

# HIGHLINE WATER DISTRICT King County, Washington

## RESOLUTION 24-3-6C

### RESOLUTION AUTHORIZING AMENDMENT #1 TO CONTRACT #23-60-06 WITH RH2 ENGINEERING, INC. FOR ADDITIONAL ENGINEERING DESIGN SERVICES RELATING TO PROJECT 23-1 DMTP/PS2 ELECTRICAL UPGRADES AND GENERATOR REPLACEMENT

**WHEREAS**, the District selected RH2 Engineering, Inc. to perform preliminary engineering and design relating to Project 23-1 electrical upgrades at the Des Moines Treatment Plant and Pump Station 2; and,

**WHEREAS**, the District requested an amendment to perform additional engineering design and support services associated with the project; and

**WHEREAS**, the General Manager and Engineering Supervisor reviewed the provided Scope of Work and Fee Estimate submitted by RH2 Engineering, Inc. and recommend approval of this resolution.

**NOW, THEREFORE, BE IT RESOLVED:**

1. The Board of Commissioners authorizes the General Manager or designee to execute Amendment #1 to Contract 23-60-06 with RH2 Engineering for Project 23-1 DMTP/PS2 Electrical Upgrades and Generator Replacement (referenced as Attachment-1 and incorporated herein).
2. The General Manager and/or the District's legal counsel are authorized to make minor changes to the Amendment if required.

**ADOPTED BY THE BOARD OF COMMISSIONERS** of Highline Water District King County, Washington, at an open public meeting held on this **6th** day of **March 2024**.

**BOARD OF COMMISSIONERS**

DocuSigned by:  
*Kathleen Quong-Vermeire*  
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**Kathleen Quong-Vermeire, President**

DocuSigned by:  
*Polly Daigle*  
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**Polly Daigle, Commissioner**

DocuSigned by:  
*Daniel Johnson*  
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**Daniel Johnson, Commissioner**

DocuSigned by:  
*Vince Koester*  
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**Vince Koester, Secretary**

DocuSigned by:  
*Todd Fultz*  
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**Todd Fultz, Commissioner**



**AMENDMENT #1  
CONSULTANT AGREEMENT FOR SERVICES  
RH2 ENGINEERING, INC. – CONTRACT # 23-60-06  
PROJECT 23-1 DMTP/PS2 ELECTRICAL UPGRADES AND GENERATOR REPLACEMENT**

RH2 Engineering, Inc. has requested the following additional compensation to amend the original contract for engineering services (**Exhibit A, B and C** incorporated herein).

Contract Revision Total	\$	111,171.00
Previous Contract Amount	\$	29,650.00
<b>Revised Contract Amount</b>	<b>\$</b>	<b>140,821.00</b>

RH2 Engineering, Inc. will undertake the above-referenced additional work on a time-and-expense basis. The estimated cost for these additional services is \$111,171.00. The previous contract amount was \$29,650.00. The revised contract amount is \$140,821.00. The same standard general terms and conditions will apply as agreed to in Contract #23-60-06 dated 7/19/23.

**Effective Date.** The effective date of this Amendment shall be the date signed by an authorized representative of the District.

**HIGHLINE WATER DISTRICT**

**RH2 ENGINEERING, INC.**

By: \_\_\_\_\_  
Jeremy DelMar  
Title: General Manager  
Date: \_\_\_\_\_

By: \_\_\_\_\_  
Dan Mahlum, PE  
Title: Principal  
Date: \_\_\_\_\_

**EXHIBIT A**  
**Amendment No. 1**  
**Scope of Work**  
**Highline Water District**  
**Des Moines and Angle Lake Well Generator Evaluation**  
**Generator Design**  
February 2024

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## Background

Highline Water District (District) owns and operates two different well facilities: the Des Moines Well and Treatment Plant, and the Angle Lake Well. Both facilities serve a critical role in supplying the District with potable water. The Des Moines Well and Treatment Plant facility includes a well building, treatment building, and booster pump station. All three buildings are served by a shared electrical service. The current standby generator at the Des Moines facility has reached the end of its serviceable lifespan and is undersized to operate the entire facility. The Angle Lake Well does not have an on-site standby generator.

In 2023, the District requested that RH2 Engineering, Inc., (RH2) provide an engineering evaluation of adding a standby generator to the Des Moines Well and Treatment Plant. The evaluation contained various alternatives to integrate a standby generator into the existing facility.

The District has decided to pursue Alternative 2 at the Des Moines Treatment Plant, as outlined in RH2's *Des Moines and Angle Lake Well Generator Evaluation Report (2023)*, and has decided not to pursue the installation of a generator at the Angle Lake Well.

