

Exhibit A

**WORK ASSIGNMENT No. 1
SCOPE OF SERVICES**

**ENGINEERING CONSULTING SERVICES
Contract No. 18/012**

**Design Services
For**

Culvert Replacement at 102nd Ave N over Cross Bayou Canal

City PID: XXXX

Prepared for:

**City of Pinellas Park
Construction Services Division
6250 82nd Avenue North
Pinellas Park, FL 33781**

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SCOPE OF SERVICES FOR ENGINEERING CONSULTING SERVICES

This Exhibit forms an integral part of the agreement between the City of Pinellas Park (hereinafter referred to as the CITY) and Cardno, Inc., (hereinafter referred to as the CONSULTANT) relative to the transportation and drainage facility described as follows: (NOTE: several tasks to be performed in coordination with Pinellas County (hereinafter referred to as the COUNTY) to address future flows within Cross Bayou Canal. Those coordinated efforts are identified in this proposal where appropriate).

I. PROJECT TITLE

Professional Engineering Services for the culvert replacement at 102nd Ave N over Cross Bayou Canal.

II. OBJECTIVE

The overall objective of this document is to describe the scope of work and responsibilities of the CONSULTANT for developing plans and specifications and performing all other professional engineering work involving the culvert replacement along 102nd Ave N over the Cross Bayou Canal in the City of Pinellas Park, Florida.

III. PROJECT DESCRIPTION

The project consists of evaluating the flows along the Cross Bayou Canal to determine the proposed culvert size requirements while demonstrating no adverse impacts upstream and downstream of 102nd Ave N. An assessment of future downstream improvements along Cross Bayou Canal will also be performed to determine the culvert size at 102nd Ave N to allow for future flows within the system. The design will include the culvert replacement as well as roadway reconstruction to accommodate profile improvements at the culvert crossing. Coordination with the COUNTY will be required for the channel improvements within this project.

IV. PROJECT SCOPE OF WORK

The CITY is seeking the professional services of an engineering consultant to design; prepare plans; acquire permits; develop construction specifications; and provide engineering and surveying services for the construction of the culvert replacement at 102nd Ave N over Cross Bayou Canal. The project will consist of roadway reconstruction along 102nd Ave N at the approaches to the culvert crossing, including the kayak launch loop and adjacent parking area. Canal improvements will occur approximately 100-ft upstream and downstream of the proposed culvert to provide the channel typical section per Pinellas County Public Works Division requirements.

The CONSULTANT will assess the existing watershed model (provided by the COUNTY) to determine the required culvert size at 102nd Ave N. The design will be coordinated with Pinellas County to include potential future downstream (and upstream) improvements to be included in an ultimate condition watershed model. The design will assess the future flows within the system and demonstrate that no adverse impacts occur upstream and downstream.

Drainage improvements must be designed in accordance with Southwest Florida Water Management District (SWFWMD) regulations for storm events (10, 25, 50 & 100 year). All required permits must be obtained by the CONSULTANT. Plans must be prepared in accordance with the CITY Requirements.

Task 1: GENERAL TASKS

QC Review/Progress Meetings and Contract Maintenance: The CONSULTANT shall conduct monthly progress meetings (teleconferences or in person) as requested by CITY. The CONSULTANT shall attend two (2) Phase Review Meetings; one (1) at 60% and one (1) at the 100% plans submittal. CONSULTANT shall conduct internal QC reviews prior to all submittals and provide the review documents to CITY upon request.

The CONSULTANT shall prepare agendas and detailed meeting minutes and distribute to CITY project manager. The CONSULTANT shall perform contract maintenance on a monthly basis providing the CITY with progress reports, invoices, and milestone dates as required.

Public Involvement: The CONSULTANT will provide support to the CITY's public involvement efforts.

1. Assist the CITY with public outreach preparations including preparation of roll graphics, preparation of public information meeting notification flyer (City will mail), and board graphics for display at the public information meeting, and finding a facility to hold the public meeting.
2. Attendance at the public information meeting by the CONSULTANT project manager.

Specifications Package Preparation: – We anticipate the project will be advertised for construction and the preparation of Bid Documents will be prepared by the CITY. CONSULTANT shall provide assistance as needed with all applicable Technical Special Provisions and review of all required FDOT supplemental specifications for all items and areas of work.

