



BOOK 2

CONNECTED MOBILITY SYSTEMS

MT. PLEASANT MASTER PLAN 2050

Acknowledgments

CITY ADMINISTRATION

Nancy Ridley — *City Manager*
Jacob Kain — *City Planner*
William Mrdeza — *Director of Community Services
and Economic Development*
Chris Bundy — *Director of Parks & Public Spaces*
Ryan Longoria — *Director of Recreation and Sports*

DOWNTOWN DEVELOPMENT AUTHORITY

Tim Coscarelly
Tim Driessnack
John Hunter
Tom Krapohl
Doug LaBelle II
Margaret McAvoy — *Isabella County Representative*
Lisa Orlando
Nancy Ridley
Robby Roberts
Jeff Smith
Robert VanDorin

PARKS AND RECREATION COMMISSION

Megan Barber
James Batcheller
Liz Busch
Peter Little
Brian Mitchell
Brian Sponseller

PLANNING COMMISSION

William Dailey
Corey Friedrich
Lesley Hoenig
Susan Horgan
Glen Irwin II
Michael Kostrzewa
Matthew Liesch
Christine Ortman
Kathy Rise

CITY COMMISSION

William L. Joseph — *Mayor*
Amy Perschbacher — *Vice Mayor*
Mary Alsager
Lori Gillis
Kristin LaLonde
George Ronan
Petro J. Tolas

