

# INNOVATIVE CONSTRUCTION STORMWATER MANAGEMENT

## A TRANSPORTATION ENVIRONMENT CASE STUDY



Barry Fagan, PE/PLS, ENV SP  
CPESC, CPMSM, CESSWI

**VOLKERT**

 **Green  
Infrastructure**

ALDOT ENVIRONMENTAL  
AN EVOLUTION OF  
THINKING, FOCUS, AND  
APPLICATION (PHILOSOPHY)



“If we put off doing right things...”

ENVIRONMENTAL VISION:

AN INTEGRATED ENVIRONMENTAL CULTURE...



# ALDOT'S MISSION:

TO PROVIDE A TRANSPORTATION SYSTEM...



# ODOT'S MISSION:

**TO PROVIDE EASY MOVEMENT OF  
PEOPLE AND GOODS ...**



MISSION



*environmental*  
RESPONSIBILITIES

# ALDOT ENVIRONMENTAL

AN EVOLUTION OF  
THINKING, FOCUS, AND  
APPLICATION (TECHNICAL)



# EVOLUTION

EFFECTIVENESS → **COMMUNICATION**

IMPLEMENTATION → **WORK**

CAUSE → **WATER**

SOURCE → **EROSION**

SYMPTOM → **SEDIMENT**

The Five Pillars of Construction Stormwater  
Management



$$A = \cancel{R K L S C P}$$

A = average annual soil loss

tons/acre/year



# A CASE STUDY

MISSION – ACTIVITIES – IMPACTS - RESPONSIBILITIES

Project **Mission**:

- to add two lanes to a section of I20/59 in Tuscaloosa

- Widen to inside
- Governor priority
- 50,000 ADT
- 45% trucks





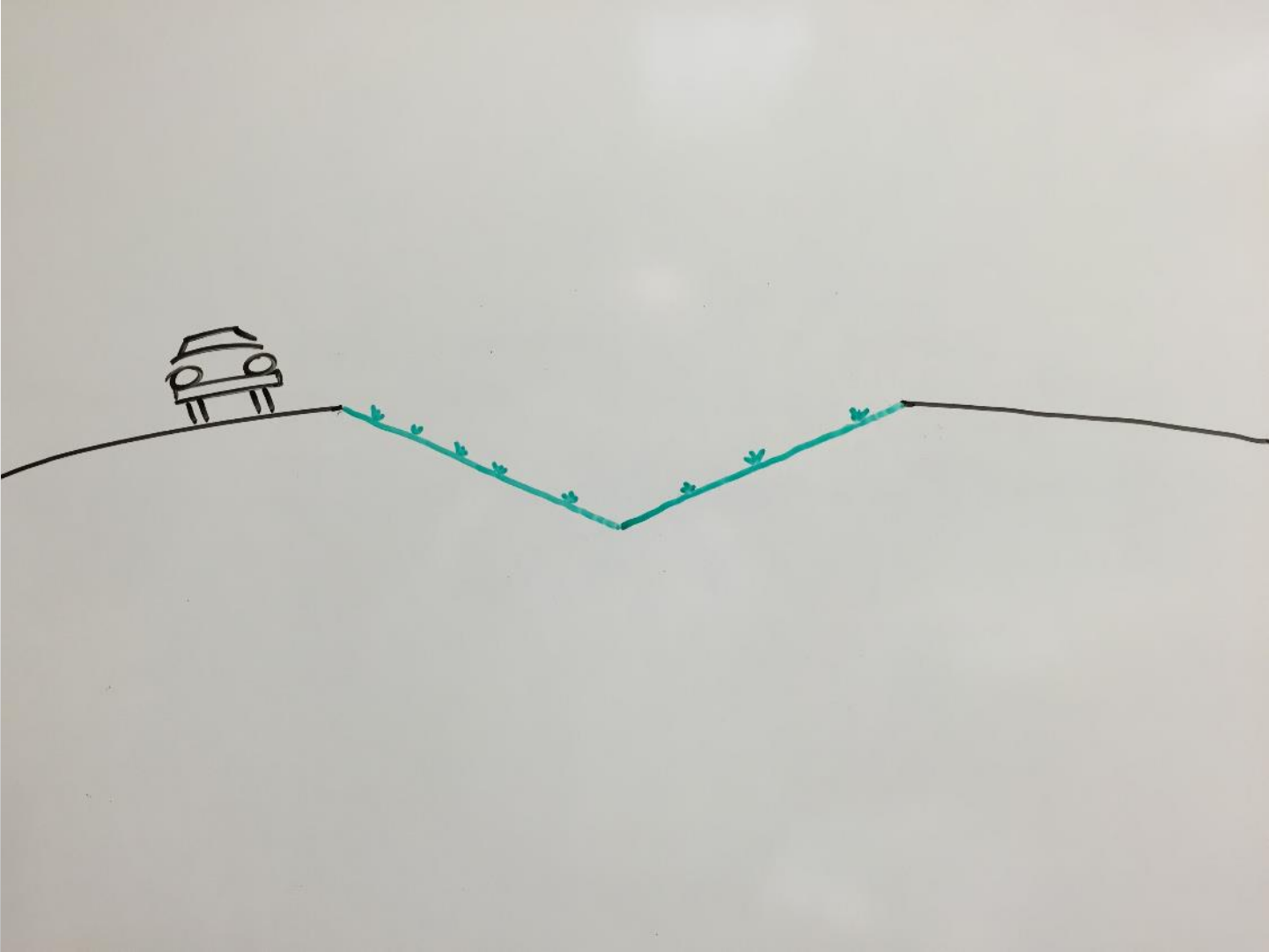
# A CASE STUDY

MISSION:



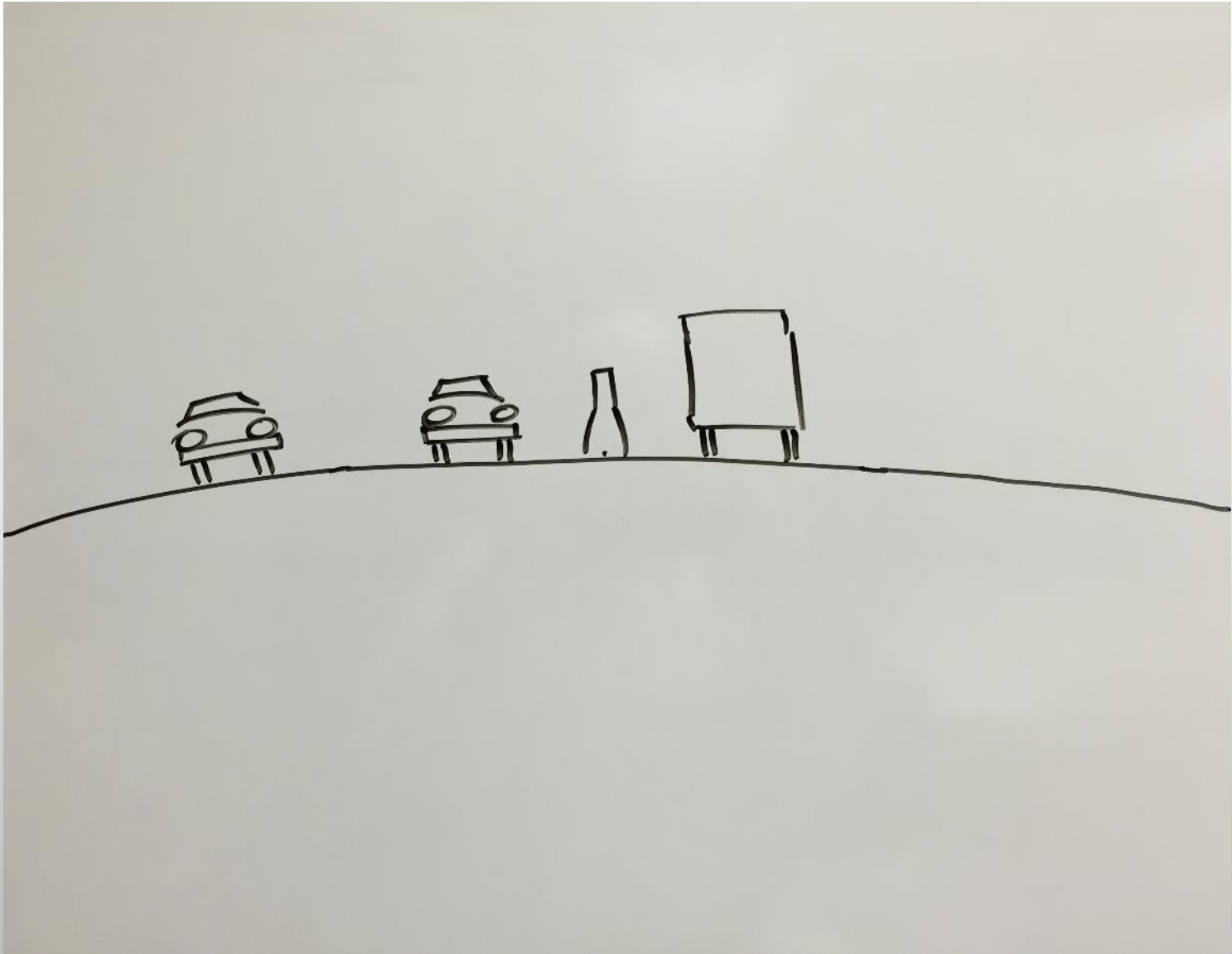
# A CASE STUDY

MISSION:



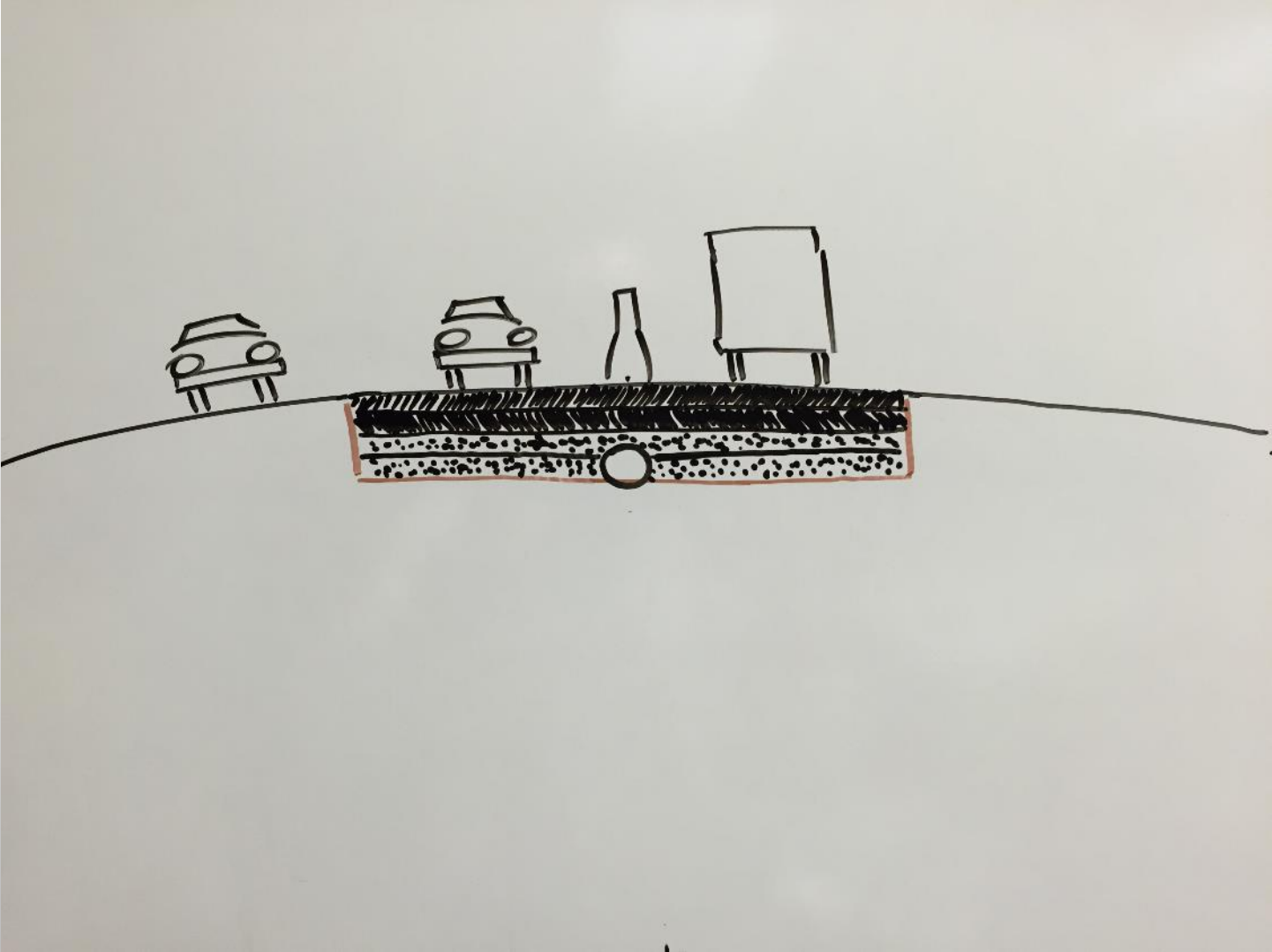
# A CASE STUDY

MISSION:



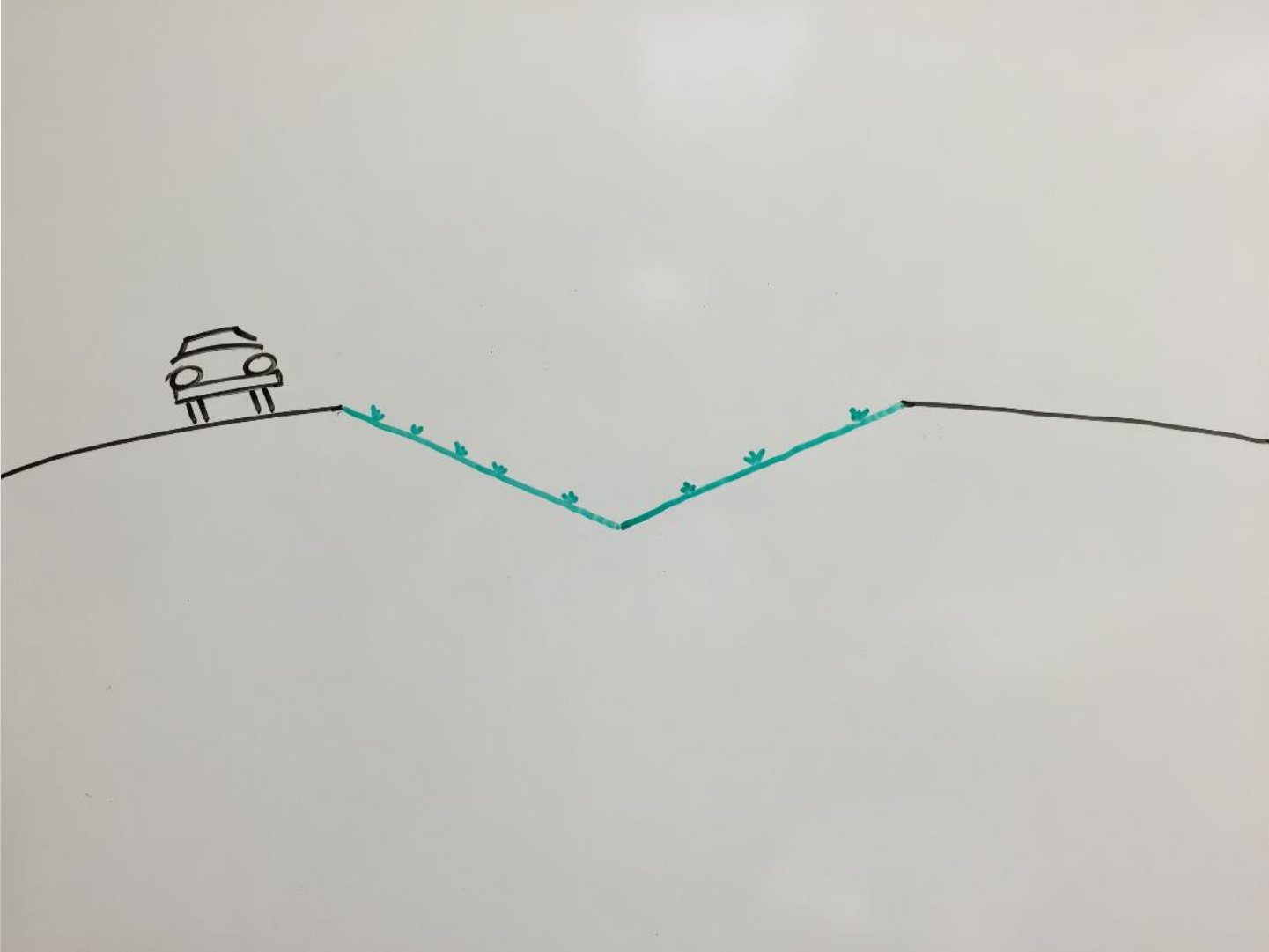
# A CASE STUDY

MISSION:



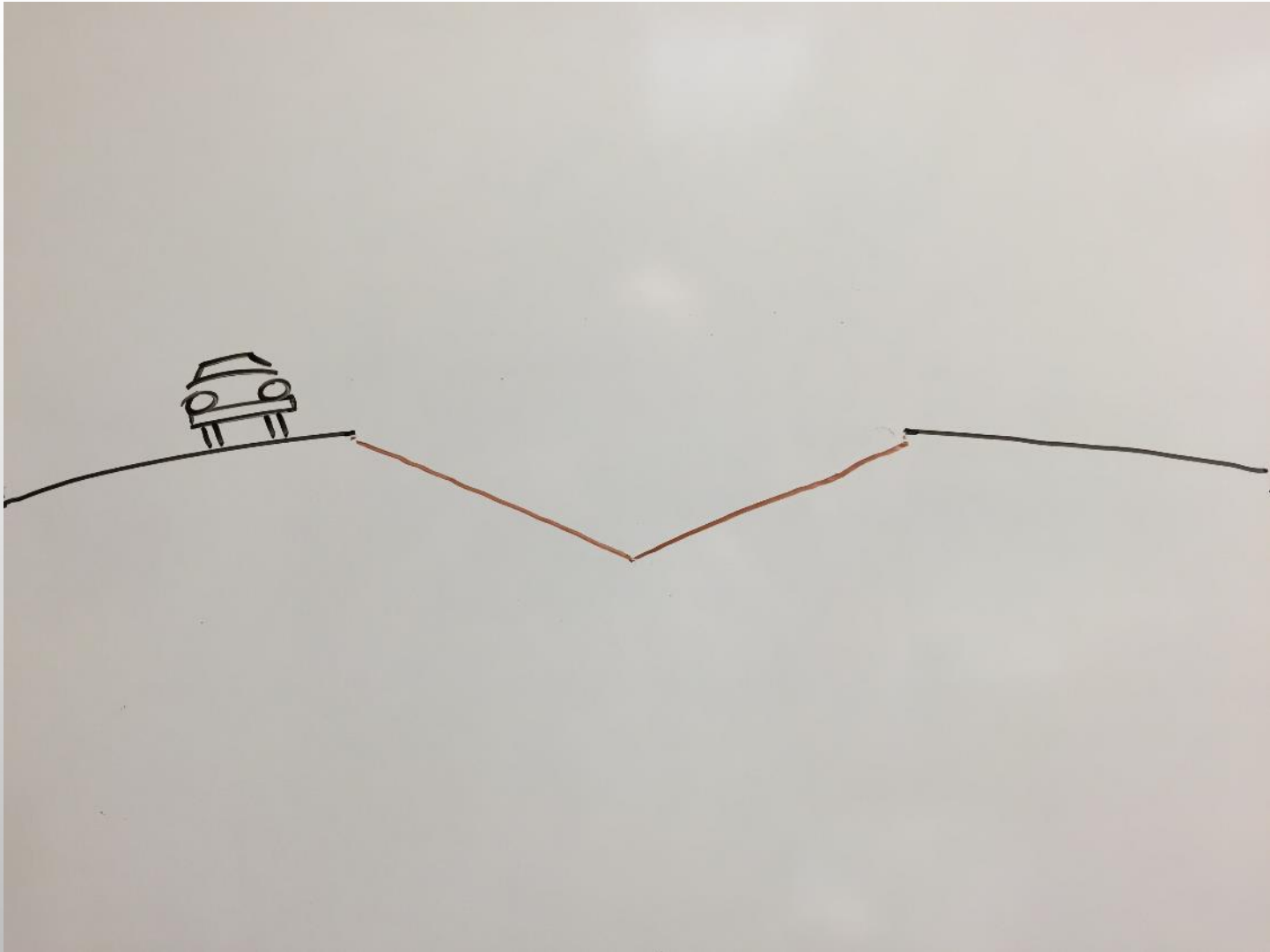
# A CASE STUDY

ACTIVITIES (traditional):



# A CASE STUDY

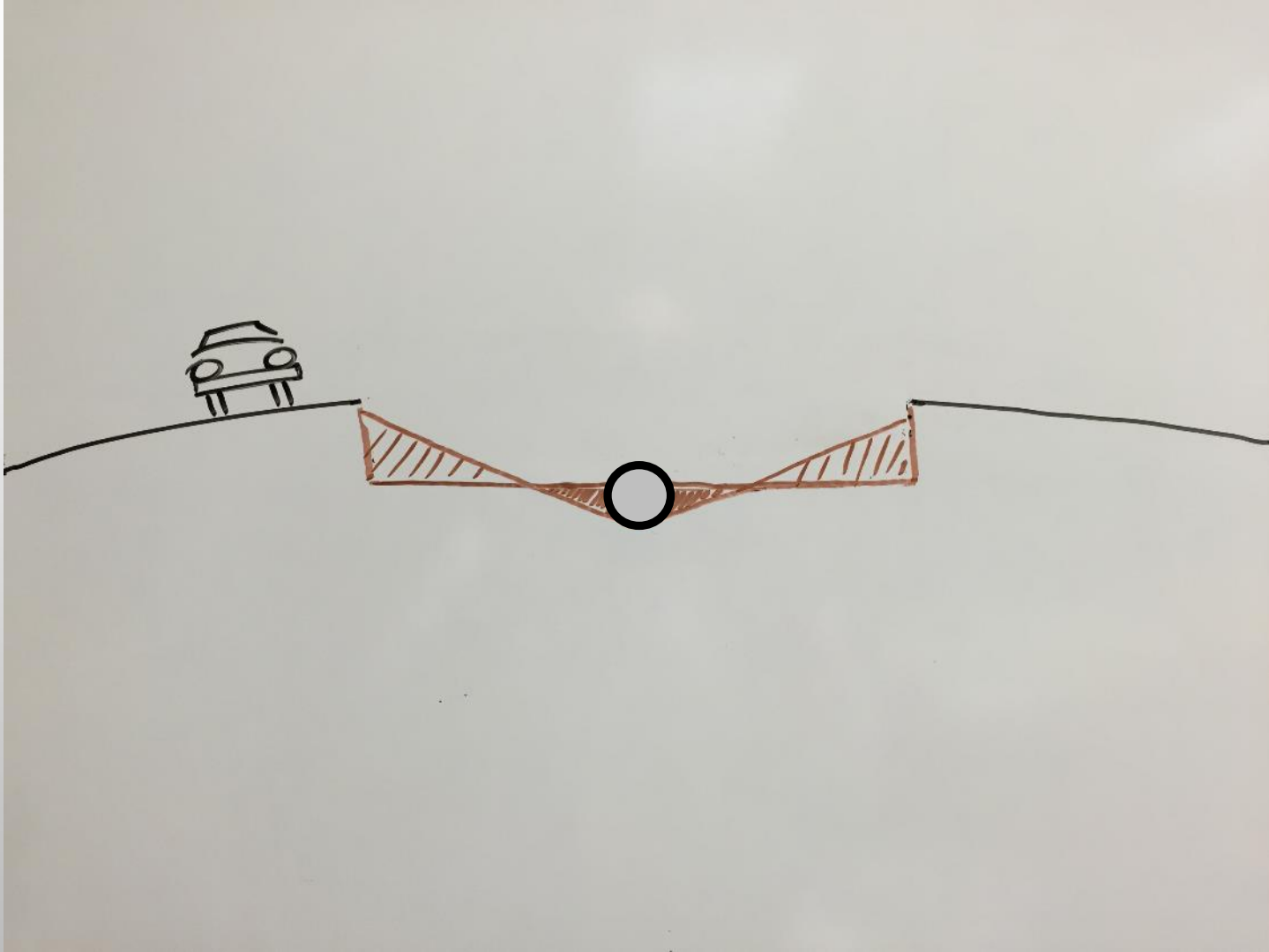
ACTIVITIES (traditional):





# A CASE STUDY

ACTIVITIES (traditional):



# A CASE STUDY

ACTIVITIES (traditional):





