AGENDA
BLOOMINGTON TRANSPORTATION COMMISSION
REGULAR MEETING
TUESDAY, SEPTEMBER 17, 2019 4:00 P.M.
COUNCIL CHAMBERS, CITY HALL
109 EAST OLIVE STREET
BLOOMINGTON, ILLINOIS

1. **CALL TO ORDER**

2. **ROLL CALL and INTRODUCTION OF NEW MEMBERS**

3. **PUBLIC COMMENT**

4. **MINUTES:** Review and approve the minutes of the August 27, 2019 special meeting of the Bloomington Transportation Commission.

5. **REGULAR AGENDA**
   - A. **TC-2019-04:** Approval of 2020 Meeting Dates
   - B. **TC-2019-02:** Downtown Main Street Parking Configuration
   - C. **Information:** September 2019 Citizen Comments/Complaints Summary

6. **OLD BUSINESS**
   - A. Any old items brought back by the Commission

7. **NEW BUSINESS**
   - A. Any new items brought up by the Commission

8. **COMMISSIONER COMMENTS**

9. **ADJOURNMENT**

For further information contact:
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MINUTES
BLOOMINGTON TRANSPORTATION COMMISSION
SPECIAL MEETING
TUESDAY, AUGUST 27, 2019 4:00 P.M.
COUNCIL CHAMBERS, CITY HALL
109 EAST OLIVE STREET
BLOOMINGTON, ILLINOIS

MEMBERS PRESENT: Mr. Rob Ballantini, Ms. Maureen (Reenie) Bradley, Mr. Edward Breitweiser, Mr. Adam Heenan

MEMBERS ABSENT: None

OTHERS PRESENT: Mr. Jim Karch, Director of Public Works, Mr. George Boyle, City Attorney (until 5:15pm); Mr. Billy Tyus, Deputy City Manager, Mr. Kevin Kothe, City Engineer; Mr. Philip Allyn, City Traffic Engineer; and members of the public.

1. CALL TO ORDER: Mr. Allyn called the meeting to order at 4:02 pm.

2. ROLL CALL: Mr. Allyn called the roll. With four members in attendance, a quorum was established.

5. REGULAR AGENDA:

A. Election of Chairperson and Vice Chairperson

Mr. Allyn asked for a motion to move the election of Chairperson and Vice Chairperson to the top of the agenda. Mr. Heenan made the motion, Mr. Ballantini seconded. Motion carried unanimously.

Mr. Heenan asked if we could table the election until we have a full commission. Mr. Boyle explained that we have a quorum and were hoping to get work done today, so it would be beneficial to elect a chairperson rather than have staff run the meeting. The commission could hold another election after the commission is full or after a set timeframe. Mr. Allyn clarified it would be an option to elect an "Interim" Chairperson.

Mr. Heenan motioned to elect an Interim Chairperson for a 2-month term. Seconded by Mr. Breitweiser. Motion passed unanimously via voice vote.

Ms. Bradley self-nominated herself. Mr. Heenan seconded the nomination. Ms. Bradley was elected as Interim Chairperson by unanimous vote.

Ms. Bradley nominated Mr. Heenan as Interim Vice Chairperson for a 2-month term. He accepted the nomination. Mr. Ballantini seconded the motion. Mr. Heenan was elected as Interim Vice Chairperson by unanimous vote.

Chairperson Bradley asked the new members to introduce themselves.

Mr. Adam Heenan introduced himself, explained that he and his wife moved to town 3 years ago, he is civically engaged and does other activities around town. He said he was pleased to be on this committee.

Mr. Eddie Breitweiser introduced himself as being born and raised in Bloomington, moved away for college, and then he and his wife moved back her 6-7 years ago. He is civically engaged, attempting to be more engaged and thank everyone for the opportunity.

Mr. Rob Ballantini introduced himself, saying he has been in town for 40+ years. He indicated he will be moving to Danville, IL and that this would unfortunately be his last meeting. He hopes to be able to serve the City of Danville in the future.

Ms. Renee Bradley introduced herself as the only remaining original member of the committee. She has a background in traffic and industrial safety, lives in North Pointe, and she is retired. She has a real interest in traffic safety, as it has been her life work. She has taught people how to ride the city bus for 35 years and has worked with a diverse group of people.

3. PUBLIC COMMENT:
There were no public comments.

4. MINUTES: Reviewed and approved the minutes of the April 19, 2019 regular meeting of the Bloomington Transportation Commission. Mr. Heenan motioned to approve the minutes. Mr. Ballantini seconded the motion. The motion was approved unanimously via voice vote.

5. REGULAR AGENDA:

B. Information: April 2019 Citizen Comments/Complaints Summary

Mr. Allyn provided the background for the report and how it is organized.

Ms. Bradley asked about item 40 (Irving School Crossing Guard request). Mr. Allyn indicated that we have completed the data gathering such as the number of vehicles and pedestrians as well as measuring the gaps between vehicles. After reviewing the data, Mr. Allyn verified that the traffic does not meet the requirements of the warrant for a Crossing Guard and this information was being passed on to the school and Police Department. He explained that the school could continue the discussion with the police department as the budget for Crossing Guards come out of the Police budget.

Ms. Bradley asked about item 56 (deer crossing signage along Washington St.) Mr. Allyn explained that he drives this route regularly and has seen a large group of deer in this area before and that the city will be moving forward with warning signage at this area.

Ms. Bradley asked about item 63 (Beich Road sight distance). Mr. Allyn explained that the city received a complaint from the factory safety officer after several crashes at the plant entrance. After a review of the crash history, it appears that the predominant cause of the crashes is related to drivers not paying attention to the current signage and/or watching for opposing vehicles. It was suggested that the company update their stop sign with higher visibility signs and a supplemental “Cross Traffic Does Not Stop” sign which they did. The safety officer mentioned that there could be confusion for exiting traffic on whether southbound traffic is on I-55 versus Beich Rd, especially when it is darker and only oncoming headlights can be seen. This could be making it harder for drivers to determine whether there is an opposing car on Beich. Mr. Allyn has talked to the City Park department about planting trees or bushes between I-55 and Beich that would provide a break in southbound vehicle headlights telling drivers which road they are using. The company has agreed to pay for the trees. Mr. Allyn still needs to obtain approval from IDOT since the trees would be in their Right-of-Way.

Ms. Bradley asked if Mr. Allyn felt the list was decreasing in size and if it was manageable. Mr. Allyn explained that it was longer than normal because it covers back to the last meeting in April. There will be a larger number dropping off the list for the next meeting. Mr. Breitweiser asked how many items usually get added per month. Mr. Allyn indicated that it varies but typically is between 5 and 15. Mr. Allyn suggested that if a commissioner has a question about a certain number, they can email him prior to the meeting and he’ll be able to have the background and status of that item handy.

Mr. Breitweiser asked about items 85 and 90 (left turns off Oakland Avenue just west of Veterans) and if plans were available to be seen. Mr. Allyn responded that there are a few ideas being researched but nothing firm yet. A change likely involving the addition of a raised median would likely be implemented when Oakland was next resurfaced in likely 2-5 years. Mr. Breitweiser indicated that he was not surprised that there were problems at this location.

