

SCOPE OF WORK AND ASSUMPTIONS FOR ENGINEERING DESIGN FOR LAKE LEWISVILLE WATER TREATMENT PLANT PHASE II REHABILITATION

Narrative on Scope and Assumptions

The City of Denton (OWNER) desires to conduct final design, bid phase, and construction phase services for the Phase II rehabilitation of the Lake Lewisville Water Treatment Plant (LLWTP). The project includes the following major work elements:

1. New WTP High Service Pump Station Electrical Switchgear and Office Building:
Design of a new building, either adjacent to the existing LLWTP Administration building and entry road, or located at the site of the recently demolished Clearwell 1 location. Major design elements will include:
 - a. Evaluation of the two alternative site locations and impact on cost and functionality of the facilities.
 - b. New electrical building with Main-tie-Main switchgear configuration and MCC's for six (6) existing high service pumps and the existing backup backwash pump at the plant. This room shall be air conditioned for improved maintenance.
 - c. Air-conditioned room with a raised floor within the electrical building to serve as a primary communication hub. The communication room will include OWNER fiber, a corporate server, and a new server for primary SCADA for each plant (LLWTP and Ray Roberts WTP).
 - d. Six new office spaces, primarily located upstairs to serve the Plant Superintendent, Senior Engineer, SCADA Supervisor, SCADA Network, Administrative Assistant, and SCADA/PLC System Integrator.
 - e. A small conference room capable of seating up to 10 persons. This room will depend on the outcome from 1.c. and 1.d. above.
 - f. A break room with adequate staff tables, sink and microwave area for lunches and other breaks, along with a stove and full-size refrigerator.
 - g. Men's and women's bathrooms.
 - h. A storage room for map and paper file storage and copy room.
 - i. Appropriate entrance road, parking, ingress, and egress to the new facilities. Existing entrance road will be resurfaced.
 - j. ADA compliant facilities.
 - k. Additional security for the building including appropriate video surveillance, security features, and a fence detection system for the plant fence.
2. Administration Building, Clearwell and High Service Pump Station Modifications:
 - a. Replace existing bathroom partitions, bathroom sink areas and lockers in the Administration Building.
 - b. Replace front doors and add electric hinge access control system locks.

- c. Update existing break room (cabinets, appliances, stove, etc.)
 - d. Replace lighting in the shop area of the Administration Building with LED lighting.
 - e. Replace metal staircases to and from the High Service Pump Station (HSPS) room (two total).
 - f. Install a new concrete staircase from the HSPS room along the wall to the front door area of the building.
 - g. Blast and re-paint piping in HSPS and Header Room (between pipe gallery and pump room), and replace all bolts and gaskets on suction and discharge piping, fittings, and valves.
 - h. Blast and grout rub all walls for HSPS and Header Room.
 - i. Add roof drain downspout nozzles to existing roof drain pipes for Administration Building and Chemical Building No. 2.
 - j. Evaluate and design ventilation system for HSPS.
 - k. Rehabilitate or rebuild crane in HSPS.
 - l. Demolish old HSPS electrical switchgear and MCC's replaced in Item 1 above.
 - m. Replace existing HSPS metering vaults, including vault, venturi meters, lights, ventilation, sump pumps, etc. and improve operating and maintenance access for the vaults.
 - n. Replace valves, PRVs and double-check assemblies on discharge piping in Header Room.
 - o. Replace four (4) 36" suction side valves – two (2) on the clearwell lines in yard (OWNER will provide the valves) – and two (2) for High Service Pumps #5 and #6 (Supplied by Contractor).
 - p. Replace three (3) 36" valves for the pump station discharges.
 - q. Replace two (2) total 24" valves on Pump #5 and #6 discharges (OWNER will provide the valves).
 - r. Install isolation gates valves and electric actuated butterfly valves on the discharge of HSPS pumps #1 and #4.
 - s. Use STOPPLE Train or similar line isolation to facilitate valve replacements. Place isolations so that the Contractor can replace one (1) 36" gate valve and one (1) 30" gate valve on the distribution lines outside LLWTP property.
 - t. Replace the access panels, lighting, and accessories within the vaults of HSPS pumps #5 and #6 and resurface the top deck of the vaults where delaminated.
 - u. Replace the drive area between the clearwells and by the high service pump station with a new asphalt driveway.
 - v. Evaluate and design drainage improvements around the existing clearwells.
3. WTP Filter and Chemical Feed Modifications:
- a. Replace actuators on the filter drain and effluent lines with simplified "open/close" actuators.

