittings to meet conditions indicated on plans.

2.3.3 Drainage Aggregate. Open graded natural crushed stone material, cleaned to be free of fines and other deleterious materials. Use 1 1/2" sized aggregate. Minimum percent passing through 1.5" sieve, 0-5% passing through 3/4" sieve.

2.3.4 Subsurface Drainage Geotextile. Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
(1) Survivability: Class 2; AASHTO M 288.
(2) Survivability: As follows:
- Grab Tensile Strength: 157 lbf ; ASTM D 4632.
- Sewn Seam Strength: 142 lbf ; ASTM D 4632.
- Tear Strength: 56 lbf ; ASTM D 4533.
- Puncture Strength: 56 lbf ; ASTM D 4833.

(3) Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
(4) Permittivity: 0.2 per second, minimum; ASTM D 4491.
(5) UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355

3.0 Execution.

3.1 Pipe Installation, General.
(1) Follow all MSD standards for storm sewer construction, unless directed otherwise by the project documents.
(2) Take all precautions to ensure that the interior of the pipeline remains clean during installation and jointing.
(3) Close all openings in the pipeline temporarily with watertight wood blocks or bulkheads when pipe laying is stopped at the conclusion of the work period or interrupted for any reason.
(4) Inspect each pipe and fitting before and after installation; remove those found defective from the site and replace with new.
(5) Care shall be taken not to damage or displace installed pipes during construction. Where pipe is damaged or displaced, take remedial measures as directed by the Contracting Officer at no additional expense.
(6) Do not cover pipe until the Contracting Officer has approved the installation.

3.2 Underdrainage System Installation.

3.2.1 Excavation. Remove all rocks or other hard objects larger than 1 1/2 inches in size from the area with- in 12 inches of the pipe. If ground water is encountered, prevent

accumulation of water in trench by methods ap- proved by the Contracting Officer.

3.2.2 Lines and Grades. All lines shall be positively pitched at a minimum of 0.75% towards the outlet. Contractor shall strictly limit sags or drops in pipeline that would obstruct or slow down the flow of water.

3.2.3 Non-Woven Filter Fabric Installation. Prior to the placement of the pipe filtration aggregate, the entire trench shall be lined with non-woven filter fabric. Provide sufficient additional material to overlay the top of the completed trench and an additional minimum of 18” beyond the edge of trench.

3.2.4 Pipe Beds. Pipe beds in bedding shall be rounded to accommodate the bottom quadrant of the pipe and to provide full support and uniform bearing for the entire length of the pipe barrel.

3.2.5 Pipe and Fittings.

(1) Connect under drainage system to storm drainage structures. Pipe connection shall be fully embedded into the drainage structure and shall be sealed with a non-shrink grout. Coordinate connection of discharge with the site utility contractor.
(2) Use fittings for branch connections. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
(3) Make up the pipe joints in accordance with the manufacturer's instructions.
(4) Provide proper facilities for lowering sections of pipe into trenches.
(5) Blocking or mounding to bring the pipe to the indicated invert elevation shall not be allowed

3.3 Pipe Joint Construction and Installation. Join and install pipe and fittings according to installations indicated.

3.3.1 Sewer Pipe and Fittings: As follows:

(1) Install according to pipe manufacturers written specifications or MSD specifications, whichever is more stringent.

3.3.2 Join piping made of different materials or dimensions with couplings made for this application. Use couplings that are compatible with and that fit both systems' materials and dimensions.

3.4 Tap Connections.

3.4.1 Make connections to existing piping and underground structures as required by MSD.

3.4.2 Install pipe to concrete structure cold joint connectors per manufacturer standard details and specifications.

3.4.3 Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.5 Field Quality Control.

3.5.1 Prior to the installation of planting soils in the underdrainage areas, demonstrate that the underdrainage systems are fully functional. The Contractor shall make adjustments, repairs, and/or replacements as required in order to produce a fully functional system at no additional expanse.

3.5.2 Clear interior of piping of dirt and superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed.
(a) In large, accessible piping, brushes and brooms may be used for cleaning.
(b) Place plug in end of incomplete piping at end of day and when work stops.
(c) Flush piping between manholes and other structures to remove collected debris.

4.0 Method of Measurement.

4.1 Landscape Subdrainage - Underdrain: Shall be measured and paid for per linear foot of underdrain. This work shall include all materials, labor, equipment and incidental work required for the installation of landscape underdrains including but not limited to excavation and backfill, perforated piping, fittings, drainage aggregate, and geotextile fabric.

4.2 Landscape Subdrainage - Cleanout: Shall be measured and paid for per each cleanout. This work shall include all materials, labor, equipment and incidental work required for the installation of cleanouts including but not limited to excavation, backfill, piping, fittings, and cleanout frame and lid assembly.

4.3 Landscape Subdrainage – Solid Piping Connection: Shall be measured and paid for per linear foot of underdrain. This work shall include all materials, labor, equipment and incidental work required for the installation of landscape underdrains including but not limited to excavation and backfill, solid piping, fittings, tap connections, and drainage outlets.

5.0 Basis of Payment. Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 8089902 Landscape Subdrainage–Cleanouts, 8089903 Landscape Subdrainage–Underdrain, & 8089903-1 Landscape Subdrainage–Solid Piping Connection.

YYY. PLANTING IRRIGATION

1.0 Related Documents. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.1 Description.

1.1.1 The work required is indicated on the drawings and includes, but is not limited to, the design, installation, and maintenance of lawn and planting area irrigation systems, backflow prevention devices, protective housings, automatic controller(s), rain sensors, remote control valves, quick coupler valves, master valves, flow sensors, and water and

electric services.

1.1.2 Related Sections.
(a) JSP "Turf and Grasses" for turf (lawn).
(b) JSP "Plants" for trees, shrubs, ground covers, and other plants.

1.1.3 Irrigation system shall be designed as a new system. Connections and zones should be logical in design and appropriate for indicated water service.
(a) Contractor shall verify extent of any exiting system prior to start of design for this scope of work.
(b) Contractor shall familiarize himself with all existing and proposed conditions including grade differences, location of walls, site features, utilities, and all other site improvements.

1.1.4 Coordinate with Landscape Contractor the placement, type, and water requirements for all plant material.

1.1.5 Areas of underground irrigation system are to include all lawn areas, planting beds, and other disturbed areas as defined in the bid documents. The contractor shall provide the design of the specific system. The system shall be in accordance with the following design performance criteria:
(a) Design of irrigation system shall conform to current industry standards and comply with local and state governing codes.
(b) Location of all major components (i.e.: controller, backflow preventer, meter, etc.) shall be coordinated with the owner.
(c) Site contains irrigated planting areas with steep grades. Refer to grading plans to ensure design allows for even irrigation of slopes and prevents saturating plantings at toes of slopes from irrigation line drain down. Provide check valves and multiple zones on hillsides as necessary to achieve uniform irrigation.
(d) All irrigation system(s) shall be designed to minimize vandalism, including lockable protective housings for all equipment installed in location accessible to the public.
(e) For each point of connection, submit pressure calculations for the system(s) with the highest psi requirement to operate properly allowing for friction losses within the system. Water velocity within the system shall not exceed 5 fps. In the event pressure differences are not reported prior to start of construction, the irrigation contractor shall assume full responsibility for any revisions necessary.
(f) Irrigation system(s) shall have the design capability of delivering 1" of water in a 5 day period.
(g) The minimum coverage requirements are 100% head-to-head coverage in lawn area, 90% in all bed areas.
(h) Irrigation water shall be applied at a rate which does not exceed the infiltration rate of the soil and system(s) shall be programmed to prevent ponding and runoff.
(i) Provide separate control valves for sprinkler line operating at the top, toe, and intermediate areas of slopes.
(j) Irrigation system shall be designed to meet the peak moisture demand of all plant materials used within the design area. Separate zones and irrigation methods shall be used for trees, ground cover, planting areas, and turf and sunny vs. shaded areas where applicable.
(k) Irrigation system shall be designed and operated to minimize fogging, overspray,

and discharge onto areas not under control of the user including streets and sidewalks.

(l) Sprinkler heads used in turf areas shall be equipped with protective covers.

(m) All sprinkler heads shall be "pop-up" type unless otherwise noted.

(n) Irrigation system shall be designed for positive winterization. Provide blowouts where positive drainage is not met.

(o) Design system(s) to lowest available pressure per local water company's records.

(p) Gate Valves shall be provided to allow shutting down various sections of the system independent of the entire system. Each section shall not exceed four (4) remote control valves. Valves shall be installed per manufacturer's recommendations and local codes and ordinances.

(q) All backflow prevention devices must comply with requirements set forth by the local health department and city water department. Prevent any back-siphoning after sectional valves are closed. Backflow prevention devices are not permitted on irrigation systems using reclaimed water.

(r) Locate remote control valves in shrub areas when possible. All valves to be in green valve boxes, marked for irrigation. Remote control valves shall be located outside of storm water detention areas or designated athletic play areas (where applicable).

(s) Anti-drain valves in line and/or under sprinkler heads are to be properly installed on sloped irrigation systems to minimize toe of slope sprinkler drainage.

(t) Rain sensor shall be connected to the irrigation controller, out of public view.

(u) Provide construction details for components.

1.2 Quality Assurance.

1.2.1 Manufacturer Qualifications: Provide underground irrigation system as a complete unit produced by the approved manufacturers including heads, valves, controls, and accessories.

1.2.2 Designer Qualifications: Designer shall be a certified irrigation designer.

1.2.3 Installer Qualifications: An employer of workers that include a certified irrigation designer qualified by The Irrigation Association and a company having not less than 5 years of experience in the installation of automated irrigation systems using experienced installers who have worked on projects similar in size and scope of the proposed project. Subcontract irrigation work to an experienced, single firm specializing in irrigation design, installation, and operations. Irrigation installer to have state certification. Irrigation Contractor to provide 3 references of work that is of similar size, scope, and expected craftsmanship as those shown in the Contract Documents. References shall include project name and address, owner's or general contractor's name, and current contact information. Irrigation Contractor shall be approved by Owner.

1.2.4 Electrical Components, Devices, and Accessories: Installation shall be by a licensed electrical contractor as required by local and state regulatory requirements to provide a fully operative irrigation system. Electrical contractor shall provide Owner's Representative documentation of inspection and approval of work by all governing regulatory agencies.

1.3 Project Conditions.

1.3.1 Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

(a) Notify Owner no fewer than seven days in advance of proposed interruption of water service.

(b) Do not proceed with interruption of water service without Owner's written permission.

1.4 Warranty.

1.4.1 For a period of one (1) year after date of Substantial Completion of work performed under this Contract, Contractor shall promptly furnish and install, without cost to Owner, parts which prove to be defective in material or workmanship.

1.4.2 Shut down and start-up service

2.0 Products.

2.1 Submittals.

2.1.1 Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Indicate on product data sheets (circle, highlight) which products will be used during the construction of the project. Ensure sheets are scanned and submitted right side up

2.1.2 Wiring Diagrams: For power, signal, and control wiring.

2.1.3 Shop Drawings: Submit shop drawings in AutoCAD format, or approved equivalent for underground irrigation system including:

(a) Plan layout and details illustrating:
- Point of connection.
- Location and type of heads.
- Valves.
- Piping circuits.
- Controls.
- Electrical information.
- Accessories.

(b) Drawings shall be sealed and signed by a Certified Irrigation Designer.

(c) Drawings shall not exceed 1" = 20'.

(d) Color-coded zone diagram to differentiate zones.

2.1.4 Substitutions: Submit all desired substitutions for review by the Owner prior to, or simultaneous to, the submittal of the Contractor's bid.

2.1.5 Record Drawings (commonly called 'As Built Drawings'):

(a) Record accurately on one set of contract drawings all changes in the work constituting departures from the original shop drawings. Maintain Record

Drawings on site at all times.

(b) The changes and dimensions shall be recorded in a legible and workmanlike manner to the satisfaction of the Landscape Architect. Prior to final inspection of the work, submit Record Drawings.

(c) Dimensions shall be from two permanent points of reference (buildings, monuments, sidewalks, curbs, pavements, etc.). Data to be shown on Record Drawings shall be recorded day-to-day as the project is being installed. All lettering on drawings shall be 1/10-inch in size, minimum.

(d) Show locations and depths of the following items:
- Point of connection.
- Routing of sprinkler pressure lines.
- Gate valves.
- Sprinkler control valves.
- Quick coupling valves.
- Routing of control wires.
- All related equipment (backflow prevention device(s), controller, rain sensor, etc.).

(e) The following charts, manuals, and equipment shall be turned over to the Owner or Landscape Architect no later than 10 days prior to the final inspection at the end of the maintenance period.
- Record Drawings must be approved by the Landscape Architect before controller schedules and charts are prepared.
- Submit a schedule indicating the controller, the station number, the valves controlled by the station, and the length of time each valve is to remain open to produce 1" minimum of precipitation per week.
- Provide one (1) controller chart of maximum size controller door will allow for each automatic controller. The chart shall show the area covered by the controller.
  - The chart is to be a reduced copy of the actual Record Drawing. In the event the controller sequence is not legible when the drawings are reduced, it shall be enlarged to a readable size.
  - Chart shall be on a black line print with different colors used to show the area of coverage for each station.
  - When completed and approved, the chart shall be hermetically sealed between pieces of plastic, each piece being a minimum of 20 mil thickness.
  - Controller charts shall be completed and installed prior to Substantial Completion.

(f) All field changes shall be updated in the shop drawings using the same software that created the shop drawings. Record Drawings shall be submitted as a PDF, or approved equal.

2.1.6 Qualification Data: For qualified installer.

2.1.7 Operation and Maintenance Manuals: One digital file as PDF, or approved equal, of operation and maintenance manual shall be delivered to the Landscape Architect ten (10) calendar days prior to final acceptance inspection. The manual shall describe the material installed. The manual shall include the following information:

(a) Index sheet stating the Project Name, Contractor's Company Name, contact

person, Company address, telephone number, expiration date of the guarantee period, list of equipment including names and addresses of local manufacturer representatives.
(b) Complete operating and maintenance instructions for all equipment.
(c) Spare parts lists and related product and manufacturer information for all equipment.

2.1.8 Closeout Submittals shall be completed and submitted prior to the issuance of the Final Payment.

2.1.9 Inspection Records: Any inspection that does not pass shall be corrected at the Contractor's expense.

2.1.10 Equipment: Supply as part of this contract the following items:
(a) Two (2) keys for each automatic controller.
(b) Two (2) valve box cover keys or wrenches.
(c) Two (2) 5' tee wrench for operating gate valves 2-1/2 inches or larger.

