Arden Park Restoration Project

FINAL DESIGN, BIDDING SUPPORT, and

DRAFT CONSTRUCTION OVERSIGHT SCOPE

Submitted July 25, 2017

1. VALUE ENGINEERING AND DESIGN STUDIES

1.1. Project Kick-off and Value Engineering Meeting

1.1.1. Inter-Fluve (IFI), Wenck, and Hart Howerton (HH) will participate in a 2 hour kickoff and value engineering discussion at MCWD offices. City of Edina representatives will attend this meeting as well. Inter-Fluve will facilitate the meeting.

The kick-off portion of the meeting will discuss overall project goals, success metrics, communication plan, delivery schedule, and other relevant project initiation topics.

The value engineering portion of the meeting will include a technical assessment of the channel design relative to the desired construction budget. It is anticipated that the channel length and planform as well as the bridges and park recreations (trail) features will be reviewed concurrently.

1.2. Stormwater site design

1.2.1. Inter-Fluve will work closely with Wenck to complete a concept level stormwater hydrology and off-site drainage review to inform discussion of stormwater treatment Best Management Practices (BMPs) to be incorporated into the site. The analysis will include computation of drainage areas, as well as existing runoff volumes and runoff rates for the 1.1", 1-yr, 10-yr, and 100-yr rainfall events using XPSWMM. The analysis will be completed using LiDAR, aerial photographs, collected geotechnical data and survey data provided by the City of Edina.

1.2.2. Inter-Fluve will facilitate one meeting with MCWD and City staff to review the existing stormwater discharges through the park and develop preferred conceptual best management practice (BMP) options. Inter-Fluve, Hart Howerton, and Wenck will participate in the meeting.

1.2.3. Inter-Fluve will develop conceptual stormwater treatment BMP plans for the site. The conceptual plans will include plan view layouts and opinion of probable construction costs.

Deliverables

- Stormwater site design memorandum and concept plans.
- Engineer's Opinion of Probable Cost for stormwater BMPs.

Assumptions

- Stormwater BMPs will be filtration, wetland, swale, or other non-active treatment solutions.

1.3. Central Vehicular Bridge Design

Bridge design effort will include the selection of up to three bridge styles from national pre-cast bridge manufacturers by Hart Howerton. Based on the available options, the preferred bridge style could be selected by MCWD and City Staff, or alternatively brought to the community for public input.

During this process, IFI will be responsible for the hydraulic analysis and recommendation of bridge span. The bridge's lowest chord elevation will be designed to comply with DNR clearance requirements (OHWM plus 3 feet). The proposed bridge design will be evaluated at base-flow as well as high water (i.e. 100yr). Wenck will be responsible for two hours of structural input on bridge construction and establishment of a design envelope. Conceptual bridge cost estimates will be solicited from up to two bridge manufacturers. Geotechnical boring information for abutment design will be collected and assessed under Task 2, prior to 50% design completion.

Deliverables

- Preliminary bridge plan, span, and elevations. .
- Summary studies of hydrologic impacts.
- Final Schematic Design level bridge design with plan and elevations
- Opinion of Probable Cost obtained from two national level bridge design companies.

1.4. Small Pedestrian Bridge Design

Bridge design effort will include the selection of up to three bridge styles from national pre-cast bridge manufacturers by Hart Howerton. Based on the available options, the preferred bridge style could be selected by MCWD and City Staff, or alternatively brought to the community for public input.

During this process, IFI will be responsible for the hydraulic analysis and recommendation of bridge span. The bridge's lowest chord elevation will be designed to comply with DNR clearance requirements (OHWM plus 3 feet). The proposed bridge design will be evaluated at base-flow as well as high water (i.e. 100yr). Wenck will be responsible for two hours of structural input on bridge construction and establishment of a design envelope. Conceptual bridge cost estimates will be solicited from up to two bridge manufacturers. Geotechnical boring information for abutment design will be collected and assessed under Task 2, prior to 50% design completion.

Deliverables

- Preliminary bridge type, span, and elevation recommendation.
- Summary studies of hydrologic impacts and various footing designs
- Opinion of Probable Cost obtained from two national level bridge design companies.

1.5. Park Shelter and View Terrace

HH will facilitate an initial work session including the City of Edina staff and the MCWD to determine desired program for the building. The meeting will also solicit input on the appropriate size of the formal terrace area based on desired use. Based on this input, an estimated building size, building envelope, and terrace extent will be recommended by the design team. A recommended list of utilities and other building requirements such as mechanical, electrical and plumbing will be summarized. The assumptions required to estimate utility (sanitary, water supply, and electrical) needs for the Park shelter will be documented.

Based on the anticipated hydraulic conditions, proposed bridge elevation, and anticipated site grades within the Great Lawn, a proposed building elevation will be recommended. The results will be summarized into a report that will become the basis of future design.

Deliverables

- Building/Terrace Site Kickoff Work Session with City of Edina Staff and MCWD
- Site Plan
- Mechanical and Electrical Systems Recommendations

Assumptions

- The City of Edina will provide a park structure and terrace program guidance

to inform the use, required amenities, and size of the proposed pavilion structure and terrace area.

