

Improving Multi-modal Safety through Specialized Audits: the City of Red Deer Commuter Bicycle Pilot Program Example

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Cycling Audit Objectives



This paper will provide some background on the use of audits to improve the safety of specific travel modes, describe the methodology applied to the City of Red Deer Bicycle Commuter Pilot, and present some of the key findings of the the audit

Highlights

- ❑ Commuter and recreational facilities
- ❑ Issues with cycling facilities through a central business district
- ❑ Route connectivity challenges
- ❑ Potential hazards within bicycle lanes
- ❑ Night-time visibility issues
- ❑ Pinch points with vehicular traffic

City of Red Deer Commuter Bicycle Pilot Program

- City Population: 97,000
- Length of Dedicated Bike Lanes: 13 km
- Length of Shared Bike Lanes: 5 km

Off-road facilities:

- Length of Multi-use Trails: 100 km
- Length of Recreational Trails: 120 km

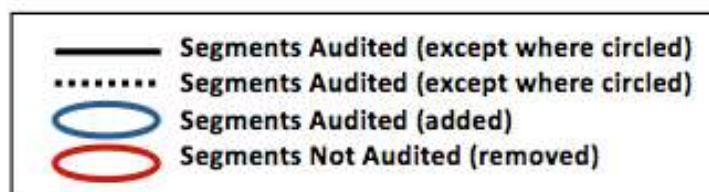
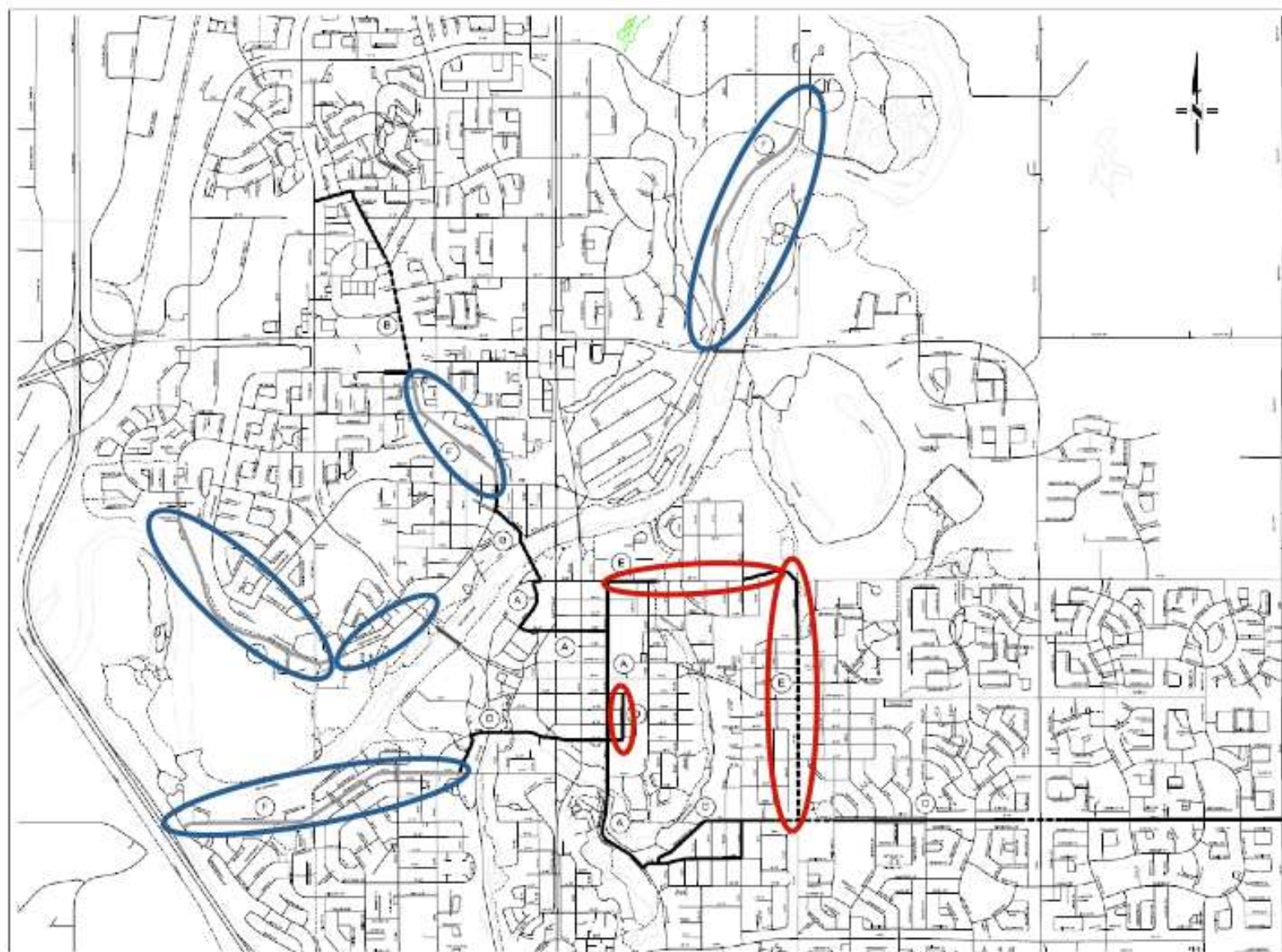




