Installing Temporary Traffic Signals at a Rural Highway Intersection as an Interim Condition

Keeping Traffic Moving on the TransCanada Highway

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Global Transportation Hub

http://www.thegth.com/the-gth/photo-gallery/

Introduction

Highway 1 west of Regina

- High volume, high speed

Global Transportation Hub

- Heavy vehicles – single, double, triple trailers

Interchange under construction

The Challenge:

Maintain safe and efficient traffic operation at a busy rural highway intersection during the construction of an interchange

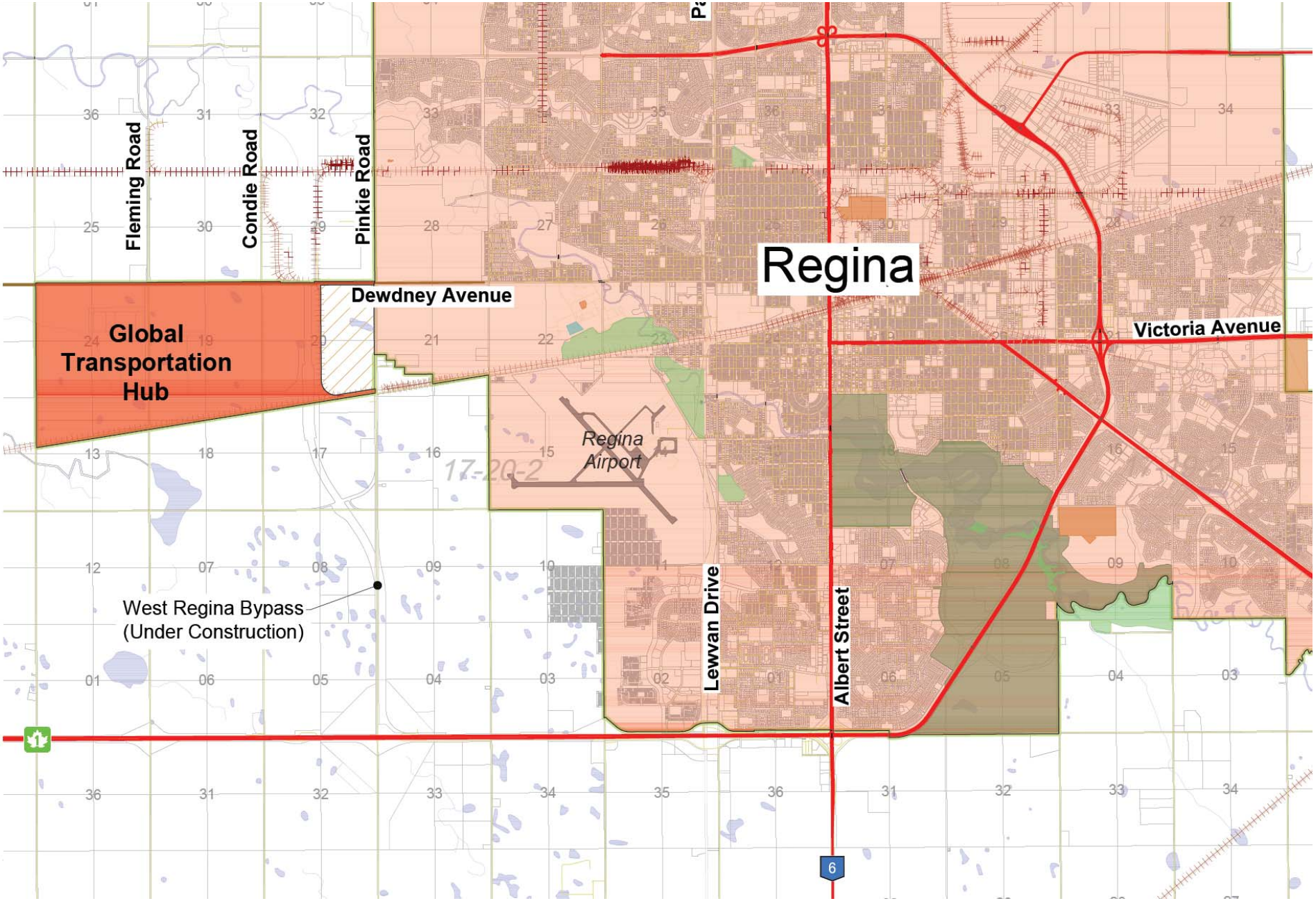
Introduction

Intersection of Highway 1 and Pinkie Road

Pinkie Road

- Low volume rural road
- High volume industrial access
- Highway bypass (West Regina Bypass)