# A CASE STUDY

ACTIVITIES (traditional):





# A CASE STUDY

ACTIVITIES (traditional):



## POTENTIAL IMPACTS:

- IMPACTS TO WATER QUALITY
- IMPACTS TO HABITAT
- IMPACTS TO PRIVATE PROPERTY
- REGULATORY ACTIONS
- CIVIL ACTIONS
- EMBARRASSMENT
- LOSS OF TRUST AND GRACE



# ENVIRONMENTAL RESPONSIBILITIES:

- REGULATORY REQUIREMENTS
  - GENERAL PERMIT
  - TMDL –
    - 32% TURBIDITY REDUCTION
    - 60.8 NTU LIMITATION
- SOCIAL EXPECTATIONS
  - HURRICANE CREEKKEEPER
  - FRIENDS OF HURRICANE CREEK
  - BLACK WARRIOR RIVERKEEPER
  - CLEAN WATER PARTNERSHIP
  - ALDOT COMMITMENT TO PROTECT THE ENVIRONMENT





**HOW?**



## Project Mission:

- to add two lanes to a section of I20/59 in Tuscaloosa

- Widen to inside
- Governor priority
- April letting

**HOW?**





# THE FIVE PILLARS OF CONSTRUCTION STORMWATER MANAGEMENT

- **COMMUNICATION** - THE BEST MANAGEMENT PRACTICE.
- **WORK** - CONTRACTORS CAN DO JUST ABOUT ANYTHING.
- ~~**WATER**~~ - CLEAN WATER IN, CLEAN WATER OUT.
- ~~**EROSION**~~ - GREEN IS GOOD.
- ~~**SEDIMENT**~~ - SEDIMENT CONTROL ALONE IS INEFFECTIVE.

