



MARKS ENTERPRISES of NC, PLLC

One Palatka Street - Arden, NC 28704

Tel: 828-231-7424 Fax: 828-681-8909

October 14, 2016

**Town of Lake Lure
Town Hall
2948 Memorial Highway
Post Office Box 255
Lake Lure, North Carolina 28746**



**Attention: Mr. Donnie McCraw
Dam & Power Plant Operator**

**Reference: PROPOSAL FOR PROFESSIONAL SERVICES
Part I: 2017 Dam Safety Evaluation & Report
Lake Lure Dam, Power Plant, and Appurtenances
NCID No. RUTHE-003
Lake Lure, Rutherford County, North Carolina
Marks Enterprises Proposal No. P-16-004**

Dear Mr. McCraw:

Marks Enterprises of NC, PLLC (Marks Enterprises) appreciates the opportunity to continue to work with the Town of Lake Lure to establish an Agreement (Contract) for Professional Services associated with evaluation of the current structural integrity, stability, and overall safety of Lake Lure Dam. This cooperative effort began over two (2) years ago when Marks Enterprises submitted a Proposal for Professional Services associated with a dam safety inspection. The original proposal was revised and resubmitted earlier this year with a significantly expanded scope of work and associated budget to address observed evidence of accelerated deterioration of the dam and appurtenances. In both instances, the dam and appurtenances experienced structural deficiencies at the same time that the proposals for dam safety inspections and evaluations were being reviewed for budget allocations. Unfortunately, but rightly so, the proposals for inspections, investigations, analyses, and evaluations were set aside in order to fund needed remediations of the dam and its appurtenances. In response to these



recurrent conflicts between dam safety evaluations and reoccurring remediation requirements, Marks Enterprises has developed a Two-Part Dam Safety Inspections, investigations, Analyses, and Evaluations Plan that incorporates two (2) significantly reduced budgets to be completed over the next ten (10) to twelve (12) months. The primary concept of the Plan is to allow more time for the overall project so that assigned Levels of Effort (LOE) during any one of the identified Project Task can be adjusted as needed without disruption or stoppage of the progression of the project. However, there must be a commitment of both parties to the Agreement for Professional Services Contract to complete both Part I and Part II of the Project in order to properly evaluate the current safety and potential needs and costs to prolong the life of Lake Lure Dam and associated hydroelectric generation capabilities.

This proposal presents a detailed scope of work, a detailed budget, and a detailed schedule for Part I of the project; an overview of the scope of work, an estimated budget, and a proposed schedule for Part II of the project; a Proposal Acceptance Signature Sheet; and a Closure containing a recommended implementation of the findings of the Two (2) - Part Dam Evaluation Project. Marks Enterprises will require a retainer for both Part I and Part II of the project at the time of signing of the Agreement for Services Contracts (Proposal Acceptance Signature Sheets). The retainers will be twenty-five (25) percent of the estimated project budget amounts and will be credited in equal amounts to each submitted invoice. As indicated in the previously submitted document some preliminary work has been done and will continue to be done to take advantage of the winter lake drawdown scheduled to begin on December 1, 2016. A portion of the retainage will be used to reimburse Marks Enterprises for these activities with the remainder used to pay subcontractors for work prior to submittal of our first invoice.

PROPOSED SCOPE OF WORK FOR PART I

The author of this proposal will be the Project Engineer for both Part I and Part II of the 2017 Dam Safety Inspection, Investigation, Stability Analyses, and Structural Integrity Evaluations for Lake Lure Dam, the Power Plant, and other appurtenances of the facility.

As such, Dr. Marks, P.E. will be present during critical project activities and conduct the visual dam safety inspections, structural stability analyses, render all final evaluations of the structural integrity, and prepare both the Part I and Part II 2017 Dam Safety Investigation Reports. Although not presented as a project task or activity, Dr. Marks, P.E. will be happy to present a PowerPoint presentation to the Town Council and Invited Guests at the completion of Part I and/or both phases of the Project.

The proposed scope of work for Part I of the project has been defined by ten (10) tasks that are described below. Some of these tasks consist of site activities that will overlap or be conducted simultaneously. As such, the time allocated to some overlapping tasks will be shown as zero or an unusually low amount of time so that the time required to complete certain tasks is not doubled or counted twice in the overall schedule. We anticipate that subcontractors retained to complete beginning project activities will mobilize no later than November 14, 2016.

