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# Whoop-Up Drive Speed Reduction

December 16, 2025

# Whoop Up Drive Posted Speed Review

Reviewing corridor design and TAC guidelines shows the 90 km/h speed limit doesn't match the road's geometry and risks.

A 70 km/h limit better suits conditions, enhances safety, and supports the Safe System approach.



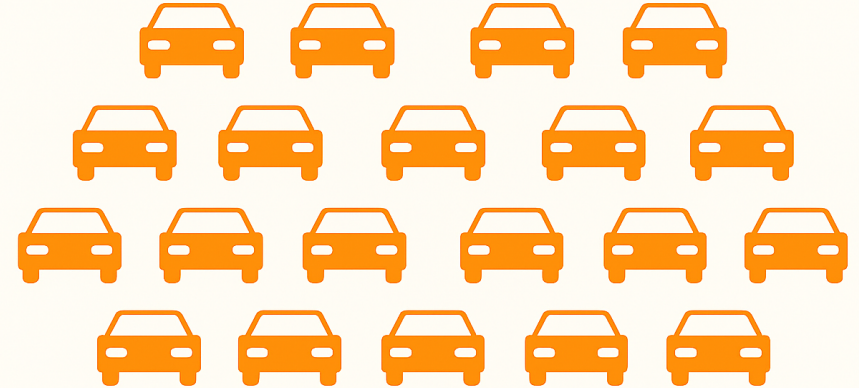
# High Traffic Volumes ( $\approx 50,000$ ADT)

High volume increases the probability of:

- rear-end collisions on grades,
- lane-changing conflicts, specially when trucks decelerate on climbs,
- conflicts with slow-moving or stopped vehicles with no shoulder refuge,
- barrier impacts when drivers must make emergency avoidance maneuvers.

Exposure to these risk factors is substantial, making a lower posted speed an effective mitigation.

