

ROAD 140 SUB-BASE REINFORCEMENT PHASE 1

MUNICIPALITY OF EAST PERTH



Detail of MacGrid EG-30S and MacTex Mx-225 placing

TYPE OF PROJECT

Surface Strengthening And Support

YEAR OF CONSTRUCTION

2015

CLIENT

MUNICIPALITY OF NORTH PERTH

CONTRACTOR

CAPITAL WORKS,
MUNICIPALITY OF EAST
PERTH

DESIGNER

MACCAFERRI CANADA LTD.

PROD. RELATED

Biaxial Geogrids (45,030 M2 Of MacGrid EG-30S), Nonwoven Geotextiles (1,672 M2 Of MacTex MX-225)

Challenge

Spring thaw was turning vital farm roads into unstable, rutted traps.

Each year in East Perth Township, melting snow saturated the unpaved road network, disturbing the granular binder and mobilizing the black organic native soils below. Under the repeated passage of heavy farming trucks, these saturated soils were pumped

upward into the road surface, destroying the structural integrity of the binder layer and creating unsafe, unworkable conditions for agricultural traffic.

The Township needed a reliable way to keep the weak native soils confined at the base, prevent intermixing during thaw, and reinforce the road to handle heavy axle loads throughout the farming season.



Detail of the black native soil at the base of the road



Detail of granular A on top of MacGrid EG-30S

Solution

Maccaferri representatives conducted a site visit on 140 Road, including an exploratory excavation to verify the depth and extent of the organic soil layer. Using field data and truck load information provided by the Township, Maccaferri's technical department developed a full road reinforcement design using MACREAD Studio, our proprietary modelling software for geogrid-stabilized pavements, technology available only through Maccaferri.

The solution begins with a MacTex MX-225 nonwoven

geotextile placed at the bottom of the section to separate the organic soils from the granular sub-base and promote horizontal drainage. MX-225 is a needle-punched polypropylene geotextile with excellent dimensional stability and resistance to UV, biological attack, and naturally occurring chemicals.

Above the separator, the design specifies a MacGrid EG-30S layer at the base of the sub-base, followed by 25 cm of Granular B, a second MacGrid EG-30S layer, and 15 cm of Granular A as the road binder. MACGRID EG

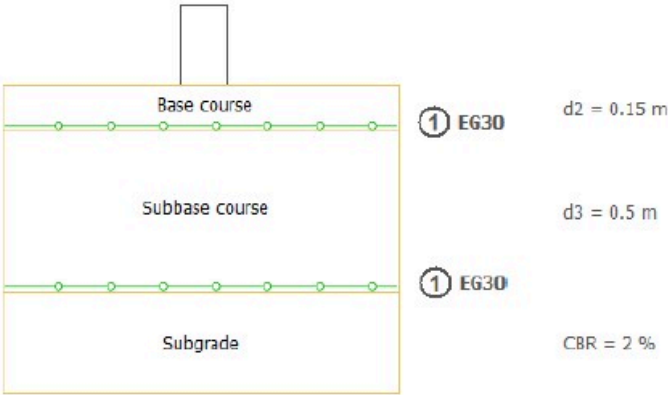
geogrids, high-modulus, biaxial polypropylene grids produced by precision extrusion, provide reinforcement

in both principal directions and remain chemically inert in all soil environments.

This configuration, one MacTex MX-225 layer and two MacGrid EG-30S layers, creates a stiff, stable, and well-

drained platform capable of carrying heavy farming traffic while preventing mixing between organic native

soils and granular layers during spring melt, ensuring long-term road performance for East Perth’s critical



Values at layers interfaces

Asphalt layer bottom

$z1 = 0 \text{ m}$
$r1 = 0.15 \text{ m}$
$\sigma1 = 600 \text{ kPa}$

Base Course layer bottom

$z2 = 0.15 \text{ m}$
$r2 = 0.3 \text{ m}$
$\sigma2 = 154.48 \text{ kPa}$

Subbase Course layer bottom

$z3 = 0.65 \text{ m}$
$r3 = 0.72 \text{ m}$

MACREAD design output



OPEN GOOGLE MAPS



OPEN GOOGLE EARTH