- b. Evaluate and design improvements to resolve inadequate mixing of fluoride, chlorine, and ammonia feed into the treated water before the clearwells for chloramine disinfection.
 - c. Evaluate and design method and sequence of construction to remove calcium buildup or replace the 30" filtered water line from filter pipe gallery to ammonia/fluoride mixing area. Replace bolts on bottom of tee in pipe gallery.
 - d. Blast interior of 30" filtered water line and identify method for recoating of interior of the line.
 - e. Blast and paint coagulated water lines and replace gaskets/bolts, etc.
 - f. Relocate sample tap and plumbing for Free Chlorine residual.
 - g. Replace five (5) metal handrails and stairs in the filter gallery and filter area (interior and exterior).
 - h. Grout rub filter gallery and filter operating area walls for uniform appearance.
 - i. Blast and coat edges of filters to match epoxy floor.
 - j. Evaluate and design method to hide damaged ceiling insulation in filter operating area.
 - k. Evaluate and design ventilation system for filter pipe gallery.
 - l. Provide a landing platform and staircase from the northern double doors of the filter area to the blower building.
 - m. Replace existing polymer feeders and tie them into the existing SCADA system for control.
 - n. Paint walls in chemical buildings to match the previously rehabilitated (Phase I) adjacent areas.
4. Lake Lewisville Raw Water Pump Station (LLRWPS) Facilities Improvements:
- a. Relocate transformers to allow additional space next to the existing pump station for construction of chemical feed improvements for zebra mussel control.
 - b. Remove existing potassium permanganate feed facilities to allow construction of new chemical feed system in Item 5 below.
 - c. Replace roof and gutters on the pump station.
 - d. Restore any wall penetrations and add new roof ventilation system with air intakes low and forced exhaust on the roof to eliminate short circuiting.
 - e. Replace existing windows.
 - f. Rehabilitate/repair overhead crane.
 - g. Initial site visit and discussion with staff indicate no structural instability related to soils around pump station building. If contrary evidence appears during the project, more detailed investigations can be performed as an Additional Service. As part of Basic Services, identify options to fill voids under cantilevered portions of building floor.
 - h. The existing wet well is showing signs of corrosion and decay, and the inlet valves are inadequately anchored for operation. Replace grating in the existing wet well area, rehab/replace existing ship's ladder, upgrade wet well lighting, and improve design of hold down struts for the inlet valves.

- i. Add a middle intake or modify lower intake at the intake structure and add piers to the top and middle intakes. Replace the existing intake gates, stems, and actuators, and modify controllers to allow control of the gates from the pump room using a portable drive system or add actuators on grade level for remote operation.
 - j. Install a new vault and actuated butterfly valve (including power and control to new vault) for the #4 pump discharge (OWNER will supply the vault and valve). Vault floor and sump will be added by Contractor.
 - k. Replace the low service pump check valves and associated couplings and related equipment for all pumps. Blast and repaint all wetwell level piping.
 - l. Add an electric gate operator at the main entrance gate and provide new concrete drive on either side of the entrance gate for required gate loops.
 - m. Replace pump station interior and exterior lighting with LED lighting.
 - n. Relocate the existing pedestrian entrance door and replace the roll-up door with a full-size roll-up.
 - o. Replace the existing surge valve.
 - p. The bypass valve was installed to provide a reduced flow option during low demand periods. Due to the exposed location, it is subject to freezing. Provide a new hot-box type structure around the existing bypass valve to weatherproof the valve and lines, and provide lifting eyes and access panels for maintenance.
 - q. Install lightning protection on the associated buildings and facilities.
5. Lake Lewisville and Ray Roberts RWPS Zebra Mussel Improvements:
- a. Install new permanent chemical feed facilities for zebra mussel control at both the Lake Lewisville and Ray Roberts Raw Water Pump Stations, using permanent sodium permanganate feed systems and Copper Ion Generation feed system, consistent with the recommendations of the 2016 Manual for Control, Operation, and Maintenance of Zebra Mussels.
 - b. Install a new chemical feed building at the Lake Lewisville RWPS to house zebra mussel control chemical feed equipment, including a separate air-conditioned room for electrical, controls and communication equipment. Install new PLC in this building that controls new chemical feed facility along with existing pump station controls. Building shall be located adjacent to the pump station in the general area of the existing transformers.
 - c. Provide potable water for Lake Lewisville raw water pump station shower/eyewash stations and as carrier water for the permanganate feed.
 - d. Incorporate zebra mussel controls for all intakes at the Lake Lewisville Raw Water Pump Station.
 - e. Install a new chemical feed building at the Lake Ray Roberts RWPS to house zebra mussel control chemical feed equipment. Building shall be located adjacent to the pump station in the area to the north.
 - f. Add carrier water at the Ray Roberts RWPS to allow a chemical feed point for zebra mussel control in the 60" valve vault near the outlet channel.

- g. Provide potable water from the Ray Roberts WTP, using a nominal 4" pipeline, to provide adequate flow for flushing activities. Include potable water to shower/eyewash stations and as carrier water for the permanganate feed.
- h. Evaluate and design improvements to the raw water feed line to facilitate mussel maintenance, including a means of draining the low point of the existing 60" pipeline, providing improved actuation of the 60" valve, and actuating the 12" drain valve.

