City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE

Feature	*Unit*	*Unit Cost*	*Notes*
SECTION 1 - ROAD WORKS			
Removal - concrete curb / concrete curb and gutter	m	$ 20	
Removal - concrete median / island	m2	$ 50	*Cost includes sidewalk and pavers*
Removal - sidewalk / blvd	m2	$ 20	
Removal - asphalt roadway (excavation)	m2	$ 20	
New - concrete curb and gutter	m	$ 75	
New - concrete sidewalk, median, blvd, and islands	m2	$ 95	*Sidewalk + curb extensions + eyebrows in protected corner*
New - TWSI	each	$ 1,500	
New - asphalt paving on blvd	m2	$ 95	*Boulevard treatment assumed per existing condition between asphalt, sod, and pavers*
New - sod	m2	$ 21	*Includes topsoil (100 mm) and watering, boulevard treatment assumed per existing condition between asphalt, sod, and pavers*
New - asphalt cycle track	m2	$ 83	*Includes granular*
New - asphalt resurfacing (40 mm)	m2	$ 50	
New - pavement structure widening (full depth)	m2	$ 155	
New - raised crossing	m	$ 1,420	*Includes pavement markings (crossride/zebra), excavation (150 mm depth and 4 m ramp up/down, and concrete crosswalk (.23 m depth and 11 m width)*
New - transit stop - landing zone (15 m x 1.2 m)	each	$ 1,870	*Includes new concrete pad and zebra markings in cycle track*
New - transit stop (15 m x 3 m)	each	$ 4,435	*Includes new concrete pad and zebra markings in cycle track*
New - paver boulevard	m2	$ 130	*Boulevard treatment assumed per existing condition between asphalt, sod, and pavers*
New - truck apron conceptual	m2	$ 95	*Assumed concrete surface*
SECTION 2 - PAVEMENT MARKINGS			
Removal pavement markings (intersection)	per # lanes	$ 276	*Applied as a generalized cost to all intersections - removals per # lanes (assumed 3.5 m lanes, ex. 2 lanes * 3.5 m = 7 m of zebra marking removal) includes removal of parvement marking symbols (assumed 50% of legs), linear pavement markings, and zebra markings*
Installation of pavement markings (protected intersection/roadway)	per # lanes	$ 1,277	*Applied as a generalized cost to standard protected intersection designs - new pavement markings per # lanes (assumed 3.5 m lanes, ex. 2 lanes * 3.5 m = 7 m of new crossride / zebra markings) includes linear pavement markings, zebra markings, and crossrides with thermoplast paint)*
Installation of pavement markings (protected corners)	per intersection	$ 2,488	*Applied as a generalized cost to standard protected corner designs - includes pavement marking symbols and stencils (bike stencils, yield bars, etc.)*
New - zebra markings	m	$ 40	*Used if generalized cost does not apply*
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	$ 150	*Used if generalized cost does not apply*
New - linear pavement markings (lanes, stop bars, guiding lines)	m	$ 6	*Used if generalized cost does not apply*
New - green thermoplast paint	m2	$ 60	*Used if generalized cost does not apply*
Painted buffer	m	$ 4	
Bike box cost	each	$ 306	*Includes linear pavement markings (100 mm outline), green thermoplast paint, bike stencil*
SECTION 3 - TRAFFIC POLES / UTILITIES			
Relocation of signal pole (including foundation)	each	$ 4,500	*Where curb alignment and crossings changed, assumed all poles move. Assumed poles in adequate condition.*
New - vehicular traffic signal head	each	$ 2,200	*Assumed two required per new protected movements (fully protected right or left)*
New - pedestrian signal head	each	$ 350	
New - bike signal head	each	$ 3,800	
New - audible ped push button	each	$ 2,500	*Assumed all intersections require AODA upgrade*
New - replace loop detector	int. approach	$ 4,000	*Relevant where lane alignment/stop bar location changes*
New - signal pole	each	$ 10,000	*Assumed two required per new protected movements (fully protected right or left)*
Relocate existing catch basin	each	$ 2,500	*Assumed 2 per corner (more added in some cases)*
New - upgrading bike detection	m	$ 35	*Assume 16 m (4 m per corner)*
New signs	each	$ 275	*Assume 12 new (includes signage requirements in protected corners and at transit stops)*
Traffic signal work (other)	per intersection	$ 80,000	*Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, ESA connections, etc. Applied to each intersection*
Adjust manhole frame and cover	each	$ 650	*Assumed 2 per corner (more added in some cases)*
		Sub Total	
SECTION 4 - GENERAL			
Contingency (40-50%)	-	45%	
Engineering (15-25%)	-	20%	*20% due to complexity*
Contract Administration (5%)	-	5%	
City Internal Costs (7-10%)	-	7%	
Traffic Control (5-10%)	-	5%	*5% due to small extents of construction zone*
Utilities (5-20%)	-	20%	*Existing road space - 5%, changing road space - 20%, 10-15% used where a portion of the intersection corners have changing curb alignment*
Police	hr	$ 213	*Required for work within 30 m of a signalized intersection*
Miscellaneous (5%)	-	5%	
		Total Cost	

GENERAL ASSUMPTIONS:

Intersections are costed at the limits of design with limits where the cross-section reaches uniform alignment. Where uniform alignment is reached before tie-in into existing, or where tie-in to existing is not designed, this tie-in is not costed.

The following items have been excluded from costing in lieu of a blanket contingency, or should be incorporated at functional design:

- street furniture
- property acquisition
- intersection reconstruction or pavement rehabilitation
- bridges / overpass work
- retaining walls
- tree removals or relocations
- major grading works
- typical environmental conditions are assumed

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE

ALTA VISTA AND INDUSTRIAL (1)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	280	$ 20	$ 5,600	
Removal - concrete median / island	m2	127	$ 50	$ 6,350	
Removal - sidewalk / blvd	m2	745	$ 20	$ 14,900	
Removal - asphalt roadway (excavation)	m2	893	$ 20	$ 17,860	
New - concrete curb and gutter	m	392	$ 75	$ 29,400	
New - concrete sidewalk, median, blvd, and islands	m2	656	$ 95	$ 62,320	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	18	$ 1,500	$ 27,000	
New - asphalt paving on blvd	m2	66	$ 95	$ 6,270	Assumed asphalt blvd if < 1m
New - sod	m2	316	$ 21	$ 6,636	Assumed sod blvd if > 1m, inc. topsoil and watering
New - asphalt cycle track	m2	557	$ 83	$ 46,231	Includes granular
New - asphalt resurfacing (40 mm)	m2	168	$ 50	$ 8,400	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	6	$ 1,420	$ 8,520	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	118	$ 95	$ 11,210	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	20	$ 276	$ 5,520	
Installation of pavement markings (protected intersection/roadway)	per # lanes	20	$ 1,277	$ 25,540	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m	3	$ 40	$ 120	Additional due to bidi ct
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	4	$ 150	$ 600	Additional due to bidi ct
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each	8	$ 2,200	$ 17,600.00	Fully protected EBL WBL NBR and SBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	8	$ 3,800	$ 30,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	8	$ 10,000	$ 80,000.00	Fully protected EBL WBL NBR and SBR
Relocate existing catch basin	each	10	$ 2,500	$ 25,000.00	Assumed 2 per corner + 1 per island
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	10	$ 650	$ 6,500.00	Assume 2 per corner + 1 per island
			Sub Total	$ 600,325	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		60%	$ 360,195	60% due to smart channel/major tie-ins
Engineering (15-25%)	-		20%	$ 120,065	20% due to complexity
Contract Administration (5%)	-		5%	$ 30,016	
City Internal Costs (7-10%)	-		7%	$ 42,023	
Traffic Control (5-10%)	-		5%	$ 30,016	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 120,065	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 30,016	
			Total Cost	**$ 1,341,242**	

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PLANNING LEVEL (D) - COST ESTIMATE