- The scope does NOT include development of conceptual design studies.
    - Conceptual design studies are recommended to appropriately evaluate the approximate size of the building (including a building footprint), relationships of the various building uses internally, relationship of the building to the site, preliminary building images and materials, summary square footages of interior spaces and building functions.
- The scope does NOT include any input from an architect to the geotechnical borings and geotechnical recommendations for structural building or terrace foundation systems suitable for this location.
- The scope does NOT include the following:
    - Building Floor Plan
    - Building Section and Exterior Elevations
    - Architectural Materials Description for Pavilion
    - Preliminary Probable Construction Costs for Pavilion or Terrace
    - Program and Materials Description for Terrace
    - Landscape Schematic Site Plan

2. GEOTECHNICAL INVESTIGATION

Generally, the geotechnical scope will include the following investigations and recommendations:

- Borings at two proposed pedestrian bridge locations. Geotech to provide recommendations for abutment design.
- Borings at two proposed overlook locations. Geotech to provide recommendations for design of terraces including any walls and railings.
- Evaluation of building foundation location. Geotech to coordinate with structural engineers on the design team to provide recommendations for building footings.
- Borings at proposed stormwater sites to inform final design of potential BMPs.
- Sampling and soil amendment recommendations based on desired landscaping and vegetation establishment plan. This data will be used for Phase I and Phase II of the project.
- Boardwalk helical pier test installation - install a test helical pier recording installation torque at approx. 2.5’ increments to an adequate depth to reach target capacities for the project.
- For the boardwalk Static Load Test, install a test helical pier, construct a test frame, and run a load test recording deflection vs load to confirm performance with the design requirements.

- All material would be removed at the completion of each test.

Deliverables

- All field testing and analysis will be documented in design reports.

3. Survey and Sediment Sampling

3.1. *Final Design Survey and Sediment Cores*

3.1.1. City will survey site for topography, infrastructure, utilities, trees (over 6" DBH), curbs, streets, trails, retaining walls, and sidewalks as identified by the Design Team.

3.1.2. In coordination with the City, Inter-Fluve will collect needed additional bathymetry data for the site and approximately 500 ft upstream and downstream. The collected bathymetry data will be blended with existing topographic data and survey date from the City to create a topographic map. Tasks will include obtaining the following data:

- Manual cores and probes will examine soils and potential bedrock contacts below the maximum predicted depth of excavation. These depths are assumed to be shallow, within five feet of the existing channel bed.
- Bathymetry of the stream within the channel, sufficient for constructing a one-dimensional hydraulic model for final design and providing impounded sediment estimates for earthwork computations.
- A detailed longitudinal profile of the bed will be developed.

3.2. *Impoundment Sediment Management Plan*

3.2.1. A brief sediment management plan will be completed for the site. The plan will include recommendations for impounded sediment management and include adaptive management options that allow for adjustments during construction based on natural variability in flow. The plan will also account for management of any constituents of concern, if they are identified during the sediment sampling phase of the project. A sediment management plan will be required by MPCA if constituents of concern are identified.

4. 50% Design (Design Development)

4.1. Overview of approach

Through the design development phase, the team will analyze and develop the foundational information required to establish the location, elevation, alignment, scale, and associated materials required to meet the success metrics and intent outlined in the concept designs and value engineering

recommendations (Task 1). The design team will develop plans, opinion of probable construction costs, and a design report to document the design decisions. The task will also include public involvement to provide information to the public and allow for public input on discrete project elements, which will be determined by the project team in coordination with MCWD and the City.

Design Development Drawings (50%) – Following the Task 1 meetings, the Inter-Fluve team will developed design drawings to the 50% design level for client, stakeholder, and agency review and permitting.

The 50% plans are anticipated to include up to 60 sheets:

- Cover sheet (1 sheet) – Project locations and drawing index- IFI
- General Notes (1 sheet) - IFI
- Site Plan - An aerial photo, approximate topographic contours, site access, control points, and staging areas. (1 sheet) - IFI
- Existing Plan – Existing topography, air photo, channel alignment, infrastructure (4 sheets) - IFI
- Proposed Creek Plan/Profile – Proposed alignment, treatments, earthwork, and any other proposed channel modifications/treatments. (4 sheets) - IFI
- Creek Grading Details – Riparian wetland and stormwater BMP grading, per current Stormwater Plan – one grassed swale, two bioretention areas, and one wetland or ponding area details. - IFI (5 sheets)
- Typical Creek Section – Cross sections showing general treatment layout - IFI (4 sheets)
- Canoe and Tubing Landing Plan - IFI (3 sheets)
- Fishing Access (below 54th Street) Plan – Hart Howerton (1 sheet)
- Site Lighting Concept– Hart Howerton (1 sheet)
- Electrical Utility layout for building feed and trail lighting (2 sheets)
- Water and Sewer Utility Sheets – Wenck (1 sheet)
- Storm sewer – Wenck (3 sheets)
- Building Demolition– Wenck (2 sheets)
- Structural at dam removal location – Wenck (1 sheet)
- Site Erosion and Sediment Control Notes and Details - IFI (2 sheets)
- Typical Creek Restoration details - IFI (up to 8 sheets)
- Trail Alignments – Hart Howerton (2 sheets)
- Terrace and Creek Edge Section(s) – Hart Howerton (1 sheet)
- Boardwalk Alignment – Hart Howerton (2 sheets)

- Stairs – Hart Howerton and Wenck (2 sheets)
- Overlook Layout Plans with key Spot Elevations – Hart Howerton (2 sheets)
- Overlook structural details –Wenck (2 sheets)
- Pedestrian Bridges – IFI (2 sheets)
- General Site Planting Plans with Plant/Seed List – Hart Howerton (4 sheets)

4.2. Hart Howerton Scope

4.2.1. Park Shelter

No further development of the Park Shelter is included in the DD phase.

4.2.2. Creek Terrace

The Creek Terrace DD drawings will illustrate and describe the development of the Terrace edge and connection with creek corridor. This will include further development of Terrace layout, grading and elevations, creek edge design, and concept lighting.

