



ROADEX Update

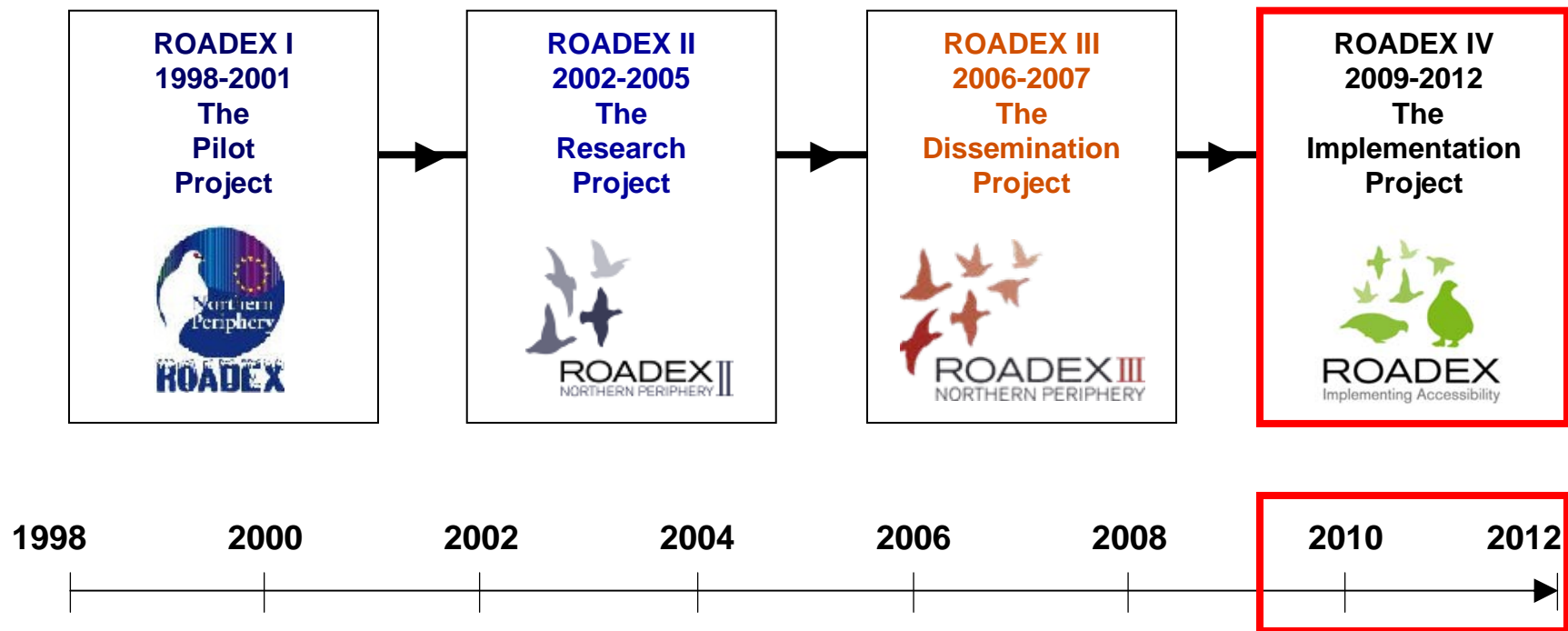
Ron Munro, ROADEX IV Project Manager

ROADEX Workshop in Ireland
Carrick-on-Shannon, 27 October 2011

EU Northern Periphery Programme



The ROADEX projects 1998 - 2012:



The ROADEX Partners:



Lead Partner, The Swedish Transport Administration
Northern Region, The Swedish Forest Agency



TRAFIKVERKET



Skogsvårdsstyrelsen
DALARNA – GÄVLEBORG



Centre for Economic Development, Transport and the
Environment, Lapland, Keski-Suomi and Savo Karelia regio



