bus rapid transit

environmental assessment

hands-on community involvement executive summary

September 9, 2014

credits

Prepared for:

Capital Area Transportation Authority

Environmental Assessment Consultant Team:

Mead & Hunt, Inc.
Consultant Team Lead, Environmental Planning, Local Outreach & Coordination

Dover, Kohl & Partners
Community Outreach & Urban Design

Kimley-Horn & Associates, Inc.
Transportation Engineering

Cambridge Systematics
FTA Coordination & Transportation Modeling

contents

introduction

above: Bus Rapid Transit in other communities

Known as "Michigan's Main Street," the Michigan Avenue/ Grand River Avenue corridor traverses Lansing, Lansing Township, East Lansing, and Meridian Township, and connects major employment destinations and institutions such as the State Capitol Complex, Michigan State University and Sparrow Hospital. The corridor has been the subject of recent planning efforts, which envision new housing in more dense, compact forms, and opportunities for infill development and economic growth.

Existing Capital Area Transportation Authority (CATA) bus service on the corridor (Route 1) is heavily used; some buses are over capacity at peak hour, and trends show transit ridership is increasing. At the same time, existing buses are being slowed by vehicular traffic, which challenges reliability. As the corridor continues to grow to include more housing and employment destinations, improved transit options are needed.

Alternatives Analysis: 2009 – 2011

Starting in 2009 a vision gradually emerged for a state-of-the-art Bus Rapid Transit (BRT) line on the corridor, extending from the Capitol on the western end to the heart of Meridian Township on the eastern end. New transit investments go through a rigorous process of analysis, investigation and consensus-building, called an Alternatives Analysis, where a number of possible technologies are considered and evaluated. In this case, three options were studied: BRT, light rail, and modern streetcar. The improved service, benefits and costs of each were compared to existing Route 1 service. Through this analysis, a modified BRT service was selected as the "locally preferred alternative." Key features of this option include:

- 6-minute peak frequency
- Replaces Route 1 service
- Provides dedicated BRT lanes
- Anticipated daily ridership: 7,600 – 8,700
- Time savings: 7.5 minutes
- Estimated cost: $194 million

Environmental Assessment: 2013 – present

In 2013 with permission of the Federal Transit Administration, CATA initiated the next step in the process: an Environmental Assessment (EA) to provide an evaluation of environmental impacts, and identify potential mitigation measures for adverse impacts (if any) that may result from implementation of the BRT system. An EA is prepared pursuant to the National Environmental Policy Act, which requires any action that involves federal funding or federal permits to undergo an environmental analysis. The purpose of this analysis is to evaluate and document effects on the surrounding natural, social, and economic environment.

An important part of the environmental assessment process is to finalize a conceptual design and alignment for the BRT system, in order to carry out the technical analysis. **This is a pivotal time for community input; to shape and inform the designs that are carried further for evaluation.** Along the proposed route there are many different places, each with its own unique character. While the corridor is common to all, each station along the route should be creatively designed, incorporating the unique qualities and characteristics that distinguish one from the others.

In March and April 2014, a series of community meetings and workshops were held to gather feedback from the community and key stakeholders along the corridor. Input was gathered from business and property owners, area employers and employees, residents and community members on design issues that impact quality of life. Pedestrian and bicycle facilities, on-street parking and landscaping, and the design of and access to planned stations were the predominant topics of concern. Key stakeholders in attendance included representatives from the Michigan Department of Transportation, the cities of Lansing and East Lansing, Meridian Township, and Michigan State University. All were invited to help to resolve technical details and refine draft design concepts.

This report is a summary of the community workshops held, input gathered, and resulting draft design concepts. These concepts will continue to be refined and will be included as part of the final EA, expected to be completed in 2015.

what is BRT?

BRT is an enhanced transit system that operates similarly to light-rail, except that it uses high-capacity buses that operate in dedicated bus lanes. Important features planned for the Michigan Avenue/ Grand River Avenue corridor include:

- ***Enhanced vehicles***: 60' articulated, hybrid buses
- ***Improved, efficient service***: Signal pre-emption, dedicated bus lanes, 28 stations from Lansing to Meridian
- ***Expedited boarding process***: Fare paid at station, level boarding, fully accessible

what are the benefits?

- ***Improved travel times, increased capacity:*** By placing buses in dedicated travel lanes, service will be faster, more predictable and reliable, and will move more people more efficiently.
- ***Improve links between communities:*** Providing enhanced transit offers more choices for commuters, improving connections throughout the corridor.
- ***Placemaking/beautification:*** The BRT system will require changes to the street configuration, which can be an important opportunity to increase sense of place through design, improving aesthetics as well as walkability and bikability. Station design can reflect specific neighborhood character or recognize employers, institutions or businesses in each district.
- ***Economic development:*** Precedents demonstrate that investment in enhanced transit can fuel economic development; employers are attracted to locations that improve employee recruitment and retention by offering choices in transportation and improved quality of life.
- ***New transit-oriented development:*** BRT will stimulate street- and transit-oriented, walkable development at stations throughout the corridor.
- ***First leg of a Lansing regional BRT system:*** Over time, additional BRT corridors can connect other workplaces and destinations in the region.

East Lansing design charrette

In March 2014, a five-day community design charrette was conducted to identify design solutions for the downtown East Lansing portion of the proposed BRT corridor. There are unique challenges found in this area of the corridor, and the charrette process provided an opportunity for an interactive dialogue to discuss alternatives. Specifically:

- Existing downtown shopfronts line one side of the right of way, and the university campus lines the other, establishing clear limits within which the proposed design solution must fit.
- The design needs to consider the future configuration of the median, which is important to community character and sense of place.
- Vehicular lanes need to be configured to provide adequate capacity to accommodate movement through the corridor. In addition to the number of lanes, the size of the lanes is an important design consideration, as lane width directly impacts travel speed and the space available for other elements such as sidewalks and medians.
- Business and property owners identified the need to be able to make eastbound left turns to access downtown shops.
- The adjacency to the university campus produces a high volume of pedestrians and cyclists in the area; the future street design must place high priority on their safety and comfort.

At the onset, it was clear that some compromises or trade-offs would be needed. For example, while it is important to provide facilities for safe cycling, a separate bike lane in this narrowed segment of the corridor may not be desirable given other priorities to be accommodated in the existing right-of-way width. Meetings, workshops and hands-on design activities were used to work with key stakeholders and community members, with a goal of creating a design that maximizes use of the streetspace.

Charrette Preparations

Preparations for the charrette started long before the kick-off meeting. In the weeks leading up to the charrette events, the CATA planning team created a website (cata-brt.org) to convey information to community members; over 1,000 flyers were printed and distributed; and signage was placed in CATA buses to inform community members of upcoming events. In February, members of the planning team conducted interviews with representatives from MDOT and the City of East Lansing, Michigan State University, property and business owners, and leaders from neighborhood and community groups. The meetings helped the team gain a better understanding of key issues and encouraged outreach to the greater East Lansing community. In the weeks leading up to the charrette, news advisories generated broad media coverage. Local news coverage continued during and after the charrette; scheduled social media posts went viral.

what is a charrette?

The National Charrette Institute defines a charrette as a multi-day, collaborative planning event that harnesses the talents and energies of all affected parties to create and support a feasible plan that represents transformative community change. In East Lansing, the charrette provided a setting for residents and other stakeholders to generate design solutions for BRT, cars, pedestrians and bicycles.

below: The East Lansing charrette study area

Hands-on Design

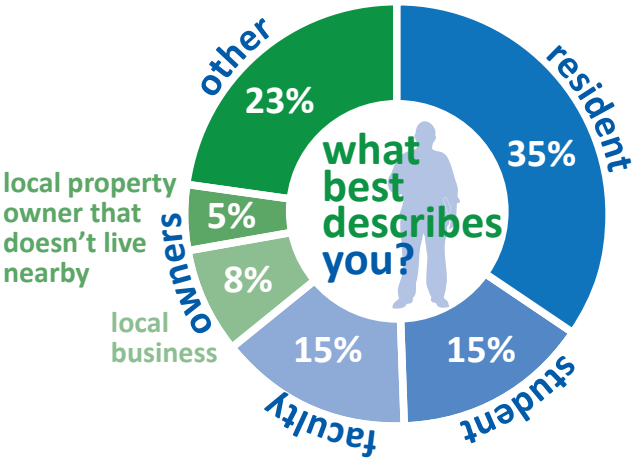
On March 19, 2014, a Kick-off & Hands-on Design Session was held. The meeting began with an introductory presentation about BRT and planning in the Michigan/ Grand River Avenue corridor to date, and outlined known challenges in the East Lansing area. A series of keypad polling questions yielded information about who was in attendance and their interests and priorities (see pages 6 – 7). Attendees then worked in small groups around tables to share ideas for the East Lansing portion of the corridor. Starting with maps, participants discussed:

- changes or improvements to pedestrian, bike, and vehicular facilities;
- locations for the planned BRT stations; and
- how BRT could impact future building design on adjacent properties.

Participants at each table then completed a "build the street your way" exercise. "Playing pieces" consisting of BRT lanes and stations, vehicular lanes, bike lanes, sidewalks, medians, and trees were provided, and each table assembled them as they envision the street configuration in the future. Participants had to balance the needs of cars, pedestrians, cyclists, and transit, and come up with a design solution that fit within the existing right-of-way. At the end of the workshop, one person from each table summarized "three big ideas" from their conversation to the entire assembly.

community polling input

(keypad polling at charrette kick-off meeting)



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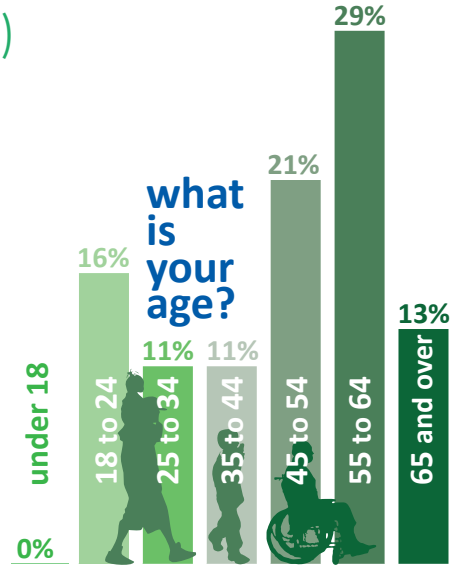
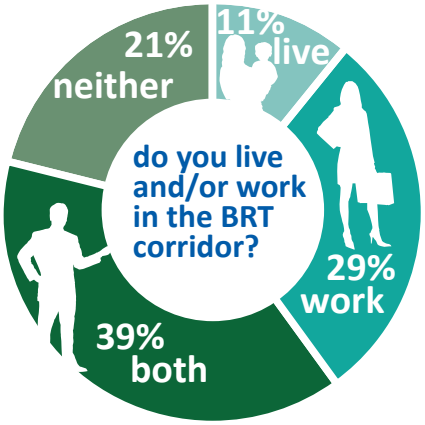


total number responding: 38

total number responding: 36



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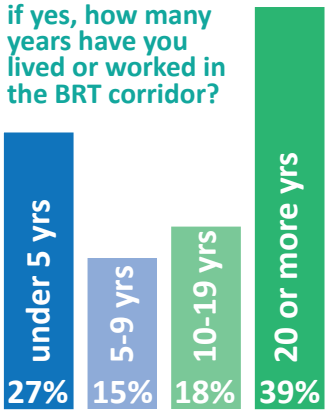