ARTICLE I - BASIC SERVICES: FNI shall render the following professional services for the development of the Project:

A. Phase 1-Final Design:

1. Meet with OWNER: (1) to review the scope of services, (2) to verify OWNER's requirements for the Project, and (3) to review and update available data.
2. Perform general administrative duties associated with the project including progress monitoring and monthly progress reporting, scheduling, general correspondence, documentation, office administration and invoicing for the scope items identified below. These duties include maintaining routine contact with the OWNER to help meet the needs of the OWNER in a timely manner, and executing the work in accordance with the work plan, budget, and schedule.
3. Advise OWNER as to the necessity of OWNER's providing or obtaining data or services from others, and assist OWNER regarding any such services, for any services outside this scope of work.
4. Incorporate appropriate design standards and elements as identified from the Phase I Rehabilitation project to match new construction to the extent possible.
5. Perform process and hydraulic calculations consistent with design standards of TCEQ Chapter 290 requirements to size all treatment elements for final recommended alternative. Document calculations and any proposed variances to TCEQ rules for regulatory approvals.
6. Develop updated opinions of probable construction cost for the selected design.
7. Provide detailed Topographic Surveying of the LLWTP, LLRWPS and LRR RWPS sites, as required for the design phase.
8. Provide a Geotechnical Investigation and Geotechnical Engineering Report of the LLWTP new building sites, as required for the design phase.
9. Meetings and Site Visits:
 - a. Conduct bi-monthly progress meetings, up to a maximum of five (5) meetings during the design phase.
 - b. Conduct up to two (2) additional site visits by the engineering team to the WTP and/or pump stations, for coordination on detailed design aspects for completion of the project.
 - c. Conduct workshops with the OWNER during the Design Phase. FNI will submit relevant drawings, specifications, and detailed data for each review workshop two

weeks prior to the workshop dates to allow the OWNER adequate time for review and comment.

- i. 30% design level QC workshop including constructability reviews
 - ii. 60% design level QC workshop including constructability reviews.
 - iii. 90% design level QC workshop including constructability reviews and construction sequencing discussions.
 - iv. All workshops will be conducted at the OWNER's offices at the LLWTP.
1. Prepare drawings, specifications, Construction Contract Documents, designs, and layouts of improvements to be constructed for each milestone submittal described above and for the final construction contract documents. For the purposes of design planning, the design is assumed to include the major items listed in the narrative and assumptions above. If alternative design elements are chosen, then any additional engineering effort which may be required to incorporate the alternative would be an Additional Service.
2. Plans and Specifications for any potentially occupied building will be submitted through the OWNER's planning and development process for construction permitting. The OWNER will coordinate on obtaining all City of Denton permits for construction.
3. Advise OWNER of need for and recommend scope of any additional subsurface investigations, special analysis, hydraulic model studies, underwater exploration and mapping, etc., and the retention of special consultants beyond those identified in these Basic Services. The cost of such services shall be paid by OWNER and are not included in the services performed by FNI.
4. Furnish OWNER, when requested, the engineering data necessary for applications for routine permits required by local, state, and federal authorities. Preparation of applications and supporting documents for government grants, TWDB or other funding, or for planning advances is an Additional Service.
5. Detailed design elements shall be developed using AutoCAD software, coordinating with the OWNER on the detailed mechanical, equipment and structures and the development of plan sheets for bidding purposes.
6. Submit drawings, specifications, design documentation and Construction Contract Documents to the applicable federal and state agency(s) for regulatory approval, where required. Submit drawings for the new building improvements to the Texas Department of Licensing and Regulation for required ADA compliance rule reviews and associated approvals, and to the OWNER's Planning and Development Department for review of building facilities.
7. This project assumes the use of the OWNER's standard construction documents including the General Conditions. FNI will use its technical standards for drawings and technical specifications. FNI will coordinate with the OWNER for any changes to match required spec standards in the Supplemental Conditions and Front-End Documents. This assumes the project is delivered using standard Design-Bid-Build.
8. Furnish such information necessary to utility companies whose facilities may be affected or services may be required for the Project.

9. Prepare revised opinion of probable construction cost for the 30%, 60%, 90% and 100% design completion levels.
10. Prepare bidder's proposal forms (project quantities) of the improvements to be constructed.
11. Furnish OWNER five (5) half-size sets and one electronic PDF copy of drawings, specifications, and bid proposals for each submittal review and workshop above, for review and approval by OWNER. Upon final approval by OWNER, FNI will provide OWNER five (5) half-size sets and one electronic PDF copy of "Final" sealed drawings and in CAD file format.