The District has requested RH2 perform engineering services to support installing a permanent standby power generator and electrical service equipment at the Des Moines Treatment Plant, and the pre-procurement of the standby generator, service switchgear, and utility transformer.

*Engineering services for construction contract administration will not be included with this contract. These services may be part of a future contract or contract amendment.*

*Deliverables will be submitted in electronic format (PDF) unless otherwise specified.*

## Task 1 – Project Management and Administration

**Objective:** Manage and coordinate RH2 staff, schedule, budget, and related services for the project.

### Approach:

- 1.1 Manage RH2 Project Team – Manage the RH2 project team to track work elements accomplished, work items planned for the next phase, staff hours, scope changes, time, and budget to complete the Scope of Work. Submit a monthly invoice summarizing costs and remaining budget by task.

- 1.2 Coordinate with District – Communicate issues to the District’s project manager by phone or email as needed. Develop meeting minutes and submit within three (3) days of meetings, site visits, or conference calls.

**RH2 Deliverables:**

- Meeting minutes.
- Monthly invoices.

**Task 2 – Site Investigation, Data Review, and Generator Size Confirmation**

**Objective:** Attend a kick-off meeting and site visit with the District. Review the project information and data and confirm generator sizing previously performed by RH2.

**Approach:**

- 2.1 Attend Kick-Off Meeting – Attend a kick-off meeting with pertinent District staff and key RH2 design team members to review the Scope of Work, schedule, and critical design elements. Prepare meeting agenda and minutes.
- 2.2 Perform Site Visit – Perform one (1) site visit to observe the facilities and electrical systems and collect information for preparation of the design drawings and specifications.
- 2.3 Review Data – Review data, as-built drawings, and other information provided by the District.
- 2.4 Review Previous Evaluation and Confirm Generator Sizing – Review the previous evaluation report prepared by RH2 and confirm the generator sizing for the Des Moines Treatment Plant. Finalize generator load and sizing calculations based on the existing electrical load and determine the generator size. Confirm generator sizing calculations with Cummins PowerSuite manufacturer sizing software. Coordinate with Cummins to determine the physical size of the proposed generator and automatic transfer switch and obtain equipment pricing information. Provide updated generator sizing reports to the District.

**Assumptions:**

- *RH2 will rely on the accuracy and completeness of any data, materials, or information generated or provided by the District or others in relation to this Scope of Work.*

**Provided by District:**

- Attendance at kick-off meeting and site visit.
- As-built drawings of best available information of the existing site, electrical systems, and buildings.
- Copies of utility power bills for each facility for the previous twelve (12) months.
- GIS system information on properties, streets, water piping, storm piping, aerial photographs, and contours.

**RH2 Deliverables:**

- Kick-off meeting agenda and minutes.
- Generator sizing report for each facility.

**Task 3 – Topographic and Boundary Survey**

**Objective:** Coordinate with Surveying and Mapping, LLC, (SAM) as a subconsultant to RH2 to perform and provide a design level detailed topographic survey of the project site as detailed in **Attachment 1**. Coordinate with the District to locate and pothole District utilities (i.e., water, sewer, storm, etc.) for design and planning.

**Approach:**

- 3.1 Coordinate Topographic Survey – Coordinate with SAM to provide horizontal and vertical survey control, topographic, and boundary information for the proposed areas where the generator and electrical service equipment will be installed at the treatment plant. *The survey shall include surface features, underground utilities, topography, roadway and utility alignments, rights-of-way, property lines, and easements within the project area. It is assumed that the District will locate and mark all water, sewer, and stormwater utilities prior to surveying. Survey shall follow the survey requirements outlined in Attachment 1, including 1-foot contour intervals and topographic information.* Review completed survey and perform one (1) site visit to “ground-truth” survey information. Format survey and prepare base site plan for design.
- 3.2 Coordinate Potholing with District – Review records and identify subsurface utilities where additional field investigation and potholing may be required. Coordinate with the District to select pothole locations. Coordinate with the District and the surveyor to pothole selected locations and record the location, depth, and condition of the existing utility line(s). Prepare a utility potholing plan including a table with northing and easting coordinates. *In the event that the District is unavailable to perform the potholing, the District will hire a private company to perform the potholing. The District will be responsible for contacting the One-Call locate service prior to potholing utilities. RH2 is not responsible for site safety, or for determining means and methods or directing any District contractor in their work.*

**Provided by District:**

- Utility locates and potholing of existing District utilities.
- Entry to the project site for SAM to perform topographic survey and RH2 staff to “ground-truth” survey.

