

9.1.1.1
Attachment
to Exhibit 1
25 pages

3 Scope of Services

Within this section, we have developed a scope of services work plan, which is descriptive outline and description of each task in accordance with your request. The outlines are based on our understanding of the project as described within the Request for Proposals, including documents as included on the Extranet site as well as our discussions with GCDC-WWS and PM personnel. HRC will strive to provide a service for the various areas that will meet the project deadlines, identified project scope, budget and objectives of the GCDC-WWS. Our scope of services is as outlined below in response to and corresponding to the numbering in your request.

5.0 Design Professional Scope of Services

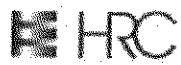
5.01 Project Management

A. Staffing

1. Dennis J. Benoit, P.E., will be the primary contact person and will function as the "Design Project Manager" or "DPM." The DPM will be readily available during normal working hours throughout the course of the project. The DPM is committed to remain as the primary contact throughout the Design, Bid, and Construction phases of this project.
2. Mr. Benoit will be responsible for maintaining HRC's standards of employee competence, conduct, courtesy, appearance, honesty, and integrity and shall be responsible for taking such disciplinary action with respect to any of its employees as may be necessary.
3. Mr. Benoit will provide for adequate supervision at all times during the performance of the services and shall provide the names and telephone numbers and other contact information where other key HRC representatives can be reached.

B. Meetings

1. Meetings will be scheduled in coordination with the PM and may include the entire LHWI project team or may be design contract-specific.
2. Meetings will generally be held at the GCDC-WWS offices.
3. We anticipate the following meetings as part of this project:
 - a. *Kickoff Meeting* - The design process will be initiated by HRC conducting an initial project kickoff meeting with the PM and Owner. The purpose of the meeting will be to review the



project approach, project limits, review previous work, confirm project communication procedures, and establish the final design schedule.

- b. *Design Review Meetings* - HRC shall conduct design review meetings with the PM, Owner and MDEQ (if required) at the 30%, 60%, 90%, and 100% design complete stages. These meetings will include HRC, PM, Owner, and permitting agencies as required.
- c. *Progress and Coordination Meetings* - HRC shall participate in progress or coordination meetings in addition to the kickoff and design review meetings as determined by the PM and Owner. Up to four additional progress meetings, in addition to the kickoff and design review meetings are included in our proposal.
- d. *Pre-bid Meeting* – HRC will participate in a pre-bid meeting for the individual construction contract for the LHPS as part of the bidding process.

4. Deliverables

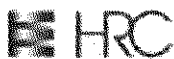
- a. *Agendas* - HRC will be responsible for the preparation and distribution of meeting agenda for the portion of meetings we conduct as related to the LHPS Project. Agenda shall be prepared and distributed at least one day before the meeting in a standard format provided by the PM.
- b. *Meeting Summaries* - HRC will be responsible for preparation and distribution of meeting summaries for any portion of meetings that we attend and conduct related to the LHPS Project. Meeting summaries will document discussions and attendees and will be presented in a standard format provided by PM. Meeting summaries shall be distributed for review no later than one week after a meeting is held.

C. Coordination

- 1. HRC will be responsible for coordinating with other DPs designing adjacent transmission main or facility contracts for connection points, schedule, design and construction details, and other items related to the design of the LHPS Project. It is our understanding that the PM will assist in coordination between various DPs.

D. Communication

- 1. Standards & Requirements
 - a. Project communication will be submitted electronically (generally through the Project Extranet site), with the exception of documents requiring original signatures, such as contracts.
 - b. It is our understanding that a Project Communication Plan will be provided to HRC indicating the contact information within the PM and Owner's team for specific facets of the project. HRC will follow the protocol outlined in the project communication plan.



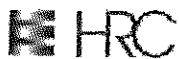
- c. HRC's single point of contact will be Dennis J. Benoit, P.E., who will be the conduit for communication between the HRC team, PM, and the Owner.
2. Project Extranet
 - a. The PM has established a Project Extranet which will be used for the transfer of information for the LHWI project. HRC will primarily utilize the Project Extranet to transfer documents to the PM. Since, we understand that the Owner may not be using the Project Extranet, some supplemental email or other means of file transfer may be provided to the Owner in order to expedite transfer of information. All submittals will be transmitted to the Owner electronically, through other means, as outlined herein.
 - b. Document organization and file naming conventions on the Project Extranet will follow the standards provided by the PM.
 - c. Once documents have been transferred to the Project Extranet, the DP shall notify the PM's point of contact for document control.

E. Administration

All requirements outlined in the RFP will be adhered to.

F. Reporting

1. Standards & Requirements
 - a. Reports will be submitted to the PM and/or Owner in electronic format unless otherwise specified.
 - b. Progress Reporting
 - (1) Weekly Progress Reports will be required to be submitted each Friday throughout the course of the project to the PM in a standard format provided by the PM.
 - (2) Weekly Progress Reports will include a short summary of schedule, accomplishments, and look-ahead, as well as issues or concerns.
 - (3) Monthly Reports including detailed schedule updates, engineering staffing, budget status, and forecast will be required the second Friday of each month in a standard format provided by the PM.
 - (4) Design Progress Reports shall be submitted along with each design progress submittal (30%, 60%, 90%, and 100% design). These narrative reports will include a summary of the design status and outline any critical issues or concerns related to the design. HRC will also complete and submit updates on Engineering Productivity and Deliverables, as outlined in Exhibit 3-0.



c. Informational Reports

- (1) Other reports and technical communications required in the course of the design, such as design reports, calculations, and investigations will be submitted, as required, in a standard format as provided by PM.