B. Phase 2–BidPhase Services

Bid phase services assume the project is constructed based on a standard Design-Bid-Build approach. Upon completion of the design services and approval of Final drawings and specifications by OWNER, FNI will proceed with the performance of services in this phase as follows:

1. Issue a Notice to Bidders for the OWNER to distribute to prospective contractors and vendors, and to selected plan rooms, using the OWNER's standard bid process. Provide a copy of the notice to bidders for OWNER to use in notifying construction news publications and publishing appropriate legal notice. The cost for publications shall be paid by OWNER.
2. Distribution of bid documents to selected plan rooms, and to prospective bidders that respond to the Notice to Bidders shall follow the OWNER's standard bid procedure. FNI shall provide up to ten (10) sets of Bid Documents (three (3) full-size and seven (7) half-size) for the OWNER's use, and coordinate with the OWNER's procurement process for distribution of Contract Documents to prospective bidders and notification to plan rooms.
3. Communicate with potential bidders as required by the OWNER's standard bid process.
4. Assist OWNER by responding to questions and interpreting bid documents. Prepare and issue addenda, if necessary, to the bid documents and distribute to plan holders following the OWNER's standard bid process.
5. At Owner request, FNI will assist Owner in the opening, tabulating, and analyzing the bids received. Review the qualification information provided by the apparent low bidder to determine if, based on the information available, they appear to be qualified to construct the project. Recommend award of contracts or other actions as appropriate to be taken by Owner. Pre-qualification of all prospective bidders and issuing a list of eligible bidders prior to the bid opening is an additional service.
6. Assist the OWNER in conducting two (2) separate pre-bid conferences for the construction project and coordinate responses with OWNER. Response to the pre-bid conference will be in the form of addenda issued after the conference. Attend the tour of the project site after the pre-bid conference.
7. Develop an example "Construction Sequence" presentation, demonstrating to potential Contractors possible methodologies for sequencing construction events. FNI will also provide special procedures and construction constraints, clearly identified in the plans, specs and in the presentation, to define limitations for the Contractor to take any unit process or plant facility out of service for construction.

8. Assist OWNER in the preparation of Conformed or "As-Bid" Construction Contract Documents. Conformed plans and specifications shall incorporate any changes from addendum into the final electronic documents and the documents shall be reprinted with the appropriate changes notated and clouded per FNI record drawing standards. Provide ten (10) half-size sets of Conformed for Construction Contract Documents which include information from the apparent low bidders bid documents, legal documents, and addenda bound in the documents for execution by the OWNER and construction contractor. Distribute five (5) copies of these documents and one electronic PDF copy to the contractor with a notice of award that includes directions for the execution of these documents by the construction contractor. Provide OWNER with the remaining five (5) copies and one electronic PDF copy of these documents for use during construction. Additional sets of documents can be provided as an additional service.
9. Furnish contractor copies of the drawings and specifications for construction pursuant to the General Conditions of the Construction Contract.

C. Phase 3—Construction Phase Services:

Upon completion of the bid or negotiation phase services, FNI will proceed with the performance of construction phase services as described below. FNI will endeavor to protect OWNER in providing these services however, it is understood that FNI does not guarantee the Contractor's performance, nor is FNI responsible for supervision of the Contractor's operation and employees. FNI and its subconsultants shall not be responsible for the means, methods, techniques, sequences, or procedures of construction selected by the Contractor, or any safety precautions and programs relating in any way to the condition of the premises, the work of the Contractor or any Subcontractor. FNI and its subconsultants shall not be responsible for the acts or omissions of any person (except its own employees or agents) at the Project site or otherwise performing any of the work of the Project.

1. Assist OWNER in conducting one (1) pre-construction conference with the selected Contractor, review construction schedules prepared by the Contractor pursuant to the requirements of the construction contract, and proposed construction. The construction contractor shall submit pay requests as per this contract. Upon review FNI will recommend approval or rejection of the request submitted to the OWNER.
2. Establish communication procedures with the OWNER and Contractor. Submit monthly reports of construction progress. Reports will describe construction progress in general terms and summarize project costs, payments made, construction schedule and pending and approved contract modifications.
3. Establish and maintain a project documentation system, consistent with the requirements of the construction contract documents. Monitor the processing of contractor's submittals and provide for filing and retrieval of project documentation. Produce monthly reports indicating the status of all submittals in the review process. Review and respond to contractor's submittals, including, requests for information, modification requests, shop drawings, schedules, and other submittals in accordance with the requirements of the construction contract documents for the projects. Monitor the progress of the contractor in sending and processing submittals to see that documentation is being processed in accordance with schedules.