**RH2 Deliverables:**

- Boundary and topographic survey and base map drawings.
- Record of survey.
- Utility potholing plan identifying location of utilities and potholing information.

## Task 4 – 90-Percent and Bid-Ready Design

**Objective:** Prepare 90-percent and bid-ready design plans, specifications, and Engineer’s opinion of probable construction costs (OPCC) for the proposed site, structural, and electrical work for the standby generator and electrical service equipment improvements.

**Approach:**

- 4.1 Prepare Site Improvements Design Plans – Develop existing, demolition, and proposed site and utility plans and details, including building setbacks, site grading, and generator concrete pad (including structural calculations). The site design will be based on RH2-provided topographic survey, base map data, and field notes from the initial site visit.
- 4.2 Prepare Pre-Purchase Documents – Develop electrical plans and specifications for the District to pre-purchase long lead items. Long lead items have been identified as the standby generator, pad-mount transformer, and switchboard.
- 4.3 Prepare Electrical Design Plans – Develop electrical plans for the installation of permanent standby generators and electrical service and distribution equipment at the Des Moines Treatment Plant.
- 4.4 Prepare Specifications – Prepare bidding, contract and technical specifications using RH2’s modified Construction Standard Institute format. Prepare specifications for the pre-procurement of the standby generator, service switchgear, and utility transformer either as part of the bid specification package or separately. *If included as part of the bid package, the standby generator, service switchgear, and utility transformer specifications will be incorporated as part of the technical specifications. If the District desires to purchase this equipment separately, the specifications will be prepared as separate equipment purchase specifications.*
- 4.5 Prepare OPCC – Prepare a detailed OPCC for District review at the 90-percent and bid-ready review stages that matches the bid schedule.
- 4.6 Provide Plans and Specifications for District Design Reviews – Submit 90-percent plans and specifications to the District for review. Meet with District staff at the 90-percent design review stage to discuss and review the plans and specifications. Update plans and specifications at the 90-percent review level based on review comments. Prepare bid-ready plans and specifications. *Plans and specifications shall conform to District and state design standards.*
- 4.7 Provide Quality Assurance/Quality Control – Provide quality assurance/quality control (QA/QC) services that shall include a formal, internal QA/QC process, and review of the constructability of the project design and final deliverables. *Internal QA/QC reviews will occur at the 90-percent and bid-ready design stages.*

**Assumptions:**

- Refer to **Exhibit B – Fee Estimate** for an estimate of effort required for design tasks. Revisions due to changes in design criteria will require a Scope of Work and Fee Estimate amendment.

**Highline Water District  
Des Moines and Angle Lake Well Generator Evaluation  
Generator Design**

**Amendment No. 1  
Exhibit A  
Scope of Work**

- *RH2 will not provide permitting support under this Scope of Work. If any permits are required, the District will complete the required permitting and documentation.*

**Provided by District:**

- Attendance at 90-percent design review meeting.
- Markups of 90-percent review documents.

**RH2 Deliverables:**

- 90-percent and bid-ready design plans in electronic PDF format.
- Bid-ready design plans in AutoCAD format.
- Pre-procurement specifications in electronic PDF and Microsoft Word format.
- 90-percent and bid-ready OPCCs in electronic PDF format.
- 90-percent and bid-ready specifications in electronic PDF and Microsoft Word format.
- Hard copies of bid-ready plans and specifications, including, two (2) specifications, two (2) full-size, and five (5) half-size plan sets.

**Task 5 – Services During Bidding**

**Objective:** Assist the District during the bidding phase of the project.

**Approach:**

- 5.1 Attend Pre-Bid Meeting – Attend one (1) pre-bid meeting with the District and potential bidders to review the scope of the construction project and record and respond to any questions.
- 5.2 Respond to Bidder Questions and Prepare Addenda – Respond to contractor and supplier questions that occur during bidding. Prepare up to three (3) addenda based on issues identified during the bidding period.
- 5.3 Review Bids and Recommend Award – Assist the District with reviewing bids and recommending project award to the lowest responsible bidder. Prepare a recommendation of award letter for the District’s use in awarding the construction contract.