## Traffic Volume



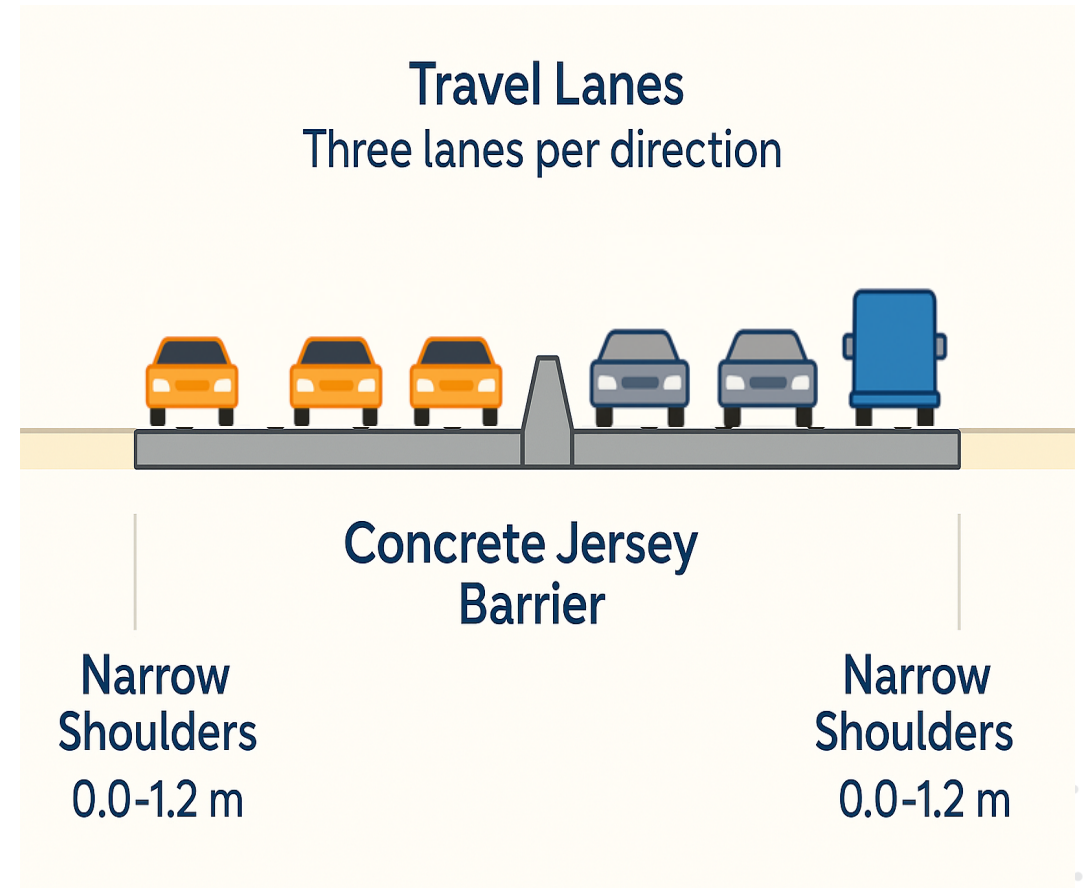
$\approx 50,000$  ADT

# Narrow Shoulder Width

Shoulder widths along the corridor range from 0.0 m to 1.2 m (in the narrowest sections), which is significantly lower than the shoulders typically associated with high-speed (90–100 km/h) expressways.

- TAC and Alberta Transportation guidelines generally provide for significantly wider shoulders than the existing 0.8–1.2 m on this corridor for high-speed (90 km/h) divided facilities
- The existing shoulders provide insufficient refuge space for disabled vehicles, maintenance activities, emergency response, or enforcement stops.
- Drivers who drift laterally have minimal recovery distance before encountering a rigid barrier.

These deficiencies are not consistent with 90 km/h operating speeds.



# Concrete Jersey Barriers on Both Sides

The corridor uses concrete jersey barriers on both sides, immediately adjacent to the travel lanes.

## Implications:

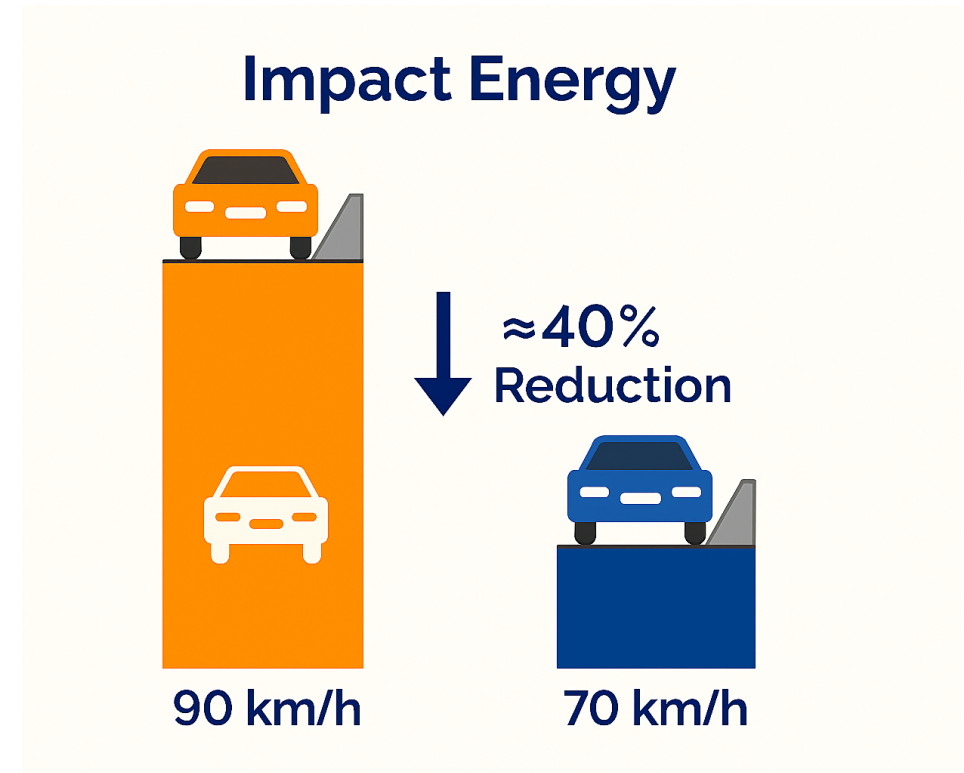
- The effective clear zone is essentially zero; there is no forgiving roadside area for errant vehicles to recover.
- Any run-off-road event becomes a barrier impact, not a recovery maneuver.
- With shoulders <1.2 m, disabled vehicles may partially occupy live lanes, increasing collision risk at high speeds.