BANK AND FIFTH (2)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	216	$ 20	$ 4,320	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	20	$ 20	$ 400	
Removal - asphalt roadway (excavation)	m2	182	$ 20	$ 3,640	
New - concrete curb and gutter	m	216	$ 75	$ 16,200	
New - concrete sidewalk, median, blvd, and islands	m2	30	$ 95	$ 2,850	
New - TWSI	each	8	$ 1,500	$ 12,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	99	$ 83	$ 8,217	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2	28	$ 130	$ 3,640	Assumed pavers per existing condition
New - truck apron conceptual	m2		$ 95	$ -	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	13	$ 276	$ 3,588	
Installation of pavement markings (protected intersection/roadway)	per # lanes		$ 1,277	$ -	
Installation of pavement markings (protected corners)	per intersection		$ 2,488	$ -	
New - zebra markings	m	50	$ 40	$ 2,000	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	15	$ 150	$ 2,250	
New - linear pavement markings (lanes, stop bars, guiding lines)	m	214	$ 6	$ 1,284	
New - green thermoplast paint	m2	118	$ 60	$ 7,080	
Painted buffer	m	8	$ 4	$ 32	
Bike box cost	each	2	$ 306	$ 612	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	4	$ 4,500	$ 18,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	2	$ 4,000	$ 8,000.00	
New - signal pole	each		$ 10,000		
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	35	560	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 238,373	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 107,268	
Engineering (15-25%)	-		20%	$ 47,675	20% due to complexity
Contract Administration (5%)	-		5%	$ 11,919	
City Internal Costs (7-10%)	-		7%	$ 16,686	
Traffic Control (5-10%)	-		5%	$ 11,919	5% due to small extents of construction zone
Utilities (5-20%)	-		5%	$ 11,919	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 11,919	
			Total Cost	**$ 466,196**	

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE

BAYSWATER AND SOMERSET (5)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	105	$ 20	$ 2,100	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	725	$ 20	$ 14,500	
Removal - asphalt roadway (excavation)	m2	661	$ 20	$ 13,220	
New - concrete curb and gutter	m	680	$ 75	$ 51,000	
New - concrete sidewalk, median, blvd, and islands	m2	572	$ 95	$ 54,340	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	24	$ 1,500	$ 36,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	468	$ 83	$ 38,844	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	1	$ 1,870	$ 1,870	
New - transit stop (15 m x 3 m)	each	1	$ 4,435	$ 4,435	
New - paver boulevard	m2	237	$ 130	$ 30,810	Assumed pavers per existing condition
New - truck apron conceptual	m2	50	$ 95	$ 4,750	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	13	$ 276	$ 3,588	
Installation of pavement markings (protected intersection/roadway)	per # lanes	9	$ 1,277	$ 11,493	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	5	$ 4,500	$ 22,500.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	1	$ 4,000	$ 4,000.00	Only relevant on north leg
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	35	560	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 440,198	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 198,089	
Engineering (15-25%)	-		20%	$ 88,040	20% due to complexity
Contract Administration (5%)	-		5%	$ 22,010	
City Internal Costs (7-10%)	-		7%	$ 30,814	
Traffic Control (5-10%)	-		5%	$ 22,010	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 88,040	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 22,010	
			Total Cost	**$ 919,730**	

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE

BAYVIEW AND SCOTT (6)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	400	$ 20	$ 8,000	
Removal - concrete median / island	m2	31	$ 50	$ 1,550	
Removal - sidewalk / blvd	m2	888	$ 20	$ 17,760	
Removal - asphalt roadway (excavation)	m2	842	$ 20	$ 16,840	
New - concrete curb and gutter	m	561	$ 75	$ 42,075	
New - concrete sidewalk, median, blvd, and islands	m2	992	$ 95	$ 94,240	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	26	$ 1,500	$ 39,000	
New - asphalt paving on blvd	m2	124	$ 95	$ 11,780	
New - sod	m2	311	$ 21	$ 6,531	Assumed sod blvd if wider than 1 m - inc. topsoil and watering
New - asphalt cycle track	m2	916	$ 83	$ 76,028	Includes granular
New - asphalt resurfacing (40 mm)	m2	100	$ 50	$ 5,000	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	6	$ 1,420	$ 8,946	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each	1	$ 4,435	$ 4,435	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	60	$ 95	$ 5,700	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	17	$ 276	$ 4,692	
Installation of pavement markings (protected intersection/roadway)	per # lanes	11	$ 1,277	$ 14,047	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each	1	$ 306	$ 306	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	7	$ 4,500	$ 31,500.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	10	$ 2,500	$ 25,000.00	Assumed 2 per corner + 2 at island
New - upgrading bike detection	m	16	35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	10	$ 650	$ 6,500.00	Assumed 2 per corner + 2 at island
			Sub Total	$ 557,478	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		60%	$ 334,487	60% due to smart channel/major tie-ins
Engineering (15-25%)	-		20%	$ 111,496	20% due to complexity
Contract Administration (5%)	-		5%	$ 27,874	
City Internal Costs (7-10%)	-		7%	$ 39,023	
Traffic Control (5-10%)	-		7%	$ 39,023	7% due to larger extents of construction zone
Utilities (5-20%)	-		20%	$ 111,496	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 27,874	
			Total Cost	**$ 1,257,271**	

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE

CUMBERLAND AND LAURIER (7)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	206	$ 20	$ 4,120	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	695	$ 20	$ 13,900	
Removal - asphalt roadway (excavation)	m2	426	$ 20	$ 8,520	
New - concrete curb and gutter	m	265	$ 75	$ 19,875	
New - concrete sidewalk, median, blvd, and islands	m2	558	$ 95	$ 53,010	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	28	$ 1,500	$ 42,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	372	$ 83	$ 30,876	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	1	$ 1,870	$ 1,870	
New - transit stop (15 m x 3 m)	each	1	$ 4,435	$ 4,435	
New - paver boulevard	m2	210	$ 130	$ 27,300	Assumed pavers per existing condition
New - truck apron conceptual	m2		$ 95	$ -	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	10	$ 276	$ 2,760	
Installation of pavement markings (protected intersection/roadway)	per # lanes	8	$ 1,277	$ 10,216	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach		$ 4,000	$ -	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 401,630	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 180,734	
Engineering (15-25%)	-		20%	$ 80,326	20% due to complexity
Contract Administration (5%)	-		5%	$ 20,082	
City Internal Costs (7-10%)	-		7%	$ 28,114	
Traffic Control (5-10%)	-		5%	$ 20,082	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 80,326	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 20,082	
			Total Cost	**$ 839,894**	

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PLANNING LEVEL (D) - COST ESTIMATE

CUMMINGS AND OGILVIE (8)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	372	$ 20	$ 7,440	
Removal - concrete median / island	m2	38	$ 50	$ 1,900	
Removal - sidewalk / blvd	m2	1923	$ 20	$ 38,460	
Removal - asphalt roadway (excavation)	m2	386	$ 20	$ 7,720	
New - concrete curb and gutter	m	463	$ 75	$ 34,725	
New - concrete sidewalk, median, blvd, and islands	m2	686	$ 95	$ 65,170	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	28	$ 1,500	$ 42,000	
New - asphalt paving on blvd	m2	166	$ 95	$ 15,770	If less than 1 m width - assumed asphalt
New - sod	m2	323	$ 21	$ 6,783	If wider than 1 m - assumed sod blvd, inc. topsoil and watering
New - asphalt cycle track	m2	692	$ 83	$ 57,436	Includes granular
New - asphalt resurfacing (40 mm)	m2	15	$ 50	$ 750	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each	2	$ 4,435	$ 8,870	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2		$ 95	$ -	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	19	$ 276	$ 5,244	
Installation of pavement markings (protected intersection/roadway)	per # lanes	18	$ 1,277	$ 22,986	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	7	$ 4,500	$ 31,500.00	
New - vehicular traffic signal head	each	12	$ 2,200	$ 26,400.00	Fully protected EBL WBL NBL SBL WBR NBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	8	$ 3,800	$ 30,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	12	$ 10,000	$ 120,000.00	For protected rights and left
Relocate existing catch basin	each	9	$ 2,500	$ 22,500.00	Assumed 2 per corner + 1 per island
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	9	$ 650	$ 5,850.00	Assumed 2 per corner + 1 per island
			Sub Total	$ 674,252	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 303,413	
Engineering (15-25%)	-		20%	$ 134,850	20% due to complexity
Contract Administration (5%)	-		5%	$ 33,713	
City Internal Costs (7-10%)	-		7%	$ 47,198	
Traffic Control (5-10%)	-		5%	$ 33,713	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 134,850	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 33,713	
			Total Cost	**$ 1,404,222**	