Bidability and Constructability Review: The CONSULTANT must provide a Peer Review as follows:

1. Perform a constructability review as part of the 60% Plans review. This process must include providing clear decisions and directions and documentation of all decisions, assumptions and recommendations.
2. Perform a constructability and bidability review as part of the 100% Plans review. This process must include providing clear decisions and directions and documentation of all decisions, assumptions and recommendations.

Task 2: DRAINAGE ANALYSIS / CULVERT SIZING

Data Collection: The CONSULTANT will perform field reviews to verify existing conditions. The COUNTY will provide the watershed model associated with this project (Cross Bayou Watershed WMP) for analysis of existing and proposed canal flow rates.

Drainage Analysis: A drainage analysis will be provided for the proposed improvements to replace the existing pipe culvert crossing 102nd Ave N at Cross Bayou Canal. The purpose of the drainage analysis will be to show that the proposed concrete box culvert will not significantly increase the upstream or downstream stages or have any other adverse impacts to the area.

A drainage analysis will also be required to evaluate potential future development by the COUNTY along portions of Cross Bayou Canal. This analysis will determine the ultimate culvert size required at 102nd Ave N for the future flow rates within Cross Bayou Canal. The proposed channel typical section consists of a 50-ft channel width between top of banks with a channel bottom invert at -4.3ft (NAVD) (matching previous drainage study recommendations, (2012) King Engineering Associates, Inc). Additional design efforts will be required to control the flow rate through the culvert to the allowable rate for the interim condition (ie. prevent flow through one of the box culvert cells) to prevent adverse impacts downstream.

The project is located adjacent to an existing kayak launch site, therefore the proposed culvert will be sized to allow for kayaks to travel through the structure to access the area upstream of the culvert. The proposed culvert opening is recommended to provide approximately 4.5-ft minimum vertical clearance from the mean high tide elevation and a minimum 8-ft width to allow passage through the structure. Existing channel banks downstream of the culvert crossing will be assessed for existing locations of erosion concerns.

The drainage design must have the following features: is consistent with requirements of FDEP, SWFWMD, USACOE, Pinellas County Stormwater Manual, City of Pinellas Park and any other regulatory agencies which have jurisdiction over the project; utilizes existing facilities where possible; is cost effective; does not create flooding problems upstream or downstream; and provides for safety of roadway users.

Task 3: ROADWAY / STRUCTURAL DESIGN

Roadway Approaches: The roadway profile is to be increased over the Cross Bayou Canal which will require pavement reconstruction at the approaches to the culvert crossing. The pavement reconstruction will extend east of the parking area and adjacent residential entrance and west into the entrance to the City's construction yard. Pavement cores and geotechnical information (modulus of resilience) will be evaluated to determine pavement design recommendations. The CONSULTANT will coordinate with the COUNTY to obtain traffic data including truck traffic (current year and 20 year projection), or best available information. Roadside safety design will include analysis of multiple options including; guardrail, barrier or slopes.

Structural Design: The proposed scope of work includes design of a new box culvert with wingwalls to replace the existing pipe culverts on 102nd Ave N over Cross Bayou. The design will consider safety, constructability, design life, and environmental impacts.

For the project construction, City trucks will use the rear entrance to the maintenance yard so that the culvert crossing can be completely closed down for construction.

Improvements shall consist of the following:

- Provisions for a new concrete box culvert structure over Cross Bayou that will support AASHTO and FDOT truck loading. An HL-93 vehicle will be evaluated. Two lanes of vehicular traffic at the culvert will be provided.

Design Report: The CONSULTANT also must develop project specific design criteria which must be included in the design report. The Design Report is to include written documentation to describe all decisions, assumptions and recommendations to develop the design for the project.

The CONSULTANT must submit a request for variance for design criteria not conforming to the minimum Florida Greenbook requirements.

Engineer's Estimate & Quantities: The CONSULTANT must prepare an estimate of probable construction costs for the design. The CONSULTANT must utilize CITY unit cost data where applicable, and FDOT Construction Contract History whenever CITY unit costs are not available.

The CONSULTANT must prepare bid quantities that include all bid items, which comprise the project design. Bid items must include reference to applicable CITY & FDOT Measurement and Payment items. Bid proposal sheets to be included in the contract documents must be prepared by the CITY based on the CONSULTANT'S quantities.

Preliminary bid quantities must be submitted with the 60% design review submittals. Final bid quantities must be submitted with the 100% design review submittal. Preliminary opinion of probable construction costs must be submitted with the 60% design review submittal. Final construction costs opinion based on the final bid quantities must be submitted with the 100% design review submittal.

