

SOUND TRANSIT - CENTRAL PUGET SOUND REGIONAL TRANSIT AUTHORITY

RESOLUTION NO. 98-17

**Systems Engineering (Link Light Rail) Contract Award
BACKGROUND AND COMMENTS**

Meeting:	Date:	Type of Action:	Staff Contact:	Phone:
Finance Committee	4/2/98	Discussion	Paul Bay	206-689-4761
Finance Committee	4/16/98	Recommend Board Action	Les Durrant	206-689-4901
Board of Directors	4/23/98	Approval		

ACTION:

Approve Board Resolution 98-17, based upon recommendation of the Finance Committee, to award a Systems Engineering Consulting contract for conceptual and preliminary engineering not to exceed \$5,856,500 to LTK Engineering Services (LTK). An additional \$1,171,300 is requested to be authorized as a contingency reserve (to cover changes in the work).

Note: The contingency reserve is not part of the consultant contract. The Director of Light Rail Transit will hold the contingency in reserve.

BACKGROUND:

On January 21, 1998, the RTA received qualification proposals from two consultant teams to perform systems engineering design services for the LINK Light Rail Transit System in response to RTA's Request for Qualifications. Both consultant teams that submitted written qualifications were deemed qualified and oral interviews were held on February 5, 1998. The RTA selection committee recommended that the RTA pursue negotiations with LTK Engineering Services (LTK), the firm deemed most qualified based on written qualifications and the oral interview. LTK was notified of their selection and LTK was given a limited notice to proceed in the amount of \$200,000 on March 13, 1998 to perform specific tasks. The limited notice to proceed enables RTA to obtain a suitable basis for negotiation of the work scope and budget.

After LTK submitted a detailed work plan to us, we discussed the scope, contract terms and conditions. The RTA has reached an agreement with LTK regarding scope, the level of effort required to implement that scope and contract terms and conditions. King County Transportation Audit Services has reviewed the overhead rates for both the prime consultant and major subconsultants, and is currently reviewing the information for the remainder of the subconsultants.

The work program and budget include the following elements:

- ◆ Work Plan (scope of work) on a task by task basis with major deliverables
- ◆ Project Schedule on a task basis
- ◆ Project Budget on a task basis, noting key staff members
- ◆ Summary Budget by firm and time period
- ◆ Diversity Program detailing anticipated M/W/DBE firm participation
- ◆ Organization Chart showing key staff and prime/subconsultant work relationships

RELEVANT BOARD POLICIES AND PREVIOUS ACTIONS TAKEN:

- ◆ Adoption of *Sound Move* (May 31, 1996)
- ◆ Adoption of Resolution 78 (December 13, 1996)
- ◆ Adoption of Implementation Guide (May 22, 1997)
- ◆ Adoption of First Moves (May 22, 1997)
- ◆ Adoption of Fiscal Year 1998 Budget (December 11, 1997)

PROPOSED KEY FEATURES:

- A \$100,000 limitation on costs associated with termination for convenience.
- Use of a letter of credit in lieu of retainage monies.
- Negotiated overhead rates versus annually adjusted provisional rates
- Commitment of consultant to co-location of key personnel at RTA offices with corresponding reduction of overhead charges and improvement in communications and coordination with other co-located civil engineering and program management consultants and RTA staff
- The contract is anticipated to run from May 1998 through April 2000. It is anticipated that this contract will be extended beyond April 2000 to provide final design and equipment procurement oversight services, provided the consultant performs the preliminary design work well.

FUNDING:

Funding is provided in the Fiscal Year 1998 Light Rail Capital budget. Federal funds are available in FY 1998. Additional federal funds may become available in FY 1999.

ALTERNATIVES:

Pursue negotiations with the second ranked team.

CONSEQUENCES OF DELAY:

The civil consultant contract has been underway with preliminary engineering for two months and will soon need to coordinate closely with the systems engineering consultant in order to verify key assumptions on vehicle clearances and yard requirements. Of particular importance is the Tacoma segment that has an extremely ambitious revenue start date. This contract is on the critical path of the Tacoma segment implementation.

WHY DO WE NEED A CONTINGENCY FOR THIS OR OTHER PROFESSIONAL SERVICE CONTRACTS?

We are entering into conceptual and preliminary engineering design and environmental documentation for the LINK Light Rail System. As evidenced in scoping meetings held in December, there are still uncertainties regarding alignment location, vertical profile, station locations and site specific applications of each alternative. These uncertainties extend even beyond the multitude of alignment options presented in the Environmental Scoping Information Report. It is important that we have the capability to respond to these alignment issues now, during preliminary engineering, not later when designs have been completed.

