

City of Mt. Pleasant

Downtown Parking Study

2005

Prepared by:



From Vision to Reality

ROWE INCORPORATED

March 2005

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I. Introduction and Project History

Rowe Incorporated (ROWE) has been retained by the City of Mount Pleasant to provide a professional parking analysis as recommended by HyettPalma Downtown Blue Print 2003. The project area is approximately Lansing Street (east), Walnut Street/Chippewa River (west), Wisconsin Street/Michigan Street (south), and Mosher Street/Chippewa River (north).

This included the goal of maximizing the number of spaces found in the downtown by:

- Conducting a comprehensive review of all streets in the downtown area to determine where angled parking is possible (while retaining two-way traffic) and if any no parking areas (loading zones, etc) could be eliminated;
- Examining every public parking lot in the downtown area to ensure that each is configured to offer the maximum number of spaces;
- Consider building a ramp, possible on the Jockey Alley parking lot site (as parking reaches a saturation point); and
- Consider additional public parking as part of the Borden Building adaptive use project.
- Review existing parking enforcement
- Review existing parking signage.

An addendum to the original contract called for traffic signal intersection study to be performed at the intersections of Main and Broadway, Washington and Broadway, Main and Mosher, and Main and Michigan for the purpose of examining existing signal timing and if the signals are warranted or if stop signs are warranted.

II. Project Approach

An inventory of all existing downtown parking spaces was made. This included both on street and off-street public parking (see Exhibits 1 and 2). Different configurations were analyzed to determine the optimal number of parking spaces that could be available.

An analysis of parking violation tickets written by the City was provided. The time, location of ticket and identification of offending vehicle was used to provide a recommendation regarding parking fines. This included using other costs provided by the City including personnel rates including fringe benefits.

The accident history for Main and Broadway, Washington and Broadway, Main and Mosher, and Main and Michigan was analyzed. A review of existing traffic signal timing and vehicle volume counts provided by the City, including turning movement counts provided by students from Central Michigan University for Main and Broadway, Washington and Broadway, Main and Mosher, and Main and Michigan.

An origin and destination study was made to determine where guests and employees came from, where they were parking and their destination point (business). This included external trips and internal trips. The external was conducted for the origins and destinations of persons entering the area under study. Internal information was gathered from the same persons to determine the movement once the persons had entered the study area.

EXHIBIT 1
DOWNTOWN MT. PLEASANT ON-STREET PARKING-EXISTING
 OCTOBER 2004

Block	Angled Spaces	Parallel Parking Spaces	Totals	Comments
E-W ROADWAYS				
MOSHER STREET:				
Broadway Street to Main Street		0	00	no parking
Main Street to Court Street		0	0	no parking
Court Street to Franklin Street		0	0	no parking
Franklin Street to Lansing Street		0	0	no parking
Lansing Street to Fancher Street		0	0	no parking
BROADWAY STREET:				
Railroad to Oak Street		3	3	2-hour, parking on east side only
Oak Street to Pine Street		19	19	2-hour, both sides
Pine Street to Washington Street		15	15	2-hour, both sides
Washington Street to Main Street		5	5	2-hour, parking on south side only
Main Street to University Street		21	21	2-hour, both sides
University Street to Franklin Street		8	8	2-hour, both sides
Franklin Street to Lansing Street		12	12	2-hour, both sides
MICHIGAN STREET:				
Pine Street to Washington Street		14	14	2-hour, both sides, no striping
Washington Street to Main Street		13	13	2-hour, both sides
Main Street to University Street		11	11	2-hour, both sides
University Street to Franklin Street		5	5	2-hour, both sides, part of south side is school drop off
Franklin Street to Lansing Street		7	7	2-hour, parking on north side only, south side school drop off
ILLINOIS STREET:				
Pine Street to Washington Street		8	8	parking on north side only, not striped, no parking south side
Washington Street to Main Street		8	8	not striped, parking on south side only
Main Street to University Street		19	19	not striped, both sides
University Street to Franklin Street		9	9	no parking north side, south side no striping
Franklin Street to Lansing Street		8	8	north side drop off for school, south side no striping
N-S ROADWAYS				
PINE STREET:				
Illinois Street to Michigan Street			0	residential - not counted
Michigan Street to Broadway Street		18	18	2-hour, not striped
WASHINGTON STREET:				
Illinois Street to Michigan Street		22	22	2-hour, both sides
Michigan Street to Broadway Street		10	10	2-hour, both sides
MAIN STREET:				
Wisconsin Street to Illinois Street		7	7	2-hour, one way, parking on east side only
Illinois Street to Michigan Street		12	12	2-hour, both sides
Michigan Street to Broadway Street		23	23	2-hour, both sides
Broadway Street to Mosher Street		5	5	2-hour, parking on east side only
UNIVERSITY STREET:				
Wisconsin Street to Illinois Street		7	7	parking on east side only for library
Illinois Street to Michigan Street		10	10	2-hour, both sides
Michigan Street to Broadway Street		17	17	2-hour, both sides

Block	Angled Spaces	Parallel Parking Spaces	Totals	Comments
COURT STREET:				
Broadway Street to Mosher Street		10	10	2-hour, both sides
Mosher Street to Chippewa Street		14	14	not striped, both sides
FRANKLIN STREET:				
Michigan Street to Broadway Street		9	0	
Broadway Street to Mosher Street		10	10	2-hour, parking on east side only, not striped
Mosher Street to Chippewa Street		9	9	2-hour, not striped, both sides
LANSING STREET:				
Illinois Street to Michigan Street		0	0	no parking
Michigan Street to Broadway Street		5	5	2-hour, parking on east side only, not striped
Broadway Street to Mosher Street		7	7	parking on west side only, not striped
TOTALS	0	380	380	

EXHIBIT 2
DOWNTOWN MT. PLEASANT PARKING LOTS-EXISTING
 OCTOBER 2004

Lot #	1 Hour Spaces	2 Hour Spaces	10 Hour Spaces	Permit Only Spaces (Daytime)	Handicap Spaces	Totals	Comments
1		43			2	45	sign says 46 spaces
2		72	51		2	125	
3		78			3	81	
4		13			1	14	sign says 16 spaces
5		20	63		3	86	sign says 86 spaces
6		20			1	21	sign says 21 spaces
7		13		35		48	
8	3	6		66	1	76	
9			20		1	21	
10				31		31	
11		37		29	3	69	sign says 71 spaces
12			57		2	59	
TOTALS	3	302	191	161	19	676	

III. Origin and Destination Study

The origin and destination study was to determine the following.

1. Where people go - their origins and destinations regardless of the present route of travel
2. Method of travel - automobile they drive, someone else drove them in an automobile, or they walked
3. When they travel - hour of the day and by direction
4. Why they travel - purpose of their trip
5. Where they stop - parking location need

The origin and destination included external trips and internal trips. The external was conducted for the origins and destinations of persons entering the area under study. Internal information was gathered from the same person to determine the movement once the person had entered the study area.

The following series of questions for guests were asked:

- Location where vehicle occupants plan to go (or where they have been)
- Where their trip originated
- Where the vehicle was parked and approximate time they parked their vehicle
- How long they planned on being downtown

The following series of questions for employees were asked:

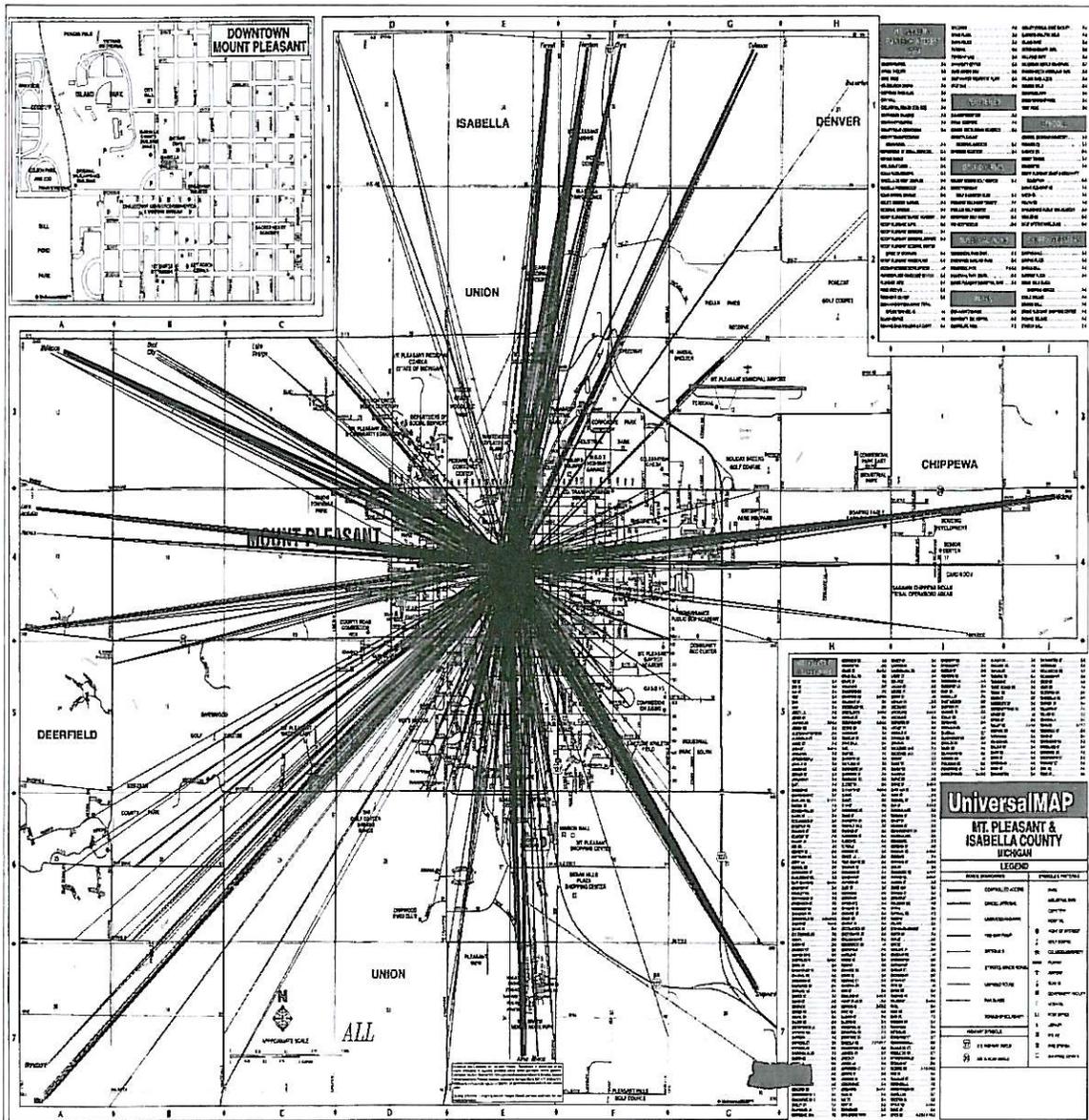
- What is your place of work (name of store/stores and/or office)?
- Do you normally drive your vehicle to work and park?
 - If yes, where do you normally park your vehicle?
 - If no, did someone give you a ride to work or do you walk to work?
- Where did your trip originate?
- How long you will be downtown (total hours including work and any shopping or going to a restaurant)?
- Do you shop downtown?
- Do you go to restaurants downtown?
- What are your work hours?

An origin and destination study is useful because it establishes patterns of use. As the name sounds, an O and D study determines a point of origin for a person, or several people, and shows their point of destination. In the case of this parking study, one O and D study has been conducted to see where people are coming from into the City of Mt. Pleasant to park, and then determining where people are going after they have parked. An O and D study is conducted by survey. In this case, surveys were handed out by employers to their employees and customers. This study is relevant to this project because it will help determine if the location of parking lots within the City are where they should be, or if there is a more ideal location for parking throughout the city. The following pages are a summary of conclusions based on the O and D study for the City of Mt. Pleasant.

External Study: Origin to Parking

Based on the patterns established in this study, it is clear to see that Downtown Mt. Pleasant is an attractive regional retail hub for Central Michigan. Many of the people that are visiting the area have come from several miles. Midland, Harrison, Clare Winn, Shephard, Farwell, Weidman, and Beal City all have a significant amount of trips coming into the City either to shop, dine, or to use some other form of professional service. Figure 1 is a large scale map of the Mt. Pleasant area showing what appears to be the spokes of a tire demonstrating trips that have originated outside of the City coming to the City.

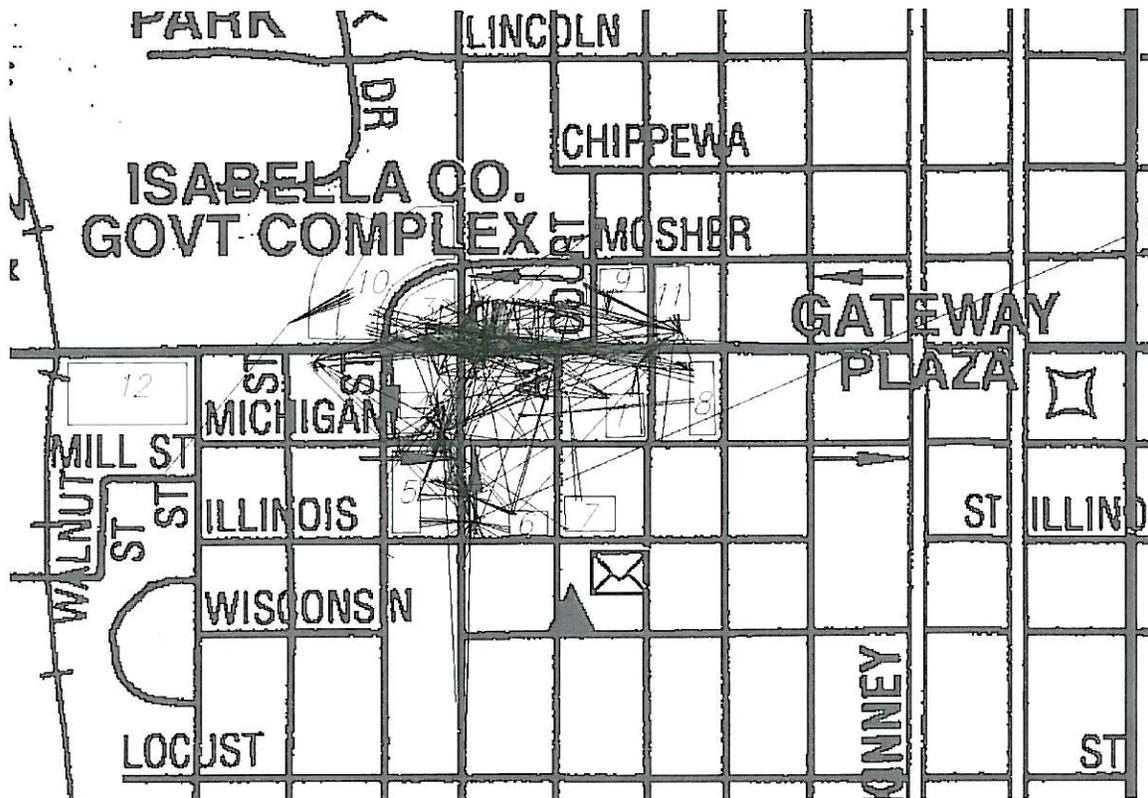
Figure 1



Internal Study: From Parking to Destination

This study took a more in-depth approach in trying to determine a) where are people parking within the City and b) where are they going after they park. By doing this study, it allows us to see what lots are drawing the most usage, and if there are lots that are being under utilized. This study also allows us to see where the majority of on-street parking is taking place. As one can see in figure 2, this study is much more scattered than the previous. Because of this scattering, patterns of use are harder to establish.

Figure 2



A couple of clear patterns that stand out immediately is that the majority of the parking within the city is taking place either on the street, or in lots that are relatively adjacent to their respective destinations. These lots include lot 1, lot 5, Jockey Alley (lot 2) and on either Broadway, or Main Streets. One surprise within this study is that not one patron or employee used lot 12 during the study period. We assume this is because of the distance from lot 12 to the central retail area (Broadway and Main) even though it is only three blocks away, or it was not identified in the survey. Another finding is that several people are parking in lot 10 to go to the M.J. Murphy Beauty College as opposed to using lot 12 which is the agreement. As we tabulated the responses from the employees, one of the main re-occurring themes was that many employees were expressing irritations with having to move their cars every two hours in short term areas in order to avoid receiving a ticket. The complaint is that there is not enough long term parking located within a short (1 block) distance of their place of employment, or when there is long term parking it is full by eight (8:00) A.M. On the other side, customer's surveys indicated that there is not enough short term parking, or on street parking within a short (1-2 blocks) distance to the central retail area. It appears that these lots may be being used by local employees and residents that live in upper level apartments within the central retail area.

Parking Enforcement

The purpose of the parking being close to downtown activity is to encourage guests or customers to come to downtown. Replacing the two hour parking with three hour parking would allow the guests to shop and dine in the downtown. A two-hour limit is not very reasonable for a guest to partake of a meal and then do some shopping or avail themselves of the professional services downtown. Long-term parking for the daytime hours should be on the periphery of the downtown.

The City may wish to consider a higher fine for tickets. A parking ticket of \$15 for the first offense on the same day with one follow up ticket for the same day at the same location is suggested. Towing the vehicle after the second ticket on the same day, at the same location for the same vehicle would discourage those who are willing to pay a ticket as a cost of doing business but taking up a short term or three hour parking.

The City may wish to consider "courtesy tickets" for out of state plated vehicles.

