

**THIS STAFF REPORT COVERS CALENDAR ITEM NO.: 14  
FOR THE MEETING OF: June 11, 2009**

## **TRANSBAY JOINT POWERS AUTHORITY**

### **BRIEF DESCRIPTION:**

Requesting that the Board provide direction to TJPA Staff and architectural consultants, Pelli Clarke Pelli Architects, to include the design of the below-grade levels of the Transit Center in the scope of construction for Phase 1 of the Transbay Transit Center.

### **SUMMARY:**

On June 2, 2006, the Board approved Resolution 06-012 providing that the Transbay Program would be constructed in two phases: Phase 1 includes the above-ground (bus) levels of the Transit Center, bus ramps, and bus storage; Phase 2 includes the Caltrain Downtown Extension (DTX) and the below-ground (rail) levels of the Transit Center (“train box”).

On May 15, 2008, the Board approved Resolution 08-025 awarding a contract for the design of the Transbay Transit Center in its entirety, including all levels of the Transit Center to be constructed in Phases 1 and 2, to Pelli Clarke Pelli Architects. Pelli Clarke Pelli heads the TJPA’s design team for the Transit Center (“Design Team”).

On February 17, 2009, President Obama signed into law the American Recovery and Reinvestment Act (“ARRA”). The ARRA appropriated \$8 billion nationally for High Speed Rail and Intercity Rail grants. In cooperation with the State of California, the TJPA intends to apply for \$400 million under the ARRA to fund construction of the train box in Phase 1. The Federal Railroad Administration (FRA) should act on the State’s application by October 1, 2009. The Transbay Program is well positioned for funding under the ARRA.

On April 3, 2009, the Design Team completed the Schematic Design for the Transit Center. Throughout the Concept Validation and Schematic Design process, the Design Team has developed and evaluated two design alternatives – one assuming that the Transit Center is constructed under the currently adopted strategy, and one assuming that construction of the train box structure - without finishes - is moved into Phase 1.

Staff has concluded that constructing the train box in Phase 1 brings the following advantages to the Program:

1. Overall Cost Savings: Building the entire Transit Center building in a single phase would result in an estimated savings of \$100 million. Additional savings may be realized through increased competition in the current construction market.
2. Improved Passenger Experiences at First Occupancy: Under the construction plan where the train box is constructed in Phase 2, “back of house” systems must be located on the ground level, displacing retail and other public uses that will activate the Transit Center and compromising horizontal and vertical circulation. Under the proposal where the train

box is constructed in Phase 1, the “back of house” systems will be placed on the Concourse level below grade.

3. **Reduced Sensitivity to Ground Movements:** Under the strategy where the train box is constructed in Phase 2, the contractor will excavate underneath the constructed or partially constructed above-grade levels of the Transit Center in the second phase. The Transit Center will be sensitive to ground movements, and mitigating potential ground movements during Phase 2 will be more difficult and costly.
4. **Construction Tolerances:** Under the “top down” strategy, the vertical control and alignment of the drilled caissons that will serve as the columns of the future rail levels will be challenging, and the columns will require moderate to extensive rework during Phase 2 to produce an acceptable finished alignment. The installation of waterproofing systems and control of water infiltration will be more difficult if the Train Box is constructed in the second phase, and the structure will have poorer waterproofing performance.
5. **Reduced Overall Construction Time and Transbay Neighborhood Disruption:** Accelerating construction of the train box would reduce the total time for construction of the Transit Center and the accompanying disruption in the area as compared to constructing the train box in Phase 2.
6. **Reduced Loading from Adjacent Structures:** Buildings adjacent to the Transbay Transit Center will exert loads on the train box during construction. If the train box is built in the Phase 1 prior to the construction of the anticipated new buildings adjacent to the Transit Center, the loading on the Transit Center structure will be reduced.
7. **Stimulus Jobs for the Bay Area:** Building the train box now, during an economic recession, rather than waiting for several years, will create jobs when they are most needed.

