Link Light Rail

Project Management Plan

University Link

REV 1

September 2008

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PREFACE

This Project Management Plan (PMP) provides an understanding of the technical and project management principles fundamental to the design, construction, start-up, and integrated testing of the University Link project. In addition, it covers the best practices, requirements, and guidance that will be used to accomplish the delivery and operation of the project. This plan meets the Federal Transit Administration requirements for a PMP as defined in 49 CFR 633 Project Management Oversight, 49 U.S.C. Section 5327 project Management Oversight, and FTA Circular 5010.1C FTA Grant Management Guidelines. This PMP is designed to be a comprehensive, thoroughly practical reference guide to the family of processes, procedures, and manuals that direct and guide Link Department activities, as well as other Sound Transit departments that provide resources to Link in meeting the goals and objectives of Sound Move – the Ten Year Regional Transit System Plan (Sound Move). In addition, this plan carefully addresses the thirteen minimum requirements for a PMP specified in the FTA Project and Construction Management Guidelines (2003 Update). This plan articulates and conveys the tenets of the management and leadership approach for the University Link Project with minimal reiteration of information contained in other Agency and Link documents. Instead, every effort is made to reference these other documents and to allow process and procedural information to reside in the location where these details are best discussed and controlled.

This PMP places additional emphasis on selected management areas as part of a "phase-relevant" approach to managing the project throughout its life cycle. For example, University Link is currently in the design phase and Sound Transit submitted a Full Funding Grant Agreement (FFGA) application in January 2008. The requisite final design and construction management processes, procedures, organization, and staffing, needed to fulfill the FTA's "project readiness" requirements, are included or referenced in this Plan. A separate project Execution Plan (PEP) was also prepared as a supplement to this PMP as discussed further below. The PMP includes significant discussion geared towards supporting FFGA project readiness, as follows:

(1) Organization and Staffing – Chapter 2 addresses the use of fully integrated consultant resources in support of the project's final design and construction management, as well as the management and oversight responsibility of Link staff.

(2) Management Control – Chapter 3 addresses early and effective technical and cost control, along with the development of project baselines and the management of changes to design baselines.

(3) Risk Management and Insurance – Chapter 5 discusses Sound Transit's risk assessment and mitigation approach. Separate project Risk Management and Contingency Management Plans were prepared and in place by the 3rd Quarter of 2007 to support a Full Funding Grant Agreement application in January 2008.

(4) Quality Assurance/Quality Control Program – Chapter 3 discusses the approach and implementation of the Link Quality Program Plan. The basis for the program is the FTA QA/QC guidelines utilizing the fundamental principles of ISO 9001-2000.

(5) Procurement of Services – Chapter 7 covers the contract packaging approach, and the division of University Link into manageable contract units that are logically related to the type of work occurring at each alignment location.

(6) Design – Chapter 9 discusses the methodical approach to advancing the design from preliminary engineering through final design and design support during construction. Attention is given to the integration of contracts, interface management, constructability

considerations, and the identification and management of risk. A separate project Constructability Program Plan was prepared in the 4th Quarter of 2007 to support the Full Funding Grant Agreement application in January 2008.

(7) Safety – Chapter 15 defines and describes the safety and security criteria, hazard management analysis, construction safety and security, safety and security certification, and systems security and emergency response plan requirements and processes. In addition, as an extension of this PMP, a separate U-Link Safety and Security Management Plan (SSMP) has been prepared to address the safety and security aspects of the University Link design, construction, testing and start-up phases of the project.

As a supplement to this plan, the aforementioned U-Link Project Execution Plan describes the following additional project management strategies to be implemented on the U-Link Project:

- Establish and maintain a technical and commercial risk baseline, based on cost estimates, risk assessments, and a critical path schedule, all of which shall be updated quarterly.
- Identify minimum target cost and schedule contingency levels at key project milestones throughout the Project development.
- Develop and maintain cost and schedule risk management capacity as needed to manage risks throughout the project development.
- Develop "secondary cost mitigation strategies" to be implemented as necessary to offset cost contingency drawdown inside the "cost mitigation buffer zone" described below.
- Develop "secondary schedule mitigation strategies" to be implemented to offset critical-path or near critical-path activity slippage and meet other scheduling requirements.

Subsequent releases of this PMP will include revisions to reflect the evolving nature of University Link by shifting the project management discussion emphasis from the design phase and FFGA readiness to construction, and then into integrated testing and start-up reflecting those areas that are the most active from a planning and execution standpoint.

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1.0 PARAMETERS AND CONSTRAINTS

1.1. SOUND TRANSIT'S BACKGROUND, MISSION, AND VISION

Sound Transit is a regional transit authority governed by an appointed board of elected officials, serving Snohomish, King, and Pierce Counties. Sound Transit is in the process of building a regional transportation system in these counties. In 1995, voters rejected an earlier proposed regional transit plan. On May 31, 1996, Sound Transit adopted a document as the official Sound Move Ten-Year Regional Transit System Plan, which serves as a blueprint for the overall transit plan. Pursuant to state law, Sound Transit also prepared an abbreviated form of this document under the same name and distributed it to registered voters as an eight-page brochure.

In August 1996, the Sound Transit Board adopted Resolution No. 75, which approved placing Proposition No. 1 on the ballot in November of that year. Resolution No. 75 proposed to impose taxes in order to plan, build, and operate a regional transportation system. Resolution No. 75 identified (1) the .04% sales tax and the .03% motor-vehicle excise tax to be imposed, (2) explained the Board's authority to manage the projects and spend the taxes, and (3) described the 70 projects making up the system. It also delegated broad authority to the Board to prioritize projects which "are deemed by the Board to be most necessary and in the best interests of the RTA" in the event of a budget shortfall.

On November 5, 1996, voters passed Proposition No. 1, a measure authorizing Sound Transit to build a high-capacity regional transportation system, including electric light rail, commuter rail, express buses, HOV lanes and other transportation improvements.

Proposition No. 1 read as follows:

PROPOSITION NO. 1

REGIONAL TRANSIT SYSTEM

> "To implement a regional rail and express bus system linking Tacoma, Seattle, Bellevue, Everett, other cities and SeaTac Airport, shall the Regional Transit Authority impose a sales and use tax of up to four-tenths of one percent and a motor vehicle excise tax of three-tenths of one percent to provide the local share of funding towards the $3.9 billion estimated cost of the system, as provided in Resolution 75 and the "Ten-Year Regional Transit System Plan."

The voters approved Proposition No.1 by a margin of 56.6% to 43.4%.

Sound Transit has adopted the following Mission Statement:

Sound Transit plans, builds, and operates regional transit systems and services to improve mobility for Central Puget Sound.

In addition, Sound Transit has the following Vision statement:

Easy connections….to more places….for more people.

The system includes high-occupancy vehicle (HOV) lane access improvements, ST Express bus routes, Sounder commuter rail, Link light rail, and new park-and-ride lots and transit centers.

Sound Transit is obligated to follow applicable state law. The Revised Code of Washington (RCW) is the compilation of all permanent laws now in force. It is a collection of Session Laws (enacted by the Legislature, and signed by the Governor, or enacted via the initiative process). The two sections of the RCW that most affect Sound Transit are Chapter 81.112 RCW, Regional transit authorities, and Chapter 81.104 RCW, High-capacity transportation systems.

1.2. SOUND TRANSIT'S MEASURES OF SUCCESS

Sound Transit's success depends on meeting the following:

- High-quality projects completed on time and within budget.
- Services are well used with high customer satisfaction.
- Checks and balances ensure accountability to the community.
- Staff, consultants, and contractors are accountable to the Sound Transit Board.
- Projects are developed with the help of meaningful community involvement and participation.
- Technical expertise is appropriate to implement the system.
- An organization that reflects the Sound Transit District's values and diversity.
- Maximum local participation, including Small and Disadvantaged Business Enterprise (S/DBE) firms in Sound Transit contracting.
- Projects include innovative design and operating features that benefit Sound Transit's customers and will attract new riders.
- Partnerships leverage Sound Transit's investments and/or reduce project costs.

In addition to the above measures of success, Sound Transit's Chief Executive issued a safety and security policy statement included in the University Link SSMP that reads in part as follows:

"Safety and security are the top priorities in all Sound Transit activities. We promote an accident free, clean, and secure passenger environment, and a safe and secure workplace. Sound Transit has established and implemented comprehensive system safety and security programs to ensure that all Sound Transit services are delivered with the highest practical level of safety and security.

"This commitment to safety and security is included as part of planning, design, construction, testing, and start-up phases of the University Link Project utilizing the procedures and forms contained in the Link Safety Certification Program Plan (SCPP). All Sound Transit planning, engineering, operations, safety, and security staff; project consultants; and construction firms are charged with the responsibility for ensuring that a safe and secure system is provided for all Sound Transit passengers, Sound Transit employees, public safety personnel, and the general public. Conformance with the SCPP requirements will be verified by Quality Assurance review and sign-off at each stage of project development, and will be an essential pre-condition of the start of revenue service.

"The University Link Project Director is delegated the authority to implement the Safety and Security Management Plan (SSMP) as part of the University Link Project Management Plan (PMP). Furthermore, all Sound Transit project personnel, including consultants and construction contractors, are directed to comply with the provisions of the Safety and Security Management Plan and to fully cooperate in achieving Sound Transit's goal for a safe and secure transit system."

In large part, Sound Transit's success can be measured by how well the agency does in planning, designing and constructing the University Link safely and by building-in safety and security features in the system design.

1.3. THE SOUND TRANSIT DISTRICT BOUNDARY

The Sound Transit District map includes the most congested urban areas of King, Pierce, and Snohomish counties. The Sound Transit District boundary generally follows the urban growth boundaries created by each county in accordance with the state Growth Management Act.

1.4. SOUND TRANSIT DISTRICT SUB-AREAS

One of the unique features of the Sound Transit plan is that it delivers a fair share of investments to each of Sound Transit's five geographic areas:

- East King County
- Snohomish County
- South King County
- North King County
- Pierce County

The principle of sub-area equity assures that Sound Transit taxes raised in each sub-area are used for capital projects and operations that directly benefit that area. Priority projects for each sub-area were identified through a public process involving established local elected official organizations.

1.5. PROJECT DESCRIPTION

University Link is part of the Central Link Light Rail Program that Sound Transit is implementing through the following discrete integrated capital projects:

(1) The "**Initial Segment**" project between Convention Place in downtown Seattle to South 154th Street in the City of Tukwila scheduled to be completed in 2009.

(2) The "**Airport Link**" project between South 154th Street and Seattle-Tacoma International Airport scheduled to be completed in 2009.

(3) The "**University Link**" project between the Pine Street Stub Tunnel (PSST) and the University of Washington Station in north Seattle planned to be completed in 2016. University Link is a part of North Link, which extends from PSST north to Northgate. The North Link segment from University of Washington Station to Northgate is not currently funded and is not covered by this PMP.

The 13.9-mile adopted Initial Segment project is from the PSTT in downtown Seattle to South 154th Street in the City of Tukwila and includes 12 light rail stations. From the Tukwila International Boulevard Station in Tukwila it will operate elevated through Tukwila along SR518, I-5 and SR599 and at street-level in the Rainier Valley. It will pass through Beacon Hill in a tunnel and emerge south of downtown Seattle. It will then continue north along the eastside of the existing E-3 Busway and into the Downtown Seattle Transit Tunnel to Westlake Station. A stub tunnel was constructed under Pine Street

to allow trains to reverse direction and to allow extension of the system to the north without any service disruption to the Initial Segment during the construction of University Link. Buses and rail will operate jointly in the downtown tunnel. The Initial Segment is scheduled to start revenue service in the summer of 2009. The Initial Segment project includes an operations and maintenance facility designed to accommodate the maintenance of 100 light rail vehicles (LRVs) with initial storage capacity for 40 LRVs, with room to expand storage to 100 vehicles. The Initial Segment project includes the purchase of 31 LRVs.

The adopted Airport Link project will extend the Initial Segment by 1.7 miles and connect the Tukwila International Boulevard Station in Tukwila at South 154th Street on elevated and at-grade tracks into the City of SeaTac to a light rail station at the main terminal of Sea-Tac International Airport. Airport Link is scheduled to be constructed and in operation as part of the Central Link Light Rail Project by the end of 2009. The Airport Link project includes the purchase of four additional LRVs.

The 3.15-mile University Link route connects into and continues north and east from the existing Downtown Seattle Transit Tunnel and Pine Street Stub Tunnel (constructed as part of the Initial Segment) in twin-bore tunnels with a light rail station at Capitol Hill. Emergency ventilation shafts are located at each end of the Capitol Hill station. The University Link alignment proceeds northeast and then crosses under the Lake Washington Ship Canal to a cut-and-cover crossover track and light rail station at the University of Washington near Husky Stadium. The University of Washington Station has two emergency vents, one at either end of the station and crossover.

Preliminary engineering scenarios envisioned the need for a Montlake Ventilation Facility sited at E. Roanoke St. at the Hop-In Market. Ventilation modeling and analyses completed at the start of final design determined that the separate Montlake Ventilation Facility is not needed.

Both stations will be a tunnel configuration and have center platforms 380 feet long to accommodate the planned four-car trains. Each train consists of four 95-foot long double-articulated light rail vehicles. Stations will have escalators and elevators. The University Link light rail extension facilities and systems will be fully integrated into the Initial Segment operations, which will start service in 2009, shortly after the expected start of University Link construction.

The University Link project originally included the purchase of 30 low floor light rail vehicles to carry the expected added Link light rail ridership. Upon review of the fleet requirements it was determined that only 27 additional light rail vehicles will be needed for the start of University Link revenue service, so the planned purchase has been scaled back accordingly. In August 2008, Sound Transit exercised an option in the Initial Segment LRV procurement contract (P801) for an additional 27 low-floor LRVs identical to the 35 on order for the Initial Segment and Airport Link. Expanded LRV storage capacity at the Link operations and maintenance facility is included in the University Link Project.

Financing of the project is planned to be accomplished through a combination of federal and state grant funding, retail sales and use taxes, and motor vehicle excise taxes. Federal funding for the University Link is proposed through conventional Federal Transit Administration (FTA) programs under SAFETEA-LU (Public Law 109-59), including a New Starts grant being sought through a Full Funding Grant Agreement for the University Link Light Rail Project. Responsibilities associated with this Full Funding Grant Agreement (FFGA) will include adherence with Federal regulations, rules, and guidelines. Failure to adhere to these Federal requirements may affect the Project's eligibility for current or future Federal funding participation.

1.6. PROJECT OBJECTIVES

The following objectives have been defined for the University Link project (hereafter referred to as "University Link", "UL", U-Link, or the "Project"):

(1) The Project shall be designed and constructed to the requirements of the North Link and Airport Link Design Criteria Manual and Link Operations Plan, and in a manner that meets or exceeds applicable quality, operational safety, security, passenger service, and environmental standards and requirements. To the extent practical, University Link designs shall be fully integrated and consistent with Initial Segment designs as a system extension.

(2) The Project shall be completed and opened to revenue service no later than April 24, 2017. The current target date for project completion remains September 24, 2016.

(3) The Project shall be completed at a capital cost that does not exceed $1,756 million in YOE$ or $1,948 million including financing.

(4) During the design and construction of the Project, the Project team shall coordinate with affected jurisdictions, stakeholders, and the public.

(5) The Project will be designed, constructed, and operated in conformance with the Master Implementation Agreement signed with the University of Washington in July 2007. Opportunities shall be pursued to integrate the design and construction of the Project with the plans of the University of Washington, including their proposed expansion of Husky Stadium.

(6) The Project shall address safety and security an integral part of planning, design, construction, testing, and operations activity and shall incorporate safety and security considerations into these activities.

(7) Opportunities shall be provided for design and construction participation by small and disadvantaged business enterprises (S/DBEs), in accordance with Sound Transit's goals and applicable laws.

(8) Opportunities shall be evaluated for future Transit Oriented Development (TOD) at the Capitol Hill Station.

1.7. PROJECT EXECUTION STRATEGY

The goal of the project execution strategy is to formulate the methods and approaches necessary to ensure the completion of the University Link project within budget and on schedule.

The primary strategy is to maintain a total contingency balance throughout the life of the project that is acceptable to both Sound Transit and the FTA and is sufficient to complete University Link as a Federal project.

There is a "break point" in project execution where market risk and early construction risk has been mitigated to the maximum extent possible, beyond which, the application of contingency is the only remaining alternative. Prior to this break point, Sound Transit will apply risk mitigation to preserve the Reserved Contingency minimum balances.

Link will undertake the integration and coordination of risk management plans with contingency management activities. As part of the ongoing project management process, specifically, the updates to this PMP will include review and adjustment of FTA Milestone Review Points and review of the Project

Execution Graphic contained in the U-Link Project Execution Plan and Contingency Management Plan to reflect the current cost and schedule status, as well as to demonstrate conformance with the agreed upon Reserved Contingency minimums.

Sound Transit Roles and Responsibilities

The U-Link Project Team shall coordinate its Risk Management plans and activities with its Contingency Management plans and activities to ensure that the Reserved Contingency minimums are preserved throughout the duration of the University Link project. Link shall also integrate such plans and activities through the creation of a secondary mitigation "buffer zone" and related "recapture" opportunities.

A secondary mitigation buffer zone was established and will be maintained at approximately 20% above the associated undistributed contingency minimum, as defined in the Contingency Management Plan. Link requirements for contingency where the balance is greater than the associated buffer zone boundary may be satisfied by the application of contingency, secondary mitigation, or some combination thereof. This approach continues up to the point where the balance enters the buffer zone. When this occurs, requirements for contingency are to be satisfied by the application of equal amounts of secondary mitigation and contingency to the point of, but not below, the minimum contingency balance. The specifics and details of the buffer zone are part of the Contingency Management Plan and will be reviewed on an annual basis.

Figure 1-1 University Link Map

The process and requirements for secondary mitigation, the elements of future mitigation capacity, and the concept of mitigation recapture can be found in the Contingency Management Plan.

Link staff will carry out the following activities in managing contingency drawdown:

- As a part of the monthly Agency Progress Report (APR) and of the FTA Quarterly Meeting, Link will report on the level of available contingency as compared with the predicted levels on the minimum contingency balance curve. Link Project Control Manager prepares the APR with input from the UL Project Control Lead and with the review/approval of the UL Project Director.
- At each FTA Milestone Review Point, Link and the PMOC will review the Risk Model to examine potential risks remaining and to update the Project Execution Graphic contained in the Contingency Management Plan. The UL Project Control Lead will organize and conduct these reviews with input from the U-Link management Team and with support from Link Risk Management Consultant (part of the Design Management Support consultant) and with the concurrence of the Link Project Control Manager and the UL Project Director.
- As part of the overall budget control process, the UL Project Control Lead will review the cost for individual construction contracts at each design deliverable (60-percent, 90-percent, and 100-percent) to compare the most current estimates with established budget values. Similarly, as construction contract bids are received, ST Contracts will conduct a cost and pricing analysis, and the UL Project Control Lead will conduct a budget analysis. As may be required, the Link Project Control Manager, with analysis and input from the UL Project Control Lead and with the review and concurrence of the UL Project Director and the Link Executive Director will recommend the application of project contingency in accordance with the UL Contingency Management Plan and applicable Link Project Control Procedures.

FTA Roles and Responsibilities

The FTA and its PMOC will monitor and evaluate Link's implementation of the project execution strategy for University Link, as well as the effectiveness of its integration of risk mitigation activities and contingency management in accordance with this plan.

1.8. LEGAL AUTHORITY

University Link is part of the Sound Move – The Ten Year Regional Transit System Plan (Sound Move) approved by the voters of King, Pierce, and Snohomish counties in 1996. Sound Move is the first phase of a long-range, multi-modal, high-capacity transportation system planned for the Puget Sound region that is compatible with and an integral part of the Metropolitan Transportation Plan prepared by the Puget Sound Regional Council, the Metropolitan Planning Organization for the Central Puget Sound Region.

The Central Puget Sound Regional Transit Authority, known as Sound Transit, was formed in 1992 under Revised Code of Washington (RCW) 81.104 and 81.112. Sound Transit is delivering Sound Move in accordance with applicable local, state, and federal requirements. Sound Transit is governed by the Sound Transit Board of Directors, comprised of 17 elected officials and the Washington State Secretary of Transportation, for a total of 18 members as described below. Under the powers assigned to Sound Transit under Revised Code of Washington (RCW) 81.112, the agency has the legal authority to:

- Establish offices, departments, boards, and commissions; appoint officers and employees; and employ personnel necessary to accomplish Sound Transit's purposes.
- Determine risks, hazards, and liabilities and obtain insurance consistent with these determinations.

- Execute contracts with any governmental agency or private person, firm, or corporation to design, construct, or operate high capacity transportation system facilities or to provide or receive services, facilities, or property rights to provide revenues for the system.
- Contract with any governmental agency or private person, firm, or corporation for the use by either contracting party of all or any part of the facilities, lands, interests in lands, air rights and rights of way of all kinds which are owned, leased, or held by the other party and for the purpose of planning, constructing, or operating facilities or performing services provided by Sound Transit.
- Acquire by purchase, condemnation, gift, or grant and lease, construct, add to, improve, replace, repair, maintain, operate, and regulate the use of high capacity transportation facilities and properties within the Sound Move boundaries.
- Dispose of any real or personal property acquired.
- Fix rates, tolls, fares, and charges for the use of transit facilities.

1.9. SOUND TRANSIT BOARD

State legislation (Chapter 81.112 RCW, Regional transit authorities) requires regional transit authorities to be governed by a Board of Directors. Sound Transit is governed by an 18-member Board of Directors; 17 members are local elected officials, and the 18th member is the Washington State Department of Transportation Secretary. Local elected officials include mayors, city council members, county executives, and county council members from within the Sound Transit District. Currently, the Sound Transit Board includes three members from Snohomish County, ten from King County, four from Pierce County, and the Washington State Transportation Department Secretary.

The county executive in each of the participating counties appoints members from that county. The respective county councils confirm the appointments. By state law, appointments must include an elected city official representing the largest city in the participating county and proportional representation from other cities and unincorporated areas. To help assure coordination between local and regional transit plans, half of the appointments in each county must be elected officials who serve on the local transit agency governing authority.

The officers of the Board include a chair and two vice chairs. The officers are elected by the Board, must be from separate counties, and serve two-year terms. The Chair is a voting member.

The Sound Transit Board of Directors is the Agency's governing body. The board establishes policy, provides direction, and performs oversight. The board employs a chief executive officer who has full responsibility to implement its policies, initiatives, and directives. The chief executive officer directs and manages the Sound Transit staff. To carry out board decisions, the chief executive officer uses staff, consultants, and contractors.

The Board's operating rules and procedures are established in ST Board Resolution No. 1-1 (Amended).

The Board and its committees conduct work in open, regularly scheduled meetings. The meetings are structured in a way to allow for public comment. Meeting agendas and related materials are available in advance of the meetings.

General board objectives include the following:

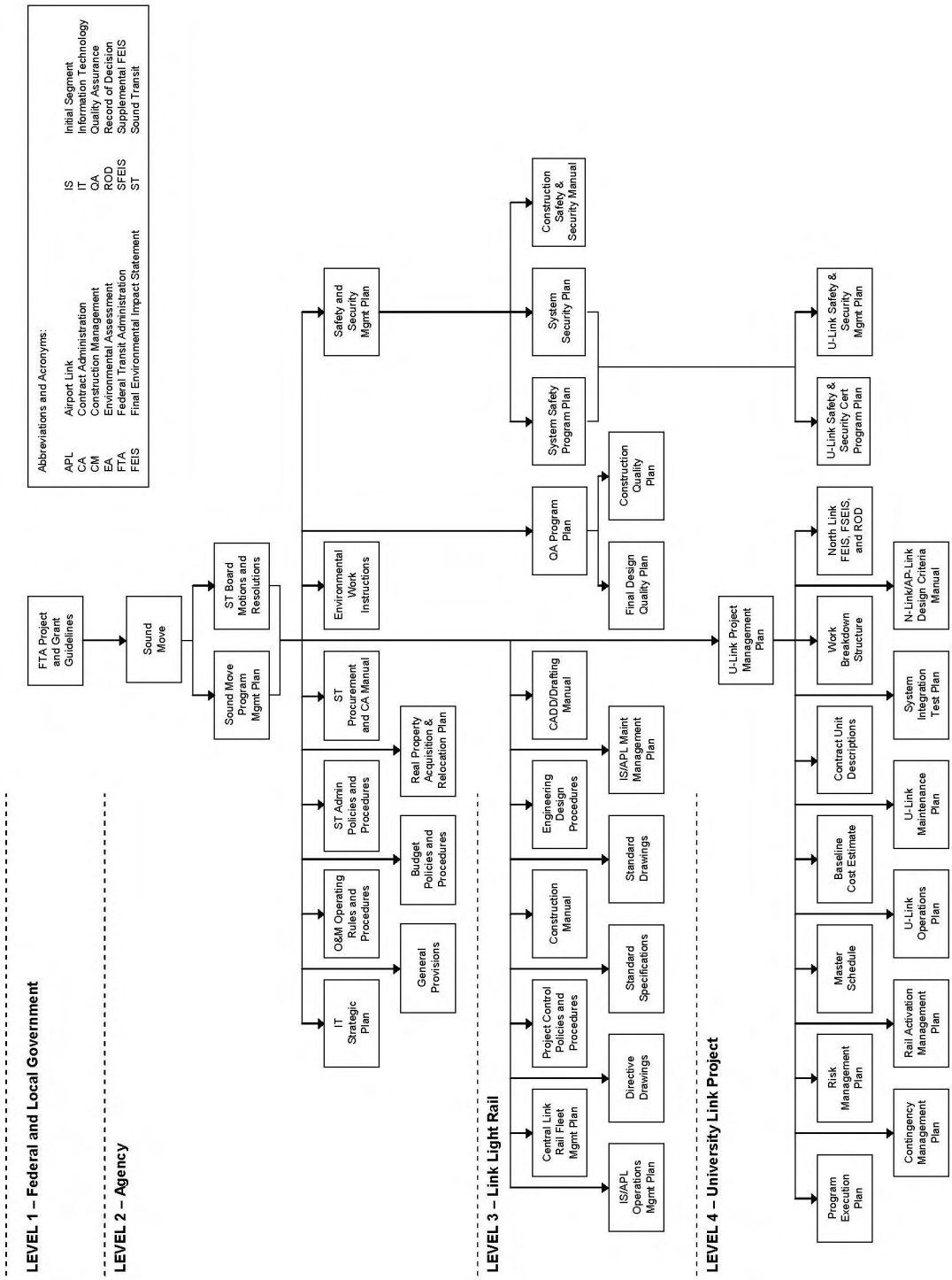
- Provide governance, establish policy, and set overall direction for the agency.

- Work with other legislative bodies on topics affecting and/or of interest to Sound Transit, such as federal funding, state legislation, and communication with legislative bodies at the local jurisdiction level.
- Work with local jurisdictions and other entities on capital construction projects to ensure a collaborative approach.

1.10. MANAGEMENT PLANS

The Sound Move Program Management Plan (SM PMP) describes Sound Transit's governance structure, oversight bodies, and organization. The SM PMP delegates responsibility, accountability and authority to lower-level plans which define the organizations and protocols that govern the delivery of capital projects and serve as the enabling documents for a hierarchy of other plans and procedures as shown in Figure 1-2 Levels of Management Plans.

Figure 1-2 Levels of Management Plans



The University Link Project Management Plan (UL PMP) is issued under the authority of the Link Executive Director and governs the conduct of Project activities performed by Sound Transit staff, Link Department staff, consultants, and contractors. The UL PMP defines Project objectives and requirements, defines the project organization, establishes management protocols, and describes key project controls, practices, and reporting. As necessary, the UL PMP invokes supportive plans, policies, and procedures that contain more detailed guidance for specific functional areas. The UL PMP is distributed to Project team members as a controlled document and is subject to revision control in accordance with Link's configuration management procedures. The UL PMP will be reviewed and updated as required, at least annually. Holders of controlled copies will automatically receive revisions. The UL Project Director and the Link Configuration Manager are responsible for the review, maintenance and distribution of this plan.

In accordance with the FTA Project and Construction Management Guidelines (2003 Update), this UL PMP addresses the following topics:

- Adequate staff organization, complete with well-defined reporting relationships, statement of functional relationships, job descriptions, and job qualifications.

  Reference UL PMP Chapters 2.1, 2.2, 2.3, 2.4, and 2.6.

- A budget covering the project management organization, appropriate consultants, property acquisition, utility relocation, systems demonstration staff, and audits.

  Reference UL PMP Chapter 3.2.

- A design management process encompassing PE, final design, and design support during construction.

  Reference UL PMP Chapter 9.0.

- A construction schedule.

  Reference UL PMP Chapter 3.3.

- A document control procedure and record-keeping system.

  Reference UL PMP Chapter 3.6.

- A change order procedure, which includes a documented, systematic approach to the handling of construction, change orders.

  Reference UL PMP Chapters 3.1.1, 3.5, and 12.4.

- A description of organizational structures, managerial/technical skills, and staffing levels required throughout the construction phase.

  Reference UL PMP Chapters 2.1, 2.2, 2.3, 2.4, and 2.6.

- Quality control (QC) and quality assurance (QA) programs which define functions, procedures, and responsibilities for construction and for system installation and integration of system components.

  Reference UL PMP Chapters 3.1.4.

- Materials testing policies and procedures.

  Reference UL PMP Chapters 3.1.4 and 12.6.4.

- Internal plan implementation and reporting requirements.

  Plan implementation occurs as part of the Link Change Control Board approval process. The development, coordination, approval, and release of all controlled documents is discussed in Chapter 3.1.1.

- Reporting is an integral part of many University Link activities and processes and is discussed throughout the UL PMP. In particular, reference Chapters 2.7, 3.2.7, 5.1.6, and 6.4. In addition, the Link Light Rail Progress Report is provided on a monthly basis as part of the Agency Progress Report (APR). The UL Project Control Lead prepares the UL input to the APR, with the review and concurrence of the UL Project Director and the Project Controls Manager.
- Safety and security requirements associated with Fire/Life Safety, hazard analysis, construction safety, construction security, safety and security certification, and emergency response planning.

  Reference UL PMP Chapters 15.1, 15.2, 15.3 and 15.4.

- Criteria and procedures to be used for testing the operational system or its major components.

  Reference UL PMP Chapters 16.1, 16.2, and 16.3.

- Periodic updates of the plan.

  Reference UL PMP Chapter 1.4.

- A commitment to make monthly submission of project budget and project schedule to the PMOC/FTA.

  Link currently provides the Link Light Rail Progress Report as part of the APR to the PMOC, FTA, and others on a monthly basis. Sound Transit will continue to prepare this report monthly throughout the life of the Project.

In addition to the SM PMP and the UL PMP, a family of federal, local government, Agency, and Link plans, manuals, procedures, and documents are available (or are planned) to provide guidance and direction to activities that support the delivery of University Link. These Agency and Link documents include:

O&M Operating Rules and Procedures (Agency-level)

These rules and procedures provide for consistent day-to-day application of direction for train operations, special and emergency operating situations, equipment use, customer service, and administrative activity.

ST Board Motions and Resolutions (Agency-level)

Table 1-1 ST Board Motions and Resolutions for University Link lists the Sound Transit Board motions and resolutions applicable to the University Link project.

Table 1-1 ST Board Motions and Resolutions for University Link

Motion/Resolution Number and Date	Summary of Action
R2008-09 7/24/08	1. Approves the revised University Link Project capital Baseline Cost Estimate at $1.756 billion (YOE$). 2. Authorizes the chief executive officer to submit a revised Full Funding Grant Agreement application with a federal share of $813 million to the Federal Transit Administration for the University Link Project.
M2008-71 7/24/08	Authorizes the chief executive officer to exercise the option with KINKISHARYO International, L.L.C./Mitsui & Co. (U.S.A.) Inc. Joint Venture, to design, manufacture, and deliver 27 low floor light rail vehicles in support of the operational requirements for the University Link project.
M2008-49 5/8/08	Authorizes the chief executive officer to execute a contract with Seattle Tunnel And Rail Team, Joint Venture to provide construction management services for the University Link project.
R2008-05 2/28/08	Authorizes the chief executive officer to acquire, dispose, or lease certain real property interests by negotiated purchase, by condemnation (including settlement), by condemnation litigation, or by administrative settlement; and to pay eligible relocation and re-establishment benefits to affected parties as necessary for construction, maintenance and operation of a light rail tunnel between the University of Washington Station and the Pine Street Stub Tunnel.
R2007-20 9/27/07	Approves the University Link Project capital Baseline Cost Estimate at $1.614 billion; establishes the baseline project completion schedule milestone as late September 2016; and authorizes the chief executive officer to submit a Full Funding Grant Agreement application to the Federal Transit Administration for the University Link Project.
R2007-19 9/13/07	Authorizes the chief executive officer to acquire certain real property and to pay eligible relocation and re-establishment benefits to affected parties as necessary for construction, maintenance, and operation of a light rail tunnel between the University of Washington Station and the Pine Street Stub Tunnel.
M2007-62 6/14/07	Authorizes the chief executive officer to execute a Master Implementation Agreement with the University of Washington establishing terms and conditions to acquire access to and use of University of Washington property for purposes of design, construction, operation, monitoring, and maintenance of Link light rail transit system.
M2007-52 5/10/07	Authorizes the chief executive officer to execute a technical amendment of the agreement with the City of Seattle, for grant of a non-exclusive use of a light rail transitway as related to the North Link Light Rail Project to reflect the Board selected final North Link alignment.
M2007-51 5/10/07	Authorizes the chief executive officer to execute a contract with LTK Engineering Services, LLC to provide systems engineering final design services for the University Link Project.
M2006-78 11/9/07	Authorizes the chief executive officer to execute a contract with Northlink Transit Partners, Joint Venture to provide civil engineering and architectural final design services for the University Link Project with final design work subject to Federal Transit Administration final design approval.
R2006-07 4/27/06	(1) Selected the final route, profile, and station locations for the North Link Light Rail Project; (2) selected the University Link portion of North Link to be constructed and operated as part of the Central Link Light Rail Project, including authorizing the steps necessary to complete final design and implementation of the University Link Project including securing a federal Full Funding Grant Agreement; (3) increased the University Link lifetime Adopted 2006 Budget and revising the annual Adopted 2006 Budget; and (4) for planning purposes reduced the minimum debt service coverage for the North King County subarea to 1.15x for the University Link Finance Plan.
R2005-06 1/27/05	Identified the 12th Avenue alternative as the preferred Roosevelt route and station location for the North Link Light Rail Project.
M2003-33 3/13/03	Directed staff to complete additional work on North Link route alternatives in order to provide the Board with more comprehensive information for its North Link route decision-making process.
M2002-69 5/23/02	Authorized staff to modify the set of route alternatives in the North Link Draft Supplemental Environmental Impact Statement.
M2002-13 2/24/02	Selected route alternatives for inclusion and study in the North Link Draft Supplemental Environmental Impact Statement excluding less promising route alternatives for further study.
M2001-104 9/27/01	Directed staff to reevaluate route alternatives from Convention Place Station to Northgate and approved the North Link work program and budget needed to complete this effort.

Environmental and Sustainability Management System (ESMS) Work Instructions (Agency-level)

ESMS Work Instructions are requirements and guidelines that have been developed to conform with and, in part, to implement Sound Transit's Environmental Policy and Executive Order No. 1 establishing a Sustainability Initiative for Sound Transit.. These Work Instructions provide detailed guidance and direction in the areas of the Endangered Species Act, Environmental Compliance, Hazardous Materials, NEPA/SEPA and Sound Transit's own environmental policy and resource stewardship requirements.

General Provisions (GPs) (Agency-level)

Sound Transit's standard general contractual provisions for construction contracts which, as augmented and supplemented by other Contract Documents, describe the contractual relationship of the parties and their rights and responsibilities to each other. In light of lessons learned from the Initial Segment and Airport Link Projects, the Agency's GPs are under review and will be revised prior to the issuance of the first UL construction contracts.

Procurement and Contracts Administration Manuals (Agency-level)

The Procurement Manual identifies the methods and procedures Sound Transit will use for procurement or use of goods and services. The requirements and standards of FTA Circular 4220.1E apply to procurements entered into under such agreements using FTA funds.

The Contract Administration Manual stipulates policy and procedures for a contract administration system that ensures contractors perform in accordance with the terms, conditions, and specifications contained in their contracts or purchase orders. This manual is used in conjunction with other Sound Transit procedures and manuals. The Contract Administration Manual sets forth requirements and procedures for all Sound Transit personnel involved with administration of Sound Transit contracts and purchase orders and defines responsibility and corresponding authority for complete contract administration documentation.

Administrative Policies and Procedures (Agency-level)

These policies and procedures provide direction and guidance in the conduct of a wide range of day-to-day business practices. These practices include business travel and expenses, Internet and E-mail use, records management and access to public records, facilities and vehicle usage, accident prevention, media relations, and delegation of authority.

Information Technology Strategic Plan (Agency-level)

This plan describes the approach and objectives of the strategic technology planning process. This process provides for completing a comprehensive assessment of the current technology environment and a review of needs. The process then guides the development of strategies and recommendations based on the assessment results. Finally, it provides for an implementation plan with prioritized action steps and a coordinated budget.

Budget Policies and Procedures (Agency-level)

These policies and procedures provide direction and guidance in the conduct of budget and financial planning and practices.

Real Property Acquisition and Relocation Plan (Agency-level)

This plan describes how Sound Transit acquires real estate and right-of-way to support the UL project. The procedures detail the cooperative acquisition of real property by agreements with owners and tenants, as well as methods to avoid protracted disputes and litigation.

System Security and Emergency Preparedness Plan (Agency-level)

The purpose of this plan is to establish and maintain the Security Program for our system. It serves as a blueprint for all security activities by: establishing how security activities are organized; outlining employee and department responsibilities with respect to security; instituting threat and vulnerability identification, assessment, and resolution methodologies; and setting goals and objectives.

Track Safety Manual (Agency-level)

This manual addresses the duties of wayside workers and light rail vehicle (train) operators. It establishes track safety rules and procedures to follow while working on the Link light rail system when it is under test operations and/or simulated service (start-up) and applies to both mainline and yard operations. Work conducted inside the O&M Facility is covered in a separate Accident Prevention Plan.

Security Standard Operating Procedures (Agency-level)

The Security Division has developed a set of Standard Operating Procedures (SOPs) that describe the methods used by Sound Transit's Security Division in accomplishing the Division's assigned functions.

System Safety Program Plan (Link-level)

This plan defines activities, management controls, planning, and monitoring processes to ensure that safety considerations are part of the design, construction, and operation of Link light rail facilities. The plan is meant to prevent patrons, personnel, and property from being exposed to hazards or unsafe conditions.

System Security Plan (Link-level)

This plan defines activities, management controls, planning, and monitoring processes to ensure that security considerations are part of the design, construction, and operation of Link light rail facilities.

Construction Safety and Security Manual (Link-level)

This manual establishes a practical, sound, and effective program for the prevention of accidents. It establishes requirements in responding to accidents and assigns specific responsibilities to contractors for compliance with Link safety programs. It is currently being revised to incorporate construction security policies, procedures, and special provisions for work on the University of Washington property.

Quality Assurance Program Plan (Link-level)

This plan describes the requirements associated with quality assurance and quality control activities for Link light rail. The plan establishes the requirements and procedures to ensure compliance with the fifteen elements contained in the FTA QA/QC Guidelines. It is currently being revised to incorporate Sound Transit's new Safety, Security, and Quality Assurance organization.

Final Design Quality Program Plan (Link-level)

This plan ensures that the products developed by the final design consultant meet rail transit industry standards and applicable Link design requirements. This plan implements design procedure requirements for design checks, design review, third party design coordination, quality audits and surveillance activity, and imposes quality requirements in Link design contracts. It is currently being revised to incorporate Sound Transit's new Safety, Security and Quality Assurance organization.

Construction Quality Plan (Link-level)

This plan defines technical and managerial quality assurance and quality control activities for link construction management. It provides goals, requirements, instructions, and direction for the implementation and maintenance of effective construction quality assurance requirements and contractor quality plans and activities by Link construction management. It is currently being revised to incorporate Sound Transit's new Safety, Security and Quality Assurance organization.

Project Control Policies and Procedures (Link-level)

The Link Project Control Procedures establish the guidelines, policies, processes, responsibilities, and documentation requirements for the management and control of the project scope, schedule, and budget of the Link Capital Programs. These policies and procedures are consistently applied throughout the life cycle of the project, including conceptual engineering, preliminary engineering, final design, construction, procurement, and testing and startup.

Engineering Design Procedures (Link-level)

The Link Engineering Design Procedures establish the policies, processes, responsibilities, and documentation requirements for the Link Engineering Division and the design consultants. These procedures ensure the design is developed and verified in accordance with approved design processes.

Construction Manual (Link-level)

This manual establishes the procedures and policies that are implemented by Link for construction management and construction administration of Link capital projects. This manual describes in detail the activity and responsibility, authority, and accountability of the resident engineers and the construction management staff assigned to the project.

