

Use of Microsimulation to Convey Access Management Techniques

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Challenges to Implementing Access Management

- Convincing the Public that Access Management Techniques are the Right Thing to Do
- Providing a Clear Understanding of the Project
- Treating Everyone Fairly
- Gaining “Acceptance” of the Project

Microsimulation

- Visual Presentation of Ideas
 - No Engineering Jargon
- A Picture is Worth a Thousand Words
 - A Video is Priceless

What's The Best Simulation Software?

- Synchro/Sim Traffic
 - Signal Optimization
 - Detailed Data Analysis
- VISSIM
 - Freeway Modeling
 - Network Applications
 - Visual Presentations

Calibration

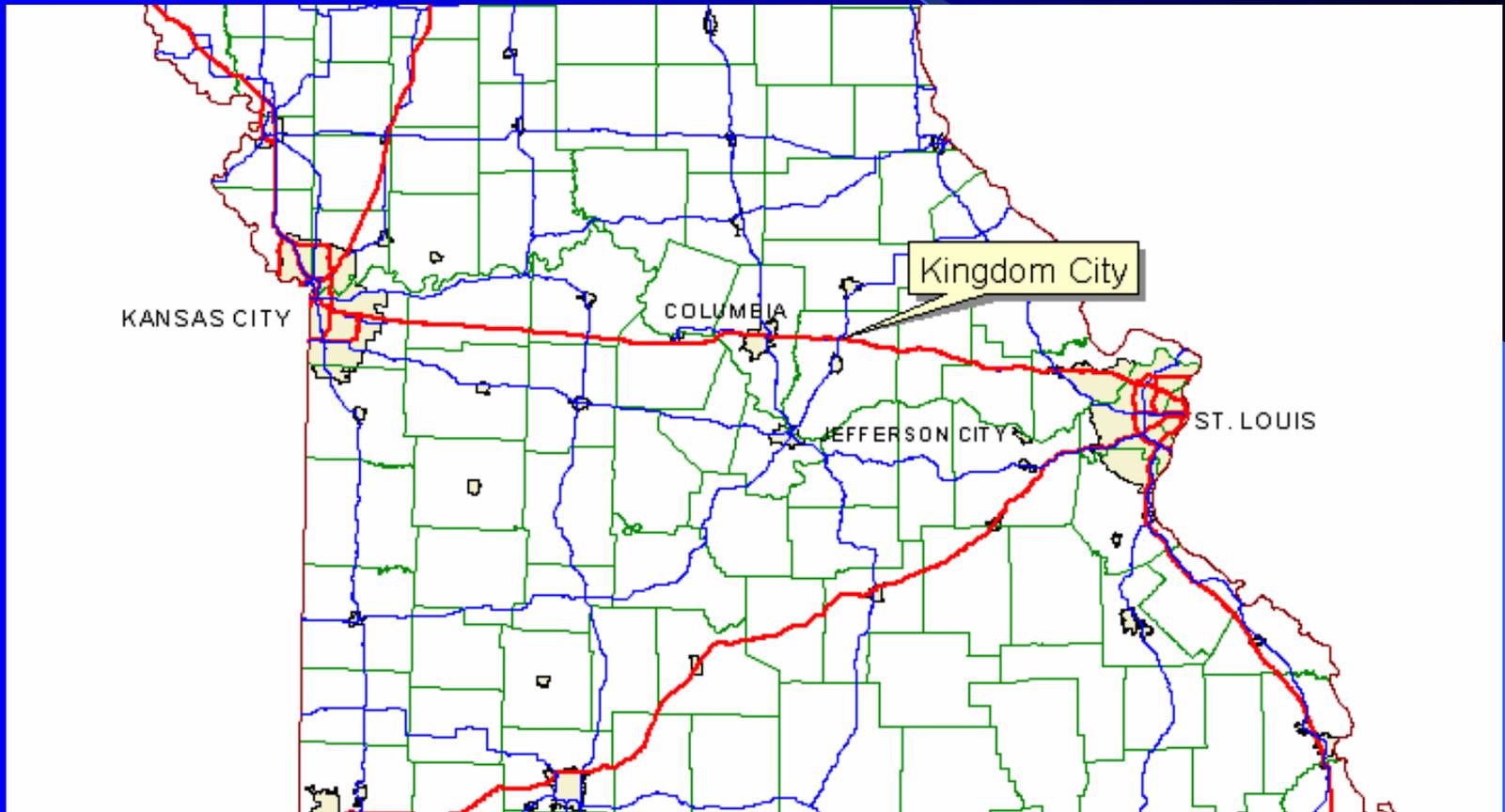
- Existing Scenario
 - Accurately Represent Conditions in the Field
- Proposed Scenarios
 - The Public Will Begin to “Trust” the Model

