BEFORE THE METRO CONTRACT REVIEW BOARD

| | | |
|---|---|---|
| FOR THE PURPOSE OF APPROVING AN AMENDMENT TO A CONTRACT FOR GEOTECHNICAL SERVICES FOR THE NEW ELEPHANT HABITAT PROJECT AT THE OREGON ZOO | ) ) ) ) ) | RESOLUTION NO. 12-4351<br><br>Introduced by Chief Operating Officer Martha Bennett |

WHEREAS, on December 19, 2011, Metro entered into a personal services agreement with Shannon & Wilson, Inc. (S&W) in the amount of $100,000, to provide geotechnical engineering services for the New Elephant Habitat and Related Infrastructure project at the Oregon Zoo; and

WHEREAS, due to unanticipated subsurface conditions requiring further investigation and study, Metro subsequently amended the S&W agreement to obtain additional services under the contract in the amount of $72,891, for a total current contract value of $172,891; and

WHEREAS, to pro-actively manage geotechnical risks as the New Elephant Habitat and Related Infrastructure project progresses, more subsurface investigation, lab testing, and design support will be necessary to support the project through completion, and an amendment to the S&W contract will be required, in the amount of $102,929, as set forth in the attached Exhibit A; and

WHEREAS, pursuant to Metro Code 2.04.046(a), Council approval is required for any amendment to a personal services contract in excess of twice the original contact amount; and

WHEREAS, Metro Code 2.04.046(a) requires the Council to determine whether it is appropriate to amend the contract in light of the polices set forth ORS 279A.015 and ORS 279B.010; and

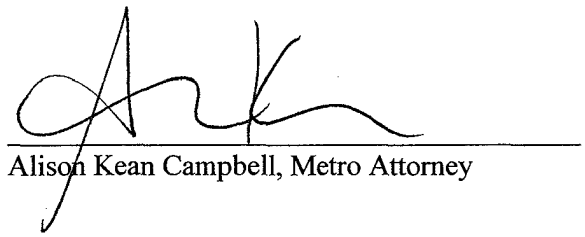
WHEREAS, the Chief Operating Officer recommends the amendment of the contract for $102,929 be awarded without additional competitive process in light of the polices set forth ORS 279A.015 and ORS 279B.010, and therefore presents this matter to the Council for approval; now therefore

BE IT RESOLVED, that the Metro Council determines that it is appropriate to amend Metro's Personal Services Agreement with Shannon & Wilson, Inc. in light of the polices set forth ORS 279A.015 and ORS 279B.010, and the Chief Operating Officer is authorized to execute Amendment No. 3 in the amount of $102,929, to Contract No. 930986 in a form substantially similar to the attached Exhibit A.

ADOPTED by the Metro Council this 24 day of May, 2012.

Tom Hughes, Council President

Approved as to Form:



Alison Kean Campbell, Metro Attorney

**Shannon & Wilson, Inc.**
**Oregon Zoo - New Elephant Habitat Project**
**Metro Contract No. 930986**

**Task 4: Exhibit Slope Stability Analyses, Grading and Wall Geotechnical Recommendations**

Shannon & Wilson, Inc. (S&W) presents this scope of work to address geotechnical issues identified through redesign of the site grading plans and to add exhibit design elements not in prior work tasks. A more inclusive scope and budget that provides the remainder of geotechnical design and construction support tasks will be prepared following this scope. Our specific additional tasks are outlined below and our proposed budget is attached to this letter.

**Task 4.1 Project Meetings**
S&W has attended 4 design team meetings to date and will attend up to 3 more design team meetings to discuss geotechnical elements of the project. We have assumed that 3 hours will be required for each meeting including travel time. We also have assumed 4 hours preparation time to present recommendations as required for certain design topics.

**Task 4.2 Exhibit Slope Stability Evaluation and Geotechnical Wall Design**
S&W provided conceptual and preliminary design engineering support during the value engineering and planning phases to aid in cost estimates. We propose to continue this support during the design phase up to the budget proposed in this amendment of $51,690 (overall total budget to date of $195,450). To the budget established, we will provide geotechnical support as needed for the following project elements:

A. North Meadow Fill evaluation
B. Proposed Utility Corridor
C. Proposed Stormwater Retention Facility, Settling Basin, and Wet Well
D. Ravine Confinement Walls
E. Excavation Stability
F. Subdrainage for Meadow Habitats and Ravine
G. Elephant Ponds and Subdrainage
H. Train Alignment and Straight Trestle
I. Optional Loop Trestle
J. Service Road Fill and Walls
K. Elephant Building and Forest Hall Foundations and Drainage
L. Forest Hall Walls
M. Elephant Fence Supports
N. Habitat Theater Area
O. East Hub Building
P. South Meadow Grading and Drainage

Results will be presented in the appropriate technical memorandums prepared in accordance with Task 2.6 described in our original scope for the site.