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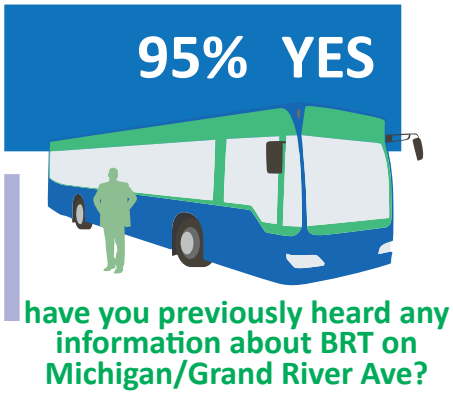
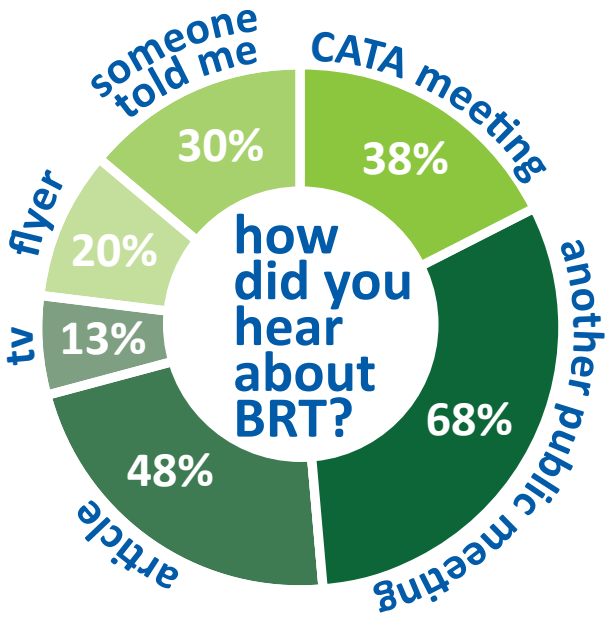


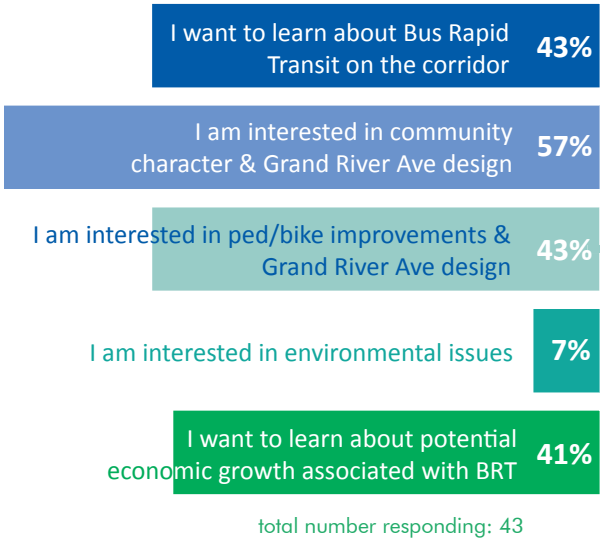
have you previously heard any information about BRT on Michigan/Grand River Ave?

total number responding: 39



total number responding: 39

I am here tonight because:
(participants selected 2)



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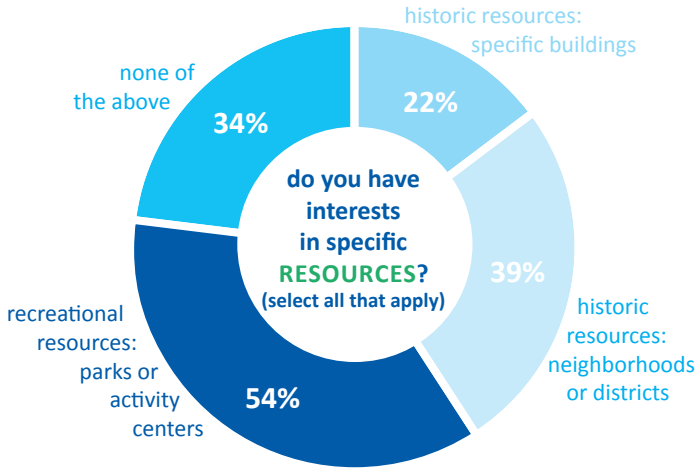
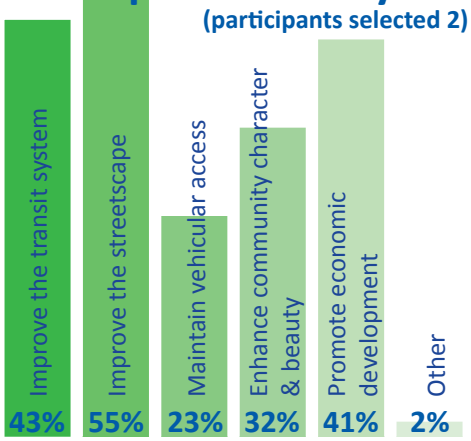


total number responding: 40

which are the highest priorities to you?
(participants selected 2)



total number responding: 44

three big ideas

At the conclusion of the Hands-on Design session, participants summarized their conversations into "three big ideas." Responses from each **table group** are listed below; common themes are highlighted in blue/all caps:

1: STATIONS IN MEDIAN TO ENHANCE MEDIAN
2: Cycle track on north side with curb provides separation from general traffic and an additional buffer for peds, sharrow/signed bike route on Albert
3: Cedar/Gunson: public-private partnership

1: With a 40% – 50% reduction in vehicles we can reduce to one lane in each direction and **PRESERVE SIDEWALK AND GREEN SPACE**
2: Move east/west bike traffic to alley (non-motorized plan)
3: Curbside stations as part of the commercial building streetscape and vitality

1: Shared BRT lane; shared BRT station staggered in narrow section
2: POSSIBLE ROAD DIET in wider section
3: Preserve narrowed median with BRT stations center-loaded

1: Stations on outside lanes, sometimes sharing with regular traffic, strict enforcement of no loading
2: Pedestrian islands of safety highly desired, green space, recovery signal must assist disabled persons
3: Different station types at different locations; big vs. small

1: Getting MSU students to East Lansing safely (all peds)
2: PLACEMAKING IN THE CORRIDOR; "string of pearls"
3: Removal of on-street loading lane

1: BRT in the middle – avoid a shared lane
2: BRT stations midblock to avoid confusion
3: ALTERNATE BIKE PATHS OFF OF GRAND RIVER

1: PEDESTRIAN SAFETY IS A TOP PRIORITY
2: Maintain the median – width may be adjusted
3: Bicycles are best supported by improvements on parallel routes
4: Long-term: widen the right of way near Bogue; now: build it on the north side as a phase 1.

1: Single BRT lane through East Lansing (timed/switched)
2: Address/improve existing traffic issues through this process
3: Streetscaping that helps create a splash barrier
4: In Gunson section – going to only two lanes of traffic with turn lane

Open Design Studio

March 20 – 22, an Open Design Studio was held at the Michigan Energy Options building in downtown East Lansing. The planning team worked to consolidate the ideas from the opening meeting into several leading streetscape design scenarios for analysis, and to create new graphics to help community participants understand the options under consideration. Scenarios were evaluated based on how well they fulfilled the community's desires for enhanced transit, vehicular functionality, improved pedestrian and bike facilities, and placemaking features (such as the median, street trees, and wide sidewalks). During this time, a series of small group discussions with key stakeholders were held to discuss draft ideas and continue to gather input. Stakeholder groups included transportation professionals, property owners, neighbors, business owners, environment/energy, and "placemakers" (designers). The studio was open for members of the community to stop by and review the work in progress as well.

Some of what we heard:

We want even more effective transit options

We want four lanes; left-turn lanes

We want provisions for bikes

We want our median, trees, and better pedestrian crossings

Need to fit in existing right of way (don't encroach on MSU)

Work-in-Progress Presentation

On March 23, a Work-in-Progress presentation was held that summarized the input gathered during the week, and described the leading design scenarios for this segment of the corridor. At the end of the meeting, participants adjourned to review large maps and exhibits showing the proposed streetscape configurations, and continue the conversation with the planning team.

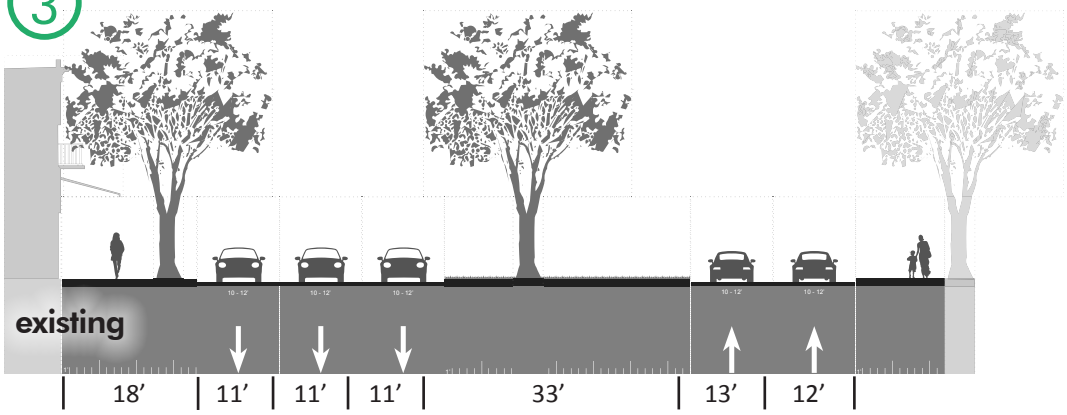
design alternatives

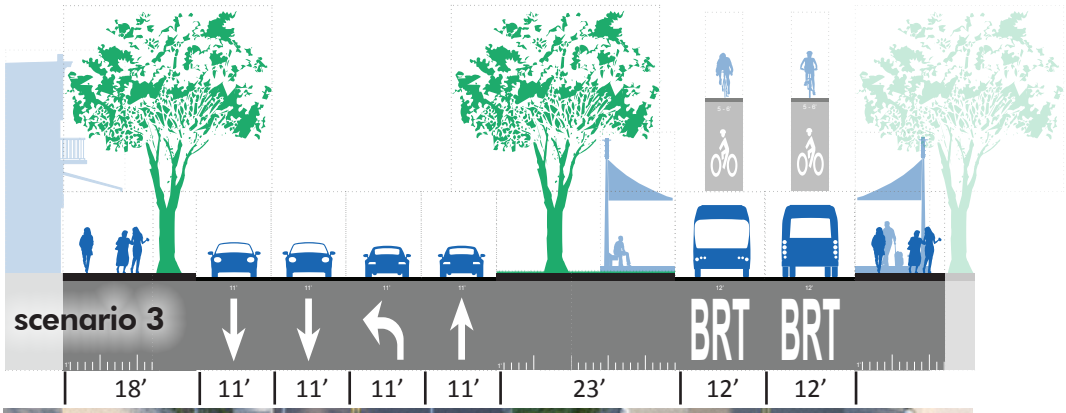
The planning team synthesized feedback from community members, creating multiple street design scenarios that were evaluated according to a "wish list" of needs for transit service, vehicles, pedestrians, bicyclists, and placemaking. These were then refined based on stakeholder input. The most promising scenarios are summarized on the following pages.

Downtown Scenario 3

"Scenario 3" was the preferred street design solution for the downtown East Lansing area. Key attributes include:

- Two dedicated BRT lanes to the south of the median. With relatively few entrances to campus, conflicts between transit and motorists are reduced, enhancing efficiency.
- Four vehicular lanes to the north of the median; two westbound, one eastbound, and an eastbound left-turn lane.
- The existing wide median is trimmed from the north side to accommodate an additional vehicular lane; however, the median is also expanded on the south side as left-turn lanes and intersection breaks are filled in. As a result, the median retains approximately 90% of its current area.
- Cyclists are accommodated in shared BRT/bike lanes.
- The existing wide sidewalk adjacent to downtown shopfronts is retained. Although there are now four vehicular lanes north of the median, pedestrian refuge areas are provided opposite turn lanes to facilitate crossing.
- Stations are located in the median (westbound), and along the university sidewalk.





