

MnROAD NRRA Cost Estimates

Proposed Study	Team LT Need	Existing Cells	MnDOT STIP Funds	NRRA Costs (Next two years)							Total Costs
			Construction Estimate	See Sensor Details			From Cost Estimates				
				Sensors Purchase (year 1)	Sensor Types	Sensors Installation (year 1)	Sensor Dynamic Testing (2 years)	Construction Inspection (year 1)	Construction Monitoring (year 1)	Field Performance (2 years)	
Rehabilitation of Concrete Roadways with Hot Mix Asphalt (HMA) Overlays	Flex 1	10 Sections Bypass (5000 ft)	400,000	11,500	Temp	2,874	-	8,000	19,610	28,704	70,688
Enhancing Compaction	Flex 2	4 Sections Bypass (2000 ft)	200,000	5,750	Temp	1,437	-	4,000	7,844	11,482	30,513
LRRB idea - 100% Recycling of Existing Mix - CCPR	Flex 3	3 Sections LVR 133,233,135,235 (1500 ft)	240,000	14,090	Strain Temperature	2,362	9,167	4,800	8,650	8,611	47,680
Use of Recycled Materials in Aggregate Base	Geo 1	4 Sections LVR 185,186,188,189 (1000 ft)	300,000	19,580	Strain/ Pressure Temp / Moisture	6,602	9,167	6,000	5,767	5,741	52,856
Determining Characteristics of Large-Aggregate Granular Sub-base Materials	Geo 2	4 Sections LVR 127,227,128,228 (1000 ft)	300,000	20,450	Strain/ Pressure Temp / Moisture	3,301	9,167	6,000	5,767	5,741	50,426
Shoulder Alternatives	GEO 3		-	-	None	-	-	-	-	-	-
Maintaining Poor Roads	PM 1	5 Sections ML 101,201,115,215 4 - HMA (1000 ft) ML 8 1 - PCC (500 ft)	150,000	9,380	Temp	3,898	-	3,000	1,500	8,611	26,390
PCC Partial Depth Repair	PM 2	Bypass I-94 ~2,500 ft of the existing ~10,000 ft of PCC remaining	25,000	-	Temp	-	-	500	1,500	11,139	13,139
Fiber-reinforced Concrete Pavement	Rigid 1	4 Sections ML 505,605,706,806 (750 ft)	275,000	39,360	Strain/ Pressure Temp / Moisture Joint Opening	14,569	4,583	5,500	4,325	5,569	73,908

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Fiber Reinforced Concrete for City Streets	Rigid 3 LRRB	2 Sections LVR 124,224 (500 ft)	100,000	15,200	Strain/ Pressure Temp / Moisture Joint Opening	7,399	4,583	2,000	2,883	3,713	35,778
PCC Diamond Grinding	Rigid 2	12 Sections LVR 141,241,341,441 142,242,243,244 143,243,343,443 (1500 ft)	30,000	-	None	-	-	600	1,500	11,139	13,239
Evaluation of Long-Term Impacts of Early Opening of Concrete Pavements	Rigid 4	5 Sections LVR 138 (500 ft)	200,000	13,560	Strain/ Pressure Temp / Moisture Joint Opening	2,903	2,292	4,000	2,883	3,713	29,351
Reduced Cementitious Material in Optimized Concrete Mixtures	Rigid 5	2 Sections LVR 139, 239 (500 ft)	200,000	10,640	Strain/ Pressure Temp / Moisture Joint Opening	3,870	4,583	4,000	2,883	3,713	29,690
LRRB Idea - Compacted Concrete Pavement	Rigid 6	2 Sections LVR 132,232 (500 ft)	100,000	9,840	Strain/Vibrating Wire Temp / Moisture	4,894	4,583	2,000	2,883	3,713	27,914
			<b>2,520,000</b>	<b>169,350</b>		<b>54,109</b>	<b>48,126</b>	<b>50,400</b>	<b>67,997</b>	<b>111,589</b>	<b>501,572</b>
								Metro MnDOT			
										Staff	281,822
										MnDOT/Contract	50,400
										PO / Contract	169,350