Roadway Field Reviews: The CONSULTANT must conduct one (1) site review prior to the 60% plans submittal and must conduct one (1) additional site review prior to 100% plans submittal.

Task 4: ENVIRONMENTAL PERMITTING

The CONSULTANT must prepare permit applications, technical data and supporting documentation for all permits to be submitted by the CITY. The CONSULTANT must acquire all state and federal permits for the proposed project. Prior to completion of the 60% design phase, the CONSULTANT must schedule pre-application meetings with applicable permitting agencies to identify specific permitting requirements for the project. The CONSULTANT must invite CITY & COUNTY staff to all pre-application meetings.

The CONSULTANT must prepare application forms, narratives, calculations, exhibits, permit drawings, etc. necessary for required permit application submittals. The CONSULTANT must submit the completed draft permit applications to the CITY for review and signature.

The CONSULTANT must prepare responses to agency requests for additional information (RAI), including completion of design revisions that may be required to secure the required permits.

Task 5 ROADWAY PLANS PREPARATION

Roadway Plans: The CONSULTANT must prepare required construction plans within the project limits. These plans must be in accordance with the CITY's Roadway Design and Construction Standards. The following construction plans will be provided:

- Key Sheet (1 Sheet)
- Summary of Quantities (3 Sheets)
- Typical Sections (1 Sheets)
- General Notes (1 Sheet)
- Survey Reference Points (1 Sheets)
- Plan /Profile (2 Sheets)
- Cross Sections (6 Sections)
- Misc. Details (1 Sheet)
- Structural Plans and Details (5 sheets)
- Erosion Control Plans (3 Sheets)
- Utility Adjustment Sheets (1 Sheets)
- Temporary Traffic Control Plans (1 Sheets)
- Signing and Pavement Marking Plans (1 Sheets)

Temporary Traffic Control Plans: Components of the Traffic Control Plan anticipated are as follows (102nd Avenue N entrance to be closed during construction):

- General Notes
- Construction Phasing Notes

Submittals and Design Reviews: CONSULTANT will submit 60%, 100% and Final (signed & sealed) plans. The CONSULTANT shall prepare plans, specifications, special conditions and other documents that are accurate, legible and complete in detail. All Submittals shall be made to the CITY in reproducible form and on CD or DVD for those items so described in this section.

Project Deliverables: The project submittal will consist of the following:

- Roadway, Drainage, Utility, and Structural Construction Plans
- Design Documentation
- Construction Specifications
- Construction Cost Estimate
- Hydraulic Analysis (pre and post development conditions). Hydraulic recommendations for the culvert considering capacity, up-stream effects, and down-stream effects will be provided.

Task 6 SURVEY

Topographic Survey Items.

1. Topographic survey limits:
 - Along 102nd Ave N right-of-way from the approximate entrance to the Cross Bayou Elementary School to approximately 120-ft west of the entrance to the City of Pinellas Park Maintenance Yard, and along the Cross Bayou Canal (50-ft beyond the existing top of bank) approximately 500-ft to the south and to the north of 102nd Ave N
 - Canal Cross sections will be completed every 100'
2. Set horizontal and vertical control (Temporary Benchmarks or TBMs) throughout the project
3. Prepare digital terrain model of the surface using cross-sections and break lines collected.
4. Locate sufficient property / plat monuments to establish a right of way line and survey baseline (which may not be the center of existing right of way)
5. Prepare a topographic survey to include the following:
 - Visible features (pavement, curbs, sidewalks, walls, fences, power poles, fire hydrants, etc.)
 - Locate and obtain size, type, and invert elevations of existing drainage facilities.
 - Locate visible evidence of subsurface utilities (marker posts, pull boxes, valve boxes, man holes, etc.)
 - Major landscape and trees greater than 6" at DBH

Task 7 GEOTECHNICAL

The purpose of our geotechnical study is to obtain information on the general subsurface conditions at the proposed project site. The subsurface materials encountered will then be evaluated with respect to the available project characteristics. In this regard, engineering assessments for the following items will be formulated:

- Identification of the existing ground water levels and estimated normal seasonal high ground water fluctuations.
- General location and description of potentially deleterious materials encountered in the borings which may have an impact on the proposed project.

