

Summary of Bridge Influence Area (BIA) Concepts

Concept Number	Concept Description	Traffic Volumes		Traffic Performance			Design Criteria (e.g. schematic, scaled single line, detailed design)			Air and Marine Navigation		Structures	Cost Estimating	Natural and Cultural/Historic Resources			Status (e.g. dropped, why? Or further evaluation why?)
		Year	Assignment Process (e.g. hand model, none, growth factor)	Level of Service (e.g. mainline, ramp, diverge, merge, ramp terminal, interchanges)	Travel Time	Mode of Travel	Vehicle Miles of Travel	Cross-Section	Horizontal	Profile	Air Navigation			Marine Navigation	Fish Habitat	Wetlands and Parks	
8-1*	Five Northbound Lanes on Existing Bridge; 5 southbound lanes on new double-deck bridge; LRT on lower deck west of existing bridges	2020	Metro's EMM/2 travel demand model - Output	VISSIM Model - Input	Average Speed	Improve freight within BIA	New structures will be built to current standards	Providing for weaving and merging means adding lanes in some locations	High-level, fixed span bridges	Bridges in the vicinity of Pearson Air Park	1-5 bridges across major shipping channel (Columbia River)	Further study needed to determine whether new bridge should be a replacement or supplemental	\$1,200 million (2002)	No detailed analysis was undertaken Limited screening focusing on fish habitat and wetlands	No detailed analysis was undertaken Limited screening focusing on fish habitat and wetlands	No detailed analysis was undertaken	Promising
			Regional travel patterns	Freeway operations	Reduce congestion and delay	Assume HOV lanes - further analysis needed in EIS	SR 500 to 4th Plain 4th Plain to MI Plain MI Plain to SR 14	Low-level movable span bridges	No impact to restricted air space			Joint use (highway/light rail) bridge further investigation needed Separate Light rail bridge - Substantial environmental & design work has already been completed in the South/North EIS Tunnels Replacement bridge Supplemental bridge Existing structures do not meet seismic standards	Part of EIS, need life cycle costs of the existing bridges and seismic retrofit costs Displacements: 8 residential & 16 non-residential Encroachments: 21 residential & 32 non-residential Need additional survey, engineering and design work in EIS Based on major construction items	Actual impacts to natural resources need to be determined in an EIS Number of river crossing will significantly influence the impact	Actual impacts to natural resources need to be determined in an EIS Delta Park green space Radio tower wetlands	Actual impacts to cultural and historic resources need to be determined in an EIS FL Vancouver Historical Site Historic I-5 Columbia River Bridge	
8-2	Five northbound lanes on new bridge east of existing bridges; 2 southbound lanes on existing bridges New LRT bridge west of existing bridges																
8-3	New 5 lane double-deck bridge, northbound upper deck, southbound lower deck, LRT on existing west bridge																
8-4*	New five lane double-deck bridge, northbound upper deck, southbound lower deck; LRT on new bridge west of existing bridges; Only option to shift navigational channel	2020	Metro's EMM/2 travel demand model - Output	VISSIM Model - Input	Average Speed	Improve freight within BIA	New structures will be built to current standards	Providing for weaving and merging means adding lanes in some locations	High-level, fixed span bridges	Bridges in the vicinity of Pearson Air Park	1-5 bridges across major shipping channel (Columbia River)	Further study needed to determine whether new bridge should be a replacement or supplemental	\$1,175 million (2002)	No detailed analysis was undertaken Limited screening focusing on fish habitat and wetlands	No detailed analysis was undertaken Limited screening focusing on fish habitat and wetlands	No detailed analysis was undertaken	Promising
			Freeway operations	Freeway operations	Reduce congestion and delay	Assume HOV lanes - further analysis needed in EIS	SR 500 to 4th Plain 4th Plain to MI Plain MI Plain to SR 14	Low-level movable span bridges	No impact to restricted air space			Separate Light rail bridge - Substantial environmental & design work has already been completed in the South/North EIS Light rail on existing bridge would require retrofitting and the associated costs could easily exceed a new bridge Tunnels Replacement bridge Supplemental bridge Existing structures do not meet seismic standards	Part of EIS, need life cycle costs of the existing bridges and seismic retrofit costs Displacements: 6 residential & 9 non-residential Encroachments: 9 residential & 35 non-residential Need additional survey, engineering and design work in EIS Based on major construction items	Actual impacts to natural resources need to be determined in an EIS Number of river crossing will significantly influence the impact	Actual impacts to natural resources need to be determined in an EIS Delta Park green space Radio tower wetlands Full impact to Columbia River	Actual impacts to cultural and historic resources need to be determined in an EIS FL Vancouver Historical Site Historic I-5 Columbia River Bridge	Best performance