The City may wish to consider another parking violation checker who would pass through the central business district three times a day. Estimated cost in 2004 was \$52,420 for an additional code officer, with a vehicle the cost would be \$78,420. Each ticket issued to the same vehicle on the same day would receive another fine. For example, the first ticket would be for \$15, if the same vehicle receives another ticket on the same day at the same location, the second ticket would be for \$15. After 15 days the fine for unpaid tickets would increase to \$50. While this may seem steep at first, keep in mind that the driver of this vehicle is depriving customers of this spot. The short-term customers will simply go somewhere else to shop, dine or avail themselves of the service they are seeking.

Instead of hiring an additional code officer, the City may wish to go to non-traditional hours for the code officer. In other words if he started at 7am, he can make more than one pass through the Central Business District during the day.

Currently the code officer drives through the area and marks the tires on vehicles. If the City opts to go to angle parking then the code officer will have to park his/her vehicle, dismount from the vehicle and walk the angle parking area, mark the vehicle tires, and return to his/her vehicle. Assuming the code officer walks at three (3) feet per second, this will increase his/her time in marking tires, and thereby increase his/her time in the performance of his/her duty in the CBD. Depending on where the code vehicle is parked, this may also increase the time (because the code vehicle will have to be properly parked, after dismounting from the code vehicle, the code person will have to walk to the angle parking area, mark the tires and then return to the properly parked code vehicle) for marking those vehicles in the angle parking area. Time would depend on where the code person parks their vehicle. This could add an additional 10-15 minutes per block to enforcement time where angle parking would exist. Given the duties in other areas the code enforcement person must travel to, the city may wish to consider the placement of the code person in the CBD at extra times on certain days. Changing or increasing enforcement hours in the CBD would likely require additional funds from the CBD. It is suggested these days not follow a pattern, so persons who move their vehicles will know the pattern. The purpose of this is to discourage persons who go out and move their vehicles at set times because they know when the code person makes their rounds. During the survey, it was mentioned some workers go out and remove the chalk mark on their vehicle's tires. The City may wish to adopt an ordinance that prohibits persons from interfering with a city employee in the performance of their duties.

IV. Traffic Signals

The traffic control devices at Main/Michigan, Main/Broadway Washington/Broadway and Main/Mosher were examined. Traffic volume counts as well as traffic accident histories for the past three years were provided by the City. Amy Lilionfield, Ph.D., a professor at Central Michigan University, also assigned her geography students to perform a manual turning movement count. Appendix B depicts accidents at the individual intersections from the past three years.

The procedure for the installation of traffic signals is found in the Michigan Manual for Uniform Traffic Control Devices. This manual outlines eleven separate warrants that are used to assure uniform installation of signals. For correct signal installation, at least one of the warrants must be met. These warrants include the following:

- Warrant 1: Minimum vehicular traffic volume
- Warrant 2: Interruption of continuous traffic
- Warrant 3: Minimum pedestrian volume
- Warrant 4: School crossings
- Warrant 5: Progressive movement
- Warrant 6: Accident experience
- Warrant 7: Systems
- Warrant 8: Combination of warrants
- Warrant 9: Four-hour volume
- Warrant 10: Peak-hour delay
- Warrant 11: Peak-hour volume

This study of existing signalized intersections is to determine if conditions have changed to the point where warrants are no longer met. A traffic signal warrant study was performed at the intersections of Main/Michigan, Main/Broadway, Washington/Broadway and Main/Mosher using volumes observed during intersection turning movement counts. It appears the intersections of Main/Mosher and Washington/Broadway meet the requirements of Warrant 10.

Warrant 10 is used to allow signal installation at an intersection where a minor street experiences lengthy delay during the peak hour. In order to meet this warrant the following three conditions must be met during the peak hour:

1. Minor street stop sign control results in a total delay of at least 4 vehicles/hour
2. Minor street approach services at least 100 vph
3. Intersection services at least 800 vph

The intersection of Main/Mosher experiences a peak between the hours of noon and 1pm. During this hour the following conditions were observed:

1. If this intersection was controlled by stop signs on Mosher Street the east bound approach would experience a 5 hour total delay
2. East bound Mosher services 129 vph, west bound Mosher services 339 vph
3. This intersection services 1016 vph

The intersection of Washington/Broadway experiences a peak between the hours of noon and 1pm. During this hour the following condition were observed:

1. If this intersection was controlled by stop signs on Broadway Street the east bound approach would experience a 5 hour total delay
2. East bound Broadway services 210 vph, west bound Broadway services 144 vph
3. This intersection services 1061 vph

The existing signals at the intersection of Main/Mosher and Washington/Broadway are warranted and should remain in service. At the intersections of Main/Michigan and Main/Broadway none of the 11 warrants were met. The existing signals at these intersections could be placed in an inoperable condition, pedestrian signals bagged and replaced with stop signs for a trial period of 6 months to one year. At the end of this period, if no significant problems are encountered, removal of the signal should be considered. At the intersection of Main/Broadway a four way stop sign should be used during the trial period and evaluated for permanent installation. At Main/Michigan a two-way stop sign should be evaluated with stop signs placed on Michigan. During the first couple of months of the conversion to angle parking it may be advantageous to keep a four-way stop to keep speeds low during the learning phase. Attention should be paid to the left turn movement from Main onto Michigan to ensure there would be sufficient gaps to complete.

The main objective of traffic signal timing is to minimize the average delay of vehicles. Signal timing is composed of cycle length and phasing. Cycle length is the amount of time allocated for the signal to complete one full set of traffic movements. Phasing is the means in which the cycle length is divided between conflicting traffic movements. In order to minimize vehicle delay the signal length should be optimized, and the number of phases should be reduced.

Cycle lengths typically fall between 30 and 120 seconds. Longer cycle lengths may be necessary where heavy congestion is experienced or where multiple phases are used. The existing traffic signals use a cycle length of 45 seconds. Using the existing lane configurations and the existing traffic volumes a natural cycle length of 40 seconds was calculated. It appears this cycle length will provide minimal delay at each individual signalized intersection. If delay were the only area of desired performance a 40 second cycle time would be appropriate.

The signalized intersections in this area are in close proximity to multiple driveways and on street parking spaces. Drivers in these areas will need to wait for an adequate gap in traffic in order to maneuver onto the roadway. While a 40 second cycle time will provide optimal flow through the intersection the gaps in traffic provided by the signal will be minimized. In order to assist drivers trying to maneuver onto the roadway a cycle length of 50 seconds may be more desirable.

Phasing of the existing signals is relatively simple and consists of two phases. Phase 1 includes all northbound and southbound movements. Eastbound and westbound movements are allowed in phase 2. Left turn movements are permitted, as no separate protected left turn phase is used. This type of phasing is consistent with the light volumes observed at these intersections.

A four second yellow light and one second of all red time should be used at this intersection to provide adequate separation between conflicting movements. The remaining cycle length may be equally divided between the two directions, as volumes are light and relatively equally distributed between travel directions. This indicates that each phase length would have a 20 second green time.

In the parking scenario where a stretch of Mosher is converted to a parking lot, a longer cycle length is required. At the intersection of Main/Mosher the natural cycle length increases to 45 seconds. The intersections of Main/Michigan and Washington/Michigan have a natural cycle length of 55 seconds. The change in natural cycle length is caused by the increase in traffic volumes. In order to provide minimal delay and allow for gap opportunity a 60 second cycle length should be considered. In this case even when signal timing is optimized there is potential for lengthy queue lines and increased delay.

Stop Signage

Stop signs should not be used as a speed control device. Conditions warranting stop signs are at intersections where:

1. Intersection of a less important road with a main road, where application of the normal right-of-way rule is unduly hazardous.
2. Intersection of a county road, City Street, or township road with a state highway.
3. Intersection of two main highways where no traffic signal is present.
4. Street entering a through highway or street.
5. Unsignalized intersection in a signalized area.
6. Railroad crossing where a stop is required by law or order of appropriate public authority;
7. An intersection where a combination of high speed, restricted view, and serious accident record indicates a need for control by a stop sign.

Four Way Stop Signage

Conditions which may warrant the use of a four-way Stop installation are:

1. Where traffic signals are warranted and urgently needed, the four-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the signal installation.
2. An accident problem as indicated by five or more reported accidents of a type susceptible to correction by a four-way stop installation in a 12-month period. Such accidents include right-and left-turn collisions as well as right-angle collisions.
3. Minimum traffic volumes:
4. The total vehicular volume entering the intersection from all approaches must average at least 500 vehicles per hour for any 8 hour of an average day, and
5. The combined vehicular and pedestrian volume from the minor street or highway must average at least 200 units per hour for the same 8 hour, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the maximum hour.
6. When the 85-percentile approach speed of the major street traffic exceeds 40 mph, the minimum vehicular volume warrant is 70 percent of the above requirements.