Shannon Wilson - Portland Branch

**Oregon Zoo New Elephant Habitat - Task 4**
**Metro/Oregon Zoo**

Attn: **Jim Mitchell**

**April 10, 2012**
**Shannon & Wilson, Inc.**
prepared by AMP/AEL/DJH

| | TASK | Sr. VP | VP | Sr. Assoc | Assoc | Sr. Prin. E/G | Prin. E/G | Sr. E/G | Pro. 3 / 4 | Pro. 1 / 2 | Sr. Tech Srvcs | Tech III/IV | Tech I/II | Sr. Office Srvcs | Office Srvcs III/IV | Office Srvcs I/II | TOTAL TASK HOURS | TOTAL LABOR COST | TOTAL TASK DIRECT COSTS | TOTAL TASK AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.1 | Project Meetings | 10 | | | | 4 | 21 | 24 | | | | | | | | | 59 | 8025 | | $8,025 |
| | | $2,100 | | | | $540 | $2,625 | $2,760 | | | | | | | | | | | | |
| 4.2 | Exhibit Slope Stability Eval and Geotech Wall Design | 24 | | | | | 100 | 160 | 40 | | | 40 | | | | | 364 | 43540 | 125 | $43,665 |
| | | $5,040 | | | | | $12,500 | $18,400 | $4,200 | | | $3,400 | | | | | | | | |
| | TOTAL HOURS | 34 | | | | 4 | 121 | 184 | 40 | | | 40 | | | | | 423 | | | $51,690 |
| | AVERAGE HOURLY RATES | $210 | $190 | $170 | $155 | $135 | $125 | $115 | $105 | $87 | $95 | $85 | $65 | $80 | $75 | $58 | | | | |
| | TOTAL LABOR ESTIMATE | $7,140 | | | | $540 | $15,125 | $21,160 | $4,200 | | | $3,400 | | | | | | | | $51,565 |

| DIRECT COSTS (ODC) | |
|---|---|
| | |
| Travel: - Vehicles & Per Diem | $125 |
| Office: - Reproduction & Software Useages | |
| Drilling | |
| Traffic Control, Utility Check, & Permits | |
| Field Equipment Rentals | |
| Laboratory Testing | |

| | |
|---|---|
| *Direct Cost Estimate* | $125 |
| *Total Labor Estimate* | $51,565 |
| *Total Labor + Direct Costs Estimate* | $51,690 |

**Shannon & Wilson, Inc.**
**Oregon Zoo - New Elephant Habitat Project**
**Metro Contract No. 930986**
**Task 5: Contract Modifications**

Shannon & Wilson, Inc. (S&W) presents herein scope of work and fee estimates for Task 5 and Task 6 contract modifications to the above referenced Metro Contract. The Task 5 scope expands upon the original design support scope of work dated January 13, 2012, plus additional tasks 2, 3 and 4. Task 5 provides continued design support through final design based upon the newly refined design details developed since January 2012. Additional geotechnical investigations, periodic instrument readings, and final design recommendations for specific project features will be provided. Task 6 provides scope of services and fee estimate for geotechnical support during construction. The specific additional tasks are outlined below.

## Task 5: Additional Explorations, Continued Engineering Analysis, and Design Support

### Task 5.1 Additional Engineering Design

S&W has provided geotechnical engineering support during the value engineering and planning phases of design and evaluating alternatives to aid in cost estimates. Those efforts have reduced estimated construction costs in part by reducing the need for substantial geotechnical solutions required in the earlier design. Based on recent discussions with the design team, additional engineering design and site specific design analyses will be required as the project proceeds through final design, plans, specifications, and cost estimating. S&W will provide site specific design recommendations for numerous walls, earthwork, utilities, and site drainage. During this phase, we will support the designers through providing review comments on relevant plans and specifications. We anticipate that these services will be required for the following project elements:

i. North Meadow Fill
ii. Proposed Utility Corridors
iii. Train Alignment including Overcrossing Trestle
iv. Optional Eastern Loop Trestle
v. Proposed Stormwater Retention Facility, Settling Basin, and Wet Well
vi. Ravine Walls and Excavation Stability
vii. Site Drainage for Meadow Habitats and Ravine
viii. Elephant Ponds
ix. Service Road Fills and Walls
x. Elephant Building and Forest Hall Foundations and Subdrainage
xi. Forest Hall Cut Walls
xii. Elephant Fence Supports
xiii. Habitat Theater Area
xiv. East Hub Building
xv. South Meadow Grading and Drainage

S&W has, and will continue, to track the above named features and their design status with the project matrix included with this scope as Attachment A. Based on our understanding of the CM/GC process, we anticipate that the design support will be required through the construction process. The estimated time for design for each element provided within this matrix incorporate both the time included in the previous budget for Task 4, as well as continued design support through construction here in Task 5. This matrix was used to support the Task 5 cost estimate included as (Attachment B).

**Task 5.2 Additional Subsurface Investigation**

S&W proposes three additional borings for ravine slope stability and north meadow fill slope design as well as a day of test pits for the eastern loop trestle design. S&W will plan, coordinate, subcontract, and observe the explorations. Three (3) borings will be drilled to depths up to 80 feet deep, or ten feet into basalt. Test pit explorations will extend to 15 to 20 feet in the area where landslide debris was identified in the eastern train loop area. Inclinometers will be installed in all three borings to allow stability monitoring during construction. Borings and test pits will be at locations agreed upon by S&W, the design team, and the Zoo, and will be field surveyed with a hand held GPS unit during the investigation and later surveyed by Westlake Consultants. Explorations will be completed with the assumptions presented and as described in our original exploration scope of work. Test pits will be loosely backfilled with the excavator and may need to be improved during construction based on location and the proposed improvements. Logs and design information will be provided in our updated Geotechnical Data Report for the site.

**Task 5.2 Assumptions:**

- Access to the northern meadow habitat will be with a tracked drill rig through the existing exhibit fences.

**Task 5.3 Additional Laboratory Testing**

S&W will examine samples in the laboratory and perform visual-manual check classifications, geologic characterization, and other index testing on select samples, including moisture content determinations, Atterberg Limits determinations, unit weight, grain size analyses, and one consolidation test.

**Table 1. Proposed Laboratory Testing Program**

| Test | ASTM | Quantity |
|---|---|---|
| Moisture Content | D2216 | 20 |
| Atterberg Limits | D4318 | 2 |
| Grain Size Analysis | D422 | 2 |
| Unit Weight | D2937 | 4 |
| Consolidation | D2435 | 2 |

**Task 5.4 Piezometer and Inclinometer Readings**

S&W will collect piezometer and inclinometer data in the instruments installed for the project three times between May and December 2012.

**Task 5.5 Review of Plans and Specifications**

S&W will provide comments and input to the relevant portions of the plans and specifications for the appropriate project elements. We anticipate that this will include the following:

- Train trestle foundations
- Train trestle abutment walls
- Up to two solider pile walls along the service road
- MSE and Gravity retaining walls as needed
- Utility, Wet Well, and Storm Facility Excavation, Shoring, and Dewatering
- Soil Nail Wall in the Ravine Habitat
- Drainage installations within the North, South, and Ravine Habitats

**Task 5.6 Deliverables**

The results of the various investigations and laboratory tests as well as collected piezometer and inclinometer data will be presented in an updated Geotechnical Data Report to serve as a contract reference document for construction. As discussed above, design recommendations will be conveyed in technical design memorandums during the design phase. Once the design is complete, a final design letter will be provided for permitting for the elements discussed above. At the conclusion of the project, S&W will provide a complete package of the design and construction documents prepared for the project. Two paper copies plus electronic files (PDF) will be provided.

