April 3, 2020

Ms. Anna Stoddard
Safety Administrator
City of Greensboro Water Resources Department
2602 South Elm-Eugene Street
Greensboro, NC 27406

Re: Fall Protection System Services Proposal

Dear Anna:

Thank you for the opportunity to submit LJB Inc.'s proposal for this important safety project for the City of Greensboro. Our water resources engineering team in the Kernersville office has enjoyed serving the City for many years, and we are excited to provide another service to enhance safety for City staff.

LJB's approach to addressing fall protection issues begins and ends with the consideration of the people who are being protected, with careful thought, collaboration, and attention to detail applied throughout. Our team has deep experience in each of the service areas required for this contract.

It is clear from our discussions in our meeting on February 18 that your goal is to have a safe environment for your workers. This proposal has been developed based on those discussions and the Request for Proposal (RFP). You have indicated that you would like to replace your existing fall protection systems since they do not pass inspections in their current condition. In addition, you want to address existing fall hazards that have no means of protection at the site locations included in this scope of work. In addition, it is important to you that your staff is properly trained. To achieve these goals, we have provided a breakdown of professional services into the following categories:

- Fall Protection Program Documents
- Initial Assessment
- Design and Engineering Services
- Staff Training
- Contract Bidding Support
- Construction Administration Services for System Certification

A table of site locations along with the scope of services by category are provided for your review.

SITE LOCATIONS

FACILITY NAME	USE	EXISTING FALL PROTECTION SYSTEM
Muirs Chapel Tank	Water Storage	Exterior ladder only; Ladder equipped with attached rail (round stock) for fall arresting trolley
Gorrell Street	Water Storage	No fall protection on ladder inside the dry riser: steel cable for fall protection arrester cable sleeve on exterior ladder
Regional Road	Water Storage	Internal ladder only with rigid rail ladder climbing system
Groometown Road	Water Storage	Internal ladder only with rigid rail ladder climbing system
Winola Court	Water Storage	Ladder inside the dry riser equipped with rigid rail (round stock) and fall arresting trolley system; no external ladder
Gate City Boulevard	Water Storage	Steel cable for fall arrester cable sleeve on exterior ladder; steel cable for fall arrester cable sleeve on ladder inside the dry riser
Battleground Avenue	Water Storage	Exterior ladder only; Ladder equipped with steel cable for fall arrester cable sleeve
Josephine Boyd Street	Water Storage	Internal ladder only with Suretrack rigid rail ladder climbing system
Knox Road	Water Storage	Internal ladder only; fall protection system removed
Lees Chapel Road	Water Storage	Steel cable for fall arrester cable sleeve on exterior ladder; steel cable for fall arrester cable sleeve on ladder inside the dry riser
Lake Higgins	Drain Valve Vault	No fall protection system on ladder inside the vault
Lake Daniel	Valve Vault	No fall protection system on ladder inside the vault
Mitchell Water Treatment Plant	Finished Water Surge Valve Vault	No fall protection system on ladder inside the vault
T.Z. Osborne Water Reclamation Facility	Final Settling Tanks (1-4) Distribution Chamber	No fall protection on ladder inside the chamber
Hilltop Road	Sewer Lift Station Wet Well and Dry Well	Existing removable davit arm fall protection system

SCOPE OF SERVICES

LJB proposes the following statement of work to meet the needs outlined in the RFP:

FALL PROTECTION PROGRAM DOCUMENTS

The City of Greensboro has an existing Standard Operating Procedure (SOP) for Fall Arrest, Harness and Lanyard Life Expectancy and Care. You have requested that LJB review this document and provide any recommendations for additions and/or modifications. In addition, you have requested the development of a Job Safety Analysis/Job Hazard Analysis (JSA/JHA) for work at heights and integration of the use and rescue procedures into the Emergency Response Plan.

1. **Standard Operating Procedure (SOP 1.040) for Fall Arrest, Harness and Lanyard Life Expectancy and Care**
   - > Review this document for compliance with OSHA regulations and ANSI Z359 standards
   - > Develop recommendations for changes and additions to the document
     - These recommendations will provide the information needed to update the document, however a full edit of the document is not included in the scope of work
   - > Conduct a conference call or online meeting to review the recommendations and address any questions or concerns
2. **Job Safety Analysis/Job Hazard Analysis (JSA/JHA) for work at heights**
   - > This is required by the City of Greensboro for non-routine tasks (see SOP 1.035), and is used as a tool to review prior to work at heights in order to keep staff safe
   - > Develop the JSA/JHA to describe the pre-planning and execution steps needed to safely perform the work at heights. It will reference the relevant project documents including but not limited to the use and rescue procedures, construction documents and specifications.
   - > Conduct a conference call or online meeting to review the JSA/JHA and address any questions or concerns
3. **Emergency Response Plan**
   - > LJB to incorporate by reference into the appendix of the City of Greensboro Emergency Response Plan the use and rescue procedures for the fall protection systems.
   - > Conduct a conference call or online meeting to review the incorporation of the procedures into the Emergency Response Plan and address any questions or concerns

INITIAL ASSESSMENT

The existing ladder fall protection systems have been taken out of use based on a previously completed inspection. It is the City of Greensboro's intent to replace these systems and add additional fall protection systems where needed. The focus of this assessment is to identify the locations where fall protection is needed and determine the recommended abatement solution. An assessment of the structural condition of the ladders and walking working surfaces will be included as part of this assessment.