Besides alignment issues, there are impacts with traffic, visual, noise and vibration, potential for hazardous materials, soil conditions, and endangered species that are currently unknown but will have to be studied nonetheless. Physical constraints and modifications to existing utilities will also have to be dealt with. In addition, systems engineering issues that may arise include station location changes, electric power availability; technology advances and obsolescence, fire/life safety issues, impacts of building code interpretations and accommodation of signaling requests by different entities. We are also sure there will be other issues that the public will be concerned about which we are unaware of at this time.

Yet we need to award a tight contract based on a definitive scope of work that we can manage accordingly. Our approach has been to make assumptions up front as to how much time and effort will be required, based on the best information at hand and includes only those items and budget in the contract.

A contingency fund is then provided to allow us to respond with engineering work that may be required above and beyond our initial assumptions. We have taken a lean approach to the consultant's budget focusing in on what we know we have to do. The contingency fund will then be used only as needed to allow us to properly scope and manage the consultant effort.

A pre-approved contingency fund will also allow us to expeditiously respond to unforeseen issues, when they arise, to avoid impacts to schedule. A contingency fund of 20% is a reasonable amount. This was provided for by the Board in Resolution 78, Sections 9 and 10. Contingency funds not required will not be spent. Contingency funds used will be reported to the Board in our monthly progress reports.

HOW DOES THIS CONTRACT FIT INTO THE OVERALL PROGRAM?

For the total Light Rail Transit conceptual and preliminary engineering effort there will be five main contracts:

- ◆ Civil Facilities Design Contract (Resolution 98-3; January 22, 1998)
- ◆ Systems Engineering Design Contract (Resolution No. 98-17 (this resolution; pending board action)
- ◆ Environmental Review Services Contract (Resolution 98-2; February 12, 1998)
- ◆ Project Management Systems and Project Control Contract (Resolution No. 98-14; pending board action)
- ◆ Ridership Forecasting (Motion 98-5; January 16, 1998)

The work performed in the conceptual and preliminary engineering stage will be the basis for follow on final design and procurement contracts as follows (for example only; specific packaging has yet to be determined):

Civil Facilities Procurements

- ◆ Rail
- ◆ Trackwork and Trackwork materials
- ◆ Ties and direct fixation fasteners
- ◆ Paved Track Materials
- ◆ Wayside Maintenance Equipment

System Facilities Procurements

- ✓ Transit Vehicles
- ✓ Traction Power Substation Equipment
- ✓ Fare Collection Equipment
- ✓ Maintenance Equipment

Civil Construction Contracts

- Tacoma Line Section
- Southern Terminus to Boeing Access Road
- Boeing Access Road to Columbia City
- Columbia City to DSTT
- DSTT Improvements
- DSTT to Northern Terminus
- Maintenance Yard and Tracks
- Stations/Station finishes (multiple contracts)
- Art in Transit (may be a part of other contracts)

System Facilities Construction Contracts

- ✦ Traction Power Installation
- ✦ Signaling and Communications
- ✦ Maintenance Facility
- ✦ Satellite Maintenance Facility (Tacoma)
- ✦ Systemwide Start-up and Testing

These final design contracts will require additional professional services for construction management, system activation, and final design oversight. One cannot overstate the importance of conceptual and preliminary engineering and the decisions that must be made as a result of that effort to ensure that follow-on work goes smoothly, without delay and without re-examining past decisions. The cost of change escalates once final design begins.

EXECUTIVE SUMMARY OF THE SCOPE OF WORK

This systems engineering contract for conceptual and preliminary engineering covers the work described below. This authorization covers conceptual, preliminary and some final design for systems engineering particularly for Tacoma, which, due to tight schedule constraints, will be brought sooner to final design. Extensions to this contract to complete systems engineering final design for the Link segments other than Tacoma will require additional authorization, as will all the other contracts listed above.

The major work items in the systems engineering scope of work are listed below:

- ◆ **Project Management**
- ◆ Project Management and Administration
- ◆ Project Control/Schedule

- ◆ Value Engineering and Peer Reviews
- ◆ Subconsultant and Contract Administration
- ◆ Cost Reporting
- ◆ Diversity Management
- ◆ Systems Coordination
- ◆ Cost Estimating
- ◆ Contract Packaging

- ◆ **Light Rail Vehicles**

- ◆ Coordination with Civil/other consultants
- ◆ Develop Baseline Vehicle Definition
- ◆ Geometric and Operational Parameters
- ◆ Composite Vehicle Dynamic Envelope
- ◆ Technology Assessment
- ◆ Develop Candidate Vehicles List
- ◆ Tacoma Compatibility and Options Study
- ◆ Operations Simulation
- ◆ Develop Draft Design Criteria
- ◆ Develop Final Design Criteria
- ◆ Draft Specification Development
- ◆ Design Decision Matrix
- ◆ Complete 15% Specification
- ◆ Complete 30% Specification
- ◆ Industry Review
- ◆ Procurement Strategy and Process
- ◆ Evaluate Procurement Process Options
- ◆ Draft Commercial Terms and Conditions
- ◆ Preliminary Evaluation Process and Criteria
- ◆ Contract Packaging