<u>TASK</u>	<u>DESCRIPTION</u>	<u>ESTIMATED COMPLETION</u>
1.	Inspection-Level Vegetation Clearing	December 1, 2016
2.	Field Measurements and Surveys	December 1, 2016
3.	Installation of Seepage Monitoring Weirs	November 21, 2016
4.	Review & Synthesis of All Dam Safety Files	November 21, 2016
5.	Monitoring Seepage at Normal Pool Elev.	December 1, 2016
6.	Dam Plans, Sections, & Details	December 23, 2016
7.	Visual Dam Safety Inspection	January 20, 2017
8.	Monitoring Seepage During Lake Drawdown	April 1, 2017
9.	Analyses of Uplift from Seepage Data	April 15, 2017
10.	Part I 2017 Dam Safety Investigation Report	April 30, 2017

RECOMMENDED PROJECT BUDGET

The recommended budget presented herein is not to be considered an itemized or line-item budget but shall be considered a financial management budget for the project so that the project can be completed within the total not-to-exceed budget amount. Marks Enterprises has gone to great extent to develop the presented budget that sets forth our best estimate of budget allocations by project task or activity. However, as one might expect it is often difficult to predict what conditions might be encountered during the inspection of a structure that is the age of Lake Lure Dam and its appurtenances. As such, invoicing for the project will be based upon actual time spent on each activity and not on a lump sum amount in accordance with the estimated distribution of the not-to-exceed budget. Marks Enterprises will not exceed the recommended not-to-exceed budget without prior written approval based upon a review of conditions that are associated with and that have resulted in the expenditure of time and monies in excess of the not-to-exceed budget.

We anticipate that invoices will be submitted on a monthly basis and/or at the completion of major project task. Completed work product will be presented with invoices where the work product is in a presentable form. Project status reports will be submitted in lieu of finished work product when completed items are not conducive to submittal as a stand-alone report or comprehensive document. For example; field measurements, notes, and survey data will be of little use if presented as raw data; however, the development of drawings, plans, sections, and details from these data would be a viable submittal once they are completed and available for distribution. As previously mentioned in the introductory information, the retainage fee shall be credited to each invoice as an equal amount until the retainage amount is totally reimbursed. Marks Enterprises has a "Due-Upon-Receipt" invoice payment policy which is in reality a ten (10)-day payment policy. Invoices that are not paid within thirty (30) days will be subject to a two (2) percent late fee or a lump sum of \$100.00, whichever is less.

ESTIMATED PART I BUDGET ALLOCATIONS

<u>Task</u>	<u>Description</u>	<u>Estimated Allocation</u>
1.	Inspection-Level Vegetation Clearing	\$ 3,500.00
2.	Field Measurements and Surveying	\$ 3,500.00
3.	Installation of Seepage Monitoring Weirs	\$ 2,500.00
4.	Review & Synthesis of All Dam Safety Files	\$ 2,000.00
5.	Monitoring Seepage at Normal Pool Elevation	\$ 1,250.00
6.	Dam Plans, Sections, & Details	\$ 2,500.00
7.	2017 Visual Dam Safety Inspections	\$ 3,000.00
8.	Monitoring Seepage During Lake Drawdown	\$ 2,000.00
9.	Analyses of Uplift from Seepage Data	\$ 2,000.00
10.	Part I 2017 Dam Safety Investigation Report	<u>\$ 2,500.00</u>
		<u>Total \$24,750.00</u>

Recommended Part I Not-To-Exceed Budget = \$ 25,000.00

PART II SCOPE OF WORK OVERVIEW

The scope of work for the Part II 2017 Dam Safety Investigation Project that will commence immediately following completion of Part I of the 2017 Dam Safety Investigation Project will be dependent to a large extent upon findings and evaluations of Part I of the overall project. However, there are some activities that will be conducted in the Part II portion of the project that will be independent of findings of the Part I portion of the project. These activities are presented herein so that the extent of the overall project can be reviewed as a part of the detailed review of the presented proposal for the Part I Dam Safety Inspection Project.

