ROAD DIET

Safety | Livability | Low Cost

PEER EXCHANGE

CENTRAL REGION – ALABAMA • ARKANSAS • INDIANA • IOWA
MISSISSIPPI • MISSOURI • TENNESSEE • WISCONSIN

August 24-25, 2016

Tennessee Tower – Nashville, Tennessee

Acknowledgement

Many people helped plan and organize the Central Region Road Diet Peer Exchange. The Federal Highway Administration (FHWA) Office of Safety greatly appreciates the cooperation of the Tennessee Department of Transportation, the City of Nashville, the Tennessee Tower contacts, and the Tennessee Division staff in assisting in the planning and coordination efforts of the peer exchange. We also thank all those that volunteered to offer presentations and share their Road Diet stories. Everyone's efforts made it a successful peer exchange.

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Executive Summary

As one of the initiatives included in the Every Day Counts (EDC) program, a Road Diet is a low-cost measure that can improve safety, reduce conflicts, calm traffic, and better accommodate the needs of all road users. A typical Road Diet project involves converting a four-lane undivided roadway to a two-lane facility with a two-way left-turn center lane. The remaining roadway width can then be repurposed for bicycle lanes, parking, transit, or sidewalks.

FHWA is partnering with State and local stakeholders to accelerate the advancement of Road Diets as a potential low-cost measure to reduce crashes, injuries, and deaths along busy corridors while improving the mobility and quality of life for all roadway users.

As a part of this initiative, the Central Region Road Diet Peer Exchange was held in Nashville, Tennessee, August 24-25, 2016. States were invited based on their EDC Road Diet implementation status and goals as well as regional proximity. The attending States included Iowa, Missouri, Alabama, Arkansas, Indiana, Mississippi, Tennessee, and Wisconsin. Fifty-five multidisciplinary representatives from FHWA, State DOTs, and local agencies had the opportunity to ask questions, exchange information, and share learning experiences with their peers on various Road Diet topics, such as:

- Identifying and evaluating candidate projects
- Marketing and outreach for proposed projects
- Design considerations and issues
- Multimodal accommodations
- Before and after evaluation factors and performance metrics
- Institutionalizing and funding a Road Diet program
- Policies that encourage Road Diets

Upon completion of the peer exchange, each participating agency shared the next steps they would pursue to further advance their Road Diet program.

About the Peer Exchange

Peer exchanges directly support the Mission, and Vision Statements contained in FHWA's Every Day Counts (EDC) Road Diet Implementation Plan:

MISSION: Partner with local access and mobility advocates, government agencies, trade and public interest groups to accelerate advancement of Road Diets as a potential low-cost measure to reduce crashes, injuries and deaths in busy corridors, while improving mobility and quality of life for all roadway users.

VISION: Institutionalize Road Diets as a tool to improve safety and mobility for all road users and to enhance community livability.

On August 24-25, 2016, key stakeholders—across a variety of disciplines—gathered at the Central Region Road Diet Peer Exchange at the Tennessee Tower in Nashville, Tennessee. The objective of the exchange was to collaborate and discuss the benefits, lessons learned, challenges, and solutions related to Road Diets. Although not an exhaustive list, the peer exchange allowed the participants to learn more about:

- Benefits and challenges of incorporating Road Diets into safety programs
- Assessing the effectiveness of Road Diet activities and investment decisions
- Ideas and approaches for overcoming Road Diet implementation barriers
- Technical, institutional, or political concerns and potential solutions
- Increasing collaboration and establishing new partnerships
- Maintaining momentum among their agency/State to increase Road Diet use
- Guidance relating to marketing, implementing, and evaluating Road Diets
- Funding mechanisms for Road Diets

Possibly the most important benefits of the peer exchange were the relationships and connections made among the participants during the meeting. Peer exchanges often serve as a first step toward re-energizing or improving upon an agency's existing program.

Peer Exchange Proceedings

August 24, 2016

FHWA Welcome and Introductory Comments

- Becky Crowe, FHWA Office of Safety, welcomed participants, introduced Pamela Kordenbrock and Leslie Meehan, and explained the role and purpose of the FHWA in sponsoring the Road Diet Peer to Peer Exchange.
- Pamela Kordenbrock, Division Administrator for FHWA TN Division, and Leslie Meehan, Assistant Director for the Tennessee Department of Health, welcomed the attendees to the peer exchange, described the efforts of their departments in support of Road Diets.

Every Day Counts: Advancing Road Diets

- Mark Doctor, FHWA Resource Center, provided a general overview of FHWA's Every Day Counts (EDC) Road Diet Implementation Plan.

Mark Doctor explains FHWA's EDC Program

Participant Introductions

As part of the introductions, participating agencies were asked to:

- Describe the State's current level of experience in implementing Road Diets,
- Describe the benefits, challenges, and lessons learned in implementing Road Diets, and
- Describe expectations for participating in the Road Diet Peer Exchange (i.e. what did they hope to accomplish?)

Tennessee Attendees:

Jason Oldham, State Traffic Engineer
Brandon Darks, Safety Manager
Jessica Wilson, Bicycle & Pedestrian Coordinator
Ali Hangul, Assistant Director of Design
Mary Beth Ikerd, Transportation and Sustainability Manager
Greg Dyer, Civil Engineering Manager 1
Adams Carroll, MPO Regional Active Mobility Planner
Jason Radinger, Metro Bicycle Pedestrian Coordinator
Michael Briggs, Transportation Planner
Leslie Meehan, Assistant Director of Primary Prevention
Pamela Kordenbrock, Division Administrator
Jessica Rich, Safety Engineer

Tennessee

Tennessee does not currently have a lot of Road Diets. They are working on a Complete Streets guide, incorporating Road Diets, and moving forward to institutionalizing Road Diets in the State. They would like to learn more about the effects Road Diets may have on parallel routes/diversion of traffic. They are currently working on promoting active transportation and improving safety and economic development.

Iowa Attendees:

Steven Schroder, Transportation Engineer

Sam Sturtz, Transportation Planner

John Dostart, Transportation Engineer

Kevin Patel, Transportation Engineer

Shane Tymkowicz, Transportation Engineer Executive

Roxanne Seward, Senior Engineering Technician

Paul LaFleur, Safety Engineer

Iowa

Iowa would like to learn more about how to determine what roads are (and are not) ideal candidates for Road Diets. They are also interested in information on crash types/rates/severity changes relating to Road Diet implementation. They are working on overcoming negative perceptions to Road Diets, especially in rural areas. They are also looking to identify a champion within the department. They estimate Iowa has implemented at least 30 Road Diets.

Missouri Attendees:

Jon Nelson, Traffic Safety Engineer

Eric Claussen, Traffic Engineer

Jeff Martin, City Engineer

Jacob Ray, Traffic Engineering Supervisor

Aaron Bartlett, Senior Transportation Planner

Marc Thornsberry, Safety & Mobility Engineer

Missouri

Missouri was interested in learning about the challenges other communities have faced and overcome, different approaches, higher volume Road Diets, what role the State DOT can have in supporting/implementing Road Diets, funding options, and outreach to the elected officials/politicians. In Springfield, there are approximately four Road Diets.

Alabama Attendees:

Steve Walker, Innovative Programs Engineer

Tim Barnett, State Safety Operations Engineer

Shaun Capps, Design Engineer

Alabama

In 2010, Alabama did a study on all the 4 lane undivided roads in the state and looked at operation and safety implementation effects to determine recommended changes. The average benefit/cost ratio for implementing a Road Diet was determined to be 5.1 to 1. Alabama is also doing some 2+1 conversions. As roads are being resurfaced, they review the roads to determine applicability for Road Diets. Typically, Alabama has completed Road Diets on roads with ADT of 17,000 or lower, but they may consider higher volumes too.

Arkansas Attendees:

Ben Whatley, Engineer

Mark Nichols, Traffic Engineer

Chris Brown, Traffic Engineer

Scott Bowles, Field Operations Engineer

Stephen Sichmeller, Advanced Design Engineer

John Landosky, Bicycle and Pedestrian Coordinator

Arkansas

Arkansas has a Road Diet project in Little Rock. They want to learn more about marketing to elected officials, selecting candidate Road Diets, gaining public buy-in, and evaluating Road Diet projects/case studies.

Mississippi Attendees:

Jeff Curtis, Assistant State LPA Engineer

James Warren, Transportation Planner

Scott Burge, Transportation Senior Analyst

Kenneth Yarrow, Transportation Planner

Randy Jansen, Planning Engineer

Terry Bridges, Safety Engineer

Mississippi

Mississippi would like to learn more about examples of Road Diet "fails"/ lessons learned and recommendations on incorporating on-street parking and biking accommodations together. Mississippi has done some Road Diets, however, they explained that one of the challenges they're facing in their area, is the lack of champions for Road Diets. They are interested in learning about capacity aspects, safety benefits, lane widths, demographics/livability, and land use.

Indiana Attendees:

Pam Drach, Deputy Director

Dan Avery, Executive Director

Jason Kaiser, Technical Services Director

Sarah Ford, Technical Services Director

Joyce Newland, Planning and Environmental Specialist

Erin Schriefer, Senior Transportation Planner

Indiana

Indiana would like to learn about alternative Road Diet designs, how Road Diet affects signal head placements/lighting, and accommodating bike lanes within narrow road widths. One of the Road Diets took nearly 4 years to convince public, so Indiana is interested in effective outreach methods. They are also interested in how others address the standard approach to design (e.g., using 10 ft lanes instead of 12 ft and determining the acceptable level of service). Indiana is interested in how many States have Complete Streets ordinances.

Wisconsin Attendee:

Jed Peters, Project Manager

Wisconsin

Wisconsin is working towards institutionalizing Road Diets and choosing their projects carefully. They are looking for ways to improve public perception, finding a champion, and working on the funding and policies. They lose funding when there is a reduction in lane miles. Becky Crowe, FHWA, indicated that Virginia has a similar situation and is working towards changing the law.

Topics of Interest

This section highlights some discussions that took place prior to the session presentations. Many of these topics were identified during participant introductions. FHWA's Road Diet Informational Guide and the Case Studies published on FHWA's website were identified as helpful resources for agencies (also included in the participant's registration packets).

Attendees shared their experiences and questions relating to Road Diets throughout the Peer Exchange (Aaron Bartlett, MARC, is speaking in this photo)

Traffic Diversion from Road Diets

- Truck traffic may be diverted to parallel roads from roads which have undergone Road Diets; the amount and type of truck traffic should be considered in Road Diet designs.
- Missouri – In Columbia, we had diversion, but it was meant to be. The goal of the Road Diet was to discourage cut-through traffic.
- Keith Harrison mentioned that people are often using navigation apps to determine alternate/quickest routes (e.g., if a Road Diet project has made travel time slower, people may use a nearby residential street). When implementing any kind of traffic calming measure to deter the cut-through traffic on parallel or residential streets, it is important to consider the effects on the residents.

Factors to Consider with Road Diets

- Tom Welch/Michelle Neuner discussed the consideration of bus stops, railroads, agricultural equipment, mailbox delivery, business delivery truck coordination, and access locations.

Potential Barriers to Implementation

- Be cautious of only marketing Road Diets because of bike lane accommodations. Focus on safety benefits and reducing the aggressive/top-end speeders. It really comes down to knowing your neighborhood and their interests/needs for the road.
- It is important to partner with and educate the freight/trucking industry when planning for Road Diets.

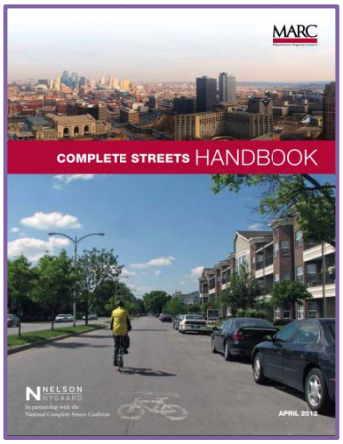
Identifying Champions

- Involve others and educate on the benefits of Road Diets, including emergency services, public officials, and other non-engineers. Focus on safety and how Road Diets are low cost and have a very high benefit-cost ratio.

What Does Institutionalizing Road Diets Look Like?

Aaron Bartlett of Mid-America Regional Council (MARC)

Aaron Bartlett of Mid-America Regional Council (MARC) spoke on MARC's role, and what institutionalizing Road Diets actually look like.



MARC is a non-profit association of city and county governments and is also the Metropolitan Planning Organization (MPO) for the bi-state Kansas City region. They serve 119 cities and 9 counties and are primarily funded by federal and state grants. MARC has a Complete Streets policy, which was recently updated in December 2015.

Aaron defined Road Diet, discussed some of the benefits of Road Diet installation, and how communities benefit from institutionalizing Road Diets. He talks about how in the Kansas City area, they are looking at opportunities to incorporate Road Diets, listing several examples:

- Southwest Blvd in Kansas City, KS
- Switzer Road in Overland Park, KS
- Blueridge Blvd in Raytown, MO (proposed project)

Mr. Bartlett's presentation is included in Appendix C.

Questions/Discussion

Q – Arkansas – We don't have a lot of bike lanes. Is there any outreach for driver education for handling bike lanes.

A – Driver's license manuals, marketing/outreach materials/flyers, cities/counties have cable channels. We do a bike map with information, social media outreach, radio. We typically conduct more activities around May (bike month) or October (walk to school)

Jeff Martin provided a lesson learned from Kansas City. They had a Road Diet that aggressive drivers used the parking lane (when it was unoccupied) as a driving lane. They had to add more striping/bollards to curb this behavior.

Road Diets in Tennessee

David Coode of Kimley-Horn

Road Diet projects have been completed in Memphis, Chatanooga, Monteagle, Kingsport, Columbia, Knoxville, and Nashville. Before and after photos with information on various projects were shown during the presentation.

A "Public Involvement Mobility Fair" was explained in the presentation. The event included interactive stations, such as, an information wall, priority pyramid, street builder, walk the corridor, etc. The pyramid was used to have the pubic prioritize their preferred options. They gave them six spaces in the pyramid, but more options to choose from that could fit within the pyramid. This made the public think about their priorities. They used this information gained from the public to understand the community's priorities. Afterwards, they developed a Report Card for each design scenario, which included safety, walkability, transit, corridor vibrancy, and traffic.

Attendees built their preferred street during the Mobility Fair

The speakers mentioned using Synchro, Transmodeler, and VISSIM.

One lesson they learned was to not talk about level of service, but instead discuss delay - are you willing to accept another minute of delay?

Mr. Coode's presentation is available in Appendix C

Questions/Discussion

Q – Did you incorporate other/people/communities further down the road/corridor?

A – We had a steering committee, TDOT representatives, Metro representatives, City, all stakeholders. Our mayor understands the benefits this community will gain and the focus shouldn't be on making sure people travel 5 minutes quicker.

On-site Visits to Road Diet Projects

Jason Radinger of Metro Nashville Public Works

Jason talked about some successful and non-successful Nashville Road Diets briefly (no presentation). Nashville is looking at the Road Diets through their pavement resurfacing program.

Jason talked about Church Street Road Diet, the subject of the on-site field visit.

During the on-site visit, traffic was backed up and slow moving, due to evening peak traffic volumes and closely spaced signals. Other times, the design operates adequately.

It is important to consider the amount of time during the day that actually has high traffic volumes when implementing Road Diets. Depending on the overall goals trying to be achieved with the project, it may be worth an hour or two of slow-moving traffic to be able to accommodate other modes of travel and improve overall safety.

August 25, 2016

Identifying, Planning, and Selecting Road Diet Locations

Eric Claussen of City of Springfield, MO

Eric Claussen, a traffic engineer for the City of Springfield presented on several example Road Diet projects and how Springfield identifies, plans, and selects Road Diet project locations. His steps in the process include:

- Identify Candidates for Road Diet – Typically 4 to 3
- Resurfacing Provides Opportunity
- Meet with Stakeholders
- Prepare Concept Plan
- Model Signals for Before/After LOS
- Estimate Cost
- Public Meetings
- Finalize Design
- Coordinate with Resurface Schedule
- News Release to Announce Schedule

Three of the City of Springfield's Road Diet Projects

His presentation also details the before/after crash data results and the lessons learned from the Road Diet projects.

Mr. Claussen's presentation is included in Appendix C.

Questions/Discussion

Q – Are your bus stops near or far? A – They are mostly near.

Rear-end crashes may have increased, but overall crashes decreased.

There was some donated right-of-way to get the transit turnouts.

On the Central Street project, the new Complete Streets project is able to consolidate the campus, where it was split before. This is a cost share with some universities nearby.

Tom – be sure to look at the older driver crash reduction to help sell the projects also.

Eric - We are doing speed studies on the arterials. We are also doing the bollards too to help with speed.

Tom – Make sure you do a speed study. Look at aggressive driving. Do adequate before and after studies for the Road Diets to get your next project implemented.

Q – What is the frequency of buses on the route? How significant? A – There isn't a significant amount of volume that the transit stops affect traffic operations. The Road Diet hasn't affected the transit headways either.

Tom – Mentions the benefits of wide nodes and narrow segments.

Q (Becky) – Did you do bike counts? A – No we haven't done a lot of bike counts. It's mainly a funding issue, but we need to start working on getting counts.

Tom – Suggests using universities to help with gathering bike counts.

Road Diets can help achieve desired land uses for universities, schools, central business district/downtown area, elderly housing.

Q –Was it seen as necessary to do the pedestrian/bike counts? A (Eric) – We are looking at new technology with camera/radar systems that can do the automated bike/pedestrian counts. It will be beneficial.

There was a discussion/explanation of the Pedestrian Hybrid Beacon (Hawk) – More information can be found at: http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_012.cfm

Marketing and Outreach for Road Diets

Iowa DOT presentation

Steven Schroder and Sam Sturtz for Iowa DOT presented on their method of analyzing their existing routes for Road Diets and the future of Road Diets at the Iowa DOT. For the analysis they are undergoing now, they are using ArcGIS, roadway elements, minor/major intersections, access density, median type, ADT, crashes, etc. They began with a high level analysis and then narrowed the selection down systematically, which also included working with the traffic and safety engineers. The last phase hasn't been completed at the time of the presentation.

Mr. Schroder's and Mr. Sturtz's presentation is included in Appendix C.

Questions/Discussion

More and more cities are looking to the Road Diets, if they see them as successful.

Tom – it is a good practice to do an initial screening of the 4-lane undivided highways and review ADT as a starting point.

Iowa – We have the private entrances/driveways in our database, so we can consider access density.

Q – Did you consider peak flows?

A – We did not consider peak flow at this initial macro level screening.

Tom – Shouldn't discount roads with high peak hour volumes.

Arkansas – There could be roads where the ADT is high, but it is still a good candidate if the flows are spread out throughout the day.

Q – How will this information be used for the "next steps"?

A – We don't know exactly, but am planning to develop a "potential Road Diet" list. Conversations will need to happen on the next steps and how these decisions will happen in the end. We will make sure the data goes out to the districts and cities.

New Jersey Road Diet video

The goals of the Road Diet video:

- To provide understanding of how Road Diets work and how they improve safety
- To show case studies of implemented projects that provide community safety, economic development, and tourism benefits
- To use case study peers to address myths and community concerns
    - Need to differentiate between perception and reality to allay public concerns
- To provide resources for communities to consider Road Diets

A link to the New Jersey Road Diet video: https://www.youtube.com/watch?v=lm_zrAfRj20

Also, see the **FHWA-produced Road Diet video**:

- Long version – https://www.youtube.com/watch?v=n3ucpaCigig
- Short version - https://www.youtube.com/watch?v=m_xTUCPWG78

Road Diets, Roundabouts, and Public Outreach

Ken Sides of Sam Schwartz Engineering

Ken Sides, PE, PTOE, CNU-a, Sam Schwartz Engineering, presented a number of constructed case studies focusing on public outreach and roundabouts used in conjunction with Road Diets.

An intersection in downtown Asheville, North Carolina, had legs containing a total of 18 lanes but was reduced to only 8 lanes total by converting the intersection from signalized to a modern roundabout. This *intersection dieting* made it possible to Road Diet the corridor, add a landscaped median to enhance the public space and add angled parking to support downtown business vitality.

Road Diet proposal on Fruitville Road in downtown Sarasota, Florida, will convert a 4-lane arterial with landscaped median to a 2-lane undivided street. This will allow widening the sidewalks from 4' to 16', thereby improving street vitality, attracting developer investment, and incorporating the street into an expanding, highly pedestrian-friendly downtown. In order for the street to continue to provide the same motorized LOS, three signalized intersections would be converted to 1-lane modern roundabouts, which would also support the safety and mobility goals of the Road Diet and provide three sites for public art in a city that promotes culture and the performing arts.

Mr. Sides demonstrated an interactive 3D modeler that can be used to effectively show the public what the roadway could look like, which was used in the Fruitville Road proposal.

One alternative that is being discussed in one of this project is a "pullover lane." Emergency services could use it, designed similar to a truck apron at a roundabout, in order to deter traffic, but can be driven on, if needed.

Lesson learned is not to focus or present on level of service. They wanted to focus on corridor vibrancy, but got bogged down in level of service during the public meetings.

Mr. Side's presentation is included in Appendix C.

Questions/Discussion

It was mentioned that this high-tech software/viewing of alternatives helps sell projects very effectively.

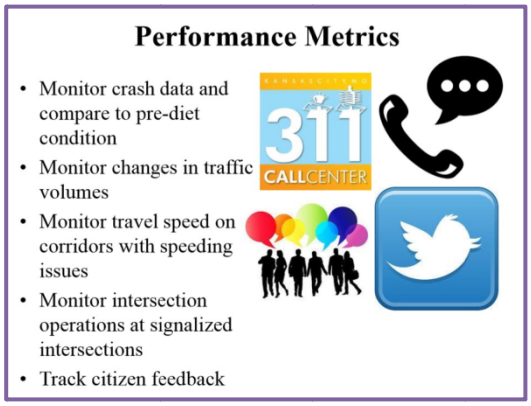
Ken mentioned the "car cam" app and Epic software.

Tennessee – We have a 3D modeler and that can be put into a virtual reality headset to see what a project can look like.

Evaluation Criteria, Processes, and Performance Metrics

Jeff Martin of Kansas City Public Works

Jeff Martin, city engineer, spoke on KCMO's Road Diet Initiative, which directed the City Manager to conduct a Road Diet analysis of undivided 4-lane streets, with primary focus to add bike facilities to roadways during resurfacing and increase safety. Initially, reviewed ADT and peak hour traffic, and also looked at other criteria such as intersection spacing, types of vehicles, signal corridor communication, etc.



KCMO Road Diet Performance Metrics

Presentation included several Road Diet case study overviews. Mr. Martin also described the various performance metrics used for Road Diet projects.

Mr. Martin's presentation is included in Appendix C.

Questions/Discussion:

Q – On Barry Road, what type of Road Diet was implemented? A - It was 5 to 3 conversion.

Q – How many are using back-in parking? A – We have some, requires signage and outreach.

Q – How do you maintain sight lines for driveways relating to bike lanes? A – There is a hashed lane area that prohibits car parking to help with sight lines

Tom – It is important to make documentation/rationale on your designs.

Ken Sides – In the AASHTO Greenbook, the preface says that it is a guide.

Q (Jon Nelson) – Did you have some that didn't have center turn lanes? A – On Gregory, there are 2 side streets and small number of accesses. Another one is similar where there isn't many accesses. We've also incorporated left turn lane in certain areas and narrowed bike lane.

Q (Aaron) – How many are you going to implement? A – Not all are on the bike plan. Any that are not on the bike plan, we are going to do a more comprehensive outreach for those. Most have been low volume and have been easy sell.

Q (Mark Thornsberry) – Can you describe design of intersection on Barry road? A – On west end, there is a shopping center. We ended bike lanes before that intersection, because we didn't want to affect operations of the busy intersection.

Even when you're pushing the envelope of traffic counts, it's the intersections that are key.

Kansas City's projects are tied to our resurfacings.

Becky Crowe, FHWA, asked participants to submit their Road Diet photos via Twitter, #RoadDiets Rule

Becky mentioned the twitter outreach, submit photos, #RoadDiets Rule. She also discussed other Road Diet resources that are available.

Nashville Complete Streets Policy

Mary Beth Ikard, City of Nashville's Mayor's Office

Mary Beth Ikard, a transportation and sustainability manager for the City of Nashville's Mayor's Office, presented on Nashville's Complete Streets policy and the connections between Road Diets and Complete Streets. Her discussion included how they focused more detail on design, design exceptions, performance metrics, etc. They added a green street component to the policy, as well as promoted accessibility for all users and improved connectivity to homes and jobs. It was decided to establish a collaborative process when considering any exceptions to the Complete Streets policy and to track the success of policy implementation with performance measures.

"The American Heart Association supports Mayor Barry's efforts to complete our streets with features that allow people of all ages and abilities to move about safely – especially in those communities **where people have no other option** but to walk, bike, or take transit because driving is impossible for whatever reason," says Ken Harms, board chair of the Greater Nashville American Heart Association (AHA). "National and local health data also affirms **these areas tend to suffer higher rates of poor heart health and potentially stand to benefit the most from active transportation** facilities that connect people to jobs, education, primary care, and healthy food."

American Heart Association supports the policy. One focus was to implement Complete Streets in communities that have no option but to bike, walk, or use transit.

Ms. Ikard's presentation is included in Appendix C.

Questions/Discussion:

Q – How many States have MPOs/locals that are implementing Complete Streets guidelines? A - Arkansas, Alabama, Tennessee

Q – Are there provisions within the policy to say some corridors should have mode priority over certain modes of transportation? A – We start with most vulnerable users. We always aim to fit all the modes. We look at it as a network overall and not just one by one, making decisions based on the best overall plan.