C. Downtown Parking Configuration

Mr. Allyn reviewed the background information in the packet. After resurfacing Main St. downtown, staff was asked to review if the parking configuration could be changed from two traffic lanes with angled parking one side and parallel parking on the opposite side to a single travel lane with angled parking on both sides. This change was initially mentioned in the Downtown Taskforce Report, but the suggestion was never adopted or approved by the Council. The main driver of the change for the taskforce was to increase parking downtown.

Mr. Allyn reviewed the different layouts in the packet, including the table with the listing of parking spot number changes. The recommended alternative generally matches the existing configuration with some small modifications to meet current codes. For example, spaces for the disabled were adjusted to provide the proper minimum widths. The second option included angled parking on both sides of the street. The third option included angled parking on both sides of the street but added a designated loading zone area in each block to help keep delivery trucks from blocking the single travel lane. The alternate with one travel lane and no loading zones adds approximately 7 spaces over the entire 5 blocks but will likely not be functional during portions of the day. The alternate with one travel lane and added loading zones actually loses 6 spaces.

Ms. Bradley asked about the impact of 60° Angle Parking versus 45° Angle Parking and the risk of one lane of traffic with delivery trucks. Mr. Allyn indicated that on a road parallel parking is typically more safe than angled parking, but that he doesn't believe there is a significant difference between 60° and 45° angled parking if the proper isle width is provided. The closer the angle gets to 90°, more crashes could be expected if the isle width is not increased accordingly. He could not speak to how delivery trucks would operate if one truck is already in the designated parking spot. It's possible that the second truck may double park next to it and still block the singe lane. Ms. Bradly asked about discussions with the Downtown businesses. Mr. Allyn was not sure how much information had been shared, but that at least some of the Main Street businesses are aware that this is being discussed.

Mr. Allyn indicated that the loading zone locations greatly impact which blocks gain or lose spaces. The locations chosen were based on staff's best estimate of need. If that option is moved forward, staff would discuss needs with the businesses in more detail and adjust the locations as needed.

Ms. Bradly indicated that she did not see a benefit to switching to one travel lane with angled parking on both sides.

Mr. Breitweiser asked if bike lanes are generally included in "pavement markings". Mr. Allyn indicated that when pavement markings are referred to, it would potentially include markings for bike lanes. The white and yellow lines seen on the drawing would show exactly what would be painted on the street. Regarding this location specifically, the City Bicycle Master Plan does not recommend bike accommodations on Main Street, so they were not provided with the proposed alternates.

Mr. Breitweiser asked about impacts to the number of parking spaces for the disabled. Mr. Allyn indicated that staff reviewed both placement and number of spaces to ensure adequate spaces are provided. These locations are generally the same for all three alternates.

Mr. Heenan asked if there where any impacts to buses. Mr. Allyn indicated that since buses typically stop immediately prior to a crosswalk, in all three alternates there should be adequate space between the parking and the crosswalk for the bus to stop without blocking a travel lane. In addition, since a bus typically stops for a relative short period and the driver remains in the bus, there shouldn't be the same negative impacts to traffic flow or the mobility of emergency vehicles that would be expected due to delivery trucks.

Mr. Heenan made a motion to recommend accepting the staff's recommendation to keep current mix of angled and parallel parking with two travel lanes in the Downtown area. Mr. Ballantini seconded the motion. The motion carried unanimously.

Mr. Allyn indicated that the next steps would likely be to share the parking evaluation and Commission's decision with the Economic Development Department to pass on to the Downtown businesses. Engineering will be coordinating with the Contractor to get the pavement markings completed.

D. Annual Street Maintenance Program

Mr. Allyn shared information about how the City has selected streets for resurfacing or pavement preservation in the past including rating the street conditions using PASER and shared with the public in GIS via the City website, determining the streets to be resurfaced based on available funds and numerous factors such as pavement conditions, other coordinating construction, etc. Information sheets about each street would be created to provide information to the public on why each street was chosen.

The new process moving forward will be to use new software that optimizes the street maintenance work to provide a minimum quality level. The program will identify street locations and type of work (resurfacing, pavement preservation, patching, etc.) for each of the upcoming 5 years. This will allow better planning and coordination with other City projects such as underground water main or sewer work to that old streets are dug up rather than newly paved streets. Each year will have a couple streets that are identified to potentially move up sooner or back later depending on the actual funding available in that year.

Mr. Heenan asked if the priority of a street could decrease once it's been selected. Mr. Allyn explained that each new year, the 5-year plan would be updated. However, we anticipate that there will not be significant changes from year to year. We should be able to code the planned work into the program so that the integrity of the plan could be maintained allowing better coordination with the other projects. If a street deteriorates significantly faster than anticipated, due to a new major development for example, it may be adjusted forward, forcing other streets back.

Ms. Bradley asked Mr. Allyn to speak to what is the difference in pothole repair versus larger street patching or resurfacing. Mr. Allyn explained that it depends on the amount and size of potholes and/or other cracks or pavement failures. Smaller potholes get filled with cold patch material. When there are larger sizes or numbers or potholes or cracks that are localized to a portion of the block, the area is removed and patched with new asphalt. When the whole block is failing, it gets resurfaced. Patching and pothole filling can delay a resurfacing since the road condition is improved. This is a good thing since the patching allows available funding to be used to resurface other, worse streets.

Mr. Allyn then discussed what input is needed from the commission to help optimize the DOT program. There are a number of inputs into the program that will impact the results. For example, the priority of arterial streets (bigger, higher volume streets) versus collector streets (medium volume) versus low volume residential streets; the importance of fire lanes, bike routes or bus routes; or the priority of commercial streets versus other roads. Another parameter may be to set a minimum rating for various streets such as arterials higher than residential. Staff will be looking to the commission to provide the

relative weighting of each of these factors since these are policy level decisions related to what is the most important for the City.

In the coming months, staff will continue getting the program setup and calibrated. We will be identifying the exact parameters as well as a staff recommended setting to bring back to the Commission for discussion and a formal recommendation. Staff will then take those priorities and run the program to determine the 5-year maintenance plan. This plan will be reviewed by Engineering and Administration for conflicts with other projects and adjusted as necessary. It will then return to the Commission with the reasoning for any staff modifications and the plan will be rolled out to the public with details on each of the streets as well as the priority factors.

Ms. Bradley appreciated how this could lead to more transparency and give more information to the public. She said the public has concerns about potholes and road conditions, but this could provide good information as to how the decisions are made systematically based on many real factors rather than being arbitrary.

Mr. Breitweiser asked if the commission would see all possible variables when the staff makes their recommendations, including the ones that are not anticipated to be changed from the defaults. Mr. Allyn indicated that was the intent, but that there may be some parameters that will not be able to be changed due to feasibly and available information. For example, there may be variables that would require extensive City-wide data collection that would not noticeably affect the results.

