ROADEX
Implementing Accessibility

Northern Periphery Programme
2007–2013

Innovatively investing in Europe's Northern Periphery for a sustainable and prosperous future

European Union
European Regional Development Fund

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REPORT ON VISIT TO SCOTLAND 17-21 APRIL 2011

Introduction

A delegation of 17 people from the Swedish forestry travelled to Scotland for the period April 17 to April 21st to exchange experiences on the construction, maintenance and utilization of roads for forest transport. On the trip three organisations from the Swedish forestry industry were represented: Skogsstyrelsen, the authority responsible for forestry in Sweden, Sveaskog, a state-owned forestry company and SCA, a privately owned forestry company. In addition to these participants there was also a participant from Ireland, John Dempsey.

The report was written in Swedish by Peter Eriksson of Skogsstyrelsen and translated into English by Hanna Christoffersson.

Photograph of the group and the Scottish speakers gathered in front of a TPCS equipped timber haulage vehicle during a visit to James Jones and Sons. Back row: Jonathan Ritchie, James Jones & Sons Ltd, Karl-Johan Karlsson, SCA, John Dempsey, Coillte Teoranata, Ireland, Ron Munro, ROADEX, Stefan Alenius, Sveaskog, Tomas Johansson, SCA, Gunnar Lindgren, SCA, Sandy Hogg, James Jones & Sons Ltd, Front row (sitting): Per Hallgren, Skogsstyrelsen, Hans Hedlund, SCA, Frank MacCulloch, Forestry Commission, Per Christoffersson, Skogsstyrelsen, Björn Lexén, Sveaskog, Martin Osbäck, Sveaskog, Christoffer Olofsson, Skogsstyrelsen, Peter Eriksson, Skogsstyrelsen, Kristina Thuresson, Skogsstyrelsen, Dan Hagström, Skogsstyrelsen and Anders Winblad, Sveaskog.

Summary of visit

The visit consisted of the following planned events:

Sunday 17 April	Arrival of the group at Edinburgh airport and travel by private coach to the Columba Hotel, Inverness.
Monday 18 April	*Morning*: meeting in the Columba Hotel to discuss the programme for the visit and hear presentations from representatives for the Scottish forestry industry. *Afternoon*: visit to the Farr Wind Farm south of Inverness. The UK Forestry Commission (equivalent to Skogsstyrelsen) had built internal roads for the construction of the wind farm.
Tuesday 19 April	*Morning*: visit to James Jones & Sons at Mosstodloch to discuss timber transportation with vehicles equipped with tyre pressure control (TPC) (also known as central tyre inflation - CTI) and maxi tyres. *Afternoon*: visit to a Forestry Commission quarry to view crushing operations and discuss material extraction practices.
Wednesday 20 April	*Morning*: visit to a steep terrain forest site adjacent to the A82 public road to discuss logging options and the problems related to it. *Afternoon*: visit to a forest road project in difficult terrain. Return coach travel to Edinburgh.
Thursday 21 April	Departure of group to Sweden

Monday 18 April

The Forestry Commission

The morning started with Frank MacCulloch and Ron Munro welcoming everyone. The programme then continued with Frank describing how the Forestry Commission (http://www.forestry.gov.uk/) was structured. This is a short summary:

- FC is available for the entire UK but is divided on England, Scotland and Wales with a shared main office in Edinburgh.
- FC Scotland is divided into 3 sections
    - Policy and secretariat support
    - Forestry sector regulation and support
    - Management of the National Forest Estate
- FC is responsible for much of the maintenance and construction of forest roads and 95% of the roads are built by contractors with only 5% constructed by the FC's own staff.
- FC is responsible for many borrow pits and bridges.

In Scotland, recreation is a very important part of forestry. Frank told the group that it was just as expensive to build a hiking trail as it was to build a forest road in Scotland. The average price of building a forest road in Scotland was almost 250 SEK per metre. There are some 460 timber trucks in Scotland. Their maximum weight is 44 tonnes.