Q - Does Nashville have large resurfacing program? A - Yes, we do.

Road Diets for All Road Users

Jacob Ray, City of Columbia, MO

Jacob Ray, a traffic engineering supervisor for the city of Columbia, gave a presentation on implementation of a bike boulevard on a low-traffic neighborhood street to deter cut-through maneuvers. City had been getting complaints/concerns from the Windsor Street residents and were asking for traffic calming measures. The neighborhood likes the results of the Road Diet. Traffic has decreased, bike traffic has increased, and vehicle speeds were reduced.

Mr. Ray's presentation is included in Appendix C.

City of Columbia, MO, Bike Boulevard

Questions/Discussion:

Q - How did you educate the drivers? A - Cable channel, flyers on city website

Q – Did you use speed tables? A – No, we originally planned to, but opted not to do it. We did some bulb-outs and delineation.

Q - With compressed traffic lanes, did you have issues with large trucks or need signing? A - No, we only have UPS delivery trucks using this road. Prior to this, there was parking on both sides of the street, so there is not much difference.

Participant Takeaways – Next Steps

At the conclusion of the peer exchange, each participating agency identified their next steps for further advancing Road Diets within their organizations. In addition, participants completed an evaluation form and were asked to identify at least one takeaway from the peer exchange that they believed could immediately make a difference in their home agency/community. This information is summarized below.

Alabama

Alabama would like to pursue hosting a Road Diet Workshop. They would also like to use resurfacing projects as an opportunity to evaluate the potential implementation of Road Diets. They need to

develop some guidelines relating to Road Diet operations. They will also encourage the Local Public Agencies to consider Road Diets and provide them resources as needed.

Arkansas

During the peer exchange, Arkansas has realized the State's Highway Department has implemented some Road Diets. They have realized public involvement is key and will be working to identify champions within the department, FHWA, locals, etc. Arkansas will work towards developing some criteria for screening projects.

Indiana

Indiana will look at resurfacing program to identify opportunities for implementing Road Diets. They will also look to organize a peer exchange within their State. Indiana will also promote Road Diets within the conferences/meetings occurring throughout the State.

The MPO will look into incorporating Road Diets within their resurfacing program. They will also investigate whether there are opportunities for clarifying design flexibility and conduct some education/outreach for Road Diets, such as showing the New Jersey video. Indiana will conduct data collection for Road Diets.

Iowa

Iowa will look to revitalizing the idea of Road Diets/conversions within the department and locals. They will work to improve management buy-in by bringing a group of stakeholders together to develop an action plan for advancing Road Diets. Examples of their efforts will include evaluating their design guide, project development process, and their supplemental efforts (e.g., safety plans). Iowa will also look to advance Road Diets throughout the State via conferences and meetings.

Mississippi

Mississippi will identify routes for potential Road Diets especially in urban areas, such as Jackson. They will also improve on their marketing/outreach for Road Diets by public involvement activities. There are more than one purpose for a Road Diet, and it is important to consider and learn what is good for a particular community/area.

Missouri

Missouri will conduct a network screening/inventory to identify potential candidates for Road Diets for both local and State roads. They would like to identify methods on better promoting Road Diets to cities/locals, such as taking advantage of public works meetings, ITE, etc. Missouri would like to identify their training needs and possibly host a workshop. Missouri will continue to push the boundaries on applying Road Diets.

Tennessee

Tennessee will develop their inventory of Road Diets, create a point of contact for Road Diets, add Road Diets within their multimodal policy, and review the standard drawings. Tennessee will follow the City of Nashville's process or something similar to coordinate with their resurfacing and sidewalk program

and develop a list of candidate locations. They will also add Road Diets to their research list and will work with other departments to advance Road Diets.

Wisconsin

Wisconsin will continue to "cherry pick" the projects and make sure they are successful in order to build the reputation of Road Diets. They will gather speed data and crash data on existing projects, develop policy/guidance and incorporate into manuals. During resurfacing projects, Wisconsin will consider the feasibility of Road Diets. One challenge that Wisconsin has is the general political climate – the State's Complete Streets Policy was rescinded. Wisconsin will focus their outreach and education materials solely on safety benefits.

Lessons Learned

The FHWA team captured many valuable lessons during the discussions and information-sharing at the peer exchange and they are listed below:

- In order to further the implementation and institutionalization of Road Diets, agencies are encouraged to educate their internal staff on the benefits and considerations related to Road Diet projects. States should also look for other departments for partnership opportunities to advance Road Diets, such as the Department of Health.
- One important discussion point is to proactively review the statewide list of roads scheduled for repaving and identify potential candidates for implementing Road Diets. Such reviews must be conducted with sufficient lead time, and provide capability for assessing critical data such as ADTs and crash histories.
- Participants learned about the importance of developing a candidate list of potential projects so when opportunity presents itself through repaving programs, they can go back to the list and review/add appropriate locations.
- In many States, the majority of road mileage is controlled by local authorities, where many opportunities may exist for implementing Road Diets. It is important, therefore, that States work closely to MPOs and local transportation agencies to increase awareness of the applicability and benefits of Road Diets. State DOTs can also provide technical support agencies to local agencies to assess the feasibility of Road Diets on specific roads.
- Road Diet projects have substantially evolved far beyond the original concept, which was simply the conversion of four-lane undivided roadways to three-lane roadways (one through lane in each direction plus a center two-way left-turn lane). For example, the City of Columbia, MO, implemented a bike boulevard on a street in need of traffic calming.
- Roads with high peak volumes shouldn't immediately be dismissed as good candidates for Road Diets. It is important to consider the amount of time during the day that actually has high traffic volumes when implementing Road Diets. Depending on the overall goals trying to be achieved with the project, it may be worth an hour or two of slow-moving traffic to be able to accommodate other modes of travel and improve overall safety.
- When presenting a Road Diet project to the public, be careful of focusing too much on level of service and instead focus on goals and vitality of the community/surrounding neighborhood, and discuss delay – *Are you willing to accept anther minute of delay in return for these benefits?*
- High-impact or 3-D visual materials can be highly effective for public outreach on Road Diets in order to display the additional features that can be accommodated with Road Diets.
- Consider looking at the older driver crash reduction to help sell the Road Diet projects and potential to reduce aggressive speeders (travelling 10 mph or more over the speed limit).

Appendix A. Central Region Road Diet Peer Exchange Agenda

Central Region Road Diet Peer Exchange
Tennessee Tower – Nashville, Tennessee
August 24 (12:30 pm - 6:00 pm) – August 25 (8:00 am - 2:00 pm)
Agenda

August 24-25, 2016

TENNESSEE TOWER – NASHVILLE, TENNESSEE

AUGUST 24

12:30 pm – 1:00 pm	Registration and sign-in (anytime during this period)
1:00 pm – 1:30 pm	FHWA Welcome and Introductory Comments • Becky Crowe, FHWA Office of Safety • Pamela Kordenbrock, Division Administrator –TN FHWA • Leslie Meehan, Assistant Director – Tennessee Department of Health
1:30 pm – 1:45 pm	Every Day Counts: Advancing Road Diets • Mark Doctor, FHWA Resource Center
1:45 pm – 3:00 pm	Participant Introductions (approx. 10 minutes per State) • Summary of current Road Diet practices • What are your benefits, challenges and lessons learned? • Topics you want covered
3:00 pm – 3:15 pm	BREAK
3:15 pm – 4:00 pm	What Does Institutionalizing Road Diets Look Like? • Aaron Bartlett, Senior Transportation Planner – Mid-America Regional Council (30 minutes) • Open Discussion
4:00 pm – 4:45 pm	Road Diets in Tennessee • David Coode, Associate – Kimley-Horn (20 minutes) • Jason Radinger, Bicycle and Pedestrian Coordinator – Metro Nashville Public Works (10 minutes)
4:45 pm – 6:00 pm	On-site Visit to Church Street • Walk and Examine the Site
	Dinner on your own.

ROAD DIET

August 24-25, 2016

TENNESSEE TOWER – NASHVILLE, TENNESSEE

AUGUST 25

8:00 am – 8:45 am	Identifying, Planning and Selecting Road Diet Locations • Eric Claussen, Traffic Engineer – City of Springfield, MO (15 minutes) • Open Discussion
8:45 am – 9:30 am	Marketing and Outreach • Steven Schroder, Safety Programs Engineer – Iowa DOT (15 minutes) • New Jersey Road Diet Video (5 min) • Open Discussion
9:30 am – 9:45 am	**BREAK**
9:45 am – 10:30 am	Road Diets and Roundabouts • Ken Sides, Senior Transportation Engineer – Sam Schwarz Engineering (15 minutes) • Open Discussion
10:30 am – 11:15 am	Evaluation Criteria, Processes, and Performance Metrics • Jeff Martin, City Engineer – Kansas City Public Works (15 minutes)) • Open Discussion
11:15 am – 12:15 pm	**LUNCH: Nashville's Complete Streets Policy** • Attendees will bring lunch back to Tennessee Tower (30 minutes) • Mary Beth Ikard, Transportation and Sustainability Manager – City of Nashville Mayor's Office (20 minutes)
12:15 pm – 1:00 pm	Road Diets for All Road Users • Jacob Ray, Traffic Engineering Supervisor – City of Columbia, MO Public Works (15 minutes) • Open Discussion
1:00 pm – 1:50 pm	Participants Take-away • What did you learn? • What steps will you take to institutionalize Road Diets?
1:50 pm – 2:00 pm	FHWA Closing comments

Appendix B. List of Attendees

Central Region Peer Exchange List of Attendees August 24-25, 2016				
Iowa				
Steven Schroder	Transportation Engineer	Iowa DOT	515-239-1623	steven.schroder@dot.iowa.gov
Sam Sturtz	Transportation Planner	Iowa DOT	515-239-1788	samuel.sturtz@dot.iowa.gov
John Dostart	Transportation Engineer	Iowa DOT	515-239-1291	john.dostart@dot.iowa.gov
Kevin Patel	Transportation Engineer	Iowa DOT	515-239-1540	Kevin.Patel@dot.iowa.gov
Shane Tymkowicz	Transportation Engineer Executive	Iowa DOT	712-274-5834	shane.tymkowicz@dot.iowa.gov
Roxanne Seward	Senior Engineering Technician	Iowa DOT	712-276-1451	Roxanne.seward@dot.iowa.gov
Paul LaFleur	Safety Engineer	FHWA	515-233-7308	paul.lafleur@dot.gov
David Veneziano	Safety Circuit Rider	Iowa LTAP	515-294-5480	dvenez@iastate.edu
Missouri				
Jon Nelson	Traffic Safety Engineer	MODOT	573-751-1157	Jonathan.Nelson@modot.mo.gov
Eric Claussen	Traffic Engineer - Operations	City of Springfield, MO Public Works	417-874-1212	Eclaussen@springfieldmo.gov
Jeff Martin	City Engineer Capital Projects	Kansas City, MO Public Works	816-513-2585	jeff.martin@kcmo.org
Jacob Ray	Traffic Engineering Supervisor	City of Columbia, MO Public Works	573-874-7688	jacob.ray@como.gov
Aaron Bartlett	Senior Transportation Planner	Mid-America Regional Council	816-474-4240	abartlett@marc.org

Marc Thornsberry	Safety & Mobility Engineer	FHWA	573-638-2616	marc.thornsberry@dot.gov
Alabama				
Steve Walker	Innovative Programs Engineer	Alabama DOT	334-242-6447	walkers@dot.state.al.us
Tim Barnett	State Safety Operations Engineer	Alabama DOT	334-242-6123	barnettt@dot.state.al.us
Shaun Capps	Design Engineer	FHWA	334-274-6347	Christopher.Capps@dot.gov
Arkansas				
Ben Whatley	Engineer	AHTD	501-569-2973	benjamin.whatley@ahtd.ar.gov
Mark Nichols	Traffic Engineer	City of Jonesboro	870-932-2438	MNichols@jonesboro.org
Chris Brown	Traffic Engineer	City of Fayetteville	479-575-8207	cbrown@fayetteville-ar.gov
Scott Bowles	Field Operations Engineer	FHWA	501-324-6441	Scott.Bowles@dot.gov
Stephen Sichmeller	Advanced Design Engineer	AHTD	501-569-2973	Stephen.sichmeller@ahtd.ar.gov
John Landosky	Bicycle and Pedestrian Coordinator	City of Little Rock	501-371-4430	jlandosky@littlerock.org
Indiana				
Pam Drach	Deputy Director	Evansville MPO	812-436-7833	pdrach@evansvillempo.com
Dan Avery	Executive Director	Northeastern Indiana Regional Coordinating Council (Ft Wayne MPO)	260-483-7586	dan.avery@co.allen.in.us
Jason Kaiser	Technical Services Director	Indiana DOT	260-969-8229	jasonkaiser@indot.in.gov
Sarah Ford	Technical Services Director	Indiana DOT	219-325-7506	sford@indot.in.gov
Joyce Newland	Planning and Environmental Specialist	FHWA	317-226-5353	Joyce.Newland@dot.gov

Erin Schriefer	Senior Transportation Planner	Evansville MPO	812-436-7833	eschriefer@evansvillempo.com
Mississippi				
Jeff Curtis	Assistant State LPA Engineer	Mississippi Department of Transportation	601-359-9837	jcurtis@mdot.ms.gov
James Warren	Transportation Planner	Mississippi Department of Transportation	601-359-7696	jwarren2@mdot.ms.gov
Scott Burge	Transportation Senior Analyst	Central Mississippi Planning & Development District	601-981-1511	sburge@cmpdd.org
Kenneth Yarrow	Transportation Planner	Gulf Regional Planning Commission	228-207-7394	kyarrow@grpc.com
Randy Jansen	Planning Engineer	FHWA	601-965-7332	randal.jansen@dot.gov
Terry Bridges	Safety Engineer	FHWA	601-965-7325	teresa.bridges@dot.gov
Tennessee				
Jason Oldham	State Traffic Engineer	Tennessee Department of Transportation	615-741-0995	Jason.Oldham@tn.gov
Brandon Darks	Safety Manager	Tennessee Department of Transportation	615-253-3999	Brandon.Darks@tn.gov
Jessica Wilson	Bicycle & Pedestrian Coordinator	Tennessee Department of Transportation	615-741-5025	Jessica.L.Wilson@tn.gov
Ali Hangul	Assistant Director of Design	Tennessee Department of Transportation	615-741-0840	Ali.Hangul@tn.gov
Mary Beth Ikerd	Transportation and Sustainability Manager	City of Nashville Mayor's Office	615-862-6036	MaryBeth.Ikard@nashville.gov
Greg Dyer	Civil Engineering Manager 1	Tennessee Department of Transportation Traffic Engineering Division	615-532-1050	Gregory.Dyer@tn.gov
Adams Carroll	MPO Regional Active Mobility Planner	City of Nashville Planning Department	615-862-7174	Adams.Carroll@nashville.gov

Jason Radinger	Metro Bicycle Pedestrian Coordinator	Metro Public Works	615-862-8750	Jason.Radinger@nashville.gov
Michael Briggs	Transportation Planner	City of Nashville Planning Department	615-862-7219	Michael.Briggs@nashville.gov
Leslie Meehan	Assistant Director of Primary Prevention	TN Department of Health	615-741-1921	leslie.meehan@tn.gov
Pamela Kordenbrock	Division Administrator	FHWA	615-781-5770	Pamela.Kordenbrock@dot.gov
Jessica Rich	Safety Engineer	FHWA	615-781-5788	Jessica.Rich@dot.gov
Wisconsin				
Jed Peters	Project Manager	Wisconsin DOT	715-365-5731	jed.peters@dot.wi.gov
FHWA				
Mark Doctor	Safety and Design Engineer	FHWA	404-562-3732	mark.doctor@dot.gov
Becky Crowe	Transportation Specialist	FHWA	804-775-3381	Rebecca.crowe@dot.gov
Keith Harrison	Safety and Design Engineer	FHWA	415-744-2657	keith.harrison@dot.gov
Leidos				
Michelle Neuner	Senior Transportation Engineer	Leidos	573-453-0073	Michelle.l.neuner@leidos.com
Tom Welch	Senior Transportation Engineer	Leidos	515-313-6278	twelch1950@yahoo.com
Other				
David Coode	Project Manager	Kimley-Horn and Associates	615-564-2701	david.coode@kimley-horn.com
Ken Sides	Senior Transportation Engineer	Sam Schwarz Engineering	727-224-4975	ksides@samschwartz.com

Appendix C. Presentations

Creating Healthy, Livable and Prosperous Communities

≠

Health care is necessary—but not sufficient—for good health

TN Department of Health

INNOVATE TO ACCELERATE

Accelerating Tennessee to be the Most Active State

Physical Activity

The **NEW** Prescription

- Primary Prevention Initiatives
  - Utilizing 3,000 employees
  - 2000+ initiatives

Examples:

- Built Environment
  - Parks
  - Greenways
  - Sidewalks
  - Bike lanes
  - Playgrounds
  - Walking Tracks
- Walking School Buses
- Run Clubs

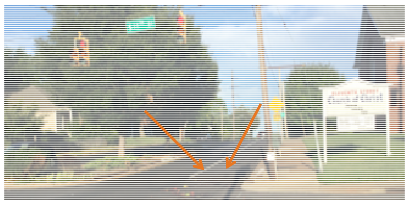
TN Department of Health

Supporting the Built Environment

- TN Livability Collaborative
  - HIAP approach to state government
- Active Transportation
  - Funding
  - Staff
  - Training
- Monitor and evaluate impact
  - Creating an Evaluation Framework
- National Partners
  - National Gov. Association
  - National Academy of Medicine
  - Centers for Disease Control and Prevention
  - Robert Wood Johnson Foundation
  - National Physical Activity Plan Alliance

TN Department of Health

Road Diet Impacts



- Efficiency of Road Diets - (pre and post ADT, posted vs. travel speeds)
- Safety – Improved Crashes
- Economic Impacts – Home values and business revenues

THANK YOU

Contact: Leslie Meehan
Office of Primary Prevention
leslie.meehan@tn.gov

Every Day Counts
Road Diet Peer Exchange

August 24 -25, 2016
Nashville, TN

U.S.Department of Transportation
Federal Highway Administration

What is "Every Day Counts"(EDC)?

State-based model to identify and rapidly deploy proven but underutilized innovations to:

- shorten the project delivery process
- enhance roadway safety
- reduce congestion
- improve environmental sustainability

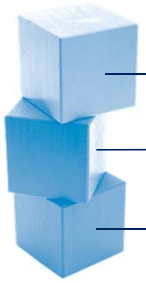
Why "Every Day Counts"?

- Changing contexts, diminishing resources and increasing demands
- Technology deployment and technical assistance are core FHWA roles
- Provide a mechanism for rapid deployment of proven innovation
- Create a sense of urgency

Every *Road Diet* Counts !!!

EDC-3 Innovations *(2015-2016)*

Building Success from "Every Day Counts"



EDC-4 *(2017-2018)*

EDC-3 *(2015-2016)*
- 11 innovations *(2 from EDC-2)*

EDC-2 *(2013-2014)*
- 13 innovations *(4 from EDC-1)*

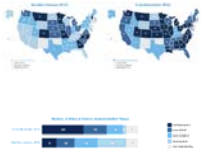
EDC-1 *(2011-2012)*
- 14 innovations

Accelerated deployment of 32 innovations to date

How EDC Works: Each State Chooses

States (STICs) select innovations for deployment and establish goals for level of implementation

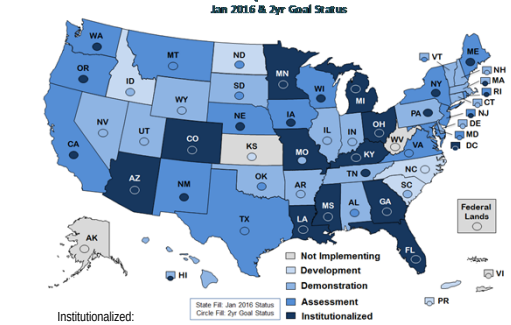
EDC-3 Innovations
- Data-Driven Safety Analysis
- Road Diets (Roadway Reconfiguration)
- Smarter Work Zones
- Regional Models of Cooperation
- Improving Collaboration and Quality Environmental Documentation (eNEPA and IQED)
- Ultra-High Performance Concrete Connections for PBES
- Geosynthetic Reinforced Soil-Integrated Bridge System
- 3D Engineered Models: Schedule, Cost, and Post-Construction
- e-Construction
- Locally Administered FA Projects: Stakeholder Partnering
- Improving DOT and Railroad Coordination



Implementation Goals

Road Diet: Implementation Status

Jan 2016 & 2yr Goal Status



Institutionalized:

- Guidance or a policy on implementing/installing Road Diets
- Road Diets included in the State's Strategic Highway Safety Plan as a safety countermeasure

7

How EDC Works: Financial Incentives

Funding incentive programs:

- State Transportation Innovation Council (STIC) Incentive Program
  - Up to $100,000 available to each STIC per year
  - Fund activities that have a statewide impact on making an innovation a standard practice
- Accelerated Innovation Deployment (AID) Demonstration Program
  - Incentive funding (up to a maximum of $1,000,000) to offset risk of using an innovation on a project

8

How EDC Works: Deployment Efforts

Multidisciplinary deployment teams:

- Guidelines and specifications
- Case studies
- On call technical assistance and support
- Training courses, webinars and workshops
- Demonstrations and Peer Exchanges

9

EDC-3 Road Diets Deployment Efforts

- Guidelines & Case Studies
- On Call Technical Assistance
  - Review Draft Road Diet Policies
  - Identify Resources
- Briefings and Presentations
  - ATSSA, ITE, AASHTO, Others
- Webinars
  - EDC Exchange, CSS.org, PBIC
- Workshops
  - OK,NJ,VA,GA, NJ, NC, *MO*
- Peer Exchanges
  - NM, MA, TN, Virtual, Mini

10

For More Information…

Every Day Counts Web Site

www.fhwa.dot.gov/everydaycounts/

11

ROAD DIET

Safety | Livability | Low Cost

P·E·E·R T·O P·E·E·R E·X·C·H·A·N·G·E

CENTRAL REGION – ALABAMA • ARKANSAS • INDIANA • IOWA
MISSISSIPPI • MISSOURI • TENNESSEE • WISCONSIN

WHAT DOES INSTITUTIONALIZING ROAD DIETS LOOK LIKE ?

Aaron Bartlett, AICP
MARC Senior Transportation Planner

Mid-America Regional Council

- MARC is a non-profit association of city and county governments
- MARC is also the Metropolitan Planning Organization (MPO) for the bi-state Kansas City region.
  - Primarily funded by federal and state grants
  - We serve 119 cities and 9 counties

road di·et

A **road diet**, also called a **lane reduction** or **road rechannelization**, is a technique in transportation planning whereby the number of travel lanes and/or effective width of the road is reduced in order to achieve systemic improvements.

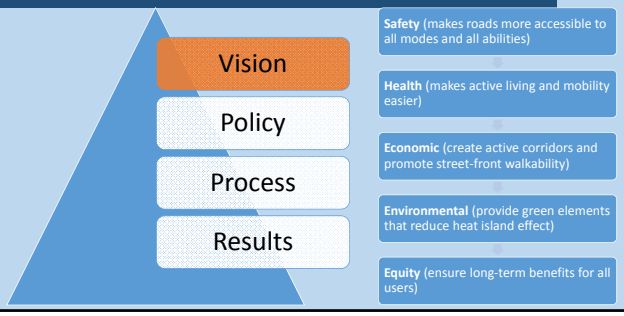
Read more: https://en.wikipedia.org/wiki/Road_diet

in·sti·tu·tion·al·ize

Process which translates an organization's code of conduct, mission, policies, vision, and strategic plans into action guidelines applicable to the daily activities of its officers and other employees. It aims at integrating fundamental values and objectives into the organization's culture and structure.