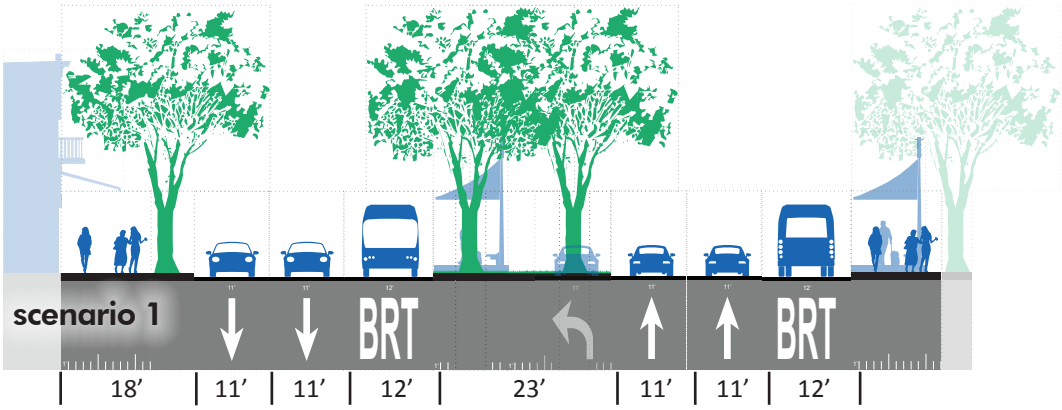
left: Existing conditions, Grand River Avenue in the downtown East Lansing Area. The street today has three westbound lanes, two eastbound lanes, and a wide central median.

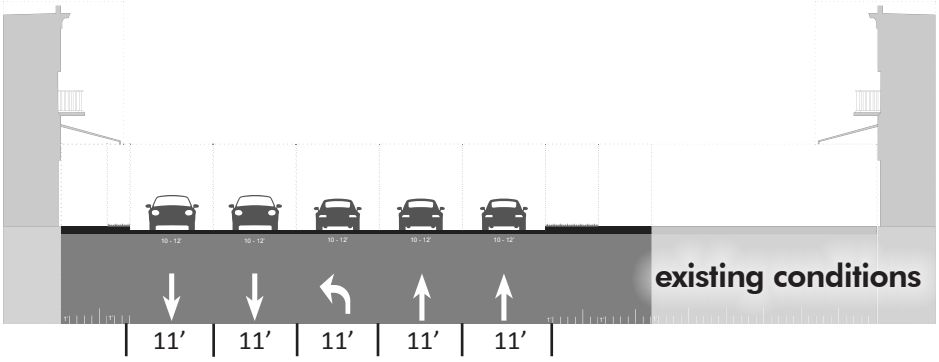
above and below: Renderings showing the street reconfigured in the future with shared BRT/bike lanes on the south of the median, and all vehicular lanes on the north. This design reduces conflicts between vehicles and transit; where intersection breaks are no longer needed, the median can be connected.

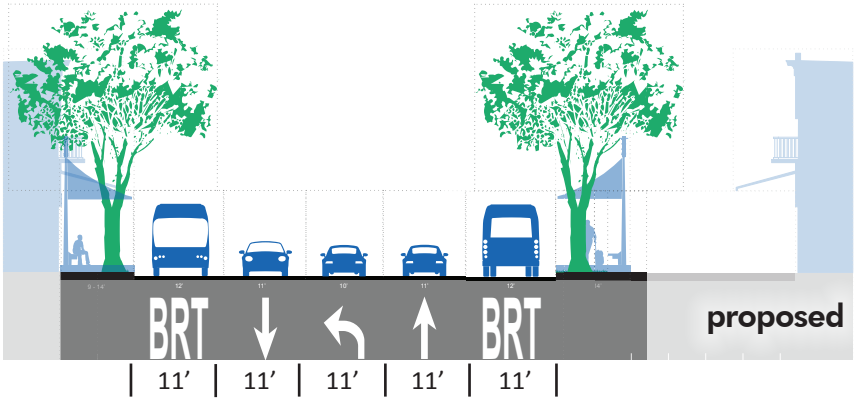
Downtown Scenario 1

"Scenario 1" is a second alternative for the downtown area. Key attributes include:

- Two dedicated BRT lanes; the westbound lane is adjacent to the median (with stations in the median). The eastbound lane is adjacent to the university sidewalk (with stations in the sidewalk area).
- Two eastbound vehicular lanes south of the median; two westbound lanes to the north. Eastbound left-turn lanes are cut into the median.
- A wide central median (although narrower than existing) is retained. The existing median is trimmed from the south side to accommodate an additional travel lane, and further narrowed where left -turn lanes are needed.
- The existing wide sidewalk adjacent to downtown shopfronts is retained. Most crosswalks only traverse three lanes at one time, with a wide refuge in the median.







East of Bogue St.

East of Bogue Street, the urban character changes. Today there are five lanes of vehicular traffic (two in each direction, and a continuous center- turn lane); buildings are further from the street than in downtown, often set behind parking. This is one of the narrowest right of way segments in the corridor.

The leading scenario for this segment of the corridor would repurpose two of the existing vehicular lanes as dedicated bus lanes. Key attributes include:

- Dedicated BRT lanes run adjacent to the sidewalk on either side of the road. (Alternatively, these lanes could be mixed bus/vehicle lanes.)
- Three vehicular lanes; one in each direction and a center-turn lane.
- Stations are located in sidewalk areas.

By repurposing the existing lanes, the curb-to-curb dimension can remain the same.

The City of East Lansing anticipates that this area will become more urban in character over time. A form-based code is in place for the neighborhoods south of Grand River. This will yield street-oriented buildings placed closer to the street than exists today and parking to the side or rear. A wide setback from the street edge to the prescribed future build-to line could provide space for future right-of-way expansion (should this be necessary). This space could alternatively be used for widened sidewalks or plaza spaces on private property.

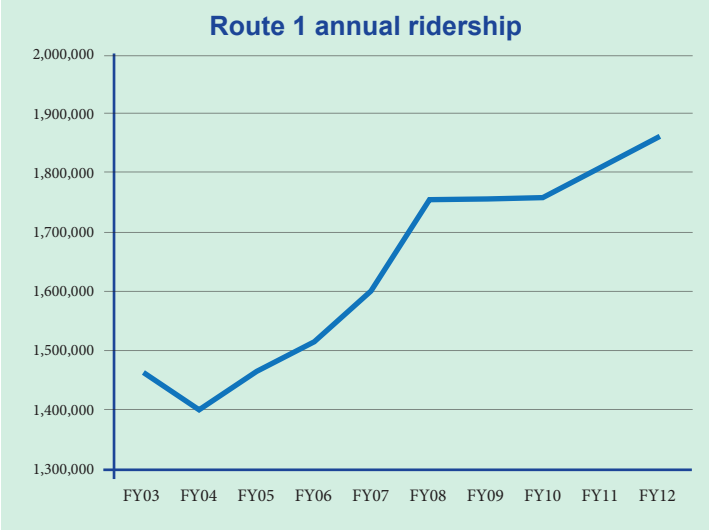
how does it work?

Transportation

The implementation of BRT will bring changes to the Michigan Avenue/Grand River Avenue streetscape; to design a road that best meets current and future needs of all transportation modes, a review of recent and current trends is needed:

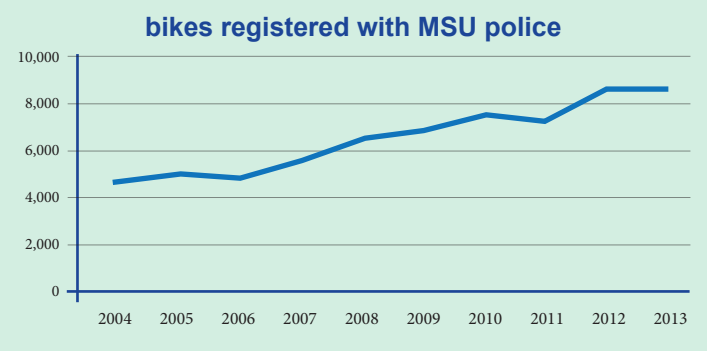
- From 2003 – 2012, there has been a dramatic increase in transit ridership in the Route 1 corridor. An enhanced transit option is crucial to accommodate future needs.
- The number of bicycles registered at MSU, as well as measured commuting by bicycle in the region is also on the rise. Thus, bike facilities on the corridor and surrounding network of streets should be a high priority.
- Within the same time period, vehicular trips appear to have decreased in some places over time. This trend was observed in regional commuting data, and in sample traffic counts on the corridor in 2006 and 2013.

To make decisions about the final design of the streetscape, specifically how many vehicular lanes are needed to support motorist needs, updated information to verify these trends is needed. Following the charrette, CATA elected to undertake an updated count of traffic in the corridor, so the analysis and decisions for the EA will be based on current data. The traffic counts are expected to be completed in fall 2014, and their results will be used in the environmental analysis that follows.

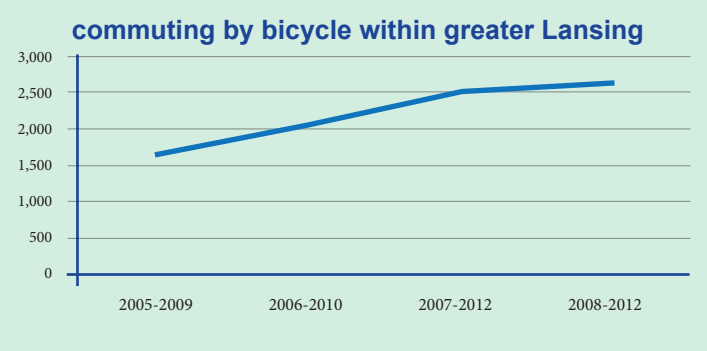


source: CATA

source: US Census American Community Survey



source: MSU Parking/Police Department Data



source: US Census American Community Survey

Shared Bus/Bike Lanes

In several of the design scenarios explored for the Michigan/Grand River Avenue corridor, shared BRT/bike lanes are being considered as a means to accommodate cyclists within the right of way.

Buses in dedicated lanes come once every six minutes at peak hour. This leaves the lane available for cyclists between vehicles. Sharing the lanes is easier than in a traditional sharrow (shared bike/vehicle lane), which will have more conflicts. In addition, each BRT vehicle is driven by a professional driver, who will be on the watch for cyclists. Designs that have bus lanes adjacent to each other best serve as shared facilities, allowing an extra lane for bike usage when a bus passes.

Shared BRT/bike lanes have been implemented successfully in other communities. It is a promising solution that accommodates cyclists in rights of way that do not have space for separate bike lanes.

below: Example of bus/bike lane at Nicollet Mall, Minneapolis.

how does it work?

Transit-Oriented Development

Most of the discussion during the charrette week focused on what will happen within the right of way: Where will transit lanes be located? How wide will the median and sidewalks be? How many lanes will there be for vehicular traffic, and where will turn lanes be located?

These are all important design elements to be addressed. However, it is equally important to look beyond the street itself, at how BRT can influence future land use and building design choices. The implementation of BRT can enhance quality of life by providing greater choices for travel, and also by stimulating new sustainable development forms. Examples from peer communities demonstrate great opportunity. Public investment in fixed transit infrastructure has been a proven inducement to new transit-oriented private development. East Lansing's Comprehensive Plan and regulatory documents prescribe higher density in this corridor, following a form-based, pedestrian-oriented approach. During the charrette, community participants and the planning team envisioned new development in walkable, transit-oriented forms. When conceived as a whole, the design of the streetscape can work together with private improvements to amplify sense of place.

Illustrating Potential Scenarios

right: Existing conditions at Grand River Avenue and Stoddard Avenue. This area is designated to be a future BRT station location.

below: The Grand River/Stoddard intersection in the future, after implementation of BRT. New mixed-use buildings front the street; parking is now located to the rear. A new park is located at the station area to provide a gathering space – an amenity for transit users, residents and businesses in the neighborhood.

Illustrating Potential Scenarios

above: Existing conditions at Grand River Avenue and Abbot Road, downtown East Lansing.

right: The retrofit of the streetscape (according to design scenario 3). The addition of transit lanes can be accompanied by other enhancements such as new trees to complete the street canopy, and a more continuous median.

below: The investment in transit can stimulate additional reinvestment by private property owners. This image shows potential mixed-use redevelopment on several parcels, making downtown East Lansing more complete.