2.2 Closeout Submittals.

2.2.1 Operation and Maintenance Data: For sprinklers, controllers, and automatic control valves to include in operation and maintenance manuals.

2.3 Materials and Equipment.

2.3.1 General requirements:
(a) New materials and equipment.
(b) PVC pipe, drip tubing, fittings, isolation valves, control valves, drip zone valve kits, valve boxes, controller(s), decoder(s), flow sensors, rain gauge, master valves, flow sensor, and rain sensor shall all be compatible.

2.4 Pipes, Tubes and Fittings.

2.4.1 Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.

2.4.2 Hard Copper Tube: ASTM B 88, Type L, water tube, drawn temper.
(a) Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper solder-joint fittings. Furnish wrought-copper fittings if indicated.
(b) Bronze Flanges: ASME B16.24, Class 150, with solder-joint end.

2.4.3 PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedule 40.
(a) PVC Socket Fittings: ASTM D 2466, Schedule 40.
(b) PVC Threaded Fittings: ASTM D 2464, Schedule 80.
(c) PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket ends.

2.4.4 PVC Pipe, Pressure Rated: ASTM D 2241, PVC 1120 compound, SDR 21.
(a) PVC Socket Fittings: ASTM D 2467, Schedule 80.
(b) PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket or threaded ends.

2.5 Piping Joining Materials.

2.5.1 Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.5.2 Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

2.5.3 Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656. Solvent shall contain pigment.

2.5.4 Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

2.6 Manual Valves.

2.6.1 Bronze Gate Valves:

(a) Description:

- Standard: MSS SP-80, Type 2.
- Class: 125.
- CWP Rating: 200 psig.
- Body Material: ASTM B 62 bronze with integral seat and screw-in bonnet.
- Ends: Threaded or solder joint.
- Stem: Bronze, nonrising.
- Disc: Solid wedge; bronze.
- Packing: Asbestos free.
- Handwheel: Malleable iron, bronze, or aluminum.

2.7 Automatic Control Valves.

2.7.1 Plastic, Automatic Control Valves:

(a) Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- Hunter Industries Incorporated.
- Weathermatic.
- Rain Bird Corporation.

(b) Description: Molded-plastic body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid.

2.7.2 Bronze, Master Control Valves:

(a) Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- Hunter Industries Incorporated.
- Weathermatic.
- Rain Bird Corporation.

(b) Description: Bronze body and cover with stainless steel bolts. Compatible for use as a master valve with control system. 10 year product warranty.

2.8 Automatic Drain Valves.

2.8.1 Description: Spring-loaded-ball type of corrosion-resistant construction and designed to open for drainage if line pressure drops below 2-1/2 to 3 psig (17 to 20 kPa).

2.9 Miscellaneous Specialties.

2.9.1 Water Hammer Arresters: ASSE 1010 or PDI WH 201, with bellows or piston-type pressurized cushioning chamber and in sizes complying with PDI WH 201, Sizes A to F.

2.9.2 Quick Coupling Swing Joints: Schedule 40 PVC tee and 1-inch swing joint with three 90 degree elbows.

2.9.3 Rain Gauge: Provide and install tipping rain gauge, compatible with control system.

2.9.4 Flow Sensor: Provide and install flow sensor compatible with control package being installed.

(a) Flow sensor shall be installed according to manufacturer's recommendations, positioned after/downstream from master valve. Install with manufacturer's recommended distances before and/or after other devices (master valve and mainline tees/fittings).

2.9.5 Rain Sensor: Provide and install rain sensor compatible with control system.

2.10 Sprinklers.

2.10.1 General Requirements: Designed for uniform coverage over entire spray area indicated at available water pressure.

2.10.2 Plastic, Pop-up Spray Sprinklers:

(a) Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- Weathermatic
- Hunter Industries Incorporated.
- Rain Bird Corporation.

(b) Description:
- Body Material: ABS.
- Nozzle: ABS.
- Retraction Spring: Stainless steel.
- Internal Parts: Corrosion resistant.
- Pattern: Fixed, with flow adjustment

2.11 Quick Couplers.

2.11.1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
(a) Hunter Industries Incorporated.
(b) Rain Bird Corporation.

(c) Toro Company

2.11.2 Description: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.

(a) Locking-Top Option: Vandal-resistant locking feature. Include two (2) matching key(s).

2.12 Controllers.

2.12.1 Two-wire Decoder Controller.

2.12.2 Manufacturers: Subject to compliance with requirements, provide products by one of the following:

(a) Weathermatic (Preferred)
(b) Hunter Industries Incorporated.
(c) Rain Bird Corporation.

2.12.3 Description:

(a) Controller Stations for Automatic Control Valves: Each station is variable from approximately 5 to 60 minutes. Include switch for manual or automatic operation of each station. 48 Zone count minimum.
(b) Exterior Control Enclosures: NEMA 250, Type 4, weatherproof, with locking cover and two matching keys; include provision for grounding.
- Body Material: Stainless-steel sheet metal.
- Mounting: Pedestal mounted on concrete base.

(c) Controller to be setup with compatibility for web-based application control.
(d) Contractor shall provide one remote transmitter/receiver kit per controller and all necessary accessories for users to communicate remotely with the control unit. Receiver mounting location(s) to be coordinated with the Owner.
(e) Control Transformer: 24-V secondary, with primary fuse.
(f) Rain and Freeze Sensor: Adjustable from one to seven days, to shut off water flow during rain or freezing conditions.
(g) Flow monitor: Provide meter/sensor assembly compatible with specified controller for monitoring system flow and detecting zone leaks.
(h) Master valve: Incorporate a master valve to disable water flow to the circuit main piping when not in use.
(i) Wiring: UL 493, Type UF multiconductor, with solid-copper conductors; insulated cable; suitable for direct burial.
- Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
- Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves; color-coded different from feeder-circuit-cable jacket color; with jackets of different colors for multiple-cable installation in same trench.
- Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial.

2.13 Boxes for Automatic Control Valves.

2.13.1 Plastic Boxes: Box and cover, with open bottom and openings for piping; designed for installing flush with grade.
(a) Size: As required for valves and service.
(b) Shape: Rectangular.
(c) Sidewall Material: PE, ABS, or FRP.
(d) Cover Material: PE, ABS, or FRP.
- Lettering: " IRRIGATION."

2.13.2 Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4 inch (19 mm) minimum to 3 inches (75 mm) maximum.

3.0 Execution.

3.1 Earthwork.

3.1.1 Excavating, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.1.2 Install warning tape directly above pressure piping, 12 inches (300 mm) below finished grades, except 6 inches (150 mm) below subgrade under pavement and slabs.

3.1.3 Drain Pockets: Excavate to sizes provided on shop drawings. Backfill with cleaned gravel or crushed stone, graded from 3/4 to 3 inches (19 to 75 mm), to 12 inches (300 mm) below grade. Cover gravel or crushed stone with sheet of asphalt-saturated felt and backfill remainder with excavated material.

3.1.4 Provide minimum cover over top of underground piping according to the following:
(a) Irrigation Main Piping: Minimum depth of 36 inches (900 mm) below finished grade.
(b) Circuit Piping: 12 inches (300 mm).
(c) Drain Piping: 12 inches (300 mm).
(d) Sleeves: As required to meet coverage requirements under pavements as directed by engineer.

3.2 Piping Installation.

3.2.1 Location and Arrangement: Shop Drawings shall indicate location and arrangement of piping systems. Install piping as indicated.

(a) Install piping at minimum uniform slope of 0.5 percent down toward drain valves.
(b) Install piping free of sags and bends.
(c) Install groups of pipes parallel to each other, spaced to permit valve servicing.
(d) Install fittings for changes in direction and branch connections.
(e) Install unions adjacent to valves and to final connections to other components with NPS 2 (DN 50) or smaller pipe connection.
(f) Install flanges adjacent to valves and to final connections to other components with NPS 2-1/2 (DN 65) or larger pipe connection.
(g) Lay piping on solid subbase, uniformly sloped without humps or depressions.
(h) Install water regulators with shutoff valve and strainer on inlet and pressure gage on outlet. Install shutoff valve on outlet. Install aboveground or in control-valve boxes.

3.2.2 Water Hammer Arresters: Install between connection to building main and circuit valves aboveground or in control-valve boxes.

(a) Install piping in sleeves under parking lots, roadways, and sidewalks.

3.3 Joint Construction.

3.3.1 Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

3.3.2 Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

3.3.3 Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

(a) Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.

(b) Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

3.3.4 Flanged Joints: Select rubber gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.4 Valve Installation.

3.4.1 Underground Curb Valves: Install in curb-valve casings with tops flush with grade.

3.4.2 Pressure-Reducing Valves: Install in boxes for automatic control valves or aboveground between shutoff valves.

3.4.3 Throttling Valves: Install in underground piping in boxes for automatic control valves.

3.4.4 Drain Valves: Install in underground piping in boxes for automatic control valves.

3.5 Sprinkler Installation.

3.5.1 Install sprinklers after hydrostatic test is completed.

3.5.2 Install sprinklers at manufacturer's recommended heights.

3.5.3 Locate part-circle sprinklers to maintain a minimum distance of 4 inches (100 mm) from walls and 2 inches (50 mm) from other boundaries unless otherwise indicated.

3.6 Automatic Irrigation Control System Installation.

3.6.1 Equipment Mounting: Install exterior controllers on building wall. Coordinate final location with Owner.

(a) Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

(b) Install anchor bolts to elevations required for proper attachment to supported

equipment.

3.6.2 Install control cable in same trench as irrigation piping and at least 2 inches (51 mm) below or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.

3.7 Connections.

3.7.1 Install piping adjacent to equipment, valves, and devices to allow service and maintenance.

3.7.2 Connect wiring between controllers and automatic control valves.

3.8 Field Quality Control.

3.8.1 **Manufacturer's Field Service:** Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

3.8.2 **Tests and Inspections:**

(a) Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

(b) Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.

(c) Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.8.3 Any irrigation product will be considered defective if it does not pass tests and inspections.

3.8.4 Prepare test and inspection reports.

3.9 Startup Service.

3.9.1 Engage a factory-authorized service representative to perform startup service.

(a) Complete installation and startup checks according to manufacturer's written instructions.

(b) Verify that controllers are installed and connected according to the Contract Documents.

(c) Verify that electrical wiring installation complies with manufacturer's submittal.

3.10 Adjusting.

3.10.1 Adjust settings of controllers.

3.10.2 Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.

3.10.3 Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/2 inch (13 mm) above, finish grade.

3.10.4 Adjust all sprinkler heads for optimum performance and to prevent over-spray onto paving and structures.

3.11 Cleaning. Flush dirt and debris from piping before installing sprinklers and other devices.

3.12 Demonstration. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain automatic control valves and controllers.

4.0 Method of Measurement.

4.1 Irrigation Point of Connection: Shall be measured and paid for as lump sum unit price. Work will include installation of point of connection components and incidentals including but not limited to excavation, backfill, water main tap, valves, fitting, water service line, backflow preventer, controller, master control valve, flow and rain sensors, and controller power supply.

4.2 Irrigation – Mainline: Shall be measured and paid for per linear foot of mainline piping. Work will include installation of mainline piping and incidentals including but not limited to excavation, backfill, piping, and fittings.

4.3 Irrigation – Sleeves: Shall be measured and paid for per linear foot of sleeves. Work will include installation of sleeves and incidentals including but not limited to excavation, backfill, and piping.

4.4 Irrigation Areas: Shall be measured and paid for per square foot of irrigated areas. Work will include installation of irrigation components and incidentals including but not limited to excavation, backfill, circuit piping, fittings, control valves and wiring, boxes, spray heads, and drain valves.

4.5 Irrigation – Quick Couplers: Shall be measured and paid for per each quick coupler valve. Work will include installation of quick coupler valves and incidentals including but not limited to excavation, backfill, valves and boxes.

5.0 Basis of Payment.

5.1 No direct payment will be made for delegated design of irrigation system, system testing, and startup services. These costs shall be included in the unit price indicated above for irrigation areas.

5.2 Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 8089901 Irrigation Point of Connection, 8089903-2 Irrigation – Mainline, 8089903-3 Irrigation – Sleeves, 8089904 Irrigation Areas, 8089902-1 Irrigation – Quick Couplers.

ZZZ. PLANTS

1.0 Related Documents. Drawings and general provisions of the Contract

1.1 Description.

1.1.1 Section Includes:

(a) Plants.
(b) Mulch.
(c) Planting soils.
(d) Tree stabilization.

1.1.2 Related Sections:

(a) JSP - "Turf and Grasses" for turf (lawn).

1.2 Definitions.

(a) Backfill: The earth used to replace or the act of replacing earth in an excavation.
(b) Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.
(c) Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required.
(d) Bare-Root Stock: Plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for type and size of plant required.
(e) Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
(f) Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
(g) Finish Grade: Elevation of finished surface of planting soil.
(h) Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
(i) Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
(j) Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs,

mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

(k) Planting Area: Areas to be planted.

(l) Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

(m) Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

(n) Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

(o) Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

(p) Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

(q) Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

(r) Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.3 Informational Submittals.

1.3.1 Qualification Data: For qualified landscape Installer. Provide 3 references of projects similar in size, scope and expected craftsmanship as those shown in the Contract Documents. Include photographs demonstrating Installer's capabilities and experience. Provide project name, address, year completed, and owner's or general contractor's name and current contact information.

1.3.2 Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:

(a) Manufacturer's certified analysis of standard products.

(b) Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

1.3.3 Warranty: Sample of special warranty.

1.4 Quality Assurance.

1.4.1 Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of plants.

(a) Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
(b) Experience: Ten years' experience in landscape installation in addition to requirements in Standard BPS specification. Landscape Contractor shall be approved by Owner.
(c) Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
(d) Pesticide Applicator: State licensed, commercial.

1.4.2 Mock-ups for Owner and Landscape Architect review.

(a) Mockup of Tree Planting Installation.

(b) Mockup of Rootball Anchor for Tree Planting installation.

1.4.3 Soil-Testing Laboratory Qualifications: An independent or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

1.4.4 Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of the soil.
(a) Testing methods and written recommendations shall comply with USDA's Handbook No. 60.
(b) The soil-testing laboratory shall oversee soil sampling; with depth, location, and number of samples to be taken per instructions from Architect. A minimum of three representative samples shall be taken from varied locations for each soil to be used or amended for planting purposes.
(c) Report suitability of tested soil for plant growth.
- Based upon the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft. or volume per cu. yd. for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.

1.4.5 Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

1.4.6 Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.

(a) Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.
(b) Other Plants: Measure with stems, petioles, and foliage in their normal position.

1.4.7 Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

(a) Notify Architect of sources of planting materials seven days in advance of delivery to site.