Read more: http://www.businessdictionary.com/definition/institutionalization.html

in·sti·tu·tion·al·ize (road diets)



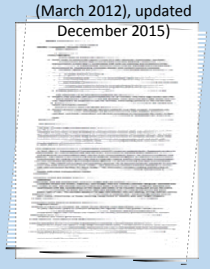
in·sti·tu·tion·al·ize (road diets)

Complete Streets -- are a shorthand term for streets that have been planned, designed, and operated with the **consideration of the needs of all users within the corridor**, including people of all ages and abilities who are driving, taking public transportation, walking, or riding a bicycle.

in·sti·tu·tion·al·ize (road diets)

- Vision
- Policy
- Process
- Results

MARC Complete Streets Policy (March 2012), updated December 2015)

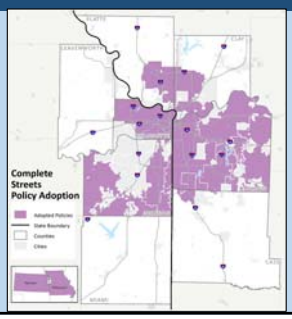


in·sti·tu·tion·al·ize (road diets)

- Vision
- Policy
- Process
- Results

- Resolution
- Ordinance
- Street Standards
- Maintenance

Results – Local Adopted Policies

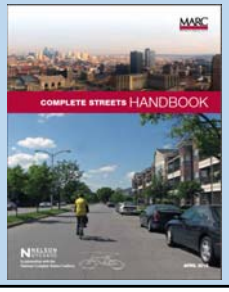


Kansas:
- Leawood
- Overland Park
- Roeland Park
- Johnson County
- Unified Government/Wyandotte County
- State of Kansas

Missouri:
- Belton
- Blue Springs
- Grandview
- Independence
- Kansas City
- Lee's Summit
- Jackson County
- State of Missouri

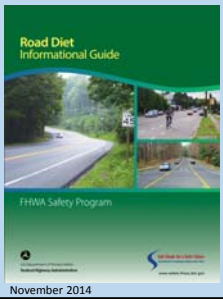
in·sti·tu·tion·al·ize (road diets)

- Vision
- Policy
- Process
- Results



in·sti·tu·tion·al·ize (road diets)

- Vision
- Policy
- Process
- Results



November 2014

in·sti·tu·tion·al·ize (road diets)

Topics Addressed
- History of Road Diets
- Why Consider a Road Diet
- Road Diet Feasibility Determination
- Designing a Road Diet
- Determining of the Road Diet is Effective

in·sti·tu·tion·al·ize (road diets)

Operational
- MMLOS
- ADT
- Bicycle and Pedestrian Counts
- Peak Hour and Peak Direction
- Turning Volumes and Pattern
- Safety Data

Geometric
- Number of Lanes
- Signalized Intersections
- Roundabouts
- Lane Widths
- On street Parking

in·sti·tu·tion·al·ize (road diets)

Vision

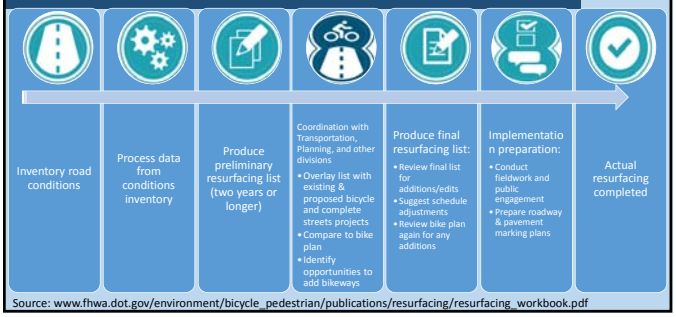
Policy

Process

Results

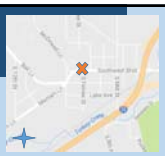
March 2016

in·sti·tu·tion·al·ize (road diets)



Source: www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/resurfacing_workbook.pdf

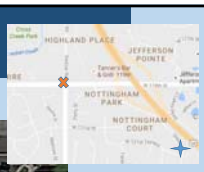
Southwest Blvd, Kansas City, KS



June 2011

April 2015

Switzer Road, Overland Park, KS



2015 11' 13'

2016 4' 10' 10'

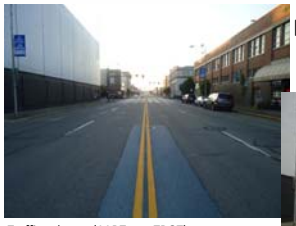
Blueridge Blvd., Raytown MO.
Road Diets 3 lane to 2 lane

Statewide Map

List of Projects

- Madison Avenue, Memphis – 1.3 mi Completed
- N. Market Street / Dallas Road, Chattanooga – 1.3 mi Completed
- MLK Boulevard / Bailey Avenue, Chattanooga – 2.74 mi Planned
- Broad Street, Chattanooga – 0.6 mi Completed
- Main Street, Monteagle – 0.9 mi Completed
- Center Street, Kingsport – 1.3 mi Completed
- West 7th Street, Columbia – 0.4 miles Planned
- Hillsboro Circle / Cleghorn Avenue / Crestmoor Road, Nashville – 1.0 mi Completed
- Cumberland Avenue, Knoxville – 0.3 mi Under Construction

Center Street (SR 36) in Kingsport



BEFORE

AFTER

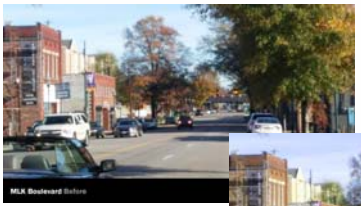
Traffic volumes (AADT, per TDOT):
- Downtown section = 16,000 veh/day
- Eastern section = 20,000 veh/day

Total number of crashes decreased by almost 20%
No significant increase in travel times

KINGSPORT TENNESSEE

Mattern & Craig ENGINEERS • SURVEYORS

Martin Luther King Boulevard in Chattanooga



EXISTING

4-lane to a 3-lane with bike lanes
2.7 miles in length
2015 AADT = 11,656

PROPOSED

North Market Street in Chattanooga

BEFORE

AFTER

Madison Avenue in Memphis

Community Transportation Planning Grant

Community Transportation Planning Grant

Dexter L. Woods Memorial Boulevard in Waynesboro

5-lane to a 3-lane with bike lanes and sidewalks
0.5 mi in length
2015 AADT = 9,102

Franklin Pike Multimodal Study

City of Berry Hill, Tennessee

Street Characteristics

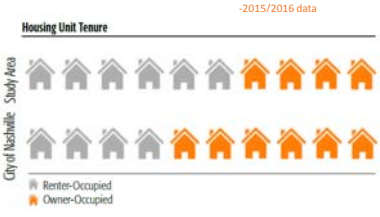
- 46’ of pavement width
- 20,837 vehicles per day
- Limited on-street parking
- Posted speed 35 mph
- Open curb cuts
- Lack of pedestrian and bike accommodations

No additional space to widen the road

More than 1,000+ residential units have received approval or are under construction… and more are on the way

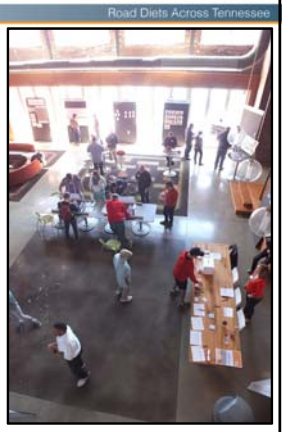
More people are on the way

-2015/2016 data



Public Involvement – Mobility Fair

- Interactive Stations
  - Information Wall
  - Mobility Continuum
  - One Word
  - Priority Pyramid
  - Street Builder
  - What makes a Great Place?
  - What's Our Brand?
  - Walk the Corridor



Public Involvement – Mobility Fair

Street Builder

Public Involvement – Mobility Fair

Walk the Corridor

Report Card Elements

Safety	• Responds to known safety challenges • Pedestrian, Bike, and Traffic • Reduce travel speeds
Walkability	• Quality of pedestrian realm • Reduced time at risk • Quality walkscore
Transit	• Opportunities for enhanced shelters and design • Transit ready environment • Enhanced ridership characteristics
Corridor Vibrancy	• Local business environment vs pass-by auto-centric • Enhanced Aesthetic • Improved accessibility by multiple travel modes
Traffic	• Accommodates acceptable LOS • Accommodates additional weekday trips • Truck traffic accommodations

Scenario A Existing Conditions

Design Characteristics:

-Dual travel lanes in each direction
-45 mph design speed

Scenario A

	AM Peak Hour	PM Peak Hour
Wedgewood	F (135.7)	F (110.6)
Bradford	A (6.8)	A (8.1)
Craighead	C (22.4)	D (35.2)
Kirkwood	B (18.7)	D (38.5)
Berry	B (16.7)	C (21.2)
Travel Time (min)	1.3	1.9

Proposed Cross Section

Report Card

Scenario B
Three Lane with Center Turn Lane

Design Characteristics:

- Single travel lanes in each direction
- Center two-way left turn lane
- Buffered bike lanes in each direction
- 25 mph design speed

Proposed Cross Section

Report Card

Scenario C
Three Lane with Center Reversible Lane

Design Characteristics:

- Single travel lanes in each direction
- Center reversible lane
- Buffered bike lanes in each direction
- 25 mph design speed

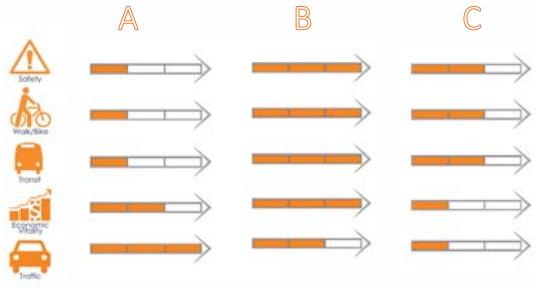
Proposed Cross Section

Report Card

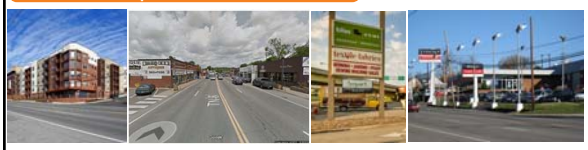
Traffic Summary (Peak and Off-Peak)

PM Peak Hour - Level of Service and (Delay in Seconds)					
			** 5 PM **	** 4 PM **	
	Existing 2016	Future 2026 Scenario A	Future 2026 Scenario B	Future 2026 Scenario B	Future 2026 Scenario C
Wedgewood	E (65.4)	F (110.6)	F (111.2)	E (70.5)	F (110.1)
Bradford	B (11.8)	A (8.1)	D (48.4)	B (18.8)	B (10.1)
Craighead	B (16.3)	D (35.2)	F (82.2)	D (44.7)	F (174.4)
Kirkwood	C (27.6)	D (38.5)	F (162.7)	F (94.9)	F (296.9)
Berry	B (16.1)	C (21.2)	E (66.3)	C (25.6)	F (84.1)
Travel Time (min)	3.3	3.8	7.3	4.7	10.9
			** 5 PM **	** 4 PM **	

Scenarios at a Glance



Next Steps



- Extend the Limits of the Study
- Conduct a More Detailed Analysis


Franklin Pike
Multimodal Study
MELROSE
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Identifying, Planning, and Selecting Road Diet Locations Springfield's Lessons Learned

Eric Claussen, P.E., PTOE
City Traffic Engineer
Springfield, MO

Road Diets - Completion Dates

- Central Street – completed August 22, 2005
- Grant Avenue – completed July 9, 2009
- Kimbrough Avenue – completed August 26, 2009

Steps in the Process

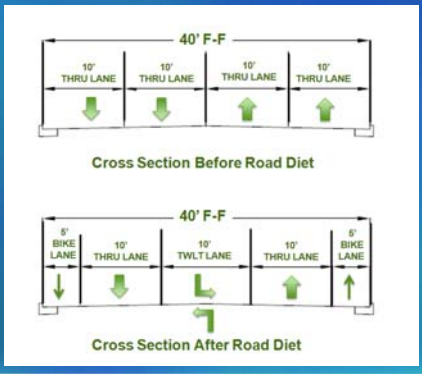
- Indentify Candidates for Road Diet – Typically 4 to 3
- Resurfacing Provides Opportunity
- Meet with Stakeholders
- Prepare Concept Plan
- Model Signals for Before/After LOS
- Estimate Cost
- Public Meetings
- Finalize Design
- Coordinate with Resurface Schedule
- News Release to Announce Schedule

Central Street (Green)

Central Street - Characteristics

- Boonville Ave to Sherman Ave (0.6 mile)
- Collector Street with 30 mph Speed Limit
- A 40 foot (measured face-to-face of curb) street which was marked for four 10 foot lanes
- Carries around 6,500 vehicles per day
- Major mid-block pedestrian crossings at the City/County Government Complex, Central HS, Drury University and Ozarks Community College
- Four traffic signals at Boonville Ave., Jefferson Ave., Benton Ave. and Drury Lane
- Roundabout at Sherman Ave

Central Street Cross Sections



Central Street




Central Street Before/After Crash Data

INTERSECTIONS:

6/1/2003 thru 5/31/2005	
BEFORE	
Total	56
Angle	37
Rear	8
Swipe	5
Ped/Bike	3
Fixed Obj.	3

6/1/2013 thru 5/31/2015	
AFTER	
Total	12
Angle	6
Rear	1
Swipe	2
Ped/Bike	2
Fixed Obj.	1

SEGMENTS

6/1/2003 thru 5/31/2005	
BEFORE	
Total	8
Angle	1
Rear	2
Swipe	3
Ped/Bike	0
Fixed Obj.	2

6/1/2013 thru 5/31/2015	
AFTER	
Total	4
Angle	0
Rear	2
Swipe	1
Ped/Bike	1
Fixed Obj.	0

Central Street – Complete Street Design

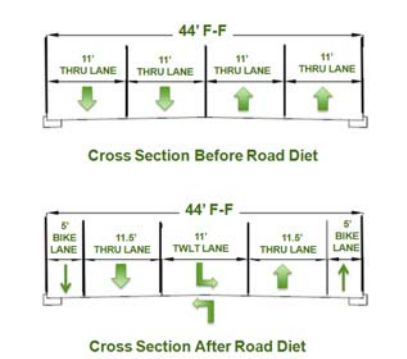
Central Street – Complete Street Design

Grant Avenue (Red)

Grant Avenue - Characteristics

- Grand Street to Chestnut Expressway (1.25 miles)
- Secondary Arterial with 30 mph Speed Limit
- Primarily, a 44 foot (measured face-to-face of curb) street which was marked for four 11 foot lanes from Grand Street to Phelps Street
- Carries around10,000 vehicles per day
- Mostly residential with elementary school
- Five traffic signals at Grand Street, Mt. Vernon Street, Walnut Street, College Street and Chestnut Expressway

Grant Avenue Cross Sections



Grant Avenue

Grant Avenue Before/After Crash Data

INTERSECTIONS:

6/1/2007 thru 5/31/2009	BEFORE
Total	89
Angle	36
Rear	30
Swipe	13
Ped/Bike	6
Fixed Obj.	4

6/1/2013 thru 5/31/2015	AFTER
Total	49
Angle	23
Rear	16
Swipe	4
Ped/Bike	3
Fixed Obj.	3

SEGMENTS

6/1/2007 thru 5/31/2009	BEFORE
Total	16
Angle	7
Rear	2
Swipe	3
Ped/Bike	2
Fixed Obj.	2

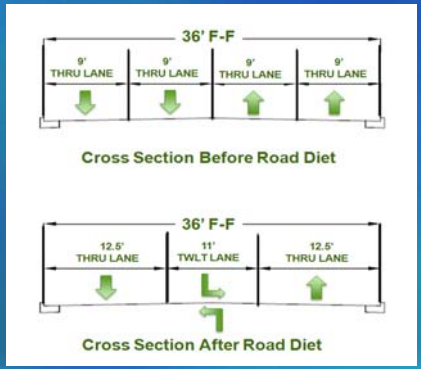
6/1/2013 thru 5/31/2015	AFTER
Total	11
Angle	3
Rear	2
Swipe	3
Ped/Bike	1
Fixed Obj.	2

Kimbrough Avenue (Blue)

Kimbrough Avenue - Characteristics

- Tampa Street to Sunshine Street (1.1 Miles)
- Secondary Arterial with a 30 mph speed limit, 25 mph in Central Business District
- Varied widths but narrowest at 30 feet south of Grand to 36 feet north of Grand
- Carries around 14,000 vehicles per day north of Grand and 8,000 vehicles per day south of Grand
- MSU campus, residential south of Harrison St, commercial in Central Business District Central north of Harrison Street
- Eight traffic signals at Sunshine St, Grand St, Madison St, Cherry St, Elm St, Walnut St, St. Louis St and E. Trafficway

Kimbrough Avenue Cross Sections



Kimbrough Avenue




Kimbrough Ave Before/After Crash Data

INTERSECTIONS:

6/1/2007thru 5/31/2009

BEFORE	
Total	157
Angle	101
Rear	30
Swipe	11
Ped/Bike	5
Fixed Obj.	10

6/1/2013 thru 5/31/2015

AFTER	
Total	104
Angle	60
Rear	25
Swipe	5
Ped/Bike	4
Fixed Obj.	10

SEGMENTS

6/1/2007 thru 5/31/2009

BEFORE	
Total	36
Angle	11
Rear	10
Swipe	3
Ped/Bike	2
Fixed Obj.	10

6/1/2013 thru 5/31/2015

AFTER	
Total	20
Angle	4
Rear	11
Swipe	1
Ped/Bike	1
Fixed Obj.	3

Lessons Learned – Traffic Operations

- **Separate Lane for Left Turns** - Continuous Center TWLTL provides separate lane for traffic turning left at driveways and intersections and additional space for queuing traffic in left turn lanes at signals.
- **Entering Traffic** - TWLTL has added benefit to allow left turning traffic entering the roadway to merge into traffic in two step manner.
- **Passing** – Motorists may carefully use TWLTL to pass a bike rider. Also provides area for Emergency Responders to pass around stopped traffic.
- **Signal Operation** – Separate left turn lanes allow vehicles to queue without obstructing through lanes, possibility for use of protected left turn phasing.

Lessons Learned – Roadway Width

- **Minimum Roadway Width for TWLT Lane** - Any Collector Street with Speed under 35 mph, No Parking and 30 Feet of Width could benefit from two thru lanes and a TWLT Lane.
- **Minimum Roadway Width for TWLT Lane and Two Bike Lanes** - Any Collector Street with No Parking and 40 Feet of Width could have three ten (10) foot lanes for traffic and two five (5) foot bike lanes.

Lessons Learned – Lane Widths

- **TWLTL** – Minimum width of 9 feet recommended. Minimum width of 10 feet desirable.
- **Through Lanes** – Minimum width of 9.5 feet each recommended. Minimum width of 10 feet each lane desirable.
- **Bike Lanes** – Minimum width of 5 feet each recommended, 6 feet each desirable.

Lessons Learned – Pedestrians / ADA

- **Pedestrian Safety** – Pedestrian safety was improved with crossing exposure to fewer traffic lanes and use of median islands to protect mid-block crossings
- **Central Street** – Improved safety at protected mid-block crossings for government buildings, high school students and College Students
- **Kimbrough Avenue** – Improved safety for College Students walking from MSU Main Campus to Downtown
- **Grant Avenue** – Improved safety for Elementary School Crosswalk, one of the heaviest in the City (over 100 student crossings during crossing periods)
- **ADA** - Compliant Ramps were constructed at Pedestrian Crossings

Lessons Learned – Bicycles (Perceptions)

- **Central Street** – Marked bike lanes on Central Street has promoted more bicycling.
- **Kimbrough Avenue** – More bicyclist are on Kimbrough even without marking separate bike lanes.
- **Grant Avenue** – Grant Avenue, wider curb lanes have promoted more bicycling.

Lessons Learned - Transit

- **Transit Stops Impede Traffic** - Transit stops within a single through lane can impede traffic for several minutes with each stop
- **Bus Turnouts Needed** - Bus turnouts can be included in the project at a modest cost, i.e. $15,000 ± each
- **Crosswalks** - Crosswalks are needed in proximity to bus stops located on opposite sides of the street

Central Region Road Diet Peer Exchange

Outline

- Previous Road Diets
- Possible Issues
- Current Analysis Methods
- Future of Road Diets at the Iowa DOT

Previous Road Diets in Iowa

City	Road	Year
Red Oak	IA 48	2005
Fairfield	Broadway Ave	2008
Oskaloosa	US 63	2008
Centerville	IA 2	2009
Centerville	IA 5	2009
Des Moines	Ingersoll Ave	2010
Washington	IA 92	2012
Atlantic	IA 83	2014
Storm Lake	IA 7	2015

Possible Issues

- Perceived loss of capacity
  - Additional parking
  - Better access
  - Slower speeds
- Lack of understanding of center lane
- Newton, Iowa

4-3 Lane Conversion Statewide Analysis

- Background of Project
  - Peer exchange opportunity
  - Office abilities
  - Current applications coming online
  - Opportunities to implement
    - Intuition
    - Data driven

Feasibility of Study

- Factors for determining feasibility
  - Roadway function and environment
  - Overall traffic volume and level of service
  - Turn volumes and patterns
  - Frequent-stop and/or slow-moving vehicles
  - Weaving, speed, and queues
  - Crash types and patterns
  - Pedestrian and bike activity
  - Right-of-way availability, cost and acquisition impacts
  - General characteristics: parallel roadways, offset minor street intersections, parking, corner radii, and at-grad railroad crossings

Limitations of Analysis

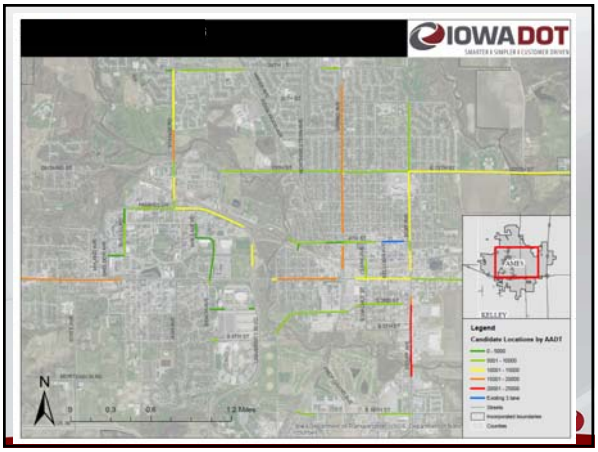
- Current Limitations of study
  - Data
  - Scope
  - Time

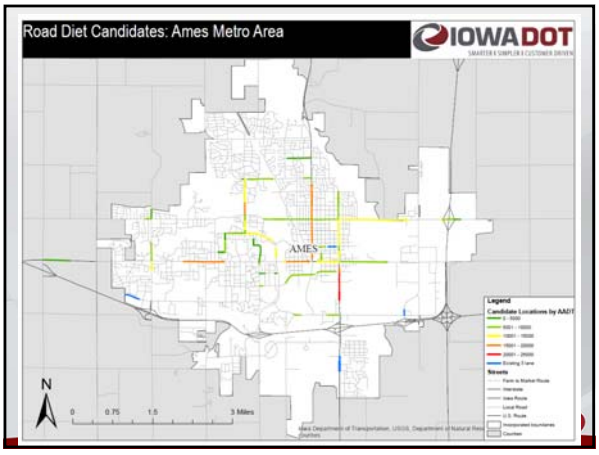
Analysis Structure

- Data Elements
  - Network screening elements
    - Roadway data elements
      - Major and minor intersections
      - Business and private entrances
      - Median type
      - Federal functional class
      - Number of lanes
      - AADT
    - Additional data elements
      - Intersection data base
        - » Signalized intersections
      - Segment level crash data

Phasing of Analysis

- First Phase
  - High level screening
    - All segments including
      - 4 lanes
      - No median
      - Two way
    - 3,290 segments identified
      - Varying lengths included
- Second Phase
  - Meeting with Traffic and Safety
    - AADT
      - Further restricted=<18,000
    - Access Density
      - Calculated field within ArcGIS
      - Per mile basis





Phasing of Analysis

- Third Phase
  - Site Aggregation
    - Dissolving feature within ArcGIS
      - Only concerned with sites .5 miles or longer
      - Manual Aggregation
        - » Disconnected but continuous sites
  - Intersection Analysis
    - Intersection database
      - Buffer analysis to determine high concentrations of signalized intersections
  - Crash Data
    - Segment level crash data
      - Select by identified locations
      - Aggregate up to corridor potential candidates

Future of Road Diets at the Iowa DOT

- Outreach to local communities
  - Video simulation
  - Real footage of other locations
- Safety Benefits
- Alternate uses for remaining pavement
- Future locations

IOWA DOT

Questions?

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Sam Sturtz
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Samuel.Sturtz@dot.iowa.gov

Road Diets
And Public Grasping

Ken Sides, P.E, PTOE, CNU-a

Central Regional Road Diet Peer Exchange

Federal Highway Administration

Snodgrass Tennessee Tower

Nashville, Tennessee, August 24-25, 2016

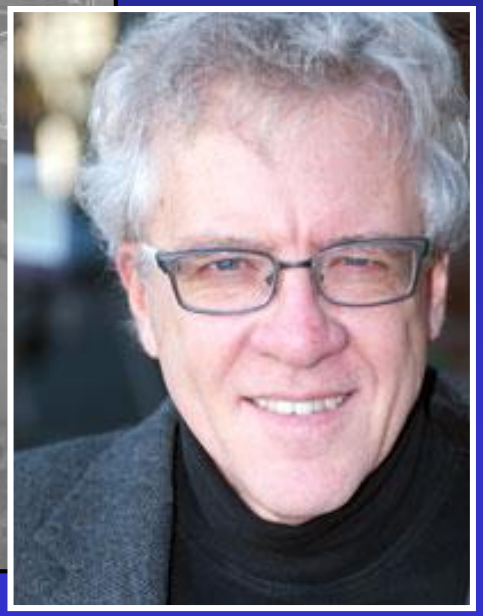
Road Diets
And Public Grasping

Helping the public **grasp** what it would mean to transmogrify a street that has become a "traffic sewer" impeding a downtown expansion northward.

