

MOTION NO. M2010-53
Geotechnical Support Services for Beacon Hill

MEETING:	DATE:	TYPE OF ACTION:	STAFF CONTACT:	PHONE:
Capital Committee	05/13/10	Recommendation to Board	Ahmad Fazel, Executive Director	206-398-5389
Board	05/27/10	Final Action	Joe Gildner, Deputy Executive Director	206-689-3350

PROPOSED ACTION

Authorizes the chief executive officer to execute a sole source contract with Shannon & Wilson, Inc. for geotechnical support services above the Beacon Hill tunnels to provide specific tasks associated with investigations into the potential existence of remaining subsurface voids and the remedial work necessary to fill any remaining voids above the Beacon Hill tunnels in the amount of \$2,930,100 with a 15% contingency of \$439,515, for a total authorized contract amount not to exceed \$3,369,615.

KEY FEATURES

- Provides for the execution of a sole source contract with Shannon & Wilson, Inc. for the continued investigation, identification, and remediation of voids above the Beacon Hill tunnels immediately east of the Beacon Hill Station.
- Shannon & Wilson will perform specific tasks including potentially drilling exploratory bores, filling voids, consolidating loose zones, and restoration of properties associated with the investigation into the existence and extent of subsurface voids, and the remedial work necessary to fill the voids.

PROJECT DESCRIPTION

The 14-mile Initial Segment of the Central Link light rail line has a northern terminus in the Pine Street Stub Tunnel, with passenger service beginning at Westlake Station serving downtown Seattle, the SODO industrial area, Beacon Hill, Rainier Valley, and Tukwila. Passenger stations include Westlake, University Street, Pioneer Square, International District/Chinatown, Stadium, SODO, Beacon Hill, Mount Baker, Columbia City, Othello, Rainier Beach, and Tukwila International Boulevard. The Operations and Maintenance Facility and Yard is located south of South Forest Street.

FISCAL INFORMATION

Budget Table

(Year of Expenditure \$000)

Initial Segment	Adopted 2010 Budget (A)	Committed To Date (B)	This Action (C)	Total Committed & Action (D)	Uncommitted (Shortfall) (E)
Agency Administration	186,233	181,061		181,061	5,172
Preliminary Engineering	33,289	33,275		33,275	14
Final Design	147,436	147,141		147,141	295
Right of Way	205,713	204,534		204,534	1,179
Construction	1,198,822	1,172,259	3,370	1,175,629	23,193
Construction Services	104,912	105,403		105,403	(491) ⁽¹⁾
Third Party Agreements	61,739	62,476		62,476	(737) ⁽²⁾
Vehicles	131,857	131,803		131,803	54
Total Current Budget	2,070,000	2,037,952	3,370	2,041,322	28,678

Construction Phase Detail					
C710 Beacon Hill Tunnel	312,460	311,581	3,370	314,950	(2,490)
Other Construction Services	886,362	860,679		860,679	25,683
Constr Unallocated Contingency	21,108	-		-	21,108
Total Phase	1,198,822	1,172,259	3,370	1,175,629	23,193

Contract Amount	Board Approvals to Date (F)	Current Approved Contract Value (G)	Proposed Action (H)	Proposed Total for Board Approval (I)	Proposed Contract Value (J)
Contract Amount	-	-	2,930	2,930	2,930
Contingency	-	-	440	440	440
Total Contract	-	-	3,370	3,370	3,370
Percent Contingency	0%	0%	15%	15%	15%

Budget Shortfall	\$Amount (K)	Potential Resources (L)	Source (M)
C710 Beacon Hill Tunnel	2,490	21,108	Unallocated contingency within the construction phase of the Initial Segment project

(B) COMMITTED TO DATE amounts are from Agency WBS Report as of March 2010 + approved and pending board actions not recorded as of 3/31/10, or submitted after that date, and include allocated contingencies.

(1) "SHORTFALL" to the Adopted 2010 Budget for Construction Services phase of the Initial Segment project: "Committed to Date" amount shown here includes unused funds authorized for allocated contract contingencies that will be decommitted as these contracts complete.

(2) "SHORTFALL" to the Adopted 2010 Budget for Third Party Agreements phase of the Initial Segment project: "Committed to Date" amount shown here includes unused funds authorized for allocated contract contingencies that will be decommitted as these contracts complete.