1.5 Delivery, Storage, and Handling.

1.5.1 Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

1.5.2 Bulk Materials:
(a) Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
(b) Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
(c) Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

1.5.3 Deliver bare-root stock plants freshly dug. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.

1.5.4 Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

1.5.5 Handle planting stock by root ball.

1.5.6 Store bulbs, corms, and tubers in a dry place at 60 to 65 degrees F until planting.

1.5.7 Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

(a) Heel-in bare-root stock. Soak roots that are in dry condition in water for two hours. Reject dried-out plants.
(b) Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
(c) Do not remove container-grown stock from containers before time of planting.
(d) Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition

1.6 Project Conditions.

1.6.1 Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

1.6.2 Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:

(a) Notify Owner no fewer than seven days in advance of proposed interruption of each service or utility.
(b) Do not proceed with interruption of services or utilities without Owner's written permission.

1.6.3 Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

1.6.4 Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

(a) When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.7 Warranty.

1.7.1 Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

(a) Failures include, but are not limited to, the following:
- Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
- Structural failures including plantings falling or blowing over.
- Faulty performance of tree stabilization.
- Deterioration of metals, metal finishes, and other materials beyond normal weathering.

(b) Warranty Periods from Date of Planting Completion:
- Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
- Ground Covers, Biennials, Perennials, and Other Plants: 12 months.

(c) Include the following remedial actions as a minimum:
- Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
- Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
- A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
- Provide extended warranty for period equal to original warranty period, for replaced plant material.

2.0 Products.

2.1 Plant Material.

2.1.1 Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

(a) Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots will be rejected.

(b) Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

2.1.2 Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

2.1.3 Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

2.1.4 If formal arrangements or consecutive order of plants is shown on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

2.1.5 Chelated Iron: Commercial-grade FeEDDHA for dicots and woody plants, and commercial-grade FeDTPA for ornamental grasses and monocots.

2.2 Submittals.

2.2.1 Product Data: For each type of product indicated, including soils.

(a) Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
(b) Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to the Project.
(c) Plant Photographs: digital format of each required species and size of plant material as it will be furnished to the Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Compile photographs for delivery into a single PDF document. Each plant shall utilize one "letter" sized sheet (8.5" x 11") and include the following information:

- Color Photograph with multi-colored scale rod or adult
- Full Latin and common name of plant.
- Size of plant.
- Name of growing nursery.
- City, State of nursery.

2.3 Planting Soils and Soil Amendments. Refer to Soil Preparation Job Special Provisions

2.4 Mulches.

2.4.1 Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

(a) Type: Triple Ground Shredded hardwood.
(b) Size Range: 1 1/2 inches maximum, 1/2 inch minimum.
(c) Color: Natural.

2.5 Pesticides.

2.5.1 General: Pesticide registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

2.5.2 Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

2.5.3 Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.6 Tree Stabilization Materials.

2.6.1 Stakes and Guys:

(a) Upright and Guy Stakes: Rough-sawn, sound, new hardwood, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.
(b) Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or turnbuckles.
(c) Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch in diameter.
(d) Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
(e) Guy Cables: Five-strand, 3/16-inch-diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 3 inches long, with two 3/8-inch galvanized eyebolts.
(f) Flags: Standard surveyor's plastic flagging tape, white, 6 inches long.

2.6.2 Rootball Anchors: As indicated on drawings.

3.0 Execution.

3.1 Examination.

3.1.1 Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.

(a) Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
(b) Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
(c) Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
(d) Uniformly moisten excessively dry soil that is not workable and which is too dusty.

3.1.2 Proceed with installation only after unsatisfactory conditions have been corrected.

3.1.3 If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 Preparation.

3.2.1 Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

3.2.2 Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2.3 Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.

3.2.4 Lay out plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

3.3 Excavation for Trees and Shrubs.

3.3.1 **Planting Pits and Trenches:** Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on

undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.

(a) Excavate approximately three times as wide as ball diameter for balled and burlapped stock.
(b) Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
(c) Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
(d) If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
(e) Maintain required angles of repose of adjacent materials as shown on the Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
(f) Maintain supervision of excavations during working hours.
(g) Keep excavations covered or otherwise protected when unattended by Installer's personnel.
(h) If drain tile is shown on Drawings or required under planting areas, excavate to top of porous backfill over tile.

3.3.2 Subsoil and topsoil removed from excavations may be used as planting soil.

3.3.3 **Obstructions:** Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
(a) Hardpan Layer: Drill 6-inch-diameter holes, 24 inches apart, into free-draining strata or to a depth of 10 feet , whichever is less, and backfill with free-draining material.

3.3.4 **Drainage**: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

3.3.5 Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.4 Tree, Shrub, and Vine Planting.

3.4.1 Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

3.4.2 Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

3.4.3 Set balled and burlapped stock plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

(a) Use planting soil for backfill.
(b) After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
(c) Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
(d) Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
(e) Continue backfilling process. Water again after placing and tamping final layer of soil.

3.4.4 Set container-grown stock plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

(a) Use planting soil for backfill.
(b) Carefully remove root ball from container without damaging root ball or plant.
(c) Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
(d) Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
(e) Continue backfilling process. Water again after placing and tamping final layer of soil.

3.4.5 When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.5 Tree Stabilization.

3.5.1 Install trunk stabilization as follows unless otherwise indicated:

(a) Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip out. Use a minimum of two stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend one-third of trunk height above grade. Set vertical stakes and space to avoid penetrating root balls or root masses.

(b) Use two stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; three stakes for trees less than 14 feet high and up to 4 inches in caliper. Space stakes equally around trees.

(c) Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

(d) Support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

3.5.2 Staking and Guying: Stake and guy trees more than 14 feet in height and more than 3 inches in caliper unless otherwise indicated. Securely attach no fewer than three guys to stakes 30 inches long, driven to grade.

(a) Site-Fabricated Staking-and-Guying Method:

- For trees more than 6 inches in caliper, anchor guys to wood deadmen buried at least 36 inches below grade. Provide turnbuckle for each guy wire and tighten securely.
- Support trees with strands of cable or multiple strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk and reaching to turnbuckle. Allow enough slack to avoid rigid restraint of tree.
- Attach flags to each guy wire, 30 inches above finish grade.

3.6 Groundcover and Plant Planting.

3.6.1 Set out and space ground cover and plants other than trees, shrubs, and vines as indicated in even rows with triangular spacing.

3.6.2 Use planting soil for backfill.

3.6.3 Dig holes large enough to allow spreading of roots.

3.6.4 For rooted cutting plants supplied in flats, plant each in a manner that will minimally disturb the root system but to a depth not less than two nodes.

3.6.5 Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

3.6.6 Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

3.6.7 Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.7 Planting Area Mulching.

3.7.1 Mulch backfilled surfaces of planting areas and other areas indicated.

(a) Trees and Tree-like Shrubs in Turf Areas: Apply organic mulch ring of 2-inch average thickness, with 48" min. radius around trunks or stems. Do not place mulch within 6 inches of trunks or stems.

(b) Organic Mulch in Planting Areas: Apply 2-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

3.8 Plant Maintenance.

3.8.1 Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.

3.8.2 Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

3.8.3 Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated past management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.8.4 Tree plantings to be maintained by the contractor until substantial completion of plantings. Following substantial completion of plant contractor is responsible for coordinating with Forest Park Forever Land Management for the transition of planting maintenance.

3.9 Pesticide Application.

3.9.1 Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

3.9.2 Pre-Emergent Herbicides (Selective and Non-Selective): Apply to tree, shrub, and ground-cover areas in accordance with manufacturer's written recommendations. Do not

apply to seeded areas.

3.9.3 Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.10 Cleanup and Protection.

3.10.1 During planting, keep adjacent paving and construction clean and work area in an orderly condition.

3.10.2 Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

3.10.3 After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

3.11 Disposal. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

4.0 Method of Measurement.

4.1 Canopy Trees: Shall be measured and paid for per each canopy tree.

4.2 Evergreen Trees: Shall be measured and paid for per each evergreen tree.

4.3 Flowering Trees: Shall be measured and paid for per each flowering tree.

4.4 Shrub Planting: Shall be measured and paid for per each shrub planting.

4.5 Perennial Planting: Shall be measured and paid for per each perennial planting.

4.6 Groundcover Planting: Shall be measured and paid for per each groundcover tree.

4.7 Rootball Anchors: Shall be measured and paid for per each tree installed on bridge deck. Work shall include materials and labor required for installation of rootball anchors as indicated on drawings.

4.8 Mulch: Shall be measured and paid for per cubic yard of mulch. Work shall include all materials, equipment, and labor required for installation of mulch.

5.0 Basis of Payment.

5.1 Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 8089902-2 Canopy Trees, 8089902-4 Evergreen Trees, 8089902-3 Flowering Trees, 8089902-5 Shrub Plantings, 8089902-6 Perennial Plantings, 8089902-7 Groundcover Plantings, 8089902-8 Rootball Anchors, & 8069907 Mulch.

AAAA. SOIL PREPARATION

1.0 Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.1 Description. Section includes planting soils specified by composition of the mixes.

1.1.1 Related Requirements:

(a) JSP "Turf and Grasses" for placing planting soil for turf and grasses.
(b) JSP "Plants" for trees, shrubs, ground covers, and other plants.
(c) JSP "Vegetated Roof System" for lightweight growing media for bridge deck.

1.2 Definitions.

(a) AAPFCO: Association of American Plant Food Control Officials.
(b) Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
(c) CEC: Cation exchange capacity.
(d) Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
(e) NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.
(f) Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
(g) Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
(h) SSSA: Soil Science Society of America.
(i) Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
(j) Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

(k) Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.

(l) USCC: U.S. Composting Council.

1.3 Preinstallation Meetings. Conduct conference at Project site.

1.4 Informational Submittals.

1.4.1 Qualification Data: For each testing agency.

1.4.2 Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.

1.4.3 Field quality-control reports.

1.5 Quality Assurance.

1.5.1 Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.

(a) Laboratories: Subject to compliance with requirements, provide testing by one of the following:

- SGS; 1511 E. Main St.; P.O. Box 175; Belleville, IL 62221.
- Local University Extension Soils Testing Laboratory (University of Missouri, University of Illinois, etc.)

(b) Multiple Laboratories: At Contractor's option, work may be divided among qualified testing laboratories specializing in physical testing, chemical testing, and fertility testing.

1.6 Preconstruction Testing.

1.6.1 Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction soil analyses on existing, on-site soil and imported soil.

(a) Notify Landscape Architect seven days in advance of the dates and times when laboratory samples will be taken.

1.6.2 Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.

(a) Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

1.7 Soil-Sampling Requirements. Extract soil samples according to requirements in this article.

1.7.1 Sample Collection and Labeling: Have samples taken and labeled by Contractor under the direction of the testing agency.

(a) Number and Location of Samples: Minimum of three representative soil samples from varied locations for each soil to be used or amended for landscaping purposes.
(b) Procedures and Depth of Samples: Per testing laboratory directions.
(c) Division of Samples: Split each sample into two, equal parts. Send half to the testing agency and half to Owner for its records.
(d) Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.8 Testing Requirements.

1.8.1 General: Perform tests on soil samples according to requirements in this article.

1.8.2 Physical Testing:

(a) Soil Texture: Soil-particle, size-distribution analysis by one of the following methods according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
- Sieving Method: Report sand-gradation percentages for very coarse, coarse, medium, fine, and very fine sand; and fragment-gradation (gravel) percentages for fine, medium, and coarse fragments; according to USDA sand and fragment sizes.
- Hydrometer Method: Report percentages of sand, silt, and clay.

(b) Chemical Testing:
- CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."

(c) Fertility Testing: Soil-fertility analysis according to standard laboratory, including the following:
- Percentage of organic matter.
- CEC, calcium percent of CEC, and magnesium percent of CEC.
- Soil reaction (acidity/alkalinity pH value).
- Buffered acidity or alkalinity.
- Nitrogen ppm.
- Phosphorous ppm.

- Potassium ppm.
- Soluble-salts ppm.
- Other deleterious materials, including their characteristics and content of each.

1.8.3 Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."

1.8.4 Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.

(a) Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inch depth of soil.
(b) Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inch depth of soil.

1.9 Delivery, Storage, and Handling.

1.9.1 Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.

1.9.2 Bulk Materials:

(a) Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
(b) Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
(c) Do not move or handle materials when they are wet or frozen.
(d) Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.
(e) Topsoil and/or planting soil stockpile(s) shall be formed under normal industry standards. Stockpile height shall not exceed highest point of lifting mechanism of equipment (maximum height: 72 inches; maximum width: 12') creating the stockpile. Stockpile will be considered defective if equipment drives or otherwise compacts stockpile. Do not stockpile within protection zones.

2.0 Materials.

2.0.1 Regional Materials: Imported soil and soil amendments and fertilizers shall be manufactured within 500 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

2.1 Submittals.

2.1.1 Product Data: For each type of product.

(a) Include recommendations for application and use.

(b) Include test data substantiating that products comply with requirements.

(c) Include sieve analyses for aggregate materials.

(d) Material Certificates: For each type of soil amendment and fertilizer before delivery to the site, according to the following:

- Manufacturer's qualified testing agency's certified analysis of standard products.
- Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
- Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

2.1.2 Samples: For each bulk-supplied material, 1-quart volume of each in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

2.1.3 Delivery and Purchase Tickets: Delivery and purchase tickets for each supplied soil type and compost from supplier. Delivery tickets shall include date, time, driver's name, project name, and quantity of material.

2.2 Planting Soils Specified by Composition.

2.2.1 Planting-Soil Type: **Existing Stockpiled Turf and Planting Bed Soil**, on-site surface soil, with the duff layer, if any, retained; and stockpiled on-site; modified to produce viable planting soil. Blend existing, on-site surface soil with the soil amendments and fertilizers in the quantities recommended by the testing agency to produce planting soil. Till in turf and planting bed soil to depths indicated on drawings.

2.2.2 Planting-Soil Type: **Imported Turf and Planting Bed Soil:** Imported, naturally formed soil from off-site sources and consisting of sandy loam soil according to USDA textures; and modified to produce viable planting soil.

(a) Sources: Take imported, unamended soil from sources that are naturally well-drained sites where topsoil occurs at least 4 inches deep, not from agricultural land, bogs, or marshes; and that do not contain undesirable organisms; disease-causing plant pathogens; or noxious weeds and invasive plants including, but not

limited to, quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and bromegrass.

(b) Additional Properties of Imported Soil before Amending: Soil reaction of pH 6 to 7 and minimum of 4 percent organic-matter content, friable, and with sufficient structure to give good tilth and aeration.

(c) Unacceptable Properties: Clean soil of the following:

- Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
- Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 8 percent by dry weight of the imported soil.
- Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 2 inches in any dimension.