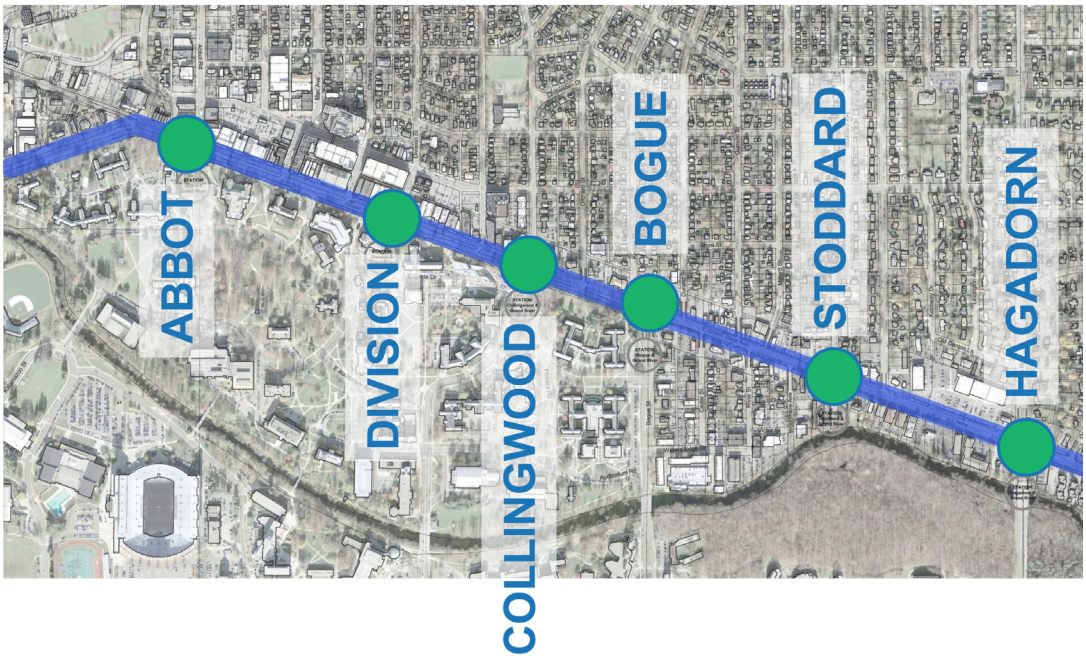
how does it work?

Refining Station Locations

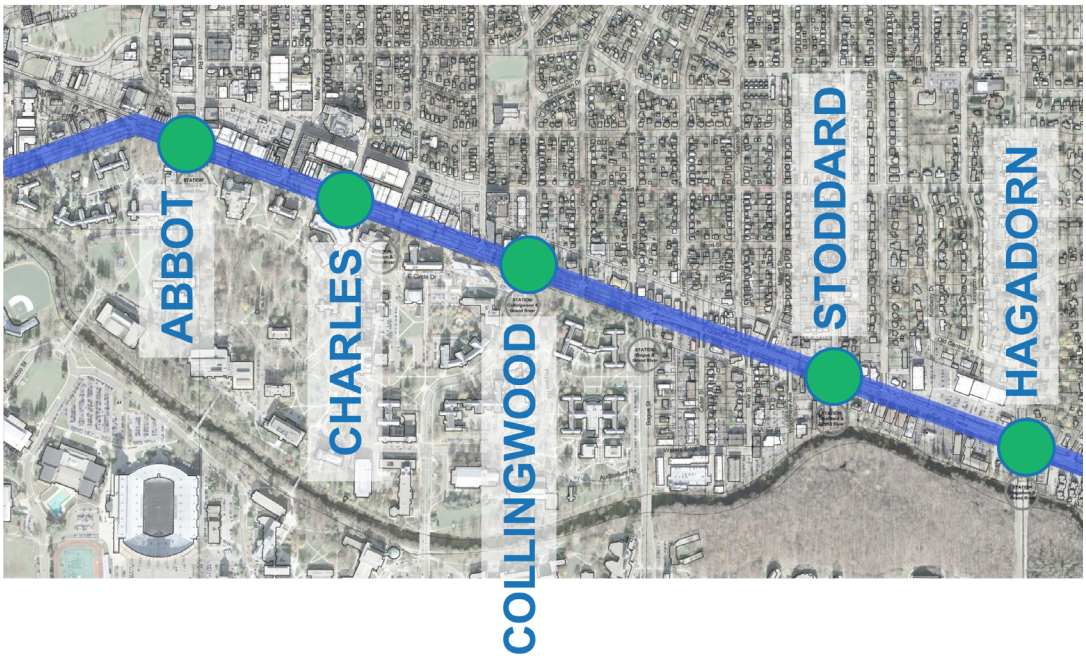
As the BRT alignment is refined and street designs are drawn in greater detail, the placement of stations along the corridor is also anticipated to be improved and finalized.

During the East Lansing charrette, community participants noted that several of the proposed stations were very close to each other. The planning team performed an analysis of the station locations, evaluating factors such as anticipated ridership and proximity to key destinations. This analysis produced a new proposed distribution of stations for this segment of the corridor.

The Alternatives Analysis identified 28 potential station locations from Downtown Lansing to Meridian Township. This total number may continue to be adjusted based on community input and additional analysis, as detailed design is completed throughout the corridor.



left: Six stations identified for the East Lansing segment of the corridor during the Alternatives Analysis.



left: Adjustment of five proposed station locations completed during the East Lansing design charrette.

designing the BRT corridor

In April 2014, community input sessions were held to gather feedback about the design of BRT within the Michigan Avenue/Grand River Avenue streetscape. These sessions focused on how to accommodate enhanced transit facilities as well as the needs of motorists, bicyclists, and pedestrians within the existing right of way. Each meeting had stations with exhibits and facilitators from the planning team to discuss non-motorized travel (bike/ped), street design, the EA process, community character, and economic impact/business development.

Each segment of the corridor is expected to have a unique, tailored design solution. The discussions included input on street design choices such as:

- the placement and alignment of BRT lanes;
- size and location of vehicular lanes and turn lanes;
- locations of sidewalks, medians, crosswalks; and
- the placement of street trees

All of these variables directly impact and enhance community character as well as the ability and desire to walk, bike, drive, and use transit. The conversations also looked beyond the right of way at how BRT could positively contribute to community character and influence economic growth and future redevelopment in each district along the corridor.

The corridor was divided into districts to allow for focused discussions at stakeholder meetings regarding unique challenges and opportunities specific to each area. Meetings were conducted at locations in each focus area, giving community members multiple opportunities to learn about the project, ask questions, and share their ideas:

1: Downtown Lansing | April 15, 4pm – 5:30pm

2: Stadium District | April 15, 11:30am – 1pm

3: Sparrow Hospital area| April 15, 9:30am – 11am

4: 2000 Block & environs | April 14, 6:30pm – 8pm

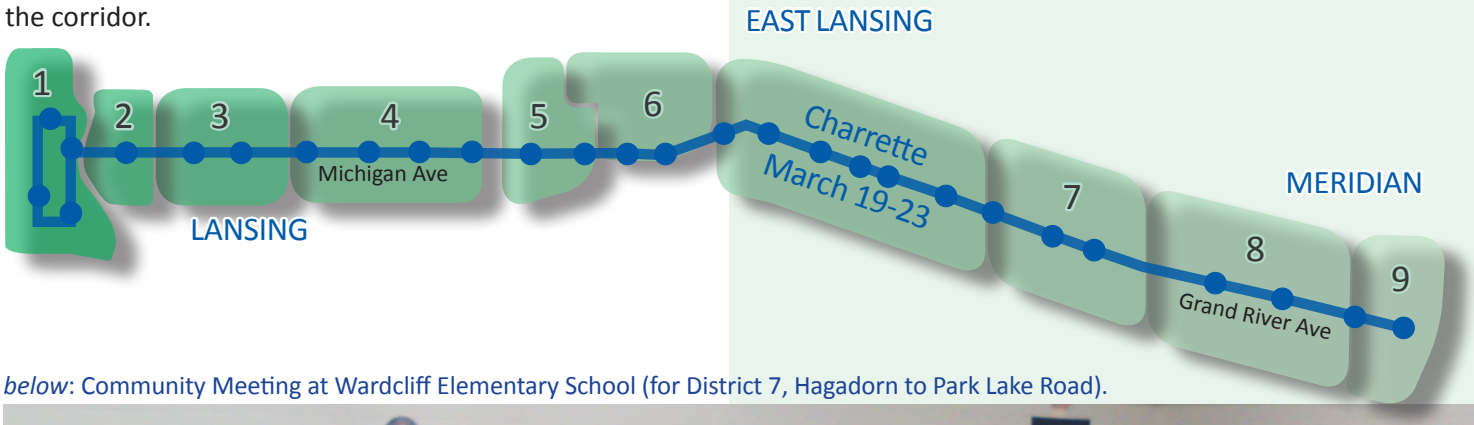
5: Red Cedar/Frandor area | April 14, 3:30pm – 5pm

6: Chesterfield Hills to Delta | April 15, 6:30pm – 8pm

7: Hagadorn to Park Lake | April 16, 9:30am – 11:30am

8: Park Lake to Okemos Road | April 16, 2pm – 3:30pm

9: Meridian Mall & Meijer | April 16, 4pm – 7pm



below: Community Meeting at Wardcliff Elementary School (for District 7, Hagadorn to Park Lake Road).

district 1: Downtown Lansing

West of the Michigan Avenue bridge

Key issues:

on-street parking

one-way vs two-way traffic flow

economic development

Some of what we heard:

We want bike accommodations along the Michigan Ave. Corridor

Will there be an emphasis on upkeep?

Smartphone app for next-bus time?

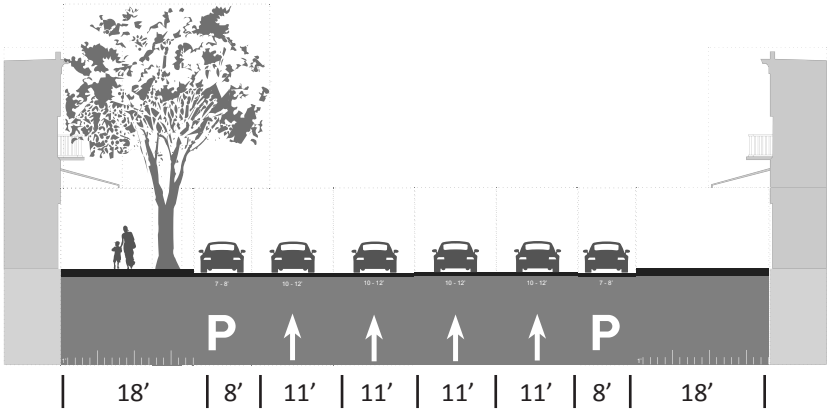
"Put dignity back into the transit experience"

Make it work for two-way and one-way

Add park-and-ride in downtown Lansing

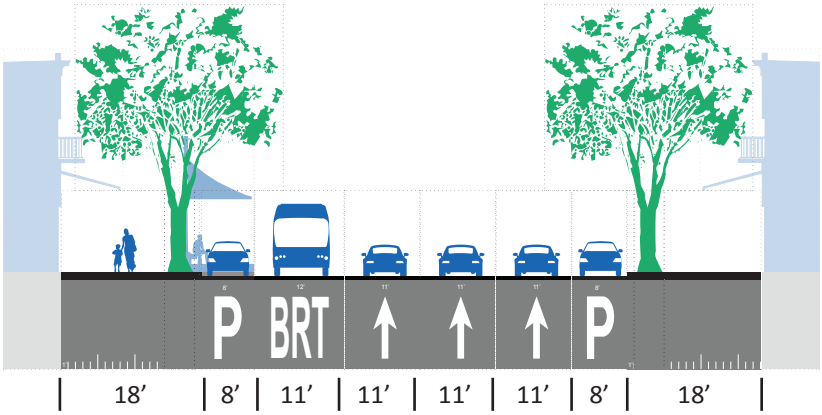
Downtown Lansing is to be a turn-around point for the BRT corridor. A dedicated BRT lane will be added to one side of the street and circulate in a loop along Grand Avenue, Lenawee Street, Capitol Avenue, and Ionia Street. Key destinations served in this area are the State Capitol complex, the CATA Transportation Center, Cooley Law School, Lansing Community College and Auto Owners Insurance. Design considerations include:

- Wide sidewalks and some on-street parking are essential to walkability and street-oriented retail in the downtown context, and should be retained where possible in the future street design. The existing street width on Grand and Capitol avenues, including parking areas, can remain the same if one vehicular lane is repurposed for transit use.
- There are discussions underway within the city about potentially returning two-way vehicular flow on streets that currently travel one way. The proposed BRT loop can work with both one-way and two-way streets. In the near term, the BRT could run contraflow (the opposite direction of) one-way vehicular travel, and make a series of right turns along the inside edge of the loop. In this case, the necessary infrastructure will be in place for future retrofit to two-way vehicular traffic flow, where the bus would run in the same direction as the adjacent travel lane.