Case Study 1

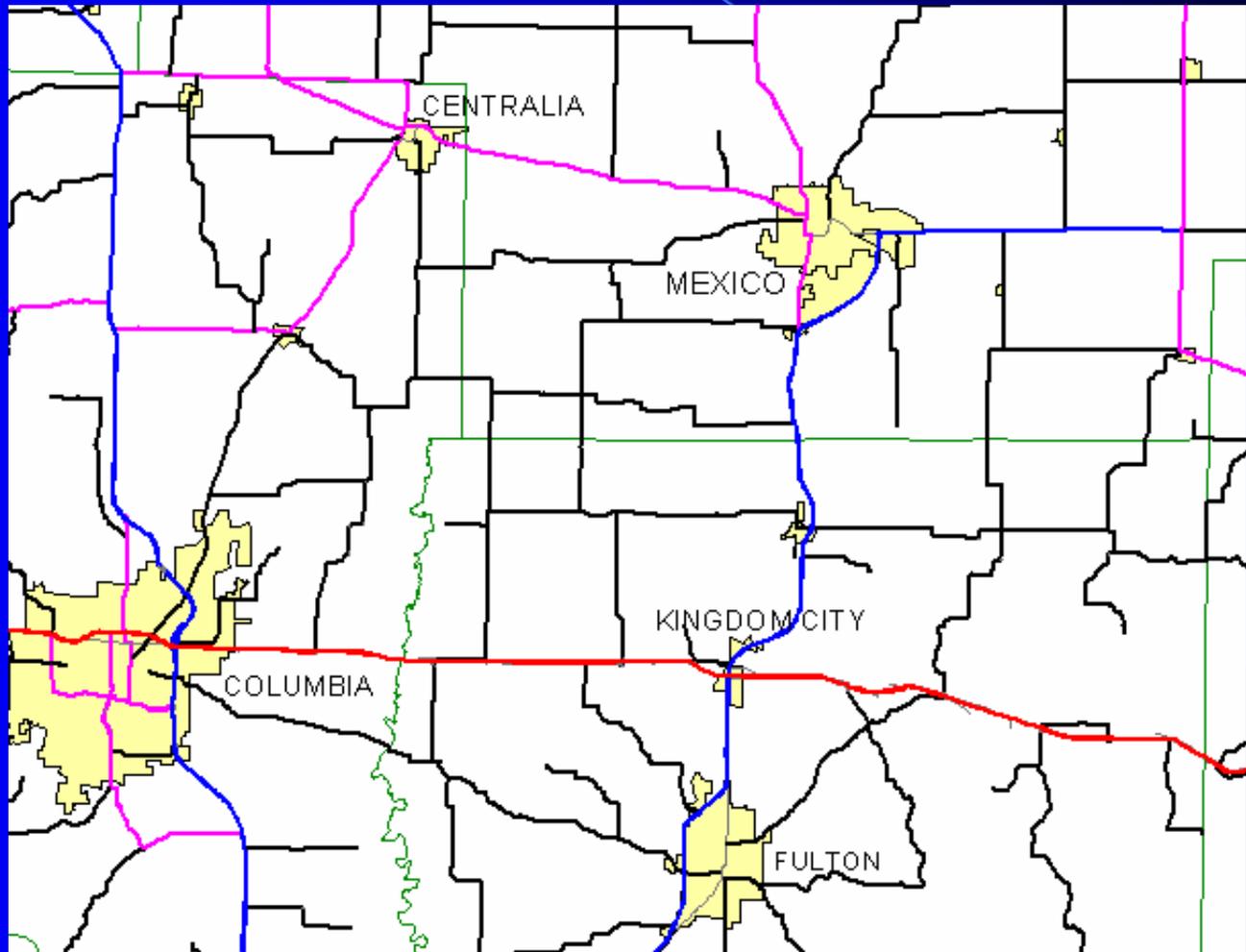
Kingdom City

- Population – 112
- IS 70 Exit 148
- Diamond Interchange with US 54
- 2 Major Truck Stops
- Several Hotels/Motels
- Fast Food restaurants (including McStop)
- Gas Stations