FIGURE 1 SCOPE OF COMMUTER BICYCLE PILOT SAFETY AUDIT



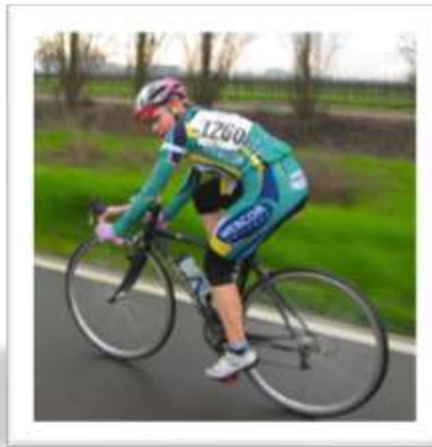
An in-service safety audit (RSA) is defined in the *Canadian Road Safety Audit Guide* (Transportation Association of Canada, 2001) as a formal and independent safety performance review of a road transportation project by an experienced team of safety specialists, addressing the safety of all road users. It is aimed to improve a project by considering the wide range in the anticipated road users as well as the road, traffic and light conditions.



An audit does not conclude that a design is “safe” or “unsafe”; this is not possible to do since safety is a relative and not an absolute measurement. However, it can provide insight into the benefits and risks associated with a project. Further, it is not a compliance check; issues and suggestions provide are not intended to be all-inclusive. It is based on the information at hand at the start of the audit.

Cyclist Types

- ❑ Commuter
- ❑ Recreational
- ❑ Children & Adults



On-Street facilities are for
commuters and experienced
cyclists.



Recreational cyclists & families use
the extensive multi-use pathway
system.



