INNOVATION IN ALBERTA PAVEMENT TECHNOLOGY, THE URBAN PERSPECTIVE

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Outline

- Why Innovate?
- Innovation in
  - New Pavement Designs;
  - Pavement Rehab & Reconstruction;
  - Materials; and
  - Engineering
- Summary
- Questions
Why Innovate?

- Ageing Infrastructure
- Competing Budget Priorities
- Environmental Commitment
  - Comply
  - Conserve (non-renewable resources)
  - Continually Improve
- Citizen Satisfaction
New Pavement Design

- City of Calgary 2012 Standard Specifications
  - Pavement Structural Design – Increased the design life of pavements
  - Changed cross-sections of the pavements
  - PG graded asphalt
Smoothness Specs

The first Municipality in Canada to implement the pavement smoothness specifications

- Set A Specs
- Set B Specs

Smooth Roads are Green
New Pavement Design

- COC 2012 Standard Specifications
  - RAP and RAS addition to asphalt mixes
  - Moisture susceptibility testing
  - Fly ash in concrete
  - AASHTO Pavement Design Procedure
PRICE ADJUSTMENT/BONUSES

- Unit Price Adjustments
  - Asphalt Content
  - Compaction
  - Air Voids
  - Average Total Thickness
  - Smoothness

![Chart B: Compaction Payment Adjustment Factor](chart_b_compaction.png)

- Chart B
  - Compaction Payment Adjustment Factor
  - PAVEMENT COMPACTON (% of Maximum Specific Gravity)

- Unit Price Adjustments
- Asphalt Content
- Compaction
- Air Voids
- Average Total Thickness
- Smoothness
Pavement Rehab and Reconstruction

- Reconstruction – Disposal of excavated material
- Partial Reconstruction
- Overlay more at the centre and tapering towards the gutter doesn’t work
- Cold In-place Recycling
- Hot In-Place Recycling
- Full Depth Reclamation
- Paving into the gutter
- Concrete Overlay
Innovative Material

- WMA
- Use of RAP
- Use of RAS
- Superpave
- SMA
- Rubber Asphalt
- DuraTough
- Micro-Surfacing
- Fibre in Asphalt
Innovation in Engineering

- Pavement Management Application
- Automated Pavement Condition Assessment
- Non-Destructive Testing
  - Falling Weight Deflectometre (FWD)
  - Ground Penetrating Radar (GPR)
  - Inertial Profiler
Innovation in Engineering

- Forensic Pavement Investigations
  - Post-flood Assessment of Pavement Damages - Premature Pavement failure
Innovation in Engineering

- Forensic Pavement Investigations
  - Pavement Degradation Study led to implementation of Pavement Degradation Fee
SUMMARY/CONCLUSIONS

- Newly Developed Pavement structure will last longer (15 Years Design Changed to 20 & 30 Years)
- Longer service life = less traffic disruptions (less User Cost)
- Implementation of new types of Mixes will result longer service life
- Properly designed roads structure for future Traffic = no reconstructions.
- New Pavement Structure allows for Future Recycling
Environmental Benefits:

- Properly designed roads structure = no reconstruction
  - Lesser traffic Disruption
  - Lesser use of non-renewable resources
  - Lesser damage to the surrounding road infrastructure due to hauling traffic
  - Lesser use of Energy
  - Lesser production of GHG Emissions
- Price Adjustments allow for better quality
- Recycling
- Post flood assessment and Pavement Degradation Fee
DID MY PowerPoint suck?