6. OLD BUSINESS:

A. Post Office

Ms. Bradley informed the commissioners about the Post Office move from the current Towanda Avenue location back to the location by Eastland Mall on the Empire Frontage Road. Mr. Allyn stated that the city received plans for internal work for the building but and a response letter is being drafted expressing concern about the relocation impacting the surrounding streets and intersections, particularly the intersection of the Frontage Road and Fairway Ave. Past crashes and traffic flow problems on Fairway Drive and Empire Street were discussed. Mr. Allyn also discussed that typically when a developer or business relocates or builds new, the city requires a traffic impact study. We have requested this analysis for the area intersections but have yet to receive anything from the Post Office. When the move was originally announced July 2018, they indicated they would be moving by the end of this summer, but we do not have an updated move date. As a pseudo-federal agency, they are not subject to the same City authority as other businesses, so we likely can't stop the construction on their property. They do need to obtain entrance permits from the City for work in the Right-of-Way, and we are currently holding those permits. Ultimately though, if they continue moving forward and open without the City permits, we will monitor the crashes that happen in the area and if needed, we will consider modifications to the Frontage Road such as creating a cul de sac and eliminating the connection to Fairway. No funding is currently planned for this work. The situation is being monitored as a potential future problem.

7. NEW BUSINESS:

A. IDOT Illinois Route 9 Study

Ms. Bradley asked for a refresher and update about the IDOT Illinois Route 9 Project. Mr. Allyn explained that the state is working to complete before next spring the Phase 1 preliminary design for the entire stretch from near MLK Dr. to the Airport. The next step would be to complete Phase 2 Construction Plans, which would likely take a year. This would result in construction not starting prior to 2021 at the earliest. The project will get broken up into at least 3-5 different construction projects spread out over a number of years as funding is obtained. As part of the Phase I study, IDOT will be estimating

construction costs and looking at how the project will be broken apart. The project will consist of significant maintenance work such as resurfacing, sidewalk ramp upgrades, and signal modernizations rather than completely rebuilding the streets.

A significant part of the project will be to move the State Route designation from Lee Street to Center Street. Empire Street west of Center, and Lee between Empire and Locust will return to being a City street, which will be a significant benefit for the residential area around Bent Elementary School as these streets should no longer have the State Route trucks and heavier volumes.

Mr. Allyn reviewed the happenings of the last few months with the open house discussion from the State and another one from the City about changes on Route 9, including bike lane changes. There were many citizens that provided comments about the changes and the city provided these comments to the state. Detailed information on this portion of the project and the City's request to IDOT is available on the Public Works page on the City website under Current Projects.

B. Lutz Rd

Ms. Bradley asked about Lutz Rd. by the Luther Oaks Retirement home. Mr. Allyn provided a background on the road that was formerly a rural Township road that the city now is responsible for. The road is narrow, in poor condition, and does not have curbs. The city has construction plans ready to reconstruct the road and add curbs and sidewalks on the north side while allowing the construction of curb and sidewalk on the south side when/if the property to the south develops. There is currently no funding available for the construction, but it is ready if funding is identified. There are some construction easements that will need to be obtained once construction is ready to move forward.

8. COMMISSIONER COMMENTS:

Mr. Allyn communicated information about the October 15, 2019 reception for board and commission members at the BPCA.

Mr. Ballantini thanked everyone for the opportunity to serve on the Commission.

9. ADJOURNMENT: Mr. Heenan made a motion to adjourn. Mr. Ballantini seconded the motion. The motion was approved unanimously, and the meeting was adjourned.

Respectfully,

Philip Allyn
City Traffic Engineer

City of Bloomington
2020 Transportation Commission Meeting Schedule

Agenda Items Due: (Monday Two Weeks Prior)	Agenda Posting: (Friday Prior)	Transportation Commission Meeting: (3rd Tuesday of Month)	Meeting Time
Monday, January 6, 2020	Friday, January 17, 2020	**Tuesday, January 21, 2020**	**4:00 PM**
Monday, February 3, 2020	Friday, February 14, 2020	**Tuesday, February 18, 2020**	**4:00 PM**
Monday, March 2, 2020	Friday, March 13, 2020	**Tuesday, March 17, 2020**	**4:00 PM**
Monday, April 6, 2020	Friday, April 17, 2020	**Tuesday, April 21, 2020**	**4:00 PM**
Monday, May 4, 2020	Friday, May 15, 2020	**Tuesday, May 19, 2020**	**4:00 PM**
Monday, June 1, 2020	Friday, June 12, 2020	**Tuesday, June 16, 2020**	**4:00 PM**
Monday, July 6, 2020	Friday, July 17, 2020	**Tuesday, July 21, 2020**	**4:00 PM**
Monday, August 3, 2020	Friday, August 14, 2020	**Tuesday, August 18, 2020**	**4:00 PM**
Monday, August 31, 2020	Friday, September 11, 2020	**Tuesday, September 15, 2020**	**4:00 PM**
Monday, October 5, 2020	Friday, October 16, 2020	**Tuesday, October 20, 2020**	**4:00 PM**
Monday, November 2, 2020	Friday, November 13, 2020	**Tuesday, November 17, 2020**	**4:00 PM**
Monday, November 16, 2020	Friday, November 27, 2020	**Tuesday, December 1, 2020**	**4:00 PM**

CITY OF BLOOMINGTON
REPORT FOR THE TRANSPORTATION COMMISSION
SEPTEMBER 17, 2019

CASE NUMBER:	SUBJECT:	ORIGINATING FROM:
TC-2019-02	Downtown Main Street Parking Configuration	Philip Allyn, PE, PTOE City Traffic Engineer
REQUEST:	Review and approval by the Transportation Commission of proposed pavement markings for Main Street in Downtown Bloomington	

STAFF RECOMMENDATION: No recommendation.

Staff requests additional discussion and feedback on this item with a vote to either verify or reverse the previous decision.

1. ATTACHMENTS:

a. **Item TC-2019-02 Packet Item from August 27, 2019 Special Meeting**
b. ***Safety Comparison of Angle and Parallel Parking*, Oregon Department of Transportation**
c. ***Safety Comparison of Types of Parking on Urban Streets in Nebraska*, McCoy et al.**

2. BACKGROUND AND SUPPLEMENTAL INFORMATION:

Main Street in the heart of Downtown Bloomington was resurfaced earlier in 2019. Staff was requested at that time to explore the possibility of changing the parking configuration along the street with the intent of gaining additional on-street parking through the business area. Prior to resurfacing, Main Street typically had two driving lanes, with angled parking on one side and parallel parking on the other side. The exception is the block between Washington and Jefferson, which is approximately 5 feet narrower than the other blocks and thus only had one, extra-wide driving lane.

Several options were considered at the August 27, 2019 Special Transportation Commission Meeting, leading to a recommendation to keep the current 2-driving lane configuration with angled parking on one side of the street and parallel parking on the opposite side of the street. There would be some minor modifications to update the parking to current requirements such as width and number of handicap spaces, separation of parking from crosswalks, etc.

This feedback and direction received last month is very much appreciated. However, it was noted at that meeting that there had not been extensive discussions directly with the Downtown business owners prior to that meeting. This item is subsequently returning for additional discussion and to allow another opportunity for public comment by Downtown stakeholders.

