

**THIS STAFF REPORT COVERS CALENDAR ITEM NO.: 13
FOR THE MEETING OF: April 9, 2009**

TRANSBAY JOINT POWERS AUTHORITY

BRIEF DESCRIPTION:

Amending Contract No. 07-04-TTC-000, Professional Design Services for the Transbay Transit Center Building and Related Structures, with Pelli Clarke Pelli Architects, Inc., to perform geotechnical testing and analysis of alternate means and methods for soil improvements and shoring wall construction in an amount not to exceed \$5,000,000.

SUMMARY:

- On March 20, 2008, the TJPA Board approved the award the contract for design and construction administration services of the Transbay Transit Center Building and Bus Ramps to Pelli Clarke Pelli Architects, Inc. (PCPA). Geotechnical engineering services, the design of the soil improvements beneath the Transit Center and design of foundation systems were included in the scope of services under the contract.
- On September 26, 2008, PCPA completed Concept Validation and began Schematic Design of the Transit Center.
- On April 3, 2009, PCPA submitted Schematic Design and commenced Design Development.
- In the course of Schematic Design ARUP, the geotechnical sub-consultant to PCPA, has recommended tests be conducted on the site of the Transit Center construction to evaluate drilled piers being considered to support properties adjoining the Transit Center and to evaluate alternate means of constructing the shoring walls which will form the perimeter of the excavation for the train levels of the Transit Center.
- After reviewing and reducing the scope of the proposed testing to those measures most critical to the design of the Transit Center and related improvements, Staff is recommending a change order be executed to amend the Professional Design Services contract with PCPA to perform additional geotechnical testing and analysis.
- Funding for this amendment is through Regional Measure 2 (RM2) funds, as administered by the Metropolitan Transportation Commission. The request will be in front of the Programming and Allocations Committee on April 8, 2009, and before the Commission for approval at its meeting on April 22, 2009.

EXPLANATION:

Proposed Geotechnical Tests

The geotechnical engineer has proposed conducting a series of tests to determine the technical feasibility and effectiveness of alternate construction processes prior to finalizing the design of the soil improvements and foundation systems for the Transit Center. The tests would be performed under the design contract with PCPA and would be coordinated and supervised by the geotechnical sub-consultant ARUP. These tests will inform the design and specifications of the soil improvements to support adjacent properties and the shoring wall that will form the perimeter of the Transit Center foundation system.

Soil Improvements

The Transit Center site is closely bordered by several large buildings. To avoid undermining the foundations of these buildings during the construction of the Transit Center, the soil beneath the Transit Center site will need to be improved by strengthening the soil or constructing physical structures to support the adjoining buildings.

The geotechnical engineer proposes to construct test shafts that have been identified as the preferred means of protecting adjoining structures. The tests will assess the propensity of the shaft construction to destabilize the soil in the vicinity of construction and the ability of the shafts to resist the forces that might displace soils beneath adjoining properties during excavation and induce undesirable settlement. While shafts of the type proposed have been constructed to the depths proposed in various circumstances around the world, the geological conditions at the Transit Center site present unique challenges.

The results of the test shaft construction will determine whether the drilled shafts are ultimately used for the soil stabilization or whether the designers will need to switch to an alternate, more time consuming and potentially more expensive method. The test results may also allow the designer to reduce the scope and cost of the soil improvements.

The test shafts could be deferred and installed by the contractor for the soil improvements, but if their construction induces unacceptable levels of settlement, it will require a redesign of the soil improvements at significant additional cost and delay to the program. The construction of the test shafts at this time mitigates the risk of future change costs and delays and may reduce the extent and cost specified for construction.

Jet Grouting

The geotechnical engineer is proposing to stiffen the existing soil in specific areas by injecting cement-grout using a jet-grouting method. The locally improved soils will act as a pre-installed strut to control excavation-induced deformations in the shoring walls and surrounding soils. By testing the effectiveness of the jet-grouting in penetrating the clay material beneath the Transit Center and in developing the desired strength, the design team will be able to appropriately size the area of soil to be strengthened.

Shoring Walls

There are several technologies that are employed to construct shoring walls of the type proposed for the Transit Center foundations. These technologies mix cement with the existing soils in situ to form the shoring wall, but the productivity, cost and performance of the technologies can vary greatly at different depths and in different soil conditions and may be unsuitable in some circumstances.

The proposed tests will provide valuable information on the capabilities and productivity of three alternate means of constructing the shoring walls. By testing the technology prior to bidding the work and making the results of these tests available to prospective bidders, we expect to:

- Ensure that the technology employed will protect adjoining properties;
- Avoid the delays, rework and claims that would arise from the use of means and methods inappropriate for this site; and
- Mitigate the risks perceived by the bidders lowering bid prices and potentially inducing additional bidders to participate who might otherwise choose to not bid.