V. Parking

A comprehensive review of all streets in downtown was made to determine where angled parking is feasible while maintaining two-way traffic, and whether "no-parking" areas, i.e. loading zones, etc. could be eliminated.

Existing parking was analyzed to provide a recommendation of the optimal configuration and location of parking spaces including 1-hour, 2-hour, 10-hour, overnight, permit parking and other recommended time designations.

This study was for the section of the Central Business District (CBD) bounded by the project area is approximately Lansing Street (east), Walnut Street/Chippewa River (west), Wisconsin Street/Michigan Street (south), and Mosher Street/Chippewa River (north). This included parking spaces on the street and twelve parking lots.

While parking might be perceived as, "free" to users (no parking meters and/or no parking lot fees), there are always costs, either direct or indirect. Each parking space entails costs for building owners, tenants, and/or taxpayers. A typical 9'x20' parking space is a 180 square foot piece of land. Typically, parking space costs are absorbed into rent, leases, taxes, special assessment districts, primary shopping districts, central business district tax increment financing authority. In reality, there really is no free parking.

Parking space costs include the actual cost of building the space; maintenance (includes patching holes and cracks, resurfacing, cleaning, painting, signage, enforcement, financing costs and interest).

While convenient low cost or "free parking" is critical for economic success, there are different groups of parking users.

Typically, clients, customers and shoppers are the highest priority. Because the clients, customers and shoppers generate the revenue to support the businesses, have the highest turnover in parking and have fewer peak hour auto trips, other visitors (i.e. employees and residents) follow in priority.

Congestion caused by drivers looking for a premium spot can be a concern. This often is a result of lack of information where nearby parking is located rather than the number of spaces available.

Parkers are interested in how easily they can find a parking space. Maintaining parking availability is a key goal but building more spaces is only one way to achieve this goal and is usually an expensive goal. Majority of the time it will cost less to free up spaces by prioritizing parking spaces and matching the highest priority parker.

A common comment in the parking survey for employees was they had to move their cars every two hours. This indicates employees are taking short-term parking spaces that should be used by downtown guests. The employees should be encouraged to use long-term parking at the periphery of the downtown area. This can be done by employers encouraging their employees to use long-term parking and by stepped enforcement and higher ticket fines. Exhibit 3 identifies recommended additions of angled parking in certain blocks, the associated parking durations and possible changes to time allocations of lots.

Free curb parking has been shown to create overcrowding and cruising to find a free spot adjacent to the cruiser's destination. This cruising also leads to increased traffic. Cruising increases vehicle miles traveled without adding to vehicles or travel. The extra vehicle miles traveled can create the impression of congestion. It has been proven that parallel parking maneuvers can congest the traveled way for up to 30± seconds and that angled parking maneuvers only take 12± seconds.

Currently, the City is utilizing the concept of shared parking between two distinct uses. This shared parking use arrangement can take place because the peak hours for the two uses are opposite of each other. The residential users need the parking for long term parking overnight and the business users need the short-term parking for customers and long-term parking for employees during the day. This allows for a more efficient and economical use of the land. Central Business District residential vehicles are allowed to use certain city Parking lots for over night use while during the day employees and business guests use the same spaces. While this shared use can sometimes create friction between the users, it should be remembered that if the shared use was not being utilized, there would be more parking spaces and the cost of the free parking would be much higher for the property owners, renters and tax payers.

The origin and destination study indicated a lack of usage of parking lot number 12. This is an under utilized lot.

The indicators are for a need for short term parking. Short term parking can be defined as less than three hours that is managed to encourage a turnover of vehicles. Long term parking is defined as parking over three hours and is not managed to encourage a turn over of vehicles.

Optimal on street parking would utilize both angle and parallel parking as shown on Exhibit 3 could result in 405 on street parking in this area. All 30 degree angle parking was analyzed with parallel parking only where the angle would not fit and this resulted in 334 spaces and all parallel parking for a current total of 380 spaces.

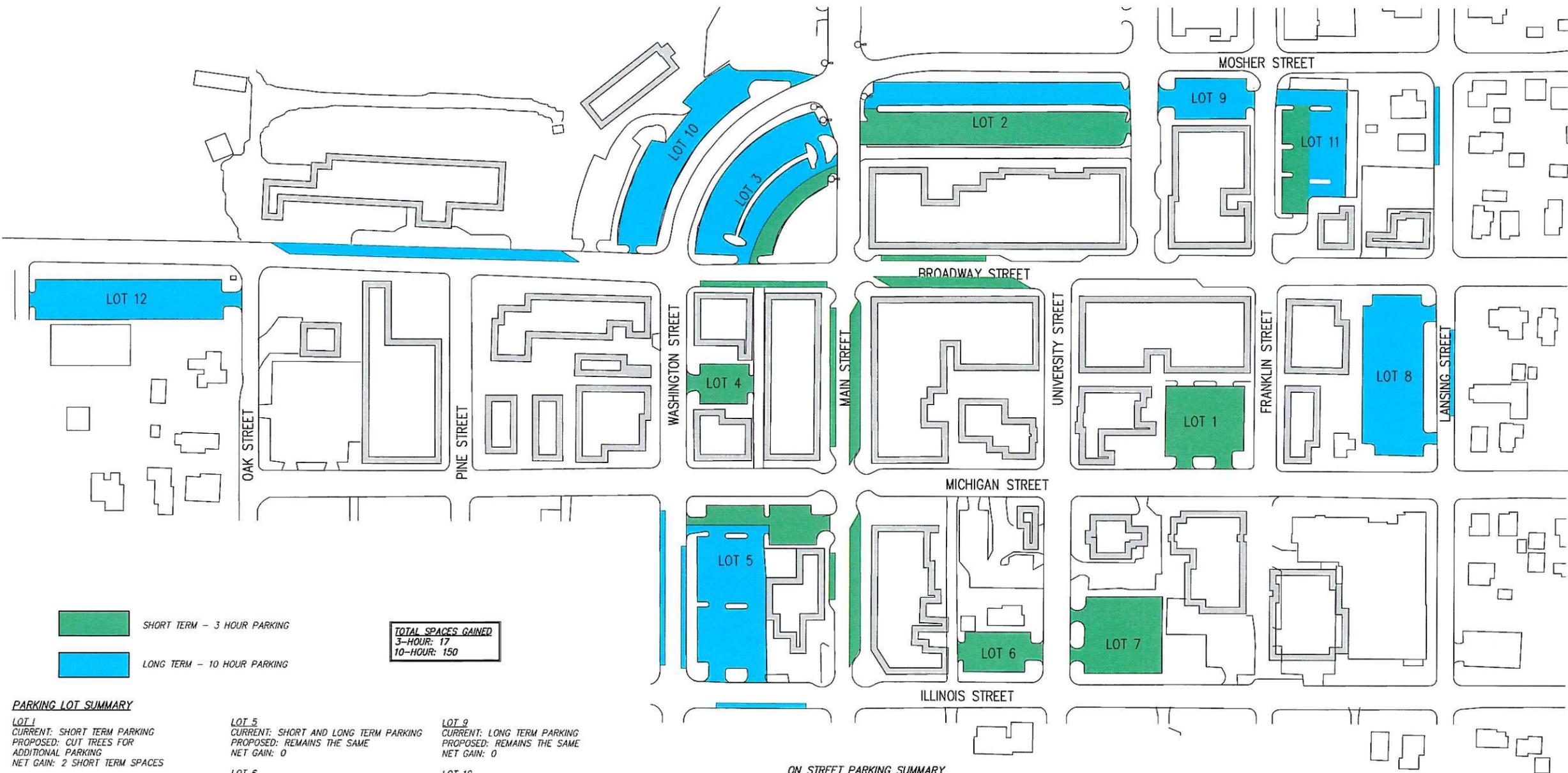
The current configuration of parking optimizes the available space. Currently, Lot 2 (Jockey Alley) is configured in a way that does not meet acceptable standards. To change this lot would require reconstruction. If reconstruction is looked into there could be possibilities to turn Court Street to one way closing at Mosher and combining Lot 2 and Lot 9.

The current permit process dedicates three lots for permit only use. We recommend this be reduced to one lot. Due to its location we recommend Lot 8 stay permit only. The new permit system could be a lottery system where drawing happens in mid October and permits take effect November 1st. Permit fees should be increased to \$50 per year and would be required to be subject to the lottery system every year.

Utilizing aerial mapping provided by the city, we reviewed each block to determine if there was sufficient width to facilitate angle parking on the street. Minimum widths used in our review was 10' wide for parallel parking; 20' wide travel way (2-10' lanes); 3' shy between travel way and back of angle parking; and 18' for 30° angle parking, for a total of 51'. Exhibit 4 depicts a minimum cross section. Based on this cross section, we identified four areas that angle parking can be utilized: two (2) blocks on Main Street between Broadway and Illinois and two (2) blocks on Broadway between Main and University and in front of the Borden Building.