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE

DONALD AND VANIER (9)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	348	$ 20	$ 6,960	
Removal - concrete median / island	m2	30	$ 50	$ 1,500	
Removal - sidewalk / blvd	m2	1280	$ 20	$ 25,600	
Removal - asphalt roadway (excavation)	m2	823	$ 20	$ 16,460	
New - concrete curb and gutter	m	570	$ 75	$ 42,750	
New - concrete sidewalk, median, blvd, and islands	m2	689	$ 95	$ 65,455	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	26	$ 1,500	$ 39,000	
New - asphalt paving on blvd	m2	116	$ 95	$ 11,020	
New - sod	m2	226	$ 21	$ 4,746	Assumed sod blvd if wider than 1 m - inc. topsoil and watering
New - asphalt cycle track	m2	823	$ 83	$ 68,309	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each	2	$ 4,435	$ 8,870	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	50	$ 95	$ 4,750	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	19	$ 276	$ 5,244	
Installation of pavement markings (protected intersection/roadway)	per # lanes	16	$ 1,277	$ 20,432	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m	40	$ 4	$ 160	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	5	$ 4,500	$ 22,500.00	
New - vehicular traffic signal head	each	4	$ 2,200	$ 8,800.00	Fully protected SBL and NBL
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach		$ 4,000	$ -	
New - signal pole	each	4	$ 10,000	$ 40,000.00	Fully protected SBL and NBL
Relocate existing catch basin	each	10	$ 2,500	$ 25,000.00	Assumed 2 per corner + 2 at island
New - upgrading bike detection	m	16	35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	10	$ 650	$ 6,500.00	Assumed 2 per corner + 2 at island
			Sub Total	$ 545,604	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 245,522	
Engineering (15-25%)	-		20%	$ 109,121	20% due to complexity
Contract Administration (5%)	-		5%	$ 27,280	
City Internal Costs (7-10%)	-		7%	$ 38,192	
Traffic Control (5-10%)	-		5%	$ 27,280	Due to small extent of construction zone
Utilities (5-20%)	-		20%	$ 109,121	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 27,280	
			Total Cost	**$ 1,137,920**	

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE

GLADSTONE AND BANK (10)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	211	$ 20	$ 4,220	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	458	$ 20	$ 9,160	
Removal - asphalt roadway (excavation)	m2	429	$ 20	$ 8,580	
New - concrete curb and gutter	m	274	$ 75	$ 20,550	
New - concrete sidewalk, median, blvd, and islands	m2	385	$ 95	$ 36,575	
New - TWSI	each	14	$ 1,500	$ 21,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	250	$ 83	$ 20,750	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	3	$ 1,870	$ 5,610	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2	67	$ 130	$ 8,710	Assumed pavers per existing condition
New - truck apron conceptual	m2	133	$ 95	$ 12,635	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	13	$ 276	$ 3,588	
Installation of pavement markings (protected intersection/roadway)	per # lanes	9	$ 1,277	$ 11,493	
Installation of pavement markings (protected corners)	per intersection		$ 2,488	$ -	
New - zebra markings	m	54	$ 40	$ 2,160	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	17	$ 150	$ 2,550	
New - linear pavement markings (lanes, stop bars, guiding lines)	m	230	$ 6	$ 1,380	
New - green thermoplast paint	m2	66	$ 60	$ 3,960	
Painted buffer	m		$ 4	$ -	
Bike box cost	each	4	$ 306	$ 1,224	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	3	$ 4,500	$ 13,500.00	
New - vehicular traffic signal head	each	2	$ 2,200	$ 4,400.00	Fully protected EBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	5	$ 3,800	$ 19,000.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	2	$ 10,000	$ 20,000.00	Fully protected EBR
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assume 12 new
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 376,105	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 169,247	
Engineering (15-25%)	-		20%	$ 75,221	20% due to complexity
Contract Administration (5%)	-		5%	$ 18,805	
City Internal Costs (7-10%)	-		7%	$ 26,327	
Traffic Control (5-10%)	-		5%	$ 18,805	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 75,221	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 18,805	
			Total Cost	**$ 787,057**	

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE

GLADSTONE AND BOOTH (11)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	292	$ 20	$ 5,840	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	552	$ 20	$ 11,040	
Removal - asphalt roadway (excavation)	m2	725	$ 20	$ 14,500	
New - concrete curb and gutter	m	323	$ 75	$ 24,225	
New - concrete sidewalk, median, blvd, and islands	m2	446	$ 95	$ 42,370	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	18	$ 1,500	$ 27,000	
New - asphalt paving on blvd	m2	104	$ 95	$ 9,880	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	477	$ 83	$ 39,591	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	1	$ 1,870	$ 1,870	
New - transit stop (15 m x 3 m)	each	1	$ 4,435	$ 4,435	
New - paver boulevard	m2	48	$ 130	$ 6,240	Curb extensions
New - truck apron conceptual	m2	11	$ 95	$ 1,045	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	15	$ 276	$ 4,140	
Installation of pavement markings (protected intersection/roadway)	per # lanes	8	$ 1,277	$ 10,216	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m	7	$ 40	$ 280	Slip lane crossing
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	2	$ 150	$ 300	Slip lane crossing
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2	22	$ 60	$ 1,320	Slip lane crossing
Painted buffer	m		$ 4	$ -	
Bike box cost	each	4	$ 306	$ 1,224	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	7	$ 4,500	$ 31,500.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	2	$ 4,000	$ 8,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assume 2 per corner
New - upgrading bike detection	m	16	35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	2	$ 650	$ 1,300.00	Assume 2 per corner
			Sub Total	$ 387,864	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 174,539	
Engineering (15-25%)	-		20%	$ 77,573	20% due to complexity
Contract Administration (5%)	-		5%	$ 19,393	
City Internal Costs (7-10%)	-		7%	$ 27,150	
Traffic Control (5-10%)	-		5%	$ 19,393	Due to small extent of construction zone
Utilities (5-20%)	-		15%	$ 58,180	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 19,393	
			Total Cost	**$ 792,005**	

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE

GLADSTONE AND PRESTON (12)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	237	$ 20	$ 4,740	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	369	$ 20	$ 7,380	
Removal - asphalt roadway (excavation)	m2	556	$ 20	$ 11,120	
New - concrete curb and gutter	m	257	$ 75	$ 19,275	
New - concrete sidewalk, median, blvd, and islands	m2	325	$ 95	$ 30,875	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	16	$ 1,500	$ 24,000	
New - asphalt paving on blvd	m2	94	$ 95	$ 8,930	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	280	$ 83	$ 23,240	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	4	$ 1,870	$ 7,480	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	114	$ 95	$ 10,830	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	11	$ 276	$ 3,036	
Installation of pavement markings (protected intersection/roadway)	per # lanes		$ 1,277	$ -	
Installation of pavement markings (protected corners)	per intersection		$ 2,488	$ -	
New - zebra markings	m	44	$ 40	$ 1,760	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	12	$ 150	$ 1,800	
New - linear pavement markings (lanes, stop bars, guiding lines)	m	200	$ 6	$ 1,200	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each	4	$ 306	$ 1,224	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	6	$ 4,500	$ 27,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	3	$ 3,800	$ 11,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach		$ 4,000	$ -	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 324,350	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 145,958	
Engineering (15-25%)	-		20%	$ 64,870	20% due to complexity
Contract Administration (5%)	-		5%	$ 16,218	
City Internal Costs (7-10%)	-		7%	$ 22,705	
Traffic Control (5-10%)	-		5%	$ 16,218	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 64,870	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 16,218	
			Total Cost	**$ 679,925**	