ROADEX presentation

Ron Munro, project manager for the ROADEX IV project, outlined the aims of the project and explained that it covered both public roads and forest roads in the Northern Periphery. The Project has partners from Ireland, Scotland, Iceland, Greenland, Norway, Sweden and Finland in the project. All information concerning the project can be found at www.roadex.org.

Presentation on trials with environmentally friendly culverts

Kim Leech of the Forestry Commission explained how the FC was improving the condition of water flowing through culverts. At present culverts can cause problems for the passage of fish during low water levels and at times of high water velocities through the culverts. Incorrectly placed culverts can also serve as an obstacle during migration of fish and other aquatic animals.

By placing obstacles (baffles) in the culverts sediments can build up resembling those iof natural brooks, where the water is stationary and providing a good environment for fish and other aquatic animals. There is however a problem with streams and migration obstacles for small fish when these culverts are used. The additional cost compared to an ordinary culvert has been calculated to be £62.00.

Roads on peat soils and landslides

Ron gave a presentation on road construction on peat and what problems this might pose to the stability of the roads built on it. Scotland has large areas of peat where improperly constructed roads have been seen to settle over the years due to their inappropriate foundations. One way overcome these problems is to unload the road and replace it with a lighter material. An example shown was the use of old tyres and the lightweight filler.

Frank McCulloch then spoke about landslides in Scotland. This is a significant problem in Scotland due to its hilly terrain. Roads are often built in the low ground of the terrain with high slopes above them and when these slopes become saturated with water after heavy rains landslides can occur. These can result in major disturbances to traffic and problems with accessibility. This was further discussed during Day 3 of the trip and covered further within that period.

Ground Penetrating Radar

Alan Drake of the Forestry Commission informed the group on how FC used ground penetrating radar and "Road Doctor" software in Scotland, as developed by Roadscanners. He demonstrated how the system worked on the screen and later, in Day 3, demonstrated the GPR survey vehicle on site. More about this system can be found at http://www.roadscanners.com/.

Farr Wind Farm

The morning ended with Bob Main of the Forestry Commission giving a short presentation on building roads for the construction of the Farr Wind Farm, performed by the Forestry Commission. The work consisted of improving 6.7km of existing forest road (upgrading the buoyancy of the road and its radius of curvature) and constructing 6.1km of new access road on land owned by the Forestry Commission and 1.3km of new road on ground outside of what FC owns. The road was built from October 2004 to April 2005, in only 24 weeks, at a total cost of 1.2 million GBP (approx 12 million SEK or about 850 SEK per metre road. Two bridges were built on the road at a total cost of 73,000 GBP or 750,000 SEK.

Bridge nr 1, cost 25,000 GBP

Bridge nr 2, cost 48,000 GBP

During the afternoon the group visited the wind farm and looked at the constructions chosen for the bridges and the building of the road on the mountainside that consisted mainly of peat. The final sections of road were constructed using 2 types of construction. Some parts were constructed from the bottom with crushed rock, and some parts were floated on a grillage of timber materials.

The group gathered under bridge nr 1.

Tuesday 19 April

Visit to James Jones and Sons Ltd, Mosstodloch
Tuesday morning was spent visiting James Jones and Sons Ltd at their sawmill facility in Mosstodloch. The meeting was hosted by Sandy Hogg. This company is one of a group of local companies that harvest and processes timber from local forests. Transportation to their processing plants is therefore very important. The company was the first in Scotland to trial TPCS (tyre pressure control system), the equivalent of the CTI system used in Sweden. TPCS was first trialed in Scotland in 2006 (and reported by ROADEX) and today most of the timber haulage vehicles within the company are equipped with the system. They are very happy with the system as it both saves fuel and improves the comfort for the driver.

In addition to pioneering the use of TPCS in Scotland, the company has also been a leading user of the new Michelin "Maxi tyre". These are wider tyres that have replaced the former twin tyres on the company's trailers and have been shown to wear less on roads.

Crushing site
Tuesday afternoon the group visited one of the many crushing sites operated by the Forestry Commission and had the opportunity of observing how the FC crushed road aggregates to a 0-100 mm in a one-step operation. This is the fraction on which the majority of the roads are built in order to get a stable base which then is compacted before the wearing course is applied.