4.2.3. Other Park Features (Identified in the sheet list above)

These DD drawings will illustrate and describe the development of the approved design and shall include further development of layout, key spot grading on hard surfaces and conceptual site lighting (needed for electrical utility planning). Hart Howerton will develop a site planting plan with plant species identified. Hart Howerton will provide up to 24 hours of general design input and support for DD drawing elements related to park asthetics.

4.2.4. Public Involvement

Hart Howerton will participate in one public meeting, to be held during the Design Development Phase. The meeting will be coordinated and organized by MCWD or the City. Hart Howerton provide 16 hours of graphic support for the meeting and will attend with one staff.

Deliverables

- DD plan sheets as listed above.
- DD level of Opinion of Probable Cost for elements noted as Hart Howerton responsibility within sheet list above.

4.3. Wenck Scope

4.3.1. DD Design and Plans

- Building Demolition – Wenck will lead the development of a demolition plan for the warming house. As part of the design

process Wenck will test will conduct a hazardous material analysis of the building to test for asbestos, PCBs, lead and other hazardous material that would impact methods for building demolition. Through the completion of the testing Wenck will develop a demolition plan and sequence which facilitates demolition in a compliant manner. Testing results will be provided to the City for record keeping purposes.

- Terraces – Two terraces located along Brookview Avenue have been proposed to facilitate formal viewing of the park. Wenck will provide structural and geotechnical design of the terraces with layout assistance from Hart Howerton. The layout will include design plans along with supporting calculations.

- Stair Connections from Minnehaha Blvd. and Brookview Avenue – Three sets of stairs have been proposed which will enable residents to better access the Creek. Our design team will review geotechnical information collected and to develop stair plans and specifications to facilitate construction. It is assumed Hart Howerton will assist in the layout of the stair cases.

- Northern Wooden Boardwalk – The design of the boardwalk on the northern end of the park will require structural and geotechnical design to ensure stability. Wenck will review the geotechnical analysis completed and leverage design layouts provided from Hart Howerton.

- Dam Retaining Wall – The existing retaining wall downstream of the existing dam and near the abutment edge of 54th St. Bridge is proposed to be replaced. Wenck will review geotechnical information and provide a revised design which incorporates the new park layout. Wenck will integrate the proposed park features into the design to ensure stability and aesthetics to wall.

4.3.2. Wenck will provide design support services for the following tasks during the DD phase:

- Storm Sewer and Site Drainage
- Erosion and Sediment Control
- Park Shelter Foundation analysis

4.3.3. Opinion of Probable Cost

Wenck will provide Opinion of Probable Costs to Inter-Fluve for the design plans for all items listed in 4.3.1. Our format will comply with that established by Inter-Fluve and as described in 4.4.3.

Deliverables

- Progress Design Development submittal (50%) drawings submitted in 11 x 17" PDF format. CAD drawings in electronic format.
- Engineer's Opinion of Probable Cost.
- Hazardous material sampling results

Assumptions

- Overlook terraces will be less than four feet in height.
- No structural improvements associated with the existing bridge piers are included in the scope. If structural impacts to the bridge are required, they can be added via addendum.
- No utility relocations are included in the scope. If a utility relocation is required for the dam removal, it can be added via addendum.
- Boardwalk designs will be similar in design to existing boardwalks in the City of Edina or along Minnehaha Creek.

4.4. Inter-Fluve Scope

4.4.1. DD Design and Plans

- *Hydrology and Hydraulics* – The proposed conditions HEC-RAS model will be updated to reflect changes in design from the value engineering meeting and updated survey. Iterations of the proposed channel dimensions will be examined for shear stress and capacity to transport sediment. Model results will be used to refine the designed channel cross section, planform, bed and bank materials, and other design details.

- *Design Analysis* – The design team Inter-Fluve will design channel bed, bank and habitat components to remain stable at a 100-year design flow which will require a stability analysis, and moment force analysis. The design team will review potential scour at the new bridge locations to inform the abutment design, based on the proposed stream profile. The design analysis will also include evaluation of proposed building pad elevations for the proposed pavilion/warming-house and coordination time to complete two modeling iterations with the architect/engineering team developing the proposed structure.

- *Design Report* - Inter-Fluve will develop the basis of design report based on work completed thus far. The report will capture project goals and performance criteria and summarize proposed design elements, design calculations, and the methods leading to the design. This document will include sediment sampling results, no-rise discussion, stormwater aspects, and stream design methodology. This document will serve as a record of engineering due diligence on the project and will be updated and submitted as a component of the 50% design submittal. The design report is intended to provide information and documentation for MCWD and will be available for public distribution.

Inter-Fluve will provide primary design services for the following elements:

- Stormwater BMP Design
- Erosion and Sediment Control
- Canoe and Tubing Landings
- Creek Remeander Design
- Creek Fishing Access
- Floodplain Landscaping

4.4.2. Design Support

Inter-Fluve will provide design support services for the other elements of the DD task, to support effective integration of all designs into a cohesive design package.

4.4.3. Opinion of Probable Cost

An Engineers Opinion of Probable Cost (EOPC), based on the conceptual estimate, will be developed in conjunction with the 50% design submittal. The EOPC will be submitted as a bid item list, itemizing estimated quantities and units for all in-stream elements only intended for bidding, and tied directly to measurement and payment as defined in the specifications. Inter-Fluve will provide leadership to the team to develop a holistic OPC for the design development phase. .

4.4.4. Public Involvement

Inter-Fluve will participate in one public meeting, to be held during the Design Development Phase. The meeting will be coordinated and organized by MCWD or the City. Inter-Fluve will provide graphics for the meeting and will attend with two staff.

Deliverables

- Progress Design Development submittal (50%) drawings submitted in 11 x 17" PDF format. CAD drawings in electronic format.
- Engineer's Opinion of Probable Cost.
- Design Report, as described, submitted in PDF format.