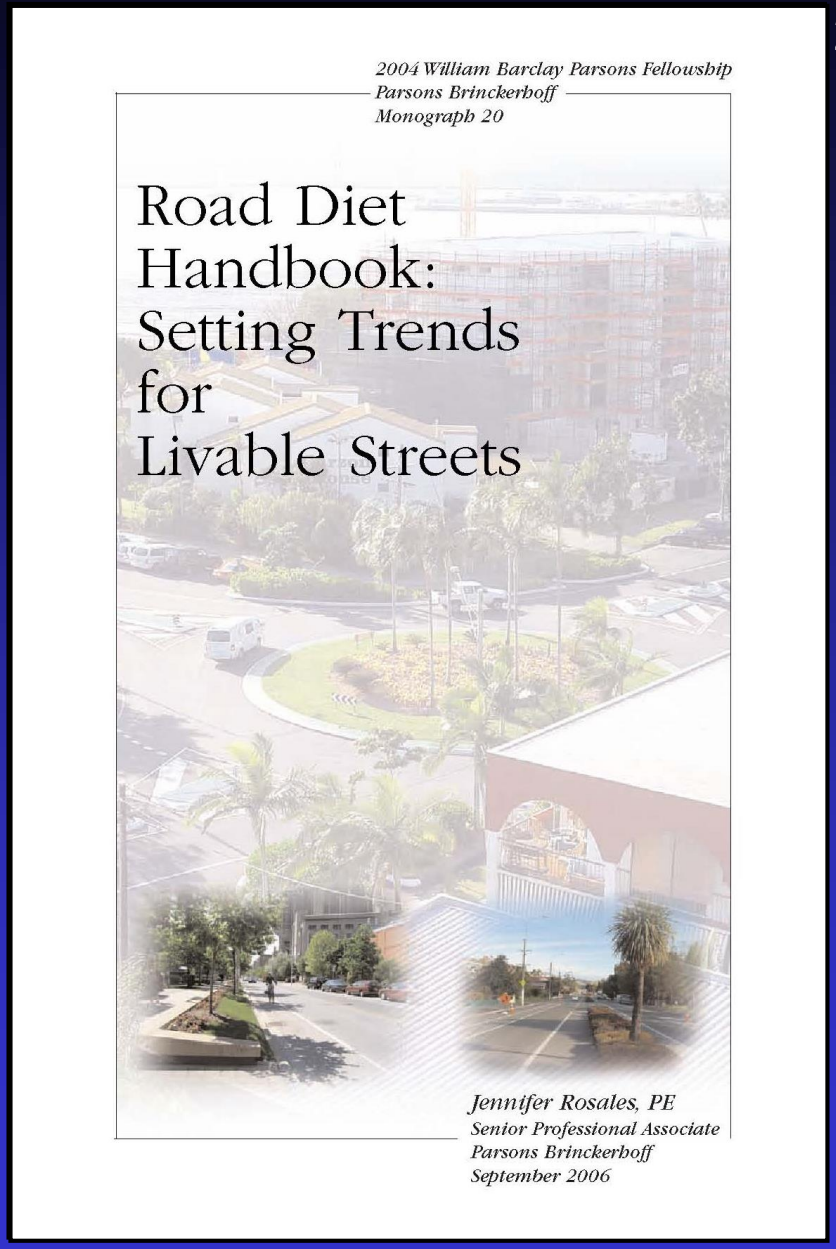
Dan Burden

March 1999

Peter Lagerwey



17 case studies

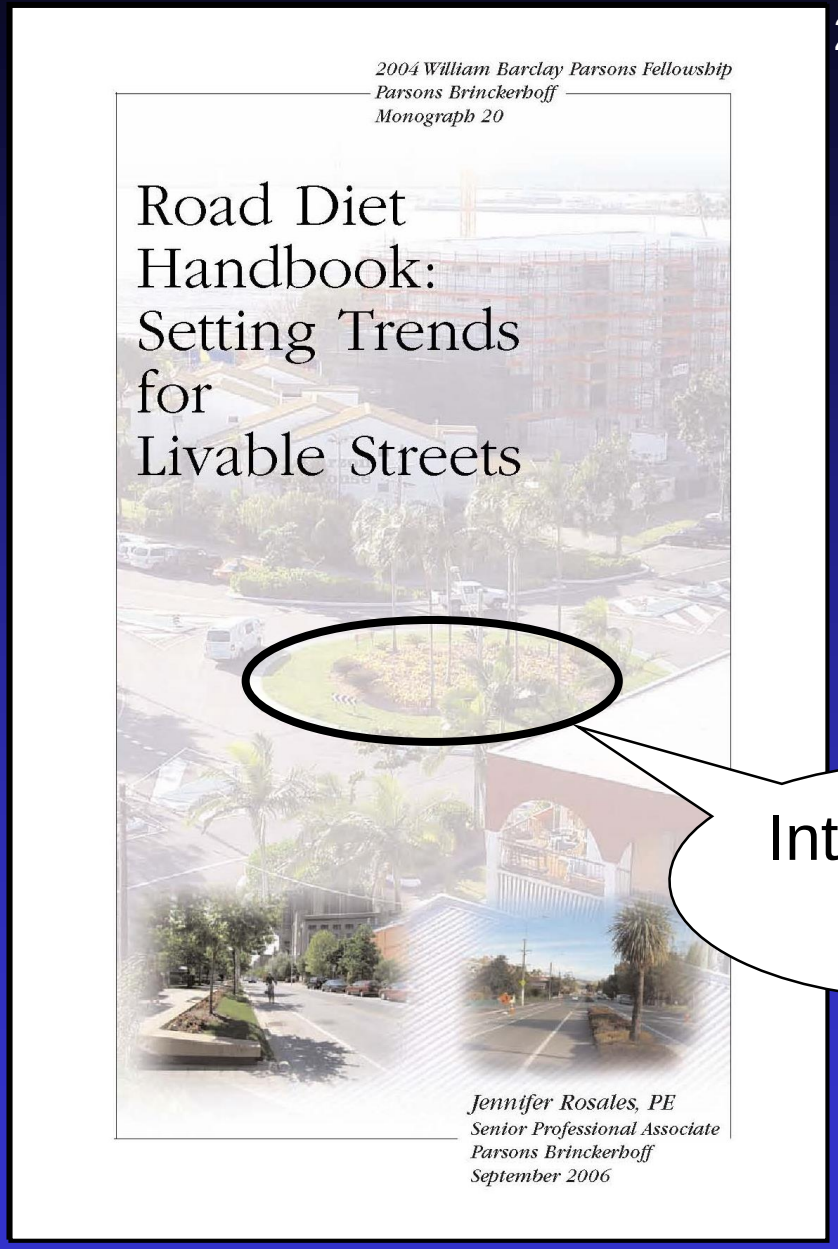


2004

Jennifer Rosales, PE

6 case studies

2007 ITE Past Presidents' Award
for
Merit in Transportation Engineering



2004

CRASHES

OPERATIONS

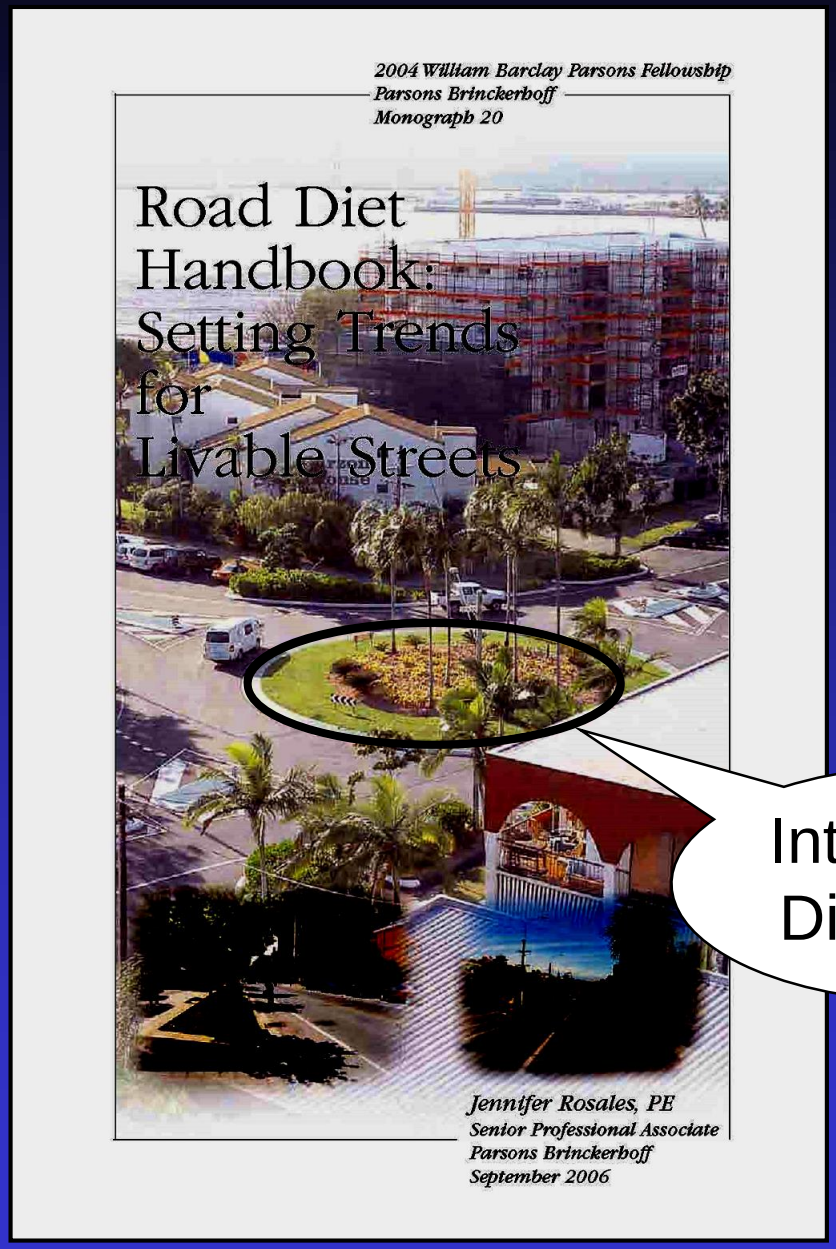
LIVABILITY

Jennifer Rosales, PE

6 case studies

Intersection Diet ?

ITE Past Presidents' Award
for
Merit in Transportation Engineering



2004

CRASHES

OPERATIONS

LIVABILITY

Jennifer Rosales, PE

6 case studies

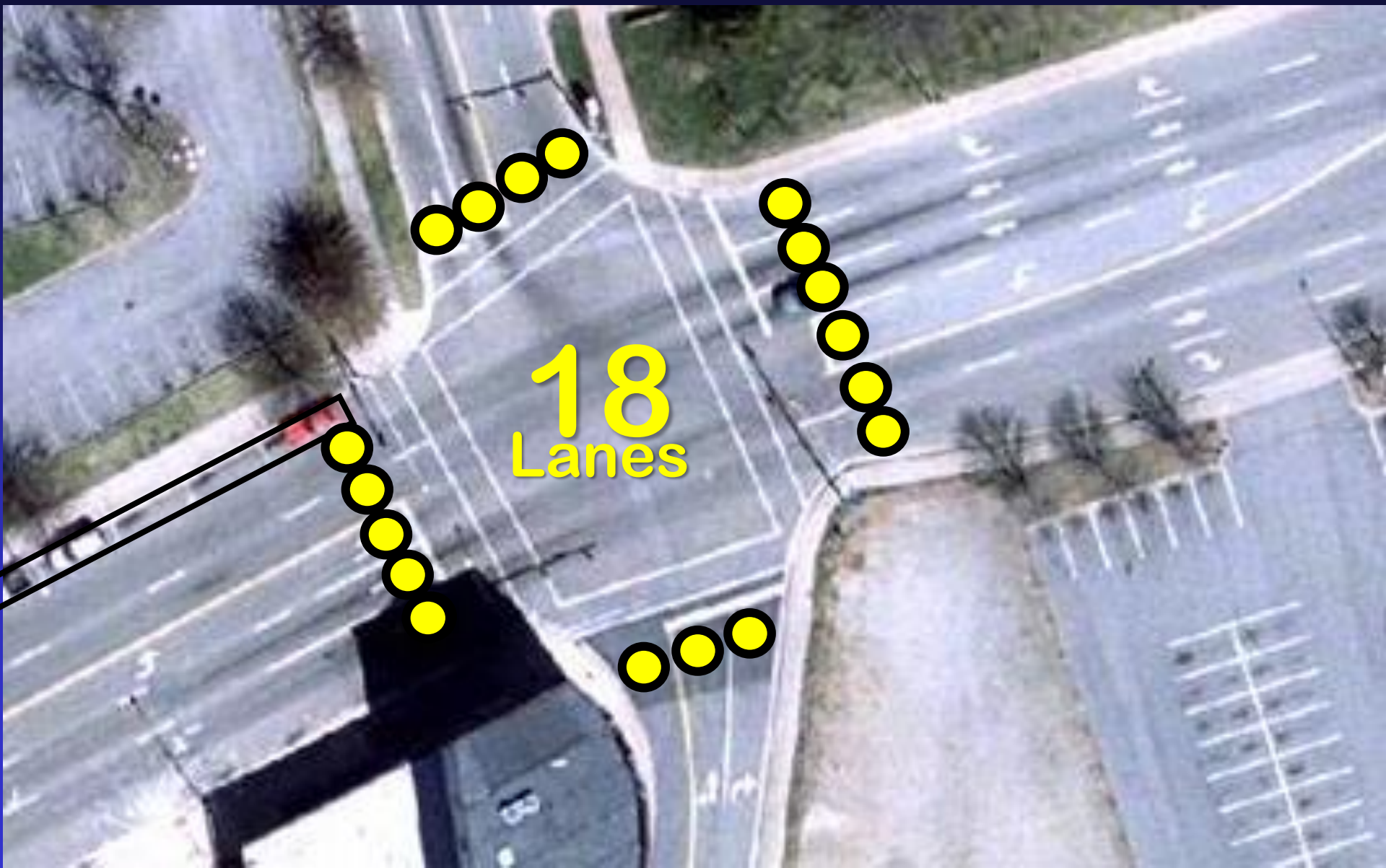
Intersection Diet? YES!

ITE Past Presidents' Award
for
Merit in Transportation Engineering

Downtown Asheville

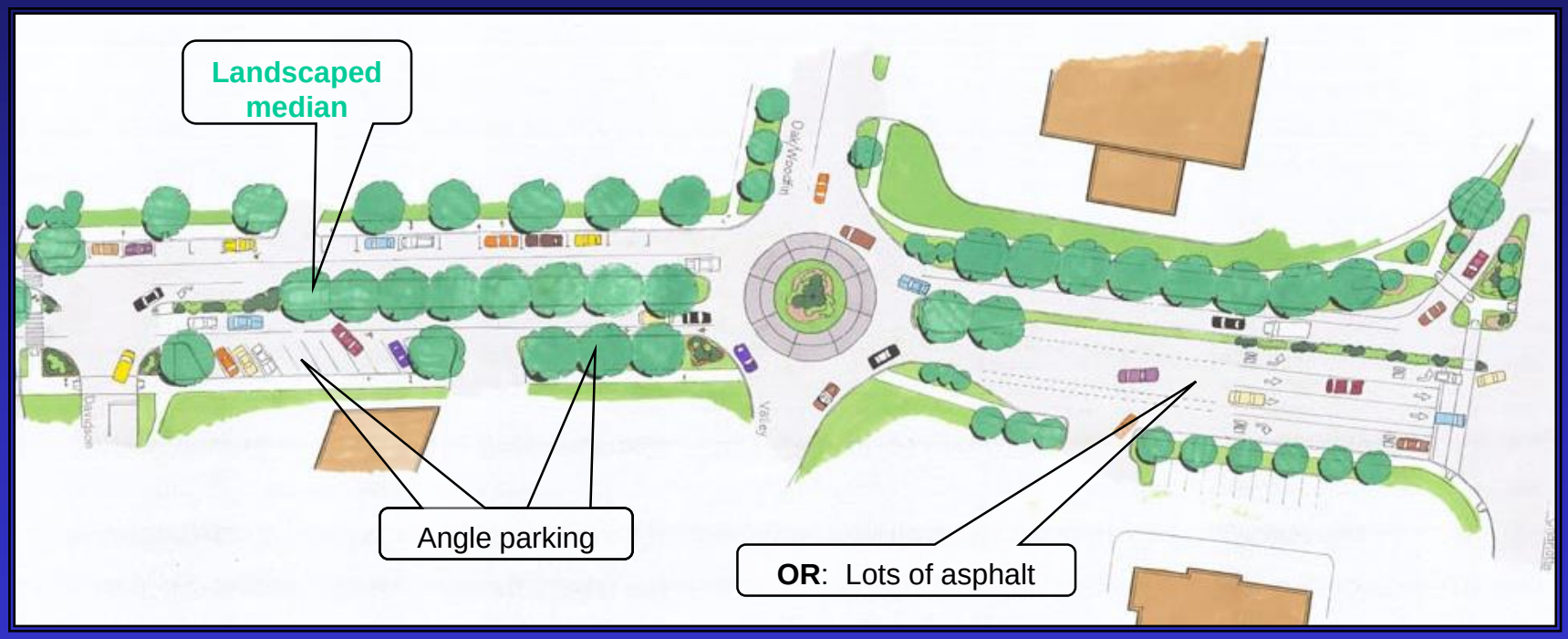
Let's count lanes !

Downtown Asheville



Downtown Asheville, NC

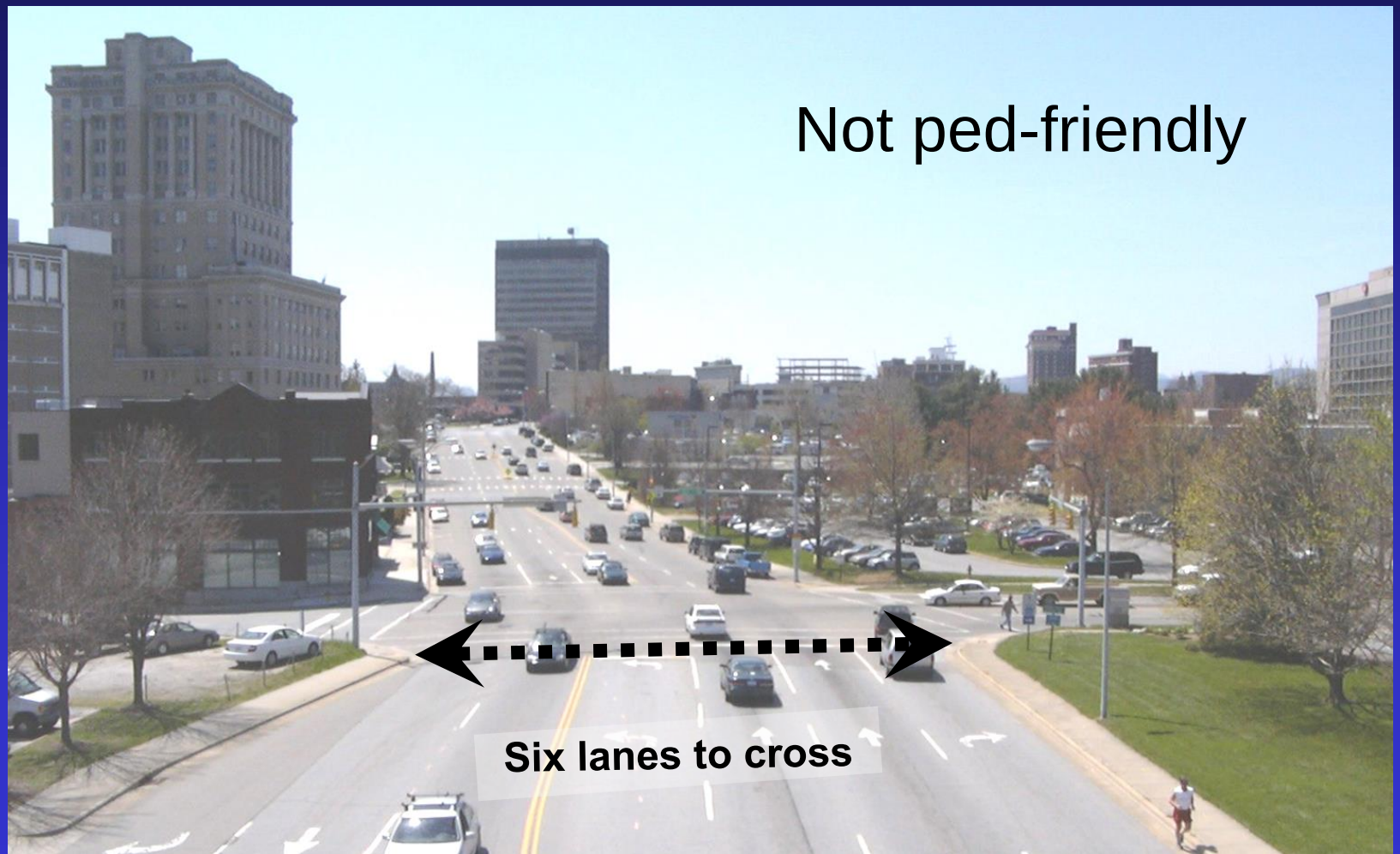
- A roundabout corridor concept...



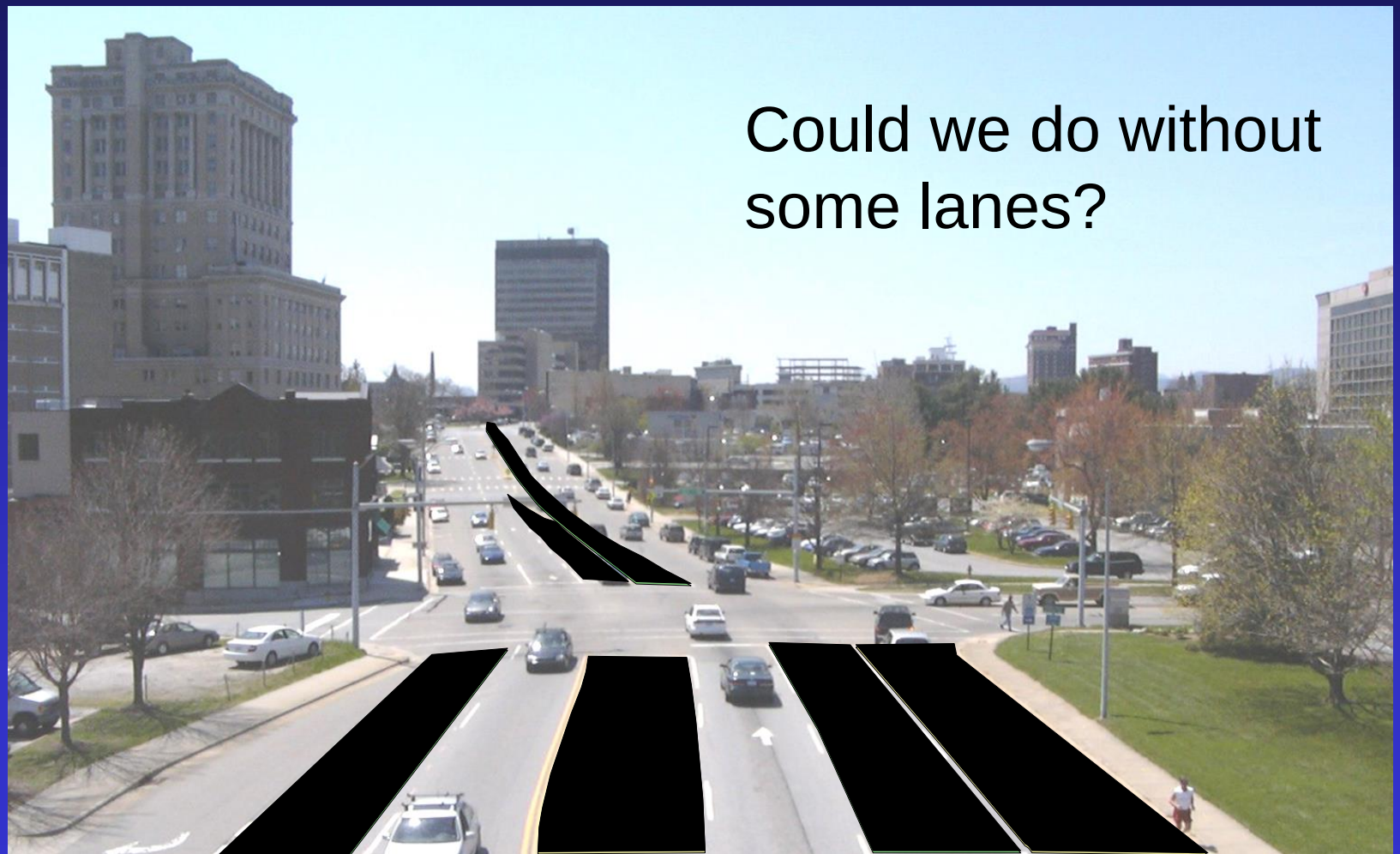
...makes many good things possible.