4. Based on FNI's observations as an experienced and qualified design professional and review of the Payment Requests and supporting documentation submitted by Contractor, determine the amount that FNI recommends Contractor be paid on monthly and final estimates, pursuant to the General Conditions of the Construction Contract.
5. Make up to twenty (20) monthly visits to the construction site (as distinguished from the continuous services of a Resident Project Representative) to observe the progress and the quality of work and to attempt to determine in general if the work is proceeding in accordance with the Construction Contract Documents. In this effort FNI will endeavor to protect the OWNER against defects and deficiencies in the work of Contractors and will report any observed deficiencies to OWNER. Visits to the site more than the specified number are an additional service.
6. Make up to ten (10) additional visits to the site, non-concurrent with the monthly site visits and meetings, to provide additional specialty observation or inspection as may be required for the project.
7. Provide up to a maximum of 600 hours of on-site construction inspection (as distinguished from the continuous services of a full time Resident Project Representative). This effort will involve weekly visits to the sites for review and inspection of ongoing progress, and coordination with the Contractor.
8. Notify the contractor of non-conforming work observed on site visits. Review quality related documents provided by the contractor such as test reports, equipment installation reports or other documentation required by the Construction contract documents.
9. Coordinate the work of testing laboratories and inspection bureaus required for the testing or inspection of materials, witnessed tests, factory testing, etc. for quality control of the Project. The cost of such quality control shall assigned as an allowance to the construction contract documents and is not included in the services to be performed by FNI.
10. Interpret the drawings and specifications for OWNER and Contractor(s). Investigations, analyses, and studies requested by the Contractor(s) and approved by OWNER, for substitutions of equipment and/or materials or deviations from the drawings and specifications is an additional service.
11. Establish procedures for administering constructive changes to the construction contracts. Process contract modifications and negotiate with the contractor on behalf of the OWNER to determine the cost and time impacts of these changes. Prepare change order documentation for approved changes for execution by the OWNER. Documentation of field orders, where completion schedule or cost to OWNER is not impacted, will also be prepared. Investigations, analyses, studies, or design for substitutions of equipment or materials, corrections of defective or deficient work of the contractor or other deviations from the construction contract documents requested by the contractor and approved by the OWNER are an additional service. Substitutions of materials or equipment or design modifications requested by the OWNER are an additional service.
12. Prepare documentation for contract modifications required to implement modifications in the design of the project. Receive and evaluate notices of contractor claims and make recommendations to the OWNER on the merit and value of the claim based on information submitted by the Contractor or available in project documentation. Endeavor to negotiate a settlement value with the Contractor on behalf of the OWNER if appropriate. Providing

these services to review or evaluate construction contractor(s) claim(s), supported by causes not within the control of FNI are an additional service.

13. Assist in the transfer of and acceptance by the construction contractor of any OWNER furnished equipment or materials.
14. Conduct, in company with OWNER's representative, a final review of the Project for conformance with the design concept of the Project and general compliance with the Construction Contract Documents. Prepare a list of deficiencies to be corrected by the Contractor before recommendation of final payment. Assist the OWNER in obtaining legal releases, permits, warranties, spare parts, and keys from the Contractor. Review and comment on the certificate of completion and the recommendation for final payment to the Contractor(s). Visiting the site to review completed work more than two trips are an additional service.
15. Revise the construction drawings in accordance with the information furnished by construction Contractor(s) reflecting changes in the Project made during construction. Five (5) half-size sets of prints of these Record Drawings and one (1) full size mylar prints shall be provided by FNI to OWNER. All digital record drawing and CAD files will be provided to the OWNER via electronic submission.

D. Phase 4–FullTimeResident ProjectRepresentative

1. The OWNER will make a determination at a later date as to whether these services will be provided by FNI or by others. If it is determined that FNI will provide these services, then the scope and effort associated with those services will be added as an Additional Service to the project.

ARTICLE II

ADDITIONAL SERVICES: Additional Services to be performed by FNI, if authorized by OWNER, which are not included in the above described basic services, are described as follows:

- A. Field layouts or the furnishing of construction line and grade surveys.
- B. GIS mapping services or assistance with these services.
- C. Making property, boundary and right-of-way surveys, preparation of easement and deed descriptions, including title search and examination of deed records.
- D. Providing services to investigate existing conditions or facilities, or to make measured drawings thereof, or to verify the accuracy of drawings or other information furnished by OWNER.
- E. Providing renderings, model, and mock-ups requested by the OWNER.
- F. Revising drawings, specifications or other documents when such revisions are 1) not consistent with approvals or instructions previously given by OWNER or 2) due to other causes not solely within the control of FNI.
- G. Providing consultation concerning the replacement of any Work damaged by fire or other cause during the construction, and providing services as may be required regarding the replacement of such Work.

- H. Investigations involving consideration of operation, maintenance and overhead expenses, and the preparation of rate schedules, earnings and expense statements, feasibility studies, appraisals, evaluations, assessment schedules, and material audits or inventories required for certification of force account construction performed by OWNER.
- I. Preparing applications and supporting documents for government grants, loans, or planning advances and providing data for detailed applications.
- J. Providing shop, mill, field or laboratory inspection of materials and equipment. Observe factory tests of equipment at any site remote to the project or observing tests required because of equipment failing the initial test.
- K. Conducting pilot plant studies or tests.
- L. Conducting operator training.
- M. Preparing data and reports for assistance to OWNER in preparation for hearings before regulatory agencies, courts, arbitration panels or any mediator, giving testimony, personally or by deposition, and preparations therefore before any regulatory agency, court, arbitration panel or mediator.
- N. Furnishing the services of a Resident Project Representative to act as OWNER's on-site representative during the Construction Phase, beyond the hours listed for part-time construction inspection. The Resident Project Representative will act as directed by FNI to provide more extensive representation at the Project site during the Construction Phase. Through more extensive on-site observations of the work in progress and field checks of materials and equipment by the Resident Project Representative and assistants, FNI shall endeavor to provide further protection for OWNER against defects and deficiencies in the work. Furnishing the services of a Resident Project Representative is subject to the provisions of Article I, D and Attachment RPR.