Assumptions

- Changes to the planform, channel dimensions and grading may be made in response to client comments that are received. Topographic or alignment layout changes after the 50% design delivery will require an addendum.
- The proposed conditions model will show "no-rise" in water surface elevations relative to the existing conditions model output developed under this contract. Development of materials required for requesting a Letter of Map Revision from FEMA is not included in this task.
- Bid items will follow MNDOT bid Items as much as feasible.

5. 90% DESIGN

5.1. General overview of effort

5.1.1. Through the Construction Document phase, starting with 90% design, the team will build upon the 50% plans to develop a plan set that is ready for bidding. The design team will update or develop plans, opinion of probable construction costs, technical specifications, and a basis of design report. The task will also include public involvement to provide information to the public. The 90% plans are anticipated to include up to 90 sheets. Sheets developed in addition to those listed in the 50% plan set include structural details (boardwalk and overlooks), staging sheets, BMP detail sheets, and other miscellaneous site and utility detail sheets.

5.2. Hart Howerton Scope

5.2.1. Hart Howerton has no 90% Design and Plans responsibility. All 90% designs to be delivered by Inter-Fluve or Wenck.

5.2.2. Design Support for following

- Canoe and Tubing Landings(s)
- Trails and Overlooks
- Boardwalk
- Stairs
- Bridges
- Planting plan for proposed riparian area

5.2.3. Review of Opinion of Probable Cost

5.2.4. Review associated technical specifications developed by Inter-Fluve, MCWD, and Wenck.

5.3. Wenck Scope

5.3.1. 90% Design and Plans

Through the review process of the 50% design plans by the City and MCWD,Wenck will provide revised plans which incorporate edits and revisions requested. These plans will be integrated into the 90% design plan package.

5.3.2. Design Support

Wenck will continue to support design activities outlined in Task 4.

5.3.3. Opinion of Probable Cost

Updated Opinion of Probable Costs will be provided to Inter-Fluve based on edits and adjustments to the 90% design.

5.3.4. Technical Specifications

Technical specifications associated with design elements listed in Task 4 will be provided to Inter-Fluve which can be incorporated into the construction and bidding documents.

5.4. Inter-Fluve Scope

5.4.1.90% Design and Plans

- *Hydrology and Hydraulics* – The proposed conditions model will be updated to reflect changes in design from the 50% drawings. Iterations of the proposed channel dimensions will be examined for shear stress and capacity to transport sediment. Model results will be used to refine the designed channel cross section, planform, bed and bank materials, and other design details.
- *Drawings (90%)* – Following client review of the 50% design, Inter-Fluve will developed design drawings to the 90% design level for client and stakeholder review.
- *Design Report* - Inter-Fluve will refine and update the design report based on changes from the 50% comments.
- *Design Leadership* – In addition to the items identified as Inter-Fluve led design elements in the DD phase and the supporting design role, we will also take on the construction document responsibilities for the pedestrian bridges. We anticipate using bridge manufacturer's specifications to develop a performance specification for the bridge and abutments.

5.4.2. Design Support

Inter-Fluve will continue to provide design support to the tasks outlined in Task 4. In addition, Inter-Fluve will be regularly checking in on other design partners and tracking project elements delivered by other team members.

5.4.3. Opinion of Probable Cost

- *Engineer's Opinion of Probable Cost* – A formal EOPC, based on the general estimates developed in Task 4, will be developed in conjunction with the 90% design submittal. The EOPC will be submitted as a bid item list, itemizing estimated quantities and units for all elements intended for bidding, and tied directly to measurement and payment as defined in the specifications.

5.4.4. Technical Specifications

Special technical specifications developed by Inter-Fluve team will detail various project components such as erosion and sediment control during construction, utilities, earthwork, stormwater BMP construction, channel components, overlooks, access points, trails, and revegetation of the proposed riparian area. Draft technical specifications will be submitted for client review in conjunction with the 90% design submittal. Inter-Fluve will be responsible for consolidation of technical specifications from all design partners.

Deliverables

- Progress submittal (90%) drawings submitted in 11 x 17" PDF format. CAD drawings in electronic format.
- Engineer's Opinion of Probable Cost.
- Technical Specifications.
- Design Report, as described, submitted in PDF format.

Assumptions

- The final planting plans for the proposed riparian area(i.e. area accounting for grading disturbances related solely to stream realignment) will be the responsibility of Inter-Fluve. Inter-Fluve's responsibilities also include development of technical specifications, and opinion of probable cost for these items. The planting plans will focus on natural and native restoration design.

- Planting plans for the upland area (i.e. including the proposed building area, areas outside of the proposed riparian area and outside of the grading disturbances related to stream realignment) will not be refined beyond the DD level by the Inter-Fluve design team. It's assumed plans and other deliverables

for these upland elements will be addressed at a later phase and under a separate contract

.

- Construction drawings included in the Bid Package will be formatted at 11in x17in.

6. 99% DESIGN

6.1. General overview

6.1.1. The design team will update plans, opinion of probable construction cost, technical specifications, and a basis of design report. The 99% Project delivery will be a complete bid package for MCWD and City review. It will include front-end documentation and supporting design documents. This submittal is intended to allow a full review of the bid package prior to signatures and the initiation of the bidding process.

6.2. Hart Howerton Scope

6.2.1. Hart Howerton has no 99% Design and Plans responsibility. All 99% designs to be delivered by Inter-Fluve or Wenck.

