

RAIL INFRASTRUCTURE IMPROVEMENTS MATRIX

#	Project	Description	Traffic Volume Number of trains/ marine traffic required openings PER DAY	Rated Capacity	Category* B/T, GS S/DT	Issues and Improvements Required				Expected Benefits Order of Magnitude (Description of capacity improvement, time savings, public convenience, safety)	Stakeholders/ Constituents
						Physical Improvements/Investments	Operational Constraints	External Constraints	Estimated Cost		
1	Pitt River Swing Span Rail Bridge Mile 109.7 Cascade Subdivision	Strategic link for all railroads to Van Port for import & export to & from the North American market Bridge handles WCE commuter & CPR (CN bulk) freight traffic CPR's route to Van Port & Greater Van area mainland & CN & other rail access if Fraser R. Bridge is inoperative	45 trains ----- 15 openings		B	<p><u>Short term:</u> upgrade lift span <u>Long term:</u> bridge replacement</p> <p>Improvements to bridge controls through installation of Programmable Linear Computer hardware & software to improve cycle times</p> <p>Physical improvements to raise bridge to reduce opening requirements impacted by proximity of approaches to Intermodal and main Coquitlam yards</p>	Freight traffic impacted by bridge operations –due to marine permitted closure periods – displace bridge openings into freight periods	Proximity to CPR intermodal & Main Coquitlam Yards restricts raising the bridge for greater clearance for marine traffic. Requirements for openings outside commuter rail windows set by commercial and recreational marine traffic	<p><u>Short Term Staged Improvements:</u> 5-6 min per closing improvement through \$400K programmable linear computer system to have quicker opening/ closing cycle</p> <p><u>Long Term:</u> \$250 million+ for replacement</p>	Increase freight windows by 1.5 hours Freight and recreational river traffic conflicts reduced Closure windows for commuters reduces future capacity for freight	<ul style="list-style-type: none"> -all railways -Shippers – VPA FRPA – Port users -Port freight operations -CPR Coquitlam Yard -Vancouver Intermodal Terminal -CN Yard to Yard running -Western Canada
2	New Westminster (Fraser River) Rail Bridge	Gateway Council infrastructure priority. Replacement of swing span needed for strategic material objectives & -rail/barge traffic -North/South AMTRAK/cargo traffic -Inner Harbour terminals -CN & BNSF route to Van Port – BCR route to USA-Canada route to Pacific Rim – SRY route to Fraser Port – Fraser Valley -VIA, AMTRAK & Rocky Mtn – to Van	46 trains ----- 460 bridge openings per month 17 openings per day	59 trains	B/T	<p>New Infrastructure</p> <p><u>Short term:</u> scheduling marine openings increase train speed <u>Long term:</u> Bridge replacement e.g. rail/road bridge/ tunnel linking rail across river and road SFPR to NFPR</p>	Swing span & track & speed limits (8mph) have serious impact on inlet terminals – 30 M tonnes of cargo Random openings for marine users, AMTRAK and Rocky Mountain	Alignment of new terminal crossing affected by rail, road, grade considerations and land availability	\$1 – 2 Billion	<p>Improve Canada's competitiveness Reduced costs to all users Reduced traffic congestion on roads Increased capacity to meet Canada's present & future transportation needs Replaces outdated Bridge Increased capacity for freight and passenger trains</p>	<ul style="list-style-type: none"> -all railways, AMTRAK, Rocky Mtn, VIA -Rail freight & passenger users -Terminals -Trucks -Vehicular traffic - Intermodal - Western / Eastern Canada & USA

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3	Westwood Street Mile 112.80 Cascadia Subdivision	Main artery in Coquitlam. Left turn Bay interfering with rail operations.	60-80 movements incl. Commuter, through freight & yard movements		GS	Combination of road restrictions, lane & barrier construction & Quadrant gates to improve existing physical layout. Four quadrant gates & closure of short cut route used to avoid Lougheed Hwy. would improve operations & safety. Grade separation (underpass) would improve traffic flow.	Crossing blocked by trains & yard switchers when working the west end of Coquitlam Yard. These rail movements occupy the crossing as required & it is the road traffic at this location that backs up Westwood.		Barriers & Quadrant gates \$300 dependent on system required Underpass at that location \$10 million	Improved road, pedestrian, commuter rail & freight safety from barriers & gates. Improved vehicle traffic flow by 4.5-6.5 hours would result from a grade separation	-Municipalities (PoCo & Co) -GVRD -WCE -Road users
4	Harris Road Mile 107.35 Cascade Subdivision	Main artery into Pitt Meadows Concern for emergency access when trains are occupying crossing while approaching and leaving nearby CPR Intermodal & Main Coquitlam yards.	45 trains + movements		GS	Grade separation required for improved traffic flow & safety at crossing. Freight operations would benefit by ability to stage for yards and Pitt River Rail Bridge, at that location.	10 mph limit		\$10 million	-Improved rail & yard operations through the area by removing road interface. -Improved freight capacity by allowing staging of freight trains. - Improved access for emergency vehicles and commercial traffic 3.75 hrs/day @ 5 min for each train -Potential Interface with new 200th St. Crossing -Improved flow over Fraser R to Albion Ferry/bridge -Westcoast Express (for safety)	-Pitt Meadows Emergency vehicles - Commercial vehicles Commuters -Port (freight access) -WCE
5	Wren St. Mile 88.80 Cascade Subdivision	Private crossing –leads to area being developed On the WCE route east of Mission Gravel & sand trucks moving product to barges on the Fraser R. provide the majority of road traffic	20-30 trains		GS	Grade separation required		Possible sub- division of waterside property could attract industrial or commuter traffic	\$10 million	Potential Industrial/Residential development at Silverdale would benefit by 2.5 hrs/day Increased Safety for road/WCE	-City of Mission -Silverdale development -WCE

