March 1, 2024

SUBJECT: St. Louis Downtown Airport

Cahokia Heights, Illinois

St. Clair County

Illinois Project Number: CPS-4839 SBG Project Number: 3-17-SBGP-TBD

Contract No. SD063

Item No. 07A, 3/08/2024 Letting

Addendum A

#### NOTICE TO PROSPECTIVE BIDDERS

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

#### Reason for Addendum:

Revisions to Plans/Special Provisions to include replacement of transformers with each relocated taxiway light fixture.

Revisions to Plans/Special Provisions to include replacement of L-867 base cans with each relocated base mounted taxiway light fixture.

Addition of Special Provisions Appendix B, Cable and Constant Current Regulator Testing Forms

## To All Plan Holders:

### Plan Changes:

Clarification: On Plan Sheet 11, Airfield Lighting Details and Notes Sheet 1:

The pay items AR125961 Relocate Stake Mounted Light and AR125962 Relocate Base Mounted Light, shall include replacement of the existing transformer with a new FAA L-830-1 30/45W series isolation transformer. The cost of the transformer shall be included within the respective pay item for light relocation.

The pay item AR125962 Relocate Base Mounted Light, shall include replacement of the existing base can with a new FAA L-867 Size B light base can to accommodate the safety ground requirement. The cost of the new base can shall be included within the respective pay item for light relocation.

#### Special Provisions Changes:

Addition to Special Provision Item 125 Installation of Airport Lighting Systems:

The pay items AR125961 Relocate Stake Mounted Light and AR125962 Relocate Base Mounted Light, shall include replacement of the existing transformer with a new FAA L-830-1 30/45W series isolation transformer. The cost of the transformer shall be included within the respective pay item for light relocation.

The pay item AR125962 Relocate Base Mounted Light, shall include replacement of the existing base can with a new FAA L-867 Size B light base can to accommodate the safety ground requirement. The cost of the new base can shall be included within the respective pay item for light relocation.

### Addition to Special Provisions:

The attached Appendix B, Cable and Constant Current Regulator Testing Forms, is added to the contract documents.

<u>Schedule of Prices Changes:</u> None.

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

Questions on this addendum may be directed to Barry Stolz, P.E. of Hanson Professional Services at 314.942.5288.

# APPENDIX B

CPS-St. Louis Downtown Airport Cahokia, Illinois Taxiway B Relocation, Phase 2: Drainage Improvements

Cable and Constant Current Regulator Testing Forms

<b>Engineering Firm</b>	Hanson Professional Services Inc.	
Airport Name	CPS-St. Louis Downtown Airport	TESTING FORMS
Project	Taxiway B Relocation, Phase 2:	
	Drainage Improvements	
IL Project No.	CPS-4839	
Hanson Project	20A000102C	
Date		

Prior to beginning excavations, airfield lighting modifications, cable installation, and/or any other work that might possibly affect airfield lighting circuits, all existing series circuit lighting cables in the areas of work shall be Megger tested with an insulation resistance tester and recorded at the respective airport electrical vault. The respective series circuit cable loops shall have the resistance measured with an Ohmmeter and recorded for each circuit at the vault. Each constant current regulator shall be tested with results recorded. The Contractor is responsible to employ the services of personnel qualified, familiar with, and trained to perform the respective tests, and qualified to work on 5000 Volt airfield lighting series circuits, constant current regulators, and associated airport electrical vault equipment. Please understand that airfield lighting series circuits are dangerous and only qualified personnel should be permitted to work on them and safety procedures need to be followed. National Electrical Code defines a Qualified Person as "One who has the skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved." Safety of personnel is the top priority. Follow safety procedures for all work. Only qualified and experienced personnel are permitted to work on airfield lighting series circuits.

Insulation resistance testing equipment for use with 5,000 Volt series circuit cables shall use an insulation resistance tester capable of testing the cables at 5,000 Volts. Older series circuit cables and/or cables in poor condition may require the test voltage to be performed at a voltage lower than 5,000 Volts (Example 1,000 Volts, 500 Volts, or less than 500 Volts). The respective test voltage shall be recorded for each cable insulation resistance test result.

