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1.0 INTRODUCTION

Capital costs are a one-time expenditure required to build a system, including infrastructure costs and soft costs. This memorandum presents the methodology for developing order-of-magnitude capital cost estimates for the Detailed Alternatives defined for the Riverview Corridor Pre-Project Development Study ('the Study').

Following the Initial Screening of Alternatives, the Study will examine a relatively small set of options characterized by factors such as alignment, transit mode, transit operating characteristics, and stop/station locations:

- Alignment options
 - Trunk of the Riverview Corridor W. 7th Street, the Canadian Pacific Railway tracks between the Union Depot and the Ford Site
 - Sub-areas Downtown Saint Paul, the Ford Site, Mississippi River Crossing, and Airport/South Loop in Bloomington.
- Transit mode
 - o Bus Local Bus, Arterial Bus Rapid Transit, Dedicated BRT
 - Rail Modern Streetcar, Light Rail Transit (LRT), Diesel Multiple Unit (DMU)
- Transit operating characteristics
 - Mixed traffic In street, existing freight railroad
 - Dedicated At-grade, aerial structure, tunnel
 - o 'Hybrid' Combination of mixed traffic and dedicated

The Study Team, comprised of the Ramsey County Regional Railroad Authority (RCRRA) and its Study Consultants, anticipates refining capital cost estimates as a result of ensuing project development activities, such as detailed basemapping, design and engineering.

Further, this methodology is consistent with the Rush Line Corridor Pre-Project Development Study, also undertaken by the Ramsey County Regional Railroad Authority.



2.0 CAPITAL COST METHODOLGY

Capital cost estimates will be prepared using the format the Federal Transit Administration's (FTA) standard cost categories (SCC). **Table 2 -1** summarizes the SCC definitions, including groupings for organization of the data. The level of detail of the capital cost estimates for the Riverview Corridor PPD Study is conceptual and preliminary in nature, as is typical with planning studies that evaluate numerous alternatives.

STANDARD COST CATEGORY (SCC)	DESCRIPTION
SCC 10-Guideway and Track Elements	Guideway grading and drainage; retaining walls, bridges and tunnels; trackwork; busway construction
SCC 20-Stations, Stops, Terminal, Intermodal	Construction of station/stop platforms, enclosures, canopies, and fixtures; elevators; escalators and stairs
SCC 30-Support Facilities: Yards, Shops, Administration Buildings	Operations, maintenance, and storage facilities
SCC 40-Sitework and Special Conditions	Demolition, clearing, and excavation; utilities and utility relocation; hazardous soil and water remediation; environmental mitigation; reconstruction of roadways, intersection and non-guideway structures; pedestrian and bicycle accommodations, sidewalks and trails; landscaping, fencing and lighting, park-and-ride facilities
SCC 50-Systems	Train control signals; roadway grade crossing protection; traction power substations; overhead catenary system; communication systems; central control hardware and software; automated fared collection system; roadway traffic signals
SCC 60-Right-of-Way, Land, Existing Improvements	Acquisition of right-of-way or easements for guideway, stations, and other facilities; relocation of existing households and businesses
SCC 70-Vehicles	Rail vehicles such as light rail, modern streetcar, diesel multiple unit (DMU); standard buses including 40' and articulated (60'); high-quality BRT vehicles including 40' and articulated (60') (see Table 3-2), non-revenue vehicles and spare parts.
SCC 80-Professional Services	Preliminary engineering; final design; project management for design and construction; construction administration and management; insurance; legal, permits review fees; surveys, testing, investigation, inspection; agency force account work
SCC 90-Contingency	Overall project contingency and reserves
SCC 100-Finance Charges	Estimated expenses for local financing of project activities prior to federal funding commitment
	(For the Riverview Corridor PPD Study, this item would be left blank)

¹ Reference: http://www.fta.dot.gov/12305_15612.html



3.0 ASSUMPTIONS

The capital cost estimates will be based upon a number of assumptions derived from various sources. These assumptions include capital cost parameters applied at certain steps during the process, unit prices for the various capital cost line items, and quantity, location, and conceptual definitions for each of the alternatives. **Table 3-1** lists bus and BRT vehicle assumptions.

Table 3-1: Draft Bus and BRT Vehicle Assumptions²

BUSES	VEHICLE ASSUMPTIONS
Local Bus ³	Standard Bus, 40' or 60'
Arterial BRT	Standard Bus, 40' or 60'
Hybrid Bus	High-quality BRT, 40' or 60'
Dedicated Guideway BRT	

3.1 Parameters

Capital cost parameters are necessary assumptions that are not related to the specific location or design features of the corridor or the alternatives under consideration.

3.1.1 Base Year

Year 2016 will be used as the base year for definition of the unit prices and development of the capital cost estimates. The Study uses a 3 percent annual inflation rate to escalate base year unit costs (e.g. 2014) to Year 2016 dollars.⁴

3.1.2 Contingencies

Contingencies are intended to compensate for unforeseen items of work, quantity fluctuations, and variances in unit costs that develop as the project progresses through the various stages of design development.

3.1.3 Annualization Factors

Assuming that cost-effectiveness would be a detailed evaluation criterion, annualization factors are necessary to convert base year capital cost estimates into annualized capital costs. The Riverview Corridor PPD Study uses FTA's annualization factors for these calculations.

3.1.4 Hybrid Bus and Hybrid Rail

Similar to developing conceptual operating and maintenance cost estimates, the Study Team will develop order-of-magnitude capital cost estimates for the Hybrid Bus and Hybrid Rail detailed alternatives as follows:

⁴ Reference: *Financial Management Plan for Southwest Light Rail*, Revision 02-00, August 2015, prepared by the Metropolitan Council, Metro Transit Finance, p 4.



² The Study will identify a preliminary conceptual transit fleet composition for each detailed alternative for purposes of estimating capital cost. The RCRRA anticipates continuing to refine these concepts and estimates during environmental review and design/engineering.

³ This encompasses the No-Build alternative (Route 54) and background bus service associated with any of the Detailed Alternatives for the Riverview Corridor.

- Hybrid Bus Using a combination of Arterial BRT and Dedicated BRT infrastructure and fleet components, e.g. station facilities, transit signal priority, ticket vending machines, and shared or dedicated guideway. The Study will estimate capital costs based on quantities and unit costs of distinct elements or segments.
- Hybrid Rail Using a combination of Modern Streetcar, LRT, and or DMU, e.g. station facilities; embedded or ballasted or direct fixation tracks; rail yard and shop; and traction power substations. The Study will estimate capital costs based on quantities and unit costs of distinct elements or segments.