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE
HAZELDEAN AND EAGLESON (13)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	475	$ 20	$ 9,500	
Removal - concrete median / island	m2	301	$ 50	$ 15,050	
Removal - sidewalk / blvd	m2	510	$ 20	$ 10,200	
Removal - asphalt roadway (excavation)	m2	739	$ 20	$ 14,780	
New - concrete curb and gutter	m	272	$ 75	$ 20,400	
New - concrete sidewalk, median, blvd, and islands	m2	572	$ 95	$ 54,340	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	26	$ 1,500	$ 39,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2	280	$ 21	$ 5,880	Assumed sod for blvd treatment, inc. topsoil + watering
New - asphalt cycle track	m2	472	$ 83	$ 39,176	Includes granular
New - asphalt resurfacing (40 mm)	m2	218	$ 50	$ 10,900	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	1	$ 1,870	$ 1,870	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2		$ 95	$ -	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	38	$ 276	$ 10,488	
Installation of pavement markings (protected intersection/roadway)	per # lanes	34	$ 1,277	$ 43,418	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each	8	$ 2,200	$ 17,600.00	Fully protected EBR WBR NBR SBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	8	$ 3,800	$ 30,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	8	$ 10,000	$ 80,000.00	Fully protected EBR WBR NBR SBR
Relocate existing catch basin	each	12	$ 2,500	$ 30,000.00	
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	12	$ 650	$ 7,800.00	Assumed 2 per corner + 1 per island
			Sub Total	$ 599,150	
			Sub Total (Smart Channel Option)	$ 634,208	1.6 multiplier to Section 1 and protected right removal from Section 3
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 285,393	
Engineering (15-25%)	-		20%	$ 126,842	20% due to complexity
Contract Administration (5%)	-		5%	$ 31,710	
City Internal Costs (7-10%)	-		7%	$ 44,395	
Traffic Control (5-10%)	-		5%	$ 31,710	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 126,842	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 31,710	
			Total Cost	**$ 1,286,272**	
			Total Cost (Smart Channel Option)	**$ 1,519,529**	Added 15% contingency due to smart channel/major tie-ins

City of Ottawa - Intersection Safety Review

PLANNING LEVEL (D) - COST ESTIMATE
HAZELDEAN AND TERRY FOX (14)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	303	$ 20	$ 6,060	
Removal - concrete median / island	m2	193	$ 50	$ 9,650	
Removal - sidewalk / blvd	m2	471	$ 20	$ 9,420	
Removal - asphalt roadway (excavation)	m2	813	$ 20	$ 16,260	
New - concrete curb and gutter	m	243	$ 75	$ 18,225	
New - concrete sidewalk, median, blvd, and islands	m2	429	$ 95	$ 40,755	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	24	$ 1,500	$ 36,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2	392	$ 21	$ 8,232	Assumed sod for blvd treatment, inc. topsoil + watering
New - asphalt cycle track	m2	429	$ 83	$ 35,607	Includes granular
New - asphalt resurfacing (40 mm)	m2	125	$ 50	$ 6,250	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2		$ 95	$ -	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	29	$ 276	$ 8,004	
Installation of pavement markings (protected intersection/roadway)	per # lanes	26	$ 1,277	$ 33,202	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each	8	$ 2,200	$ 17,600.00	Fully protected EBR WBR NBR and SBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	8	$ 3,800	$ 30,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	8	$ 10,000	$ 80,000.00	Fully protected EBR WBR NBR and SBR
Relocate existing catch basin	each	12	$ 2,500	$ 30,000.00	Assumed 2 per corner + 1 per island
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	12	$ 650	$ 7,800.00	Assumed 2 per corner + 1 per island
			Sub Total	$ 551,813	
			Sub Total (Smart Channel Option)	$ 566,088	1.6 multiplier to Section 1 and protected right removal from Section 3
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 254,740	
Engineering (15-25%)	-		20%	$ 113,218	20% due to complexity
Contract Administration (5%)	-		5%	$ 28,304	
City Internal Costs (7-10%)	-		7%	$ 39,626	
Traffic Control (5-10%)	-		5%	$ 28,304	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 113,218	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 28,304	
			Total Cost	**$ 1,166,048**	
			Total Cost (Smart Channel Option)	**$ 1,357,371**	Added 15% contingency due to smart channel/major tie-ins

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PLANNING LEVEL (D) - COST ESTIMATE
HUNT CLUB AND MERIVALE (15)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	306	$ 20	$ 6,120	
Removal - concrete median / island	m2	138	$ 50	$ 6,900	
Removal - sidewalk / blvd	m2	669	$ 20	$ 13,380	
Removal - asphalt roadway (excavation)	m2	528	$ 20	$ 10,560	
New - concrete curb and gutter	m	235	$ 75	$ 17,625	
New - concrete sidewalk, median, blvd, and islands	m2	467	$ 95	$ 44,365	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	24	$ 1,500	$ 36,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2	224	$ 21	$ 4,704	Assumed sod for blvd treatment, inc. topsoil + watering
New - asphalt cycle track	m2	400	$ 83	$ 33,200	Includes granular
New - asphalt resurfacing (40 mm)	m2	138	$ 50	$ 6,900	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2		$ 95	$ -	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	31	$ 276	$ 8,556	
Installation of pavement markings (protected intersection/roadway)	per # lanes	27	$ 1,277	$ 34,479	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each	8	$ 2,200	$ 17,600.00	Fully protected EBR WBR NBR and SBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	8	$ 3,800	$ 30,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	8	$ 10,000	$ 80,000.00	Fully protected EBR WBR NBR and SBR
Relocate existing catch basin	each	12	$ 2,500	$ 30,000.00	Assumed 2 per corner + 1 per island
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	12	$ 650	$ 7,800.00	Assumed 2 per corner + 1 per island
			Sub Total	$ 546,937	
			Sub Total (Smart Channel Option)	$ 557,189	1.6 multiplier to Section 1 and protected right removal from Section 3
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 250,735	
Engineering (15-25%)	-		20%	$ 111,438	20% due to complexity
Contract Administration (5%)	-		5%	$ 27,859	
City Internal Costs (7-10%)	-		7%	$ 39,003	
Traffic Control (5-10%)	-		5%	$ 27,859	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 111,438	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 27,859	
			Total Cost	**$ 1,151,650**	
			Total Cost (Smart Channel Option)	**$ 1,336,187**	Added 15% contingency due to smart channel/major tie-ins

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PLANNING LEVEL (D) - COST ESTIMATE

HUNT CLUB AND PRINCE OF WALES (16)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	697	$ 20	$ 13,940	
Removal - concrete median / island	m2	563	$ 50	$ 28,150	
Removal - sidewalk / blvd	m2	775	$ 20	$ 15,500	
Removal - asphalt roadway (excavation)	m2	3045	$ 20	$ 60,900	
New - concrete curb and gutter	m	738	$ 75	$ 55,350	
New - concrete sidewalk, median, blvd, and islands	m2	1204	$ 95	$ 114,380	Sidewalk + curb extensions + eyebrows in protected corner + channels
New - TWSI	each	32	$ 1,500	$ 48,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2	1420	$ 21	$ 29,820	Includes topsoil (100 mm) and watering
New - asphalt cycle track	m2	910	$ 83	$ 75,530	Includes granular
New - asphalt resurfacing (40 mm)	m2	615	$ 50	$ 30,750	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	24	$ 1,420	$ 34,080	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	351	$ 95	$ 33,345	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	31	$ 276	$ 8,556	
Installation of pavement markings (protected intersection/roadway)	per # lanes	27	$ 1,277	$ 34,479	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	8	$ 3,800	$ 30,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach		$ 4,000	$ -	Lane configuration unchanged on approaches
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	12	$ 2,500	$ 30,000.00	Assume 2 per corner + 1 per island
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	12	$ 650	$ 7,800.00	Assume 2 per corner + 1 per island
			Sub Total	$ 793,328	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		60%	$ 475,997	60% due to smart channel/major tie-ins
Engineering (15-25%)	-		20%	$ 158,666	20% due to complexity
Contract Administration (5%)	-		5%	$ 39,666	
City Internal Costs (7-10%)	-		7%	$ 55,533	
Traffic Control (5-10%)	-		5%	$ 39,666	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 158,666	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 39,666	
			Total Cost	**$ 1,769,708**	

