



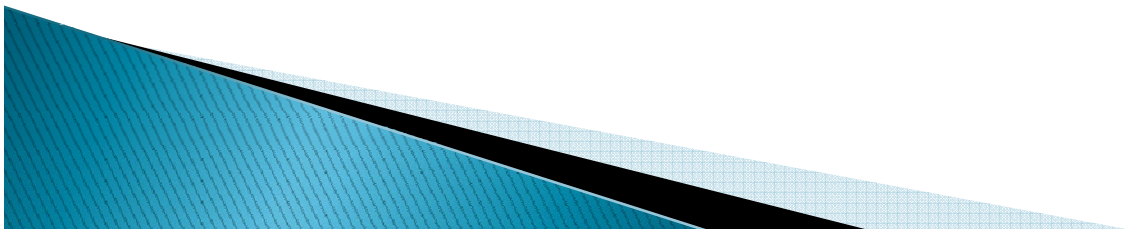
# LESSONS LEARNED IN ALTERNATIVES TO PAVING

LOCAL ROAD ADVISORS CONFERENCE  
RAPID CITY, SOUTH DAKOTA

October 26, 2011

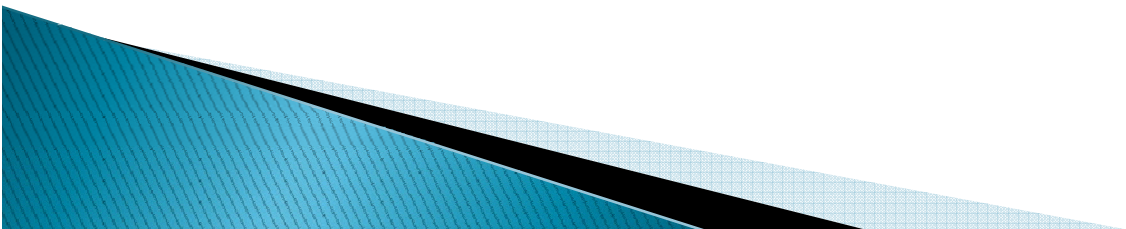
# Why do we need hard surfaced roadways?

- ▶ Provide better level of service for the traveling public, most notably on Major Corridors.
- ▶ Preserve the existing aggregate on the road.
- ▶ Provide better stability for larger volume of traffic and heavy vehicular loads.



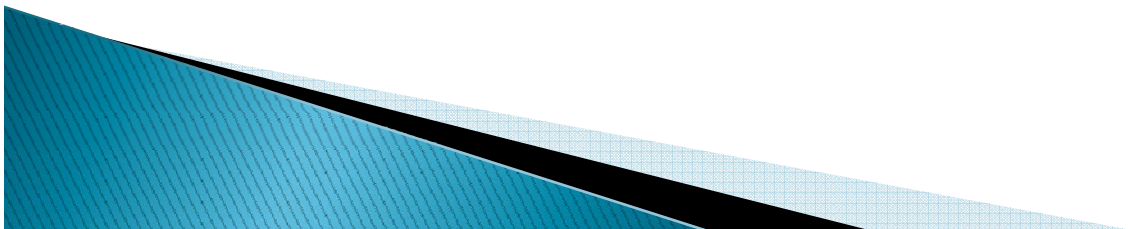
# What are some of the goals when considering an alternative to paving?

- ▶ Seek more cost effective means of providing a smooth roadway.
- ▶ Find an alternative that will provide an aggregate section that will perform similar to asphalt.
- ▶ Minimize the amount of aggregate it will take to provide the needed stability .
- ▶ Minimize the amount of widening needed for the road construction.