3.2 Unit Prices

Unit prices for the various capital cost elements will be based on local and national references that include, but are not limited to:

- Southwest LRT/METRO Green Line Extension Project
- Gateway Corridor/METRO Gold Line Project Draft Environmental Impact Statement (BRT on dedicated guideway)
- 'A' Line/Snelling Avenue Arterial BRT
- Cotton Belt Preliminary Engineering and Environment Assessment (Dallas, TX)
- Nicollet-Central Streetcar Project (Minneapolis, MN)

The Study Team will review unit price assumptions from these sources to determine their applicability to the detailed alternatives under consideration for the Riverview Corridor PPD Study. Appendix A presents draft unit costs by detailed alternative, including the No-Build.



Appendix A: Preliminary Draft Unit Costs for:

Bus: No-Build, Arterial BRT, Dedicated BRT, Hybrid Bus

Rail: Modern Streetcar, LRT, Diesel Multiple Unit, and Hybrid Rail



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40.02 Site Utilities, Utility Relocation (Urban) RF \$ 1,000 30% 40.02 Site Utilities, Utility Relocation (Suburban) RF \$ 800 30% 40.02 Site Utilities, Utility Relocation (Rural) RF \$ 600 30% 40.03 Haz, Mat'l, contam'd soil removal/mitigation, ground water treatments RF \$ 600 30% 40.04 Environmental mitigation, e.g. wetlands, historical/archeologic parks RF \$ 100 20% 40.06 Pedestrian/bike access and accommodation, landscaping RF \$ 100 20% 40.08 Temporary facilities and other indirect costs during construction RF \$ 1,500 20% 40.08 Traction power supply: substations RF NA 15% 50.00 Traffic signals and crossing protection - Freight RF NA 15% 50.04 Traction power supply: substations RF NA 15% 50.05 Communications RF NA 15% 50.06 Fare collection system and equipment STA \$ 338,000 10% 60.00 Row, LAND, EXISTING IMPROVEMENTS Control allowance LS \$ 580,000 20% 70.04 Bus - 40 hybrid electric EA \$ 700,000 5% 700	40.01	Demolition, Clearing, Earthwork	RF	\$	400	20%		
40.02 Site Utilities, Utility Relocation (Suburban) RF \$ 800 30% 40.02 Site Utilities, Utility Relocation (Rural) RF \$ 600 30% 40.03 Haz. Martl, contam'd soil removal/mitigation, ground water treatments RF \$ 50 20% 40.04 Environmental mitigation, e.g. wetlands, historical/archeologic parks RF \$ 100 20% 40.05 Site structures including retaining walls, sound walls RF \$ 100 20% 40.06 Pedestriar/bike access and accommodation, landscaping RF \$ 100 20% 40.07 Automobile, bus, van accessways including roads, parking lots RF \$ 1,050 20% 40.08 Temporary facilities and other indirect costs during construction RF \$ 1,050 20% 50.00 SYSTEMS EA \$ 250,000 15% 50.02 Traffic signals and crossing protection - Freight RF N/A 15% 50.02 Traftic signals and crossing protection - Freight RF N/A 15% 50.04 Traction power supply: substations RF N/A 15% 50.05 Communications <t< td=""><td>40.02</td><td>Site Utilities, Utility Relocation (Urban)</td><td>RF</td><td>\$</td><td>1,000</td><td>30%</td></t<>	40.02	Site Utilities, Utility Relocation (Urban)	RF	\$	1,000	30%		
40.02 Site Duting Relocation (Kura) RF \$ 600 30% 40.03 Haz, Marti, contram'd soil removal/mitigation, ground water treatments RF \$ 500 20% 40.04 Environmental mitigation, e.g. wetlands, historical/archeologic parks RF \$ 100 20% 40.05 Site structures including retaining walls, sound walls RF \$ 100 20% 40.06 Automobile, bus, van accessways including roads, parking lots RF \$ 1,050 20% 40.08 Temporary facilities and other indirect costs during construction RF \$ 1,050 20% 50.00 SYSTEMS EA \$ 250,000 15% 50.01 Tratin control and signals RF NVA 15% 50.02 Traffic signals and crossing protection - Freight RF NVA 15% 50.02 Traffic signals and crossing protection - Freight RF NVA 15% 50.04 Traction power supply: substations RF NVA 15% 50.05 Comm	40.02	Site Utilities, Utility Relocation (Suburban)	RF	\$	800	30%		
40.04 Fraz. Mail, totilating solit Prilocal Mitigation, gluotid Valatine fractments NF \$ 300 20% 40.04 Environmental mitigation, gluotid Valations, historical/archeologic parks RF \$ 100 20% 40.05 Site structures including retaining walls, sound walls RF \$ 100 20% 40.06 Pedestrian/bike access and accommodation, landscaping RF \$ 100 20% 40.06 Pedestrian/bike access and accommodation, landscaping RF \$ 1,050 20% 40.07 Automobile, bus, van accessways including roads, parking lots RF \$ 1,150 20% 40.08 Temporary facilities and other indirect costs during construction RF \$ 1,150 20% 50.00 SYSTEMS EA \$ 250,000 15% 50.01 Train control and signals RF N/A 15% 50.02 Traffic signals and crossing protection - Freight RF N/A 15% 50.03 Traction power distribution: catenary RF N/A 15% 50.04 Traction power distribution: catenary RF N/A 15% 50.05 Communications RF \$ 150 15% 50.06 Fare collection system and equipment STA \$ 338,000 10%<	40.02	Site Utilities, Utility Relocation (Rural)		\$	600	30%		
Total Entitient information modules, sound walls RF 100 100 100 40.05 Site structures including retaining walls, sound walls RF \$ 100 20% 40.06 Pedestrian/bike access and accommodation, landscaping RF \$ 100 20% 40.07 Automobile, bus, van accessways including roads, parking lots RF \$ 1,050 20% 40.08 Temporary facilities and other indirect costs during construction RF \$ 1,150 20% 40.08 Temporary facilities and other indirect costs during construction RF \$ 1,150 20% 50.00 SYSTEMS EA \$ 1,150 20% 50.01 Train control and signals RF NA 15% 50.02 Traffic signals and crossing protection - Freight RF NA 15% 50.03 Traction power supply: substations RF NA 15% 50.04 Faction power distribution: caterary RF NA 15% 50.05 Control allowance LS	40.03	Find in contrained soli removal mitigation, ground water treatments	RF	ф \$	100	20%		
40.06 Pedestriar/bike access and accommodation, landscaping RF \$ 350 20% 40.07 Automobile, bus, van accessways including roads, parking lots RF \$ 1,050 20% 40.08 Temporary facilities and other indirect costs during construction RF \$ 1,150 20% 40.08 Temporary facilities and other indirect costs during construction RF \$ 1,150 20% 50.00 SYSTEMS 50.01 Trafic signals RF N/A 15% 50.02 Traffic signals and crossing protection - Freight RF N/A 15% 50.03 Traction power supply: substations RF N/A 15% 50.04 Traction power distribution: catenary RF N/A 15% 50.05 Communications RF \$ 150 15% 50.06 Fare collection system and equipment STA \$ 338,000 10% 50.07 Central control allowance LS \$ 580,000 20% 60.01 Purchase or lease of real estate	40.05	Site structures including retaining walls, sound walls	RF	\$	100	20%		