Location Map



Location Map



Aerial Photograph



Simulation

- Each model has its strengths and weaknesses (CORSIM, VISSIM, SIMTRAFFIC, etc.)
- SimTraffic/Synchro
 - Traffic Signal timing was critical for evaluation

Methodology

- Created Existing conditions
- Projected Volumes for 2010 and 2030

Existing Conditions

- Used Actual Turning Movement counts (12 hour) from the signalized intersections
- Used existing signal timing and phasing
- Field observation/counts to determine percent trucks on entry nodes
- Calibrated the model to replicate existing conditions

Future Conditions

- Used historic growth factors on IS 70 to project volumes (approximately 2% per year)
- Turning percentages at the intersections were kept the same
- Truck percentages kept the same
- Signal timing was optimized using Synchro

Results

- Presented at meeting with local stakeholders
- Model helped visually present the problems we had identified with existing geometrics
- The aerial photograph available in SimTraffic was very helpful for the stakeholders
- Demo

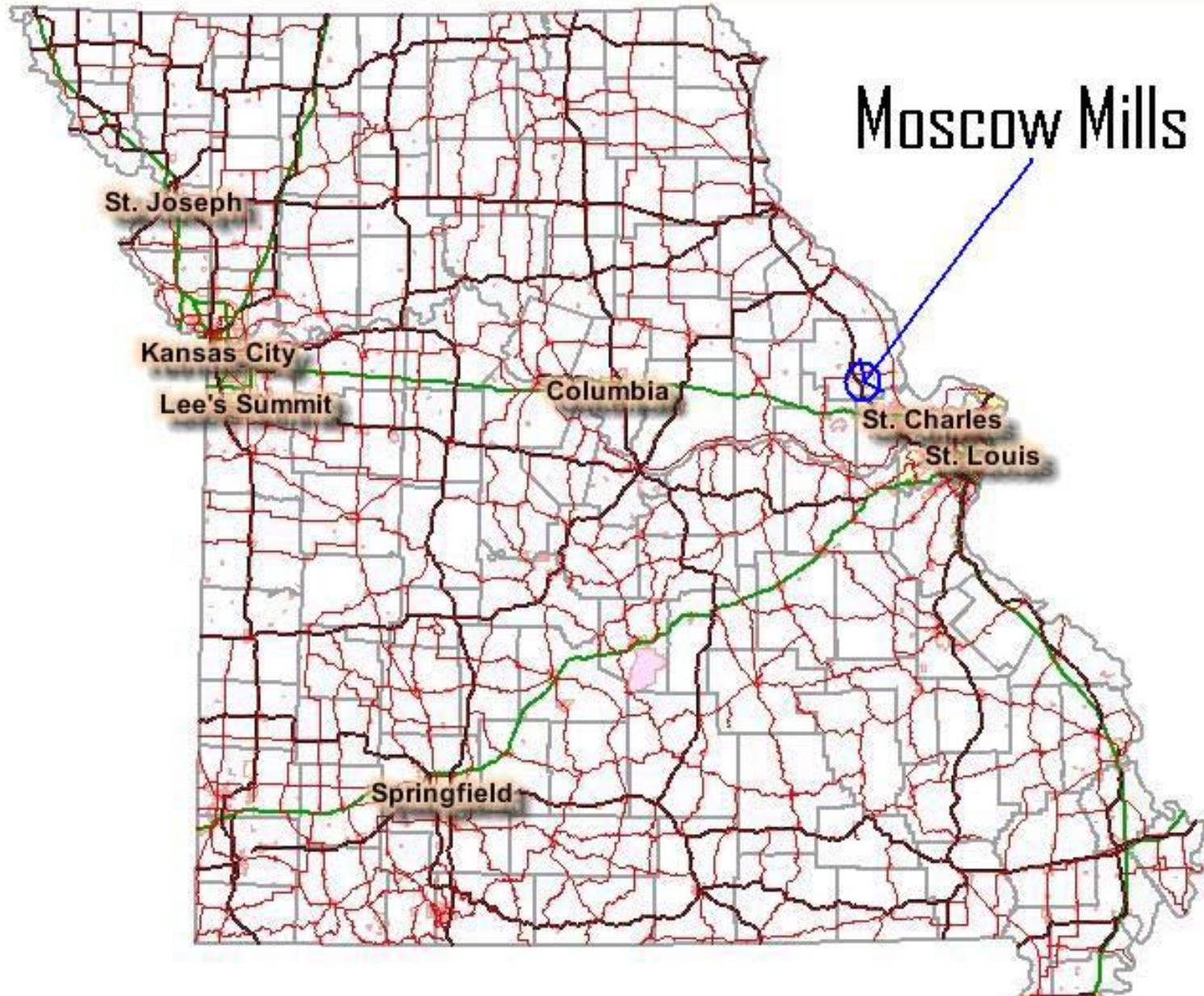


Case Study 2

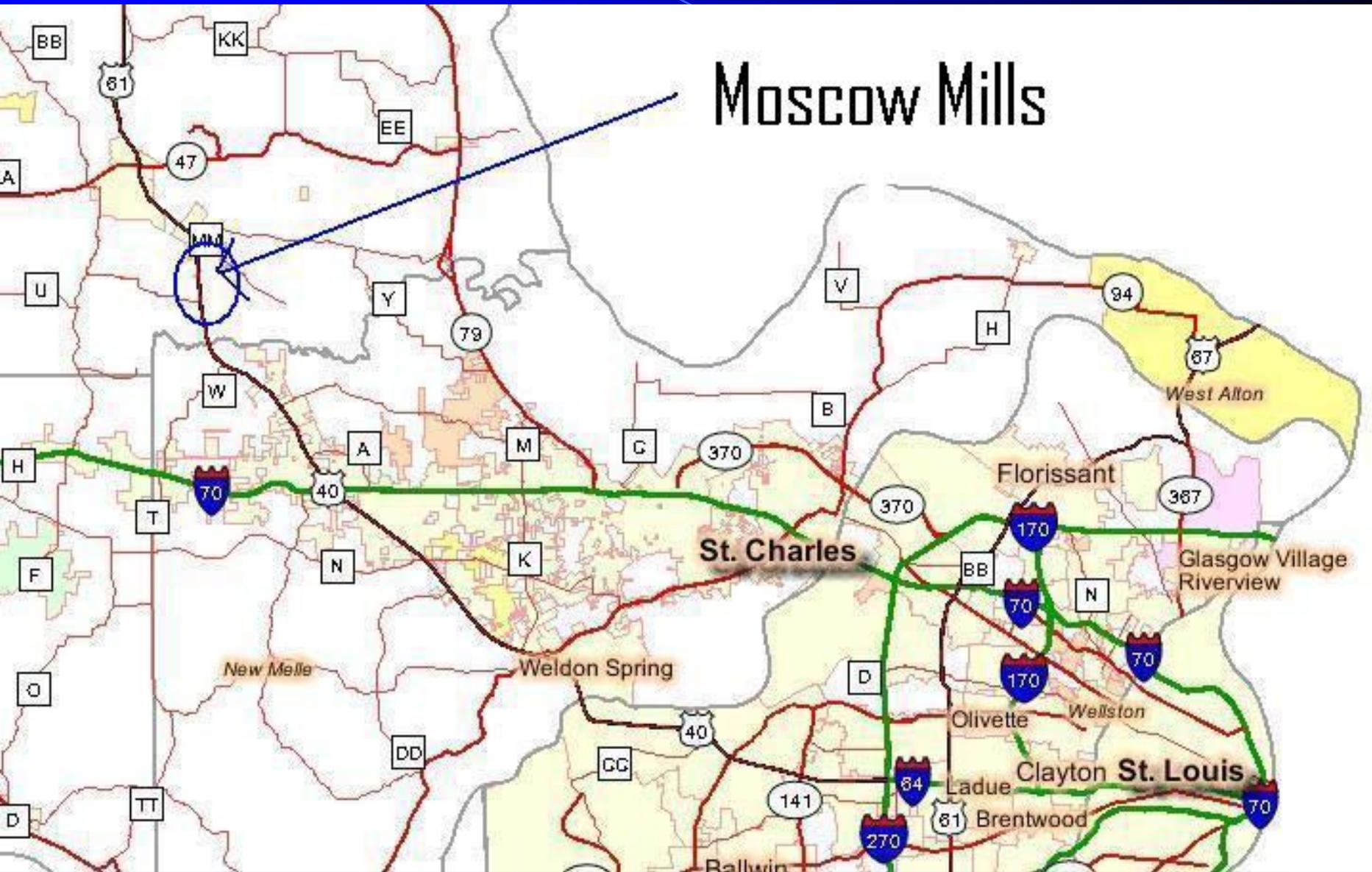
Moscow Mills

- US Rt. 61 and Rt. U, Lincoln County
- Proposed Mixed-Use Development
 - Several Retail Sites, Hotels, Gas Stations and Restaurants
- Roadway Improvements
 - Interchange Construction
 - Signal Installation

