

AMENDMENT NUMBER 02 TO
AGREEMENT FOR PROFESSIONAL SERVICES
BETWEEN
GREELEY AND HANSEN LLC
AND
THE CITY OF ANN ARBOR

The City of Ann Arbor, a Michigan municipal corporation, with offices at 100 N. Fifth Avenue, Ann Arbor, Michigan 48107-8647 ("City") and Greeley and Hansen LLC, a Limited Liability Company with its office at 100 South Wacker Drive, Suite 1400, Chicago, Illinois 60606-4004 ("Consultant") agree to amend the professional services agreement for construction engineering services for the Residuals Handling Improvements Project executed by the parties dated February 19, 2009 and amended November 21, 2011, as follows:

- 1) **EXHIBIT A, SCOPE OF SERVICES**, is amended to add additional services as specified in the attached **EXHIBIT A-2**.

- 2) **Article IV.A., COMPENSATION OF CONSULTANT** is amended to add the following:

The Consultant shall be paid for providing the additional services specified in the attached **EXHIBIT A-2** on the basis of time spent and materials used at the rates and prices specified in attached **EXHIBIT B-2** for the professional service agreement for construction engineering services for the Residuals Handling Improvements Project executed by the parties dated February 19, 2009 and amended November 21, 2011. The additional fee to be paid the Consultant for the additional services specified in **EXHIBIT A-2** shall not exceed \$304,940.

All terms, conditions, and provisions of the original agreement between the parties executed February 19, 2009 and amended November 21, 2011, unless specifically amended above, are to apply to this amendment and are made a part of this amendment as though expressly rewritten, incorporated, and included herein.

This amendment to the agreement between the parties shall be binding on the heirs, successors and assigns of the parties.

Dated this _____, 2012.

For Consultant

By _____
Paul J. Vogel, P.E., Principal

For City of Ann Arbor

By _____
John Heiftje, Mayor

By _____
Jacqueline Beaudry, City Clerk

Approved as to form and content

Stephen K. Postema, City Attorney

Approved as to substance

Steven D. Powers, City Administrator

Craig Hupy, Interim Public Services
Administrator

EXHIBIT A-2

Scope of Services

Amendment No. 02, Exhibit A-2 Residuals Handling Improvements Project

PROJECT TASKS

Item A1: Submittal Coordination

Additional submittal review effort for the timely coordination of shop drawing review associated with project work changes and to meet the Contractor's construction progress milestones. Equipment associated with the additional review effort includes the following:

- Owner requested Sludge Holding Tank mixers
- Owner requested Gravity Thickener scum baffle curtain
- Owner requested New Truck Loading Facility loading bay PICS computer monitor
- Owner requested centrifuge cake chute access panel and truck load out hopper chute modifications
- Review of contractor's revised terrazzo application procedures and associated materials occurred due to concrete moisture and bonding issues before and during installation
- Additional review effort was performed associated with structural steel for new pug mill covers, monorail switches, and odor control equipment mezzanine for the following reasons:
 - Additional shop drawing coordination and design review was required to properly support the covers of the pug mills from the mezzanine structural steel rather than from the pug mill equipment. The pug mill equipment uses load cells to monitor the weight of solids contained within it, therefore the removable covers could not be supported on the equipment as the changes in weight would negatively impact the process.
 - Installation of improved monorail system required additional coordination efforts during the shop drawing review to confirm adequate structural support for the monorail switches.
 - The structural steel supporting the walkways around the Odor Control Units required field modifications to avoid a conflict between the FRP duct work and the cross bracing of the walkway.
- Review effort for owner requested additional thickened biosolids piping, valves and metering within the Solids Handling Building. Additional review effort for owner requested hose bibs in the Mezzanine area and modifications to the New Truck Loading Facility roof drains.
- Additional review efforts (conference calls and pre-submittal reviews) associated HVAC equipment and controls for training and Operations and Maintenance materials to assist contractor in meeting schedule milestones for heating season.
- Additional review efforts (conference calls and pre-submittal reviews) associated with the short circuit and protective device study to ensure that the calculations being performed properly reflected the actual electrical system on site.
- Elevator inspection-related modifications associated with code requirements and inspector interpretation. These changes included additional roof walkway and lighting, modifications to roof parapet, Machine Room roof scupper and water unit heater piping revisions, and louver and duct relocation from elevator shaft.

Item A3: Prepare As-Builts

Additional effort will be required to incorporate some project changes identified in approved Change Order Nos. 1-9 into as-built drawings of completed project. Some changes during construction will not be incorporated into the Contractor's as-builts, such as architectural modifications to parapets and roof scuppers, and need to be field verified and incorporated into the final as-builts by the Engineer.