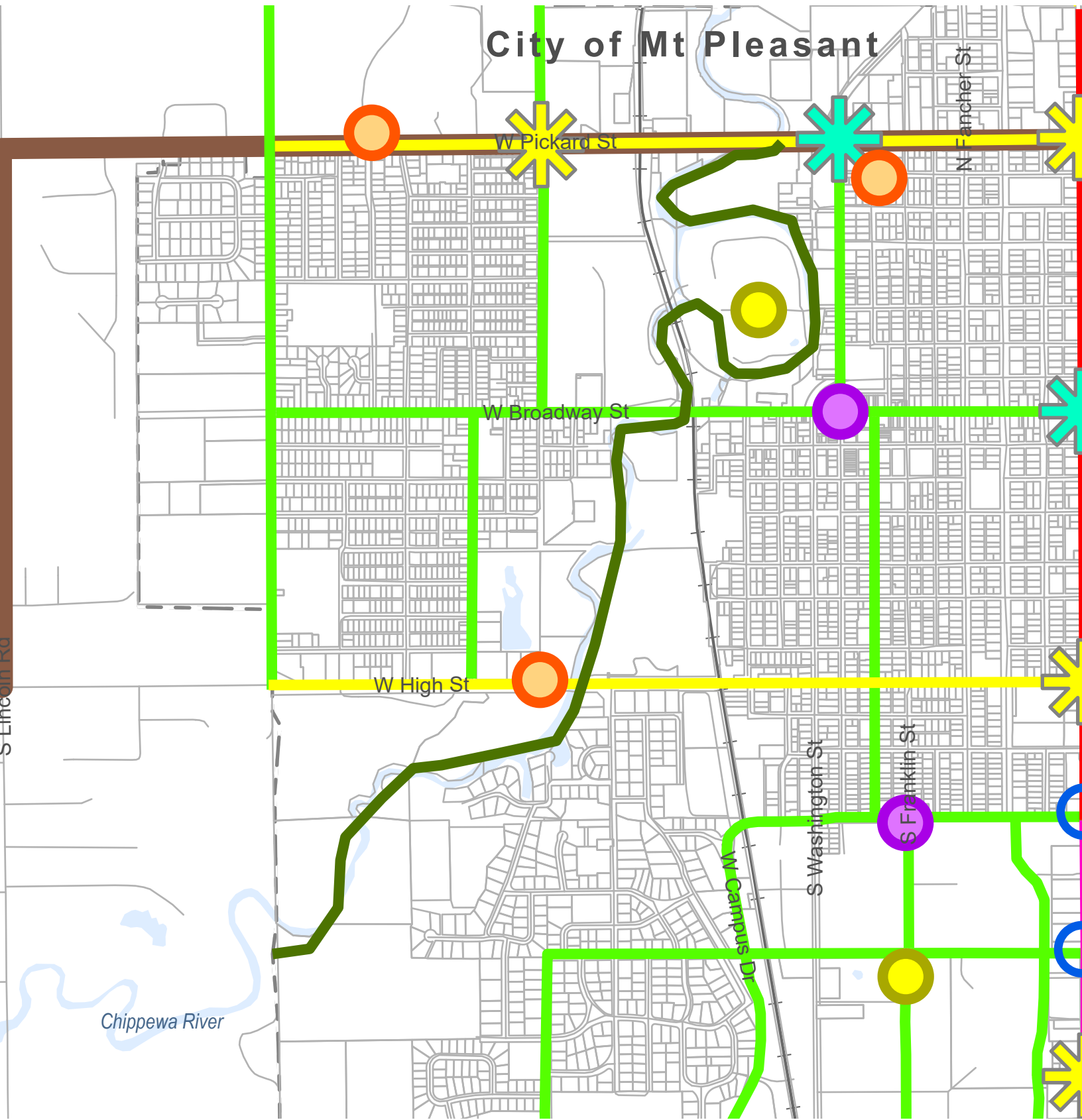
PLANNING CONSULTANTS – MCKENNA

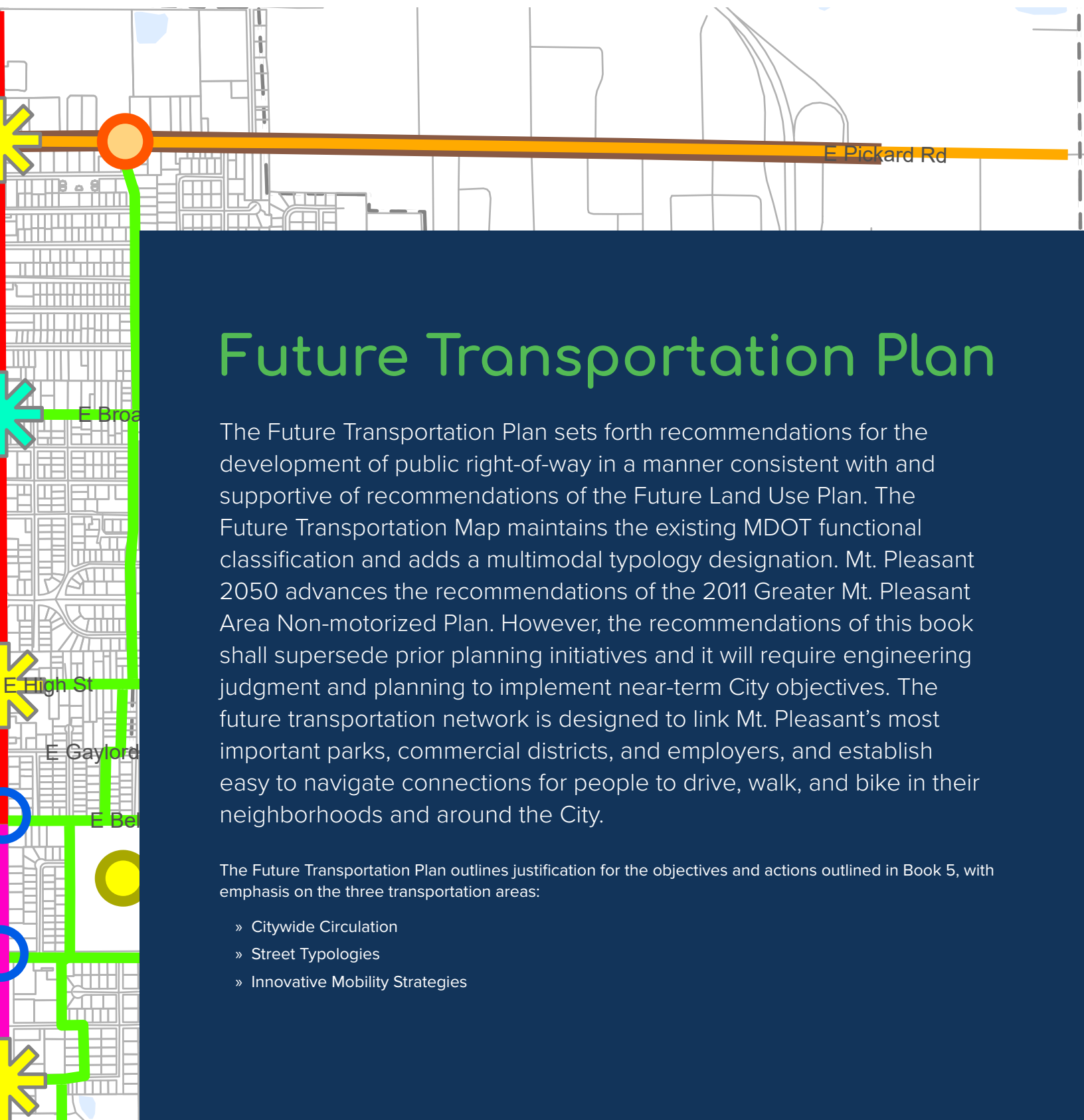
John Jackson, AICP — *President*
Paul Lippens, AICP, NCI — *Project Manager*
Chris Khorey AICP
Laura Haw, AICP, NCI
Carrie Leitner
Chris Madigan
Wendy Caldwell
Irvin Wyche
Adam Cook, CNU-A, NCI, FBCI — *Seamless Collaborative*
Michael Campbell — *Campbell Planning and Design*

The City of Mt. Pleasant offers a special thanks to all residents and participants who took time to provide feedback or attend the charrette or another public meeting for Mt. Pleasant 2050.

Table of Contents

- FUTURE TRANSPORTATION PLAN 5**
- CITYWIDE CIRCULATION 6**
 - Mission Street Roundabouts 6
 - Broomfield US-127 Ramps 7
 - Re-Routing M-20 9
- TYPES 12**
- INNOVATIVE MOBILITY STRATEGIES 16**
 - Innovative Mobility Policies 17
 - Non-Motorized Network 18
 - Connected and Autonomous Vehicles. 19
 - Access Management. 19
- LIST OF MAPS**
- Map 1.1: Future Transportation Map 10



