Renaissance Infrastructure Consulting

November 19, 2021

Ted Martin, P.E., CFM
Stormwater Manager - Water Pollution Control
City of Independence, Missouri
14909 East Truman Road
Independence, MO 64051-0519

Re: **Engineering Services for Pearl to Crane & Hereford Drainage Improvement Project**

Mr. Martin:

The City of Independence Water Pollution Control Department has requested Renaissance Infrastructure Consulting (RIC) to provide a scope and fee proposal for professional services for the development of plans, specifications and an engineer's estimate for the Pearl to Crane & Hereford Drainage Improvement Project.

The project will adopt the preliminary design previously completed by HDR/Archer in 2011. RIC will update this design as necessary and move it forward to final plans for bidding. The overall project limits include the following areas:

North Area
1. An enclosed storm sewer system along Leslie Avenue from 23rd Street to Fair Street.
2. An enclosed storm sewer system along Fair Street from Leslie Ave to Pope Ave.
3. An enclosed storm sewer system along Pope Ave from the north side of the intersection with Fair St to the outlet to an existing open channel approximately 250 feet downstream of the intersection with Fair St.

Middle Area
1. An existing open channel running along the rear property lines Fair St to Angus St.
2. This area includes an existing 270 ft long dual CMP culvert.

South Area
1. An enclosed storm sewer system along Hereford Ave from Kier St to Pope Ave.
2. An enclosed storm sewer system along Pope Ave from Hereford Ave to Angus St.
3. An enclosed storm sewer system along Angus St from approximate 240 ft upstream of the intersection of Angus St and Pope Ave to the outlet to the existing open channel downstream of Pope Ave.

The North Area is going to be a future Phase 2 project and design services for this area will not be included in this scope of services. The Middle area will be split at the existing CMP culvert. Rehab of the existing culvert will be the upstream limit of this scope of services.

The purpose of the proposed storm sewer system is to reduce flooding reports within the project area as much as practical and correct erosion concerns within the open channel area. The following tasks are included in our scope of services for this project.

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Task One – Preliminary Design:

1. Existing Conditions - Determine the watershed, major drainage-way, drainage structures and flow constrictions. Investigate the flooding problems in the area including past complaints and facilitating a public meeting. Identify impacted property owners and size of tracts. Research other existing information such as soil types, depth to bedrock, utilities, rights-of-way and easement information, if applicable to the proposed project.

   As part of this task, RIC will review the information included in the previously completed design and assess areas where changes within the watershed have occurred that could impact the design of the system. During this phase, RIC will also recreate the plans previously completed utilizing the CAD files provided by the City as much as possible.

2. Standards -Identify applicable design and construction standards including APWA Section 5600, FEMA, MDNR Dam Safety Program and other applicable standards as pertinent.

3. Utility Contacts -Identify contacts for utility companies and provide them map of project corridor; request information on their utility within corridor and illustrate on base project map. At a minimum, the following utility companies should be included:

   a. Electric -Independence Power and Light
   b. Gas -Missouri Gas & Energy
   c. Cable TV - Comcast
   d. Telephone -AT&T
   e. Water-Independence Water Department
   f. Sewer -Independence Water Pollution Control

   The first utility coordination meeting will be held after the completion of the surveys.

4. Hydrology and Hydraulics-Provide the design storms used for the analysis of the system components. Determine existing and proposed design flow rates for the drainage system. Summarize results including a description of the models and hydrologic and hydraulic methods used for the analyses and basis for using the model selected.

   a. Hydrologic Analysis -Develop the runoff flow rates for a minimum 10 and 100-year return intervals for each sub-area of the project watershed. Provide the appropriate hydrologic parameters used for the runoff computations including runoff coefficients, curve numbers, percent imperviousness, time of concentration, rainfall intensity and/or rainfall hyetograph. Summarize the results including the methodology used for the analysis and explain the basis for the selected approach.

   b. Hydraulic Analysis -Perform hydraulic calculations per APWA 5600 in sufficient detail to determine conduit and channel sizes.