(d) Amended Soil Composition: Blend imported, unamended soil with the following soil amendments and fertilizers in the following quantities to produce planting soil:

- Ratio of Loose Compost to Soil: 1:4 by volume.
- Inorganic soil amendments to be applied as prescribed by soil reports.

(e) Till in turf and planting bed soil to depths indicated on drawings.

2.2.3 Planting-Soil Type: **Lightweight Growing Media:** For soils installed on bridge deck refer to JSP “Vegetated Roof Systems”.

2.3 Inorganic Soil Amendments.

2.3.1 Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:

(a) Class: T, with a minimum of 99 percent passing through a No. 8 sieve and a minimum of 75 percent passing through a No. 60 sieve.

(b) Class: O, with a minimum of 95 percent passing through a No. 8 sieve and a minimum of 55 percent passing through a No. 60 sieve.

(c) Form: Provide lime in form of ground dolomitic limestone.

2.3.2 Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.

2.3.3 Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

2.3.4 Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C 33/C 33M.

2.4 Organic Soil Amendments.

2.4.1 Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:

(a) Feedstock: Limited to leaves and other green waste (grass clippings, twigs, green food waste etc.).
(b) Reaction: pH of 5.5 to 8.
(c) Soluble-Salt Concentration: Less than 4 dS/m.
(d) Moisture Content: 35 to 55 percent by weight.
(e) Organic-Matter Content: 50 to 60 percent of dry weight.
(f) Particle Size: Minimum of 98 percent passing through a 1-inch sieve.

2.4.2 Wood Derivatives: Shredded and composted, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.

(a) Partially Decomposed Wood Derivatives: In lieu of shredded and composted wood derivatives, mix shredded and partially decomposed wood derivatives with ammonium nitrate at a minimum rate of 0.15 lb/cu. ft. of loose sawdust or ground bark, or with ammonium sulfate at a minimum rate of 0.25 lb/cu. ft. of loose sawdust or ground bark.

2.4.3 Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, persistent herbicides, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.

2.5 Fertilizers.

2.5.1 Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

2.5.2 Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

(a) Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.

2.5.3 Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

(a) Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.
- Poultry based litter.
- Approved equal.

2.5.4 Chelated Iron: Commercial-grade FeEDDHA for dicots and woody plants, and commercial-grade FeDTPA for ornamental grasses and monocots.

3.0 Execution.

3.0.1 Place planting soil and fertilizers according to requirements in other Specification Sections.

3.0.2 Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.

3.0.3 Proceed with placement only after unsatisfactory conditions have been corrected.

3.1 Preparation of Unamended, On-Site Soil Before Amending.

3.1.1 Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.

3.1.2 Unsuitable Materials: Clean soil to contain a maximum of 8 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.

3.2 Placing and Mixing Planting Soil over Exposed Subgrade.

3.2.1 General: Apply and mix unamended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

3.2.2 Subgrade Preparation: Till subgrade to a minimum depth of 4 inches . Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

(a) Apply, add soil amendments, and mix approximately half the thickness of unamended soil over prepared, loosened subgrade according to "Mixing" Paragraph below. Mix thoroughly into top of subgrade as indicated on the drawings. Spread remainder of planting soil.

3.2.3 Mixing: Spread unamended soil to total depth indicated on Drawings, but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.

(a) Amendments: Apply soil amendments and fertilizer, except compost, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.

- Mix lime or sulfur with dry soil before mixing fertilizer per soil testing recommendations.
- Mix fertilizer with planting soil no more than seven days before planting.

(b) Lifts: Apply and mix unamended soil and amendments in lifts not exceeding 8 inches in loose depth for material compacted by compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.

3.2.4 Compaction: Compact each blended lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698 and tested in-place.

3.2.5 Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.3 Blending Planting Soil in Place.

3.3.1 General: Mix amendments with in-place, unamended soil to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.

3.3.2 Preparation: Till unamended, existing soil in planting areas to depth indicated on drawings. Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

3.3.3 Mixing: Apply soil amendments and fertilizer, except compost, if required, evenly on surface, and thoroughly blend them into full depth of unamended, in-place soil to produce planting soil.

(a) Mix lime or sulfur with dry soil before mixing fertilizer per soil testing recommendation.
(b) Mix fertilizer with planting soil no more than seven days before planting.

3.3.4 Compaction: Compact blended planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698.

3.3.5 Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.4 Field Quality Control.

3.4.1 Testing Agency: Engage a qualified testing agency to perform tests and inspections.

(a) Upon delivery at the project site:

- 1 test per 1000 yards of imported topsoil.
  - Test for the following:
  - pH.
  - CEC.
  - Percentage of Organic Matter.
  - N-P-K.
  - Soluble Salts ppm.
  - Soil Texture.

(b) Perform the following tests and inspections:

- Compaction: Test planting-soil compaction after placing each lift and at completion using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D 698. Space tests at no less than one for each 1000 sq. ft. of in-place soil or part thereof.
- Post-installation Soil Test: Provide soil analysis by same laboratory determining pH, CEC, N-P-K, micornutrients, and organic matter.
  - Perform post-installation testing at locations indicated on the drawings.
  - Post-installation testing should be performed approximately 3-6 months after installation.

3.4.2 Soil will be considered defective if it does not pass tests and inspections, or stockpile has not been formed properly per Section 1.

3.4.3 Prepare test and inspection reports.

3.4.4 Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.

3.5 Protection.

3.5.1 Protection Zone: Identify protection zones according to Section 015639 "Temporary Tree and Plant Protection."

3.5.2 Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:

(a) Storage of construction materials, debris, or excavated material.
(b) Parking vehicles or equipment.
(c) Vehicle traffic.
(d) Foot traffic.
(e) Erection of sheds or structures.
(f) Impoundment of water.
(g) Excavation or other digging unless otherwise indicated.

3.5.3 If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Landscape Architect and replace contaminated planting soil with new planting soil.

3.6 Cleaning.

3.6.1 Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.

3.6.2 Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.

(a) Coordinate with owner the legal disposal of excess subsoil and unsuitable materials.

4.0 Method of Measurement.

4.0 Amended Planting Soil / Soil Preparation: Shall be measured and paid for per cubic yard of amended and prepared planting soil. This work shall include all materials, labor, equipment and incidental work required for the installation of amended soil as described herein and indicated on the drawings.

5.0 Basis of Payment.

5.0 No direct payment will be made for testing / analysis of existing and imported soils used on the project. Costs associated with this work shall be included in the unit price of the amended planting soils.

5.1 Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 8069907-1 Amended Planting Soil / Soil Preparation.

BBBB. SOLID LIMESTONE ENTRY FEATURE

1.1 Related Documents. Drawings and general provisions of the Contract

1.2 Description. Section Includes:

(a) Fabrication and installation of exterior solid limestone entry features.
(b) Specialty stone paint.
(c) Specialty natural stone sealant/ graffiti guard.
(d) Fasteners.

1.3 Scope of Work.

1.3.1 Provide shop drawings to effectively communicate the Contractor's fabrication and installation.

1.3.2 Mock-ups and submittal of material samples and product data as specified herein.

1.3.3 Fabrication of entry feature components to achieve the design intent as specified herein and on the drawings.

1.3.4 Installation of solid limestone entry features.

1.4 Quality Assurance.

1.4.1 Limestone Supplier/Fabricators Qualifications

(a) Limestone Supplier/Fabricator shall be experienced in procuring limestone material and fabricating solid limestone features similar to those indicated for this Project.
(b) Limestone Supplier/Fabricator shall have sufficient production capacity to produce the entry features without causing delays in the project schedule.

1.4.2 Qualifications Submittals

(a) The Contractors and Limestone Supplier/Fabricators anticipated to complete the specified limestone entry features fabrication work shall submit qualifications and similar project samples to the Owner and Landscape Architect for review and approval.
(b) At minimum (3) example projects of comparable scope and detail successfully completed with the past five (5) years, including references for work performed, shall be provided.

(c) Qualifications and project samples shall be in graphic format and submitted in electronic format to the Owner.

1.4.3 In-Fabrication Review

(a) Owner and or Landscape Architect may request a visit to the Contractor's fabrication facility to review the progress and condition of the Work, at mutually agreed upon times. Contractor will make available for review by Owner and Landscape Architect documentation of the source and quality of materials used in the fabrication of the entry features.

(b) Quantity of fabrication facility visits: One (1), minimum.

1.4.4 Products

(a) Products shall be new stock, free from defects.

(b) Fabrication or installation methods or procedures shall not change the material warranty, quality, nor have an adverse effect on existing materials and surfaces.

(c) Handle and install products according to manufacturer's instructions.

1.5 Project Conditions.

1.5.1 Field Measurements: Contractor to take field measurements prior fabrication to ensure proper fitting. Show recorded measurements on shop drawings.

1.5.2 Coordinate supports, anchors, footings, and utilities with locations of adjacent site and building elements.

1.5.3 Entry features shall not have protrusions, sharp edges, and other potential hazards for both park guests and employees.

1.5.4 Entry features are to be installed in a public, high-traffic area with exposure to weather, including high humidity, heat, and winds. Entry features must be durable under these conditions.

1.5.5 Entry features will be within reach of park guests and employees. Entry features must be durable under these conditions.

1.6 Delivery, Storage, and Handling.

1.6.1 Inspect buy-out material upon receipt from the manufacturer/fabricator. Reject any defective or damaged materials.

1.6.2 Handle and store materials according to manufacturer's/fabricator's instructions.

1.6.3 Deliver elements to the project site in undamaged protective packaging labeled with specific contents.

1.6.4 Protect materials from damage on construction site and store in a safe, dry location.

1.6.5 Any material that becomes damaged during manufacture, shipping, or while being stored shall be replaced at no additional cost to the Owner.

2.0 Materials.

2.1 Submittals.

2.1.1 Provide comprehensive shop drawings showing fabrication and erection of entry features. Include plans, elevations, and large-scale sections of typical and other components. Show layout, dimensions, finishes, connections, materials anchors, accessories, and installation details, including all connections details, as needed to effectively communicate the Contractor's fabrication and installation.

2.1.2 Product data for all materials used.

2.1.3 Mock-ups for Owner and Landscape Architect review.

(a) Fabricator to provide full scale mock-up of wall/column portion with sufficient detail and size to represent all edge treatments, finishes, material, paints, and sealants as indicated in the drawings and specified herein. Mock-up may be coordinated to be presented during in-fabrication review.

(b) A separate mock-up of letter engraving shall be provided for approval prior to installation on finish stone material. For engraving mock-up, stone wall units shall be placed dry fit to reflect installed positioning and shall include full scale templates of engraving locations to show overall engraved composition. Engraving mock-up to be reviewed in person by Client and or Landscape Architect.

2.1.4 Cleaning and Maintenance Data: Include procedures for operation and maintenance including stain removal.

2.1.5 Warranties: Submit warranties from manufacturers, fabricators and installers.

2.2 Solid Limestone.

2.2.1 Indiana Limestone:

(a) Color: Gray, light silvery gray to shades of bluish gray, consistent color and minimal streaking required.
(b) Grade: Select per Indiana Limestone Institute’s classifcations
(c) Texture: Fine
(d) Finish: Honed and Bushhammered as indicated on the drawings

2.3 Mortar Materials.

2.3.1 Colored Portland Cement-Lime and Sand Mix: Packaged blend of portland cement, hydrated lime.

(a) Portland Cement: ASTM C 150, Type I or Type II, except Type III may be used for cold-weather construction; natural color or white cement may be used as required to produce mortar color indicated.

- Low-Alkali Cement: Not more than 0.60 percent total alkali when tested according to ASTM C 114.

(b) Hydrated Lime: ASTM C 207, Type N.

(c) Sand: Clean, sharp, and washed free of loam, silt, and vegetable matter. Grading should be fine to coarse complying with ASTM C144. If setting mortar is used for pointing mortar, white sand which passes through No. 16 sieve shall be used.

(d) Water: Potable.

(e) Provide color additive compatible with manufacturer mortar product to match limestone finish color for pointing mortar. Provide samples for initial selection. Include color in mock-up for approval

2.4 Masonry Cleaners.

2.4.1 **Proprietary Acidic Cleaner:** Manufacturer's standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone producer.

2.5 Stone Paint.

2.5.1 **Products**

(a) Lithichrome Stone Paint, Color as noted on drawings

(b) Approved Equal

2.5.2 Install per manufacturer requirements.

2.5.3 Manufacturer:

(a) Cleveland Lithichrome, Joplin, MO 417-659-8900

(b) Or Approved Equal

2.6 Natural Stone Sealant.

2.6.1 Provide a clear, penetrating water and oil repellent suitable for use on interior or exterior calcareous surfaces such as limestone, marble and travertine. Sealant shall also perform as an anit-graffiti coating. The sealant shall penetrate deeply to provide surface and subsurface protection without forming a glossy surface film. Treated surfaces shall retain their natural color, texture and appearance after treatment.

(a) Technical Data:

(b) Clear liquid, mild petroleum odor

(c) Specific Gravity: .809
(d) Wt/gal.: 6.73 lbs.
(e) Active Content: 12%
(f) Total Solids: 10% ASTM D 5095
(g) VOC Content: 708 g/L
(h) Flash Point: 126° F (52° C) ASTM D 3278
(i) Freeze Point: <–22° F (<–30° C)
(j) Shelf Life: 2 years in tightly sealed, unopened container

2.6.2 Products:
(a) Stand Off Limestone & Marble Protector by PROSOCO, 3741 Greenway Circle, Lawrence, KS 66046, 1(800) 255-4255, http://www.prosoco.com/
(b) Approved equal.

2.7 Anchors.

2.7.1 Stainless Steel Threaded Rod
(a) Type 304, ASTM F593 Gr 18-8
(b) Size: As indicated on drawings or as required by fabricator

2.8 Bearing Shims.

2.8.1 Molded Copolymer Plastic Bearing Shims
(a) Size: As indicated on drawings or as required by fabricator to achieve consistent joint thickness
(b) Product: Shimmers by JVI or approved equal.

2.9 Damproofing.

2.9.1 Utilize damproofing product recommended by stone material product fabricator. Install per manufacturer’s specifications and as indicated on drawings.

3.0 Execution.

3.1 Fabrication.

3.1.1 Solid Limestone
(a) General: Fabricate stone units in sizes and shapes required to comply with requirements indicated. Comply with recommendations in ILI's "Indiana Limestone Handbook."
(b) Limestone entry feature components shall be shop-fabricated to extent possible.
(c) Limestone materials used shall be free of defects as specified herein, and consistent and uniform in appearance and color.

3.1.2 Paint

(a) Clean and prepare limestone surfaces as required by paint manufacturer's recommendations.
(b) Apply paint and over coat per paint manufacturers recommendations.
(c) Paint and over coat to be shop-applied in conditions deemed acceptable by manufacturer.

