Section 2

PROPOSAL OF ENGINEERING SERVICES FOR
THE CITY OF COLUMBUS
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF POWER

FOR STREET LIGHTING DESIGN OF:
CIP # 670778-100001
(Broad Meadows Assessment Street Lighting)

July 9, 2013

By

ADVANCED ENGINEERING CONSULTANTS

Mechanical | Electrical | Plumbing | Fire Protection

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Topic 1: Proposal Quality

A. PROJECT MANAGEMENT

Founded in 1998, ***Advanced Engineering Consultants, Ltd.*** (AEC) is a Columbus-based engineering firm, specializing in providing a wide variety of electrical and mechanical engineering services including roadway / highway lighting design. AEC is prequalified by the Ohio Department of Transportation (ODOT) to provide Limited and Complex Lighting design services. In addition, AEC is certified by the City of Columbus as a Female Business Enterprise (FBE).

Mrs. Lisa Huang, PhD, P.E., RCDD, founder and President of AEC, will serve as our Principal-In-Charge on the street lighting projects. Ms. Huang holds a Ph.D. in Electrical Engineering from The Ohio State University and is certified as a Registered Communications Distribution Designer (RCDD). She is a State of Ohio registered Professional Engineer who has accumulated over 24 years of experience in the field of electrical engineering. Her experience includes providing electrical engineering services for numerous projects for the City of Columbus including several roadway/street lighting designs. As the President of AEC, she has the corporate authority to ensure that all necessary AEC personnel and equipment resources are made available for this contract to ensure delivery of high quality services, on-time and within budget. (See Experience of Team's personnel for Resume.)

Mr. Jordan Steele, PE, LEED AP will be the AEC Team's Project Manager and electrical engineer. He is well qualified for this role having accumulated 8 years of experience in lighting designs. Mr. Steele has a tremendous amount of experience with projects of similar requirements. (See Experience of Team's personnel for Resume.)

AEC assumes a very proactive role in quality assurance and quality control in order to produce high quality construction documents and eliminate the potential for design errors and omissions. Every project is reviewed and coordinated with a formal internal process at each submission level. The review is completed and back checked prior to the design being submitted to the client. This insures that our designs are fully coordinated and of the highest quality possible.

Refer to Exhibit B and C for task/hour breakdown of every labor class.

B. DEMONSTRATED UNDERSTANDING OF PROJECT

The City of Columbus Division of Power (DOP) is requesting engineering services to design underground street lighting within the specified areas on boundary map included in the RFP. The project requires the development of Drawings and specifications for:

1. Decorative Post Top pole street lighting system, with underground wiring.
2. Location of underground utilities.
3. Street lighting work within City of Columbus right-of-way.

AEC shall design an underground street lighting system, prepare a complete set of drawings, provide a detailed specification, and develop a cost estimate. The design shall include the locations of the light poles, street lights, brackets, conductors, power sources and their relation to structures and other utilities within the project limits.

All light poles and luminaries shall be as specified by the Division of Power. The design shall be in compliance with the National Electric Safety Code requirements for spacing between electric lines and power cables.

AEC shall design the system to the required illumination and uniformity ratios in accordance with the City of Columbus standards for street lighting. Illumination calculations shall be prepared using Visual Lighting Design software. Typical foot-candle levels shall be shown as a grid with a point value listed at a maximum of every 10 square feet of pavement surface. An average calculation shall be shown for road, sidewalk, and other pertinent pavement features.

Drawings and specifications shall be prepared in accordance with Division of Power Street Lighting MIS Specifications, the City of Columbus 2012 Construction and Materials Specifications, and the scope of services document for the above specified project areas.

AEC shall field verify existing drawings from the local utilities or the Franklin County GIS files. Drawings generated by utilizing topography and aerial photography within 50 feet of the construction area and easements shall be supplemented with field verification to ensure accuracy.

AEC shall review project documents with the City Project Manager at 30% and 70% milestones. The review documents shall include site surveys, preliminary design work, voltage drop calculations, itemized cost estimates and specifications.

100% review Drawings shall be submitted in accordance with the preliminary review comments incorporated. The review set shall include Ten (10) sets of Drawings and a digital copy and specifications. Upon request, a minimum of two (2) sets of review Drawings shall be submitted to utility companies or to the City for easement requisition.