SHANNON AND WILSON
PORTLAND BRANCH

New Elephant Habitat - Task 5 — May 13, 2012
Oregon Zoo — **Attn:** Jim Mitchell — Shannon & Wilson, Inc.
24-1-03681-005 — prepared by AMP

| | TASK | Sr. VP | VP | Sr. Assoc | Assoc | Sr. Prin. E/G | Prin. E/G | Sr. E/G | Pro. 3 / 4 | Sr. Tech Srvcs | Tech III/IV | Office Srvcs III/IV | Office Srvces I/II | TOTAL HOURS | TOTAL LABOR | TOTAL DIRECT COSTS | OTHER FEES | TOTAL TASK AMOUNT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.1 | Additional Engineering Design | 2 | | | | | 88 | 180 | | | | | | 270 | $32,120 | | | $32,120 |
| | | $420 | | | | | $11,000 | $20,700 | | | | | | | | | | |
| 5.2 | Additional Investigations - Previously Authoriazed | | | | | | | | | | | | | | | | | |
| 5.3 | Additional Lab Testing | | | | | | | 2 | | | | 2 | | 4 | $380 | $2,210 | | $2,590 |
| | | | | | | | | $230 | | | | $150 | | | | | | |
| 5.4 | Piezometer and Inclinometer Readings | 1 | | | | | | | 24 | | | | | 25 | $2,730 | $269 | | $2,999 |
| | | $210 | | | | | | | $2,520 | | | | | | | | | |
| 5.5 | Review of Plans and Specifications | 1 | 4 | | | | 20 | 20 | | | | | | 45 | $5,770 | | | $5,770 |
| | | $210 | $760 | | | | $2,500 | $2,300 | | | | | | | | | | |
| 5.6 | Updated GDR and Tech Design Memos | 6 | 4 | | | | | 24 | 8 | | 12 | 12 | | 66 | $7,540 | $220.00 | | $7,760 |
| | | $1,260 | $760 | | | | | $2,760 | $840 | | $1,020 | $900 | | | | | | |
| | TOTALS | | | | | | | | | | | | | | | | | |
| | TOTAL HOURS | 10 | 8 | | | | 108 | 226 | 32 | | 12 | 14 | | | | | | |
| | AVERAGE HOURLY RATES | $210 | $190 | $170 | $155 | $135 | $125 | $115 | $105 | $95 | $85 | $75 | $58 | | | | | |
| | TOTAL LABOR ESTIMATE | $2,100 | $1,520 | | | | $13,500 | $25,990 | $3,360 | | $1,020 | $1,050 | | 410 | $48,540 | $2,699 | | |
| | | | | | | | | | | TOTAL ESTIMATED FEES AND LABOR | | | | | $51,239 | | | |

| DIRECT COSTS (ODC) BY TASK | 5.1 | 5.2 | 5.3 | 5.4 | 5.5 | 5.6 | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Travel: Vehicles & Per Diem | | | | 29 | | | | | | 29 |
| Office: Reproduction & Software Useages | | | | | | 220 | | | | 220 |
| Drilling | | | | | | | | | | |
| Subcontractors Traffic Control & Utility Check | | | | | | | | | | |
| Field Equipment Rentals | | | | 240 | | | | | | 240 |
| Laboratory Testing | | | 2,210 | | | | | | | 2,210 |
| Total | | | 2,210 | 269 | | 220 | | | | 2,699 |

**STAFF REPORT**

IN CONSIDERATION OF RESOLUTION NO. 12-4351, FOR THE PURPOSE OF APPROVING A CONTRACT AMENDMENT FOR GEOTECHNICAL SERVICES ON THE NEW ELEPHANT HABITAT PROJECT AT THE OREGON ZOO

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Date: May 15, 2012 Prepared by: Craig Stroud
Jim Mitchell

**BACKGROUND**

A Request for Proposals was issued in August 2011 for Geotechnical On-Call Services to support upcoming 2008 Zoo Bond projects. Three firms were selected to provide the On-Call Geotechnical Services and Metro entered into separate contracts with each firm. On December 19, 2011, Metro awarded Shannon & Wilson, Inc. (S&W) a personal services contract in the amount of $100,000 to support the New Elephant Habitat and Related Infrastructure project geotechnical engineering needs. As project site investigation work progressed, the scope of services necessary to inform and finalize the project's schematic design increased to the point that Metro amended the S&W contract by adding additional scopes of work totaling $72,891, for a current contract value of $172,891.