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PLANNING LEVEL (D) - COST ESTIMATE

ISLAND PARK AND RICHMOND (17)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	366	$ 20	$ 7,320	
Removal - concrete median / island	m2	41	$ 50	$ 2,050	
Removal - sidewalk / blvd	m2	1592	$ 20	$ 31,840	
Removal - asphalt roadway (excavation)	m2	437	$ 20	$ 8,740	
New - concrete curb and gutter	m	372	$ 75	$ 27,900	
New - concrete sidewalk, median, blvd, and islands	m2	780	$ 95	$ 74,100	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	30	$ 1,500	$ 45,000	
New - asphalt paving on blvd	m2	15	$ 95	$ 1,425	
New - sod	m2	548	$ 21	$ 11,508	Includes topsoil (100 mm) and watering
New - asphalt cycle track	m2	640	$ 83	$ 53,120	Includes granular
New - asphalt resurfacing (40 mm)	m2	24	$ 50	$ 1,200	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	1	$ 1,870	$ 1,870	
New - transit stop (15 m x 3 m)	each	1	$ 4,435	$ 4,435	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2		$ 95	$ -	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	15	$ 276	$ 4,140	
Installation of pavement markings (protected intersection/roadway)	per # lanes	12	$ 1,277	$ 15,324	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m	3	$ 40	$ 120	In bidi cycle track
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	2	$ 150	$ 300	In bidi cycle track
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	9	$ 4,500	$ 40,500.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	2	$ 4,000	$ 8,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 485,640	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 218,538	
Engineering (15-25%)	-		20%	$ 97,128	20% due to complexity
Contract Administration (5%)	-		5%	$ 24,282	
City Internal Costs (7-10%)	-		7%	$ 33,995	
Traffic Control (5-10%)	-		5%	$ 24,282	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 97,128	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 24,282	
			Total Cost	**$ 1,013,795**	

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PLANNING LEVEL (D) - COST ESTIMATE

KING EDWARD AND SUSSEX (18)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	313	$ 20	$ 6,260	
Removal - concrete median / island	m2	41	$ 50	$ 2,050	
Removal - sidewalk / blvd	m2	1395	$ 20	$ 27,900	
Removal - asphalt roadway (excavation)	m2	338	$ 20	$ 6,760	
New - concrete curb and gutter	m	378	$ 75	$ 28,350	
New - concrete sidewalk, median, blvd, and islands	m2	919	$ 95	$ 87,305	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	27	$ 1,500	$ 40,500	
New - asphalt paving on blvd	m2	15	$ 95	$ 1,425	
New - sod	m2	145	$ 21	$ 3,045	Includes topsoil (100 mm) and watering
New - asphalt cycle track	m2	559	$ 83	$ 46,397	Includes granular
New - asphalt resurfacing (40 mm)	m2	16	$ 50	$ 800	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	6	$ 1,420	$ 8,520	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each	1	$ 4,435	$ 4,435	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	68	$ 95	$ 6,460	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	17	$ 276	$ 4,692	
Installation of pavement markings (protected intersection/roadway)	per # lanes	17	$ 1,277	$ 21,709	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m	11	$ 40	$ 440	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	2	$ 150	$ 300	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	11	$ 4,500	$ 49,500.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	3	$ 4,000	$ 12,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	12	$ 35	$ 420.00	Assume 12 m (4 m per corner at 3 corners)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 505,456	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		60%	$ 303,274	60% due to smart channel/major tie-ins
Engineering (15-25%)	-		20%	$ 101,091	20% due to complexity
Contract Administration (5%)	-		5%	$ 25,273	
City Internal Costs (7-10%)	-		7%	$ 35,382	
Traffic Control (5-10%)	-		5%	$ 25,273	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 101,091	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 25,273	
			Total Cost	**$ 1,130,632**	

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PLANNING LEVEL (D) - COST ESTIMATE

KING EDWARD AND ST PATRICK (19)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	473	$ 20	$ 9,460	
Removal - concrete median / island	m2	34	$ 50	$ 1,700	
Removal - sidewalk / blvd	m2	802	$ 20	$ 16,040	
Removal - asphalt roadway (excavation)	m2	984	$ 20	$ 19,680	
New - concrete curb and gutter	m	493	$ 75	$ 36,975	
New - concrete sidewalk, median, blvd, and islands	m2	775	$ 95	$ 73,625	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	20	$ 1,500	$ 30,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	485	$ 83	$ 40,255	Includes granular
New - asphalt resurfacing (40 mm)	m2	13	$ 50	$ 650	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	7	$ 1,420	$ 9,940	
New - transit stop - landing zone (15 m x 1.2 m)	each	1	$ 1,870	$ 1,870	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2	422	$ 130	$ 54,860	Assumed pavers for blvd treatment
New - truck apron conceptual	m2	15	$ 95	$ 1,425	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	23	$ 276	$ 6,348	
Installation of pavement markings (protected intersection/roadway)	per # lanes	19	$ 1,277	$ 24,263	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	10	$ 4,500	$ 45,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	7	$ 3,800	$ 26,600.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	2	$ 4,000	$ 8,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assume 12 new
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 538,239	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 242,208	
Engineering (15-25%)	-		20%	$ 107,648	20% due to complexity
Contract Administration (5%)	-		5%	$ 26,912	
City Internal Costs (7-10%)	-		7%	$ 37,677	
Traffic Control (5-10%)	-		5%	$ 26,912	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 107,648	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 26,912	
			Total Cost	**$ 1,122,675**	

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PLANNING LEVEL (D) - COST ESTIMATE

LAURIER AND KING EDWARD (20)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	207	$ 20	$ 4,140	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	332	$ 20	$ 6,640	
Removal - asphalt roadway (excavation)	m2	461	$ 20	$ 9,220	
New - concrete curb and gutter	m		$ 75	$ -	
New - concrete sidewalk, median, blvd, and islands	m2	255	$ 95	$ 24,225	
New - TWSI	each	12	$ 1,500	$ 18,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	211	$ 83	$ 17,513	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	2	$ 1,870	$ 3,740	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2	82	$ 130	$ 10,660	Assumed pavers per existing condition
New - truck apron conceptual	m2	146	$ 95	$ 13,870	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	13	$ 276	$ 3,588	
Installation of pavement markings (protected intersection/roadway)	per # lanes		$ 1,277	$ -	
Installation of pavement markings (protected corners)	per intersection		$ 2,488	$ -	
New - zebra markings	m	53	$ 40	$ 2,120	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	18	$ 150	$ 2,700	
New - linear pavement markings (lanes, stop bars, guiding lines)	m	230	$ 6	$ 1,380	
New - green thermoplast paint	m2	80	$ 60	$ 4,800	
Painted buffer	m		$ 4	$ -	
Bike box cost	each	4	$ 306	$ 1,224	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 320,080	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 144,036	
Engineering (15-25%)	-		20%	$ 64,016	20% due to complexity
Contract Administration (5%)	-		5%	$ 16,004	
City Internal Costs (7-10%)	-		7%	$ 22,406	
Traffic Control (5-10%)	-		5%	$ 16,004	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 64,016	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 16,004	
			Total Cost	**$ 671,086**	