District 1: Existing Conditions

Capitol Avenue in the Downtown District. Four vehicular lanes run one way southbound; on-street parking and wide sidewalks are provided along both sides of the street.

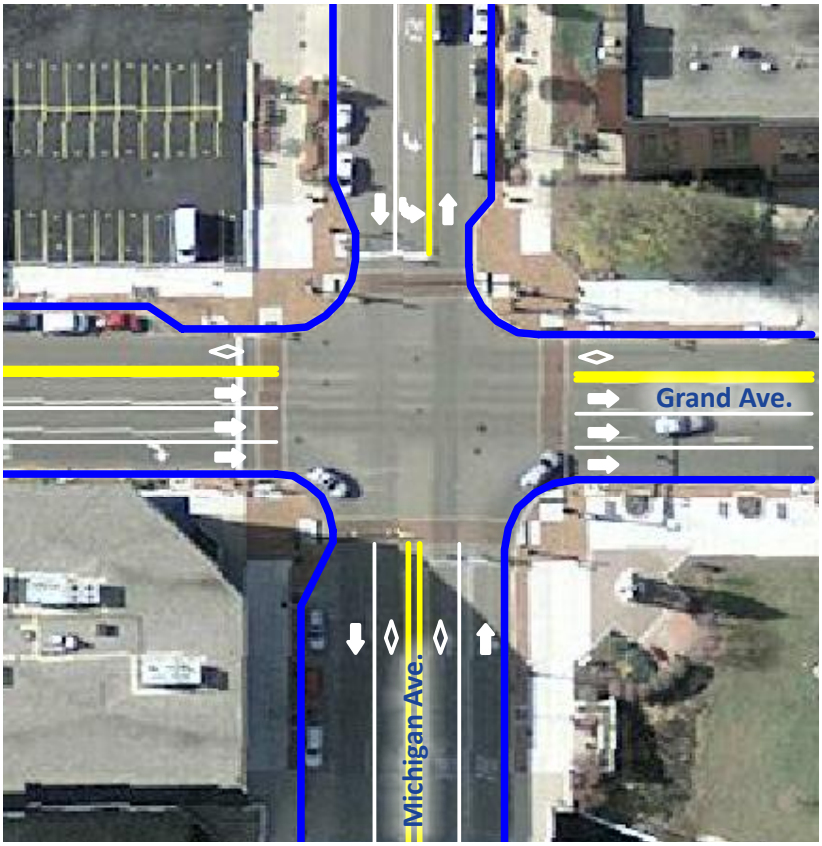


Capitol Avenue with BRT

In the downtown loop, the addition of a dedicated BRT lane is proposed on one side of the street.

PROS:

- One vehicular lane can be repurposed for transit
- Other elements of existing street design (wide sidewalk and on-street parking) remain in place
- The existing curb-to-curb dimension remains unchanged

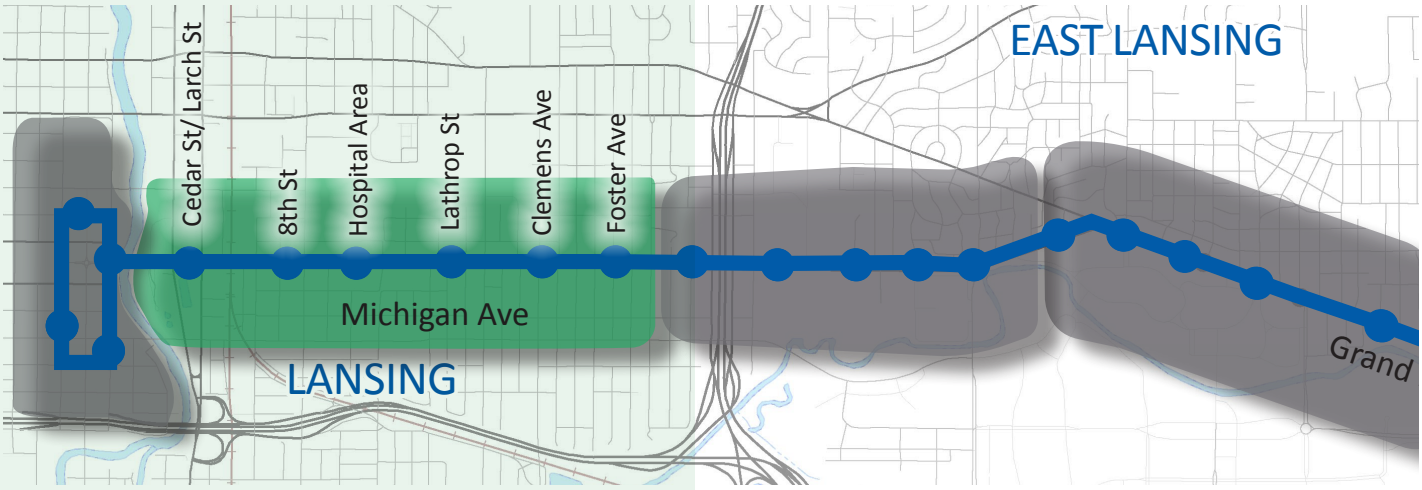


left: Detail of the Michigan Avenue/Grand Avenue intersection. In the downtown area, BRT lanes (marked with a diamond) will be added to the inside of the planned loop, with vehicles making a series of right turns. In this scenario, BRT buses could run in the opposite direction of vehicle flow on Grand Avenue.

On Michigan Avenue, transit lanes are shown center-running, one of the possible alignments under consideration.

districts 2, 3 & 4: Michigan Avenue

Stadium District to 2000 Block



Key issues:

on-street parking

pedestrian & bike access and safety

station location/design

development opportunities with BRT

aesthetics/character

compatibility with neighborhood

Some of what we heard:

Businesses need on-street parking and accommodations for deliveries

Where do bikes go – can there be a dedicated bike facility?

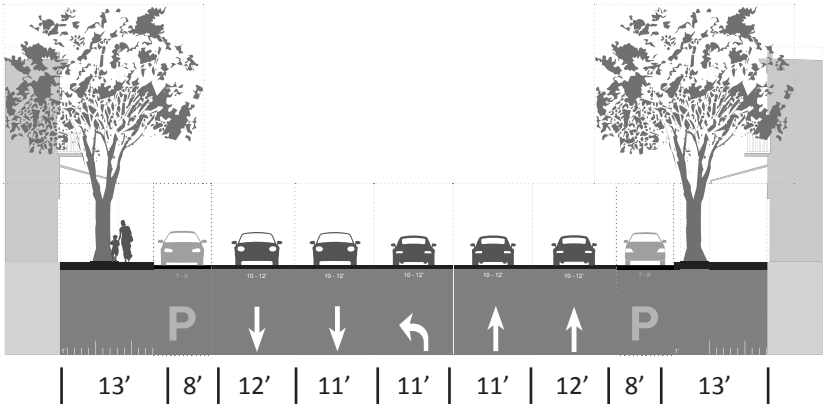
Will there be park-and-ride solutions for people moving east?

Branding – what will stations look like?

The Michigan Avenue segment of the corridor contains street-oriented main street shopfronts, as well as major regional destinations at the Cooley Law School Stadium and Sparrow Hospital. Design considerations include:

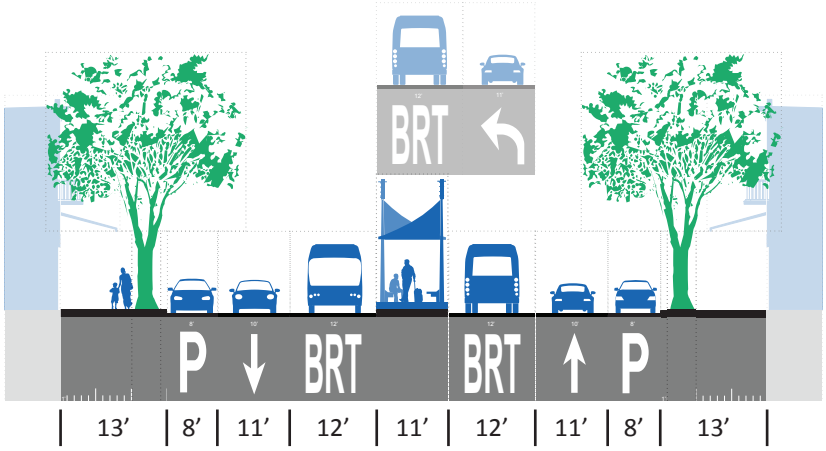
- On-street parking is desired for the street-oriented retail shops found in this area.
- Walkability, and pedestrian and bicycle access and safety is a high priority in this urban context. Narrowed travel lanes (to control vehicle speeds), frequent crosswalks, a potential reduction of vehicle lanes, and dedicated bike facilities can all be part of the solution.
- Designs that enhance character and sense of place are important to the Lansing community. The design of station platforms can be unique in this segment of the corridor – perhaps designed by area artists to reflect local character.
- Views to the Capitol building are prominent and should be considered in the future street design. There is an opportunity to enhance this view by adding new landscaping and replacing missing street trees along sidewalks. Street design options that include an asymmetrical solution should feature low-level plantings (no trees) in newly created medians to preserve long views.

Design options under consideration for this portion of the corridor, as well as pros and cons for each, are included on the following pages.



Districts 2, 3 & 4: Existing Conditions

Michigan Avenue at Clemens Street. Five vehicular lanes (two each direction and a center turn lane), on-street parking (where shopfronts are present) and wide sidewalks are found here. Most design scenarios propose turning one vehicular lane each direction into a dedicated bus lane.



