

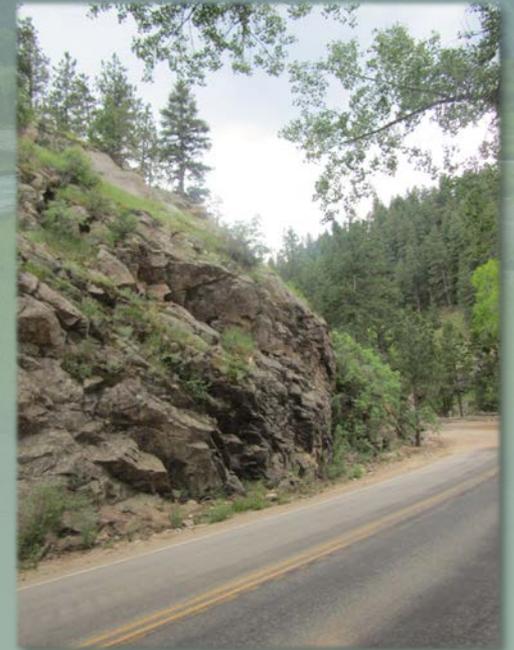
# Fourmile Canyon Community Meeting

## *Permanent Repairs for Fourmile Canyon Road*

July 28, 2015

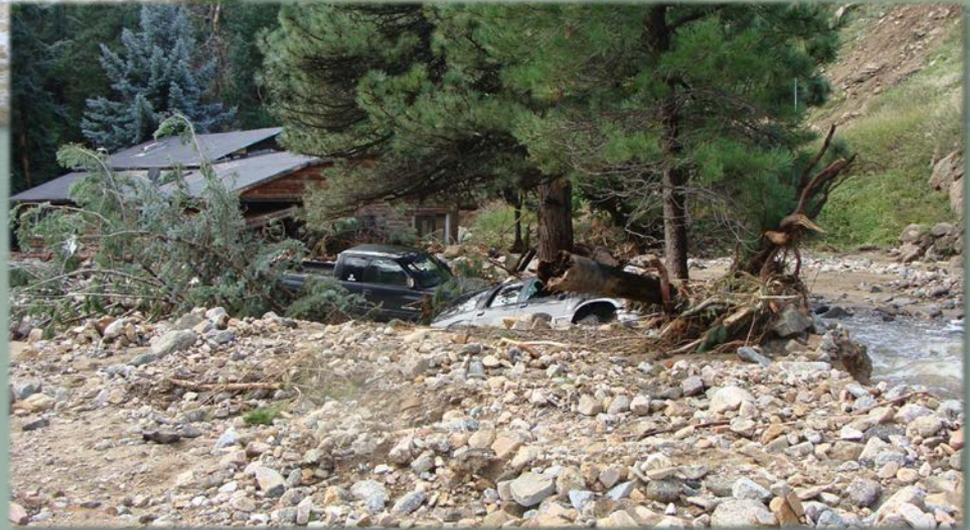
### *Meeting Format:*

- **Ground Rules**
- **County Presentation**
- **Q&A/Local Presentation**
- **Discussion**



