HILLERS ELECTRICAL ENGINEERING, INC.

May 29, 2018

Ms. Shannon LaRocque, PE
Utility Director
Village of Wellington
12300 Forest Hill Blvd
Wellington, FL 33414

Subject: TROPOS Telemetry System Replacement-Phase 2: System Re-configuration Study

Dear Shannon:

Hillers Electrical Engineering, Inc. (HEE) is pleased to provide the Village of Wellington Utilities (Village) this proposal for microwave telemetry engineering analysis in support of the ongoing TROPOS Phase 2 project. The TROPOS Phase 2 project, currently under design, replaces the existing microwave based mesh routers throughout the Village to transmit data and monitoring/command signals to assets in the Utility's Distribution and Collection System, as well as, the Storm Water Management System. During design, two significant issues have caused the need to re-evaluate the system configuration:

1. The intent of the project is to replace existing mesh routers, and associated equipment, with the most current state-of-the-art equivalent. The new mesh router unit configuration is physically different than the currently installed mesh router unit as the manufacturer has separated the mesh router power supply into a separate enclosure from the microwave mesh radio transceiver. This complicates the installation of the replacement units at each deployment location.

2. Many of the mesh routers are mounted to light poles owned by FPL and the additional power supply enclosure has caused a re-evaluation by FPL of the installation on their poles for wind loading and resiliency during high wind events. FPL has determined that it is no longer acceptable to deploy the Village's mesh router system on existing FPL infrastructure and has instructed the Village to remove these units from their facilities. Simply removing the units from the FPL infrastructure would cause vulnerabilities, and potentially holes, in the communication network leaving utilities unable to communicate with collection and distribution sites and affecting the level of service to the Village residents.

To address the stipulation from FPL, and maintain a robust communications network, engineering and evaluation of the affect part of the mesh network system is required by a firm that specializes in microwave telemetry communications. HEE has contacted subconsultant MCIS to assist with the engineering required to determine the impacts and new system configuration to address the FPL stipulation and maintain a robust, reliable communications system.

The scope of work is as follows:

1. Identify TROPOS mesh sites collocated with FPL infrastructure that will require replacement, relocation, and/or reconfiguration alternatives to maintain monitoring integrity in support of Village of Wellington monitored sites (WTP Sites).

2. Obtain the existing TROPOS system operating performance characteristics by Mesh node from TROPOS management console (TROPOS Network Management Software).

3. Identify existing FPL sites and specific mesh nodes deployed on said sites to assess impact of node removal.

4. Perform field surveys and assess potential of restoring monitoring integrity associated with disrupting/relocating FPL mesh locations (Approximately one hundred thirty (130) and required monitoring of remaining network sites (approximately one hundred forty six (146) locations.

5. Field assesses potential relocation site alternatives to achieve reliable communications to existing utility distribution, collection and stormwater sites.

6. Based on known removal of FPL sites and potential new sites, develop a connectivity plan based on high probability of success to achieve connectivity with utility distribution, collection and stormwater sites.

7. Develop new site Build-Out requirements and high level BOM for site implementation to achieve connectivity with utility distribution, collection and stormwater sites.

8. Prepare and submit draft a technical memorandum documenting and summarizing the results of the study for Village Staff review and comment.

9. Attend a draft review meeting with Village, MCIS and HEE to discuss the study results.

10. Incorporate comments and finalize technical memorandum for submittal to Village. Recommendations in the final technical memorandum will be used to complete the TROPOS Phase 2 design project.

Our total proposed lump sum study fee is: $64,487.00

The following is our propose project schedule:

Draft documents: 90 days after notice to proceed.
Draft document review: 10 days after draft document submittal.
Final document submittal: 14 days after draft document review meeting.

Assumptions:

1. No civil or structural engineering, surveying, geo-tech, permitting, etc. is assumed.

2. Village will furnish the following information from existing records and monitoring systems:

    a. Equipment, locations (GPS) for all mesh nodes deployed.

    b. Identify FLP sites and identify specific mesh node deployed on said site.

    c. Identify WTP sites and identify specific mesh node deployed on said site.

    d. Furnish available data contained within TROPOS control as it relates to the scope of the project, to include historical data of the mesh units, paths, signal strengths, neighbors, throughput, uptime, etc. of all TROPOS mesh units via download of management software.

3. Village will provide access to identified sites for potential relocation, to the greatest extent possible.

4. Work is of a study nature, no materials are to be provided under this proposal.

5. No tower work at the Village Water Treatment Plant is assumed, or contained in this proposal. It is assumed that the base stations at the Water Treatment Plant are sufficient for communication with the re-configured system and no work will be required to improve or replace existing base station units.

6. No Maintenance of Traffic/Temporary Traffic Control is assumed, or required, as part of this effort as related to field work.

HEE wishes to thank the Village for the opportunity to assist with this project. Please do not hesitate to call me if you have any questions regarding this proposal or any other related matter.