SMALL BUSINESS PARTICIPATION

Sound Transit Goal: 20%
Committed goal: 47.86%

Subconsultant/Subcontractor	Business Type	% of Work	Dollar Value
Salsbury Drilling	Small Business	40.44%	\$1,184,862
PLS, Inc	Small Business	0.33%	\$96,000
G&M Solutions	Small Business	1.33%	\$39,000
Lin Associates, Inc.	DBE	0.88%	\$25,000
TBD – Building Protection and Restoration	Small Business	4.88%	\$143,000
Total		47.86%	1,402,262

EQUAL EMPLOYMENT WORKFORCE PROFILE

Shannon & Wilson's has 308 employees; 31.49% are women; 11.04% are minorities.

BACKGROUND

Sound Transit was notified by a Beacon Hill property owner in March 2009 of the discovery of a subsurface void on her property near the corner of 18th Avenue South and South Lander Street in Seattle. Sound Transit took immediate action to fill and stabilize the void, and set about investigating the underlying cause of the void and the possible existence of other voids. Under the chief executive officer's authority for handling emergencies, an integrated team of engineers and geologists from Sound Transit, Shannon & Wilson, and Hatch Mott McDonald/Jacobs began subsurface explorations and probes, targeting the area and searching for other potential voids above both tunnel bores. Target areas were determined by correlating incidents of over-excavation with locations along the alignments, as reflected in records maintained by the contractor during the project. This method was also used to determine the theoretical volumes of the voids.

From April 2009 to approximately mid-July 2009, Sound Transit staff, with its consultants, worked with our contractor, Obayashi Corporation, to fill the voids and stabilize the ground in the vicinity immediately east of the Beacon Hill Station extending approximately 250-350 feet along the length of the tunnel bores. The remedial work was accomplished in two phases. The first phase focused on probing target areas and filling voids with a quick-setting cement-based fill material called controlled density fill (CDF). In April and May, the team conducted a thorough investigation and discovered subsurface voids in different shapes and sizes at various depths below the ground surface at nine locations. Overall, the team drilled 38 probe holes and pumped in approximately 2,550 cubic yards of CDF. Additionally, microgravity testing was conducted in order to provide Sound Transit staff and consultants the clearest possible picture of subsurface conditions in the affected area.

The second phase of this program was to stabilize any loosened zones or layers of soil that developed in proximity to the voids. These loosened zones or layers required stabilization to avoid any potential further ground displacements, including during any future earthquakes. To address this concern, Sound Transit's team recommended a program to compact these loose zones, by carefully pumping cement grout through a pattern of drill holes in the vicinity of the nine locations where the voids were discovered. The compaction grouting program required more engineering oversight and labor to ensure that these grout materials are properly placed in these zones because the grout is inserted at pressures ranging from 300 to 600 psi to effectively compact these loose zones. This phase was undertaken in June and July and the team drilled 61 holes and pumped in approximately 293 cubic yards of grout.

Given the possible consequences that could have arisen as a result of the existence of the voids, all of the above-described work was undertaken on an immediate, emergency basis. The primary concern of Sound Transit staff and consultants was to ensure the public safety and the integrity of the infrastructure previously constructed. The circumstances presented were unusual and urgent, and the chief executive officer's declaration of an emergency was appropriate under both Resolution 78-1 and FTA guidelines.

Overall, the consultants believe that approximately 87% of the theoretical volumes of the voids were found and filled during the first two phases. In light of this belief and the fact that any immediate danger to persons and property was eliminated by the work accomplished in these first phases, and because of the difficulties inherent in finding and filling the remaining 13% of the voids, Shannon & Wilson was directed to develop a proposed program to expeditiously and economically complete the void remediation work. The results of Shannon & Wilson's work in this regard are compiled in a report that recommends implementing a progressive program of investigative drilling and subsequent filling of any and all voids encountered. The program is to be implemented in phases. This phasing is intended to address first the areas of highest probability, and the termination of work at the point at which, in the exercise of sound and prudent engineering judgment, the voids have been found and filled to an acceptable degree.

The work to be performed under the proposed contract constitutes the final phase of the investigative and remedial work necessary to resolve the situation with the voids. The work under this proposed contract will be essentially identical to the work previously performed by Shannon & Wilson in the earlier operations

relating to the voids: Drilling exploratory bores, filling voids, consolidating loose zones, and restoring of properties. As with the work performed in the first two phases, the final phase work under the proposed contract will be performed under the direct supervision of Shannon & Wilson personnel by forces engaged by that firm.

Sole Source Justification

This proposed action would authorize a contract with Shannon & Wilson to carry out the remediation plan it prepared at Sound Transit's request. Because it prepared the proposed plan, and because it directed and supervised the remediation work already performed, Shannon & Wilson is uniquely qualified to perform the scope of work required by the proposed action. Consequently, a sole source contract is appropriate and allowed under Resolution 78-1, which states in relevant part:

[U]pon determination in writing by the Executive Director that there is only one source practically available for that which is to be procured, a contract may be negotiated and awarded to that source without being competitively procured.