After receipt of comments from the City and utility companies, AEC shall incorporate final review changes, and submit two (2) sets of final Drawings with mylar title sheets for approval signatures.

Upon project design approval by the City, AEC shall furnish itemized cost estimates, preliminary construction schedule and supplemental specifications for construction.

AEC shall provide the following scope of services:

1. Review existing Drawings (where available).
2. Prepare base Drawings using the Franklin County GIS system. Base Drawings showing relevant data layers will be prepared. They will be verified using a combination of aerial photographs and field surveys.
3. Provide Engineering Drawings on Auto-Cad 2007, plotted in ink on 24" x 36" sheets. Drawings will include, as a minimum:
    a. Title Sheet per Division of Power standards (on Mylar)
    b. Drawings Notes
        - General Notes and Legends
        - General Summary
        - Control Center Schedule
    c. Design Detail Sheets
        - Plan View scale: 1" = 50'
        - Subject area streets, street names, and north arrow
        - Property lot lines and house numbers
        - Legend
        - Circuit identification symbol for each new circuit (to distinguish circuits)
        - Pole identification showing pole and circuit number
        - Alignment and spacing of lights
        - Distance, in feet, between lights

- New 480 volt circuits – Bold on Drawings
- New HPS lights – Bold on Drawings
- Location of poles – Bold on Drawings
- Identification of private or City utility conflicts (caution arrow) and coordination with utilities for possible relocation
- Street light controller location and associated Division of Power electric source
- Circuit single line diagrams (shown on one sheet)
- Profile (when necessary to show clearance from other utilities, structures, or obstacles)

4. Site description information shall be included in CAD files including all lines, features and grades relevant to the project.
5. Attend meetings including: consultation with City staff; meetings with City and private utilities; three (3) design review meetings; a public information meeting; pre-bid meeting; and a pre-construction meeting.
6. Provide the minimum Engineering Services such as issuing resident notification letters, responding to RFIs, and review of shop drawings within 14 calendar days.
7. Prepare electronic record drawings from Contractor marked drawings and deliver to the City in portable media format.

C. PROJECT SCHEDULE

AEC's professional services are always directed toward working within the client's project budget and schedule constraints. Internal project costs are regularly monitored through AEC's computerized project cost accounting system. AEC's Project Managers receive weekly printouts that document the project's design budget and person-hours spent so that the status of the contract can be closely monitored.

AEC is also aware of the impact of contractor claims for additional monies resulting from design errors and omissions, unforeseen conditions, and economic market conditions. AEC supports our clients in dealing with claims from unforeseen conditions and other issues during the construction phase by evaluating potential change orders to prevent unjustified additional costs. The historically low percentage of extra work orders on AEC's contracts is documentation of our company's multi-faceted knowledge of design requirements and our ability to convey the design intent through our drawings and specifications and by providing good coordination during construction.

A tentative proposed schedule is shown in Exhibit A. Upon selection, AEC shall request a meeting with the City to further refine the schedule to meet the City's needs.

D. PROJECT COST

Our lump sum fee for this project is $27,151.80(Twenty Seven Thousand, One Hundred and Fifty One dollars and Eighty Cents), which includes all items contained in the scope of services. The breakdown of the services is outlined in Exhibit B and C.

LISA HUANG, PH.D., P.E., RCDD

President | Senior Electrical Engineer

EDUCATION:
PhD, Electrical Engineering, 1999
M.S., Electrical Engineering, 1993
B.S., Electrical Engineering, 1982

REGISTRATIONS:
Registered Professional Engineer
Registered Communications Distribution Designer (RCDD)

EXPERIENCE SUMMARY:
Ms. Huang has accumulated 24 years of experience in project management, design and construction of electrical power substations, distribution systems, emergency standby power systems, illumination, telecommunications, and fire / security alarm systems for various facilities. She is responsible for performing analysis of existing electrical systems, evaluation of alternatives, preparation of feasibility reports, construction plans, contract documents, construction administration, shop drawing review, development of punch lists, and project closeout. Her lighting design experience includes plan preparation, illumination calculation and lighting layout, voltage drop calculation, grounding, and lighting controls. She has completed the Ohio Department of Transportation (ODOT) Traffic Academy's Highway Lighting design course.

