

Technical Article: Greenroads – A Sustainable Solution to Roadway Projects

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Total Canadian transportation energy demands are the second largest end-use sector in the country, based on Natural Resources Canada statistics (2006).

In 2006, the on-road passenger transportation sector consumed about 13 per cent of total end-use energy consumption in Canada. The energy consumed to construct a 1 km of a single-lane road is greater than the energy consumed in over 30 North American households for a year. Still, constructing new roads and re-constructing or widening existing roads is inevitable, due to growing traffic demands and aging of existing roads.

Sustainable development allows for present needs to be met without compromising future generations' ability to meet their own needs.

There are various sustainable solutions in practice now, some of which are mandatory local municipality requirements. Today, different roadway projects use different sustainable practices. However, there is a definite need for a sustainable rating system that is quantifiable.

Greenroads Rating System is the first of its kind to quantify sustainable attributes of a roadway project. A "greenroad" is defined as a roadway project that has been designed and constructed to a sustainability level that is substantially higher than current common practices.

Greenroads, a voluntary third-party system, seeks to recognize and reward roadway projects that exceed public expectations for environmental, economic, and social performance. The system defines 11 project requirements that are essential for a roadway project to qualify for a sustainability certification.

In addition to the project requirements, there are 37 voluntary credits – each assigned a point value from one to five, depending on their impact on sustainability. The total point value from these voluntary credits is 108. Greenroads Rating System also recognizes sustainable practices not defined by the rating system by providing up to 10 points for custom credits. To be Greenroads certified, a roadway project must meet all the project requirements, as well as earn a minimum of 32 voluntary credits.

Greenroads also offers four levels of certification, including Certified, Silver, Gold and Evergreen. These certification levels are based on the points earned from voluntary credits and they recognize the sustainability commitment achieved by a roadway project.

The benefits of using the Greenroads Rating System include:

1. *Lower initial costs* – As the system emphasizes effectiveness in project execution and innovation to reduce waste during construction, total project costs are expected to be low. For example, encouraging recycling or reusing of old materials is a common practice in the Greenroads Rating System.
2. *Lower lifecycle costs* – Materials, technologies, and systems used in the Greenroads Rating System result in a reduced lifecycle costs.
3. *Lower user costs* – Traffic emission reduction, transit and high occupancy vehicle access, bicycle and pedestrian access, and safety audits are all part of the Greenroads Rating System. These will ensure that costs for users, such as traffic delay costs and accident costs are less on the Greenroads Rating System.
4. *Local economical development* – The Greenroads Rating System promotes locally sourced materials, promoting more jobs to strengthen the local economy.
5. *Higher property values* – Smart and durable roadway infrastructure will mean a favourable place to live and do business. This will lead to higher property values.
6. *Healthier communities and residents* – Multi-modal corridors will improve mobility and accessibility, leading to healthier communities.
7. *Reduced environmental impacts* – The Greenroads Rating System encourages protection and improvement of sensitive habitats. There is also less stormwater run-off with the rating system, meaning less negative impact to the environment.

Over the past five years, more than 100 projects have been used as case studies to test and refine the Greenroads Rating System. There are many projects that have already been certified, or are currently under review, in the United States. Greenroads is a relatively new system to have much momentum in Canada, but its use will promote sustainability on our future roadway projects.