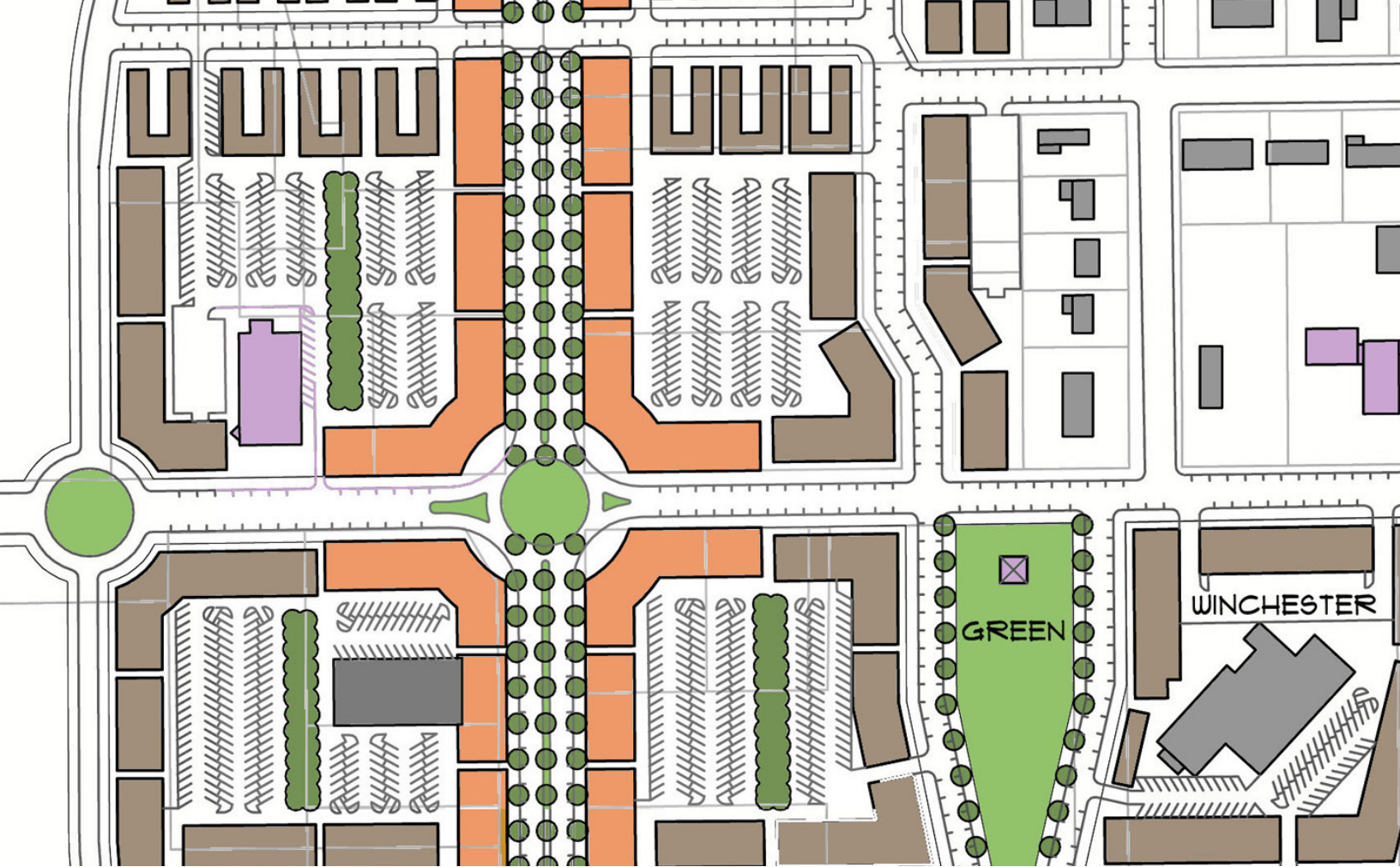


Future Transportation Plan

The Future Transportation Plan sets forth recommendations for the development of public right-of-way in a manner consistent with and supportive of recommendations of the Future Land Use Plan. The Future Transportation Map maintains the existing MDOT functional classification and adds a multimodal typology designation. Mt. Pleasant 2050 advances the recommendations of the 2011 Greater Mt. Pleasant Area Non-motorized Plan. However, the recommendations of this book shall supersede prior planning initiatives and it will require engineering judgment and planning to implement near-term City objectives. The future transportation network is designed to link Mt. Pleasant's most important parks, commercial districts, and employers, and establish easy to navigate connections for people to drive, walk, and bike in their neighborhoods and around the City.

The Future Transportation Plan outlines justification for the objectives and actions outlined in Book 5, with emphasis on the three transportation areas:

- » Citywide Circulation
- » Street Typologies
- » Innovative Mobility Strategies

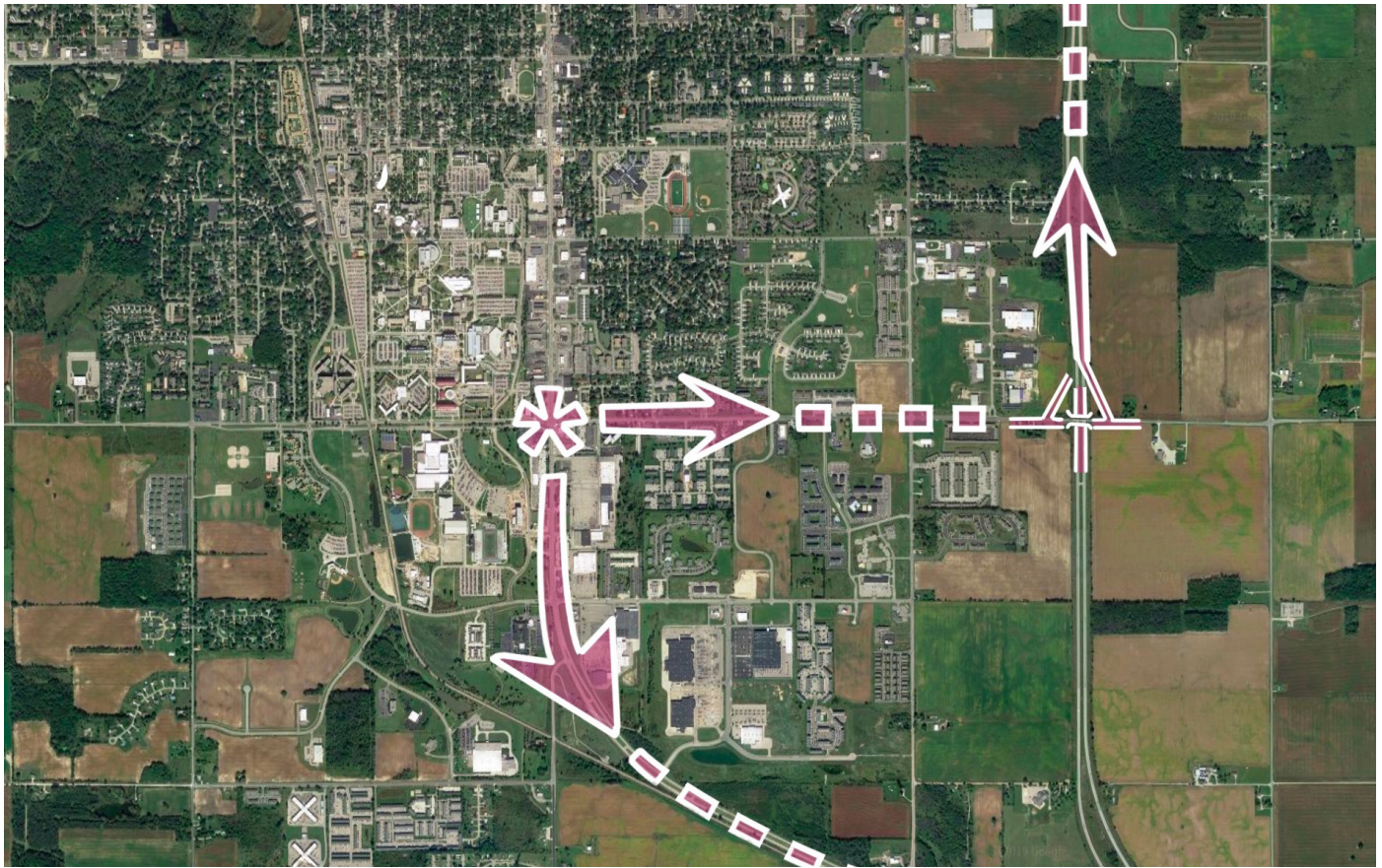


Citywide Circulation

Mission Street Roundabouts

A series of roundabouts for Mission Street has been proposed for the intersections at West Campus Drive/Blue Grass Road, and Broomfield, Preston, and Bellows Streets. The roundabout concept for Mission Street was initially proposed for the Mission/Broomfield intersection by transportation engineer Ian Lockwood during a consultation visit to the city in 2009. Mr. Lockwood recommended that the roundabout solution would accommodate existing traffic volumes while providing increased safety for motorists and pedestrians, a positive aesthetic impact on the corridor, and minimal right-of-way acquisition. The roundabout at Mission and Broomfield was later included in the 2013 Central Michigan University Campus Master Plan, along with others on the parallel East Campus Drive.

In reimagining the Mission Street corridor as a vibrant, mixed-use district acting as a front door to the University and the city, the roundabouts would establish a sense of arrival and of place to the district. Working in tandem, roundabouts along Mission Street and East Campus Drive would moderate vehicular speeds, improving traffic flow and maintaining visibility for Mission Street businesses. Roundabouts must be designed to prioritize walking and biking by utilizing the minimum acceptable design diameter. A feasibility analysis that examines alternatives, in partnership with MDOT, is recommended as a near-term objective. Other multimodal intersection design solutions that improve pedestrian safety and land access may be considered during design development.



The creation of additional exit ramps at Broomfield and U.S. 127 will support the City's goals to retrofit Mission Street as a place to go "to" rather than "through."

Broomfield US-127 Ramps

If access to northbound and from southbound US-127 were provided at Broomfield Street, northbound traffic leaving Mt. Pleasant directly from the university area, and traffic destined for the university area originating from the north, would no longer be required to traverse the entire Mission Street corridor. Eliminating this through traffic would allow Mission Street and East Campus Drive to work as a system with the two streets linked together by the grid of connecting streets as proposed in the 2012 Transportation Network Plan. This would allow the design of Mission Street to safely accommodate a more local function. This modified design should include on-street parking, to further enhance the pedestrian comfort along the street.