Standard Drawings (Link-level)

The Link standard drawings provide standards and details beneficial in conducting the work. These standards, which are issued to the contractors, ensure that there is consistency and uniformity in typical plans, notes, diagrams, and visualizations across all contracts.

Directive Drawings (Link-level)

The Link directive drawings provide standards and details necessary for the preparation of contract drawings. These standards, which are issued to designers, ensure that there is consistency and uniformity in typical plans, notes, diagrams, and visualizations. Directive drawings are not issued to contractors.

Standard Specifications for Facilities Construction (Link-level)

The Link standard specifications are the basis for contract specifications. These standards ensure that there is consistency and uniformity in items being produced or provided, the activities being conducted, and the planning being performed by Link consultants and contractors. (These Standard Specifications are not going to be included in University Link construction contracts, only in the preparation of contract-specific specifications.)

North Link and Airport Link Design Criteria Manual (Link-level)

This criteria manual guides the preliminary engineering and final design of University Link. It provides for uniform application of codes and standards, establishes an order of precedence for code enforcement, and facilitates the design collaboration process between engineering specialties. This manual is currently being revised to incorporate University of Washington Master Implementation Agreement requirements for the University Link Project.

CADD/Drafting Manual (Link-level)

This manual establishes the conventions and procedures for preparing Computer Aided Design and Drafting (CADD) files and digital design data for Link. The manual ensures that CADD data is prepared in a consistent manner and promotes efficient and straightforward transfer and sharing of files and data between project participants.

Link Light Rail Progress Report (Link-level)

This monthly progress report, which is part of the Agency progress Report, provides project summaries, segment summaries, schedule status, cost summaries and forecasts, a critical path analysis, Right of Way updates, key activities, and a discussion of closely monitored issues.

Central Link Rail Fleet and Bus Fleet Management Plans (Link-level)

These plans describe the operating relationships between the fleet of Link light rail vehicles and the Sound Transit bus fleet. They document the rational that was used to determine light rail vehicle fleet and bus fleet sizes, identify the Link maintenance facilities and capabilities, discuss the Link maintenance philosophy, and discuss fleet growth as a function of ridership expansion.

IS and AL Maintenance Management Plan (Link-level)

This plan describes the facilities, equipment, and personnel requirements that have been established to support the maintenance of the Central Link. The plan includes a description of maintenance facilities and equipment, an outline of the maintenance program, lists of maintenance equipment and tools, responsibilities of maintenance personnel, a maintenance safety program, reporting, and warranty control.

Link Safety Certification Program Plan (Link-level)

This plan is used during the design, construction, testing, and commissioning of the project to verify conformance with the intent of the Life/Safety elements of the Design Criteria. The plan includes the policy, activities and process, forms and checklists necessary to verify that each applicable safety-related requirement of the Design Criteria has been met prior to the start of revenue service.

Contract Unit Descriptions (Project-level)

The Contract Unit Description (CUD) is a basic unit of the Link Program, in which a portion of the total system has been separated into identifiable subsets for the purposes of managing procurement, design, construction, testing, and operation. Each CUD is associated with specific Work Breakdown Structure identification, schedule information, payment and delivery methods, work scope, and defining configuration documentation. Every CUD follows a standard format. The UL CUDs were approved by action of the Link Change Control Board (CCB) on September 4, 2007.

Work Breakdown Structure (Project-level)

The Work Breakdown Structure (WBS) provides a framework for organizing projects through imposition of a standard hierarchy of discrete, manageable work elements, each of which is assigned a unique code, a scope definition, schedule parameters, and budget. The WBS helps organize and relate the scope, schedule, and budget for Link projects. It also provides a basis for managing and reporting progress, cost, and schedule performance.

North Link SEIS and ROD (Project-level)

The University Link environmental impact is documented as a subset of the North Link Supplemental Environmental Impact Statement (SEIS). This SEIS includes a preliminary analysis that considers and weighs the environmental effects of University Link; the environmental impacts of alternatives to the project, and alternatives available for reducing or avoiding adverse environmental effects.

Similarly, the North Link ROD publicly and officially discloses Link's decision on which alternative assessed in the supplemental environmental impact statement will be implemented for University Link.

University Link Project Execution Plan (Project-level)

This plan, negotiated between Sound Transit (Grantee) and the FTA and PMOC, supplements the U-Link PMP and specifies project management tools to be used in controlling cost and schedule and managing risk.

University Link Contingency Management Plan (Project-level)

This plan describes the proactive management of contingencies in order to respond to changing project conditions. This plan discusses the processes and mechanisms, assigns responsibilities, and establishes authority levels that will be used to manage the total project contingency.

University Link Risk Management Plan (Project-level)

This plan describes the process that will be applied to decisions to accept risk exposure or to reduce vulnerabilities by either mitigating the risks or applying cost effective controls. This plan will address project cost and schedule risks, develop risk-handling options, establish methods to develop secondary mitigation plans to handle risk events, monitor risks, and establish reporting requirements.

University Link Constructibility Program Plan (Project-level)

This plan describes the activities and processes to be utilized by Sound Transit to incorporate constructability and constructability reviews into the University Link project.

University Link Operations Plan (Project-level)

This plan describes the physical characteristics, systems that will support operations, and ridership projections for Central Link. It also includes service planning describing service frequency, train length, run times, and fleet size requirements.

University Link Rail Maintenance Plan (Project-level)

This plan describes the facilities, equipment, and personnel requirements that have been established to support the maintenance of the Central Link, including the University Link extension. The plan includes a description of maintenance facilities and equipment, an outline of the maintenance program, lists of maintenance equipment and tools, responsibilities of maintenance personnel, a maintenance safety program, reporting, and warranty control.

University Link Safety and Security Management Plan (Project-level)

This plan details the policies and procedures for implementation of lower-level safety and security plans, review and monitoring of contractor safety/security plans during construction, hazard analyses, and the conduct of threat and vulnerability assessments. The plan provides for coordination of procedures and training with the police and fire services of the municipalities affected by the University Link project.

University Link Safety and Security Certification Plan (Project-level) – Planned

This plan will outline and summarize the processes, responsibilities, documentation, and procedures required to certify the light rail system as safe for revenue service. It will ensure that facilities, systems, procedures, plans, training programs, incident reporting activities, and documentation related to safety critical equipment are reviewed for compliance with safety requirements.

University Link Systems Integration Test Plan (Project-level) – Planned

This plan will be developed to ensure that all elements of the system conform to specification and function in an integrated manner. It will also provide for verification that all elements of the O&M system and the O&M personnel are able to function effectively together to provide safe and reliable service.

Rail Activation Plan (Project-level) – Planned

This plan will describe the activities Link must undertake to help assure that the University Link project is ready on the scheduled revenue operations date. Combined with the test program, the plan will describe all activities beyond the tasks of construction and systems installation, acceptance testing, and integrated testing. The plan will list all events that lead to revenue service, develops a special start-up schedule network, and demonstrates the activity logic and event durations.

Pre-Revenue Operations and Start-up Plan (Project-level) – Planned

This plan will provide the framework for managing, staffing, and executing the O&M elements of the ST/KCM Intergovernmental Agreement (presuming that KCM will be the Link Light Rail operator in 2016). It will include the KCM organization structure, position descriptions, related documents, staffing schedules, a list of subcontracted work, and a description of the KCM Materials Management Information System.

1.10.1. Document Maintenance Responsibility

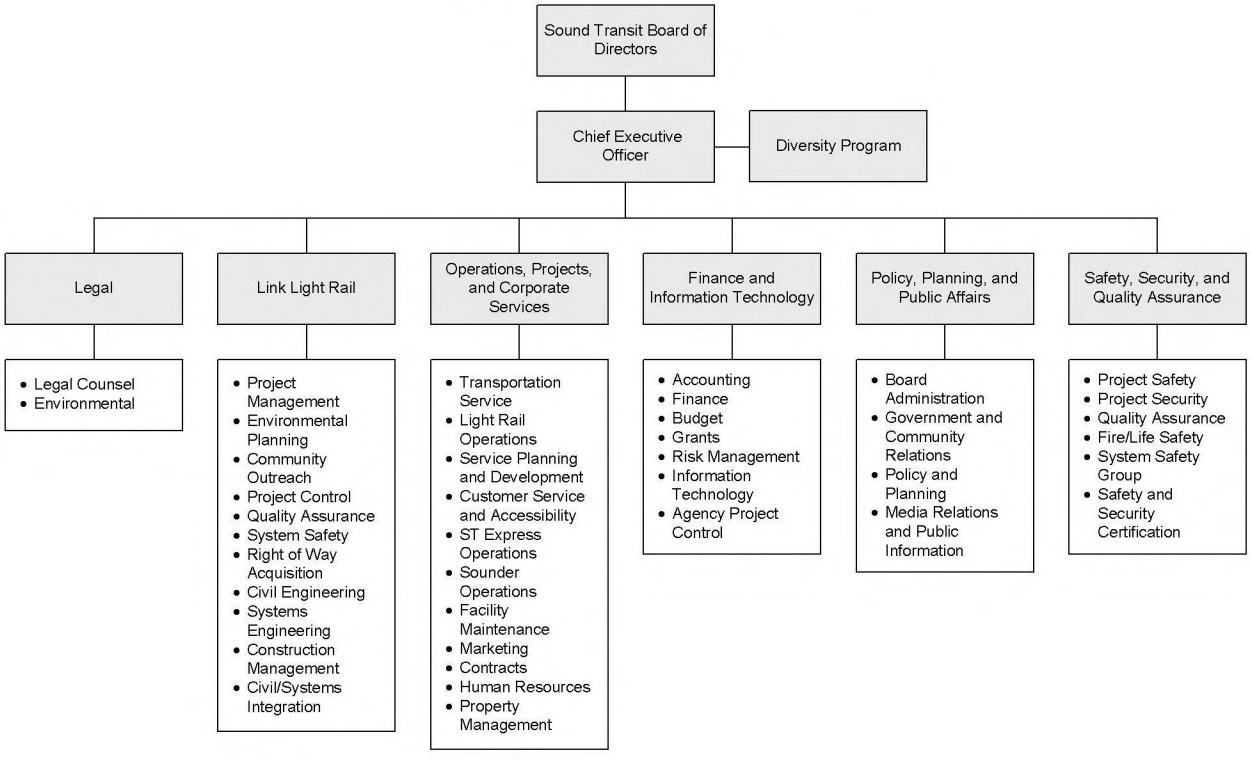
The responsibilities and process for updating and maintaining Agency and Link documents are described in the Link Project Control Procedure LPC-04 Configuration Management.

2.0 ORGANIZATION AND STAFFING

2.1. AGENCY ORGANIZATION

Link capital projects are implemented within Sound Transit's overall organization framework. Sound Transit is organized in five departments headed by Executive Directors who report to the Chief Executive Officer (CEO), as depicted in Figure 2-1 Sound Transit Organization. The comprehensive set of Sound Transit organization charts are included as Appendix B Sound Transit Organization.

Figure 2-1 Sound Transit Organization



Capital projects are delivered through the Link Light Rail and the Operations, Projects, and Corporate Services Departments. The delivery of capital projects is supported by services provided by other departments, as summarized above. An Office of Safety, Security, and Quality Assurance, reporting to the CEO, was established in May 2007 to consolidate, coordinate, and elevate the oversight and management of these key functions. This important addition to the Sound Transit organization is responsible for the integration of safety and security activities for the University Link project and the methods for identifying, evaluating and resolving safety hazards and mitigating security vulnerabilities of this Light Rail extension during the construction, testing, and start-up phases.

2.2. DELEGATION OF AUTHORITY

Link Project Control Procedure LPC-09 Change Control Board establishes the responsibility, accountability, and authority for which negotiations may be conducted, contract changes approved, and

procurements conducted. The levels of authority specified and described in this procedure, and shown in Table 2-1 Authority Delegation, include the Chief Executive Officer, the Link CCB, the Link Executive, and Deputy Executive Directors, and extends to Link Division Managers, Construction Managers, and Procurement Managers. In the case of the University Link Project, the U-Link Project Director is a Deputy Executive Director.

Table 2-1 Authority Delegation Tables

Authority Levels for Professional Services			
Level	**Position**	**Maximum Change Order**	**Cumulative Limit**
1	Contract Manager	$25,000	$50,000
2	Division Manager (DM)	$50,000	$100,000
3	Deputy Executive Director	$75,000	$150,000
4	Link Executive Director	$200,000	$500,000
5	Change Control Board (CCB)	$500,000	
6	Chief Executive Officer (CEO)	> $500,000	

Authority Levels for Construction and Procurement Contracts			
0Level	**Position**	**Maximum Change Order**	**Cumulative Limit**
1	Construction Manager (1)/Procurement Mgr.	$100,000	$250,000
2	Link Executive Director	$200,000	$500,000
3	Change Control Board (CCB)	$500,000	
4	Chief Executive Officer (CEO)	> $500,000	

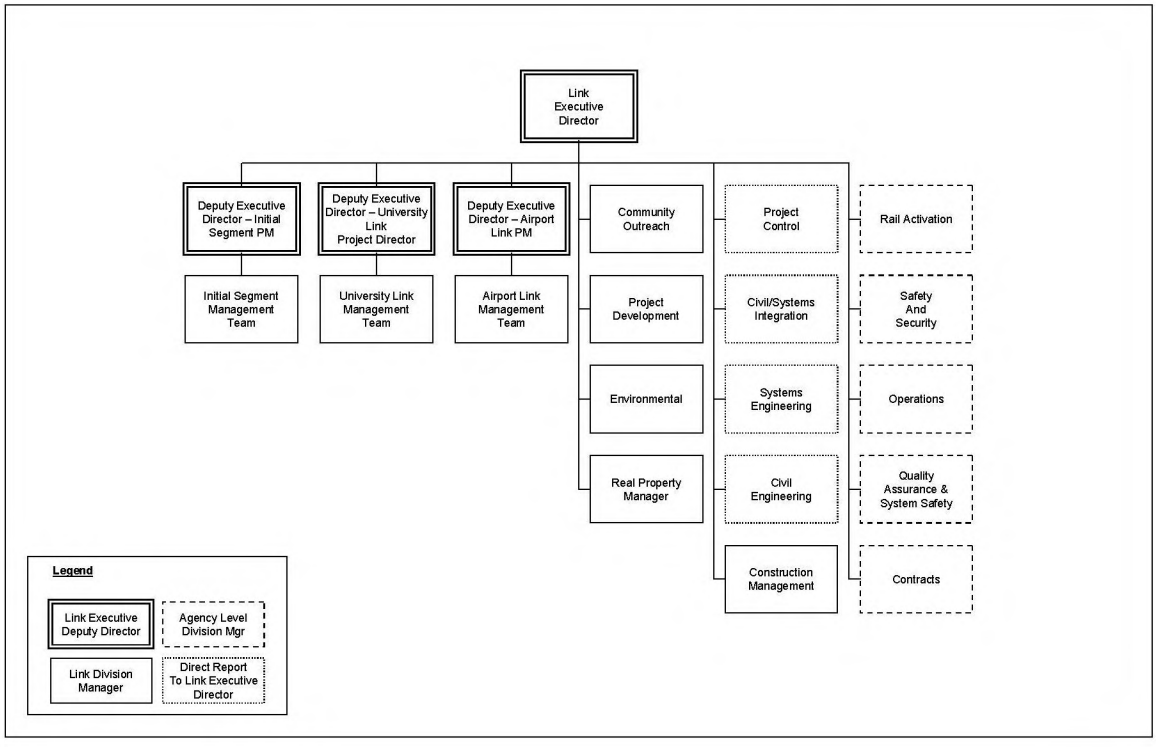
(1) The Construction Manager may delegate authority to members within the CM organization, including the Resident Engineer. This delegation must be specified in writing.

Authority Levels for Betterment Work		
Level	**Position**	**Maximum Betterment**
1	Construction Manager/Procurement Mgr.	$100,000
2	Link Executive Director	$200,000
3	Change Control Board (CCB)	$500,000

2.3. LINK DEPARTMENT ORGANIZATION

The Link Executive Director reports to the Chief Executive Officer and provides overall leadership and direction for all Link Program activities. The Link Department is depicted in Figure 2-2 Link Department Organization. Link is supported by an Operations and Maintenance Manager, a Rail Activation Manager assigned from the Operations, Projects, and Corporate Services department and the Office of Safety, Security and Quality Assurance. These managers are fully integrated into the Link Department organization, coordinating on technical matters directly with the appropriate Link managers/Executive Director.

Figure 2-2 Link Department Organization



2.3.1. Link Department Divisions

Link's Executive Director assigns staff and resources to direct and manage the implementation of the requirements of this PMP to effect the successful completion of this project. Link Divisions provide the following core functions and project services:

- Link's Project Development Division provides staff and resources and is responsible for performing or overseeing the performance of support land use, transit service, and station area planning; evaluation of project alternatives; development of patronage forecasts; facilitate the Sound Transit Board decision-making process; and development of third party agreements.
- Link's Environmental Division provides staff and resources that monitor project compliance with environmental laws and regulations; lead the preparation of environmental documents, and oversee the performance of environmental mitigation.

- Link's Civil Engineering Division provides staff and resources that perform or oversee the development of civil, structural, and architectural designs for the project, including facilities, stations, roadways, drainage, utilities, and trackwork during the design and construction phases. Functional areas include right of way engineering, permitting, and CADD.
- Link's Systems Engineering Division provides staff and resources that perform or oversee the development of engineering designs for system elements, including electrification, communication, and signal systems and light rail vehicle procurements during the design and construction phases.
- Link's Construction Management Division provides staff and resources that perform and oversee the performance of constructability reviews, and the administration and management of construction and procurement contracts.
- Link's Project Control Division provides staff and resources that develop or oversee the development of the project budget, project schedules, cost forecasts, progress and performance reports and facilitate the development of risk assessments and the administration of value engineering studies.
- The Civil/Systems Integration Manager provides interface coordination and expertise to the Civil Engineering Manager and Systems Engineering Manager for integration of the University Link design internal to Link and between Link and third parties. Because of the Systems Engineering Manager's work load in completing the construction and integrated testing of the Initial Segment and Airport Link Projects, the Civil/Systems Integration Manager also leads the University Link Systems Final Design and manages the University Link Systems Engineering Design Consultant contract.
- Link's Community Outreach Division provides staff and resources that plan, facilitate, and implement a community outreach effort that includes public meetings and workshops, support media relations, project information services, and business mitigation measures.
- The Real Property management within Link provides staff and resources that manage and administer Link's property acquisition and relocation plan.

2.3.2. Agency Support

The Link Department is supported by other Agency Divisions for rail activation, operations, safety and security, quality assurance, system safety, and contracts.

- The Rail Activation Manager within the Operations, Projects, and Corporate Services Department provides coordination and expertise to the management of activities necessary for rail activation, systems integration testing, and safety certification.
- The Operations Division within Transportation Services contributes staff and resources to provide operations planning, design review, and maintenance planning services.
- The Office of Safety, Security and Quality Assurance provides construction and operations safety and security management as well as Quality Assurance and System Safety support. It will provide resources that administer Link's Quality Assurance Program Plan (QAPP), including the approval and quality oversight monitoring of quality programs prepared and implemented by consultants and contractors, the facilitation of in-house construction inspection training programs, and system safety oversight.
- ST Contracts provides management support and staff for all contract procurement and administration.
- The Agency provides specific skills and expertise in the legal, budget and finance, information technology, grants management, and facilities management areas.

2.3.3. Link Project Organizations

Each Link project in final design or construction is headed by a Deputy Executive Director supported by the resources and staff necessary to meet the requirements of the Project PMP using a matrix organization. Staff resources from within the Link Department and other supporting Agency Divisions are assigned to the project organizations by Division Managers in conjunction with Project Managers. Staff assignments are adjusted to meet changing project demands during the project implementation cycle. Division Managers are charged with establishing, managing, and enforcing consistent standards of practice across all project organizations and are responsible for recruitment, professional development, and staff training. In addition, Division Managers provide guidance and technical support to their Project Managers.

2.4. UNIVERSITY LINK PROJECT ORGANIZATION

The University Link Project organization has been designed to be responsive to the overall management philosophy and requirements of each phase of the project implementation as outlined in this PMP, taking into consideration Sound Transit's experience and lessons learned with the implementation of the Initial Segment and Airport Link.

The University Link Project organization is comprised of a core group of Link staff and integrated consultant teams that are directed by the University Link Project Director and supported by Link Division Managers, and agency staff resources, as depicted on the organization chart for the final design phase of the Project as shown in Figure 2-3 University Link Project Organization for Final Design Phase. The Office of Safety, Security, and QA is illustrated in Figure 2-4, and the Civil and Architectural Final Design Consultant Disciplines structure is shown in Figure 2-5. Figure 2-6 Systems Final Design Consultant Disciplines shows the Systems Final Design Consultant Disciplines and Figure 2-7 Design Management Support Consultants shows the Design Management Support Consultants. These organization charts show a matrix-organization approach to the University Link Project staffing. The organizational hierarchy represents project-related tasking and not necessarily actual reporting relationships.

Tacoma Link was built on time and within budget. Link also successfully completed Initial Segment final design and has managed four years of successful Initial Segment construction. Airport Link is also now under construction. Based on actual Link accomplishments and by applying lessons learned from the Initial Segment and Airport Link, the University Link Project organization is structured to manage and complete the final design successfully for University Link and plan for construction, testing, start-up and operations. The Link Final Design Quality Plan requires verification of incorporation of approved lessons learned items at each design milestone. A formal lessons learned program has been developed by Sound Transit at the Agency level.

Link staff is assigned to the Project team from each Link Department Division. Project staff time dedication levels to the project vary depending on the job function and Project phase and will be adjusted and expanded as may be needed. Link Department staff assignments to the University Link Project provide for resources necessary to meet the responsibilities and assignments detailed in Chapter 2.5. Project activities are conducted in accordance with the lines of authority and communication established in the Project organization chart and the UL PMP. Division Managers provide guidance and technical oversight to the project staff resources assigned to the Project from their Divisions, in coordination with the University Link Project Director.

In addition to existing Link staff and other Sound Transit staff resources assigned to University Link, supplementary full-time and part-time positions are filled by consultants through the fully integrated

design management support consultant team led by PB Americas, Inc. as described in Section 2.4.4 Consultant Resources.

Appendix A Link Light Rail Staffing Resources is provided to clarify the general responsibilities and capabilities of each Link staff member, provide job descriptions and abbreviated resumes of Link staff, and detail the planning and mobilization of resources.

2.5. KEY POSITIONS

The following section describes the Project responsibilities for the key positions within the Project organization. The Sound Transit Human Resources Division has developed detailed descriptions for each of the key positions described below. These position descriptions are available in an appendix, "Link Light Rail Staffing Resources", updated September 2008.

2.5.1. Link Department Staff

Link Executive Director

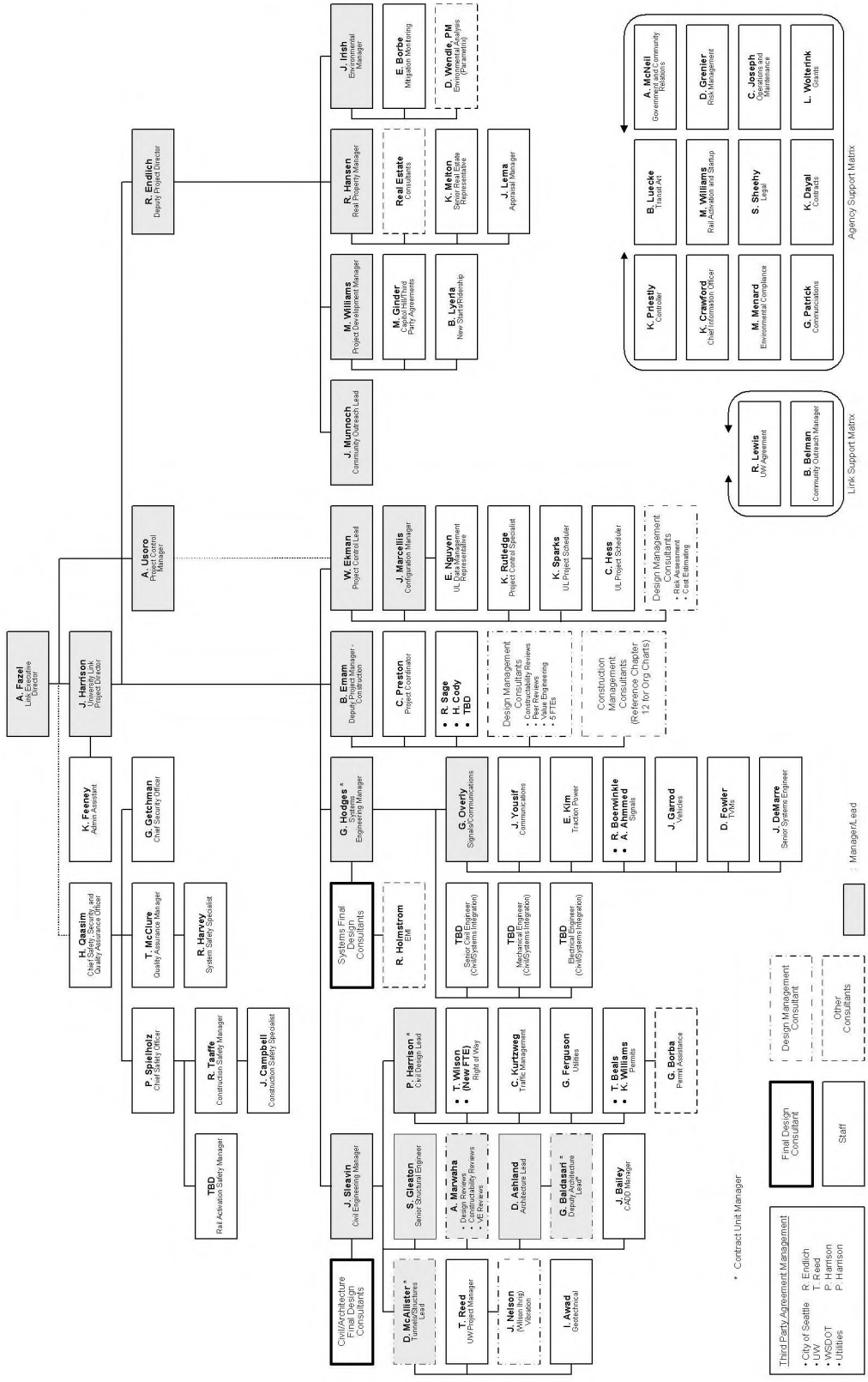
The Link Executive Director reports directly to the Sound Transit Chief Executive Officer (CEO) and provides overall leadership and direction for all Link activities. The Link Executive Director is responsible for the performance and overall management of the Link Program, providing direction, oversight, and monitoring of the progress of the University Link Project. Major strategic and policy issues, Executive Department and Board briefings, and media relations, are coordinated with the Link Executive Director. The Link Executive Director also serves on the Link Change Control Board (CCB) and the Material Review Board (MRB) as a voting member.

Deputy Executive Director/University Link Project Director

Reporting to the Link Executive Director, the University Link Project Director is responsible for overall project performance including scope, budget, schedule, risk, safety, security, and quality. The U-Link Project Director leads the University Link project organization and is responsible for managing overall project activities. The Project Director's responsibilities include project reporting, coordination with staff resource providers, third parties, consultants, contractors, and oversight entities. The Project Director is responsible for defining priorities, determining assignments, and monitoring progress. The Project Director is also responsible for representing the University Link project to the Sound Transit Board, the Citizen Oversight Panel, other Sound Transit agency staff, and to local governments, citizens, community groups, oversight agencies, and other external stakeholders.

The U-Link Project Director is assisted by the University Link Deputy Project Director who will support the Projector Director in fulfilling overall project responsibilities. The U-Link Project Director is supported by the Civil Engineering Manager and the Civil-Systems Integration Manager, who are responsible for the day-to-day management and completion of University Link final design, the Construction Manager for constructability reviews and construction planning, and the Agency Quality Assurance Manager. The U-Link Project Director is also supported by Link Division Managers. These division managers are responsible for ensuring that sufficient qualified staffing resources are available to the project and functional performance standards are established and consistently met across all projects.

Figure 2-3 University Link Project Organization for Final Design Phase



Specific responsibilities of the University Link Project Director include overall management and execution of the following technical functions for the final design phase:

- Facilitate the Sound Transit Board decision-making process with accurate and timely information.
- Maintain effective working relationships and communication with project partners, oversight groups, and project stakeholders.
- Ensure that final design is consistent with project commitments made to the public and to partner agencies, while adhering to the scope, schedule, and budgets approved by the Sound Transit Board.
- Ensure that final design is consistent with project environmental mitigation commitments made in the North Link Record of Decision (ROD).
- Ensure that the final design process includes opportunities for meaningful public input into station design and ensure that surrounding communities, general public, and other important stakeholders are keep informed about University Link progress.
- Collaborate with project partners to integrate light rail into the existing transportation system and communities along the route, and support transit-oriented land use and economic development goals.
- Assist in negotiating, finalizing, and managing third-party agreements including agreements with the City of Seattle, Washington State Department of Transportation (WSDOT), University of Washington (UW) and King County Metro (KCM).
- Project performance reporting to Link management, project stakeholders, and oversight organizations, including the Citizen Oversight Panel (COP), the Sound Transit Board including the Central Link Oversight Committee (CLOC), internal and external auditors, local and state agencies, the FTA, the Project Management Oversight Consultant (PMOC), and other agencies.
- Coordination with Sound Transit corporate functions, including Board Administration, Legal, Government and Community Relations, Contracts, Grants Administration, Budget, Finance, and Communications.
- Oversight of design and constructability reviews, value engineering, cost estimates, budget development, risk assessment, and contingency assignments. Includes budget monitoring and implementation of corrective measures, as necessary.
- Oversight of schedule development. Includes schedule monitoring and implementation of corrective measures, as necessary.
- Ensure University Link Safety and Security Management Plan is fully implemented.
- Full voting member of the Link Change Control Board and of the Link Material Review Board for all University Link-related actions.

University Link Deputy Project Director

The University Link Deputy Project Director reports directly to the Project Director and is responsible for assisting the Project Director in leading the University Link project organization and managing project activities. The Deputy Project Director is assigned Project responsibility to oversee the Environmental Manager for environmental mitigation and compliance issues, the Real Property Manager for real estate issues, the Community Outreach Lead for public involvement issues, and the Project Development Manager for agency coordination and third party agreement support. The Deputy Project Director is responsible for supporting the Project Director in the day-to-day management of all project activities, defining priorities, determining assignments, and monitoring progress. Further responsibilities include project reporting, coordination with staff resource providers, third parties, consultants, contractors, and oversight entities, and representing the University Link project to the Sound Transit Board, the Citizen

Oversight Panel, other Sound Transit agency staff, and to local governments, citizens, community groups, oversight agencies, and other external stakeholders.

The Deputy Project Director is supported by Link Division Managers who are responsible for ensuring that sufficient staffing resources are available and functional performance standards are consistently met across all projects.

Specific responsibilities of the University Link Deputy Project Director include assisting the Project Director in the overall management and execution of the following technical functions for the final design phase:

- Facilitate the Sound Transit Board decision-making process with accurate and timely information.
- Maintain effective working relationships and communication with project partners, oversight groups, and project stakeholders.
- Ensure that final design is consistent with project commitments made to the public and to partner agencies, while adhering to the scope, schedule, and budgets approved by the Sound Transit Board.
- Ensure that final design is consistent with project environmental mitigation commitments made in the North Link Record of Decision (ROD).
- Ensure that the final design process includes opportunities for meaningful public input into station design and ensure that surrounding communities, general public, and other important stakeholders are keep informed about University Link progress.
- Collaborate with project partners to integrate light rail into the existing transportation system and communities along the route, and support transit-oriented land use and economic development goals.
- Assist in negotiating, finalizing, and managing third-party agreements including agreements with the City of Seattle, Washington State Department of Transportation (WSDOT), University of Washington (UW) and King County Metro (KCM).
- Project performance reporting to Link management, project stakeholders, and oversight organizations, including the Citizen Oversight Panel (COP), the Sound Transit Board including the Central Link Oversight Committee (CLOC), internal and external auditors, local and state agencies, the FTA, the Project Management Oversight Consultant (PMOC), and other agencies.
- Coordination with Sound Transit corporate functions, including Board Administration, Legal, Contracts, Real Estate, Grants Administration, Budget, Finance and Communications.
- The Deputy Project Director is a voting member of the Link Change Control Board for all University Link-related actions.

Systems Engineering Manager

The Systems Engineering Manager is responsible for integration of the University Link facilities and systems designs, construction, testing and operations with the Initial Segment civil facilities and communications system, signals, electrical systems, vehicles, and ticket vending. Because of the Systems Engineering Manager's workload in completing the construction and integrated testing of the Initial Segment and Airport Link Projects, the Systems Engineering Manager also leads the University Link Systems Final Design and manages the University Link Systems Engineering Design Consultant contract.

The Systems Engineering Manager reports functionally to the Link Executive Director and is assigned to the University Link Project Director. Specific responsibilities include:

- Manage the work of the systems final design consultant for systems engineering analyses and design, including development of standard drawings, design criteria, and technical specifications, and monitoring compliance with design criteria.
- Design coordination with the University of Washington and public and private utilities.
- Assure Civil/Systems design integration.
- Endorse the systems design safety and security design certification.
- Review civil and systems contract drawings and specifications and contractor shop drawings for designs and features that affect work by other contractors.
- Compare and assure that designs in project contracts maintain proper form, fit, and function as they interface across contract packages.
- Supervise the Systems Engineering Division staff assigned to the University Link Project and coordinate with Link Civil Engineering Manager and consultant design teams to ensure integrated designs.
- Coordinate with Link Construction Management teams and assist in identifying and resolving construction problems in the field, which particularly involve hardware, equipment, or items installed by one contractor for the express use of follow-on contractors.
- Review test requirements and assist Link Construction Management teams in monitoring contractor conduct of required tests, particularly tests involving hardware, equipment, or items installed by one contractor for the express use of follow-on contractors.
- Serve as the liaison with Agency Board members, elected officials, WSDOT, local transit agencies, the media, local community groups and the general public systems integration issues.
- Review design submittals, procurement documents, installation and construction interfaces with other systems such as civil and systems engineering, and fire/life safety elements.
- Assist with the development of rail activation plans and integrated testing plans.
- Full voting member of the Link Change Control Board and of the Link Material Review Board for all University Link-related actions.

Civil Engineering Manager

The University Link Civil Engineering Manager reports functionally to the Link Executive Director, is assigned to the University Link Project Director, and is responsible for managing and successfully completing University Link civil final design. Responsibilities include managing civil and architectural final design staff and consultants, other consultants, status reporting, and overall design coordination. The Civil Engineering Manager is also responsible and accountable for the overall design effort, including scope, budget, schedule, and quality.

The Civil Engineering Manager is assisted by the Civil Design Lead, Architectural Lead, and Tunnels/Structures Lead, and is supported by Division Managers who are responsible for ensuring that functional performance standards are consistently met across all projects.

Specific responsibilities of the University Link Civil Engineering Manager include management and execution of the following technical functions:

- Administration and management of civil/architectural engineering consultant contracts, including peer reviews, design management support, and contract reporting.

- Architectural, civil, systems, traffic, trackwork, structural, geotechnical, ventilation, and urban design analyses and design, including development of standard drawings, technical design criteria, and technical specifications.
- Management of technical support services, including surveying, mapping, CADD, right-of-way engineering and easements, and permits.
- Civil/systems design integration
- Monitoring of compliance with design criteria and environmental requirements.
- Project permit approvals, including technical support for permit applications.
- Coordination with public and private utilities.
- Design review and approvals at major design completion milestones (60%, 90%, 100%), including third party reviews.
- QA/QC, in coordination with QA/QC staff.
- Operations and maintenance review, in coordination with Operations Manager.
- Value engineering and peer reviews.
- Monitoring compliance with safety and security design requirements.
- Approve the civil design safety and security design certification as necessary in accordance with the University Link Safety and Security Management Plan.
- Voting member of the Link Change Control Board and the Link Material Review Board for all University Link-related actions.
- Custodian for maintenance of the North Link and Airport Link Design Criteria Manual.

Responsibility for signing and sealing drawings or other documents is delegated to the originating consultant by the terms of the contract. The Civil Engineering Manager reviews Link's Quality Assurance surveillance and audit reports, along with design review comment incorporation, to verify that the consultant has complied with contractually dictated criteria and standards.

The Civil Engineering Manager is supported by the Tunnels/Structures Lead, Civil Design Lead, and Architectural Lead for the coordination of architectural designs, and Sound Transit's Art Program. The Civil Engineering Manager will coordinate design efforts with Link's Systems Engineering Manager and other engineering discipline leads.

The Civil Engineering Manager coordinates with and reviews reports from the Right-of-Way Engineer. The right-of-way certification process is managed by Link's Right-of-Way Engineer, whose efforts are augmented by consultants and additional staff as needed. The Right-of-Way Engineer also coordinates property acquisition and easement needs with Sound Transit Real Estate staff and consultants, who are responsible for University Link property appraisals, negotiations, and transactions.

The Civil Engineering Manager coordinates with and reviews reports from the Permits Manager. The permitting process is managed by the Link Permits Manager, whose efforts are augmented by consultants and additional staff as needed. The Permits Manager manages the preparation of necessary permits to build University Link, and monitors permit reviews and approvals.

During the construction phase of University Link, the Civil Engineering Manager is responsible for providing qualified engineering and CADD management resources to support design changes. The Civil

Engineering Manager also coordinates and manages design issues with the Construction Management staff.

The Link Construction Division is responsible for the on-site management of construction. The Construction Manager and Deputy Construction Managers also participate in University Link constructability reviews, the development of contract packaging strategies and the development of the final bid sets, design reviews, and plans for integration and startup testing.

Senior Structural Engineer

The Senior Structural Engineer will report directly to the Civil Engineering Manager and will be responsible for the management and technical direction of the Project's structural engineering elements, including station structures, the I-5 undercrossing and other structural design elements of the University Link Project.

Specific responsibilities of the Senior Structural Engineer include working in coordination with the Tunnel/Structures Lead, the Senior Structural Engineer will be responsible for review of the structural design prepared by the civil/architectural final design consultant including review of tunnel and station drawings, technical specifications, and compliance with design criteria.

Civil Design Lead

The Civil Design Lead reports directly to the Civil Engineering Manager and is principally responsible for the day-to-day coordination of civil design issues, including civil facilities design, property acquisition coordination, administrative permits, and third party reviews. The Civil Design Lead is also responsible for the management and technical direction of the Project's civil engineering elements, including facilities, utilities and drainage, right-of-way, traffic permits, and UW mitigation.

Specific responsibilities of the Civil Design Lead include:

- Coordination and progress monitoring of permit applications.
- Coordination with WSDOT, including design approvals and tunnel easements needed for crossings of I-5 and SR-520.
- Coordination with Sound Transit's property acquisition and underground tunnel easement procurement efforts.
- Third party coordination and reviews.
- Weekly progress monitoring and reporting.
- Staff lead for coordination with civil/architectural final design consultant for civil engineering analyses and design, including the development of standard drawings, design criteria and technical specifications, and monitoring compliance with design criteria.
- Design coordination with the City of Seattle, public and private utilities, University of Washington, and other affected stakeholders.
- Review and respond to requests for information.
- Endorse the civil design safety and security design certification.

The Civil Design Lead will direct the day-to-day work activities of the Link staff reporting to him.

Tunnels/Structures Lead

The Tunnels/Structural Lead reports directly to the Civil Engineering Manager and is responsible for the management and technical direction of the Project's structures and tunneling engineering elements, including tunnels/structures, cut-&-cover stations, ventilation, geotechnical, and UW mitigation. Specific responsibilities include:

- Staff lead for coordination with civil/architectural final design consultant for tunnels/structures engineering analyses and design, including the development of standard drawings, design criteria and technical specifications, and monitoring compliance with design criteria.
- Design coordination with the University of Washington and other affected stakeholders.
- Review and respond to requests for information.

The Tunnels/Structural Lead will direct the day-to-day work activities of the Link staff reporting to the Lead. This position will be filled by a full-time consultant.

Architectural Lead

The Architectural Lead reports directly the Civil Engineering Manager and is responsible for the management and technical direction to the final design consultant for the Project's architectural elements, including station design, landscape, lighting, artists, and signage. Specific responsibilities include:

- Staff lead for coordination with civil/architectural final design consultant for architectural analyses and design, including the development of standard drawings, design criteria and technical specifications, and monitoring compliance with design criteria.
- Design coordination with the City of Seattle, University of Washington, and other affected stakeholders.
- Review and respond to requests for information.

The Architectural Lead will direct the day-to-day work activities of the Link staff reporting to the Lead and will be supported by the Deputy Architectural lead (a full-time consultant position).