One specific point for discussion relates to the quantity of parking. The original suggestion to switch to angled parking on both sides of the street was made as an attempt to increase available parking in the Downtown area. Staff is interested in the Commission's opinion on whether increasing on-street parking should be a priority given that there are either (or both) public parking decks or public surface parking lots available within a couple blocks of anywhere within the Downtown area.

Finally, in response to questions about the safety differences between angled and parallel parking, two studies have been attached: a research summary report compiled by the Oregon Department of Transportation, and a report from a research project studying parking on urban streets in Nebraska.

3. STAFF RECOMMENDATION:

Staff has no current recommendation.

Respectfully submitted,

Philip Allyn, PE, PTOE
City Traffic Engineer

CITY OF BLOOMINGTON
REPORT FOR THE TRANSPORTATION COMMISSION
AUGUST 27, 2019

CASE NUMBER:	SUBJECT:	ORIGINATING FROM:
TC-2019-02	Downtown Main Street Parking Configuration	Philip Allyn, PE, PTOE City Traffic Engineer
REQUEST:	Review and approval by the Transportation Commission of proposed pavement markings for Main Street in Downtown Bloomington.	

STAFF RECOMMENDATION: Approval

Staff requests approval of maintaining the current pavement marking configuration along Main Street between Washington Street and East Street consisting of a combination of angled and parallel parking.

1. ATTACHMENTS:

a. **Proposed Plan Based on the Current Configuration**
b. **Proposed Plan Incorporating Angled Parking on Both Sides of Main**
c. **Proposed Plan Incorporating Angled Parking on Both Sides of Main with Loading Zones**
d. **City Code §44-1206 Parking Design Standards**

2. BACKGROUND AND SUPPLEMENTAL INFORMATION:

Main Street in the heart of Downtown Bloomington was resurfaced earlier in 2019. Staff was requested at that time to explore the possibility of changing the parking configuration along the street with the intent of gaining additional on-street parking through the business area. Prior to resurfacing, Main Street typically had two driving lanes, with angled parking on one side and parallel parking on the other side. The exception is the block between Washington and Jefferson, which is approximately 5 feet narrower than the other blocks and thus only had one driving lane.

Exhibits are attached showing the three alternates developed for the parking configuration for these blocks. The first alternate is based largely on the current configuration. Minor changes were made to comply with current code and laws, such as widening handicap stalls to the minimum legal width and maintaining the proper distance from cross walks.

The second two configurations were developed by changing parallel parking into angled parking and eliminating a driving lane. Because angled parking along both sides of a street is uncommon, and standard dimensions are not readily available, the aisle and parking stall dimensions specified in City Code for off-street parking lots were used. For reference, a copy of this section of Code is attached. The existing angled street parking is set at 60°; however, this requires a minimum aisle width of 16 feet. To fit angled parking on both sides of the street within the

existing street width, the parking angle needed to be changed to 45° (12-foot minimum aisle width), which reduced the number of spaces along the length of the block.

In evaluating reducing the street to one 12'-8" driving lane rather than two driving lanes totaling over 26 feet, several potential negative factors were identified:

- A significantly narrower buffer between the two banks of parked cars may increase the number of crashes by drivers backing out of a parking spot.
- Parking lot aisle dimensions are based on a lower speed environment in which drivers are actively monitoring the parking spaces and have an expectation that a vehicle will back into the aisle. Conversely, while driving down a street, drivers are typically driving at a faster speed and less focused on vehicles that may be backing out of parking spaces. By reducing the driving area to a single driving lane, a driver loses the ability to veer out of the way of a backing car, which could result in more crashes.
- There are a significant number of businesses along this section of Main Street that receive deliveries from the street. Current City ordinance allows a delivery truck to park in a travel lane for a short duration if there are at least two travel lanes. By eliminating the second travel lane, businesses will struggle to receive their deliveries, or the trucks (or any stalled vehicles) will block the only travel lane, effectively shutting down the entire street. This could also block First Responders (Police, Fire, Ambulance), delaying the ability to access an emergency situation.
- From an aesthetic stand point, a change in parking angle will result in parking no longer matching the existing curb bumpouts.

In order to mitigate the blockage due to delivery vehicles the third alternate was developed that provided a dedicated loading zone on each block. Note that these locations are conceptual and while locations were logically chosen, there would likely be pushback from business owners whose customers can no longer park in front of their business.

A comparison of the number of parking spaces in each alternate is shown below in Table 1. The blue rows represent the total within a given block, including both sides of the street. The yellow and orange rows provide the number of spaces on each side of the street. The Net Change columns show the net change in relation to the 2-lane Alternate. In all three alternates, the 200 Block of Main Street is the same. Since this block is approximately 5 feet narrower than the other blocks as mentioned above, there is not enough street width to allow angled parking on both sides of the street.

In the 300 and 400 Blocks of Main Street, the necessary change from 60° parking to 45° parking results in either the same or fewer number of parking spaces. In order to actually increase the number of parking spaces, 60° parking must be used with the aisle width (12 feet) for 45° parking. This is shown on the layout provided in the 500 Block. While either 9 or 5 spaces are gained, the ability to back a vehicle out of a space without hitting parked cars on the opposite side of the street is dramatically decreased since the aisle width would be 4 feet narrower than Code, likely leading to an increase in traffic crashes.

Main Street Parking	2-Lane	1 Lane No Loading Zones		1 Lane With Loading Zones	
	# of Spaces	# of Spaces	*Net Change*	# of Spaces	*Net Change*
200 Block (Washington-Jefferson)	**25**	**25**	***0***	**25**	***0***
East Side	16	16	***0***	16	***0***
West Side	9	9	***0***	9	***0***
300 Block (Jefferson-Monroe)	**26**	**24**	***-2***	**21**	***-5***
East Side	17	13	***-4***	13	***-4***
West Side	9	11	***2***	8	***-1***
400 Block (Monroe-Market)	**39**	**39**	***0***	**33**	***-6***
East Side	13	19	***6***	19	***6***
West Side	26	20	***-6***	14	***-12***
500 Block (Market-Mulberry)	**36**	**45**	***9***	**41**	***5***
East Side	11	20	***9***	16	***5***
West Side	25	25	***0***	25	***0***
Total All 4 Blocks	**126**	**133**	***7***	**120**	***-6***
East Side	57	68	***11***	64	***7***
West Side	69	65	***-4***	56	***-13***

Table 1: Comparison of Number of Parking Spaces

Since the goal of a potential parking change is to increase the number of available parking spaces, and this can not be accomplished without noticeably decreasing the safety and usability of the street and/or violating City Code, Staff recommends keeping the current configuration with a combination of angled and parallel parking and two driving lanes when Main Street is repainted.

3. STAFF RECOMMENDATION:

Staff recommends maintaining the current pavement marking configuration along Main Street between Washington Street and East Street consisting of a combination of angled and parallel parking and two driving lanes.