Angle parking has had a stigma for causing accidents in the past. Up until last year, MDOT would not allow angle parking on streets receiving federal funds for reconstruction. This has been changed to now allow angle parking or a combination, with a geometric review and an accident study. Accident studies from other communities have shown that there is actually more accidents associated with parallel parking than with angle parking. A couple of key geometric requirements that help improve traffic safety and traffic calming in the cross section proposed is 10' travel lanes. This still meets AASHTO's recommended standards for urban streets, and has the benefit of slowing traffic speeds allowing more reaction time for drivers. These should also be 3' of shy distance between the travel lanes and the back of the angled parking spaces, allowing some space for parked cars to slowly back out to look for traffic prior entering the travel lanes.

We recommend improving angle parking by first utilizing pavement marking, and latter if desired to reconstruct curbed bump-outs to further protect parked cars and pedestrian crossings.



SHORT TERM - 3 HOUR PARKING
 LONG TERM - 10 HOUR PARKING

TOTAL SPACES GAINED
 3-HOUR: 17
 10-HOUR: 150

PARKING LOT SUMMARY

- | | | |
|---|--|---|
| <p>LOT 1
CURRENT: SHORT TERM PARKING
PROPOSED: CUT TREES FOR ADDITIONAL PARKING
NET GAIN: 2 SHORT TERM SPACES</p> <p>LOT 2
CURRENT: SHORT AND LONG TERM PARKING
PROPOSED: REMAINS THE SAME
NET GAIN: 0</p> <p>LOT 3
CURRENT: SHORT TERM PARKING
PROPOSED: SHORT TERM IN ROW 1
LONG TERM IN ROWS 2-4
NET GAIN: 45 LONG TERM SPACES</p> <p>LOT 4
CURRENT: SHORT TERM PARKING
PROPOSED: REMAINS THE SAME
NET GAIN: 0</p> | <p>LOT 5
CURRENT: SHORT AND LONG TERM PARKING
PROPOSED: REMAINS THE SAME
NET GAIN: 0</p> <p>LOT 6
CURRENT: SHORT TERM PARKING
PROPOSED: REMAINS THE SAME
NET GAIN: 0</p> <p>LOT 7
CURRENT: SHORT TERM PARKING
PROPOSED: REMAINS THE SAME
NET GAIN: 0</p> <p>LOT 8
CURRENT: PERMIT PARKING
PROPOSED: REMAINS PERMIT PARKING
NET GAIN: 0</p> | <p>LOT 9
CURRENT: LONG TERM PARKING
PROPOSED: REMAINS THE SAME
NET GAIN: 0</p> <p>LOT 10
CURRENT: PERMIT ONLY
PROPOSED: LONG TERM PARKING
NET GAIN: 31 LONG TERM SPACES</p> <p>LOT 11
CURRENT: SHORT TERM PARKING
PROPOSED: CHANGE MIDDLE ISLAND TO LONG TERM
NET GAIN: 22 LONG TERM SPACES</p> <p>LOT 12
CURRENT: LONG TERM PARKING
PROPOSED: REMAINS THE SAME
NET GAIN: 0</p> |
|---|--|---|

SPACES GAINED
 3-HOUR: 2
 10-HOUR: 98

ON STREET PARKING SUMMARY

- BROADWAY ST - BETWEEN MAIN & UNIVERSITY**
 CURRENT: SHORT TERM, PARALLEL PARKING
 PROPOSED: SHORT TERM, ANGLE PARKING ON NORTH SIDE OF STREET
 NET GAIN: 7 SHORT TERM SPACES
- BROADWAY ST - BETWEEN WASHINGTON & MOUNTAIN TOWN STATION**
 CURRENT: SHORT TERM, PARALLEL PARKING
 PROPOSED: LONG TERM, ANGLE PARKING ON NORTH SIDE OF STREET
 NET GAIN: 10 LONG TERM SPACES
- MAIN STREET - BETWEEN BROADWAY & ILLINOIS**
 CURRENT: SHORT TERM, PARALLEL PARKING
 PROPOSED: SHORT TERM, ANGLE PARKING ON EAST SIDE OF STREET
 NET GAIN: 8 SHORT TERM SPACES
- WASHINGTON ST - BETWEEN MICHIGAN & ILLINOIS**
 CURRENT: SHORT TERM, PARALLEL PARKING
 PROPOSED: LONG TERM, PARALLEL PARKING
 NET GAIN: 22 LONG TERM SPACES
- ILLINOIS ST - BETWEEN WASHINGTON & MAIN**
 CURRENT: SHORT TERM PARALLEL PARKING
 PROPOSED: LONG TERM PARALLEL PARKING
 NET GAIN: 8 LONG TERM SPACES
- LANSING STREET - BETWEEN MOSHER & MICHIGAN**
 CURRENT: SHORT TERM PARALLEL PARKING
 PROPOSED: LONG TERM PARALLEL PARKING
 NET GAIN: 12 LONG TERM SPACES

SPACES GAINED:
 3-HOUR: 15
 10-HOUR: 52

PLAN NO. PARKING LOT EXHIBIT
 DATE: MARCH, 2005
 PROJECT MGR:
 REVIEWER:
 SCALE: N.T.S.

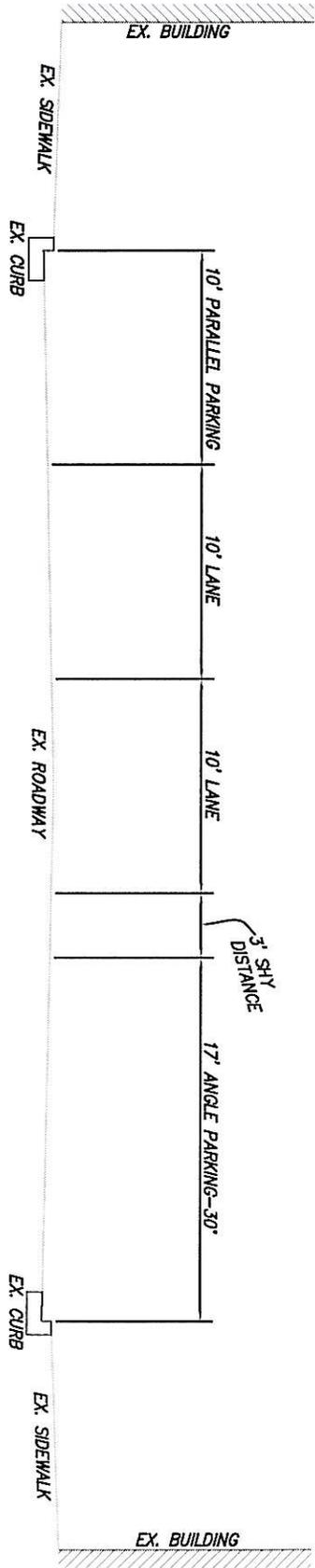
PREPARED BY
ROWE INCORPORATED
 CORPORATE OFFICE
 LAPEER
 128 N. Saginaw St.
 (810) 664-9411

MT. PLEASANT
 127 S. Main St.
 (888) 772-2138

PREPARED FOR
CITY OF MT. PLEASANT
PARKING STUDY



REV:
 SHT# OF
 Cad No: 04C0353



BROADWAY STREET TYPICAL CROSS SECTION
N.T.S.



N.T.S.

EXHIBIT 4

SHT # 1 OF 1
CROSS SECTION



PREPARED FOR
CITY OF MT. PLEASANT
PARKING STUDY
TYPICAL CROSS SECTION

PREPARED BY
ROWE INCORPORATED
LAPEER 128 N. Stephens St. (419) 684-9411
CORPORATE OFFICE 6211 Taylor Dr., Flint (419) 344-7800
MT. PLEASANT 127 S. Main St. (419) 773-2138

PLAN NO. TYPICAL CROSS SECTION
DATE: MARCH, 2008
PROJECT MGR.:
REVIEWER:
SCALE: N.T.S.

Bicycles

Creation of a more bicycle friendly infrastructure is desired. On a day that was inhospitable to bicycle riders, bicycles were noted at the following locations on Main Street: in front of the used book store, in front of Motorless Motion and by National City Bank. These bicycles for the most part were chained to trees or sign posts. These same bicycles had snow caked in their spokes indicating they had been parked there for some time. In addition, bikes were parked in alleys and again chained to utility poles.

Common sense tells us that for each bicycle parked in the downtown area there is an available parking space for an automobile. With some encouragement for bicycles (bicycle parking stands), potentially more automobile parking spaces can be made available. Bicycles chained to trees and light poles damage city facilities and should be discouraged. Therefore, bicycle racks should be placed in key locations.

Bicycle riding by employees should be encouraged by business owners. Bicycling amenities for customers should be encouraged by business owners.

Typically, the communities that have the highest level of bicycle usage are midsize cities with a large student population. These prerequisites do not need to be present to make a serious effort to encourage bicycle transportation as a legitimate form of daily transportation.