To maintain the current schedule for construction of Phase 1 of the Transit Center, the Design Team must begin Design Development (“DD”) now. DD involves the detailed design of the structure and building systems around a fixed arrangement of program spaces and establishing a sequence of construction. Continuing to develop two alternatives for the construction of the Transit Center through the DD phase would increase the TJPA’s currently budgeted design costs, delay the completion of design and the start of construction, and add design complexity as the TJPA and the Design Team move between two sets of design and construction assumptions. Accordingly, the TJPA should decide at this time whether the Design Team should continue the current “top down” design for construction of the Transit Center, or design for construction of the train box in the first phase.

If the TJPA provides direction to the Design Team now, the DD effort can be completed within the current schedule and budget. If, however, the Design Team is required to redesign the Transit Center after completion of DD to include the train box or to revert to constructing the train box in Phase 2 after proceeding with the expectation that the rail levels would be

constructed in Phase 1, the redesign effort will delay completion of design by an estimated 4 months and result in additional design costs of approximately \$12 million.

Staff recommends that the Board direct the Design Team to proceed with DD assuming that the train box will be included in the Phase 1 construction of the Transit Center building because (a) constructing the train box in Phase 1 has distinct cost, design, and other advantages over the original “top down” approach; (b) the Design Team can incorporate the train box in DD without delaying construction of the Transit Center or increasing the design development budget; and (c) the TJPA has a good chance of receiving ARRA funding for the construction of the train box.

## **REPORT:**

### **The Two Phase Strategy**

In 2005-2006 the TJPA, in consultation with the Program Management and Program Controls team, conducted a Value Engineering exercise to identify methods of reducing the overall cost of the Transbay Program and secure the greatest benefit from the funds committed to date. The principal outcome of this process was a recommendation to split the Transbay Program into two phases: Phase 1 included construction of the elements of the Program necessary for bus operations--construction of the temporary terminal, demolition of the existing Transbay Terminal and bus ramps, and construction of the above-grade levels of the Transit Center, the bus ramps, and bus storage. In Phase 1, the TJPA planned to build drilled caisson foundations and other improvements in the Transit Center to allow for future construction of the train box – the Rail Concourse and Rail Platform levels. Phase 2 involved construction of the rail extension for Caltrain commuter rail and California High Speed Rail (“DTX”) and the train box using a “top down” method of construction. At its June 2, 2006 meeting, the TJPA Board adopted this phased implementation strategy.

The Design Team headed by Pelli Clarke Pelli has designed the Transit Center through Conceptual Validation and Schematic Design assuming that the Transit Center will be built in two phases. In the design work thus far, however, the Design Team has also kept open the possibility that the Transit Center could be constructed with the train box in Phase 1 if the TJPA is able to secure additional funding. If the train box is included in the same phase of construction as the above-ground bus station levels of the Transit Center, the construction method used for the Transit Center would be changed to “bottom up.”

### **ARRA Funding**

On February 17, 2009, President Obama signed into law the American Recovery and Reinvestment Act (“ARRA”). The ARRA includes \$8 billion nationally for High-Speed Rail and Intercity Rail grants. On April 16, the Federal Railroad Administration (“FRA”) released its *Vision for High-Speed Rail in America*, a Strategic Plan describing how the agency will use the \$8 billion in ARRA funds for intercity and high-speed rail. The *Vision for High Speed Rail in America* outlines four strategic transportation goals:

1. Ensure safe and efficient transportation choices.

2. Build a foundation for economic competitiveness.
3. Promote energy efficiency and environmental quality.
4. Support interconnected livable communities.