Mission Street has been the 'Business Route' through Mt. Pleasant for over 50 years, dating from when the US-27 (now US-127) freeway bypass of Mt. Pleasant opened in 1961-62. As discussed elsewhere in this Plan, Mt. Pleasant was sited at the center of a one-square-mile section of the Northwest Survey. Mission Street is the eastern boundary of this section, and became the main north-south road through the region by the early 20th Century. Mission was, until the mid-20th Century, the far eastern boundary of Mt. Pleasant's urbanized area, and was a natural magnet for auto-oriented businesses passing through Mt. Pleasant, avoiding the traditional downtown.

This somewhat unique situation caused the Mission Street Business Route to serve as a "bypass to a bypass": it neither serves Mt. Pleasant's downtown nor does it facilitate easy through travel. It is a conduit for those passing into and out of Mt. Pleasant, but is not a destination in and of itself. Mt. Pleasant has grown around Mission Street since the 1950s, and Mission deserves to be reinvented.

WHAT IS A BUSINESS LOOP?

As modern freeways began to bypass smaller cities and towns in the 1950s, local business interests became alarmed that the diversion of through traffic away from main streets would negatively impact local economies. California began experimenting with signing “Business Routes” through cities and towns bypassed by freeways beginning in the 1950s. In 1964, the American Association of State Highway Officials (AASHO), a coordinating body of state highway departments, codified California’s practice in policy HO1, stating in part:

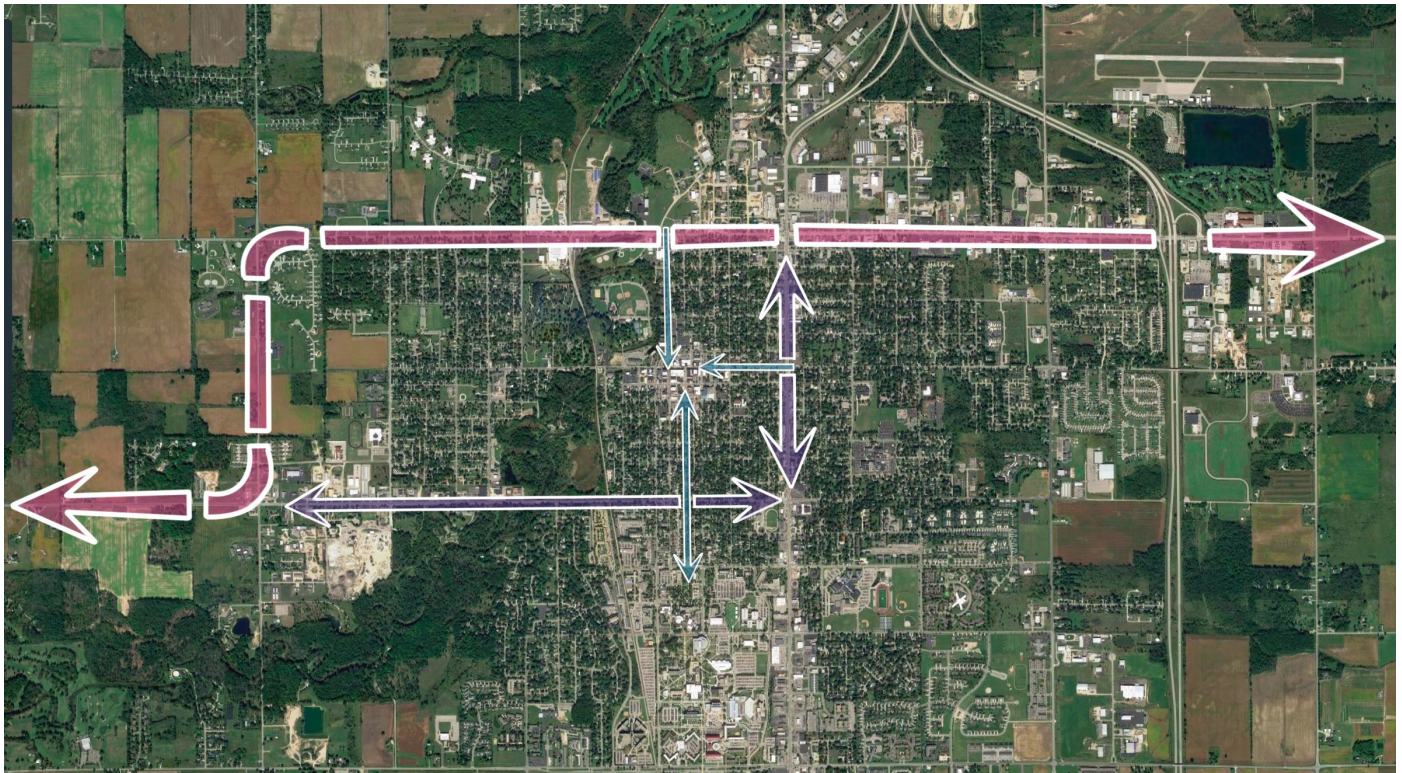
“[A ‘Business Route’ is] a route principally within the corporate limits of a city which provides the traveling public an opportunity to travel through that city, passing through the business part of the city, while the regular number is used to obviate passing through the congested part of the city. This ‘Business Route’ connects with the regular numbered route at the opposite side of the city limits...”

By 1964, the practice of designating Business Routes had spread from California to many other states, including Michigan. When the US-27 freeway bypass of Mt. Pleasant was completed during 1961-62, the Michigan State Department of Highways (MSDH) designated Mission Street through Mt. Pleasant as ‘Business US-27’ (now Business US-127).

Stemming from the history Mt. Pleasant’s siting, Mission Street was never Mt. Pleasant’s ‘Main Street’, and had always acted as a bypass to the downtown area from its earliest days as a numbered route. Indeed, auto-oriented businesses, including the Pixie Drive-In and Vic’s Supermarket, were locating on Mission Street by the 1950s. Mission Street’s function, therefore, was always that of a through-corridor for cars rather than a principal mixed-use city street.

MSHD (later MDOT) policy was to develop business routes to the highest standard possible for arterial streets in a given community, as part of an overall statewide philosophy of creating a limited network of high-capacity State Trunklines. Similar examples of business routes acting like arterial highways (as opposed to traditional main streets) can be found throughout Michigan, notably in Pontiac, Battle Creek, Kalamazoo, and Jackson.

Due to Michigan’s philosophy for business routes, combined with 50 years of auto-oriented land-use policies, Mission Street has been designed less as a street for local traffic, and instead as a “bypass to a bypass”. It is not itself a destination in Mt. Pleasant, rather, it is a conduit to allow large volumes of traffic to flow to the Central Michigan University campus, downtown Mt. Pleasant, and otherwise through the city for trips originating and/or ending elsewhere. This is the primary challenge addressed in the corridor revision exercise.