VI. Parking Signage-Guide Signs-Parking

A study of existing parking signage was made to provide a recommendation of a uniform parking signage system. Estimated cost will be based on employee hourly rates and fringe benefits supplied by the City.

Guide signs however should be used whenever they can contribute to the convenience and facilitation of traffic movement. Guide signs include parking lot informational signs. Reflect lot signage should be colored coded for short term, long term and over night. Parking lot informational signage should be uniform in size, color, and wording. Parking guide signs should also be color coordinated to reflect the lot signage-long term, short term or over night. The purpose of these guide signs is:

1. Interpretation-All possible interpretations and misinterpretations must be considered in phrasing sign messages (words and symbols).
2. Continuity-Each sign must be designed in context with those which precede it so that continuity is achieved.
3. Advance notice-Signing must prepare the driver ahead of time for each decision he/she has to make
4. Relatability -Sign messages should be in the same terms as information available to the driver from other sources, such as parking handouts from the business community, the city or tourism guides.
5. Prominence-The size and position, as well as the number of times a sign or message is repeated, should be related to the competition from other demands on the driver's attention.
6. Unusual maneuvers-Signing must be specially designed at points where the driver has to make a movement, which is unexpected or unnatural.

Appropriate and well thought out parking guide signs assist the driver in reducing time spent searching for an available parking space.

Check List for Guide Signs

The following questions may be applied to a particular signing installation as a test to determine whether all of the principles are complied with:

1. Is there enough information to prevent a motorist from being led astray by assumptions based on information that is not given?
2. If a motorist does exactly what the sign tells him/her to do, will he do the right thing, at the right time?
3. Is the difference between alternatives clearly emphasized?
4. Is no more than one choice presented at the same time?
5. Is the message too cryptic because of the use of symbols or words, which are either ambiguous or meaningless to a certain portion of the motoring public?
6. Is the motorist confronted with too much information to comprehend at one location, either by having too much on one sign or too many signs?
7. Are the various items of information emphasized (by their size, position, color, etc.) in accordance with their importance to the motorist?
8. Is the signing sufficiently prominent to overcome the competition for the motorist's attention from other sources?
9. Does the information presented at this sign installation preserve the continuity established by previous signing?
10. Does the information presented relate to that available to the motorist from other sources?
11. Is the information repeated often enough and far enough in advance to assure the motorist will see it and reach a decision well in advance of the point where he/she must act?
12. Has presentation of new information at the point of decision been avoided?
13. Is this sign installation the same as those used at other locations where similar conditions exist? The term "conditions" refers to alignment, permissible movements, decisions required, etc.

14. Do the conditions at this location demand custom-designed signing because unusual, unnatural or unexpected maneuvers are required of the motorist? This special signing need not result in bizarre treatment; it can be accomplished by the imaginative application of accepted practices.

Based on the above criteria, it is recommended the City use uniform parking signs. The parking signs should be color coded as follows:

- Long term (10 hours) – Blue
- Short term (3 hours) – Green
- Overnight – (brown)

Each type of parking sign should be of the same color and verbiage. Is the number of parking spaces on the signs relevant? The person driving the vehicle is looking for parking, and how long can they park. Unless the sign indicates the number of spaces open at that time, in all likelihood the driver could care less how many spaces are in the lot. He/she wants to park their vehicle and go to work, shop or partake of the excellent recreational opportunities that are available. They want a parking space close to where they are going and for the length of time that they are going to be there.

Readability and understanding of a sign is based on the drive reaction time after seeing the sign, understanding its message and making the appropriate traffic movement. There is an adjustment of the reaction time based on other moving vehicles, pedestrians, and tightly spaced identified retail locations. The response time is based on the comprehension time after first seeing the sign. The average response time at 20mph is 117.6 sec or 1.96 min. This is based on Viewer Reaction Distance = (mph) (vrt) 1.47. Maneuver is based on a 4

Signage should be within the cone of visibility for the driver and should be placed at five feet. If a sign is situated at or below, five feet above grade it can be blocked by pedestrians on the sidewalk, trucks, and cars, parked on street or moving, or obscured by sign clutter. Signage should be placed in a visible cone the same as a stop sign to ensure visibility and appropriate reaction time.

Lot signage should be colored coded for short term, long term and over night. Parking guided signs should also be color coordinated to reflect the lot signage-long term, short term or over night. The City may want to consider using the standards from the Uniform Traffic Control Devices. See Figure 3.

Figure 3



If used, the sign should be a horizontal rectangle with a standard size of 30" x 24". It should contain the word "PARKING" with the letter P five times the height of the remaining letters, and a directional arrow "→" to indicate short term parking. To indicate long term parking the word "PARKING" with the letter P five times the height of the remaining letter and a directional arrow "→" should be used. To indicate overnight parking the word "PARKING" with the letter P five times the height of the remaining letters and a directional arrow "→" should be used. The arrow may be on the sign as in the illustration or on a separate sign attached below the Parking sign. The legend and border should be the same color code on a retro-reflectorized white background for both arrow and legend signs if done separately. The "Parking" sign should be installed on major through fares as a guide to the parking facility (no more than four blocks from the parking area) and at the nearest point of access to the parking facility. Parking limitations should also be posted on the guide signs and at the nearest point of access to the parking facility.

Lot signage should be colored coded for short term, long term and over night. Parking guided signs should also be color coordinated to reflect the lot signage-long term, short term or over night.

Short term parking could be green

Long term parking could be blue

Over night parking could be brown

All caps should be used for signage.

*It is noted that pertinent information, including formulas, evaluation criteria, and recommendations for the signal, signage, parking and traffic patterns are based on standards from the Institute of Traffic Engineers (ITE).

Estimated Cost of Parking Signs

The study area for the proposed parking guide signage would need a total of approximately 500 new color coded signs. Cost of signs and installation would be approximately \$100 per sign. The approximate total cost for a color coded guide sign program in the study area would be \$50,000. This includes both on street and surface parking lot signage. It should be remembered that parking spaces will be lost during the project due to the necessity of each work days sign installation area being "coned off" prior to the beginning of the work day.

Parking Lots-Maps/Brochures

It is recommended the City attempt to place parking lot location on other maps, such as Isabella County, State of Michigan and AAA. For example AAA maps will list Mt Pleasant points of interest, cemeteries, golf courses, industrial parks, park, schools, shopping centers and on the inset for Downtown Mt Pleasant Pickens Field, Island Park, City Hall, Isabella County Building, Isabella County Building Annex, Sheriff Dept, Broadway Theater, Chamber of Commerce/Convention & Visitors Bureau, 1st United Methodist, Art Reach Center, Sacred Heart Academy, Train Station, Nelson Park and Zoo, Original Waterworks Building, Mill Pond Park--While some parking facilities (not all parking facilities are shown) are indicated by a "P" for these centers of activity, they are just a "P" on a block without showing location of the block with entry, much less length of time, cost, etc. for the parking facility. The City may wish to contact various map producers and offer this information to these producers as well as producing their own maps highlighting points of interest, shopping venues as well as parking facility location, entry points and cost length of time associated with each parking facility. The City may want to consider using a "green P" for map insertion to match the short term on-street signage and short term parking lots (3 hours), a "blue P" for long term parking lots (10 hours) and a "brown P" for overnight parking. The maps if colored should reflect lot signage should be colored coded for short term, long term and over night. Parking guided signs should also be color coordinated to reflect the lot signage-long term, short term or over night. This information should be on all City Brochures.

Off Street Parking Requirements

The American Planning Association Planning Advisory Service Report 510/511 in the Central Business District identifies the requirement of one off street space for each 1,000 feet of gross floor area for non residential buildings and hotels and one off street space for each one space for dwellings.

Using the square footage as provided by the Hyett Palma Study the current square footage of Downtown Mt Pleasant is as follows:

Retail Business - 159,138 square feet*

Office - 245,529 square feet*

Residential Dwellings in the CBD - 158

This would translate to 662 required spaces. Currently, 676 parking spaces in the lots and 380 on-street spaces provides a total of 1056 spaces. This is 60% more spaces than required. With the addition of 25 spaces on-street due to the conversion to angle parking, a new total of 1081 spaces would increase to 63% more spaces than required.

As either the number of residential dwelling units significantly increases in the Central Business District or non-residential square footage significantly increases, the City should take a look at either acquiring additional land for off street parking or erecting a parking ramp. An alternative is when land becomes available in the Central Business District, the City may consider acquiring the land for the purpose of off street surface parking.

One common method of increasing off street parking spaces is the construction of a parking ramp. These structures can greatly increase the number of parking spaces, but are typically expensive. Two locations within the study area were examined as sites of potential parking ramps. The area along Mosher where existing lots 3 and 10 are located provides parking near many downtown businesses. A parking ramp in this area could provide ground level spaces, as well as above and or below ground levels. The closing of Mosher through this area would provide additional parking, however negative impacts to traffic conditions may be expected should Mosher be converted into parking use. Additional parking on above and below ground levels could supply approximately 90 spaces per level.