Downtown Asheville, NC

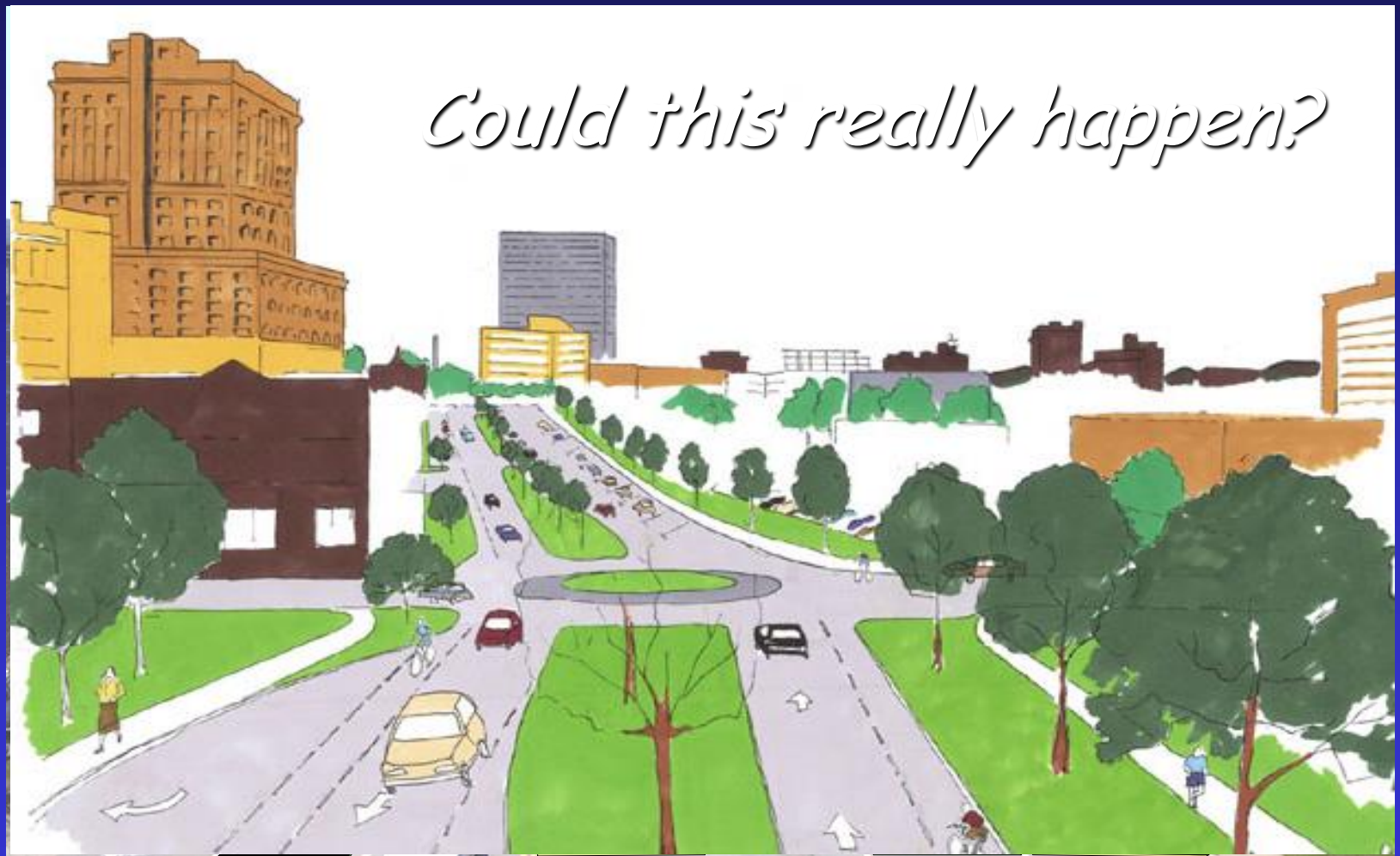
Downtown Asheville, NC



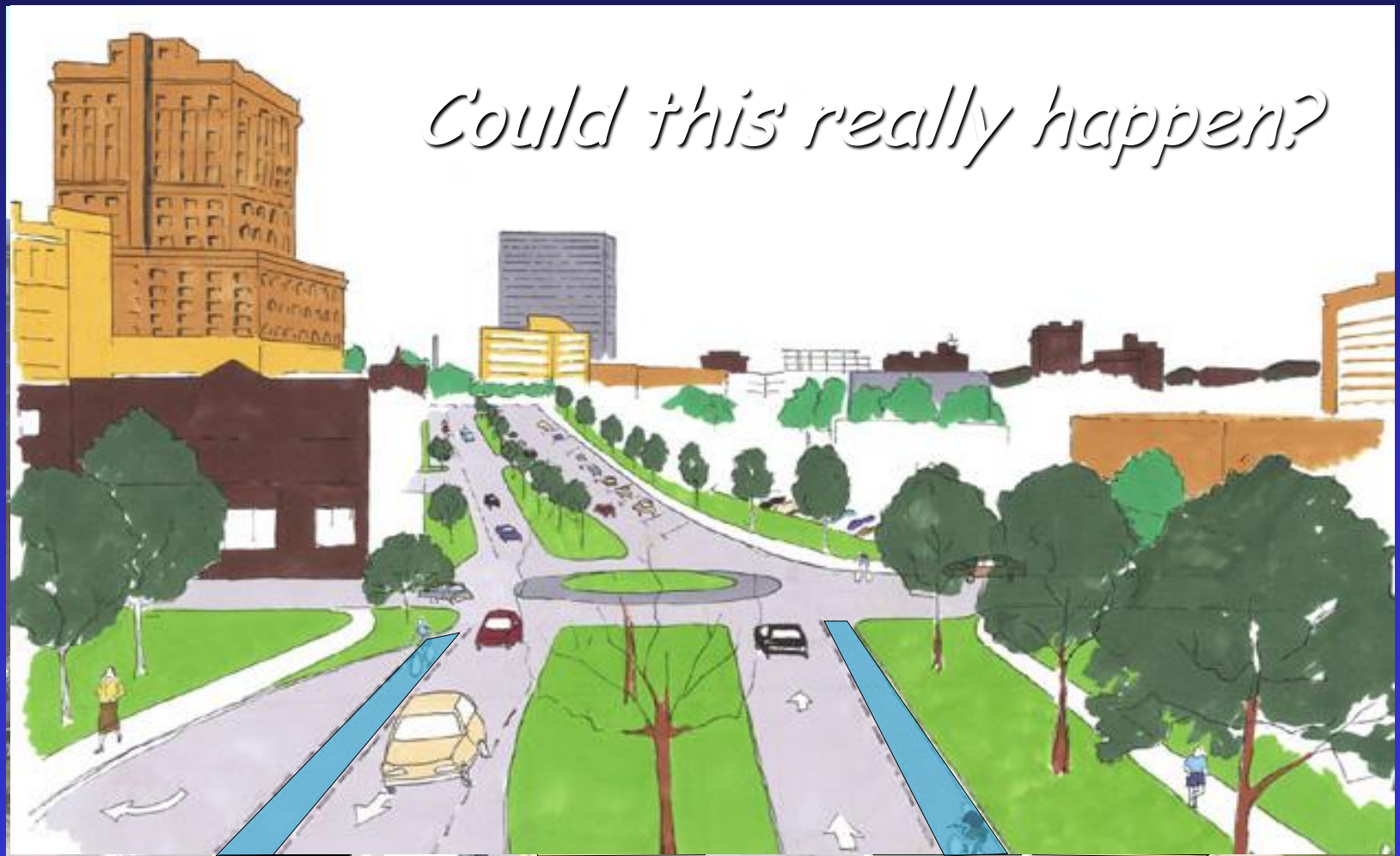
Downtown Asheville, NC



Downtown Asheville, NC



Downtown Asheville, NC



Downtown Asheville, NC

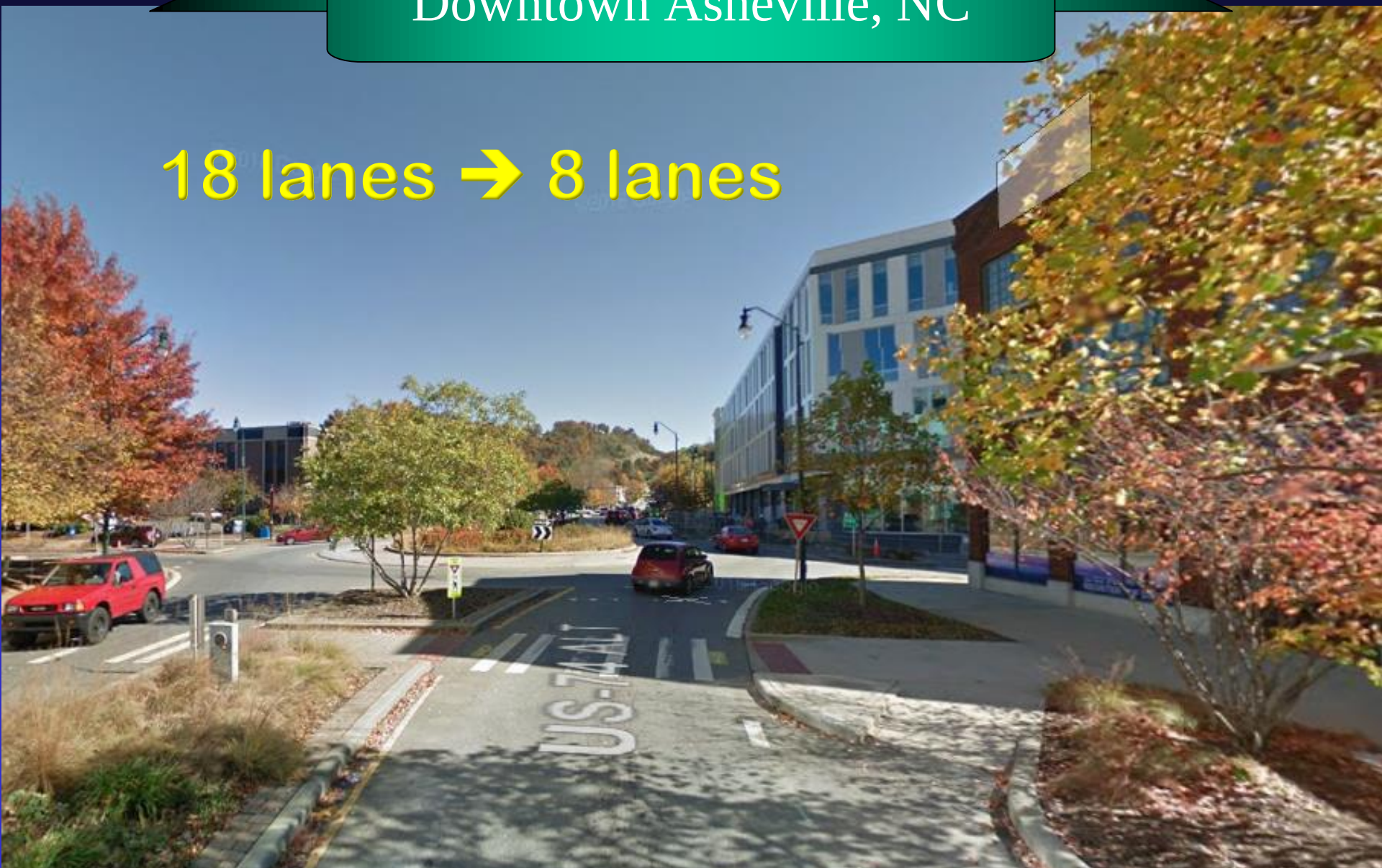
More green, more beauty downtown, ped friendly
More parking, more access, more biz-friendly

Downtown Asheville, NC

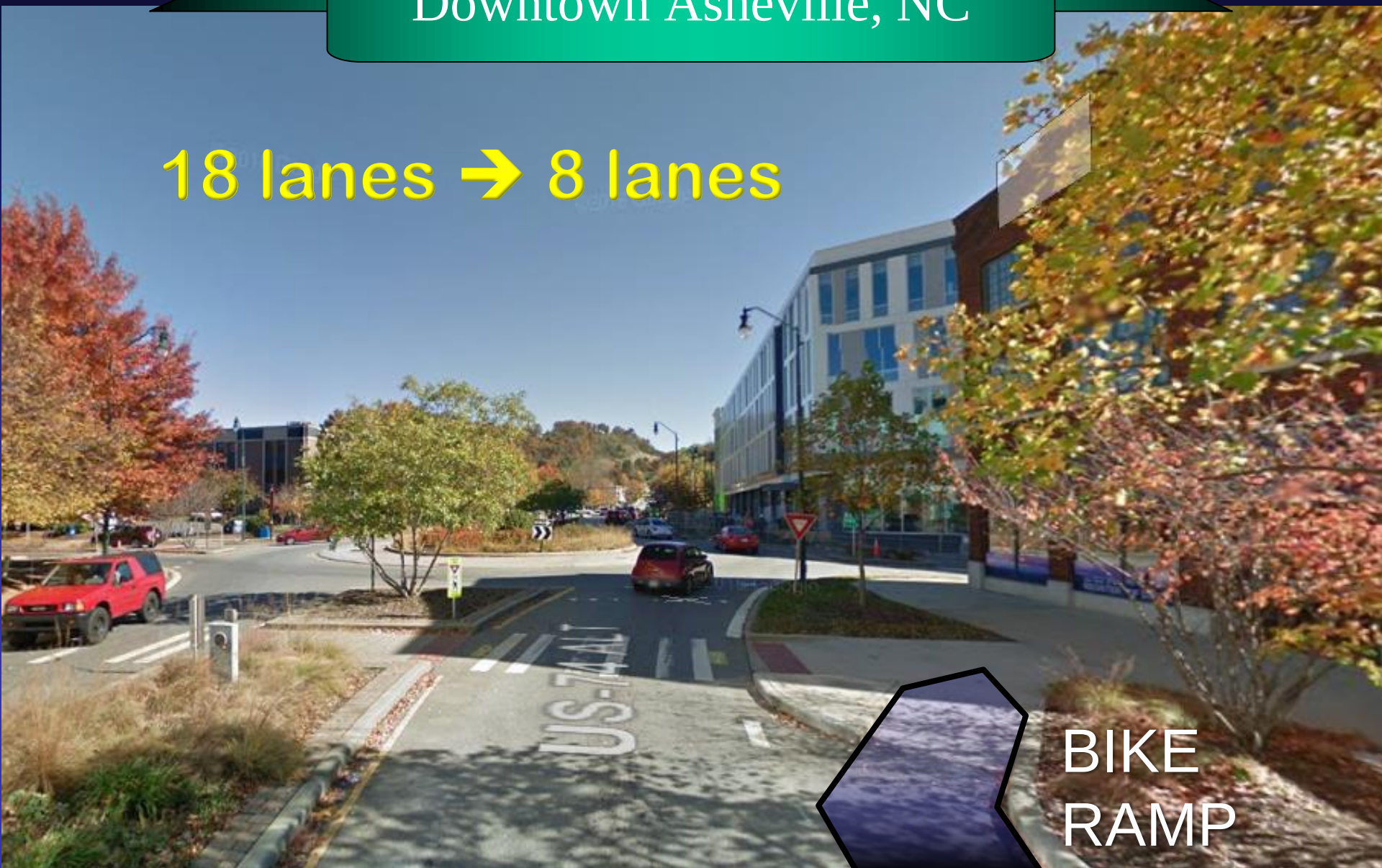
More green, more beauty downtown, ped friendly
More parking, more access, more biz-friendly

More bike-friendly, too

Downtown Asheville, NC



Downtown Asheville, NC



Enhanced crosswalk

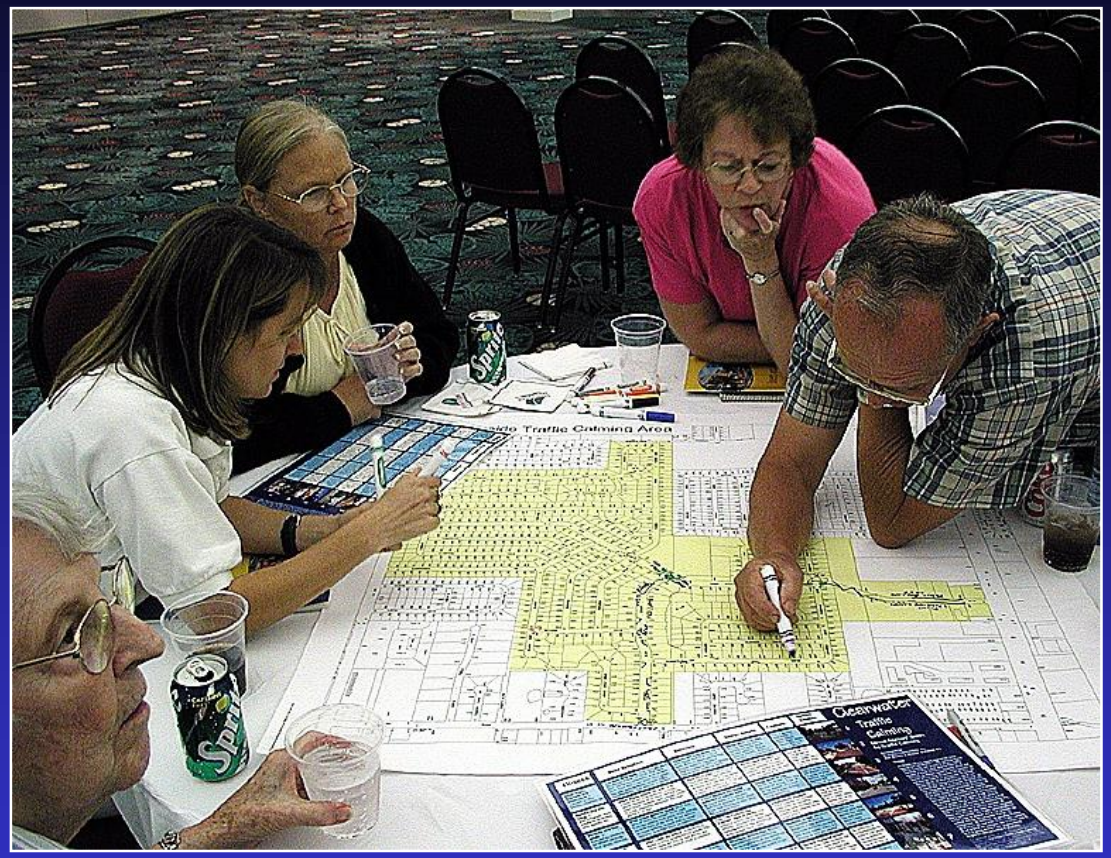
PUBLIC INVOLVEMENT in Clearwater, Florida

Citizen Design Charrettes

Trained Citizen Designers

Citizen Designers
at work !!

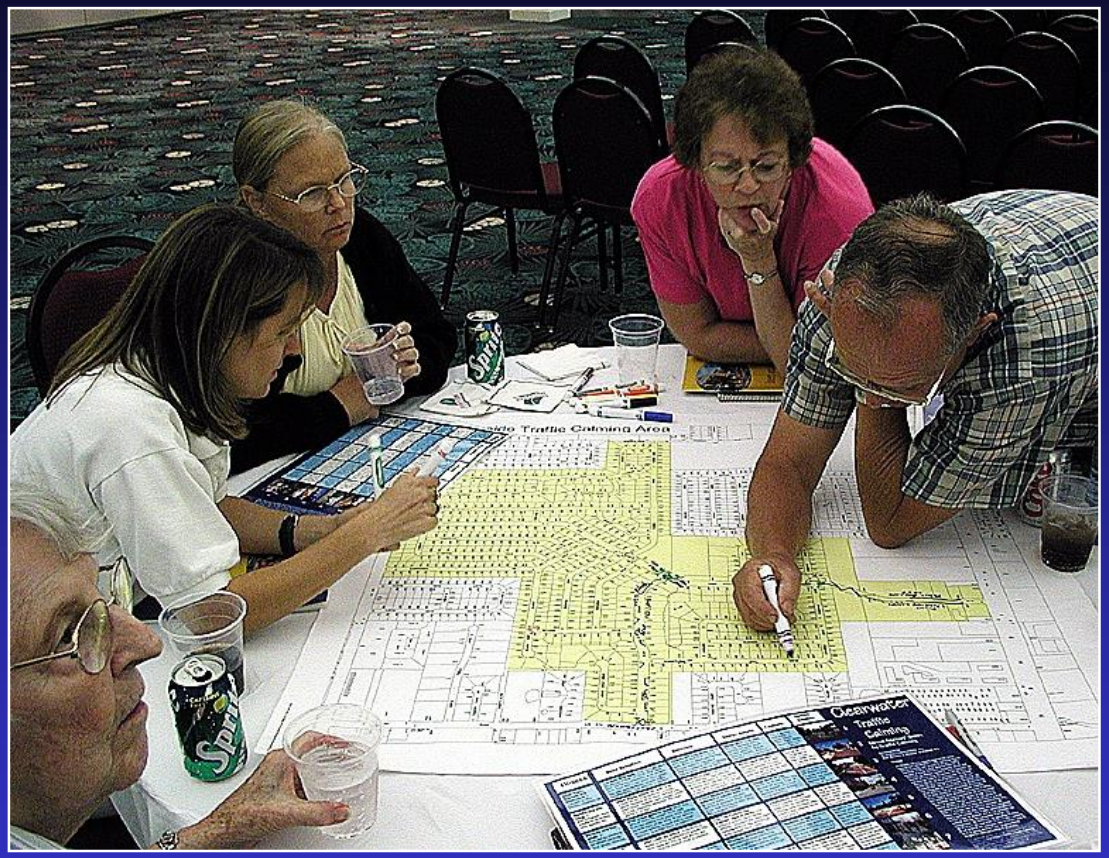
PUBLIC INVOLVEMENT



Body language: residents collaborating

Citizen Designers
at work !!

PUBLIC INVOLVEMENT

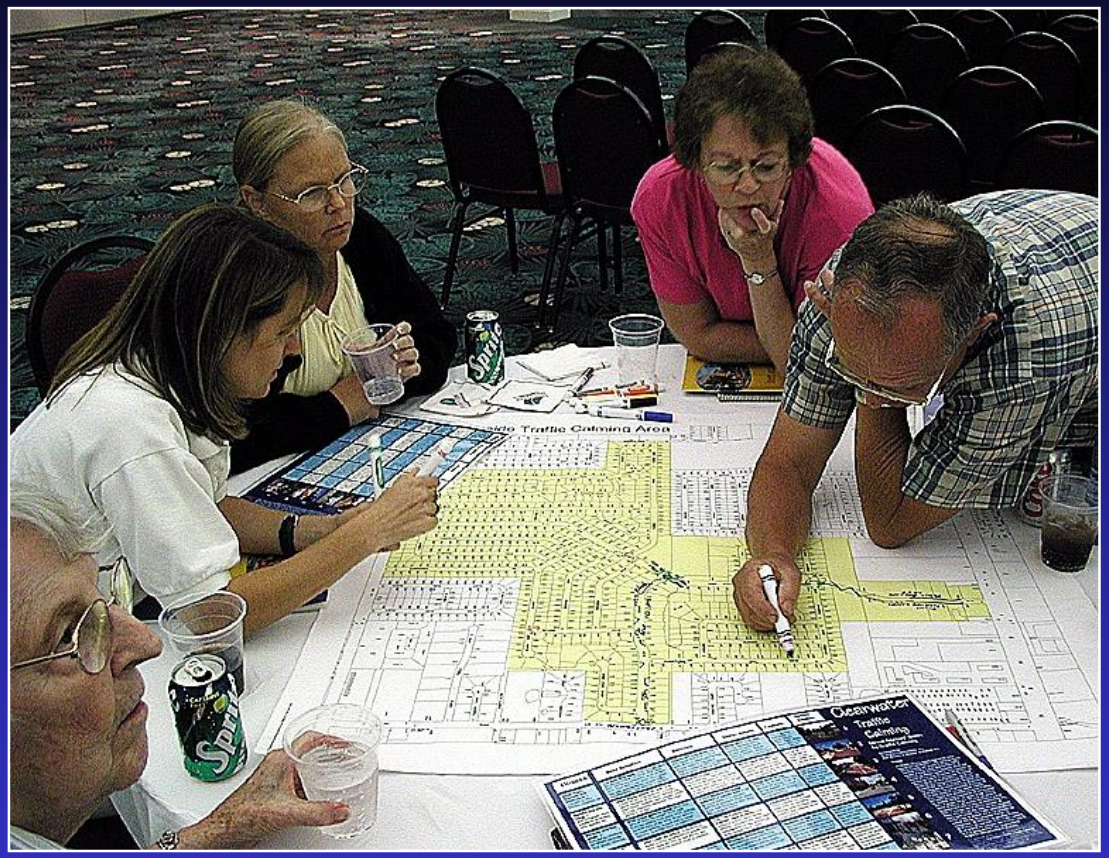


Body language: residents collaborating

Ownership: proudly signing their work

Citizen Designers at work !!

PUBLIC INVOLVEMENT



Body language: residents collaborating

Ownership: proudly signing their work

Citizen Designers at work !!

