AMENDMENT NO. 2 TO AGREEMENT

Project: Rushmore Plaza Civic Center Arena Expansion Project #2452

Background Data: Original Contract Date: 6/13/18
Owner: City of Rapid City
Consultant: FMG, Inc.

Nature of Amendment: Construction Testing for RPCC Arena Expansion

Current Contract Amount: $47,250.00 (topo survey and geo-tech)
Change Requested: $387,483.00 (construction testing)
New Contract Amount: $434,733.00

Owner and Contractor hereby agree to modify the above referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect. The effective date of this Amendment is:

December 17, 2019.

CITY OF RAPID CITY
By: ____________________________
   Steve Allender, Mayor
Date: __________________________

ENGINEER
By: ____________________________
   Alex Fisher, FMG Engineering Inc.
Date: __________________________

ATTEST:
By: ____________________________
   Pauline Sumption, Finance Officer
Date: __________________________
September 23, 2019

Mr. Rod Johnson  
City of Rapid City  
300 6th Street  
Rapid City, South Dakota 57701

Re: Proposal for Construction Testing Services  
Rushmore Plaza Civic Center Arena Expansion

Dear Mr. Johnson:

Thank you for this opportunity to provide a proposal for construction period services for the referenced project.

We have reviewed the plans and specifications available at this time and have developed the following scope of work. The scope of work outlined herein encompasses the general tasks required for both Bid Package 1 (Site Infrastructure, Grading and Foundations) and Bid Package 2 (Superstructure).

**TASK 1 – Special Inspection of Deep Foundation Elements**

Per the project specifications, FMG will provide a full-time field technician or geotechnical engineer to observe and document the driven piles for the arena and the drilled piers for the Central Utility Plant.

**Assumptions**
- Prior to pile driving FMG will document the condition of all structures within 600 ft. of pile driving operations with photographs and video.
- We assume the inspection of the driven piles will require the full-time presence of an FMG field technician for approximately 7 weeks.
- We assume the inspection of the drilled piers will require full-time presence of and FMG field technician for approximately 10 days.
- Dynamic Pile Analysis will be performed on test piles and on 10% of production piles.
- FMG will conduct vibration monitoring as needed while piles are being driven.
- All pile splice welds will be visually inspected by a Certified Weld Inspector (CWI) and ultrasonic testing will be performed.
- A written report will be issued to document the driven pile inspections.

**TASK 2 – Earthwork Testing**

We have assumed our field technician will make multiple site visits to perform density tests on the earthwork using a Troxler nuclear density gauge. There will also be soil laboratory testing such as moisture-density relationships (proctor), and laboratory testing on any proposed engineered fill material with compliance specifications.
Assumptions:
- Earthwork testing will include trench backfill, retaining wall backfill, foundation backfill, and floor slab subgrade/engineered fill.
- Moisture density relationships in accordance with current ASTM standards will be prepared for all different material types. General compliance testing (Atterberg limits, gradations, etc.,) will be performed as required in accordance with applicable ASTM standards and project specifications.
- All laboratory testing will be performed at the materials lab of FMG in Rapid City.
- A written testing report will be issued to document the earthwork testing.

**TASK 3 – Special Inspection and Testing of Concrete Construction**

We have assumed our field technician will make multiple site visits to perform slump, air and temperature testing of the fresh concrete placed at the site. The field technician would also cast one set of test cylinders for each specified concrete placement volume. The technician would also inspect the reinforcing steel as necessary prior to each pour. FMG will work with the project team to ensure the most critical structural concrete elements are tested within the available concrete testing budget.

Assumptions
- Cast cylinders will be stored on site in clearly marked, protective foam lined containers for a period of approximately 24 hours before transport to the FMG laboratory in Rapid City.
- After transport the cylinders will be logged in and placed in a curing room until compressive strength testing is performed.
- We anticipate performing tests at 7 days and 28 days, with one cylinder held in reserve.
- Testing reports will be prepared after each strength test is complete.

**TASK 4 – Grout Testing**

We have assumed our field technician will make multiple site visits to cast compressive strength specimens for the non-shrink grout placed at the site.

Assumptions:
- We have assumed that a set of compressive strength specimens will be performed for each critical grout placement. FMG will work with the project team to ensure the most critical grout placements are tested within the available grout testing budget.
- Cast specimens will be stored on site in clearly marked, protective foam lined containers for a period of approximately 24 hours before transport to the FMG laboratory in Rapid City.
- After transport the specimens will be logged in and placed in a curing room until compressive strength testing is performed.
- We anticipate performing compressive strength tests at 7 days and 28 days.
- Testing reports will be prepared immediately after each strength test is complete.

**TASK 5 – Asphalt Testing**

Field density testing would be performed using a Troxler nuclear density gauge on the new asphalt pavement during placement operations.
Assumptions:
- Assumed density tests on each lift of new asphalt pavement.
- Assumed contractor would provide Rice Density information to calculate in-place density of new asphalt pavement.

TASK 6 – Masonry Observation and Inspection

Periodic inspections of the masonry construction will be conducted. These inspections will verify all masonry elements are constructed per the plans and specifications. Inspections will include verifying the location and size on reinforcing steel as well as testing the masonry grout for compressive strength. Our field technician would cast one set of test specimens for compressive strength testing. Masonry grout will also be tested for slump and temperature at the same time the test specimens are cast.

Assumptions
- We have assumed that a set of compressive strength specimens will be performed for each critical grout placement.
- Cast specimens will be stored on site in clearly marked, protective foam lined containers for a period of approximately 24 hours before transport to the FMG laboratory in Rapid City.
- After transport the specimens will be logged in and placed in a curing room until compressive strength testing is performed.
- We anticipate performing compressive strength tests at 7 days and 28 days.
- Testing reports will be prepared immediately after each strength test is complete.