# Introduction – 2013 Flood

## *Flood Damage*



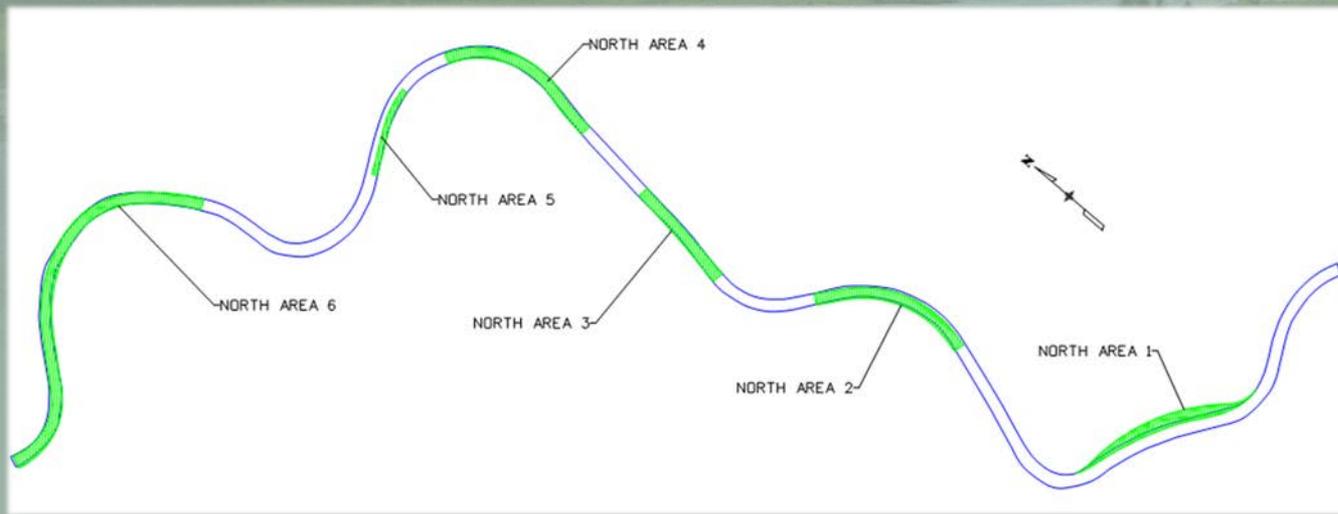
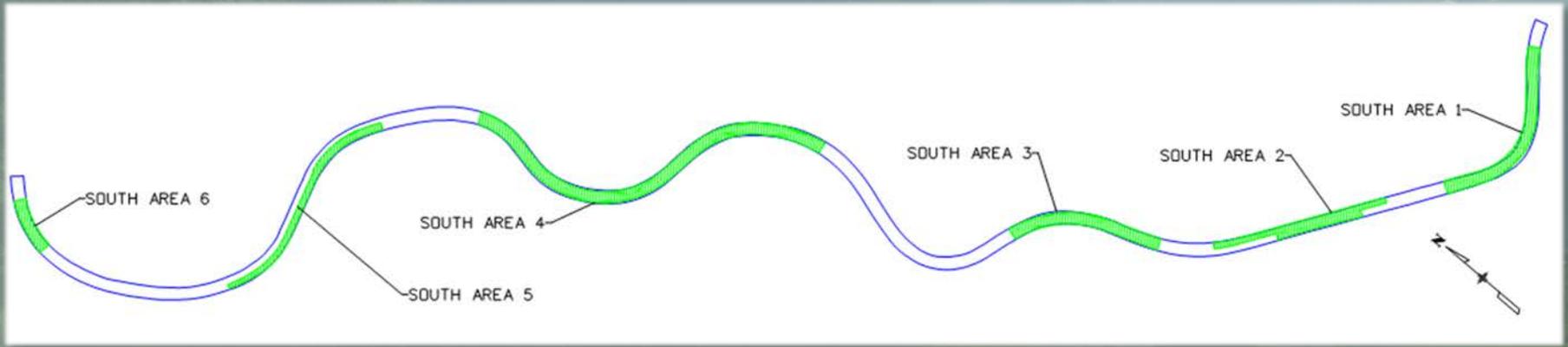
# Introduction – 2013 Flood

## *Flood Damage*



# Introduction – Temporary Paving

## *Flood Damaged Areas*





# Introduction – Discussion Topics

## *Overview of Topics*

- **Roadway Safety**
- **Rock Excavation / Mesh**
- **Environmental Considerations**
- **Right-of-Way**



# Project Goals

- ✓ **Permanent reconstruction of damaged roadway**
- ✓ **Increase safety for all users**
- ✓ **Increase resiliency against next flood**
- ✓ **Implement design consistent with Watershed Master Plan**
- ✓ **Minimize environmental impacts through balanced design**
- ✓ **Minimize impacts to the community/environment**