Centre for Economic Development,
Transport and the Environment



The Government of Greenland



The Icelandic Road Administration



The Northern Region, Norwegian Public Roads Administration



The Highland Council, Forest Enterprise,
Comhairle Nan Eilean Siar



Forest Enterprise



National Roads Authority,
Department of Transport, Ireland



Comhairle Nan Eilean Siar
Environment, Heritage and Local Government

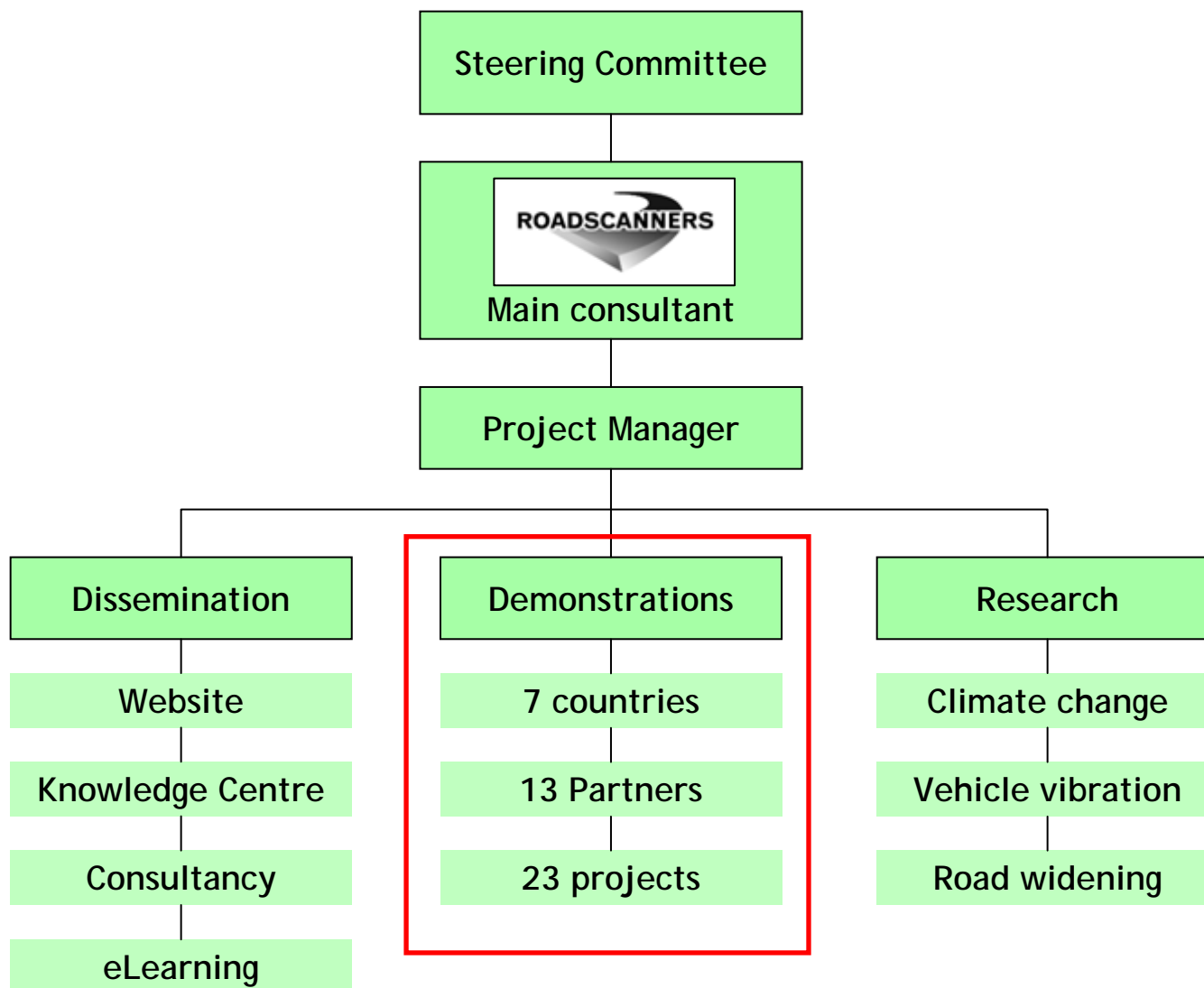


Associate Partner:
The Forest Engineering Research Institute of Canada, (FERIC)