Another option in this area is to examine building a parking ramp while leaving Mosher in service. In this case a structure would be limited to the southeast side of Mosher for the first two stories before it expands over Mosher for additional stories. The first two floors of this layout could supply approximately 40 spaces per level. Upper floors which span over Mosher could accommodate approximately 75 spaces per level.

The second potential location of a parking ramp is the jockey alley lot. This is a popular lot with both employees and visitors and additional spaces provided by a structure could be beneficial in this location. In order to provide adequate room for a parking ramp both the northern and southern lot would need to be utilized. The northern lot is owned by the county and a 99 year lease of the property would be required for the construction of this type of structure. Additional parking on levels above or below ground could supply approximately 70 spaces per level.

The cost of an above ground parking ramp typically ranges from \$13,000 to \$15,000 per space. Where parking levels below ground are desired, price ranges can be expected to increase 160% and would thus range from \$21,000 to \$24,000 per space. In the 1965 study the increase in cost to build spaces over a street was shown to be approximately 184%. This indicates spaces placed over a street (Mosher) would range from \$24,000 to \$28,000. All of these prices reflect the cost to construct a functional structure with no aesthetic additions. The prices do not include land, maintenance, or labor associated with ramp operations.

A parking structure costs about \$13,000 to \$15,000 per space and would be a no frills structure. This does not include maintenance or land purchase cost. Parking Ramps are a high maintenance structure from the standpoint of snow removal, salt in the winter, oil and grease from automobiles dripping on the concrete. Based on a 280 space ramp, such as that shown for Jockey Alley in Appendix A and historical maintenance costs of \$600 per space per year, maintenance could be in the range of \$100,000 to \$120,000 per year. Typically, most parking ramps have a fee structure that will include attendants at entry and exit points for the purpose of assessing and collecting fees. If gates are used, the maintenance costs will have to be factored in. While adding to the existing parking spaces, this not necessarily the best solution. The City may wish to redirect long term parkers to underutilized parking lots, thus freeing up needed short term parking. It would appear that it would be more economical to obtain property as it becomes available for the purpose of an additional surface parking lot.

Summary and Recommendations

The following is a summary of recommendations and possible phasing options:

Phase I: Items can be implemented within the next year with minimal cost.

1. Implementation of angled parking on Main Street and Broadway Street by restriping these areas. This could add around 25 additional spaces.
2. Restripe all on-street parking and parking lot spaces.
3. Implement sign updates and color coding. Depending on funding sources this may move to Phase II.
4. Update brochures and maps showing parking and tie in color coding. Implement time allotment changes in lots as shown in exhibits.
5. Revise short term parking time allotment from 2 hours to 3 hours.
6. Revise code enforcement hour to incorporate earlier starting time marking and ticketing. Revise ticket structure to increase fine from \$7.50 to \$15.00 and issue multiple tickets per day if necessary.
7. Revise permit process to be a yearly lottery system open to only owners and employees, and limit permit parking to lot 8 only. Convert other permit lots to long term parking.
8. Implement a trial period to monitor impacts of converting Main/Broadway and Main/Michigan, intersections to four way and two way stops, respectfully.
9. Purchase and install bike racks in key locations of the CBD, to encourage alternative transportation.

Phase II: Items to be planned for future implementation as funding is made available.

1. Reconstruction of Jockey Alley Lot (lot 2) in combination with possible changes to Court Street and lot 9.

Phase III: Items to be addressed with significant growth of the CBD.

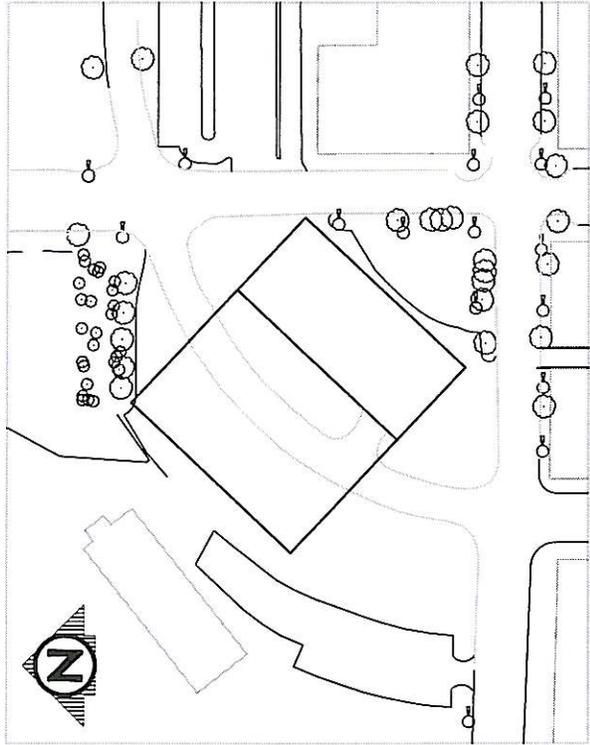
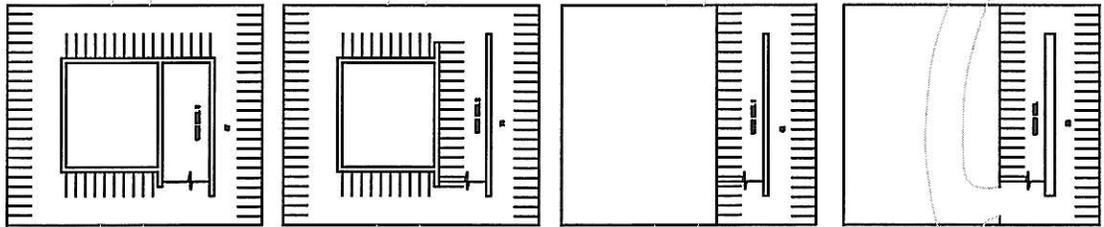
1. Construction of parking ramp.

Appendix

Appendix A: Ramp Options for Mosher And Jockey Alley

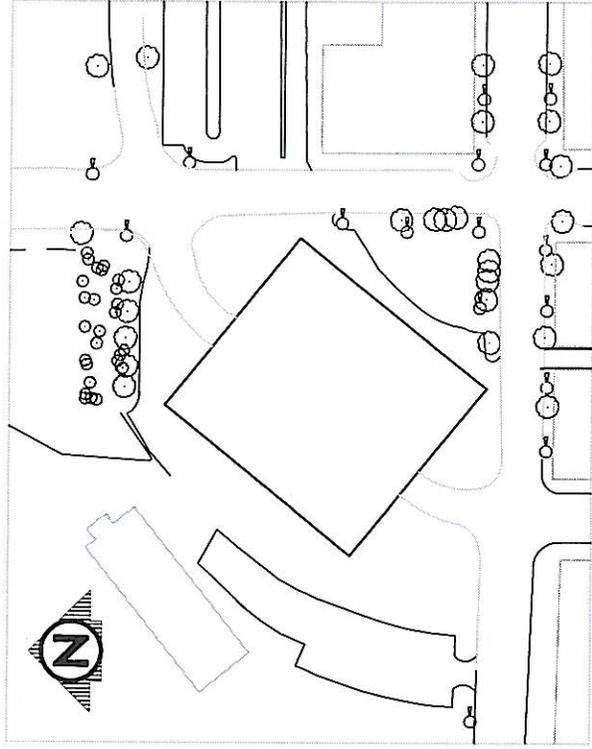
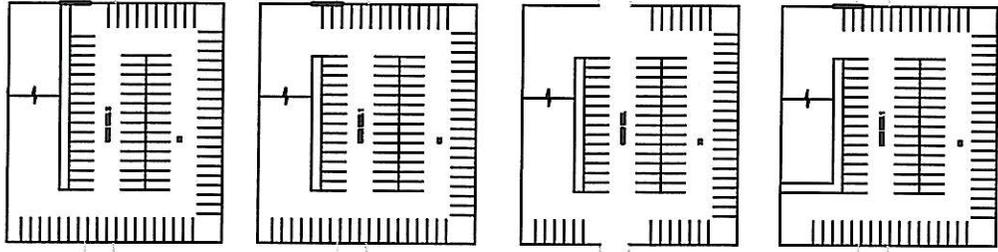
This section of the study included conceptual ideas for placement of either an above or below ground parking structure at Mosher Street and Broadway, or at the current Jockey alley location. The following exhibits depict what this type of layout could look like.