- ◆ **Operations and Maintenance Facilities**

- ◆ Coordination with Civil/other consultants
- ◆ Community Involvement Activities
- ◆ Conceptual and Preliminary Design
- ◆ Identify and Evaluate Sites
- ◆ Maintenance and Space Planning
- ◆ Preliminary Yard Layouts
- ◆ Conceptual and Preliminary Shop Layouts
- ◆ Equipment and Tool List
- ◆ Draft Design Criteria
- ◆ Final Design Criteria
- ◆ Preliminary Design
- ◆ Yard Schematic Design - 15% and 30%
- ◆ Shop Schematic Design - 15% and 30%

- ◆ Develop 15% Specification
- ◆ Develop 30% Specification
- ◆ Contracting Strategy and Process
- ◆ Determine Contracting Method

- ◆ **Traction Electrification System**
- ◆ Activities List (Work Breakdown Structure - WBS) and Schedule
- ◆ Coordination with Civil/other consultants
- ◆ Community Involvement Activities
- ◆ Corrosion Committee Interface
- ◆ Develop Baseline System
- ◆ Develop Electrical Parameters
- ◆ Substation Technology Assessment
- ◆ Packaged vs. Rooms Analysis
- ◆ Overhead Collection System (OCS) Parameters
- ◆ Simulation/Substation Sizing
- ◆ Utility Coordination
- ◆ Draft Design Criteria
- ◆ Final Design Criteria
- ◆ Preliminary Design
- ◆ Substation Single-Line Diagram
- ◆ OCS Sectionalization Diagram
- ◆ Utility Feed Single-Line Diagram
- ◆ Corrosion Control Utility Guidelines
- ◆ Develop 15% Specification
- ◆ Develop 30% Specification
- ◆ Contracting Process
- ◆ Evaluate Procurement Process Options
- ◆ Develop Evaluation Criteria

- ◆ **Signal System**
- ◆ Activities List (WBS) and Schedule
- ◆ Coordination with Civil/other consultants
- ◆ Community Involvement Activities
- ◆ Operations Interface
- ◆ Coordinate with Regulatory Agencies
- ◆ Conceptual Design
- ◆ Technology Assessment
- ◆ Determine Technical Parameters (braking algorithm, headways)
- ◆ Train to Wayside Communications (TWC)
- ◆ Street Crossing Warning Systems
- ◆ Rooms vs. Bungalows vs. Cases
- ◆ Auxiliary Electric Feed/Utility Power
- ◆ EMI Assessment

- ◆ Draft Design Criteria
- ◆ Final Design Criteria
- ◆ Preliminary Design
- ◆ Signal Single-Line Diagram
- ◆ TWC Single-Line Diagram
- ◆ Control Line Diagram
- ◆ Develop 15% Specification
- ◆ Develop 30% Specification
- ◆ Contracting Process
- ◆ Evaluate Procurement Process Options
- ◆ Develop Evaluation Criteria

◆ **Communications/Central Control**

- ◆ Activities List (WBS) and Schedule
- ◆ Coordination with Civil/other Consultants
- ◆ Community Involvement Activities
- ◆ Fire/Life Safety Committees
- ◆ Coordination with police, fire, rescue
- ◆ FCC Coordination
- ◆ ADA Coordination
- ◆ Conceptual Design
- ◆ Technology Assessments (fiber technology, view digital vs. analog)
- ◆ Regional Frequency and Coverage Study
- ◆ Audio Requirements (PA, radio)
- ◆ Video Requirements (CCTV, information kiosks, signage)
- ◆ Control Room Requirements
- ◆ Software Parameters
- ◆ Draft SCADA Parameters
- ◆ Draft Design Criteria
- ◆ Final Design Criteria
- ◆ Preliminary Design
- ◆ Communications Single-Line Diagram
- ◆ Develop 15% Specification
- ◆ Develop 30% Specification

◆ **Fare Collection**

- ◆ Activities List (WBS) and Schedule
- ◆ Coordination with Civil/other Consultants
- ◆ Community Involvement Activities
- ◆ Conceptual Design
- ◆ Coordinate w/Existing and Planned Transit Services
- ◆ Fare Collection Methodology (Smartcard, SSPOP, credit, debit)
- ◆ Establish Fare Policies
- ◆ Define Fare Collection Approach

