

Product Evaluation

RE: Review of CEMATRIX CELLULAR CONCRETE

PRODUCT

The CEMATRIX Cellular Concrete product is produced onsite by CEMATRIX (Canada) Inc. located in Calgary, Alberta.

VENDOR CLAIMS AND INFORMATION

CLAIMS

CEMATRIX Cellular Concrete is a combination of cement, fillers such as fly ash, or slag, water, foaming agent and air. Fresh made cellular concrete is a flowable, self-compacting material similar to regular concrete; cellular concrete will set and harden into a monolithic material without subsidence. This material is cast at a various densities as per the strength requirement. Product Web Link:

<http://www.cematrix.com/>

DESCRIPTION

CEMATRIX Cellular Concrete product is produced onsite from mobile CEMATRIX production units capable of producing 20 to 120 cubic meters per hour. The Cematrix material is composed of cement (type 10 or type 30), or in combination with fly ash, and/or slag, the slurry is then combined with pre-formed foam. The foam is produced from proprietary foaming agents such as PROVOTON, or CEMATRIX CF-1. The material is produced, pumped and placed at a distance of up to 1 kilometer from the production units.

POTENTIAL USAGE

The CEMATRIX Cellular Concrete product is used to fill voids, bridge abutment and approach backfills, retaining wall backfill, lightweight culvert and span backfill and engineered fill.

STANDARDS

Cement : CSA-3001, ASTM C-150, AASHTO M85
Foaming agent : ASTM C-790
Flexural strength : ASTM C-78

Fly ash : CSA-3000, ASTM C-618
Compressive strength: ASTM C-495
Freeze/thaw resistance : ASTM C-666

ALBERTA TRANSPORTATION COMMENTS

EXPERIENCE

Alberta Transportation has accepted the use of CEMATRIX Cellular Concrete for grouting abandoned culverts and culvert liners and CEMATRIX CMI-500 Insulating Cellular Concrete for shallow utility backfill. Cematrix Cellular Concrete has been used as Lightweight Fill at HWY762 geo-hazard site S22.

APPLICABLE STANDARDS

The Alberta Transportation Specifications: 2.22 - Plastic Culvert Extension and Culvert Liners, 2.23 Smooth wall Steel Pipe Culvert Extension and Culvert Liners, 2.4.3.5.4 - Grouting of Abandoned Culverts.

Caveat: For Lightweight fill applications and grouting abandoned culverts, site specific conditions and requirements shall be assessed and then strength and density of CEMATRIX Cellular Concrete shall be determined by a Professional Engineer registered in Alberta.

RECOMMENDATIONS:

CEMATRIX Cellular Concrete product be listed as a proven Product under Alberta Transportation Products List, Lightweight Fill Materials – Frost Barrier and Void Filling – Proprietary.

TRIAL PROJECTS

- AT #5892/03, Jct. Hwy 2 & Hwy 54 South near Innisfail, Grout Abandoned Pipes or Culverts, 20m³, 2003 / 2004
- AT #6566/03, Hwy 36 near Two Hills, Grout Abandoned Pipes or Culverts, 140 m³, 2003 / 2004
- AT #6867/04, Douglasdale Interchange, Calgary Grout Abandoned Pipes or Culverts 530 m³, 2004 / 2005
- AT #6948/04, Intersection of TransCanada Highway and Stoney Trail NW, Calgary, Grout Abandoned Pipes or Culverts, 600 m³, Spring 2005
- AT # 6985/05, Stoney Trail and Highway, Insulation of Shallow Buried Pipe, 55 m³, Fall 2005
- AT # 7072/05, Trans-Canada Hwy & West Campus Blvd., Insulation of Shallow Buried Pipe, 350 m³, Fall 2005
- Grout Ø400 mm pipe x 300 m long, Intersection of TransCanada Highway and Stoney Trail NW, Calgary, Grout Abandoned Pipes or Culverts, 40 m³, Spring 2006
- AT# 7429-07, Stoney Trail and Crowchild Trail, Grout Abandoned Pipes or Culverts, 15 m³, Fall 2007
- Grout Ø2200 mm culvert x 18 m long, Hwy 2 near Granum, AB approximately 8 km north of Hwy 3, Grout Abandoned Pipes or Culverts, 80 m³, Fall 2010
- AT # 7725/10, Carseland-Bow River Headworks System Rehabilitation, Travers Reservoir Structures, Lightweight fill, 400 m³, Winter 2010
- Northwest Anthony Henday Drive, Edmonton, St. Albert Trail Bridge abutments, Void fill - fill for gap between soldier piles and precast concrete panels, 800 m³, 2011
- Southeast Stoney Trail Ring Road, Calgary, Hwy 2 & 22X, Insulation of Shallow Buried Pipe; Protection of Pipes Crossing Under Roadway with Minimal Cover, 20 m³, Summer 2012
- Hwy 2 over Dunbow Road Bridge Abutments, Voids under Roadway Behind Abutments, Void fill, 10 m³, Fall 2012
- Southeast Stoney Trail Ring Road, Calgary, Bridge approach / embankment fill 1300 m³, November 2012 through Fall 2013
- Ramp from westbound 22X to Northbound Deerfoot, Shallow Utility Insulation, 10 m³, 2013
- Southeast Stoney Trail Ring Road, Deerfoot Trail & Seton Boulevard, Culvert Fill, 10 m³, 2013
- Dunbow Road and Highway 2, Void fill under roadway and behind bridge abutment, 10 m³, Fall 2013
- Southeast Stoney Trail Ring Road, West side of southbound Deerfoot Trail, near the exit to Seton/Cranston, Shallow Utility Insulation, 20 m³, Spring 2014
- Highway 766, Grout abandoned pipes / culverts, 40 m³, Fall 2014
- Ivor Strong Bridge - awarded a 2017 Minister's Award for Innovation, Bridge abutment and roof slab backfill, 300 m³, Summer 2015
- Highway 762 slope stabilization at S22, Lightweight fill, 5700 m³, Fall 2017

Rishi Adhikari

cc Innovation Evaluation Group – Roger Skirrow
Dave Besuyen / Jim Gavin