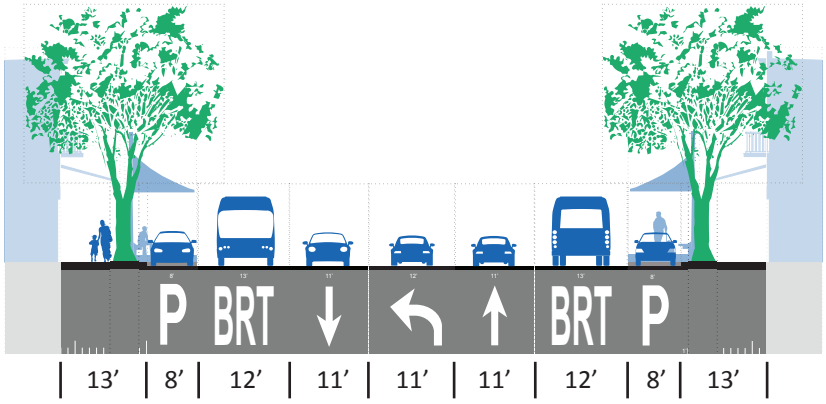
Option 1: Center-Running BRT

PROS:

- Create center median, alternating with left-turn pockets or stations
- Existing parking maintained
- Right turns do not interact with BRT

CONS:

- Left turns at intersections that also have stations are more complicated
- Many driveways would be right-in, right-out only
- Shared bus/bike lanes are more complicated (bikes must move into vehicular lanes when bus is present)



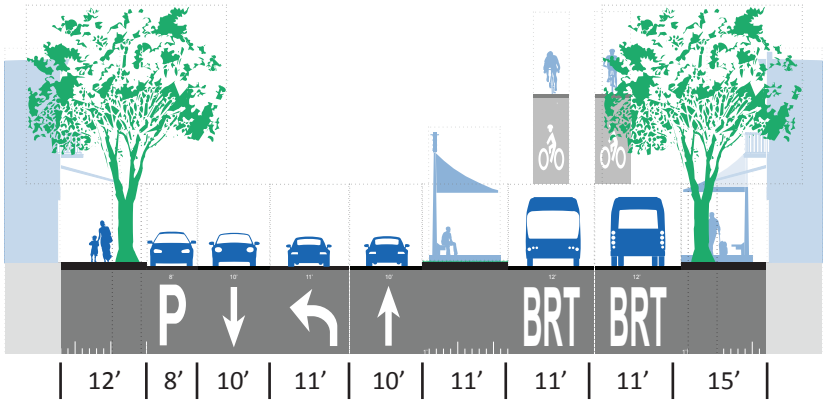
Option 2: Side-Running BRT

PROS:

- Maintain existing turning movements and parking (most like existing conditions)

CONS:

- Shared right-turn lanes (cars and BRT)
- No dedicated bike facility



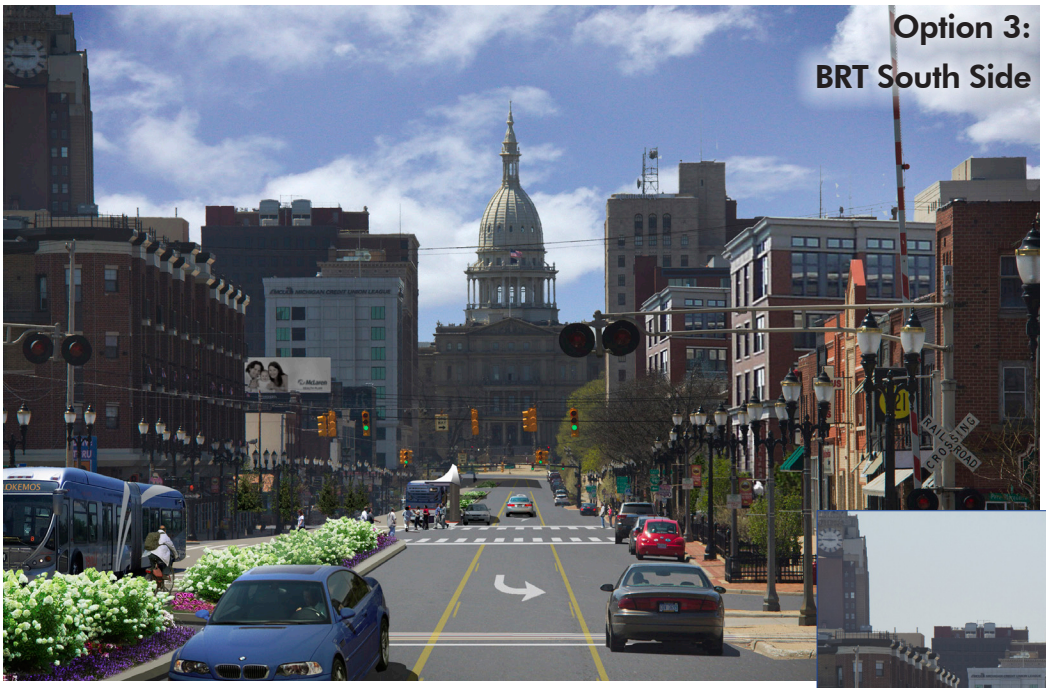
Option 3: BRT South Side

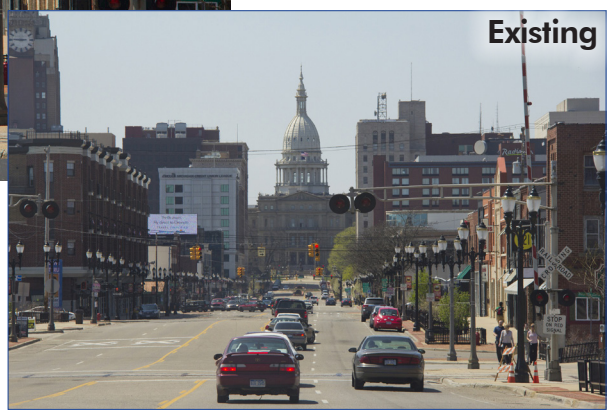
PROS:

- Separated BRT
- North driveways have no interaction with BRT
- Shared bus/bike lanes
- Potential continuous street design from Lansing to East Lansing

CONS:

- South driveways must cross BRT

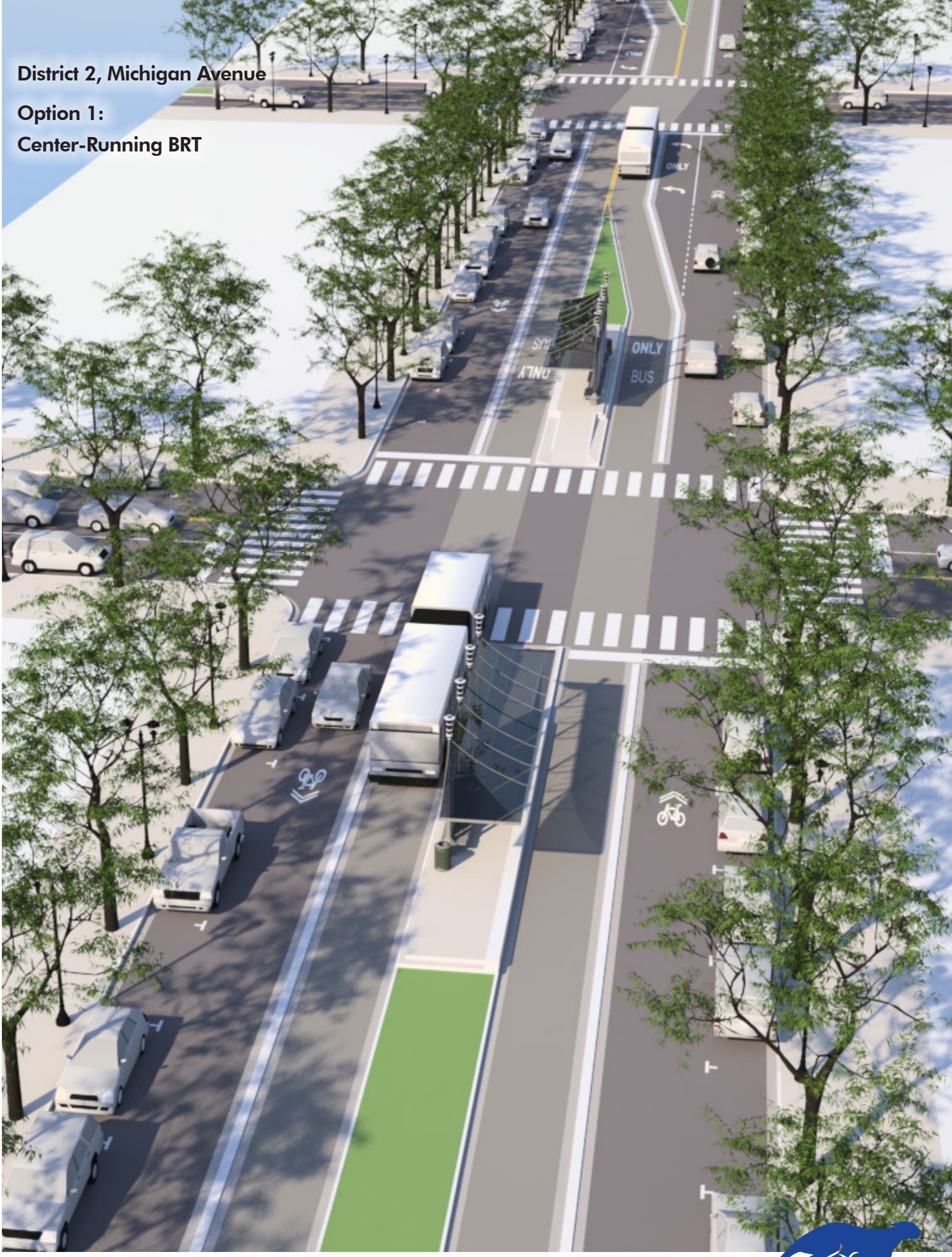




Districts 2, 3 & 4: Comparing Options

above: Two of the street design options under consideration for this segment of Michigan Avenue are shown for comparison. Both options include a new center median, which positively contributes to sense of place and street beautification, as well as pedestrian safety. Note the proposed plantings are low maintain the character-defining view of the Capitol.

next page: Center-running BRT, shown in perspective view. This view demonstrates important design considerations regarding treatment of intersections and station platforms. In this image, there are no left-turn lanes at the intersection where the station is located. This allows pedestrians to reach center platforms via the intersection crosswalk. The next intersection shows how the transit lanes can shift to accommodate a turn where there is no station. If a left-turn lane and station are required at the same intersection, other design solutions will be needed. This could include shifting the station platform to a midblock area (and inserting additional crosswalks), or removing on-street parking near the intersection to create space for both the station platform and turn lane.

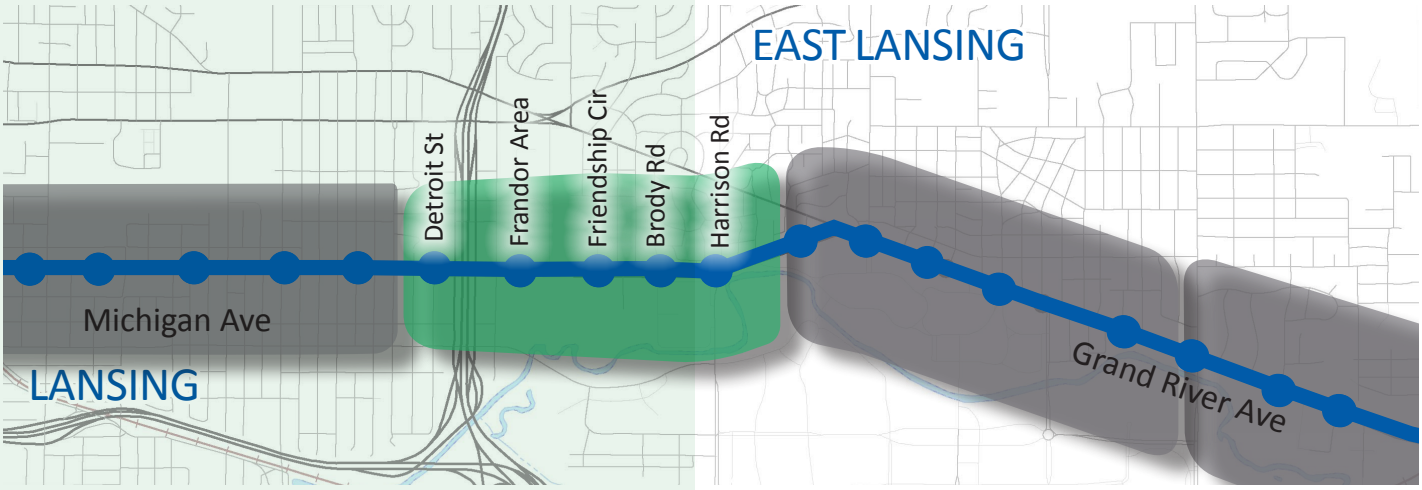


District 2, Michigan Avenue

Option 1:
Center-Running BRT

districts 5 & 6: eastern Michigan Avenue

US-127 to East Lansing



Key issues:

park & ride

non-motorized "hot spot"

station location/design

redevelopment opportunities

drain improvements

traffic flow

station locations

access to Frandor shops

Some of what we heard:

We want improved pedestrian experience: safety, aesthetics

How do shared bike/bus lanes work?

Concerned about reducing number of stops throughout corridor

How will Frandor shops be accessed?