Risk Mitigation

Although the tests have the potential to reduce the construction cost of the soil improvements and shoring walls, the greatest advantage of conducting the tests at this time is to mitigate cost and schedule risks to the overall Transit Center Program (Program). The changes, delays, and disputes that could arise if the contractor begins construction employing inappropriate or ineffective means would result in Program cost increases and

extend the duration of construction. Because the soil improvements and foundation systems will be the first elements of construction, delays in completing this work will affect not only its cost, but could impact the cost of later construction trade packages.

Funding

Funding for this amendment is through Regional Measure 2 (RM2) funds, as administered by the Metropolitan Transportation Commission. The request will be in front of the Programming and Allocations Committee on April 8, 2009, and before the Commission for approval at its meeting on April 22, 2009.

RECOMMENDATION:

Staff recommends that the TJPA Board of Directors authorize amending Contract No. 07-04-TTC-000, Professional Design Services for the Transbay Transit Center Building and Related Structures, with Pelli Clarke Pelli Architects, Inc., to perform geotechnical testing and analysis of alternate means and methods for soil improvements and shoring wall construction.

ENCLOSURE:

1. Resolution
2. Amendment

**TRANSBAY JOINT POWERS AUTHORITY
BOARD OF DIRECTORS**

Resolution No. _____

WHEREAS, The Transbay Transit Center will be a landmark intermodal transit center supporting rail and bus operations; and

WHEREAS, The TJPA requires an Architectural and Engineering team capable of successfully executing such a complex project while maintaining design excellence; and

WHEREAS, On May 15, 2008, the TJPA Board approved the award the contract for design and construction administration services of the Transbay Transit Center Building and Bus Ramps to Pelli Clarke Pelli Architects, Inc.; and

WHEREAS, Geotechnical engineering services, the design of the soil improvements beneath the Transit Center and design of foundation systems are included in the scope of services under the contract; and

WHEREAS, On September 26, 2008, Pelli Clarke Pelli Architects, Inc. completed Concept Validation and commenced Schematic Design of the Transbay Transit Center; and

WHEREAS, On April 3, 2009, Pelli Clarke Pelli Architects, Inc. submitted Schematic Design and is commencing Design Development of the Transit Center; and

WHEREAS, The geotechnical engineer has recommended testing alternate technologies for soil improvements and shoring wall construction; and

WHEREAS, These tests will provide valuable information to the Architectural and Engineering team and potential contractors and will diminish the risk of future delays and cost increases; and

WHEREAS, Funds for this contract amendment will be available once approved by the Metropolitan Transportation Commission (MTC) on April 22, 2009; now, therefore, be it

RESOLVED, That the TJPA Board of Directors authorizes the Executive Director to execute Amendment No. 1 to the Agreement for professional design and construction administration services for the Transit Center Building and Related Structures with Pelli Clarke Pelli Architects, Inc. in an amount not to exceed \$5,000,000, to perform geotechnical testing and analysis of alternate means and methods for soil improvements and shoring wall construction.

I hereby certify that the foregoing resolution was adopted by the Transbay Joint Powers Authority Board of Directors at its meeting of April 9, 2009.

Secretary, Transbay Joint Powers Authority

**AGREEMENT
AMENDMENT NO. 01
BETWEEN
TRANSBAY JOINT POWERS AUTHORITY
AND
PELLI CLARKE PELLI ARCHITECTS, INC.
TO FURNISH
ARCHITECTURAL AND ENGINEERING
PROFESSIONAL DESIGN SERVICES
FOR
THE TRANSBAY TRANSIT CENTER BUILDING AND RELATED STRUCTURES
(Agreement No. 07-04-TTC-000)**

TABLE OF CONTENTS

SECTION	PAGE NO.
1. Terms and Conditions	1
EXHIBITS	
A. Amended Scope	4

**AGREEMENT AMENDMENT NO. 01 BETWEEN
THE TRANSBAY JOINT POWERS AUTHORITY
AND
PELLI CLARKE PELLI ARCHITECTS, INC.**

THIS AMENDMENT for AGREEMENT is entered into as of the _____ day of _____, 20____ by and between the TRANSBAY JOINT POWERS AUTHORITY ("TJPA") and Pelli Clarke Pelli Architects, Inc. (the "Architect").

Recitals

A. TJPA desire that the Architect render professional design services in connection with the design and construction of TRANSBAY TRANSIT CENTER BUILDING AND RELATED STRUCTURES.

