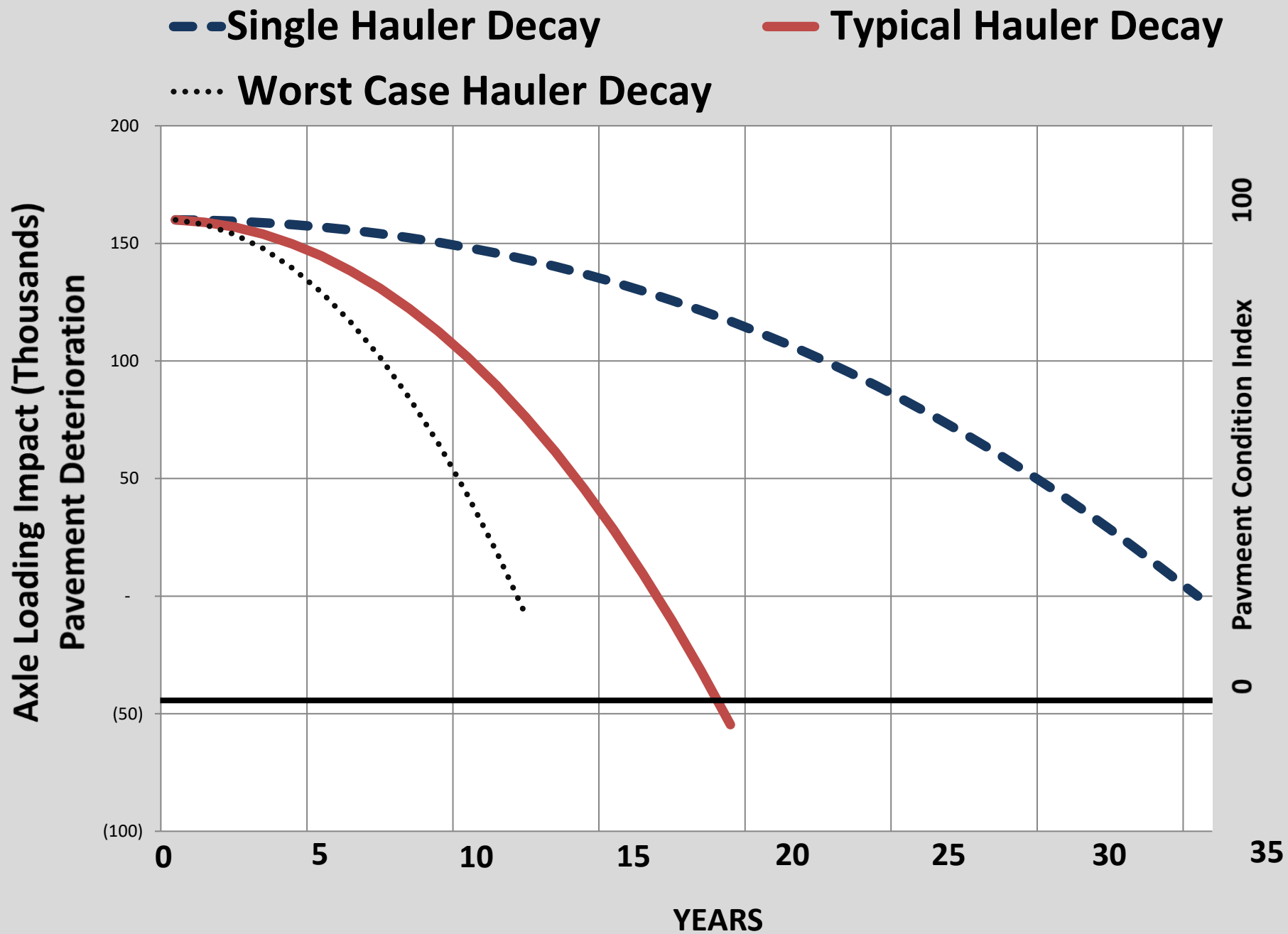




ESAL impact Curve Data

Year	Worst Case Hauler Decay	Typical Hauler Decay	Single Hauler Decay	Total ESAL life of Road	10-hauler Impact (ESALs used)	5-hauler Impact (ESALs used)	1-hauler Impact (ESALs used)	Year
0	160,000	160,000	160,000	160,000	-	-	-	0
1	157,997	159,001	159,799		2,003	999	201	1
2	153,952	156,983	159,394	Crack Seal	6,048	3,017	606	2
3	147,823	153,926	158,779	Slurry Seal	12,177	6,074	1,221	3
4	139,568	149,808	157,952	Overlay	20,432	10,192	2,048	4
5	129,146	144,609	156,907		30,854	15,391	3,093	5
6	116,513	138,307	155,641		43,487	21,693	4,359	6
7	101,624	130,880	154,149		58,376	29,120	5,851	7
8	84,434	122,305	152,426		75,566	37,695	7,574	8
9	64,899	112,560	150,468		95,101	47,440	9,532	9
10	42,969	101,621	148,270		117,031	58,379	11,730	10
11	18,599	89,464	145,827		141,401	70,536	14,173	11
12	(8,262)	76,065	143,135		168,262	83,935	16,865	12
13		61,399	140,188		197,662	98,601	19,812	13
14		45,441	136,981		229,654	114,559	23,019	14
15		28,164	133,510		264,288	131,836	26,490	15
16		9,543	129,768		301,617	150,457	30,232	16
17		-10,450	125,751		341,696	170,450	34,249	17
18		-31,841	121,452		384,579	191,841	38,548	18
19		-54,659	116,868		430,322	214,659	43,132	19
20			111,990		478,983	238,933	48,010	20
21			106,814		530,620	264,691	53,186	21
22			101,334		585,292	291,964	58,666	22
23			95,544		643,060	320,781	64,456	23
24			89,437		703,987	351,173	70,563	24
25			83,007		768,135	383,172	76,993	25
26			76,248		835,568	416,810	83,752	26
27			69,153		906,353	452,120	90,847	27
28			61,716		980,556	489,135	98,284	28
29			53,929		####	527,890	106,071	29
30		0	45,785		####	568,418	114,215	30
31			37,278		####	610,757	122,722	31
32			28,400		####	654,941	131,600	32
33			19,143		####	701,007	140,857	33