- ◆ Technology Assessment
- ◆ Draft Design Criteria
- ◆ Final Design Criteria
- ◆ Preliminary Design
- ◆ System Single-Line Diagram
- ◆ Draft 15% Specification
- ◆ Draft 30% Specification
- ◆ Contracting Process
- ◆ Evaluate Procurement Process Options
- ◆ Evaluation Criteria

◆ **System-wide Electrical**

- ◆ Activities List (WBS) and Schedule
- ◆ Coordination with Civil/other consultants
- ◆ Community Involvement Activities
- ◆ Develop Baseline System
- ◆ Stations and Parking Electrical Needs Analyses
- ◆ Other Facilities Electrical Needs Analyses
- ◆ Develop Conceptual Designs
- ◆ Preliminary Design
- ◆ Station and Parking Electrical Diagrams
- ◆ Other Facilities Electrical Diagrams
- ◆ Develop 15% Specification
- ◆ Develop 30% Specification

◆ **Operations and System Integration and Fire/Life Safety**

- ◆ Activities List (WBS) and Schedule
- ◆ Coordination with Civil/other consultants
- ◆ Community Involvement Activities
- ◆ Operations and Maintenance Planning
- ◆ Operating Plan Development
- ◆ Maintenance Plan Development
- ◆ Organization Plan Development
- ◆ O & M Cost Estimates
- ◆ Facilities Definition Studies
- ◆ Design Reviews for Operability
- ◆ System Integration
- ◆ Develop Interface Management Plan
- ◆ Prepare Integration Matrix
- ◆ Design Reviews for Systems Integration
- ◆ Preparation of Fire/Life Safety Plan
- ◆ Quality Assurance

This scope of work covers a two-year work program. LTK is proposing the use of the 31 subcontractors, of which 18 are Minority, Women and Disadvantaged Business Enterprises, with many of the firms holding dual or all three certifications. LTK has committed to a 25% DBE involvement in the work. They have also committed to a mentoring and technology transfer program that will mean genuine and substantial involvement of small, local and disadvantaged businesses in the work program.

REGIONAL TRANSIT AUTHORITY

RESOLUTION NO. 98-17

A RESOLUTION of the Board of the Regional Transit Authority for the Pierce, King and Snohomish Counties region authorizing a contract with LTK Engineering Services to provide systems engineering design work for LINK Light Rail Transit System.

WHEREAS, a Regional Transit Authority (“RTA”) has been created for the Pierce, King, and Snohomish County region by action of their respective county councils pursuant to RCW 81.112.030; and

WHEREAS, on November 5, 1996, Central Puget Sound area voters approved local funding for *Sound Move*, the ten-year plan for regional high-capacity transit in the Central Puget Sound Region.

WHEREAS, the *Sound Move* ten-year plan includes the design and construction of a new Link Light-Rail Transit System to provide passenger service from downtown Seattle north to the University District and potentially to Northgate; from downtown Seattle south through Southeast Seattle and Tukwila to SeaTac; and from downtown Tacoma to the Tacoma Dome Intermodal Station;

WHEREAS, the construction of the Link Light Rail Transit System will require the design of an integrated transit system that will include approximately 80 light-rail passenger train cars, 25 miles of newly constructed rail line, and 24 newly constructed passenger stations located in Seattle and Tacoma;

WHEREAS, the RTA solicited proposals through a competitive procurement process for the preliminary systems engineering services necessary to design the Link Light Rail Transit System;


WHEREAS, the selection committee charged with the evaluation of the solicited proposals determined that the firm LTK Engineering Services (“LTK”) was the most-qualified firm to perform the engineering services; and

WHEREAS, the RTA has determined that the fees, costs, terms and conditions negotiated with "LTK" to perform the preliminary systems engineering services for the central line and preliminary and final design for Tacoma are fair and reasonable and in the best interests of the RTA.

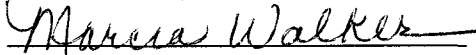
NOW, THEREFORE, BE IT RESOLVED by the Board of the Regional Transit Authority as follows:

The Executive Director is hereby authorized to execute a contract with "LTK" to provide systems engineering services to the Authority pursuant to such terms and conditions as are appropriate, usual and customary for governmental agencies and substantially in the form attached hereto, provided that the base fees and expenses paid for such services shall not exceed \$5,856,500 in base fees and \$1,171,300 in contingent funds to pay for additional services, if any, required to be performed due to unforeseen changed conditions.

ADOPTED by the Board of the Central Puget Sound Regional Transit Authority at a regular meeting thereof held on the 23 day of April 1998.


Bob Drewel
Board Chair

ATTEST:


Marcia Walker
Board Administrator