8-5	New 6 lane bridge east of existing bridges; 2 lanes northbound/southbound collector-distributor on existing bridges; LRT on new bridge west of existing bridges																
8-6*	3 lanes northbound/southbound on existing bridges; New 4-lane collector-distributor double deck bridge with LRT on lower deck	2020	Metro's EMM/2 travel demand model - Output	VISSIM Model - Input	Average Speed	Improve freight within BIA	New structures will be built to current standards	Providing for weaving and merging means adding lanes in some locations	High-level, fixed span bridges	Bridges in the vicinity of Pearson Air Park	1-5 bridges across major shipping channel (Columbia River)	Further study needed to determine whether new bridge should be a replacement or supplemental	No cost estimate was developed for Concept #6	No detailed analysis was undertaken Limited screening focusing on fish habitat and wetlands	No detailed analysis was undertaken Limited screening focusing on fish habitat and wetlands	No detailed analysis was undertaken	Design problems will be difficult to overcome
			Freeway operations	Freeway operations	Reduce congestion and delay	Assume HOV lanes - further analysis needed in EIS	SR 500 to 4th Plain 4th Plain to MI Plain MI Plain to SR 14	Low-level movable span bridges	No impact to restricted air space			Joint use (highway/light rail) bridge further investigation needed Tunnels Replacement bridge Supplemental bridge Existing structures do not meet seismic standards	Displacements: 20 residential & 23 non-residential Encroachments: 16 residential & 43 non-residential Need additional survey, engineering and design work in EIS Based on major construction items	Actual impacts to natural resources need to be determined in an EIS Number of river crossing will significantly influence the impact	Actual impacts to natural resources need to be determined in an EIS Delta Park green space Radio tower wetlands	Actual impacts to cultural and historic resources need to be determined in an EIS FL Vancouver Historical Site Historic I-5 Columbia River Bridge	Least improvement
8-7*	3 southbound lanes on existing west bridge; HOV only, southbound and northbound on existing east bridge; 3 northbound lanes on new bridge east of existing bridges; 2 arterial lanes and LRT on new bridge west of existing bridges	2020	Metro's EMM/2 travel demand model - Output	VISSIM Model - Input	Average Speed	Improve freight within BIA	New structures will be built to current standards	Providing for weaving and merging means adding lanes in some locations	High-level, fixed span bridges	Bridges in the vicinity of Pearson Air Park	1-5 bridges across major shipping channel (Columbia River)	Further study needed to determine whether new bridge should be a replacement or supplemental	\$1,161 million (2002)	No detailed analysis was undertaken Limited screening focusing on fish habitat and wetlands	No detailed analysis was undertaken Limited screening focusing on fish habitat and wetlands	No detailed analysis was undertaken	Promising
			Freeway operations	Freeway operations	Reduce congestion and delay	Assume HOV lanes - further analysis needed in EIS	SR 500 to 4th Plain 4th Plain to MI Plain MI Plain to SR 14	Low-level movable span bridges	No impact to restricted air space			Tunnels Replacement bridge Supplemental bridge Existing structures do not meet seismic standards	Part of EIS, need life cycle costs of the existing bridges and seismic retrofit costs Displacements: 6 residential & 17 non-residential Encroachments: 13 residential & 29 non-residential Need additional survey, engineering and design work in EIS Based on major construction items	Actual impacts to natural resources need to be determined in an EIS Number of river crossing will significantly influence the impact	Actual impacts to natural resources need to be determined in an EIS Delta Park green space Radio tower wetlands	Actual impacts to cultural and historic resources need to be determined in an EIS FL Vancouver Historical Site Historic I-5 Columbia River Bridge	
8-8	New 8-lane Bridge east of existing bridges Local Arterial on existing northbound ridge LRT on southbound Bridge																

*modeled in detail in BIA Study