6.2.2. Design Support for following

- Canoe and Tubing Landings(s)
- Trails and Overlooks
- Boardwalk
- Stairs
- Bridges
- Planting plan for proposed riparian area

6.2.3. Review of Opinion of Probable Cost

6.2.4. Review Technical Specifications and 99% Bid Package.

6.3. Wenck Scope

6.3.1. 99% Design and Plans

Through the review of 90% design plans Wenck will incorporate edits provided by the City, MCWD and partners into design elements listed in 4.3.1.

6.3.2. Design Support

Wenck will provide review support on design elements noted in 4.3.2

6.3.3. Opinion of Probable Cost

Through the review of updates in the 99% design Wenck will update the Opinion of Probable Cost for items noted in 4.3.1.

6.3.4. Technical Specifications and Bid Package

Technical specifications will be updated with based on edits developed in the 90% design. Review of 99% Bid Package.

6.4. Inter-Fluve Scope

6.4.1. 99% Design and Plans

- *Hydrology and Hydraulics* – The proposed conditions model will be updated to reflect changes in design from the 90% drawings. This effort is anticipated to be minimal and Inter-Fluve has allocated 7 hours to this task.
- *Drawings (99%)* – Following client review of the 90% design (Task 5), Inter-Fluve will developed design drawings to the 99% design level for client and stakeholder review.
- *Design Report* - Inter-Fluve will refine and update the design report based on changes from the 90% comments. This effort is anticipated to be minimal and Inter-Fluve has allocated 8 hours to this task.

6.4.2. Design Support

Inter-Fluve will provide design support on tasks listed in the Inter-Fluve scope (above in Tasks 4 and 5).

6.4.3. Opinion of Probable Cost

A formal EOPC, based on the general estimates developed in Task 5, will be developed in conjunction with the 99% design submittal. The EOPC will be submitted as a bid item list, itemizing estimated quantities and units for all elements intended for bidding, and tied directly to measurement and payment as defined in the specifications.

6.4.4. Technical Specifications and Front End Documents

- *Technical Specifications* – Technical specifications will detail various project components such as erosion and sediment control during construction, earthwork, stormwater BMP construction, channel components, and revegetation of the proposed riparian area. Draft technical specifications will be submitted for client review in conjunction with the 99% design submittal. Inter-Fluve will be responsible for consolidation of technical specifications from all design partners.
- *Front End Documents* - Inter-Fluve will be responsible for developing the Front End Documents for the bid package. Inter-Fluve will work closely with MCWD to develop the document package based on the Reach 20-22 document and other recent documents. Inter-Fluve has

updated most of the necessary specification sections within Division 0 and Division 1 based on EJCDC 2013 General Conditions, but MCWD will review and provide any necessary updates to Division 0 and Division 1 of the bid package for additional specifications required. Inter-Fluve will be responsible for compilation of the full Bid Package.

Deliverables

- Progress submittal (99%) drawings submitted in 11 x 17" PDF format. CAD drawings in electronic format.
- Engineer's Opinion of Probable Cost.
- Design Report, as described, submitted in PDF format.
- Draft 99% Bid Package for review. These documents will include development of a project Bid Package using the Construction Specifications Institute (CSI) formatting and 2013 Engineers Joint Documents Committee Design and Construction (EJCDC) contract. Technical Specifications updated during the 99% design phase will be incorporated into the Bid Package.

7. 100% DESIGN

7.1. General overview

The design team will finalize plans, opinion of probable construction cost, full project manual specifications, and a basis of design report. The 100% Project delivery will be a complete bid package for MCWD utilize during the Bidding phase of the project.

7.2. Hart Howerton Scope

7.2.1. Hart Howerton has no 100% Design and Plans responsibility. All 100% designs to be delivered by Inter-Fluve or Wenck.

7.2.2. Design Support for following

- Canoe and Tubing Landings(s)
- Trails and Overlooks
- Boardwalk
- Stairs
- Bridges
- Planting plan for the proposed riparian area

7.2.3. Review of Opinion of Probable Cost

7.2.4. Review Technical Specifications and Bid Package

7.3. Wenck Scope

7.3.1. 100% Design and Plans

Wenck will finalize plans for items noted in 4.3.1 to go to the bidding phase and provide 100% design plans.

7.3.2. Design Support

Wenck will provide final design assistance for items noted in 4.3.2 to facilitate development of 100% design plans.

7.3.3. Opinion of Probable Cost

A final Opinion of Probable Cost will be developed for items noted in 4.3.1.

7.3.4. Technical Specifications

Specifications will be finalized for 100% and incorporated into the final specification package for the project. Review of 100% Bid Package.

7.4. Inter-Fluve Scope

7.4.1. 100% Design and Plans

- Following client review of the 99% design (Task 6), Inter-Fluve will developed design drawings to the 100% design level.

- *Special Technical Specifications* – Final technical specifications will be submitted with the 100% design plans.

- *Design Report*- Inter-Fluve will refine and update the design report based on changes from the 99% comments.

7.4.2. Design Support

Inter-Fluve will provide design support on tasks listed in the Inter-Fluve scope (above in Tasks 4 and 5).

7.4.3. Opinion of Probable Cost

A final EOPC, based on edits from Task 6, will be developed in conjunction with the 100% design submittal.

7.4.4. Technical Specifications and Front End Documents

Inter-Fluve will update and compile comments and produce a final bid package, including front end bid documents, technical specifications, plans, and relevant reports (e.g. geotechnical).

Deliverables

- Engineer's Opinion of Probable Cost.
- Design Report, as described, submitted in PDF format.
- Final 100% Bid Package for advertisement and release.

8. PERMITTING AND ENVIRONMENTAL COMPLIANCE

8.1. *Pre-Application Meeting* – MCWD to facilitate. Inter-Fluve to attend.