Respectfully submitted,

Philip Allyn, PE, PTOE
City Traffic Engineer

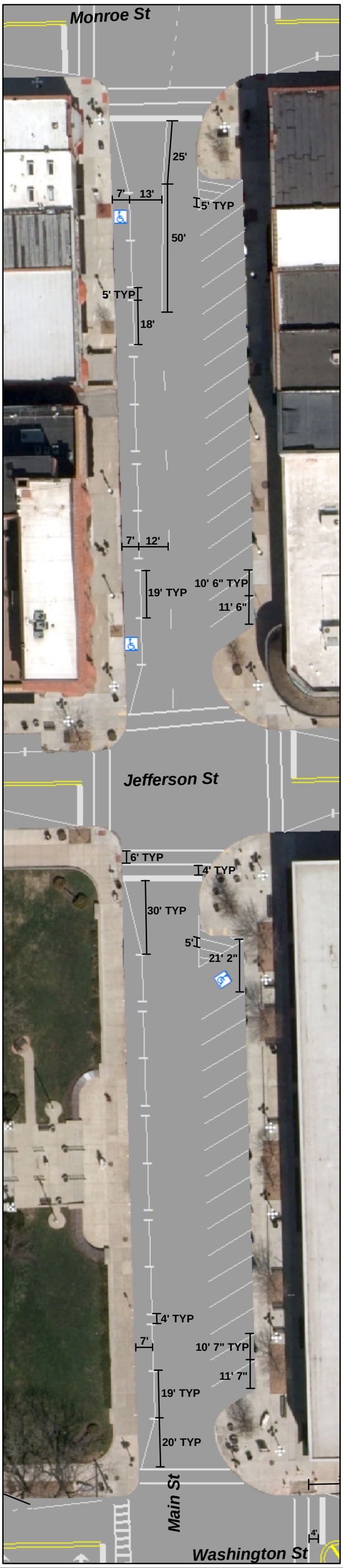
City of Bloomington ILLINOIS
Public Works Department

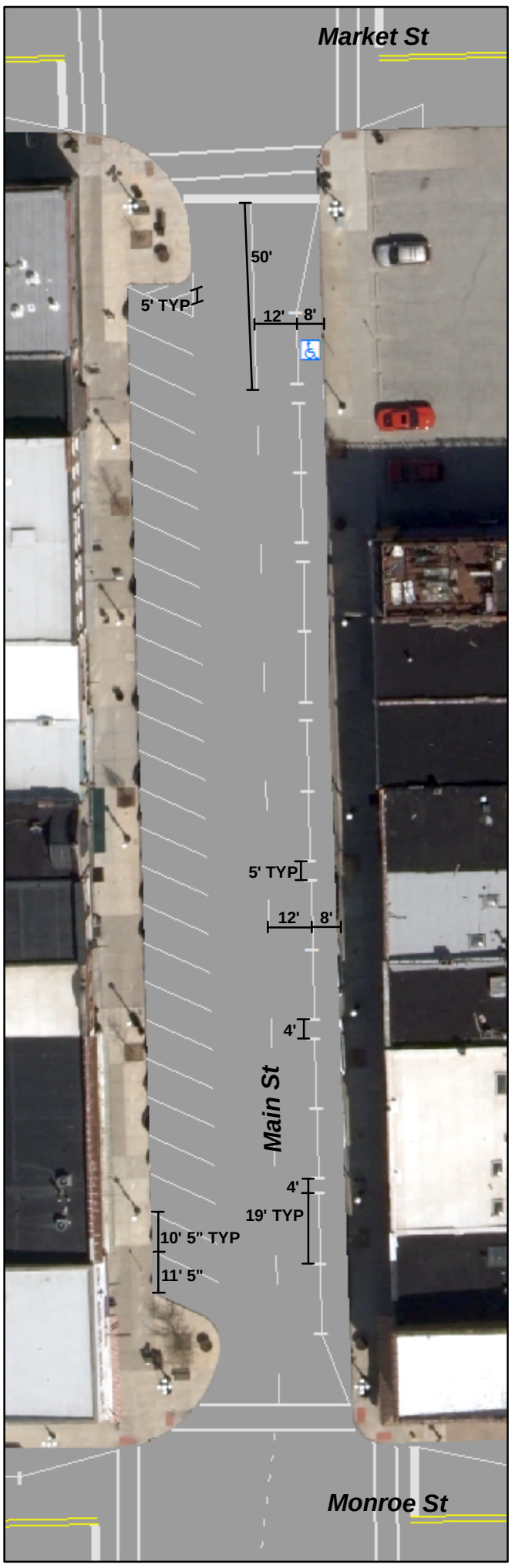
Main St.
Washington to East

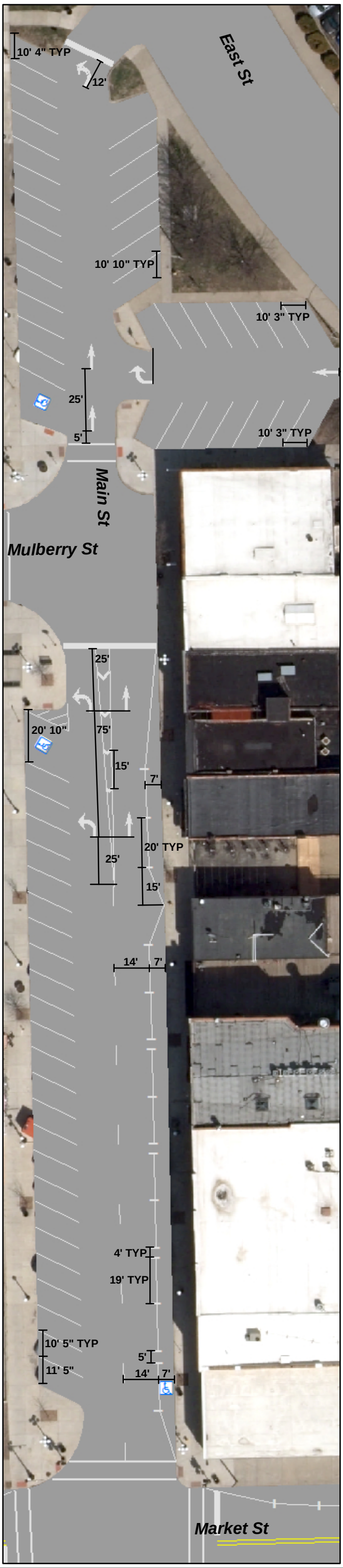
Current and Recommended Mix of Angled and Parallel Parking