2. Deliverables

- a. Weekly and Monthly Progress Reports.
- b. Informational Reports as required.

G. Project Schedule

1. Information Provided

a. PM Overall Schedule

- (1) The PM has developed a detailed project schedule for the overall project as outlined in Exhibit I-E. This schedule shows baseline target dates for each of the LHWI Contracts.
- (2) HRC will execute their scope of work and develop the construction documents in accordance with the overall program schedule.

2. HRC Responsibilities

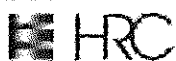
- a. HRC will prepare a schedule for consulting services that meets the requirements described in the Schedule Requirements document as listed in Exhibit 3-e showing by Critical Path Method (CPM) the planned sequence and timing of their scope of work.
- b. The Schedule will be prepared utilizing Primavera Version 6.1 or later, or as approved by the PM.

c. Baseline Consulting Services Schedule

- (1) Following Notice to Proceed, HRC will develop, submit, and review the draft detailed baseline consulting services schedule with PM and Owner which will document HRC's understanding of the Agreement requirements and approach for performing the work.
- (2) HRC will prepare the final detailed baseline consulting services schedule, based on the PM and Owner comments, if any, and submit this schedule to the PM prior to submittal of the first project invoice.

d. Progress Consulting Services Schedule

- (1) HRC will prepare and submit monthly to PM and Owner, for approval, the updated schedule in accordance with the Schedule Guidance Document.
- (2) As the work progresses, HRC shall update the schedule and record actual progress as described in the Schedule Guidance Document.



- (3) The updated schedule submittal shall also include a concise schedule narrative that highlights the following, if appropriate and applicable:
 - (a) Changes in the critical path;
 - (b) Expected schedule changes;
 - (c) Potential delays;
 - (d) Opportunities to expedite the schedule;
 - (e) Coordination issues PM and Owner should be aware of or can assist with; and,
 - (f) Other schedule-related issues.
- (4) If the work accomplished falls behind that schedule due to factors within HRC's control, HRC will take such action as necessary to improve the progress of the work. If required by PM and Owner, HRC will submit a revised schedule demonstrating the proposed plan to make up the delay in schedule progress.
- e. We understand that monthly invoices may not be accepted and processed for payment without approvable monthly schedule updates.

3. Deliverables

a. Primavera CPM Schedule

- (1) Schedule submittals shall be submitted in PDF format and schedule files shall also be submitted in native file format (i.e., file formats associated with the scheduling software).

b. There are three basic elements to schedule submittals:

- (1) **Baseline Schedule:** Initial schedule submitted before work begins that will serve as the baseline for measuring progress and departures from the schedule.
- (2) **Progress Schedule:** Monthly submittal of a progress schedule documenting progress on the project and any changes anticipated.
- (3) **Schedule Narrative:** Concise narrative that highlights changes in the schedule, expected delays, key schedule issues, etc.

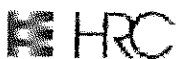
5.02 Site Data and Investigations

A. Verification of Data

1. HRC will be responsible for conducting field checks to verify that the information provided is accurate and up-to-date. HRC will be responsible for conducting supplemental investigations to obtain data information required to complete our design tasks, unless otherwise noted.

B. Owner-Provided Base Files

1. Information gathered for design purposes to date will be provided to HRC.



2. The only CADD Based Files that we have been made aware of include the site plan topographical information as included on the Extranet site. We understand that the information on this topographical survey will need to be verified.

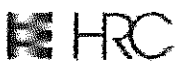
C. Environmental Investigations

1. Owner-Provided Information

- a. We understand that an Environmental Study and report has been developed by the Owner to assist HRC in assessing the impacts to floodplains, wetlands, streams, and county drains and provide direction for required permits.
- b. According to the RFP, the above mentioned report reportedly contains the information below and, as such, we have not included any costs to duplicate these efforts:
 - (1) A summary of regulatory jurisdiction related to floodplains, inland lakes and streams, wetlands, county drains, and threatened and endangered species; A summary of the approach used to identify floodplains, inland lakes and streams, wetlands, county drains, and threatened and endangered species; Design and permitting requirements; Process in which permit application and coordination will be administered for the Project; and, maps depicting the Project area and illustrating the approximate locations of potentially regulated wetlands, floodplains, streams, county drains, and a summary of available data regarding threatened and endangered species.
- c. A copy of the Pre-Permitting Analysis for Inland Lakes and Streams, Floodplains, Wetlands, Drains, and Threatened and Endangered Species report is provided in Exhibit 4-A.

2. Additional Investigations Required

- a. We understand that a Pre-permitting analysis was prepared by the PM based on review of available data, available maps and a "windshield" field survey. Additional, more specific analysis of impact areas may be required during the engineering phase. Additional detailed work such as field delineations, elevation surveys, flooding mapping, inventory of threatened or endangered species, engineering calculations and preparation of necessary permits will need to be completed prior to submission of regulatory permit applications.
- b. HRC will complete a topographic survey to collect in-stream cross sections if required for the water main crossing within the LHPS site and floodplain boundaries within the design corridor on the improved portion of the LHPS site. HRC will also measure the size and elevation of Birch Creek which runs through the site in the vicinity of the proposed water transmission main crossing. It is anticipated that the transmission line will be crossing Birch Creek within the LHPS site just north of Fisher Road prior to connecting with the first transmission main contract. The specific location of the terminus of the water main will need



to be agreed to by the PM and the Owner during the preliminary Design Phase of this project. The type of crossing will be noted. During the survey, HRC will measure the level of sediment in nearby culverts, drains, and storm sewers.