If OWNER provides personnel to support or to conduct the activities of the Resident Project Representative, the duties, responsibilities, and limitations of authority of such personnel will be set forth in an Attachment attached to and made a part of this Agreement before the services of such personnel are begun. It is understood and agreed that such personnel will work under the direction of and be responsible to the Resident Project Representative. OWNER agrees that whenever FNI informs him in writing that any such personnel provided by the OWNER are, in his opinion, incompetent, unfaithful or disorderly, such personnel shall be replaced.

- O. Furnishing Special Inspections required under chapter 17 of the International Building Code. These Special Inspections are often continuous, requiring an inspector dedicated to inspection of the individual work item, and they are in addition to General Representation and Resident Representation services noted elsewhere in the contract. These continuous inspection services can be provided by FNI as an Additional Service.
- P. Assisting OWNER in preparing for, or appearing at litigation, mediation, arbitration, dispute review boards, or other legal and/or administrative proceedings in the defense or prosecution of claims disputes with Contractor(s).
- Q. Performing investigations, studies, and analyses of substitutions of equipment and/or materials or deviations from the drawings and specifications.

- R. Assisting OWNER in the defense or prosecution of litigation relating to or in addition to those services contemplated by this Agreement. Such services, if any, shall be furnished by FNI on a fee basis negotiated by the respective parties outside of and in addition to this Agreement.
- S. Providing environmental support services including the design and implementation of ecological baseline studies, environmental monitoring, impact assessment and analyses, permitting assistance, and other assistance required to address environmental issues.
- T. Performing investigations, studies, and analysis of work proposed by construction contractors to correct defective work.
- U. Design, contract modifications, studies or analysis required to comply with local, State, Federal or other regulatory agencies that become effective after the date of this agreement.
- V. Services required to resolve bid protests or to rebid the projects for any reason.
- W. Visits to the site more than the number of trips included in Article I for periodic site visits, coordination meetings, or contract completion activities.
- X. Any services required because of default of the contractor(s) or the failure, for any reason, of the contractor(s) to complete the work within the contract time.
- Y. Providing services after the completion of the construction phase not specifically listed in Article I.
- Z. Providing basic or additional services on an accelerated time schedule. The scope of this service includes cost for overtime wages of employees and consultants, inefficiencies in work sequence and plotting or reproduction costs directly attributable to an accelerated time schedule directed by the OWNER.
- AA. Providing services made necessary because of unforeseen, concealed, or differing site conditions or due to the presence of hazardous substances in any form.
- BB. Providing services to review or evaluate construction contractor(s) claim(s), provided said claims are supported by causes not within the control of FNI.
- CC. Providing value engineering studies or reviews of cost savings proposed by construction contractors after bids have been submitted.
- DD. Preparing statements for invoicing or other documentation for billing other than for the standard invoice for services attached to this professional services agreement.
- EE. Provide follow-up professional services during Contractor's warranty period except as specifically provided in Article I.

ARTICLE III

TIME OF COMPLETION: FNI is authorized to commence work on the Project upon execution of this Agreement and agrees to complete the services in accordance with the following schedule:

Final Design Phase -	10 months from completion of Preliminary Design Phase
Bid Phase -	3 months from completion of Final Design Phase
Construction Phase -	18 months from Contractor NTP
Resident Representation Phase -	Concurrent with Construction Phase (Not part of this Scope)

If FNI's services are delayed through no fault of FNI, FNI shall be entitled to adjust contract schedule consistent with the number of days of delay. These delays may include but are not limited to delays in OWNER or regulatory reviews, delays on the flow of information to be provided to FNI, delays by the construction contractor not within the control of FNI, governmental approvals, etc. These delays may result in an adjustment to compensation as outlined on the face of this Agreement and in Attachment CO.

ARTICLE IV

RESPONSIBILITIES OF OWNER: OWNER shall perform the following in a timely manner so as not to delay the services of FNI:

- A. OWNER recognizes and expects that certain Change Orders may be required. Unless noted otherwise, the OWNER shall budget a minimum of 5% for new construction and a minimum of 10% for construction that includes refurbishing existing structures.