The FRA has developed project selection criteria to implement the *Vision for High-Speed Rail in America*, as follows:

1. *Achieving Public Benefits*: The extent to which the project provides specific, measurable, achievable benefits in a timely and cost-effective manner in relation to public sector and Federal investment costs. Applicants will be evaluated on how well their project:
  - Contributes to economic recovery efforts by creating and/or saving jobs.
  - Advances the President's strategic transportation goals to ensure safe and efficient transportation choices, build a foundation for economic competitiveness, promote energy efficiency and environmental quality, and support interconnected livable communities.
  - Furthers other high-speed and intercity passenger rail goals outlined in the *Vision for High-Speed Rail in America* and in the Passenger Rail Investment and Improvement Act of 2008.
2. *Mitigating Risks*: Applicants will be evaluated on the extent to which they address critical success factors:
  - Fiscal and institutional capacity to carry out and manage the project.
  - Financial projections and plans to cover cost.
  - Commitments from key stakeholders, including other States involved in the corridor and the host railroads that own any existing required rail infrastructure.
  - Experience and procedures for managing project financial, management, and construction risks.
3. *Other Criteria*: Other key considerations include:
  - Timeliness of achieving benefits.
  - Sufficiency of the reporting and management approach.
  - Completeness and quality of the application.

The FRA will accept two rounds of applications for distribution of ARRA funds. Applications for Round 1 are due August 1, 2009, and project selections will be made by October 1, 2009. On June 17, 2009, the FRA will release detailed application guidelines.

The State will be the primary applicant in California for ARRA high-speed and intercity rail funds. Caltrans is coordinating the State's application process and has convened several meetings with high-speed and intercity rail stakeholders. Caltrans has included the TJPA's train box in the state-wide list of projects under consideration for the State's application for ARRA funds.

In the Bay Area, the Metropolitan Transportation Commission (“MTC”) requested that the TJPA, California High-Speed Rail Authority, Caltrain, and the Valley Transportation Authority develop a consensus on a strategy for securing ARRA funding for high-speed rail in the Peninsula Corridor. The result of this effort is the Bay Area’s *Peninsula Corridor Investment Strategy*, which identifies key near-term and possible longer-term high-speed rail funding needs for the segment of high-speed rail from the Transbay Transit Center to San Jose’s Diridon Station. The ARRA funding request contained in the *Strategy* includes the TJPA’s train box, extension of the rail platforms in the train box to accommodate 400 meter-long high-speed rail trains, and DTX design.

The success of the TJPA’s application for ARRA funds for the train box will depend on support from Caltrans, MTC, the TJPA member agencies, and other stakeholders. We will look to our partners for ongoing leadership and support in securing funding for the Transbay Program from sources such as ARRA.

### **Proceeding with Design Development with the Train Box in Phase 1**

ARRA funding in the amount of \$400 million is required for construction of the train box in Phase 1 of the Transit Center construction. The FRA selection process will not be completed until October 1, 2009. Meanwhile the Design Team has begun Design Development (“DD”) for the Transit Center now and will complete DD by October 31, 2009. Staff is seeking the Board’s approval for the Design Team to complete DD assuming that the train box will be built in Phase 1 of the Transit Center construction. Staff’s recommendation is based on its weighing of three factors: (a) the cost, technical, and other advantages of including the train box in Phase 1; (b) the opportunity to incorporate the train box in Phase 1 design now without adverse effect on the DD schedule or budget; and (c) the likelihood that the FRA will grant ARRA funds for the train box.

#### **Advantages of Including Train Box in Phase 1**

Constructing the train box in Phase 1 in a “bottom-up,” approach would result in significant total Program cost savings, distinct design advantages, and other benefits as follows:

1. The train box would add \$400 million to the \$1.2 billion cost of Phase 1 of the Transit Center. Building the entire Transit Center structure in Phase 1, however, will reduce the cost of constructing the train box and result in an estimated savings of \$100 million for the total Program. The drilled caissons that will serve as the future columns of the train box structure under the “top down” strategy will not be required if the train box is constructed in the first phase. Excavation and construction of the train box will be easier and less costly in the first phase. Finally, building the train box now, in a soft construction market, will result in savings in the cost of labor and materials.
2. Several “back of house” systems essential to the operation of a Transit Center, including electrical transformers and switch gear, mechanical rooms, and other administrative, maintenance and building support spaces, must be constructed in Phase 1. Ideally, these elements would be located below grade on the Rail Concourse level, out of sight and out of the path of ground floor visitors to the Transit Center. Under the strategy where the train box is built in Phase 2, however, there would be no below-ground construction other

than foundations. Accordingly, these systems must be located on the ground level, compromising horizontal and vertical circulation and displacing retail and other public uses that will activate the Transit Center. Moreover, some of these “back of house” systems will have to be reworked during Phase 2 under the alternative where the train box is constructed in Phase 2.