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6	Maple Meadows Area (A) & (B)	4 crossings exist in a 1 mile stretch of track Additional traffic will be attracted to the area with the expansion of industrial park area & construction of bridge at Albion	20-30 trains		GS	Consolidation of crossings. (A) One of either Ditton Street Mile 105.21 Cascade or Lorne Ave. Mile 105.33 Cascade should be closed to channel access across the tracks. (They serve same residential area) (B) Maple Meadows Way Mile 106.2 & newly opened 203 rd St @ Mile 105.7 Cascade both serve a new industrial park, are close together and will be at or near proposed route to Albion Bridge. Consolidation with best practises crossing with barriers and 4 quadrant gates. (C) Grade separation dependant on route of ring route to Albion Bridge. (200 th St. at present time)	Modifications would lead to increased safety & separation of people from trains. Freight trains do not block the crossing now for switching other than one mill. Increased road traffic through the area, if Albion Bridge is built, is a concern at the grade crossings.	Public disagreement to crossing closure.	(A) \$100K to 300K dependent on crossing signal & road requirements due to 1 closure. (B) \$100K to \$300K dependant on crossing signal & road requirements Hwy Crossing Protection - signals, gates & bells	Safety for public & WCE 2.5 hrs/day opening of road	-Maple Ridge -Industrial developments -Katie Indian Reservation
7	Cascade Subdivision	3 crossings to log handling facilities: Mile 102.54 Cascade serving Northview Enterprises (225 th St.) Mile 95.14 Cascade serving Fraser Cedar Products Mile 93.80 Cascade (Sidney St) serving Twin River Cedar Products & Waldun Forest Products	20-30 trains		GS	Width restrictions due to distance available between track & highway lead to situations where logging trucks foul rail tracks, while waiting to make turns onto Lougheed Hwy. <u>Solution:</u> Construct staging lanes next to the highway to allow trucks space to get off tracks, while waiting to make right turns (presently no left turns allowed onto Lougheed)			\$600,000 \$200,000 x 3 per location	Safety improvement for rail freight & WCE. Improved safety to truckers & Hwy traffic	-CPR -WCE -Maple Ridge -GVRD -Truckers -Hwy traffic -Ministry of Transport -Transport Canada

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8	King Edward Street Mile 4.95 Westminster Subdivision	Interference between road traffic & rail movements to N. Shore Terminals, Annacis Island, Westminster & Westminster Bridge: Sapperton Exchange area & adjacent land has seen proliferation of big box store construction. This crossing is connection to United Blvd. – major east-west connector, which is being extended to Braid St. in New West – will see additional traffic as result of being alternate route for commuters to Lougheed Hwy. & No 1 Hwy. Expansion & increased use by rail for service to North Shore Terminals (Neptune) for coal could be impacted by increased traffic.	15-20 movements CANAC Actual 16 movements	33 trains	GS or DT	Grade Separation required. Trackage at alternate site to handle volumes yard to yard may be feasible alternative for freight to investigate (does not alleviate increased vehicle – train cross product at the crossing as road traffic will increase). This is on CPR's route to Annacis Island auto terminals, Fraser River Bridge and North Shore.	Restricts train length for exchange of traffic	Cannot construct overpass	\$10 M Underpass	1.5 hrs/day opening of road.	-all Railways -Port Freight Operations -CPR Coquitlam Yard -Vancouver Intermodal Terminal -New Westminster (connection to Braid St.)
9	Pemberton Avenue	Single track used for mainland movements, yard and customer switching lead, and as the main interline connection for BCR and its customer to CN & other railways Through train movements conflict with servicing FiberCo, Van Wharves operations	250,000 car load movements per year @40 cars =17 train movements per day or 45 switching movements per day		GS	Overpass – biggest single improvement Close Bewicke, Bridge & Phillips Aves., direct all vehicular traffic over a new Pemberton overpass	Reduction in yard switching Crossing blockage for other industries Interchanging between CN/BCR	Land availability Municipal requirements	\$5 to 10 M	Improve the interline flow of 100,000 carloads of interline business 3.5 hrs/day opening of road -improved industrial vehicular access -increased yard capacity & utilization -improved customer service	-BC Rail -all railways -commercial & industry users -Fiberco & Vancouver Wharves -SeaSpan ship yards -North Van

