

A low-angle shot of a Sound Transit train, showing the side of the car with windows and the blue and teal livery. The train is moving, and the background is a bright sky.

ST3 System Plan Contingency Management & Cost Estimate

**Expert Review Panel
November 9, 2015**

SOUNDTRANSIT

Contingency Management

- Sound Transit actively manages project budget contingency and reports on status at both contract and project levels.
- Project Control Policy & Procedures PCPP-12 establishes standard practices, assigns responsibilities and provides guidelines to management of project contingency (*refer to Attachment 1*)

Uncontrolled Document



Approvals:  DECM Executive Director  PEPD Executive Director  Director of Project Controls	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 60%;">PROJECT CONTROL POLICY & PROCEDURES</td><td style="width: 40%;">PCPP-12 Rev: 01</td></tr><tr><td colspan="2" style="text-align: center;">Contingency Management</td></tr><tr><td colspan="2">Original Release Date: 09/28/10 Current Revision Date: 03/13/12</td></tr></table>	PROJECT CONTROL POLICY & PROCEDURES	PCPP-12 Rev: 01	Contingency Management		Original Release Date: 09/28/10 Current Revision Date: 03/13/12	
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1.0 PURPOSE

Various types of contingencies are established in project cost estimates and budgets to address uncertainties, unknowns and risks. This procedure defines general practices, assigns responsibilities, and establishes authority levels for the management of contingencies to respond to the changing project conditions.

2.0 SCOPE

This procedure applies to all ST capital and capital-improvement projects. Projects which require a unique process for management of contingency, such as the University Link project (which requires distinctive processes for managing contingencies as a condition of the FFGA), may maintain a project-specific Contingency Management Plan that supplements this policy and procedure.

3.0 REFERENCES

- (1) Phase Gate Policy
- (2) University Link Contingency Management Plan
- (3) Project Control Policies and Procedures; PCPP-02 Cost Estimating
- (4) Project Control Policies and Procedures; PCPP-08 Change Notices, Change Orders and Claims
- (5) Project Control Policies and Procedures; PCPP-09 Change Control Board
- (6) Project Control Policies and Procedures; PCPP-10 Progress Reporting
- (7) Project Control Policies and Procedures; PCPP-11 Cost Forecasting
- (8) Project Control Policies and Procedures; PCPP-13 Risk Management
- (9) Commitment and Contingency Management System (CCMS) User Guide

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Purpose of Contingency

- Contingency is a budget allowance to address uncertainty and risk associated with the delivery of a given scope of work
- Contingency provides the mechanism to manage the variance between estimates and actual project cost.
- Use of contingency is inevitable, and it demonstrates good management & standard business/industry practice.

- Contingency is established during the development of capital project budgets.
- Contingencies are refined and updated at different stages of project development.

Contingency Matrix

The matrix below indicates a guide for acceptable contingency ranges by estimate level. The matrix incorporates best practices from AACEI, ASPE, and FTA. Deviations from this guidance require approval from the Deputy Executive Director of Project Control & VE.