40.07 Automobile, bus, van accessways including roads, parking lots RF \$ 1,050 20% 40.08 Temporary facilities and other indirect costs during construction RF \$ 1,150 20% 50.00 SYSTEMS	40.06	Pedestrian/bike access and accommodation. landscaping	RF	\$	350	20%		
40.08 Temporary facilities and other indirect costs during construction RF \$ 1,150 20% 50.00 SYSTEMS	40.07	Automobile, bus, van accessways including roads, parking lots	RF	\$	1,050	20%		
50.00 SYSTEMS Image: Marcol and signals RF N/A 15% 50.01 Train control and signals RF N/A 15% 50.02 Traffic signals EA \$ 250,000 15% 50.02a Traffic signals and crossing protection - Freight RF N/A 15% 50.03 Traction power supply: substations RF N/A 15% 50.04 Traction power distribution: catenary RF N/A 15% 50.05 Communications RF 150 15% 50.06 Fare collection system and equipment STA \$ 338,000 10% 50.07 Central control allowance LS \$ 580,000 20% 60.00 ROW, LAND, EXISTING IMPROVEMENTS Image: Adv 100% 60.01 Purchase or lease of real estate RF \$ 300 40% Professional Services (2% of SCC 60 direct costs) 2% N/A 100% 70.04 Bus - 40' hybrid electric EA \$ 7,00,00 5% 70.05 <t< td=""><td>40.08</td><td>Temporary facilities and other indirect costs during construction</td><td>RF</td><td>\$</td><td>1,150</td><td>20%</td></t<>	40.08	Temporary facilities and other indirect costs during construction	RF	\$	1,150	20%		
30.00 STSTEMS RF NA 15% 50.01 Train control and signals RF NA 15% 50.02 Traffic signals and crossing protection - Freight RF NA 15% 50.03 Traction power supply: substations RF NA 15% 50.03 Traction power distribution: catenary RF NA 15% 50.05 Communications RF \$ 150 15% 50.05 Communications STA \$ 338,000 10% 50.06 Fare collection system and equipment STA \$ 338,000 10% 50.07 Central control allowance LS \$ 580,000 20% 60.00 ROW, LAND, EXISTING IMPROVEMENTS 60.01 Purchase or lease of real estate RF \$ 300 40% 60.02 Relocation of existing households and businesses RF \$ 300 40% 70.00 VEHICLES (number) <	50.00	CVCTENC						
Bit Stress EA \$ 250,00 10% 50.02 Traffic signals and crossing protection - Freight RF N/A 15% 50.02 Traffic signals and crossing protection - Freight RF N/A 15% 50.03 Traction power supply: substations RF N/A 15% 50.04 Traction power distribution: catenary RF N/A 15% 50.05 Communications RF N/A 15% 50.06 Fare collection system and equipment STA \$ 338,000 10% 50.07 Central control allowance LS \$ 580,000 20% 60.00 ROW, LAND, EXISTING IMPROVEMENTS Improvements Improvements Improvements 60.01 Purchase or lease of real estate RF \$ 150 30% 60.02 Relocation of existing households and businesses RF \$ 300 40% 70.00 VEHICLES (number) Improvements Improvements Improvements 70.04 Bus - 40' hybrid electric EA \$ 700,000 5%	50.00	Train control and signals	RF		N/A	15%		
50.02a Traffic signals and crossing protection - Freight RF NA 15% 50.03 Traction power supply: substations RF NA 15% 50.04 Traction power distribution: catenary RF NA 15% 50.05 Communications RF NA 15% 50.06 Fare collection system and equipment STA \$ 338,000 10% 50.07 Central control allowance LS \$ 580,000 20% 60.00 ROW, LAND, EXISTING IMPROVEMENTS	50.02	Traffic signals	EA	\$	250.000	15%		
50.03 Traction power supply: substations RF N/A 15% 50.04 Traction power distribution: catenary RF N/A 15% 50.05 Communications RF \$ 150 15% 50.06 Fare collection system and equipment STA \$ 338,000 10% 50.07 Central control allowance LS \$ 580,000 20% 60.00 ROW, LAND, EXISTING IMPROVEMENTS	50.02a	Traffic signals and crossing protection - Freight	RF		N/A	15%		
50.04 Traction power distribution: catenary RF N/A 15% 50.05 Communications RF \$ 150 15% 50.06 Fare collection system and equipment STA \$ 338,000 10% 50.07 Central control allowance LS \$ 580,000 20% 60.00 ROW, LAND, EXISTING IMPROVEMENTS	50.03	Traction power supply: substations	RF		N/A	15%		
50.05 Communications RF \$ 150 15% 50.06 Fare collection system and equipment STA \$ 338,000 10% 50.07 Central control allowance LS \$ 580,000 20% 60.00 ROW, LAND, EXISTING IMPROVEMENTS	50.04	Traction power distribution: catenary	RF		N/A	15%		
50.06 Fare collection system and equipment STA \$ 338,000 10% 50.07 Central control allowance LS \$ 580,000 20% 60.00 ROW, LAND, EXISTING IMPROVEMENTS Improvement I	50.05	Communications	RF	\$	150	15%		
Sol.07 Ets \$ 360,000 20% 60.00 ROW, LAND, EXISTING IMPROVEMENTS	50.06	Fare collection system and equipment	SIA	\$	338,000	10%		
60.00 ROW, LAND, EXISTING IMPROVEMENTS Image: mail of the state RF \$ 150 30% 60.01 Purchase or lease of real estate RF \$ 150 30% 60.02 Relocation of existing households and businesses RF \$ 300 40% Professional Services (2% of SCC 60 direct costs) 2% N/A 100% 70.00 VEHICLES (number) Image: mail of the state Image: mail of the state 1mage: mail of the state 70.04 Bus - 40' hybrid electric EA \$ 700,000 5% 70.04 Bus - 60'/articulated hybrid electric EA \$ 1,200,000 5% 70.05 Other EA N/A 10% 70.06 Nor revenue vehicles EA N/A 10% 70.07 Spare Parts LS N/A 0%	50.07			¢	560,000	20%		
60.01 Purchase or lease of real estate RF \$ 150 30% 60.02 Relocation of existing households and businesses RF \$ 300 40% Professional Services (2% of SCC 60 direct costs) 2% N/A 100% 70.00 VEHICLES (number)	60.00	ROW, LAND, EXISTING IMPROVEMENTS						
60.02 Relocation of existing households and businesses RF \$ 300 40% Professional Services (2% of SCC 60 direct costs) 2% N/A 100% 70.00 VEHICLES (number)	60.01	Purchase or lease of real estate	RF	\$	150	30%		
Professional Services (2% of SCC 60 direct costs) 2% N/A 100% 70.00 VEHICLES (number)	60.02	Relocation of existing households and businesses	RF	\$	300	40%		
70.00 VEHICLES (number) EA 700,00 5% 70.04 Bus - 40' hybrid electric EA \$ 700,000 5% 70.04 Bus - 60'/articulated hybrid electric EA \$ 1,200,000 5% 70.05 Other EA N/A 10% 70.06 Non revenue vehicles EA N/A 15% 70.07 Spare Parts LS N/A 0%		Protessional Services (2% of SCC 60 direct costs)	2%	-	N/A	100%		
70.04 Bus - 40' hybrid electric EA \$ 700,000 5% 70.04 Bus - 60'/articulated hybrid electric EA \$ 1,200,000 5% 70.05 Other EA N/A 10% 70.06 Non revenue vehicles EA N/A 15% 70.07 Spare Parts LS N/A 0%	70.00	VEHICLES (number)		+				
70.04 Bus - 60'/articulated hybrid electric EA \$ 1,200,000 5% 70.05 Other EA N/A 10% 70.06 Non revenue vehicles EA N/A 15% 70.07 Spare Parts LS N/A 0%	70.04	Bus - 40' hybrid electric	EA	\$	700,000	5%		
70.05 Other EA N/A 10% 70.06 Non revenue vehicles EA N/A 15% 70.07 Spare Parts LS N/A 0%	70.04	Bus - 60'/articulated hybrid electric	EA	\$	1,200,000	<u> </u>		
70.06 Non revenue vehicles EA N/A 15% 70.07 Spare Parts LS N/A 0%	70.05	Other	EA		N/A	10%		
10.01 Spare Parts LS NA 0%	70.06	Non revenue vehicles	EA	-	N/A	15%		
	70.07	Spare Parts	LS		N/A	0%		