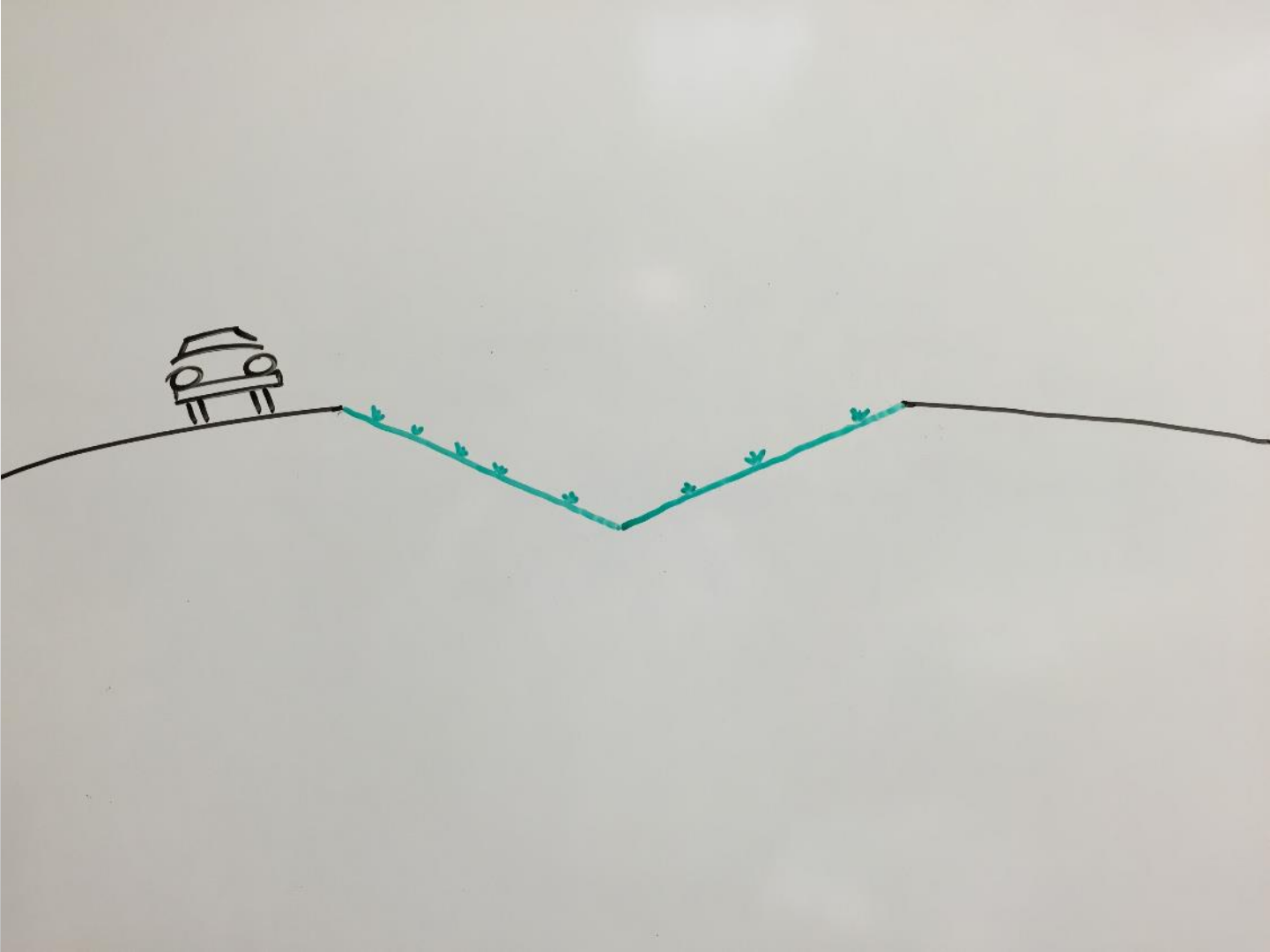
$$A = R \cancel{KLS} C P$$

A = sediment yield in **tons/acre/year**



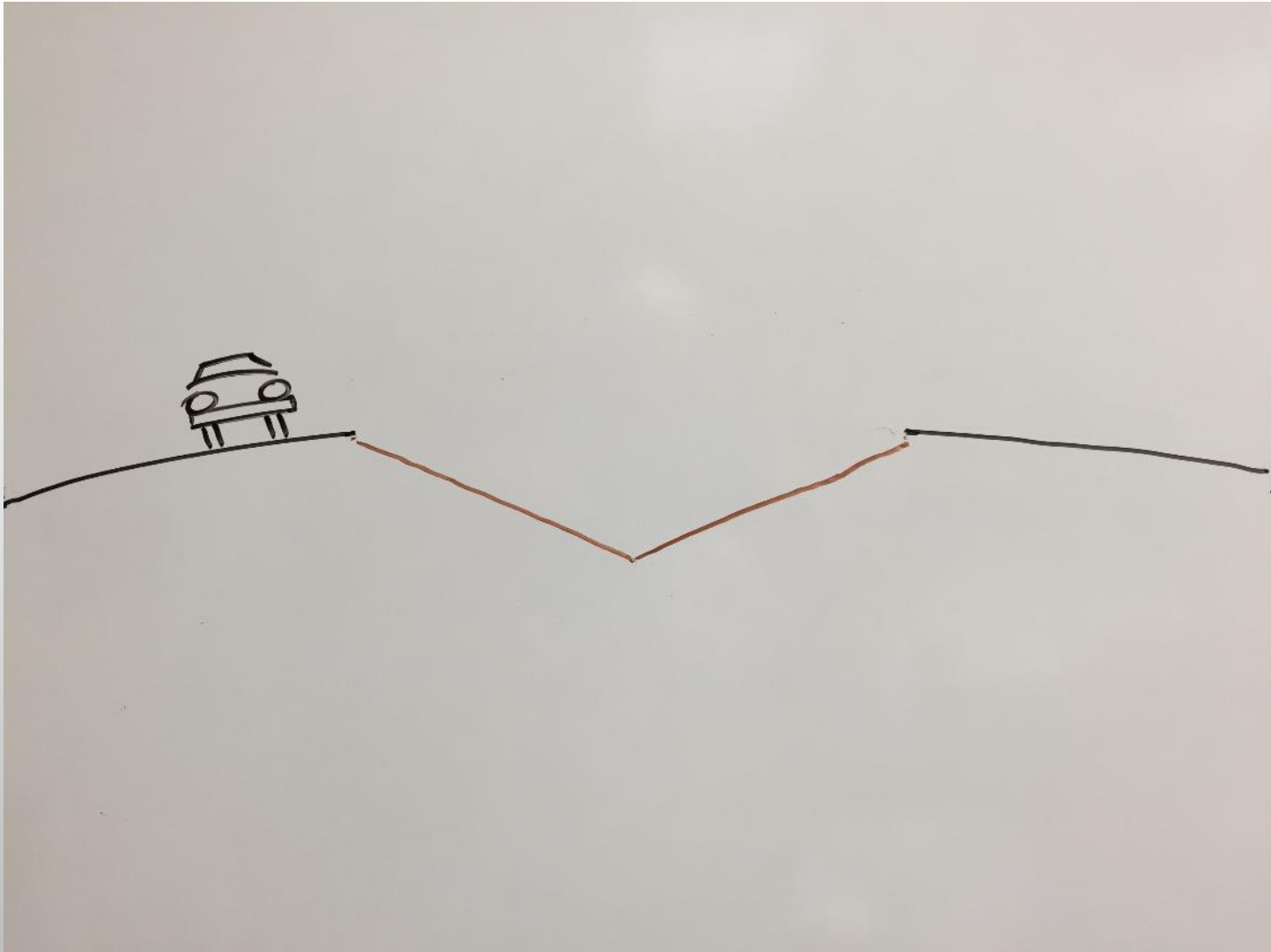
# A CASE STUDY

ACTIVITIES (alternate):



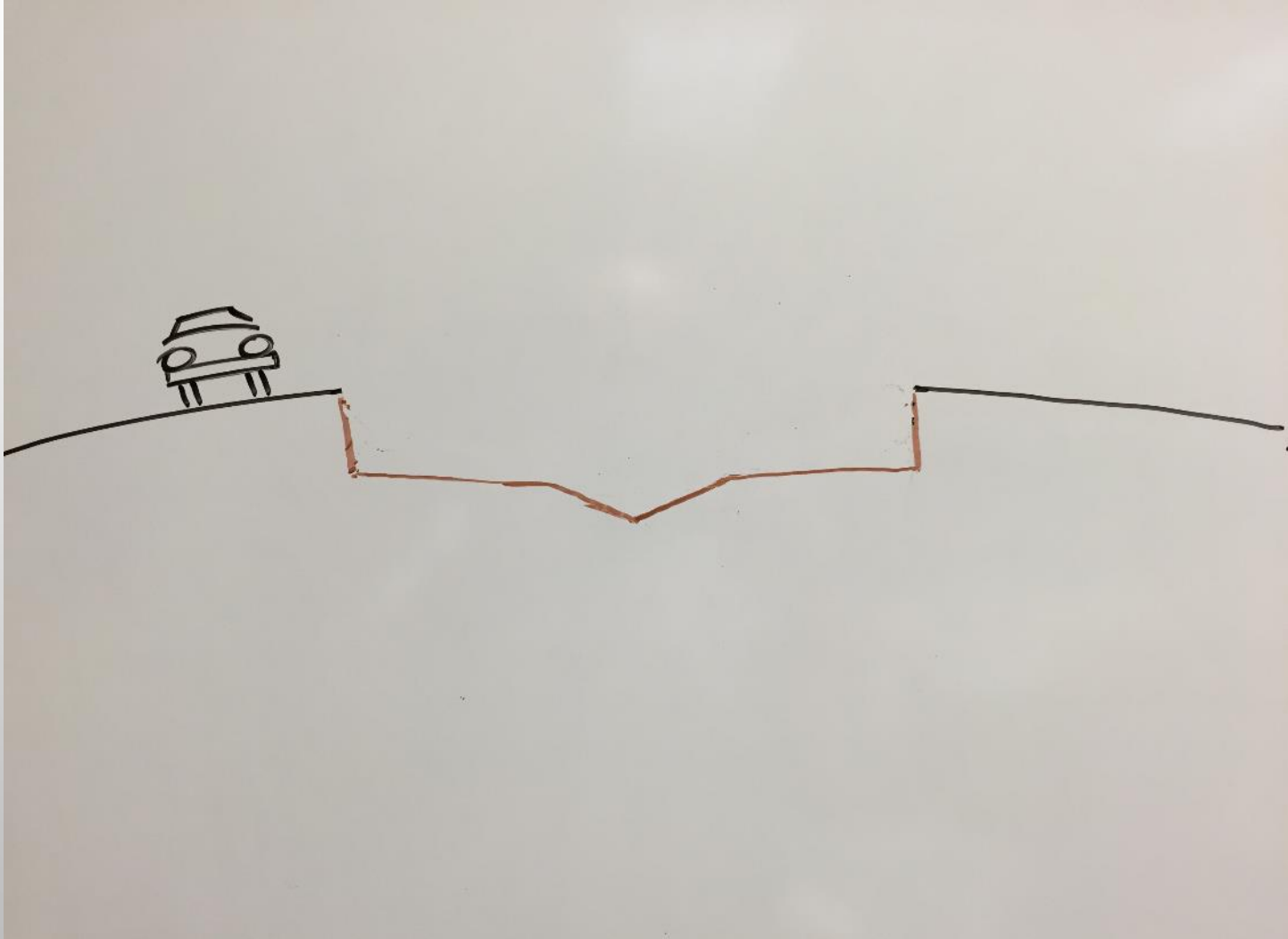
# A CASE STUDY

ACTIVITIES (alternate):



