Wildlife Crossings

North Dakota Department of Transportation

Office of Project Development Conference

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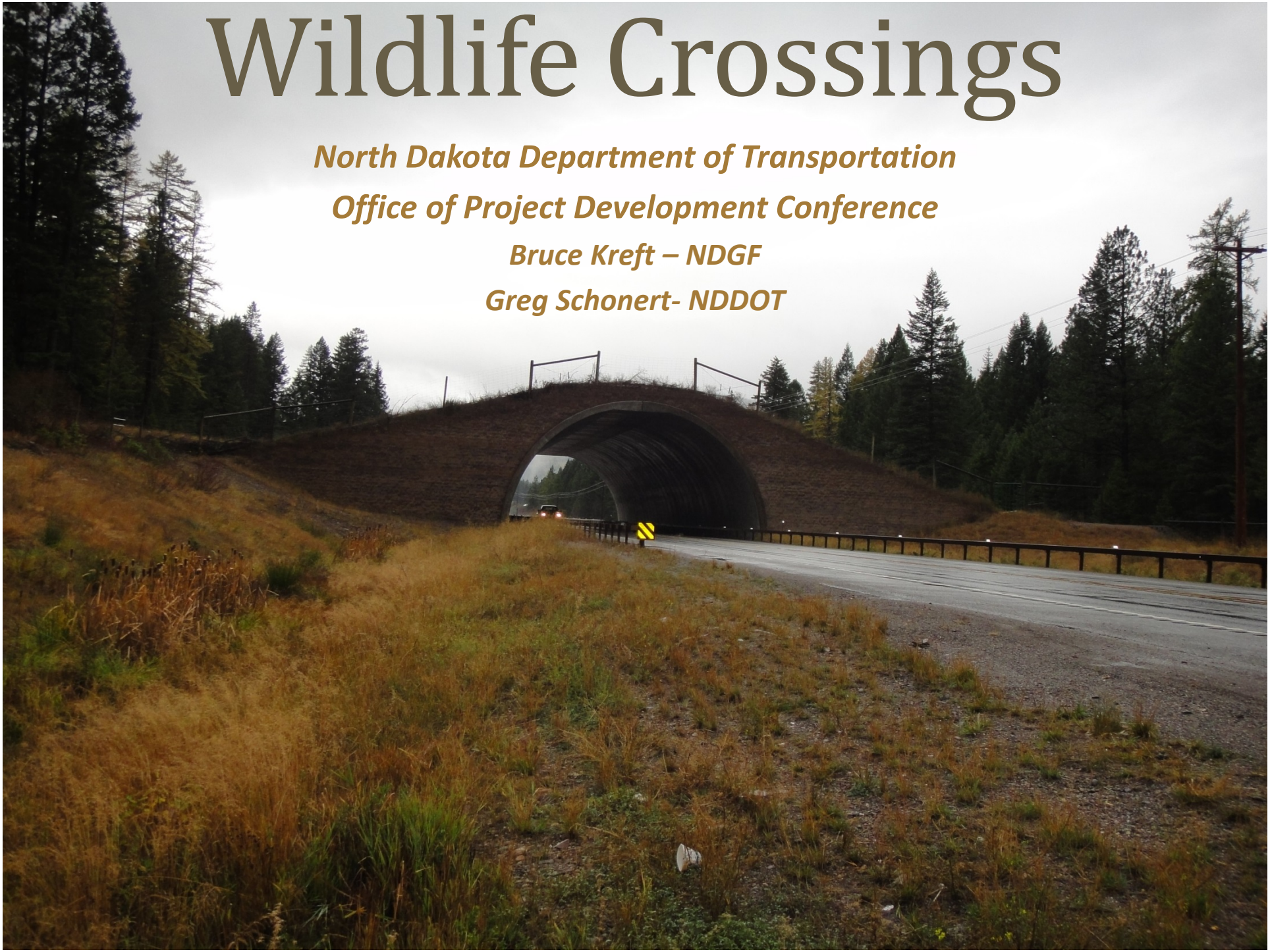


What are Wildlife Crossings?