Riverview Corridor Pre-Project Development S	tudy					
Bus, Arterial BRT, Dedicated BRT, and Hybrid	Bus					
Draft Estimated Unit Costs						
Description	Unit	Unit Cost (2016 \$)	Recommended Allocated Contingency			
PROFESSIONAL SERVICES (SCC CATEGORIES 10 - 50)	30.00%					
Project Planning	3.00%		20%			
Engineering	9.00%		20%			
Project Management for Design and Construction	7.00%		20%			
Construction Administration & Management	6.00%		20%			
Professional Liability and other non Construction Insurance	2.00%		20%			
Legal; Permits; Review Fees by other agencies, cities, etc.	1.50%		20%			
Surveys, Testing, Investigation, Inspection	0.50%		20%			
Start-up (by Transit workforce)	1.00%		20%			
L SCC CATEGORIES 10-80						
Contingency (Unallocated)	5.00%					
Finance Charges	3.00%	per year				
OJECT COST (10-100)						
r Foot; RF = Route Foot; EA = Each; SF = Square Foot; STA = Cost per Station; LS =	Lump Sum	n; TF = Track Fo	ot			
ng Space						
Cost Estimating Assumptions:	•					
Estimates are prepared using current dollars (2016).						
Adequate experienced craft labor is available.						
Normal productivity rates as historically experienced are utilized.						
Compatible trade agreements exist in the region.						
No strike impacts will be experienced by the project.						
There are sufficient experienced contractors available to perform said work.						
Normal Minneapolis/Saint Paul Area weather impacts to constructions schedule.						
Evide Compared as the first second model and the share being strictly be and the set						
Existing state of the art construction technology will be utilized.						
	Riverview Corridor Pre-Project Development S Bus, Arterial BRT, Dedicated BRT, and Hybrid Draft Estimated Unit Costs Description PROFESSIONAL SERVICES (SCC CATEGORIES 10 - 50) Project Planning Engineering Project Management for Design and Construction Construction Administration & Management Professional Liability and other non Construction Insurance Legal; Permits; Review Fees by other agencies, cities, etc. Surveys, Testing, Investigation, Inspection Start-up (by Transit workforce) L SCC CATEGORIES 10-80 Contingency (Unallocated) Finance Charges COJECT COST (10-100) r Foot; RF = Route Foot; EA = Each; SF = Square Foot; STA = Cost per Station; LS = ng Space Cost Estimating Assumptions: Estimates are prepared using current dollars (2016). Adequate experienced craft labor is available. Normal productivity rates as historically experienced are utilized. Compatible trade agreements exist in the region. No strike impacts will be experienced by the project. There are sufficient experienced contractors available to perform said work. Normal Minneapolis/Saint Paul Area weather impacts to constructions schedule.	Riverview Corridor Pre-Project Development Study Bus, Arterial BRT, Dedicated BRT, and Hybrid Bus Draft Estimated Unit Costs Description Unit PROFESSIONAL SERVICES (SCC CATEGORIES 10 - 50) 30.00% Project Planning 3.00% Engineering 9.00% Project Management for Design and Construction 7.00% Construction Administration & Management 6.00% Professional Liability and other non Construction Insurance 2.00% Legal; Permits; Review Fees by other agencies, cities, etc. 1.50% Start-up (by Transit workforce) 1.00% L SCC CATEGORIES 10-80 Contingency (Unallocated) Finance Charges 3.00% Route Foot; EA = Each; SF = Square Foot; STA = Cost per Station; LS = Lump Sum ong Space Cost Estimating Assumptions: Estimates are prepared using current dollars (2016). Adequate experienced craft labor is available. Normal productivity rates as historically experienced are utilized. Compatible trade agreements exist in the region. No strike impacts will be experienced by the project. There are suffici	Riverview Corridor Pre-Project Development Study Bus, Arterial BRT, Dedicated BRT, and Hybrid Bus Draft Estimated Unit Costs Description Unit Unit (2016 \$) PROFESSIONAL SERVICES (SCC CATEGORIES 10 - 50) 30.00% Project Planning 3.00% Project Planning 3.00% Project Management for Design and Construction 7.00% Construction Administration & Management 6.00% Professional Liability and other non Construction Insurance 2.00% Legal; Permits; Review Fees by other agencies, cities, etc. 1.50% Surveys, Testing, Investigation, Inspection 0.50% Start-up (by Transit workforce) 1.00% Interpresent Colspan="2">Interpresent Colspan= 2" Inte			