3. Including the train box in the first phase of construction will also simplify construction and mitigate construction risks. If the train box is built in Phase 2, the contractor will excavate underneath the constructed or partially-constructed above-grade levels of the Transit Center to construct the rail levels. This will be slower and more expensive than the conventional open-pit excavation that will be employed if the train box is constructed prior to the construction of the above-grade structures. Obstacles encountered during the course of construction will be easier and less expensive to address and will result in fewer delays if the train box is constructed in the first phase. Additionally, the contractor will have to carefully monitor and control ground settlement during excavation to protect earlier Transit Center construction. If settlement exceeds projections, the measures required to stabilize the excavation and mitigate the settlement would be more difficult and costly if the train box is built in Phase 2.
4. Under the “top down” strategy the vertical control and alignment of the drilled caissons that will serve as the columns of the future rail levels will be challenging, and the columns will require moderate to extensive rework during Phase 2 to produce an acceptable finished alignment. Constructing the train box in Phase 1 allows for the design of the train box as a large bath tub. Constructing the train box in Phase 2 requires the construction of deep foundations to support the Phase 1 structure followed in Phase 2 by the construction of the train box. The penetration of the train box by the Phase 1 foundations compromises the train box waterproofing systems resulting in poorer waterproofing performance and long-term maintenance challenges.
5. Constructing the train box in Phase 1 will decrease the total time for construction of the Transit Center by several months and will reduce the accompanying disruption of vehicle and pedestrian traffic and access to adjoining properties resulting from the construction.
6. Buildings adjacent to the Transit Center will exert loads on the train box during construction. If the train box is built before the Transit Tower and other anticipated development on adjoining property, the train box will not be required to provide lateral support for these structures. Rather, when these structures are built, they will be required to protect the train box.
7. Building the train box now, during a severe economic recession, rather than waiting for several years, has the added advantage of creating jobs when they are most needed. The TJPA estimates that the train box construction alone will directly and indirectly add 12,000 jobs to the local economy.

It is important to point out that there will be a schedule impact with building the train box in Phase 1 as opposed to Phase 2. If the train box is constructed as part of Phase 2, the start of bus service is scheduled for completion in 2014. Building the Transit Center in a single phase

“bottom up” will extend the completion date of the above-ground levels and delay the start of bus service by approximately 14 months, during which time AC Transit, Greyhound, and the other bus providers would continue to operate at the Temporary Terminal. Staff will continue to work with the TJPA’s contractor to reduce the delay in completing the above-ground levels of the Transit Center resulting from inclusion of the train box in the first phase of construction. With the economic downturn, it is likely that the Temporary Terminal would provide adequate capacity during the extra time needed to construct the rail levels in Phase 1. TJPA staff will review projections of bus service demand and develop contingency plans should unforeseen increases in gas prices or ridership strain the operating capacity of the Temporary Terminal. A key concern with the Temporary Terminal is the high staffing costs required to ensure reliable operations. The site is constrained and requires more staffing to manage bus circulation than the current Terminal or the new Transit Center. Building the Transit Center building in a single phase will, however, require only one additional year of this higher staffing level, which is a reasonable tradeoff given the significant benefits of the change.