- Simply put, wildlife crossings are areas of concentrated animal movement intercepted by roadways. Wildlife crossing structures are features built in key areas to serve several functions:
  - *Reduce collisions/injuries to motorists*
  - *Increase/maintain habitat connectivity*
  - *Reduce mortality of wildlife species*

- Wildlife Crossing Structures have many design features:
  - *Underpasses, overpasses, culverts as well as others*

- Wildlife Crossing Structures can be stand alone features, but can also be incorporated into multi-use structures, such as accommodating moving water and wildlife.
  - *Extending bridge lengths on one or both sides can allow for a small path for a wide variety of wildlife species to travel safely underneath the roadway.*

Why Wildlife Crossings in North Dakota?

- ***Highway systems have several ecological effects on various species of wildlife and associated habitats.***
  - *Loss and fragmentation of habitat*
  - *Barriers to dispersal/migration corridors*
  - *Avoidance response*
  - *Increased mortality*
  - *Reduced landscape connectivity - higher mortality, lower reproduction, etc*
- ***As traffic volumes and roadway development projects continue across the state of North Dakota, wildlife crossings will have multiple benefits:***
  - *Reduce accidents/injuries to motorists*
  - *Provide a benefit to the wildlife species that are an important resource for the people of North Dakota.*

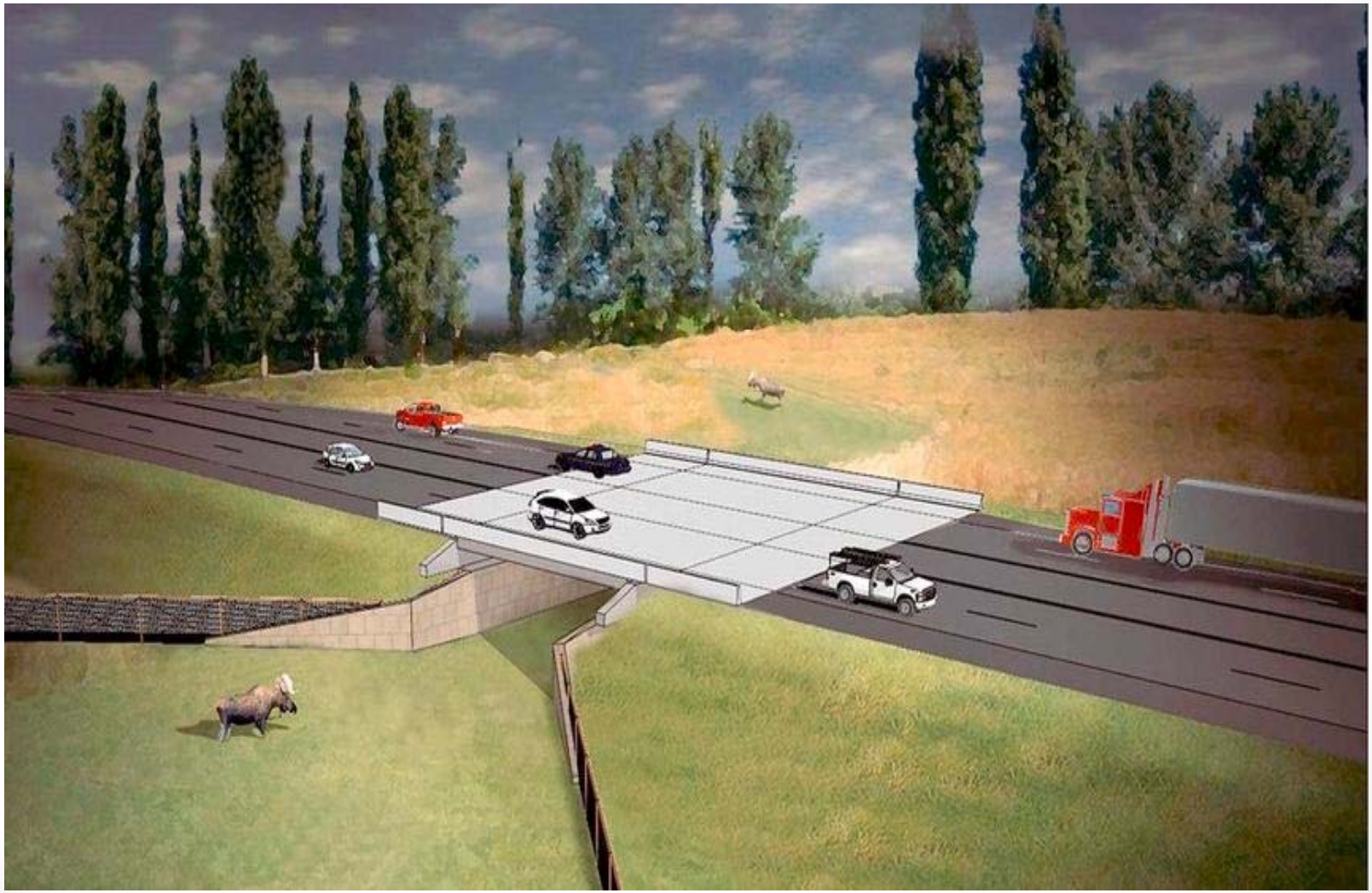
Animal Vehicle Collisions (AVCs)