Riverview Corridor Pre-Project Development Study						
LRT (Dedicated Guideway)						
Number	Draft Estimated Unit Costs Description	Unit	Unit Cost (2016 \$)	Recommended Allocated Contingency		
10.00	GUIDEWAY & TRACK ELEMENTS (Route Feet)					
10.01	Guideway: At-Grade Exclusive Right of Way	RF	\$ 300	15%		
10.02	Guideway: At-Grade semi-exclusive (allows cross traffic)	RF	\$ 1,330	15%		
10.04	Guideway: Aerial Structure	RF	\$ 12,250	25%		
10.08	Guideway: Retained Cut or Fill	RF	\$ 12,900	20%		
10.09	Track: Direct Fixation		\$ 600	10%		
10.10	Track: Embedded		\$ 800	15%		
10.11	Track: Special (switches, turnouts)	FA	\$ 1,000,000	10%		
10.12			\$ 1,000,000	1070		
20.00	STATIONS, STOPS, TERMINALS, INTERMODAL (Number)					
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	\$ 3,000,000	15%		
20.02	Aerial station, stop, shelter, mail, terminal, platform	EA	\$ 9,358,000	20%		
20.03	Other Stations, landings, terminals, intermedal, form, trollow, etc.		N/A	30% 25%		
20.04	Joint development	FA	N/A	25%		
20.06	Automobile parking multi-story structure	SP	\$ 20.000	10%		
20.06a	Automobile parking - unstructured	SP	\$ 6,000	10%		
20.07	Elevators	EA	\$ 844,000	10%		
20.07	Escalators - 2 escalators and 2 elevators per aerial/underground station)	EA	\$ 4,000,000	10%		
30.00	SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS					
30.01	Administration Building, Office, sales, storage, revenue counting	SF	\$ 350	15%		
30.02	Light Maintenance Facility - Allowance	LS	\$ 24,000,000	20%		
30.03	Heavy Maintenance Facility - Allowance	EA	N/A	20%		
30.04	Storage or Maintenance of Way Building	EA	N/A	20%		
30.05	Yard and Yard Track	EA	\$ 30,000	15%		
40.00	SITEWORK & SPECIAL CONDITIONS					
40.01	Demolition, Clearing, Earthwork	RF	\$ 400	20%		
40.02	Site Utilities allowance - High	RF	\$ 1,000	30%		
40.02			\$ 800	30%		
40.02	Site Utilities allowance - Low		\$ 600	30%		
40.03	Environmental mitigation, e.g. wetlands, historical/archeologic parks		\$ 50	20%		
40.05	Site structures including retaining walls, sound walls	RF	\$ 100	20%		
40.06	Pedestrian/bike access and accommodation, landscaping	RF	\$ 350	20%		
40.07	Automobile, bus, van accessways including roads, parking lots	RF	\$ 1,050	20%		
40.08	Temporary facilities and other indirect costs during construction	RF	\$ 1,150	20%		
50.00	SYSTEMS					
30.00						
50.00	Train control and signals	RF	\$ 450	15%		
50.00 50.01 50.02	Train control and signals Traffic signals and crossing protection	RF EA	\$ 450 \$ 250,000	15% 15%		
50.01 50.02 50.03	Train control and signals Traffic signals and crossing protection Traction power supply: substations	RF EA RF	\$ 450 \$ 250,000 \$ 500	15% 15% 15%		
50.00 50.02 50.03 50.04	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail	RF EA RF RF	\$ 450 \$ 250,000 \$ 500 \$ 460	15% 15% 15% 15%		
50.00 50.02 50.03 50.04 50.05	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications	RF EA RF RF RF	\$ 450 \$ 250,000 \$ 500 \$ 460 \$ 300	15% 15% 15% 15% 15%		
50.00 50.02 50.03 50.04 50.05 50.06 50.07	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications Fare collection system and equipment Central control	RF EA RF RF RF STA LS	\$ 450 \$ 250,000 \$ 500 \$ 460 \$ 300 \$ 338,000 \$ 750,000	15% 15% 15% 15% 15% 10% 20%		
50.00 50.01 50.02 50.03 50.04 50.05 50.06 50.07	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications Fare collection system and equipment Central control	RF EA RF RF STA LS	\$ 450 \$ 250,000 \$ 500 \$ 460 \$ 300 \$ 338,000 \$ 750,000	15% 15% 15% 15% 15% 10% 20%		
50.00 50.01 50.02 50.03 50.04 50.05 50.06 50.07 60.00	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications Fare collection system and equipment Central control ROW, LAND, EXISTING IMPROVEMENTS Purphese or lease of real estate	RF EA RF RF STA LS	\$ 450 \$ 250,000 \$ 500 \$ 460 \$ 300 \$ 338,000 \$ 750,000 	15% 15% 15% 15% 15% 10% 20%		
50.00 50.01 50.02 50.03 50.04 50.05 50.06 50.07 60.00 60.00 60.01	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications Fare collection system and equipment Central control ROW, LAND, EXISTING IMPROVEMENTS Purchase or lease of real estate Relocation of existing households and businesses	RF EA RF RF STA LS RF RF RF	\$ 450 \$ 250,000 \$ 500 \$ 500 \$ 300 \$ 338,000 \$ 750,000 \$ 150 \$ 150	15% 15% 15% 15% 15% 20% 20% 30% 40%		
50.00 50.01 50.02 50.03 50.04 50.05 50.06 50.07 60.00 60.01 60.02	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications Fare collection system and equipment Central control ROW, LAND, EXISTING IMPROVEMENTS Purchase or lease of real estate Relocation of existing households and businesses VEHICLES (number)	RF EA RF RF STA LS RF RF RF	\$ 450 \$ 250,000 \$ 500 \$ 460 \$ 300 \$ 300 \$ 338,000 \$ 750,000 \$ 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	15% 15% 15% 15% 15% 20% 20% 30% 40%		
50.00 50.01 50.02 50.03 50.04 50.05 50.06 50.07 60.00 60.00 60.01 60.02 70.00 70.01	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications Fare collection system and equipment Central control ROW, LAND, EXISTING IMPROVEMENTS Purchase or lease of real estate Relocation of existing households and businesses VEHICLES (number) Light Rail	RF EA RF RF STA LS RF RF RF EA	\$ 450 \$ 250,000 \$ 500 \$ 460 \$ 300 \$ 338,000 \$ 750,000 \$ 150 \$ 150 \$ 300 \$ 300 \$ 38,000 \$ 300 \$ 38,000 \$ 300 \$ 38,000 \$ 300 \$ 750,000 \$ 300 \$ 300 \$ 750,000 \$ 300 \$ 300 \$ 750,000 \$ 300 \$ 300 \$ 300 \$ 750,000 \$ 300 \$ 3000000 \$ 300000000 \$ 3000000000000000000000000000000000000	15% 15% 15% 15% 15% 20% 20% 30% 40%		
50.00 50.01 50.02 50.03 50.04 50.05 50.06 50.07 60.00 60.01 60.02 70.00 70.01 70.04	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications Fare collection system and equipment Central control ROW, LAND, EXISTING IMPROVEMENTS Purchase or lease of real estate Relocation of existing households and businesses VEHICLES (number) Light Rail Bus	RF EA RF RF STA LS RF RF RF EA EA	\$ 450 \$ 250,000 \$ 500 \$ 460 \$ 300 \$ 338,000 \$ 750,000 \$ 150 \$ 300 \$ 300 \$ 750,000 \$ 150 \$ 300 \$ 150 \$ 300 \$ 150 \$ 150 \$ 300 \$ 150 \$	15% 15% 15% 15% 15% 20% 20% 30% 40% 5%		
50.00 50.01 50.02 50.03 50.04 50.05 50.06 50.07 60.00 60.01 60.02 70.00 70.01 70.04 70.04	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications Fare collection system and equipment Central control ROW, LAND, EXISTING IMPROVEMENTS Purchase or lease of real estate Relocation of existing households and businesses VEHICLES (number) Light Rail Bus Other	RF EA RF RF STA LS RF RF RF EA EA EA	\$ 450 \$ 250,000 \$ 500 \$ 460 \$ 300 \$ 338,000 \$ 750,000 \$ 150 \$ 300 \$ 300 \$ 750,000 \$ 750,0000 \$ 750,00000 \$ 750,00000 \$ 750,00000 \$ 750,00000	15% 15% 15% 15% 15% 20% 20% 30% 40% 5% 5% 10%		
50.01 50.02 50.03 50.04 50.05 50.06 50.07 60.00 60.01 60.02 70.00 70.01 70.04 70.05 70.06	Train control and signals Traffic signals and crossing protection Traction power supply: substations Traction power distribution: catenary and third rail Communications Fare collection system and equipment Central control ROW, LAND, EXISTING IMPROVEMENTS Purchase or lease of real estate Relocation of existing households and businesses VEHICLES (number) Light Rail Bus Other Non revenue vehicles	RF EA RF STA LS RF RF RF RF EA EA EA EA	\$ 450 \$ 250,000 \$ 500 \$ 460 \$ 300 \$ 338,000 \$ 750,000 \$ 150 \$ 150 \$ 3,800,000 V/A V/A	15% 15% 15% 15% 15% 20% 20% 30% 40% 5% 5% 5% 10% 15%		