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PLANNING LEVEL (D) - COST ESTIMATE
MOODIE AND ROBERTSON (22)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	318	$ 20	$ 6,360	
Removal - concrete median / island	m2	159	$ 50	$ 7,950	
Removal - sidewalk / blvd	m2	510	$ 20	$ 10,200	
Removal - asphalt roadway (excavation)	m2	522	$ 20	$ 10,440	
New - concrete curb and gutter	m	225	$ 75	$ 16,875	
New - concrete sidewalk, median, blvd, and islands	m2	455	$ 95	$ 43,225	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	24	$ 1,500	$ 36,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2	236	$ 21	$ 4,956	Assumed sod for blvd treatment, inc. topsoil + watering
New - asphalt cycle track	m2	367	$ 83	$ 30,461	Includes granular
New - asphalt resurfacing (40 mm)	m2	159	$ 50	$ 7,950	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2		$ 95	$ -	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	32	$ 276	$ 8,832	
Installation of pavement markings (protected intersection/roadway)	per # lanes	30	$ 1,277	$ 38,310	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each	8	$ 2,200	$ 17,600.00	New fully protected EBR, WBR, NBR and SBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	8	$ 3,800	$ 30,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	8	$ 10,000	$ 80,000.00	4 proposed protected right turns
Relocate existing catch basin	each	12	$ 2,500	$ 30,000.00	Assumed 2 per corner + 1 per island
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	12	$ 650	$ 7,800.00	Assumed 2 per corner + 1 per island
			Sub Total	$ 545,707	
			Sub Total (Smart Channel Option)	$ 552,757	1.6 multiplier to Section 1 and protected right removal from Section 3
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 248,741	
Engineering (15-25%)	-		20%	$ 110,551	20% due to complexity
Contract Administration (5%)	-		5%	$ 27,638	
City Internal Costs (7-10%)	-		7%	$ 38,693	
Traffic Control (5-10%)	-		5%	$ 27,638	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 110,551	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 27,638	
			Total Cost	**$ 1,145,677**	
			Total Cost (Smart Channel Option)	**$ 1,325,637**	Added 15% contingency due to smart channel/major tie-ins

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PLANNING LEVEL (D) - COST ESTIMATE

NELSON AND RIDEAU (23)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	211	$ 20	$ 4,220	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	216	$ 20	$ 4,320	
Removal - asphalt roadway (excavation)	m2	461	$ 20	$ 9,220	
New - concrete curb and gutter	m	311	$ 75	$ 23,325	
New - concrete sidewalk, median, blvd, and islands	m2	85	$ 95	$ 8,075	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	15	$ 1,500	$ 22,500	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	361	$ 83	$ 29,963	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	2	$ 1,870	$ 3,740	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2	134	$ 130	$ 17,420	
New - truck apron conceptual	m2	25	$ 95	$ 2,375	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	14	$ 276	$ 3,864	
Installation of pavement markings (protected intersection/roadway)	per # lanes		$ 1,277	$ -	
Installation of pavement markings (protected corners)	per intersection		$ 2,488	$ -	
New - zebra markings	m	50	$ 40	$ 2,000	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	22	$ 150	$ 3,300	
New - linear pavement markings (lanes, stop bars, guiding lines)	m	270	$ 6	$ 1,620	
New - green thermoplast paint	m2	30	$ 60	$ 1,800	
Painted buffer	m	10	$ 4	$ 40	
Bike box cost	each	1	$ 306	$ 306	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	2	$ 3,800	$ 7,600.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach		$ 4,000	$ -	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 310,748	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 139,837	
Engineering (15-25%)	-		20%	$ 62,150	20% due to complexity
Contract Administration (5%)	-		5%	$ 15,537	
City Internal Costs (7-10%)	-		7%	$ 21,752	
Traffic Control (5-10%)	-		5%	$ 15,537	5% due to small extents of construction zone
Utilities (5-20%)	-		10%	$ 31,075	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 15,537	
			Total Cost	**$ 620,694**	

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PLANNING LEVEL (D) - COST ESTIMATE
PRESTON AND PRINCE OF WALES (24)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	364	$ 20	$ 7,280	
Removal - concrete median / island	m2	162	$ 50	$ 8,100	
Removal - sidewalk / blvd	m2	1650	$ 20	$ 33,000	
Removal - asphalt roadway (excavation)	m2	806	$ 20	$ 16,120	
New - concrete curb and gutter	m	364	$ 75	$ 27,300	
New - concrete sidewalk, median, blvd, and islands	m2	1701	$ 95	$ 161,595	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	20	$ 1,500	$ 30,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	290	$ 83	$ 24,070	Includes granular
New - asphalt resurfacing (40 mm)	m2	120	$ 50	$ 6,000	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	6	$ 1,420	$ 8,520	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2	304	$ 130	$ 39,520	Assumed pavers per existing condition
New - truck apron conceptual	m2	16	$ 95	$ 1,520	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	12	$ 276	$ 3,312	
Installation of pavement markings (protected intersection/roadway)	per # lanes	11	$ 1,277	$ 14,047	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	7	$ 150	$ 1,050	In bidi ct
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2	46	$ 60	$ 2,760	In bidi ct
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	6	$ 4,500	$ 27,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	8	$ 3,800	$ 30,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	3	$ 4,000	$ 12,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	9	$ 2,500	$ 22,500.00	Assume 2 per corner + 1 per island
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	9	$ 650	$ 5,850.00	Assume 2 per corner + 1 per island
			Sub Total	$ 588,292	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 264,731	
Engineering (15-25%)	-		20%	$ 117,658	20% due to complexity
Contract Administration (5%)	-		5%	$ 29,415	
City Internal Costs (7-10%)	-		7%	$ 41,180	
Traffic Control (5-10%)	-		5%	$ 29,415	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 117,658	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 29,415	
			Total Cost	**$ 1,226,284**	

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PLANNING LEVEL (D) - COST ESTIMATE

PRESTON AND SOMERSET (25)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	255	$ 20	$ 5,100	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	686	$ 20	$ 13,720	
Removal - asphalt roadway (excavation)	m2	772	$ 20	$ 15,440	
New - concrete curb and gutter	m	318	$ 75	$ 23,850	
New - concrete sidewalk, median, blvd, and islands	m2	602	$ 95	$ 57,190	
New - TWSI	each	26	$ 1,500	$ 39,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	421	$ 83	$ 34,943	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	3	$ 1,870	$ 5,610	
New - transit stop (15 m x 3 m)	each	1	$ 4,435	$ 4,435	
New - paver boulevard	m2	260	$ 130	$ 33,800	Assumed pavers per existing condition
New - truck apron conceptual	m2	114	$ 95	$ 10,830	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	12	$ 276	$ 3,312	
Installation of pavement markings (protected intersection/roadway)	per # lanes	8	$ 1,277	$ 10,216	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each	1	$ 306	$ 306	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	6	$ 4,500	$ 27,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach		$ 4,000	$ -	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assume 12 new
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 431,500	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 194,175	
Engineering (15-25%)	-		20%	$ 86,300	20% due to complexity
Contract Administration (5%)	-		5%	$ 21,575	
City Internal Costs (7-10%)	-		7%	$ 30,205	
Traffic Control (5-10%)	-		5%	$ 21,575	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 86,300	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 21,575	
			Total Cost	**$ 901,725**	

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PLANNING LEVEL (D) - COST ESTIMATE

PRINCE OF WALES AND FISHER (26)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	496	$ 20	$ 9,920	
Removal - concrete median / island	m2	770	$ 50	$ 38,500	
Removal - sidewalk / blvd	m2	492	$ 20	$ 9,840	
Removal - asphalt roadway (excavation)	m2	725	$ 20	$ 14,500	
New - concrete curb and gutter	m	362	$ 75	$ 27,150	
New - concrete sidewalk, median, blvd, and islands	m2	702	$ 95	$ 66,690	
New - TWSI	each	20	$ 1,500	$ 30,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2	408	$ 21	$ 8,568	Includes topsoil (100 mm) and watering
New - asphalt cycle track	m2	446	$ 83	$ 37,018	Includes granular
New - asphalt resurfacing (40 mm)	m2	205	$ 50	$ 10,250	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	6	$ 1,420	$ 8,520	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	78	$ 95	$ 7,410	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	11	$ 276	$ 3,036	
Installation of pavement markings (protected intersection/roadway)	per # lanes	10	$ 1,277	$ 12,770	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	4	$ 4,500	$ 18,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	3	$ 3,800	$ 11,400.00	
New - audible ped push button	each	6	$ 2,500	$ 15,000.00	
New - replace loop detector	int. approach	2	$ 4,000	$ 8,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner + 2 for large island
New - upgrading bike detection	m	12	$ 35	$ 420.00	Assume 4 m per corner
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assumed 2 per corner + 2 for large island
			Sub Total	$ 447,980	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		60%	$ 268,788	60% due to smart channel/major tie-ins
Engineering (15-25%)	-		20%	$ 89,596	20% due to complexity
Contract Administration (5%)	-		5%	$ 22,399	
City Internal Costs (7-10%)	-		7%	$ 31,359	
Traffic Control (5-10%)	-		5%	$ 22,399	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 89,596	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 22,399	
			Total Cost	**$ 1,003,036**	