N

0 12.5 25 50 75 100
Feet







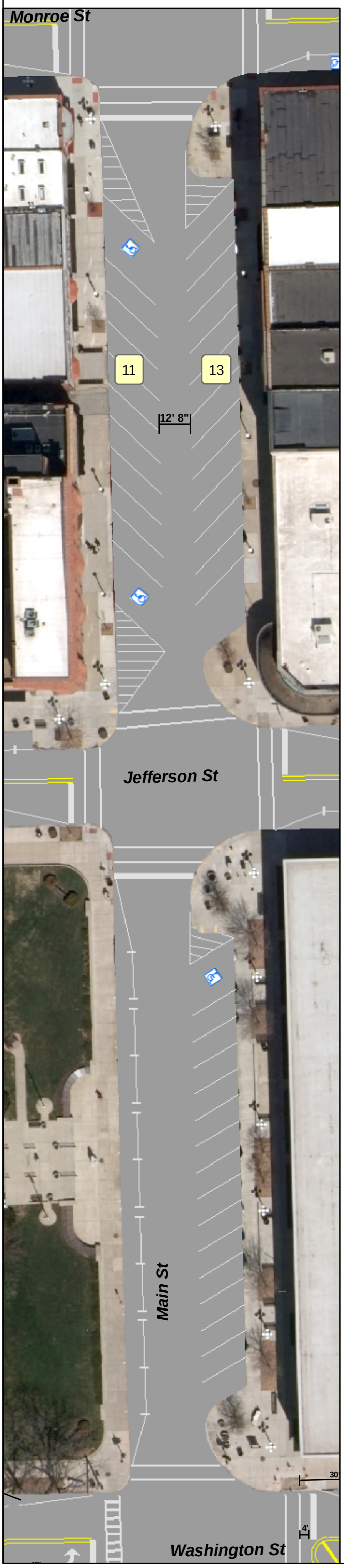
City of Bloomington Illinois
Public Works Department

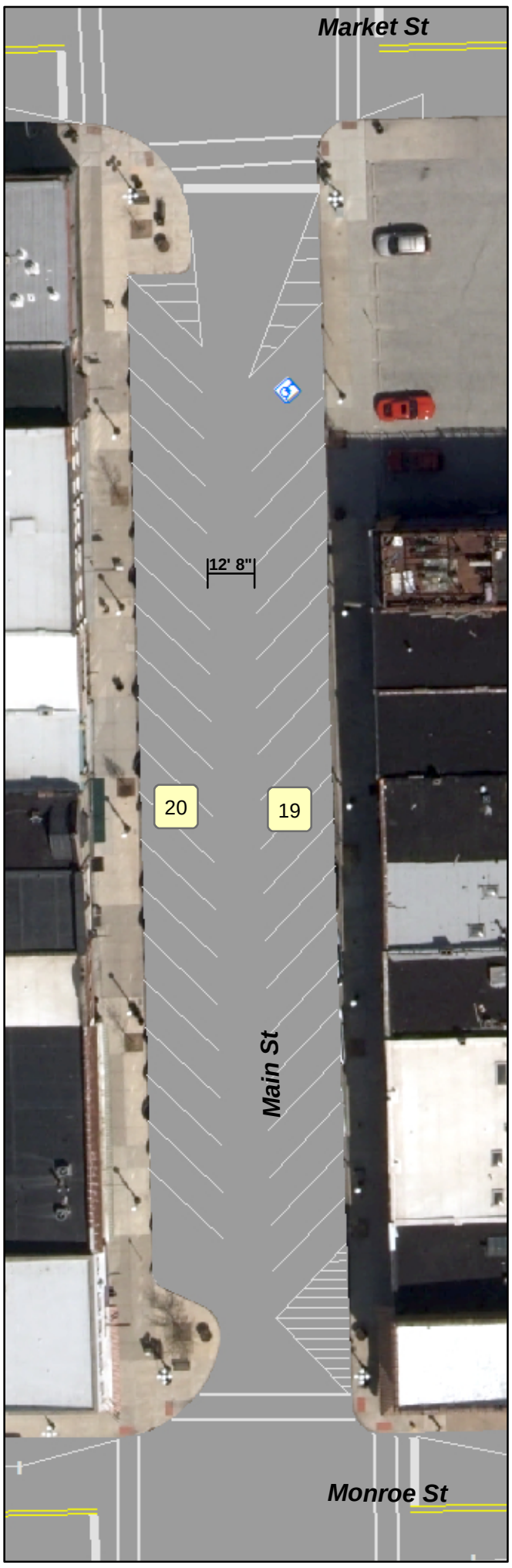
Main St.
Washington to East

All Angled Parking
No Loading Zones

N

0 12.5 25 50 75 100
Feet





City of Bloomington ILLINOIS
Public Works Department

Main St
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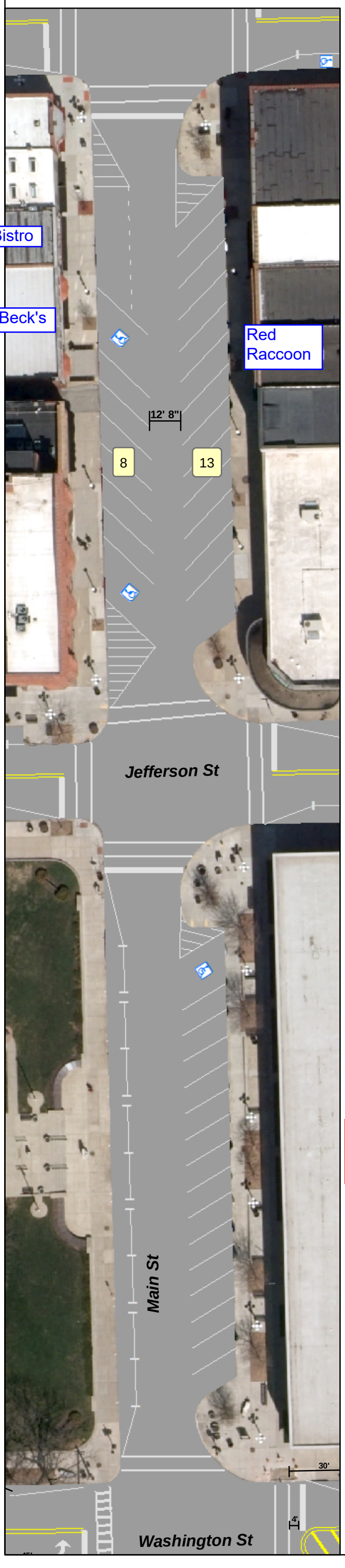
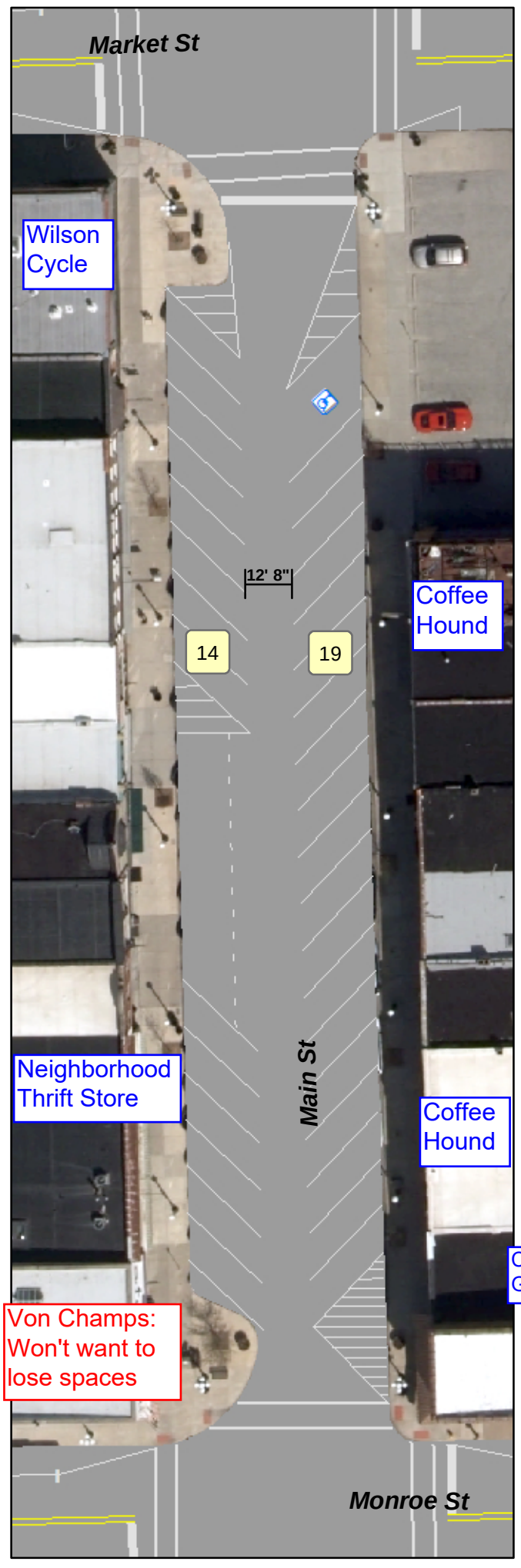
All Angled Parking
Added Loading Zones