# Safe System Rationale

Modern road safety practice accepts that drivers make mistakes, and the roadway environment should ensure that these mistakes do not result in severe outcomes if a collision occurs. On this corridor:

- Rigid barriers, narrow shoulders, and steep grades create an unforgiving cross-section.
- At 90 km/h, common driver errors (lane drift, misjudged braking on a downgrade, or reacting to a stalled vehicle) can result in high-severity crashes.
- At 90 km/h, barrier impacts carry high kinetic energy. Reducing the posted speed to 70 km/h reduces typical impact energy by approximately 40%, making barrier collisions significantly more survivable.



A 70 km/h limit makes the corridor more consistent with Safe System design principles.

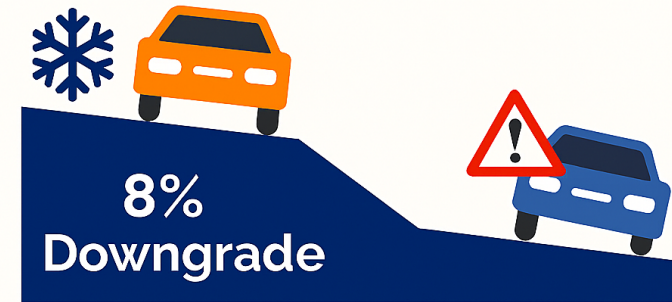
# Steep Grades Up to 8%

The corridor includes vertical grades up to 8%, which increase operational and safety risks at higher speeds.

Safety implications of steep grades:

- On downgrades, vehicles require longer stopping distances due to gravitational acceleration. Under winter conditions, the required stopping distance at 90 km/h may exceed available sight distance.
- On upgrades, heavy vehicles slow significantly (often to 50–60 km/h). This creates large speed differentials with cars traveling near 90 km/h, particularly in the fast lane.
- Winter operations on 8% grades amplify risks of loss of control, rear-end collisions, and heavy-vehicle instability.

## Grade Impact



- **Longer Stopping Distances at 90 km/h**
- **Winter Conditions Increase Risk**

A lower posted speed of 70 km/h reduces stopping-sight-distance requirements, lowers speed differentials, and increases stability margins on both grades and curves.

# Safe System Rationale

The mobility penalty of lowering the speed from 90 → 70 km/h is modest. On this 2.7 km 90 km/h limits on Whoop Up Drive, travel time will be:

Travel Time	
• 90 km/h:	~1 min 48 s
• 70 km/h:	~2 min 19 s
• Difference:	~31 s

This marginal travel-time cost is proportionally small relative to the expected reduction in collision severity and frequency.

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# Summary

- Based on a review of geometric constraints, roadside design, traffic operations, and TAC speed limit guidance, the existing 90 km/h posted speed on Whoop Up Drive does not reflect the corridor's actual safety and operational environment
- Reducing the posted speed to 70 km/h:
  - aligns operating speeds with available stopping distance on grades,
  - reduces barrier-impact energy by ~40%,
  - mitigates the consequences of grade-related speed differentials,
  - compensates for the absence of a forgiving roadside, and
  - is consistent with TAC and Alberta Transportation speed-management principles.



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# Questions