University of Washington Project Manager

The University of Washington Project Manager is responsible for the management and coordination of University of Washington station/tunnel design and construction issues, project mitigation requirements affecting UW campus facilities, and the day-to-day coordination with UW and other third party staff on these and other UW-related issues. Specific responsibilities include:

- Managing the UW Master Implementation Agreement (MIA).
- Providing technical management of vibration and EMI sub-consultants.
- Coordinating Sound Transit review input to the civil and systems final design teams, bus interface issues, and project risk management tasks.
- Manage qualitative risk assessments and statistical modeling.

The UW Station and Mitigation Lead reports to the Tunnels/Structures Lead or Architecture Lead on respective design issues and reports to the University Link Deputy Project Director on third party and mitigation issues.

Contract Unit Managers

The Contract Unit Managers report to the U-Link Project Director. In the case of civil contracts, the Contract Unit Managers will report to the U-Link Project Director through the Civil Engineering Manager as shown in Figure 2-3 University Link Project Organization for Final Design Phase. Each Contract Unit Manager is responsible and accountable for their contract unit's performance, including scope, budget, schedule, safety and security, and quality. Day-to-day, they will be responsible for:

- Leading weekly coordination meetings with the final designers.
- Preparing monthly schedule updates.
- Monthly progress reporting.
- Input and review of permit applications.
- Internal review and reconciliation of design review comments.
- Participation in constructability reviews.
- Fire/Life Safety Reviews.
- Safety Certification input.

The Contract Unit Manager assignments reflect the scope and extent of each contract unit throughout its lifecycle. Each Contract Unit Manager is supported with assigned resources from the functional divisions within Link, corporate Sound Transit divisions, integrated consultants, and other contracted services.

Each of the following contract groups is assigned a Contract Unit Manager:

- U210/U211/U215 – Phil Harrison
- U220/U230 – David McAllister
- U240/U250 – Gary Baldasari
- U260/U820/U830 – George Hodges

CADD Manager

The Link CADD Manager reports to the Civil Engineering Manager and is responsible for establishing, and maintaining the Link Computer Aided Design and Drafting system, including the development and application of standards and procedures for all electronic drawings, including all University Link design, construction contract, and as-built record drawings.

Signals/Communication Lead

The Signals/Communication Lead, reporting to the Systems Engineering Manager provides technical support to U-Link systems elements. This includes the procurement of light rail vehicles, fare collection equipment, train signal systems, traction power, communications systems, system-wide electrical systems, SCADA and Operations Control Center elements, stray current and corrosion control, and UW mitigation.

University Link Deputy Project Director - Construction

The Construction Manager reports functionally to the Link Executive Director and is assigned to the University Link Project Director. The Deputy Project Director - Construction provides assistance to the

Civil Engineering Manager and is responsible for the quality, management, and coordination of U-Link Project civil construction activity, including the development of new construction and procurement contracts. Specific responsibilities include:

- Constructability reviews, including strategies for construction packaging plans for contract documents and value engineering studies.
- Technical assistance during the development of contract documents, including development of the general and special provisions.
- Direction of construction and construction management activities, including providing support services and contract interface management (i.e., civil-systems interface).
- Implementation of construction safety and construction management standards.
- Coordinate pre-bid and proposal meetings and technical evaluation of bid proposals.
- Construction progress reporting and monitoring, including review of progress payments, review, and negotiation of change order requests, and verification and acceptance of work for payment.
- Claims administration and support of dispute resolution process, including representation of Link's position at Dispute Resolution Board hearings.
- Verification of compliance with construction quality and safety programs, environmental, federal, state, and local regulations, including applicable project labor agreement requirements.
- Documentation of safety certification construction items and contract closeout activities.

The Deputy Project Director - Construction will be supported by the services of Construction Managers, Resident Engineers, Construction Inspectors, and other construction field staff performed by Sound Transit and consultant staff.

Project Development Manager

The Project Development Manager coordinates directly with the University Link Deputy Project Director and supports a range of multi-disciplinary efforts, including environmental and land use analyses, patronage forecasting, bus interface planning, traffic studies, intergovernmental agreements, New Starts reporting, permit applications, and community outreach. The Project Development lead serves as a liaison to project stakeholders, the public, and other agencies, including the University of Washington, the City of Seattle, King County Metro, WSDOT, and the FTA.

Environmental Manager

The Environmental Manager coordinates directly with the University Link Deputy Project Director and is responsible for assuring compliance with environmental laws, regulations, and Project mitigation requirements. The Environmental Manager facilitates the environmental process in partnership with the FTA; local, regional, and state governments; other agencies; key stakeholders; and the community. The Environmental Manager is responsible for coordination with Sound Transit's environmental compliance group in the Legal Department.

Real Property Manager

The Real Property Manager for Link is responsible for the management of timely acquisition of permanent and temporary property rights necessary for the construction and operation of University Link, including private properties, property owned by the Washington State Department of Transportation (WSDOT), and property owned by the University of Washington. The Real Property Manager is

responsible for the development and monitoring of property acquisition budgets and schedules. The Real Estate Manager is supported by the Senior Real Estate Representative, Appraisal Manager, a right-of-way consultant team, and internal and external legal staff. For the University Link Project, the Real Property Manager reports to the Deputy Project Director.

Community Outreach Lead

The Community Outreach Lead reports functionally to the Link Community Outreach Manager (Kathy Albert) and reports to the University Link Deputy Project Director. He is responsible for all Project community outreach activities, including public meetings, open houses, and Project mailings. Responsibilities include providing information to the public about light-rail plans, designs, and construction plans. The Community Outreach Lead works with the affected communities to address concerns and potential impacts and coordinates with Project staff to incorporate public input into project plans.

Project Control Manager

The Project Control Manager reports to the Link Executive Director and is responsible for the overall management of the Link Project Controls Division. The Project Controls Manager oversees the management of the implementation and administration of tools and procedures required to measure scope, schedule, and budget performance. The Project Controls Manager is responsible for ensuring consistent application of policies and procedures and for ensuring that functional performance standards are consistently met across all projects in the Link Department.

Specific responsibilities include:

- Management and assignment of project controls staff and consultants to projects and contracts.
- Integration and coordination with related agency-wide corporate functions, including project control, finance, budget, accounting, contract administration, and government grants.
- Oversight of administration of progress payments and change order requests for professional services, procurement, and construction contracts.
- Oversight of cost estimates, budget development, and contingency management and budget monitoring, cost forecasting, and reporting.
- Oversight of schedule development, schedule monitoring, and implementation of corrective measures as necessary.
- Facilitate the development of risk assessments and the administration of value engineering studies.
- Risk assessment consultant management.
- Serves as liaison to Federal Oversight parties (FTA, PMOC, etc.).
- A member of the Change Control Board.

The Project Control Manager is supported by a Project Control Lead for the University Link project, a project Control Specialist handling consultant and intergovernmental agreements, schedulers, and cost estimators.

Project Control Lead

The Project Control Lead reports functionally to the Project Control Manager and is assigned to the University Link Project reporting to the U-Link Project Director. He is responsible for day-to-day

coordination of project controls functions, including implementation and administration of tools and procedures required to measure scope, schedule, and budget performance. Specific responsibilities include:

- Integration and coordination with related agency-wide corporate functions, including project control, finance, budget, accounting, contract administration, and government grants.
- Administration of progress payments and change order requests for professional services, procurement, and construction contracts.
- Evaluation of schedule and budget performance, cost forecasting.
- Coordinate the development and management of the Risk Management and Contingency Management Plans and procedures, and management of the University Link Risk Management Subconsultant (part of the Design Management Support Consultant team).
- Coordinate the development of independent cost estimates and management of cost estimate reviews conducted by the University Link Design Management Support Consultant team.
- Coordinates the activities of the Link Configuration Manager, UL Data Management Representative, Link Project Control Specialist, and UL Project Scheduler.
- Coordinate the preparation of monthly progress, cost, risk, contingency, and scheduling reporting.
- Coordination with the FTA/PMOC's risk management consultant.
- Coordination of submittals to the FTA/PMOC.

As shown in Figure 2-3 University Link Project Organization for Final Design Phase, the Project Control Lead for the University Link Project is supported by the Link Configuration Manager, UL Data Management Representative, a Project Control Specialist handling consultant, intergovernmental agreements, and the UL Project Scheduler.

UL Project Scheduler

The UL Project Scheduler oversees the development and maintenance of project schedules during all Project phases. Specific responsibilities include:

- Maintenance of the overall project schedule, including development of expenditure projections.
- Coordination of schedule change control activity.
- Review and approval of construction baseline schedules prepared by contractors and review/analysis and recommendation for approval of subsequent schedule submittals.
- Measurement and evaluation of schedule performance and identification of corrective actions, as necessary.
- Reports on project schedule progress, issues, and recommendations on schedule delay mitigation.
- Assist with risk assessment and management.

Link Configuration Manager

The Configuration Manager is responsible for the management of the implementation and administration of Link's configuration management and change control procedures with respect to the University Link project scope, schedule, and budget. Specific management responsibilities include:

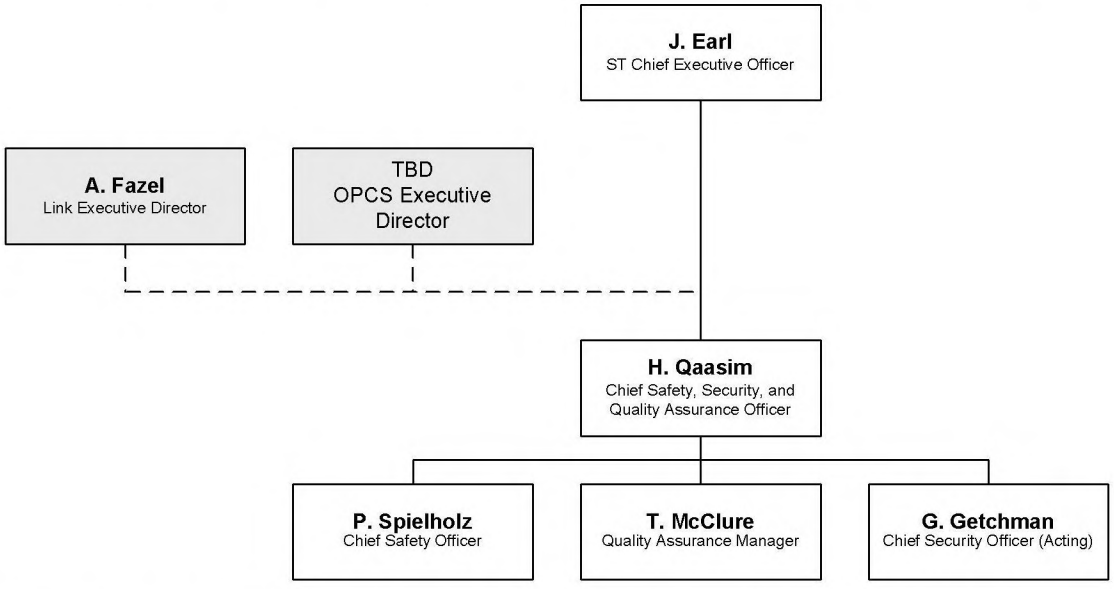
- Secretariat of the Link Change Control Board (CCB).
- Administration of Link's CCB, including monitoring of authority delegations, monitoring of CCB reporting requirements, and review of procurement documents.
- Coordination of change control activity, including administration of University Link Design and Interface Control Procedure adopted by Sound Transit to coordinate change control activities for the light rail elements.
- Oversight of data management activities in the home office and field offices, including control and distribution of project documents, and management of the UL Data Management Representative.
- Participates in Physical Configuration Audits.

2.5.2. Agency Corporate Department Staff

Chief Safety, Security, and Quality Assurance Officer

The Chief Safety, Security and Quality Assurance Officer is a vital and contributing member of the agency's senior management team. Reporting directly to the CEO, the Chief SSQA Officer directs the centralized Office of Safety, Security, and Quality Assurance. Assigned functional responsibility areas include quality assurance, construction safety, accident prevention, emergency response and preparedness, operations security and safety, fire/life safety, agency security, loss prevention, safety certification and compliance audits. Working closely with the Executive Director of Operations, Projects & Corporate Services and the Executive Director of Link Light Rail, the Chief SSQA Officer has five direct reports, including the Rail Activation Safety Manager, Construction Safety Manager, Safety Manager, Security Officer, and Agency Quality Assurance Manager, as shown in Figure 2-4 Sound Transit Office of Safety, Security, and Quality Assurance.

Figure 2-4 Sound Transit Office of Safety, Security, and Quality Assurance



In addition, the Chief SSQA has the following duties and responsibilities:

- Manage and participate in the development and implementation of goals, objectives, and priorities for assigned projects, services and functional areas.
- Oversee the administration of Safety, Security and Quality Assurance programs, policies, and procedures for Design, Construction, Testing, Start-up and Operations.
- Plan, direct, coordinate, and review the work plan for assigned staff; assign work activities, projects, and programs; review and evaluate work products, methods, service delivery, and procedures; and meet with staff to identify and resolve safety, security, and quality assurance issues.
- Train, motivate, and evaluate assigned personnel; develop a competent, well-trained, properly structured, and highly motivated staff capable of achieving departmental, divisional and agency goals and commitments; and provide coaching, training and technical information to staff.

Quality Assurance Manager

The Quality Assurance (QA) Manager is responsible for management of Link's Quality Assurance and Safety Certification programs. Specific responsibilities include administration of Sound Transit's Fire Life Safety Committee and the Sound Transit Quality Representative Liaison to the Performance Audit Committee (PAC). The Agency Quality Assurance Manager reports functionally to the Chief Safety, Security and Quality Assurance Officer and provides functional support to the U-Link Project. A System Safety and Quality Assurance Specialist, reporting to the Agency Quality Assurance Manager, is also assigned to the University Link Project to develop and manage the UL System Safety Certification activities. Specific management responsibilities of the Agency Quality Assurance Manager include:

- Implement and maintain the Link Final Design Quality Plan, the Link Construction Quality Plan, and the UL Safety and Security Management Plan (SSMP).
- Review and approval of QA and QC plans prepared by consultants, contractors, and suppliers.

- Performance of internal audits (see also Section 3.1.4), assessments, and surveillance of Link design, construction, rail activation, and administrative activities.
- Identification, analysis, and documentation of potential system safety hazards.
- Performance of quality-related training programs.
- Participation in design reviews and development of quality-related technical specifications.
- Chair of the Material Review Board for disposition of non-conformances and requests for deviation.
- System safety oversight for University Link.
- Chief Safety Officer

The Chief Safety Officer reports to the Chief Safety, Security and Quality Assurance Officer, and has responsibility for Agency occupational safety, construction safety, and rail safety programs. The Chief Safety Officer develops and implements safety policies and programs to reduce the frequency and severity of accidents and occupational illnesses, analyze new and existing job positions, work processes, or systems to determine the existence, severity, probability, and disposition of hazards. This officer is also responsible for implementing bus and rail system emergency programs in coordination with local fire, police, and other emergency responders along with the development of related programs, manuals, and procedures.

Construction Safety Manager

The Construction Safety Manager reports to the Chief Safety Officer, and directly develops and implements Link Safety Program policies, and procedures for design, construction, and operations to ensure safety of staff, facilities, passengers, and the public. Specific management responsibilities include:

- Safety procedures and training in hazardous communication, personal protective equipment, First Aid, and CPR.
- Training and emergency exercises to ensure compliance with applicable Federal, State, and local safety requirements.
- Safety audits of documentation and work processes of Link, its consultants, its suppliers, and its contractors.
- Supervise performance of safety certification, system safety, construction safety, employee safety, facilities security, and emergency management programs.
- Verifying that work processes and other activities are performed in accordance with Agency, Link, OSHA, and WISHA requirements.

Rail Activation Safety Manager

The Rail Activation Safety Manager reports to the Chief Safety Officer and manages all safety activities during testing and start-up.

Chief Security Officer

The Chief Security Officer reports to the Chief Safety, Security and Quality Assurance Officer, and is responsible for implementing and monitoring policies and procedures to protect employees, customers and property. The Chief Security Officer investigate reports of theft, vandalism, and assaults, and acts as the liaison with other transit agencies and law enforcement representatives in connection with security programs including training related to security issues. The Chief Security Officer recommends security

policies along with the development of related programs, manuals, and procedures. The Chief Security supports and participates in activities related to Crime Prevention Through Environmental Design.

Operations and Maintenance Manager

The Operations and Maintenance Manager is responsible for the management of the operations and maintenance planning and related design coordination. The Operations Manager reports to the Director of the Transportation Services Division and coordinates directly with the U-Link Project Director on Project matters. Specific responsibilities include:

- Analysis of operations and maintenance requirements, including fleet size projections, development of testing and startup plans, and pre-revenue service testing, training, and certification.
- Review of design criteria, design development, procurement documents, and submittals.
- Development of Operations and Maintenance Plans, Operations Rule Book, Standard Operating Procedures, and other plans and procedures.
- Development of operations and maintenance strategies, staffing plans, and budgets.
- Development of revenue service schedules.
- Development of pre-revenue fire/life safety readiness drills for emergency services personnel in collaboration with Sound Transit Safety and Security Divisions.
- Coordinate with King County Metro (KCM) and manage KCM's activity in accordance with the scope, responsibility, and accountability detailed in the ST-KCM Memorandum of Agreement.

Rail Activation and Start-Up Manager

The Rail Activation and Start-Up Manager is responsible for management of activities related to rail activation, systems integration testing, and safety certification. Specific responsibilities include the following:

- Coordinate and supervise Rail Activation Group.
- Plan and coordinate rail activation and systems integration testing.
- Develop Rail Activation Plan.
- Develop safety certification process.
- Ensure test plans and procedures are developed and implemented.

Transit Art Manager

The Transit Art Manager reports to the Chief Corporate Communications Officer and is responsible for the management and implementation of Sound Transit's Art Program (Start) elements in connection with the University Link project. The Transit Art Manager oversees the artist selection process, monitors design progress and budget performance, and coordinates design proposals with the design team and project stakeholders, including the University of Washington and the City of Seattle.

Contracts Manager

The Contracts Manager, reporting to the Executive Director – General Counsel, is responsible for the management of the procurement and contract administration activities performed by Sound Transit for the University Link project. This includes ensuring that contracts procured and administered by Sound

Transit for the project meet Sound Transit's procurement and contract administration procedures as defined in the Procurement Manual and Contract Administration Manual, as well as applicable federal, state, and local laws, rules, and regulations. Specific responsibilities include the following:

- Assist in developing terms and conditions for contracts awarded by Sound Transit.
- Conduct procurement for goods and services, including activities related to soliciting bids/proposals/quotes, contract negotiations, cost/price analysis, contract award, and notice to proceed.
- Prepare change orders and assist in reviewing proposed change orders for professional services, including design support during construction.
- Prepare change orders and assist in reviewing proposed change orders and change notices during the construction phase.
- Assist in reviewing progress payment documentation.
- Ensure contracts procured and awarded meet Sound Transit goals for local, small and minority, women and disadvantaged enterprises.
- Maintain official contract files.
- Support audit activity and assist in resolving audit issues.

Controller

The Controller, reporting to the Chief Financial Officer, directs, manages, supervises, and coordinates the activities and operations of the Accounting & Treasury Division, including the accounting and treasury sections. The Controller provides professional and administrative support to the Chief Financial Officer (CFO). The CFO is responsible for providing financial support to the Sound Transit Board and executive management.

The Accounting & Treasury Division activity includes:

- Develop, implement, and manage Sound Transit's long-term ERP applications and direct integration with project management systems.
- Provide accurate and timely accounting information, preparation and analysis of financial statements.
- Coordinate Sound Transit's audit function that includes financial and federal audits.
- Ensure collections of local sales tax and motor vehicle excise taxes.
- Attain market rate-of-return through investment of excess Sound Transit funds following prescribed board-approved investment policy.
- Manage federal, state, and local grant reimbursement programs and the FTA's annual National Transit Database reporting to ensure compliance requirements are met.

Chief Information Officer

The Chief Information Officer, reporting to the Chief Financial Officer, is responsible for the management of the Information Technology Division including network systems, enterprise and business applications, desktop user support, telephony, and technology related projects. Specific responsibilities include:

- Provide computer users with comprehensive help desk support and telecommunications support for phone, fax, and voicemail services.
- Assist with user training and technical support for applications.
- Maintain and enhance agency communications through interactive Web site application implementation, 1-800-number support, and remote access protocols to support field offices and construction sites.
- Support a rapidly expanding computer network infrastructure with appropriate hardware and software components and optimization strategies.
- Assist with agency-wide data system integration efforts between the capital projects departments and corporate divisions and coordinate application development.
- Provide technical support for Sound Transit's management system.

Environmental Compliance Manager

The Environmental Compliance Manager, reporting to the Executive Director – General Counsel, is responsible for managing, supervising, and coordinating the activities and operations of the Environmental Compliance Division within the Legal Services Department. Specific responsibilities include:

- Ensure the Agency is in compliance with all environmental requirements
- Provide legal advice about environmental matters.
- Coordinate assigned activities with other divisions, programs, Departments/Offices, and outside agencies.
- Provide administrative support to the General Counsel.

Media Relations and Public Information Manager

The Media Relations and Public Information Manager reports to the Executive Director – Policy, Planning, and Public Affairs and is responsible for producing public information pieces for internal and external audiences, including working directly with the Chief Executive Officer to develop messages and products for the Agency, ST Board, and the public. Specific responsibilities include:

- Produce a wide range of strategically developed public information pieces including letters, brochures, speeches, talking points, executive summaries, fact sheets, and opinion columns.
- Work with project staff to ensure all written materials coming out of the Agency convey messages consistent with the agency's strategic goals.

Government and Community Relation Manager

The Government and Community Relation Manager reports to the Executive Director – Policy, Planning, and Public Affairs and is responsible for managing, supervising, and coordinating the activities and operations of the Government Relations Division within the Communications Department. This includes programs and operations related to the development and maintenance of relationships with federal, state, regional, and local government officials. Specific responsibilities include:

- The development and implementation of strategies to advance the Agency's interests with elected officials, staff, and other public agencies.

- Oversees and participates in the work of staff involved in planning, coordinating, and directing significant public policy issues to meet the long- and short-range goals of the Agency.
- Providing analytical support, policy analysis, and strategic analysis within the Agency's federal, state, regional, and local government relations programs.
- Coordinates assigned activities with other divisions, programs, Departments/Offices, and outside agencies.
- Provides administrative support to the Media Relations and Public Information Manager.

Risk Manager

The Risk Manager reports to the Chief Financial Officer and is responsible for managing, supervising, and coordinating the activities and operations of the Risk Management Division within Central Puget Sound Regional Transit Authority's Finance & Information Technology Department. Specific responsibilities include:

- Manage insurance claims administration.
- Provide ongoing property and liability claims administration.
- Communicate claims procedures to all Agency internal and external customers.
- Negotiate, procure, and maintain adequate risk and insurance coverage programs.
- Interface and coordinate with all Agency lines of business, insurance brokers, insurance companies, and third-party claims service providers.
- Respond to and resolve difficult and sensitive citizen inquiries and complaints.

Legal

Legal Counsel is responsible for providing legal analysis and counsel to the Agency on a variety of legal matters. Specific responsibilities include:

- Conducts contract negotiations.
- Supports property acquisition, property management and development, and policy formation.
- Advises on employment and municipal law matters.
- Prepares, reviews, and examines legal documents.
- Assists in representing the Agency in litigation cases.
- Performs a variety of legal research.

The Legal Counsel for the University Link project supports the development of inter-agency agreements, including Project land use approvals and the agreements with the University of Washington, and helps direct legal issues to appropriate legal counsel, upon request from the U-Link Project Director, including Sound Transit's in-house environmental and construction legal counsel.

2.4.3 University Link Project Management

Figure 2-6 University Link Project Management illustrates the overall management and reporting structure for this Project. The U-Link Project Director is directly supported by the Deputy Project Director, the Civil Engineering Manager, the Civil/Systems Integration Manager, and the Construction Manager. The Deputy Project Director has five functional managers or leads reporting to him: Project

Controls, Environmental, Real Property, Community Outreach, and Project Development. The Link Quality Assurance Manager reports indirectly to the University Link Project Director.

The University Link project staffing organization and consultant team reporting relationships are further illustrated in Figure 2-3 University Link Project Organization.

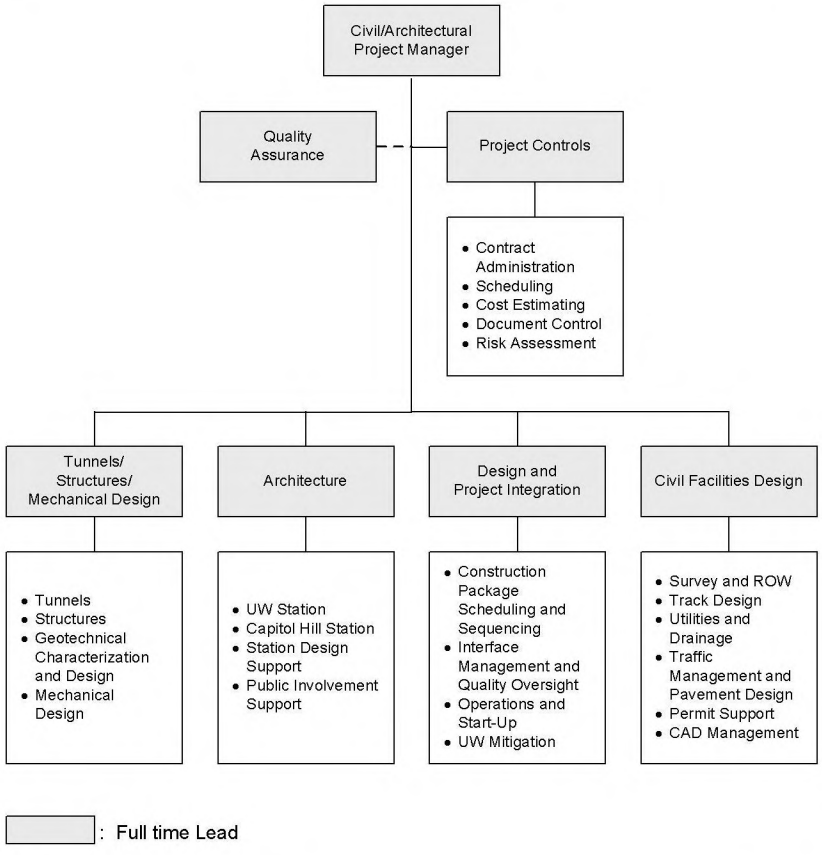
2.4.4 Consultant Resources

Most of the engineering and other technical work needed to complete University Link final design will be produced by two major final design consultants, a civil/architectural final design consultant and a systems final design consultant, under the direction of Link staff. These consultant resources have been procured and contracts negotiated as generally described below. Additional consultant design management and design support services were also procured as an extension to Link staff to supplement the management oversight, as identified below.

Civil/Architectural Final Design Services

The final design consultant contract for general civil engineering and architectural services was awarded to Northlink Transit Partners (NTP). This consultant team is providing expertise, which includes tunnel and heavy civil design, geo-technical exploration and design, station architectural design, ventilation design, trackwork design, surveying and right-of-way design, traffic engineering, utility and drainage design, systems and project integration, cost estimates, scheduling, contract drawings and specifications, and bid and design support during construction. Figure 2-4 Civil/Architectural Final Design Consultant Disciplines illustrates the major design disciples provided though this civil and architectural final design contract.

Figure 2-5 Civil/Architectural Final Design Consultant Disciplines

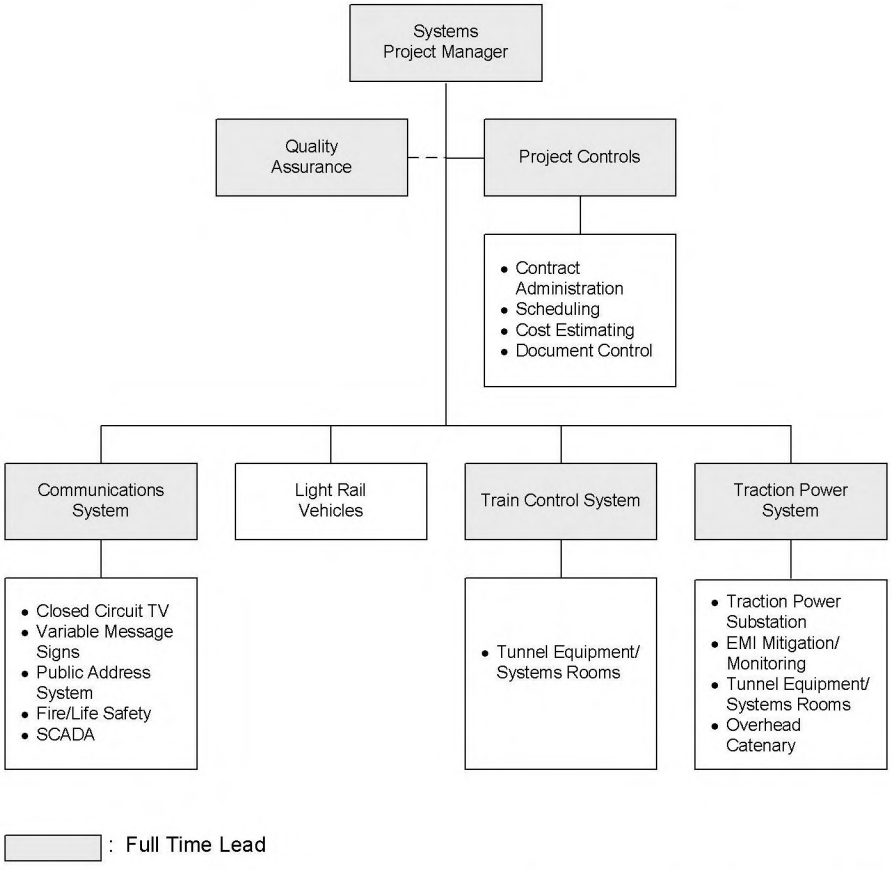


The civil and architectural final design consultant team project manager reports directly to the University Link Civil Engineering Manager for administrative matters and to the University Link civil and architectural design leads for technical matters. Key members of this consultant team are co-located at Sound Transit offices and integrated with the Link staff project team.

Systems Final Design Services

The consultant contract for systems final design services was awarded to LTK Engineering Services, Inc. The systems final design consultant team provides expertise in the areas including design and coordination of signals, communications, SCADA, traction power system, Electro magnetic Interference (EMI) mitigation, fare collection, vehicle procurement, cost estimates, scheduling, contract drawings and specifications, and bid and design support during construction. The EMI sub-consultant will refine the University of Washington EMI mitigation and monitoring commitments and will coordinate directly with the Link UW Station and Mitigation Lead. Figure 2-5 Systems Final Design Consultant Disciplines illustrates the major design disciplines provided through this systems final design contract.

Figure 2-6 Systems Final Design Consultant Disciplines

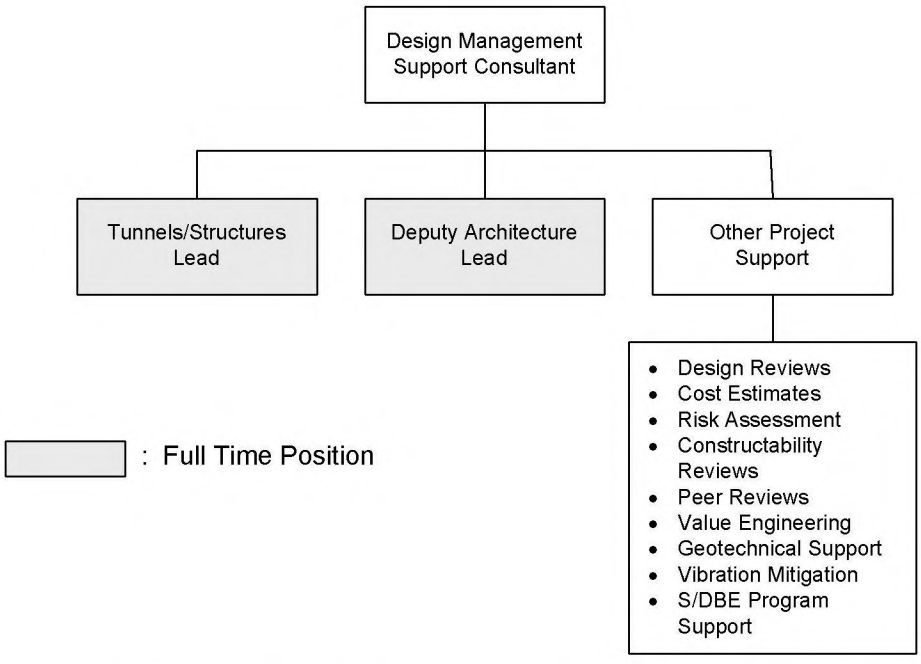


The systems final design consultant team project manager will report to the University Link Civil/ Systems Engineering Manager for administrative matters and to the Link Systems Engineering design leads for technical matters. Key members of this consultant team will also be co-located at Sound Transit offices and integrated with the Link staff project team.

Design Management Support Consultant

In order to supplement Link staff resources assigned to University Link for the management oversight of the final design efforts, Link hired PB Americas, Inc. to provide additional consultant resources. The design management support consultants provide expert personnel to assist Link staff in the day-to-day management and review of final design work and support other University Link project activities. This consultant team is acting as extensions of Link project staff. Two full-time positions and additional personnel are being supplied by this consultant team. Figure 2-6 Design Management Support Consultants illustrates the areas of additional consultant expertise provided through this contract. As a lesson-learned from the Initial Segment, U-Link has implemented a formal interface management program and is utilizing Interface Management Plans as a means to document interface control issues, questions, and comments and to facilitate the identification of contract-to-contract interfaces, as well as civil-systems interfaces existing within contracts.

Figure 2-7 Design Management Support Consultant



Design management support consultant personnel are responsible as full-time leads in the discipline areas of tunnel/structures engineering and architecture. In addition, this consultant team will provide other periodic assistance by personnel with expertise in the areas of design review, cost estimating review, risk assessment, value engineering, constructability review, and other project support functions, as needed.

The design management support consultant personnel report directly to appropriate Link staff. Key members of this consultant team will be co-located at Sound Transit offices and integrated with the Link staff project team.

The design management support consultant contracts include the following sub-consultants:

- The vibration sub-consultant firm from the PE phase (Wilson Ihrig Associates) has been retained to support Link staff work activities to refine University of Washington vibration mitigation commitments. This sub-consultant firm will coordinate their work with the civil and systems design consultant teams. The vibration sub-consultant will coordinate directly with the Link UW Station and Mitigation Lead.
- The risk assessment consultant from the PE phase (Davis Langdon) has been retained as a sub-consultant to support Link staff activities to monitor and refine University link risk activities during final design. The risk assessment consultant reports to the Project Controls Manager and coordinates with the UW Station and Mitigation Lead.
- A S/DBE Program Advisory Team, led by Griffin, Hill & Associates, composed of small and disadvantaged business owners subcontracted through the design management support consultant is advising Sound Transit on developing and implementing a series of outreach efforts specifically for University Link.

The following specialized sub-consultant resources have been or may be procured:

- The Link real estate division has procured real estate services consultants to provide negotiation services, relocation benefits assistance, appraisal and relocation support, property management services, and other related assistance. The real estate consultants report directly to the Link Real Property Manager.
- The Link Permit Manager has hired a permit support services consultant to assist him in securing required University Link land use and other permits. The permit consultant reports directly to the Link Permit Manager.
- Other consultant resources may also be procured, as needed, to successfully complete University Link final design. The procurement of consultants is discussed in Chapter 7.2.2.

2.6. INTERFACE POINTS

Table 2-1 Project Interface Points of Contact summarizes the principal points of contacts for external communications.

Table 2-2 Project Interface Points of Contact

Party	Subject Area	Project Contact
University of Washington	General	UW Station and Mitigation Lead
	Coordination	Civil Design Lead
	Design issues	Design Manager
	Architecture and transit art	Architecture Lead, Transit Art Manager
	Construction	Constructability Review Manager
	Right of Way	Link Right-of-Way Manager
	Scheduling	Schedule Lead
	Change Control	Configuration Manager
City of Seattle	General, Schedule	Deputy Project Director
	Coordination	Civil Design Lead
	Design issues	Civil Engineering Manager, Systems Engineering Manager
	Architecture and Transit Art	Architecture Lead, Transit Art Manager
	Permits	Project Development Manager, Permit Manager
	Construction	Constructability Review Manager
King County Metro		Project Development Manager
WSDOT		Civil Design Lead
FTA/PMOC		Project Director, Environmental Manager
Contractors		Resident Engineers
Utilities		Civil Design Lead
Community Outreach	Community concerns	Community Outreach Lead

Table 2-2 University Link Contract Interface Matrix shows the relationship between the preliminary University Link work packages and each external organization or activity requiring interface coordination. (These work packages are subject to refinement during the Final Design phase.) In addition, the matrix identifies the activities that must be coordinated to deliver University Link. The management of interfaces will be accomplished in accordance with the Link Engineering Design Procedures.

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Table 2-3 University Link Contract Interface Matrix

U-Link Contract / Interface Point	U210 – Advance Utility Work	U211 – Demo and Environmental Mitigation	U215 – I-5 Advance Work	U220 – Bored Tunnel Construction (UWS - CHS)	U230 – CHS Excavation/Bored Tunnel (CHS - PSST)	U240 – Capitol Hill Station and Finishes	U250 – UW Station and Finishes	U260 – Trackwork (UW Station to PSST)	U820 – Rail Yard Expansion	U830 – Systems	U821 – Vehicles
Designers and Consultants	• Civil	• Civil	• Civil	• Civil	• Civil	• Civil • Systems	• Civil • Systems	• Civil • Systems	• Systems	• Systems	• Systems
Prime Contractor	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	Kinkisharyo
Link Interfacing Contracts	• U220	• U230	• U230	• U210 • U250 • U230 • U260 • U240 • Systems	• U240 • U220 • U211 • U215 • Systems	• U230 • U260 • Systems	• U220 • U260 • Systems	• U240 • U230 • U220 • U250 • Systems	• C810 • Systems	• U260 • U240 • U220 • U250 • U230 • U823	
City of Seattle	Permits	Permits	Permits	Permits	Permits	Permits	• Permits • Burke-Gilman Trail connection	Permits	Permits	Permits	
Seattle City Light		Utility disconnects		TPSS electrical service	• 115-kV underground transmission line • TPSS electrical service	• 115-kV underground transmission line • TPSS electrical service	TPSS electrical service			TPSS electrical service	
Seattle Public Utilities		• Utility disconnects • Storm water protection	• Storm drain relocations • TBD	• Service tap into 54-inch water supply line • Utility settlement monitoring (tunnels) • Lake Washington Ship Canal water tunnel	• Lincoln Reservoir • 16-in water main • Utility settlement monitoring (tunnels)	• Lincoln Reservoir • 16-in water main • Permanent water service • Sewer service connections	Sewer service connections				
Seattle Fire Dept.				• Emergency ventilation • Fire standpipes	• Emergency ventilation • Fire standpipes	• Emergency ventilation	• Emergency ventilation				
King County Metro		Bus stop temporary relocations	Bus route relocations		Bus stop temporary relocations	• Bus stop locations • Bus layover • Bus service integration	• Bus stop locations • Bus layover • Bus service integration	DSTT construction staging coordination		DSTT systems coordination	
Puget Sound Energy		Utility disconnects			Gas line relocations						
TeleComm	Utility protection and relocation	Utility disconnects									
Qwest	Utility protection and relocation	Utility disconnects				Phone services	Phone services				
WSDOT			• I-5 undercrossing • ROW agreements	• I-5 undercrossing • SR-520 undercrossing • ROW agreements	I-5 TBM undercrossing (monitor)		SR-520 project design coordination				
WSDOE	Permits	Permits	Permits	Permits	Permits	Permits	Permits				
WA Dept of Arch & Hist Preservation	Archaeological site coord if needed	Archaeological site coord if needed		Archaeological site coord if needed	Archaeological site coord if needed	Archaeological site coord if needed	Archaeological site coord if needed				
University of Washington	• Coordination • Utility protection and relocation for water, sewer, and fiber optic			• Construction impacts • Vibration • Husky Stadium • Sewer and storm ultility relocation			• Design coordination • Construction impacts • Vibration/EMF • Husky Stadium	• Vibration/EMI Mitigation			
U.S. Army COE				Permit (Lake Washington Ship Canal undercrossing)							

Note: Cell content indicates interface point or activity/interface requiring coordination.

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2.7. STAFF MOBILIZATION

As of the 1st Quarter 2007, the University Link staff was fully mobilized for the Final Design phase. The UL Deputy project Director - Construction was named in October 2007.