- Approximately 4 million miles of roadways in the United States
  - Each year between 725,000 to 1.5 million animal vehicle collisions occur.
  - Approximately a billion dollars in property damage caused by AVCs annually
  - On average, 29,000 human injuries and 200 fatalities each year

- ***Can never completely eliminate AVCs, however problem areas can be identified and with proper design and placement of wildlife crossings and fencing/jumpouts, AVCs can be reduced significantly.***

Animal Vehicle Collisions

Highway 85 Crossing



Existing Structures in ND

Project Types and Impacts to Wildlife

- ***New Highway*** – Bisects existing habitats, interrupts migration/movement patterns, genetic isolations of populations, increases probability for collisions.

- ***Highway Widening*** – Increased distances for wildlife to cross, greater traffic volumes and potentially higher speeds from 2 lane to 4 lane.

- ***Installation of Median Barriers*** **–** Restrictions for animal migration/movement, increased time spent on roadway which correlates with greater risk of collisions with motorists.

- ***Bridge Replacement*** **–** Can result in reduced or increased opportunities for crossing. Riparian areas act as natural travel corridors for various wildlife species (small, medium, and large).

- ***Without consideration of wildlife mitigation on projects, AVC's can be expected to notably rise, depending on wildlife populations within a project corridor.***

Corridor Planning and Design

- ***Identify target species early in project development process.***
  - **Home range-** Area which animal remains for daily activities
  - **Dispersal-** Movement of wildlife to establish new home ranges, seek new territories and resources (food, water, mates, etc.)
  - **Migration-** Seasonal movement between different areas (wintering areas, summer areas, etc.).

- ***Once target species and road segments are known, design and placement are the next critical items to consider.***
  - **Placement-** Where, how many, how far apart
  - **Design-** How tall, wide, long, overpass, underpass, etc.
  - **Other factors-** Fencing, jumpouts, adjacent land ownership, etc.