Shannon & Wilson is the only practical choice for the performance of the work covered in the proposed action: Not only was all prior remediation work performed by or under the supervision of Shannon & Wilson, that firm prepared the report that dictates the further remediation work to be performed. No other firm is as familiar with the site and circumstances of the necessary work, and no other firm is or will be as uniquely qualified to implement the plan and, of equal significance, to determine the point at which no further remedial work is necessary.

These circumstances also justify a sole source contract under FTA guidelines. Under the guidelines, Sound Transit may issue a sole source contract when it "requires supplies or services available from only one responsible source, and no other supplies or services will satisfy its requirements." That subsection goes on to specifically state that a sole source contract is appropriate where:

"The offeror demonstrates a unique or innovative ... capability not available from another source."

Shannon & Wilson possess a unique capability to perform the work required under the proposed contract: It oversaw and performed the previous remedial work, and it investigated and determined the need for and extent of the additional remedial work to be performed. No other firm or entity is so uniquely prepared and positioned to perform this work with undue delay, an extraordinary duplicate of effort and significant additional costs. Shannon & Wilson lead the investigation and remediation efforts upon the initial discovery of the voids. This fact was due in large part to the fact that Shannon & Wilson is the geotechnical engineer of record in connection with the construction of the Beacon Hill Station and tunnels. In its role leading the investigative and remedial efforts in connection with the voids, its personnel became the most knowledgeable about the nature and location of the voids, and of the best, most efficient and most economical means of locating and eliminating them. The knowledge and experience gained by Shannon & Wilson personnel will allow that firm to conduct and complete the void remediation in the most efficient and expeditious manner, thereby eliminating any potential threat to the public, to infrastructure and to private property posed by the conditions described. To compare, if another firm was brought in to perform this work, it would need to spend significant time and effort (at Sound Transit expense) reviewing and becoming intimately familiar with all of the data and information previously gathered by Shannon & Wilson personnel. In fact, it is likely that another firm would need to engage Shannon & Wilson as a subconsultant. Obviously this would end up costing Sound Transit significantly more money.

Moreover, Shannon & Wilson developed the phased process pursuant to which the remediation will be performed, and of equal importance, is the geotechnical engineer of record for the Beacon Hill project. Consequently, by virtue of this status (in addition to its superior knowledge and experience in connection with this issue) it is the party that ultimately determines when, in its engineering judgment, adequate remedial work has been performed and operations may cease. No other person or entity is so uniquely qualified by knowledge, training and experience to make this determination. Again, Shannon & Wilson is not only the

lone practical choice to perform this work, it possesses the unique capacity and capability to undertake and complete the work under this proposed contract in an efficient and expeditious manner.

While the current situation does not constitute an emergency, the failure to complete the remediation work in an expeditious manner could result in further upward migration of the remaining voids and potentially their manifestation at grade, resulting in damage or injury to persons or property. If this work were to be competitively procured, a delay of up to six months would result. Sound Transit finds the added risk created by any such delay to be unacceptable.

ENVIRONMENTAL COMPLIANCE

JI, 04/30/10

TIME CONSTRAINTS

Any delay would increase the risk of further upward migration of the voids and the potential for impact to public safety, infrastructure and private property.

PUBLIC INVOLVEMENT

Sound Transit's Community Outreach division has been actively involved in discussions with the property owners and residents in the area impacted by the voids in order to provide up-to-date information concerning the situation and actions being taken or to be taken by Sound Transit.

LEGAL REVIEW

JEN, 05/07/10

MOTION NO. M2010-53

A motion of the Board of the Central Puget Sound Regional Transit Authority authorizing the chief executive officer to execute a sole source contract with Shannon & Wilson, Inc. for geotechnical support services above the Beacon Hill tunnels to provide specific tasks associated with investigations into the potential existence of remaining subsurface voids and the remedial work necessary to fill any remaining voids above the Beacon Hill tunnels in the amount of \$2,930,100 with a 15% contingency of \$439,515, for a total authorized contract amount not to exceed \$3,369,615.

BACKGROUND:

This action provides for the execution of a sole source contract with Shannon & Wilson, Inc. for the continued investigation, identification, and remediation of voids above the Beacon Hill tunnels immediately east of the Beacon Hill Station. Shannon & Wilson will perform specific tasks including potentially drilling exploratory bores, filling voids, consolidating loose zones, and restoration of properties associated with the investigation into the existence and extent of subsurface voids, and the remedial work necessary to fill the voids.