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PLANNING LEVEL (D) - COST ESTIMATE

PRINCE OF WALES AND MEADOWLANDS/HOG'S BACK (27)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	452	$ 20	$ 9,040	
Removal - concrete median / island	m2	173	$ 50	$ 8,650	
Removal - sidewalk / blvd	m2	1211	$ 20	$ 24,220	
Removal - asphalt roadway (excavation)	m2	858	$ 20	$ 17,160	
New - concrete curb and gutter	m	498	$ 75	$ 37,350	
New - concrete sidewalk, median, blvd, and islands	m2	1051	$ 95	$ 99,845	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	24	$ 1,500	$ 36,000	
New - asphalt paving on blvd	m2	87	$ 95	$ 8,265	
New - sod	m2	247	$ 21	$ 5,187	Includes topsoil (100 mm) and watering
New - asphalt cycle track	m2	597	$ 83	$ 49,551	Includes granular
New - asphalt resurfacing (40 mm)	m2	105	$ 50	$ 5,250	
New - pavement structure widening (full depth)	m2	88	$ 155	$ 13,640	
New - raised crossing	m	6	$ 1,420	$ 8,520	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	88	$ 95	$ 8,360	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	22	$ 276	$ 6,072	
Installation of pavement markings (protected intersection/roadway)	per # lanes	18	$ 1,277	$ 22,986	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	1	$ 150	$ 150	In bidi ct
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2	24	$ 60	$ 1,440	In bidi ct
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	9	$ 4,500	$ 40,500.00	
New - vehicular traffic signal head	each	2	$ 2,200	$ 4,400.00	New fully protected NBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	7	$ 3,800	$ 26,600.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	2	$ 10,000	$ 20,000.00	New fully protected NBR
Relocate existing catch basin	each	10	$ 2,500	$ 25,000.00	Assumed 2 per corner + 1 per island
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assume 12 new
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	10	$ 650	$ 6,500.00	Assumed 2 per corner + 1 per island
			Sub Total	$ 607,034	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		60%	$ 364,220	60% due to smart channel/major tie-ins
Engineering (15-25%)	-		20%	$ 121,407	20% due to complexity
Contract Administration (5%)	-		5%	$ 30,352	
City Internal Costs (7-10%)	-		7%	$ 42,492	
Traffic Control (5-10%)	-		5%	$ 30,352	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 121,407	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 30,352	
			Total Cost	**$ 1,356,136**	

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PLANNING LEVEL (D) - COST ESTIMATE
SMYTH AND RIVERSIDE HOSPITAL (28)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	618	$ 20	$ 12,360	
Removal - concrete median / island	m2	76	$ 50	$ 3,800	
Removal - sidewalk / blvd	m2	930	$ 20	$ 18,600	
Removal - asphalt roadway (excavation)	m2	1513	$ 20	$ 30,260	
New - concrete curb and gutter	m	629	$ 75	$ 47,175	
New - concrete sidewalk, median, blvd, and islands	m2	1220	$ 95	$ 115,900	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	30	$ 1,500	$ 45,000	
New - asphalt paving on blvd	m2	519	$ 95	$ 49,305	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	702	$ 83	$ 58,266	Includes granular
New - asphalt resurfacing (40 mm)	m2	70	$ 50	$ 3,500	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	18	$ 1,420	$ 25,560	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each	2	$ 4,435	$ 8,870	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	105	$ 95	$ 9,975	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	19	$ 276	$ 5,244	
Installation of pavement markings (protected intersection/roadway)	per # lanes	15	$ 1,277	$ 19,155	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	8	$ 4,500	$ 36,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	16	$ 2,500	$ 40,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assume 12 new
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	16	$ 650	$ 10,400.00	Assume 2 per corner
			Sub Total	$ 676,918	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		60%	$ 406,151	60% due to smart channel/major tie-ins
Engineering (15-25%)	-		20%	$ 135,384	20% due to complexity
Contract Administration (5%)	-		5%	$ 33,846	
City Internal Costs (7-10%)	-		7%	$ 47,384	
Traffic Control (5-10%)	-		5%	$ 33,846	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 135,384	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 33,846	
			Total Cost	**$ 1,511,278**	

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PLANNING LEVEL (D) - COST ESTIMATE

SOMERSET AND BRONSON (29)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	339	$ 20	$ 6,780	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	443	$ 20	$ 8,860	
Removal - asphalt roadway (excavation)	m2	773	$ 20	$ 15,460	
New - concrete curb and gutter	m	416	$ 75	$ 31,200	
New - concrete sidewalk, median, blvd, and islands	m2	391	$ 95	$ 37,145	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	16	$ 1,500	$ 24,000	
New - asphalt paving on blvd	m2	143	$ 95	$ 13,585	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	424	$ 83	$ 35,192	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	4	$ 1,870	$ 7,480	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	164	$ 95	$ 15,580	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	14	$ 276	$ 3,864	
Installation of pavement markings (protected intersection/roadway)	per # lanes		$ 1,277	$ -	
Installation of pavement markings (protected corners)	per intersection		$ 2,488	$ -	
New - zebra markings	m	60	$ 40	$ 2,400	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	13	$ 150	$ 1,950	
New - linear pavement markings (lanes, stop bars, guiding lines)	m	350	$ 6	$ 2,100	
New - green thermoplast paint	m2	80	$ 60	$ 4,800	
Painted buffer	m		$ 4	$ -	
Bike box cost	each	4	$ 306	$ 1,224	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	7	$ 4,500	$ 31,500.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	4	$ 3,800	$ 15,200.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assume 12 new
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 403,380	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 181,521	
Engineering (15-25%)	-		20%	$ 80,676	20% due to complexity
Contract Administration (5%)	-		5%	$ 20,169	
City Internal Costs (7-10%)	-		7%	$ 28,237	
Traffic Control (5-10%)	-		5%	$ 20,169	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 80,676	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 20,169	
			Total Cost	**$ 843,517**	

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PLANNING LEVEL (D) - COST ESTIMATE

SOMERSET AND KENT (30)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	330	$ 20	$ 6,600	
Removal - concrete median / island	m2		$ 50	$ -	
Removal - sidewalk / blvd	m2	296	$ 20	$ 5,920	
Removal - asphalt roadway (excavation)	m2	657	$ 20	$ 13,140	
New - concrete curb and gutter	m	351	$ 75	$ 26,325	
New - concrete sidewalk, median, blvd, and islands	m2	225	$ 95	$ 21,375	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	16	$ 1,500	$ 24,000	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2		$ 21	$ -	
New - asphalt cycle track	m2	453	$ 83	$ 37,599	Includes granular
New - asphalt resurfacing (40 mm)	m2		$ 50	$ -	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m		$ 1,420	$ -	
New - transit stop - landing zone (15 m x 1.2 m)	each	2	$ 1,870	$ 3,740	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2	205	$ 130	$ 26,650	Pavers (per existing)
New - truck apron conceptual	m2	28	$ 95	$ 2,660	Assumed concrete surface
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	13	$ 276	$ 3,588	
Installation of pavement markings (protected intersection/roadway)	per # lanes	13	$ 1,277	$ 16,601	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each	1	$ 306	$ 306	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	4	$ 4,500	$ 18,000.00	
New - vehicular traffic signal head	each		$ 2,200	$ -	
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	3	$ 3,800	$ 11,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	1	$ 4,000	$ 4,000.00	
New - signal pole	each		$ 10,000	$ -	
Relocate existing catch basin	each	8	$ 2,500	$ 20,000.00	Assumed 2 per corner
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assumed 12
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	8	$ 650	$ 5,200.00	Assume 2 per corner
			Sub Total	$ 353,452	
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 159,053	
Engineering (15-25%)	-		20%	$ 70,690	20% due to complexity
Contract Administration (5%)	-		5%	$ 17,673	
City Internal Costs (7-10%)	-		7%	$ 24,742	
Traffic Control (5-10%)	-		5%	$ 17,673	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 70,690	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 17,673	
			Total Cost	**$ 740,166**	