Further, OWNER recognizes and expects that certain Change Orders may be required to be issued as the result in whole or part of imprecision, incompleteness, errors, omission, ambiguities, or inconsistencies in the Drawings, Specifications, and other design documentation furnished by Engineer or in the other professional services performed or furnished by FNI under this Agreement ("Covered Change Orders"). Accordingly, OWNER agrees to pay for Change Orders and otherwise to make no claim directly or indirectly against FNI based on professional negligence, breach of contract, or otherwise with respect to the costs of approved Covered Change Orders unless the aggregate costs of all such approved Covered Change Orders exceed 2% for new construction and 4% for reconstruction. Any responsibility of FNI for the costs of Covered Change Orders in excess of such percentage will be determined based on applicable contractual obligations and professional liability standards. For purposes of this paragraph, the cost of Covered Change Orders will not include:

any costs that OWNER would have incurred if the Covered Change Order work had been included originally in the Contract Documents and without any other error or omission of FNI related thereto,

Any costs that are due to unforeseen site conditions, or

Any costs that are due to changes made by the OWNER.

Any costs that are due to the Contractor

Nothing in this provision creates a presumption that, or changes the professional liability standard for determining if, FNI is liable for the cost of Covered Change Orders in excess of the percent of Construction Cost stated above or for any other Change Order. Wherever used in this document, the term Engineer includes FNI's officers, directors, partners, employees, agents, and subconsultants.

- B. Designate in writing a person to act as OWNER's representative with respect to the services to be rendered under this Agreement. Such person shall have contract authority to transmit instructions, receive information, interpret, and define OWNER's policies and decisions with respect to FNI's services for the Project.
- C. Provide all criteria and full information as to OWNER's requirements for the Project, including design objectives and constraints, space, capacity and performance requirements, flexibility and expandability, and any budgetary limitations; and furnish copies of all design and construction standards which OWNER will require to be included in the drawings and specifications.

- D. Assist FNI by placing at FNI's disposal all available information pertinent to the Project including previous reports and any other data relative to design or construction of the Project.
- E. Arrange for access to and make all provisions for FNI to enter upon public and private property as required for FNI to perform services under this Agreement.
- F. Examine all studies, reports, sketches, drawings, specifications, proposals, and other documents presented by FNI, obtain advice of an attorney, insurance counselor and other consultants as OWNER deems appropriate for such examination and render in writing decisions pertaining thereto within a reasonable time so as not to delay the services of FNI.
- G. Furnish approvals and permits from all governmental authorities having jurisdiction over the Project and such approvals and consents from others as may be necessary for completion of the Project.
- H. Provide such accounting, independent cost estimating and insurance counseling services as may be required for the Project, such legal services as OWNER may require or FNI may reasonably request with regard to legal issues pertaining to the Project including any that may be raised by Contractor(s), such auditing service as OWNER may require to ascertain how or for what purpose any Contractor has used the moneys paid under the construction contract, and such inspection services as OWNER may require to ascertain that Contractor(s) are complying with any law, rule, regulation, ordinance, code or order applicable to their furnishing and performing the work.
- I. OWNER shall determine, prior to receipt of construction bid, if FNI is to furnish Resident Project Representative service so the Bidders can be informed.
- J. If OWNER designates a person to serve in the capacity of Resident Project Representative who is not FNI or FNI's agent or employee, the duties, responsibilities, and limitations of authority of such Resident Project Representative(s) will be set forth in an Attachment attached to and made a part of this Agreement before the Construction Phase of the Project begins. Said attachment shall also set forth appropriate modifications of the Construction Phase services as defined in Article I, D, together with such adjustment of compensation as appropriate.
- K. Attend the pre-bid conference, bid opening, preconstruction conferences, construction progress and other job-related meetings and substantial completion inspections and final payment inspections.
- L. Give prompt written notice to FNI whenever OWNER observes or otherwise becomes aware of any development that affects the scope or timing of FNI's services, or any defect or nonconformance of the work of any Contractor.
- M. Furnish, or direct FNI to provide, Additional Services as stipulated in Article II of this Agreement or other services as required.
- N. Bear all costs incident to compliance with the requirements of this Article IV.

ARTICLE V

COMPENSATION

Following is the breakdown of the proposed lump sum fees:

Phase 1 – Final Design	\$1,028,665
Phase 2 – Bid Phase	\$ 59,995
Phase 3 – Construction Phase	\$ 440,520
Phase 4 – Resident Project Rep.	FUTURE
Total Basic Services	\$1,529,180

ARTICLE VI

DESIGNATED REPRESENTATIVES: FNI and OWNER designate the following representatives:

OWNER's Designated Representative –	Mamun Yusuf, P.E. Senior Engineer – Water Production Division City of Denton 9401 Lake Ray Roberts Dam Road Aubrey, Texas 76227 940-349-7523 mamun.yusuf@cityofdenton.com
FNI's Designated Representative –	David Jackson, P.E., BCEE Vice President 2711 N. Haskell Ave, Suite 3300 Dallas, TX 75204 214-217-2257 David.Jackson@freese.com
FNI's Accounting Representative –	Sharon James 4055 International Plaza, Suite 200 Fort Worth, TX 76109 817-735-7298 sharon.james@freese.com