Sound Transit was notified by a Beacon Hill property owner in March 2009 of the discovery of a subsurface void on her property near the corner of 18th Avenue South and South Lander Street in Seattle. Sound Transit took immediate action to fill and stabilize the void, and set about investigating the underlying cause of the void and the possible existence of other voids. Under the chief executive officer's authority for handling emergencies, an integrated team of engineers and geologists from Sound Transit, Shannon & Wilson, and Hatch Mott McDonald/Jacobs began subsurface explorations and probes, targeting the area and searching for other potential voids above both tunnel bores. Target areas were determined by correlating incidents of over-excavation with locations along the alignments, as reflected in records maintained by the contractor during the project. This method was also used to determine the theoretical volumes of the voids.

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Overall, the consultants believe that approximately 87% of the theoretical volumes of the voids were found and filled during the first two phases. In light of this belief and the fact that any immediate danger to persons

and property was eliminated by the work accomplished in these first phases, and because of the difficulties inherent in finding and filling the remaining 13% of the voids, Shannon & Wilson was directed to develop a proposed program to expeditiously and economically complete the void remediation work. The results of Shannon & Wilson's work in this regard are compiled in a report that recommends implementing a progressive program of investigative drilling and subsequent filling of any and all voids encountered. The program is to be implemented in phases. This phasing is intended to address first the areas of highest probability, and the termination of work at the point at which, in the exercise of sound and prudent engineering judgment, the voids have been found and filled to an acceptable degree.

The work to be performed under the proposed contract constitutes the final phase of the investigative and remedial work necessary to resolve the situation with the voids. The work under this proposed contract will be essentially identical to the work previously performed by Shannon & Wilson in the earlier operations relating to the voids: Drilling exploratory bores, filling voids, consolidating loose zones, and restoring of properties. As with the work performed in the first two phases, the final phase work under the proposed contract will be performed under the direct supervision of Shannon & Wilson personnel, by forces engaged by that firm.

Sole Source Justification

This proposed action would authorize a contract with Shannon & Wilson to carry out the remediation plan it prepared at Sound Transit's request. Because it prepared the proposed plan, and because it directed and supervised the remediation work already performed, Shannon & Wilson is uniquely qualified to perform the scope of work required by the proposed action. Consequently, a sole source contract is appropriate and allowed under Resolution 78-1, which states in relevant part:

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property posed by the conditions described. To compare, if another firm was brought in to perform this work, it would need to spend significant time and effort (at Sound Transit expense) reviewing and becoming intimately familiar with all of the data and information previously gathered by Shannon & Wilson personnel. In fact, it is likely that another firm would need to engage Shannon & Wilson as a subconsultant. Obviously this would end up costing Sound Transit significantly more money.

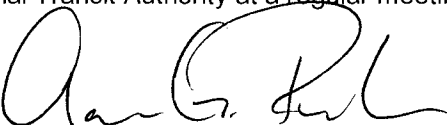
Moreover, Shannon & Wilson developed the phased process pursuant to which the remediation will be performed, and of equal importance, is the geotechnical engineer of record for the Beacon Hill project. Consequently, by virtue of this status (in addition to its superior knowledge and experience in connection with this issue) it is the party that ultimately determines when, in its engineering judgment, adequate remedial work has been performed and operations may cease. No other person or entity is so uniquely qualified by knowledge, training and experience to make this determination. Again, Shannon & Wilson is not only the lone practical choice to perform this work, it possesses the unique capacity and capability to undertake and complete the work under this proposed contract in an efficient and expeditious manner.

While the current situation does not constitute an emergency, the failure to complete the remediation work in an expeditious manner could result in further upward migration of the remaining voids and potentially their manifestation at grade, resulting in damage or injury to persons or property. If this work were to be competitively procured, a delay of up to six months would result. Sound Transit finds the added risk created by any such delay to be unacceptable.

MOTION:

It is hereby moved by the Board of the Central Puget Sound Regional Transit Authority that the chief executive officer is authorized to execute a sole source contract with Shannon & Wilson, Inc. for geotechnical support services above the Beacon Hill tunnels to provide specific tasks associated with investigations into the potential existence of remaining subsurface voids and the remedial work necessary to fill any remaining voids above the Beacon Hill tunnels in the amount of \$2,930,100 with a 15% contingency of \$439,515, for a total authorized contract amount not to exceed \$3,369,615.

APPROVED by the Board of the Central Puget Sound Regional Transit Authority at a regular meeting thereof held on May 27, 2010.



Aaron Reardon
Board Chair

ATTEST:



Marcia Walker
Board Administrator