34			9,501		####	748,994	150,499	34
35			-		####	798,940	160,535	35

LCCA Impact - 2024

Present Worth Calculation: $PW \text{ Factor} = 1/(1 + i)^n$

i = 3.0%

i = inflation rate (discount)

n = year in which maintenance occurs

Actual Discount Rate
calculated by Conrad
Lamb was 2.91%

Life = 35 years

Current Date:
11-Jan-11

Surface	Width (ft)	Length (ft)	Area (Sq Yds)
Asphalt	12	5,617,920	7,490,560
			0

Deterioration with District/Zone Haulers (3 trucks per week / 35 years)

Event	Year	Unit Cost	Units	Qty	Extended Price	PW factor	Present Worth
Crack Seal	4	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.88849	\$ 4,658,685.88
Slurry Seal	8	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.78941	\$ 15,374,104.81
Crack Seal	12	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.70138	\$ 3,677,609.65
Slurry Seal	16	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.62317	\$ 12,136,460.31
Mill & Overlay	20	\$ 8.00	Sq Yds	7,490,560	\$ 59,924,480.00	0.55368	\$ 33,178,731.1
Staff Time	20	\$ 1,198,490.00	Lump Sum	1	\$ 1,198,490.00	0.55368	\$ 663,574.1
Crack Seal	24	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.49193	\$ 2,579,401.42
Slurry Seal	27	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.45019	\$ 8,767,637.15
Crack Seal	31	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.39999	\$ 2,097,289.40
Mill & Overlay	35	\$ 8.00	Sq Yds	7,490,560	\$ 59,924,480.00	0.35538	\$ 21,296,165.31
2% Patching	35	\$ 125.00	Sq Yds	149,811	\$ 18,726,400.00	0.35538	\$ 6,655,051.66
Staff Time	35	\$ 1,573,018.00	Lump Sum	1	\$ 1,573,018.00	0.35538	\$ 559,024.48
					\$ 220,746,804.00		\$ 111,643,736.58

Based on \$60
per ton

Accelerated Deterioration with 5 haulers (15 trucks per week / 16.5 years)