§ 44-1206. [Ch. 44, 12-6] Parking design standards.

A. Access.

(1) All off-street parking, stacking, and loading areas shall be arranged for convenient access and safety of pedestrians, bicyclists, and vehicles.

(2) Each required parking space shall open directly upon an aisle, or driveway of such width and design as to provide safe and efficient means of vehicular access and egress. Except for driveways serving single-family and two-family dwelling units, access to a parking space shall not require backing across a street property line or re-entering a public right-of-way.

(3) Off-street parking areas with three or more required spaces shall be configured so that a vehicle may enter and leave a parking space without moving another vehicle. Tandem parking may be approved for valet parking and similar purposes pursuant to Site Plan Review procedures.

(4) Access to an off-street parking area that serves a nonresidential use shall not be permitted across lots that are residential in use or located in a Residential District.

(5) Where the parking area of a corner lot abuts an alley or a corner side street, access to the parking area shall be obtained from the alley or corner side street. Alternate access from a primary street may be approved through Site Plan Review procedures if a determination is made that it is infeasible to fulfill this standard.

(6) On any parcel, curb cuts for access to the right-of-way shall be approved by the City Engineer. In residential areas, only one driveway opening will be allowed if the lot width is less than 100 feet.

B. Large parking lots (200 or more parking spaces).

(1) Primary drive aisles shall be located across from streets or driveways to avoid conflicting traffic movements and facilitate the safe flow of traffic.

(2) Large off-street parking lots shall be designed to simulate a grid pattern through the placement of landscape islands, buildings, and drive aisles.

(3) Block lengths within the grid should not exceed 600 linear feet between the center lines of intersecting streets or primary drive aisles. In cases where a block length exceeds 600 feet due to topography, natural features or other physical constraints, sidewalks shall be provided mid-block to connect parallel streets or drive aisles.

C. Curbs and vehicle stops.

(1) All off-street parking lots, access drives and aisles, and other vehicle maneuvering areas shall provide perimeter curbs.

(2) Off-street parking stalls shall provide curbs, vehicle stops or similar devices to prevent vehicles from overhanging on or into public right-of-way or adjacent property, structures, fences, or screens.

(3) Vehicle stops shall be located 2.5 feet from a fence or wall.

(4) When a parking space abuts a landscaped area, the front two feet of the parking space may overhang a landscaped area.

(5) A parking space may overhang a walkway by up to two feet, provided that curbs or vehicle stops are installed to ensure that a minimum five-foot walkway clearance is maintained.

D. Defined areas. Off-street parking areas of three or more spaces and off-street loading areas shall include painted lines, curbs, vehicle stops or other similar identifiers to delineate parking and loading areas.

E. Accessible parking. Parking lots shall provide accessible parking spaces and accessible access routes for persons with disabilities in compliance with the State Building Code and the Americans with Disabilities Act (ADA), as applicable. The provision of accessible parking shall count toward fulfillment of off-street parking requirements.

F. Surfacing requirements.

(1) Parking lots. All off-street parking, stacking, and loading areas shall be surfaced with asphalt, concrete, brick, stone, pavers, or an equivalent material as approved by the City Engineer. Surfaces such as pervious asphalt, pervious concrete, or turf blocks are permitted; subject to the requirements of this chapter and other City policies pertaining to stormwater management.

(2) Driveways.

(a) Driveways leading to parking lots of 10 parking spaces or more shall conform to the requirements of § 44-1206D(1) of this Code.

(b) Aprons on all driveways shall conform to the following standards:

[1] A 1 1/2 inch bituminous concrete surface on a four-inch base of bituminous aggregate mix; or

[2] A two-inch bituminous concrete surface on an eight-inch base of crushed gravel or crushed stone; or

[3] A six-inch Portland cement concrete or five-inch reinforced with wire mesh or structural equivalent of any of the foregoing as determined by the Community Development Director.

G. Drainage.

(1) All parking lots shall be sloped and/or drained to prevent surface water from such lots from running onto adjoining property in unreasonable volumes.

(2) All ramped parking lots and un-ramped parking lots containing 10 or more parking spaces shall provide flood routes to direct excess water in a way that results in the least amount of harm to adjoining properties and shall dispose of surface water in one of the following methods when approved by the City Engineer:

(a) Surface drainage across sidewalks, if any, onto adjacent public right-of-way, unless such drainage would either:

[1] Cause flooding of the adjacent public right-of-way; or

[2] Flow longitudinally along any sidewalk adjacent to such lot or otherwise impair pedestrian use of such sidewalk;

(b) Use of inlets and storm sewer facilities capable of draining the lot from a storm of five year magnitude or greater;

(c) Retention of water on the premises;

(d) Underground drainage across other private property to an approved outlet;

(e) And permeable pavers as approved by the City Engineer.

H. Dimensional standards.

(1) Off-street parking spaces shall be designed in accordance with Table 1206I: Dimensional Standards for Parking Spaces and Aisles.

(2) All parking spaces shall have a minimum vertical clearance of seven feet.

(3) Compact spaces. Up to 30% of all provided parking spaces may be compact vehicle parking spaces. Dimensions for compact spaces are shown in Table 1206X.