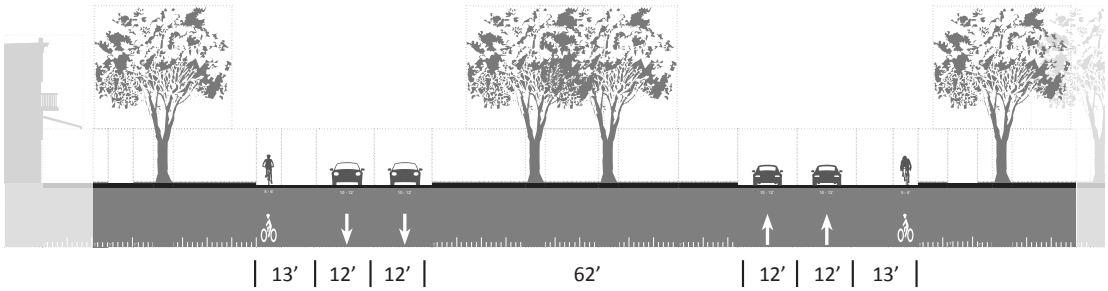
How does traffic work?

Near the US-127 overpass, the character of Michigan Avenue changes; the right-of-way increases, and a wide median is introduced. The auto-oriented Frandor shopping center is located to the north, and the vacant Red Cedar golf course to the south.

This segment of the corridor has been the focus of recent planning efforts. The regional vision specifies a retrofit of the shopping area over time into a walkable, mixed-use center, and a large park (to help with stormwater retention) on a portion of the golf course site. Property owners are exploring redevelopment options and have been conducting public charrette meetings to gather input. A key part of redevelopment will include drain improvements to manage stormwater flow. Design considerations include:

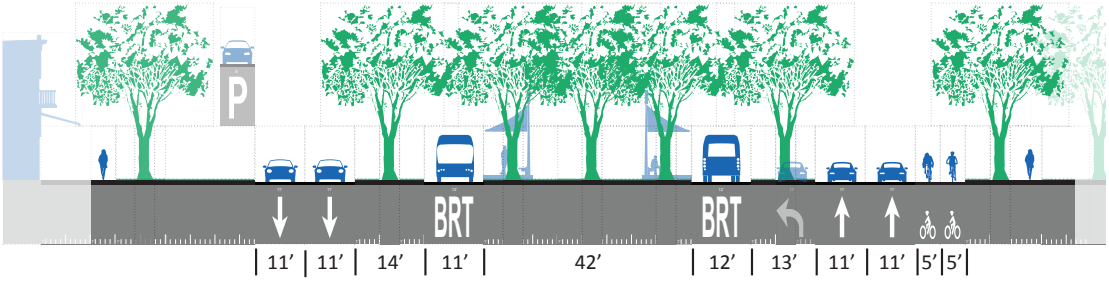
- The wide median is similar to downtown East Lansing. Treatment of BRT alignment and the median can be coordinated to make an easy transition.
- This is a non-motorized "hot spot." This segment of roadway was recently altered to add dedicated bike lanes in place of a vehicular lane. Including bike facilities is a priority in the future street design.
- A park-and-ride facility for BRT will be accommodated in this area.
- Access to Frandor shops from station platforms will be considered. The future vision includes buildings along the back of wide sidewalks, making a comfortable pedestrian environment. In the current auto-oriented conditions, use of a transit circulator is under evaluation.

Design options under consideration are included on the following page.



Districts 5 & 6: Existing Conditions

Michigan Avenue between Clippert and Morgan Streets. The wide right of way includes a central median and planting areas on each side of the street. Two lanes run in each direction, and left-turns are cut into the median. Recent improvements added bike lanes in place of a vehicular lane in each direction.



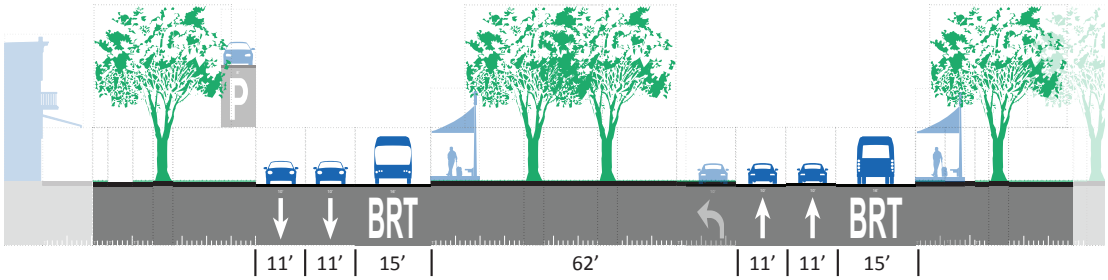
Option 1: Center-Running BRT

PROS:

- Result of the regional visioning charrettes
- BRT in center median
- Dedicated cycle track

CONS:

- Most change to existing wide median



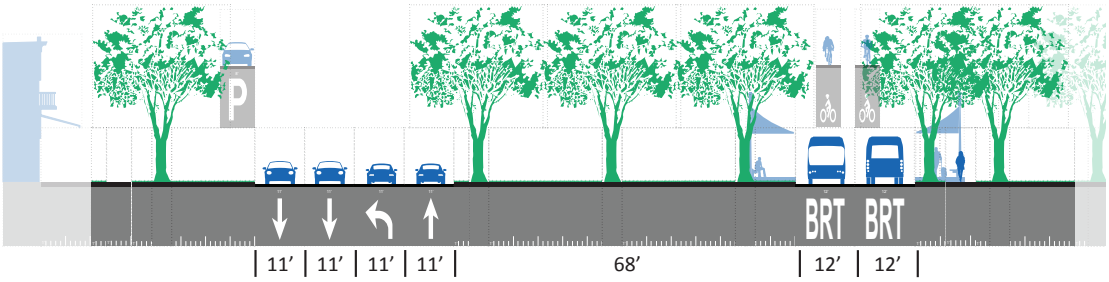
Option 2: Split BRT

PROS:

- Most like existing conditions
- Smooth transition to East Lansing scenario 1
- Widened BRT lanes can be shared with bikes

CONS:

- Left turns shared with BRT or require traffic merging westbound through BRT lanes
- Some driveways right-in, right-out only



Option 3: BRT South Side

PROS:

- Separated BRT
- Large median intact
- North driveways have no interaction with BRT
- Shared bus/bike lanes
- Smooth transition to East Lansing scenario 3

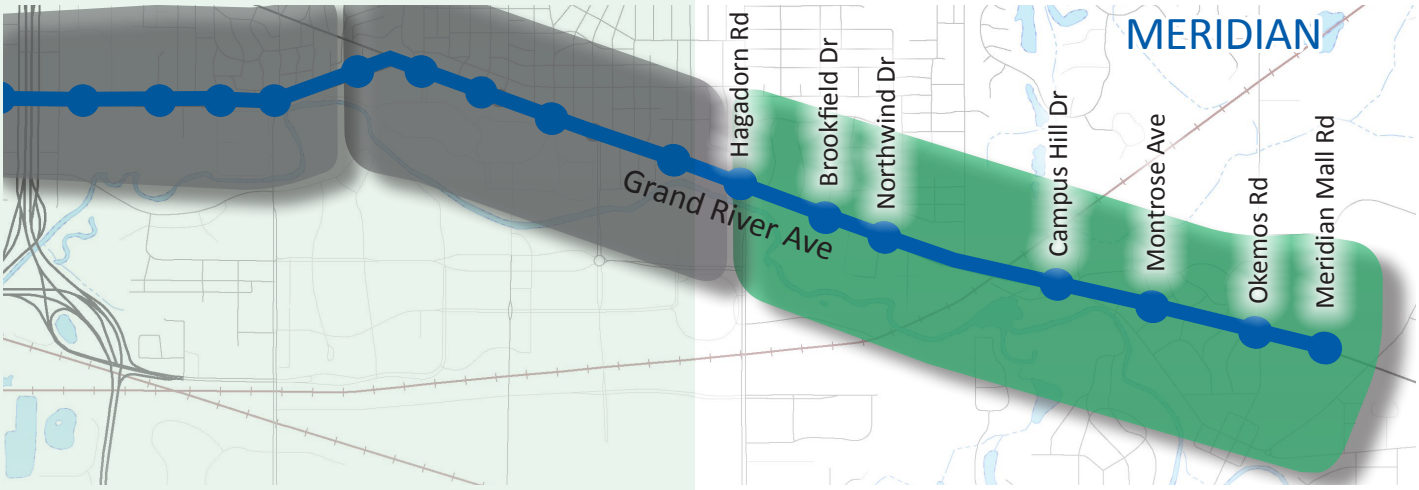
CONS:

- South driveways must cross BRT lanes
- Shift of median will increase costs

*note: on-street parking could be added on the north side (left on these sections) when future redevelopment (with street-oriented shopfront buildings) occurs.

districts 7, 8 & 9: Grand River Avenue

Hagadorn to Meridian Mall



Key issues:

pedestrian and bike safety

placemaking

speed control

traffic flow, left turns

park and ride

compatibility with neighborhood

Some of what we heard:

Left turns are important for businesses

We want to facilitate traffic flow but are also concerned about safe pedestrian crossings, placemaking, and bikablity

We are concerned about cut-through traffic in neighborhoods

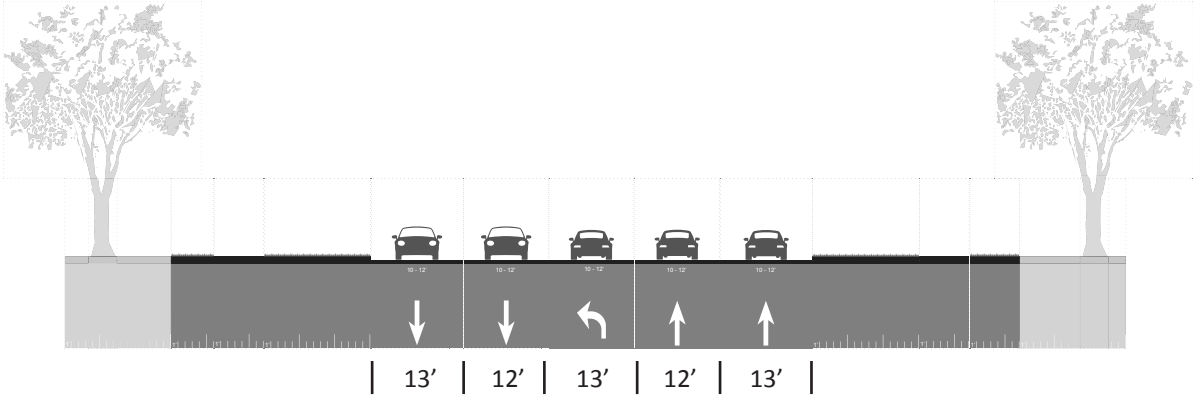
What about cost, taxes?

As the corridor transitions from East Lansing to Meridian Township, the character changes again. In this area, the street is automobile-oriented, with five lanes of vehicular traffic (two each way, plus a continuous center-turn lane). Existing businesses are typically set behind parking lots.

The implementation of BRT in this segment of the corridor opens new possibilities for walkable, sustainable development forms. The community expressed a desire for increased pedestrian and bike safety. Conversely, business owners expressed the desire to retain left turns for ease of vehicular access. Design considerations include:

- Traffic flow and left-turn movements need to be accommodated to provide access to businesses and deter cut-through traffic in surrounding neighborhoods.
- Future street design should improve pedestrian and bike safety. Reducing the width of vehicular lanes (to slow traffic), including new crosswalks and dedicated bike facilities, widening sidewalks, and buffering pedestrians on sidewalks with street trees are all potential parts of the solution.
- A park-and-ride facility for BRT will be located here. The community expressed a need for two facilities – one on the north side and one on the south – for convenient pedestrian access. The Meridian Mall and other big-box retail sites are potential locations; coordination with private property owners will be key to implementation.
- Access to the mall and destination big-box retailers from station platforms will need to be considered.

Design options under consideration are included on the following pages.