TASK 7 – High-Strength Bolted Connection Observation

Bolted connections will be observed to determine that the bolts, washers and nuts are in place for each of the bolted connections, and that the connection has been tightened.

Assumptions:
- We anticipate multiple bolted connections can be observed during a single site visit to minimize trips to the site.
- FMG will work with the project team to ensure the most critical bolted connections are tested within the available testing budget.

TASK 8 – Observation of Structural Steel Framing Field Welds

A CWI will be retained to visually check and test all field welds on the structural members per the plans and specifications.

Assumptions:
- FMG will work with the project team to ensure the most critical bolted connections are tested within the available testing budget.
- We have assumed that visual inspections of the field welds by a CWI will be sufficient; no Non-Destructive Testing (NDT) will be required.
**TASK 9 – Observation of Steel Deck Welds, Side Lap Fasteners and Shear Studs**

As required by the structural plans and specifications, FMG will check the steel decking to determine if the welds, shear studs, and side lap fasteners are in place at the specified frequency.

**Assumptions:**
- FMG will work with the project team to ensure the most components are tested within the available testing budget.

**TASK 10 – Construction Period Geotechnical Engineer of Record Services**

This task includes the scope of services required to fulfill our role as the project Geotechnical Engineer of Record during construction. This scope includes but is not necessarily limited to:

- Geotechnical submittal reviews.
- Assistance with interpretation and implementation of geotechnical project requirements during construction.
- Supplementary geotechnical recommendations and design changes as unforeseen conditions arise during construction.
- Attendance at progress meetings as necessary during geotechnically critical construction phases.
- Project management and review of testing results to ensure conformance with geotechnical recommendations.

Geotechnical Engineering services during construction are a crucial component of a successful project. As the Geotechnical Engineer of Record, our responsibility is to ensure the project is constructed in accordance with the geotechnical design parameters and construction criteria provided in our report.

**Summary**

FMG will assign a Project Manager who will act as the primary client contact, coordinate and direct the primary project tasks, interface with the internal project engineers and technicians, attend meetings and interface with other primary project consultants, maintain the project information, and oversee the project schedule and budget.

The Senior Materials Technician and Materials Technicians will be responsible for the primary field and laboratory work execution, analysis and coordination, and final report production.

For this project the primary project team is anticipated to be as follows:

- **Project Manager:** Alex Fisher, PE, GE
- **Project Engineer:** Jason Hinds, PE
- **Project Senior Materials Technician:** Kyle Jacobson

Specific resume’s and related project experience for these individuals can be provided upon request.
Estimated Fees

Please find our estimate of the construction testing costs for this project and the scope of work outlined herein. Due to necessary assumptions and interpretations of project duration, contractor approach to project sequencing and the project specifications available at this time, the actual testing costs may ultimately vary from this estimate. The fees listed below may not cover the strictest interpretations of the current version of plans and specifications; however, FMG will work diligently with the project team to ensure the most critical components of the project are inspected, tested and documented within the estimated budget. If necessary, FMG would request that the project budget be adjusted to provide any additional testing requested or required by the project team.

<table>
<thead>
<tr>
<th>Task</th>
<th>Estimated Fee</th>
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<tbody>
<tr>
<td>Task 1 – Special Inspection and Testing of Deep Foundation Elements</td>
<td>$129,814.00</td>
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<tr>
<td>Task 2 – Earthwork Testing</td>
<td>$47,270.00</td>
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<tr>
<td>Task 3 – Special Inspection and Testing of Concrete Construction</td>
<td>$67,235.00</td>
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<td>Task 4 – Grout Testing</td>
<td>$4,300.00</td>
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<td>Task 5 – Asphalt Testing</td>
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<td>Task 6 – Masonry Observation and Inspection</td>
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<td>Task 7 – High Strength Bolted Connection Inspection</td>
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<td>Task 8 – Observation and Testing of Structural Steel Framing Welds</td>
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<td>Task 9 – Observation of Steel Deck Welds, Side Lap Fasteners, and Shear Studs</td>
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<td>Task 10 – Construction Period Geotechnical Engineering Services</td>
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<td>Task 11 – Expendables and Mileage</td>
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Estimated Total* .................................................................................. $387,483.00

*Applicable tax and reimbursables are not included in estimate.

If contracted, we will not exceed this estimate without prior authorization. We propose to complete the scope of work outlined herein on an hourly basis per the attached fee schedule.

If you have any questions, or desire any additional information, please call us at your earliest convenience. Thank you for the opportunity to be of continued service on this exciting project.

Sincerely,

FMG Engineering

Alex Fisher, PE, GE

Enclosure

C: Z:\180642 CORC-Bushmore Plaza CC Arena Expansion\Proposals
EXHIBIT A

FMG ENGINEERING
2019 RATE SCHEDULE
FOR
Rushmore Plaza Civic Center Arena
Expansion
Construction Testing Services

<table>
<thead>
<tr>
<th>Personnel</th>
<th>Rate</th>
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<tbody>
<tr>
<td>Principal Civil Engineer</td>
<td>$156.00/hr</td>
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<tr>
<td>Senior Geotechnical Engineer</td>
<td>$135.00/hr</td>
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<tr>
<td>Senior Civil Engineer</td>
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<td>Senior Materials Specialist</td>
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<td>Materials Technician</td>
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<td>Senior Administrative Assistant</td>
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<tr>
<th>VEHICLES &amp; EXPENSES</th>
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<tbody>
<tr>
<td>Mobilization (support vehicle)</td>
<td>$0.70/mile</td>
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<tr>
<td>Travel Costs - air, lodging, transport, meals, etc.</td>
<td>cost</td>
</tr>
<tr>
<td>Document/Plans Reproduction</td>
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