1. **Document review** – review the existing documentation of the structures and associated fall protection systems. In addition, review the specific City of Greensboro safety requirements relevant to this project.
   - Gather and organize the documents provided
   - Review the safety requirements and determine the parameters required to be compliant while performing the on-site field work
   - Review the reference documents to gain familiarity with the available information regarding existing conditions
   - Identify missing information and confirm no documents are available showing existing conditions
2. **On-site field work –** a team of OSHA qualified persons/structural engineers will visit each location with City of Greensboro representatives to complete the following tasks:
   - LJB will discuss with workers the path of travel and work locations that expose workers to a fall of four feet or greater
   - Signs of deterioration of the structural steel associated with the support of existing or potential fall protection systems will be noted
   - Observations of the existing fall protection systems will be made to ascertain the effectiveness of the solution type and changes that can be made to improve safety and ease of use with the new systems. These may include:
     - Signs of tampering with the fall protection system components, including accidental damage
     - Indications of the system being impacted by a fall incident or other forces
     - Observations regarding needed changes and/or improvements in the current system type or style of installation
   - It is our understanding that the water storage tanks are non-permit required confined spaces. While the vaults and wells may be permit required confined spaces, the City of Greensboro will be responsible for the associated requirements such as air monitoring.
3. **Assessment report –** the on-site work will be summarized into a report form for each location that will include:
   - Observations regarding fall hazard locations and any deterioration of supporting structures related to the existing or potential new fall protection systems
   - Recommendations to abate the fall hazards including an overview of solution types available on the market. These will be categorized as:
     - Abatement solution types where existing systems are located
     - Abatement solution types to address fall hazards not yet addressed
4. **Review the report**
   - Conduct a meeting with appropriate personnel to review the report and address any questions

- Update the report based on input received
- Finalize next steps

DESIGN AND ENGINEERING SERVICES

The design and engineering services will be based upon the outcome and recommendations from the initial assessment of the fall hazards associated with the path of travel and associated work areas.

1. **Conceptual design of new fall protection** – based on the knowledge gained during the assessment, conceptual designs are developed to determine the preferred option to select for final design
   - This is a helpful step in achieving consensus on the best approach to address the fall hazard when multiple abatement options exist
   - For some scenarios where the best solution is apparent and agreed upon, this step may not be required
2. **Qualified person design of new fall protection** – an OSHA qualified person will perform the design of agreed upon abatement solutions
   - The design will be in accordance with OSHA 1910 and ANSI Z359.6 requirements
     - This will include considerations for fall clearance and swing fall
   - The design will include the structural engineering of any new framing associated with the fall protection systems
   - Specify equipment to ensure compatibility
     - Consistency in fall protection system types across the locations is an important project element
   - Provide draft use and rescue procedure for the fall protection systems (to be finalized upon completion of the installation)
     - The intent is to have the City of Greensboro fire department and first responders involved in the development and review of the rescue aspect of the procedures
3. **Structural engineering analysis** – the existing structure will be analyzed to determine if it can safely support the load from the new fall protection system in combination with code prescribed loads
   - It is our understanding that the City of Greensboro's consultant (Kimley-Horn) will provide existing loading information where needed for the analysis.
   - If there are any deficiencies found as a result of the analysis, LJB will provide a letter-style report summarizing the results, however, design of any reinforcement will be a subsequent phase of work
4. **Develop construction bidding documents** – these will include the engineering drawings and the project manual in accordance with City of Greensboro standards
   - The drawings will contain sufficient information for the production of shop drawings for the fabrication and installation of the new fall protection systems

- The drawings will show information regarding the existing conditions in the areas to the extent required for the installation
- The project manual will include the technical specifications, as well as, the front end and general conditions sections based upon the City's template to be provided to LJB

5. **Develop estimate of probable construction cost** – this estimate of the proposed fall protection system(s) will be provided for each of the locations
   - As part of the estimate of probable construction cost estimate, LJB will provide information regarding what M/WBE opportunities are available for the noted work

STAFF TRAINING

LJB's fall protection training is built upon the requirements of the OSHA regulations and the best practices of the ANSI Z359 Fall Protection Code. LJB has integrated into the training hands on experiential exercises involving fall protection personal protective equipment (PPE) that is typically used when working at heights.

