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Concession Rd 8 - Leskard.xls

Calculating Schedule C Benefits

Project #1 Road Resurfacing - mill & overlay

Definitions

- input field
- calculated field (no data entry required)

AADT = Average Annual Daily Traffic
 RCR = Ride Comfort Rating
 MJ = mega joules

Assumptions

- milling of existing asphalt surface full width of pavement to a depth of 90mm
- surfacing with 2 lifts of hot mix asphalt to a depth of 90mm
- base lift of hot mix asphalt contains RAP

Project Description

| | | |
|---|--------|----------------|
| project length | 749 | m |
| width of pavement | 6.1 | m |
| intersections (and areas not included in above) | 0 | m ² |
| Total Project Area | 4568.9 | m ² |
| current traffic volume (actual or estimated) | 2724 | AADT |
| % light trucks (pickup) | 0 | % |
| % trucks (heavy truck) | 2 | % |
| % trucks (tractor/trailer) | 0 | % |
| % trucks (B trains) | 0 | % |
| pavement smoothness | 6 | RCR |

Current CO₂ Emissions

| | | |
|-------------------------|-------|--------|
| Total Current Emissions | 413.3 | kg/day |
|-------------------------|-------|--------|

NOTE: Based on Natural Resources Canada - 2.36Kg/L CO₂ Gasoline, 2.73kg/L CO₂ Diesel and Transport Canada - Company Average Fuel Consumption 2004



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Energy Used For Construction

| | | |
|---|------------------|----------------|
| milling of existing asphalt surface | 4568.9 | m ² |
| trucking of milled asphalt (distance to dump site and return) | 20 | km |
| base lift of Hot Mix Asphalt with RAP | 50 | mm |
| % RAP | 20 | % |
| Surface lift of Hot Mix Asphalt | 40 | mm |
| Total MJ of energy required for project | 615,652.3 | MJ |

NOTE: Natural Resources Canada - Road Rehabilitation Energy Reduction Guide for Canadian Road Builders 2005, IVL Swedish Environmental Research Institute - Lifecycle Assessment of Road, March 2001

Benefits

Maintaining this road with a smooth surface condition reduces emissions

| | | |
|---|--------|---------|
| pavement smoothness (on the above project length) | 10 | RCR |
| Total Emissions (on the above project length if pavement maintained with a smooth riding surface) | 399.7 | kg/day |
| Reduction in CO ₂ | 13.6 | kg/day |
| | 4956.7 | kg/year |

Resurfacing at appropriate lifecycle to maintain the road with a smooth surface can reduce the total energy required as the pavement will require less work to rehabilitate. For example: instead of double lift of hot mix asphalt a single lift may be all that is required to maintain a smooth surface

| | | |
|--|------------------|----------------|
| milling of existing asphalt surface | 4568.9 | m ² |
| trucking of milled asphalt (distance to dump site and return) | 20 | km |
| Surface lift of Hot Mix Asphalt | 40 | mm |
| Total MJ of energy required for single lift resurfacing | 309,385.4 | MJ |
| Reduced Energy requirements | 306,266.9 | MJ |