**Assumptions:**

- *In the event the District prefers hard copies of bid sets for prospective bidders, these can be prepared by RH2 and provided to the District using RH2’s standard rates and charges (Exhibit C).*
- *It is assumed that the District will pay the plans posting fees directly.*
- *The District will receive all bidder questions and record them for forwarding to RH2 at the District’s discretion.*

**Highline Water District  
Des Moines and Angle Lake Well Generator Evaluation  
Generator Design**

**Amendment No. 1  
Exhibit A  
Scope of Work**

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- *The District will conduct the bid opening and it is assumed that RH2 will not attend. The District will review all other elements of the bid proposals, as they deem appropriate. The District will handle the bid award and construction contract execution.*

**Provided by District:**

- Receive and record questions from bidders.
- Hold the bid opening at the District's Office, verify bids and bid bonds, issue the Notice of Intent to Award, administer any protests and disputes related to the bidding and award, award and process the construction contract, and issue the Notice to Proceed to the contractor.
- Submit bids to RH2 for bid tabulation.

**RH2 Deliverables:**

- Attendance at pre-bid meeting.
- Response to bidder questions transmitted by the District to RH2.
- Up to three (3) addenda.
- Recommendation of award letter.

**Project Schedule**

It is the intent of RH2 to complete the design by Summer 2024. Services in support of permitting and services during construction are not included in this Scope of Work but can be accommodated by an amendment. Construction is planned to commence in Summer 2025 due to the time involved in generator set procurement.



**EXHIBIT B**

Fee Estimate

Amendment No. 1

Highline Water District

Des Moines and Angle Lake Well Generator Evaluation

Feb-24

Description		Total Hours	Total Labor	Total Subconsultant	Total Expense	Total Cost
<b>Task 1</b>	<b>Project Management and Administration</b>	<b>18</b>	<b>\$ 3,948</b>	<b>\$ -</b>	<b>\$ 99</b>	<b>\$ 4,047</b>
1.1	Manage RH2 Project Team	14	\$ 2,912	\$ -	\$ 73	\$ 2,985
1.2	Coordinate with District	4	\$ 1,036	\$ -	\$ 26	\$ 1,062
<b>Task 2</b>	<b>Site Investigation, Data Review, and Generator Size Confirmation</b>	<b>42</b>	<b>\$ 9,556</b>	<b>\$ -</b>	<b>\$ 744</b>	<b>\$ 10,300</b>
2.1	Attend Kick-Off Meeting	12	\$ 2,908	\$ -	\$ 295	\$ 3,203
2.2	Perform Site Visit	12	\$ 2,816	\$ -	\$ 215	\$ 3,031
2.3	Review Data	11	\$ 2,288	\$ -	\$ 140	\$ 2,428
2.4	Review Previous Evaluation and Confirm Generator Sizing	7	\$ 1,544	\$ -	\$ 94	\$ 1,638
<b>Task 3</b>	<b>Topographic and Boundary Survey</b>	<b>12</b>	<b>\$ 2,724</b>	<b>\$ 8,050</b>	<b>\$ 373</b>	<b>\$ 11,147</b>
3.1	Coordinate Topographic	8	\$ 1,816	\$ 8,050	\$ 295	\$ 10,161
3.2	Coordinate Potholing with District	4	\$ 908	\$ -	\$ 78	\$ 986
<b>Task 4</b>	<b>90-Percent and Bid-Ready Design</b>	<b>374</b>	<b>\$ 76,212</b>	<b>\$ -</b>	<b>\$ 5,318</b>	<b>\$ 81,530</b>
4.1	Prepare Site Improvements Design Plans	56	\$ 10,424	\$ -	\$ 1,498	\$ 11,922
4.2	Prepare Prepurchase Documents	56	\$ 11,384	\$ -	\$ 285	\$ 11,669
4.3	Prepare Electrical Design Plans	160	\$ 33,456	\$ -	\$ 2,046	\$ 35,502
4.4	Prepare Specifications	34	\$ 6,216	\$ -	\$ 430	\$ 6,646
4.5	Prepare OPCCs	18	\$ 3,686	\$ -	\$ 312	\$ 3,998
4.6	Provide Plans for District Design Reviews	28	\$ 5,118	\$ -	\$ 598	\$ 5,716
4.7	Provide Quality Assurance/Quality Control	22	\$ 5,928	\$ -	\$ 148	\$ 6,076
<b>Task 5</b>	<b>Services During Bidding</b>	<b>18</b>	<b>\$ 3,722</b>	<b>\$ -</b>	<b>\$ 426</b>	<b>\$ 4,148</b>
5.1	Attend Pre-Bid Meeting	8	\$ 1,488	\$ -	\$ 287	\$ 1,775
5.2	Respond to Bidder Questions and Prepare Addenda	6	\$ 1,344	\$ -	\$ 89	\$ 1,433
5.3	Review Bids and Recommend Award	4	\$ 890	\$ -	\$ 50	\$ 940
<b>PROJECT TOTAL</b>		<b>464</b>	<b>\$ 96,162</b>	<b>\$ 8,050</b>	<b>\$ 6,959</b>	<b>\$ 111,171</b>