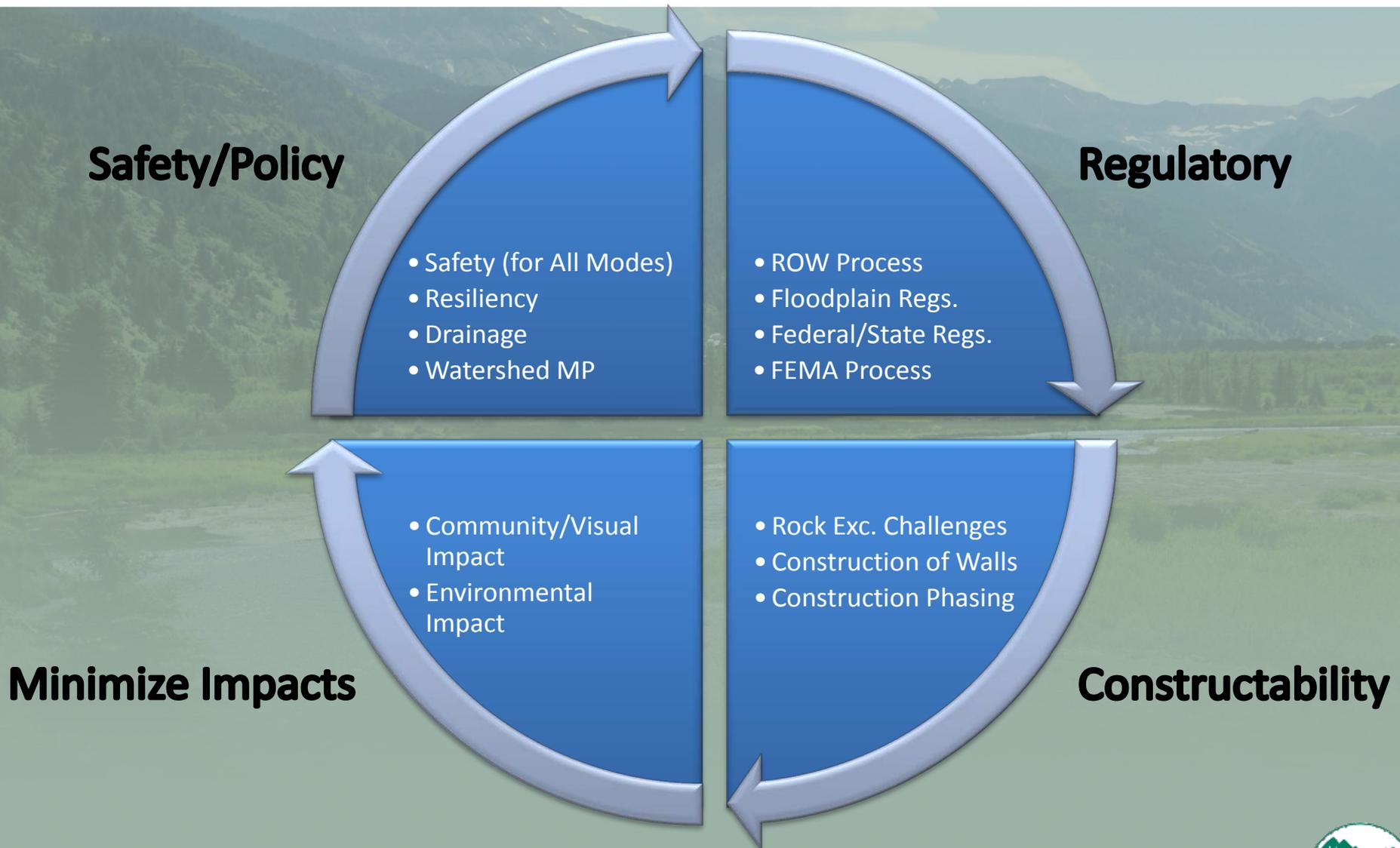
# Previous Meetings Comments

## *From earlier community meetings:*

- Don't urbanize or lose the Fourmile Canyon character
- Fix roadside drainage
- Minimize cuts & walls /make visually appealing
- Concerns about tree, vegetation, & wildlife impacts
- Concerns about impacts to private property
  - Access/Flooding/Visual
- Improve Bike/Ped. Safety/Blind Corners
- Concern about increasing # of cyclists
- Mixed comment re: 4' uphill shoulder



# Roadway Design – Driving Factors



# Roadway Design – Design Update

*The design continues to be revised and updated to address concerns, including:*

- **Minimize/avoid rock excavation**
  - **Rock excavation has been reduced by over 60% and more reduction is anticipated as design progresses**
  - **Refine clear zone/rock fall/drainage requirements to reduce cross section**
  - **Minimal impacts at Culbertson Cut**
- **Don't use rock mesh**
  - **Design is being adjusted to eliminate planned rock mesh**
- **Don't like the appearance of Jersey Barrier**
  - **Jersey barrier has been eliminated from the design**

# Roadway Design – Rock Impacts

## *Comparison of 30% design and current design South Section*

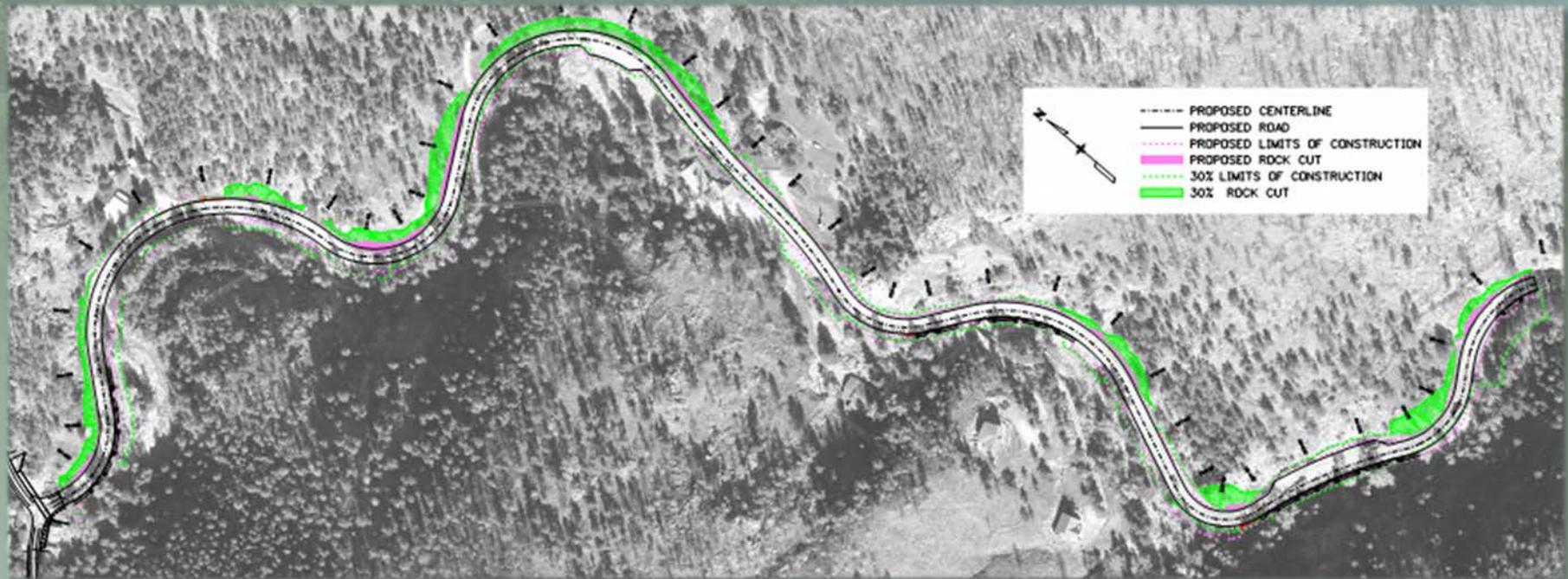
- **59% Reduction in Rock Excavation (By Length) - Over 1,600 ft Eliminated**
- **83% Reduction in Rock Excavation (By Volume)**