65+% stakeholder petition signatures for:

- Road Diets
- Complete Streets
- Roundabouts

PUBLIC INVOLVEMENT in Sarasota, Florida

Downtown Sarasota

4 lanes + median ➔ 2 lanes

+

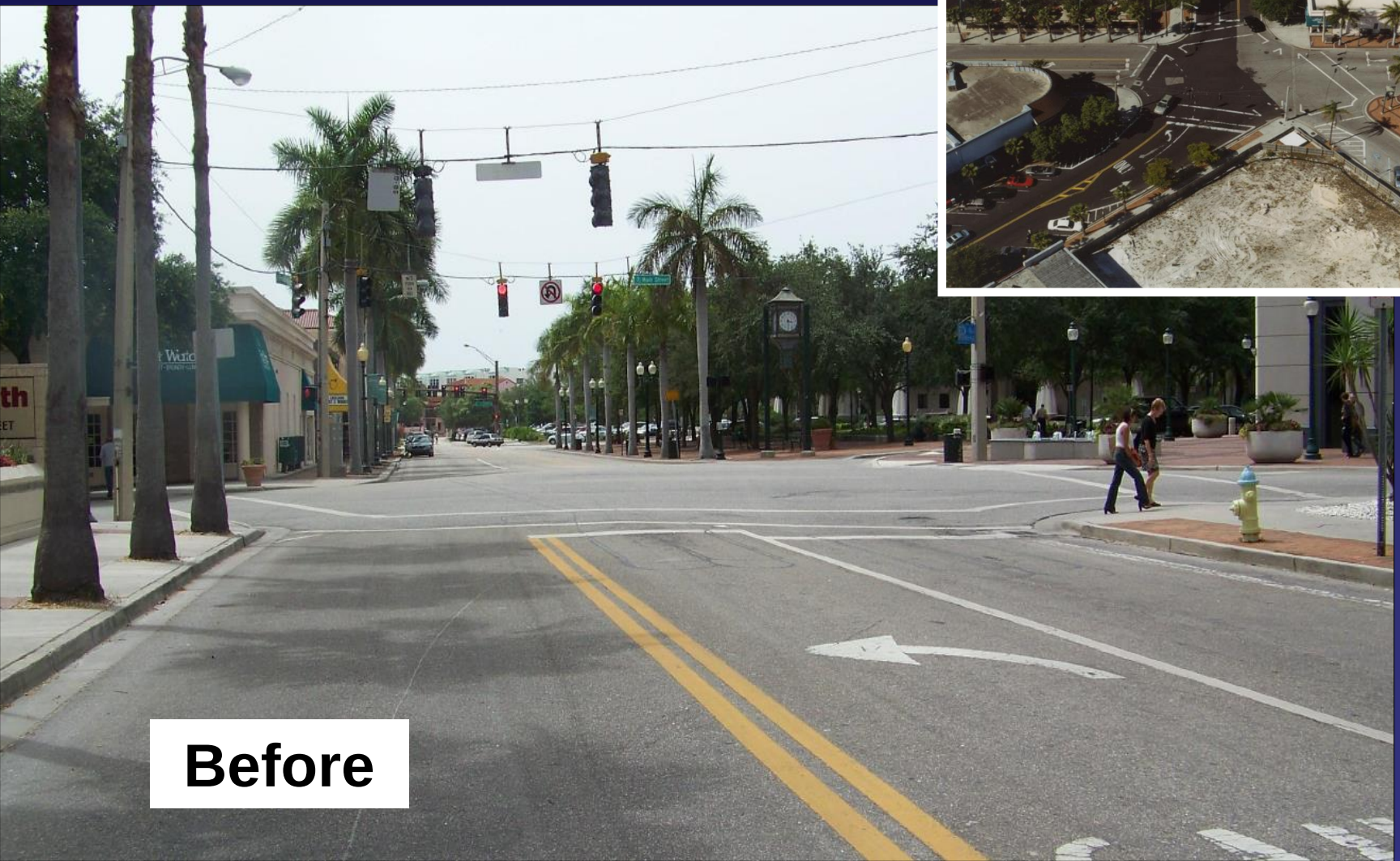
3 signalized ➔ 3 roundabouts

Before


El Greco Cafe
Main St
S Orange Ave
N Orange Ave
Main St
ONLY
ONLY
ONLY

AFTER

Five Points Roundabout

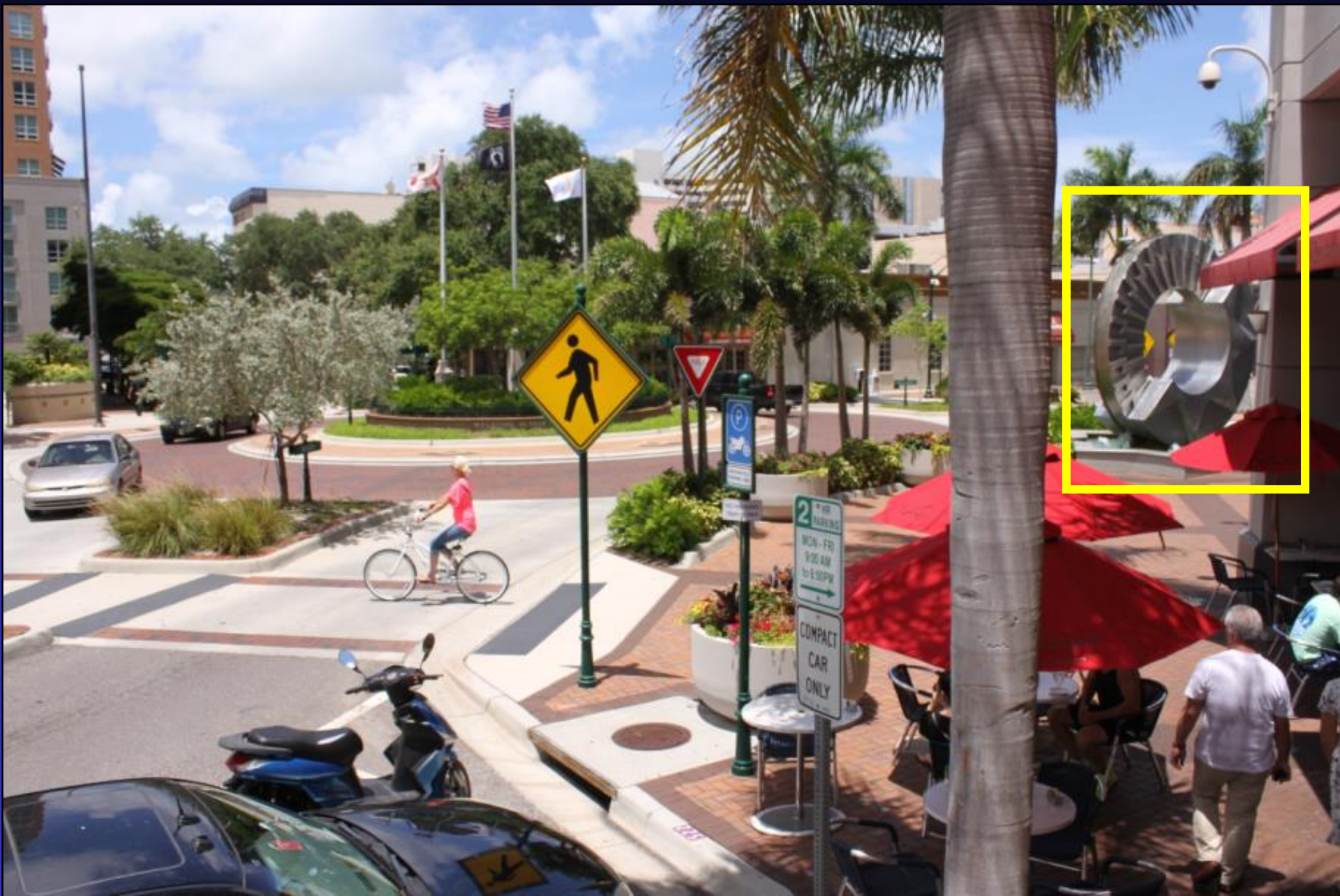


Before

Five Points Roundabout

After

Five Points Roundabout



Five Points Roundabout, downtown Sarasota, Florida

Sam Schwartz Engineering

Five Points Roundabout, downtown Sarasota, Florida

Sam Schwartz Engineering

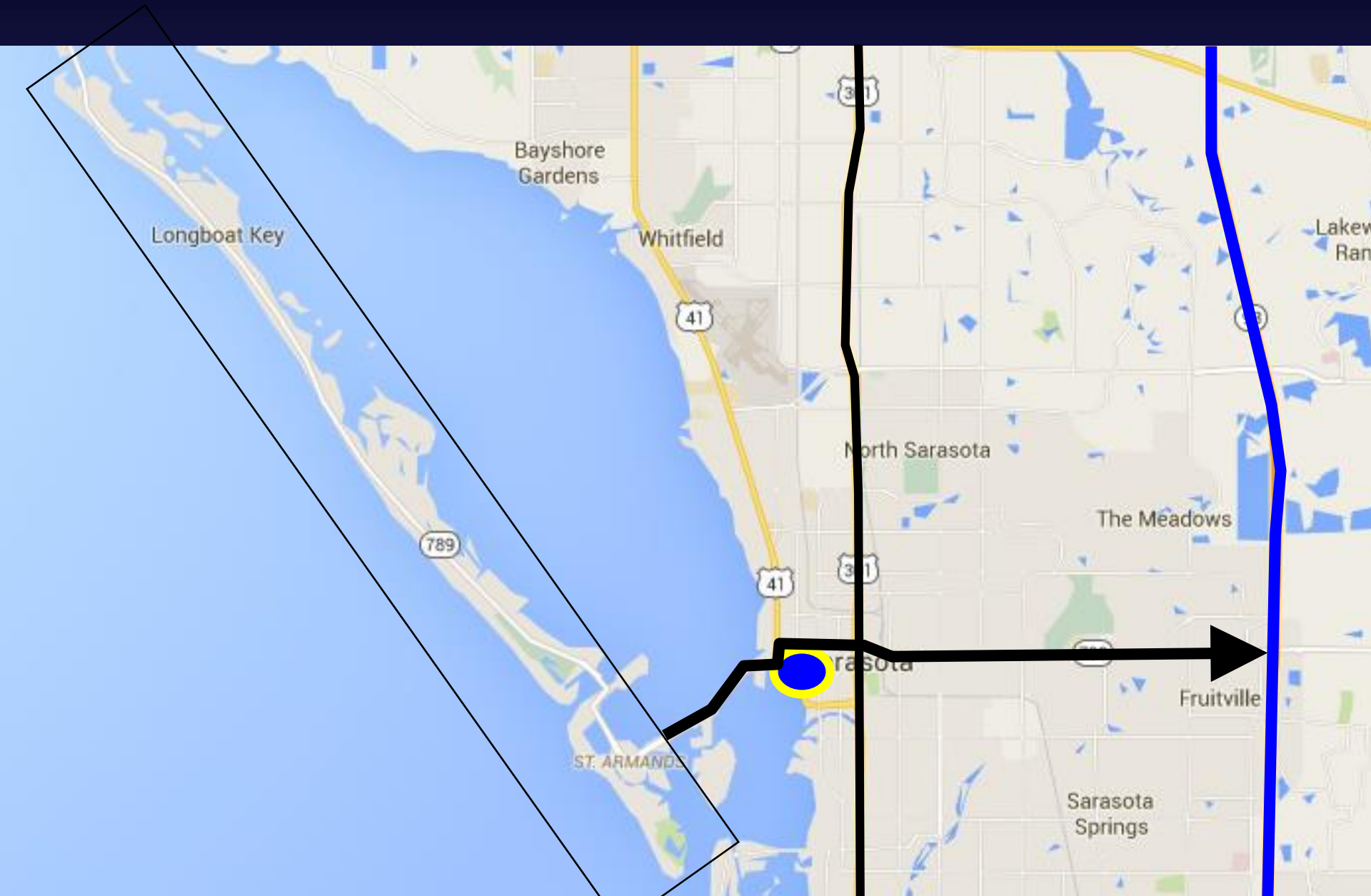
Five Points Roundabout, downtown Sarasota, Florida

Sam Schwartz Engineering

Five Points Roundabout, downtown Sarasota, Florida

Sam Schwartz Engineering

Downtown Sarasota



Downtown Sarasota

A *sense of place* is lacking

Perceptions of disinvestment give a negative impression

Pedestrians are imperiled

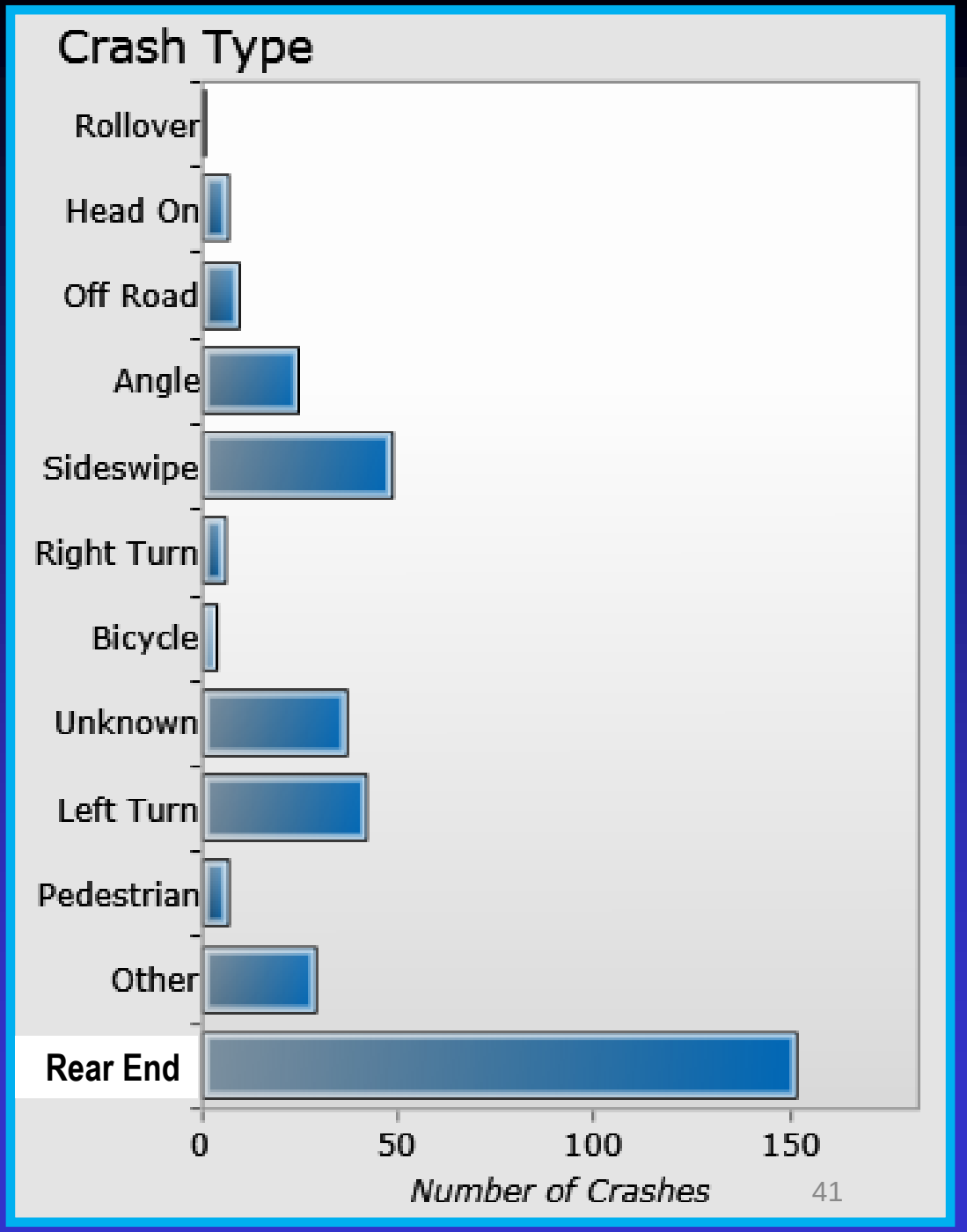
Urban vitality clearly not being sustained

We showed them…

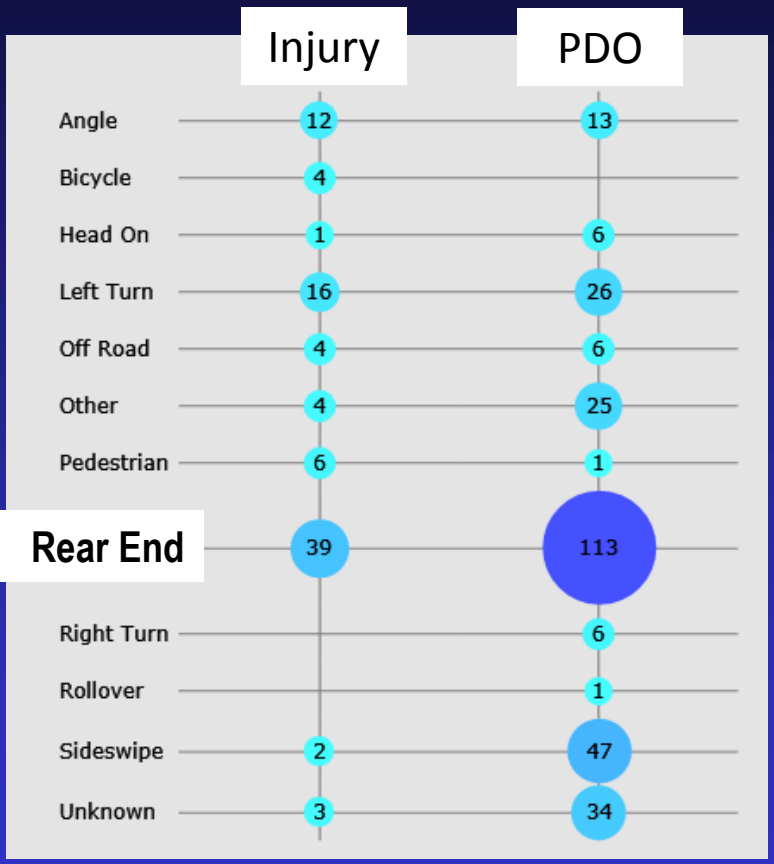
Crash Data

All Crashes: 369
Oct. 2010 — Oct. 2015

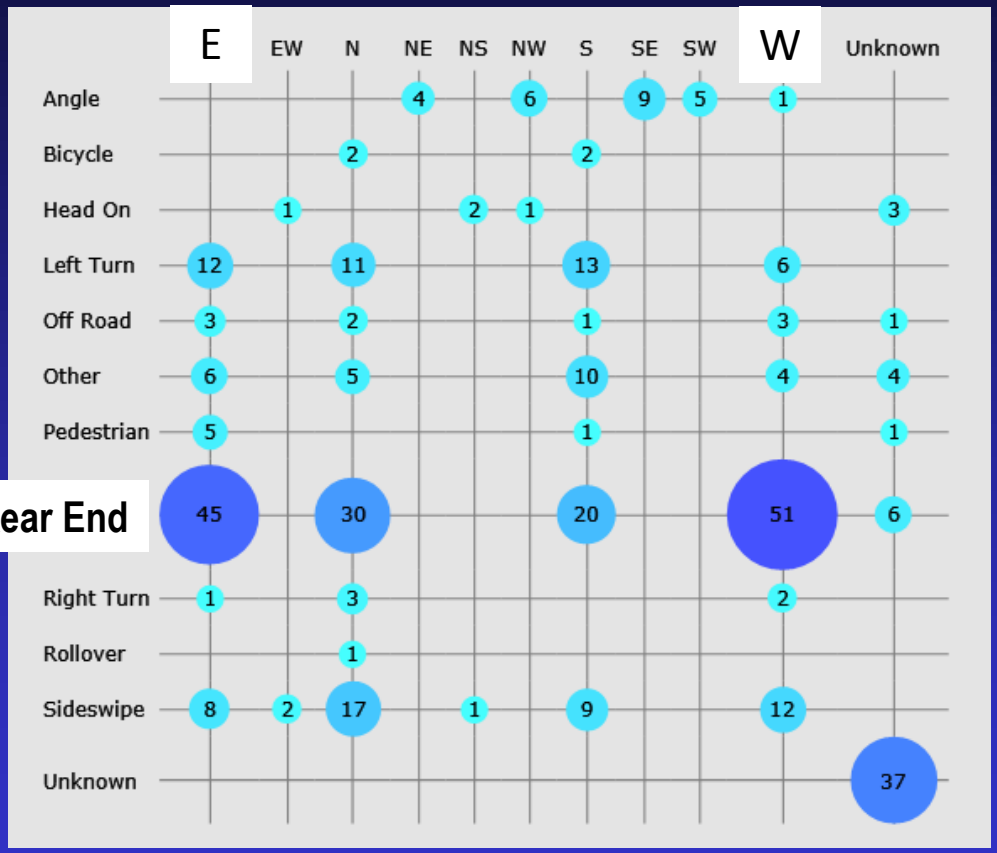
About 155 rear-end crashes are about 42% of the total 369 crashes. The national rate for rear-end crashes is 40%.



Severity

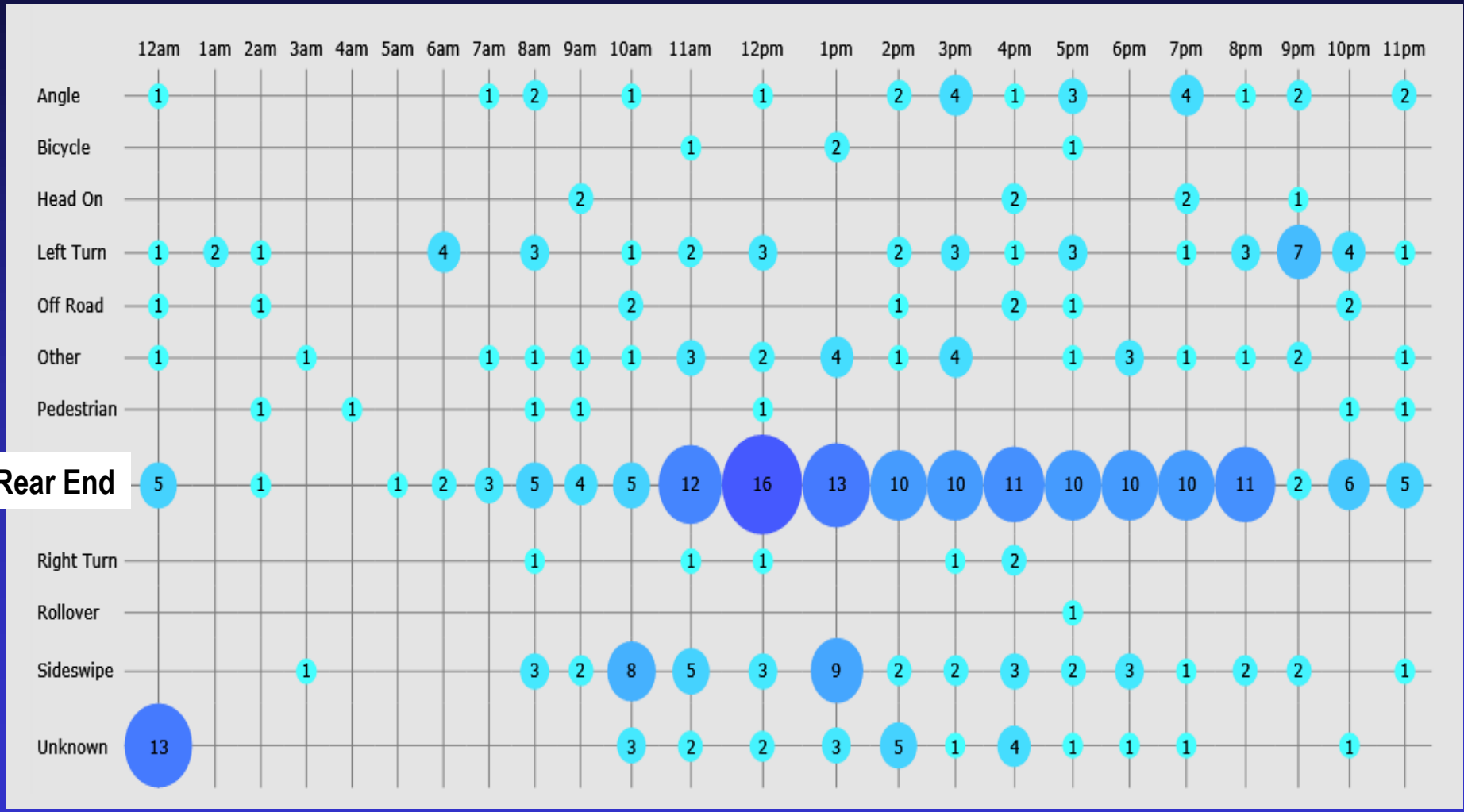


Direction of Travel



PDO=Property Damage Only

Time of Day


12am 1am 2am 3am 4am 5am 6am 7am 8am 9am 10am 11am 12pm 1pm 2pm 3pm 4pm 5pm 6pm 7pm 8pm 9pm 10pm 11pm
Angle 1 1 2 1 2 1 4 1 2 1 1 2 1 2 4 1 3 4 1 2 2
Bicycle 1 2 1 1 2
Head On 2 2 2 1
Left Turn 1 2 1 4 3 1 2 3 2 3 1 3 1 3 7 4 1
Off Road 1 1 2 1 2 1 2
Other 1 1 1 1 1 1 3 2 4 1 4 1 3 1 1 2 1
Pedestrian 1 1 1 1 1 1 1
Rear End 5 1 1 2 3 5 4 5 12 16 13 10 10 11 10 10 10 11 2 6 5
Right Turn 1 1 1 1 2
Rollover 1
Sideswipe 1 3 2 8 5 3 9 2 2 3 2 3 1 2 2 1
Unknown 13 3 2 2 3 5 1 4 1 1 1 1