Sincerely,

Mark E. Luther, PE

MEL/mel

Attachment
Business Development/Proposal/Village of Wellington/Village of Wellington-TROPOS Replacement-Phase 2 System Re-configuration Study.doc

TROPOS Replacement Phase 2 System Re-configuration Study
Village of Wellington Utilities
HILLERS ELECTRICAL ENGINEERING, INC.
Scope Fee Breakdown
Date: 5/29/18

Rate	**$225.00**	**$192.00**	**$153.00**	**$147.00**	**$129.00**	**$93.50**	**$90.00**	**$81.00**	**$138.00**	**$78.00**				
	Principal	Chief Engineer	Project Manager	Professional Engineer	Lead Engineer	Programmer	Designer	CADD/ Technician	Construction Coordinator	Secretarial	Total Task	Subconsultant	SUBTOTAL	TASK TOTAL
PHASE OF WORK	Hours	Hours	Hours	Hours	Hours			Hours	Hours	Hours	Hours	FEE	Cost	Cost
Study Analysis by MCIS														**$55,016.00**
MCIS Fee												**$50,000.00**		
HEE contract Administration		18								20			**$5,016.00**	
Technical Memorandum														**$9,471.00**
Draft Technical Memorandum														
Engineering Hours		12		24							36		**$5,832.00**	
Review Meeting														
Engineering Hours		3		3							6		**$1,017.00**	
Final Technical Memorandum														
Engineering Hours		6		10							16		**$2,622.00**	
Total Hours		**39**		**37**						**20**	**58**			
Construction Total		$7,488.00		$5,439.00						$1,560.00		**$50,000.00**	**$14,487.00**	**$64,487.00**

MCIS, Inc.
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Lakeland, Florida 33815
Office 863-327-1095
Fax 863-327-1091
www.mcispzone.com

Village of Wellington
Mesh Assessment & FPL Re-design
P6187655-05

PROPOSAL FOR: Hillers Electrical Engineering (CLIENT) 05/23/2018
Attn: Mark Luther

The following proposal outlines services to be provided by MCIS, Inc. (MCIS) to assess the impact and options associated with the Village of Wellington's Tropos wireless mesh network and provide options, considerations and re-configuration of the system to achieve monitoring of the WTP Sites.

Scope of Services:

Intent: Identify Tropos mesh sites collocated with FPL infrastructure that will require replacement, relocation, and/or reconfiguration alternatives to maintain monitoring integrity in support of Village of Wellington monitored sites (WTP Sites).

1. Download system performance by Mesh node from management console (Tropos Network Management Software).
2. Identify FPL sites and specific mesh nodes deployed on said sites to assess impact of node removal.
3. Perform field surveys and assess potential of restoring monitoring integrity associated with disrupting/relocating FPL mesh locations (Approximately one hundred thirty (130) and required monitoring of WTP sites (approximately one hundred forty six (146) locations).
4. Field assess potential relocation site alternatives to achieve monitoring of WTP sites.
5. Based on known removal of FPL sites and potential new sites, develop a connectivity plan based on high probability of success to achieve connectivity with WTP sites.
6. Develop new site Build-Out requirements and high level BOM for site implementation to achieve connectivity with WTP Sites.

Total Not-to-Exceed Cost: $50,000.00

Assumptions:

a. No civil or structural engineering, surveying, geo-tech, permitting, etc. is assumed.
b. Client will provide MCIS the following information from existing records and monitoring systems:
   i. Equipment, locations (GPS) for all mesh nodes deployed.
   ii. Identify FLP sites and identify specific mesh node deployed on said site.
   iii. Identify WTP sites and identify specific mesh node deployed on said site.
   iv. Provide available data contained within Tropos Control as it relates to the scope of the project, to include historical data of the mesh units, paths, signal strengths, neighbors, throughput, uptime, etc. of all Tropos / mesh units via download of management software.
c. Client will provide access to identified sites for potential relocation.
d. Labor costs include travel/lodging/per Diem costs, project management time and basis of design.
e. No materials are to be provided as part of this effort.
f. No tower work is assumed.
g. No Maintenance of Traffic/Temporary Traffic Control is assumed as part of this effort.

h. MCIS is not responsible for Force Majeure events causing damage or delays. Force Majeure is defined as any unforeseeable or unpreventable event beyond the reasonable control and without gross negligence of the party alleging its occurrence, which, despite all reasonable efforts such party to prevent its occurrence or mitigate its effects, causes a delay or disruption in the performance of any obligation imposed on such a party hereunder. Subject to the foregoing, Force Majeure shall include but not be limited to: acts of god; meteorological or atmospheric conditions; interference from new or existing sources; explosions; fires; storms; floods; lightning; system emergencies; terrorism; vandalism; any Force Majeure event described in the foregoing clauses that affects the performance of any person that is party to any material services; and any events that are deemed to be Force Majeure events under applicable law.

TERMS AND CONDITIONS

This proposal and quotation is based on MCIS performing the entire scope of work as outlined above. Price assumes access to on-site personnel, sites, buildings and cabling during site surveys/visits. Payment terms are net 30 days with the payment due upon completion of work.

FEE AND TERM OF CONTRACT

This proposal is valid for 90 calendar days from the date listed on this proposal. The above work will be provided for the Client.

MCIS represents and warrants that it is acting as an independent contractor, and none of its personnel shall be employees of the Client. MCIS will be responsible for all taxes, benefits and insurance pertaining to its personnel. MCIS shall not be an agent for Client or hold itself as an agent for Client and shall not have the authority or power to enter into any contract, make any purchase for or otherwise obligate Client in any manner.

CONFIDENTIALITY

Any non-public information relating to Client or its business will be kept confidential by MCIS.

The parties undersigned below hereby agree to the proposed work for the scope contained in this document, fees, terms and conditions outlined herein either by way of signature below or issuance of Purchase Order number in the amount of the Total Cost.

MCIS, Inc.	**Client**
By: _____	By: _____
Paul T. Kerby	Mark Luther
Vice President	Hillers Electrical Engineering
Date: 5/26/18	Date: _____