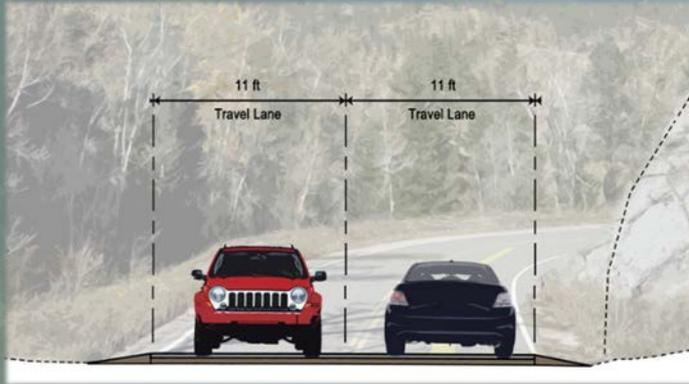
# Roadway Design – Rock Impacts

## *Comparison of 30% design and current design North Section*

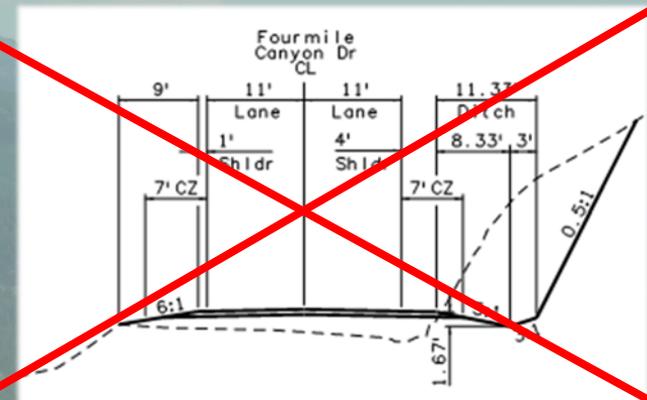
- **64% Reduction in Rock Excavation (By Length) - Over 1,500 ft Eliminated**
- **86% Reduction in Rock Excavation (By Volume)**



