North Highway Connector
Multi-Purpose Crossing

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2015 TAC Conference:
Active Transportation Safety Session

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Agenda

1. Project Background
2. Multi Modal Project Challenges
3. Planning & Design Solutions
4. Underpass Design & Construction
5. Question & Answer
Background

2008 - Functional Study
“Northland Drive - Ring Road”

2009 - Preliminary Design Completed
“North Highway Connector”

2012 – Grading, Underpass & Utilities

2018 - Roadway Surfacing (Tentative)
Background

Northland Drive
Population Horizon: 188,000 (~2040)

- Interchanges
- Crossing Structure
- Railroad Overpass
- Red Deer River Bridge
- Signalized Intersections
- Creek Crossing
Project Challenge

Expand Trail Network & Maintaining Community Connectivity

- Trails Master Plan
- Additional Trails
Multi-Modal Accommodation

- Ped/Cyclist Facility Along Entire “Ring Road”
- 2.0m Wide Pedestrian Pathway
- 1.5m x 2 Dedicated Cyclist Lanes
- 5.0m Boulevard
Multi-Modal Accommodation

Reduced ROW Through Large Fill Areas At Bridge Approach Will Include Barriers

Includes Wildlife Fencing Through Natural Areas
Project Challenge

Accommodating Active Modes + Wildlife
Project Challenges
Accommodating Active Modes + Wildlife

Deer, Moose, Fox, Etc.

Recreational Cyclists
Pedestrians
Commuters
Project Challenge

Incorporate City Park/Trail Network
Project Challenges

Expressway Profile & Crossing Alignment
Underpass Challenges

- Balancing Active Modes, Wildlife & Traffic
  Competing Objectives

- Animals & People Shy Away From
  Long Dark Tunnels

- Traffic Noise Can Scare & Deter Animals

- Constructability, Cost & Aesthetics
Crossing Solution
Crossing Solution

Strategic active commuter link to rec areas
Active Commuters - Link To Rec Areas

Mackenzie Trails Park and Picnic Area
(South of Crossing Location)

Discovery Canyon
(North of Crossing Location)

Pines Mountain Bike Park
(West of Crossing Location)
Underpass Design & Construction

BEBO Precast Concrete Arch System

- Long Design Life (100+ Years)
- Cost Effective
- Rapid Installation Time
Underpass Design & Construction

BEBO Precast Concrete Arch System

5m H x 10m W For Active Modes and Wildlife Comfort
Underpass Design & Construction

- Mitigate Loading & Differential Movement Impacts
- 10x5 “Skylight” Enhance Active Mode & Wildlife Utilization
Underpass Design & Construction

Precast Concrete Arch With MSE Walls

• Crossing Distance Control (60m Max)
Future Expressway Crossing Active Modes Trail Connections
Underpass Design & Construction

Complimenting the Natural Environment
Special Thank You
The City of Red Deer
CPCI

Questions?

Contact the Canadian Precast/Prestressed Concrete Institute for more information on precast concrete infrastructure solutions.