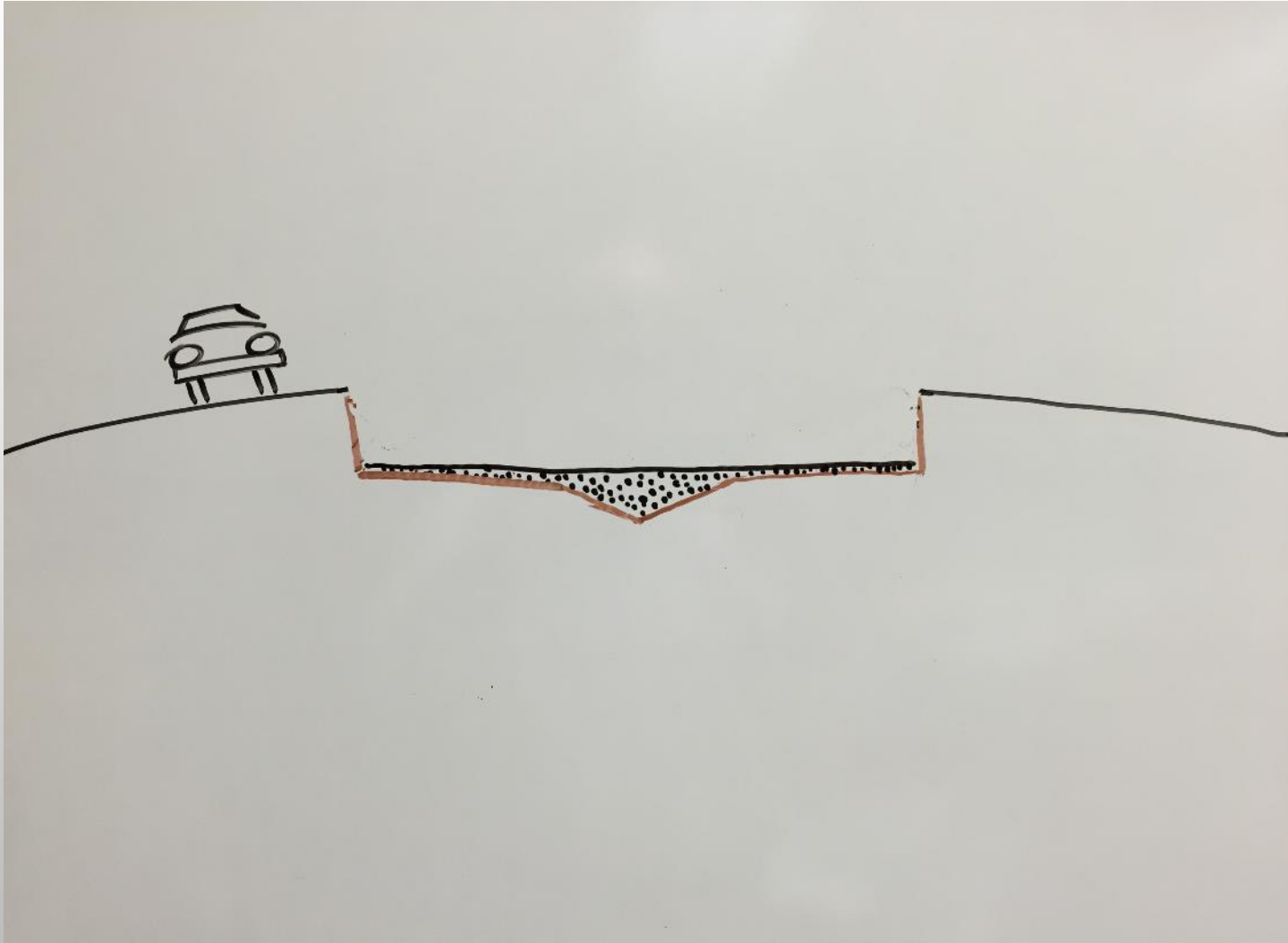
# A CASE STUDY

ACTIVITIES (alternate):