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10	Roberts Bank 41B Grade Separation	Access to Roberts Bank area over 41 B	22 trains	33 trains	GS	Improvement for Class 1 railways accessing Roberts bank Construct an overpass @ 41B grade crossing	Limiting train length	Municipal requirements Farmers requirements	\$15-20 M due to Deltaport Way	-would allow unrestricted switching of Roberts Bank causeway & building of trains in excess of 10,000 feet in length. -2 hrs/day opening of road -increases capacity -Safety	-Class 1 Railways -Port of Vancouver -Westshore -Deltaport/TSI
11	Mud Bay Area	West leg of the Y North-south corridor Colebrook to Brownsville	13 trains	26 trains	S/DT	Construct a west leg of a "Y" from BN mainline to BCR Port Subdivision –integrates tunnel Provides access to southbound trains off of BNSF Provides secondary access to/from the one growth area that will happen for certain: i.e. Roberts Bank Unsure if technically feasible for overpass at 99 Rail underpass may have to be constructed for Hwy 91	Limiting access for southbound trains off of BNSF	Technical feasibility MOTH requirements for Hwy 99	\$15 M	1 hr/day opening of road -alleviate need for yard capacity at Roberts Bank -relieves congestion on Roberts Bank route – 2 access points -increased capacity -access for southbound trains	-all railways -Port of Vancouver -Terminal operators -Westshore -Deltaport/TSI
12	Victoria Drive	Victoria is the last grade crossing to the waterfront. Short distance between tracks & Powell St. restricts vehicle staging area.	45 trains		Road Closure	Closure of crossing access for emergency purposes only.		City of Vancouver Some issues with earthquake accessibility to Port lands		-safety and transit time for WCE.WCE goes over crossing at 10km/h now. -improves yard capacity with closure and alternate grade separation.	-Port of Vancouver -CP Railway -Port users -Marine carriers
13	Queensborough Bridge	-access to Annacis Island Auto Terminals	14 trains		B	Bridge widening for marine carriers			\$5 M		Marine community
14	FRONT ST. - Begbie St - 6th St - Front St	main route for commercial traffic	40 movements		GS	Overpass for Begbie or 6 th St. and overpass for Front St.	Queue for Bridge & switching lead		\$20 M	-3.5 hrs/day opening of road -safety	-City of New Westminster and railways

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15	Boundary Bay		22 trains	23 trains	S/GS	New 10,000 ft siding on BCR Port Subdivision and vehicle overpass			\$15 M	-significant increased capacity on Roberts Bank line -reduced vehicle delays at crossing -reduce railway costs	-CP/CN/BNSF -VPA -Westshore -Delta Port /TSI
16	BNSF Burrard Inlet Line @ Powell Street	Powell Street	19 movements	43 movements	DT	Double track from Glen Yard to Waterfront with Powell Street Grade Separation	Doubling of trains for Port		\$20 -25M	-increased access capacity to South Shore -improved vehicular access	-City of Van -Port -Terminals -BNSF & CN
17	BNSF Line – CN Junction		19 movements	85 movements	DT	New Willingdon Siding to keep double track clear			\$2M		-CN, BN, AMTRAK, -Waterfront Industries
18	BN New Yard to Spruce St. (.5 miles)		46 trains	59 trains	DT	Extend double track south for half mile to provide additional queuing capability for Fraser River Bridge			\$300,000		
19	Kingsway Street PoCo	Crossing – freight route to Sapperton	10-20 movements		GS				\$10 M		-Port Coquitlam -commercial vehicular traffic
20	Colebrook A		12 trains	26 trains	S/DT	Siding Extension to Colebrook North to South Increase Capacity		Municipal requirements		Increases capacity on BNSF New Westminster Sub Necessary for any increase in AMTRAK trains	-CP/CN/BNSF -AMTRAK -VPA -Westshore -Deltaport/TSI
	Colebrook B		22 trains	23 trains		Siding Extension East to West Close crossings & extend sidings	Alternative to a New Boundary Bay Siding	Municipal requirements Farmer requirements		Increases capacity on Roberts Bank Route Makes Mud Bay/Colebrook Siding “useable”	CP/CN/SRY/BNSF -VPA -Westshore -Deltaport/TSI
21	Chilliwack – Yale	Main crossing – (numerous crossing accidents & blockages)	35 trains	60 trains	GS	Overpass Northern Extension to stage trains			\$15	-increased capacity -crossing accidents reduced -crossing blockage	-CN -CP -SRY -Chilliwack

* Categories: B/T – Bridge/Tunnel GS – Grade Separation S/DT – Siding /Double track