   Summarize the methodology used for the hydraulic analysis and explain the basis for the selected approach.

   During this task, RIC will review and re-establish the calculations previously performed and determine if any updates are required.

5. Permits - Investigate relevant federal, state and local permitting requirements, if any, for the proposed project.

6. RIC will assist City at joint informational meeting with City and residents in the project areas (City to send out notifications and set up meeting with assistance from RIC).

7. RIC will utilize information provided by utility companies, and city GIS data to update the existing basemap with any changes that have occurred. The updated plans will be presented to the City for discussion and concurrence.

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Task Two – Preliminary Plans:

1. Develop Preliminary plans and specifications clearly stamped "preliminary", or otherwise indicated. All plans shall be prepared in accordance with the latest editions, supplements and revisions of the City's storm drainage design criteria and APWA Section 5600, as adopted. The construction drawings shall be prepared in AutoCAD format. The City of Independence project number shall be included upon all correspondence.

    a. RIC will survey the project with the City supplying the bench mark records as near to the project location as possible. The Consultant/ surveyor shall set any other needed permanent benchmarks for the project. All vertical datum must be USGS datum and tied to the City controls.

        i. Survey size, type, location, and elevation of all storm drainage facilities including culverts, pipes, headwalls, manholes, and inlets.

        ii. Perform topographic survey of entire project area needed for design of the project, including dwellings/structures, sheds, fences, walls, streets, curbs, ditches, sidewalks, decks and patios, size and species of trees 2 inches and larger, shrubs, bushes, landscaping, and property pins. Provide the minimum low opening for each dwelling

        iii. Where there is a group of trees, show the outside limits and label accordingly.

        iv. Contact Missouri One Call and obtain available mapping from all pertinent utilities for locates of existing utilities and tie then into the topographic survey. Include sizes of utility lines.

        v. The construction contractor will be required to provide construction staking for the project, not the Consultant. However, the Consultant may contract with the general contractor to perform construction staking.

        vi. All proposed structures or improvements shall be located by station and offset or their coordinate values on the plans. There shall be a note as to the exact point(s) being located for each type of structure or improvement on the final plans.

        vii. Prepare survey base map depicting above information, including property lines, ownership and easement dimensions and information.

        The tasks listed above are general guidelines for what will be included in the survey. RIC has reviewed the previously performed survey and will perform targeted survey to update the previously completed survey in areas that have changed substantially from the information shown in the previous survey.

    b. Perform Geotech Analysis

        i. RIC will contract with Intertek PSI to perform geotechnical investigation. A maximum of 3 borings will be performed. All three borings will be performed to a depth of 20 feet or auger refusal. PSI will provide boring logs including soil analysis for each boring performed. In addition, PSI will perform CPT soundings during the borings for use in the evaluation of the shear strength of the soils. These three borings will be in the area along the channel where significant erosion has taken place and bank stabilization is planned.

        ii. PSI will also perform up to 4 additional borings to a depth of 15 feet or auger refusal as necessary to supplement the information obtained during the previous design project.

        iii. See PSI scope of services for additional information.

    c. Perform Field Check

        i. After completion of the survey and Geotech, RIC will develop the plan and profile of the proposed system. RIC will coordinate a field check to assess the accuracy of the survey, check proposed

structure locations, and determine conflicts with topography and utilities. Immediately prior to the field check, RIC will stake the center of the proposed drainage facilities with elevations noted for each top of structure.

d. Finalize preliminary plans to include:

- Cover sheet.
- General Notes and Quantities
- Project General Layout, Survey Base Map and Control
- Demolition Plans
- Drainage Area Map and Drainage Calculations in tabular format
- Drainage area map
- Hydrologic Calculations – Tabular Format
- Inlet design calculations – Tabular Format
- Pipe capacity calculations – Tabular Format
- Plan and Profile Sheets 1"=20' Horizontal and 1"=10' Vertical showing utility crossings and HGL
- Standard Details
- Easement Plans (show easement lines only with no call-outs, dimensions or areas)