2.8. KEY PROJECT POLICIES

University Link project activities are guided by the following management policies:

- Comply with the requirements and guidance provided in Sound Move and this University Link Project Management Plan.
- Link's project management, quality, safety, security, and project control practices will meet or exceed industry standards.
- Link's standards for preliminary and final design will meet applicable local, state, and national jurisdictional codes and standards in accordance with the North Link and Airport Link Design Criteria Manual.
- Sound Transit will perform betterment work only upon receipt of a written funding commitment and payment schedule from the third party requesting the work. Betterment work is not eligible for federal funding.
- The majority of professional service activities, such as design, construction management, and specialty engineering will be performed by consultants, as described in this plan.
- Key consultant staff are required to co-locate in the Link offices. Link offices are equipped with industry-standard computer hardware and software required to support the University Link Project.
- The Project will employ and provide compensation, training, and benefits for its workforce in accordance with Sound Transit human resource policies.
- The Project will apply for, administer, and monitor grants in accordance with Sound Transit grants policies.
- The Project will conduct administrative and business activity in accordance with Sound Transit business policies.
- Link will establish and maintain a configuration and data management program in accordance with Link Project Control Procedures. Included in this program will be a Change Control Board.
- The Project will develop a Work Breakdown Structure to serve as a common, integrated structure for physical and functional features, contract packages, project reporting, and cost and schedule definition in accordance with Link Project Control Procedures.
- The Project will develop and utilize cost estimating and project scheduling methodologies and reporting in accordance with Link Project Control Procedures.
- Link will control the procurement of services and supplies in accordance with Link Project Control Procedures.
- Link will manage security in accordance with the Safety and Security Management Plan.
- The Project will consistently and fairly process payment requests for work performed in accordance with Link Project Control Procedures.

- The Project will report progress, forecast costs, and manage contingencies in accordance with Link Project Control Procedures.
- Project requirements will be verified and reported on in accordance with the Link Final Design Quality Plan and the Link Construction Quality Plan.

2.9. TRAINING PLAN

Each consultant selected to participate in the planning and design of University Link and Link staff member will be proficient in the technical skills germane to their recognized area of expertise, such as geotechnical engineering, structural engineering, architecture, surveying, and systems.

Sound Transit will conduct training so that all responsible individuals understand their roles and responsibilities, the procedures for implementing design, construction management, and project control processes, and the tools and automation used to facilitate these processes. This Link-specific training is administered by various Sound Transit Departments and Divisions, depending on the type of training and the subject matter, and takes two forms:

- Formal presentations in a classroom environment.
- On-the-job or one-on-one training as circumstances and situations dictate.

Sound Transit training will provide the context for understanding University Link objectives, processes, procedures, and tools (automation) for specific aspects of the project. This may include organizational interfaces and interactions, familiarization with Link Design Criteria and Standard/Directive drawings, software programs such as Primavera Expedition, OpenText Livelink, and Safety Link.

The Link Department recognizes the importance of strong technical and project management skills in the delivery of Link projects. Link encourages and supports project managers and other project staff to pursue professional development training and education opportunities. These efforts are supported by the programs provided through Sound Transit's Human Resources Division and Sound Transit's relationships with local education providers. The Agency Project Control Division arranges for and administers periodic in-house training programs for agency staff.

The Link Quality Assurance organization, in conjunction with the Construction Management Division, provides on-going training to construction management and design staff in a variety of topics. This training is conducted on a rotational basis through the construction field offices and includes environmental best management practices, inspection preparedness, survey and test lab coordination, rail inspection, and corrosion control testing.

Link provides the following general training to each University Link employee and consultant supporting Link activity:

- Livelink orientation
- eRoom Training
- Quality Assurance Training

Sound Transit will provide the following specialized training to those Link and consultant employees that have the need to conduct activities in the field in support of construction, testing, or delivery:

- Inspector Daily Reports, Contractor Work Plans, and Non Conformance Report

- Potholing and Underground Utilities
- Traffic Control and Signals
- Buy America Requirements
- Soils Compaction Inspection and Testing
- As-Built Documents and Redlines Documents
- Concrete and Asphalt Concrete Inspection and Test
- Steel Structures, Welding, and Cathodic Protection
- Rail Installation, Inspection, and Testing
- Architectural Finishes and Artwork
- Traction Electrification Installation
- Asphalt Inspection and Test
- Environmental Best Management Practices
- Inspection Preparedness
- Survey and Testing Lab Coordination
- Nonconformance Reporting
- Rail Inspection
- Weld Specification Section 05090
- System Infrastructure Basics
- Corrosion Control Installation and Testing
- Reinforcing Steel

The Agency provides the following training on a recurring basis:

- IP Phone Familiarization
- E-mail management and other IT training

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3.0 MANAGEMENT CONTROL

This chapter summarizes the overall requirements and incorporates as part of the plan the detailed procedures that are in place to ensure that the implementation of the University Link project is guided by applicable controls and subject to required approvals. The management controls are implemented by the University Link Project Director and the Link management staff under the direction of the Link Light Rail Executive Director. The University Link Project Director is responsible for the management and control of the project scope, staffing, cost, schedule, risk, safety, and quality through the use of communication from the managers assigned to the U-Link Project Director. This communication includes reports to Link senior management and to the FTA summarizing progress and status.

3.1. FUNCTIONAL AND TECHNICAL CONTROL

The University Link scope configuration is defined in the following documents:

(1) Sound Transit Board Resolution selecting the University Link alignment and station locations (Resolution No. R2006-07 adopted in April 2006).

(2) North Link Final Supplemental Environmental Impact Statement (published by the FTA with Sound Transit in April 2006).

(3) Record of Decision (ROD) for the University Link Segment of the North Link Light Rail Transit Project (published by the FTA in June 2006).

(4) University Link Phase Gate Process, Gate IIIA Documentation (approved December 2006), Gate IIIB (TBD).

(5) University Link Contract Unit Descriptions (CUD) describing in narrative form the construction and procurement contracts that have been defined for the delivery of the Project.

(6) North Link and Airport Link Design Criteria Manual.

The Link Configuration Management and Data Management Program provides for control of the documents describing the physical and functional characteristics of the University Link Project. This program is described in Link Project Control Procedure LPC-04 Configuration Management. The procedure describes how configuration and data management are planned and accomplished. It also describes how consistency between the documentation that describes the project, the actual configuration of each portion of the project, and the configuration and data management documentation and records is achieved and maintained throughout the phases of University Link.

Link configuration and data management principles are based on sound business practices being used throughout industry and government to provide:

- The orderly documentation of a product's functional, performance, and physical attributes, and the evolution thereof.
- Management of changes to the attributes.
- Access to and dissemination of accurate information essential to project planning, design, construction, testing, and operation.

Configuration and data management is described in terms of seven activities:

(1) Configuration and data management planning and management.

(2) Configuration identification.

(3) Change management.

(4) Interface control.

(5) Configuration status accounting.

(6) Configuration verification and audit.

(7) Document control.

3.1.1. Baseline/Configuration Control

Change management is the discipline of managing changes to the configuration of the project using systematic, measurable change control processes. These processes include:

- Identify the need for a change and assign a unique identifying number to each change.
- Evaluate each change, coordinating with organizations affected by the change.
- Identify the authority level that is responsible for approving the change.
- Disposition of each change.
- Plan for the implementation of each change.
- Facilitate the implementation of the change and verify that the item affected by the change and the documentation describing this item is consistent.

The Project scope is subject to the following change control processes:

- Changes to the University Link Contract Unit Descriptions, substantial design refinements made during the design process, changes to the Design Criteria Manual, and updates to controlled manuals and procedures are subject to approval by the Link Change Control Board (CCB). The scope and administration of Link's CCB is described in Link Project Control Procedure LPC-09 Change Control Board.
- Design changes are subject to the University Link Design and Interface Control Procedure to be adopted by Link to ensure that configuration changes during the design phase are fully coordinated.
- Scope changes and key milestone completion are subject to the Sound Transit Phase Gate Process, which provides agency oversight and during the project evolution by requiring a check-in process with agency management at key project milestones. The Phase Gate Process is administered by the Agency Project Control Division.
- Once construction has commenced, changes to contract documentation, such as drawings and specifications, are subject to coordination and approval as described in Link Project Control Procedure LPC-08 Change Notices and Change Orders, the Construction Manual, and the Contract Administration Manual.
- The Sound Transit Board scope control policy requires board approval of substantial scope modifications.

3.1.2. Design Management Control

The overall design management is the responsibility of the U-Link Project Director, who controls the design process from preliminary design through design support during construction. The Project Director delegates responsibility for Civil and Architectural design management to the Civil Engineering Manager and for Systems design management to the Civil/Systems Integration Manager, who are responsible for managing the integrated Link/consultant design teams. The Project Director reports progress and issues relative to the design to the Link Executive Director. The administration and coordination of the design team, which consists of civil, structural, mechanical, electrical, geotechnical, survey, systems, utilities, architectural, trackwork, and right of way design will be accomplished by implementing the provisions within the Link Engineering Design Procedures, Link Project Control policies and Procedures, Final Design Quality Plan, and CADD/Drafting Manual. The incorporation of features designed to facilitate and promote project security will be accomplished by implementing the Safety and Security Management plan. The U-Link design managers will conduct effective design coordination meetings with integrated Link and design consultant team members, which will be documented in meeting minutes with action items and due dates assigned. The U-Link Project Director, with the assistance of the Project Control Lead, will control and monitor the scope, schedule, and costs of the overall design effort, as well as the consultant contract work activities through the review and verification of consultant invoices and pay requests against the contract baseline requirements. Design management controls will include engineering and quality reviews, design document checking, and milestone submittal reviews. The U-Link Project Director will coordinate with the Safety and Security Certification Review Committee and approve the civil design safety and security design certification as necessary in accordance with the University Link Safety and Security Management Plan.

3.1.3. Design Reviews

During the University Link design process, documented design reviews are performed at the 60, 90, and 100 percent design completion milestones in accordance with the Link Final Design Quality Plan. The scope of the design reviews includes design drawings, specifications, calculations, results of computer modeling, technical memoranda, traffic studies, staging plans, scope documents, budgets, schedules, and design reports. Reviews are performed by multiple disciplines within Sound Transit, by the Design Management Support Consultant, and by external parties, including the University of Washington, the City of Seattle, WSDOT, and affected public and private utility companies. The reviewers record comments on standard design review comment forms as shown in the Link Final Design Quality Plan, Chapter 3.0 and submit these to the Civil Engineering and Civil/Systems Integration Managers for response and disposition. The Civil Engineering Manager and the Civil/Systems Integration Manager are responsible for ensuring that all comments are responded to in writing and incorporated as appropriate by the design consultant. An electronic data management system (eRoom) is employed by both the Civil and Architectural Final Designer (Northlink Transit Partners) and the Systems Final Design consultants (LTK Engineering Services, Inc.) to store all University Link design work products, deliverables, and review comments that comply with engineer design standards and applicable codes and regulations. Design review meetings are held to resolve design issues. Each succeeding design milestone submittal incorporates the resolution of the design review comments from the previous design milestone submittal. The Fire/Life Safety Committee will meet to discuss safety critical design issues. The U-Link Project Director will consider aspects of the design deemed to promote safety, security, and economy over the life-cycle of the project, and will also integrate the Link safety certification process with the other design review activities.

3.1.4. Quality Assurance / Quality Control Program

The Link Quality Assurance Program (QAP) is maintained by the Link Quality Assurance Manager to provide quality assurance and to verify quality control processes during design, procurement,

construction, installation, testing, startup, acceptance, and operations. Program details are defined in the Quality Assurance Program Plan. Elements of the program correspond to the quality program elements described in the U.S. Department of Transportation Quality Assurance/Quality Control Guidelines. The fundamental principles of ISO 9001-2000 Quality Management Systems and American National Standards for Quality Systems, ANSI/ASQ Q90-Q94 are incorporated. Applicable quality requirements are integrated into activities conducted by Link staff, design and construction management consultants, contractors, and suppliers. Quality programs prepared by consultants, contractors, and suppliers are part of the contract submittal requirements submitted to the Link Quality Assurance Manager for review and approval. Northlink Transit Partners produced a Final Design Quality Assurance Manual that meets Sound Transit's requirements. Sound Transit employs a Quality Oversight consultant to audit the QAP. The QAP clearly defines the management responsibility, accountability, and authority within Link and provides for a well-documented approach to quality assurance and quality control. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Elements 1 and 2.)

The following requirements and practices are defined in the Link Final Design Quality Plan and the Link Construction Quality Plan and support the University Link quality assurance and quality control program:

- In accordance with contract documents, consultants, contractors, material suppliers, installers, and equipment manufacturers are required to prepare and submit quality plans covering their activities. For the purposes of design control, design consultants are required to have a quality plan in place. Link requires consultants to develop their own quality plans that meet Link requirements or to adopt selected Link quality documents. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 2.)
- Link has implemented a Final Design Quality Plan in order to provide procedures and standards that ensure design control compliance with design criteria, contract scope definitions, the Quality Assurance Program Plan, and applicable codes and standards. Link's approach to design quality includes deliverable identification, design criteria conformance checklists, design and constructability reviews, accuracy and completeness checks, and both design consultant and Link Quality Assurance audit/surveillance activity. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 3.)
- Link maintains documented procedures to control the configuration of baseline documents and data, and to ensure that current documents are available and that safeguards are in place to prevent the unintended use of obsolete documents. Link also requires that each contractor, in accordance with contract requirements is required to have document and data control procedures in place to assure effective control of contractor-generated and contractor-received documents. The procurement of spares, replacement equipment, or replacement components is subject to interchangeability and replaceability considerations. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 4.)
- Link Quality Assurance audits contractors and suppliers to verify conformance with procurement control requirements. Applicable design basis and quality assurance program requirements are included or referenced in documents used for procurement of materials, parts, equipment, or services. Quality assurance requirements for contractors and suppliers are included in contract documents. Contractors and suppliers will implement quality programs, appropriate to the work being performed, to assure that purchased products and services conform to contract requirements. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 5.)
- Consultants, contractors, and suppliers are required to have quality procedures to assure effective product identification and tracking. These procedures will assure that only correct and acceptable items are used and the required certification and test report documentation are provided. Inspection

will verify compliance with the procedures. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 6.)

- Contractors and suppliers are responsible for developing and implementing procedures for the control of special processes that directly affect quality. Special processes required for fabrication, production, or installation that cannot be verified by subsequent inspection are tested or witnessed under controlled conditions. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 7.)
- Control, calibration, and maintenance of equipment are the responsibility of the entity responsible for the inspection and testing. Procedures for control of inspection, measuring, and testing are reviewed and approved. Procedures will assure that only work that has passed inspections and tests are incorporated into the project. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 9.)
- Inspection and tests are planned, performed, and documented by qualified persons other than those responsible for performing the work that is being inspected. Inspections and testing are the responsibility of the contractors and Link Construction Management, unless otherwise stated in the contract documents. Procedures are developed and followed for inspection and test activities including personnel qualification, control of measuring and calibration equipment, and status control. All test reports will contain the information required concerning the identification, tracking, standard/code requirements, location, and acceptability of the product. In-process inspection of items or systems is performed as necessary to verify use of proper design criteria and conformance to the contract documents. Hold or witness points are identified, and work will not proceed beyond those points until inspection is completed or waived by Sound Transit. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Elements 8 and 10.)
- Link maintains a system for tracking and controlling nonconforming items, including requirements for identification, segregation, and disposition. Sound Transit Construction Management maintains a list of work that does not comply with the contract, and identify what items need to be corrected, the date the item was originally discovered, and the date the item was corrected. All nonconforming items are required to be identified to prevent unauthorized use, shipment, or inclusion with conforming items. All nonconforming items that are dispositioned as "use-as-is" or "repair" must be approved by the Link Material Review Board in accordance with the Link Construction Quality Plan (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Elements 11 and 12.)
- Complete records of quality activities and accountability will be maintained. These Quality Assurance records are available on request to the Quality Assurance Manager. These records include audit, surveillance and assessment reports, inspection, and Material Review Board records. Quality Control records are available upon request to the Construction Manager. These records include test reports, inspection reports, test plans, test procedures, and non-conformance reports. At completion of the contract, the records are turned over to Link. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 13.)
- Planned quality audits will verify that applicable elements of the QAP have been effectively implemented and documented. Internal audits of Link Project Control, Civil Engineering, Systems Engineering, and Construction Management, and external audits of contractors will be scheduled commensurate with the activities. Audit schedules and records of results are maintained. Spot surveillances will be conducted to verify or witness specific processes and aspects of the contractor's field installation and testing. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 14.)

- Construction quality training of CM staff and consultants will be conducted for selected critical and special processes, as well as many of the typical processes. (FTA Quality Assurance and Quality Control Guidelines, Feb 2002, Element 15.)

3.2. BUDGET AND COST CONTROL

Various levels of Project capital budgets and cost estimating practices are in place to establish budget commitments and monitor budget performance for University Link. Financial audits of the budgets, accounts payable, and accounts receivable are performed periodically by the Finance Department and outside consultants.

3.2.1. Budgeting

Prior to the end of each year, the Sound Transit Board approves the Adopted University Link Project Budget for the following year. The Adopted Budget is approved at the "phase level" for (a) the full project duration (i.e., lifetime budget); and (b) capital expenditures for the upcoming fiscal year for each project. As part of the development of the budget for the next fiscal year, staff levels are reviewed and evaluated. This evaluation validates the current staffing or identifies necessary adjustments to staff levels in order to support project activity.

The Lifetime Adopted Budget is equal to the Baseline Budget, as modified by one or more of the following Sound Transit Board actions:

(1) Budget transfers between "phases".

(2) Transfer of project contingency to other "phases" within the project.

(3) Change in annual cash flow estimates for capital outlays.

(4) Direction to prepare updated budgets for selected project elements to reflect changed circumstances.

The Sound Transit Board may amend either the lifetime or annual Adopted Budget outside of the annual budget development cycle. Budget development and maintenance is conducted in accordance with the Sound Transit Budget Policies and Procedures. Budget transfers are controlled by Sound Transit Administrative Business Policy and Procedure No. 12, Budget Transfer Policy.

3.2.2. Maintaining Baseline Project Cost

The Sound Transit Board has adopted the Baseline Budget for University Link. It is be based on the Board approved Baseline Cost Estimate shown in Table 3-1 Proposed University Link Budget. This proposed budget is in year of expenditure dollars (YOE$) at the "phase level," which can be translated into the FTA Standard Cost Category (SCC) format. Once approved, and absent changes to the Baseline Budget approved by the Sound Transit Board, the Baseline Budget will remain fixed for the Project duration.

Table 3-1 Proposed University Link Budget

Sorted by Sound Transit Capital Budget Phase

PHASES (YOE$)	Baseline Budget
Administration	$ 115,229,000
Preliminary Engineering	$ 24,388,000
Final Design	$ 77,944,000
Construction Services	$ 68,526,000
Third Parties	$ 19,733,000
Construction	$ 1,188,913,000
Light Rail Vehicles	$ 103,909,000
Right of Way	$ 157,332,000
Capital Costs Subtotal	**$ 1,755,974,000**
Finance Costs	$ 191,708,000
Project Total	**$ 1,947,682,000**

Sorted by FTA Standard Cost Category (SCC)

SCC (YOE$)	Baseline Budget
10 Guideway & Track Elements	$ 626,825,000
20 Stations	$ 375,241,000
30 Support Facilities: Yards, Shops	$ 7,013,000
40 Sitework & Special Conditions	$ 60,116,000
50 Systems	$ 69,626,000
Construction Subtotal (Sum 10-50)	**$ 1,138,821,000**
60 Row, Land, Existing Improvements	$ 157,332,000
70 Vehicles	$ 99,761,000
80 Professional Services	$ 306,407,000
90 Unallocated Contingency	$ 53,653,000
Subtotal (Sum Categories 10 - 90)	**$ 1,755,974,000**
100 Finance Costs	$ 191,708,000
Project Total (SCC 10-100)	**$ 1,947,682,000**

3.2.3. Cost Performance Measurement

The U-Link Project Director, with the assistance of the Project Control Lead, is responsible for maintaining cost forecasts on an ongoing basis for all major project elements in accordance with the standard practices defined in Link Project Control Procedure LPC-11, Cost Forecasting and Trending. Cost forecasts are reported monthly on the phase level in the Agency Progress Report (APR). Construction cost estimates are updated at the 60, 90, and 100 percent design milestones in accordance with Link's standard practices for the development and review of cost estimates, as describe in Link Project Control Procedure LPC-02 Cost Estimating. Cost variances, due to estimate changes or scope transfers, are recorded through updates to the Working Budget, subject to approval by the Link Project Control Manager and the Link Executive Director. The current Working Budget is used as the basis for proposed changes to the Adopted Budget during the annual budget development cycle.

The Finance Department prepares monthly "capital outlay reports" that compare monthly incurred costs to the annual budget plan contained in the Adopted Budget. Cash flow performance is reported to the Link Executive Director who issues quarterly briefing memoranda to Sound Transit Executive Management. The Finance Department also prepares a quarterly financial report to the Board that compares quarterly incurred costs to the annual budget plan contained in the Adopted Budget.

Consultants and contractors are required to submit cost-loaded schedules that will be integrated into the project and utilized to measure cost, schedule, and work performance against the project baseline.

3.2.4. Contingency Management

The U-Link Project Director, with the assistance of the Project Control Lead, is responsible for the management of contingences in accordance with the University Link Contingency Management Plan and Link Project Control Procedure LPC-12, Contingency Management. Contingency status is reported to the Change Control Board (CCB) for all change orders requiring CCB review and approval.

The University Link Contingency Management Plan is structured to address the overall approach to contingency management, Sound Transit roles and responsibilities, and FTA roles and responsibilities, and to ensure that distributions of project contingency are appropriately controlled and documented. The University Link Contingency Management Plan also describes the manner in which Sound Transit forecasts and trends the project contingency, as part of its overall budget and progress reporting effort, in accordance with FTA requirements.

Contingency Management Approach

Sound Transit will manage to the "total contingency" as referenced in Section 13 (Baseline Cost Estimate) of the FTA standard FFGA. The FTA and Sound Transit will utilize this total contingency as the basis for assessing Sound Transit's management of project contingency. The total contingency will be trended and measured against three contingency thresholds: "Sound Transit Board Reserved", "FTA Minimum", and "25% Buffer" as described in the Project Execution Plan. Sound Transit will manage distribution, use and maintain total contingency above the FTA Minimum at specified times during the project. These milestones, known as "FTA Milestone Review Points", are defined in terms of procurement actions and construction contract completion. These milestones are based on the Link Integrated Project Schedule (IPS). As the IPS is revised and updated throughout the life of the program, the above listed time periods may be adjusted. In the event the contingency balance is projected to fall below the minimum level, efforts will be initiated to develop and implement recovery measures, and full project review will be conducted in conformance with the University Link Contingency Management Plan.

The FTA and Sound Transit agree that in order to ensure sufficient contingency for completion of the University Link project, distribution, or consumption of the total contingency shall be subject to the detailed requirements described in the University Link Contingency Management Plan.

3.2.5. Escalation Factor Derivation

In the development of budget and cost forecasts, separate independently developed inflation indices are used for various project components. Inflation estimates for construction components are developed using the Building Construction Index (BCI). Professional services and administration cost elements are inflated used the Consumer Price Index (CPI). Property acquisition cost estimates are developed using the Right of Way Index (ROWI). All three indices are updated annually by an independent local economist under contract to Sound Transit's Finance Department. Budget development and maintenance is conducted in accordance with the Sound Transit Budget Policies and Procedures.

3.2.6. Contracting Techniques

The following types of contracts will be employed in the delivery of the University Link Project:

- Professional services for University Link will be delivered through negotiated procurements and will be in compliance with applicable WA State requirements and laws. Selected design consultant services will be procured through sole source procurements in accordance with applicable Sound Transit policies and FTA requirements.
- Sound Transit has entered into an implementation agreement with the UW and updated funding agreements with the City of Seattle and the Washington State Department of Transportation.
- Light Rail Vehicles (LRV) will be procured by exercising the existing option for 27 Initial Segment LRVs.
- Construction elements will be delivered through new low-bid construction and procurement contracts advertised by Sound Transit.

The selection of the most appropriate contract type for a given procurement and the contract administration is conducted in accordance with the Sound Transit Procurement Manual.

3.2.7. Cost Allocation Plan

The majority of project costs are accumulated and charged directly to the University Link project using the Work Breakdown Structure (WBS). Link labor costs will be accumulated and charged directly to the University Link project in accordance with staff timesheet charges. The Project Control Lead and Link Budget Analyst are responsible for the administration of cost charges in coordination with the Project Director and the Finance Department.

Agency corporate departments' labor costs are allocated by an approved activity-based allocation model that utilizes activity drivers to distribute costs to the Agency's transit operations and capital projects, including the University Link project, based on their use of the service or resource. All allocations are developed in conformance with generally accepted accounting standards and are updated and audited on an annual basis. Consultants and contractors are required to submit cost-loaded schedules that will be integrated into the project and utilized to measure against the baseline.

Cost allocation is conducted in accordance with the Sound Transit Budget Policies and Procedures.

3.2.8. Cost Accounting System

Sound Transit uses Enterprise One (PeopleSoft), for all financial related functions that includes Procurement, Budget, General Ledger , Project Costing, Fixed Assets, Payroll, Accounts Payable, Accounts Receivable, Payroll, and Human Resources modules. Enterprise One is integrated with Expedition, Sound Transit's project management system. Data from the Enterprise System is made available for project reporting purposes through Agency Reporting Portal (formerly known as the HQ Reports. Data and reports from Agency Reporting Portal (ARP) are used internally for daily project management and for monthly external reporting in the Agency Progress Report. Enterprise One is the system of record for financial statements, quarterly financial Board reporting, asset management, budget accountability, audit and data integrity. Cost accounting is conducted in accordance with the Sound Transit Budget Policies and Procedures.

3.2.9. Force Account Plan

There are no current plans for Force Account work on U-Link.

Sound Transit will work closely with the FTA and follow guidelines outlined in FTA Circular 5010.1C before any Force Account work would be authorized.

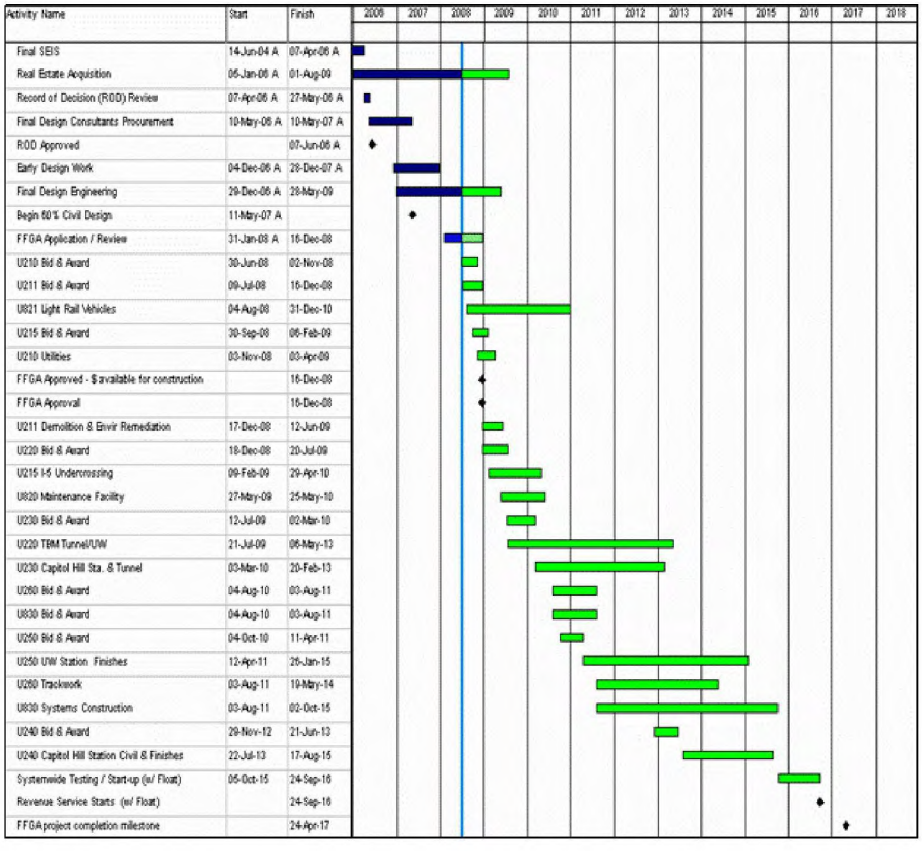
3.3. SCHEDULE CONTROL

Project schedules are used to establish the Project schedule commitments, coordinate and integrate work performed by multiple parties, manage project activities, and monitor progress.

3.3.1. Maintaining the Baseline Schedule

The Sound Transit Board has adopted the University Link Project completion milestone of late September 2016. The current summary schedule is shown in Figure 3-1 Summary University Link Schedule. Absent changes approved by the Sound Transit Board, the baseline schedule completion date will remain fixed for the Project duration.

Figure 3-1 Summary University Link Schedule



Baseline schedules are developed and maintained in accordance with Link Project Control Procedure LPC-03 Scheduling. The University Link schedule will be baselined at roughly sixty-percent design completion as part of the Full Funding Grant Agreement (FFGA) negotiations.

3.3.2. Project Schedules

Schedule targets and progress analyses will be established using the following project schedules:

(1) The Project Master Schedule is developed and administered by Link's Project Scheduler to control contract interfaces and monitor project float. The Project Master Schedule is subject to change control by Sound Transit. Changes to the summary view of the Project Master Schedule are subject to Link CCB approval.

(2) Working Schedules to support schedule analyses and identify opportunities to improve the Project Master Schedule.

(3) Contractors are required to develop and maintain integrated cost-loaded Contract Schedules. Baseline schedules and schedule updates are subject to Sound Transit approval. Summaries of Contract Schedules are incorporated by Link's Project Scheduler into the Project Master Schedule. Construction schedule submittal requirements are specified in the Link Standard Specifications.

The above schedules are maintained in accordance with Link Project Control Procedure LPC-03 Scheduling in the critical-path method (CPM) format and should denote the critical path. The level of detail required in each schedule is a function of the magnitude, complexity, and duration of the scope of work; contract interfaces; and proximity to the Project's overall critical path. Schedule detail is updated monthly and submitted to the FTA. The following items are reviewed and analyzed:

- Critical path and float.
- Project performance, planned, earned, and schedule data.
- Changes to logic, assumptions, and constraints.
- Project and inter-project interfaces and milestones.
- Period and baseline variances.
- Approved project time extensions.

3.3.3. Updating the Master Schedule

The contractors accepted baselined schedule, and subsequent updates, will be integrated into the Master Schedule and will be the basis of updates and evaluation. All changes proposed by the contractors in their schedule will be acknowledged, analyzed, discussed, and either accepted or declined based on its impact on the overall schedule. If changes to the durations and network logic of the schedule are rejected, or the contractor failed to submit accepted monthly updates on timely manner, the RE will independently update the latest accepted version of the contractors schedule for progress reporting purposes. Once an acceptable contractor schedule is submitted, that update will be integrated into the Master Schedule.

3.3.4. Schedule Contingency Management

The Project Director, with the assistance of the Project Control Lead and Project Schedule Lead, is responsible of the management of contingences in accordance with the University Link Project Execution Plan and Link Project Control Procedure LPC-03, Scheduling.

The FTA and Sound Transit will utilize the schedule contingency as the basis for assessing Sound Transit's management and forecasting of the project contingency in relation to the schedule. The schedule contingency is made up of three components:

- Forced Lag, which is the built-in float of the critical path; also referred to as "Project Interface Float"
- Reserved Float, which is the FFGA Revenue Operations Date – the ST Revenue Operations Date
- Buffer Float, which is the ST Revenue Operations Date – Schedule Revenue Operations Date

The FTA and Sound Transit agree that in order to ensure sufficient contingency for the completion of the University Link project, distribution, or consumption of the schedule contingency shall be subject to the detailed requirements described in the University Link Project Execution Plan and Contingency Management Plan.

The University Link Contingency Management Plan is structured to address the overall approach to contingency management, Sound Transit roles and responsibilities, and FTA roles and responsibilities and to ensure that distributions of schedule contingency are appropriately controlled and documented. The University Link Project Execution Plan and Contingency Management Plan also describes the manner in which Sound Transit forecasts and trends the schedule contingency, as part of its overall budget and progress reporting effort, in accordance with FTA requirements.

3.4. CASH MANAGEMENT

The baseline expenditure plan for the University Link project was established as part of the baseline budget and schedule development in coordination with Sound Transit's Finance Department. This expenditure plan forms the basis of the University Link Financial Plan defined and approved as part of the Phase Gate Process.

The annual expenditure plan for the balance of the Project duration and monthly expenditures for the upcoming year are updated at the end of each year as part of Sound Transit's annual capital budget development process.

Cash management is conducted in accordance with the Sound Transit Budget Policies and Procedures.

3.5. CONTRACTS AND CONTRACT ADMINISTRATION

The Sound Transit Contracts organization (shown in the Agency functional organization charts included in Appendix B) provides timely, cost-effective, legally compliant procurement and contracting services for Link. In addition to Washington State procurement and contracting regulations, Federal regulations apply to any Link procurement that is funded in part with federal funds. The majority of Sound Transit capital projects will be procured using federal requirements. There are two mandatory sources of federal requirements:

- The Master Grant Agreement between Sound Transit and the FTA contains requirements for grant eligibility.
- FTA Circular 4220.1E Third Party Contracting Requirements contains mandatory requirements for procuring goods and services and administering contracts.

While not a source of mandatory requirements, the FTA's Best Practices Procurement Manual explains Circular 4220.1E and gives examples of best practices for complying with each requirement.

The Sound Transit Board has passed two resolutions that specifically govern procurements. Resolution No. 78-1 sets requirements on procurements-such as requiring bid competition and establishing procedures for determining a winning bid. Resolution No. 78-1 also sets the authorization levels of the chief executive officer (CEO), the board, and the Finance Committee. Resolution No. 81 governs ethics.

The scope of the support provided to Link by the Contracts organization includes:

- Procurement planning.

- Requisitions and initiation of procurements
- Solicitations and qualification of suppliers.
- Bid or proposal protests.
- Negotiations.
- Award of contracts.
- Contract administration.
- Contract Change Orders (per FTA guidelines, change orders are considered procurements)
- Contract closeout.
- Claims, disputes, and conflict resolution.

3.6. CHANGE CONTROL

Change control (change management) is a process for managing changes to approved baseline documents. There are three levels of change review and approval responsibility during the design phase, depending on the nature of the change.

(1) Approval authority for minor changes resides with the Civil Engineering Manager and Civil/Systems Integration Manager in consultation with lead engineers and architects from Link and the University Link consultants. Change review and approval activity is recorded in meeting minutes or by memorandum. Minor changes require only consensus approval by the Link engineering managers. If consensus is not achieved on any given potential change, the issue is elevated to the Project Director for a decision. Minor changes must meet criteria documented in University Link procedures.

(2) Approval authority for intermediate changes resides with the U-Link Project Director. Potential changes exceeding the authority of the U-Link Project Director are elevated to the Link Change Control Board (CCB). As with minor changes, the criteria for intermediate changes is documented in procedures developed and accepted by Link.

(3) Approval authority for major changes resides with the Link CCB. Approval of major changes is required by the Link CCB before implementation. Major changes exceed the threshold established for intermediate changes and meet Link CCB thresholds as described in Link Project Control procedures.

Change management during design is conducted in accordance with the University Link Design and Interface Control Procedure. Requests for deviation to the design criteria and to specification requirements must be approved by the Link Material Review Board in accordance with the Link Construction Quality Plan. The Material Review Board is a sub-committee to the Link CCB. The overall approach to controlling change and baselines during the life of the project is as previously discussed in Chapter 3.1.1 Baseline/Configuration Control.

3.7. DOCUMENT CONTROL

Data management (document control) is the process of providing custody for released documents, reproducing and distributing copies, ensuring timely and convenient hardcopy and electronic access to documents, and providing appropriate archiving. Data management for University Link is an extension of the process used for the Initial Segment. University Link data management utilizes existing and proven

Link procedures, electronic tools, library resources, and Washington State records management guidelines to manage the release and maintain the integrity of University Link baseline documents.

The purpose and benefits of the configuration management of data are to ensure the integrity of project records by performing records management in accordance with Washington State, Sound Transit, and Link requirements, and enhance good data management practice by providing:

- Effective hardcopy, electronic file, and database management
- Unique identification of documents and files
- Maintenance of data identifier and version relationships
- Correlation of data with associated products
- Known status of data
- Controlled access to data.

Within Link, data may be considered recorded information of any nature, including administrative, managerial, financial, or technical, regardless of medium or characteristics.

There are two organizational centers of activity associated with Link data management, the Link Data Management Center (LDMC) and Field Office Data Management (FODM). FODM is a subset and extension of LDMC and is responsible for the management of contract documents for a specific civil or systems contract. Each construction and systems field office has a dedicated FODM representative. The detailed responsibilities and activities associated with LDMC and FODM are discussed in Link Project Control Procedure LPC-5 Data Management. In each activity center, the primary tool/automation used to facilitate document control is Livelink. Livelink is a web-based electronic document management system. Data management consists of six basic elements, each of which is listed below and discussed in greater detail in Link Project Control Procedure LPC-5 Data Management:

- Document identification.
- Data status level management.
- Data and product configuration relationship management.
- Data version and revision control.
- Data transmittal, distribution, and posting.
- Data access control.

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4.0 LABOR RELATIONS AND POLICY

4.1. WAGE RATES AND CLASSIFICATIONS

Washington State Department of Labor & Industries prevailing wage requirements (the Public Works Act) as well as the federal Department of Labor prevailing wage requirements (the Davis Bacon Act) will govern the wages and classifications associated with the craft labor construction work for University Link. The higher of the two prevailing wage rates will prevail. Details of Washington State Department of Labor & Industries' prevailing wage requirements can be found under RCW 39-12 and its associated Administrative Code. Details on the federal Department of Labor's prevailing wage requirements can be found under 29 CFR 3.11 and 29 CFR 5.5(a).

4.2. WAGE AND HOUR REQUIREMENTS

As with rates and classifications, the Public Works Act and Davis Bacon Act define the wage and hour requirements for University Link. ST Contracts reviews base labor and escalation rates and labor classifications to verify compliance with state and federal requirements.

4.3. STATE AND LOCAL REGULATIONS

The Revised Code of Washington (RCW) and the United States Code (USC) provide the governing labor requirements for University Link construction activities, including General Health and Safety statutes, the Standards of Employment statues, and the Industrial Insurance statutes.

4.4. NO STRIKE AGREEMENTS

The Project Labor Agreement (PLA) negotiated by and between the Washington State Building and Construction Trades Council, including its local affiliates in the Sound Transit region, and Sound Transit includes "No Strike" language. This agreement is applied only on a voluntary basis and is not part of the Invitation for Bid or the conformed construction contract documents. A Sound Transit PLA Specialist from the Executive Office administers this program.

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5.0 RISK MANAGEMENT AND INSURANCE

5.1. RISK MANAGEMENT/ASSESSMENT

5.1.1. Background and Approach

Sound Transit's risk management program is an extension of the technical oversight and peer review programs that support Link's engineering and project management efforts. Sound Transit formed the Tunnel Peer Review Panel (TPRP) in 1999 to provide independent reviews of engineering data and to monitor design progress for underground and related structures. Since then, the TPRP has convened more than a dozen times to review North Link designs, most recently as part of the North Link Design Peer Review conducted during North Link Preliminary Engineering in April 2005.

At key project milestones, Sound Transit also convenes a panel of senior managers from other transit agencies to review and comment on Link's proposed project delivery plans, including project schedules, contracting strategies, and contract packaging plans. The Contract Packaging Peer Review held in October 2004 formed the basis of the contract packaging structure that underlies the risk assessment for University Link. Two contract-packaging workshops conducted in May and June 2007 established the basis for the University Link construction contract packages, Contract Unit Descriptions, and Baseline Cost Estimate prepared in the 3rd Quarter of 2007.

Sound Transit initiated the North Link risk assessment at the Initial Risk Workshop held in May 2004 at the outset of North Link PE. In May 2005, Sound Transit convened a Risk Identification and Analysis Workshop to collect information that forms the basis of the qualitative and quantitative findings of the North Link Risk Assessment, which included those findings specific to University Link. Participants in the risk assessment process included a range of agency staff; management, discipline leads, and cost and schedule engineers from the civil design consultant team; the geotechnical consultant lead; construction management consultants; and an independent facilitator. A risk assessment report was issued in July 2005.

In July 2006, Sound Transit procured risk management consultant services in support of University Link, which have been extended through the Final Design phase. The scope of these services included updating the 2005 risk register and Level 3 (bottom-up) cost and schedule models, development of a mitigation plan, reporting tools, and other oversight in support of the University Link project application for final design and future federal grant funding application. The scope of work included support of a series of project execution strategy workshops conducted by FTA and the PMO consultant for University Link in the fall and winter of 2006.

As an outcome of the January 2007 Sound Transit/FTA/PMOC Risk Management Workshop, the Parties executed a Technical Memorandum of Understanding (MOU) that lays out the basis for Sound Transit's management of project risks and project budget contingency. A separate Risk Management Plan (RMP), Contingency Management Plan (CMP), and Geotechnical Plan were prepared consistent with the Project Execution Plan.