	Riverview Corridor Pre-Project Development St	tudy		
	LRT (Dedicated Guideway)	_		
	Draft Estimated Unit Costs			
Number	Description	Unit	Unit Cost (2016 \$)	Recommended Allocated Contingency
80.00	PROFESSIONAL SERVICES (SCC CATEGORIES 10 - 50)	34.00%		
80.01	Project Planning	3.00%		20%
80.02	Engineering	9.00%		20%
80.03	Project Management for Design and Construction	7.00%		20%
80.04	Construction Administration & Management	10.00%		20%
80.05	Professional Liability and other non Construction Insurance	2.00%		20%
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	1.50%		20%
80.07	Surveys, Testing, Investigation, Inspection	0.50%		20%
80.08	Start-up (by Transit workforce)	1.00%		20%
SUBTOT	AL SCC CATEGORIES 10-80			
90.00	Contingency (Unallocated)	5.00%		
100.00	Finance Charges	3.00%	per year	
TOTAL P	ROJECT COST (10-100)			
LF = Linea	ar Foot; RF = Route Foot; EA = Each; SF = Square Foot; STA = Cost per Station; LS =	Lump Sum	n; TF = Track Fo	ot
SP = Park	ring Space			
	Cost Estimating Assumptions:			
	Estimates are prepared using current dollars (2016).			
	Adequate experienced craft labor is available.			
	Normal productivity rates as historically experienced are utilized.			
	Compatible trade agreements exist in the region.			
	No strike impacts will be experienced by the project.			
	There are sufficient experienced contractors available to perform said work.			
	Normal Minneapolis/Saint Paul Area weather impacts to constructions schedule.			
	Existing state of the art construction technology will be utilized.			
	Assumes cooperation between stakeholders.			