Project Consultant: Roadscanners Oy, Finland

The ROADEx IV Project



ROADEx demonstration projects



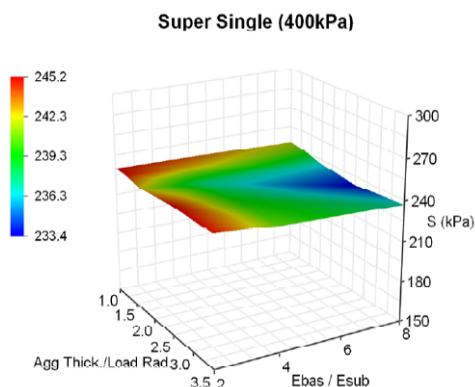
Drainage guidelines
Timo Saarenketo



Road friendly vehicles & TPC
Pauli Kolisoja



Forest road rehabilitation
Svante Johansson



Design against rutting
Pauli Kolisoja



Roads on Peat
Haraldur Sigursteinsson



Driver vibration & health
Johan Granlund

Locations of demonstrations:



- Location of a demonstration project

Demonstration projects:

Original plan to NPP:
23 demonstrations

Current plan:
28+ demonstrations

No	Location	Description
1	Greenland	Drainage surveys in Greenland (2)
2	Iceland	Drainage surveys in Iceland
3	Ireland	Drainage surveys in Ireland (2)
4	Norway	Drainage surveys in Norway
5	Highland	Drainage surveys in Highland
6	Western Isles	Drainage surveys in Western Isles
7	Sweden	Drainage surveys in Sweden
8	Highland	TPCS Stynie Wood, Scotland
9	Finland	TPCS Javarus Percostation. Finland
10	Finland	TPCS slippery road, Finland
11	Highland	Gleann Mor Forest Road
12	Highland	Glen Fiddich Forest Road
13	Sweden	Timmerleden Forst Road
14	Finland	Permanent deformation, Ehikki-Juokslahti drainage I
15	Finland	Permanent deformation, Ehikki-Juokslahti drainage II
16	Finland	Permanent deformation, Ehikki-Juokslahti III geo-reinforcement
17	Finland	Permanent deformation, Rd 16589 Saalahti geo-reinforcement
18	Finland	Permanent deformation, Humalamäentie, 'Tirkkonen method'
19	Sweden	Permanent deformation, Rd AC 1093 Morkan - Dikanäs
20	Sweden	Permanent deformation, Selet - Boden, (with LTU)
21	Ireland	Roads on Peat, N59 Newport - Mulranny, Co. Mayo
22	Ireland	Roads on Peat, N56 Drumnaraw - Cashelmore, Co. Donegal
23	Finland	Vibration & health, Hwy 21 Kilpisjärvi - Kaaresuvanto
24	Finland	Vibration & health, Palojoensuu - Enontekis - Raattama - Muonio
25	Highland	Vibration & health, Kilmallie Sawmill at Corpach, Fort William
26	Highland	Vibration & health, A82 Fort William - Inverness
27	Norway	Vibration & health, Oslo - Finnsnes
28	Sweden	Vibration & health, Road 331, The Beaver Road

(Locations & types of demonstration projects selected by the local Partner)