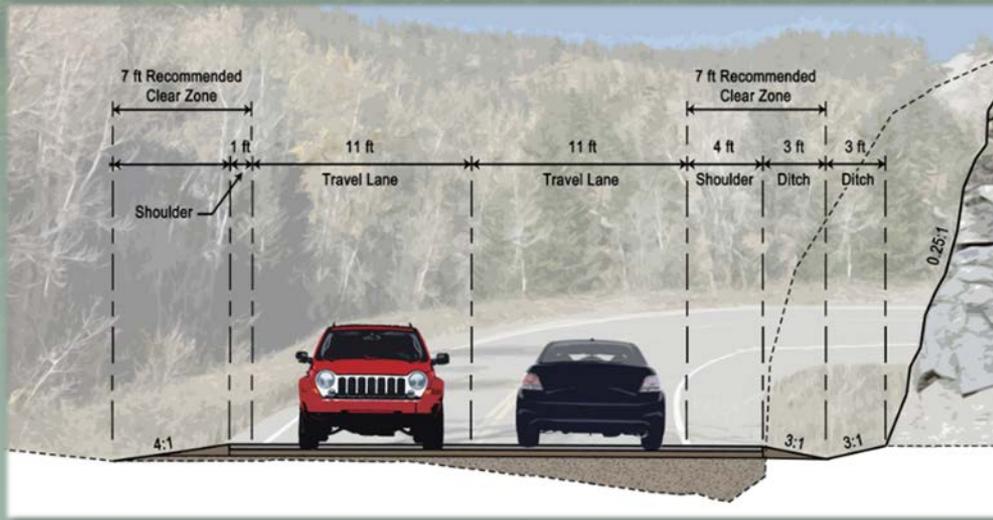
# Roadway Design – Typical Sections



Existing Road



Section Included with 30% Design



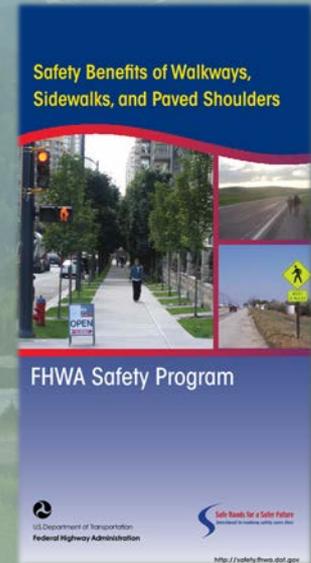
Revised Design Section – Planned for Use

- **Clear zone measured from edge of lane (not shoulder)**
- **Clear zone will be further reduced as drainage/safety allows**
  - **Reduced ditch depth**
  - **Steeper rock slopes**
  - **Steeper side slopes**
  - **Refined alignment**

# Roadway Design – Safety/Maintenance

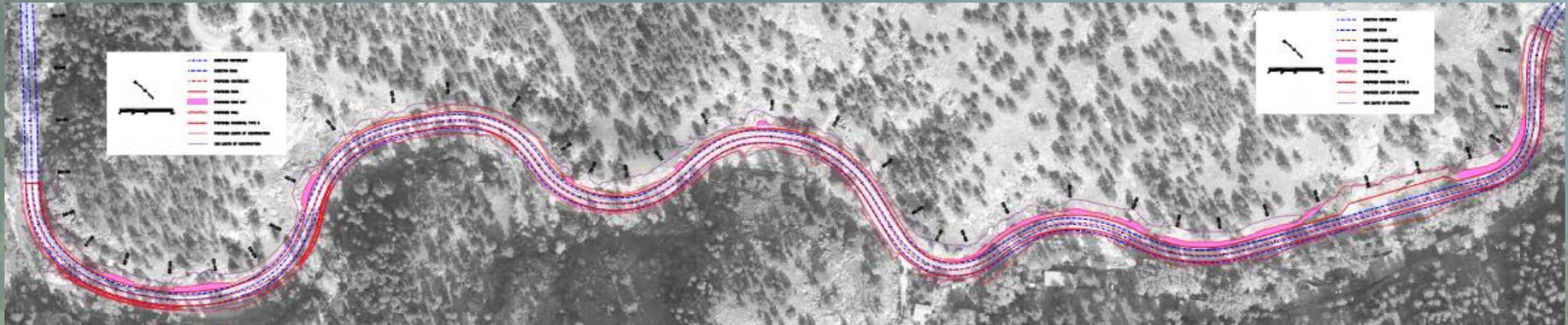
## *Paved shoulders increase safety and improve maintenance*

- Reduces numerous crash types including:
  - Head on crashes (15%-75%)
  - Sideswipe crashes (15%-41%)
  - Fixed object crashes (29%-49%)
- Reduces shoulder maintenance requirements
- Provides emergency stopping space for broken down vehicles
- Provides space for maintenance operations and snow storage
- Provides an increased level of compatibility between bicycles and cars