RELEVANT EXPERIENCE:

ODOT Project MOT-75-11.00: Ms. Huang was responsible for highway lighting design services that involved improvements to over one mile of continue run of the I-75 mainline as well as the I-75 / U.S. 35 interchange. Services include lighting layout and illumination calculations to meet ODOT average illumination and uniformity requirements; electric services and circuits to the high way lighting, underpass lighting, voltage drop calculations, lighting controls, grounding and lightning protection; lighting design, layout, notes, schedules, specifications, drawings; Provide lighting detail sheets to meet ODOT standard and project requirements; Construction documents; and cost estimate.

ODOT Project LUC-475-14.53: Ms. Huang was responsible for complex highway lighting design services that involves improvements to several interchanges, over 3 miles of mainline, and eight (8) bridges with associated roadway work to accommodate the widening of I-475 (PID 77255) and I-75 (PID 77254). Services include lighting layout and illumination calculations to meet ODOT average illumination and uniformity requirements; electric services and circuits to the high way lighting, bridge lighting, voltage drop calculations, lighting controls, grounding and lightning protection; Interchange lighting design, layout, notes, schedules, specifications, drawings; Provide lighting detail sheets to meet ODOT standard and project requirements; Construction documents; and cost estimate.

ODOT Project LAK-2-7.76: Ms. Huang provided design services for main line lighting for a 1.8-mile section of State Route 2 in Lake County. The project includes improvements at two intersections, one with State Route 615 and one with Heisley Road. AEC was responsible for preparation of highway lighting designs for the roadway and two intersections.

Street Lighting Improvement in Raspberry Park and Heatherbrook, Columbus, OH: Provided engineering design services for construction of over 100 streets lighting, grounding, and controls. The design included the location of new light poles, street lights, conductors, power sources and their relation to structures and other utilities.

City Hall Exterior Façade Lighting, City of Columbus - Columbus, OH: Mrs. Huang served as project manager and lighting designer on this project which involved replacement of the exterior building lighting at City Hall. Several large HID luminaires were replaced with LED sources. The system also incorporated color changing strategies that allow the City to adjust system parameters for certain annual special events such as 4th of July or breast cancer awareness week. The LED system reduced power consumption for the City Hall exterior façade lighting by 91%.

JORDAN STEELE, P.E., LEED® AP

Electrical Engineer | Lighting Designer

EDUCATION:
Bachelor of Science, Electrical Engineering, 2001

REGISTRATIONS:
Registered Professional Engineer (OH)
LEED Accredited Professional

EXPERIENCE SUMMARY:
Mr. Steele has eight years of engineering design experience in electrical power and lighting systems, roadway lighting designs. He has experience with creation of construction documents from the systems analysis / schematic design stages to completed document sets. Mr. Steele is responsible for performing design analysis, cost estimating, shop drawing checks, construction management and coordination with other disciplines, contractors, owners and vendors. Mr. Steele also served as a Captain in the U.S. Army. He has completed the Ohio Department of Transportation (ODOT) Traffic Academy's Highway Lighting design course.

RELEVANT EXPERIENCE:

ODOT Project ATH-M3Y05-175 - Athens County, OH: Electrical Engineer for lighting an historic bridge on Richland Avenue in Athens, OH. The 80 year old bridge will undergo a complete deck replacement and renovation, while keeping the historic railings and piers intact. Modern mast-arm lighting will be removed and replaced with decorative post-top lantern style luminaires on ornamental poles to emulate the original lighting of the bridge. A modern structure grounding system was also designed into the existing bridge structure to bring the old bridge into modern compliance with code. Mr. Steele was responsible for full lighting design analysis, circuit design, and structure grounding design and construction document production for the project.

ODOT Project FRA-270-21.03 - Franklin County, OH: Electrical Engineer for this project that involved providing complex lighting design and power services for improvements to the I-270/SR315/US23 interchanges. The project combines two interchanges (I-270/SR 315 and I-270/SR 23) into one interchange. Work involved approximately 1.5 miles of continuous run of mainline highway lighting, as well as lighting for the Linworth Road Bridge to meet ODOT requirements.