The FTA/PMOC conducted an updated Risk Assessment in the 4th Quarter of 2007 to support a Full Funding Grant Agreement application in January 2008. This effort, involving the Project Director and key University Link staff, with the technical support of the Link Risk Assessment sub-consultant (Davis Langdon) under the direction of the Link Project Control Lead, aimed to:

- Proactively mitigate risks through development of an appropriately conservative design.
- Validate assumptions for and inform the development of the contract construction schedule.

- Validate assumptions for and inform the development of the engineer's estimate.
- Evaluate the adequacy of budget and schedule contingency levels.
- Identify opportunities to mitigate risks through provisions in IFB documents.
- Provide a basis for monitoring risk levels throughout the construction phase.
- Be responsive to input and guidance from the FTA/PMOC and its risk management consultants assigned to the University Link project.

In March 2008, the FTA/PMOC initiated a Risk Review update and conducted a pre-bid design scope review, a project delivery method review, a project schedule contingency review, and a definitive project cost estimate review. PMOC Spot Reports for these reviews will be completed prior to FFGA execution.

5.1.2. Scope

The objective of the University Link Risk Management Program is to capture scope growth, schedule delay, and costs growth risks that could arise during any Project phase and potentially impact any part of the University Link Project scope, including engineering, property acquisition, construction, procurement, construction management, agency administration, and inflation. Risk analyses are not intended to define theoretical "worst case" scenarios that cannot be reasonably anticipated or controlled, such as earthquakes, floods, and extreme weather conditions.

5.1.3. Risk Identification

In the identification of project risks, emphasis is placed on those risk factors that are most likely to affect the overall project schedule and capital cost. Risk factors are recorded and ranked in the University Link Risk Register that is updated quarterly. The baseline Risk Register was prepared based on an assessment conducted at the end of the preliminary engineering phase in September and October 2006. The Risk Register was updated in January 2007 and again in June and September 2007 in preparation of the Baseline Cost Estimate. The top risk factors are identified in the University Link Project Risk Register. The U-Link Project Director, with the assistance of the Project Control Lead, is responsible for updating and refining the project risk register at key project milestones. These include: (a) completion of the 60, 90, and 100 - percent design submissions for major construction contracts; (b) completion of negotiations of the Implementation Master Agreement (MIA) with the UW; (c) development of the baseline cost estimate and schedule; preparation of the Full Funding Grant application, and (d) at bid opening or award of major University Link construction contracts.

5.1.4. Risk Assessment

The University Link Project team, with the technical support and assistance of the Project Control Lead, will employee a range of tools to isolate the cause and evaluate the severity and potential impacts associated with identified project risks, including qualitative assessments performed by the Project team and Link management and quantitative statistical modeling using Link's established methodologies.

Qualitative Risk Assessment

During the final design, Link will perform ongoing qualitative risk assessments with the objective of guiding the design in a manner that would, to the extent possible, reduce construction and schedule risks. Link will utilize subject matter experts early in the design process to independently evaluate design progress and offer guidance for the University Link design. The results of these assessments may be used to trigger various modifications to the final design for selected project elements. Continued assessment of the effectiveness of the design modifications will be monitored through the updating of the Risk Register.

Quantitative Risk Assessment

At the conclusion of 60-percent design of the University Link tunnels and stations, and at other key design milestones, Link's risk assessment sub-consultant will perform a risk assessment including probabilistic schedule and cost risk simulations to accomplish the following:

- Review risks previously identified in the qualitative assessment in light of the final design configuration and identify additional risk events for inclusion in the quantitative assessment.
- Quantify the schedule and cost impact of the full range of potential risk events with respect to discrete construction activities.
- Model schedule and cost scenarios to determine the cumulative schedule and cost impact associated with the identified risk events.
- Relate schedule and cost risks to the University Link budget and Contingency Management Plan.
- Develop detailed documentation that records the assumptions made about the identified risk levels and their assignment.

Another quantitative schedule and cost risk assessment will be completed at the 40-percent bid milestone. Link's risk modeling program is aimed at informing and facilitating the subsequent FTA Milestone Review points of FFGA application and the 100-percent bid.

5.1.5. Risk Mitigation

Risk mitigation is a sequential process and Link management's goal during final design is to mitigate as many discrete design, procurement, and construction risk factors as practicable. The Project Director will identify individual members of the project team responsible for carrying out each risk mitigation action, report on material assumptions and rationale, and progress will be tracked accordingly. Some risks are however, inherent to the project scope or more appropriately shared through transfer to a third party for example, in the form of contract requirements, warranties, or insurance policies. Project risk register items will therefore be organized into four treatment categories: risk avoidance, risk reduction/mitigation, risk transfer or sharing, and risk acceptance.

FTA Milestone Review points have been established throughout the project implementation process to focus decisions regarding risk control and handling in relation to the contingency balance at each project phase (see section 3.2.3). The University Link Risk Management Plan describes the continuous process that will be applied to decisions to accept risk exposure or to reduce vulnerabilities through primary mitigation, applying cost effective controls, and maintaining the capacity to apply secondary mitigation in future project phases.

In accordance with FTA Risk Management Guidance PG-40, the value of specific actions taken to mitigate risk will be estimated and compared to baseline project risk levels established for each project milestone. During the bid and construction phases use of secondary risk mitigation will be considered carefully against the application of project contingency in order to preserve the agreed upon minimum contingency balance described in the project Contingency Management Plan. The risk mitigation program will further consider means of executing high-risk work elements as early as possible in the project schedule such that the opportunity to apply secondary mitigation against their potential negative outcomes can be maximized.

Link has adopted the following strategies for mitigating construction risks:

- Collect and quantify extensive engineering data to identify areas of construction risks.
- Continually seek guidance from independent industry experts and the contracting community.
- Pursue development of an appropriately conservative design.

- Assure and support knowledge transfer from the design team to contractors.
- Employ schedule risk mitigation as a strategy for cost avoidance.
- Maintain a focus on reducing the cost at completion rather than lower construction bids.

As described above, qualitative risk assessments conducted throughout the engineering design process will be used to guide continued refinement of the project design. Quantitative risk assessments will be performed at in support of the FFGA application process (60-percent design) and again upon opening of the major tunneling and excavation contracts (40-percent bid) when the majority of market risk has been realized or eliminated. During construction, risk assessment will be conducted collaboratively between the contractors, Link, and FTA's project management oversight team.

5.1.6. Risk Monitoring and Reporting

In addition to the near term objectives of validating the project schedule and budget parameters and informing the development of Invitation for Bid (IFB) provisions, the quantitative risk assessment will forms the basis for the long term monitoring of project risks. Updates to analyses will support the construction management team in the evaluation of risk assignments between Link and the contractors, provide a quantitative framework for measuring and reporting progress, and provide a basis for cost forecasting during the construction phase. In order to support these long term objectives, the quantitative schedule and cost assessments will be updated as a continuous process throughout construction and as significant events warrant changes to the forecast.

The University Link Risk Management Plan outlines various monitoring tools that will be utilized including quarterly reports to FTA on any changes in the risk register, project budget, and overall project execution strategy parameters. Detailed reporting requirements are further defined in the plan document.

5.2. INSURANCE

Sound Transit's Risk Manager, reporting to the Chief Financial Officer, is responsible for establishing and reviewing the insurance coverage requirements and contract language to be included in all University Link contracts. In the 2007 legislative session, Sound Transit was successful in renewing authorizing legislation in Washington State to allow Sound Transit to continue to purchase single insurance coverage for all Link construction. This authority permits Sound Transit to continue insurance coverage using an Owner-Controlled Insurance Program (OCIP).

Sound Transit implemented an OCIP to furnish "wrap-up" insurance coverage for the work performed in conjunction with the Central Link Light Rail construction project. For the Initial Segment and Airport Link projects, the current OCIP provides primary insurance coverage for Sound Transit and its consultants, sub-consultants, contractors, and subcontractors of all tiers, with respect to their work performed in the design, fabrication and construction of the Sound Transit contract packages for these projects.

For the University Link Project the original Central Link OCIP policy covers the Final Design consultants. The current OCIP General Liability policy has been extended from the original expiration of January, 2007 to December, 2009. In addition, the Project Professional Liability and Contractor's Pollution Legal Liability policies have been extended from January, 2009 to December, 2016, with an additional three-year discovery period through 2019.

In the spring of 2008, Sound Transit in collaboration with its broker (Willis), conducted a feasibility study evaluating various insurance approaches for the construction phase of U-Link. In April 2008, the ST executive team lead by the CEO made the decision to procure a project-specific owner-controlled or "wrap-up" insurance program for the University Link construction. An insurance underwriter's conference is scheduled in July 2008 to kickoff the procurement of the U-Link OCIP, which is expected to be in place by the end of September 2008.

The first two U-Link construction contracts, U210 and U211, as well as U820, will not be included in the OCIP coverage. They will utilize conventional contractor-provided insurance. The other eight major U-Link construction contracts (U215, U220, U230, U240, U250, U260, and U830) will all be included in the new OCIP.

The proposed U-Link OCIP coverage will include:

- Commercial General Liability,
- Excess Liability,
- Environmental Pollution Liability, and
- Builder's Risk Property Physical Damage and Loss.

Unlike the current OCIP, the U-Link insurance program will be administered by a full-time on-site OCIP administrator assigned by Sound Transit and our insurance broker, Willis, to work closely with the Resident Engineers and CM division staff to investigate and process claims more expeditiously. The new program will include a contractual risk-transfer mechanism to assess and charge back a portion of the deductible amounts to the contractors. We will incorporate the lessons learned from the current OCIP to improve the performance of the new OCIP.

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6.0 ENVIRONMENTAL ASSESSMENT AND MITIGATION

University Link staff, in coordination with the agency's Environmental Compliance Staff and Environmental Management and Sustainability System (ESMS), proactively maintains an awareness of the environmental laws and regulations applicable to Link and ensures compliance with them. In addition to environmental protection measures, University Link's environmental management program helps avoid the potential liability and high costs of corrective actions or penalties through early identification of regulatory requirements and monitoring compliance during project implementation.

The University Link environmental management program has the following objectives:

- Comply with Sound Transit's environmental policies and with all federal, state, and local environmental laws and regulations.
- Minimize negative impacts on the social, economic, physical, and natural environments associated with Link light rail.
- Identify, plan, and implement mitigation measures needed to address both known and potential environmental impacts identified during environmental reviews.
- Plan and accomplish required environmental reviews, permitting, mitigation measures, monitoring activities, and reporting to regulatory agencies in compliance with applicable environmental laws and regulations.
- Implement specific measures developed to respond to accidents involving spills, environmental contamination or damage, or environmental emergencies on Sound Transit property, including project sites and operating facilities.

To achieve these goals, Sound Transit's environmental staff under the direction of the Agency's Legal Counsel/Environmental Compliance Manager (Perry Weinberg), Senior Environmental Analyst (Mark Menard) and Senior Environmental Planner (Chris Townsend) will, as necessary, contract for environmental services during the design and construction phases and manage the environmental services consultants who perform the work. Day-to-day activities related to completion of environmental assessments, EISs, and other documents required for reporting to federal and state agencies will be carefully managed and monitored by Link's Environmental Program Manager. Environmental mitigation programs established by Sound Transit's SEPA responsible official will be implemented and necessary status provided to Link management.

Link environmental staff, led by James Irish, coordinates with the FTA on a regular basis regarding environmental compliance activities, and interfaces with other agencies, including the Corps of Engineers, EPA, USFWS, NOAA Fisheries, state Department of Ecology, state Department of Fish and Wildlife, State Department of Historical Preservation regional air-quality agencies, and local permitting jurisdictions.

By working with Sound Transit and Legal staff to determine and carry out appropriate environmental compliance activities, design consultants and construction contractors can be directed, as needed, to complete environmental mitigation measures.

Close coordination with the University Link Permits Manager, Terry Beals, will ensure environmental permitting, including developing a permitting plan and obtaining environmental permits is conducted in a timely and effective manner.

6.1. APPLICABLE REGULATIONS

University Link must comply with federal, state, and local environmental laws and regulations. The potentially applicable laws and regulations are as follows:

Federal Environmental Regulations

- National Environmental Policy Act (NEPA)
- National Historical Preservation Act
- Clean Air Act
- Clean Water Act (CWA)
- Coastal Zone Management Act (CZMA)
- Endangered Species Act (ESA)
- Resource Conservation and Recovery Act
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

These are primarily administered by the FTA, the EPA, the U.S. Department of the Interior, the U.S. Army Corps of Engineers, the NOAA Fisheries, and the U.S. Fish and Wildlife Service. Executive orders, issued by the President of the United States, may also contain environmental guidance and requirements. Executive Order 12898, Environmental Justice, applies to the project. Some of these environmental programs have been delegated to the state for implementation and administration. The major regulations are listed below.

Washington State Environmental Regulations

- State Environmental Policy Act (SEPA)
- Shoreline Management Act (SMA)
- Water Pollution Control Act
- Growth Management Act
- Model Toxic Control Act
- Washington Clean Air Act

These environmental regulations are administered primarily by the Washington State Department of Ecology, the state Department of Fish and Wildlife, the state Department of Community Trade and Economic Development, and the Puget Sound Clean Air Agency.

Tribes

For University Link, we have consulted with the Duwamish, Muckleshoot, and Squamish tribes, as discussed in detail in the Central Link Environmental Impact Statement. Link will continue to coordinate with Native American tribes as the proposed project could affect unknown tribal cultural or archaeological resources.

Local Environmental Laws and Requirements

University Link lies within King County and in the City of Seattle. These jurisdictions each have comprehensive plans and land use codes containing environmental requirements for projects within their

boundaries. These include zoning provisions, procedures implementing SEPA, programs implementing SMA, and regulations for protection of sensitive and critical areas.

Sound Transit Environmental and Sustainability Management System (ESMS)

Environmental Work Instructions (WINS) have been developed to address day-to-day activities, address environmental review under NEPA and SEPA, hazardous materials, ESA compliance, and environmental commitment implementation and tracking. This PMP is consistent with Sound Transit's ESMS, and the WINS are referenced here for more detail on commitment implementation.

6.2. ENVIRONMENTAL IMPACT DOCUMENTATION

The North Link Final Supplemental Environmental Impact Statement (SEIS) was prepared to address requirements University Link (a segment of North Link) for both NEPA and SEPA. This SEIS supplements the EIS prepared for the Central Link project, November 1999 and provides additional information regarding project changes, alternatives, impacts, and proposed measures to mitigate potential project impacts since the 1999 EIS. FTA is the lead agency under NEPA and Sound Transit is the SEPA lead. The Final SEIS was issued on April 07, 2006.

The EIS also contains an analysis of effects to properties regulated under federal law 23 U.S.C. 138, commonly known as Section 4(f). It also includes an evaluation of impacts on low-income and minority populations as required under Executive Order 12898, Environmental Justice. A Record of Decision (ROD) was issued in June, 2006. Appendix C of the ROD describes the mitigation measures that will become project requirements.

6.3. ENVIRONMENTAL PERMITTING FOR UNIVERSITY LINK

Environmental permits are generally those permits and approvals that involve water or water-related work. The Real Estate Division, under the direction of Link's Real Property Manager, will obtain real estate approvals, such as rights-of-entry and licenses. Construction-related permits and land-use approvals (e.g., conditional-use permits and variances) and the National Pollutant Discharge Elimination System (NPDES) permit are generally the responsibility of the Link Civil Engineering division, except where the contract requires the contractor to obtain specific permits. Permit requirements are monitored by the Link Environmental Division working with the Agency Environmental Specialist.

These permits will be required before initiating construction. The permitting process includes necessary and appropriate coordination with the agencies of jurisdiction.

6.4. ENVIRONMENTAL MITIGATION FOR UNIVERSITY LINK

Mitigation measures identified as required through the environmental review and permitting processes will be incorporated into project plans, designs, and construction contracts, as appropriate. The North Link ROD contains those mitigation measures required as part of the University Link project. Link will submit to FTA the University Link Mitigation Monitoring Plan, which describes the program to track and monitor the status of the environmental mitigation actions identified in the ROD. The mitigation-monitoring program will be revised as necessary during the permitting process to facilitate implementation of those measures during final design and construction. The environmental manager will conduct regular reviews for compliance with environmental mitigation commitments with corrective actions required, as needed.

Link light rail will submit a quarterly Environmental Mitigation Program Status Report for University Link describing the status of the mitigation-monitoring program to the FTA. Implementation of identified

mitigation measures during final design and construction is the responsibility of the Link Executive Director, who has delegated this to the environmental manager. Project management is responsible for tracking implementation of environmental commitments from RODs, permits, and agreements (as described in EMSWIN 11-9, 11-10, 11-11) and this has been delegated to the environmental manager.

Environmental remediation on properties acquired by Sound Transit may be required before construction of Link facilities. In those cases, the responsible Link project managers will coordinate with the Sound Transit Real Estate Division and Sound Transit's environmental compliance manager to determine scope, responsibilities, and schedules for completing the work. Specific procedures are detailed in Section 9.0 Right-of-Way Acquisition and EMSWIN-11-05 and 11-06.

During construction and operations, Sound Transit and its contractors will be required to comply with environmental regulations, permit conditions, other mitigation commitments, and reporting requirements, such as the Washington State Department of Ecology Noncompliance Notification Report. The methods, procedures, and responsibility for compliance with applicable environmental standards and requirements during construction are described primarily in Sound Transit Environmental Management Procedure, the Construction Manual, and contract documents for construction contractors. Reporting to state and federal agencies will also be required.

6.5. UNIVERSITY LINK SUSTAINABILITY PROGRAM

Sustainability is the subject of varying definitions, but the basic concept involves *keeping in existence adequate habitat and resources to meet the needs of the present generation without comprising the future.* Sustainability focuses on not only the environment but also attempts to promote a healthy economy and society by investing in and supporting local and regional communities. In addition, by taking into account the life-cycle cost of products and services, minimizing waste, and seeking more efficient alternatives to existing practices, sustainability programs generally lead to long-term cost savings.

Planning and design of sustainable infrastructure, such as an urban transit system, requires creativity and technical understanding to achieve cost-effective solutions that do not depend on traditional patterns of resource consumption. The UL project is being planned, designed, and constructed with sustainability as a guiding principle.

In June 2007, the Sound Transit Board directed the agency's CEO:

"to take all reasonable and appropriate steps to integrate sustainable business practices and strategies throughout the Sound Transit organization including planning, designing, constructing, and operating existing and new transit systems and facilities. Such strategies shall constitute Sound Transit's Sustainability Initiative and shall address at a minimum, but are not limited to, petroleum conservation, alternative fuels, and renewable energy; energy efficiency; greenhouse gas emissions; water conservation; toxins reduction; procurement; waste prevention, re-use, and recycling; building and facility performance; and land use."

In July 2007 Sound Transit's CEO issued Executive Order No. 1 "Establishing a Sustainability Initiative for Sound Transit" directing staff to implement a broad set of measures to conserve energy, reduce petroleum use, reduce greenhouse gas (GHG) emissions, conserve water, prevent pollution, maximize reuse of materials and recycling, incorporate "green design/green building" practices, and explore opportunities for transit-oriented development (TOD) and other means to foster compact urban communities.

University Link is the first major transit project to be designed and built in response to and in conformance with the agency's new Sustainability Initiative, which has motivated staff to be more proactive in considering and adopting more environmentally sensitive features.

In the spring of 2007, a formal University Link Sustainability Study was prepared by Via Suzuki Architecture to identify, evaluate, and recommend UL project planning, design and construction strategies in each of these areas. Its final report issued in August 2007 describes in detail recommended sustainability strategies and a proposed implementation process.

Sound Transit's Environmental and Sustainability Management System (ESMS), developed in 2004 in conjunction with a pilot program established by the FTA and recently certified to meet the requirements of the internationally recognized ISO 14001 standard, serves as a framework for evaluating and implementing the UL Sustainability Report recommendations. The ESMS establishes objectives and targets that lead to improved environmental performance.

A number of Sound Transit's 2007-2008 targets apply to the UL project, including the following:

- Analyze and incorporate sustainable design measures into UL.
- Use building deconstruction/salvage.
- Research ways to minimize greenhouse gas emissions during construction.
- Evaluate construction practices to encourage material reuse and recycling.

The UL Sustainability Report identified strategies in seven categories by project phase – design, construction, and operations. The seven sustainability categories include:

- Energy.
- Pollution, Air Quality & Emissions.
- Site & Water Quality, Conservation.
- Materials.
- Indoor Environmental Quality.
- Urban Ecology & Microclimate.
- Community Investment.

A total of 60 sustainability strategies were identified and defined by Via Suzuki. Each strategy was developed and evaluated in terms of its technical aspects, its applicability to the UL system, and precedent applications demonstrating its use. An evaluation system was used to characterize strategies in terms of both initial and life-cycle cost and relative degree of difficulty or deviation from a "business-as-usual" baseline.

Based on the strategies identified, with analysis and feedback from Sound Transit staff as to the agency's priorities, a checklist was prepared summarizing the sustainability strategies and ranking them as follows:

- Existing baseline.
- Strongly recommended.
- Recommended.

- Will be considered.
- Need further research.
- Not recommended or not applicable.

Forty-five of the 60 strategies, or 75 percent, were either ***existing baseline***, ***strongly recommended,*** or ***recommended***. Ten percent of the strategies will be ***considered***; three percent ***need further research*** and 12 percent are either ***not recommended*** or ***not applicable***.

The U-Link sustainability checklist is being used as a management tool for guidance of the final design team and of Sound Transit staff. As with its other mandatory environmental mitigation commitments through the federal environmental impact statement (EIS) Record of Decision, Sound Transit periodically reviews the sustainability checklist and updates it as the project develops. Progress also is tracked through the ESMS. Staff takes its commitments to planning, designing, and constructing a sustainable project seriously and is motivated to make sure these strategies are incorporated.

7.0 PROCUREMENT OF SERVICES

This chapter provides an overview of University Link specific procurement procedures and outlines the procurement plan for professional services and civil construction. The procurement plan for system-wide elements, light rail vehicles, and Sound Transit-supplied material is described in Chapter 8 of this PMP.

7.1. PROCEDURES FOR PROCUREMENT

University Link procurements will comply with Sound Transit's Procurement Regulations described in the Agency-level Procurement Manual issued by the Contracts Division within the Project Delivery and Support Services Department. This manual complies with FTA Circular 4220.1E Third Party Contracting Requirements (including the Best Practices Procurement Manual) and FTA Circular 5010.1C Grants Management Guidelines. Sound Transit has discretion in conducting its procurements; however, certain Revised Code of Washington (RCW) provisions and Washington Administrative Code (WAC) provisions may pertain to University Link procurements. Components of the University Link Project will be funded in part with federal funds, as described in the Procurement Plans in this PMP. Federal procurement regulations and guidelines apply to any procurement that is funded in part with federal funds, including FTA Circular 4220.1E Third Party Contracting Requirements (including the Best Practices Procurement Manual).

The delegation of procurement authority and procurement procedures are defined in Sound Transit's Procurement Manual. Monetary authority levels for University Link procurements solicited under a competitive procurement process are summarized in the following table.

Table 7-1 Procurement Approval Requirements

Procurement Amount*	Approval Level
Greater than $5,000,000	Full Sound Transit Board
$5,000,000 or less	Finance Committee
$200,000 or less	Sound Transit CEO
$100,000 or less	Link Executive Director
$50,000 or less	Project Director
$25,000 or less	Deputy Project Director or Designee

* Including contract contingency, if applicable.

Procurements approved at any level are routed for review and approval at all lower levels using the standard routing form provided by the University Link Project Control Lead or Project Control Specialist. The Project Director is responsible for the development of Sound Transit Board Motions and Staff Reports that are prepared for University Link procurements.

University Link services and materials may be procured under Sound Transit's Sole Source procurement policy in accordance with FTA guidelines. In such instances, The Project Director is responsible for the development of a Sole Source Justification memorandum issued to the Link Executive Director. The Link Executive Director is authorized to approve sole source contracts in an amount not to exceed $25,000. The CEO is authorized to approve sole source contracts in an amount not to exceed $100,000. Sole source contracts with an amount greater than $100,000 require approval by the full Sound Transit Board.

7.2. PROCUREMENT PLAN

The following sections describe the baseline procurement assumptions for the delivery of professional services and civil construction elements required for the University Link project. This is a design-bid-build project in accordance with the requirements of the Procurement Manual.

7.2.1. Project Management Services

The overall project management for the University Link Project is provided by Link Department staff, as described in Figure 2-3 University Link Project Organization. Link project management staff is augmented with selected integrated consultant staff services, including those of the Tunnel/Structures Lead and the Deputy Architecture Lead that are provided under the design management support consultant contract (PB Americas, Inc.).

7.2.2. Design Services

Section 2.4.3 Consultant Support Resources describes in greater detail the consultant expertise needed to complete University Link final design. All University Link Consultant procurements were completed by the end of May 2007.

7.2.3. Construction Management Services

A single University Link Construction Management Consultant services contract has been procured in accordance with the Procurement Manual. The overall University Link construction management effort will be led by Link staff under the direction of the University Link Deputy Project Director - Construction and managed in accordance with the Link Construction Manual, the Link Construction Quality Plan, and the Link Project Control Policies and Procedures. This Construction Management Consultant services contract includes specialized construction management consultants for University Link.

7.2.4. Legal Services

Sound Transit's Legal Department staff provide legal services upon request by the U-Link Project Director. As necessary, agency staff resources are augmented by external legal council and services provided through a roster of on-call legal firms that is managed and administered within the Legal Department.

7.2.5. Construction Contracts

Sound Transit has developed a construction contract-packaging plan for the delivery of the University Link light rail facilities and systems. Each contract is described in detail in its Contract Unit Description. It is anticipated that the following University Link construction contracts will be advertised, bid and awarded by Sound Transit:

- U210 – Advanced Utility Relocations. This work includes relocation of ducting and wet utilities at the University of Washington Station.
- U211 – Demolition and Environmental Remediation at Capitol Hill Station. This work includes the demolition of all buildings within the staging footprint at Capitol Hill Station, and the environmental clean-up associated with contaminated media encountered.
- U215 – I-5 Advanced Support Work. This work includes the installation of support, excavation and removal of existing retained structures, and the placement of controlled density fills within I-5 entrance and exit ramps at four locations. The work is to be done in preparation for the bored tunnels beneath I-5.
- U220 – Bored Tunnels UWS to CHS, and University of Washington Station Excavation and Support. This work includes the excavation and earth support for the University of Washington Station Box and crossover structure; and the 2.1 miles of twin-bored tunnels that run from it to Capitol Hill Station. The tunnel work includes all civil works (e.g. track-slab, walkway, raceways), and cross-passages.
- U230 – Bored Tunnels CHS to PSST, and Capitol Hill Station Excavation and Support. This work includes the excavation and earth support for the Capitol Hill Station structure; and the 1 mile of twin-bored tunnels that run from it to Pine Street Stub Tunnel. The tunnel work includes all civil works (e.g. track-slab, walkway, raceways), and cross-passages.
- U240 – Capitol Hill Station Civil and Finish Work. This work includes finishes within the Station Box (constructed in U230); construction of the west entrance and the Broadway pedestrian tunnel, head-houses as well as the north and south entrance structures.
- U250 – University of Washington Station Civil and Finish Work. This work includes civil and finishes within the station box (constructed in U220); construction of the Pedestrian Bridge across Pacific Place and Montlake Blvd; and the north (Burke Gilman) west (triangle parking garage) and south entrances.
- U260 – Trackwork. This work includes installation of track, track switches, and other related equipment from Pine Street Stub Tunnel portal through to the northern wall at University of Washington Station. It includes any vibration, noise dampening, and special track fixtures at the crossover.
- U820 – Yard Expansion. This work includes construction of five additional storage tracks at the OMF, complete with OCS and signaling. A proposal to build out the full yard using local funds is also being evaluated.
- U830 – Systems Design/Furnish/Install. This work includes the procurement of systems equipment, detailed design of the signaling, communications and traction power systems, and the installation and testing of the Systems Elements from the Pine Street Stub Tunnel through the University of Washington Station.
- Other Miscellaneous Contracts for Ticket Vending Machine installation, Signage, etc.

7.2.6. Data Processing

Sound Transit's Information Technology Division staff and resources within the Finance and Information Technology Department provides information technology equipment and services to all project offices, including construction field offices. The equipment includes desktop PCs, servers, telephony, fax, and printers. The services include support for all supplied equipment according to the Agency Service Level Agreement, including scheduled on-site support. The scheduling and assignment of Information Technology (IT) resources is governed by the IT Strategic Plan. Software programs provided and supported by IT include Primavera Expedition, Primavera P3ec, OpenText Livelink, and PeopleSoft Enterprise One.

7.2.7. Public Relations

Public relations services are provided by agency and Link Department staff. Mailings, meeting facilitation, and business mitigation services are provided through vendors and on-call services.

7.3. SMALL AND DISADVANTAGED BUSINESS OPPORTUNITIES

Sound Transit has established a Small and Disadvantaged Business Enterprise (S/DBE) program in accordance with the regulations of the US Department of Transportation (USDOT) 49 CFR 26. Sound Transit has received Federal financial assistance from USDOT and as a condition of receiving this assistance, Sound Transit has signed an assurance that it will comply with 49 CFR 26.

It is the policy of Sound Transit to ensure that DBEs as defined in 49 CFR 26 have an equal opportunity to receive and participate in USDOT-assisted contracts. It is also Sound Transit policy to:

(1) Ensure non-discrimination in the award and administration of USDOT-assisted contracts;

(2) Create a level playing field on which DBEs can compete fairly for USDOT-assisted contracts;

(3) Ensure that the Sound Transit DBE Program is narrowly-tailored in accordance with applicable laws;

(4) Ensure that only firms that fully meet eligibility standards as set forth in 49 CFR 26 are permitted to participate as DBEs;

(5) Help remove barriers to the participation of DBEs in USDOT-assisted contracts; and

(6) Assist in the development of firms that can compete successfully in the marketplace outside of the DBE Program.

Implementation of the Sound Transit DBE Program is accorded the same priority as compliance with all other legal obligations incurred by Sound Transit in its financial assistance agreements with USDOT.

All bidders and proposers may be asked to provide business participation plans that include detailed information regarding the utilization of DBEs and other small businesses. Prime contractors and consultants will be required to make commitments to participation levels provided in these plans. To help facilitate and improve the performance of this process on the University Link Project, Sound Transit's Diversity Program Manager, working in conjunction with the University Link Project Director, has contracted with a number of small and disadvantaged business advocates and practitioners to form a S/DBE Advisory Team (as sub-consultants to the design management support consultant PB Americas, Inc.). Their role will be to enhance relationships and identify effective long-term outreach strategies for

the Project. The work includes redesign and implementation of outreach efforts to ensure Sound Transit's outreach efforts are not only compliant but also produce desired/measurable results.

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8.0 PROCUREMENT OF MATERIALS AND EQUIPMENT

This chapter outlines the procurement plan for system-wide elements, light rail vehicles, and Sound Transit-supplied material. The procurement plan for professional services and civil/systems construction was previously described in Chapter 7 of this PMP.

8.1. PROCEDURE FOR PROCUREMENT OF SYSTEM-WIDE COMPONENTS

University Link procurements for system-wide elements, light rail vehicles, and Sound Transit-supplied material will comply with Sound Transit's Procurement Regulations described in the Procurement Manual issued by the Contracts Division within the Project Delivery and Support Services Department.

As with professional services and civil/systems construction, the procurements discussed in this section follow Revised Code of Washington (RCW) provisions and Washington Administrative Code (WAC) provisions as they apply to University Link. Federal procurement regulations apply to any procurement that is funded in part with federal funds. There is no change to the procurement approach for system-wide elements, light rail vehicles, and owner-supplied material from that of services and civil/systems construction with respect to the monetary authority levels for competitive University Link procurements, the review and approval approach, or sole source procurement policies.

8.1.1. Permanent Materials

Sound Transit will use new procurements for tactile path (braid) pavers and platform edge detectable warning surface pavers for University Link. Sound Transit will ensure a consistent architectural and art program approach for this material system-wide.

Sound Transit is considering the possibility of amending the existing Initial Segment contract for passenger signage (Contract P550) to support University Link.

Art elements may be fabricated for specific contracts. This activity will be administered under Sound Transit's Transit Art Program.

8.1.2. Construction Equipment

No construction equipment will be purchased by Sound Transit as part of the delivery of University Link. Each civil or systems contractor is expected to procure or lease any and all construction equipment necessary to fulfill the terms of their contract.

Non-revenue vehicles to be used for system maintenance, such as hi-rail vehicles, vans, lifts, cranes, trucks, and loaders, will be procured using multiple competitive procurement contracts.

8.1.3. Systems Elements

The University Link Systems elements consist of the train signal system, communications systems, and the traction electrification system to be procured under Contract U 830 as described above, procurement of 27 LRVs (U821), portable radios (U826), and fare collection/ticket vending machines (TVMs) (U829). For the procurement of light rail vehicles, Sound Transit has exercised the option to order 27 LRVs from Kinkisharyo under the existing vehicle procurement contract. For the radios and TVMs Sound Transit will use either sole source procurements if justified and/or change orders to existing procurements for University Link. All systems elements will be integrated with the Initial Segment. Proprietary systems used on the Initial Segment, such as source code for communications and train control may require sole source procurements for University Link.

8.2. QUALITY ASSURANCE REQUIREMENTS

The inspection and test of system-wide elements, light rail vehicles, and Sound Transit-supplied material is part of the overall Link Quality Assurance Program (QAP) discussed in Chapter 3 of this PMP. The quality assurance approach will emphasize the quality system procedures and planning associated with the manufacture, installation, and service of these hardware and software-orientated items. Special attention will be paid to process control and work instructions, in-process inspection and testing (including hold points), calibration of measuring and test equipment, control of nonconforming product, and handling and packaging. Systems contractors will be required to submit a quality plan to Link for approval.

8.3. SYSTEM AND EQUIPMENT TEST AND EVALUATION PLAN

A comprehensive and integrated test and evaluation program is part of the Rail Activation Management Plan and Test Program Plan developed for University Link and described in detail in Chapter 16 of this PMP. University Link will conform to these same plans.

8.4. DISADVANTAGED AND SMALL BUSINESS OPPORTUNITIES

As previously discussed in Chapter 7.3, Sound Transit provides fair and representative employment and business opportunities for S/DBEs in the procurement of equipment, materials, supplies, and services for the agency.

Contracts for system-wide elements, light rail vehicles, and owner-supplied material for University Link will all include DBE and SBE goals.

9.0 DESIGN PROGRAM

9.1. REQUIREMENTS AND STANDARDS

The technical basis of design for University Link is governed by operating plans, regulatory requirements, industry standards, and the jurisdictional specifications of affected areas. These baseline design documents are comprised of the North Link and Airport Link Design Criteria Manual, the CADD/Drafting Manual, Link Light Rail Standard and Directive Drawings, the Safety and Security Management Plan, and the Link Light Rail Standard Specifications for Facilities Construction. Requirements unique to a contract, but not standard for the project, will be addressed in contract specifications. Documents that address environmental issues, hazardous materials, and associated permitting requirements will also be addressed during the design phase of University Link. The Link Final Design Quality Plan and the Link Engineering Design Procedures will be used to determine required design processes and their application to University Link design development.

9.2. ENGINEERING DESIGN MANAGEMENT AND SUPERVISION

The detailed design of University Link will be conducted by two integrated consultant teams – a Civil/Architectural Final Design consultant, and a Systems Final Design consultant. Link exercises oversight and coordination of this activity and retains ultimate responsibility for the final design products. In addition to the two final design consultants, Link has retained the services of a Design Management Support (DMS) consultant to augment Sound Transit's technical capacity and capability to assist Link staff with design reviews, constructability reviews, value engineering, and peer reviews. Project design activities for preparation of design studies, reports, drawings, specifications, cost estimates, and bid documents are conducted in accordance with the clearly defined lines of authority and communication. The Link engineering responsibilities are defined in the Link Engineering Design Procedures. Figure 2-3 University Link Project Organization for Final Design phase illustrates the organization of the final design effort. The key positions of design management and coordination are:

- Assigned to the U-Link Project Director, the Link Civil Engineering Manager manages civil and architectural design staff assigned to University Link and manages both the Civil/Architectural Final Design Consultant (Northlink Transit Consultants) and the Design Management Support Consultant (PB Americas). The Civil Engineering Manager reports to the Deputy Director of Technical Services for overall Link Department design resources development.
    - The Civil Design Lead reports to the Civil Engineering Manager for project related activities and is responsible for the coordination of the design effort, resolution of design issues, assuring the civil-systems interfaces are accurate and well-coordinated, and coordination with third parties, including WSDOT, the City of Seattle, and the University of Washington for facilities and utilities design.
    - The Tunnels/Structures Lead (employed by PB Americas) reports to the Civil Engineering Manager and is responsible for the coordination of structures and tunneling design.
    - The Architecture Lead reports to the Civil Engineering Manager and is responsible for the coordination of architectural design and Sound Transit's Transit Art Program. A Deputy Architecture Lead from PB Americas also provides full-time dedicated U-Link architectural management support.

- The Link Civil/Systems Integration Manager reports functionally to the Link Executive Director and for U-Link related duties he reports directly to the U-Link Project Director and is responsible for the management and technical direction of engineering activities for the Project's systems elements, including management of the Systems Final Design Consultants (LTK Engineering Services). He is also responsible for internal and external integration of the University Link facilities and systems designs, construction, testing and operations.
- The Construction Manager, reporting to the U-Link Project Director, plays a key role in the final design phase, providing constructability input, design review and hiring of the Construction Management (CM) consultants to help perform additional constructability and bid-ability reviews prior to advertising the construction contract packages.

Link's Quality Assurance program provides surveillance and audits to ensure compliance with design criteria, standards, and design processes. The Link QA Manager will provide design surveillance and design audit reports to the University Link Project Director.

The Link engineering managers and the discipline leads will be responsible for the control of the consultant team's work product tasks, resolving issues and reporting progress on scope, schedule, cost, and quality. Effective control of the consultant team's work products will require effective and open lines of communication between disciplines to ensure correct inter-discipline integration of the design elements. Close coordination with the Design Consultant Project Managers and the Link discipline leads and Link Design Coordinators will be accomplished through meetings, E-mail, and memos. The Design Consultant Project Managers are responsible for managing the consultant staff, reporting to Link staff, ensuring compliance to the requirements of their contracts, including both administrative and technical provisions. The overall responsibility for the management of the design rests with the Project Director.

9.3. DESIGN COORDINATION (INTERNAL AND EXTERNAL)

Sound Transit is designing and constructing University Link in partnership with the affected local jurisdictions and the University of Washington (UW). The principal third parties involved are the City of Seattle, the Washington State Department of Transportation (WSDOT) and UW.

Link engineering is carried out by two divisions.

- The Link Civil Engineering Division is responsible for the engineering, design, and development of fixed facilities, stations, tunnels, and related facilities for University Link. It is also responsible for the production of conceptual design documents necessary for the environmental assessment process. The Civil Engineering Division provides design and engineering services, using seconded design consultants as an extension of Sound Transit staff. Link civil engineering work is managed by Sound Transit staff, but will be performed as an integrated Link/consultant team effort through final design and into design support during construction.
- The Link Systems Engineering Division is responsible for the development and design of the systems elements and associated facilities for University Link. The Systems Engineering Division provides design and engineering services using seconded design consultants as an extension of Sound Transit's Link light rail staff. All work will be managed by Sound Transit staff, but will be performed as an integrated Link/consultant team effort through final design and into construction support and integrated testing.

For University Link, the Link Civil/Systems Integration manager is managing the Systems Final Design to help ensure the civil and systems designs become fully integrated and coordinated.

9.3.1. Conceptual Engineering

The initial planning study involved the planning, development, land use, community participation, station location, route alignment, environmental, and operations and maintenance issues that were identified and presented to the Sound Transit Board, associated agencies, and related community groups for endorsement. These studies examine significant factors such as topography, geology, roadway improvements, right-of-way, utility networks, and private and public developments.

9.3.2. Preliminary Engineering and Final Environmental Impact Statement

Significant design issues were identified and resolved, and the development of design details necessary to quantify the work during the Preliminary Engineering (PE) phase were addressed. The design consultants prepared engineering drawings supported by calculations and specifications that defined the technical requirements. They determined essential elements for the Link light rail system. Several value engineering proposals were identified in the PE phase for further study in the Final Design phase. A Final Supplemental Environmental Impact Statement (FSEIS) and resulting Record of Decision were issued in April 2006.

9.3.3. Final Design Phase

The Link design staffs, with the help of their Design Management Support and Construction Management consultants, and design consultants will develop final design documents for construction and related procurement contracts. The Final Design phase commenced with Early Work tasks to develop and refine the preliminary engineering design, including evaluation and incorporation of feasible value engineering recommendations, developing a construction contract packaging plan and related constructability considerations.. During this phase, the final design consultants prepare contract drawings supported by calculations and specifications to define the technical requirements for construction and/or fabrication/installation. The final design consultants have specific responsibilities during the final design process that are defined in the Link Engineering Design Procedures. The University Link final design will be safety and security certified in accordance with the Safety and Security Management Plan.