Contingency Guidelines for Construction Cost Estimates

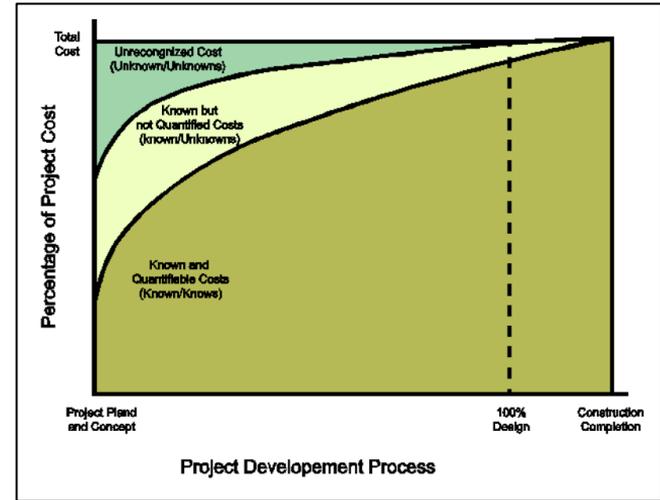
Estimate Level	Design Stage	Purpose	Information Available	Estimate Methods	Design Allowance	Average Total Allocated Contingency	Unallocated Contingency	Total Contingency including Design Allowance
<i>Order of Magnitude</i>	Planning / Programming (0-5% design)	Evaluation of projects or alternatives	Historical information with adjustments made for specific project conditions.	Parametric; costing by SF, LF, or CF.	30% minimum	15-20%	10-15%	64% minimum
<i>Schematic / Conceptual</i>	Conceptual Engineering (5-15% design)	Develop early design	Schematic drawings, sketches, renderings, diagrams, conceptual level plans, elevations, sections, and preliminary project descriptions.	Parametric; costing by SF, LF, or CF, with quantity development of major items.	20% minimum	12-20%	5-10%	41% minimum
<i>Design Development</i>	Preliminary Engineering (15-30% design)	Establish control budget	Drawings showing plans, elevations, typical details, engineering design criteria, equipment layouts, and detailed outline specifications.	Quantity development of major items, pricing by cost library. Rough estimates or allowances developed for hard-to-measure items.	15% minimum	10-15%	5-10%	33% minimum
<i>Final Design</i>	Final Design (30-100% design)	Detailed control budget; cost control & reporting	Detailed drawings showing plans, elevations, sections, details, schedules, draft specifications, and bidding criteria.	Takeoff quantities from plans, representative pricing adjusted for project-specific conditions. Crew-based approach to labor and equipment. Percent approach to GCs, OH&P, and escalation. Some allowances for hard-to-measure items.	8-15% at start of final design, diminishing with design progress	8-15%	5-10%	22% minimum
<i>Bid</i>	Ad-Ready (100% design)	Check bids; commit funds	Completed documents.	Detailed takeoff quantities, detailed review of specifications, detailed pricing including price quotes, crew-based labor & equipment, detailed GCs and OH&P. Consideration of construction schedule, work restrictions, and risk.	None	8-15%	5-10%	15% minimum

** Notes:*

- GC/CM contracts include risk contingency as part of the MACC. Risk contingency is developed based on contract specifics.
- Design Build contracts utilize the same guidelines for Change Orders and Unallocated Contingency, but Design Allowance is eliminated at the 30% level when the contract is let to the Design Builder.
- Total Contingency does not equal the sum of the Design Allowance and Allocated/Unallocated Contingencies due to the order in which they are applied.
- Final Allocated Contingency and Unallocated Contingency amounts are established in the baseline cost estimate.
- Exceptions to the above guidelines must be approved by the Dep. Exec. Dir. Of Project Control & VE (DED-PCVE).

Types of Contingencies

- **Design Allowance (D.A.)** Design allowance addresses uncertainty regarding the final configuration of a given construction scope element.
 - *Account for Scope items not well defined or quantified.*
 - *Apply as percentage to construction cost element, varies depending on the level of design detail, scope complexity.*
 - *Base construction cost includes D.A*
- **Allocated Contingency (A.C.)**
 - *Address Risks and Unknowns during the execution of work.*
 - *Apply as percentage, corresponding to complexity, unforeseen conditions and risks of the scope (risk assessment), over Bid Amount Estimate.*
 - *Draw down to address unforeseen conditions (i.e. Change orders)*



- **Unallocated Contingency (UAC)**

- *Address general project-wide cost risks and uncertainties.*
- *ST assigned UAC to each budget phase.*

- **Project Reserves**

- *May be established during the development of Baseline Budget.*
- *Assignment and allocation requires approval by two-thirds majority of the Sound Transit Board.*

- Contract Contingency is assigned by Sound Transit Board based on the recommendation by the project team.
 - *included as part of contracting authority*
 - *Funded by the budgeted contingencies included in project estimates.*
- Contingency assignment is based on assessment of the contract scope & associated risk.

