

# Maintenance and Management of Gravel Roads

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# Overview of the next 2 days

## Day 1: Introductions and OPEN discussions

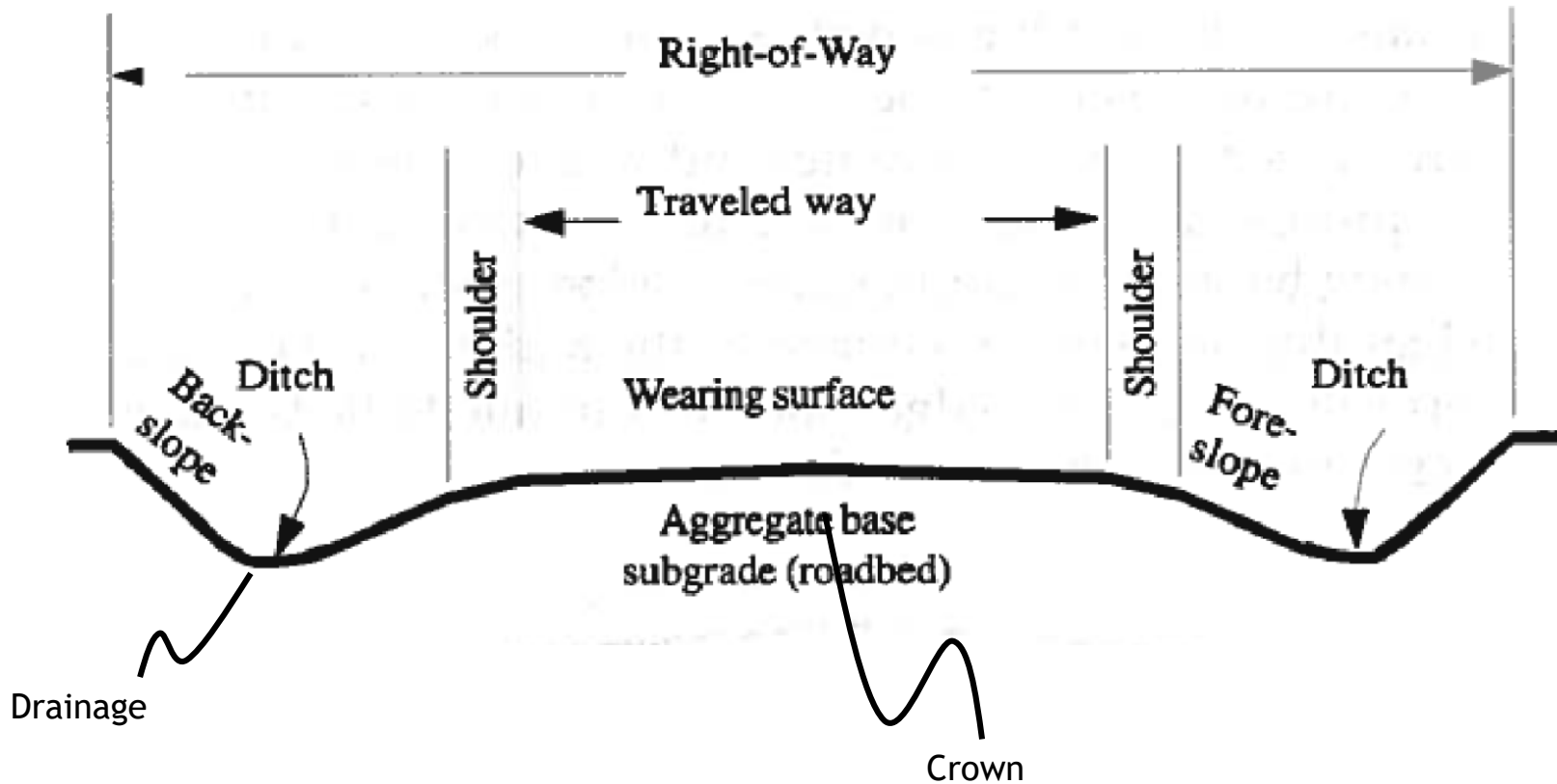
### Design and Construction Topics

- Intro to Good Gravel Roads
- Geometry and Typical Cross Section elements
- Drainage concepts for unpaved roads
- **Design and Coordination of horizontal and vertical alignments**
- Signing our unpaved roads

# Key learning objectives

- Properly trained and supported maintenance staff is critical to the long-term success of all road departments, and the importance of day-to-day maintenance and operations are not to be underestimated.

# Review: Typical Cross Section elements



# Roadway crown shape is critical!



Crown should be straight like the roof of a house, **NOT** arched like a loaf of bread.

Crown should be at or near  $\frac{1}{2}$  inch per ft (or 4%), but not to exceed 6%.

Example:

24 ft roadway should have....approx. 6 inches of crown.  
(vertical difference between the shoulder and centerline)

# Roadway Geometry Considerations

**Includes: Terminology, Horizontal and vertical curves, roadway safety concerns, clear zone, handling water through coordination of vertical and horizontal geometry,**

# Roadway Geometry Considerations

## Terminology:

- **Grade or Profile Grade**
- **Alignment**
- **Cross Section**
- **Limit of construction**
- **Line of Sight**
- **Sight Distance**

# Roadway Geometry Considerations

## Terminology of Curves

- **Tangent alignment**
- **Point of Curvature**
- **Point of Intersection**
- **Point of Tangency**



# Roadway Geometry Considerations

**YouTube Video 1**

**YouTube Video 2**

# Roadway Geometry Considerations

**Coordination of Alignment: Consider the path of water through coordination of vertical and horizontal curves**

# Videos showing examples

Superelevation and cross slope:

- [Video Link \(12 minutes\)](#)

Here is a video illustrating some of the considerations for alignment coordination

- [LINK \(5:32 min\)](#)

Resource:

<https://www.youtube.com/@FindleyDaniel>

Using an  
indicating device  
can be helpful  
But only if it's a  
crown gauge!



Slope Control systems on motorgraders are a great aid in construction and rehabilitation





# Electronic Slope Reading



## A simple carpenter level or smart level



# Roadway Safety

FHWA EDC Initiatives [LINK](#) (5:50)

- Visual Traps
- Guardrail
- Frost Boils
- Culvert failures
- Winter maintenance





- FHWA EDC,  
[https://safety.fhwa.dot.gov/roadway\\_dept/horicurves/fhwasa15084/ch7.cfm](https://safety.fhwa.dot.gov/roadway_dept/horicurves/fhwasa15084/ch7.cfm)

# Roadway Safety

Stopping Sight Distance [LINK](#) (

Vision Triangles at intersections Intersection Sight  
Distance (ISD) [LINK](#) (23 mins)

# Roadway Safety

**Clear Zone Concept**

**Signs**

**Fixed objects**

**Animal-vehicle collisions**

**BREAK!**