Design coordination between Link, UW, the City of Seattle, WSDOT, and other third parties (such as utilities) occurs in a working group environment closely monitored by Link management.

Multiple levels of design coordination meetings allow for an interactive approach to developing and advancing the University Link design within increasing levels of authority and responsibility. Review of the progress of the design occurs during these meetings, as well as resolution of questions and issues in order to allow orderly maturing of the design definition from preliminary design to final design, and finally to bid-ready documents. Openness to design options, innovations, community concerns, and timely communications will be emphasized by design management.

The first level of design coordination consists of bi-weekly design coordination meetings that include the University Link consultant teams and Link design staff. Progress, issue resolution, minor change decisions, and action item assignments with due dates are documented. As required, third parties are engaged in order to ensure interface aspects are properly addressed.

The next higher level of design coordination involves project management level-meetings that include the University Link and consultant teams. Intermediate changes and issues beyond the authority of the weekly design coordination group are reviewed at this project management level. The UW, City of Seattle, and WSDOT may also participate in these meetings.

Contract Unit Descriptions (CUDs) and major changes to the CUDs are reviewed and approved by the Link Change Control Board in accordance with Link Project Control Procedure LPC-14 Change Management and Link Project Control Procedure LPC-9 Change Control Board.

These multiple levels of approval and accountability allow for wide visibility of design progress, good understanding and agreement on design changes, and effective control of interfaces.

Both the Civil and Systems Engineering Division products will be subject to design review and audits by Link Quality Assurance.

9.3.4. Design Support During Construction

Following ST Board approval of construction or procurement contracts, the design consultants from the final design phase will be requested to provide design support of construction. This consists of the review and approval of shop drawings, construction work plans, test plans, test procedures, and other submittals, answering requests for information, disposition of nonconformance reports, and technical assistance, as requested by Sound Transit. During this phase, Sound Transit's design consultants provide continuity for the interpretation of design concepts and the resolution of dimensional and material acceptability issues.

9.3.5. Product Data Management and Data Collaboration

Link and consultant design staff are utilizing EMC Documentum© eRoom as the primary collaboration and coordination tool for the University Link final design activity. This software allows people from different departments, locations, and companies to work as if they were in the same location by providing a single, secure environment to coordinate project activities. eRoom is a web-based workspace that will be used for file sharing, coordination, reviews, document versioning, and communication.

9.4. DESIGN REVIEW PROCESS

Design reviews are conducted to evaluate and compare the design progress against project requirements, to review the design itself, and to review interfaces among disciplines. If the design is considered acceptable at a design review milestone, and complies with design requirements and criteria applicable to the design at that milestone, the design is allowed to progress to the next review milestone.

Design reviews are conducted at interim design milestones of 30-percent complete (or "Early Work"), 60-percent complete and 90-percent complete final design. QA reviews are conducted at each stage of design development. Final design verification by Link Quality Assurance staff is conducted when the document set is 100-percent complete. The U-Link Project Director will identify the Sound Transit and third party reviewers and convene a design review meeting to discuss each submittal and resolve internal conflicting comments.

Each design review is performed by the Link Civil and Systems Engineering and Environmental as appropriate, Link QA, O&M staff, and other parties as determined by the U-Link Project Director. Where required by interface considerations or inter-agency agreement, the City of Seattle, the UW, WSDOT, or other third-party agencies will be requested to participate in the design review. Each reviewing organization has specific responsibilities depending on the scope and phase of the documents under review. Design review comments will be electronically documented on the Design Review Comment Form posted in eRoom for review, disposition, and incorporation into the design prior to the next milestone submittal. The Link Engineering Division managers are responsible for ensuring that revisions and advancement of the design will be checked by their respective design consultant (Civil or Systems) prior to the next submittal. Design reviews and document checking are to be performed in accordance

with the Link Final Design Quality Plan and the Link Engineering Design Procedures. The University Link final design will be safety and security certified in accordance with the Safety and Security Management Plan.

9.5. VALUE ENGINEERING

Twenty-four Value Engineering (VE) and Design Proposal (DP) items were studied by the Civil/Architectural Final Design consultant during "Early Work" of the Final Design phase, and a formal 5-day VE Workshop led by a Certified Value Specialist, was conducted at the end of the Early Work, before finalizing the Baseline Cost Estimate. The results of these studies and Workshop will be summarized in reports submitted in advance of the FFGA application. Opportunities for value engineering on University Link will continue to be considered as part of the normal detailed design progression and during construction through the standard VECP clause in each contract. Where design, material selection, or constructability possibilities exist, these opportunities will be evaluated as part of the design coordination and design review processes. As coordination occurs for contract packages, initiatives involving VE considerations and review of constructability will be continuously considered. Cost, schedule, scope, quality, risk, and impacts to third parties would be reviewed and analyzed prior to accepting VE proposals.

9.6. CONSTRUCTABILITY REVIEWS

Constructability reviews will be conducted in accordance with Link Engineering Design Procedure EP-08 Constructability Reviews:

- To verify University Link contracts are bid-able and constructible with standard construction industry materials, means and methods.
- To ensure project drawings and specifications provide contractors with clear and concise instructions to prepare a competitive, cost-effective bid.
- To make sure the work, after constructed, will result in a project that can be maintained cost-effectively in the long term.

Constructability reviews will be led by the University Link Construction Manager or his designee. The Construction Manager, Deputy Construction Managers, DMS and CM consultant staff, and independent third parties. A Constructability Review report will be prepared upon completion of each constructability review. Design staff from Sound Transit and the Final Design consultant will analyze each constructability review comment and prepare a response, recommending either incorporating the comment into the project or presenting reasons for rejection. A checklist of elements will be developed and a constructability review report with associated cost-benefit will be provided for each recommended revision.

Constructability reviews will occur following the completion of the 60-percent and 90-percent design milestone submittals. These submittals will include design drawings, utility drawings, a drainage report if applicable, the geotechnical report if applicable, the cost estimate, and the project design report. The reviews and the subsequent reports will address both bid-ability and build-ability of planned work with the goal of infusing construction expertise into the design process in order to avoid major oversights and reduce the number of addendums, change orders, and claims.

9.7. O&M CONSIDERATIONS AND REVIEWS

Link Light Rail Operations and Maintenance personnel assist in establishing equipment and facility designs requirements. The O&M Manager actively participates in design coordination, assigns operations and maintenance personnel to participate in design reviews and design coordination meetings, and helps verify that procurement documents support civil to systems and systems to systems integration and testing, start up, revenue service, and operations and maintenance. Design coordination will extend, as necessary, to King County Metro, who is the current Link operator. Issues that cannot be resolved between the O&M manager and the Link Civil Engineering Manager or Civil/Systems Integration Manager will be discussed and resolved by the University Link Project Director and the Link Executive Director.

9.8. CHANGE CONTROL

Changes during the design program are subject to the Interface Coordination and Integration Procedure (EP-04) adopted by Link to ensure that configuration changes to light rail and related roadway projects are fully coordinated. The University Link Project Director is responsible for ensuring that changes substantially affecting the configuration of the project are reviewed and approved by the Link Change Control Board (CCB). These changes are classified as major changes. The process for presenting these configuration changes to CCB is the same as required for the Initial Segment. The configuration control (versioning) of design documents during the design phase is the responsibility of the final design consultants. The Link CADD Manager is responsible for monitoring and verifying compliance with Link configuration management practices for drawings in accordance with the Link CADD/Drafting Manual.

9.9. SYSTEMS INTEGRATION

Design and project integration is a requirement of both the Civil/Architectural Final Design and the Systems Final Design contracts as Task 200 under both contracts. The Link Civil/Systems Integration manager is responsible for overseeing both these design tasks and the overall design integration effort. Link interface coordination and integration processes are described in the Link Engineering Design Procedures, EP-04 Design Interface Integration. The Link Final Design Quality Plan contains requirements and guidance related to interface management, including the use of interface control checklists, design review criteria and timing, and the checking procedures to be used prior to design document release.

In addition, on-going interdisciplinary design review and coordination occurs as part of the design coordination activity of the management-level Project Coordination Meetings.

9.10. RELIABILITY, MAINTAINABILITY, SAFETY, AND SECURITY

The University Link reliability and maintainability program is a continuation of the methodology adopted for the Initial Segment.

Link considers reliability to be the ability of the civil and systems components of University Link to perform their required functions over the lifetime of revenue service with a calculated level of successful operational service. The required levels of reliability are achieved by conducting reliability analyses and modeling, designing to established design criteria and standard drawings, conducting trade-off studies, incorporating reliability considerations into design reviews, flowing reliability requirements down to subcontractors and suppliers, and investigating failure modes and effects.

Key in the availability of University Link is minimizing downtime, the time required to bring failed portions of the civil or systems infrastructure back to operation. This down time is normally attributed to regularly scheduled maintenance activities however, occasionally equipment failure may be a factor. An effective way to increase a system's availability is to minimize the downtime, therefore effective maintainability must be assured. This is achieved on University Link by the implementation of specific design practices, such as ergonomics, effective and robust mechanical interfaces, consideration of how test equipment is used, accessibility, and redundancy.

The combination of reliability and maintainability contribute to overall system availability and operability. The availability, or service dependability, in terms of level of service is defined in the North Link and Airport Link Design Criteria.

Systems Safety engineering efforts will be worked in unison with reliability engineering activities. Hazard Analyses is the primary technique used by designers, which, by qualitative or quantitative analysis, is used to identify hazards, their causes and effects. The elimination or mitigation of these hazards is then incorporated into the design documents.

The SSMP identifies the following safety and security activities to be undertaken and approved by the Chief SSQA Officer during Final Design:

- Formal PHAs and TVAs will be completed, as will any special safety and security studies that may be deemed necessary.
- Fire/Life Safety Committee review and review with community groups and stakeholders will continue.
- Design reviews, including involvement by the Link contract operator, will address safety and security issues.
- Safety and security requirements to be included in contract specifications will be developed and included in the bid documents.
- Any unique requirements for safety and security during construction will be identified and specified.
- The Link Construction Safety and Security Manual, and any special contract provisions to be used by contractors to develop their individual construction safety and security plans will be reviewed and revised to reflect any unique University Link requirements.
- Training to be provided by contractors will be identified and included in the specifications.

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10.0 RIGHT-OF-WAY ACQUISITION

The University Link project requires the acquisition and management of properties, including private properties, property owned by the University of Washington, and property owned by the Washington State Department of Transportation (WSDOT). The Real Estate Division, headed by the Real Property Manager, is responsible for the acquisition and management of property. Property management is the responsibility of the Sound Transit Transportation Services Division's Property Manager. Real property acquisition and management performed by Sound Transit will be in accordance with state and federal regulations, including 49 CFR Part 24, Uniform Relocation and Acquisition Policies Act of 1970, as amended.

Sound Transit's Real Property Acquisition and Relocation Policy, Procedures, and Guidelines governs how Sound Transit exercises the authority granted by Sound Move to achieve real estate and right-of-way acquisition. In addition, a Real Estate Action Plan has been developed by the Real Estate Division to provide appropriate requirements and guidance. The procedures encourage the cooperative acquisition of real property by agreements with owners and tenants, avoiding protracted disputes and litigation, whenever possible. However, all properties acquired under the program, whether acquired cooperatively or through eminent domain litigation will be acquired "under threat of condemnation". Sound Transit will comply with Chapter 8.26 RCW, Chapter 468–100 WAC, USC Title 42, and 49 CFR Part 24 in connection with the acquisition of real property for, and relocation of persons displaced by, the implementation of Sound Move.

The Sound Transit Board establishes the policy direction of Sound Transit's property acquisition and relocation program. The Sound Transit Board has responsibility for approving the acquisition of property by condemnation, but has made certain delegations of authority regarding property and leasehold transactions and improvements to the Chief Executive Officer.

In addition to the normal records of agreements and real estate transactions, notices and records pertaining to displacement and compensation arrangements are required to be retained. Persons unable to read or understand the notices are provided with appropriate translation and counseling. Each notice will indicate the name and telephone number of a person who may be contacted for answers to questions or other needed help. Notices may be served personally or sent by registered or certified first-class mail, return receipt requested, and documented in Sound Transit's files. Records of acquisition and displacement activities are maintained in sufficient detail to demonstrate compliance with the procedures and applicable law. Such records are maintained for at least three years after each owner of a property and each person displaced from a property receives the final payment to which the person is entitled under the procedures or in accordance with federal funding requirements, whichever is later. Records are confidential regarding their use as public information, unless applicable law provides otherwise.

10.1. IDENTIFICATION (ROW ENGINEERING)

Right-of-way engineering is the responsibility of the University Link Right of Way Engineer, who reports to the Civil Engineering Manager. The designers and engineers identify specific ROW and property acquisition needs during preliminary engineering. The Link team conducts surveys and prepares maps that show locations of Link facilities, including stations, station platforms, track lines, sub-surface easements, traction power substations, parking, access roads, utility easements, and construction easements, as well as other property-related information. Property interests to be acquired or conveyed for utility relocations and new utility services are also determined. During final design, specific dimensions of parcels are established and locations of transit facilities finalized. Temporary construction staging and access requirements are also finalized during final design. A list and description of the

properties to be acquired are certified by Link as necessary for the program and communicated by Link to the Sound Transit Real Estate Division, which then confirms the exact legal description and ownership of the properties. The University Link Environmental Lead reviews and certifies all property acquisitions for consistency with the program's environmental documentation.

10.2. APPRAISAL

Appraisals are conducted by licensed appraisers under contract with Sound Transit and are prepared and reviewed in accordance with standards outlined in procedures. Appraisers are provided with the results of the title search and required to inspect each property, offering the owner the opportunity to accompany the appraiser on his or her inspection of the property. Based upon Environmental Site Assessment (ESA) results, if significant cleanup costs (relative to property value) are estimated, and/or if highest and best use of the property is changed, the appraisers will revise their appraisal reports, which will be reviewed by the Appraisal Review Manager. Appraised values may be modified to take into consideration the estimated costs of environmental remediation. Appraised values of $2,000,000 or greater are submitted to the Federal Transit Administration (FTA) for federally funded projects, for concurrence on the amount of just compensation. Appraisals are the responsibility of the Real Estate Division.

The acquisition of property rights needed from the University of Washington will be carried out in accordance with the terms of an implementation agreement between Sound Transit and the University.

10.3. ACQUISITION PLAN

Following certification of specific properties to be acquired, Sound Transit's Real Estate Division shall initiate a title search. The title search will be used to (1) establish the legal description and ownership of the property; (2) identify and describe existing easements and encumbrances; (3) identify any additional legal work needed to obtain clear title during acquisition; (4) obtain additional information concerning topography, utilities, metes, bounds, and other information; and (5) obtain copies and confirm accuracy of property information. Sound Transit will use the services of consultants and service firms, as necessary, for title searches.

Environmental Site Assessments (ESA) are completed for each property to be acquired in accordance with federal regulations and in order to identify and assess any potential contamination. ESAs may be completed before or after the completion of the appraisal process, depending on the level of investigation required. Phase I investigations are generally completed during, or prior to, the completion of the appraisal process. If Phase I results indicate the site is likely to be free of significant levels of contamination, Just Compensation can be offered to the owner based upon the approved appraisal.

Phase II investigations are completed as necessary to confirm the nature and extent of any potential contamination identified during the Phase I ESA and to determine remediation requirements and costs. The results of the Phase II investigations, and the development of a remediation cost estimate, may be completed after the property is initially appraised. The Phase II results are then evaluated by Sound Transit's Senior Environmental Analyst and the Appraisal Manager and Senior Real Estate Representative to recommend appropriate adjustments to, or further analysis of, fair market value.

Offers for property may be made subject to adjustment for environment issues if Phase II investigations and cost analysis are incomplete. Sound Transit obtains necessary approvals from property owners prior to conducting each ESA and provides ESA results to appraisers. ESAs on properties to be acquired by Sound Transit are conducted by qualified environmental services consultants obtained via competitive procurement procedures under the direction of the Real Estate Division. Sound Transit's Senior

Environmental Analyst also reviews the results of Phase I and II environmental investigations to confirm consistency with the project's environmental documentation, and as necessary advises the Environmental Manager for Link.

The Real Estate Division is responsible for negotiating the purchase of all properties. Each offer to purchase must be approved by Sound Transit and presented in writing; and include a summary of the basis for just compensation. No property owner will be required to surrender possession of real property without receiving fair market value and just compensation. Specific actions and procedures for negotiation and acquisition of real property are contained in the Real Property Acquisition and Relocation Policy, Procedures, and Guidelines.

Sound Transit may determine the need to file a condemnation action in order to acquire a property in a timely manner. When eminent domain is deemed necessary, Sound Transit will proceed in accordance with applicable laws. Negotiations with the seller may continue in an effort to reach mutual agreement. All property negotiations and acquisition activities are the responsibility of the Real Estate Division, with assistance from the Legal Department.

Upon receipt of title to the property by Sound Transit, the Real Estate Division will notify the University Link Project Director that the property acquisition has been finalized. Access to a site cannot begin until transfer of ownership, right of way, or other property rights is received.

10.4. PROPERTY MANAGEMENT PLAN

Management of acquired property is the responsibility of Sound Transit's Property Manager,, in consultation with Link. For interim management of all acquired properties, during the period prior to any demolition, Sound Transit has contracted for professional property management services through a competitive bidding process. The property management firm will work under the direction of the Transportation Services Division's Property Manager, for the day-to-day management of the real property. Vacant land and unoccupied structures will be secured to prevent vandalism and vagrancy. Early demolition of certain structures may be considered and recommended to the Link Civil Engineering Division in order to minimize or eliminate unsafe conditions or attractive nuisances. In some cases, Sound Transit may lease property until demolition occurs or the site is needed for the project.

Sound Transit has property management policies, procedures, and guidelines in its Property Management Guide to ensure that constructed facilities are managed in accordance with applicable laws and Sound Transit needs.

The objectives of Property Management are as follows:

- Maintain properties in the most efficient and cost-effective manner until such time as the properties are needed for Sound Transit projects.
- Provide a cost-effective means for a safe, secure, and habitable environment for tenants.
- Maintain properties to a standard that lessens the impression of impending redevelopment and mitigates perception of blight on the surrounding community.
- Establish efficient and effective means of providing day-to-day property management services.
- Develop good relations with members of the affected community.

10.5. RELOCATION ASSISTANCE PLAN

Any person meeting the definition of a "Displaced Person" may be eligible for relocation assistance. Relocation assistance includes:

- Advisory assistance (such as providing transportation to replacement residential or business sites, helping the person obtain loans, assistance in filing claims, or assistance in qualifying for payments).
- Monetary benefits.

The type and amount of benefit to which a displaced person may be eligible to receive is dependent on the type of displacement (residential, business, tenant, or owner) and other factors.

Monetary benefits include replacement housing and moving payments for residential displaced persons and a wide variety of moving and moving-related benefits for displaced businesses. Businesses are also eligible for reimbursement of reestablishment costs. Some benefits have a statutory limit.

10.6. DEMOLITION

Improvements to be demolished to prepare the property for construction will generally be removed as part of a civil construction contract. If remediation is necessary before construction, all or part of the demolition and removal of improvements may occur as part of the remediation effort. Environmental remediation, including any associated demolition or removal of improvements, is generally the responsibility of the Link Civil Engineering Division.

10.7. SCHEDULING AND FUNDING PLAN

Several factors can determine the length of time and schedule necessary for the acquisition of the properties, including the ESA and the extent of any necessary environmental remediation, whether the acquisition is through voluntary negotiation or condemnation/eminent domain, the nature and extent of relocation activities, and any required demolition.

Estimates of right of way costs are determined by identifying the property interest (fee take, permanent easement, etc.) and land area to be acquired, researching market data for sales of comparable types of properties and estimating the value of the part taken including damages, if any, to the remaining property. Relocation costs are also estimated based on the anticipated business or residential displacements. Administrative, legal costs and contingency are then added resulting in the total estimated right of way cost for the project.

10.8. REAL PROPERTY DISPOSAL PLAN

When real property is no longer needed, it will be disposed of in accordance with Sound Transit's Real Property Disposition Policy, Procedures and Guidelines and FTA property disposition policies and requirements. Use and disposal of acquired properties will be examined in conjunction with station area and transit-oriented development strategies and plans to determine any opportunities for use of the property that might further support Sound Transit goals. Options and procedures for disposal of excess property are defined in the procedures. Disposal of excess property is the responsibility of the Real Estate Division.

11.0 COMMUNITY RELATIONS

Community relations and outreach is the art of engaging, involving, and informing agencies, key stakeholders, impacted community members, and the general public about project decisions, and progress related to the planning, design and construction of Link light rail. To assure that these goals are met and that University Link reflects and addresses the interests of the community, Sound Transit coordinates a broad range of community outreach activities. Sound Transit has established the following principles to guide this process:

- Community members shall have opportunities to affect major decisions before they are finalized.
- Community input shall be actively sought at all stags of planning, development, engineering and construction.
- Community member's inquiries, suggestions and ideas shall be considered in the decision-making process.
- A representative cross-section of interests will be engaged.
- Notification will be made in advance for all public hearings and meetings.
- Community members shall have access to project information.

To serve the goals of the project phase and the unique characteristics of each community, Sound Transit develops and implements individual community relations and outreach plans for each stage of a project. Link's Program Manager for Community Outreach leads the development of these plans. A community outreach specialist has been assigned to manage the University Link Community Relations Program.

11.1. PUBLIC INFORMATION AND INPUT

Throughout the different phases of design and construction, Sound Transit will provide community members, organizations and businesses extensive opportunity to learn about the program. Stakeholders will be asked to provide input on design options and discuss issues or concerns with the staff. This input is then considered at key decision points in the project and used to make the most informed choices possible.

To achieve these goals, community outreach staff will continually reach out an engage the public in a variety of methods:

- Meetings with community organizations.
- Interface with state and local agencies.
- Public hearings, meetings and other events.
- Regular electronic and printed communications.
- Coordination with local and regional media.

Some community outreach efforts are specifically designed to provide information and seek input from diverse communities throughout the region. Sound Transit aims to include people of diverse economic, cultural, racial, and ethnic backgrounds, including new immigrants with an extensive range of first languages and communities with special needs associated with ages, health, and disabilities.

11.2. CONSTRUCTION MITIGATION

When construction begins, community outreach takes on an additional role as the liaison between the impacted neighborhood, the agency, and the contractor. This role is a critical element in both meeting the projects milestones without major incidents, as well as ensuring that the project is delivered with as little impact on the community, and in a manner consistent with the Sound Transit's commitments to the community. This new role also adds two new guiding principles, in addition to the ones listed above:

- Impacted parties will receive adequate notification of construction work
- Sound Transit will work with impacted property owners, residents, and businesses to collaboratively solve construction related issues

During construction, community outreach staff becomes an integral part of the construction management team. Developing close one-on-one relationships with the directly impacted residents, businesses and property owners, the resident engineer and the contractor is central to this approach. These relationships allow for frank communication and collaborative problem solving, which are essential for successful construction mitigation.

Outreach activities during construction include a number of techniques that have proven to be effective on past Sound Transit construction projects:

- Dedicated full-time staff.
- 24-hour construction hotline.
- Regular project updates sent out by e-mail.
- Construction alerts distributed to the immediate area affected by construction work.
- Up to date information on the website.
- Regular construction update meetings and project open houses held in the impacted neighborhood.
- Attend community group meetings to provide briefings and collect input.
- Work with local schools to educate student on safety around construction sites.
- Work with local businesses and organizations to develop a business mitigation plan, including marketing and technical assistance programs.

12.0 CONSTRUCTION PROGRAM

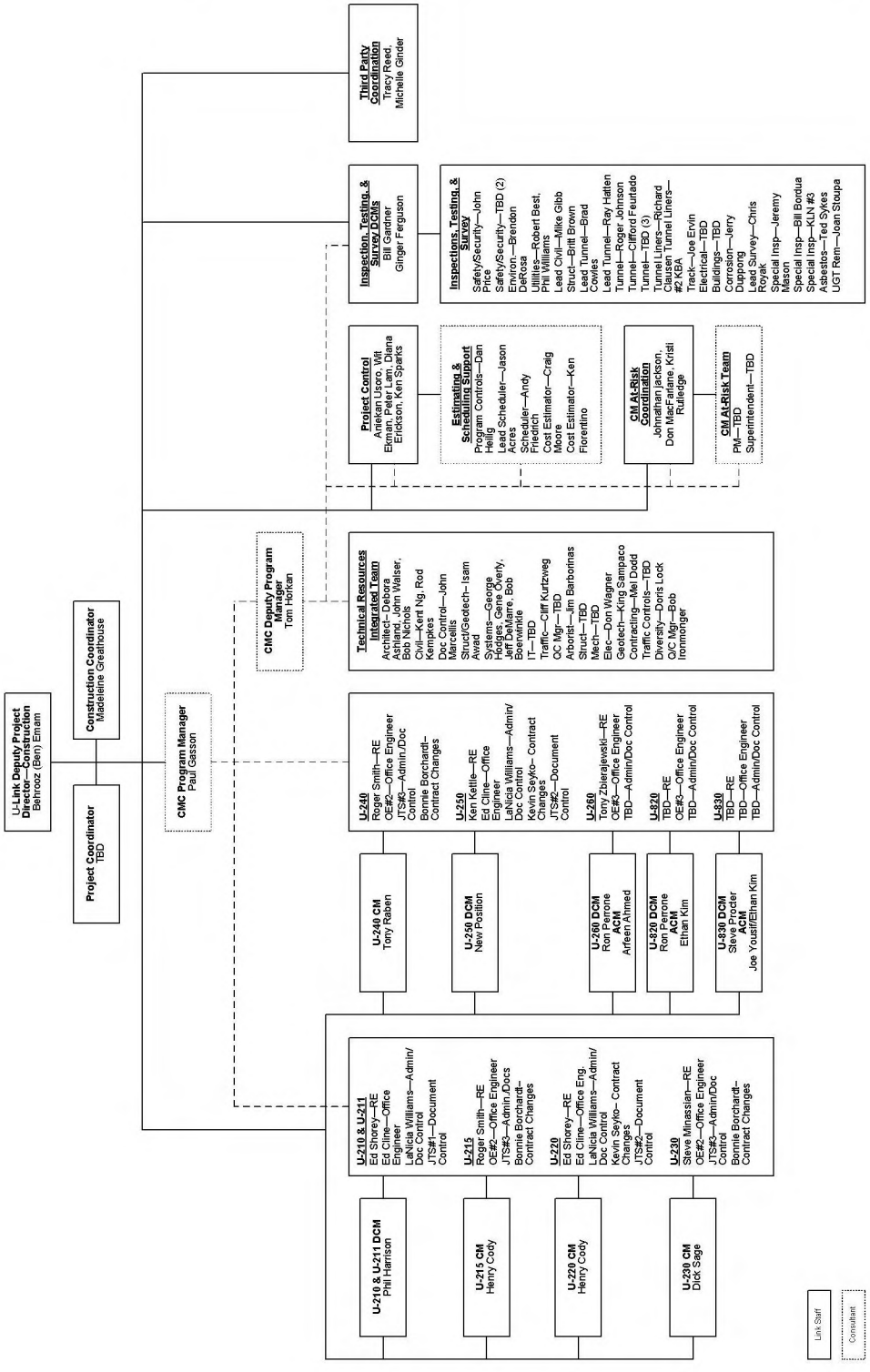
12.1. CONSTRUCTION MANAGEMENT

Construction Management for the University Link implements and manages the construction phase of the project by ensuring control of the infrastructure required to control, construct, test, inspect, and deliver each contract. These management activities necessary to provide this control include the following:

- Participating in the development of appropriate and accurate construction and procurement bid and contract documents.
- Managing the development of appropriate and accurate construction management contract RFP documents.
- Controlling interfaces to ensure that the various project elements are effectively coordinated.
- Ensuring that all the work required (and only the required work) is included in the project scope. Controlling scope and requirements "creep".
- Establishing an effective and accurate project baseline schedule and updating the baseline schedule in order to complete the work according to plan.
- Maintaining budget control, and identify and control project resources in order to complete the work within the approved budget.
- Maintaining a quality management system is in place to ensure project requirements are met.
- Obtaining timely UW approval of construction.
- Managing staff resources to assign sufficient project personnel commensurate with project staffing requirements.
- Timely deployment of independent testing and survey resources to meet project requirements.
- Participating in risk assessments and support to the development of risk mitigation plans.
- Participating in development and negotiation of third party agreements.
- Establishing effective communications within the CM team, between CM and the design support teams, between CM and the contractor, and between the Construction manager and other Sound Transit divisions.
- Establishing and monitoring compliance with project-specific construction safety and security plans.
- Monitoring and mitigating actual and potential risks.
- Participating in constructability reviews.
- Managing procurements and services to obtain necessary resources and support from third parties.

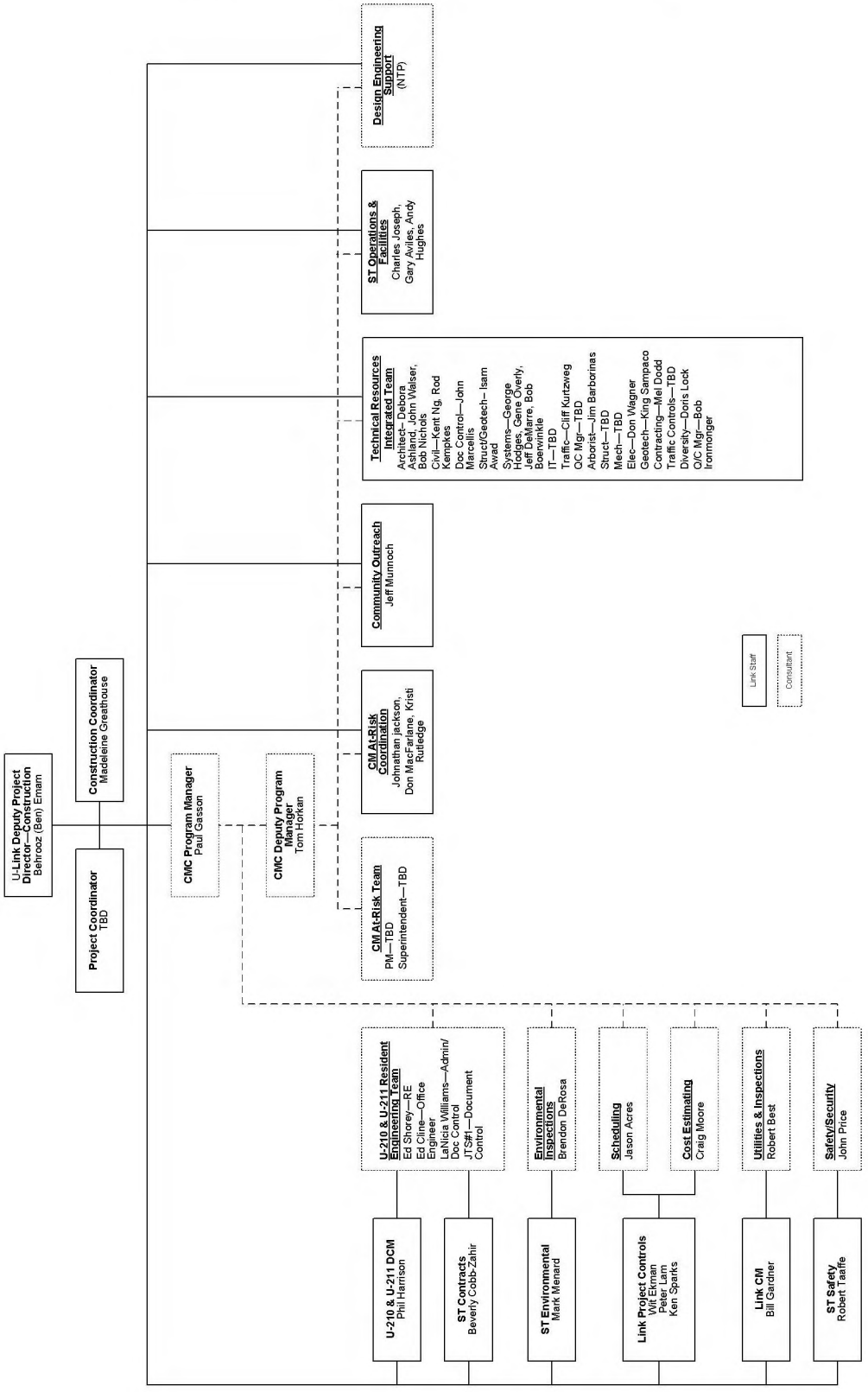
The construction of University Link facilities and systems will be controlled by a single construction management consultant (CMC) team contracted to Sound Transit. The CMC contract was approved by the Sound Transit board on May 8, 2008. The CMC is the START JV, which is a Joint Venture of CH2M Hill and Jacobs with eight subcontractors in the original contract. Link will exercise oversight and coordination of activities related to LRT facilities and systems and retains ultimate responsibility for the constructed LRT products. Construction management activities will be conducted in accordance with the clearly defined lines of authority and communication, as shown in Figure 12-1 University Link Construction Management Organization.

Figure 12-1 University Link Construction Management Organization



- The University Link Deputy Project Director – Construction is assigned to the University Link Project and reports to the U-Link Project Director.
- The Deputy Project Director – Construction manages the CMC contract manages Link construction staff assigned to the University Link project.
- The CMC Program Manager reports to the Deputy Project Director – Construction and is responsible for day-to-day management of CMC personnel as well as the management of the technical construction management activities and the project control services.
- Construction Managers (CM) and Deputy Construction Managers (DCM) report to the Deputy Project Director – Construction and are responsible for the day-to-day monitoring and coordination with the construction management resident engineering teams for each construction contract.
- The Civil Engineering Manager coordinates with the CMC, CM, and DCMs, and is responsible for the management of civil design support during construction.
- The Civil/Systems Integration Manager coordinates with the CMC, CM, and DCMs, and is responsible for the management of the systems design support during construction.
- Resident Engineer(s) will direct teams that will consist generally of an Office Engineer, Administrative Support staff, Data Management Representative, and a Contract Change Specialist. A staff member may fill the role of Administration Support and Document Control on the smaller value construction packages. It is also expected that at the major station excavation and tunnel boring machine launch locations at the University of Washington and Capitol Hill when the station and tunnel construction operations are on-going simultaneously that the RE teams will closely coordinate their RE activities in the management of multiple contracts at sites shared by multiple contractors. Figure 12-2 U210/U211 Construction Management Organization illustrates in detail the typical organization structure for the RE and the contract-level CM staff.
- Resident Engineer(s) (RE) report to the CMC Project Manager and are the authorized on-site Link representative with the contractor for the work. The RE's manage the day-to-day work activities of the CM staff assigned to the contract.
- Office Engineer(s) report to the Resident Engineers and will assist the RE's as part of the Resident Engineering teams in the management of RFI's, tracking submittals, identifying potential change areas, tracking material deliveries and quantity of work performed and coordinate with Quality Assurance surveying and testing.

Figure 12-2 U210/U211 Construction Management Organization



- The Document Control Representative or Field Office Data Management Specialist (FODM) will report to the Resident Engineer and be responsible to collect, retain, retrieve, distribute and transmit project documents and maintain project files in hard-copy and electronic retention systems. While the RE has ultimate responsibility for construction-related data management activity, the FODM is responsible for daily U-Link data management, records management, and SharePoint administration activity. The Link Data Management Center is the focal point for data management procedures and processes, and will conduct periodic quality assurance audits on document files and databases.
- The Contract Change Management Specialist will review contract correspondence and the basis for any proposed contract changes, provide advice to their respective RE, respond to inquiries and prepare draft correspondence for RE review. The Contract Change Management Specialist will also manage change order documentation and change order tracking and classification, as well as provide timely analysis of claims and assist in negotiating strategies in accordance with related sections of Link Project Control Policies and Procedures. The Change Management Specialist will be coordinating his/her work closely with Project Control Lead (PCL). PCL is responsible for review the change order package, obtain internal approval, costing of the change, coordination with CCB, and ensure timely execution of the change. PCL is the focal point for change management processes. The Change Management Specialist will assist PCL in cost forecasting and contingency management.
- Link project Control (LPC) is responsible for oversight of CMC project control activities to ensure compliance with Link policies and procedures, including accurate and timely preparation of independent cost estimates for change orders, reporting of work progress, review and acceptance of schedule updates, and approval of change orders and progress payments.
- The Administrative/Clerical personnel will report to the Resident Engineer and provide general administrative support, including managing the flow of Contract correspondence, preparing and distribution of meeting minutes.
- The Diversity/Small Business Coordinator will collect data and monitor participation of Small Business and DBE subcontractors, collect workforce utilization and demographics (EEO) of subcontractors and collect apprenticeship data. The Diversity/Small Business Coordinator will also provide monthly reports on all data collected.
- The Technical Resources Support Pool will consist of specialists whom are licensed in their particular field with directly applicable experience in the area they will provide the expertise. The Technical Resources team will consist of the appropriate technical support and field inspection personnel that will function as a shared resource among all the construction contracts and RE teams to ensure quality construction and adherence to specifications. The Initial team will be in place for the first three years of the U-link construction, and then be joined by additional technical resources and will consist of the following technical professionals that will be drawn from Sound Transit and the CMC:

  Initial Team:

  - Architect
  - Civil Engineer
  - Electrical Engineer
  - Mechanical Engineer
  - Structural Engineer
  - Utilities Engineering Coordinator

- Diversity Program Coordinator
- IT and Data Management Coordinator
- Geotechnical Engineer
- Environmental (Haz-Mat) Coordinator

Full Team Additions:

- Systems Engineers (Signals, Communications, and Power)
- Landscape Architect
- Commissioning Agent
- Arborist
- EMI and Vibration Specialists
- Permits
- Traffic Control Coordinator

- The CMC Cost Estimators will provide construction estimating services, including preparing independent cost estimates of proposed changes smaller than $100,000 to compare with Contractor's cost proposals, prepare claims analyses and estimates, and perform cost-benefit analyses of proposed accelerations, schedule workarounds, and claim mitigation. All independent cost estimates will be prepared prior to receiving the contractor's proposal and reviewed by Link Project Control (LPC) for accuracy and consistency of the format. Independent cost estimates of Contractor's proposed changes greater than $100,000 will be prepared by LPC.
- The Schedulers (CM Scheduler) will review the Contractors preliminary construction schedule and verify compliance with contract schedule requirements, provide monthly review of the Contractor's monthly submittals and schedule updates, prepare a monthly summary of progress highlighting planned versus actual progress of scheduled activities, identify areas of concern, and lead the effort to report monthly trends in progress. The Schedule team will also support LPC in producing a periodic cost and schedule reports for Link management review. While CM Scheduler is responsible for construction-related scheduling activities, he/she will also work closely with the Link Project Scheduling Lead (PSL) in maintaining the U-Link project master schedule. PSL is the focal point for scheduling procedures, administrator (Super User) of scheduling software, administrator of the schedule activity codes at the EPS and Global levels. The PSL coordinates closely with the PCL to analyze and evaluate schedule performance and any impacts to the U-Link contracts. The contract baseline schedule and monthly contractor schedule submittal must be reviewed and approved by both the CM Scheduler and the PSL before progress payment is approved. The PSL also maintains the Project Master Milestones, and coordinates the overall schedule change control process with CCB.
- Construction Management At-Risk Services Coordinators will work with the Construction Management At-Risk Team of the CMC to issue, as needed, small scope projects that become necessary and have not been identified in the scope of the Contract Packages.

- The Link Inspection, Testing, and Security team will provide inspection forces, testing, quality assurance surveying, safety staff, and quality assurance as required for special inspections and site security needs.
- ST Construction Safety and Security personnel will be responsible for monitoring of the Contractor's Site Safety Program. On-site construction safety professionals, reporting to the RE, will be provided by the CMC to regularly monitor and report on the daily practices of the contractor.
- Link's quality assurance program provides surveillances, assessments, and audits to ensure compliance with construction contract document requirements and the Link Construction Manual. The QA Manager coordinates all surveillances, audits, and assessments with the REs and reports all findings, observations, and recommendations to the REs, DCMs, and the Deputy Project Director – Construction.

12.2. CONSTRUCTION CONTRACT ADMINISTRATION

Contract administration is the coordination of day-to-day actions required for the performance of a contract, including the guidance and supervision necessary to assure that all contractual obligations are fulfilled. Contract administration requirements are detailed in the Link Construction Manual, and include:

- Maintaining the integrity and accuracy of contract documents during the life of the project.
- Complying with contract documents and requirements.
- Enforcing local, state, and federal regulations.
- Performing quality surveillance of off-site manufacturing, fabrication, and testing facilities.
- Reporting contract scope, schedule, and cost/budget progress against the contract baseline.
- Managing the submittal, RFI, nonconformance, and as-built processes.
- Managing independent testing laboratories and survey services.
- Reviewing site investigations and surveys.
- Monitoring compliance with permit requirements.
- Coordination with design engineers for design support during construction.
- Daily monitoring and reporting on construction activities, equipment, personnel, and site safety.
- Ensuring quality control by overseeing, inspecting and reviewing sampling and testing of all materials and work.
- Keeping and maintaining organized and complete project records.
- Timely recording, verifying and processing of monthly pay requests.
- Negotiating and processing of change orders, supplemental agreements and other contract modifications in a timely manner.
- Utilizing claims avoidance techniques.
- Promoting good public relations and community outreach.
- Setting and maintaining a high professional standard.