1. **Deliver Competent Person training** – This training program is for personnel whose work involves the need to address fall protection issues, inspect equipment components and/or who are responsible for the supervision of employees working at heights
   - The goal of LJB's competent person training is to provide participants with the knowledge to identify fall hazards and understand the steps involved with evaluation and control. OSHA's definition of a competent person is:
     - *"**. . .** a person who is capable of identifying existing and predictable hazards in any personal fall protection system or any component of it, as well as in their application and uses with related equipment, and who has authorization to take prompt corrective measures to eliminate the identified hazards. (29 CFR 1910.140(b))"*
   - The main learning outcomes include:
     - Managed fall protection program components
     - Fall hazard identification, evaluation, and control
     - Personal Protective Equipment (PPE) use, limitations, and fall clearance requirements
     - Equipment fit, inspection and care
     - Requirements and proper use of anchor points
     - Rescue planning
     - Fall clearance calculation
     - Use and rescue procedure development
     - Mobile elevated work platforms best practices and regulations
     - Scaffolding best practices and regulations

- The content includes and exceeds the training performance criteria set forth by OSHA and the ANSI Z359 standard, and conforms to American National Standard Z490.1, Criteria for Accepted Practices in Safety, Health, and Environmental Training.
- The course provides interactive instruction, multimedia resources, and knowledge checks to train attendees
- LJB will furnish the training materials and equipment (no training tower will be employed), which will be set up in advance of the start of the training
  - Allowance provided for additional service: LJB will develop and design a training set-up for use at one of your locations. This will include a back-up fall protection system for use while a trainee gets comfortable using an installed climbing ladder fall protection system.
    - Same training set-up design would be used for both Competent and Authorized Person training
- The 3-day training sessions will include:
  - Water Supply Division: one session with 11 attendees
  - Water Reclamation Division: one session with 12 attendees
  - Operations Division: one session with 11 attendees
- The training sessions will be conducted on three consecutive weeks at a mutually agreed upon time
- Arrangements related to the training room will be City of Greensboro's responsibility
  - Please note that the size of the training room is preferred to be 40 feet by 40 feet or larger, and it should be able to be secured.
- LJB will be responsible for arranging for lunch and refreshments as a reimbursable expense
- Deliverables:
  - Each participant will be provided with a comprehensive manual to be used throughout the course
  - Each participant who completes the course will receive a certificate signed by the facilitator certifying them as OSHA authorized persons for City of Greensboro and awarding the participant with 2.4 CEUs
- Competent Person Refresher Training (excluded from current scope)
  - In accordance with ANSI Z359, this training shall be conducted at least every two years to stay current with the fall protection and rescue educational industry requirements or when new fall protection systems are used or installed, or new fall hazards are encountered

2. **Deliver Authorized Person training** – This training program is for anyone who performs work at heights four feet or more
   - The goal of LJB's authorized person training is to provide participants with the knowledge to use fall protection properly in their daily work and to become aware of issues before they arise.

- The main learning outcomes include:
  - Fall hazard identification, evaluation, and control
  - Personal Protective Equipment (PPE) use, limitations, and fall clearance requirements
  - Equipment fit, inspection and care
  - Requirements and proper use of anchor points
  - Rescue
- The content includes and exceeds the training performance criteria set forth by OSHA and the ANSI Z359 standard, and conforms to American National Standard Z490.1, Criteria for Accepted Practices in Safety, Health, and Environmental Training
- The course provides interactive instruction, multimedia resources, and knowledge checks to train attendees.
  - The competency of each trainee will be evaluated through the knowledge checks and hands on exercises related to harness fit and equipment pre-use inspection.
- LJB will furnish the training materials and equipment (no training tower will be employed), which will be set up in advance of the start of the training
  - Allowance provided for additional service: LJB will develop and design a training set-up for use at one of your locations. This will include a back-up fall protection system for use while a trainee gets comfortable using an installed climbing ladder fall protection system.
    - Same training set-up design would be used for both Competent and Authorized Person training
- The 8-hour training sessions will include:
  - Water Supply Division: one session with 9 attendees
  - Water Reclamation Division: one session with 8 attendees
  - Operations Division: one session with 13 attendees
- The training sessions will be conducted will be held on three consecutive days at a mutually agreed upon time
- Arrangements related to the training room will be City of Greensboro's responsibility
  - Please note that the size of the training room is preferred to be 40 feet by 40 feet or larger, and it should be able to be secured.
- LJB will be responsible for arranging for lunch and refreshments as a reimbursable expense
- Deliverables:
  - Each participant will be provided with a comprehensive manual to be used throughout the course
    - At your request, we will provide an electronic copy of this document. A disclaimer will be included stating that the material is current as of the training delivery date, and it is our

understanding that these training materials will strictly be used for City of Greensboro employees and not shared with others.