- | | | 2009 | | | | 2010 | | | | 2011 | | | | 2012 | | | | | | | | | |
|-------------|--|------|----|----|----|------|---|---|---|------|---|---|---|------|----|----|----|---|---|---|---|---|---|
| Description | | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 |
| WP1 | Project Management | | | | | | | | | | | | | | | | | | | | | | |
| M2 | Project management | | | | | | | | | | | | | | | | | | | | | | |
| WP2 | Consultancy Service & Knowledge Centre | | | | | | | | | | | | | | | | | | | | | | |
| C2 | Website | | | | | | | | | | | | | | | | | | | | | | |
| C2 | Knowledge Centre | | | | | | | | | | | | | | | | | | | | | | |
| C3 | Consultancy Service | | | | | | | | | | | | | | | | | | | | | | |
| WP3 | Local demonstration projects | | | | | | | | | | | | | | | | | | | | | | |
| D1 | Drainage maintenance | | | | | | | | | | | | | | | | | | | | | | |
| | - Project design | | | | | | | | | | | | | | | | | | | | | | |
| | - Demonstrations | | | | | | | | | | | | | | | | | | | | | | |
| | - Monitoring | | | | | | | | | | | | | | | | | | | | | | |
| | - Reporting | | | | | | | | | | | | | | | | | | | | | | |
| D2 | Road friendly vehicles | | | | | | | | | | | | | | | | | | | | | | |
| | - Setting up project | | | | | | | | | | | | | | | | | | | | | | |
| | - Demonstrations | | | | | | | | | | | | | | | | | | | | | | |
| | - Reporting | | | | | | | | | | | | | | | | | | | | | | |
| D3 | Forest Road Management | | | | | | | | | | | | | | | | | | | | | | |
| | - Setting up project | | | | | | | | | | | | | | | | | | | | | | |
| | - Demonstrations | | | | | | | | | | | | | | | | | | | | | | |
| | - Monitoring | | | | | | | | | | | | | | | | | | | | | | |
| | - Reporting | | | | | | | | | | | | | | | | | | | | | | |
| D4 | Rutting design | | | | | | | | | | | | | | | | | | | | | | |
| | - Setting up project | | | | | | | | | | | | | | | | | | | | | | |
| | - Demonstrations | | | | | | | | | | | | | | | | | | | | | | |
| | - Monitoring | | | | | | | | | | | | | | | | | | | | | | |
| | - Reporting | | | | | | | | | | | | | | | | | | | | | | |
| D5 | Roads on Peat | | | | | | | | | | | | | | | | | | | | | | |
| | - Setting up project | | | | | | | | | | | | | | | | | | | | | | |
| | - Demonstrations | | | | | | | | | | | | | | | | | | | | | | |
| | - Monitoring | | | | | | | | | | | | | | | | | | | | | | |
| | - Reporting | | | | | | | | | | | | | | | | | | | | | | |
| D6 | Vibration & Health | | | | | | | | | | | | | | | | | | | | | | |
| | - Setting up project | | | | | | | | | | | | | | | | | | | | | | |
| | - Demonstrations | | | | | | | | | | | | | | | | | | | | | | |
| | - Monitoring | | | | | | | | | | | | | | | | | | | | | | |
| | - Reporting | | | | | | | | | | | | | | | | | | | | | | |
| WP4 | eLearning | | | | | | | | | | | | | | | | | | | | | | |

ROADEx IV reports produced to date:



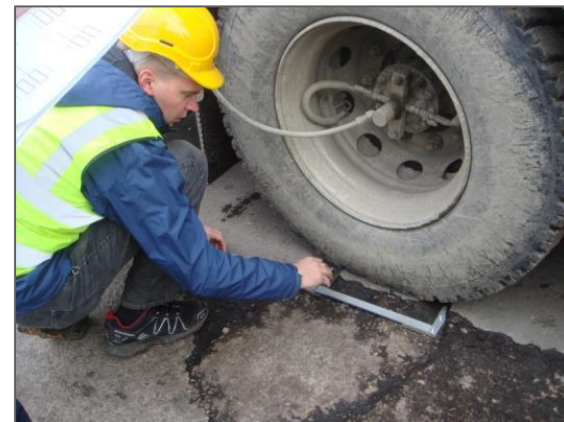
Examples of work in progress:



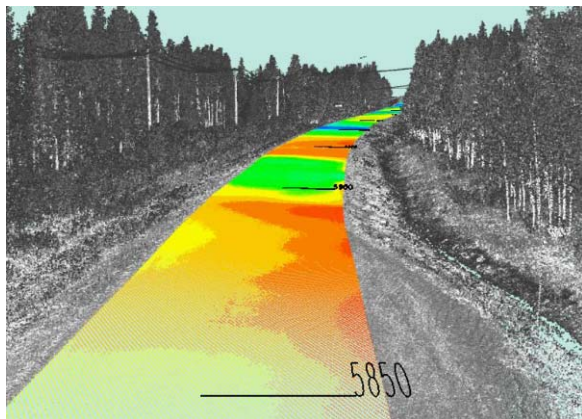
Trialing methods to minimise permanent deformation on peat