3.1.3 Natural Stone Sealant

(a) Clean and prepare limestone surfaces as required by sealant manufacturer's recommendations.
(b) Apply sealant per manufacturer's recommendations.
(c) Sealant to be applied in conditions deemed acceptable by manufacturer.

3.2 Installation.

3.2.1 General

(a) Means and methods used to install the entry feature shall be determined by the Contractor, with approval from the Owner and Landscape Architect.
(b) Contractor to provide equipment necessary to move and place limestone entry features without causing damage to material during installation.

3.2.2 Site Examination

(a) Verify that footings installed by other trades have been installed in the appropriate locations for anchoring.
(b) Do not proceed with installation of entry features until unsatisfactory conditions have been corrected.
(c) Locate entry features where indicated on drawings, using mounting methods of the type described and in compliance with the limestone fabricator's instructions.
(d) Entry features to be installed level and plumb.

3.2.3 Preparation

(a) Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.2.4 Setting Limestone

(a) Installation Quality Standards: In addition to standards specified elsewhere, perform work according to following, unless otherwise specified:
- ILI – Indiana Limestone Handbook.
- Approved submittals.

(b) Install mortar joints as indicated on drawings. Ensure completes solid mortar joint between segments. Provide bearing shims between pieces to provide consistent thickness as indicated on drawings.

3.2.5 Protection

(a) Protect installed elements during construction period.
(b) Remove temporary protection at Final Completion.

3.2.6 Damage Repair

(a) If acceptable to Landscape Architect, repair damage according to ILI's Repairing Damage to Indiana Limestone.
(b) If damaged cannot be repaired, remove and replace limestone units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units/components to match adjoining units and install to eliminate evidence of replacement.

3.2.7 Cleaning

(a) Final Cleaning: Clean installed work according to following:
- ILI's Indiana Limestone Handbook.
- ILI's How to Avoid Small Area Stains and Blemishes.

4.0 Method of Measurement.

4.1 Engraved Lettering with Painted Finish: Shall be measured and paid for as a lump sum price. This work shall include all materials, labor, and equipment required for the installation of engravings on stone material and application of painted finish.

4.2 Solid Limestone Monument - Medium Column: Shall be measured and paid for per each column. This work shall include all materials, labor, equipment and incidental work required for fabrication, delivery, and installation stone columns.

4.3 Solid Limestone Monument - Short Column: Shall be measured and paid for per each column. This work shall include all materials, labor, equipment and incidental work required for fabrication, delivery, and installation stone columns.

4.4 Solid Limestone Monument – Baluster Wall Section: Shall be measured and paid for per linear foot of baluster wall section. This work shall include all materials, labor, equipment and incidental work required for fabrication, delivery, and installation of stone balusters, base, and coping units.

4.5 Solid Limestone Monument – Solid Wall Section: Shall be measured and paid for per linear foot of solid wall section. This work shall include all materials, labor, equipment and incidental work required for fabrication, delivery, and installation of stone wall, base, and coping units.

5.0 Basis of Payment.

5.1 No direct payment will be made for shop drawings, samples, and mockups indicated. These costs should be included in the unit price costs of the limestone monument features.

5.2 Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 8089901-1 Engraved Lettering with Painted Finish, 8089902-9 Solid Limestone Monument - Medium Column, 8089902-10 Solid Limestone Monument - Short Column, 8089903-4 Solid Limestone Monument – Baluster Wall Section, & 8089903-5 Solid Limestone Monument – Solid Wall Section

CCCC. TREE PROTECTION FENCING

1.0 Related Documents. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section

1.1 Description. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

1.2 Definitions.

(a) Caliper: Diameter of a trunk measured by a diameter tape or the average of the smallest and largest diameters at 6 inches above the ground for trees up to, and including, 4-inch size; and 12 inches above the ground for trees larger than 4-inch size.

(b) Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

(c) Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings.

(d) Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.3 Informational Submittals.

1.3.1 Qualification Data: For qualified arborist and tree service firm.

1.3.2 Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

1.3.3 Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

1.3.4 Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

(a) Use sufficiently detailed photographs or videotape.

(b) Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.4 Quality Assurance.

1.4.1 Arborist Qualifications: Certified Arborist as certified by ISA.

1.4.2 Preinstallation Conference: Conduct conference at Project site.

(a) Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
- Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.
- Enforcing requirements for protection zones.
- Arborist's responsibilities.
- Field quality control.

1.5 Project Conditions.

1.5.1 The following practices are prohibited within protection zones:
(a) Storage of construction materials, debris, or excavated material.
(b) Parking vehicles or equipment.
(c) Foot traffic.
(d) Erection of sheds or structures.
(e) Impoundment of water.
(f) Excavation or other digging unless otherwise indicated.
(g) Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

1.5.2 Do not direct vehicle or equipment exhaust toward protection zones.

1.5.3 Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

2.0 Materials.

2.1 Fencing

2.1.1 Protection-Zone Fencing: Fencing fixed in position and meeting one of the following requirements. Previously used materials may be used when approved by Landscape Architect.
(a) Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with

plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet apart.

- Height: 4 feet.
- Color: High-visibility orange, nonfading.

2.2 Submittals.

2.2.1 Product Data: For each type of product indicated.

3.0 Execution.

3.2 Examination.

3.2.1 Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

3.2.2 For the record, prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.3 Preparation.

3.3.1 Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated. Tie a 1-inch blue-vinyl tape around each tree trunk at 54 inches above the ground.

3.3.2 Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.4 Tree and Plant Protection Zones.

3.4.1 Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people and animals from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

(a) Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Landscape Architect.

3.4.2 Maintain protection zones free of weeds and trash.

3.4.3 Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.

3.4.4 Maintain protection-zone fencing and signage in good condition as acceptable to Landscape Architect and remove when construction operations are complete and equipment has been removed from the site.

(a) Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
(b) Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.5 Excavation.

3.5.1 **General:** Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 310000 "Earthwork."

3.5.2 **Trenching near Trees:** Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.

3.5.3 Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.

3.5.4 Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.6 Root Pruning.

3.6.1 Prune roots that are affected by temporary and permanent construction. Prune roots as follows:

(a) Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments or with specialized root pruning equipment approved by the owner; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
(b) Cut Ends: Do not paint cut root ends.
(c) Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
(d) Cover exposed roots with burlap and water regularly.
(e) Backfill as soon as possible according to requirements in Section 310000 "Earthwork."

3.6.2 Root Pruning at Edge of Protection Zone: Prune roots 12 inches inside of the protection zone, by cleanly cutting all roots to the depth of the required excavation.

3.6.3 Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

3.7 Regrading.

3.7.1 Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

3.7.2 Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

3.7.3 Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

3.8 Field Quality Control.

3.8.1 Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.9 Repair and Replacement.

3.9.1 General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.

(a) Submit details of proposed root cutting and tree and shrub repairs.

(b) Have arborist perform the root cutting, branch pruning, and damage repair of trees and shrubs.

(c) Treat damaged trunks, limbs, and roots according to arborist's written instructions.

(d) Perform repairs within 24 hours.

(e) Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.

3.9.2 Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.

(a) Provide two new tree(s) of 4-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.

- Species: Species selected by Landscape Architect.

(b) Plant and maintain new trees as specified in Section 329300 "Plants."

3.9.3 Soil Aeration: Where directed by Landscape Architect, aerate surface soil compacted during construction. Aerate 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch- diameter holes a minimum of 12 inches deep at 24 inches O.C. Backfill holes with an equal mix of augered soil and sand.

3.10 Disposal of Surplus and Waste Materials.

3.10.1 Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

4.0 Method of Measurement.

4.2 Tree Protection Fencing: Shall be measured and paid for per linear foot of tree protection fencing. Work will include material, labor, and equipment required for the installation of tree protection fencing.

5.0 Basis of Payment.

5.1 No direct payment will be made for provisions of this section for regrading, root pruning, trenching, and excavations coordinated with tree protection zones. Costs associated with this work shall be included in the earthwork contract price.

5.2 Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 8069903-6 – Tree Protection Fencing.

DDDD. TURF SOD

1.0 Related Documents. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.1 Description. Section Includes:

(a) Sodding.
(b) Turf renovation.
(c) Erosion-control material(s).

1.2 Definitions.

(a) Finish Grade: Elevation of finished surface of planting soil.

(b) Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

(c) Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

(d) Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" and drawing designations for planting soils.

(e) Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.3 Informational Submittals.

1.3.1 Qualification Data: For landscape Installer.

1.3.2 Product Certificates: For fertilizers, from manufacturer.

1.3.3 Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.4 Quality Assurance.

1.4.1 Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.

(a) Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.

(b) Experience: Five years' experience in turf installation.

(c) Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

(d) Pesticide Applicator: State licensed, commercial.

1.5 Delivery, Storage, and Handling.

1.5.1 Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

1.5.2 Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

1.5.3 Bulk Materials:

(a) Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

(b) Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

(c) Accompany each delivery of bulk materials with appropriate certificates.

1.6 Field Conditions.

1.6.1 Planting Restrictions: Planting turf seed and installing turf sod is recommended during one of the following periods. Seeding and installing sod outside of this period is authorized only with written approval from the Landscape Architect. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of planting completion.

(a) Spring Planting:

- Seed: March 1 to May 1.
- Sod: March 1 to June 1.

(b) Fall Planting:
- Seed: September 1 to October 15.
- Sod: September 1 to October 15

1.6.2 Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions. Do not plant or install sod when daytime temperatures will exceed 80 degrees Fahrenheit within 14 calendar days of planting.

2.0 Materials.

2.1 Turfgrass Sod.

2.1.1 Turfgrass Sod: Certified , complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.

2.1.2 Turfgrass Species: Sod of grass species as follows, with not less than 85 percent germination, not less than 95percent pure seed, and not more than 0.5 percent weed seed:
(a) Full Sun: Turf-Type Tall Fescue, a minimum of three improved cultivars.
(b) Shade: Mixture of Creeping Red Fescue, Chewings Fescue, Kentucky Bluegrass, and Perennial Ryegrass, a minimum of 3 improved cultivars.

2.2 Fertilizers.

2.2.1 Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
(a) Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
(b) Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.2.2 Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
(a) Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
(b) Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.3 Pesticides.

2.3.1 General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

2.3.2 Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

2.3.3 Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.4 Erosion-Control Materials.

2.4.1 Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.

2.4.2 Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.

3.0 Execution.

3.1 Examination.

3.1.1 Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

(a) Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
(b) Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
(c) Uniformly moisten excessively dry soil that is not workable or which is dusty.

3.1.2 Proceed with installation only after unsatisfactory conditions have been corrected.

3.1.3 If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 Preparation.

3.2.1 Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

(a) Protect grade stakes set by others until directed to remove them.

3.2.2 Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 Turf Area Preparation.

3.3.1 General: Prepare planting area for soil placement and mix planting soil according to JSP - Soil Preparation.

3.3.2 Placing Planting Soil: Place and mix planting soil in place over exposed subgrade.

(a) Reduce elevation of planting soil to allow for soil thickness of sod.

3.3.3 Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.3.4 Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 Preparation for Erosion-Control Materials.

3.4.1 Prepare area as specified in "Turf Area Preparation" Article.

3.4.2 Fill cells of erosion-control mat with planting soil and compact before planting.

3.4.3 For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

3.4.4 Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.5 Sodding.

3.5.1 Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

3.5.2 Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid

damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

(a) Lay sod across slopes exceeding 1:3.
(b) Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.

3.5.3 Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod. Saturate sod with fine water spray within two hours of planting. Do not over water such that water runs off the sodded areas. Where soils have low permeability, employ a cycle and soak watering schedule to avoid drowning the sod and causing excess runoff. Sod thatch layer should have adequate time to dry out between watering to prevent disease and decay.

3.6 Turf Renovation.

3.6.1 Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
(a) Reestablish turf where settlement or washouts occur or where minor regrading is required.
(b) Install new planting soil as required.

3.6.2 Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.

3.6.3 Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.

3.6.4 Mow, dethatch, core aerate, and rake existing turf.

3.6.5 Remove weeds before sodding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

3.6.6 Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

3.6.7 Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches. Should turf renovation be required with tree driplines, refer to JSP- TEMPORARY TREE AND

PLANT PROTECTION for soil aeration within tree driplines.

3.6.8 Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.

(a) Soil Amendment(s): According to requirements of JSP - Soil Preparation.
(b) Initial Fertilizer: Commercial fertilizer applied according to manufacturer's recommendations.

3.6.9 Install sod as required for new turf.

3.6.10 Water newly planted areas and keep moist until new turf is established.

3.7 Turf Maintenance.

3.7.1 General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

(a) Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
(b) In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
(c) Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

3.7.2 Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.

(a) Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
(b) Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.

3.7.3 Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

(a) Mow tall fescue to a height of 2 1/2 to 3 inches .

3.7.4 Turf Postfertilization: Apply slow-release fertilizer after initial mowing and when grass is dry.

(a) Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.8 Satisfactory Turf.

3.8.1 Turf installations shall meet the following criteria as determined by Landscape Architect:

(a) Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

(b) Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even- colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

3.8.2 Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.9 Pesticide Application.

3.9.1 Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

3.9.2 Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.10 Cleanup and Protection.

3.10.1 Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

3.10.2 Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

3.10.3 Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

3.10.4 Remove nondegradable erosion-control measures after grass establishment period.

3.11 Maintenance Service.

3.11.1 Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established as required in the “Satisfactory Turf”, but for not less than the following periods:

(a) Sodded Turf: 30 days from date of planting completion.

4.0 Method of Measurement.

4.1 Turf Sod: Shall be measured and paid for per square yard of turf sod. This work should include all materials, labor, equipment, and incidental work necessary for the installation of turf sod as described herein.

5.0 Basis of Payment.

5.1 Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 8039905A – Turf Sod.

EEEE. GRANITE COBBLE PAVERS

1.0 Description. Section Includes:
(a) Stone pavers.
(b) Curbs and edge restraints.

1.2 Informational Submittals.

1.2.1 Qualification Data: For Installer.

1.2.2 Material Certificates: For unit pavers. Include statements of material properties indicating compliance with requirements, including compliance with standards. Provide for each type and size of unit.

1.2.3 Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for unit pavers, indicating compliance with requirements.

1.3 Quality Assurance.

1.3.1 Installer Qualifications: A qualified unit paving installer. Submit a minimum of five project samples showing successful performance of paver installation similar in size and scope, completed within the last three years.

1.3.2 Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

(a) Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.4 Delivery, Storage, and Handling.

1.4.1 Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.

1.4.2 Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

1.5 Field Conditions.

1.5.1 Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

2.0 Products.

2.1 Manufacturers.

2.1.1 Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.2 Submittals.