- Each participant who completes the course will receive a certificate signed by the facilitator certifying them as OSHA authorized persons for City of Greensboro and awarding the participant with 0.8 CEUs

> Authorized Person Refresher Training (excluded from current scope)

- In accordance with ANSI Z359, this training shall be conducted at least every two years to stay current with the fall protection and rescue educational industry requirements or when the nature of the work, the workplace or the methods of control change to an extent that prior training is not adequate.

3. **Deliver System Specific training (post installation)** – Conduct training that includes a review of the use and rescue procedures and a hand-on demonstration on the proper use of the systems

> The 2-hour training sessions will include:

- Water Supply Division: one session with 9 attendees
- Water Reclamation Division: one session with 8 attendees
- Operations Division: one session with 13 attendees

> These training sessions will be held on two consecutive days at a mutually agreed upon time

> It is anticipated that this training will be held at one of the site locations where new system(s) have been installed

> It is our understanding that those receiving this system specific training will have been trained to the Authorized and/or Competent Person level.

CONTRACT BIDDING SUPPORT

1. **Pre-bid meeting** – conduct the pre-bid meeting on behalf of the Water Resources Department
2. **Respond to RFI's from bidders** – provide written responses to questions that may arise regarding the construction documents

CONSTRUCTION ADMINISTRATION SERVICES FOR SYSTEM CERTIFICATION

3. **Submittals** – provide a review and recommended actions for construction submittals related to the fall protection systems specified
4. **Construction site observation** – provide on-site observation services during installation for conformance with construction documents

> An estimated 30 site visits (15 project locations) at various stages of construction are anticipated

- This is based on an average of 2 site visits per project location
- At least one site visits will typically occur at or near the completion of the installation and a final contractor punch list will be provided

> Field reports will be provided for each site visit completed

5. **Respond to RFI's from contractor** – provide written responses to questions that may arise during construction
6. **Use and rescue procedures** – develop the finalized procedures incorporate photos from the installation for enhanced understanding of proper system use and rescue
7. **Provide a certification record for the active fall protection systems** – this record will be assembled in accordance with ANSI Z359. The certification record will serve as the owner's documentation for continued inspection and re-certification needs. The certification record will consist of the following parts:
   - Certification letter
   - System certification summary list
   - System ID drawings
   - Design documentation
     - Engineering drawings
     - Project Manual
   - Construction documentation
     - Construction submittals
     - As-built drawings based on contractor mark-ups
   - Operational documentation
     - Fall protection system use and rescue procedures
   - Training documentation
     - System-specific authorized person training documentation
     - Roster of current authorized and competent persons
   - Inspection logs

TASKS TO BE COMPLETED BY BB FOSTER - WITH BREAKDOWN BY SCOPE ITEM

1. **Fall Protection Program Documents**
   - Quality control and technical support
2. **Initial Assessment**
   - Support on-site field work for assessment and peer review report
3. **Design and Engineering Services**
   - Support on-site field work for design and peer review project manual and drawings
4. **Staff Training**
   - Support training activities, logistics preparations, printing and assembling some materials
5. **Contract Bidding Support**
   - Research potential M/WBE bidders, participate in pre-bid meeting
6. **Construction Administration Services for System Certification**
   - Perform site observation/construction administration support and develop field reports

FEE AND SCHEDULE

SCOPE OF SERVICES	TOTAL FEE	LJB FEE	BB FOSTER FEE	DURATION (SOME SERVICES COMPLETED IN PARALLEL)
Fall Protection Program Documents	$8,950	$8,150	$800	3-4 weeks
Initial Assessment	$62,700	$57,000	$5,700	6-8 weeks
Design and Engineering Services	$77,700	$72,005	$5,695	8-12 weeks
Staff Training	$72,400	$65,600	$6,800	4-6 weeks
Contract Bidding Support	$9,100	$8,250	$850	4-6 months
Construction Administration Services for System Certification	$36,600	$29,700	$6,900	6-8 months
Allowance for design of training set-up	$5,200	$5,200	n/a	2-3 weeks
TOTAL	$272,650	$245,905	$26,745 (10%)	

We look forward to working with the City to reduce risk and improve safety for work at height. If you need more information or have any questions, please contact me at (419) 236-7050 or TRiepenhoff@LJBinc.com.

Sincerely,

LJB Inc.

Tracey K. Riepenhoff

Tracey Riepenhoff, P.E., C.S.P., PMP
Project Manager

cc: Mr. Mike Borchers and Ms. Monica Jarrett, City of Greensboro; Mr. Roberto Canales, LJB; file 0118551A.00