<u>Task</u>	<u>Description</u>	<u>Estimated Completion Date</u>
1.	Subsurface Exploration & Piezometers	June 2017
2.	Concrete Coring Investigation	July 2017
3.	Concrete & Rock Core Testing	August 2017
4.	Monitoring Piezometer Uplift Pressures	September 2017
5.	Dam Stability Analyses & Evaluations	October 2017
6.	Phase II Dam Safety Investigation Report	November 2017

PART II ESTIMATED BUDGET ALLOCATION OVERVIEW

The extent to which collection of seepage data during the scheduled lake drawdown for remediation of the smaller of the two turbines and generators in the powerhouse will benefit project tasks associated with determination of uplift pressures is extremely difficult to predict at this time. However, we do know that there are project tasks that must be completed regardless of the benefits of the additional activities undertaken in an attempt to collect additional supporting data for the static and quasi-dynamic stability analyses and evaluations. These tasks have been used to develop a very preliminary overview of the budget for Part II of the project. Presented below is our best estimated distribution of expenditures for project tasks that we know must be completed in Part II of the project in order to present results of dam stability analyses under various loading conditions that are as accurate as possible. This portion of the overall dam safety evaluation process is without doubt the most critical activity of the entire project since extension of the service life of Lake Lure Dam and the hydroelectric production capabilities will likely be dependent upon dam remediation activities that can be

undertaken to increase the structural integrity and stability of the dam and its appurtenances. As such, we are of the opinion that overviews of both the scope of work and anticipated minimum budget requirements for Part II of the 2017 Dam Safety Investigation Project be available during review of the Part I 2017 Dam Safety Investigation Project proposal for professional services.

<u>TASK</u>	<u>DESCRIPTION</u>	<u>ESTIMATED BUDGET</u>
1.	Subsurface Exploration & Piezometers	\$13,000.00
2.	Concrete Coring Investigation	\$ 3,000.00
3.	Concrete & Rock Core Testing	\$ 2,000.00
4.	Monitoring Piezometer Uplift Pressures	\$ 1,250.00
5.	Dam Stability Analyses & Evaluations	\$ 2,750.00
6.	Part II Dam Safety Investigation Report	<u>\$ 3,000.00</u>
<u>Total</u>		<u>\$25,000.00</u>

Estimated Part II Not-To-Exceed Budget = \$25,000.00

Estimated Part I & Part II Not-To-Exceed Budget = \$50,000.00

PROPOSAL ACCEPTANCE AND RETAINAGE

Acceptance of this proposal by execution of the following Agreement for Professional Services Contract and return of one executed copy of this document will serve as the contract between the Town of Lake Lure and Marks Enterprises of NC, PLLC for completion of Part I of the 2017 Dam Safety Investigation Project Lake Lure Dam and its Appurtenances. A separate Agreement for Professional Services will be executed for Part II of the Project.

The executed Agreement for Professional Services Contract shall be accompanied by the Retainage Fee Check made payable to Marks Enterprises of NC, PLLC in the amount of \$6,250.00 (twenty-five percent of the estimated not-to-exceed budget for Part I of the Project). There will be no need to provide a Certified Check, or other high security cash transfer document, other than a normal operating Town of Lake Lure Check. We anticipate that there will be five (5) invoices issued for the project following completion of Project Tasks No. 3, 5, 7, 9, and 10 (Final Close-Out Invoice). As such, a credit of \$1,250.00 will be provided in each invoice for reimbursement of the Retainage Fee. Terms of invoice payment and invoices subject to late fees has been covered on page four (4) of this document and will not be reiterated here.

PROJECT STATUS REPORTS

Marks Enterprises will not issue project status report unless specifically requested during the normal course of the project. However, the Project Engineer will remain in continual contact with Mr. Donnie McCraw, Dam and Hydropower Manager, so that he will be continually involved in the project and aware of the progression of project work. Completed work product will be submitted to Mr. McCraw for notice of receipt and distribution to the appropriate individuals. Marks Enterprises will be happy to attend any project meetings that are deemed necessary throughout the course of the project.

PROPOSAL ACCEPTANCE SIGNATURE SHEET

AGREEMENT FOR PROFESSIONAL ENGINEERING SERVICES CONTRACT

BETWEEN

TOWN OF LAKE LURE, NORTH CAROLINA

AND

MARKS ENTERPRISES of NC, PLLC

FOR

COMPLETION OF PART I OF THE 2017 DAM SAFETY
INVESTIGATION FOR LAKE LURE DAM, HYDROELECTRIC
FACILITIES, AND OTHER MAJOR APPURTENANCES

NC DAM ID No. RUTHE-003

LAKE LURE, RUTHERFORD COUNTY, NORTH CAROLINA

ON BEHALF OF THE TOWN OF LAKE LURE, NC:



Donnie McCraw, Operator of Lake Lure Dam and Hydroelectric Plant

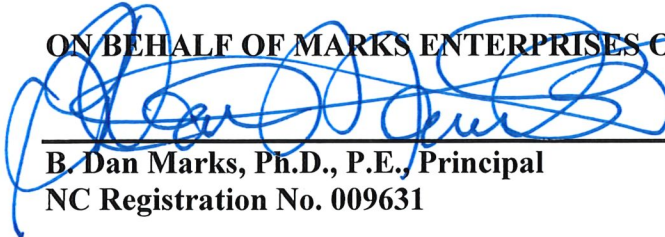


Sam Karr, Finance Director for Town of Lake Lure



Ron Nally, Town Manager for Town of Lake Lure

ON BEHALF OF MARKS ENTERPRISES OF NC, PLLC:



B. Dan Marks, Ph.D., P.E., Principal
NC Registration No. 009631

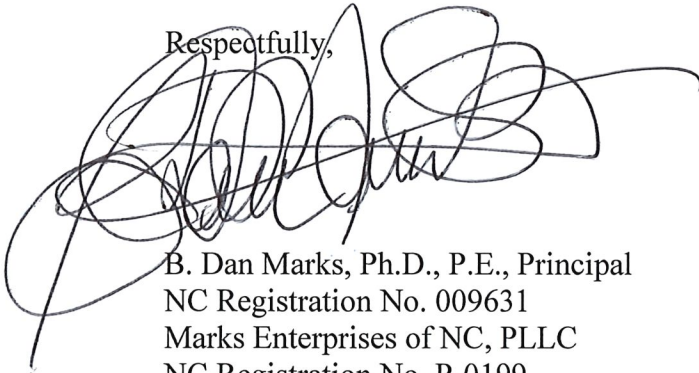
Dated This 14th Day of December, 2016

CLOSURE

Marks Enterprises is appreciative of this opportunity to work with representatives of the Town of Lake Lure on this extremely critical and vital project that we hope will generate a renewed community interest in not only the amenities of the dam but also the care and well-keeping of a truly historic structure. The Town is fortunate to have an Operator like Mr. Donnie McCraw that considers Lake Lure Dam to be a major part of his life and looks over the dam in a manner that all dams would be fortunate to experience.

If there are any questions concerning this proposal during your review of this document please contact me at (828) 231-0598 or drbdan@bellsouth.net at your convenience. I look forward to meeting with you to discuss this proposal and some of my concerns about the current status relative to the structural integrity, stability, and overall safety of the dam and major appurtenances.

Respectfully,

A large, stylized handwritten signature in black ink, appearing to read 'B. Dan Marks', is written over the typed name and title.

B. Dan Marks, Ph.D., P.E., Principal
NC Registration No. 009631
Marks Enterprises of NC, PLLC
NC Registration No. P-0199

Attachment: **Project Fee Schedule**

cc: **Mr. Ron Nally, Town Manager**

BDM/dm

MARKS ENTERPRISES OF NC, PLLC
1 PALATKA STREET
ARDEN, NC 28704
(828) 231-0598

2016 – 2017 FEE SCHEDULE
PROFESSIONAL DAM ENGINEERING SERVICES

- Principle/Owner; per hour \$ 165.00
- Senior Consultant, per hour \$ 150.00
- Senior Project Engineer, per hour \$ 135.00
- Project Engineer, per hour \$ 125.00
- CAD Operator and Engineer Assistant, per hour \$ 60.00
- Executive Assistant, Administrator & Technologist, per hour \$ 50.00
- Per Diem for Out-of-Town (Asheville Area) travel, per day \$ 40.00
- Vehicle Mileage, per mile \$ 0.60
- Airfare, Rental Vehicle, Taxi, and Tolls (Cost + 15%)
- Overnight Accommodations (Cost + 15%)
- Subcontract Services (Cost + 15%)
(Subsurface Explorations, Laboratory Testing, Surveying, etc.)
- Miscellaneous Expenses (Cost + 15%)
(Reproduction of Documents and Files, Overnight Shipping, etc.)

Marks Enterprises has a due-upon-receipt invoice payment policy. Invoices that are not paid within thirty days are subject to a late fee charge of two (2) percent of the invoice or a minimum of \$100.00 per month until the invoice is paid in full. Projects having unpaid invoices in excess of sixty days are subject to a stop-work order with a re-negotiated agreement for services to resume project services.