Riverview Corridor Pre-Project Development Study						
DMU						
Number	Draft Estimated Unit Costs Description	Unit		Unit Cost (2016 \$)	Recommended Allocated Contingency	
10.00	GUIDEWAY & TRACK ELEMENTS (Route Feet)				contingency	
10.01	Guideway: At-Grade Exclusive Right of Way	RF	\$	300	15%	
10.02	Guideway: At-Grade semi-exclusive (allows cross traffic)	RF	\$	2,650	15%	
10.03	Guideway: At-Grade in Mixed Traffic	RF		N/A	15%	
10.04	Guideway: Aerial Structure	RF	\$	12,250	25%	
10.05	Guideway: Built-up Fill	RF	\$	5,550	20%	
10.06	Guideway: Underground Cut & Cover		\$	18,150	30%	
10.07	Guideway: Underground Tunnel		\$	42,000	30%	
10.00			¢ ⊅	1 200	20%	
10.08	Track: Embedded	RE	ф 8	1,200	10%	
10.10	Track: Ballasted	RF	\$	1,400	10%	
10.11	Prack: Special (switches, turnouts)	FA	\$	1 000 000	10%	
10.13	Track: Vibration and noise dampening	LS	Ť	N/A	15%	
20.00	STATIONS, STOPS, TERMINALS, INTERMODAL (Number)		-			
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	\$	2,151,000	15%	
20.02	PAerial station, stop, shelter, mall, terminal, platform	EA	\$	9,358,000	20%	
20.03	Underground station, stop, shelter, mall, terminal platform	EA	\$	68,762,000	30%	
20.04	Other Stations, landings, terminals, intermodal, ferry, trolley, etc.	EA		N/A	25%	
20.05	Joint development	EA		N/A	25%	
20.06	Automobile parking multi-story structure	SP	\$	20,000	10%	
20.06a	Automobile parking - unstructured	SP	\$	6,000	10%	
20.07	Elevators	EA	\$	844,000	10%	
20.07	Escalators - (2 escalators and 2 elevators per aerial/underground station)	EA	\$	4,000,000	10%	
30.00	SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS					
30.01	Administration Building, Office, sales, storage, revenue counting	SF	\$	350	15%	
30.02	Light Maintenance Facility*	LS	\$	21,123,000	20%	
30.03	Heavy Maintenance Facility*	LS	\$	42,215,000	20%	
30.04	Storage or Maintenance of Way Building	EA	¢	IN/A	20%	
30.05		<u>L</u> S	\$	20,977,000	15%	
40.00	SITEWORK & SPECIAL CONDITIONS					
40.01	Demolition, Clearing, Earthwork	RF	\$	400	20%	
40.02	Site Utilities, Utility Relocation (Urban)	RF	\$	1,000	30%	
40.02	Site Utilities, Utility Relocation (Suburban)	RF	\$	800	30%	
40.02	Site Utilities, Utility Relocation (Rural)	RF	\$	600	30%	
40.03	Haz. Mat'l, contam'd soil removal/mitigation, ground water treatments		\$	50	20%	
40.04	Environmental mitigation, e.g. wetlands, historical/archeologic parks		¢ ⊅	100	20%	
40.00	Pole structures including retaining wails, sound wails		¢ ¢	350	20%	
40.00	Automobile bus van accesswavs including roads parking lots	RE	¢ ¢	1 050	20%	
40.08	Temporary facilities and other indirect costs during construction	RF	\$	1,150	20%	
50 00	SYSTEMS					
50.01	Train Control and signals	RF	\$	450	15%	
50.02	Traffic signals and crossing protection	EA	\$	250,000	15%	
50.03	Traction power supply: substations	RF		N/A	15%	
50.04	Traction power distribution: catenary	RF		N/A	15%	
50.05	Communications	RF	\$	150	15%	
50.06	Fare collection system and equipment	STA	\$	338,000	10%	
50.07	Central Control	LS	\$	702,000	20%	
60.00	ROW, LAND, EXISTING IMPROVEMENTS					
60.01	Purchase or lease of real estate	RF	\$	150	30%	
60.02	Relocation of existing households and businesses	RF	\$	300	40%	
				-		



	Riverview Corridor Pre-Project Development St	udy		
	DMU			
	Draft Estimated Unit Costs			
Number	Description	Unit	Unit Cost (2016 \$)	Recommended Allocated Contingency
70.00	VEHICLES (number)			
70.03	DMU	EA	\$ 7,341,000	5%
70.04	Bus	EA	N/A	5%
70.05	Other	EA	N/A	10%
70.06	Non revenue vehicles	EA	N/A	15%
70.07	Spare Parts (Based on vehicle total)	LS	5%	0%
80.00		24.009/		
80.00	Project Planning	2 000/		20%
80.01		3.00%		20%
00.02	Engineering Broiset Management for Design and Construction	9.00%		20%
00.03	Construction Administration & Management	7.00%		20%
00.04	Construction Administration & Management	10.00%		20%
80.05	Professional Liability and other non Construction Insurance	2.00%		20%
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	1.50%		20%
80.07	Surveys, Testing, Investigation, Inspection	0.50%		20%
80.08	Start-up (by Transit workforce)	1.00%		20%
OUDTOT				
SUBIOIA	AL SCC CATEGORIES 10-80			
00.00		F 000/		
90.00	Contingency (Unallocated)	5.00%		
100.00	Financo Chargos	3 00%	por voor	
100.00	rindice Cildiges	3.00%	per year	
TOTAL PI	ROJECT COST (10-100)			
LF = Linea	ar Foot; RF = Route Foot; EA = Each; SF = Square Foot; STA = Cost per Station; LS = Lu	mp Sum; T	TF = Track Foot	
SP = Park	ing Space			
*Light mai	ntenance facility includes inspection pits, servicing equipment, and train washing			
*Heavy ma	aintenance facility includes inspection pits, servicing equipment, train washing, sanding towe	er pipina w	vheel truing and c	trop table
*Light and	heavy maintenance vards are assumed to be equal	n pipilig, t	rhoor traing, and t	
	Cost Estimating Assumptions:			
	Estimates are prepared using current dollars (2016).			
	Adequate experienced craft labor is available.			
	Normal productivity rates as historically experienced are utilized.			
	Compatible trade agreements exist in the region.			
	No strike impacts will be experienced by the project.			
	There are sufficient experienced contractors available to perform said work.			
	Normal Minneapolis/St. Paul Area weather impacts to constructions schedule.			
	Existing state of the art construction technology will be utilized.			
	Assumes cooperation between stakeholders.			