Location Map



Location Map



Aerial Photograph



Proposed Scenario

- Outer Road Spacing of only 600'
 - Queues from the Outer Road back into the Ramp Terminal Intersections
 - Queues have potential to spill onto US 61
 - Coordinated Signals Unevenly Spaced
- Modeled with Synchro and VISSIM
 - Synchro used for Signal Timing
 - VISSIM used for Network Analysis and Visual Demonstration



Suggested Improvements

- Increase Spacing of First Signalized Intersection
- Provide More Evenly Spaced Signals
 - Minimized Total Number of Signals



Results

- Better Progression along Route U
- No Queues Backing into the Ramp Terminals
- No Negative Effects to US 61
- Synchro Provided Signal Timings for both Scenarios
- VISSIM showed effects of Outer Road Spacing on the Entire Network
- Operational Benefits of Access Management

Lessons Learned

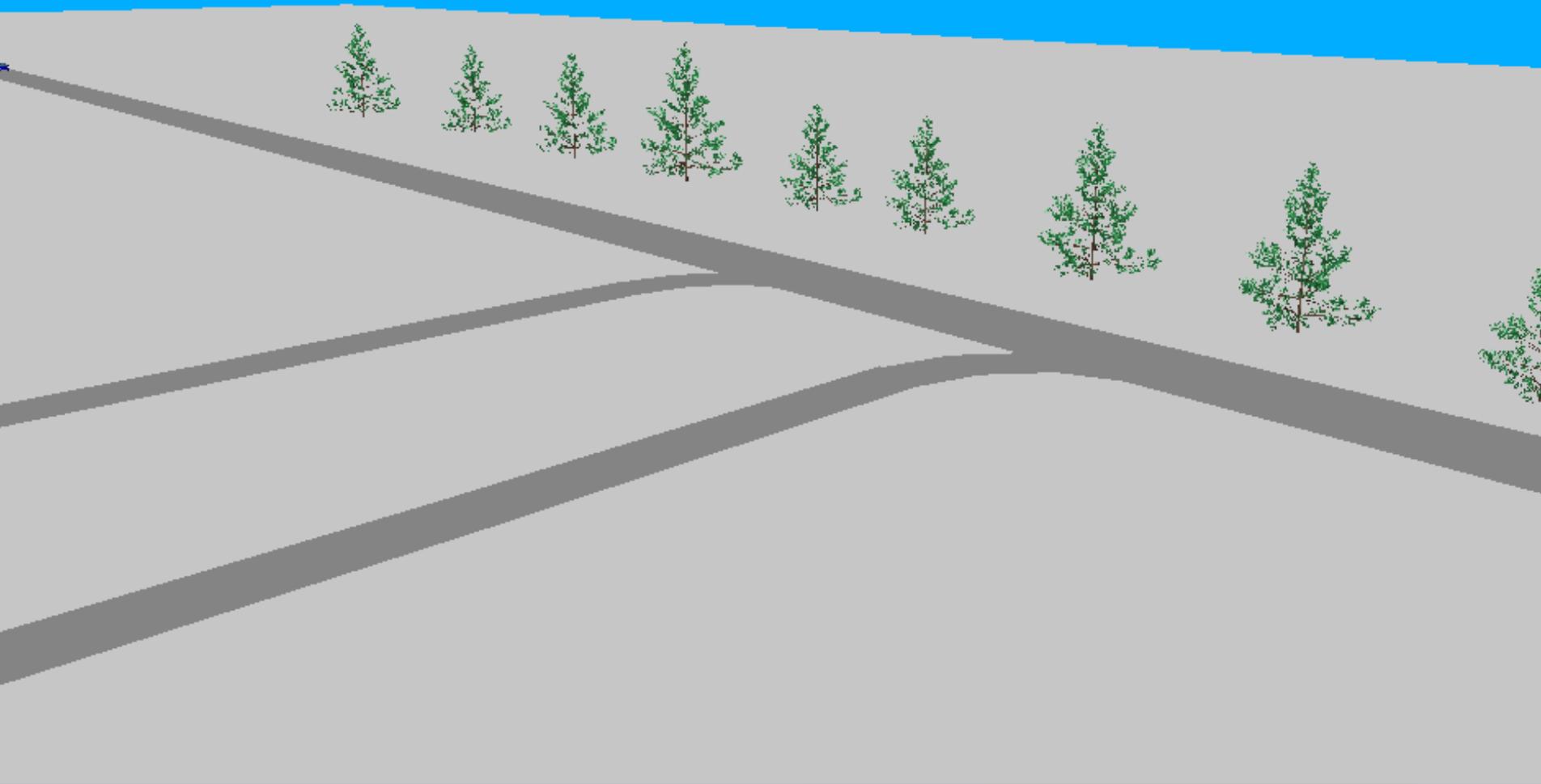
- Presenting to Large Groups can be Dangerous
 - Ring Leader can Influence Others
 - Be Prepared for Surprises and Unsatisfied Customers
- You Can't Satisfy Everyone
- Be Truthful
 - If You're Going to Negatively Effect Someone, Be Up-Front with Them