B. Architect represents that it possesses the requisite professional expertise, experience and resources to render such services in accordance with the terms and conditions of this Agreement.

C. TJPA and Architect intend that this Agreement comply with the regulations of the Federal Transit Administration of the United States Department of Transportation ("FTA").

D. On September 20, 2007, the TJPA Board of Directors (the "Board") adopted Resolution No. 07-034, which authorized the Executive Director to negotiate with the Architect

E. On May 15, 2008, the TJPA Board of Directors adopted Resolution No. 08-025, which authorized the Executive Director to execute the Agreement for said services by Architect.

Now, THEREFORE, the parties agree as follows:

Terms and Conditions

The agreement between the TJPA and the Architect which was executed by the parties on May 15, 2008 is amended as follows:

1. Services associated with prototype test for shoring wall and buttress shall be included as "Additional Services" and shall be completed by the completion of the "Design Development" phase. Exhibit A provides the scope of these additional services.
2. Under 8.2 of the Agreement the Architect is authorized to invoice these Additional Services in an amount not to exceed \$5,000,000.00.
3. All other terms, covenants, and conditions in the original agreement shall remain in full force and effect and shall be applicable to this amendment.

The individuals executing this amendment to the agreement represent and warrant that they have the legal capacity and authority to do so on behalf of their respective legal entities.

IN WITNESS WHEREOF, the parties hereto have executed this contract Amendment No. 01 on the day first mentioned above.

TRANSBAY JOINT POWERS AUTHORITY

Maria Ayerdi-Kaplan
Executive Director

Transbay Joint Powers Authority

Transbay Joint Powers Authority
Board of Directors
Resolution No. _____
Adopted: _____
Attest:

Secretary, TJPA Board

Approved as to Form:

Dennis J. Herrera, City Attorney

By _____
Deputy City Attorney

Architect

By signing this Agreement, I certify that I comply with the requirements of the Minimum Compensation Ordinance, which entitle Covered Employees to certain minimum hourly wages and compensated and uncompensated time off.

I have read and understood paragraph 55, the TJPA's statement urging companies doing business in Northern Ireland to move towards resolving employment inequities, encouraging compliance with the MacBride Principles, and urging San Francisco companies to do business with corporations that abide by the MacBride Principles.

Authorized Signature

Printed Name

Title

Pelli Clarke Pelli Architects, Inc.

Company Name

1056 Chapel Street

Address

New Haven, CT 06501

City, State, ZIP

Phone Number

Federal Employer ID Number

Exhibit A

Amended Scope

Prototype Test for Shoring Wall and Buttress

1. Additional Services Architect Agrees to Perform

Work under this Agreement shall be performed only by competent personnel under the supervision of and/or in the employment of the Architect and shall include all costs associated with labor, materials, equipment, professional services, permits, markups and fees.

a. Prototype Shoring Wall and Buttress

- 1) Construct a 1-cell cut-off/shoring wall (50 ft x 25 ft) using the Deep Mixing Method (DMM), also referred to as the Cement Deep Soil Mixing (CDSM) method. A system of three overlapping augers shall be used to drill through a column of soil to the depth of interest while injecting and mixing cement-bentonite slurry with the in-situ soils to construct overlapping soil-cement panels that will form the shoring/cut-off walls to shore the excavation for the train box. Construct two walls 50 feet by 105 feet, 1 wall 25 feet by 120 feet and a fourth wall 25 feet by 140 feet.
- 2) Construct a 1-cell shoring/cut-off wall (50 ft x 25 ft) using the Cutter Soil Mixing (CSM) method, which uses a system of steel blades to shear the soil as the equipment penetrates the ground, and to mix the soil with injected cement-bentonite slurry. Consecutive overlapping panels shall be constructed to form the shoring/cut-off wall. Construct 2 longitudinal walls each 120 feet deep (100 feet by 120 feet) and two transverse walls each 140 feet deep (50 feet by 140 feet).
- 3) Construct a series of 5 overlapping drilled shafts, each 7 feet in diameter and 220 feet deep, to evaluate constructability issues and production rates for the construction of the buttress that is intended to protect adjacent buildings.
- 4) Construct a cement-grout slab 20 feet thick within the walls of one of the CSM cells using the jet-grouting method, to act as a pre-installed strut for control of excavation-induced deformations. The cell shall be 25 feet by 50 feet.

b. Testing and Supervision

Perform geotechnical testing consisting of dewatering the cells and monitor the performance of the test cells, coring of the soil-cement and concrete shafts, and perform laboratory testing. Coordinate work to avoid interference between testing and prototype work. Perform monitoring and in-situ testing while construction of prototype shoring wall and buttress is in progress.