CITY OF Vancouver WASHINGTON

A Safe Systems Approach

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The Institute of Transportation Engineers (ITE) and the Road to Zero Coalition's Safe Systems Framework articulate that to anticipate human mistakes, **a Safe System** should:

1. Separate users in physical space
2. Separate users in time
3. Alert users to potential hazards
4. Accommodate human injury tolerance through interventions that reduce speed or impact force

Safe Systems Approach: the basics

How?

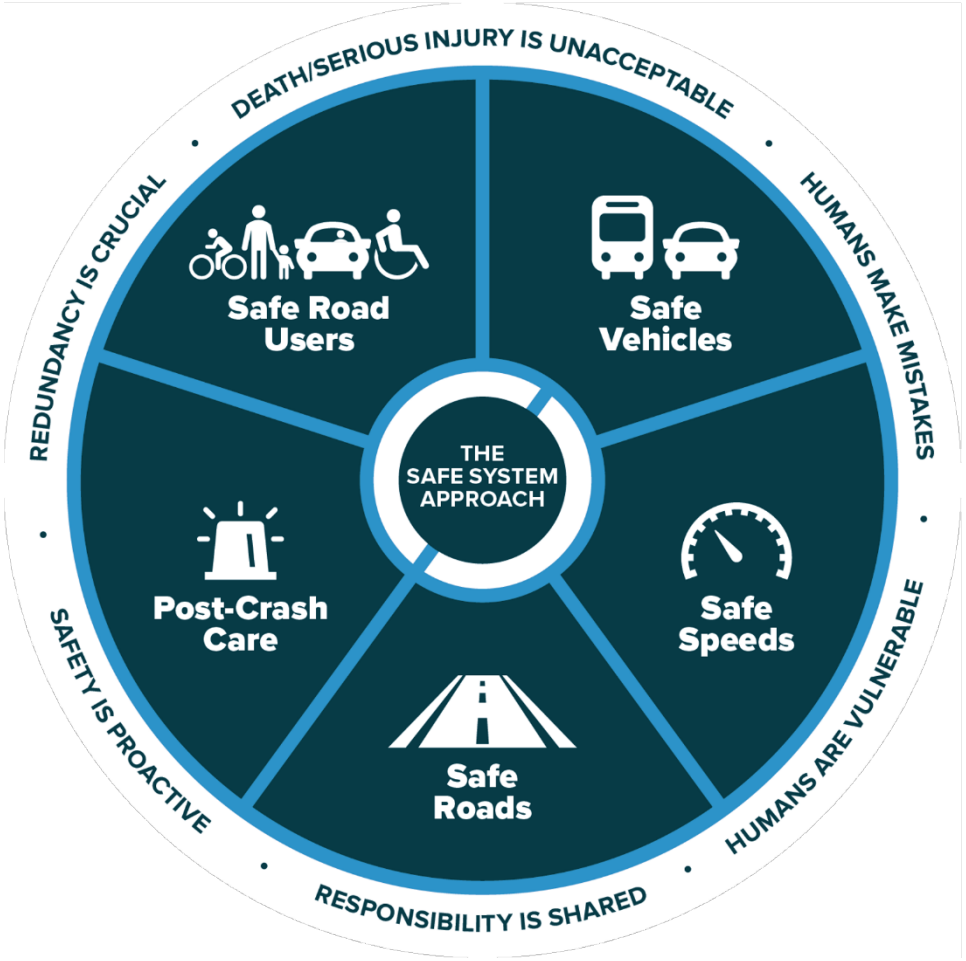
1. Dedicated facilities for different users
2. Dedicated phases for pedestrian crossings, bikes, turning vehicles
3. Signage, striping and warnings
4. Slowing vehicle speeds, improving post-crash and emergency / incident response

Safe Systems Approach: Who and Where

Federal Support – Federal, State and Local Implementation

- Safe Systems are a major initiative of the USDOT Federal Highways (FHWA).
- FHWA's goal is to reduce transportation related fatalities and serious injuries across the transportation system.
- Safe Systems support the vision of zero deaths and serious injuries on US roads.
- FHWA collaborates with other USDOT agencies to implement the National Roadway Safety Strategy (NRSS) and requires states to create a Statewide Safety Plan.
- Washington State's Strategic Highway Safety Plan is 'Target Zero'.
- City of Vancouver's safety plan is the Local Roads Safety Plan (LSRP), which analyzes which streets and intersections have the most crashes across the city, and what contributed to them.
- On identified dangerous roads and streets, **safety countermeasures** are applied to address the aspects of the roadway that are most leading to crashes.