Insulation resistance testing equipment for use with 600 Volt rated cables shall use a 500 Volt insulation resistance tester. The respective test voltage shall be recorded for each cable insulation resistance test result.

It is recommended to use the same insulation resistance test equipment throughout the project to ensure reliable comparative readings at the beginning of the project and at the completion of the project.

Disconnect the airfield lighting series circuit cables from the constant current regulator when performing cable insulation resistance tests (Megger Tests). Test the cables that go to the airfield for the respective airfield lighting series circuit. Connect the cable insulation resistance tester to one of the airfield lighting series circuit cables and to a good ground in the airport electrical vault such as the airport vault ground bus. Conduct the cable insulation resistance test on each respective cable for not less than 90 seconds. Record the test results at the end of the time duration for the test.

Engineering Firm	Hanson Professional Services Inc.	
Airport Name	CPS-St. Louis Downtown Airport	TESTING FORMS
Project	Taxiway B Relocation, Phase 2:	
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Hanson Project	20A000102C	
Date		<u></u>

FAA Advisory Circular 150/5340-26C Maintenance of Airport Visual Aid Facilities provides guidance on Insulation Resistance Tests. Also refer to the user manual for the respective cable insulation resistance tester. Reasonably new series circuit cables and transformers with good connections should read 500 Mega-Ohms to 1,000 Mega-Ohms or higher. The readings should decrease with age. The resistance value declines over the service life of the circuit; a 10-20 percent decline per year may be considered normal. A yearly decline of 50 percent (4 percent monthly) or greater indicates the existence of a problem, such as a high resistance ground, serious deterioration of the circuit insulation, lightning damage, bad connections, bad splices, cable insulation damage, or other failure. FAA Advisory Circular 150/5340-26C notes "Generally speaking, any circuit that measures less than 1 megohm is certainly destined for rapid failure." Airfield lighting series circuits with cable insulation readings of less than 1 megohm are not uncommon for older circuits that are 20 years or more of age.

Based on information in FAA AC No. 150/5340-26C Maintenance of Airport Visual Aid Facilities, the cable insulation resistance value inevitably declines of the service life of the circuit; a 10-20 percent decline per year may be considered normal. In the event that the cable insulation resistance readings have declined more than 2 percent per month it might indicate cable damage due to lightning or damage as a result of Contractor operations. Where the cable insulation resistance readings have declined more than 2 percent per month over the project construction duration as a result of Contractor operations, Contractor will need to investigate, address, and repair the respective cable circuits.

All existing series circuit cable loops shall also have the resistance measured with an Ohmmeter and recorded for each circuit at the vault. The resistance of the series circuit loop with connections using #8 AWG copper conductor should be approximately 0.8 to 1 Ohm per thousand feet of cable length. The resistance of the series circuit loop with connections using #6 AWG copper conductor should be approximately 0.5 to 0.7 Ohm per thousand feet of cable length. The number of series circuit transformers and connections will affect the overall resistance of the series circuit loop and therefore the measurements might be slightly higher than the calculated resistance for the respective length of cable.

Engineering Firm	Hanson Professional Services Inc.	
Airport Name	CPS-St. Louis Downtown Airport	<b>TESTING FORMS</b>
Project	Taxiway B Relocation, Phase 2:	_
	Drainage Improvements	
IL Project No.	CPS-4839	-
Hanson Project Date	20A000102C	- - -
Record the date	for the respective tests.	
for the Megger tes	nufacture and model number of the insulat ts. Note: it is recommended to use the sar airfield lighting modifications, additions, and	me insulation resistance
resistance of each	nufacture and model number of the Ohmm series circuit cable loop. Note: it is recom ifter airfield lighting modifications, additions	mended to use the same
current. Note: it is	nufacture and model number of the Amme recommended to use the same Ammeter itions, and/or upgrades have been comple	again after airfield lighting
Record personn	el conducting tests.	
Record personn	el observing tests.	