This task will update the plans submitted in Task One based on new survey information and include the rehab of the CMP culverts and bank stabilization not included in the previous plan set.

e. Plans shall include location of property lines, utilities, and other conflicts that will impact the design of the selected alternative.

f. Develop a preliminary construction cost estimate including quantities, unit costs and a 10% contingency for utility relocation expenses, legal expenses and easement acquisition as applicable.

g. Correspondence indicating any significant changes in scope or design from information submitted as part of the Preliminary Design Plans submitted under Task One.

h. A drainage area plan must be included as part of the Preliminary Plan submittal. This plan must indicate complete hydrologic calculations and any pertinent hydraulic calculations performed as part of the design. Design Hydraulic Grade Line, or water surface elevations for the conveyance systems, plotted on profile view of plans. Multiple design return may be plotted, however, at a minimum; the controlling design return interval must be shown.

2. Tabular description of how the design flows are intercepted and conveyed.Coordination and Reviews

a. Utility coordination meeting. RIC will contact and work closely with utilities to determine the locations of existing and planned facilities to be shown on the plans. RIC will prepare correspondence to all utility companies at the proper times during the design phase and will provide plans to utilities prior to the utility coordination meeting

b. RIC will submit preliminary plans and specifications as described herein for formal City review and attend review meeting with City staff.

c. Assess state and federal environmental regulations and permit conditions.

d. Meet with City staff at scheduled project meetings and attend a field check meeting. Preliminary design submittal shall include corrections noted from the field check.

3. Submit Preliminary Plan Package to City. Deliverables include:

a. Transmittal letter addressing changes from the Preliminary Design Memo to Preliminary Engineering Plans (if applicable) (3 copies)

b. Comment resolution memo from the preliminary plan field check and city review (3 copies)

c. Preliminary Plans as listed above

   i. Full size, bound – 2 sets

   ii. Full size, unbound – 1 set

d. Cost estimate with 10% contingency (3 copies)

e. Geotech Report – 1 copy

f. Electronic Delivery of PDF of total submittal package (1 copy)

4. Meet with City to discuss Review of Preliminary Plan Package.

Task Three – Final Plans, Specifications and Estimate (90% Plans)

1. Develop Final design plans and specifications clearly stamped "Final" or otherwise indicated. A transmittal letter shall accompany this submittal addressing City staff's comments on the preliminary design. The City's project number shall be included upon all plans and correspondence.

2. Prepare final plans which address comments from the city review of preliminary plans as applicable and include:

   Cover sheet, including abbreviations, legends, and utility contacts

   General Notes and Quantities

   Project General Layout, Survey Base Map and Control

   Demolition Plans

   Drainage Area Map and Drainage Calculations in tabular format

      Hydrologic Calculations

      Inlet design calculations

      Pipe capacity calculations

      All hydrology and hydraulic calculations performed to meet City and APWA requirements regarding the 10-year and 100-year return interval events. If hydraulic calculations are too awkward to submit, a detailed narrative may be submitted describing all design assumptions and considerations.

   Typical Sections

   Plan and Profile Sheets 1"=20' Horizontal and 1"=10' Vertical showing utility crossings and HGL

   Grading Sheets (Grading plan and/or cross sections shall be provided which clearly indicate limits of grading. Overflow channels and swales used to accommodate the maximum design storm shall be defined and the effects of velocity/shear determined for cover selection. Cross sections shall be at 1"=20' scale, horizontal and 1"=10' vertical at 50' maximum intervals.)