8.2. *Section 106 and EAW Historical and Archeological Compliance*

- Cultural resources literature review
- Archaeological assessment including a site visit
- Property specific research and visual assessment for the dam near 54th Street
- Participation in an agency meeting

8.3. *Permit Applications* – MCWD will prepare applications to submit the following permits using material developed for the 50% Design Package. Inter-Fluve will provide graphical support for permit submittals and has allocated 24 hours for this effort.

8.3.1. USACE Clean Water Act Section 404 Permit

8.3.2. MPCA / USACE Clean Water Act Section 401 Water Quality Certification

8.3.3. MPCA - NPDES Construction Stormwater Permit (to be submitted upon project award to a construction contractor)

8.3.4. MPCA Dredge Permit – The complexity of this permit is dependent upon the impounded sediment characterization. Inter-Fluve has allocated 16 hours for the coordination with MPCA, preparation, and submittal of the permit. Additional hours may be required if contamination is identified.

8.3.5. City of Edina Conditional Use Permit

8.3.6. DNR Public Waters Permit

8.3.7. MCWD / DNR Wetland Conservation Act Permit

8.3.8. Environmental Assessment Worksheet (EAW) – MCWD will complete an EAW submittal which is anticipated to be required based on length of stream impacted by the Arden Park Restoration project. The City of Edina is anticipated to be the Responsible Governmental Unit (RGU) for the EAW process. MCWD will complete a Draft and Final EAW for submittal.

8.3.9. Wetland Conservation Act Permit – MCWD staff will be responsible for submitting and obtaining any applicable wetland permit. Inter-Fluve has included 8 hours of engineering and science support effort to this task.

8.3.10. No Rise Documentation – The hydraulic analysis will include a formal comparison of modeled (HEC–RAS) existing and proposed condition water

surfaces associated with the regulatory flood in accordance with federal and City of Edina requirements.

8.3.11. *Phase 1 Environmental Site Assessment* – A Phase 1 environmental site assessment for the park will be completed to enable excavation of materials on site and ensure the potential for contaminated materials is addressed.

Deliverables

- Draft and Final Permit submittals as outlined above.
- Permit graphical support
- Phase 1 Environmental Site Assessment

Assumptions

- Wetland delineation has been completed by others under previous tasks.
- Surveys associated with Endangered Resources review are not included in this scope.
- The proposed conditions model will show "no-rise" in water surface elevations relative to the existing conditions model output developed under this contract. Development of materials required for requesting a Letter of Map Revision from FEMA is not included in this task. If desired, development and submittal of such information can be added via addendum.

9. BID PERIOD SUPPORT

9.1. *Pre-bid meeting* – Following dispersal of bids, Inter-Fluve staff will attend and assist MCWD at a pre-bid meeting for interested contractors. Notice of the pre-bid meeting will be included in the bid package. Advertisement of the bid is the responsibility of MCWD.

9.2. *Respond to Requests for Information/Addenda* –Inter-Fluve will respond to Requests for Information (RFIs) submitted by potential bidders during the solicitation period, and will prepare addenda if required. Responses will be prepared in writing and submitted electronically to MCWD for distribution to plan holders.

9.3. *Review bids* - Inter-Fluve will review submitted bids and develop and award recommendation.

Deliverables

- Attendance at the pre-bid meeting
- Written responses to RFIs and Addenda submitted electronically. One addendum is included in the scope and fee.

- Bid Award Review and Recommendation Memo

Assumptions

- MCWD will advertise the bids and distribute bid documents.
- Documents will be prepared for only one bidding process.
- Bid documents will be made available electronically, in PDF format only.

10. PROJECT MANAGEMENT AND DESIGN TEAM MEETINGS

10.1. *Project Management* – Inter-Fluve will manage the design team throughout the design and bid phase. The project management will include monthly billing, monthly project updates, and regular project phone call check-ins as requested by the City or MCWD.

10.2. *Team meetings* – Assume 24 meetings at Edina or MCWD. Meeting will include:

- *Design Review Meetings after each submittal (except the 100%)* - Inter-Fluve will attend an in-person design review meeting at MCWD to discuss plan comments following review of the 50%, 90%, and 99% design documents. This meeting is intended to provide the Inter-Fluve design team with clear direction for development of the next level of plan development. We have allocated two hours per meeting. A total of three (3) meetings are anticipated.
- *Monthly Team meetings* - Design integration with MCWD, City, and design team members throughout the project design phase will be critical. The coordination is anticipated to include merging of plan sets, OPC, and specifications to allow for a single design package. We have included monthly meetings through the duration of the project to facilitate communication and decisions. We have allocated two hours per monthly meeting. A total of 16 meetings are anticipated.
- *Other design meetings as needed (up to 5 meetings)*

Deliverables

- Inter-Fluve to provide meeting minutes for meetings noted.
- Monthly invoicing.

11. CONSRUCTION OBSERVATION - DRAFT

11.1. *Pre-construction Meeting* - The Inter-Fluve Project Manager will attend the pre-construction meeting to work with the oversight team leadership to establish communication protocols, verify assignment of responsibilities, and discuss outstanding construction questions with the oversight team, owners, and contractor on the project site.

11.2. *Preliminary Schedule Reviews* - Assist with discussions with the Contractor related to requirements of the Contract, including sequencing of construction and schedule of values breakdown.