The future transportation plan supports re-routing M-20 on west of the City north to Pickard Street. This serves two overall objectives: 1) restoring the residential character of High Street, and 2) supporting the retrofit of Mission Street as a destination for business and local services.

Re-Routing M-20

Over 50 years, Mt. Pleasant's citizens and stakeholders have clearly stated through every Master Plan their desire to see the re-routing of M-20 from High Street. From its inception in 1919 until 1933, M-20 used Broadway through Mt. Pleasant, and served the downtown district. In 1933, a new bridge over the Chippewa River was completed, connecting High Street to Remus Road, and M-20 was then routed south of the downtown to follow High, Mission Street, and Pickard Street to the east. In 1933, High Street was effectively the southern boundary of Mt. Pleasant's urbanized area. Similar to Mission, Mt. Pleasant has grown around High Street over the intervening 75 years. Unlike the case of Mission Street, however, High Street has served a residential function in the community. The presence of long-distance, east-west through traffic on High Street has created negative externalities on area residents including noise, reduced air quality, and safety of roadway users. It also creates a major barrier through a vital neighborhood, disconnecting downtown Mt. Pleasant from CMU.

This Plan proposes, once again, decommissioning M-20 from High Street, and rerouting M-20 north on Lincoln Road to Pickard Street, and then east on Pickard Street to Mission Street, at which point M-20 continues eastward on Pickard. This arrangement would require responsibility for one mile of roadway to be exchanged between the City and MDOT (High Street from South Bradley Street east to Mission Street in exchange for Pickard Street from North Bradley Street east to Mission Street). It would further require one-half mile of Remus Road (from Lincoln Road east to South Bradley Street) be returned from MDOT to Isabella County in exchange for 1.5 miles of County-maintained roads (Lincoln Road from Remus Road north to Pickard Street, and Pickard Street east from that point to North Bradley Street). In total, MDOT would assume one mile of additional roadway into the state trunkline system, Isabella County would relinquish a total of two miles of County-maintained roads to MDOT, and the City of Mt. Pleasant would assume no net road mileage into their system.

The resulting shift of High Street to City control would allow greater design flexibility to this corridor. High Street would continue to serve as a residential street, and begin to function as more of a 'seam' between the historic downtown neighborhoods to its north, and the university-serving residential district to its south.

Typologies

The future transportation plan establishes three intersection typologies (Multimodal Intersection, Multimodal Gateway, and Roundabout), three neighborhood center typologies (Civic Center, Mixed Use, and Public Spaces), and five multimodal street typologies (Modern Boulevard, Thoroughfare Retrofit, Multimodal Thoroughfare, Multimodal Avenue, and Connector) for creating walkable places and designing and retrofitting roadway improvements.

INTERSECTION TYPOLOGIES

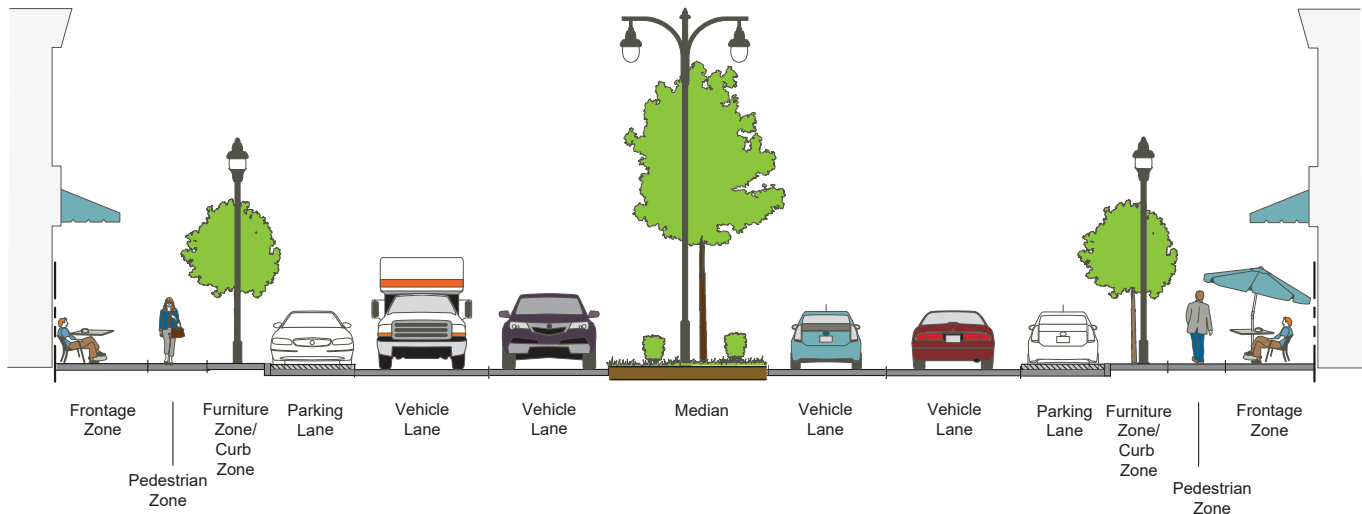
The following intersection typologies are noted on the future transportation plan to provide guidance in the design of wayfinding and crossings. These intersections are priorities for completing intersection design studies:

- » **Multimodal Intersections:** Opportunities to provide enhanced pedestrian and bicycle signs and crossings
- » **Multimodal Gateways:** Located at community entrances or key wayfinding locations to signify routes to and from downtown.
- » **Roundabouts:** Key locations for system retrofit to enhance pedestrian, bicycle, and vehicle circulation