<b>EXHIBIT C</b>		
<b>RH2 ENGINEERING, INC.</b>		
<b>2024 SCHEDULE OF RATES AND CHARGES</b>		
<b>RATE LIST</b>	<b>RATE</b>	<b>UNIT</b>
Professional I	\$168	\$/hr
Professional II	\$186	\$/hr
Professional III	\$207	\$/hr
Professional IV	\$227	\$/hr
Professional V	\$245	\$/hr
Professional VI	\$259	\$/hr
Professional VII	\$282	\$/hr
Professional VIII	\$296	\$/hr
Professional IX	\$314	\$/hr
Technician I	\$132	\$/hr
Technician II	\$144	\$/hr
Technician III	\$162	\$/hr
Technician IV	\$177	\$/hr
Technician V	\$193	\$/hr
Technician VI	\$213	\$/hr
Technician VII	\$231	\$/hr
Technician VIII	\$243	\$/hr
Administrative I	\$88	\$/hr
Administrative II	\$103	\$/hr
Administrative III	\$123	\$/hr
Administrative IV	\$144	\$/hr
Administrative V	\$166	\$/hr
CAD/GIS System	\$27.50	\$/hr
CAD Plots - Half Size	\$2.50	price per plot
CAD Plots - Full Size	\$10.00	price per plot
CAD Plots - Large	\$25.00	price per plot
Copies (bw) 8.5" X 11"	\$0.09	price per copy
Copies (bw) 8.5" X 14"	\$0.14	price per copy
Copies (bw) 11" X 17"	\$0.20	price per copy
Copies (color) 8.5" X 11"	\$0.90	price per copy
Copies (color) 8.5" X 14"	\$1.20	price per copy
Copies (color) 11" X 17"	\$2.00	price per copy
Technology Charge	2.50%	% of Direct Labor
Night Work	10.00%	% of Direct Labor
Mileage	\$0.6700	price per mile (or Current IRS Rate)
Subconsultants	15%	Cost +
Outside Services	at cost	

Rates listed are adjusted annually.

## ATTACHMENT 1



February 12, 2024

Orin Paul, PE  
RH2 Engineering, Inc.  
4164 Meridian St, Suite 302  
Bellingham, WA 98226

RE: Highline Water District – Facility Improvements  
Topographic Survey Services

Orin:

Thank you for the opportunity to provide you with this survey proposal on your projects in Des Moines, WA. Per our email conversation, I understand that you wish to have SAM perform a Topographic Survey for this project.

Please find attached a copy of our proposed scope of services that we feel will meet your specified criteria. The Topographic Survey was estimated as \$7,000. We propose to complete this work on a fixed fee basis. If you wish to review or revise these task items, please do not hesitate to contact me at our office.

We plan to sign RH2's Subconsultant Agreement for this project. When we receive these authorized documents, we'll proceed under authorization on this task item.

I look forward to this opportunity to help provide for your successful project. We can be reached by phone at 425-823-5700 extension 316 or by email at [travis.bradley@sam.biz](mailto:travis.bradley@sam.biz)

Regards,

A handwritten signature in black ink, appearing to read 'W. Travis Bradley'.

W Travis Bradley, PLS, CFedS  
Office Manager - Redmond  
encl.

**SAM COMPANIES**

15241 NE 90th Street, Suite 100 Redmond WA 98052  
425-823-5700 Office

**sam.biz**



**Exhibit A – Scope of Work**

**Item 1 –Topographic Survey – Highline Water District**

**This Item Proposes:**

Preparation of a drawing at 1" = 20' scale, unless otherwise specified, detailing the location information and topographic relief depicted as contours at a 1-foot interval, with index contours labeled every 5 feet. This drawing can be delivered in both digital and paper format. Please be advised that the signed and stamped map alone represents the full extent of Axis accuracies and responsibilities.

Obtain ground elevations within the property boundary on an approximate 25-foot grid plus elevations along obvious topographic breaks.

Drawing will be per the standards provided to SAM by RH2 Engineering.

Obtain location of existing structures.

Locate Significant Trees as defined by Municipal Code.

The project area generally includes Street Surface and Utility Improvements at the following locations:

- The Highline Water District Facility located at 1209 S 208<sup>th</sup> St, Des Moines.