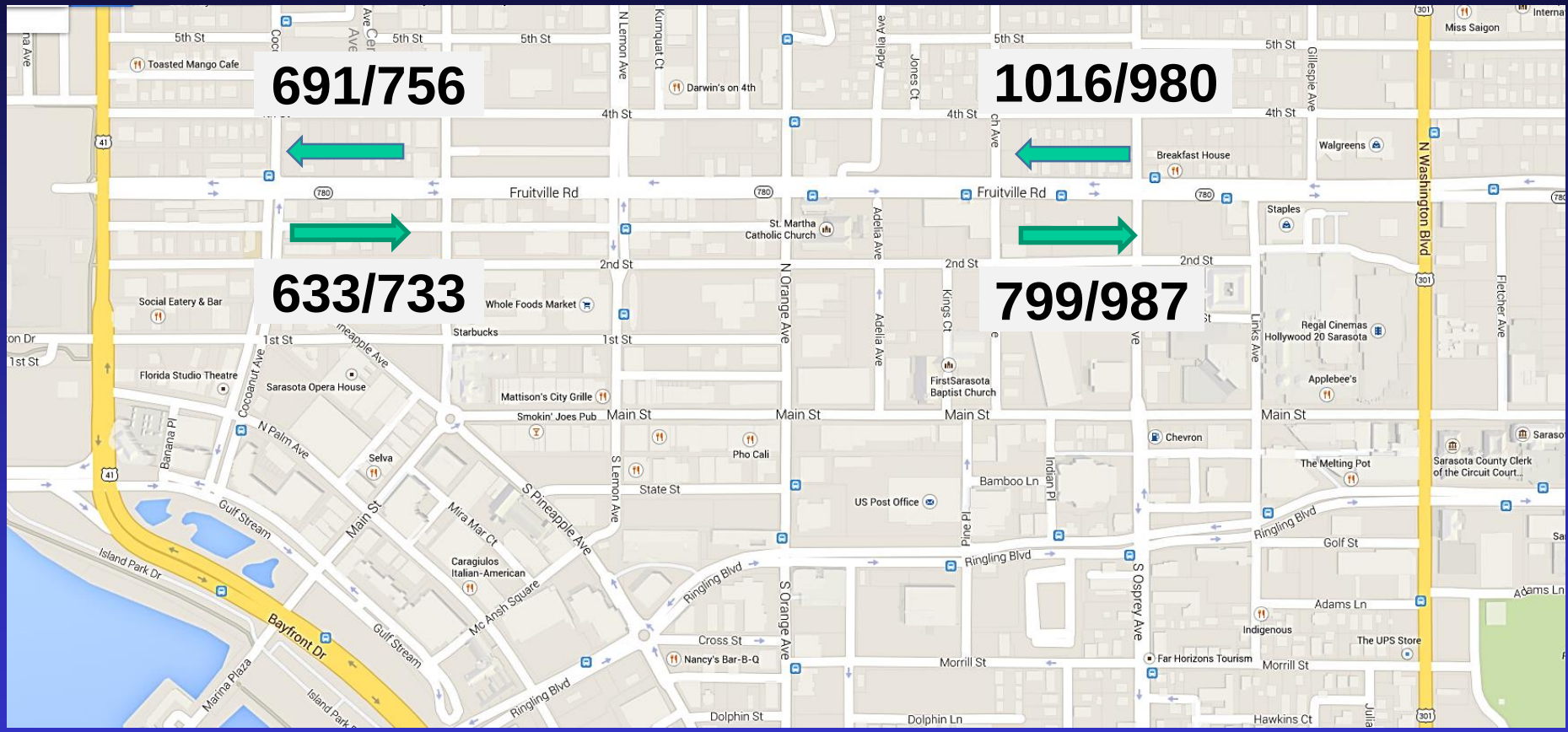
And we showed them…

Traffic Volumes and Speeds

Fruitville Road, Sarasota, FL

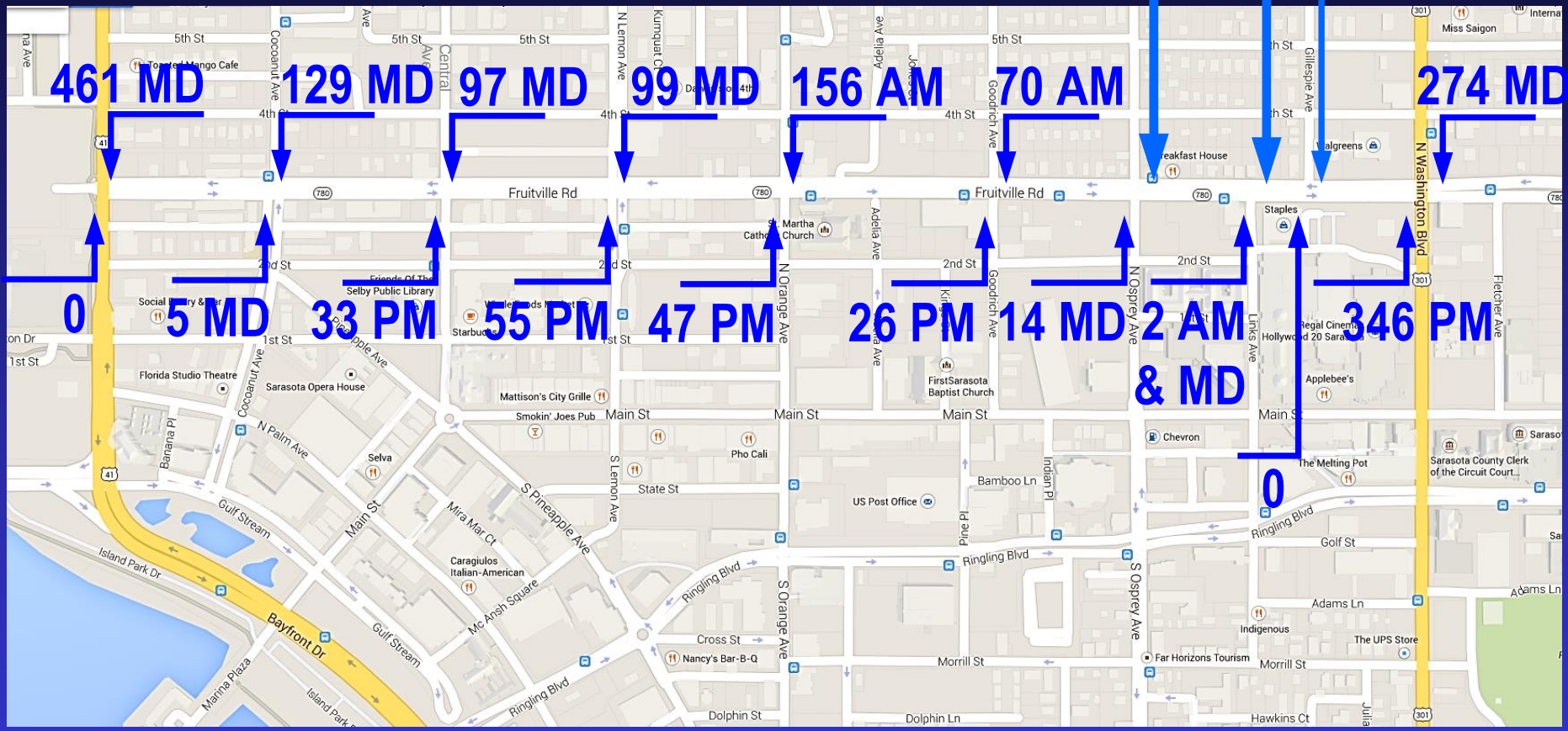
East-West Traffic Volumes - March 2015

AM (8-9 AM)**/PM** (4:30-5:30)



Fruitville Road, Sarasota, FL

East-West Turning Movement Counts - March 2015



And we showed them…

Level of Service

2015 Existing Conditions Level of Service

#	Intersection & Approach	Weekday AM					Weekday MD					Weekday PM				
		Lane Group	LOS	Delay (sec)	v/c Ratio	Queue Length (ft)	Lane Group	LOS	Delay (sec)	v/c Ratio	Queue Length (ft)	Lane Group	LOS	Delay (sec)	v/c Ratio	Queue Length (ft)
1	US Route 41 N. Tamiami Trail and Fruitville Road															
	Eastbound	LT					LT					LT				
		R					R	F	86.4	0.27	15	R				
	Westbound	L	E	76.9	0.74	280	L	F	124.9	1.01	500	L	E	67.8	0.58	309
		LT	E	77.2	0.74	346	LT	F	80.5	0.76	484	LT	E	67.8	0.58	309
		R	A	8.9	0.45	60	R	B	10.0	0.51	37	R	C	28.1	0.71	244
	Northbound	L	C	33.0	0.11	7	L	C	22.0	0.11	8	L				
		TR	E	60.5	0.95	812	TR	D	48.5	0.95	1050	TR	E	67.5	1.05	1449
	Southbound	L	E	69.0	0.87	555	L	F	160.9	1.16	356	L	F	277.8	1.45	367
		T	B	17.1	0.70	703	T	C	20.1	0.70	634	T	B	14.9	0.64	507
		R					R					R				
		Int.	D	42.6			Int.	D	47.3			Int.	D	54.2		

We showed 9 LOS tables like this one.

The Pedestrian Space is narrow


RUGS
0% OFF
SA
Pakistan
City
Engineer
The Pedestrian
Space is narrow


Downtown
Economic
Development
The Pedestrian
Space is narrow


Civil Designer
The Pedestrian Space is narrow


RUGS
1513
0% OFF
SA
Pakistan
Happy
Civil Designer
The Pedestrian
Space is narrow

Project Truisms

You can't have a vibrant street with 4' sidewalks.

A vibrant street requires *wide sidewalks*.

Wide sidewalks require *fewer lanes*.

Fewer lanes require roundabouts.

Project Truisms

Put another way…

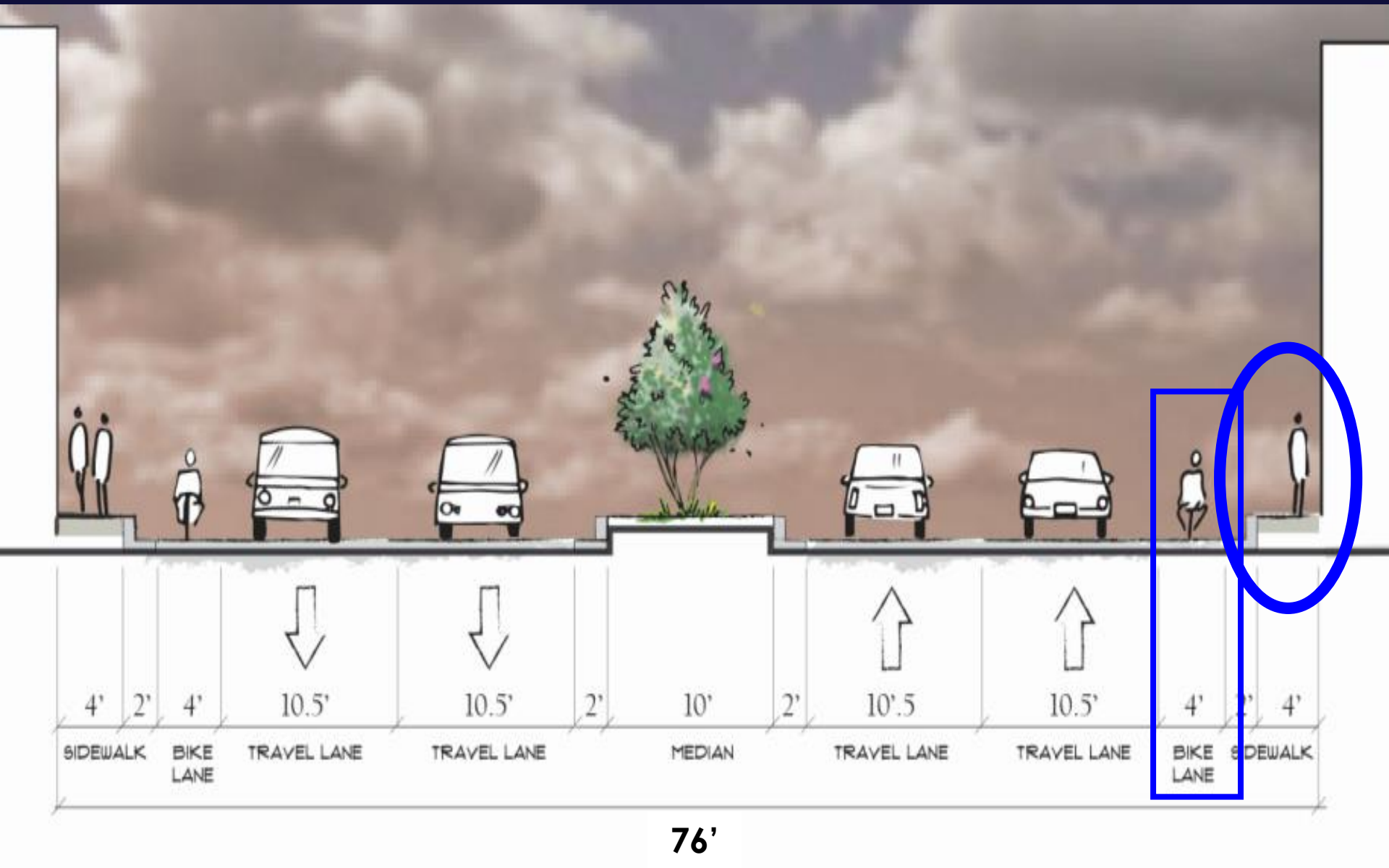
Roundabouts make *fewer lanes* possible.

Fewer lanes makes *16' sidewalks* possible.

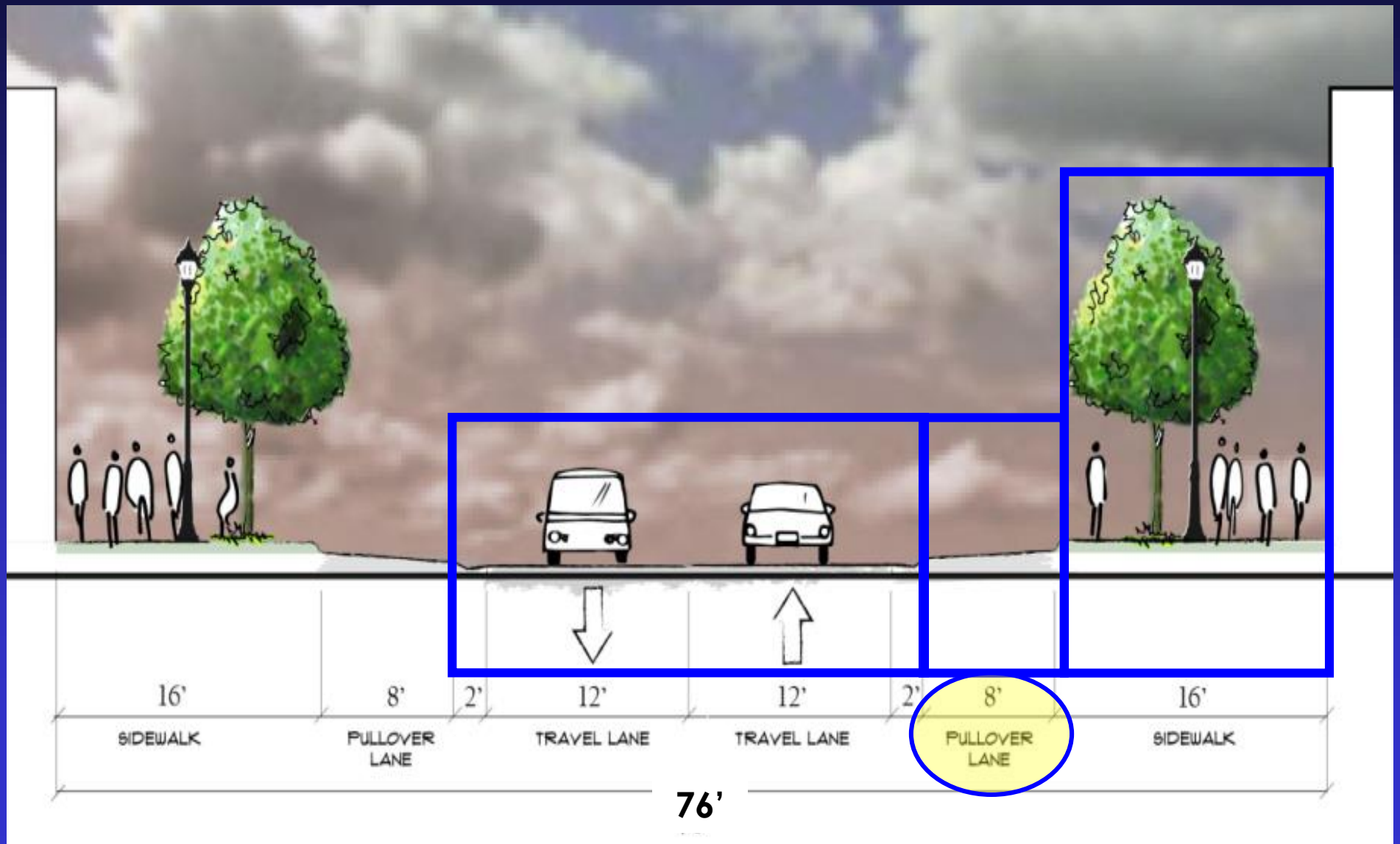
16' sidewalks makes a *vibrant street* possible.

A vibrant street makes *economic development* possible!

Existing Conditions: 4’ sidewalk and very uncomfortable bike lane

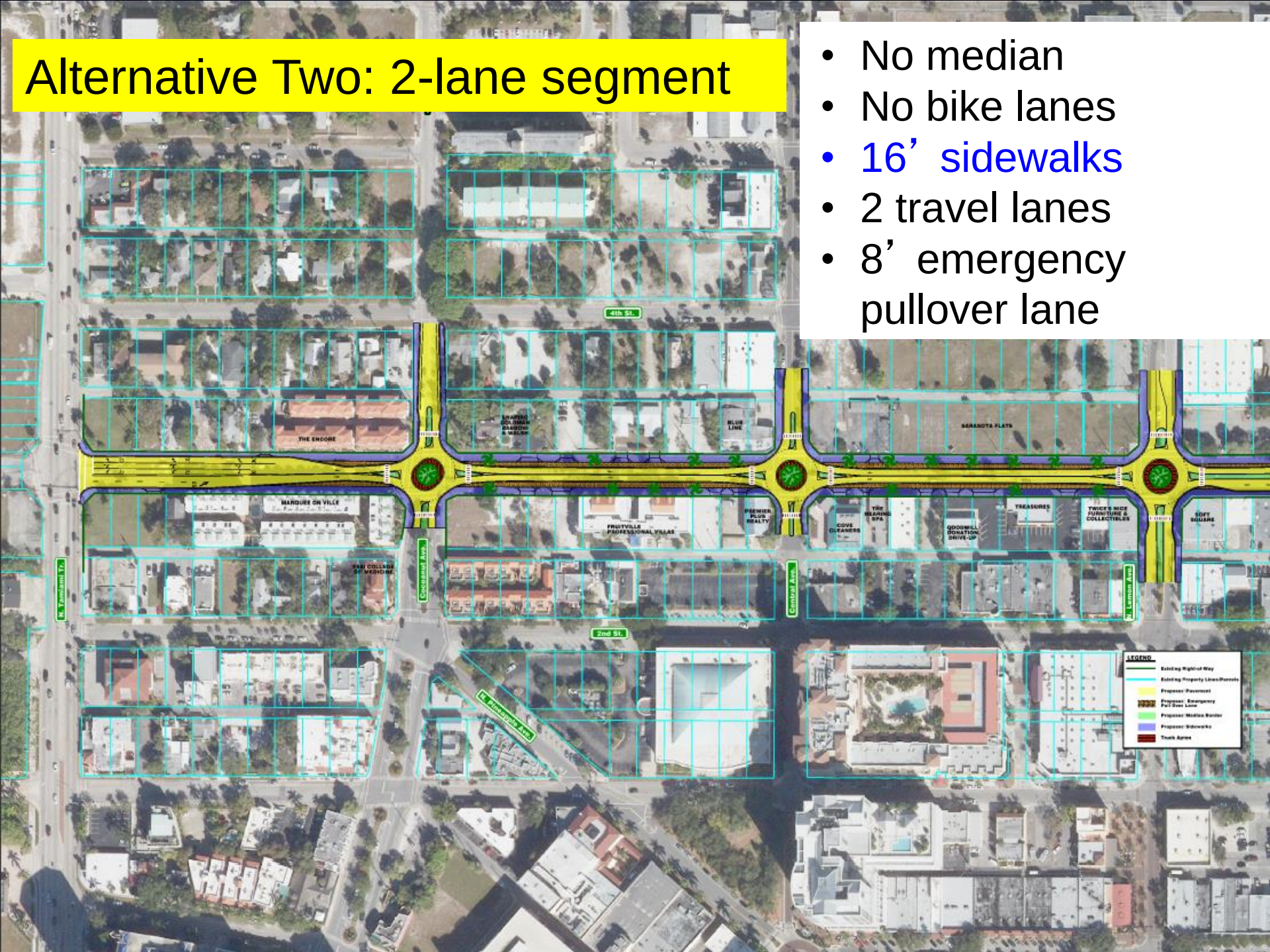


Alternative Two: 16’ sidewalk and two travel lanes

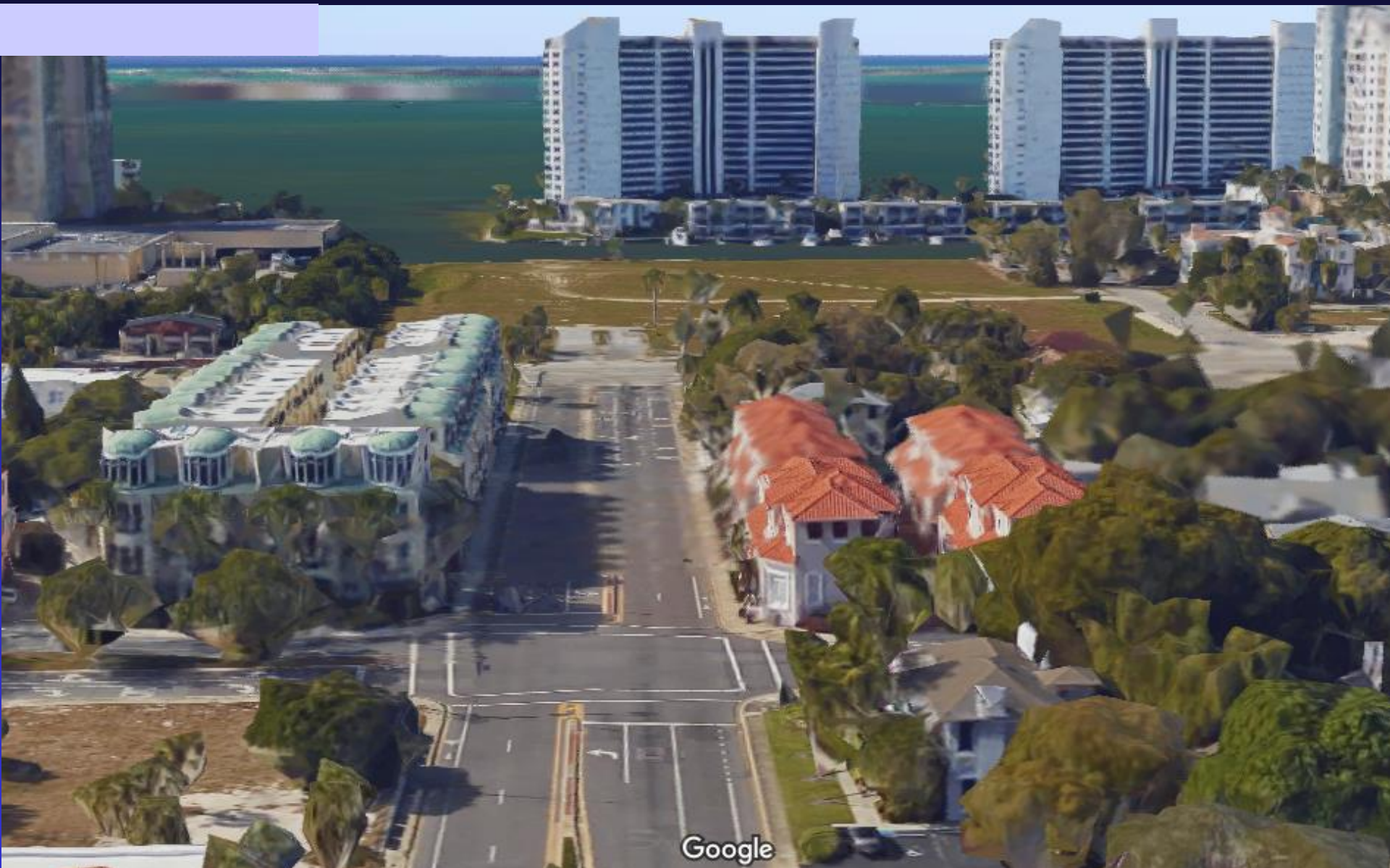


Alternative Two: 2-lane segment

- No median
- No bike lanes
- 16’ sidewalks
- 2 travel lanes
- 8’ emergency pullover lane



Cocoanut intersection as it is today



Cocoanut intersection as it could be

But instead of talking about

Corridor Vibrancy

The conversation got bogged down in…

Level of Service

Even though that's only about cars,
and only about
2 hours/day
5 days/week
4 months/year

Somehow we have to shift the narrative to the vision.

So what we're developing now is a new public outreach tool: 3D sim visualization with near-Hollywood quality.

Ken Sides, PE, PTOE, CNU-a

KSides@SamSchwartz.com


Photo by Michael Moule

KCMO ROAD DIET INITIATIVE

THE START OF THE INITIATIVE

Resolution #140982 – Adopted December 2014

Directed the City Manager to conduct a Road Diet analysis of undivided four-lane streets

- Primary focus
  - Add bike facilities to roadways during resurfacing
  - Increase safety along over built arterial roadways

- Previously only bike facilities were added if width allowed without lane reductions

DEFINITION OF ROAD DIET: Conversion of a four-lane undivided road to a three-lane undivided road made up of two through lanes and a center two-way-left-turn-lane.