	Riverview Corridor Pre-Project Development Study						
		Modern Streetcar and Hybrid R	ail				
Draft Estimated Unit Costs							
Brance: Nicollet-Central Streetcar Project, North Parant/St Claude Streetcar Project (New Orleans)							
Rase	Vear: 2015 (dollars Vear 2016 dollars uses 3 percent escalation rate		, and	/		
Base	Decerinti	nonars. Tear 2010 donars uses 5 percent escalation hate.	l Init		Unit Coot	Becommonded	
300	Descripti	on	Unit		Unit Cost	Recommended	
					(2010 \$)	Contingonov	
10	Guidowa	v and Track Element		1		contingency	
10	10.00	Direct Eivation Track	TE	¢	618	10%	
	10.09	Embedded Track in Poadway		φ	824	1078	
	10.10	Special Trackwork - Embedded crossing (Trail)	FΔ	φ \$	267 800	15%	
	10.12	Special Trackwork - Embedded turnout (Trail)	FA	\$	1 030 000	15%	
	10.12		L/\	Ψ	1,000,000	1070	
20	Stations.	Stops, Terminals, Intermodal					
	20.01	Modern Streetcar Stop - Center Loading	EA	\$	154,500	15%	
	20.01	Modern Streetcar Stop - Side Loading	EA	\$	113,300	15%	
					,		
30	Support I	Facilities: Yards, Shops, Admin. Bldgs					
	30.03	Heavy maintenance faciity - Streetcar	LS	\$	24,720,000	20%	
	30.05	Yard and yard track - Streetcar MOS	LS	\$	20,600,000	15%	
40	Sitework	and Special Conditions					
	40.02	Utility allowance	TF	\$	412	30%	
	40.02	Track drainage allowance	TF	\$	103	30%	
	40.02	Street lighting modification allowance	TF	\$	26	30%	
	40.03	Haz mat cleanup allowance	LS	\$	1,030,000	20%	
	40.05	Bridge allowance for streetcar	TF	\$	10,300	25%	
	40.06	Urban improvement & landscaping allowance	TF	\$	26	20%	
	40.06	ADA upgrade allowance per intersection	EA	\$	30,900	20%	
	40.07	Roadway construction allowance		\$	155	20%	
	40.08	MOT during construction (% of direct costs)	5%				
	40.08	Construction - Contractor Indirects (mobilization, etc; % of direct costs)	15%				
50	Suctore						
50	50 01	Train control and signals or Interlocking	E۸	¢	515 000	15%	
	50.01	Powered switch machine and train circuits	ΕΔ	φ \$	206.000	15%	
	50.01	Train warnings at driveways	ΕΛ	Ψ \$	51 500	15%	
	50.02	Traffic signal - New	FA	\$	231 750	15%	
	50.02	Traffic Signal - Modify existing	EA	\$	103.000	15%	
	50.02	TSP upgrade	TF	\$	21	15%	
	50.02	Streetcar only signal phase (TWC)	EA	\$	25,750	15%	
	50.03	Traction power substation	EA	\$	566,500	15%	
	50.03	Traction power substation	EA	\$	2,060,000	15%	
	50.04	Traction power distribution allowance	TF	\$	185	15%	
	50.04	Traction power distribution allowance	TF	\$	258	15%	
	50.04	Traction power distribution allowance (OCS -ready)	TF	\$	165	15%	
	50.04	Traction power distribution allowance (OCS -ready)	TF	\$	247	15%	
	50.05	Fibre optic trunk allowance	RF	\$	41	15%	
	50.05	Fibre optic trunk allowance	RF	\$	93	15%	
	50.06	Fare collection system and equipment	EA	\$	18,540	10%	
	50.06	Fare collection system and equipment	EA	\$	348,140	10%	
	50.07	Central control allowance	I F	\$	10	20%	
	50.07	Central control allowance	LS	\$	618,000	20%	
60	Dialet of 1	Nov Allowanaa					
00	Right-of-	way Allowance Streetcar Operations and Maintenance Eacility	10	¢	1 020 000	200/	
	60.01	Streetcar TPSS Fasement	ES EA	φ ¢	1030,000	30% 2∩%	
	60.01	Streetcar TPSS Fasement	RF	Ψ \$	155,000	30%	
				Ψ	100	0078	



Riverview Corridor Pre-Project Development Study						
		Modern Streetcar and Hybrid F	Rail			
		Draft Estimated Unit Costs				
Refer	ence: Nic	collet-Central Streetcar Project, North Rampart/St Claude Streetcar Projec	t (New Orle	ans)		
Base	Year: 201	5 dollars. Year 2016 dollars uses 3 percent escalation rate.				
SCC	Description		Unit	Unit Cost (2016 \$)	Recommended Allocated Contingency	
70	Transit	Vehicles				
	70.01	Modern streetcar (standard)	EA	\$ 4,326,000	5%	
80	Professional Services (for SCCs 10 through 50)			32%	20%	
	80.01	PE		3%	20%	
	80.02	Final Design		9%	20%	
	80.03	Project management for design and construction		7%	20%	
	80.04	Construction administration and management		9%	20%	
	80.05	Insurance		2%	20%	
	80.06	Legal - Permits, review fees by other agencies/cities, etc.		2%	20%	
	80.07	Survey, testing, investigation, inspection		1%	20%	
	80.08	Start-up cost and agency force account work		1%	20%	
90	Contine					
	ooming	Construction (SCCs 10-50)		allocated by each		
<u> </u>		ROW		+ 5% overall allocated by each		
		Vehicles		+ 5% overall 5%		
100	Finance	e Charges	3%	per year		
ΤΟΤΑ	L PROJ	ECT COST (10 - 100)				
F=	inear foo	t: RF= Route foot: FA= Fach: SF= Square Foot: STA= Cost per station: L	S = Lump s	um: TF = Track foot		
*Unit costs are presented as a range (low-high), "Low" costs represent smaller streetcar system (e.g. Nicollet-Central, Portland).						
**"Hig	h" range	represent larger systems, more similar to LRT.				
	Cost Es	stimating Assumptions:				
	Estimate	es are prepared using current dollars (2016).				
	Adequat	te experienced craft labor is available.				
Normal productivity rates as historically experienced are utilized.						
Compatible trade agreements exist in the region.						
No strike impacts will be experienced by the project.						
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