Obtain location of the following improvements with elevations:

- a) Edge of asphalt, curbing, sidewalks, buildings, concrete pad corners, fencing, and other surface improvements within the mapping limits.
- b) Catch basins, culverts, sewer manholes, fire hydrants, valve boxes and other utilities which are observable from surface exploration on the property and within mapping limits.
- c) Only sanitary sewer, storm drain and water main trunk lines within the mapping limits. Available as-built utility records for power, telephone, cable TV and natural gas will be interpreted from existing records to assist in determining approximate buried utility locations. Coordination with Highline Water to located underground utilities within their facility.

**This Item Excludes:**

Resolution of discrepancies caused by differing datum use of various regulatory agencies.

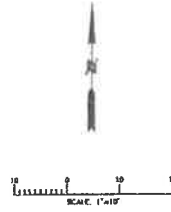
**Underlying Assumptions:**

Fee includes 2 hours of research time evaluating existing survey data (record of survey, section control) which affect the subject property.

**Fixed Fee: \$7,000**

**EXHIBIT B**

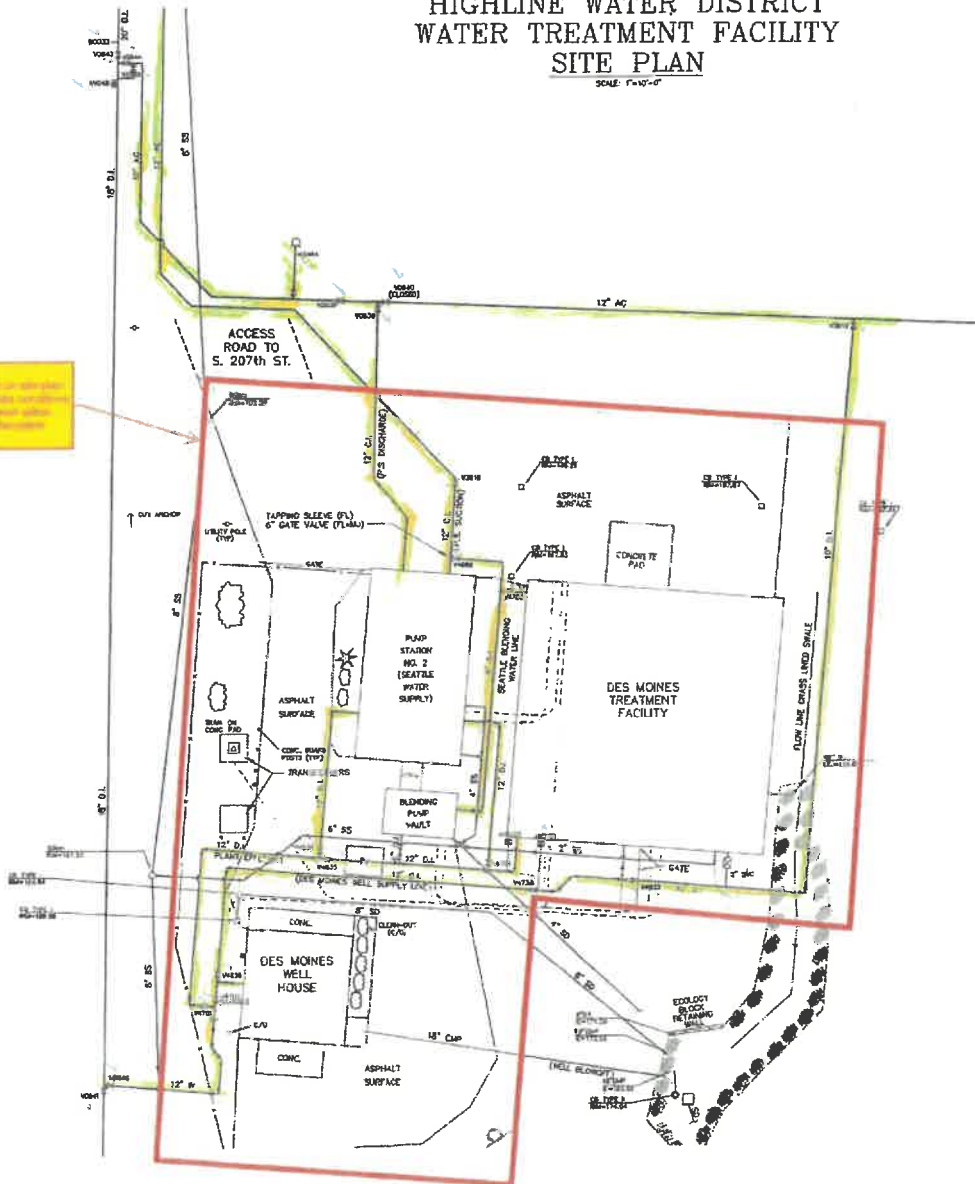
S. 207th St.