Improving the ROADEx road design methodology with new data



Monitoring the benefits of TPCS on timber haulage vehicles



Using laser scanning and point cloud technology in frost heave analysis



Demonstrating ROADEx drainage surveys and analysis

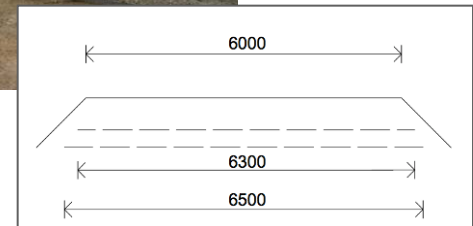
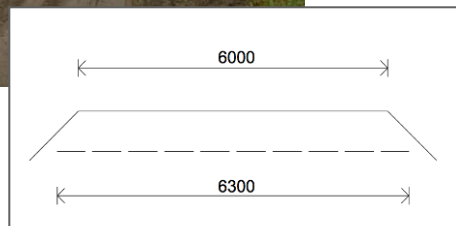
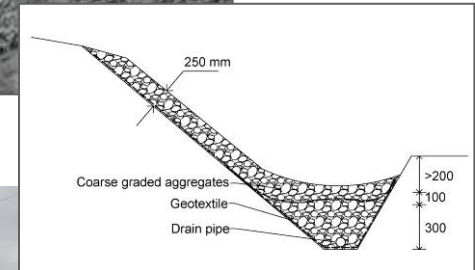
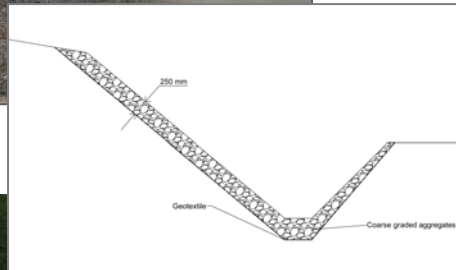


Measurements of vibration in vehicles and drivers

(Drainage, risk analyses and roads on peat covered today)

Demonstrations of design against rutting

(Tampere University of Technology)



Demonstrations of design against rutting

Coarsening of a roadbase by stone crushing



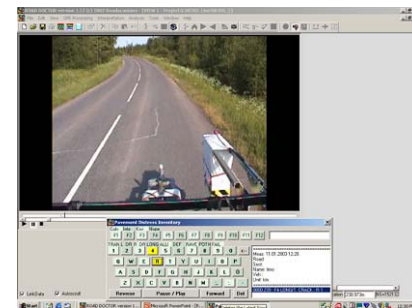
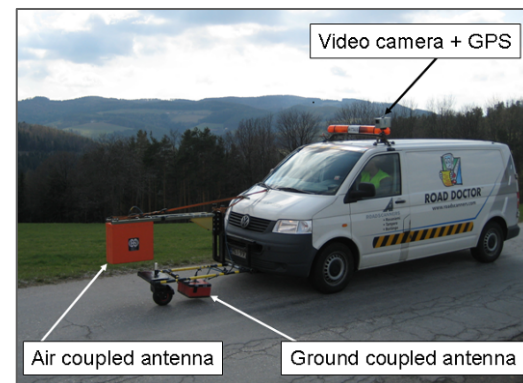
Experience in Ireland!

“Timmerleden” Forest Road, Sweden

Competition: (a) Skogsstyrelsen, (b) SCA Skog AB, (c) Sveaskog AB, (d) Roadscanners Oy

Winner = Roadscanners Oy
using the ROADEx design method:

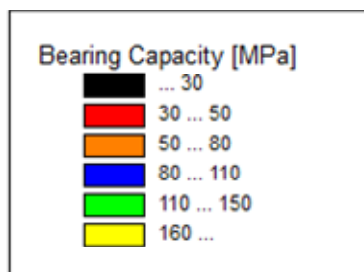
- Step 1 - Collection of data
- Step 2 - Project setup; processing and interpretation of data
- Step 3 - Modulus calculations for road structure and subgrade soil
- Step 4 - Calculation of the initial bearing capacity of the road
- Step 5 - New design; Determining the target bearing capacity
- Step 6 - Checking the design with additional data