12.2.1. Construction Management Consultant (CMC)

The University Link construction management organization will consist of an integrated team of consultants and Sound Transit staff. Each construction contract will be assigned a CM or Deputy DCM and a CMC Resident Engineering (RE) team. The RE reports to the CMC Program Manager and to the Link CM or DCM as shown in Figure 12-1 U-Link Construction Management Organization. The RE teams will generally be comprised of an appropriate number of staff commensurate with the size and complexity of the contract. This staff may include an Office Engineer, construction engineer or Assistant RE, administrative support staff, a Data Management Specialist, a Contract Change Specialist, assistants, inspectors, and a Project Control Lead. Estimators, schedulers, additional data management, engineering and architectural technical resources (including safety and security specialists), testing, and survey support may be provided as additional site staff depending on the size, anticipated extended hours, complexity, or changes in contract requirements. Systems construction inspection, systems integration, and testing support are also included in the CMC scope of work.

12.3. CONSTRUCTION SAFETY

Link construction safety requirements and guidelines are found in the Construction Safety and Security Manual, which is being revised to incorporate additional University Link construction requirements, including those added by the UW Master Implementation Agreement. The contractors will be required to submit site-specific safety plans and incorporate as Job Hazard Analyses (JHA) into construction work plans.

Various measures are available to Link to improve jobsite safety during construction. Several of the most important will occur before construction is undertaken. These include the consideration of safety in design, choice of technology, and education of staff. Educating workers and managers in proper procedures and hazards has a direct impact on jobsite safety. The realization by Link CM of the large costs involved in construction injuries and illnesses provides a considerable motivation for awareness and education. Each construction contractor will be required to staff a full-time Safety Manager who will be responsible for jobsite safety. Link will assign a Safety Specialist to oversee construction safety and report to the RE and the Sound Transit Safety and Security Managers. The CMC will also provide Safety and Security technical support services.

During the construction itself, the most important safety related measures followed by construction management staff are to insure vigilance and cooperation on the part of managers, inspectors and workers. Vigilance will involve considering the risks of different working practices. It will also involve maintaining temporary physical safeguards such as barricades, braces, guy-lines, railings, and toe boards. Standard practices will be used, such as:

- Requiring mandatory, site-specific safety orientations for all site visitors, as well as contractor, CMC, and Link staff.
- Providing special equipment, if required, such as personal self-rescue ventilation devices for individuals entering tunnels and enclosed working environments.
- Requiring hard hats on site.
- Requiring eye protection on site.
- Requiring hearing protection near loud equipment per industry safety standards.
- Requiring safety shoes for workers.
- Providing first-aid supplies and safety training for personnel on site.

- Conducting regular safety inspections and safety meetings on each job site.
- Requiring safety certified personnel on site.

12.4. CHANGE ORDER CONTROL

Changes to Link contract documents during construction are controlled in accordance with the Sound Transit Contract Administration Manual, the Link Construction Manual, and the Link Project Control Procedures. These documents identify applicable processes, roles and responsibilities, monetary authority levels, Change Control Board requirements, and documentation for contract changes.

An executed change order is the only instrument capable of finalizing changes to contract documents. Prior to an executed change order, a number of documents may be used to establish the need and scope of a contract change. Requests for changes may be originated by the contractor or third parties and provided to the RE for consideration. The CM staff may originate changes by issuing a Change Notice – Request for Proposal (CN-RFP) to the contractor. The contractor is then required to provide the RE a proposal in response to the CN-RFP that will be the basis for negotiations. A Change Notice – Work Directive (CN-WD) may be issued to the contractor directing a certain scope of work that needs to be performed immediately. A force account is then established to monitor work accomplished against the CN-WD. Each type of change notice must be formalized by executed change order. Change activity will be provided to the CM as part of the weekly RE report.

Link may direct the RE to issue unilateral changes to the contractor when necessary to maintain the progress of the work or when an impasse in negotiations occurs.

12.5. PAYMENT AND CLAIMS CLOSE-OUT

12.5.1. Payment

Payments to contractors for University Link will be controlled in accordance with the Link Construction Manual, the Link Project Control Procedures, and the contract documents. These documents define the requirements for measurement of quantities, payment for material on hand but not installed, progress payments, reporting, time and material consideration, and the tracking of certified payrolls.

Link will maintain documentation to support all quantities of work performed and payments made to the contractor and will ensure the following:

- Satisfaction of contract technical and administrative requirements by the contractor.
- Prompt and fair payment to the contractor.
- Satisfactory progress of the work.
- Current, orderly, and accurate payment records.

The review of contractor pay requests will include ensuring that the contractor completes work as provided in the contract before making payment. Link will pay only for those materials incorporated into the work in accordance with the contract and will ensure that the contractor assumes liability for completion of the work until final acceptance. Payments will be based on an approved schedule of values. The contractor is expected to repair or replace any defective parts or materials if such defects are discovered on or before final inspection and acceptance of the work.

12.5.2. Construction Claims

The goal of the Link project organization is to avoid disputes and claims through a process of planning and coordination that results in complete and accurate contract documents. The responsibility for understanding and instituting procedures to improve communication and minimize the number and severity of claims rests at all levels within the Link project organization.

Each construction contract includes requirements and procedures for notifying and responding to claims that arise between contractors and Sound Transit. The Link Construction Manual and the Link Project Control Procedures provide methods that permit construction to proceed while claims are reviewed and ultimately settled.

Link has established a claims management process that includes progressively increasing levels of mitigation and settlement. Staring with discovery and fact-finding, the scope and details of teach claim will be established and clearly defined. Negotiation will be the preferred method for settling claims. A dispute resolution process, as described in Chapter 14 provides the next level of arbitration and mediation available to resolve a claim. Finally, litigation provides the highest level, although least desirable, avenue for resolution and settlement.

12.6. LOGISTICS PLAN

12.6.1. Materials Handling and Logistics Planning

Planning for construction material delivery and storage is being considered as part of the constructability reviews during final design. Requirements for staging areas, as well as locations for field assembly, such as rail welding, will be specified in the contract documents of the appropriate contracts.

12.6.2. Owner-Furnished Materials and Equipment Handling

When appropriate, Link will procure system-wide materials and equipment in order to leverage pricing advantages, standardize the type of equipment or material used, and to acquire specialized long-lead items. Examples of this material are the tactile path, platform edge warning pavers, and ticket vending machines. The procurement, off-site storage, delivery to the job site, and proper job-site storage of such materials will be in accordance with the terms of the appropriate contract.

12.6.3. Construction Materials Storage and Logistics

The planning, procurement, delivery, and storage of construction materials and equipment are the responsibility of each contractor. Contractors must notify the RE of delivery and storage plans shortly after notice to proceed is provided. Material deliveries and storage on construction sites or at Link approved off-site storage areas are monitored by the RE. Contractors may provide their own off-site storage for materials and equipment with delivery to the construction site as needed. Security arrangements for off-site storage are to be reviewed by the Sound Transit Safety and Security Manager and approved by the RE. Periodic payment for materials shall be made only for those materials stored physically on site or at an off-site storage area that is in accordance with the terms of the contract and has been approved by Link.

12.6.4. Materials Testing and Quality Control

Each Link construction contractor must submit a materials test plan in compliance with the contract specifications. Contractors are required to submit test results and to retain copies that are available to

Sound Transit on request. In addition, CMC and Link Quality Assurance Specialists perform periodic audits of the contractor's materials testing process and procedures to ensure the timeliness of reporting, accuracy, and completeness of test reports and documentation, and the tracking of retesting where test failures occur.

12.6.5. Temporary Site Facilities

Temporary facilities, such as field offices will be provided by each contractor for the CM staff. The main office for field operations for the construction management organization will be installed near the Capital Hill station and be completed by the U211 contractor. Job site facilities will also be provided also at the University of Washington site and be put in place by the U220 contractor. A third facility will be located on property currently owned by Sound Transit near the work location at I-5 and Pine Street to provide job site facilities for the U215 project. This work may be done by the U215 Contractor or completed by Sound Transit prior to the U215 award. Sound Transit is currently working on finalizing the facility needs with the CMC for inclusion in the appropriate construction packages. The intent is to deploy the majority of the Construction Management organization to the temporary site facilities. Maintenance of these temporary site facilities will be described in the various U-Link contract documents.

12.7. VALUE ENGINEERING

During the construction phase for University Link, value engineering opportunities in identifying unnecessary costs in construction and in soliciting or proposing alternative construction technology to reduce costs without sacrificing quality or performance requirements may be considered. Contractors who are willing to examine construction alternatives when offered incentives for sharing the savings by Link will examine alternatives in accordance with appropriate Link contract provisions. Contractors may take advantage of proprietary or unusual techniques and knowledge specific to the contractor's firm. The contractor may offer new construction insights, which are not mentioned in the contract documents. Cost, schedule, scope, quality, risk, and impacts to third parties will be reviewed and analyzed prior to accepting value-engineering proposals. The review, evaluation, and processing of value engineering proposals will be in accordance with the Link Construction Manual.

12.8. AS-BUILT DRAWINGS

Preparing, reviewing, accepting, and retaining University Link as-built drawings and specification will be controlled in accordance with the Link Construction Manual and the Link Project Control Procedures.

Whenever changes, additions or deletions from the original design are made during construction, each Contractor is required to note it in the contract drawings and specification in accordance with the contract specifications. Each contractor must maintain as-builts of all work continuously as the job progresses. The RE will be responsible for the following:

- Monitor the preparation of the working as-builts.
- Ensure that redline as-builts are available for review upon request.
- Assure that the as-built drawings and specifications reflect the incorporation of filed clarifications, field markups, change notices, and change orders.
- Transmit reline as-built updates to CADD staff.

Upon completion of the work, the working as-builts will be delivered to the RE for review and approval, and will be the basis for the final as-builts. Link CADD and the Design Support During Construction staff will assist the RE in validating the completeness and accuracy of the as-builts.

13.0 REQUIREMENTS FOR INTERAGENCY AND MASTER UTILITY AGREEMENTS, APPROVALS, AND PERMITS

Implementation of the University Link Project requires close coordination with permitting agencies, the City of Seattle, the University of Washington, King County Metro, WSDOT, and affected public and private utilities. This chapter provides an overview of the major third party agreements and expected permit requirements identified for the Project.

A number of land use, environmental and construction permits are required from several agencies in order to complete the University Link Project. Table 13-1 Project Permits provides a list of the major permits that will be obtained for each contract prior to issuing the notice to proceed, in support of University Link construction activity.

Table 13-1 Project Permits

Contract	Agency	Permit Type	Comment
U210 (UWS Utility Relocations)	DPD	MUP	UWS MUP for Shoreline, Demo, & Staging.
	DPD	Building Demo	No DPD grading permit required for utility trenching.
	KC/DNR & SPU	IWP or MDA	IWP or MDA may not be needed for this contract.
U211 (CHS Demolition and Remediation)	DPD	MUP	CHS MUP for Staging & Demolition. Application also includes approval for excavation component associated with U230 at CHS location.
	DPD	Building Demo	
	KC/DNR & SPU	IWP or MDA	KC/DNR Industrial Waste Permit or Major Discharge Authorization yet to be determined.
	DPD	Shoring/Excavation	No DPD grading permit required for utility trenching.
	SDOT	Street Use Permit	Owner-Furnished for tensioned tie backs under City ROW.
	SDOT	Street Use Permit	Contractor-Furnished for street and sidewalk closures.
U215 (I-5 Undercrossing)	DPD	MUP	MUP for Staging & Grading. Application also includes excavation component associated with U230 at Pine Street.
	SDOT	Street Use Permit	For tiebacks under City ROW. Owner Furnished. Tiebacks de-tensioned afterwards.
	KC/DNR & SPU	IWP or MDA	KC/DNR Industrial Waste Permit or Major Discharge Authorization yet to be determined.
	WSDOT	ASL	For work inside WSDOT property on Pine Street I-5 off-ramp and tunnel under I-5.

(Continued)

Contract	Agency	Permit Type	Comment
U220 (UWS Excavation and Tunneling)	DPD	MUP	Part of UWS 210 MUP.
	SDOT	PCP	
	DPD	Shoring	
	ACOE	Section 10	Environmental permits under JARPA and includes U210.
	DOE	CZMA	Environmental permits under JARPA and includes U210.
	WDFW	HPA	Environmental permits under JARPA and includes U210.
	WSDOT	ASL	For tunnel under SR-520.
U230 (CHS Excavation and Tunneling)	DPD	MUP	U230 excavation at CHS is tied to the U211 MUP. U230 excavation at Pine Street is tied to the U215 MUP.
	SDOT	PCP	One SDOT PCP for both U230 & U240.
	KC/DNR & SPU	IWP or MDA	KC/DNR Industrial Waste Permit or Major Discharge Authorization yet to be determined.
	DPD	Demo/Grading	
U240 (CHS Finishes)	DPD	MUP	CHS Finishes.
	DPD	Building	
	SDOT	PCP	One SDOT PCP for both U230 & U240.
	KC/DNR & SPU	IWP or MDA	KC/DNR Industrial Waste Permit or Major Discharge Authorization yet to be determined.
U250 (UWS Finishes)	DPD	MUP	UWS Finishes.
	DPD	Grading	
	SDOT	PCP	
	SDOT	Ped Bridge Application	For UWS ped bridge
	KC/DNR & SPU	IWP or MDA	KC/DNR Industrial Waste Permit or Major Discharge Authorization yet to be determined.
	WSDOT	ASL	For ped bridge over Montlake Blvd.
U820 (OMF Modifications)	DPD	Electrical	No SDOT PCP required. Only electrical for OCS from DPD.
	DOE	Renewed Individual Systemwide NPDES	
U215, U220, & U230	DPD	Technical Noise Variance	One application to cover all 3 sites.
U215, U220, U230, U240, & U250	DPD	Electrical	
Systems Contracts	SDOT	PCP	

(Continued)

Abbreviations			
Agencies		**Permits**	
DPD (City of Seattle)	Dept. of Planning & Development	HPA	Hydraulic Project Approval
SDOT	Seattle Dept. of Transportation	PCP	Project Construction Permit
SPU	Seattle Public Utilities	CZMA	Coastal Zone Management Act
KC/DNR	King County Dept. of Natural Resources	IWP	Industrial Waste Permit
WSDOT	Washington State Dept. of Transportation	UFP	Utility Franchise Permits
WDFW	Washington Dept. of Fish & Wildlife	ASL	Airspace Lease
DOE (Wash. State)	Dept of Ecology	NPDES	National Pollutant Discharge Elimination System
ACOE	Army Corps of Engineers	JARPA	Joint Aquatic Resource Permit Application

13.1. CITY OF SEATTLE

Sound Transit and the City of Seattle have an existing Memorandum of Agreement (MOA) in place that governs agency coordination, responsibilities, and project requirements. On May 16, 2007, the University Link Supplement was executed by the agencies as an amendment to the MOA. The University Link Supplement provides for City of Seattle final design reviews and approvals to construct the Project within City rights-of-way.

In addition, on October 23, 2007, Sound Transit and the City of Seattle executed Amendment No. 1 to the City of Seattle Transitway Agreement. This amendment incorporates updated Link light rail alignment maps and includes process requirements for City review and approval of the proposed University of Washington Station (UWS) pedestrian bridge.

City of Seattle land use approvals are granted through the issuance of Master Use Permits (MUPs) for each major Project work site. For major construction contracts, the City must also issue Project Construction Permits (PCPs) that spell out City permit, mitigation, or other construction requirements.

Sound Transit will also be required to obtain owner-furnished administrative permits from the City for each construction contract, including, but not necessary limited to, building, electrical, drainage, and right-of-way (i.e., temporary street use) permits. Owner furnished administrative permits should be secured prior to the end of the bid period but no later than the notice to proceed to the contractor. Other selected permits shall be obtained by the contractor (e.g., hauling permit) as required by the contract documents.

The Seattle Light Rail Review Panel (LRRP), made up of members from the Seattle Design, Planning and Art Commissions, provides design review of the University Link Project station designs at the 30%, 60% and 90% design milestones.

Design and construction issues affecting Fire/Life Safety are being coordinated with the Seattle Fire Department through the Sound Transit Fire/Life Safety Committee.

Sound Transit is also coordinating design and construction reviews with Seattle Public Utilities (SPU) and City Light to ensure proper utility protection or relocations occur during construction. Their requirements are being incorporated into contract documents.

Prior to the start of construction, Sound Transit and the City of Seattle will execute a construction services agreement to provide funding for any construction-related Project work (such as inspections or utility relocations) that would be performed by City personnel.

13.2. UNIVERSITY OF WASHINGTON

Sound Transit and the University of Washington (UW) have entered into a Master Implementation Agreement (MIA) in order to:

- Define and assign cost-sharing responsibilities.
- Convey UW permanent property easements and access rights to Sound Transit.
- Establish schedule requirements and risk sharing principles.
- Establish management protocols coordination requirements.
- Clarify liability and insurance responsibilities during LRT construction on UW property.
- Address operating protocols and insurance responsibilities during LRT operations on UW property.
- Secure UW resources to review project final design deliverables and provide coordination during construction.

The MIA was approved by the Sound Transit Board and the University of Washington Board of Regents and executed on July 2, 2007. Sound Transit is coordinating station design, construction staging, operation plan and other reviews with UW staff to achieve UW approvals prior to Project construction.

13.3. KING COUNTY METRO

Sound Transit and King County Metro are currently working under an existing Memorandum of Understanding (MOU) that includes:

- King County's review and endorsement of transit route assumptions used in the travel demand (ridership) forecast model.
- The review of transit facilities at stations during the design review process.
- The review of environmental documents, as necessary.

13.4. WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT)

Sound Transit and the Washington State Department of Transportation (WSDOT) are currently working under an existing MOU that includes work performed by Task Order.

Task Order N-4 was executed with WSDOT on April 28, 2008 to provide WSDOT final design reviews and approvals necessary to allow construction of University Link Project elements within WSDOT rights-of-way.

Specific tasks include the development and execution of an airspace lease or tunnel easement where the project tunnels under I-5 and SR-520. In addition, an airspace lease will also be needed for the University of Washington Station pedestrian bridge over Montlake Boulevard (SR-513).

Prior to the start of construction, Sound Transit and WSDOT will execute a construction services task order to provide funding for any construction-related Project work (such as inspections or traffic maintenance activities) that would be performed by WSDOT work crews.

13.5. OTHER

During the design and construction of University Link, Sound Transit will coordinate with private utility companies that may be affected by Project construction. These companies include Puget Sound Energy, Qwest and Telecomm companies.

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14.0 DISPUTE RESOLUTION

During University Link construction, Sound Transit will use two primary strategies to facilitate dispute resolution. These strategies are a partnering process and a disputes review board.

Partnering

Sound Transit has developed a formal partnering process to help successfully conduct construction contracts, and may implement this process on University Link if appropriate. Sound Transit recognizes that partnering is a business endeavor with multiple phases over the span of each contract. Sound Transit's partnering approach includes four distinct phases.

Phase I – Sound Transit initiates every partnered contract with a joint session for top executives. The focus is to achieve consensus on what "Partnering" means; identification of contractor/agency executive-level business objectives; and a common understanding of roles and responsibilities.

Phase II – Sound Transit coordinates a "workshop" where all interested parties are invited to participate in the development of an execution plan for the contract. The execution plan includes a mission statement combined with team conduct guidelines and strategic goals. The plan also includes detailed action plans and assigns responsibilities in order to achieve the plan's goals. During this workshop, the parties are challenged to develop effective issue resolution and evaluation procedures that are used in Phase III.

Phase III – All participating parties are strongly encouraged to follow-through on the plan developed in Phase II. This involves focused implementation and candid evaluation of the execution plan for the duration of the contract. Critical in this phase is assuring that the issue resolution process is working effectively. This phase includes half-day sessions (quarterly or semi-annually) to welcome new participants, update the execution plan, recognize successes, and identify new opportunities for improvement.

Phase IV – The plan is closed out and feedback is provided to all participants. This feedback provides insights on what worked well, what didn't work well, and what could be done on future contracts to improve the partnering process. This is also the time to reward distinguished performance of teams and individuals.

Disputes Review Board

Sound Transit's construction management approach includes provisions for Alternative Disputes Resolution (ADR) to resolve disputes and avoid litigation. In particular, Sound Transit utilizes a Disputes Review Board (DRB) as an ADR approach to provide early attention to disputes arising during contract execution. Sound Transit includes provisions in a contract for a DRB whenever that contract involves geotechnical, construction or contracting features that historically have lead to substantial claims or disputes.

The DRB provides an impartial review of disputes by mutually accepted experts. The DRB does not replace the disputes notification and claim process indicated in the contract documents and is not intended to diminish Sound Transit or Contractor responsibility of making a good-faith effort to settle their disputes. Rather, it is an early, non-binding, step that is directed at avoiding the need to resort to other more expensive and time consuming methods, such as litigation.

The DRB is established through a three-party agreement between Sound Transit, the Contractor, and three subject matter experts who serve as DRB members. The agreement outlines the scope of the DRB

services and the rights and responsibilities of the parties. The agreement also establishes the process for reviewing a dispute with the DRB. In general, the DRB is engaged when either Sound Transit or the Contractor believes that bilateral negotiations are not likely to succeed or have reached an impasse. The role of the DRB is to review and evaluate the facts of each dispute. These assessments typically involve interpretations of the contract documents, and evaluating documentation regarding delays, acceleration, scheduling, extra work, differing site conditions, or design changes. The DRB is kept informed of construction activity and other developments by means of activity status updates and periodic site visits.

15.0 SAFETY AND SECURITY

Sound Transit prepared and submitted the University Link Safety and Security Management Plan (SSMP) that was approved by the FTA/PMOC in August 2007. All aspects of safety and security for University Link from preliminary engineering up to the start of revenue operations are described in this plan. In addition to the design criteria and national standards, a series of safety and security lessons have been learned on previous projects and operations (such as over the course of Tacoma Link start up and Central Link planning and construction) and these will be incorporated into University Link. The SSMP will be revised as required, including an update to be submitted with the Full Funding Grant Agreement (FFGA) application.

15.1. SAFETY AND SECURITY CRITERIA

The Link Fire Life Safety Committee consisting of fire, police, safety, security, operations and quality personnel, building on previous Central Link efforts, will evaluate the need for revisions or updates to the Sound Transit safety and security criteria that address any peculiar or unique hazards of the University Link stations and/or underground environment. The primary function of the Fire Life Safety Committee is to jointly review designs and develop mitigations to identified hazards and threats with the local authorities having jurisdiction, and, to incorporate these safety and security improvements into the design. Final approval of proposed mitigations will be made by Link Change Control Board. Specific certification requirements can be found in the North Link and Airport Link Design Criteria Manual.

15.2. HAZARD MANAGEMENT ANALYSIS

The Hazard Analyses and Threat and Vulnerability Assessments for Central Link will be updated by Sound Transit to identify any major safety and security issues and physical conditions that should be addressed and resolved throughout final design and construction. This is an iterative process and will continue into and through operations. Additional information on this task can be found in the System Safety and Security Program Plan.

15.3. CONSTRUCTION SAFETY AND SECURITY

Building on existing procedures for monitoring contractor compliance with safety and security contract submittal documents, Sound Transit will perform field verification of these elements. Exceptions or observations will be immediately transmitted to the Resident Engineer and contractor supervision. Recommended practices will be provided as necessary.

Sound Transit will consistently identify and address those areas of overall system design and construction activities that will have an ultimate impact upon the safety and security of the operational system. This effort will identify safety or security-related design and construction issues in these two major areas:

- Security/safety of personnel who are within or in the immediate vicinity of the University Link, its ancillary structures, and equipment at the construction sites.
- Security/safety of the system itself, including the rolling stock, track, stations, yard and shops, and all other ST facilities, equipment, and property.

Additional information on this task can be found in the Link Construction Safety and Security Manual and site-specific security procedures.

15.4. SAFETY AND SECURITY CERTIFICATION

For Link light rail programs, system safety certification is required by the State of Washington DOT. The Link System Safety Program Plan states that Link light rail will self-certify. A safety certification process will be performed to document that all systems safety and safety certification activities have been met and the system is ready for passenger service. This will be followed by an independent audit of the of the safety certification process. On completion of University Link, Link will submit a copy of the Link System Safety Program Plan, along with audit results, safety certificates and other supporting documentation to the State of Washington DOT, which has authority for safety oversight approval.

Once University Link construction and installations are nearing completion, Sound Transit must inspect, test, and certify completion of the fixed facilities and systems installations contract-by-contract and the verify safety and security critical installed systems components function as specified. Sound Transit and its consultants will conduct integrated tests and commence pre-revenue test operations and training of operational staff. The Safety Certification Program Plan (SCPP) provides a systematic program plan to ensure all Link criteria, designs, procurement, construction, transit facilities, systems equipment, procedures, plans, and training programs are analyzed and reviewed for compliance with safety requirements and certified prior to revenue service. The SCPP also validates that normal, abnormal, and emergency operating and maintenance procedures are sufficient to maintain the overall operating safety of the system. The safety and security certification process is described in detail in the Link Safety Certification Program Plan.

16.0 PLANNING FOR OPERATIONS START-UP

16.1. RAIL ACTIVATION PLANNING

University Link will develop a Rail Activation Plan (RAP) and Systems Integration Test Plan (SITP) for University Link as the basis for development of the University Link RAP and SITP. The RAP will identify activities that must be completed in a timely and systematic manner in order to ensure a successful start-up of the line for passenger service. The RAP will also identify tasks, assigns responsibilities and provides time frames for their completion. Time frames take into account sequences, identifying prerequisites and dependencies. The SITP will be a comprehensive integrated test plan to ensure that all elements of the system conform to specifications and function in a prescribed and integrated manner, and that all elements and all personnel are able to function effectively together to provide a safe and reliable passenger service. The SITP will focus on systems integrated testing, critical equipment/facilities tests, systems readiness drills, and pre-revenue service.

The Rail Activation Group (RAG) formed under the leadership of a Rail Activation Manager (RAM) for the Initial Segment and Airport Link will also have responsibility for University Link start-up activities. The activity of the RAG will continue beyond the start of Initial Segment revenue service in order to support University Link. Testing and Startup teams will be formed, consisting of Sound Transit staff, engineers, specialists and CMC personnel, contractors, and operations specialists. Their function will be to plan and oversee the testing, checkout, acceptance, and startup of systems and facilities. Testing of fire/life safety equipment will include local fire services personnel as required. The RAG will coordinate with the contracted operator for the light rail system, emergency responders, and the Washington State Department of Transportation (Rail Fixed Guideway Safety Oversight office). Security aspects, including coordination with the Department of Homeland Security will be as prescribed by the Safety and Security Management Plan.

16.2. INSPECTION, TESTING, AND CERTIFICATION

Materials to be used in Sound Transit Link light rail facilities and systems will be certified in accordance with national standards, as indicated in and required by the applicable specification.

Link will implement a comprehensive inspection and acceptance program for civil construction and systems elements for each of the transit facilities included in the University Link project. This will include materials inspections and tests, in-process inspections and tests during construction, and final inspection and acceptance of individual facilities. Inspections will be performed by the CMC to ensure completion of construction according to specifications and verify readiness for safe operations. Link or its contractors will prepare facilities inspection and acceptance procedures. Facilities inspections and acceptance will be documented in inspection and test reports produced or accumulated by the CMC, which will become part of the permanent record of the project.

Testing of light rail vehicles, electrical infrastructure, supervisory control and data acquisition (SCADA), traction electrification, signals, communications, corrosion control, ventilation, fire protection/safety, and security will occur during construction and start-up activities. The results of all tests will be documented in signed test reports, which will be maintained by Link as permanent records. The following describes the tests conducted in support of University Link start-up activity.

Component and Subsystem Testing

System components and subsystems will be tested independently, as well as after integration into the system or subsystem assemblies to verify compliance with technical specifications. Component testing will be the responsibility of the manufacturers or contractors with independent test verification provided to Sound Transit for review and approval of test reports. Required component and subsystem tests will be identified in individual contracts by Sound Transit with test plans prepared by the contractor, subject to the approval of CMC staff. Link is responsible to ensure that testing is performed in accordance with approved procedures and that all requirements are satisfied.

Factory Verification Tests

In-process acceptance tests will be conducted at the material, component, assembly, or subsystem level during production of equipment to verify compliance with contract specifications. Production verification tests will be performed at the manufacturer's facilities, independent laboratories, or agency facilities. Required factory verification tests will be identified in individual system test plans and be prepared by the contractor for approval by CMC staff. These tests will be included in the contract specifications and are a prerequisite to integration testing.

Subsystem Acceptance Tests

In-process acceptance tests will be conducted at the subsystem level to ensure that onsite installation is in accordance with approved design and contract specifications. Acceptance tests at the subsystem level will verify that the subsystems perform as specified. Subsystem acceptance tests will be a prerequisite for integrated systems testing. Required subsystem acceptance tests will be identified as part of the Test Program Plan and in appropriate contract documents.

Systems Integration Testing

Systems integration tests will be performed to ensure that all elements of the transit system are functioning together properly. These tests generally involve comprehensive verification of system functionality. These tests include contractually required tests; some tests will require the use of a train and a train operator; and non-contractual tests that will be the responsibility of the Link systems team. Integration testing is closely related to the safety and security certification process, since certain safety certification requirements cannot be confirmed until systems integration testing has been successfully completed. Each integration test will be fully documented to define the test procedure, acceptance criteria, and the test results. Required systems integration tests will be defined in the SITP.

All testing will be performed in accordance with Link light rail Operating Rules and Standard Operating Procedures (SOP).

Fire/life-safety equipment testing will be carried out in accordance with applicable codes and standards.

Construction Materials Testing

Link construction contractors are required to submit construction materials testing plans at the start of construction, and results of materials tests during construction. Materials testing is a Federal Transit Administration (FTA) requirement for federally funded transit projects, so documentation of materials testing plans, procedures, and results are required. Testing requirements for specific construction materials are defined in each civil and system contract.

In-process Inspections during Construction

Selected in-process inspections and tests are conducted during construction by the CMC to ensure that supplied materials meet specified standards and that facilities are constructed in accordance with specified workmanship standards and contract specifications. The results of inspections and tests conducted during construction by the contractor are fully documented in test reports and submitted for approval by the respective RE. In-process construction inspections and tests are planned for and discussed in the Construction Manual. The Link Construction Manual, Link Standard Specifications for Facilities Construction, and contract specifications address testing requirements during construction.

Facilities Checkout and Acceptance

Each University Link construction contract will include provisions for inspection and acceptance of the constructed facility. Link Construction Management Division has established a facility checkout and acceptance procedure to ensure that all constructed facilities are fully inspected and accepted by Sound Transit project engineering, quality, construction management, safety, security, operations, and CMC personnel. Final acceptance and readiness for operations will require systems installation, testing, and other preparations. Emergency response agencies, in conjunction with Sound Transit staff and King County Metro, will conduct familiarization activities. At the appropriate time, certain rail sections will be selected for full and partial emergency response drill and exercises. Final acceptance will be subject to satisfactory completion of Safety and Security Certification, as defined in Chapter 15.

Pre-Revenue Operations Tests

University Link will undergo pre-revenue operations tests, during which the system will be tested in simulated passenger service operations. This will mean full-scale operations with Link light rail trains. During this period, operating systems, manuals and training will be confirmed and updated. System safety and security elements will be tested, along with emergency response systems and procedures. During pre-revenue operations, Link contractors will be involved, as needed, to prepare the system for full passenger service operations. Before revenue service, Link will simulate passenger service to test that all system elements are functional and performing as designed. A startup operations team, appointed by the RAG, will verify the competence of personnel and ensure a smooth transition from construction through testing to revenue service.

16.3. OPERATIONAL READINESS

Operational readiness will be demonstrated and documented before passenger revenue startup of any transit system or facility. Operational readiness begins during the design phase, in conjunction with operational reviews of specifications, designs and plans. This section describes some of the key elements of operational readiness that will be addressed by Link before start of revenue services.

Sound Transit will hire experienced light rail operations and maintenance staff in order to address operational and maintenance issues during the project planning, design, and construction phases. These operations experts will be assisted by rail operations consultants, as needed to complete the necessary design reviews, operations planning, incorporation of safety and security lessons learned, and system safety requirements early in the development process. Operations staff (including contracted operators and maintainers) and consultants responsible for the operations of light rail will report to the Link Operations and Maintenance (O&M) Manager. The Link O&M Manager reports to the Director, Transportation Services in the Operations, Projects & Corporate Services Department.

Sound Transit has selected King County Metro (KCM) as the Operations and Maintenance contractor for the Initial Segment and Airport Link. This contractual agreement may be extended to University Link. KCM is required to:

- Operate and maintain the Link light rail system and prepare and submit an annual budget for Sound Transit staff review and Sound Transit Board approval.
- Provide personnel to operate and maintain the system in accordance with the level of service requirements detailed in the Intergovernmental Agreement (IGA).
- Participate with Link Light Rail Operations Division, Link Engineering Divisions and Link Construction Management in the final integrated testing and acceptance of systems and facilities.
- Meet all other requirements of the IGA, which is the enabling agreement between KCM and Sound Transit for KCM to operate and maintain Link light rail.

Operations and Maintenance plans will be prepared by the TSD Link Operations & Maintenance staff. The Link O&M Manager will be responsible for maintaining and updating those plans.

Contracts for Link systems and subsystems will include requirements to provide appropriate operations and maintenance manuals, as well as system training. Contractors will prepare operations and maintenance manuals for each major system and facility during final design. Operations and maintenance manuals will be updated during construction and startup to reflect field changes affecting configuration, design documents, or operating and maintenance procedures. Final revisions of these manuals are part of the final acceptance of a facility or system contracts.

Oversight of the review and approval of operations and maintenance manuals is the responsibility of the Link O&M Manager.

16.4. TRAINING

Link light rail will establish a training program to educate and/or familiarize King County Metro light rail section personnel, agency staff and emergency services personnel with the light rail transit system fire/life safety equipment, operations, and emergency procedures.

Operations and maintenance personnel will be fully trained before startup. Operations personnel involved in operating light rail vehicles and equipment must be certified and where appropriate licensed. Maintenance personnel must be certified with the systems and equipment, as well as maintenance facilities and procedures. The training records will be prepared and kept on file along with attendance sheets. Operations and maintenance manuals and procedures will be completed before training of personnel, when applicable. Adequate training for operations and maintenance personnel will be incorporated as a specific construction contract requirement for rail operations contractors for Link light rail, as necessary.

17.0 GENERAL JOINT DEVELOPMENT PROGRAM

Sound Transit will provide opportunities for project-related Transit Oriented Development (TOD) at the Capitol Hill Station. The exact nature of these opportunities will be evaluated and developed during final design. Joint development opportunities at the University of Washington Station are unlikely.

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18.0 REFERENCES

FEDERAL

(1) FTA Circular 5010.1C Grants Management Guidelines

(2) FTA Full Funding Grant Agreement and Master Grant Agreements

(3) 49 CFR 633 Project Management Oversight

(4) FTA Project and Construction Management Guidelines (2003 Update)

(5) FTA Circular 4220.1E Third Party Contracting Requirements (including the Best Practices Procurement Manual)

(6) FTA Quality Assurance and Quality Control Guidelines, Feb 2002

(7) FTA Project Management Oversight Program Operating Procedure 40, Risk Management Products and Procedures, July 1, 2006

AGENCY

(1) Sound Move – The Ten Year Regional Transit System Plan (Sound Move)

(2) Sound Move Program Management Plan

(3) Sound Transit Administrative Business Policy and Procedures

(4) Sound Transit Budget Policies and Procedures

(5) Safety and Security Management Plan

(6) Real Property Acquisition and Relocation Policy, Procedures, and Guidelines

(7) Property Management Guide

(8) Environmental Management Procedures

(9) General Provisions

(10) Environmental Work Instructions

(11) O&M Operating Rules and Procedures

(12) Procurement Manual

(13) Contract Administration Manual

(14) Information Technology Strategic Plan

(15) Guiding Principles for Employment and Contracting

LINK LIGHT RAIL

(1) Resolutions and Motions

(2) North Link and Airport Link Design Criteria Manual

(3) Link CADD/Drafting Manual

(4) Link Light Rail Standard and Directive Drawings

(5) Link Light Rail Standard Specifications for Facilities Construction
(6) Link Project Control Policies and Procedures
(7) Link Engineering Design Procedures
(8) Quality Assurance Program Plan
(9) Link Final Design Quality Plan
(10) Link Construction Quality Plan
(11) System Safety Program Plan
(12) System Security Plan
(13) Construction Safety and Security Manual
(14) Construction Manual
(15) Link Work Breakdown Structure
(16) Link Light Rail Progress Report
(17) Link Operations Plan (with DSTT Joint Bus/Rail)
(18) Central Link Rail Fleet Management Plan
(19) IS/APL Maintenance Management Plan
(20) ST-KCM Memorandum of Agreement

UNIVERSITY LINK PROJECT

(1) North Link Supplemental Environmental Impact Statement
(2) North Link Record of Decision
(3) University Link Phase Gate Process Documentation
(4) University Link Contract Unit Descriptions
(5) University Link Safety and Security Management Plan
(6) Link Safety and Security Certification Plan
(7) University Link Final Design Quality Manual
(8) University Link Project Master Schedule
(9) University Link Baseline Cost Estimate
(10) Implementation Agreement between Sound Transit and the University of Washington
(11) ST-COS Supplemental Memorandum of Agreement (MOA) for University Link
(12) University Link Real Estate Action Plan
(13) University Rail Activation Plan (future)
(14) University Link Test Program Plan (future)
(15) University Link Maintenance Plan (future)
(16) University Link Constructability Program Plan
(17) University Link Geotechnical Plan

(18) University link Project Execution Plan

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APPENDIX A

LINK LIGHT RAIL STAFFING RESOURCES

This appendix is provided under a separate cover.