11.3. *Review of Contractor Submittals* - Inter-Fluve will communicate with the project partners (MCWD and City of Edina) and Contractor, review Contractor submittals relative to dam removal and channel design as necessary. Inter- Fluve will review these documents and submit to MCWD for final review. General tasks for all submittals will include:

- Review Contractor's submittals of information and shop drawings for the Project and either mark "No Exceptions Taken," "Make Corrections Noted," "Revise and Resubmit," or "Rejected" on each submittal. Provide MCWD with a brief written narrative of what is required from the Contractor for items the team mark on each submittal response.
- Ensure that copies of submittals reviewed are stamped, dated, and signed by the person performing the review.
- Review items that have been submitted by the Contractor as a substitution or an "approved equal" for specified items. Ensure that each substituted item meets the performance requirements specified in the Project specifications and ensure its compatibility with other components of the project. Consult with MCWD's Project Manager regarding acceptability of the proposed substitution.
- Upon completion of review, return the submittals with any written narratives to MCWD.

11.4. *Pay Request Review* - Task completed by MCWD.

11.5. *Develop Field Orders for minor changes to the Work (FO's)* – Inter-Fluve will provide written response for up to ten (10) FO's throughout the construction phase.

11.6. *Respond to Requests for Information (RFI's)* – Inter-Fluve will respond to up to five (5) questions and issues raised by the general contractor during construction. Major issues will be coordinated and discussed with MCWD. Inter-Fluve will provide recommendations for review and MCWD will be responsible for submission to the Contractor.

11.7. *Develop Change Order (CO) Packages* - Inter-Fluve will provide written response for up to three (3) CO's packages throughout the construction phase.

11.8. *Construction observation (general)* – It is anticipated that MCWD and the City of Edina will be able to provide daily field observation for the duration of the project. The Consultant team will be responsible for specific observation as outlined below.

11.9. *Construction observation (structural and civil)* - Task completed by Wenck – see detailed scope.

11.10. *Construction observation (stormwater, dam removal, and stream restoration construction)* - Inter-Fluve will provide up to 480 hours of stream construction observation during the dam removal associated channel construction and vegetation planting of the riparian area. Inter-Fluve will also participate via phone call in up to ten (10) weekly construction meetings throughout the construction phase. Direct communication with the Contractor will be the responsibility of MCWD. Communication with regulators is the responsibility of MCWD. Inter-Fluve will provide photo documentation of activities occurring during the oversight time Inter-Fluve has staff on-site. It's assumed post construction observation and maintenance period enforcement of the planted vegetation within the riparian area will be completed by MCWD staff.

11.11. *Construction observation (Landscape Architecture)* – Hart Howerton will provide up to 80 hours of construction support for items including material submittal reviews, overlook staking, trail and boardwalk staking, site reviews, site walkthrough, punchlist development, and other miscellaneous tasks as needed and approved by MCWD.

11.12. *Monthly Construction Meetings* –Inter-Fluve will organize and facilitate monthly construction meetings throughout the duration of the project. Jonathon Kusa will attend ten (10) monthly meetings, Marty Melchior will attend six (6) meetings via phone for key construction phases.

11.13. *Weekly construction logs* - Task completed by MCWD or City of Edina.

11.14. *Remotely Respond to Questions* - Inter-Fluve has included up to 40 hours of staff time to remotely respond to questions from the Contractor and oversight team. Due to the multi-disciplinary nature of this project, we anticipate coordination during the trail, stairs, boardwalk, and overlook construction phases of the project, but we do not anticipate having river restoration specialty staff on-site for these portions of the project.

11.15. *Site walk-through* - The design team will conduct one final site walk-throughs with the Contractor; the walk through will follow substantial completion of the project, at which point a punchlist will be developed.

11.16. *As-built / Record Documents* – The Inter-Fluve team will provide a red-lined plan set documenting the as-build conditions of the project. The documentation will only include activities observed when a design team member was on site. The City and MCWD are responsible for documenting all other activity as needed for their records.

FEE ESTIMATE:

The following fee estimate is based on the detailed scope provided above. We look forward to discussing the scope and answering any questions you may have.