### **Likelihood of ARRA Funding**

The likelihood that the TJPA will receive funding from the FRA in Round 1 should be given great weight in this decision making process. Staff believes that ARRA funding is likely for the following reasons:

1. Accelerating construction of the train box meets the draft criteria included in the *Vision for High-Speed Rail in America*: (a) the train box portion of the project alone will create more than 12,000 jobs; (b) the Transbay Program promotes energy efficiency and environmental quality; (c) the Program provides an important terminal for the high-speed rail network in California; (d) the TJPA has the fiscal and institutional capacity to carry out and manage the Program; and (e) the project is under construction with environmental clearances in place.
2. The TJPA has actively participated in the statewide effort to develop a list of ready-to-go projects and will continue to work closely with Caltrans to ensure that the train box is a high priority for the State’s application for Round 1 of ARRA High-Speed and Intercity Rail Funds.
3. The train box is a key project listed in the *Peninsula Corridor Investment Strategy*, a consensus position of Bay Area stakeholders for ARRA High-Speed and Intercity Rail Funds.

### **RECOMMENDATION:**

In consideration of all the above factors, Staff concludes that it is advantageous to proceed with DD for a single phase construction of the Transit Center building. Staff recommends that the TJPA Board of Directors authorize Staff to direct architectural consultants Pelli-Clarke Pelli Architects to include design of the below-grade levels of the Transit Center in the Phase 1 construction of the Transit Center.

### **ENCLOSURE:**

1. Resolution

**TRANSBAY JOINT POWERS AUTHORITY  
BOARD OF DIRECTORS**

**Resolution No. \_\_\_\_\_**

WHEREAS, On June 2, 2006, the Board approved Resolution 06-012 providing that the Transbay Program would be constructed in two phases: Phase 1 includes the above-ground (bus) levels of the Transit Center, bus ramps, and bus storage; Phase 2 includes the DTX and the below-ground (rail) levels of the Transit Center (“train box”); and

WHEREAS, On May 15, 2008, the Board approved Resolution 08-025 awarding a contract for the design of the Transbay Transit Center in its entirety, including all levels of the Transit Center to be constructed in Phases 1 and 2, to Pelli Clarke Pelli Architects; and

WHEREAS, Pelli Clarke Pelli Architects heads the TJPA’s design team for the Transit Center (“Design Team”); and

WHEREAS, On February 17, 2009, President Obama signed into law the American Recovery and Reinvestment Act (“ARRA”), under which the federal government appropriated \$8 billion nationally for High-Speed Rail and Intercity Rail grants; and

WHEREAS, In cooperation with the State of California, the TJPA intends to apply for \$400 million under the ARRA to fund construction of the train box in Phase 1; and

WHEREAS, The Federal Railroad Administration (FRA) should act on the TJPA’s application by October 1, 2009; and

WHEREAS, The Transbay Program is well positioned for funding under the ARRA because the Program meets the criteria for an award of a High-Speed Rail and Intercity Rail grant; and

WHEREAS, Throughout the Concept Validation and Schematic Design process, the Design Team has developed and evaluated two design alternatives – one assuming that the Transit Center is constructed under the current two-phase strategy, and one assuming that construction of the train box (without finishes) is moved into Phase 1; and

WHEREAS, Staff has concluded that constructing the train box in Phase 1 brings significant cost and design advantages to the Program and will create thousands of jobs for the region when they are most needed; and

WHEREAS, To maintain the current schedule for construction of Phase 1 of the Transit Center, the Design Team must begin Design Development (“DD”) immediately; and

WHEREAS, If the TJPA provides direction to the Design Team to include the train box in the design for Phase 1 of the Transbay Program, the DD effort can be completed within the current schedule and budget; now, therefore, be it

**RESOLVED**, That the TJPA Board authorizes the Executive Director to direct architectural consultants Pelli Clarke Pelli Architects to include design of the below-grade levels of the Transit Center in the construction for Phase 1 of the Transit Center.

I hereby certify that the foregoing resolution was adopted by the Transbay Joint Powers Authority Board of Directors at its meeting of June 11, 2009.

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Secretary, Transbay Joint Powers Authority