The cost of crushing on this site was about 150 GBP per hour or 1500 SEK per hour, including machines and personal (2 people were carrying out all the work when the group visited the site). The crusher could crush rocks of about 100x60 cm and had an output of almost 200 tons per hour. The purchase cost of the crusher was approx 200,000 GBP.

The picture on the right shows the crushed material produced by the operation.

Wednesday 20 April

Felling in steep terrain

Wednesday morning was spent on a forest site adjacent to the A82 Inverness-Fort William road discussing the problems of felling timber on steep terrain and in proximity to public roads. Many roads in Scotland are built at the bottom of long slopes and subject to landslides. Felling operations in these locations are likely to be extremely hazardous. The group was asked a couple of questions on practices in Sweden but no immediate answers could be given. Where slopes were steep and there were no access roads on the slopes, felling opportunities were limited. The problem became more acute when the public road could not be closed, or the traffic redirected. This was the case with the A82 road where the road could only be closed for a maximum of 20 minutes. This was not a sufficient time interval to transport the timber down the terrain. The group suggested a number of possible measures that could be possible, for example by helicopter, but when the trees can be up to 8m³ this was not seen to be a viable option. In the end the group suggested the construction of a new road in tunnel. This won the approval of the presenters who wished that they could build a tunnel just so they could forget about the damn trees. (Quote: “let’s build a tunnel and just forget about the f***g trees”)

Brecklett Road

During Wednesday afternoon the group visited Brecklett Road, a 5.3 km long road built on very steep terrain in an important tourist location. Planning and working permits had taken a long time to achieve before the road could be built. The final route cost approximately several hundred thousand SEK. The total cost for the road was 420,000 GBP or 4.2 million SEK.

The group stopped at one of the many bridges along the road to study construction practices. Temporary bridges are common to prevent disturbance of existing water flows. The cost for building of this particular bridge was about 33,000 GBP.

After this last stop the trip continued to Edinburgh and the group left for Sweden on Thursday morning.

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ROADEX PILOT PROJECT REPORTS (1998–2001)

Road Condition Management in the Northern Periphery
Road Condition Management of Low Traffic Volume Roads in the Northern Periphery
Winter Maintenance Practice in the Northern Periphery,
ROADEX Sub Project B Phase I Extended Summary and Conclusions
Winter Maintenance Practice in the Northern Periphery,
ROADEX Sub Project B Phase I State-of-the-Art Study Report
Generation of 'Snow Smoke' behind Heavy Vehicles

ROADEX II REPORTS (2002–2005)

User Perspective to ROADEX II Test Areas' Road Network Service Level
Permanent deformation
Material Treatment
Managing spring thaw weakening on low volume roads
Socio-economic impacts of road conditions on low volume roads
Dealing with bearing capacity problems on low volume roads constructed on peat
Drainage on low traffic volume roads
Environmental guidelines
Environmental guidelines, pocket book
Road management policies for low volume roads – some proposals
Structural Innovations
Monitoring, communication and information systems & tools for focusing actions

ROADEX III EXECUTIVE SUMMARIES (2006–2007)

Managing Rutting in Low Volume Roads
Treatment of Moisture Susceptible Materials
Design and Repair of Roads Suffering Spring Thaw Weakening
Managing Peat Related Problems on Low Volume Roads
Managing Drainage on Low Volume Roads
Socio-economic Impacts of Road Conditions on Low Volume Roads
Environmental Guidelines & Checklist
Monitoring Low Volume Roads

ROADEX III REPORTS (2006–2007)

Drainage guidelines
Deformation mitigation measures
Health considerations
Road condition management policies
ROADEX III Case Study in Greenland

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Forestry Commission Scotland
NAALAKKERSUISUT GOVERNMENT OF GREENLAND
Centre for Economic Development, Transport and the Environment
ROADSCANNERS
The Highland Council Comhairle na Gaidhealtachd SERVING The Highland Community
Department of Transport An Roinn Iompair
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