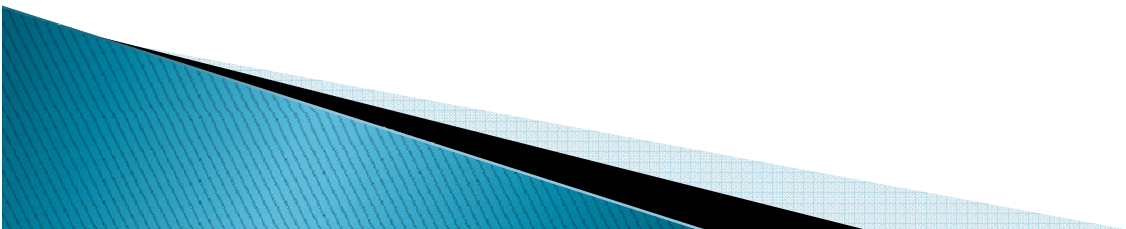
# What are some of the goals when considering an alternative to paving?

- ▶ **COST**
- ▶ **PRESERVATION OF AGGREGATE  
(EXHAUSTABLE NATURAL RESOURCE)**



# WHAT HAVE WE TRIED??

- ▶ LIGNOSULFONATE – LIGNITE SULFATE
- ▶ STABILIZED BASE USING 3% ASPHALT CONTENT
- ▶ AGGREGATE BASE COURSE WITH ARMOR COAT  
(CONSISTING OF PRIME AND DOUBLE CHIP SEAL)
- ▶ RECLAIMING EXISTING CHIP SEAL AND ADDING ANOTHER ARMOR COAT
- ▶ RECLAIMING EXISTING SURFACING IN CONJUNCTION WITH THE ADDITION OF  
A ROADWAY STABILIZATION PRODUCT



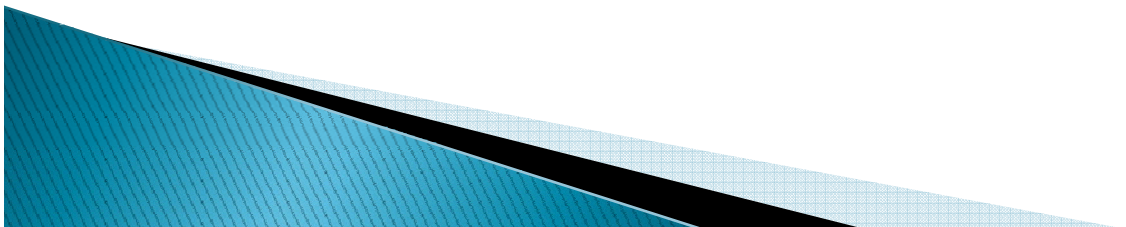
# MOST RECENT VENTURES

- ▶ **Surfacing Stabilization using Base One (Team Lab)**  
Consisted of incorporating Base-1 solution into aggregate base and compacting.
- ▶ **Surfacing Stabilization using Road Enzyme**  
Consisted of injecting a road enzyme by way of a water/enzyme emulsion into a reclaimer and blended it into the roadway.
- ▶ **Surfacing Stabilization using Portland Cement additive**  
Consisted of blending cement into the aggregate surfacing of the roadway utilizing a road reclaimer and a water truck to inject water in front of the grinding head of the reclaimer.
- ▶ All of the Road Stabilization efforts were done in conjunction with an Armor Coat application.