2.2.1 Product Data:
(a) For materials other than water and aggregates.
(b) For the following:
- Pavers.
- Aggregate setting materials.
- Edge restraints.

2.2.2 Sieve Analyses: For aggregate setting-bed materials, according to ASTM C136.

2.2.3 Samples for Verification: For full-size units of each type of unit paver indicated.
(a) Joint materials.
(b) Exposed edge restraints.
(c) Stone Pavers.

2.3 Stone Pavers.

2.3.1 Granite Pavers: Rectangular paving slabs made from granite complying with ASTM C615/C615M.

(a) Product: Mesabi Black Granite
(b) Finish: D10
(c) Verify product color / composition matches granite pavers used at existing Forest Park entry features at Wells Ave. and Skinker Blvd.
(d) Thickness: As indicated on drawings.
(e) Face Size: As indicated on drawings.

2.4 Curbs and Edge Restraints.

2.4.1 Aluminum Edge Restraints: As Indicated on Drawings.

2.5 Aggregate Setting-Bed Materials.

2.5.1 Graded Aggregate for Subbase: Sound, crushed stone or gravel complying with ASTM D448 for Size No. 57.

2.5.2 Sand for Leveling Course: Sound, sharp, washed, natural sand or crushed stone complying with gradation requirements in ASTM C33/C33M for fine aggregate.

2.5.3 Joint Material: High Performance Polymeric Sand, with dark color to match granite setts. Submit physical color samples for Landscape Architect selection.

3.0 Execution.

3.1 Examination.

3.1.1 Examine surfaces indicated to receive unit paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

3.1.2 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Preparation.

3.2.1 Proof-roll prepared subgrade according to requirements in Section 310000 "Earthwork" to identify soft pockets and areas of excess yielding. Proceed with unit paver installation only after deficient subgrades have been corrected and are ready to receive base course for unit pavers.

3.3 Installation, General.

3.3.1 Do not use unit pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.

3.3.2 Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.

3.3.3 Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.

3.3.4 Joint Pattern: As indicated on drawings.

3.3.5 Tolerances:

(a) Do not exceed 1/32-inch unit-to-unit offset from flush (lippage) or 1/8 inch in 10 feet from level, or indicated slope, for finished surface of paving.
(b) Do not exceed 1/16-inch unit-to-unit offset from flush (lippage) nor 1/8 inch in 24 inches and 1/4 inch in 10 feet from level, or indicated slope, for finished surface of paving.

3.3.6 Provide edge restraints as indicated. Install edge restraints before placing unit pavers.

(a) Install edge restraints to comply with manufacturer's written instructions. Install stakes at intervals required to hold edge restraints in place during and after unit paver installation.

3.4 Aggregate Setting Bed Applications.

3.4.1 Compact soil subgrade uniformly to at least 95 percent of ASTM D1557 laboratory density.

3.4.2 Proof-roll prepared subgrade to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

3.4.3 Place aggregate base, compact by tamping with plate vibrator, and screed to depth indicated.

3.4.4 Place leveling course and screed to a thickness of 1 inch, taking care that moisture content remains constant and density is loose and uniform until pavers are set and compacted.

3.4.5 Treat leveling course with herbicide to inhibit growth of grass and weeds.

3.4.6 Set pavers with a minimum joint width of 3/8 inch and a maximum of 1/2 inch, being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars. Use string lines to keep straight lines.

3.4.7 Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a 3500- to 5000-lbf compaction force at 80 to 90 Hz. Use vibrator with neoprene mat on face of plate or other means as needed to prevent cracking and chipping of pavers. Perform at least three passes across paving with vibrator.

3.4.8 Before ending each day's work and when rain interrupts work, cover pavers that have not been compacted and cover leveling course on which pavers have not been placed with nonstaining plastic sheets to protect them from rain.

3.4.9 Spread dry sand and fill joints immediately after vibrating pavers into leveling course. Vibrate pavers and add sand until joints are completely filled, then remove excess sand. Leave a slight surplus of sand on the surface for joint filling.

3.4.10 Do not allow traffic on installed pavers until sand has been vibrated into joints.

3.4.11 Repeat joint-filling process 30 days later.

4.0 Method of Measurement.

4.1 Granite Cobble Paving: Shall be measured and paid for per square foot of granite cobble paving. Work will include all materials, labor, and equipment required for installation of granite paving including but not limited to base and setting bed materials, pavers, fitting and cutting, jointing materials, and edge restraints.

5.0 Basis of Payment.

5.1 Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 4019904 – Granite Cobble Pavers.

FFFF. VEGETATED ROOF ASSEMBLY

1.0 Related Documents. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.1 Description. Section includes continuous vegetated roof assemblies.

1.2 Definitions.

(a) Captured Water: Water that is retained in the drainage layer of a vegetated roof assembly after new water additions have ceased and that cannot escape the roof except through evaporation or plant transpiration.

(b) Finish Elevation: Elevation of finished growing-media surface of planting area.

(c) Planting Area: Areas to be planted.
(d) Plant; Plants; Plant Material: Vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

(e) Growing Medium: Manufactured, lightweight soil mixture that promotes good growing conditions for specific varieties of plants.

1.3 Informational Submittals.

1.3.1 Qualification Data: For Installer.

1.3.2 Product Certificates: For each type of manufactured product.

(a) Manufacturer's certified analysis of standard products.
(b) Analysis of other materials by a recognized laboratory, according to methods established by the Association of Official Analytical Chemists, where applicable.

1.3.3 Product Test Reports: For complete analysis of each growing medium, for tests performed by manufacturer and witnessed by a qualified testing agency or by a qualified testing agency.

1.3.4 Sample Warranty: For special warranties.

1.4 Quality Assurance.

1.4.1 Installer Qualifications: A qualified vegetated roof assembly Installer, approved, authorized, or licensed by roofing-membrane manufacturer, whose work has resulted in successful establishment of vegetated roofs.

(a) Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when vegetated roof assembly work is in progress.

1.5 Delivery, Storage, and Handling.

1.5.1 Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and Federal laws if applicable.

1.5.2 Bulk Materials:

(a) Do not dump or store bulk materials on or near structures, utilities, walkways and pavements, or existing roof areas or plants.
(b) Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of debris-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

(c) Accompany each delivery of bulk materials with product certificates.

1.5.3 Handle and store materials, and place equipment in a manner to avoid overloading roof structure or damaging roofing membrane.

1.6 Field Conditions.

1.6.1 Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

1.7 Warranty.

1.7.1 Special Warranty for Vegetated Roof Assembly: Installer agrees to repair or replace components of vegetated roof assembly that fail in materials or workmanship within specified warranty period.

(a) Failures include, but are not limited to, ponding water or prolonged wetness of growing medium caused as a result of failure of the assembly to properly drain.
(b) Warranty Period: 10 years from date of Substantial Completion.

2.0 Materials.

2.1 Vegetated Roof Assemblies.

2.1.1 Continuous Vegetated Roof Assembly: Continuous-coverage assembly consisting of manufacturer's standard vegetated roof assembly components for installation over roofing system.

(a) Manufacturers: Subject to compliance with bridge deck waterproofing membrane provide products by one of the following:
- American Hydrotech, Inc.
- Carlisle SynTec Incorporated.
- Firestone Building Products.
- Sika Corporation.
- Soprema, Inc.
- Approved Equal.

(b) Assembly Depth, Nominal: As shown on Drawings, including growing medium.
(c) Assembly Weight: Maximum per structural requirements.
(d) Plantings: As shown on Drawings.

2.2 Submittals.

2.2.1 Product Data: For each vegetated roof assembly.

(a) Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
(b) Include material descriptions for each growing medium.

2.2.2 Shop Drawings: For each vegetated roof assembly.
(a) Include plans, sections, slopes, and drain locations.
(b) Indicate dimensions, weights, and loads.
(c) Detail field assembly of components, depth of growing media, and attachments to other work.

2.2.3 Samples for Verification: For each of the following components of vegetated roof assembly:
(a) Growing Media: 1-quart volume of each growing medium, in sealed plastic bags labeled with content and source. Each Sample shall be typical of the lots of growing media to be furnished. Provide an accurate representation of texture and composition.
(b) Water Retention Mat: 12 by 12 inches.
(c) Drainage Panels: 12 by 12 inches.
(d) Root Barrier: 12 by 12 inches.
(e) Protection Board / Mat: 12 by 12 inches.
(f) Access Boxes: One in each size and color required.

2.3 Closeout Submittals.

2.3.1 Maintenance Data: For vegetated roof assembly and plants, including a recommended maintenance plan with procedures for inspection and care during a calendar year. Submit before start of required warranty and maintenance periods.

2.3.2 Continuing Maintenance Proposal: From vegetated roof assembly Installer approved by roofing- membrane manufacturer to Owner, in the form of a standard one-year maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

2.4 Vegetated Roof Assembly Components.

2.4.1 Moisture-Retention Mat: Assembly manufacturer's standard water-retaining fabric manufactured from synthetic fibers.

2.4.2 Drainage Panels: Assembly manufacturer's standard drainage board formed from geotextile- faced, molded-plastic sheet with a geotextile face and "cups" of the molded sheet facing upward like small reservoirs to retain water while allowing excess water to drain away below the board.

2.4.3 Root Barrier: Vegetated roof assembly manufacturer's standard plastic sheet manufactured from polyethylene or polypropylene plastic; formulated to resist root growth and bacteria.

2.5 Manufactured Growing Media.

2.5.1 Lightweight Growing Medium: Vegetated roof assembly manufacturer's lightweight, manufactured soil mixture designed for plants indicated on Drawings.

(a) Product: Intensive Green Roof Media meeting Performance Specifications Below

(b) General Condition at Time of Planting: Free of aggregates 1/2 inch or larger in any dimension; free of roots, plants, clods, pockets of sand, paint, building debris, oils, solvents, roofing materials, and other extraneous materials harmful to plant growth; free of weeds, disease-causing plant pathogens, and other undesirable organisms.

(c) Particle Size Distribution (ASTM D422-63)

• Proportion of particles < 0.05 mm	Mass %	< 20
• Proportion of particles < 0.25 mm #60 mesh	Mass %	15 - 40
• Proportion of particles < 1.00 mm #18 mesh	Mass %	25 - 60
• Proportion of particles < 2.00 mm #10 mesh	Mass %	40 - 80
• Proportion of particles < 3.20 mm 1/8-inch mesh	Mass %	50 - 90
• Proportion of particles < 6.30 mm 1/4-inch mesh	Mass %	75 - 100
• Proportion of particles < 9.50 mm 3/8-inch mesh	Mass %	90 - 100
• Proportion of particles < 12.50 mm 1/2-inch mesh	Mass %	100

(d) Bulk Density Measurements (ASTM E2399)*

• Bulk Density dry weight basis	lb/ft3	50 - 65
• Bulk Density at maximum water-holding capacity	lb/ft3	80 – 90

(e) Water/Air Measurements (ASTM E2399)

• Total Pore Volume	Vol. %	> 50
• Maximum water-holding capacity	Vol. %	45 – 65
• Air-filled porosity at maximum water-holding capacity	Vol. %	> 7
• Water permeability (saturated hydraulic conductivity)	in/min	0.0118 – 1.18

(f) pH and Salt Content

• pH (in CaCl2)		6.0 -8.5
• Soluble salts (water, 1:10, m:v)	g (KCl)/L	< 2.5

(g) Organic Measurements (LOI at 500°C SM 2540 G)

• Organic matter content	g/L	50 - 90

(h) Nutrient Retention Capacity

• Cation Exchange Capacity (CEC)	meq/100 g	> 6

2.6 Accessories.

2.6.1 Protection Board: As recommended by roofing-membrane manufacturer.

3.0 Execution.

3.1 Examination.

3.1.1 Examine each area to receive vegetated roof assembly for compliance with requirements for installation tolerances and other conditions affecting performance.

(a) Verify that roof insulation over roofing membrane is in place, secure, and flush along all seams.
(b) Verify that perimeter and other flashings are in place and secure along entire lengths where they will be covered by vegetated roof assembly.

3.1.2 Inspect growing medium.

(a) Verify that no foreign or deleterious material or liquid, such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in growing medium within a planting area.
(b) If growing medium is contaminated by foreign or deleterious material or liquid, remove growing medium and contamination and replace with new growing medium.

3.2 Installation, General.

3.2.1 Protection Course: Cover roofing system with protection board with butted and fully taped joints before roofing system is subject to vegetated roof assembly installation work.

3.2.2 Install vegetated roof assembly according to manufacturer's written instructions.

3.2.3 Access Boxes: Install access box at each drain, valve, and switch. Install top of boxes level with the finish elevation of growing medium.

3.3 Planting.

3.3.1 Do not mix or place growing medium or plants during frozen, wet, or muddy conditions.

3.3.2 Suspend spreading, grading, and planting operations during periods of excessive moisture until the moisture content in growing medium reaches acceptable levels to attain the required results.

3.3.3 Uniformly moisten an excessively dry growing medium that is too dusty or unworkable.

3.3.4 Site Planting: Plant vegetated roofs according to requirements specified in Section 329300 "Plants." except as otherwise indicated on Drawings and required by vegetated roof assembly manufacturer's written instructions. Perform digging carefully to prevent damaging roofing system below the vegetated roof assembly.

3.4 Field Quality Control.

3.4.1 Testing Agency: Owner will engage a qualified testing agency to perform tests.

3.4.2 Perform the following tests:

(a) Electronic Leak-Detection Testing:

- Testing agency shall test each deck area for leaks using an electronic leak-detection method that locates discontinuities in the roofing membrane.
- Testing agency shall perform tests on abutting or overlapping smaller areas as necessary to cover entire test area.
- Testing agency shall create a conductive electronic field over the area of roofing to be tested and electronically determine locations of discontinuities or leaks, if any, in the roofing.
- Testing agency shall provide survey report indicating locations of discontinuities if any.

(b) Proceed with installation of vegetated roof assembly only after unsatisfactory conditions have been corrected.

3.4.3 Correct deficiencies in work that do not comply with requirements.

3.5 Protection. Protect vegetated roof assemblies from damage, including growing-medium contamination, due to operations of other contractors and trades. Repair or replace damaged vegetated roof assemblies.

4.0 Method of Measurement.

4.1 Vegetated Roof Assembly Components: Shall be measured and paid for per square foot of vegetated roof / bridge deck. Work will include installation of assembly components and incidentals including but not limited to lightweight growing media, drainage mat, retention mat, root barrier, and protection board.

5.0 Basis of Payment.

5.1 Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 8089904-1 – Vegetated Roof Assembly.

GGGG. TREE REMOVALS

1.0 Description. Section includes the selective demolition of existing trees and stumps as shown on the plans.

1.1 Definitions.

(a) Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings.