The Oregon Zoo is situated on a landslide zone known as the Zoo-Highlands Landslide Complex. Landslide movement has been noted and required mitigation in past construction projects. Construction of the prior OMSI facility (now the Children's Museum) and widening of Highway 26 caused some of the first landslide activity in 1958 and 1959. Mitigation measures to address landslide conditions installed in the vicinity of the zoo from 1959 to 1996 include a vertical drainage gallery, horizontal drains, toe berms, rock buttresses, retaining walls and soldier pile walls. The zoo measures ground movement annually through information gathered from six inclinometers installed around the zoo campus. The multiple mitigating improvements over the past 50 years have dramatically slowed the land movement from 6 inches per year in 1959 to currently .01 inches or less per year.

For the New Elephant Habitat and Related Infrastructure project pre-schematic design, Metro and the design team relied on geotechnical assessments and recommendations from a different geotechnical engineering firm. The scope of that geotechnical work was at a pre-schematic level of effort and did not identify the risks that S&W identified as project designs progressed and specific site borings were performed and analyzed. Much of the project's improvements are sited along the zoo campus perimeter in areas with little prior geotechnical information other than what could be observed on the ground surface. The underlying site conditions are much more challenging than initially expected.

S&W provided a draft report dated March 16, 2012, that documents the extent of ground movement risk for the pre-schematic designs of the New Elephant Habitat and Related Infrastructure project. The report identifies considerable geotechnical risk beyond what was known at the time the project pre-schematic deign was approved in mid-2011. The project's cost estimators forecast the project costs to mitigate the geotechnical risk, which resulted in a forecast project cost considerably above the pre-schematic estimate.

In many cases, the cause of current estimates exceeding the pre-schematic estimate were a direct result of the underlying geotechnical conditions that required extensive shoring and retaining walls to address. For example, the pre-schematic elephant habitat included a connecting chute between the north and south habitats with a tunnel underneath the service road. Constructing that chute and tunnel involved an approximately 30 foot deep cut that required expensive drainage, stabilization, and retaining walls in a challenging soil condition. While the construction was feasible, the cost premium to deal with the soil

conditions drove the project and design team to reconsider the program and to identify new solutions that provided the intended elephant connection between habitats, but without the extensive soil cut. The redesigns have resulted in a final schematic design construction estimate that aligns with available project resources.

The analysis and information provided by S&W has been extremely valuable to Metro to pro-actively mitigate geotechnical risk as the design progresses, but the scope of services required far exceeded original estimates for this work at the time the contract was awarded. S&W provided Metro a detailed scope of work estimate to continue subsurface investigation, lab testing, and design support that totals $102,929. A summary of the scope of services to be performed and related costs is included in Exhibit A of Resolution Number 12-4351.

Bond program staff discussed the geotechnical conditions and S&W scope of additional work to complete the project with the zoo bond steering group to identify options to support the project's geotechnical needs through construction documents. Geotechnical risk is considered the greatest risk facing the project and staff believes proactively mitigating those risks ahead of construction substantially reduces project exposure to unforeseen conditions and associated construction change orders. The group believes it would be impractical and inefficient to conduct a competitive procurement process for the additional scopes of work through design and is in the best interest of Metro to amend the existing agreement with S&W. The project is extremely complex and is approaching major design milestones that necessitate continued geotechnical engineering analysis and recommendations. The time involved to solicit a new Request for Proposals to support the project's remaining geotechnical engineering scopes, as well as the inefficiency of transferring the project knowledge and expertise already gained by S&W to another firm, are the primary justifications to amend the existing contract. Therefore, it is recommended that a contract amendment for $102,929 be awarded without an additional competitive process. The action requires Metro Contract Review Board approval because the amendment exceeds twice the amount of the original contract.

The current Elephant Schematic Design direct construction estimate, dated April 23, 2012, totals $39 million and balances to the approved project construction budget resources. The budget includes a 10 percent design contingency, which is a level believed to be reasonable and adequate at this point of design. In addition to the design contingency, the overall project budget is maintaining healthy overall owner's contingency funds. Contingency funds are adequate to support the project's increased geotechnical engineering costs.

**ANALYSIS/INFORMATION**

1. **Known Opposition** None known.

2. **Legal Antecedents** Metro Code 2.04.046

3. **Anticipated Effects** Approval of this amendment will authorize Metro to amend the professional services contract with Shannon and Wilson, Inc.

4. **Budget Impacts** Existing New Elephant Habitat and Related Infrastructure project contingencies are adequate to fund this contract amendment.

**RECOMMENDED ACTION**

The Metro Contract Review Board approves Resolution 12-4351.