- c. Roadside drainage ditches and storm sewers that are being impacted by this project will be investigated in order to meet local requirements from the Sanilac County Road Commissioner, and/or Worth Township.

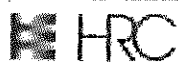
3. Deliverables

- a. During the preliminary design phase, HRC will prepare an impact report summarizing where temporary impacts and permanent impacts will be initially anticipated, as well as where potential impacts were avoided, based on the preliminary design requirements/guidelines. The Owner will review the impact report with HRC and confirm the location of temporary and permanent impacts. HRC will complete a detailed analysis of temporary and permanent impacts and provide design guidelines and calculations to the Owner, which will be consistent with the regulatory requirements. This will include wetland, stream and floodplain mitigation and hydraulic analysis for any regulated crossings, and ongoing coordination with MDEQ and the Sanilac County Drain Commissioner. HRC will complete field reviews, coordinate threatened and endangered species reviews, and will provide the Owner with direction regarding supplements/revisions to the design to minimize the threatened and endangered species impacts. HRC will complete and submit to the Owner final design (including cut and fill calculations) of crossings, wetlands and floodplains within the limits of the project area as mapped in this report. The Owner will review the design to ensure that regulatory requirements and design guidelines are met, and will prepare necessary permit applications related to floodplains, wetlands, streams, drains, and threatened and endangered species. The PM will coordinate and prepare any mitigation requirements that are outside of the project area as illustrated in the Pre-Permitting Analysis for Inland Lakes and Streams, Floodplains, Wetlands, Drains, and Threatened and Endangered Species report (Exhibit 4-A).

D. Topographical Survey and Existing Site Conditions

1. Owner-Provided Information

- a. We understand that the Owner has obtained orthophotography and photogrammetric mapping of portions of the work area and has contracted for the completion of all required survey and survey control work for the project route including horizontal, vertical, and photo control.
- b. Orthophotography has not been indicated to have been previously obtained for the LHPS Project.



- c. The available data, along with pertinent benchmarks, will be provided for DP's use. A copy of the horizontal and vertical control data is provided in Exhibit 4-C.
2. Supplemental Survey Requirements
- a. Additional surveying services to be provided for the LHPS Project by HRC is as follows:
 - (1) Identification and location of below-ground utilities and above-ground utilities if not shown in the mapping provided. This task includes requesting existing utility maps from applicable public and franchise utilities and incorporating this data into the design base files.
 - (2) Identification and mapping of obscure areas which were not mapped during the photogrammetric mapping.
 - (3) Determine the size, type, invert, and any other characteristics of the underground utilities that may impact the design.
 - (4) Determine details via site examination of all structures and other impediments located within the CP limits that will impact the design such as bridges, water courses, etc.
 - (5) Obtain additional information regarding existing conditions for environmental permitting as outlined in Section 5.12, *Permitting*.
3. Additional Underground Information Required
- a. DP is responsible to obtain pertinent information regarding underground utilities, both public and private, that are within the limits of the Work. This information will be incorporated into the 30% design phase documents. A preliminary list of contacts can be found in Appendix A of the Design Standards manual (Exhibit 5-A).
4. Deliverables
- a. Survey information is to be incorporated into design base files.
 - b. Survey must be obtained in accordance with the Survey Standards in Exhibit 4-B.

E. Geotechnical Investigations

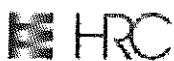
1. Owner-Provided Information
- a. PM has assembled, on behalf of Owner, soil boring information that has been determined to exist within the entire project limits.
 - b. Much of this data was originally obtained during the 1960s. Although this data is now approximately 40 years old, it contains very helpful information related to the subsurface conditions. This includes approximately 250 soil borings.
 - c. The location of the borings will be provided in the base files, as outlined in Exhibit 4-0. In addition to this aged project data, the Owner has contracted to complete a preliminary geotechnical investigation for the Lake Huron Pump Station and Intermediate Pump Station.



The data is provided as background information relevant to the project and has been gathered for the DP's reference and use.

2. Geotechnical Requirements

- a. HRC will be responsible to complete additional geotechnical investigation that is specific to the design and construction of the LHPS project.
- b. Completion of additional geotechnical investigation and testing is essential to provide the necessary design criteria and construction recommendations for each type of construction.
- c. Elements of the design for which additional geotechnical investigations and evaluations are to be conducted include (but are not limited to):
 - (1) Borings, testing, and reported results as required by MDEQ, County Drain Commissioner's Offices, County Road Commission, and other agencies related to improvements within area under their jurisdiction.
 - (2) Borings, testing, and reported results related to bearing capacities of soils and potential settlement concerns for transmission main routes and at proposed pump station sites.
 - (3) All other items included in Section 8.0, Design Recommendations, of Appendix G of the Geotechnical Information provided in Exhibit 4-E.
 - (4) HRC will review existing geotechnical information and determine the need for additional analyses during the initial portion of the design process. We will include the tasks of obtaining the needed additional geotechnical services in the proposal schedule and the development of the professional fee. HRC has proposed the services of Materials Testing Consultants (MTC), who has significant wealth of experience related to the construction of raw water wet wells for water treatment plants, to provide consulting services to supplement the existing geotechnical report already obtained and to provide assistance in designing excavation containment and assistance with determination of a means of specifying the construction techniques to be utilized for the installation of the pump wet well. HRC will enter into an appropriate sub-consultant agreement for said services if this firm is acceptable to GCDC-WWS. HRC will incorporate the details of the timing of the additional investigation into the required project schedule.
 - (5) If MTC obtains additional borings, HRC will obtain and preserve all samples taken during the drilling and deliver the required samples to the Corrosion Protection Consultant within 48 hours if required.
 - (6) We understand that the Corrosion Protection Consultant will utilize this additional data from the new samples and provide HRC with an amended report with design recommendations to incorporate into the design documents.