Dennison Place Phase 2&3 Street Lighting Improvements: Project Manager and Electrical Engineer for replacement of existing Cobra head luminaires on aluminum brackets with tear drop green luminaires on green brackets on King Ave. (Olentangy to High St.) and 5th Ave. (Neil to High St.), and replacement of existing overhead street lighting with underground ornamental lighting system on 6th Ave. (Neil to Dennison) and Dennison Ave. (King to 5th). Existing luminaires in alleys adjacent to this upgrade will be converted and re-fed. The street lighting system will be utilizing High Pressure Sodium, 100 Watt Acorn luminaires at 6th and Dennison Ave., and 250 Watt Tear Drop luminaires at King and 5th Ave. Mr. Steele is responsible for full lighting analysis, fixture selection, and power design for the project.

Parking Lot Lighting and Security Improvements, Nationwide Children's Hospital – Columbus, OH: AEC provided lighting design and power design to control gates and security equipment for a 30,000 square foot parking lot extension at the East Broad Street Close to Home Center for Nationwide Children's Hospital. Mr. Steele served as one of AEC's Electrical Engineers. He was responsible for full lighting analysis, fixture selection, power circuit design, telecommunications and power design for the security system and development of construction documents and specifications for the project.

Energy Efficient Lighting Upgrades for Fire Stations, Columbus Division of Fire - Columbus, OH: AEC was selected to provide design services for energy efficient lighting upgrades and/or retrofits at 28 Columbus fire stations. The purpose of the project was to correct inefficient and ineffective luminaires that are technically and physically dated. The City also wanted to take advantage of the AEP's energy reduction program. The AEP gridSMART program offers a few avenues to earn cash back incentives by reducing lighting loads in existing facilities. AEC's services included submitting for the AEP rebates in order to maximize utilization of funds. Mr. Steele served as one of AEC's Electrical Engineers for this project.

Topic 3: Experience of Prime

AEC's reputation is built on our commitment to design excellence, proficiency in production, and project management. We have successfully completed a number of projects involving lighting design services for streets and highways. Each of the projects below are similar in size and complexity to the DOP and other municipalities. These projects involved lighting layout and illumination calculations to meet average illumination and uniformity requirements; electric services and circuits to the highway/street lighting; voltage drop calculations; lighting controls; grounding; cost estimates, and lightning protection.

CITY OF COLUMBUS STREET LIGHTING IMPROVEMENTS
DENNISON PLACE, COLUMBUS, OH
GLENBROOK, COLUMBUS, OH
WILLIS PARK AND LEAWOOD GARDENS, COLUMBUS, OH
AEC provided electrical engineering management and design services for site lighting and overhead alley lighting for several areas within the City of Columbus. The detailed lighting designs included field survey, drawings and specifications, bid documents, and the preparation of record plan drawings.

ODOT SUM-8.30 STATE ROUTE 8 IMPROVEMENTS
SUMMIT COUNTY, OH
AEC is providing lighting design services for this highway improvement project. Services include preparation of lighting layout and illumination calculations to meet ODOT average illumination and uniformity requirement by point by point analysis of brand luminaries using Halophane Visual Pro lighting software. The design parameters are an initial average illumination of 0.9-1.1 fc. with an average/minimum ratio not to exceed 3:1 and a maximum/minimum ratio not to exceed 10:1; lighting plans, details, notes, schedules, specifications, construction documents; provide electric services and circuits to the high way lighting, coordinate power service locations with utility company and voltage drop calculations.

CITY PARKS SITE LIGHTING AND ELECTRICAL UPGRADES
CITY OF COLUMBUS - COLUMBUS, OH
AEC provided electrical engineering management and design services for site lighting and electrical service upgrades for the following City of Columbus recreation and parks facilities: Antrim Park, Big Walnut Park, Livingston Park, McCoy Park, Sawyer Center, Westgate Pond, Griggs Park, and Woodward Park. The design provided code compliant illumination, controls, grounding, and safe power services for the site lighting.

ENVIRONMENTALLY TECHNOLOGIES: For all the lighting projects presented for the City of Columbus such as fire stations' lighting upgrades, AEC has possessed experience for the evaluation of the utilization of environmentally beneficial methods and technologies. We have a very high percentage of our staff who hold the LEED Accredited Professional designation from the US Green Building Council. Our team has read and digested the City of Columbus "Green Memo" and applauds the City's initiatives.

Topic 4: Local Workforce

All work performed for this project by AEC will be performed from our Columbus office which is located near downtown at 1310 Dublin Road. Therefore, 100% of the team's project labor costs are assignable to employees paying City of Columbus income tax.