Airport Name  CPS-St. Louis Downtown Airport  Taxiway B Relocation, Phase 2:  Drainage Improvements  IL Project No.  Hanson Project  Date  CPS-St. Louis Downtown Airport  TESTING FOR  TES	Engineering Firm	Hanson Professional Services Inc.	
Drainage Improvements  IL Project No. CPS-4839  Hanson Project 20A000102C	Airport Name	CPS-St. Louis Downtown Airport	TESTING FORMS
IL Project No.         CPS-4839           Hanson Project         20A000102C	Project	Taxiway B Relocation, Phase 2:	
Hanson Project 20A000102C		Drainage Improvements	
20/1000/1020	IL Project No.	CPS-4839	
Date	Hanson Project	20A000102C	
	Date		

\_\_ For each respective series circuit in the areas of work, conduct cable insulation resistance test (Megger test) at the vault and record test results. Time duration of test should not be less than 90 seconds.

Cable Under Test	Cable Insulation Resistance	Test Voltage	Time Duration
Taxiway A Lighting series circuit cable			
Taxiway B, Lighting Circuit 1 series circuit cable			
Taxiway B, Lighting Circuit 2 series circuit cable			

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Hanson Project	20A000102C	
Date		

\_\_ Each respective lighting series circuit cable loop shall have the resistance tested and recorded at the vault. Use an Ohmmeter and measure the resistance of the series circuit loop at the Vault.

Cable Under Test	Series Circuit Loop
	Resistance in Ohms
Taxiway A	
Lighting	
series circuit cable	
Taxiway B,	
Lighting Circuit 1	
series circuit cable	
Taxiway B,	
Lighting Circuit 2	
series circuit cable	

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	Drainage Improvements	
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Hanson Project	20A000102C	<del>_</del>
Date		<del>_</del>

Tests for constant current regulators shall include the following.

- 1. The respective personnel performing airfield lighting work, vault work, and/or tests shall be familiar with and qualified to work on 5000 Volt airfield lighting series circuits, constant current regulators, and associated airport electrical vault equipment.
- 2. Prior to conducting tests confirm each constant current regulator has a good and secure frame ground connection to the vault grounding electrode system. The constant current regulator frame ground shall be a minimum #6 AWG copper conductor and UL listed grounding connectors with secure and tight connections. Correct where missing. This is required for the safety of personnel.
- 3. The respective personnel performing tests shall be familiar with the respective test equipment and the use and operation of the test equipment. The Contractor is responsible to employ the services of personnel qualified to perform the respective tests and qualified to work on 5000 Volt airfield lighting series circuits, constant current regulators, and associated airport electrical vault equipment.
- 4. Test each brightness step and measure and record the input current on Phase A, Phase B and/or Phase C for the 208 VAC branch circuit to each CCR. Note: Provide a True RMS Ammeter for current measurements.
- 5. Test each brightness step and record the CCR output current to the series circuit lighting. Each CCR should be equipped with an output current meter. In the event the output current meter is not working properly or is out of calibration use a True RMS Ammeter for output current measurements and measure the current in the output series circuit conductor.
- 6. Test each brightness step and record the CCR output voltage for the series circuit lighting. Each CCR should be equipped with an output voltage meter. Where the CCR does not include an output voltage meter, the output voltage measurements are not required. Do not use a 0 to 600 Volt voltmeter to measure voltage across the CCR output terminals due to safety concerns and high voltages at the CCR output.

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Airport Name	CPS-St. Louis Downtown Airport	TESTING FORMS
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	Drainage Improvements	
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Hanson Project	20A000102C	
Date		

\_\_ Test Taxiway A Lighting CCR by Manual Control and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

\_\_ Test Taxiway A Lighting CCR in remote mode by airfield lighting control system and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

<b>Engineering Firm</b>	Hanson Professional Services Inc.	
Airport Name	CPS-St. Louis Downtown Airport	TESTING FORMS
Project	Taxiway B Relocation, Phase 2:	
	Drainage Improvements	
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Hanson Project	20A000102C	<del></del>
Date		<del></del>

\_\_ Test Taxiway B, Lighting Circuit 1 CCR by Manual Control and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

\_\_ Test Taxiway B, Lighting Circuit 1 CCR in remote mode by airfield lighting control system and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

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\_\_ Test Taxiway B, Lighting Circuit 2 CCR by Manual Control and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

