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Road Safety Audit

A formal and independent safety performance review of a road transportation project by an experienced, multi-disciplinary team of safety professionals, addressing the safety of all road users.
Responsibilities

1. Identify project
2. Select RSA team
3. Conduct Kick-off meeting
4. Perform data & field reviews
5. Conduct analysis and prepare report
6. Present findings to Project Owner
7. Prepare formal response
8. Incorporate findings

RSA Team
Design Team / Project Owner
Best Practices

- Innovative Pathway
- Progressive thinking, roundabouts
- Transit Service
- Genuine concern and prioritized approach to safety
Haxton Way & Slater Rd

Lummi Shores
/Kwina / Marine
Haxton Way & Slater Road
Haxton Way & Slater Road

What’s Working
- Ped accommodations at intersection
- Lighting
- Good pavement
- Condition of pavement marking
- Adequate for most circumstances
Haxton Way & Slater Road

Issues

- Mixed users, many unfamiliar drivers use this intersection (local / non-local)
- High number of older drivers
- Major traffic generators: convenience store, gas station, casino/hotel, ferry, and main reservation access
- Wayfinding to I-5
- Commercial use of Slater, large trucks for oil industry
Haxton Way & Slater Road

Crash Experience

- At least 12 high severity angle crashes WB to SB
- Crashes and near-collisions with NB right turns
- Ten years crash data:
  - 13+ Serious Crashes
  - 16+ PDO Crashes
  - 3 deaths
**Issues**

- Permissive left turns, WB to SB
- Sun glare could impair visibility of EB or WB signal or oncoming vehicles
- Fog is frequent
Issues

• EB to SB right turning vehicle may obscure other EB vehicles

• Posted speed on Slater (50mph) compared to Haxton Way (35mph)
LOW Cost /SHORT Term Countermeasures

• Add protected left turn phase for WB to SB

• Add protected NB right turn arrow (same time as WB left turn phase)

• Add EB acceleration lane for NB right turns or prohibit NB right turns on red
Protected Left Turns

MUTCD Sec. 4D.19
Long Term Recommendation

- Roundabouts reduce:
  - crash severity
  - frequency
  - maintenance costs
- Potential gateway to Reservation
- Eliminates last signal in county
Low Cost / Short Term Countermeasures

- Continue 45mph zone EB until east of Haxton
- Over-sized, retroreflective back plates
- Upgrade to 12-inch signal heads
- Upgrade to LED signal heads
Issue:
Conflicts with Right Turn Pocket
Issue: Conflicts with Right Turn Pocket
• Signs and markings are in good condition
• Considering the complexity of facility crash experience could be worse
Crash History

- Difficult to understand crash data for this area

- Crash Reports
- Law Enforcement Observation
- RSA Team Observation
- Unreported Crashes
Issues

• Unconventional layout is challenging to negotiate

• Uncertainty by drivers on who has ROW, especially at the south intersection

Limited ped accommodations, but ped traffic present
Issues

• Skewed intersections
• No stop bars
• Sight distance due to grade and vegetation
• Ice influenced by tree canopy
• Intersection ahead signs may not convey situation

W10-1 in MUTCD
Issues

- Reduced sight distance due to horizontal and vertical alignment
Issues

• No lighting on 3 of four intersections. Difficult to detect alignment at night
Issues • Signs not related to traffic
LOW COST / SHORT TERM

• Revise striping to define primary route
• add delineation or chevron signs

• Rumble strips across travel lane on WB and NB to alert driver of unusual conditions

• enhanced vegetation maintenance
Mid-term Recommendations

• Eliminate WB Marine to NB Lummi Shore
• Could dedicate this to peds

• Lighting would enhance intersection operation

• Lighting and clear shoulders would help ped movements

• Improved shoulders would also help reduce vehicle roadway departure crashes
Long Term Option

- Ice/canopy: about the same
- Sight Distance: some enhancement
- Speed Concerns: reduced
- Conflict Points: 12 versus existing 36
- Configuration: meets driver expectation
- Peds: traffic calming better for peds
Long Term Option

- Ice/Canopy: bridge or ramp may ice; but may reduce canopy issue
- Sight Distance: eliminates concerns
- Speed Concerns: mitigate with traffic calming
- Conflict Points: 32 vs. 36 existing
- Configuration: meets driver expectations
- Peds: mitigation needed to east; mitigation needed if not 4-way
Long Term:
• Ice/canopy: may reduce canopy issue
• Sight distance: no longer a concern
• Speed Concerns: mitigates speed
• Conflict points: 8 vs. 36 existing
• Configuration: meets driver expectation
• Peds: accommodated as part of design.
• Less maintenance than signal option
• Reservation gateway
Consider a larger modified "round"about intersection that could be lower cost and have a significant grade change.
Questions?

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