AEC is able to perform all the work outlined in-house and will not be using subconsultants.

EXHIBIT A - TIME SCHEDULE

PROJECT TITLE: Broad Meadows Street Lighting Improvements

CIP # 670778-100001

TASK NO.	ACTIVITY / MONTH	1	2	3	4	5	6	7	8	9	10	11	12
1	General	■											
2	Field Survey	■											
3	Drawings and Specifications		■	■									
4	Easements (If required)												
5	Building and Construction Services			■									
6	Permits				■								
7	Engineering Services During Construction					■	■						
8	Record Plan Drawings							■					
9	Community Interaction												
	City Review			■									

NOTES:

1 Shade the blocks indicating the month in which each task is expected to be completed.

2 Refer to Schedule 1- Scope of Servicesfor number and duration of City reviews.

3 Tasks 8 and 9 will be completed after month 12, and *should not be indicated* in the schedule.

EXHIBIT B - ESTIMATE OF COST ALLOCATION BY TASK ACTIVITY

EXHIBIT B -Estimate of Time Allocation by Task Activities
PROJECT TITLE: Broad Meadows Street Lighting Improvements

CIP # 670778-100001

TASK NO.	ACTIVITY	LABOR HOURS											
		PR	PM	SPE	PE	DE	ET	DR	CL	RS	FP		TOTAL
1	General		10		10								
2	Field Survey				5	30							
3	Drawings and Specifications		5		15	40		120					
4	Easements (If Required)												
5	Bidding / Construction Services												
6	Permits				B								
7	Engineering Services During Construction				10	10		10					
8	Record Plan Drawings							20					
9	Community Interaction		5										
	Total Hours	0	20	0	40	80	0	150	0	0	0	0	290

PR - Principal
PM - Project Manager
SPE - Senior Project Engineer
PE - Project Engineer
DE - Design Engineer
ET - Eng. Technician
DR - Drafter
CL - Clerical
RS - Registered Surveyor
FP - Field Person

EXHIBIT C - COST SUMMARY

EXHIBIT C -Cost Summary

1. CITY: COLUMBUS, OHIO DEPT. OF PUBLIC UTILITIES			2. CIP NO. **670778-100001**		3. VERSION:
4. NAME OF CONSULTANT: Advanced Engineering Consultants		PROJECT TITLE: **BROAD MEADOWS STREET LIGHTING**			
5. ADDRESS: 1310 Dublin Rd, Columbus, OH 43215		6. TYPE OF CONTRACT: **DIRECT HOURLY w/MULTIPLIER**			
7. DIRECT LABOR (DL)	LABOR CATEGORY		EST. HRS.	MAX HOURLY RATE	TOTALS
Project Manager (PM)			20.00	45.00	$900.00
Project Engineer (PE)			40.00	42.00	$1,680.00
Design Engineer (DE)			80.00	36.00	$2,880.00
CAD Drafter (DR)			150.00	28.00	$4,200.00
				DL TOTAL:	$9,660.00
8. HOURLY COST MULTIPLIER HCM = (1+OR) * (1+NF) where: OR=Overhead Rate composed of Payroll and Administrative markups. NF=Net Fee or profit. OR= (_____ %) Overhead Rate NF= (_____ %) Net Fee or profit				HCM TOTAL:	2.55
9. TOTAL LABOR COSTS				(Line 7 x Line 8)	$24,633.00
10. OTHER DIRECT COSTS (ODC)				EST. COST	
a. Travel Transportation 100 mi @ $ .555 /mile					
				Travel Subtotal:	$55.50
b. Equipment, materials, supplies (provide itemized breakdown of these costs on separate sheet)					
				E, M & S Subtotal:	$
c. Subcontracts					
				Subcontracts Subtotal:	$
d. Other (Specify categories)					
				Other Subtotal:	
				OTHER DIRECT COSTS (ODC) TOTAL:	$55.50
11. **TOTAL COST** (without Task 4)(sum of line 9 + line 10)					$24,688.50
12 Task 4 - Easements (If Authorized)					$0.00
13 10% Contingency					$2,463.30
14 **CONTRACT GRAND TOTAL** (sum of lines 11 thru 13)					**$27,151.80**