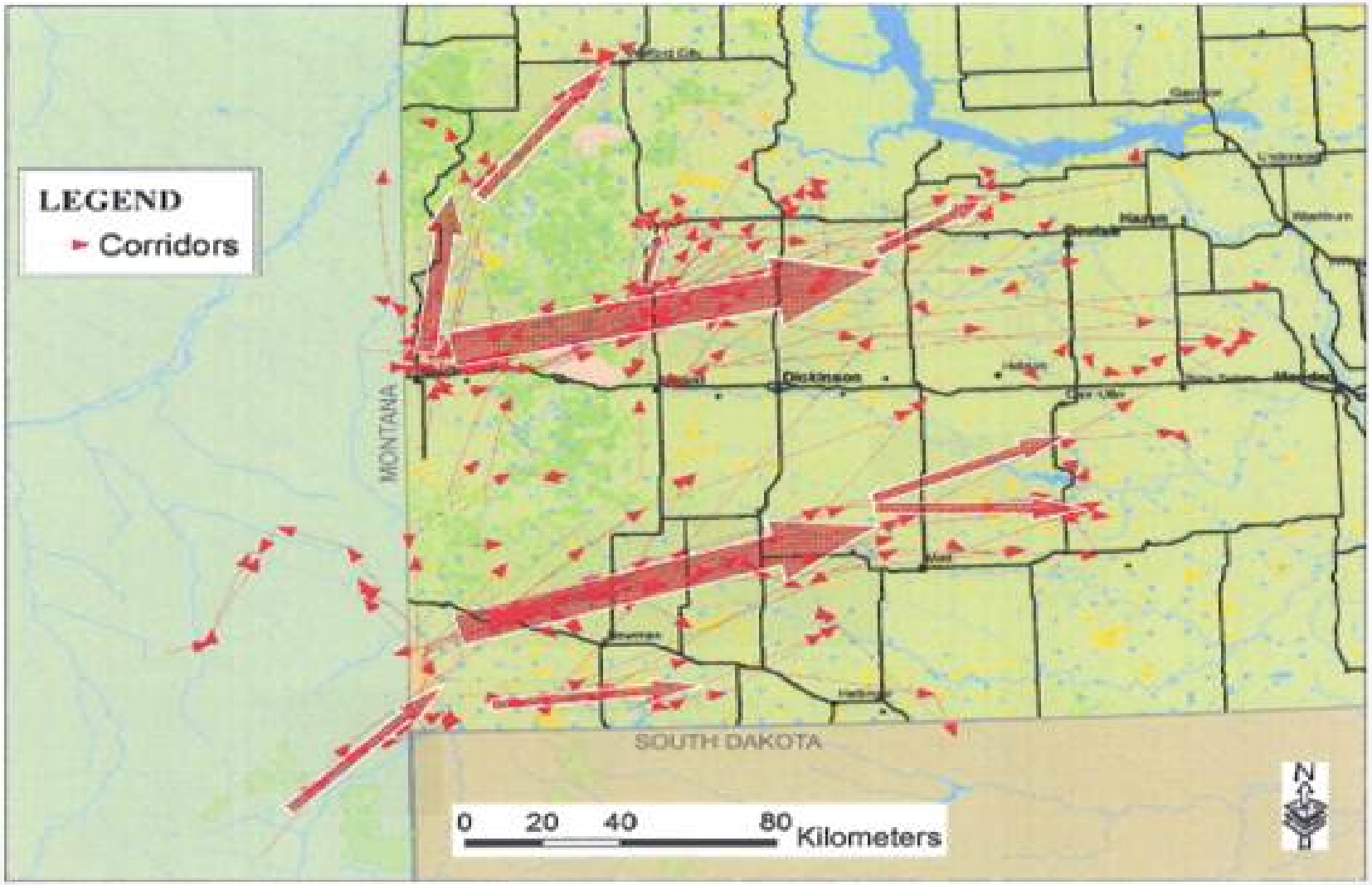
How to Determine Placement

- ***Proper design and placement is essential. One "size" does not fit "all" scenarios or projects.***

- ***Animal-Vehicle-Collision "hotspots"***
  - Human safety (fewer and less severe accidents)
  - Conservation (fewer animals killed or injured)
  - Should not be used alone to determine placement

- ***Landscape Awareness – Habitat Linkage***
  - Land management – Must ensure long term functionality
  - Known migration corridors (riparian areas, ridgelines, wooded draws, etc.)
  - Animal movement data (radio-collars or historical data).

NDGF Animal Movement Data



Wildlife Species Preferences

	Landscape Bridge/Wildlife Overpass	Viaduct or Open Span Bridges	Large Mammal Underpass	Underpass with Water Flow
Deer Sp.	X	X	X	X
Bighorn Sheep	X	X		
Elk	X	X	X	X
Pronghorn	X	X		
Moose	X	X	X	X

Underpasses – Various Designs

Underpasses- Substrate

Construction of Underpass

Overpasses- Various Designs

Accommodating Wildlife Movement

Wildlife Exclusion Fencing

- General purpose is to keep animals from crossing roadways. However, fencing alone can isolate wildlife populations by creating a barrier to movement
- Fencing should be used as a two part mitigation strategy in conjunction with wildlife crossings.
- Fences must be properly constructed and maintained in order to keep traffic collisions to a minimum and ensure that wildlife crossings will be used.

Wildlife Exclusion Fencing

Jumpouts

Increasing Attractiveness of Crossing Structures for Wildlife Use

Monitoring Options

Success!

Image courtesy of CSKT & MDT 2009

Moose
Courtesy of: CSKT, MDT, & WTI-MSU

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Image courtesy of CSKT & MDT 2009

Take Home Message

- **No simple solution -** One “size” does not fit “all” in regards to wildlife crossings.

- ***Continually a learning process - Team effort necessary***
  - Various DOT Divisions/Departments, as well as agency partners
  - Design – Placement – Maintenance – Monitoring = All important

- Key point is to consider wildlife mitigation measures early in initial phases of project development.

- ***In addition to reducing damage to vehicles/injuries to motorists, wildlife crossings may prevent serious injuries and even save several lives of motorists over the life of the structures. Can not put a price on that!***

Questions??

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