OVER MOSHER RAMP CONCEPTUAL MODEL



CLOSED MOSHER RAMP

CONCEPTUAL MODEL



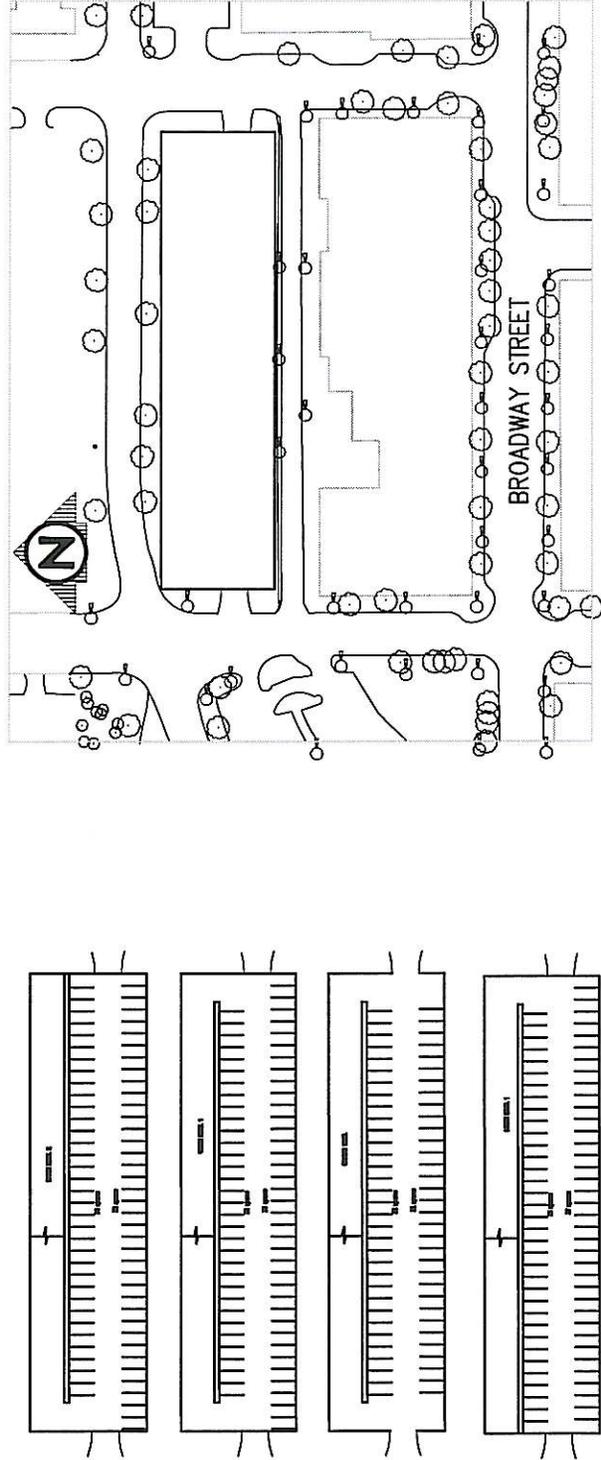
MOSHER CONVERTED TO PARKING

141 SPACES



EXHIBIT 7

JOCKEY ALLEY RAMP CONCEPTUAL MODEL



Appendix B Accident Study

For the purposes of recommending timing changes to traffic signals at selected locations and removing them at others, we conducted an accident study to determine the level of accidents that have taken place within the last three years at the intersections of Broadway/Main, Michigan/Main, Mosher/Main, and Washington/Broadway. The following exhibits depict the results of this study.

1-25-02 11:01 AM
C-DY-DRY-CLEAR

1-25-2002 11:01 AM
C-DY-DRY-CLEAR

10-31-2004
CLOUDY-DARK-WET

4-28-2004 14:57 PM
DY-C-DRY

11-01-2002 11:59 AM
DAY-SNOW-WET

11-27-2003 14:44 PM
DY-C-D

06-24-2004 7:41 AM
DY-CLOUDY-DRY

07-22-2003 11:59 AM
DY-C-DRY

12-08-2003 13:17 PM
DY-CLOUDY-WET

06-21-2003 10:44 AM
DY-CLOUDY-DRY

MAIN STREET

BROADWAY STREET



EXHIBIT 9



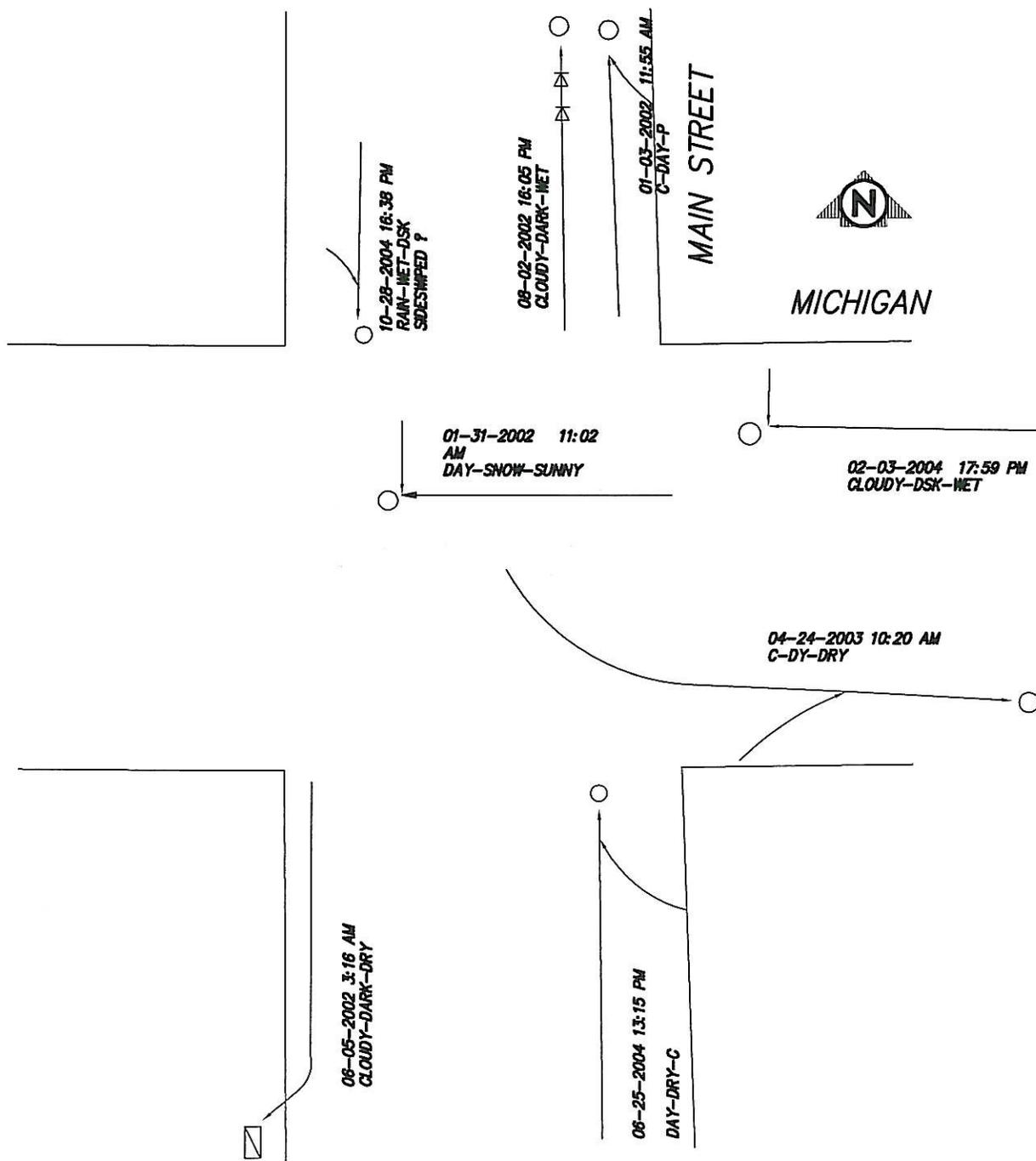


EXHIBIT 10



MAIN STREET



MOSHER

12-30-2002 15:07 PM
CLOUDY-WET

09-03-2003 14:40 PM
CLOUDY-DAY-DRY

04-23-2003 19:15 PM
C-DAY-DRY

10-30-2002
C-DAY-DRY

03-10-2003 12:02 AM
CLOUDY-DARK-SNOW

EXHIBIT 11

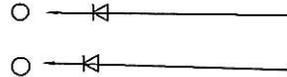


WASHINGTON STREET

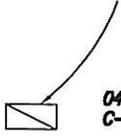


BROADWAY

02-03-2004 17:59 PM
CLOUDY-DSK-WET



09-27-2002 16:48 PM
C-DAY-DRY



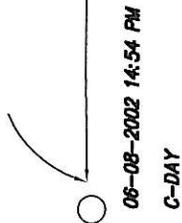
04-10-2003 15:12 PM
C-DAY



06-03-2003 00:36 AM
CLOUDY-DRY
FLASHING RED

08-07-2004 19:42 PM
CLOUDY-DRY

11-19-2002 11:59 AM
C-DAY-DRY



06-08-2002 14:54 PM
C-DAY

EXHIBIT 12