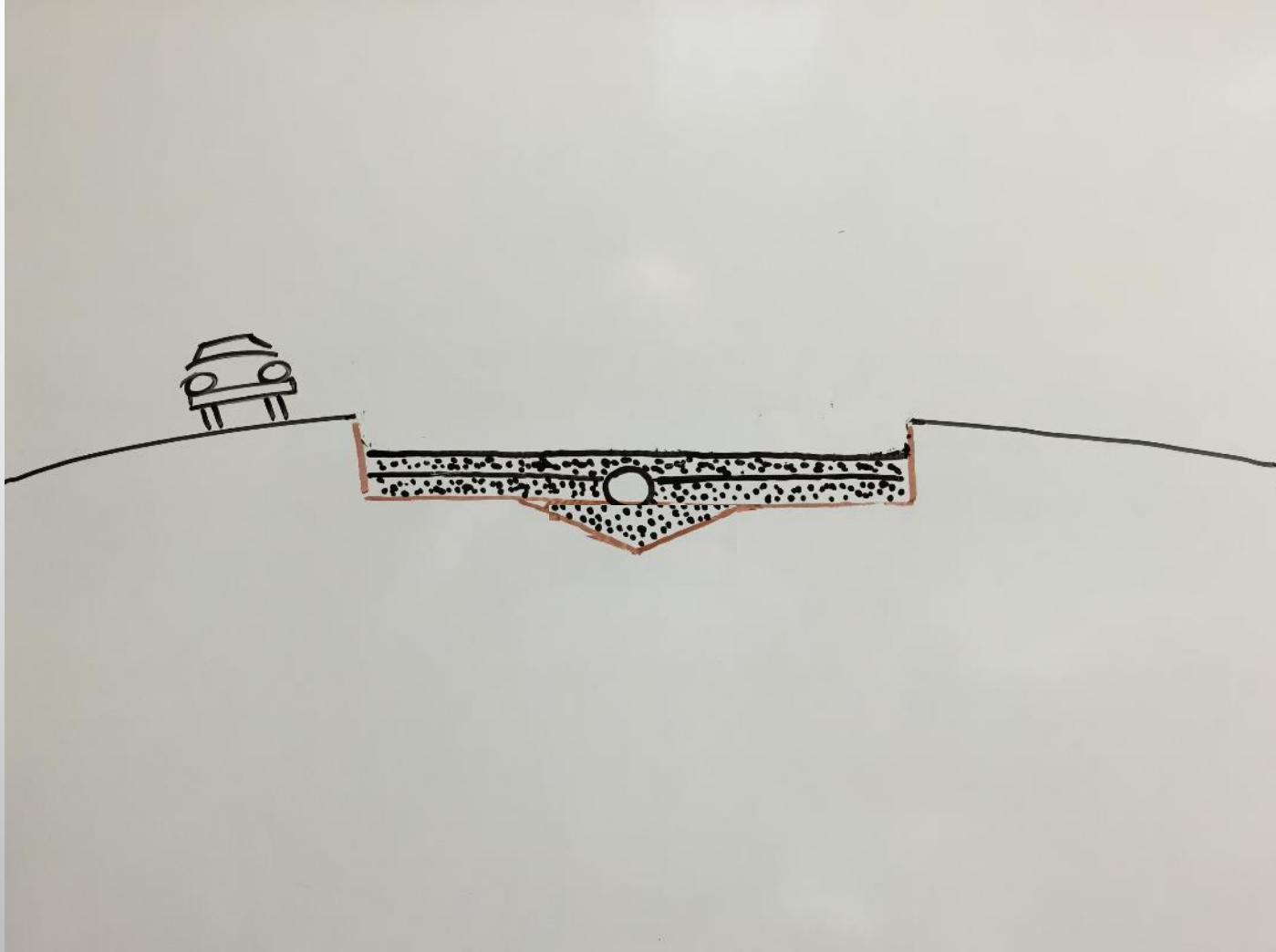
# A CASE STUDY

ACTIVITIES (alternate):



# A CASE STUDY

ACTIVITIES (alternate):













ALTERNATE



TRADITIONAL











## POTENTIAL Q&A

“WE CAN’T DICTATE THE CONTRACTOR’S  
MEANS AND METHODS... CAN WE?”

- WHY NOT?
- THE CONTRACTOR WORKS FOR US, RIGHT?
- WE HAVE DIFFERENT INTERESTS.
- WE HAVE EXPERTISE WHERE THEY DON’T.



# “DIDN'T THAT SLOW PRODUCTION?”

- CONTRACTOR:

- “WE MAY HAVE BEEN SHUT DOWN FOR A DAY AFTER A RAIN, NOT A WEEK.”
- “UNLESS THE RAIN WAS FALLING, WE WERE WORKING.”



# “DIDN'T THAT SLOW PRODUCTION?”

- CONTRACTOR:

- “WE WOULD HAVE WAITED UNTIL APRIL TO START RATHER THAN LAST NOVEMBER... AND WE WOULD NOT HAVE BEEN SHIFTING TRAFFIC TODAY.”
- “PRODUCTION WAS INCREASED BY AT LEAST 35%.”

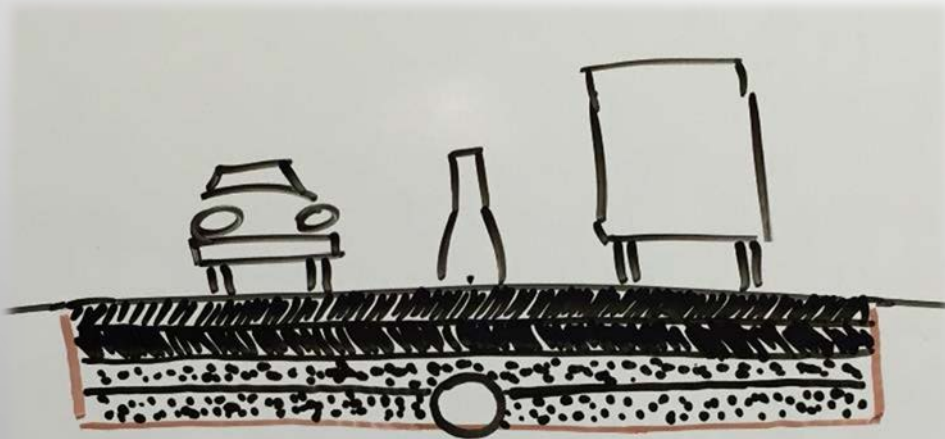


“WHAT ABOUT QUALITY?”

“This is actually a better structural buildup.”

- Lyndi Blackburn, P.E.

ALDOT Asst. State Materials & Tests Engineer





“IF YOU DON’T MIND ME ASKIN’,  
HOW MUCH DID SHE SET YOU BACK?”

- SIGNIFICANT DIRECT CONTRACT COST INCREASES  
NOT CONSIDERING SAVINGS DUE TO IMPROVEMENTS IN -
  - SAFETY
  - REDUCTION IN TRAFFIC DELAYS
  - PRODUCTION
  - HEADACHE



# DO YOU REALIZE WHAT WE JUST DID?

- ENVIRONMENTAL PROTECTION, WITH BENEFITS IN...
  - QUALITY
  - SAFETY
  - TRAFFIC
  - PRODUCTION
  - COST



“I HAVE NEVER SEEN A BETTER RUN ROAD PROJECT BY ALDOT.”

“THAT DOESN'T MEAN I BELIEVE THEY CAN BUILD THE EASTERN (BOONDOGGLE EXPRESSWAY) BYPASS WITH THE SAME CONTROL. WE'LL SEE.”

- John Wathen  
Hurricane Creekeeper Blog  
June, 2015





THE END...

Barry Fagan, PE/PLS, ENV SP  
CPESC, CPMSM, CESSWI

**VOLKERT**



**Green  
Infrastructure**