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PLANNING LEVEL (D) - COST ESTIMATE

ST LAURENT AND OGILVIE (31)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	456	$ 20	$ 9,120	
Removal - concrete median / island	m2	209	$ 50	$ 10,450	
Removal - sidewalk / blvd	m2	484	$ 20	$ 9,680	
Removal - asphalt roadway (excavation)	m2	1676	$ 20	$ 33,520	
New - concrete curb and gutter	m	393	$ 75	$ 29,475	
New - concrete sidewalk, median, blvd, and islands	m2	703	$ 95	$ 66,785	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	29	$ 1,500	$ 43,500	
New - asphalt paving on blvd	m2		$ 95	$ -	
New - sod	m2	678	$ 21	$ 14,238	Assumed sod for blvd treatment, inc. topsoil + watering
New - asphalt cycle track	m2	578	$ 83	$ 47,974	Includes granular
New - asphalt resurfacing (40 mm)	m2	141	$ 50	$ 7,050	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	12	$ 1,420	$ 17,040	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each	1	$ 4,435	$ 4,435	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	128	$ 95	$ 12,160	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	31	$ 276	$ 8,556	
Installation of pavement markings (protected intersection/roadway)	per # lanes	25	$ 1,277	$ 31,925	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each		$ 150	$ -	
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	9	$ 4,500	$ 40,500.00	
New - vehicular traffic signal head	each	2	$ 2,200	$ 4,400.00	New fully protected EBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	8	$ 3,800	$ 30,400.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	2	$ 10,000	$ 20,000.00	New fully protected EBR
Relocate existing catch basin	each	12	$ 2,500	$ 30,000.00	Assumed 2 per corner + 1 per island
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assume 12 new
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc
Adjust manhole frame and cover	each	12	$ 650	$ 7,800.00	Assumed 2 per corner + 1 per island
			Sub Total	$ 601,356	
			Sub Total (Smart Channel Option)	$ 577,719	1.6 multiplier to Section 1 (SW corner) and protected right removal
SECTION 4 - GENERAL					
Contingency (40-50%)	-		60%	$ 346,632	60% due to smart channel/major tie-ins
Engineering (15-25%)	-		20%	$ 115,544	20% due to complexity
Contract Administration (5%)	-		5%	$ 28,886	
City Internal Costs (7-10%)	-		7%	$ 40,440	
Traffic Control (5-10%)	-		5%	$ 28,886	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 115,544	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 28,886	
			Total Cost	**$ 1,314,693**	
			Total Cost (Smart Channel Option)	**$ 1,484,715**	Additional 15% contingency due to added smart channel

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PLANNING LEVEL (D) - COST ESTIMATE
INDUSTRIAL AND RIVERSIDE (34)

Feature	*Unit*	*Estimated Quantity*	*Unit Cost*	*Total Cost*	*Notes*
SECTION 1 - ROAD WORKS					
Removal - concrete curb / concrete curb and gutter	m	783	$ 20	$ 15,660	
Removal - concrete median / island	m2	298	$ 50	$ 14,900	
Removal - sidewalk / blvd	m2	1241	$ 20	$ 24,820	
Removal - asphalt roadway (excavation)	m2	792	$ 20	$ 15,840	
New - concrete curb and gutter	m	545	$ 75	$ 40,875	
New - concrete sidewalk, median, blvd, and islands	m2	1299	$ 95	$ 123,405	Sidewalk + curb extensions + eyebrows in protected corner
New - TWSI	each	19	$ 1,500	$ 28,500	
New - asphalt paving on blvd	m2	152	$ 95	$ 14,440	
New - sod	m2	297	$ 21	$ 6,237	Assumed sod for wide blvd treatment, inc. topsoil + watering
New - asphalt cycle track	m2	587	$ 83	$ 48,721	Includes granular
New - asphalt resurfacing (40 mm)	m2	60	$ 50	$ 3,000	
New - pavement structure widening (full depth)	m2		$ 155	$ -	
New - raised crossing	m	13	$ 1,420	$ 18,460	
New - transit stop - landing zone (15 m x 1.2 m)	each		$ 1,870	$ -	
New - transit stop (15 m x 3 m)	each		$ 4,435	$ -	
New - paver boulevard	m2		$ 130	$ -	
New - truck apron conceptual	m2	61	$ 95	$ 5,795	
SECTION 2 - PAVEMENT MARKINGS					
Removal pavement markings (intersection)	per # lanes	33	$ 276	$ 9,108	
Installation of pavement markings (protected intersection/roadway)	per # lanes	31	$ 1,277	$ 39,587	
Installation of pavement markings (protected corners)	per intersection	1	$ 2,488	$ 2,488	
New - zebra markings	m		$ 40	$ -	
New - pavement markings symbols (stencils, turn lanes, yield bars)	each	2	$ 150	$ 300	In bidi ct
New - linear pavement markings (lanes, stop bars, guiding lines)	m		$ 6	$ -	
New - green thermoplast paint	m2		$ 60	$ -	
Painted buffer	m		$ 4	$ -	
Bike box cost	each		$ 306	$ -	
SECTION 3 - TRAFFIC POLES / UTILITIES					
Relocation of signal pole (including foundation)	each	9	$ 4,500	$ 40,500.00	
New - vehicular traffic signal head	each	4	$ 2,200	$ 8,800.00	Fully protected NBR and SBR
New - pedestrian signal head	each		$ 350	$ -	
New - bike signal head	each	10	$ 3,800	$ 38,000.00	
New - audible ped push button	each	8	$ 2,500	$ 20,000.00	
New - replace loop detector	int. approach	4	$ 4,000	$ 16,000.00	
New - signal pole	each	4	$ 10,000	$ 40,000.00	Fully protected NBR and SBR
Relocate existing catch basin	each	11	$ 2,500	$ 27,500.00	Assumed 2 per corner + 3 for islands
New - upgrading bike detection	m	16	$ 35	$ 560.00	Assume 16 m (4 m per corner)
New signs	each	12	$ 275	$ 3,300.00	Assume 12 new
Traffic signal work (other)	per intersection	1	$ 80,000	$ 80,000.00	Typically inc. TMH/TH, ducts, controller, ESA connect, mast arms, etc.
Adjust manhole frame and cover	each	11	$ 650	$ 7,150.00	Assumed 2 per corner + 3 for islands
			Sub Total	$ 693,946	
			Sub Total (Smart Channel Option)	$ 646,603	1.6 multiplier to Section 1 (SE/NW corners) and protected right removal
SECTION 4 - GENERAL					
Contingency (40-50%)	-		45%	$ 290,971	
Engineering (15-25%)	-		20%	$ 129,321	20% due to complexity
Contract Administration (5%)	-		5%	$ 32,330	
City Internal Costs (7-10%)	-		7%	$ 45,262	
Traffic Control (5-10%)	-		5%	$ 32,330	5% due to small extents of construction zone
Utilities (5-20%)	-		20%	$ 129,321	Existing road space - 5%, changing road space - 20%
Police	hr	40	$ 213	$ 8,520	Required for work within 30 m of a signalized intersection
Miscellaneous (5%)	-		5%	$ 32,330	
			Total Cost	**$ 1,394,331**	
			Total Cost (Smart Channel Option)	**$ 1,549,036**	Added 15% contingency due to smart channel/major tie-ins