Event	Year	Unit Cost	Units	Qty	Extended Price	PW factor	Present Worth
Crack Seal	3	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.91514	\$ 4,798,446.46
Slurry Seal	6	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.83748	\$ 16,310,387.79
Crack Seal	9	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.76642	\$ 4,018,623.36
Slurry Seal	12	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.70138	\$ 13,659,693.00
Mill & Overlay	16	\$ 8.00	Sq Yds	7,490,560	\$ 59,924,480.00	0.62317	\$ 37,342,954.7
Staff Time	16	\$ 1,198,490.00	Lump Sum	1	\$ 1,198,490.00	0.62317	\$ 746,859.3
Crack Seal	19	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.57029	\$ 2,990,233.16
Slurry Seal	22	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.52189	\$ 10,164,094.44
Crack Seal	24	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.49193	\$ 2,579,401.42
Mill & Overlay	28	\$ 8.00	Sq Yds	7,490,560	\$ 59,924,480.00	0.43708	\$ 26,191,597.15
3% Patching	28	\$ 125.00	Sq Yds	224,717	\$ 28,089,600.00	0.43708	\$ 12,277,311.17
Staff Time	28	\$ 1,760,282.00	Lump Sum	1	\$ 1,760,282.00	0.43708	\$ 769,378.34
Crack Seal	31	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.39999	\$ 2,097,289.40
Slurry Seal	34	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.36604	\$ 7,128,891.34
					\$ 255,016,116.00		\$ 141,075,161.18

Based on \$60
per ton

Accelerated Deterioration with 10 haulers (30 trucks per week / 11.67 years)

Event	Year	Unit Cost	Units	Qty	Extended Price	PW factor	Present Worth
Crack Seal	2	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.94260	\$ 4,942,399.85
Slurry Seal	4	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.88849	\$ 17,303,690.41
Crack Seal	7	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.81309	\$ 4,263,357.53
Slurry Seal	9	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.76642	\$ 14,926,315.35
Mill & Overlay	12	\$ 8.00	Sq Yds	7,490,560	\$ 59,924,480.00	0.70138	\$ 42,029,824.1
Staff Time	12	\$ 1,198,490.00	Lump Sum	1	\$ 1,198,490.00	0.70138	\$ 840,596.1
Crack Seal	14	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.66112	\$ 3,466,499.81
Slurry Seal	16	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.62317	\$ 12,136,460.31
Crack Seal	19	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.57029	\$ 2,990,233.19
Mill & Overlay	23	\$ 8.00	Sq Yds	7,490,560	\$ 59,924,480.00	0.50669	\$ 30,363,239.54
3% Patching	23	\$ 125.00	Sq Yds	224,717	\$ 28,089,600.00	0.50669	\$ 14,232,768.54
Staff Time	23	\$ 1,760,282.00	Lump Sum	1	\$ 1,760,282.00	0.50669	\$ 891,920.36
Crack Seal	25	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.47761	\$ 2,504,273.22
Slurry Seal	27	\$ 2.60	Sq Yds	7,490,560	\$ 19,475,456.00	0.45019	\$ 8,767,637.15
Crack Seal	29	\$ 0.70	Sq Yds	7,490,560	\$ 5,243,392.00	0.42435	\$ 2,225,014.32
Mill & Overlay	32	\$ 8.00	Sq Yds	7,490,560	\$ 59,924,480.00	0.38834	\$ 23,270,894.84
3% Patching	32	\$ 125.00	Sq Yds	224,717	\$ 28,089,600.00	0.38834	\$ 10,908,231.95
Staff Time	32	\$ 1,760,282.00	Lump Sum	1	\$ 1,760,282.00	0.38834	\$ 683,582.69
					\$ 350,033,870.00		\$ 196,746,940.43

Based on \$60
per ton

PAVEMENT MAINTENANCE COST COMPARISON	Present Worth Annual Maintenance Cost	Increase Maintenance Cost (35 years)
Proposed District/Zone System (3 trucks per week)	\$ 3,189,821.05	LOW
Current System (up to 15 trucks per week)	\$ 4,149,269.45	\$ 29,431,424.60
Worst Cast (up to 30 trucks per week)	\$ 6,148,341.89	\$ 85,103,203.86
Increased Annual Cost of Current Collections =		\$ 840,897.85