Contingency Management and Control

- The Deputy Executive Director (DED) of Project Control & VE oversees the management of contingencies.
- Procedures govern the movement of contingency funds within the estimate and any contingency included in a contract award per authority level. (See change order authority level).
- Contingency use is monitored & controlled through Project Control systems at the contract, phase, project & program levels.
- Contract contingency is managed by the project manager in conjunction with project control, within delegated authority levels and subject to further approval(s) depending on value and or circumstances as stipulated in (PCPP-09) .
- Modifications to contingency levels require approval from the DED of Project Control & VE, Department Executive Director, Change Control Board, Sound Transit CEO, and/or the Sound Transit Board based on current agency policy.

PROJECT CONTROL POLICY & PROCEDURES PCPP- 09 Capital Program Control Board (CCB)		Original Release: 05/04/10 Rev. 02 Release: 07/28/15	
Table PCPP-09-02: Authority Levels for Professional Services and Third Party Agreement Contract Change Orders			
Level	Position	Single Change Limit	
1	Project Manager / Agreement Manager	\$50,000	
2	Project Director / PEPD Director (if applicable)	\$100,000	
3	Executive Director	\$250,000	
4	Capital Program Control Board (CCB)	\$500,000	
5	Chief Executive Officer (CEO)	> \$500,000	
Table PCPP-09-03: Authority Levels for Construction and Procurement Contract Change Orders, including Modifications to Provision Sums			
Level	Position	Single Change Limit	
1	Project Manager / Project Director for Small Projects/Contracts (\$0 - \$5 Million)	\$50,000	
2	Project Director (Projects > \$5 Million)	\$150,000	
3	Executive Director	\$250,000	
4	Capital Program Control Board (CCB)	\$1,000,000	
5	Chief Executive Officer (CEO)	> \$1,000,000	
Table PCPP-09-04: Authority Levels for Construction Change Notice - Work Directives			
Level	Position	Limit Based on Value of Single WD	Limit Based on Value of Open WDs as a % of Remaining Contingency
1	Project Manager / Project Director for Small Projects/Contracts (\$0 - \$5 Million)	\$50,000	
2	Project Director	\$150,000	> 50% and < 75%
3	Executive Director	\$250,000	≥ 75%
4	Capital Program Control Board (CCB)	> \$250,000	
<p><i>**Project Directors may delegate their authority to approve a change order or work directive to Principal Construction Managers, Construction Managers, and Resident Engineers for their specific project/contract.</i></p>			

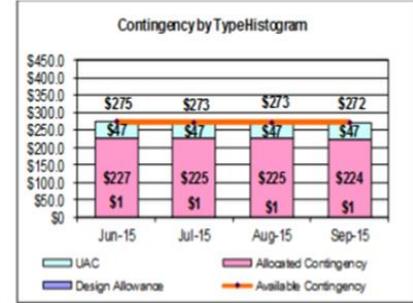
Tracking & Reporting on Contingency

Contingency Index

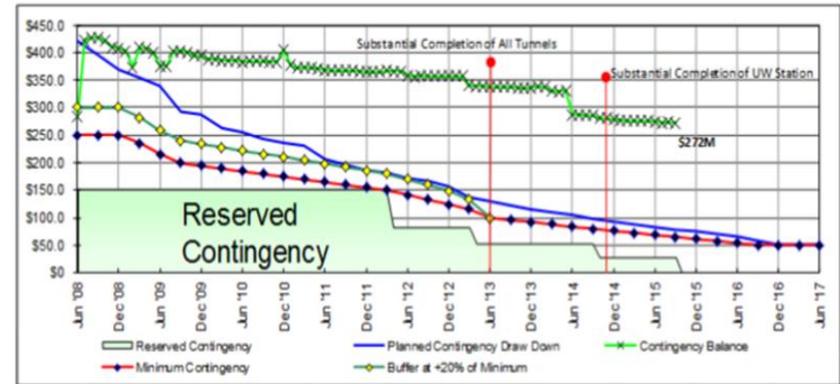
- A measure of work progress relative to contingency drawdown, computed as a ratio of % construction work complete to % contingency expended.
- Index of 1.0 or more indicates good and efficiency control of contingency.
- Index less than 1.0 - indication the contingency is being drawn at a faster rate than work progress, a potential risk of depleting the contingency before the work is completed.
- At Sound Transit, a contingency index of less than 1.0 triggers a requirement of a report with mitigation measures to the CEO, DECM Executive Director and Director of PC by the responsible PM or Project Director.