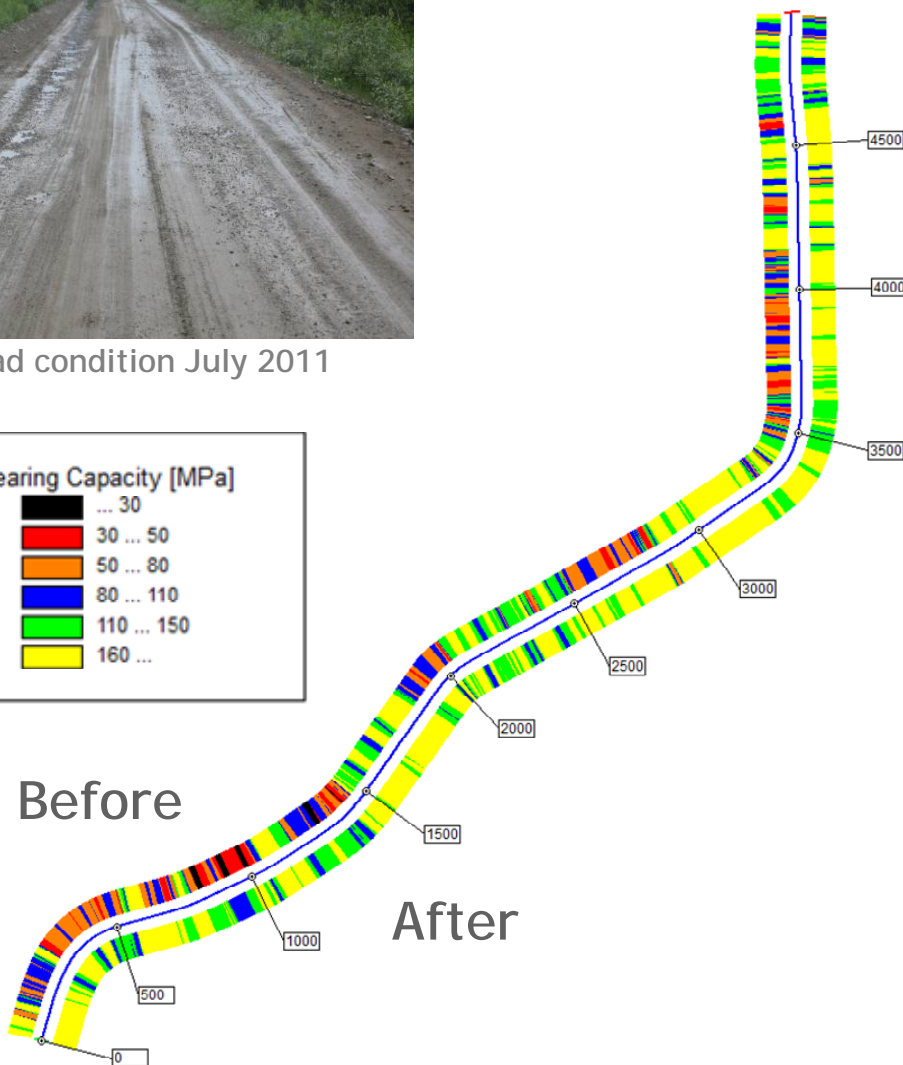
Timmerleden Forest Road Rehabilitation



Road condition July 2011



Before



After

Bearing capacity before and after rehabilitation




Road condition October 2011

Result = saving of 15% - 50% of normal Partner works

The ROADEx website: www.roadex.org

Latest News: 15.07.2010. ROADEx meets FPInnovations. Scotland, Finland and Sweden were happy to host TPCS expert Al Bradley of FPL... more.



ROADEx Services


The ROADEx Project offers a number of services to its Partner organisations to support the continual improvement of the organisations and the rural road networks they manage.

- Home
- About Us
- Background
- ROADEx Services
 - Consultancy
 - The ROADEx Knowledge Centre
 - The Partner Knowledge Bank
- Demonstration Projects
- Research Projects
- ROADEx E-Learning
- News
- Contacts

The ROADEx Consultancy Service

A consultancy service to support the in-house teams in the application of ROADEx technologies


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The ROADEx Knowledge Centre

The place where all published ROADEx publications and media can be accessed


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The Partner Knowledge Bank


The Partner area of the website where Partners can share in-house information on low volume roads

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THIS PROJECT IS BEING PART-FINANCED BY EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND



Northern Periphery Programme
2007-2013

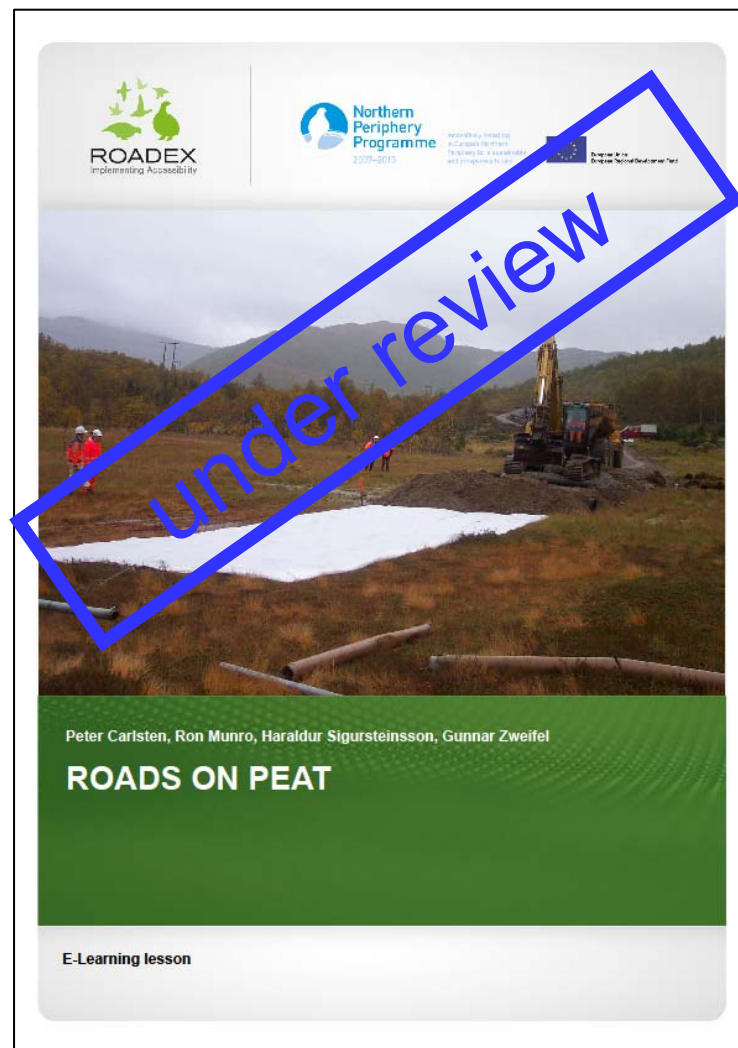
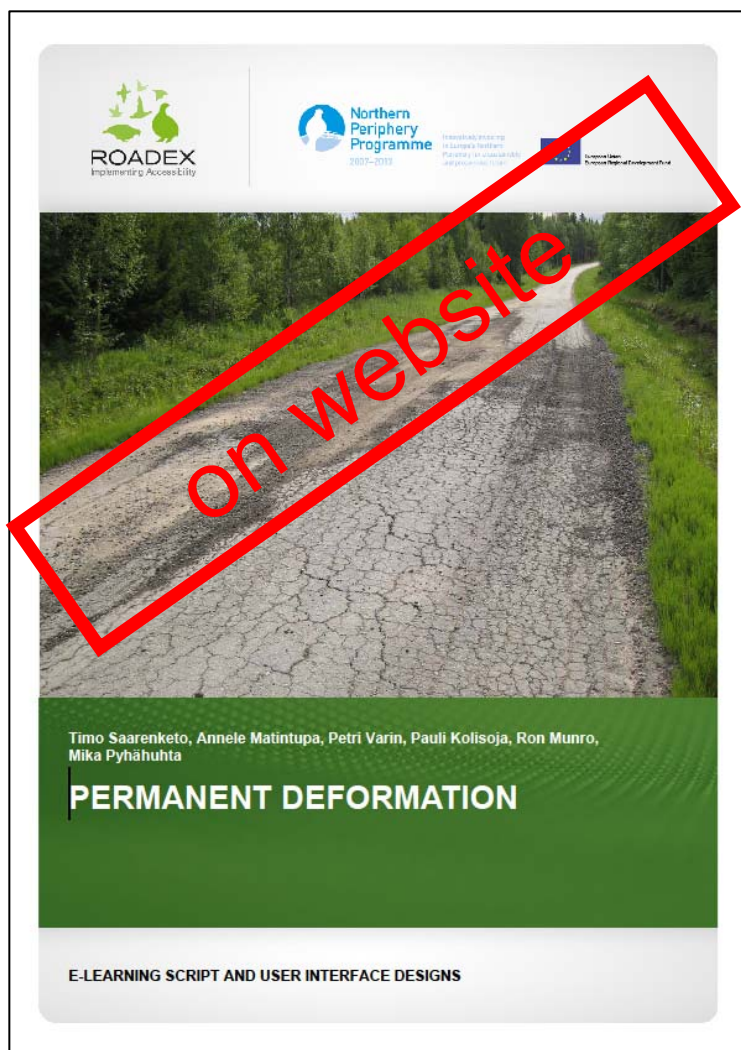
The ROADEX Knowledge Centre: 12 years of ROADEX