# Roadway Design – Curve Design

## *Comparison of existing and proposed roads*



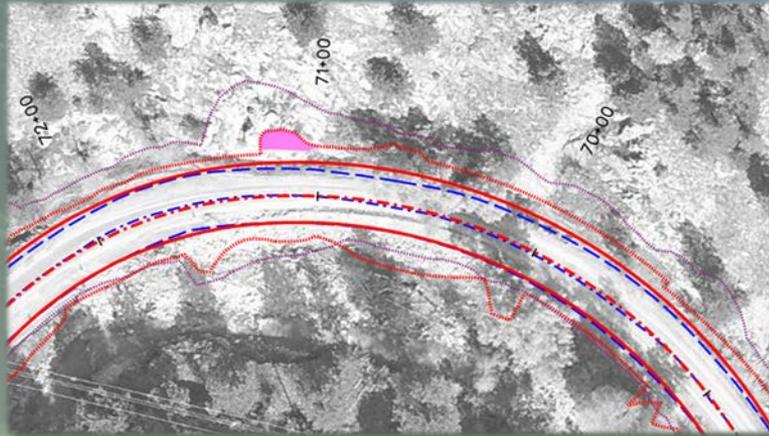
South Section



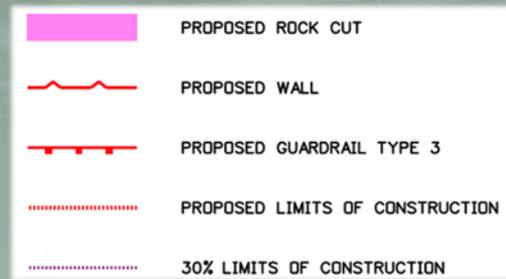
North Section

# Roadway Design – Curve Design

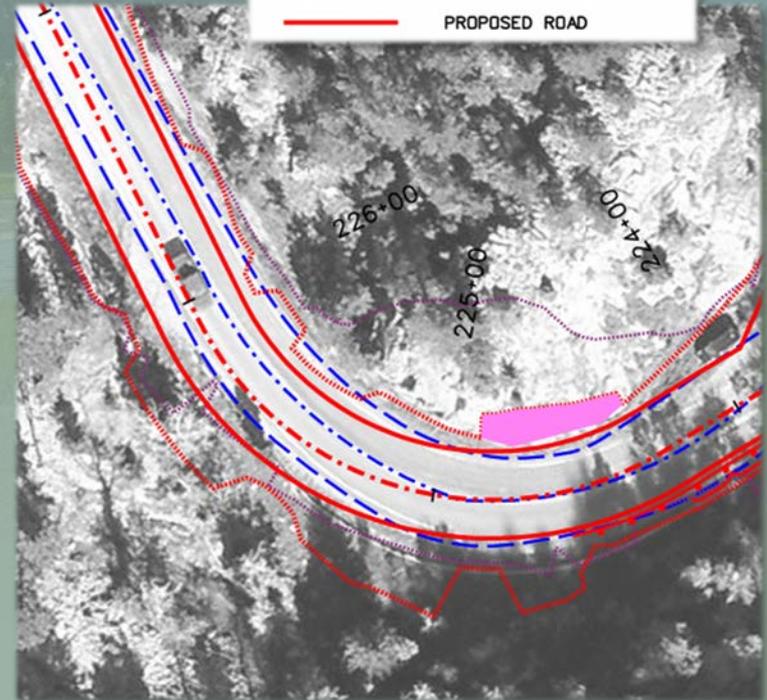
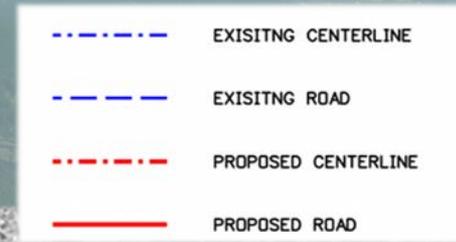
## Comparison of existing and proposed roads



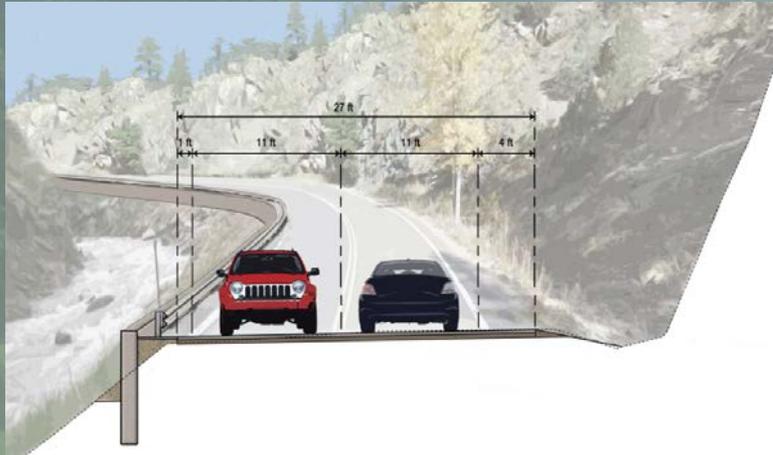
*Some areas have no visible change*



*Some areas have the road moved to reduce impacts*



# Roadway Design – Walls vs. Rock Ex.



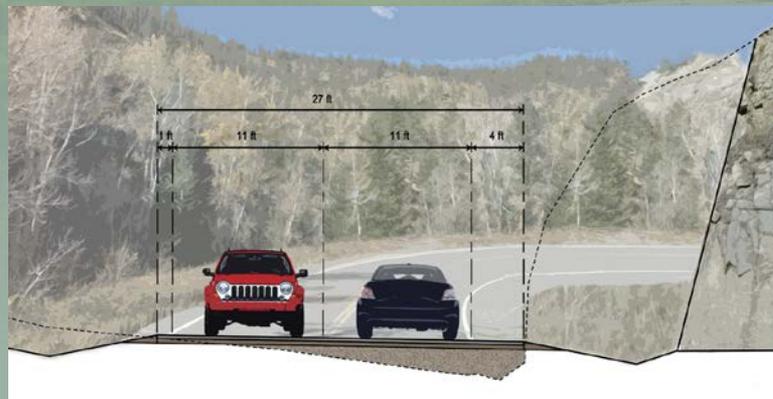
## PROS

### Retaining Walls

- Reduce/avoid rock
- More flexibility
- Can help resiliency
- Less visible from road