Contingency Status	BCE		Current Status	
	Amount	% of Total	Remainin g Amount	% Remaining Work
Design Allowance	\$103.9	7.8%	\$0.9	2.1%
Allocated Contingency	\$264.3	19.8%	\$223.9	534.3%
Unallocated Contingency	\$53.7	4.0%	\$46.9	111.9%
Total	\$421.9	31.6%	\$271.7	648.3%

Percentage = Contingency\$ / (EFC or Remain. Work \$ ex-Contingencies)



MINIMUM CONTINGENCY CURVES as of September 30, 2015 \$ in millions



Contingency status for major contracts and projects are monitored, tracked and reported monthly as depicted on the above charts.

ST2 Project Cost Estimates

Estimates vs. Actuals

Major ST2 Link Projects - ST2 Compared to Updated Estimate

Project Name	Phase and Year	ST2 - High	ST2 - Realigned	Estimate	% of ST2 High	% of ST2 Realigned
S 200th Link	Baseline, 2011	\$ 367,450,000	\$ 310,582,000	\$ 343,770,000	94%	111%
Northgate Link	Baseline, 2012	\$ 1,620,290,000	\$ 1,456,211,958	\$ 1,601,214,040	99%	110%
East Link	Baseline, 2014	\$ 3,185,348,000	\$ 3,020,533,000	\$ 3,079,087,698	97%	102%
Lynnwood Link	PE (30%), 2014	\$ 1,614,198,000	\$ 1,375,063,000	\$ 1,453,980,000	90%	106%
Link OMSF	PE (30%), 2015	\$ 298,615,000	\$ 251,589,000	\$ 381,130,000	128%	151%
Tacoma Link Exp.	PE (30%), 2015	\$ 188,300,000	\$ 135,876,000	\$ 153,170,000	81%	113%
South Corridor to K-DM	CE (15%), 2014	\$ 474,331,000	\$ 422,448,000	\$ 485,960,000	102%	115%

Average

97%	107%
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Notes:

- ST2 High - Includes project reserve.
- ST2 Realigned - Removed project reserve and 5% from selected budget phases.
- Northgate Link ST2 includes funds from Sound Move. Estimate excludes vehicles (not part of the ST2 project estimate).

Application of Contingency as Design Evolves

% of Construction	Federal Way to K-DM		Lynnwood Link			East Link	
	Alternatives Analysis	Conceptual Engineering	Alternatives Analysis	Conceptual Engineering	Preliminary Engineering	Preliminary Engineering	East Link (Baseline)
Design Allowance	27%	28%	22%	23%	23%	16%	10%
* Allocated Contingency	10%	10%	10%	10%	15%	26%	15%
** Unallocated Contingency	10%	13%	10%	10%	5%	7%	6%
Total Contingency as % of Total Construction Estimate	35%	37%	32%	33%	33%	36%	25%
*** Total Contingency as % of Base Construction Estimate	53%	60%	48%	48%	48%	57%	34%

* Allocated Contingency: Includes Provisional Sums
Cal. As % of Base Est. + Design Allowance (D.A.)

** Unallocated Contingency: Cal. As % of Base Est. + D.A. + Allocated Contingency (compounded over D.A.)

*** Total Contingency \$ = Sum(Design Allowance, Allocated Contingency, Unallocated Contingency, and Project Reserves)
Total Contingency % = Total Contingency \$ / Base Construction Cost

The image features a dark grey horizontal banner across the center. On the left side of the banner is the Sound Transit logo, which consists of a white square containing a stylized 'S' and 'T' symbol. To the right of the logo, the words 'SOUNDTRANSIT' are written in a bold, white, sans-serif font. Below 'SOUNDTRANSIT', the slogan 'RIDE THE WAVE' is written in a smaller, white, sans-serif font. The background of the entire image is a close-up of a double-decker bus. The upper deck is white with a large, stylized wave graphic in shades of blue and teal. The lower deck is blue with white text, including the word 'SOUNDBUS' partially visible. Several windows are visible on both decks.

SOUNDTRANSIT
RIDE THE WAVE