(7) HRC has included the costs for completing the additional geotechnical investigation in the proposal as an allowance.

3. Deliverables

- a. Any additional geotechnical investigations shall be performed in accordance with the Owner's Geotechnical Investigation Protocol referred to as: *Recommended Minimum Specifications for Soil Borings, Tests, Report and Recommendations*, also included in Exhibit 4-E.

F. Utility Investigations

1. Owner-Provided Information

- a. Existing record drawings have been provided for other areas, but the area around the LHPS site is not specifically included as far as we can see.

2. Requirements

- a. HRC will develop and implement a plan for utility coordination. HRC will provide for communication with the utilities in the project area including notification of the project, requests for facility information, requests for clarifications, transmittal of drawings, and meetings to discuss the project.
- b. Utility coordination will be conducted in consultation with the PM. HRC will send utility requests directly to the utility companies with copies of the requests to PM. We understand that the PM will provide a preliminary utility coordination contact list. HRC will be responsible for taking and distributing meeting notes and incorporating utility information.
- c. HRC will conduct a utility coordination meeting to be held at the approximately 30% design following the completion of basic alignment recommendations to allow involved parties to review and comment on preliminary design drawings.

3. Deliverables

- a. Applicable utilities shall be shown on design base plans and incorporated into detailed design.

5.03 Detailed Design

General

- A. The detailed design process has been divided into discreet submittal milestones of 30%, 60%, 90%, and 100% (Final) Design Complete. HRC will develop required design documents and submit them to PM and Owner for review and comment at each of these milestones.



- B. Each milestone submittal generally requires development of plans and specifications, completion of quality assurance/quality control, and generation of an Engineer's Opinion of Construction Cost and permitting documents.

5.04 30% Design

- A. The development of the design documents for this milestone is crucial to the establishment of the project direction and will include preliminary design.

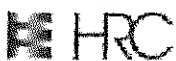
- B. Specific activities and work products from this phase are described below.

C. 30% specific work items include:

1. Develop preliminary design including structures, driveways, and major site element horizontal locations, structure floor, control levels and finished grades for the LHPS.
2. Detailed transmission main alignment within the LHPS site.
3. Identify alignment concerns related to constructability or easement/ROW factors.
4. Identify staging, storage, access, and offsite access corridors.
5. Preliminary site grading drawings.
6. Develop Preliminary Storm Water Pollution Prevention (SWPP) Plan and Grading and Erosion Control Plan where applicable. Conceptualize erosion and sediment control requirements on the construction drawings.
7. Coordinate and review with the PM suggested modifications to the pipe alignment, site layout including, but not limited to, storm water management and route/site drainage and confirm the location of connection with the adjoining transmission main contract.
8. Develop traffic maintenance plans if needed near site driveways.
9. Develop preliminary building floor plans and elevations for all buildings on the site.
10. Coordinate size and location of electrical services.
11. Coordinate structural design concepts for the improvements and confirm wet well caisson size, depth and layout.
12. Coordinate and review with the PM any modifications to the scope of work.
13. Identify additional non-Owner provided specifications needed for elements of the design.

D. 30% Submittal Deliverables

1. HRC will provide and distribute hard copies and electronic copies of plans and specifications to the Owner two weeks in advance of the time needed for comment. HRC will also place the same



electronic copies on the Project Extranet for distribution to the PM and VE Team. Deliverables will be as outlined in Section 5.08.C.a, *30% Design*.

2. A Project Design Report (PDR), as outlined in the Design Standards Manual (Exhibit 5-A), will be prepared. All of the applicable information listed such as standard specifications, Basis of Design, system hydraulics, etc. as listed in the PDR outline will be prepared by HRC.
3. A 30% Design Review Meeting will be conducted to discuss the LHPS Project between the Owner, PM and the Sanilac County Drain Commissioner, Sanilac County Road Commissioner, and MDEQ (as required) in order to solicit input and comments.
4. A 30% Design Review Meeting will be conducted to discuss Owner, PM, VE Team, and MDEQ comments. As a minimum, the HRC DPM will be represented at each of the other 30% Design Review Meetings.

5.05 60% Design

- A. In this phase, HRC will expand on the decisions and concepts developed in the Preliminary 30% Design and achieve a design basis that can be used for the design production without major changes at the conclusion of this phase.

- B. This phase will also include completing and finalizing the preliminary calculations of the previous phase. Structures, equipment, major facility piping, process, and site plans where applicable will all be finalized during this phase to allow final detailing of the same in the next phase of design. Specific activities and work products from this phase are described below.