NEIGHBORHOOD CENTER TYPOLOGIES

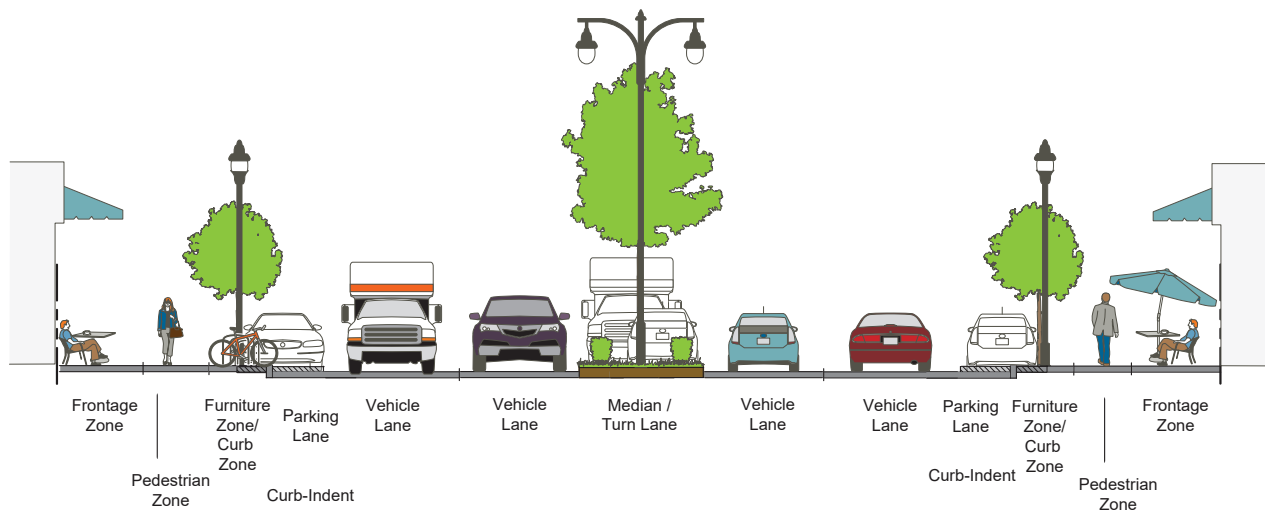
The following neighborhood center typologies are noted on the future transportation plan to provide guidance in creating walkable places. Neighborhood centers are places that would benefit from visioning sessions and other subarea planning activities, like those included in Book 3, Focused Redevelopment:

- » **Civic Center:** Areas of citywide civic importance. Town Center and Mission Street are discussed in Book 3. The third location identified is the intersection of University and Bellows. The Town & Gown relationship and importance of the University Avenue connection is also discussed in Book 3. Additional study at the south end of University Avenue, in partnership with CMU, is warranted.
- » **Mixed Use:** Opportunities for neighborhood service centers, mixed use nodal development and missing middle housing. The City Zoning Ordinance supports walkable development. These locations should be prioritized or creating access to attractive new developments and adaptive reuse.
- » **Public Spaces:** These locations correspond to existing parks or public spaces, including CMU's campus where a typology node is located close to Preston and Franklin. The Future Transportation Plan identifies these locations to show how future improvements, when designed with citywide connectivity in mind, can fill in network gaps to create a more accessible and walkable city.



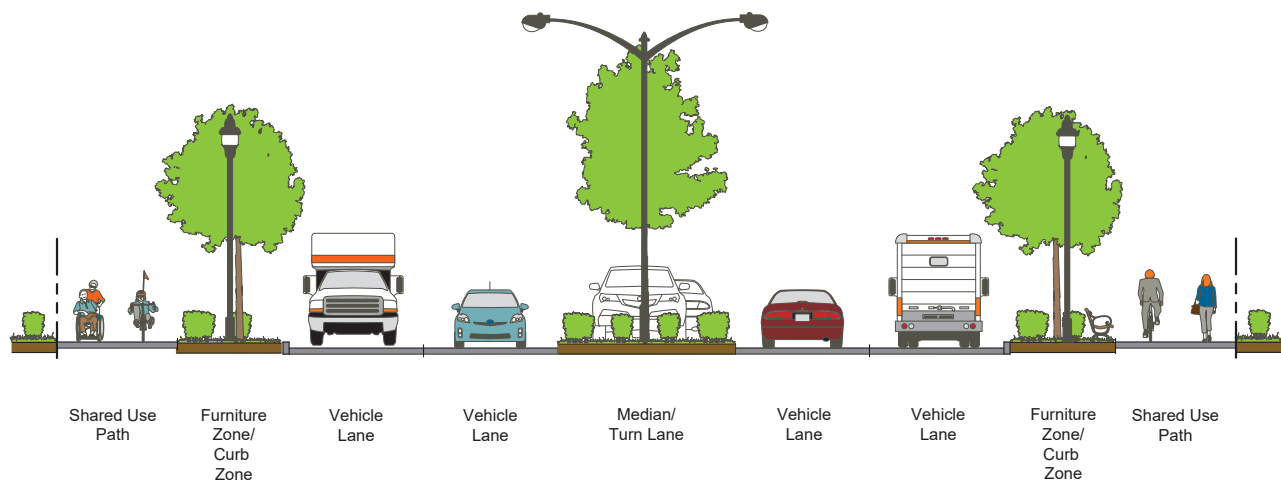
MODERN BOULEVARD

A modern boulevard treatment is proposed on Mission Street south of Bellows. The modern boulevard is a street designed to permit vehicle travel but with slower speeds to optimize land access and encourage placemaking in the Mission Street center area. On-street parking is required to support the zoning requirements and vision for the district with buildings at the lot line. On-street parking in front of businesses is an essential component for a successful retail environment. The roadway should be designed with landscaped medians to reduce left turn movements and manage access at regular block intervals. Vehicles can also use roundabouts to circulate through the district and find parking. The multimodal roundabouts in this area must be designed to promote bicycle and pedestrian crossings at the minimum allowable diameter and utilize mountable curbs for vehicles with wider turning radii. The presence of landscaping, as well as ample separation from vehicle ways, will make the modern boulevards a desirable pedestrian corridor.



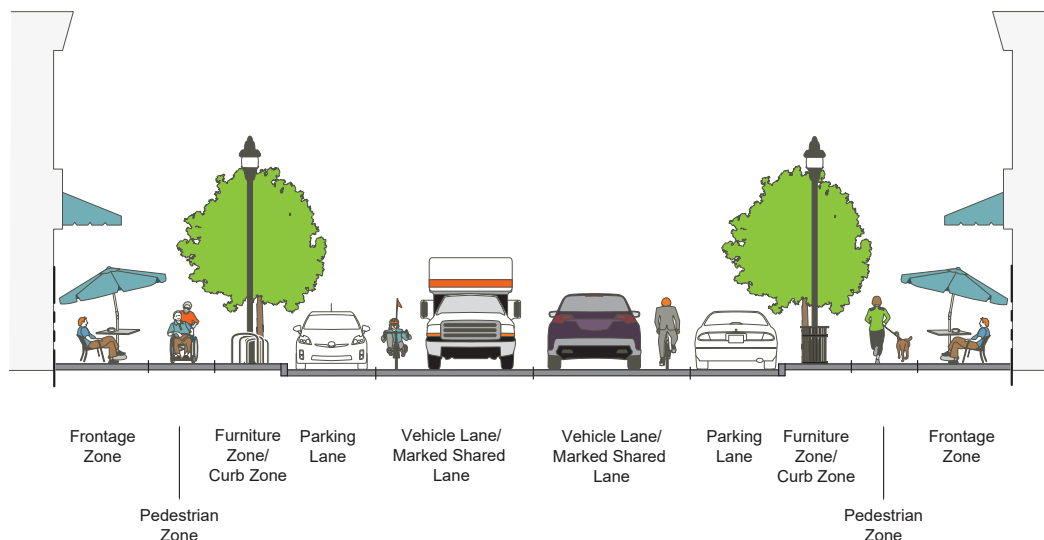
THOROUGHFARE RETROFIT

A thoroughfare retrofit is proposed north of Bellows. Mission Street takes on a different character in this section of the corridor. Many of the buildings in this area are already situated at the lot line or can be remodeled to do so with a building addition. The thoroughfare retrofit should focus on iterative improvements. Retrofit improvements include adding periodic 40 to 50-foot-long landscape medians to slow traffic and beautify the corridor—an approach that balances the need for many parcels to preserve a center turn lane for access. Another example is retrofitting on-street parking with “bump-ins” where building orientation and land use would be supported by short-term parking and drop-off areas. These on-street parking inlets can be spaced with improved furnishing zones or tree lawn areas.