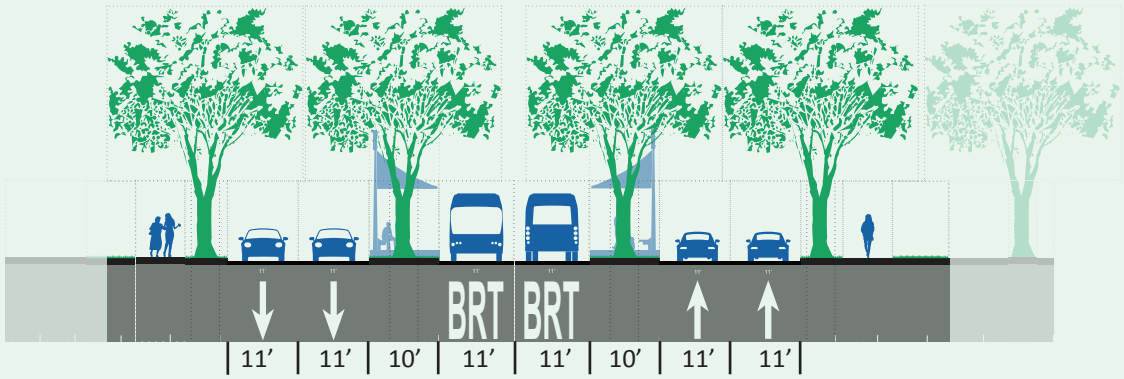
Districts 7, 8 & 9: Existing Conditions

Grand River Avenue in Meridian Township at Okemos Road, looking west. Five vehicular lanes (two each direction and a center turn lane) are found here. Swales and sidewalks are within the right of way; existing businesses are set back from the road, typically behind surface parking lots.

Districts 7, 8 & 9: Center-Running BRT

The center-running BRT design option provides an opportunity to beautify the streetscape and add character and sense of place in the Meridian Township portion of the corridor. Attributes of this design option include:

- Consolidates left-turn movements at designated intersections with u-turns allowed; all left turns cross BRT lanes
- Widens street curb-to-curb width to accommodate BRT lanes and new medians
- Narrows existing vehicular lanes to slow travel speeds (and make pedestrian movements safer)
- Additional trees planted along the street provide a buffer for pedestrians on the sidewalk
- Shared BRT/bike lanes
- New medians separate vehicular traffic from BRT lanes; these medians provide additional tree-planting area (increasing shade and green space) as well as pedestrian refuge space, and provides visual relief to the wide street
- In short segments of the corridor, proposed medians could be narrowed or eliminated to accommodate smaller right of way
- Maintains all existing right-turn movements without BRT conflicts



Option 1: Center-Running BRT

PROS:

- Create center median alternating with left-turn pockets
- Right turns do not interact with BRT

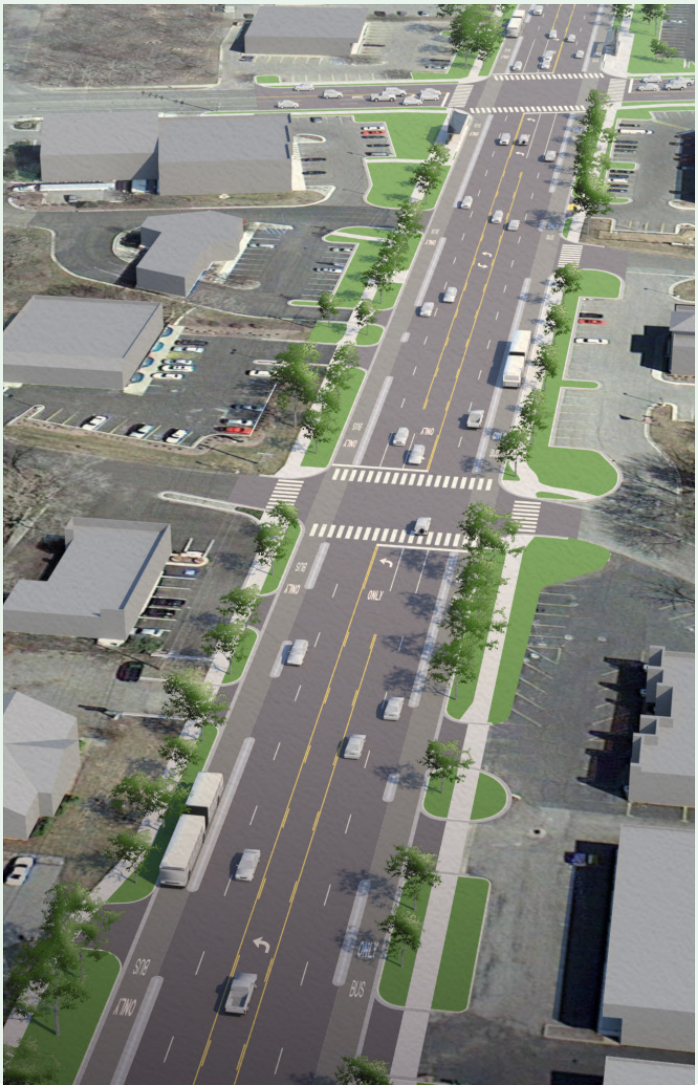
CONS:

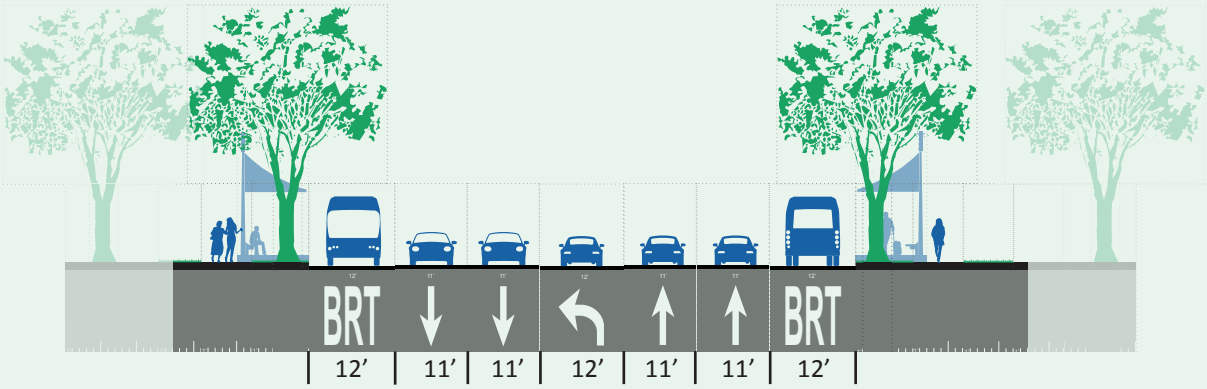
- Many driveways will be right-in, right-out only

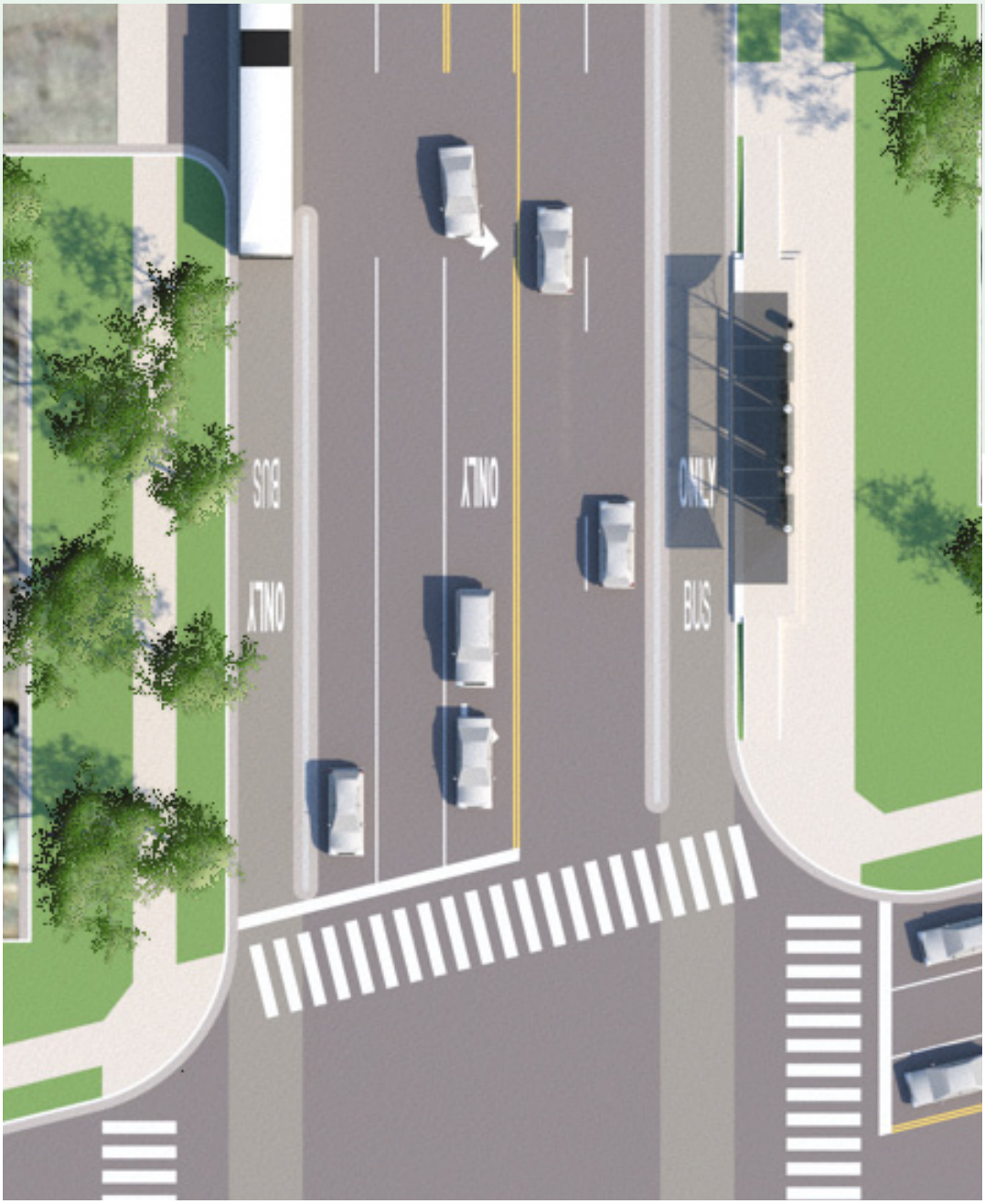
Districts 7, 8 & 9: Side-Running BRT

Side-Running BRT introduces less change to the street design. All existing vehicular movements are maintained, and BRT lanes are added to the edge of the roadway. Attributes of this design option include:

- Maintains all existing turning movements
- Widens street curb-to-curb width to accommodate BRT lanes (compared to the center-running option, the overall width is less, but there is no midway pedestrian refuge provided)
- Narrows existing vehicular lanes to slow travel speeds (and make pedestrian movements safer)
- Additional trees planted along the street provide a buffer for pedestrians on the sidewalk
- Requires all right turns into streets and driveways to cross a BRT lane
- Increases the amount of pavement pedestrians need to cross
- Does not provide a dedicated bike lane







Option 2: Side-Running BRT

PROS:

- Maintain existing turning movements (most like existing conditions)

CONS:

- Shared right-turn lanes (cars and BRT) in some locations
- No dedicated bike facility
- Widened pavement area not conducive to walkability

next steps

The design options included in this executive summary describe potential street design scenarios that will change the experience of walking, biking, driving and taking transit in the Michigan Avenue/Grand River Avenue corridor. Further analysis is needed to test the feasibility of these ideas and reach a single design solution.

Updated traffic counts are currently being conducted across the entire corridor. Once this is completed and a better picture of existing conditions on the corridor is available, the planning team will use the new traffic data, along with the priorities identified by community members and stakeholders, to finalize the BRT alignment decisions. This alignment will be the basis of the EA evaluation of impacts.

The draft EA is expected to be completed in late 2015. An additional opportunity for public involvement will be provided as part of the public hearing, which is expected to be held in the latter half of 2015. In the interim, the community can continue to stay informed and involved throughout the process on the project website.

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