- C. **60% specific work items include:**
 1. Begin finalizing the design including structures, drives, and major site element horizontal locations, structure floor/control levels and finished grades.
 2. Final transmission main alignment on the site.
 3. Define staging, storage, access, and offsite access corridors.
 4. Prepare site grading drawings.
 5. Further develop the Storm Water Pollution Prevention (SWPP) Plan and Grading and Erosion Control Plan where applicable. Advance the erosion and sediment control requirements for the site.
 6. Coordinate and review with the PM modifications to the previously submitted information on the pipe alignment and site layout, including storm water management and site drainage.
 7. Refine traffic maintenance plans, if required.
 8. Continue to develop and refine building floor plans and elevations.



9. Coordinate and refine size and location of electrical services dependent on information provided by the utility.
10. Coordinate and refine the structural design for the wet well caisson and building improvements.
11. Coordinate and review with the PM modifications to the previously submitted design.
12. Prepare supplemental and additional specifications as required for the elements of the design.

D. 60% Submittal Deliverables:

1. HRC will provide and distribute hard copies and electronic copies of plans and specifications to the Owner allowing a minimum of two weeks for comment. HRC will also place the same electronic copies on the Project Extranet for distribution to the PM and VE Team. The submittal shall include all deliverables outlined above.
2. PDR's will be updated with pertinent data and information developed since the 30% submittal.
3. A 60% Design County Review Meeting will be conducted to discuss the Owner, PM, Sanilac County Drain Commissioner, Sanilac County Road Commissioner, and MDEQ (if required) in order to solicit comments.
4. A 60% Design Review Meeting will be conducted to discuss Owner, PM, VE Team, and MDEQ comments. At a minimum, the HRC DPM will be represented at each of the other 60% Design Review Meetings.

5.06 90% Design

- A. This phase will advance the design detail and more complete specifications than the 60% submittal. This submittal will be an essentially complete design, with the exception of changes to be incorporated based on Owner, PM, and internal reviews.

B. 90% -Specific work items include:

1. 90% Design Meeting -Following the Owner's 60% design review, a meeting will be held to discuss the scope, schedule, and steps that will be taken to complete the 90% design with the Owner and PM. This task also includes preparation time and internal discussions held prior to the meeting.
2. HRC will coordinate with the Owner and PM to incorporate the requirements into the bidding documents.
3. A meeting will be held with the PM and the other DPs to seek uniformity for the CP's bidding documents. It is our assumption that this meeting and the meeting described in Item 1 above will be the same meeting.



4. Following receipt of 90% design comments from the Owner, HRC will meet with the Owner and PM staff to discuss the comments on the design submittal.
5. Staffing Requirements – As part of the 90% submittal review meeting for the LHPS, the Owner, PM, and HRC will review the estimate manpower requirements to operate the new LHPS when it is placed into operation.
6. Operations Review – HRC will provide a review of the proposed improvements that focuses on operation of the facility and discuss the findings during the 90% review meeting.

C. 90% Submittal Deliverables

1. HRC will provide and distribute hard copies and electronic copies of plans and specifications to the Owner allowing two weeks for Owner comment. HRC will also place the same electronic copies on the Project Extranet for distribution to the PM. The submittal shall include all deliverables outlined above.
2. The PDR will be updated with pertinent data and information developed since the 60% submittal.
3. The 90% Design Review Meeting will be conducted to discuss Owner, PM, and MDEQ comments. It is understood that all DPMs will be present for each 90% Design Review Meeting.

5.07 100% (Final Design)

- A. This phase will include development of final documents and specifications for bidding, construction, and permitting.

B. 100% Submittal to Owner

1. HRC will provide copies of plans and specifications for Owner and PM for review purposes and place same documents on the Project Extranet site, allowing two weeks for Owner to comment. The submittal will include all deliverables outlined in Section 5.08.C.d, *100% Complete*.
2. The Final PDR will be submitted.
3. A 100% Final Design Review Meeting will be conducted to discuss the Owner, PM and MDEQ comments and verify that the construction documents are suitable for bidding and construction.
4. Once approved by Owner, HRC will provide eight hard copies of signed and sealed plans and specifications for Owner, PM, and permitting purposes.



5.08 Design Plans and Specifications Requirements

A. Owner-Provided Information

1. The GCDC-WWS has developed project specific design standards for various elements to be designed and constructed as part of this project. Details regarding these standards are outlined in various sections of this RFP. A summary of the available documents is as follows:
 - a. General Design Standards
 - (1) The Design Standards developed by the PM on behalf of the Owner for the project outline a wide spectrum of design criteria for all facets of the project and will be used to the greatest extent possible so that design formats are consistent.
 - (2) The Design Standards supplement the Standard Specifications and Standard Details and serve as a guideline for the DP to prepare required documents, construction drawings. It is understood that specific standards of HRC may be used to supplement the Design Standards as required.
 - b. Standard Specifications
 - (1) The table of contents of the specifications is included in Appendix B of Exhibit 5-A. The complete documents can be retrieved from the Project Extranet site.
 - (2) The standard specifications have been prepared by the Owner and will be used by HRC as appropriate. Revisions and additions to the standard specifications will be completed in accordance with the Design Standard Manual and as follows:
 - (a) HRC will revise the standard specifications, or indicate new information and specification sections that they wish to include in the plans and specifications
 - (b) HRC will submit the proposed revisions and/or new information and specification section to the PM for review and approval prior to including in the final documents.
 - c. Standard Details
 - (1) As with the standard specifications, the Owner has developed standard details that will be utilized for many of the components of the proposed construction.
 - (2) These details will be used in their issued or modified form. Additional details needed to provide the Contractor appropriate guidance for installation of the improvements or for permitting purposes will be developed by HRC as required. The same process outlined above for specification revisions and additions will be followed for revised or additional details.
 - d. Typical Cross Sections for County Road Restoration
Not applicable to this project.