   Standard Details

   Special Details

   Driveway Profiles (1"=10' scale, horizontal and vertical)

   Construction Sequence and Traffic Control Plans

Traffic Control Details

Sediment and Erosion Control Plans (Including landscaping/restoration. Will break into separate sheet if necessary for clarity)

Erosion Control Detail Sheets

Easement Plans (show easements and all information regarding call-outs and areas including property lines, right of ways, existing and proposed easements, and a table listing in square fee all the required temporary construction easements and permanent easements)

3. Correspondence indicating significant changes in scope or design from information submitted as part of the Preliminary Plans. If such changes occur, all information required as part of the Preliminary Plans shall be resubmitted for items which have changed and all portions of the project which have been affected by the change(s).
4. Develop Project Specifications utilizing the City Standard Specifications – including measurement and payment section, special provisions and Stormwater Pollution Prevention Plan (SWPPP)
5. Prepare final construction cost estimate based on measured quantities from the plans
6. Acquire Guaranteed Title Report (GTR) documents and produce legal descriptions on City furnished instruments
    a. Acquire title work to include ownership and encumbrance for all adjacent properties. (Title work shall not be over 180 days)
    b. Provide legal descriptions for easements on City provided forms and individual tract maps which clearly illustrate property lines, right of ways, existing and proposed easements
    c. Table listing in square feet all the required temporary construction easements, and permanent easements
7. Facilitate utility coordination meeting with Utility Representatives and City Staff.
8. Submit Final Plan Package to City

    Deliverables:

    a. Transmittal letter addressing changes from the Preliminary Design Memo to Preliminary Engineering Plans (if applicable) (3 copies)
    b. Comment resolution memo from the preliminary plan field check and city review (3 copies)
    c. Preliminary Plans as listed above
        i. Full size, bound – 2 sets
        ii. Full size, unbound – 1 set
    d. Cost estimate with 10% contingency (3 copies)
    e. Geotech Report – 1 copy
    f. Electronic delivery of PDF of total submittal package (1 copy)
9. Revise Plans, Specifications, and Estimate from City comments prior to public meeting.
10. Following approval of Final Design assist City at joint informational meeting with City and residents in the project areas (City to send out notifications and set up meeting with assistance from RIC).

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Task Four – Final Check Set and Construction Bid Documents (100% Plans)

1. Submit Final plans (as delineated in item number two under task 3 above) as revised according to City comments to Public Works Engineering to perform final reviews in preparation for the acquisition and bidding phases. Copies of the submittal shall be forwarded to the Stormwater Manager.
2. Incorporate Public Works Comments into Construction Bid Documents
3. Prepare and submit state and federal permit applications
4. Upon completion of acquisition phase, RIC will incorporate into the drawings the easement acquisition related notes.
5. Deliver Construction Bid Documents
   a. Deliverables:

      Final Mylar Construction Plans (1 set sealed)
      Final Full Size Construction Plans (2 sets sealed)
      Final Half Size Construction Plans (2 sets sealed)
      Final Construction Specifications (Printed and Word Files) (sealed)
      Final Engineer's Estimate (sealed)
      PDF of total submittal package

Task Five – Bidding and Construction

1. RIC will respond to all Requests for Information (RFI's) during the bid process.
2. RIC will respond to all RFI's during the construction phase.

Notes

1. Any changes generated by easement acquisition beyond 8 hours are not part of this scope and may be added with a negotiated task order increase. Changes that are not covered include alignment changes of the storm sewer, any design of additional structures or infrastructure impacted by changes to final design or easement changes.
2. The City will be responsible for administration of the bidding and construction contract. The consultant may answer technical questions during the bidding phase.
3. Construction inspection services are not included as part of this scope and may be added with a negotiated task order increase at the request of the City.
4. RIC and our sub-consultants are able to provide all insurance coverage as required by the City.
5. It is assumed that PSI will be able to access the boring locations through coordination with homeowners. No clearing of trees or shrubs is included in this proposal.

If you require any additional information regarding our proposal, please contact me at 816-564-1722 or vzink@ric-consult.com. We look forward to your positive response to our scope letter and getting underway.

Respectfully:

Vincent Zink, P.E., ENV SP
Cc: File