**HIGHLINE WATER DISTRICT  
WATER TREATMENT FACILITY  
SITE PLAN**

SCALE: 1"=10'-0"

Access Road to S. 207th St. (Yellow callout box)



RECORD DRAWING

P.O. BOX 3867  
23828 30th Ave. So.  
KENT, WA 98032-3667



TEL: (206) 824-0375  
FAX: (206) 824-0806

## EXHIBIT C

### GENERAL REQUIREMENTS FOR CONTROL AND TOPOGRAPHIC SURVEYS

The general requirements for survey work are as follows.

- On projects in street rights-of-way, establish centerline of right-of-way (baseline). Fully describe and show monuments found and describe points set. Points for missing monuments are to be reset. All monuments are to be tied out. If baselines are used, they must be tied to known property corners or monumented street centerlines. Show bearings and distances between monuments.
- Survey drawings shall be completed using RH2 standard blocks, layers, linetypes and colors, unless otherwise agreed in writing. The attached drawing files (both printed and on disk) include RH2 standard blocks and linetypes we use in our designs.
- Locate all surface features within the proposed survey limits or as shown in the attachment. It will be necessary to collect spot elevations beyond these limits in order to generate contours to the identified limits.
- Surveyor shall install and survey a temporary control point (such as rebar with cap) within every ½-acre or every ¼-mile of roadway or water main alignment of areas surveyed. These points shall be represented by standard nomenclature per APWA standards.
- Show easement limits.
- Identify property lines. Note if corner found or set and describe.
- Some agencies have established vertical and horizontal datum that is to be used for their projects. In this case, use that datum so our work will be compatible with that agency.
- Provide 5-foot major and 1-foot minor contours lines, along with corresponding major contour labels, each on separate layers. Provide all spot elevations and breaklines used to define the surface on separate layers. Provide contour label text on a separate layer at a height of 0.1 inches.
- Provide the surface used to create the contours in native Autodesk Civil 3D or LandXML format. The Civil3D/LandXML surface must be provided in a manner that will allow the Engineer to perform design grading and recreate the contours using the surveyor-provided surface model. In addition, provide a Triangular Irregular Network (TIN) based on surveyed surface points. The TIN shall be comprised of 3-D faces or a polymesh. The TIN shall not be comprised of line or polyline segments. The TIN shall be provided on a separate layer, frozen in the view.
- Provide pipe diameter, type of pipe, and top and invert elevations of storm and sanitary sewer facilities and show direction of flow. Also locate centers of manhole lids and centers of the manhole structures.
- Provide elevations at the top of valve boxes and the top of operating nuts.
- Show tops and toes of all slopes.
- Identify and locate surface features as required to accurately reflect the surveyed topography including, but not limited to:
  - \* Pavement limits, curb and sidewalk;
  - \* Pavement markings (roadway centerline, crosswalks, parking delineation, channelization, etc.);
  - \* Ditches, top and bottom;
  - \* Utilities;
  - \* Fences;
  - \* Structures such as houses, storage building, etc;
  - \* Trees with diameter of 6 inches or greater;

- \* All trees (vegetation shown on the drawing shall accurately portray the extents of the tree and shrub drip lines);
- \* Limits of landscaped areas with nature of landscaping identified (i.e., grass, junipers, etc.);
- \* Vaults; and
- \* Other pertinent topographical features.

### **SUBSURFACE UTILITY DATA**

The accurate depiction of subsurface utility information is critical in the design and construction of the proposed improvements. It is the responsibility of the surveyor to become familiar with the nature and extents of the proposed improvements and to ensure that sufficient ground surveying has been completed that accurately depicts the subsurface utilities that will and may be encountered in the construction of the improvements. In some areas this may require that the surveyor extend the survey limits in order to pick up crossing utilities (i.e. a gravity sewer main that crosses the proposed utility corridor but does not have a manhole within the corridor).

- Locate all subsurface utilities from marks on the surface created by One-Call. Field surveys shall not start until all utility locates have been marked.
- The surveyor shall be responsible for verifying all utilities in the field. It is the responsibility of the surveyor to coordinate with the utility locate companies to confirm all underground utilities.