Safe Systems Approach: Principles



- Death/serious injury is unacceptable
- Humans make mistakes
- Humans are vulnerable
- Responsibility is shared
- Safety is proactive
- Redundancy is crucial

Traditional Road Safety vs Safe System Approach

Traditional		Safe System
• Prevent crashes	→	• Prevent deaths and serious injuries
• Improve human behavior	→	• Design for human mistakes/ limitations
• Control speeding	→	• Reduce system kinetic energy
• Individuals are responsible	→	• Share responsibility
• React based on crash history	→	• Proactively identify and address risks

Proven Safety Countermeasures

How to address safety and crash issues

- FHWA's **Proven Safety Countermeasures** initiative lists 28 countermeasures and strategies proven to reduce roadway fatalities and serious injuries on US highways.

- Transportation agencies are encouraged to implement PSCs to achieve local, State, and National safety goals. These strategies are designed for all road users and all kinds of roads and contexts.

- Each countermeasure addresses one or more safety focus area – speed management, intersections, roadway departures, or pedestrians/bicyclists.

- PSCs provide guidance on how to address what traffic, safety and crash studies tell us.

Crosswalk Visibility Enhancements

- High-visibility crosswalks
- Improved lighting
- Signing and pavement markings

Medians and Pedestrian Refuge Islands

- Mid-block crossings
- Approaches to multilane intersections
- Areas near transit stops or other pedestrian-focused sites

Roadway Configuration

- Reduce number of lanes

Complete Streets

Where to use Proven Safety Countermeasures

- Complete Streets implementation aligns with the Safe System Approach.
- Anticipate human mistakes by designing and managing road infrastructure to keep the risk of a mistake low and reduce injury severity if a crash does occur.
- FHWA promotes and advances infrastructure solutions to prevent common crash types:
    1. involving pedestrians and bicyclists
    2. at intersections, and
    3. with vehicles departing the roadway.

Proven Safety Countermeasures on **Complete Streets** improve safety by

- managing speeds
- increasing attentiveness of road users
- reducing complexity of the design and operation of the transportation system
- separating road users in time and space.

SSA Principle: Safer People

- **Shared responsibility for road safety**. Road users are expected to follow rules of the road, pay attention, adapt changing conditions, not driving under the influence, and drive without distraction.
- Roadway design, education, enforcement, and vehicle technology are all important in encouraging road users to behave safely.
- The Safe System approach addresses the safety of all road users, including those who walk, bike, drive, ride transit, and travel by other modes.

The 3 most frequent and persistent behavioral safety factors in fatal crashes are:

1. People in motor vehicles not wearing seat belts (see Safer Vehicles)
2. Driving while impaired from alcohol (see Safer People)
3. Speeding (see Safer Speeds)

SSA Principle: Safer Roads

- Design roadways to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users.
- Driver behavior is taken into consideration as a part of engineering design.

Safety Countermeasures include:

- Limit conflict opportunities (pedestrian crossing phase, no RTOR, shorten crossing distances, roundabouts)
- Increase visibility of crossings (clear zones)
- Medians and Pedestrian Refuge Islands
- Separate modes of travel (vertical and horizontal separation or delineation)
- Textured street markings (rumble strips)
- Harden turn radii

SSA Principle: Safer Speeds

- Promote safer speeds in all roadway environments through a combination of context-appropriate roadway design, targeted education, outreach campaigns, and enforcement.
- Speeding increases the frequency and severity of crashes.
- Managing speeds and addressing issues of speeding improves safety. Unsafe speeds are a well-documented and understood factor in death and injury, especially among people outside of a vehicle.
- Enforcing existing speed limits, including automated enforcement, and educating road users also play a role in contributing to driver compliance with speed limits.

Safety Countermeasures include:

- Road design (number and width of lanes, vertical and horizontal deflection)
- Speed limit setting
- Education
- Enforcement

SSA Principle: Safer Vehicles

Vehicle technology that helps prevent and minimize the impact of crashes on people inside, and outside of the vehicle.

SSA Principle: Post-Crash Care

Incorporate emergency services and medical care, crash reporting and investigation, traffic incident management, and the justice system into transportation system safety.

- Improve crash survivability by expediting access to emergency medical care.
- Create a safe working environment for first responders and prevent secondary crashes through robust traffic incident management practices.
- Quick response and detailed investigation by police and road operators can ensure crash factors are documented and reported correctly, the justice system can take appropriate action, and the risk of future crashes can be mitigated through a policy, program or project change.
- Crash factors are understood in Safe Systems context of shared responsibility (Roadway and vehicle design, public health issue, and individual choices.)

What does the SSA mean for Vancouver?

- Vision Zero is one of the top TSP priority initiatives for the next two years.
- At the national level, a Safe Systems approach has been adopted and tied to many federal grants such as Safe Streets and Roads for All.
- Cities such as New York, Hoboken, and Jersey City are seeing reductions in deaths through Vision Zero initiatives.
- Understanding the trends in crash data and our local road safety plan helps the city prioritize when and where to make investments.

Thank You