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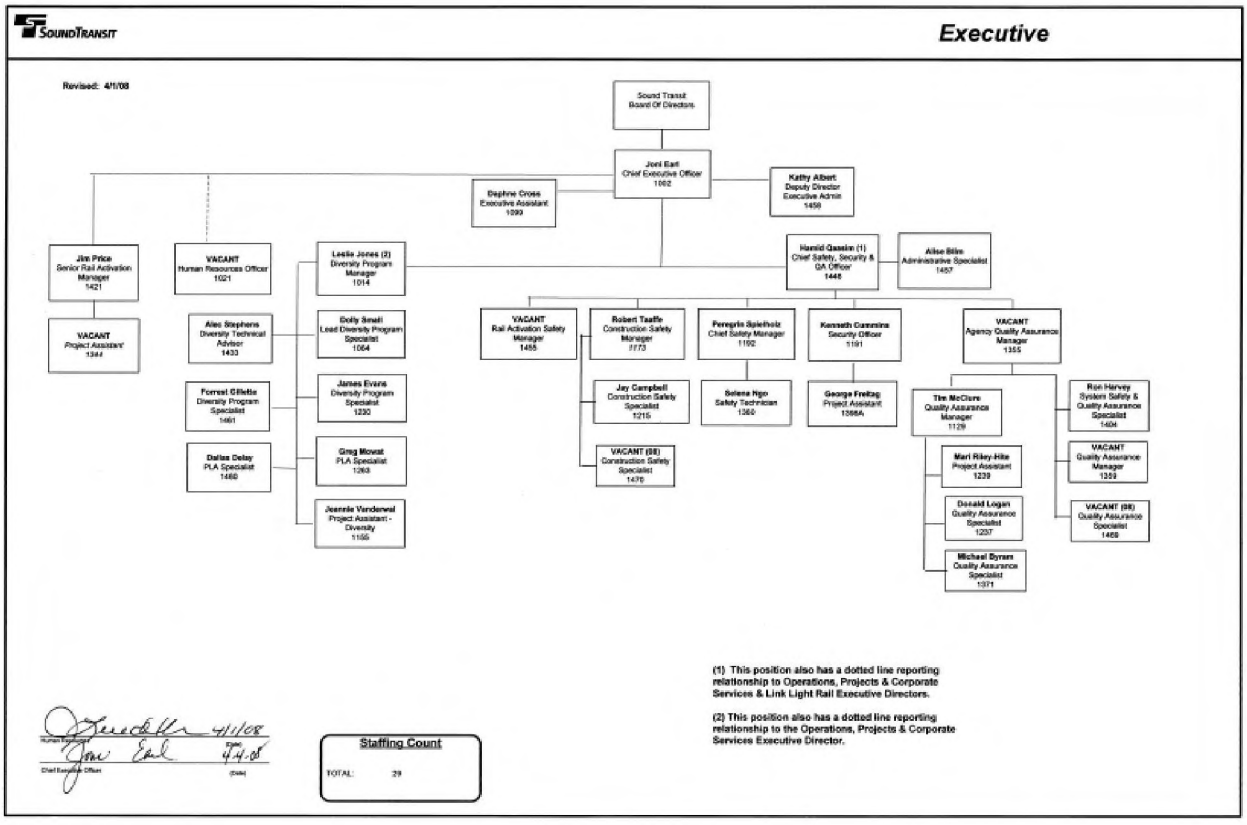
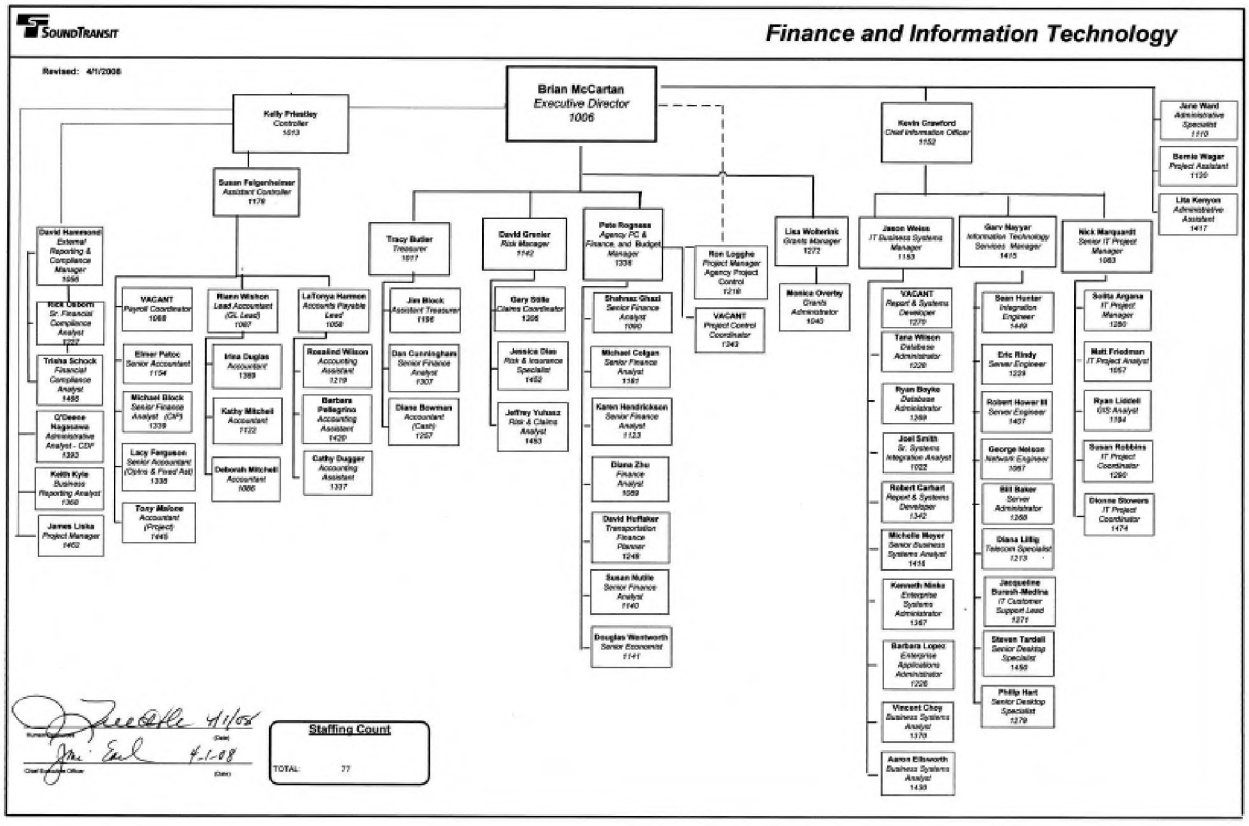
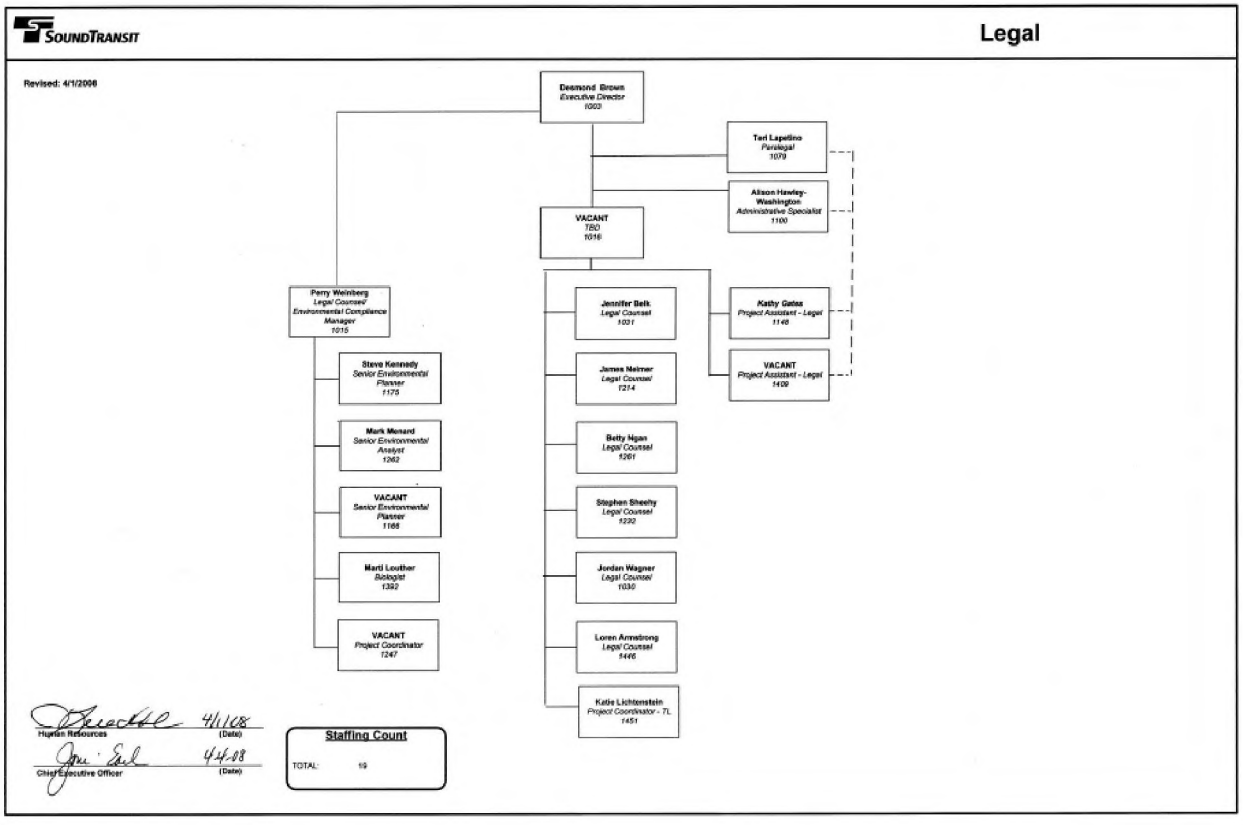
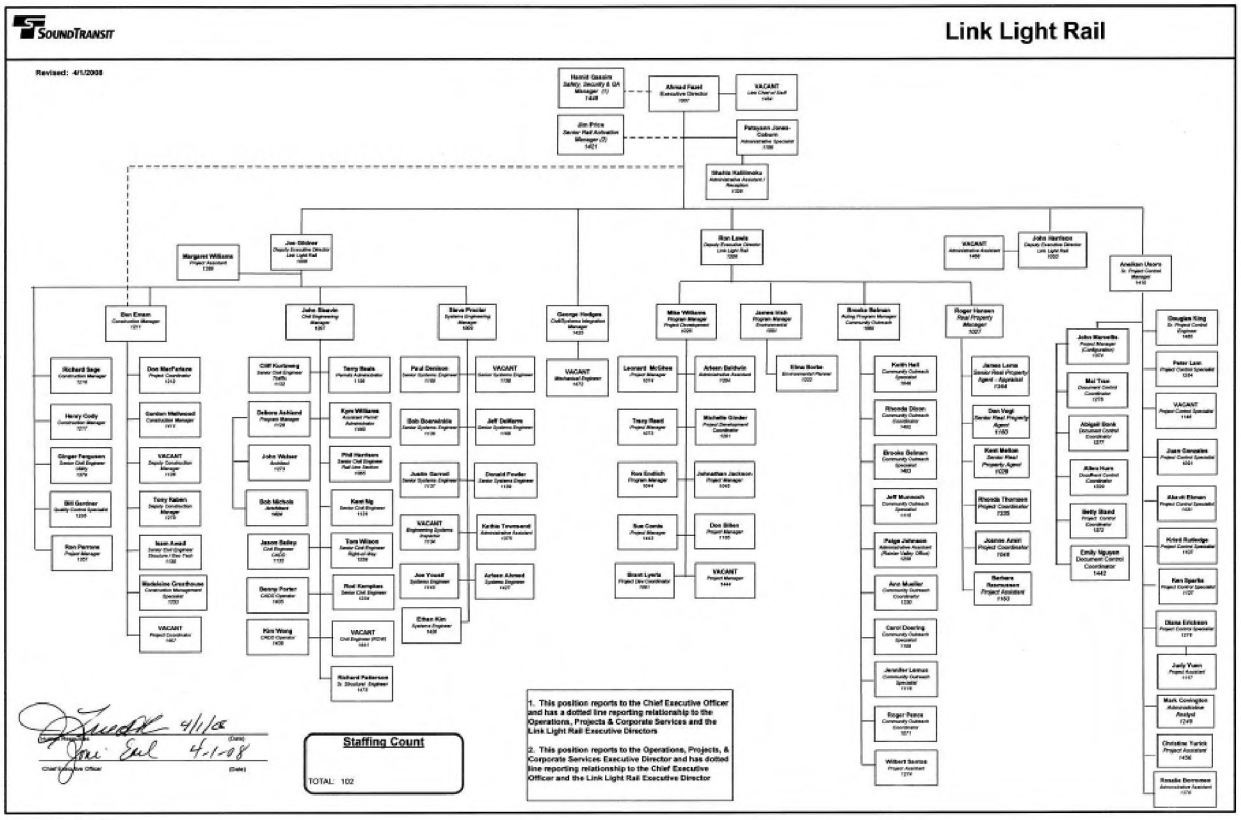
APPENDIX B

SOUND TRANSIT ORGANIZATION


SOUNDTRANSIT
Executive
Revised: 4/1/08
Sound Transit Board Of Directors
Joni Earl Chief Executive Officer 1002
Daphne Cross Executive Assistant 1099
Kathy Albert Deputy Director Executive Admin 1450
Jim Price Senior Rail Activation Manager 1421
VACANT Project Assistant 1344
VACANT Human Resources Officer 1021
Alec Stephens Diversity Technical Advisor 1433
Forrest Gillette Diversity Program Specialist 1461
Dallas Delay PLA Specialist 1460
Leslie Jones (2) Diversity Program Manager 1014
Dolly Small Lead Diversity Program Specialist 1064
James Evans Diversity Program Specialist 1230
Greg Movat PLA Specialist 1263
Jeannie Vanderwal Project Assistant - Diversity 1155
Harold Gassiin (1) Chief Safety, Security & QA Officer 1448
Ailse Bliss Administrative Specialist 1457
VACANT Rail Activation Safety Manager 1455
Robert Taaffe Construction Safety Manager 1173
Jay Campbell Construction Safety Specialist 1215
VACANT (08) Construction Safety Specialist 1476
Peregrin Spielholz Chief Safety Manager 1102
Solena Higo Safety Technician 1360
Kenneth Cummins Security Officer 1191
George Freitag Project Assistant 1368A
VACANT Agency Quality Assurance Manager 1355
Tim McClure Quality Assurance Manager 1129
Mari Riley-Hite Project Assistant 1239
Donald Logan Quality Assurance Specialist 1237
Michael Dynan Quality Assurance Specialist 1371
Ron Harvey System Safety & Quality Assurance Specialist 1404
VACANT Quality Assurance Manager 1359
VACANT (08) Quality Assurance Specialist 1468
(1) This position also has a dotted line reporting relationship to Operations, Projects & Corporate Services & Link Light Rail Executive Directors.
(2) This position also has a dotted line reporting relationship to the Operations, Projects & Corporate Services Executive Director.
4/1/08
4.4.08
Staffing Count
TOTAL: 29


SOUNDTRANSIT
Finance and Information Technology
Revised: 4/1/2008
Brian McCartan
Executive Director
1006
Kelly Priestley
Controller
1013
Susan Feigenheimer
Assistant Controller
1178
Tracy Butler
Treasurer
1017
David Grenier
Risk Manager
1142
Pete Rogness
Agency PC & Finance and Budget Manager
1238
Ron Loggins
Project Manager Agency Project Control
1218
VACANT
Project Control Coordinator
1243
Lisa Wolterink
Grants Manager
1272
Monica Overby
Grants Administrator
1040
Kevin Crawford
Chief Information Officer
1152
Jason Weiss
IT Business Systems Manager
1153
Gary Nayyar
Information Technology Services Manager
1415
Nick Marquardt
Senior IT Project Manager
1083
Jane Ward
Administrative Specialist
1110
Bernie Wager
Project Assistant
1120
Lita Kenyon
Administrative Assistant
1417
David Hanesworth
External Reporting & Compliance Manager
1066
Rick Osborn
Sr. Financial Compliance Analyst
1227
Trisha Schock
Financial Compliance Analyst
1468
O'Deese Hagaisewa
Administrative Analyst - CDF
1393
Keith Kyle
Business Reporting Analyst
1368
James Liska
Project Manager
1462
VACANT
Payroll Coordinator
1068
Elmer Peloc
Senior Accountant
1154
Michael Block
Senior Finance Analyst (CIP)
1338
Lacy Ferguson
Senior Accountant (Claims & Fixed Ast)
1335
Tony Malone
Accountant (Project)
1445
Riann Wishon
Lead Accountant (GL Lead)
1067
Irina Duglas
Accountant
1389
Kathy Mitchell
Accountant
1122
Deborah Mitchell
Accountant
1066
LaTonya Harmon
Accounts Payable Lead
1058
Rosalind Wilson
Accounting Assistant
1219
Barbara Pellegrino
Accounting Assistant
1420
Cathy Dugger
Accounting Assistant
1337
Jim Block
Assistant Treasurer
1156
Dan Cunningham
Senior Finance Analyst
1307
Diane Bowman
Accountant (Cash)
1257
Gary Stite
Claims Coordinator
1206
Jessica Dias
Risk & Insurance Specialist
1402
Jeffrey Yuhasz
Risk & Claims Analyst
1453
Shahnaz Ghazi
Senior Finance Analyst
1090
Michael Colgan
Senior Finance Analyst
1187
Karen Hendrickson
Senior Finance Analyst
1123
Diana Zhu
Finance Analyst
1089
David Hoffaker
Transportation Finance Planner
1248
Susan Nuttle
Senior Finance Analyst
1140
Douglas Wentworth
Senior Economist
1141
VACANT
Report & Systems Developer
1279
Tena Wilson
Database Administrator
1226
Ryan Boyke
Database Administrator
1389
Joel Smith
Sr. Systems Integration Analyst
1022
Robert Carhart
Report & Systems Developer
1342
Michelle Moyer
Senior Business Systems Analyst
1416
Kenneth Ninks
Enterprise Systems Administrator
1367
Barbara Lopez
Enterprise Applications Administrator
1226
Vincent Choy
Business Systems Analyst
1370
Aaron Ellsworth
Business Systems Analyst
1439
Sean Hunter
Integration Engineer
1449
Eric Rindy
Server Engineer
1229
Robert Hower III
Server Engineer
1457
George Nelson
Network Engineer
1097
Bill Baker
Server Administrator
1388
Diana Lillig
Telecom Specialist
1213
Jacqueline Buresh-Medina
IT Customer Support Lead
1271
Steven Tardell
Senior Desktop Specialist
1450
Philip Hart
Senior Desktop Specialist
1279
Anita Argana
IT Project Manager
1286
Matt Friedman
IT Project Analyst
1057
Ryan Liddell
GIS Analyst
1184
Susan Robbins
IT Project Coordinator
1280
Dionne Stowers
IT Project Coordinator
1474
4/1/08
4/1/08
Staffing Count
TOTAL: 77


SOUNDTRANSIT
Legal
Revised: 4/1/2008
Desmond Brown
Executive Director
1003
Teri Lapetino
Paralegal
1079
Alison Hawley-Washington
Administrative Specialist
1100
VACANT
TBD
1016
Perry Weinberg
Legal Counsel/ Environmental Compliance Manager
1015
Jennifer Belk
Legal Counsel
1031
Kathy Gates
Project Assistant - Legal
1148
VACANT
Project Assistant - Legal
1409
James Meirner
Legal Counsel
1214
Steve Kennedy
Senior Environmental Planner
1178
Mark Menard
Senior Environmental Analyst
1262
Betty Ngan
Legal Counsel
1261
VACANT
Senior Environmental Planner
1166
Stephen Sheehy
Legal Counsel
1232
Marti Louther
Biologist
1382
Jordan Wagner
Legal Counsel
1030
VACANT
Project Coordinator
1247
Loren Armstrong
Legal Counsel
1446
Katie Lichtenstein
Project Coordinator - TL
1451
Human Resources
4/1/08
(Date)
Chief Executive Officer
4-4-08
(Date)
Staffing Count
TOTAL: 19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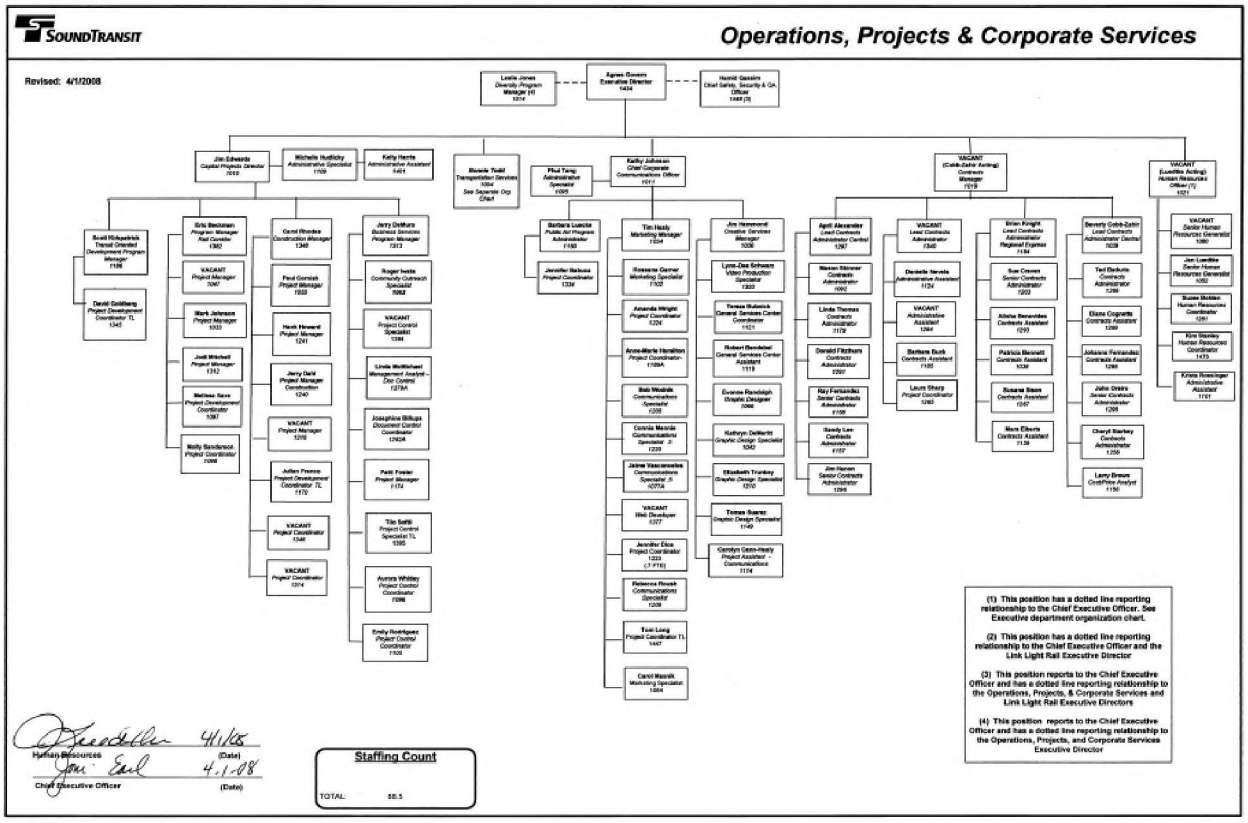
Link Light Rail
Revised: 4/1/2008
Staffing Count
TOTAL: 102
1. This position reports to the Chief Executive Officer and has a dotted line reporting relationship to the Operations, Projects & Corporate Services and the Link Light Rail Executive Directors
2. This position reports to the Operations, Projects, & Corporate Services Executive Director and has dotted line reporting relationship to the Chief Executive Officer and the Link Light Rail Executive Director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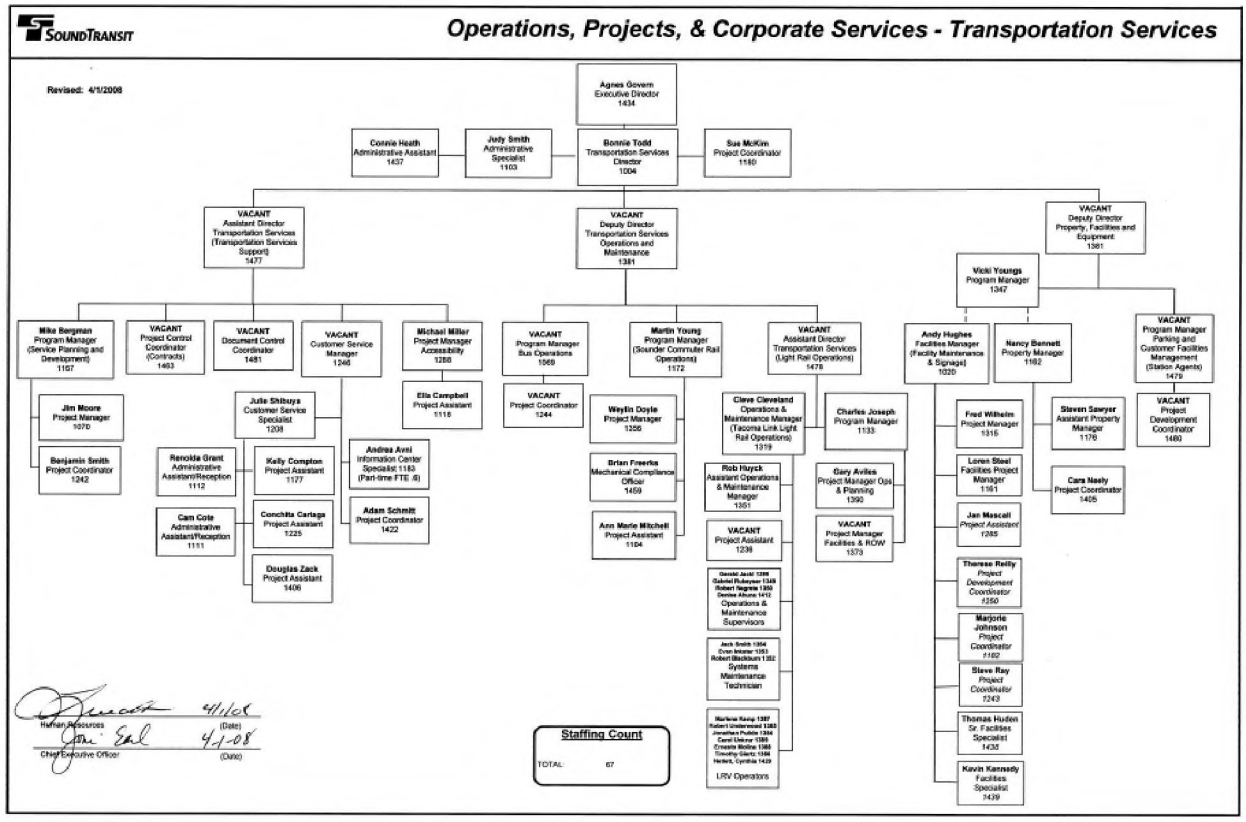
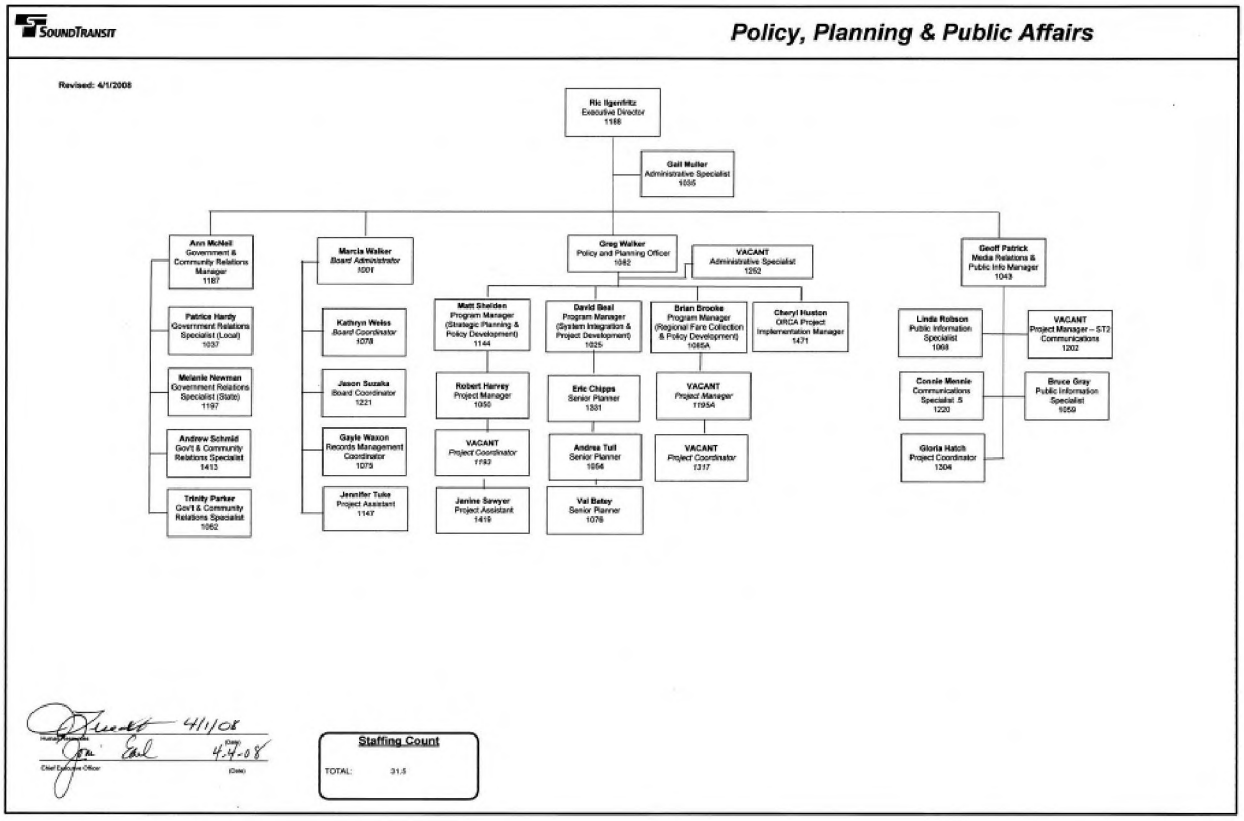
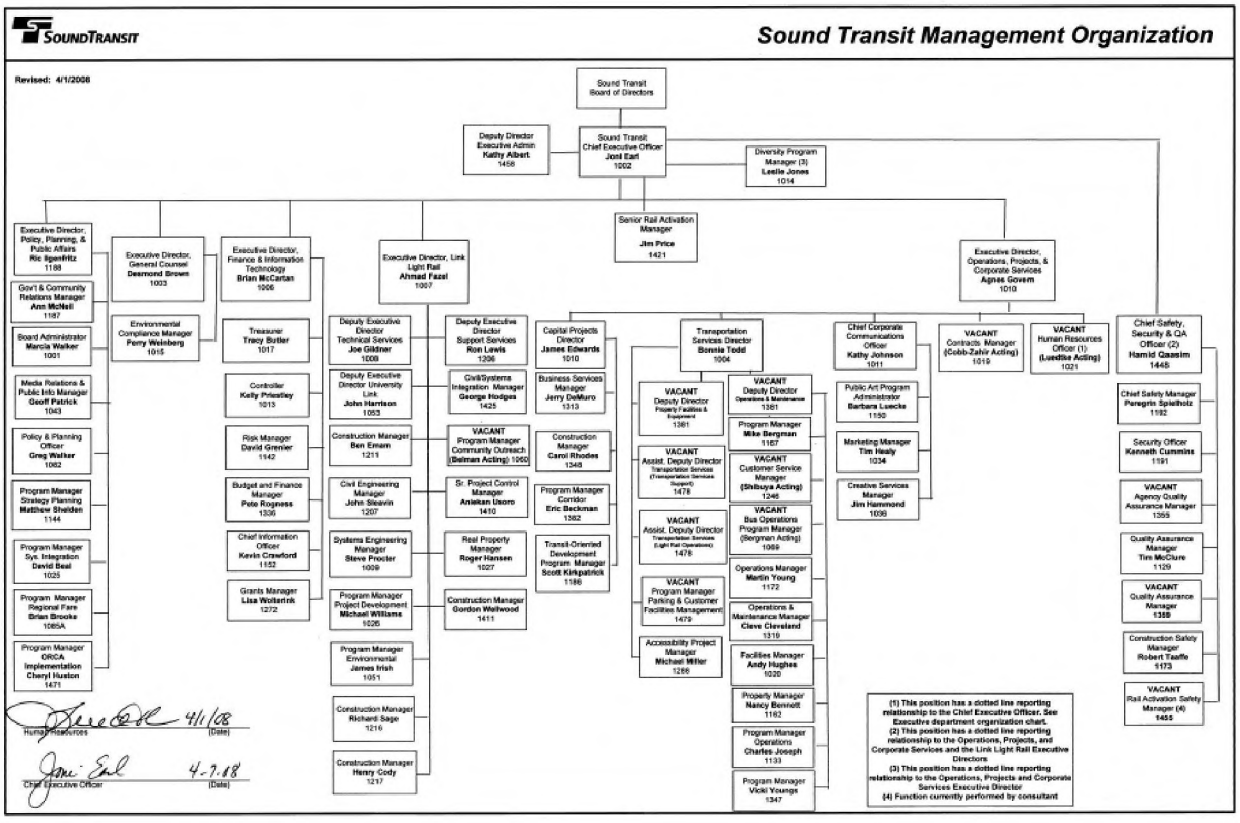
Operations, Projects & Corporate Services
Revised: 4/1/2008
Staffing Count
TOTAL 88.5
(1) This position has a dotted line reporting relationship to the Chief Executive Officer. See Executive department organization chart.
(2) This position has a dotted line reporting relationship to the Chief Executive Officer and the Link Light Rail Executive Director
(3) This position reports to the Chief Executive Officer and has a dotted line reporting relationship to the Operations, Projects, & Corporate Services and Link Light Rail Executive Directors
(4) This position reports to the Chief Executive Officer and has a dotted line reporting relationship to the Operations, Projects, and Corporate Services Executive Director
Human Resources
Chief Executive Officer
(Date)
4/1/08
4.1.08


SOUNDTRANSIT
Operations, Projects, & Corporate Services - Transportation Services
Revised: 4/1/2008
Agnes Govern
Executive Director
1434
Connie Heath
Administrative Assistant
1437
Judy Smith
Administrative Specialist
1103
Bonnie Todd
Transportation Services Director
1004
Sue McKim
Project Coordinator
1160
VACANT
Assistant Director Transportation Services (Transportation Services Support)
1477
VACANT
Deputy Director Transportation Services Operations and Maintenance
1381
VACANT
Deputy Director Property, Facilities and Equipment
1381
Vicki Youngs
Program Manager
1347
Mike Bergman
Program Manager (Service Planning and Development)
1157
VACANT
Project Control Coordinator (Contracts)
1463
VACANT
Document Control Coordinator
1481
VACANT
Customer Service Manager
1246
Michael Miller
Project Manager Accessibility
1288
VACANT
Program Manager Bus Operations
1569
Martin Young
Program Manager (Sounder Commuter Rail Operations)
1172
VACANT
Assistant Director Transportation Services (Light Rail Operations)
1478
Andy Hughes
Facilities Manager (Facility Maintenance & Signage)
1020
Nancy Bennett
Property Manager
1182
VACANT
Program Manager Parking and Customer Facilities Management (Station Agents)
1479
Jim Moore
Project Manager
1070
Benjamin Smith
Project Coordinator
1242
Julie Shibuya
Customer Service Specialist
1208
Renolda Grant
Administrative Assistant/Reception
1112
Cam Cote
Administrative Assistant/Reception
1111
Kelly Compton
Project Assistant
1177
Conchita Cartaga
Project Assistant
1225
Douglas Zack
Project Assistant
1406
Andrea Avni
Information Center Specialist 1183 (Part-time FTE .6)
Adam Schmit
Project Coordinator
1422
Ella Campbell
Project Assistant
1118
VACANT
Project Coordinator
1244
Weylin Doyle
Project Manager
1256
Brian Freerks
Mechanical Compliance Officer
1459
Ann Marie Mitchell
Project Assistant
1184
Clove Cleveland
Operations & Maintenance Manager (Tacoma Link Light Rail Operations)
1319
Rob Huyck
Assistant Operations & Maintenance Manager
1351
VACANT
Project Assistant
1238
Operations & Maintenance Supervisors
Systems Maintenance Technician
LRV Operators
Charles Joseph
Program Manager
1133
Gary Aviles
Project Manager Ops & Planning
1390
VACANT
Project Manager Facilities & ROW
1373
Fred Wilhelm
Project Manager
1316
Loren Steel
Facilities Project Manager
1161
Jan Mascall
Project Assistant
1285
Therese Reilly
Project Development Coordinator
1250
Marjorie Johnson
Project Coordinator
1182
Steve Ray
Project Coordinator
1243
Thomas Huden
Sr. Facilities Specialist
1435
Kevin Kennedy
Facilities Specialist
1439
Steven Sawyer
Assistant Property Manager
1176
Cara Neely
Project Coordinator
1405
VACANT
Project Development Coordinator
1480
Staffing Count
TOTAL: 67
Human Resources (Date) 4/1/08
Chief Executive Officer (Date) 4-1-08


SOUNDTRANSIT
Policy, Planning & Public Affairs
Revised: 4/1/2008
Ric Ilgenfritz
Executive Director
1166
Gail Muller
Administrative Specialist
1035
Ann McNeil
Government & Community Relations Manager
1187
Patrice Hardy
Government Relations Specialist (Local)
1037
Melanie Newman
Government Relations Specialist (State)
1197
Andrew Schmid
Gov't & Community Relations Specialist
1413
Trinity Parker
Gov't & Community Relations Specialist
1062
Marcia Walker
Board Administrator
1001
Kathryn Weiss
Board Coordinator
1078
Jason Suzaka
Board Coordinator
1221
Gayle Waxon
Records Management Coordinator
1079
Jennifer Tuke
Project Assistant
1147
Greg Walker
Policy and Planning Officer
1082
VACANT
Administrative Specialist
1252
Matt Shelden
Program Manager (Strategic Planning & Policy Development)
1144
Robert Harvey
Project Manager
1050
VACANT
Project Coordinator
1193
Jenine Sawyer
Project Assistant
1419
David Beal
Program Manager (System Integration & Project Development)
1025
Eric Chipps
Senior Planner
1331
Andrea Tull
Senior Planner
1054
Val Batey
Senior Planner
1078
Brian Brooke
Program Manager (Regional Fare Collection & Policy Development)
1085A
VACANT
Project Manager
1195A
VACANT
Project Coordinator
1317
Cheryl Huston
ORCA Project Implementation Manager
1471
Geoff Patrick
Media Relations & Public Info Manager
1043
Linda Robson
Public Information Specialist
1068
Connie Mensle
Communications Specialist .5
1220
Gloria Hatch
Project Coordinator
1204
VACANT
Project Manager – ST2 Communications
1202
Bruce Gray
Public Information Specialist
1059
4/1/08
4-4-08
Chief Executive Officer
Staffing Count
TOTAL: 31.5


SOUNDTRANSIT
Sound Transit Management Organization
Revised: 4/1/2008
Sound Transit Board of Directors
Deputy Director Executive Admin Kathy Albert 1458
Sound Transit Chief Executive Officer Joni Earl 1002
Diversity Program Manager (3) Leslie Jones 1014
Senior Rail Activation Manager Jim Price 1421
Executive Director, Policy, Planning, & Public Affairs Ric Ilgenfritz 1188
Executive Director, General Counsel Desmond Brown 1003
Executive Director, Finance & Information Technology Brian McCartan 1006
Executive Director, Link Light Rail Ahmad Fazel 1007
Executive Director, Operations, Projects, & Corporate Services Agnes Govern 1010
Govt & Community Relations Manager Ann McNeil 1187
Environmental Compliance Manager Perry Weinberg 1015
Treasurer Tracy Butler 1017
Deputy Executive Director Technical Services Joe Gildner 1008
Deputy Executive Director Support Services Ron Lewis 1206
Capital Projects Director James Edwards 1010
Transportation Services Director Bonnie Todd 1004
Chief Corporate Communications Officer Kathy Johnson 1011
VACANT Contracts Manager (Cobb-Zahir Acting) 1019
VACANT Human Resources Officer (1) (Luedtke Acting) 1021
Chief Safety, Security & QA Officer (2) Hamid Qaasim 1448
Board Administrator Marcia Walker 1001
Controller Kelly Priestley 1013
Deputy Executive Director University Link John Harrison 1053
Civil/Systems Integration Manager George Hodges 1425
Business Services Manager Jerry DeMuro 1313
Public Art Program Administrator Barbara Luecke 1150
Chief Safety Manager Peregrin Spielholz 1192
Media Relations & Public Info Manager Geoff Patrick 1043
Risk Manager David Grenier 1142
Construction Manager Ben Emami 1211
VACANT Program Manager Community Outreach (Belman Acting) 1060
Construction Manager Carol Rhodes 1248
VACANT Deputy Director Property / Facilities & Equipment 1381
VACANT Deputy Director Operations & Maintenance 1381
Marketing Manager Tim Healy 1034
Security Officer Kenneth Cummins 1191
Policy & Planning Officer Greg Walker 1082
Budget and Finance Manager Pete Rogness 1336
Civil Engineering Manager John Stewart 1207
Sr. Project Control Manager Anielan Usoro 1410
Program Manager Corridor Eric Beckman 1382
VACANT Assist. Deputy Director Transportation Services (Transportation Services Support) 1478
Program Manager Mike Bergman 1187
Creative Services Manager Jim Hammond 1038
VACANT Agency Quality Assurance Manager 1355
Program Manager Strategy Planning Matthew Shelden 1144
Chief Information Officer Kevin Crawford 1152
Systems Engineering Manager Steve Procter 1009
Real Property Manager Roger Hansen 1027
Transit-Oriented Development Program Manager Scott Kirkpatrick 1186
VACANT Assist. Deputy Director Transportation Services (Light Rail Operations) 1478
VACANT Customer Service Manager (Shibuya Acting) 1246
Quality Assurance Manager Tim McClure 1129
Program Manager Sys. Integration David Beal 1025
Grants Manager Lisa Wollerton 1272
Program Manager Project Development Michael Williams 1026
Construction Manager Gordon Wellwood 1411
VACANT Program Manager Parking & Customer Facilities Management 1479
VACANT Bus Operations Program Manager (Bergman Acting) 1069
VACANT Quality Assurance Manager 1388
Program Manager Regional Fare Brian Brooke 1085A
Operations Manager Martin Young 1172
Program Manager ORCA Implementation Cheryl Huston 1471
Program Manager Environmental James Irish 1051
Accessibility Project Manager Michael Miller 1286
Operations & Maintenance Manager Cleve Cleveland 1319
Construction Safety Manager Robert Taaffe 1173
Facilities Manager Andy Hughes 1020
VACANT Rail Activation Safety Manager (4) 1455
Property Manager Nancy Bennett 1162
Construction Manager Richard Sage 1216
Program Manager Operations Charles Joseph 1133
Construction Manager Henry Cody 1217
Program Manager Vicki Youngs 1347
(1) This position has a dotted line reporting relationship to the Chief Executive Officer. See Executive department organization chart.
(2) This position has a dotted line reporting relationship to the Operations, Projects, and Corporate Services and the Link Light Rail Executive Directors
(3) This position has a dotted line reporting relationship to the Operations, Projects and Corporate Services Executive Director
(4) Function currently performed by consultant
Human Resources
4/1/08
(Date)
Chief Executive Officer
4-7-08
(Date)

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