## CONS

- More expensive
- More creek impacts
- More habitat impacts
- More visible from homes



### Rock Excavation

- Less creek/wildlife impacts
- Improves safety
- Less guardrail
- Matches existing better

- Immediate visual impacts
- Difficult construction
- Rockfall risk increased
- Expensive

# Rock Excavation – Updated Design

## *Updated Design Information*

- **Rock excavation significantly reduced and/or eliminated**
  - **80% reduction by volume**
  - **60% reduction in total length**
  - **Focused attention on areas of high concern**
- **No rockfall mesh is anticipated (increase ditch if necessary)**
  - **Could be needed if absolutely necessary as determined during construction**
  - **No chain link fence**
- **Some bolts still required**
  - **Number needed greatly reduced**
  - **Will be painted a natural color and hidden**



# Environmental – Process

## *Environmental Planning and Historic Preservation (EHP) Process*

- The project is funded through FEMA and is subject to the National Environmental Policy Act (NEPA)
- The EHP document is reviewed/approved by FEMA
- Other clearance/permitting processes:
  - Wetlands/Section 404 – through the USACE
  - Floodplain Development – through Boulder County
  - Riparian/SB 40 – through CPW
  - Endangered Species Act – through USFWS
  - National Historic Preservation Act – through SHPO
  - Hazardous Materials – through CDPHE



# Environmental – Cultural Resources

## *Results of the Cultural Resources Study*

- Pinyon Historian and Archeologist conducted existing condition surveys in the Area of Potential Effect (APE) on May 21, 2015.
- **Archaeological findings**
  - **No Impacts**
- **Historical findings**
  - **No rocks outcroppings are classified as historic**
  - **No buildings/structures will be impacted**
  - **Architectural inventory for parcels older than 50 years (as needed)**
  - **Switzerland Trail Railroad in the vicinity – no impacts**



# Environmental – Wildlife Study

## *Results of the Wildlife Impacts Study*

- **Consideration of guardrail and retaining walls**
  - **Minimize retaining wall/rock exc./jersey barrier to ensure continued creek access**
  - **Rock Rip Rap embankment will be soil covered and re-vegetated**
- **Wildlife within project area includes chipmunks, rabbits, mule deer, elk, and wild turkeys, mountain lions, moose, and bears**
- **No regional migration corridors or migration patterns within the project area**
- **CPW – No concerns with planned design**



# Right-of-Way

## *Work with individual property owners*

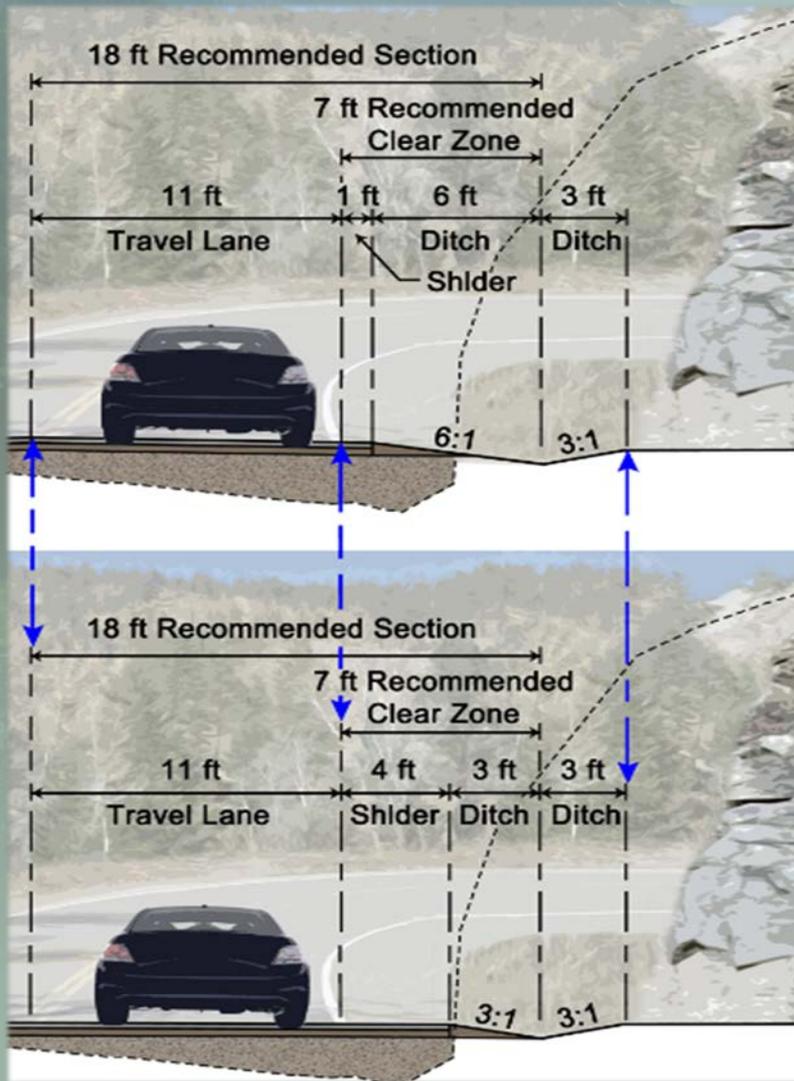
- **Temporary easements for construction**
  - **Reduces costs, closures, & construction time**
- **Permanent easements for ongoing maintenance**
- **No new ROW anticipated**