1.2 Informational Submittals.

1.2.1 Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

(a) Use sufficiently detailed photographs or videotape.
(b) Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.3 Quality Assurance.

1.3.1 Pre Tree Removal Conference: Conduct conference at Project site.

(a) Contractor to flag all trees to be removed and review methods and procedures related to tree removal with City of St. Louis Forestry and Forest Park Land Management prior to the commencement of tree removal work.

1.4 Project Conditions.

1.4.1 Prior to commencement of tree removal work, all tree-protection zones shall be established, and tree protection fencing shall be installed.

1.5 Standards. The work shall be performed in compliance with the most current reversion of the following safety and tree care practices standards:

- ANSI Z133 Safety Requirements for Arboricultural Operations
- ANSI A300
- International Society of Arboriculture Best Management Practices

2.0 Execution.

2.1 Remove trees indicated for removal on plans and that have been verified for removal as indicated in this section. Grind down stumps and remove roots larger than 3 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade. Stump in conflict with proposed work shall be completely removed. Fill depressions caused by tree removal operations with satisfactory soil material unless further excavation or earthwork is indicated. Remove and dispose of removed tree materials legally off the project site.

3.0 Method of Measurement.

3.1 Tree Removals: No measurement will be made for work included in this section, but will be considered a lump sum unit price.

4.0 Basis of Payment.

4.1 Payment for the above-described work, including all material, equipment, labor, and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for 2019901 – Tree Removals.

HHHH. ABANDONMENT

1.0 Description. Sewers and laterals to be abandoned shall be securely blocked at any points of intake or discharge with a bulkhead or pre-formed plug. When directed by the Project Plans and Specifications, sewers and laterals shall be completely filled with an approved material such as low-density cellular concrete. The proposed method of filling and blocking the Sewer shall be submitted to the Engineer for approval by The Metropolitan St. Louis Sewer District (MSD). The Contractor will be allowed to remove that portion of the Sewer to be abandoned in lieu of filling all all costs for backfilling the excavation and surface restoration, removing and disposing of the pipe, shall be included in the price for abandonment.

2.0 Method of Measurement. The work provided in accordance with this Job Special Provision will not be measured for payment but will be considered a Lump Sum.

3.0 Basis of Payment. The Contractor will be paid for at the contract lump sum price for unit bit item 202-99.01 - Abandonment to recover the cost of equipment, labor, and materials to comply with the above provisions.

IIII. ELLIPTICAL RCP AND END SECTIONS

1.0 Description. This work shall consist of furnishing and installing reinforced concrete elliptical culvert pipe and flared end sections as shown on the construction plans.

2.0 Construction Requirements. The Contractor shall use the elliptical culvert shown on the plans and shall use the appropriately sized flared end section that corresponds to the elliptical pipe culvert. Reinforced concrete elliptical pipe culverts shall be in accordance with AASHTO M 207 and material shall be in accordance with MoDOT section 1026. The pipe class shall be as indicated on the construction plans.

3.0 Method of Measurement. Measurements for pipe culverts will be made per Linear Foot. Measurement for End Sections will be paid for by the Each.

4.0 Basis of Payment. The contract unit prices shall be considered as full compensation for all labor, equipment, materials, bedding, backfill, additional material, or other construction involved in completing the work.

726-99.03 – Elliptical RCP (Class IV) – 14-Inch x 23 -Inch
732-99.02 – Elliptical End Section) – 14-Inch x 23 -Inch

JJJJ. MSD CONCRETE COLLAR - PIPE

1.0 Description. This work shall provide all labor, equipment, tools, materials, and the performance of all work for MSD Concrete Collars on pipes as shown in the construction plans.

The layout and all material shall meet or exceed material, performance, and design characteristics included in The Metropolitan St. Louis Sewer District (MSD) Standard Construction Specifications for Sewers and Drainage Facilities, 2023 or current addition at time of construction.

2.0 Material. All material shall meet or exceed material, performance, and design characteristics included in current edition at the time of construction of The Metropolitan St. Louis Sewer District (MSD) Standard Construction Specifications for Sewers and Drainage Facilities.

3.0 Submittals. The Contractor shall provide the Engineer and MSD's construction management division shop drawings signed and sealed by a professional engineer licensed in Missouri for approval prior to construction of these structures. Approval in writing by MSD shall be obtained in advance of starting the Work. Please contact MSD's construction management division at (314) 335-2072 for questions.

4.0 Basis of Payment. The contract unit price shall be considered as full compensation for all engineering design, coordination, submittals, labor, equipment, materials, or other construction involved in completing the work. The Contractor will be paid for at the contract unit bid price of each for bid items:

604-99-02.01 – Concrete Collar 8 – Inch Pipe
604-99-02.02 – Concrete Collar 42 – Inch Pipe
604-99-02.03 – Concrete Collar 48 – Inch Pipe

KKKK. MSD TOPS AND SPECIAL BASE ON LARGE DIAMETER PIPE

1.0 Description. This work shall consist of the requirements for the construction of manhole special bases and tops on larger diameter pipe as shown in the construction plans. The layout and all material shall meet or exceed material, performance, and design characteristics included in The Metropolitan St. Louis Sewer District (MSD) Standard Construction Specifications for Sewers and Drainage Facilities, 2023 or current addition at time of construction.

2.0 Material. All material shall meet or exceed material, performance, and design characteristics included in current edition at the time of construction of The Metropolitan St. Louis Sewer District (MSD) Standard Construction Specifications for Sewers and Drainage Facilities.

3.0 Method of Measurement.

3.1 Payment will be made for each manhole special base on pipe sewers twenty-seven inches (27") in diameter and larger at the bid price of feet for completed manhole base construction. For manhole tops the vertical distance between the elevation of the top of the cast iron frame and the elevation of the lowest pipe invert. Payment will be made for each MSD Area Inlets on large pipe as described for manhole tops, except that the vertical distance for payment as a manhole top shall exclude the top two feet (2') of each MSD Araea Inlet on large pipe. Such payment shall include all costs of labor, equipment, material, the manhole base, bottom section, invert walls, plastering where required, making pipe connections, steps, and appurtenance associated with the structure as required in accordance with the construction plans and MSD's standard specifications and details.

3.2 Payment for the top two (2') of each MSD Area Inlet Top on Large Pipe will be made at the unit

bid price of each, of the type required by the project plans and specifications and shown in the MSD Standard Details of Sewer Construction. Such payment shall include all costs of the completed top section, labor, equipment, material, and appurtenance associated with the structure as required in accordance with the construction plans and MSD's standard specifications and details.

4.0 Basis of Payment. The Contractor will be paid for at the contract unit bid price of Linear Foot for bid items:

731-99.03 – MSD Manhole Special 60-Inch Base
731-99.03 – MSD Manhole Special 72-Inch Base

4.1 Basis of Payment. The Contractor will be paid for at the contract unit bid price of Each for bid items:

614-99.02 – MSD Area Inlet – Single on Large Pipe

LLLL. MSD PIPE SEWER

1.0 Description. This work shall provide all labor, equipment, tools, materials, and the performance of all work for MSD Pipe Sewers and steel casing pipe as shown in the construction plans. The layout and all material shall meet or exceed material, performance, and design characteristics included in The Metropolitan St. Louis Sewer District (MSD) Standard Construction Specifications for Sewers and Drainage Facilities, 2023 or current addition at time of construction.

2.0 Material. All material shall meet or exceed material, performance, and design characteristics included in current edition at the time of construction of The Metropolitan St. Louis Sewer District (MSD) Standard Construction Specifications for Sewers and Drainage Facilities Standard Specifications.

3.0 Submittals. In addition to other submittals as required by MSD, the Contractor shall submit the following to the Engineer and MSD's Construction Management Division for review and approval.

1) A full detail of materials
2) Required equipment
3) Method of operation.
4) Shop Drawings for the casing pipe and sizes for each pipe.
5) Design mixes for Concrete, grout, and flowable fill.
6) Specification for the steel casing pipe and joints.
7) Any additional submittals as required by the Engineer or MSD.

3.1 Approval in writing by MSD shall be obtained in advance of starting the Work. In any case the Contractor shall retain full responsibility for the adequacy of the installation method(s), equipment, materials, and means to ensure that the Work is installed as described in the Contract Documents. Please contact MSD's construction management division at (314) 335-2072 for questions.

3.0 Basis of Payment. The contract unit price shall be considered as full compensation for all

engineering design, coordination, submittals, labor, equipment, materials, casing pipes, bedding, backfill, or other construction involved in completing the work. The Contractor will be paid for at the contract unit bid price of each for bid items:

726-99-03.02 – Pipe Sewer 8 - Inch
726-99-03.03 – Pipe Sewer 42 - Inch
726-99-03.04 – Pipe Sewer 48 - Inch

MMMM. PVC DRAINAGE SUMP, PVC (SCH40) PIPE SEWER, AND DOME GRATE

1.0 Description. This work shall consist of the requirements for the construction of PVC Drainage Sumps, Dome Grates and PVC Schedule 40 pipe sewers as shown in the construction plans. The layout and all material shall meet or exceed material, performance, and design characteristics included in MetroLink Master Specs 22 14 13-4 Facility storm drainage piping and additional MetroLink Master specification required to conform to Metro standards.

2.0 Material.

2.1 Dome Grate. The dome grates shall be ductile iron per ASTM A536 Grade 70-50-05.

2.2 PVC schedule 40 Pipe Sewer. It shall conform to the requirements of ASTM F 891, Schedule 40. Fittings for PVC pipe sewer shall be of the same material and strength requirement as the sewer and conform to the requirements of ASTM D2665, made to ASTM D3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

2.3 PVC Drainage Sumps. Drain Basins shall conform to ASTM F3778 as well as the following mechanical properties and requirements. The raw material used to manufacture the pipe stock used to manufacture the main body and pipe stubs of the Drain Basin, Inline Drains and PVC fittings conform to ASTM D1784 cell class 12454. Drainage pipe connections shall be formed to provide a watertight connection conforming to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals. The flexible elastomeric seals conform to ASTM F477. The PVC glue and primer used in the assembly of components shall conform to ASTM D2564 and ASTM F656.

3.0 Method of Measurement. Measurement for PVC (SCH40) Pipe Sewer and PVC Drainage Sump will be made to the nearest foot. Measurement for pipe sewer will be made from inside wall of structure to inside wall. Measurement of PVC Drainage Sump will be made from the lowest pipe invert to the top elevation.

4.0 Basis of Payment. The contract unit price shall be considered as full compensation for all labor, equipment, materials, bedding, backfill, or other construction involved in completing the work. All labor, equipment and material costs required to complete the described work shall be completely covered by:

4.1 Dome Grate. The Contractor will be paid for at the contract unit bid price of Each for bid items:

614-99-02 – Dome Grate 24-Inch
614-99-02 – Dome Grate 30-Inch

4.2 PVC (SCH40) Pipe Sewer. The Contractor will be paid for at the contract unit bid price of

Linear Foot for bid items:

726-99-03 – PVC (SCH40) Pipe Sewer 18-Inch
726-99-03 – PVC (SCH40) Pipe Sewer 24-Inch

4.3 PVC Drainage Sumps. The Contractor will be paid for at the contract unit bid price of Linear Foot for bid items:

731-99-03 – PVC Drainage Sump 24-Inch
731-99-03 – PVC Drainage Sump 36-Inch

NNNN. CONCRETE SIDEWALK, 6 IN.

1.0 Description. This work shall consist of constructing 6 inch thick Portland cement concrete sidewalk with a standard finish at the locations shown on the plans, including the multi-use path.

2.0 Construction Requirements. Sidewalk work for the pay item below shall be in accordance with Section 608. Materials, concrete mixture, placement, jointing, finishing, and curing shall also follow City of St. Louis Standard Specification Section 321313, Concrete Paving, and City of St. Louis Standard Details for Public Works Construction Sheets 10, 11, 12, and 39, as applicable. In particular:

2.1 Concrete shall be Class "B" with a minimum 28-day compressive strength of 3,000 psi, a maximum water-cementitious ratio of 0.50, and air entrainment in accordance with Section 321313.

2.2 Sidewalk shall be placed on a minimum 4 inch compacted granular base (Type 1 aggregate) over prepared subgrade.

2.3 Expansion joints shall be spaced at a maximum of 50 feet, and control joints between expansion joints shall be spaced at a distance equal to the width of the pedestrian access route. Longitudinal joints shall be provided in accordance with Standard Detail Sheet 11, Note 3. One-quarter inch expansion joint material shall be placed where the sidewalk meets a wall, building, step, or other fixed object.

2.4 The sidewalk shall receive a medium broom or magnesium float finish perpendicular to the direction of travel, in accordance with Section 321313, Article 3.07.

2.5 The pedestrian access route shall have a cross slope of 1.5% ± 0.5% and shall meet all ADA requirements.

Pay Item:

Concrete Sidewalk, 6 In.
This pay item consists of 6 inch thick, ADA-compliant concrete sidewalk with a standard finish. This does not include curb ramps, which shall be paid for under the curb ramp pay item.

3.0 Method of Measurement. This work shall be measured for payment to the nearest tenth of a square yard.

4.0 Basis of Payment. All costs for excavation, subgrade preparation, granular base, forming, materials, concrete placement, jointing, joint material, finishing, curing, backfilling along the sidewalk edges, equipment, and labor to construct the sidewalk shown on the plans shall be included in the contract unit price for the pay item described in Section 2.0.

Pay Item No. 608-99.06, Concrete Sidewalk, 6 In., per square yard.

SEE SHEET C4.4

MATCHLINE STA. 8+60.00

℄ FOREST PARK PKWY

BEGIN MSE WALL
UNION BLVD. STA 8+74.98
OFF 91.90'RT

PROPOSED GUARDRAIL

EXIST. CONCRETE MEDIAN BARRIER (UIP)

EXIST. INLET (REBUILD)
19G1-411C
TOP 463.99
NE FL 460.25
NW FL 460.14

SLOPE LIMITS

END MSE WALL
LINDELL BLVD.
STA 12+18.93
OFF 60.96'LT

BEGIN TAPER
STA 12+00.00
OFF 39.50'

EXIST. INLET (REBUILD)
19G1-413C
TOP 462.67
NW FL 458.69
SW FL 457.77(TRAP)
BTM 456.77

EXIST. INLET
(REBUILD)
19G1-412C
TOP 463.72
FL 459.74

EXISTING GUARDRAILS (R)

RELOCATE ALL

END TAPER
STA 12+73.50
OFF 35.50'

EXIST. R.O.W.

