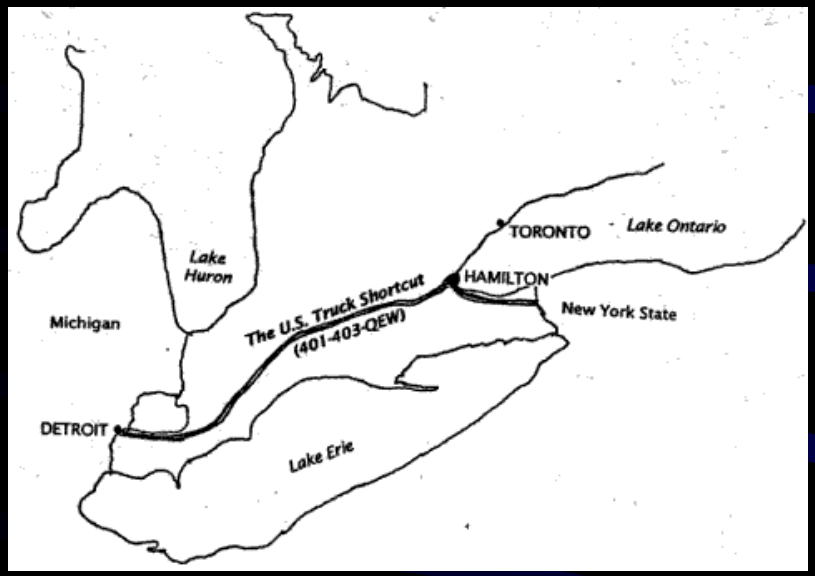
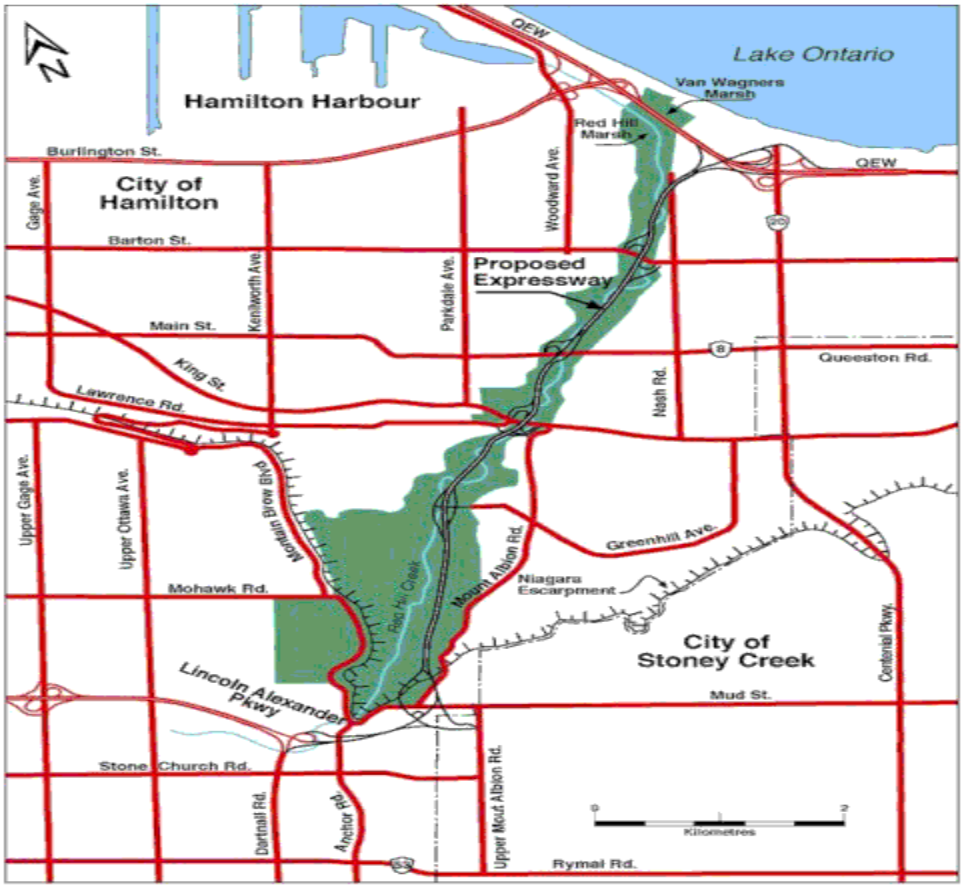
Geosynthetic Solutions
Landfill Remediation
Case Study - Rennie St. Landfill
Hamilton, Ontario

Bruno Herlin, P.Eng. / Terrafix
Daniel Jetté, ing., M.Sc.A. / Tensar
Kent von Maubeuge / Naue Fasertechnik
Bill Allison, P.Eng. / Dillon Consulting Ltd.