\_\_ Test Taxiway B, Lighting Circuit 2 CCR in remote mode by airfield lighting control system and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

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series circuit cables recorded at the vau with an Ohmmeter	g modifications, additions, and/or upgrades s shall be Megger tested with an insulation ult. All series circuit cable loops shall have and recorded for each circuit at the vault. ested with results recorded. Record the da	resistance tester and the resistance measured Each constant current
Record the man for the Megger test	nufacture and model number of the insulations.	on resistance tester used
<del></del>	nufacture and model number of the Ohmme series circuit cable loop.	eter used to measure
current. Note: it is	nufacture and model number of the Ammet recommended to use the same Ammeter a tions, and/or upgrades have been complet	again after airfield lighting
Record personne	el conducting tests.	
Record personne	el observing tests.	

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\_\_\_ After airfield lighting modifications, additions, and/or upgrades have been completed, conduct cable insulation resistance test (Megger test) at the vault and record test results for each respective series circuit in the areas of work. Time duration of test should not be less than 90 seconds.

Cable Under Test	Cable Insulation Resistance	Test Voltage	Time Duration
Taxiway A Lighting series circuit cable			
Taxiway B, Lighting Circuit 1 series circuit cable			
Taxiway B, Lighting Circuit 2 series circuit cable			

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\_\_ After airfield lighting modifications, additions, and/or upgrades have been completed, each respective lighting series circuit cable loop shall have the resistance tested and recorded at the vault. Use an Ohmmeter and measure the resistance of the series circuit loop at the Vault.

Cable Under Test	Series Circuit Loop Resistance in Ohms
Taxiway A Lighting series circuit cable	
Taxiway B, Lighting Circuit 1 series circuit cable	
Taxiway B, Lighting Circuit 2 series circuit cable	

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	Drainage Improvements	
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Hanson Project	20A000102C	<del></del>
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- 2. Prior to conducting tests confirm each constant current regulator has a good and secure frame ground connection to the vault grounding electrode system. The constant current regulator frame ground shall be a minimum #6 AWG copper conductor and UL listed grounding connectors with secure and tight connections. Correct where missing. This is required for the safety of personnel.
- 3. The respective personnel performing tests shall be familiar with the respective test equipment and the use and operation of the test equipment. The Contractor is responsible to employ the services of personnel qualified to perform the respective tests and qualified to work on 5000 Volt airfield lighting series circuits, constant current regulators, and associated airport electrical vault equipment.
- 4. Test each brightness step and measure and record the input current on Phase A, Phase B and/or Phase C for the 208 VAC branch circuit to each CCR. Note: Provide a True RMS Ammeter for current measurements.
- 5. Test each brightness step and record the CCR output current to the series circuit lighting circuit. Each CCR should be equipped with an output current meter. In the event the output current meter is not working properly or is out of calibration use a True RMS Ammeter for output current measurements and measure the current in the output series circuit conductor.
- 6. Test each brightness step and record the CCR output voltage for the series circuit lighting circuit. Each CCR should be equipped with an output voltage meter. Where the CCR does not include an output voltage meter, the output voltage measurements are not required. Do not use a 0 to 600 Volt voltmeter to measure voltage across the CCR output terminals due to safety concerns and high voltages at the CCR output.

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\_\_ After airfield lighting modifications, additions, and/or upgrades have been completed, Test Taxiway A Lighting CCR by Manual Control and record input current and output current at each step.

STEP	INPUT CURRENT	<b>OUTPUT CURRENT</b>	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

\_\_ Test Taxiway A Lighting CCR in remote mode by airfield lighting control system and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

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\_\_ After airfield lighting modifications, additions, and/or upgrades have been completed, Test Taxiway B Lighting Circuit 1 by Manual Control and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

\_\_ Test Backup CCR for Taxiway B Lighting Circuit 1 in remote mode by airfield lighting control system and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

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\_\_ After airfield lighting modifications, additions, and/or upgrades have been completed, Test Taxiway B Lighting Circuit 2 CCR by Manual Control and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

\_\_ Test Taxiway B Lighting Circuit 2 CCR in remote mode by airfield lighting control system and record input current and output current at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

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Record additional notes as applicable.