### **SURVEYOR DRAWING FORMAT**

The following format shall be used for all drawings prepared for RH2 Engineering, unless otherwise agreed upon. Should any of the requirements identified below significantly impact cost, please bring them to the attention of the project manager during the proposal phase.

The survey results shall meet the following criteria.

#### **General**

1. Survey drawing shall be provided in the AutoCAD DWG format (latest version). Preliminary drawings shall be provided via email for review. The final drawing shall be provided in electronic and stamped and sealed hard copies. Provide two printed 22-inch by 34-inch copies of the surveyed area at 1"=20'
3. All blocks, text, linetypes, etc. shall be formatted for the specified drawing plot scale.
4. All entities or objects shall be native AutoCAD objects. No "proxy" objects will be allowed. All objects shall be editable using basic AutoCAD software without the need for third-party add-ons, extensions or object enablers.
5. Drawing shall be cleaned and purged of all extraneous blocks, layers, linetypes, layer filters/states, text styles, etc. not specifically utilized in the development and management of the survey drawing.

#### **Layer, Linetypes and Lineweights**

6. All entities/objects shall be separated into appropriately named layers based on the U.S. National CAD Standard (NCS), or agreed similar standard. Where an object layer is not defined in the NCS, a new layer may be created that adheres to the NCS format. Layers, linetypes and lineweights shall be per APWA/AWWA and NCS guidelines. Layer color shall be RH2 standards, unless otherwise agreed. A description should be included for each layer definition.
7. All entities/objects shall be colored "by-layer," unless otherwise indicated below.
8. All entities/objects shall have a linetype "by-layer," unless otherwise indicated below.
9. Where an alternative standard is allowed, provide a spreadsheet or comma-delimited ASCII file containing all layer names and a description of each layer name. In addition, provide a spreadsheet or comma-delimited ASCII file containing a list of block names and a description of each name.

#### **Linework**

10. All topographic and surface features to be represented by a line shall be drawn as continuous unbroken polylines as much as reasonably obtainable. Do not represent these with numerous short line segments.
11. Contours shall be continuous polylines at the correct elevation with the text label also at the correct elevation.

**Symbology**

12. Use blocks and linetypes to represent surface and subsurface features (i.e. mail boxes, gate valves, poles, signs, etc.). Blocks and linetype symbology shall adhere to APWA/AWWA standards and NCS guidelines.

**Annotations**

13. Drawings shall utilize the RH2 standard text styles as follows. Fonts used for text shall either be native AutoCAD fonts or standard True Type Fonts.
  - a. NOTES text shall be Simplex font, height of 0.10 inched, width of 0.8 inches.
  - b. LABELS text shall be Times New Roman Bold Italic font, height of 0.15 inched, width of 0.8 inches.
  - c. TITLES text shall be Arial Bold font, height of 0.25 inched, width of 1.0 inch.

**Survey Points**

14. Spot elevations shall be marked by blocks inserted at surveyed coordinates (X, Y, and Z) with attributes for point number, description and elevation. The surveyed point shall be represented as a POINT object.
15. Subsurface points such as pipe inverts and valve nuts shall be on a separate layer from points surveyed on the topographic surface. Separate control points and topographic points into different layers.

**Utilities**

16. Utilities shall be drawn as continuous lines or polylines with separate text labels located above the line describing the utility (i.e. size, material, etc.). Utilities shall not be drawn with individual line segments separated by text labels.



**Agenda Item No.:** 5.3

**Agenda Date:** 03/06/24

**Reviewed By:** [Signature]

**Subject:** Authorize Amendment #1 to Contract #23-60-06 with RH2 Engineering, Inc. for additional engineering design services relating to Project 23-1 DMTP/PS2 Electrical Upgrades and Generator Replacement

CATEGORY	
<i>Executive</i>	<input type="checkbox"/>
<i>Administrative</i>	<input type="checkbox"/>
<i>Engineering/Operations</i>	<input checked="" type="checkbox"/>

FINANCIAL						
<i>Expenditures?</i>	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	N/A	<input type="checkbox"/>
<i>Budgeted?</i>	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	N/A	<input type="checkbox"/>
<i>Estimated Amount:</i>				\$	<u>111,171.00</u>	
						<small>Excludes sales tax</small>

**ATTACHMENTS:**

1. Resolution 24-3-6C
2. Attachment - 1: Amendment #1

**COMMENTS:**

The District requested RH2 Engineering, Inc. submit a Scope of Work and Fee Estimate proposal for additional engineering services.

The General Manager and Engineering Supervisor have reviewed the February 2024 Scope of Work and Fee Estimate and recommend approval of this resolution.