Simulations Related to General Access Management Techniques

- Egress Capacity
- Driveway Width

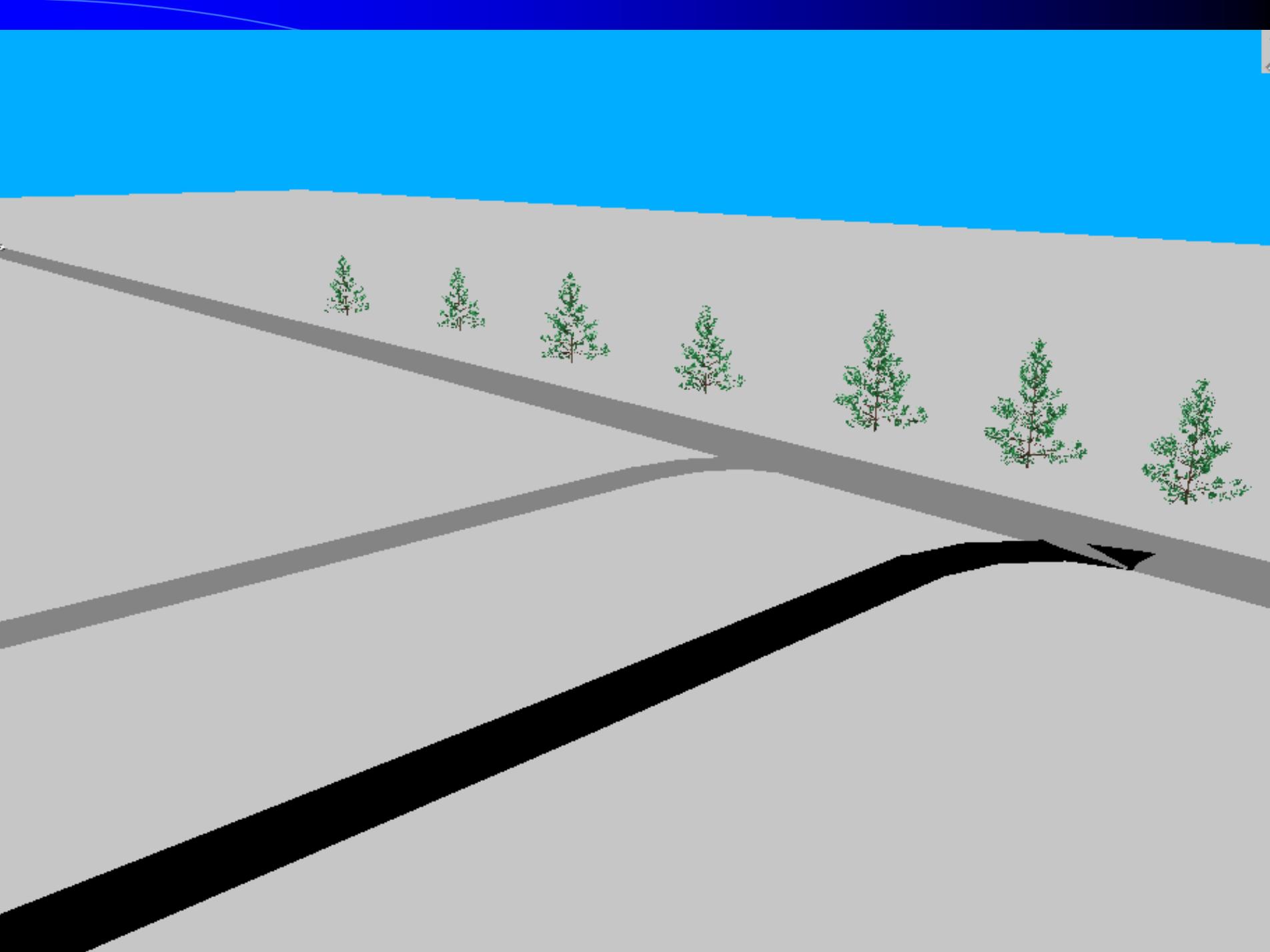
Egress Capacity

- Closely Spaced Driveways
- Consolidated Driveways
- Example is from MoDOT's Access Management Seminar
 - prepared by Vergil Stover