Presence of dedicated facilities



Adequate separation and comfort



Good route network connectivity



Smooth transitions between road and pathway systems



Clear route and facility signing at junctions



Superior ride quality



Guidance through intersection



Availability of parallel cycling facilities



Potential for dooring from parked vehicles



General Safety Issues

Potholes and broken pavement



General Safety Issues

Ride quality



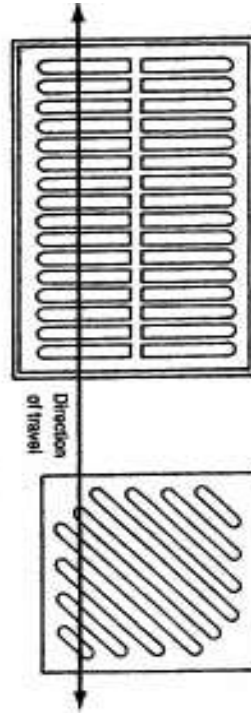
General Safety Issues

Debris in bike lanes

General Safety Issues

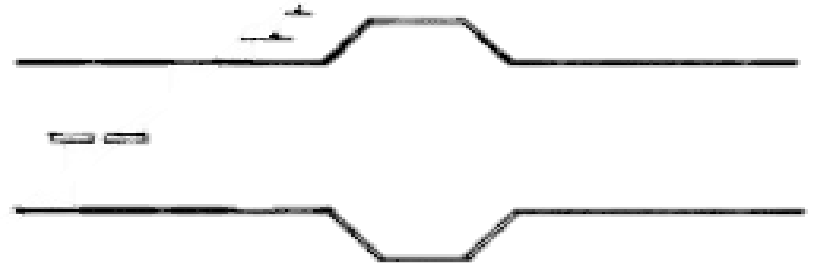


Drainage grate treatments



General Safety Issues

Suggested Grate
Treatments

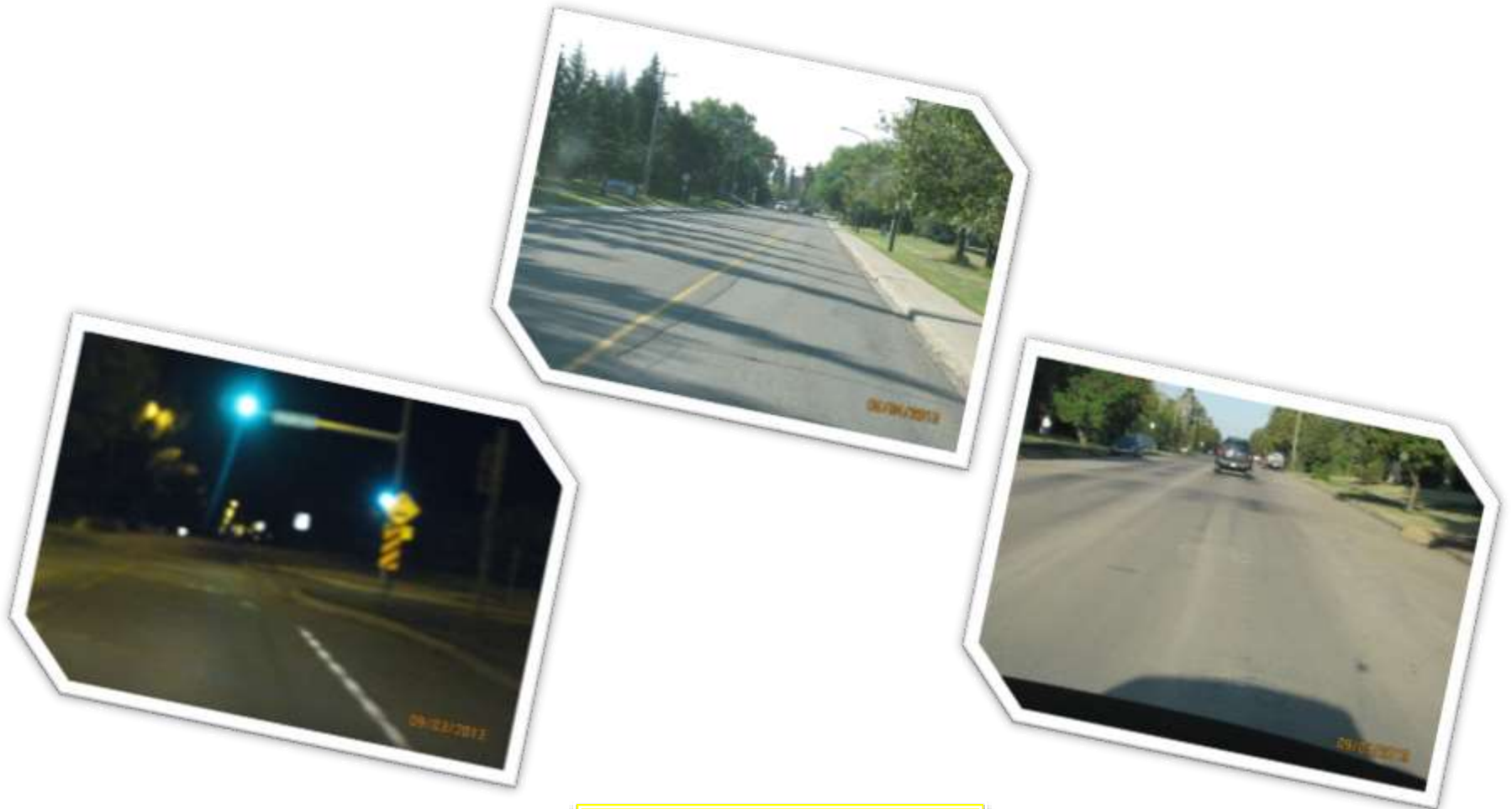


Variable lighting levels



General Safety Issues

Conspicuity of bicycle pavement markings



General Safety Issues

Lateral placement of bike stencils in shared lanes



General Safety Issues

Vegetation blocking signs or affecting cycle movements



General Safety Issues

Sign placement (lateral and vertical)



General Safety Issues

Consistency in the use of standard bicycle signs



General Safety Issues

Route signing at end of bike lanes to off-road system



General Safety Issues

Cyclist non-compliance



General Safety Issues

Crosswalk not expected in high speed environment on Riverside Drive



Other Safety Issues

Connectivity of bike route across Riverside Drive and across 67 Street unmarked



Other Safety Issues

Trail sign on 67 Street doesn't direct cyclists to crosswalk



Other Safety Issues

Northbound signs hidden by shrubbery



Other Safety Issues

Limited visibility of roadway from multi-use pathway on east-side



Other Safety Issues

Limited visibility of entrance to pathway for northbound vehicles



Other Safety Issues

Project Status

- Replacement of some sections of on-street bike lanes with adjacent multi-use trails
- Removals of hazards and reconstruction of curb-ramp designs being addressed during next construction season
- Maintenance-related issues (e.g. minor sign modifications; trimming shrubbery) being more formally address as part of maintenance activities
- Other specific items are being addressed as capital programs permit

Lessons Learned

- ❑ The City of Red Deer has already built safety into most of its bicycle facilities
- ❑ Parallel commuter and recreational facilities offer significant safety benefits and meet user needs
- ❑ In-person ride-throughs of facilities provide a first-hand view of potential issues
- ❑ Most issues can be addressed through minor reconstruction, sign/markings revisions, or enhanced maintenance activities
- ❑ Issues through business districts are more complex

Thank You



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