Studies, reports, methodologies, techniques, case histories, ...

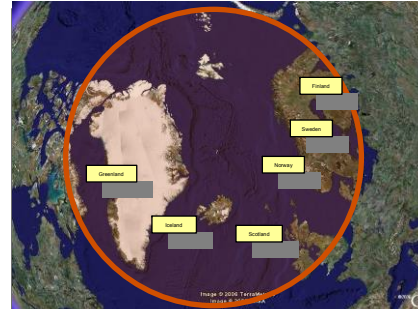
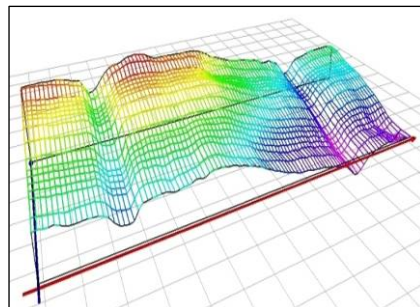
ROADEx E-Learning lessons

Link: <http://www.roadex.org/index.php/e-learning/permanent>



In preparation: Drainage of roads, Environmental considerations for low volume roads

The ROADEx Project:



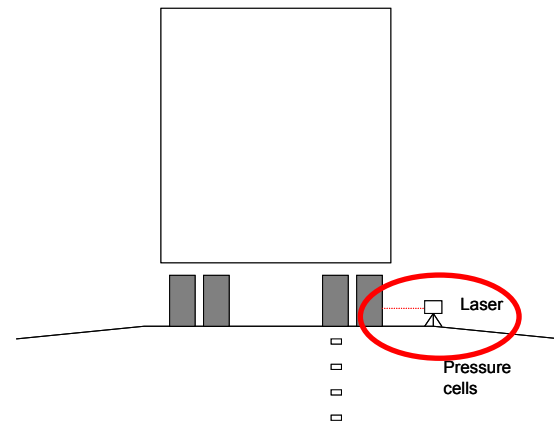


ROADEx
Implementing Accessibility

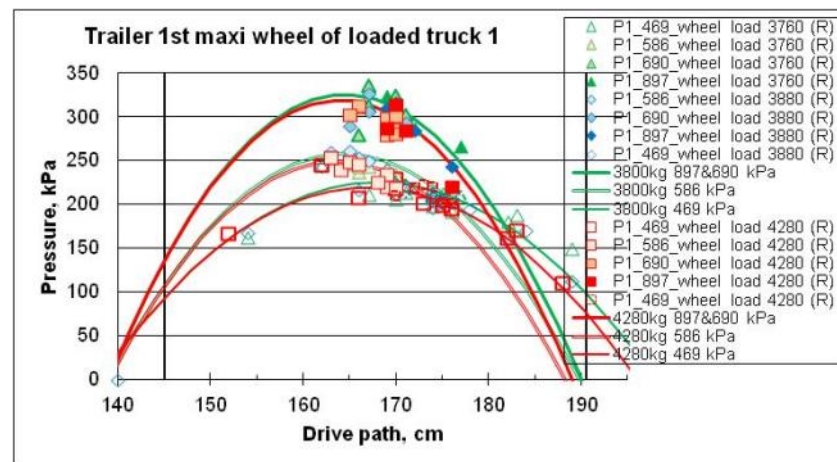
www.roadex.org

Demonstrations of Tyre Pressure Control (TPC)

Effect of variable tyre pressure with depth:



Driving line of vehicle over pressure cells



Effect of tyre pressure lowering observed at the depths of 70 and 150 mm but hardly any effect at 240 and 370 mm – basically as expected.