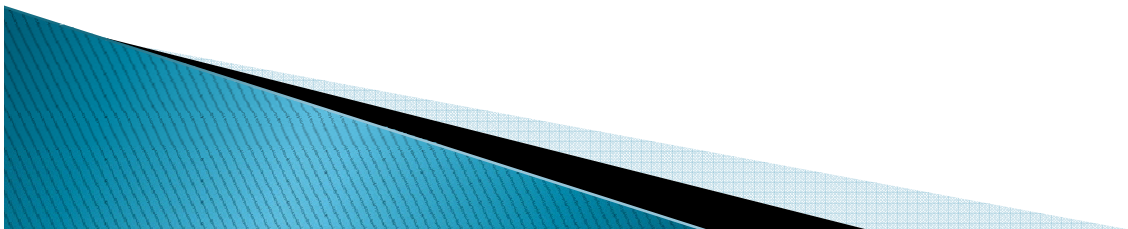


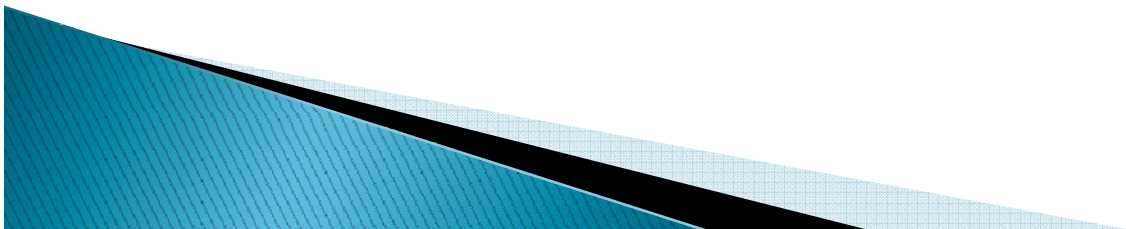


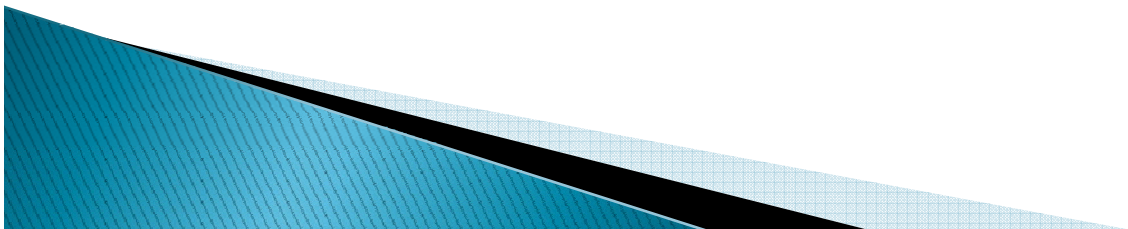








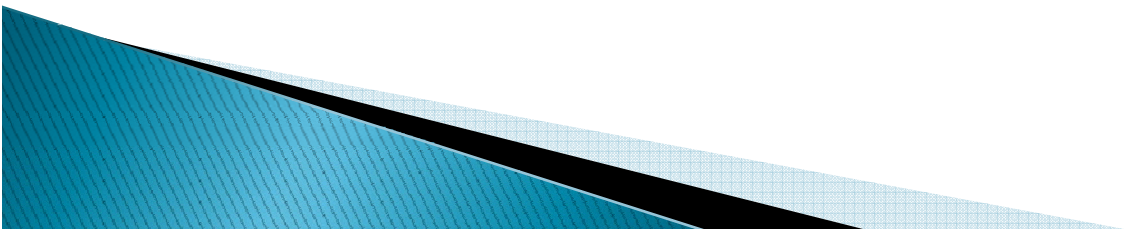






# WHAT WENT WRONG? WHAT WENT RIGHT? WHAT HAVE WE LEARNED?

- ▶ Wet spring made for a wet underlying roadway. Injecting additional water with the water/enzyme emulsion added to the moisture condition and resulted in an unstable roadway, thereby hindering compaction efforts.
- ▶ Cement additive pulled moisture out of the ground and added strength to the aggregate section.
- ▶ Much like pavement design, the application may not be the same for every roadway. However, the application that provides the best aggregate equivalency reduces the need for widening and gains favorability when comparing options.



# SLOGANS TO LIVE BY

- ▶ THE ROAD OF PROGRESS CANNOT BE PAVED WITHOUT THE EFFORT OF TRYING TO IMPLEMENT NEW IDEAS.
- ▶ THE ROAD TO SUCCESS CANNOT PAVED WITHOUT A BUMP OR TWO ALONG THE WAY.
- ▶ SUCCESS CANNOT BE DEFINED WITHOUT ITS COUNTERPART – FAILURE.
- ▶ FAILURE ONLY EXISTS WHEN YOU DO NOT LEARN SOMETHING FROM WHAT YOU TRIED.