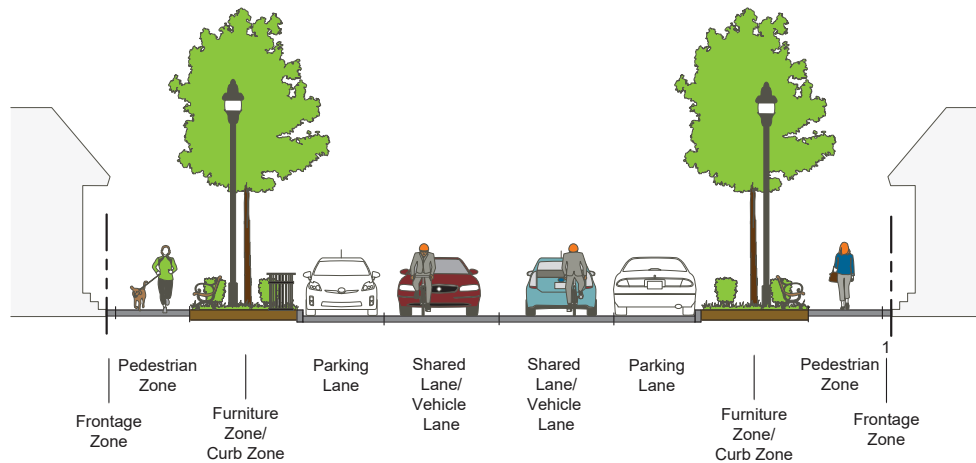
MULTIMODAL THOROUGHFARE

The multimodal thoroughfare is proposed on Pickard Street east of Mission. The multimodal thoroughfare street designed for higher vehicle capacity and moderate speed, traversing an urbanized area. This typology is a good candidate for a shared-use path. Design should include crossing analysis to safely traverse driveways and intersections. Tree rows and landscape medians can be incorporated to improve aesthetic and buffer sidewalks or shared use paths.

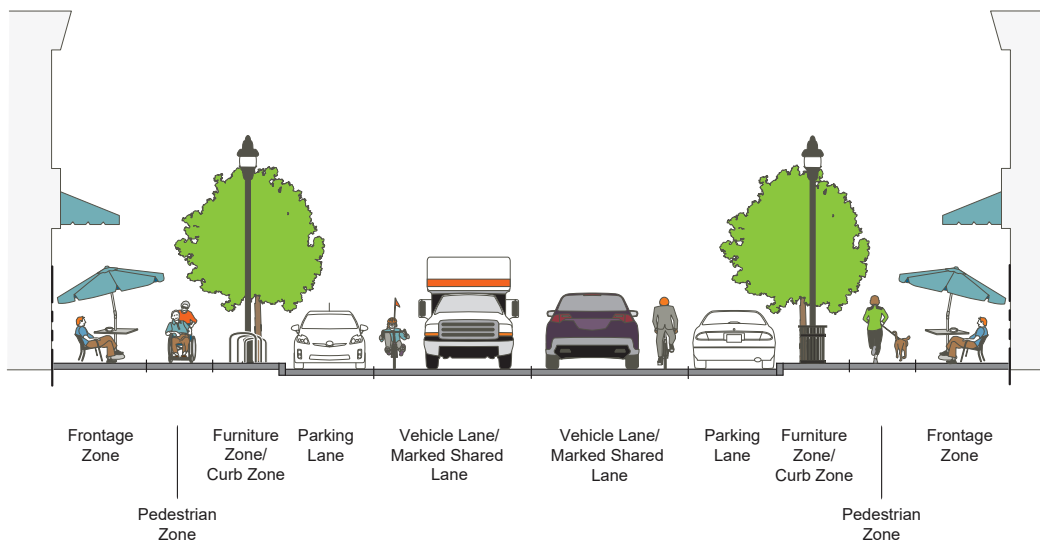


MULTIMODAL AVENUE

Multimodal avenues are proposed to improve east-west connectivity in the City along Pickard (west of Mission), High Street (west of Mission), and Broomfield. An avenue is a street of moderate to high vehicular capacity and low to moderate speed, acting as a connector between urban centers. Avenues often are corridors that can support the development of neighborhood centers to implement citywide Pedestrian Sheds; as such, pedestrian facilities are required and on-street parking is encouraged in development nodes. Avenues may be equipped with landscaped medians and should include bike lanes or marked shared lanes, especially if they are planned links in a bikeway network.



Example: Residential Connector



Example: Commercial Connector

CONNECTOR

Connectors are recommended to help prioritize local connections between prominent Mt. Pleasant neighborhood center locations. Connectors serve primarily local connections. They can make connections along commercial corridors but often serve residential areas. Street character may vary in response to the adjacent commercial or residential area. Mt. Pleasant connectors, in both contexts, should have raised curbs, drainage inlets, wide sidewalks, space for parallel parking, lighting, and trees in individual or continuous planters. Signed bike routes using shared lanes and bike boulevards are appropriate treatments for streets; bike lanes and shared lane markings should be considered on streets with heavier traffic. The alignment of the recommended connectors should be considered when updating the 2011 Greater Mt. Pleasant Transit non-motorized plan.