e. CADD Standards

- (1) The CADD Standards document dated December 2012 and as provided in Exhibit 5-C will be followed to the greatest extent possible including graphic accuracy, file naming conventions, level/layer naming standards, standard symbols, text formatting, graphic, and annotative scaling.
- (2) Working drawings prepared by HRC will be in AutoCAD 2012 format; final deliverables to PM from HRC will be in AutoCAD 2013 format.

f. Water Quality

- (1) A technical memo outlining requirements for water quality is included in Exhibit 5-0 and must be incorporated into the DP's design.

g. Electrical Service

- (1) A copy of the electrical service requests outlining the requirements for electrical service are included in Exhibit 5E and will be incorporated into the design.
- (2) Updates shall be provided by the PM to HRC as more details become available.

h. SCADA & Security

- (1) SCADA communication is intended to be fiber optic, but has not yet been finalized.
- (2) A technical memo outlining requirements for SCADA and necessary security measures is included in Exhibit 5-F and will be incorporated into the design.

i. Vulnerability Assessment & Security

- (1) A technical memo outlining the potential vulnerabilities and security requirements for the planned facilities are included in Exhibit 5-G and will be incorporated into the design.

j. Corrosion Protection

(1) Owner-Provided Information

- (a) The services of Corrpro have been retained to provide Corrosion Engineering Services. This includes a detailed technical study of background data and collecting resistivity measurements along the proposed routes of the transmission main. In addition, data has been obtained from the geotechnical work that was previously completed, and will be for that work yet to be completed. Recommendations as to the best cost effective means to protect the improvements to be designed and constructed on behalf of the Owner will be provided as they become available during design. It is recognized that this may have limited applicability on this project due to the relatively limited length of buried transmission main on this project but, in any event, the developed recommendations of Corrpro will be included in the design as applicable.



(2) Corrosion Requirements

(a) HRC will review the recommendations and understand the methods proposed in Exhibit 5-H, communicate concerns and coordinate the design of the transmission main and/or pump stations in accordance with Corpro's recommendations. Any soil samples and geotechnical reports obtained by HRC as a result of additional geotechnical investigations shall be provided to Corpro. It is our understanding that final recommendations for corrosion protection will be provided to HRC as soon as they are available.

k. Surge Analysis

(1) Owner-Provided Information

(a) The services of Foster Wheeler have been retained to provide Surge Protection Engineering Services. Specific recommendations as to the most cost effective means to protect the improvements to be designed and constructed on behalf of the Owner will be provided.

(2) Surge Protection Requirements

(a) HRC will review the recommendations and understand the methods proposed in Exhibit 5-1, communicate concerns and coordinate the design of the LHPS in accordance with Foster Wheeler's recommendations.

B. Design Standards and Specifications Requirements

1. HRC will review all provided standards, guidance and information and incorporate accordingly into design and other documents generated as part of the LHWI project.
2. HRC will indicate if it finds any of the provided standards or requirements to be impracticable and address this with the PM and Owner to jointly determine a solution.

C. Deliverables

1. HRC will make submissions to the Owner and Project Extranet at the following major scheduled milestones as follows:
 - a. 30% Design
 - (1) 30% plans with additional survey data incorporated with detailed transmission main alignment or pump station coordinate placement
 - (2) Identify required supplemental specifications
 - (3) Copy of the report related to the Additional Geotechnical work completed
 - (4) 30% QA/QC completed forms
 - (5) Updated Project Schedule



- (6) 30% Construction Cost Estimate
- (7) Preliminary Design Report (PDR) and the latest Progress Report
- b. 60% Design
 - (1) 60% plans with corresponding complete profiles and details
 - (2) Draft Specifications
 - (3) 60% QA/QC completed forms
 - (4) Updated Project Schedule
 - (5) 60% Construction Cost Estimate
 - (6) Updates to the PDR and the latest Progress Report
- c. 90% Design
 - (1) 90% plans with completed profiles and details
 - (2) Final Review Specifications
 - (3) 90% QA/QC completed forms
 - (4) Updated Project Schedule
 - (5) 90% Construction Cost Estimate
 - (6) Updates to the PDR and the latest Progress Report
- d. 100% Complete
 - (1) 100% plans with final profiles and details. These plans shall include original electronic files (AutoCAD 2013 format), hard copies, and PDFs made directly from the electronic files.
 - (2) Final Specifications, including original electronic files (Microsoft Word format), hard copies, and PDFs made directly from the electronic files.
 - (3) 100% QA/QC completed forms
 - (4) 100% Construction Cost Estimate
 - (5) Final PDR

5.09 Quality Assurance/Quality Control (QA/QC)

A. Requirements

1. Quality Assurance and Quality Control (QA/QC) is a critical component of this project. The PM, on behalf of the Owner, has developed the minimum standards for this element of the services to be provided. Developing a quality deliverable is only one attribute of the QA/QC process. The entire process is a reflection of the mindset of the design teams that complete the tasks on a day-to-day basis. The policy and associated forms are important, but the attitude of the staff of all DPs is also paramount to successful implementation and completion of the process.