EASTBOUND TRACK 2

WESTBOUND TRACK 1

PULL BOX (ATG)
SLOPE LIMITS
UTILITY POLE (RBO)

SIGNAL POST (R)

SIGNAL POST (R)

UTILITY POLE (RBO)

8' SIDEWALK

END STA 2+56.29

15

S07°09'10"W

1335

1335

R 30'

EOP

60'

39'

21'

PROP. 12" RCP

EXIST. 12" VCP (R)

EXIST. INLET (R)
19G1-164C
TOP 482.62
FL 476.91

PROP. CURB INLET

G-1 CI

(UIP)

BEGIN MILL & OVERLAY
STA 28+32.47

PARK (50'W) RD

SEE INTERSECTION DETAIL SHEET FOR ISLAND AND RAMP DETAILS

OWNER: CITY OF
ST LOUIS ROAD PARK
5293 LINDELL BLVD
ST LOUIS MO 63108
PARCEL ID 4902-9-220.000

15+00.00 (LINDELL BLVD)
10+00.00 (UNION BLVD)
2+22.37 (BRIDGE BL)

STA 28+32.55
OFF 31.77' RT

POWER POLE (UIP)
PULL BOX (R)
SLOPE LIMITS
SIGNAL POST (R)

EXIST. R.O.W.

8' SIDEWALK

EOP
SIGN (RELOC)
UTILITY POLE (RBO)

END BENT NO. 3

℄ LINDELL BLVD.

10

56'

31'

25'

SIGNAL POLE (R)

END MULTI-USE-PATH
STA 15+94.26

UTILITY POLE (UIP)

10' MULTI USE PATH

EXIST. R.O.W.

END MSE WALL
LINDELL BLVD.
STA 16+87.31
OFF 43.96'RT

SLOPE LIMITS

OWNER: CITY OF
ST LOUIS FOREST PARK
301 S KINGSHIGHWAY BLVD
ST LOUIS MO
PARCEL ID
2022-9-010.000

UTILITY POLE (RBO)

EXIST. ASTHETIC ELEMENTS SALVAGE (TYP.)

WESTBOUND TRACK 1

EASTBOUND TRACK 2

EXIST. R.O.W.

BEGIN TAPER STA 11+50.00
OFF 17.00' LT

EXISTING WESTBOUND FOREST PARK PKWY EXIT RAMP TO BE REMOVED

END BARRIER
STA 66+19.74

UTILITY POLE (RBO)

PROP. MSE WALL

B-3 EXI

EXIST. INLET
(REBUILD)
19G1-0042D
TOP 461.58
FL 458.76

SEE SHEET C4.1
MATCHLINE STA. 12+00.00

SEE SHEET C4.3
MATCHLINE STA. 17+00.00

SEE SHEET C4.3
MATCHLINE STA. 28+48.67

Valve/Hydrant Relocation Required

Approx. Sta 12+56, 15' RT

34'-0"

243'-0"

20" STEEL MAIN Top Found at 9' by Ameren Contractor

45°

20" STEEL MAIN RELOCATION DUE TO EXCAVATION FOR PROPOSED BRIDGE

PROPOSED BRIDGE

Service to Cabanne House Reconnection Required

Approx. 304'
20" PIPE
2 x 45 Degree Bends

Service to Cabanne House
1.5"

START STA 1+00.00

N51°22'55"E

END BENT (R) NO. 1

EXIST. ASTHETIC ELEMENTS SALVAGE (TYP.)

PROPOSED BRIDGE ℄

SIGNAL POST (R)

EXIST. UTILITY POLE (RBO)

20" STEEL MAIN

235'-0"

S07°29'13"W

℄ UNION BLVD.

10' MULTI-USE PATH

EXIST. R.O.W.

65'

52'

5'

10'

35'

17'

EOP

PULL BOX (ATG)

EXIST. UTILITY POLE (RBO)

EXIST. SIGN (RELOC)

SLOPE LIMITS

10'

5'

45°

20" STEEL MAIN

MATCHLINE STA. 12+30.00
SEE SHEET C4.5

NOTE:
SEE INTERSECTION DETAIL SHEET
FOR ISLAND AND RAMP DETAILS

SCALE
60-1"
0 20 40 60

PAVEMENT LEGEND

- PROPOSED PAVEMENT
- MILL & OVERLAY
- PROPOSED MULTI-USE-PATH/ SIDEWALK
- PROPOSED ISLAND
- PROPOSED LANDING AREA

MSD PROJECT NO. TBD -- BASEMAPS 19G

ABNA JOB NO. 22-6033

STP-9901(663)

CITY OF SAINT LOUIS
MISSOURI

DEPARTMENT OF THE PRESIDENT
BOARD OF PUBLIC SERVICE
ROOM 301 CITY HALL
ST. LOUIS, MISSOURI 63103
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JAROSLAW CZERNIKIEWICZ, P.E.
Chief of Design Division

ABNA Engineering, Inc. | HDR Engineering, Inc.

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Seal

Name

Lic. No.

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

**PLAN 2
LINDELL BLVD. AND
UNION BLVD.**

SHEET NUMBER

C4.2

02/26/2025
Date

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SEE SHEET C4.6

WATER MAIN LEAK

℄ FOREST PARK PKWY CONN.

N76°21'44"E

OWNER: CITY OF ST LOUIS FOREST PARK
301 S KINGSHIGHWAY BLVD ST LOUIS MO
PARCEL ID 2022-9-010.000

20" STEEL MAIN POTHOLED - PR DRAINAGE PIPE ADJUSTED TO PROVIDE 2' SEPARATION FROM CITY WATER

SLOPE LIMITS

20" STEEL MAIN

EXIST. R.O.W.

EXIST. ROW

SLOPE LIMITS

12" RCP

10'MULTI-USE PATH

D-4 MH

D-2 DCI

D-3 MH

EXIST. 15" RCP

EXIST. 12" RCP

CONNECT TO EXISTING SIDEWALK

END PROJECT
STA 16+70.00

EXIST. INLET
19G1-289C
TOP 464.17
N FL 458.42
S FL 458.07 (TRAP)
BTM 457.02

EXIST.DOUBLE INLET
CONVERT TO NEW MH
19G1-379C
TOP 464.76
FL 459.31

12" RCP
PROP. DOUBLE CURB INLET

END OF CURB
STA 16+63.12
OFF 57.57'

PROPOSED CURB RAMP

GRAND DR.

END NEW PAVEMENT /SAWCUT
STA 16+31.41

EXIST. MULTI-USE PATH (UIP)

EXIST. RAMP (UIP)

END OF CURB
STA 16+21.12
OFF 37.13'

EXIST. SIGN (RELOC)

EXIST. DOUBLE INLET (UIP)
19G1-378C
TOP 464.63
FL 460.48

ALL SIGNS (RELOC)

CONNECT TO EXISTING SIDEWALK

EXIST. TRESS (RELOC)

EXIST. SIGN (RELOC)

EXIST. UTILITY POLES (RELOC)

S52°03'32"W

PROPOSED PLANTED ISLAND

EXIST. SIGN (R)

+31.43
1.50' RT.

(UIP)

S35°19'39"E

R 32'

℄ UNION BLVD

+55.15
1.50' RT.

EXIST SIGN (R)

(R)

LIGHT POLE (UIP)

SLOPE LIMITS

SIGNAL PULL BOX (R)

BEGIN MSE WALL
UNION BLVD.
STA 12+56.13
OFF 56.21'LT

START STA 20+00.00

D-5 CI

10'MULTI-USE PATH

END TAPER STA 12+78
OFF 6.00' LT

EXIST. GUARDRAILS (R)

SLOPE LIMITS

30" STEEL MAIN

WATER

STA 13+70.90 UNION BLVD.
STA 20+00.00 FOREST PARK PKWY CONN.

EOP

PROP. CURB

MATCHLINE STA. 12+30.00
SEE SHEET C4.2

START OF PROPOSED 20" STEEL MAIN RELOCATION DUE TO EXCAVATION FOR PROPOSED BRIDGE

Approx. Sta. 12+36, 32' RT

45°

50'-0"

(DND)

EXIST. PULL BOX (ATG)

EXIST. UTILITY POLES (RELOC)

SLOPE LIMITS

OWNER: CITY OF ST LOUIS FOREST PARK
301 S KINGSHIGHWAY BLVD ST LOUIS MO
PARCEL ID 2022-9-010.000

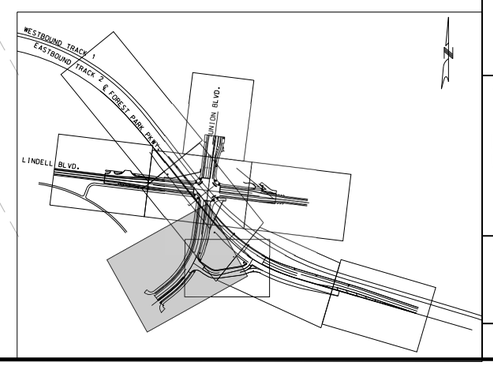
See Sheet C4-2 for Continuation of Proposed Route

PAVEMENT LEGEND

PROPOSED PAVEMENT

PROPOSED MULTI-USE-PATH/ SIDEWALK

SCALE
60'-0"
0 20 40 60



STP-9901(663)

CITY OF SAINT LOUIS
MISSOURI

DEPARTMENT OF THE PRESIDENT
BOARD OF PUBLIC SERVICE
ROOM 301 CITY HALL
ST. LOUIS, MISSOURI 63103
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JAROSLAW CZERNIKIEWICZ, P.E.
Chief of Design Division

ABNA Engineering, Inc. | HDR Engineering, Inc.

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Lic. No.

Revision No. Date

UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

PLAN 5
UNION BLVD.

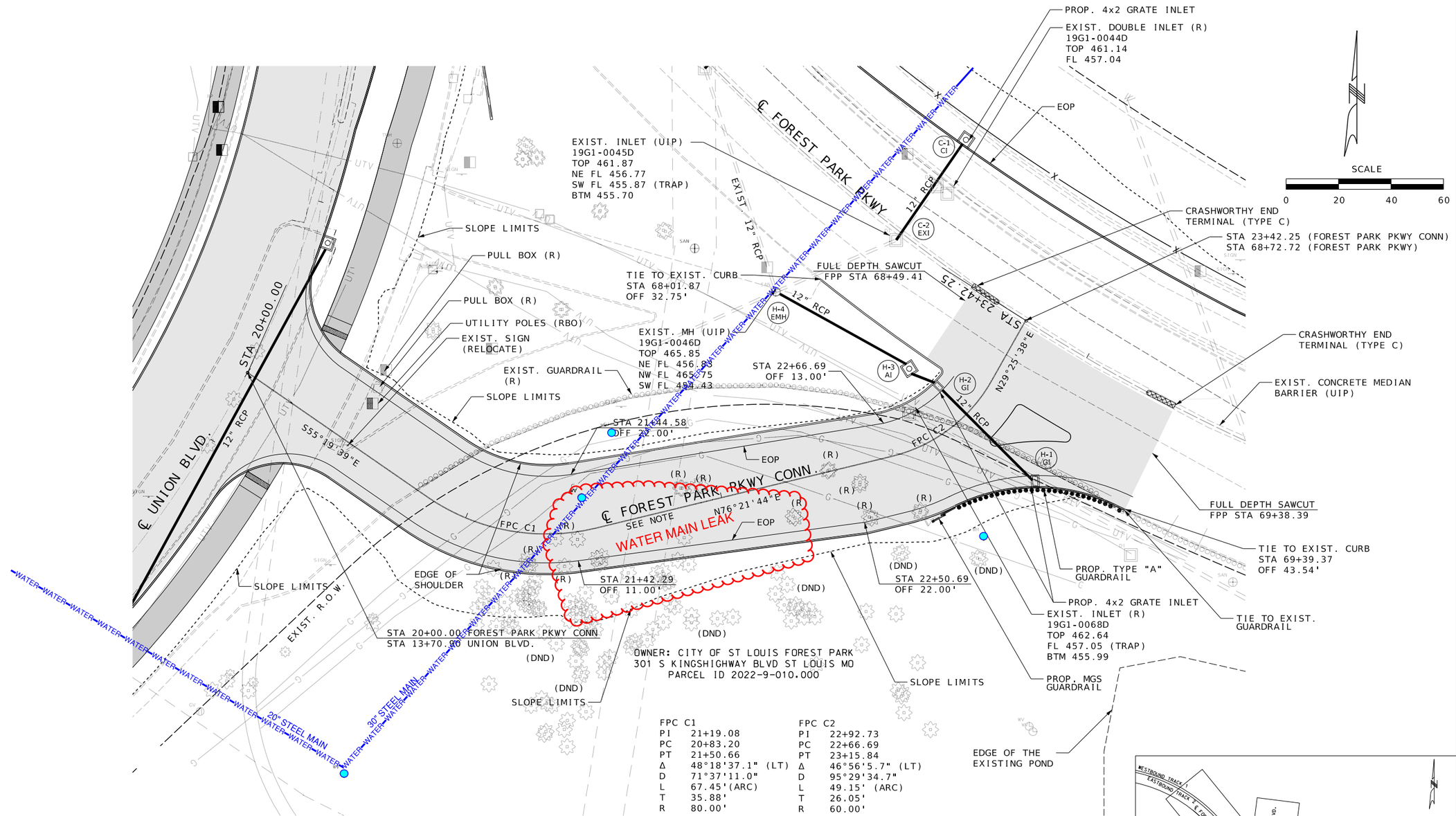
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C4.5

02/26/2025
Date

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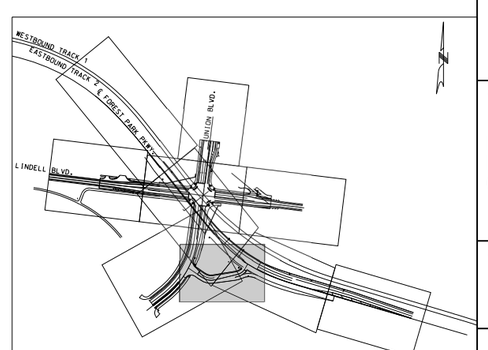
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PAVEMENT LEGEND

- PROPOSED PAVEMENT
- PROPOSED MULTI-USE-PATH/ SIDEWALK

NOTE:
REMOVE ALL THE TREES
ALONG THE PROPOSED ROUTE



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UNION LINDELL BRIDGE OVER FOREST PARK PKWY & METROLINK RECONSTRUCTION

CITY OF SAINT LOUIS, MISSOURI

SHEET TITLE

PLAN 6
FOREST PARK PKWY CONNECTOR

SHEET NUMBER

C4.6

02/26/2025
Date

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