ATTACHMENT RPR – RESIDENT PROJECT REPRESENTATION

- A. The OWNER will have a Resident Project Representative on the Site. If the OWNER chooses to have FNI provide these services, the duties, responsibilities and the limitations of authority of the Resident Project Representative, and designated assistants, are as follows:
1. Resident Project Representative is FNI's agent at the site, will act as directed by and under the supervision of FNI, and will confer with FNI regarding Resident Project Representative's actions. Resident Project Representative's dealings in matters pertaining to the on-site Work shall in general be with FNI and Contractor, keeping OWNER advised as necessary. Resident Project Representative's dealings with Subcontractors shall only be through or with full knowledge and approval of Contractor. Resident Project Representative shall generally communicate with OWNER with the knowledge of and under the direction of FNI.
- B. Duties and Responsibilities of Resident Project Representative:
1. Schedules: Review the progress schedule, schedule of Shop Drawing submittals and schedules of values prepared by Contractor and consult with FNI concerning acceptability.
 2. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.
 3. Liaison:
 - a. Serve as FNI's liaison with Contractor, working principally through Contractor's superintendent and assist in understanding the intent of Contract Documents; and assist FNI in serving as OWNER's liaison with Contractor when Contractor's operations affect OWNER's on-site operations.
 - b. Assist in obtaining from OWNER additional details or information, when required for proper execution of the Work.
 4. Shop Drawings and Samples:
 - a. Record date of receipt of Shop Drawings and Samples.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify FNI of availability of Samples for examination.
 - c. Advise FNI and Contractor of the commencement of any Work requiring a Shop Drawing or Sample if the submittal has not been approved by FNI.

5. Review of Work, Rejection of Defective Work, Inspections and Tests:
 - a. Conduct on-site observations of the Work in progress to determine if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to FNI whenever Resident Project Representative believes that any Work will not produce a completed Project that conforms generally to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise FNI of Work the Resident Project Representative believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 - c. Verify that tests, equipment and systems start-up and operating and maintenance training are conducted in the presence of appropriate personnel, and the Contractor maintains adequate records thereof; and observe record and report to FNI appropriate details relative to the test procedures and start-ups.
 - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to FNI.
6. Interpretation of Contract Documents: Report to FNI when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by FNI.
7. Request for Revisions: Consider and evaluate Contractor's suggestions for revisions to Drawings or Specifications and report with Resident Project Representative's recommendations to FNI. Transmit to Contractor in writing decisions as issued by FNI.
8. Records:
 - a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and Samples, reproductions of original Contract Documents, including all Work Change Directives, Addenda, Change Orders, Field Orders, Written Amendments, additional Drawings issued subsequent to the execution of the Contract, FNI's clarifications and interpretations of the Contract Documents, progress reports, submittals and correspondence received from and delivered to Contractor and other Project related documents.
9. Reports:
 - a. Furnish to FNI periodic reports as required of progress of the work and of Contractor's compliance with the progress schedule and schedule of Shop Drawings and Sample submittals.

- b. Consult with FNI in advance of scheduled major tests, inspections or start of important phases of the Work.
 - c. Draft proposed Written Amendments, Change Orders and Work Change Directives, obtaining backup material from Contractor and recommend to FNI Written Amendments, Change Orders, Work Change Directives, and Field Orders.
 - d. Report immediately to FNI and OWNER the occurrence of any accident.
10. Payment Requests: Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to OWNER, noting particularly the relationship of the payment requested to the schedule of values, Work completed and materials and equipment at the Site but not incorporated in the Work.
11. Certificates, Maintenance and Operation Manuals: During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to FNI for review and forwarding to OWNER prior to final payment for the Work.
12. Completion:
- a. Before FNI issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.
 - b. Observe whether Contractor has performed inspections required by laws or regulations, ordinances, codes or order applicable to the Work, including but not limited to those to be performed by public agencies having jurisdiction over the Work.
 - c. Conduct a final inspection in the company of FNI, OWNER and Contractor and prepare a final list of items to be completed or corrected.
 - d. Observe whether all items on final list have been completed or corrected and make recommendations to FNI concerning acceptance.
- C. Limitations of Authority of Resident Project Representative:
- 1. Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items), unless authorized by FNI.
 - 2. Shall not exceed limitations of FNI's authority as set forth in Agreement or the Contract Documents.
 - 3. Shall not undertake any of the responsibilities of Contractor, Subcontractor, Suppliers, or Contractor's superintendent.

4. Shall not advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
5. Shall not advise on, issue directions regarding or assume control over safety precautions and programs in connection with the Work or any activities or operations of OWNER or Contractor.
6. Shall not accept shop drawing or sample submittals from anyone other than the Contractor.
7. Shall not participate in specialized field or laboratory tests or inspections conducted by others, except as specifically authorized by FNI.