B. QA/QC Procedure and Standard Forms

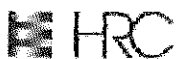
1. To aid in reaching common ground for the entire expanded team members serving the GCDC-WWS, several documents were included in Exhibit 6-A. This includes the following:
 - a. Quality Assurance/Quality Control (QA/QC) Process Review,
 - b. Quality Assurance/Quality Control (QA/QC) Plan Checking Procedure (Appendix A),
 - c. QA/QC checklists for 30%, 60%, 90%, and 100% designs, as well as Addenda and Bulletins (Appendix B).
2. HRC will review and execute the required elements of the QA/QC Plan.
3. Dennis Monsere, P.E., will be HRC's Quality Lead (QL). We understand that the QL is accountable for the successful QA/QA process.

C. Deliverables

1. QA/QC Checklists are required to be submitted with each design progress submittal as evidence that proper reviews and controls have been implemented. The deliverables required for the QA/QC aspects of the project are referenced throughout this document.

5.10 Value Engineering (VE)

- A. HRC intends to provide Ken Melchior, P.E., Senior Associate, as our representative on the VE team.
- B. Mr. Melchior will not be a part of the core HRC design team on this project so he will be in a position to provide an independent evaluation.
- C. We understand that the VE Team will meet prior to the 30% and 60% Design Review Meetings to complete a value engineering analysis of each the proposed designs.
- D. We understand that the components of the VE analysis will include the following:
 1. Develop creative and/or alternative ideas to achieve the same basic function at a lower cost for the proposed design. This shall be achieved by using brainstorming techniques, and shall be accomplished by the VE Team generating and recording all ideas without first evaluating them.
 - a. The list of ideas generated will then be analyzed in terms of cost. Ideas that could add cost to the project or those not considered feasible will be eliminated. The VE Team will then discuss the most viable ideas that would result in cost savings, and develops a list of advantages, disadvantages, and consider the effects of the following:
 - (1) Constructability
 - (2) Energy cost savings



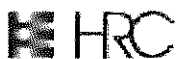
- (3) Effects on the design and construction schedule
 - (4) Maintenance cost savings
 - (5) Environmental impacts
 - (6) Aesthetics
 - (7) Redesign costs
 - (8) Reliability
 - (9) Future expansion
 - (10) Service Life
 - (11) Replacement or repair cost
 - (12) Safety during construction
2. Alternatives remaining after the preliminary analysis shall then be developed to a point where they can be compared with the original "as-designed" system from the standpoint of both cost and feasibility. Operation, maintenance and repair costs shall be evaluated in greater detail during this phase. Detailed calculations will be developed for each viable alternative remaining.
 3. We understand that once the final alternatives have been developed by the VE Team for the LHPS Project, they will be presented to the HRC LHPS Design Team, the Owner and PM during the 30% and 60% Design Review Meetings. The presentation shall include a comprehensive description of the "as-designed system" versus the alternatives developed by the VE Team, including capital costs; operation, maintenance and repair costs; cost savings; advantages and disadvantages of the VE alternative suggestions; technical differences and redesign requirements and costs. The HRC VE representative will also participate in other VE presentations for the entire LHWI project.

E. Owner shall then make the final determination regarding which (if any) of the alternatives suggested by the VE Team will be accepted.

5.11 Cost Estimating

A. Owner-Provided Information

1. The Owner has provided, for informational purposes, a high level Project Cost Estimate. This is a pre-design estimate that reflects the order of magnitude of the project. This estimate is located in Exhibit 6-0.
2. The initial Project Cost Estimate includes assumptions for material pricing, equipment, production rates, and other data utilized to develop the estimate, for informational purposes.



B. Requirements

1. We understand that it is the responsibility of HRC to complete more detailed cost estimates as the design process progresses. Opinion of Construction Cost forms included in Exhibit 6-B will be utilized as a format.
2. These forms will be utilized by HRC to provide the PM and Owner with updated resource-based construction cost estimates at the 30%. More detailed forms will be provided for use by HRC at the 60%, 90%, and 100% complete stages of the design. These later estimates will be in a format consistent with the bid proposal including pay items and unit prices or a schedule of values.
3. As the design detail advances, the estimates also need to be refined and developed at a more in-depth level. HRC will use customized formats in order to provide the Owner with the level of cost opinion correlating with the design detail that has been developed.
4. Estimates will be prepared and checked by staff experienced in developing opinions of cost for the type of work included in each cost opinion.

C. Estimate Approach

1. The resource-based estimate relies on construction labor costs, construction rental equipment costs, and permanent material/equipment and supply costs all of which are incorporated into construction production rates. This effort is an attempt to adopt the Contractor's approach in pricing the work. It also allows DP a good basis for evaluating bids as they are submitted.
2. Labor rates: Should be developed using current local prevailing wage rates.
3. Construction Equipment: Utilize current Blue Book Rental Rates that are area-adjusted.
4. Material Costs: Material and equipment costs are incorporated in the estimate using present costs as determined by soliciting from various materials and equipment manufacturers during the estimating process.
5. Provisional Allowances: These allowances are a standard practice for preparation of heavy civil underground projects in both the public and private sector. They generally identify known conditions or items to be considered that are significant, but indeterminate throughout the engineering and construction procurement phases of a project. They cannot be designated, quantified, or priced ahead of time, but will be dealt with once the construction project is underway. These are items typically not incidental to the Contract.
6. Provisional Allowance items such as regulatory permit fees, utilities being provided by the private utility company, and/or unusual geotechnical considerations.
7. Allowance for Unforeseen Conditions: These allowance items typically are Owner-initiated changes or other necessary contract modifications that may occur after the work is underway.