Consolidate Driveways

- Combine Two Closely Spaced Driveways Into One Joint-Use Driveway

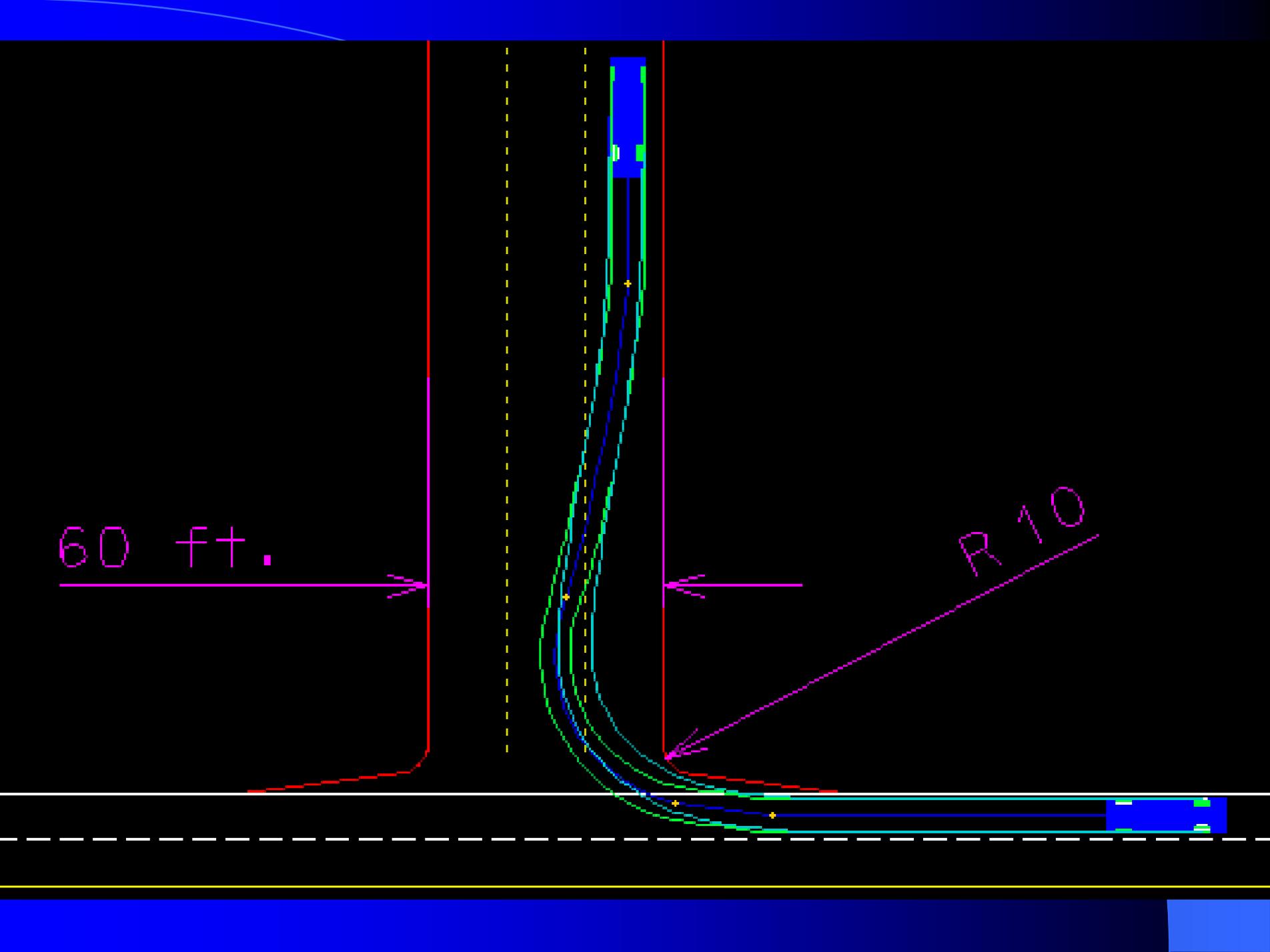


Driveway Width

- Commercial Entrances
 - Property Owners Desiring Maximum Width
 - MoDOT Allows Maximum 60'
 - Convince Property Owners to use More Appropriate Widths