Introduction - Geography





Rennie St. Landfill - History

- September 2001: City pleaded guilty to allowing PCBs and other toxic wastes to pour into Red Hill Creek from the Rennie Street Landfill site. Fined $480,000 and ordered to commit $11 million in a clean up operation.
- October 2001: City pleaded guilty to a second dump site…2003 work…$12 million clean up plan.

STRATEGY ADOPTED

- Construction of a low-permeability cover of the landfill (minimize future generation of leachate)
- Construction of a leachate collection system at the toe of the landfill (+re-alignment of the creek)
- Stabilization and lining of the landfill slopes (prevent slope failure and direct leachate to the collector system)

STEP 1 : GCL ON TOP OF THE LANDFILL (summer 2001)

STEP 2a : re-alignment of the Red Hill Creek (summer 2002)


STEP 2a : re-alignment of the
Red Hill Creek (summer 2002)


CAT

STEP 2b : construction of a leachate collection system at the toe of landfill


HITACHI

STEP 3 : Stabilization and lining of the landfill slopes

- Slopes ranging from 2.5H : 1V (22^{o}) to 1.5H : 1V (35^{o})
- leachate collected and directed into the collection system at the toe through a drainage net
- landfill slope sealed by installing a GCL
- soil cover secured against sliding failure by a geogrid reinforcement (veneer stability)