8. Indirect Costs: These are construction costs that are not included as a specific item of work, but capture the small tools and supplies, Personal Protection Equipment (PPE), unscheduled or unanticipated overtime, insurance, or identified permit costs, as well as project setup costs that are not otherwise identified. A contingency cost of 10% should be assigned to these General Condition (GC) or indirect costs.
9. Overhead & Profit (OH&P): A standard approach of adding not more than 15% for overhead and profit should be reflected on the submittal of each estimate.

D. Deliverables

1. Resource based estimates will conform to the Microsoft Excel format provided and will include the above items.

5.12 Permitting

A. Environmental Permitting Requirements

1. HRC will assist the Owner to obtain the following permits and approvals for the LHPS site:
 - a. Environmental (as required)
 - (1) Floodplains (NREPA Part 31)
 - (2) Inland Lakes and streams (NREPA Part 301)
 - (3) Wetlands (NREPA Part 303)
 - (4) Threatened and Endangered Species (NREPA Part 365)
 - b. Drain Crossings
Not anticipated.
2. The impacted agencies that HRC may interface with would likely include MDEQ, and the Sanilac County Drain Commissioner's office.
3. HRC will coordinate with the PM and Owner to review the list of permits and environmental concerns developed as well as tracking the permit process during design.
4. HRC will provide required information, calculations and quantities, drawings, sketches, and photographs for permitting, as required by the agency having jurisdiction. HRC will submit applicable applications for permits to the appropriate agencies on behalf of the Owner and will pay all applicable fees as part of the permit fee allowance.
5. A copy of the pre-permitting is included in the Pre-Permitting Analysis for Inland Lakes and Streams, Floodplains, Wetlands, Drains, and Threatened and Endangered Species report, located in Exhibit 4-A.



B. General Permitting Requirements

1. The following permits may be required as part of the general permitting process and will be coordinated by HRC:
 - a. Local Roads
 - (1) Sanilac County Road
 - b. Building
 - (1) Worth Township
 - c. Soil Erosion and Sedimentation Control
 - (1) Sanilac County Department of Construction, Soil Erosion and Sedimentation Control Agency
 - d. Michigan Department of Transportation
 - (1) Road Crossings – Davison TSC
 - e. Environmental
 - (1) MDEQ Construction Permit (ACT 399 permit)
 - f. Other Local Agencies Having Jurisdiction
 - (1) Sanilac County Health Department (Septic Tank)
2. HRC will complete the necessary permit application(s) and submit a draft of each application to the PM. PM will complete a cursory review of the application to make sure major elements are present before submitting the draft application to the Owner for review and comment.
3. Once review comments from the Owner have been incorporated into the permit application, HRC will submit the final application to PM. PM will obtain Owner signature and submit signed application to the applicable permitting agency.

C. Deliverables

1. Draft permit applications to PM
2. Final permit applications to PM

5.13 Easements

Not Anticipated



5.14 Material Procurement

A. Requirements

1. It is the Owner's intent to procure portions of the project materials in advance of the standard design-bid-build process. The specific items such as pipe, line valves, air release valves, switchgear, pumps, etc. that will be procured by Owner will be defined during the design process.
2. HRC will be responsible to coordinate the development of the CP's construction documents integrating elements of the Owner-procured items. HRC will be responsible to provide to PM the appropriate quantities and standard specification supplemental documents of identified items.

B. Deliverables

1. Quantities lists and Supplemental Materials Specifications
2. Shop Drawing or Laying Schedule Review

5.15 Bidding Phase

A. Requirements

1. Bidding Questions and Addenda
 - a. HRC will be responsible to provide PM and Owner the following services during this phase of the project:
 - (1) Provide the PM with pertinent information for the Advertisement for Bid.
 - (2) Develop an agenda for PM review and approval and conduct a pre-bid conference the PM and Owner's representatives attending.
 - (3) HRC will receive the Contractor's questions relevant to all CPs. HRC will implement a procedure for receiving and answering perspective bidders' questions and Requests For Information (RFI) and develop appropriate responses. HRC's procedure will include a log of all significant bidders' questions and RFIs and the responses thereto. HRC will solicit feedback from PM when necessary, relevant to furnishing answers back to the Contractors.
 - (4) HRC will prepare any Addendum if/when deemed necessary. PM will review and approve the addendum prior to issuing the document. Owner will distribute the bidding documents and maintain a list of document holders. HRC will attend the bid opening, compile a bid tab, and communicate the numerical results to PM and Owner.
 - (5) HRC will provide the technical interpretation of the contract bid documents and will prepare a response to the Contractor's questions and RFI(s). This response may be in the form of addenda.



(6) HRC will develop the agenda and content of the pre-bid conference with assistance from Owner and PM. The content will highlight project specific requirements for the bidders to use in development of their bids. HRC will also provide technical information at a pre-bid conference. HRC will record the conference minutes or make other provisions for documenting the results of the pre-bid conference and provide all results to PM and Owner.

2. Bid Review and Recommendation

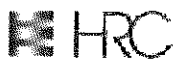
a. HRC will make a recommendation of award to the PM and Owner.

B. Deliverables

1. Pre-Bid meeting agenda, Bid Tabulation and technical interpretations of the plans and specifications.
2. Log of all perspective bidders' questions and answers provided.
3. DP's Award of the Contract recommendation to PM and Owner including qualification checks completed and reasons for making the recommendation.

5.16 Construction Phase (Not Included)

A. We understand that the scope of work for the construction phase will be provided to the Owner and will be outlined at a later date. A corresponding fee will be negotiated at that time.



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