- Exiting pavement and base thicknesses near the existing culvert crossing.
- General site preparation and foundation recommendations.

The following services will be performed to achieve the above-outlined objectives:

- Request utility location services from Sunshine811.
- Perform two Standard Penetration Test (SPT) borings to depths of 50 feet at the culvert location and two SPT borings to depths of 20 feet along the bank of Cross Bayou Canal. Samples will be collected, and Standard Penetration Test resistances will be measured at approximate intervals of two feet for the top ten feet and at approximate intervals of five feet thereafter.
- Perform four hand auger borings extending to depths of approximately 6 feet, or auger refusal.
- Provide existing groundwater depths and estimated seasonal high groundwater levels.
- Perform two pavement cores with hand auger borings extending to depths of approximately 5 feet below existing grades; or auger refusal.
- Visually classify and stratify soil samples in the laboratory using the Unified Soil Classification System and conduct a laboratory testing program as needed.
- The written report will be signed and sealed by a professional engineer specializing in geotechnical engineering.

Task 8 POST DESIGN SERVICES

The CITY must select a Contractor for this project via competitive bid. The CONSULTANT must provide limited services as required during construction to verify the project is constructed in general conformance with the construction documents and permit requirements. In all instances, the CONSULTANT's services must be coordinated, in writing, by the CITY.

The following task items are anticipated as required services to be provided on an as-needed basis:

- Response to Inquiries: The CONSULTANT must ensure a response within one (1) working day to any inquiries required so as not to cause delay to the construction contract.
- Meetings: At the CITY's request, the CONSULTANT must attend a pre-construction conference, pre-bid meetings, progress reviews, design-to-construction hand-off meetings or other similar meetings.
- Permit and As-Built Review: The CITY must be responsible for providing the CONSULTANT with As-built drawings which have been prepared and certified by a Registered Land Surveyor. The CITY must also provide the CONSULTANT with the records of Construction Engineering and Inspection (CEI) activities. The CONSULTANT must review the As-built drawings and CEI records to verify the Work has been performed in general accordance with the permit conditions and the approved plans and submit them to the CITY as part of the Engineer's Certification of Completion of Construction.
- Contingency Services: In case of emergency or as unforeseen circumstances arise, the CONSULTANT must provide unspecified services and/or field visits as needed, at the request of the CITY, within the field of the CONSULTANT's expertise.

V. COMPENSATION



Task 1	General Task	\$ 11,140.00	Lump Sum
Task 2	Drainage Analysis/Culvert Sizing	\$ 19,760.00	Lump Sum
Task 3	Roadway/Structural Design	\$ 41,350.00	Lump Sum
Task 4	Environmental Permitting	\$ 12,928.48	Lump Sum
Task 5	Roadway Plans	\$ 29,974.24	Lump Sum
Task 6	Survey	\$ 10,302.68	Lump Sum
Task 7	Geotechnical	\$ 8,250.00	Lump Sum
Total Lump Sum Fee		\$ 133,705.40	Lump Sum
<i>Post Design Services</i>		\$ 15,000.00	Hourly

VI. SCHEDULE

The CONSULTANT must provide a Microsoft Project Schedule with updates to be included with each monthly invoice submittal.

CONSULTANT'S services must commence upon receipt of written notice to proceed issued by CITY. CONSULTANT must complete the final design in accordance with the following or better project schedule:

PROJECT SCHEDULE

MILESTONE	TASK DURATION / DAYS AFTER RECEIVE NTP (Calendar Days)
Survey	30 / 30
Channel Typical Section Alternatives Analysis	45 / 75
60% Submittal	45 / 120
City/County Review	21 / 141
100% Complete Plans	85 / 226
City/County Review	21 / 247
Final Plans	30 / 277
City/County Review	21 / 298
Signed and Sealed Plans	15 / 313

CITY design review period is twenty-one calendar days from the date of each milestone submittal. Design reviews by CITY and COUNTY must occur for the 60%, 100% and final complete phases.

VII. INVOICES & PROGRESS REPORTS

Invoicing must take place monthly and will include a progress report summarizing the work completed during the invoice period as well as a schedule update. The CONSULTANT must pre-submit invoices to the Project Manager prior to an official monthly submittal. The final invoice will be marked ``FINAL” on the invoice and be accompanied by a letter from the CONSULTANT stating that this is the Final Invoice and that compensation for tasks completed, as described in the Scope of Services Agreement, is now concluded.