# Community Discussion

## Questions?

- **Comment Period Ends August 15<sup>th</sup>**

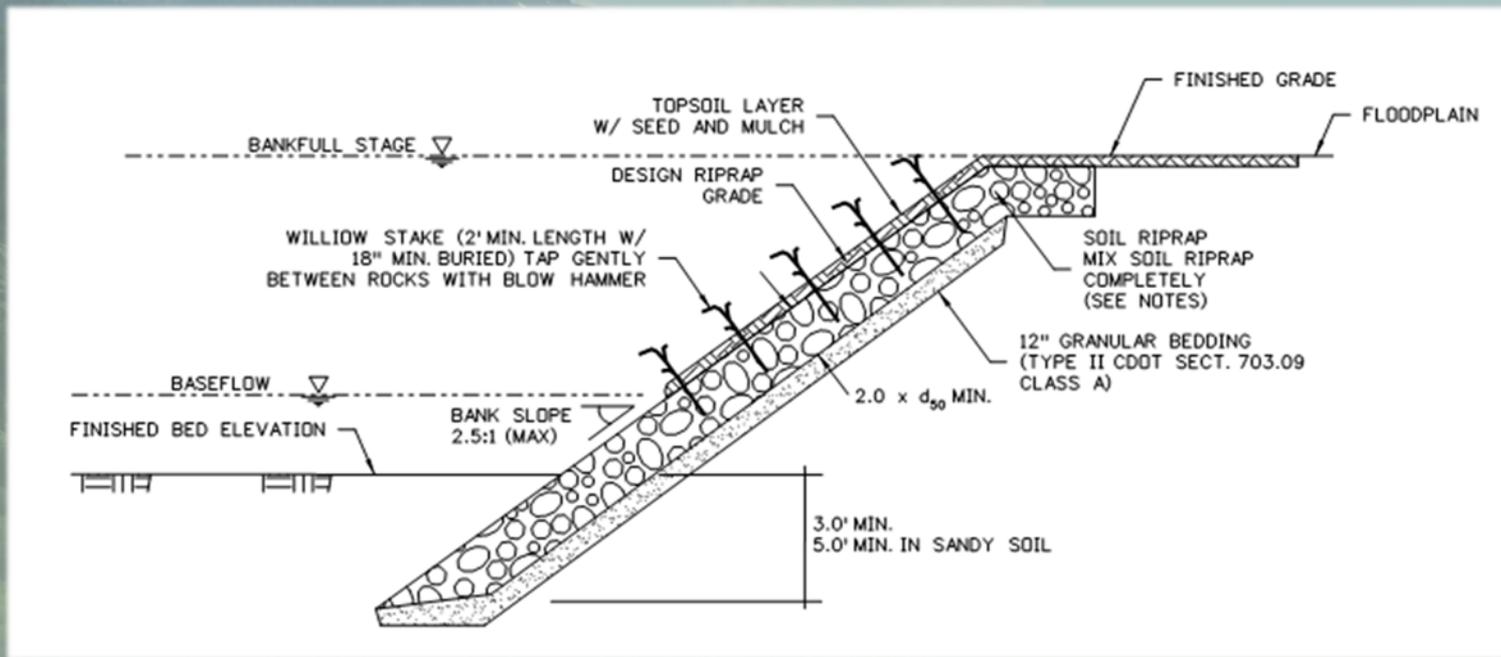
# Roadway Design – Typical Sections



## Comparison of Shoulder Conditions:

- Clear zone drives the geometry, not the shoulder since measured from edge of lane.
- Clear zone will be further reduced as drainage/safety allows
  - Reduced ditch depth
  - Steeper rock slopes
  - Steeper side slopes
  - Refined vert./horiz. alignment

# Roadway Design – Embankment



- **Embankment slopes will have:**
  - **Natural finish – topsoil with vegetation**
  - **Ecological features – fish, riparian & critter friendly**
  - **Resiliency where appropriate – flood banks and buried riprap**
  - **No concrete**