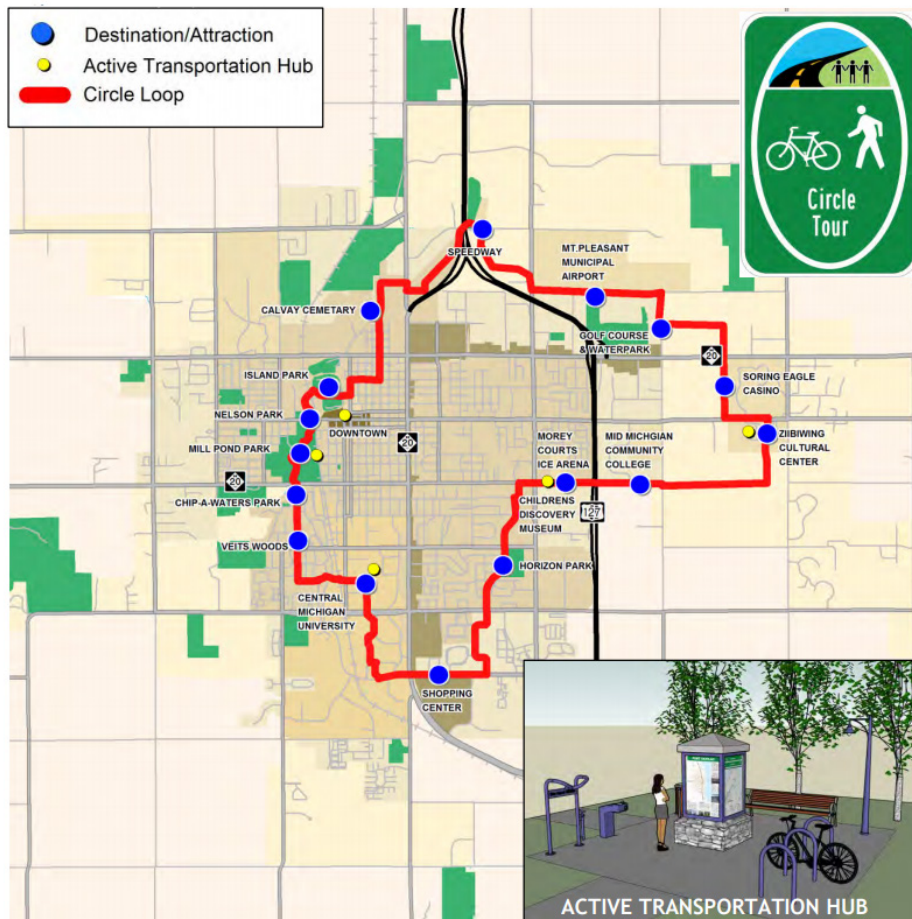
Innovative Mobility Strategies

Mt. Pleasant 2050 advances the City's transportation network with innovative mobility strategies for connecting residents locally and regionally. The single occupant vehicle travel pattern characterized by door-to-door private vehicle trips increasingly can be supplemented by mixed-mode behaviors. Whether it's sharing a ride to a meeting with a colleague, walking to lunch, or riding your bike to the trail the one mode transportation day is in the past. Mt. Pleasant 2050 adopts a policy embracing innovative mobility to guide future transportation policy in the City of Mt. Pleasant.

Innovative Mobility Policies

- » **Multimodal Land Use Strategy:** Encourage place-based system design that increases travel choices linking to multimodal transit hubs.
- » **Walkable and Ridable Densities:** Encourage walkable and ridable housing infill and adaptive reuse within mixed development centers around Pedestrian Sheds. Housing densities above 16 dwelling units per acre are considered to be transit supportive. Pedestrian priority should be given within mixed development centers minimally ½ mile from Pedestrian Sheds.
- » **Safe and Convenient Bike Accommodations:** Bikeways and bike sharing systems should continue to be a priority for system implementation as guided by the non-motorized plan. Facilities within 2 to 4 miles of the hubs should be prioritized with a high priority given to intersection treatments that connect neighborhoods. The Mt. Pleasant “Circle Loop” includes near-term connections to neighborhoods and destinations as well as priority crossing retrofits.
- » **Transportation Network Companies:** Encourage ride hailing services provided by transportation network companies, like Uber and Lyft, to operate in the City. Facilitate service by creating priority curbside drop-off locations and designated places to wait for fares.
- » **Connected and Automated Vehicles (CAV):** Become an early adopter of connected and automated vehicle technology through policy and leading by example with fleet management and facility design. Review and update zoning and engineering standards accordingly.
 - **CAV land form impact areas:**
 - Access management
 - Building disposition
 - Auto-oriented land uses
 - Parking requirements
 - Building massing
 - **CAV roadway function impact areas**
 - Turning radii
 - Target speed
 - Lane width
 - Clearance
 - Engineering judgment
- » **Corridor Planning:** Implement system improvements through strategic corridor planning and segment improvements. Near-term corridors projects:
 - Mission Street
 - University Avenue
 - Pickard Avenue / M-20





The 2011 Greater Mt. Pleasant Non-Motorized presented a vision for walking and biking – The Circle Loop was envisioned as a near-term link between many of the City's priority destinations.

Map excerpt from 2011 plan. Spelling errors are reprinted from original document.

Non-Motorized Network

The Greater Mt. Pleasant Non-Motorized Plan was completed in 2011 and contains many viable recommendations for retrofitting the City's transportation network to support walking and biking. In adopting the Mt. Pleasant 2050 Master Plan, the City recognizes the need to update the comprehensive vision for non-motorized facilities in the greater Mt. Pleasant area while also recognizing the ongoing value of the recommendations and analysis included in the 2011 plan. Some of the highlights of the plan include:

- » The Mt. Pleasant Circle Loop
- » 16 Miles of Proposed Neighborhood Connector Pathways
- » 5.5 Miles of Bike Lanes proposed on Primary Roads
 - W. Pickard Street
 - S. Isabella Road
 - E. Broomfield Road
 - E. Blue Grass Road
- » 13 Miles of Sidewalk Gap Connections
- » 16 unique neighborhood crossing recommendations

While some of this work has been initiated, like the midblock crossing on Mission Street, there is room to improve or envision "phase two" efforts to support the Mission Street redevelopment and the implementation of the Future Transportation Plan. Other recommendations, like designs to safely facilitate pedestrian crossing and biking on Pickard Street, continue to be non-motorized objectives.



Connected and Autonomous Vehicles

Mt. Pleasant 2050 supports advancing the City's transportation network with a robust and sustainable vision for future development. The vision realizes the full potential of CAV's and Transportation Network Companies (TNC's) and changing mobility preferences and employment patterns. This technology offers the potential for shorter travel distances, slower traffic speeds, and more transportation options, pick-up and drop-off zones.

The early adoption of CAV's and TNC's technology offers Mt. Pleasant many benefits, including continuing the City's efforts to reduce parking requirements, the re-purposing of excess parking lots, shared/flexible vehicle lane usage, the inclusion of other modes on the street, reduction of vehicle lane dimensions, the setting of safe target speeds, the design of safe intersections and crosswalks, and pedestrian-priority streets. Excess right-of-way capacity resulting from CAV capacity improvements should be given to bicycles and transit.

Mt. Pleasant 2050 recognizes that to realize the benefits of CAV and TNC technologies, strategies must be deployed in conjunction with transit and non-motorized systems. Particularly when integrated into a leg of a non-motorized travel day.

Mt. Pleasant's Future Transportation Plan promotes land use policy that encourages population density and bicycle facilities near mixed development centers, allowing individuals the opportunity to walk or bike to destinations rather than rely upon CAV's and TNC's for short trips.

Access Management

Access management strategies can improve pedestrian and vehicle circulation. Access management reduces the number of points of access to the street from adjacent properties. The City and DDA installed several street connectors between Mission Street and East Campus Drive. Access management benefits pedestrians by reducing the number of points along a sidewalk where they may encounter a vehicle, and it benefits traffic by reducing the number of points for other vehicles to enter the street. Cross access and rear alleys between developments helps to limit total number of driveways as sites are redeveloped.