Monitor traffic operations during the transition


Fleming Road
Condie Road
Pinkie Road
Regina
Dewdney Avenue
Victoria Avenue
Global Transportation Hub
Regina Airport
17-20-2
West Regina Bypass
(Under Construction)
Lewvan Drive
Albert Street
6

Highway 1 & Pinkie Road

Initial Condition

- Low volume rural road intersection
- Two way stop control

Interim Condition

- Increasing traffic volumes – heavy trucks
- Two way stop control → traffic signals

Ultimate Condition

- Interchange

Interim Intersection

Timeline

Interim intersection – Fall 2010

Baseline assessment – Fall 2011

Traffic signals – Spring 2012

Interchange – Fall 2013

Baseline Assessment

Operational analysis

- Baseline traffic volumes
- Capacity analysis
- Collision review

Safety Review

- Day and night site visits

Traffic Signal Review

- TAC signal warrant
- Synchro model
- Jurisdictional review

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Baseline Assessment

Traffic signals not warranted under existing conditions

- Would require 3x more traffic on Pinkie Road

Safety review:

- Minor recommendations – signage, pavement markings, delineators
- Intersection lighting
- Signage for acceleration lanes

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Intersection Monitoring

Ongoing monitoring program

Routine site visits

- Checklist – review operations and physical characteristics
- Submit short report

Construction

- Changing conditions
- Embankment construction - visibility

Traffic Signals

Traffic operations were acceptable during baseline assessment

Doubles restricted to off-peak hours under stop-control

Global Transportation Hub expansion

- More trucks, including more doubles
- Proposed triples

Operational issues anticipated prior to completion of the interchange

Traffic signals as an interim condition

Traffic Signal Design

Considerations:

- Rural location – no signals on the rural highway network
- No surrounding development
- High speeds (110 km/h)
- Majority of traffic (including trucks) on Highway 1
- Improve safety and access for vehicles entering from Pinkie Road
- Introduce potential for rear-end collisions on Highway 1

Traffic Signal Design

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Traffic Signal Design

Signal timing

- Semi actuated
- Highway 1 – “rest in green”
- Detection for southbound and eastbound left turns
- Eastbound left turns – protected/permitted

Other options for consideration

- Eastbound free-flow
- Night time flash mode
- Speed limit – 60 km/h regulatory

Traffic Signal Performance

Activation – May 31, 2012

Recorded the first 24 hours with Miovision camera

Signal design was effective

- Maintained traffic flow on Highway 1
- Provided protected entry for southbound left turns

Some issues with detection - southbound right turns

Miovision Camera

Signs

Important Intersection Ahead

Variable Message Boards

Speed Transition

- 110 km/h →90 km/h → 60 km/h

Signals Ahead

Dynamic Speed Display

Advance Warning Flashers


IMPORTANT
INTERSECTION
1 km
30
ADVANTAGE
West Regina Bypass
Investment $ 70 Million
Length 8.2 km
30


60
60
NEW
60
60
60
NEW
60


YOUR
SPEED
YOUR
SPEED
56


PREPARE TO STOP
WHEN FLASHING
PREPARE TO STOP
WHEN FLASHING

Additional Lighting

Median lighting – Highway 1

Temporary lighting – Pinkie Road

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Roadside Delineators


MAXIMUM
60
PASSING
WORKERS
YOUR
SPEED
54
MAXIMUM
60
PASSING
WORKERS
YOUR
SPEED
55
MAXIMUM
60
NEW

Winter Operation

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Bridge Deck

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Interchange

Opened to traffic October 1, 2013

Pinkie Road intersection closed

Traffic signals and associated signs removed

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Conclusion

Global Transportation Hub changed traffic patterns west of Regina

Pinkie Road

- Low volume rural road
- High volume industrial access road
- West Regina Bypass

Interchange construction at Highway 1 and Pinkie Road

Traffic signals introduced as an interim measure

Conclusion

Location and conditions presented challenges

Maintain safe and efficient traffic operations

- Signal design, signage, pavement markings, lighting

Intersection monitoring

- Identify issues and implement solutions

Tested safety measures

- Dynamic speed signs, roadside delineators, gateway barricades

Successful transition to interchange operation


Questions?