Road Diet Informational Guide, FHWA

ROAD DIET - BENEFITS

National studies indicate that Road Diet benefits may include:

- Improved safety for all roadway users
- Assistance to motor vehicles by providing a center turn-lane
- Protection of vulnerable users such as people trying to cross the roadway and bicyclists using the roadway
- Reduced aggressive driving
- Crash reductions

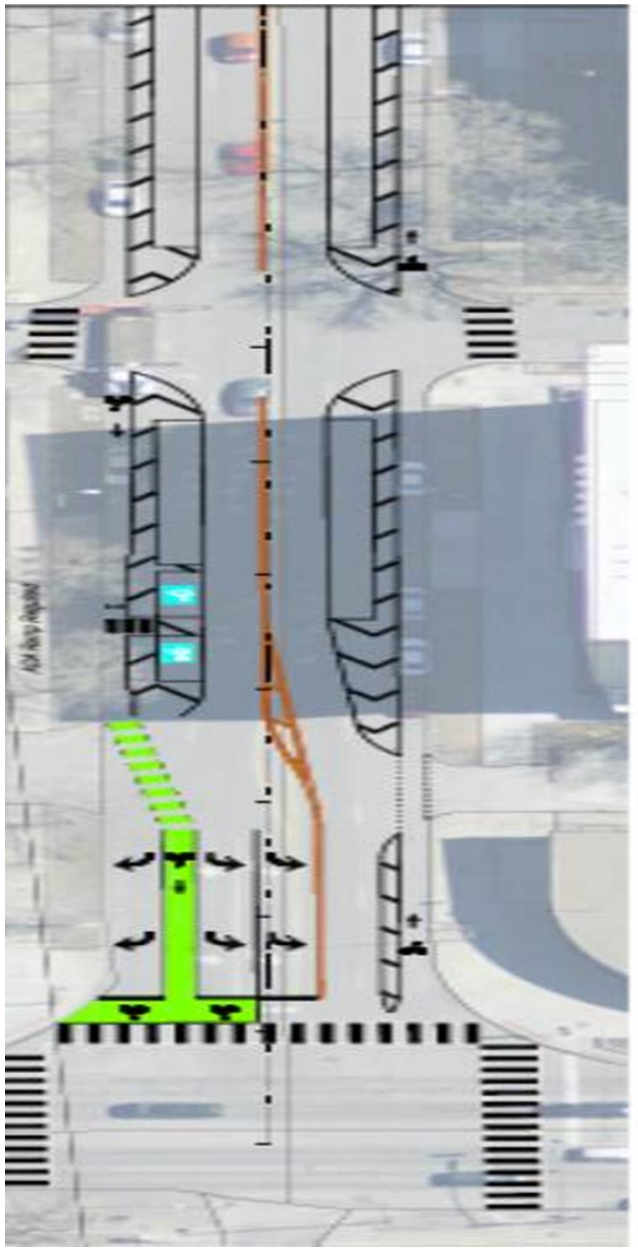
Initial Analysis Criteria

High Level Approach to Start

- Average daily traffic: Less than 20,000 vehicles
- Four or more lanes, undivided
- Peak hour traffic less than 1,000 vehicles per hour
  - Less than 800 vph = Diet
  - 800 vph > 1,000 vph = Additional analysis

Additional Analysis Criteria

- Spacing of intersections
- Driveway density and type
- Lane widths, both existing and proposed
- Types of vehicles using corridor
- Signal corridor communication
- Existing right and left turn lanes at intersections
- Roadway alignment
- Existence of on-street parking



Initial Study Results

STREETNAME	Qualified Road Diet Routes by Continuous Segments with 4 or More Lanes			ESTIMATED ADT	Existing Pavement Markings Conditions	On Street Parking	2015 Resurfacing Program	AM PEAK HOUR VOLUMES		PM PEAK HOUR VOLUMES		Road Diet Feasibility
	Begin	End	NO. OF LANES		Best Condition Observed	Any Part of the Corridor	Comments	North or East Leg	South or West Leg	North or East Leg	South or West Leg	
Leeds Tfwy	280 feet east of Emanuel Cleaver II	N Stadium Dr	4	3700	Fair	Yes	Proposed - Cleaver II to Stadium Dr	170	99	366	148	Yes
Highland Ave	NE 48th Street	NE 46th Street	4	8000	Fair	No	Not in 2015 List		606		731	Yes
Southern Rd	Stillwell St	Front St	4	600	Poor	No	Not in 2015 List	14		57		Yes
McGee Tfwy	250 feet south of 29th St	30th St	4	1000	Fair	Yes	Not in 2015 List	66		93		Yes

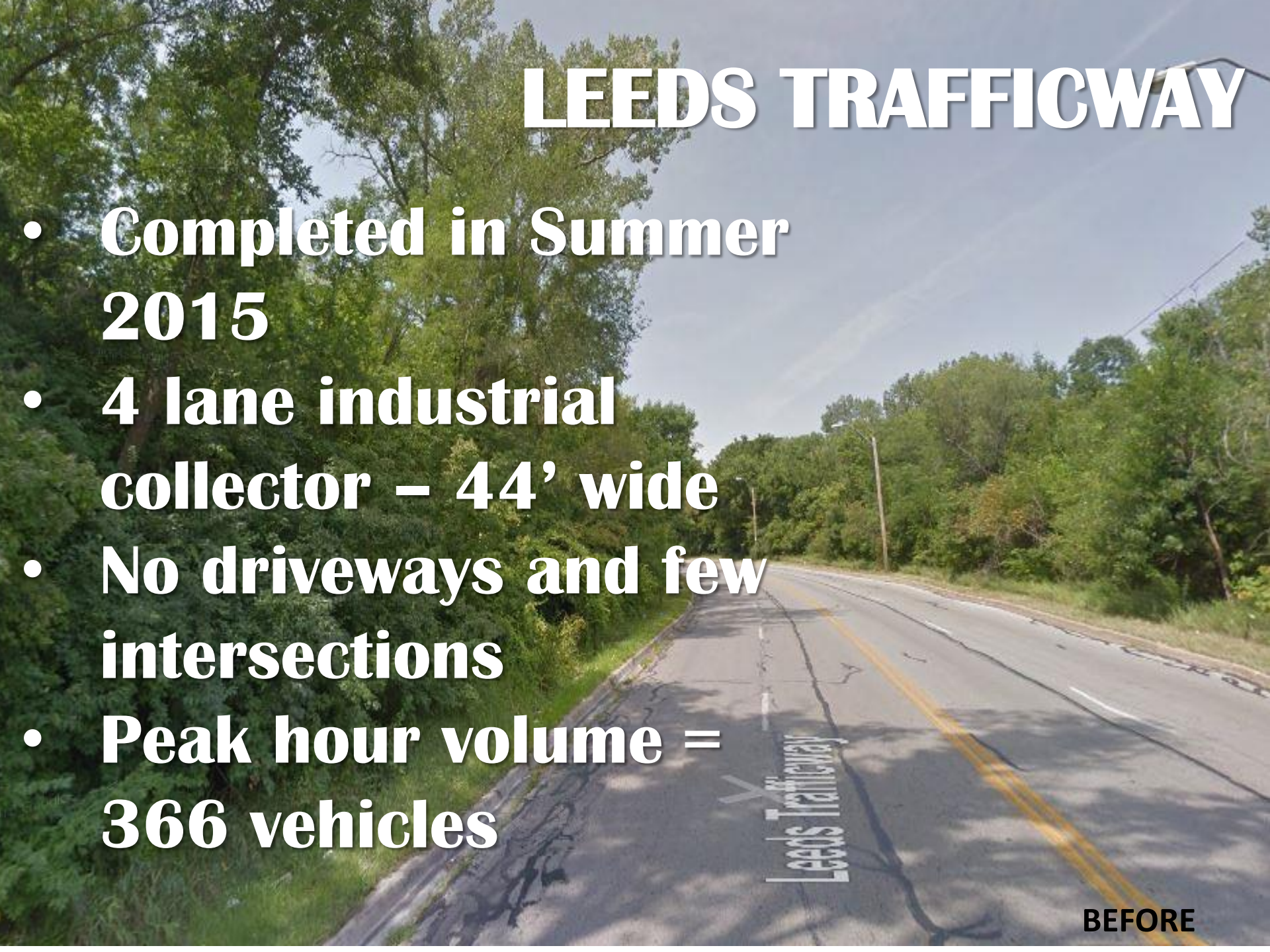
Of the four-lane street segments in Kansas City:

- 630 had less than 20,000 ADT
- 54 had fewer than 1,000 vehicles per hour, peak
- 45 had fewer than 800 vehicles per hour, peak

- Four were on the resurfacing list for 2015 but only two were more than one block
- Two are on the resurfacing list for 2016
- Additional Road Diets being completed as separately funded projects
- Costs approximately $20,000 per bike lane mile

LEEDS TRAFFICWAY

- Completed in Summer 2015
- 4 lane industrial collector – 44’ wide
- No driveways and few intersections
- Peak hour volume = 366 vehicles

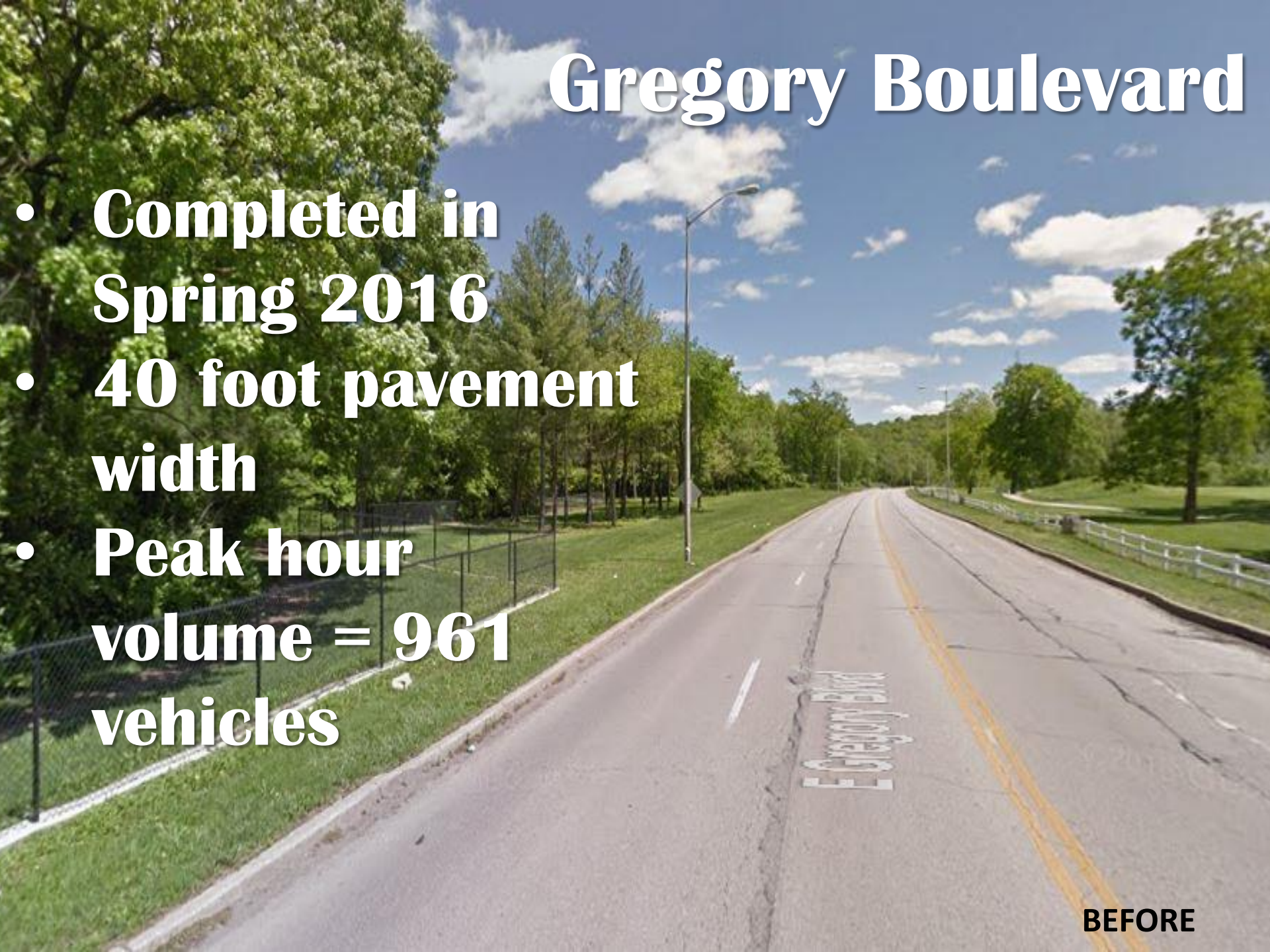


BEFORE


LEEDS TRAFFICWAY
• 12’ lane, 6’ bike lane, 5’ painted median
AFTER

Gregory Boulevard

- Completed in Spring 2016
- 40 foot pavement width
- Peak hour volume = 961 vehicles



BEFORE


Gregory Boulevard
• 12’ lane, 5’ bike lane, 3’ buffer
AFTER

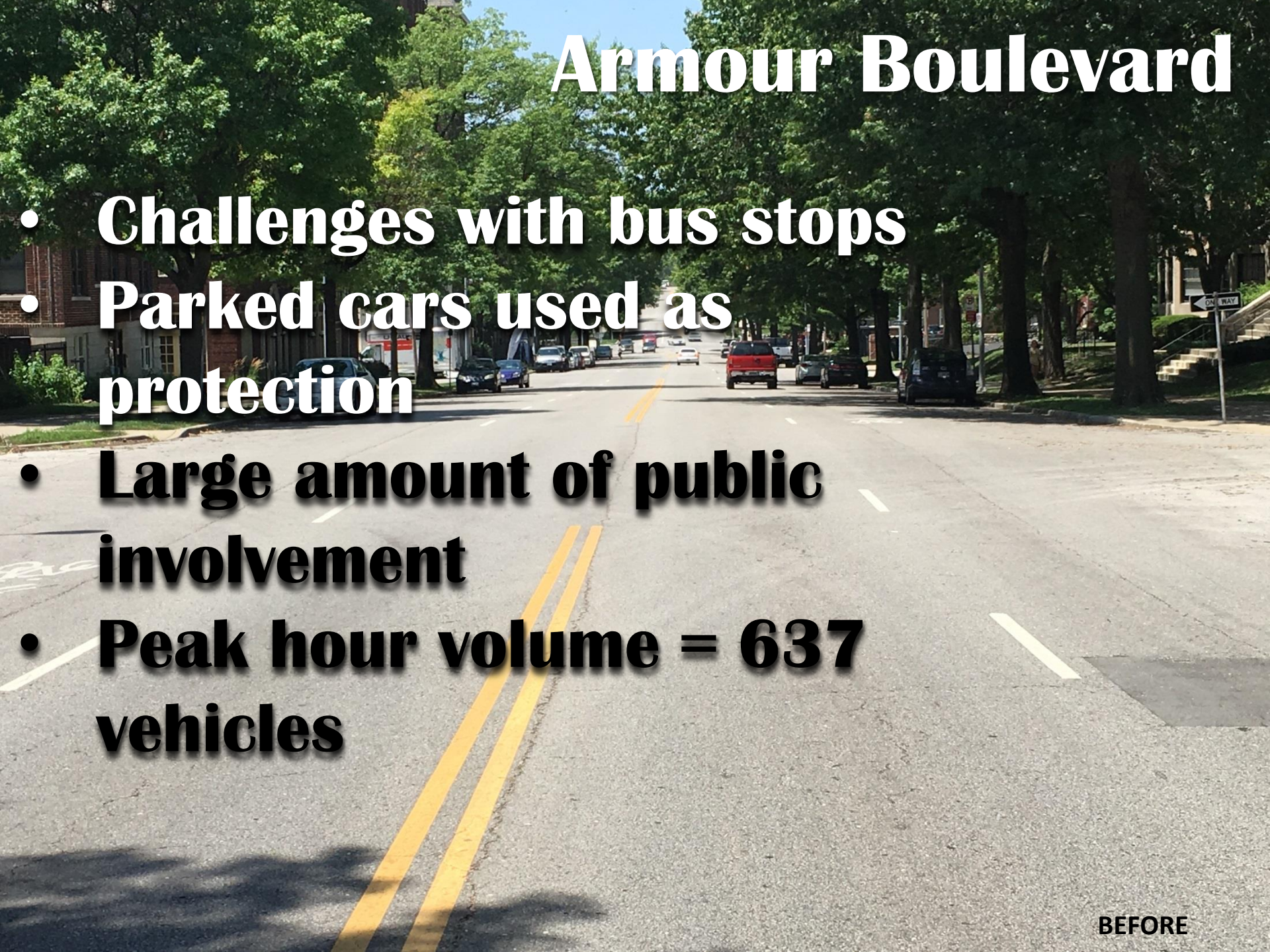

BEFORE
• Completed Summer 2016
• Multiple drive challenges
• Peak hour volume = 1196 vehicles
NE Barry Road

NE Barry Road

- 12’ lanes, 6’ bike lane, 4’ buffer
- Striping not complete

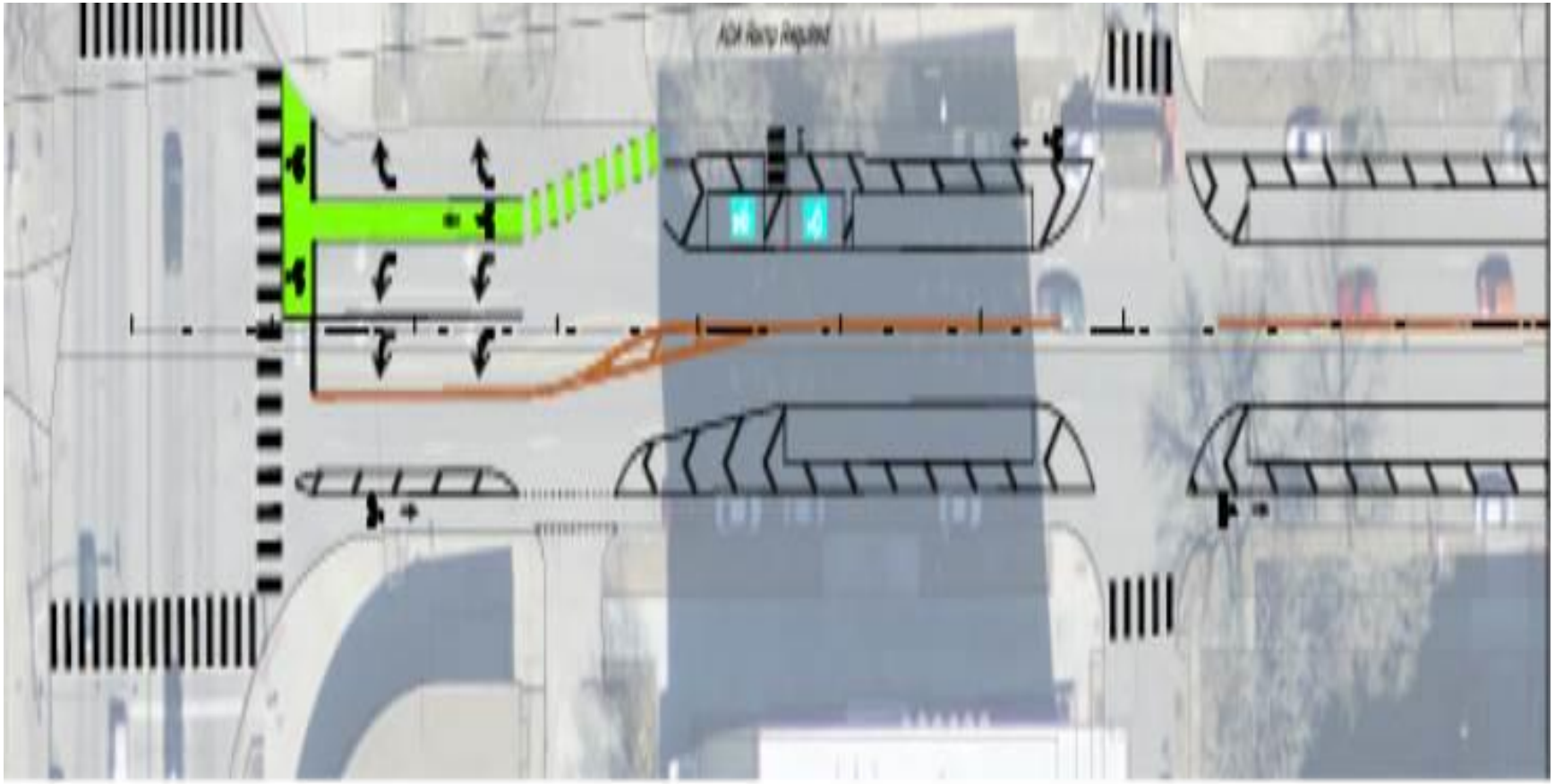
Armour Boulevard

- Challenges with bus stops
- Parked cars used as protection
- Large amount of public involvement
- Peak hour volume = 637 vehicles



BEFORE

Armour Boulevard



AFTER


• One Way, 32 feet wide
• Issue with speeding cars and large trucks
• Adjacent to park
• Allow angled parking to be added along park
CHARLOTTE AVENUE
BEFORE

CHARLOTTE AVENUE

AFTER

Performance Metrics

- Monitor crash data and compare to pre-diet condition
- Monitor changes in traffic volumes
- Monitor travel speed on corridors with speeding issues
- Monitor intersection operations at signalized intersections
- Track citizen feedback

Mayor Karl Dean
Complete Streets
Executive Order
Oct. 6, 2010

National Complete Streets Coalition

City: Executive order			
City: Executive order	Memphis, TN	An Order Establishing a Complete Streets Policy for the City of Memphis	2013
City: Executive order	Houston, TX	Executive Order No. 1-15	2013
City: Executive order	Nashville, TN	Executive Order No. 40	2010
City: Executive order	Lincoln, NE	Executive Order 088476	2013
City: Executive order	Salt Lake City, UT	Executive Order on Complete Streets	2007
City: Executive order	Philadelphia, PA	Executive Order No. 5-09	2009

Major Differences: 2009-016

- Expands the focus to include green-street elements;
- Adds language re: increasing accessibility for **all** users;
- Uses the Major & Collector Street Plan and Metro's other modal plans (Sidewalks/Bikeways) to establish complete street standardized dimensions;
- Directs Metro to establish a collaborative process for considering exceptions to the policy;
- Directs Metro to establish a means to track the success of policy implementation with performance measures.

American Heart Association.

"The American Heart Association supports Mayor Barry's efforts to complete our streets with features that allow people of all ages and abilities to move about safely – especially in those communities **where people have no other option** but to walk, bike, or take transit because driving is impossible for whatever reason," says Ken Harms, board chair of the Greater Nashville American Heart Association (AHA). "National and local health data also affirms **these areas tend to suffer higher rates of poor heart health and potentially stand to benefit the most from active transportation** facilities that connect people to jobs, education, primary care, and healthy food."

Mayor Barry
Green and
Complete
Streets
Executive Order
May 23, 2016

Project Name	**Complete Streets Implementation on BRT Lite Corridors - Gallatin Pike**			**TIP #**	2014-111-026
Improvement Type	Multi-Modal Upgrades			**Lead Agency**	Metro Nashville
County	Davidson County	**Length**	0.00	**Regional Plan ID**	Consistent
Air Quality Status	Exempt	**TDOT PIN**		**Project Cost**	$5,383,360.00
Route					
Location	Alta Loma Road to Liberty Lane				
Project Description	Implementation of Complete Streets elements along the Gallatin Pike BRT lite corridor in Nashville. Work elements may include a multi-use path, strategic pedestrian connections, improved signalized intersections with crosswalks and pedestrian countdown timers, reconfigured or repositioned transit stations, enhanced transit station amenities, bike lockers and benches. Project must be designed in coordination with a steering committee comprised, at a minimum, of represenatives from Metro Planning, Nashville MTA, and the MPO.				

Fiscal Year	Type of Work	Funding Type	Total Funds	Federal Funds	State Funds	Local funds
2014	PE-D, ROW	U-STP	$1,730,560.00	$800,000.00	$0.00	$930,560.00
2015	CONSTRUCTION	U-STP	$3,652,800.00	$2,922,240.00	$0.00	$730,560.00

REVISION HISTORY

PROJECT NOTES

12/18/12 - Metro project in coordination with MTA

Road Diets for All Road Users – Bike Boulevard

Jacob Ray
Traffic Engineering Supervisor
City of Columbia, MO
(573) 874-7688
jacob.ray@como.gov

Columbia is a typical university city

- Population 115,000 - hills - weather extremes
- Not densely populated: urban area 8 x 8 miles (twice the footprint of San Francisco proper)
- Typical urban area: downtown grid area + urban sprawl + barriers to NonMotorized transportation (interstates)
- University of Missouri – 35,000 students

What is a Bike Boulevard?

- Low-traffic neighborhood streets which:
  - Separate vehicle and bicycle traffic from each other as much as possible
  - Through vehicle is displaced to a parallel busy road and drawing bicycle traffic away from the busy road to a quiet residential street.
  - Provides a safe bicycle connection to trails, schools, businesses,etc.

Goals of Bike Boulevards

- Reduce vehicle speed
- Displace Through Traffic
- Increase safety crossing busy streets

Elements of Bike Boulevards

- Usually accomplished by striping, marking and signage
- Parking is often restricted to one side of the street for safety and visibility
- Speed tables can be added to slow down cars and discourage “cut through” traffic

Benefits

- Bicyclists’ and walker’s safety
- Bicyclists’ convenience and comfort
- Better neighborhood connections
- Residents experience “calmed” traffic, less traffic

Disadvantages

- Drivers may be inconvenienced, requiring a change in the route they may use.

Project Area

Bike Blvd. (with 6' Advisory bike lanes)

- Divert "cut through" vehicle traffic to parallel roads
- Heavy "traffic calming" on bike blvd (speed tables, diverters, etc)
- Center 6' bike lanes created with white skip striping ("Advisory" or "Priority" lane) – like a trail in the middle of the road.
- SLM (Sharrows) centered in bike lane
- Street murals created at several intersections

Survey: Residents Like It!

Results

- Vehicle traffic decreased by 42% (942 vehicles/day to 522)
- Bicycle traffic increased 125% (33 bicyclists to 71 during the peak hours)
- Vehicle speeds – 85th percentile reduced from 26 to 24 mph
- A neighborhood survey showed a majority in favor of the bike boulevard

Summary

- Reduced vehicle speed
- Displaced through vehicular traffic to adjacent higher classification roadways
- Increased bicycle traffic on Ash/Windsor
- Neighborhood was supportive of the implementation
- Have almost completed design on 2nd implementation that will be constructed during the Summer of 2017

Questions ?