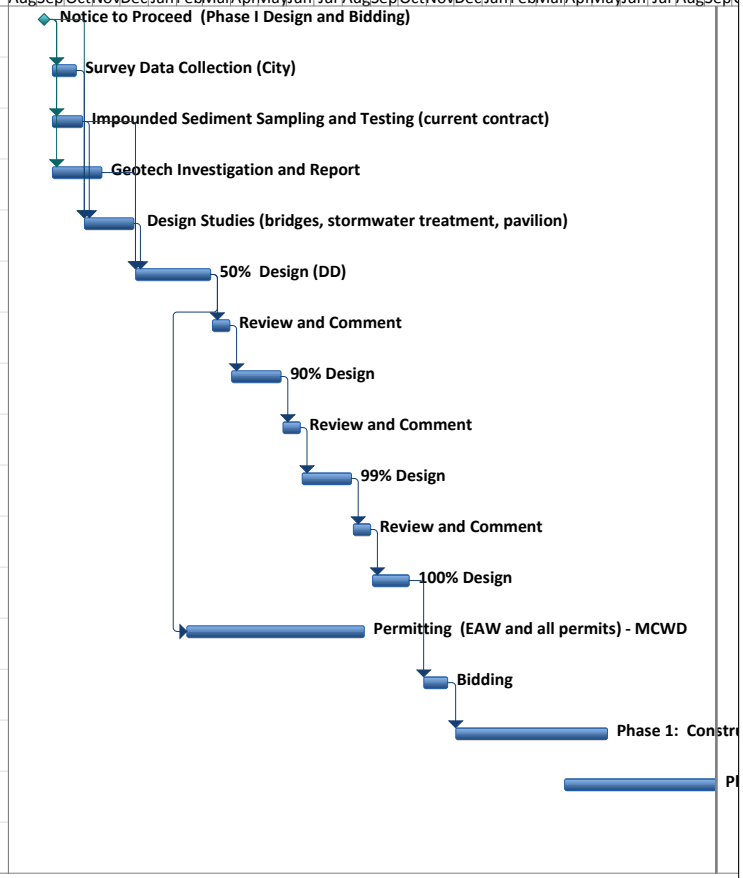
Project: Arden Park, MN

	Minnehaha Creek Watershed District		City of Edina		Total Hours	Total Fee
	%	$	%	$		
Task 1 - Value Engineering and Design Studies	**36%**	$16,300	**64%**	$29,370	345	$45,640
Project Kick-off and Value Engineering Meeting	50%	4130	50%	4130	-	$8,250
Stormwater Site Design and Meeting	50%	5630	50%	5630	-	$11,250
Bridge and Pavillion Study	25%	6540	75%	19610	-	$26,140
Task 2 - Geotechnical Investigation	**50%**	$11,700	**50%**	$11,700	21	$23,390
Geotech Investigation and Report (Braun)	50%	7510	50%	7510	-	$15,020
Helical Pile testing and report (Atlas Foundation)	50%	4190	50%	4190	-	$8,370.0
Task 3 - Survey (Bathymetry)	**100%**	$13,780	**0%**	$0	102	$13,780
Final Design Bathymetry	100%	9760	0%	0		$9,760
Sediment Management Plan	100%	4020	0%	0		$4,020
Task 4 - 50% Design (DD)	**51%**	$66,240	**49%**	$62,980	931	$129,200
H&H Model - Final Design (Stormwater)	50%	3870	50%	3870		$7,730
H&H Model - Final Design (Creek)	100%	9100	0%	0		$9,100
Design Report	50%	3750	50%	3750		$7,500
Plans and OPC	50%	44080	50%	44080		$88,150
Public Mtg support	50%	5440	50%	5440		$10,880
Electrical / Plumbing	0%	0	100%	5840		$5,840
Task 5 - 90% Design	**53%**	$27,600	**47%**	$24,660	389	$52,250
H&H Model Updates	100%	2940	0%	0		$2,940
Design Report Update	50%	730	50%	730		$1,460
Plans, Specs, and OPC	50%	21560	50%	21560		$43,120
Public Mtg support	50%	2370	50%	2370		$4,730
Task 6 - 99% Design	**53%**	$15,550	**47%**	$13,960	225	$29,490
H&H Model Updates	100%	1590	0%	0		$1,590
Design Report Update	50%	620	50%	620		$1,230
Plans, Specs, OPC and Bid Package	50%	13340	50%	13340		$26,670
Task 7 - Final (100%) Construction Documents	**50%**	$10,740	**50%**	$10,740	159	$21,470
Design Report Finalization	50%	580	50%	580		$1,160
Plans, Specs, and OPC	50%	7160	50%	7160		$14,320
Bid Package	50%	3000	50%	3000		$5,990.0
Task 8 - Permitting and Environmental Compliance	**54%**	$12,250	**46%**	$10,480	78.00	$22,700
EAW (MCWD lead)	50%	1590	50%	1590		$3,170
No - Rise	100%	1770	0%	0		$1,770
Permit Application support (graphics)	50%	1840	50%	1840		$3,670
Wenck (Phase 1 for Bldg Demo)	50%	1380	50%	1380		$2,750
Historical and Archeological Investigation	50%	5670	50%	5670		$11,340
Task 9 - Bidding Support	**50%**	$4,890	**50%**	$4,890	71	$9,770
Task 10 - Project Management	**50%**	$35,820	**50%**	$35,820	453	$71,640
TASK 1 - 10 TOTAL	**51%**	**$214,870**	**49%**	**$204,600**	**2774**	**$419,330**
Task 11 - Construction Management	**50%**	$69,260	**50%**	$69,260	925	$138,510
TASK 1 -11 TOTAL	**51%**	**$284,130**	**49%**	**$273,860**	**3699**	**$557,840**

Note: Hours shown do not account for geotechincal services

SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish
1		Notice to Proceed (Phase I Design and Bidding)	1 day	Fri 9/8/17	Fri 9/8/17
2		Survey Data Collection (City)	1 mon	Mon 9/18/17	Fri 10/13/17
3		Impounded Sediment Sampling and Testing (current contract)	5 wks	Mon 9/18/17	Fri 10/20/17
4		Geotech Investigation and Report	2 mons	Mon 9/18/17	Fri 11/10/17
5		Design Studies (bridges, stormwater treatment, pavilion)	2 mons	Mon 10/23/17	Fri 12/15/17
6		50% Design (DD)	3 mons	Mon 12/18/17	Fri 3/9/18
7		Review and Comment	3 wks	Mon 3/12/18	Fri 3/30/18
8		90% Design	2 mons	Mon 4/2/18	Fri 5/25/18
9		Review and Comment	3 wks	Mon 5/28/18	Fri 6/15/18
10		99% Design	2 mons	Mon 6/18/18	Fri 8/10/18
11		Review and Comment	3 wks	Mon 8/13/18	Fri 8/31/18
12		100% Design	6 wks	Mon 9/3/18	Fri 10/12/18
13		Permitting (EAW and all permits) - MCWD	7 mons	Mon 2/12/18	Fri 8/24/18
14		Bidding	1 mon	Mon 10/29/18	Fri 11/23/18
15		Phase 1: Construction NTP	6 mons	Mon 12/3/18	Fri 5/17/19
16		Phase 2: Park Structure Construction	6 mons	Mon 4/1/19	Fri 9/13/19
17					



Project: Arden_Final_Design_052
Date: Mon 7/24/17

Task	External Tasks	Manual Task	Finish-only		
Split	External Milestone	Duration-only	Deadline		
Milestone	Inactive Task	Manual Summary Rollup	Progress		
Summary	Inactive Milestone	Manual Summary			
Project Summary	Inactive Summary	Start-only			