Item A4: Change Order Proposals, Work Change Directives and Supplemental Drawings

Additional Change Order Proposals, Work Change Directives and Supplemental Drawings were prepared which resulted from coordination with the ongoing Facilities Renovation Project design, determination of the need to replace or modify existing equipment and piping based on access afforded by construction activities, code-related modifications resulting from inspection of new elevator, adjustments and additions to improve access and operability of new equipment and systems and as directed by the City. These include the following:

- Owner requested separation of lighting circuits provides night and security lighting within the Solids Handling Building to allow for safe egress from the building during normal operations and minimizes energy usage associated with lighting.
- Owner requested relocation and installation of existing antenna wire to be placed into rigid conduit to protect it from accidental damage thereby providing a more reliable lift station radio system and the existing wireless PICS communication network system.
- Owner requested new Sludge Holding Tank Mixers to replace mixers which are beyond repair.
- Owner requested modifications to the Gravity Thickener odor control curtain to minimize blinding of the weirs and design of density baffle plates to limit the possible circumvention of the gravity thickener scum baffles.
- Elevator inspection-related modifications associated with code requirements and inspector interpretation. These changes included additional roof walkway and lighting, modifications to roof parapet, Machine Room roof scupper and water unit heater piping revisions, and louver and duct relocation from elevator shaft.
- Owner requested New Truck Loading Facility user interface for monitoring of liquid and cake sludge quantities during offloading.
- Owner requested additional thickened sludge plug valves to allow transfer of sludge from thickening equipment directly to Sludge Holding Tanks.
- Owner requested additional primary sludge meter design to aid in the monitoring of sludge blending in the Sludge Holding Tanks.
- Provisions to facilitate additional gravity drainage of the temporary building drain piping prior to the permanent building drain connection to the plant headworks under the Facilities Renovation project.
- Owner requested hose bibs at the mezzanine for seasonal wash down of dewatering facilities.
- Valves and piping for tie-in of scum and sump pump piping from the Gravity Thickener Building to the Gravity Thickener overflow piping as pre-coordination for Facilities Renovations project.
- Owner requested addition of a passage door from the Centrifuge Room to the New Truck Loading Facility roof for easier access to the new Lime Silos.

- Owner requested re-routing of the New Truck Loading Facility roof drains to connect into existing roof leaders.
- Owner requested modifications to the Cake Storage Hopper chutes to improve truck loading,
- Owner requested addition of an access panel to the centrifuge cake chutes.
- Owner requested additional welding receptacles including twenty-two receptacles powered from a new 480V distribution panel feed from MCC 54 in Electrical Room #3 on the third floor of the Solids Handling Building.
- Addition of a 120V power panel to provide new power source for existing lime slaker equipment and electrical receptacles in the dewatering polymer dilution unit areas for operational maintenance use. The 120V control power associated with the existing lime slaker equipment was not included in the original contract drawings. The Owner requested the addition of 120V power receptacles at the polymer areas for the GBT and Centrifuge equipment to assist with maintenance. Both of these items led to the addition of a new 120V power panel to feed the receptacles and existing equipment and also provides spares for future use.
- Owner requested addition of PEW isolation valve and harnessing on existing PEW piping to simplify isolation of the Solids Handling Building during future PEW system tie-ins,
- Owner requested ECST area modifications to include additional workspace partitions in the ECST office area and installation of a passage door to the restroom and shower from the ECST office area. Revisions to the office area layout required additional power and communication receptacles which will provide options for future revisions and additional office space.
- Evaluation of greater than anticipated quantity of Contractor's change estimates.

Item A5: Submittals Other Than Shop Drawings

Additional effort for review of Contractor's construction progress schedules and requests/claims for time extension beyond the revised Contract Final Completion date of September 2, 2011.

Item C1: Resident Engineer

Additional effort by Greeley and Hansen to respond to administrative inquiries from the Contractor relative to interpretation of the drawings and specifications and other matters concerning construction for the Residuals Handling Improvements project. Additional coordination efforts were required with both plant and contractor personnel due to the complexity of the construction project occurring within the existing and operating Solids Handling Facility. Additional Engineering services were also performed to assist with ongoing training and troubleshooting of new equipment during the operational changes from dewatering to land application seasons. Due to the complexity of the project, direct coordination efforts between the engineer and major subcontractors were required to ensure the operational needs of the plant were met during shutdown situations while necessary construction activities could be completed in the most time efficient manner. These additional efforts have included assisting and supporting the Contractor with regard to processing submittals, preparation of the construction progress schedule, coordination of shutdown requests, anticipation of construction coordination challenges, preparation and response to Contractor's letters regarding extension of time and coordination of construction activities to meet project milestones. The contract change for the replacement of the Sludge Holding Tank mixers resulted in an estimate of 3- to 4- month additional on-site construction engineering services to be performed during the construction

phase of this change request. This change extends the resident engineering services task by two months until July 1, 2012.