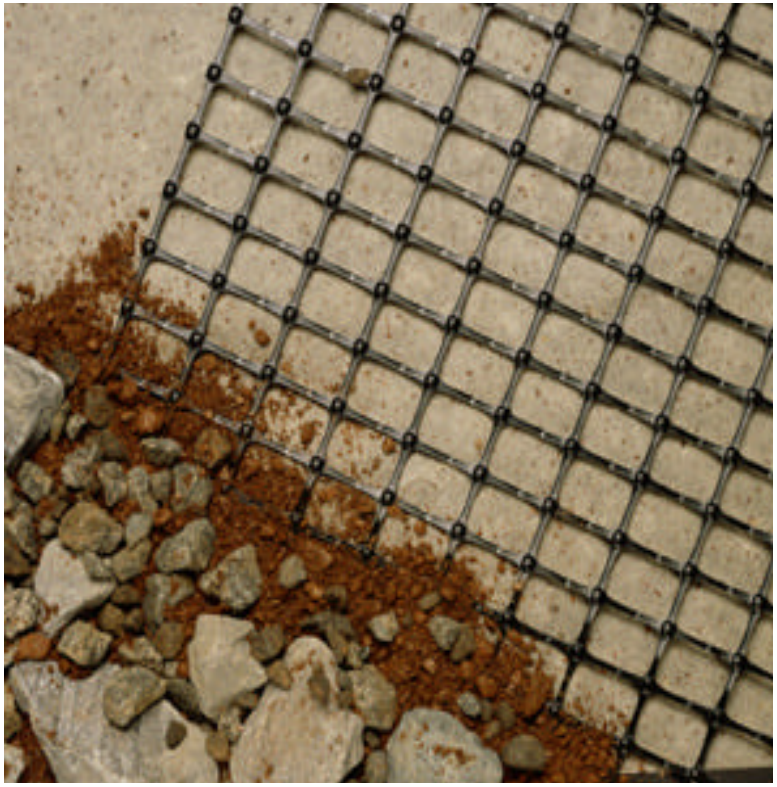
Geonet / GCL / Geogrid ANCHOR TRENCH

UX Geogrids
Veneer Reinforcement

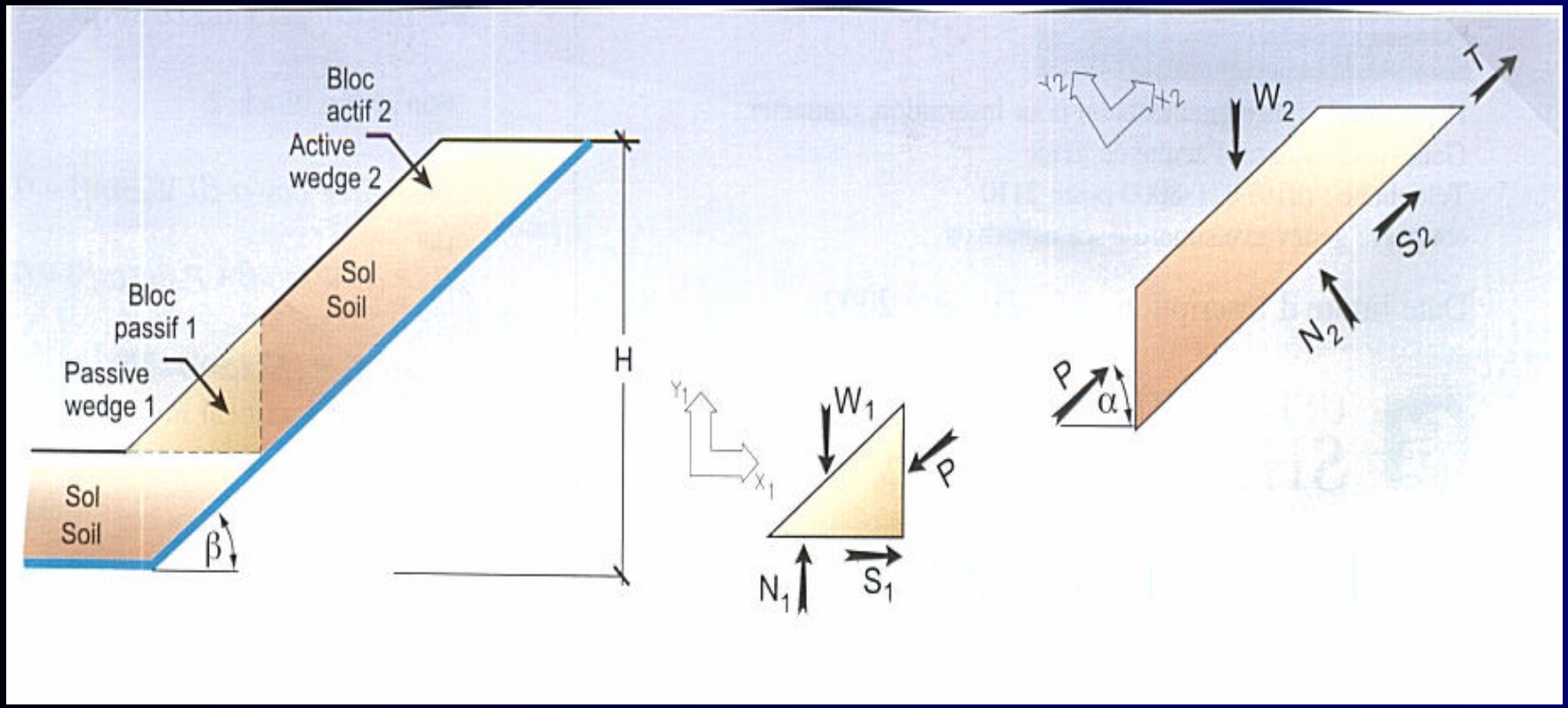
- Compatible with Most Fills
- High tensile strengths
- Mobilize friction along its transverse bars and ribs
- Open aperture structure interlocks with natural fill materials
- Manufactured from HDPE (long term resistance to elongation / creep)

BX Geogrids
Surficial Slope Stability

- Open Apertures and Stiff Structure Lock Soils in Place
- Wrapped face system
- Permits water Seepage
- Increased Facial Stability
- UV protected (carbon black content)



Veneer stability analysis



Wrapped face system


KOMATSU


KOMATSU


October 2002

April 2003

1st week of May 2003


August 2003


June 2003 / Brampton Street


September 2003

Acknowledgement

- Dillon Consulting Ltd (Design Engineers)
- Golder Associates (Peer review)
- City of Hamilton (Owner)
- Hard Rock Construction (Gen. Contr. Ph.1)
- AECON Construction (Gen. Contr. Ph.2)
- Terrafix Geosynthetics
  - (GCL manuf. + geosynth. supplier / site assistance)
- Tensar Earth Technologies Inc.
  - (Geogrid manuf./ veneer + surficial slope design)

Update: October 1, 2003

2003 International Achievement Awards Competition Winner

Outstanding Achievement Award

Industrial Fabrics Association International