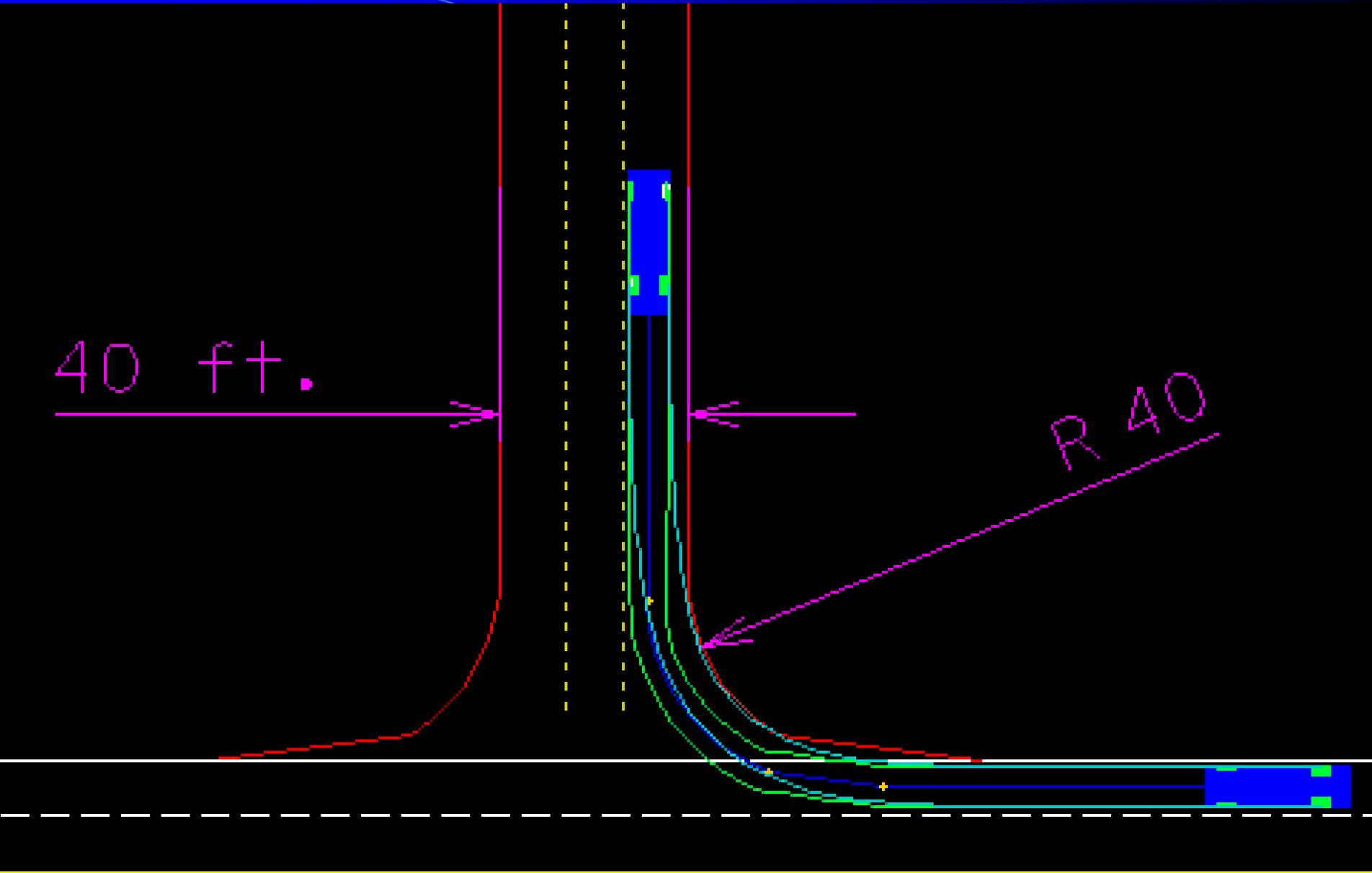
60 ft.

R 10



40 ft.

R 40



Summary of Simulations in Access Management

- Who is your audience?
- What is your goal?

Questions and Comments