Item C3: Administrative Assistant

The original on-site duration for the Administrative Assistant position was 24 months to perform field inspection, record keeping, and certification of materials and photographic and video documentation of work. The Administrative Assistance was brought on-site 2 months earlier than originally scheduled and kept on site 9 months longer than the original duration due to the complexity of maintaining on-going plant operations during construction. It is anticipated that the Administrative Assistant will be on-site a total of 35 months (May 2009 through March 2012). This task was amended under Amendment 1 to include an addition of 5 months. This amendment is for 4 months which allows for incorporation of the remaining approved submittals to be input to the file management and retrieval system. As a result of the segmented submittal and approval process of the shop drawings, additional paperwork was generated which needed to be sorted prior to incorporation into the document management system.

Item D1: Programming Assistance

Greeley and Hansen is continuing to provide support to Plant Staff with integration of the controls for the new facilities into the City's Plant Information and Control System. Assistance includes determination of necessary data points and guidance on historical and trending analysis to include on operator interfaces for new facilities.

Item D4: Electrical and Thermal Evaluation

Perform evaluation of opportunities for electrical and thermal savings through modifications to HVAC system operations, monitoring and controls of lighting and return air ductwork. The WWTP's 2010 and 2011 electric and natural gas utility usage data will be used to analyze potential electrical utility savings for lighting control and ventilation control alternatives. A simple thermal model will be developed to analyze potential natural gas utility savings through retrofit of return air ductwork. Results of evaluation will be provided in a technical memorandum and reviewed with the City.

The following activities will be performed:

Lighting Energy Usage:

- Review design calculations and measured kilowatt data for each of the lighting panels serving the lighting contactors for the lighting in the Solids Handling Building.
- Ann Arbor ECST's will perform and provide the actual kilowatt data for the lighting at different stages such as all lights on and only the night/safety lights on etc. Greeley and Hansen will provide detailed instructions of the conditions for the testing and measurements to be taken.
- Greeley and Hansen will provide a written letter report documenting the findings of the lighting electrical usage measurements, propose three lighting control alternatives (such as methods to monitor the electrical usage in the future locally and through PICS, remote control of the lighting through PICS etc.).

- The letter report will include budgetary estimates of engineering design fees and a budgetary estimate for construction/implementation of the identified options.

Heating and Ventilation Energy Usage:

- Review design in conjunction with recent energy bills to determine viable options for decreases in energy usage, both natural gas and electricity.
- Greeley and Hansen will prepare a letter report documentation results of the investigation and identifying three options to reduce energy costs including. Potential options may include possible use of VFDs on the ventilation system and the possibility of using recycled air rather than 100% outside air for different air handling units serving specific area within the Solids Handling Building.
- The letter report will include budgetary estimates for engineering fees to perform a detailed design as well as a budgetary estimate of the construction costs associated with each option.

EXHIBIT B-2

Fee Schedule

Task Hours and Fees

**Amendment No. 02, Exhibit B-2
Residuals Handling Improvements Project**

TASK	Principal	Project Manager	Senior Engineer	Resident Engineer	Project Engineer	CADD Designer	TOTAL HOURS	TOTAL COSTS
A1 Submittal Coordination Issues	10	20	30	0	80	0	140	\$19,950
A3 Prepare As-Builts	0	0	0	0	0	240	240	\$24,000
A4 Change Proposals, Work Change Directives and Supplemental Drawings	40	135	186	0	267	141	769	\$109,025
A5 Submittals Other Than Shop Drawings	15	50	0	0	25	0	90	\$15,020
C1 Resident Engineer	0	0	0	200	0	0	200	\$33,000
C3 Administrative Assistant	0	0	0	0	715	0	715	\$78,650
D1 Programming Assistance	0	15	75	0	0	0	90	\$15,690
D4 Electrical and Thermal Evaluation	0	5	50	0	0	0	55	\$9,605
Task Hours Total	65	225	341	200	1087	381	2,299	---
Hourly Billing Rate	\$248	\$171	\$175	\$165	\$110	\$100	---	---
Subtotal Costs	\$16,120	\$38,475	\$59,675	\$33,000	\$119,570	\$38,100	---	\$304,940