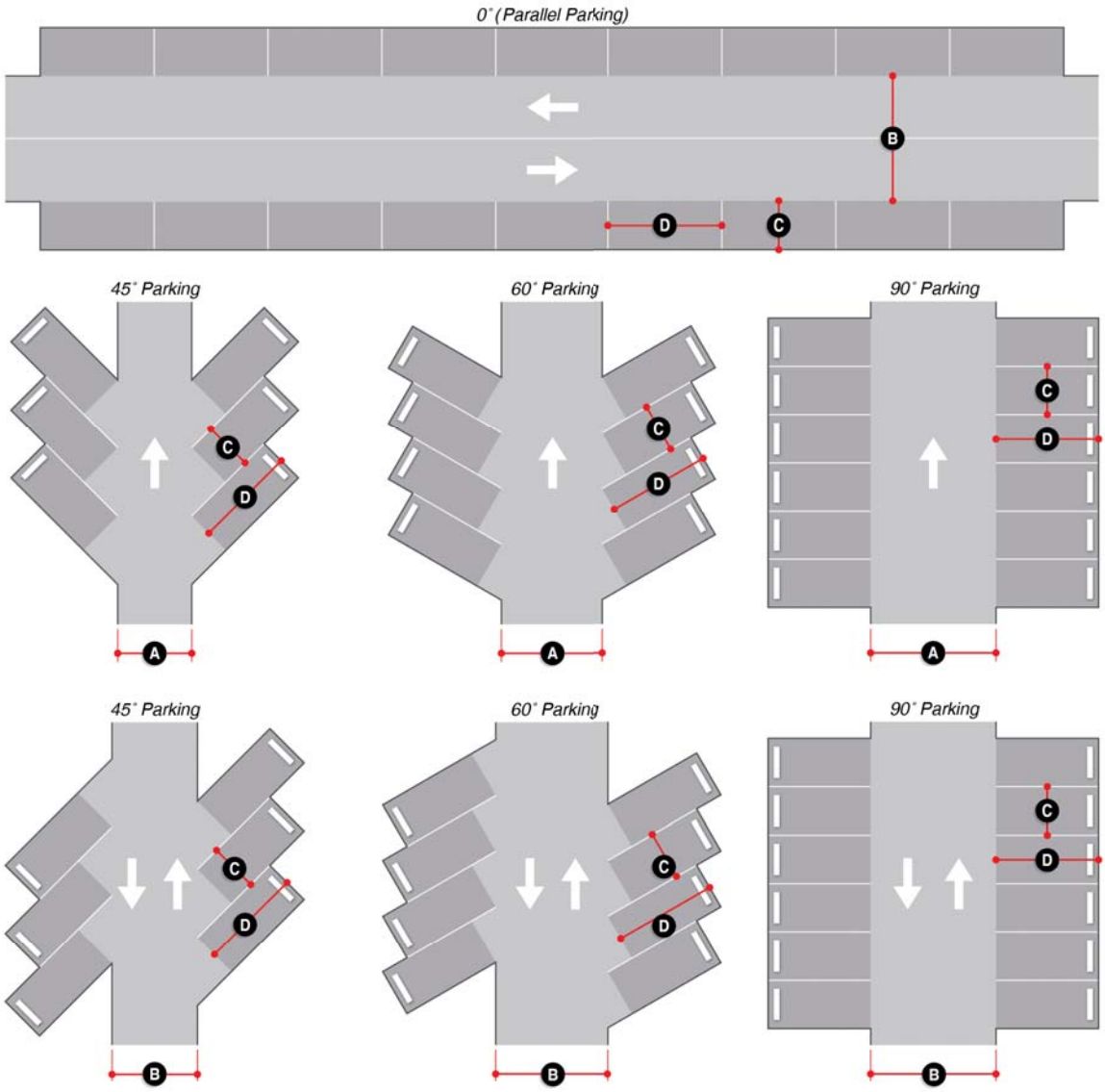
(4) All parking spaces and aisles shall comply with the following minimum requirements.

Table 1206I: Dimensional Standards for Parking Spaces and Aisles

	0° (Parallel)		45°		60°		90°	
	Typical	**Compact**	**Typical**	**Compact**	**Typical**	**Compact**	**Typical**	**Compact**
A - Width of Aisle: One-Way	11 feet	11 feet	12 feet	12 feet	16 feet	16 feet	20 feet	20 feet
B - Width of Aisle: Two-Way	12 feet	12 feet	20 feet	19 feet	20 feet	19 feet	24 feet	23 feet
C - Width of Space	8.5 feet	8 feet	8.5 feet	8 feet	8.5 feet	8 feet	8.5 feet	8 feet
D - Depth of Space	20 feet	19 feet	19 feet	18 feet	20 feet	19 feet	18 feet	17 feet

Diagram 1206

Dimensional Standards for Parking Spaces and Aisles



Oregon Department of Transportation
Traffic Management Section
Traffic Engineering Services Unit

March 15, 2001

Safety Comparison of Angle and Parallel Parking File Code: **TRA 07-01-05**

SUMMARY

Recently, the Traffic Engineering Services Unit was asked to review the research on the safety differences between types of on-street parking, specifically parallel and angle parking. This document is a summary of those findings.

In general, the study of the safety effects of on-street parking has been focused on the type of parking arrangement since it is clear that any on-street parking "decreases through capacity, impedes traffic flow, and increases crash potential (*1*)". Much of the research on the comparison of on-street parking (angle and parallel) was conducted prior to the 1980s with a few more recent studies in the 1990s. Conclusions of the early research were consistent in that urban sections with angle parking had higher crash rates than comparable sections with parallel parking, although they were criticized for failing to account for different levels of parking activity(*2*). These studies can be divided into two types, before and after comparisons of changes in parking arrangement and cross sectional studies of similar roadway sections with different parking arrangements. The before and after studies found crash rate reductions of 19% to 63% when converting from angle to parallel parking. None of these studies, however, included sites where parking was changed from parallel to angle. Cross sectional studies found differences in crash rates of 50% to 70% lower for parallel than angle. In recent research, McCoy et al conducted a before and after study in Lincoln, Nebraska. The researchers found no statistical evidence in the difference between the crash rate of angle and parallel parking when the increase in parking activity was included in the analysis(*3*). The researchers concluded that while angle parking clearly has a higher crash rate and frequency it is more likely due to the increased activity of parking rather than the characteristics of either type of parking and that if ample parking supply exists, parallel parking should be used.

While parallel parking is generally preferred for safety and operational considerations, the drawbacks include: 1) driver and passengers may have to exit vehicle into the traveled way; 2) the parking maneuver takes more time than angle; 3) some drivers must execute maneuver multiple times; 4) interruption of through movement depending upon width of cross section. Angle parking is generally less desirable because: 1) the driver leaving the space has limited visibility to the rear; 2) empty spaces are hard to detect by approaching drivers resulting in stop and go movements; 3) through drivers decrease speed in anticipation of conflict movements. However, angle parking is desirable because of 1) less time required for parking maneuver; 2) greater number of stalls; 3) driver and passengers exit vehicle outside of the traveled way.

Based upon the review of the research and in agreement with AASHTO *A Policy on Geometric Design of Highways and Streets* (1994) and the ODOT Highway Design Guide (1996) ***parallel parking is preferable to angle parking whenever possible***.

DESIGN GUIDES

The AASHTO *Policy on Geometric Design of Highways and Streets* (1994) recommends that the type of on-street parking selected "should depend on the specific function and width of the street, the adjacent land use, traffic volume, as well as existing and anticipated traffic operations." Parallel parking is preferred and angle parking is allowable under certain circumstances.

The *Oregon Department of Transportation Highway Design Guide* (1996) states that on-street parking is appropriate for different types of roadways. For example, parking is not appropriate for expressways, suburban arterials, and urban business areas. For special transportation areas, the necessity of on-street parking is recognized but only parallel parking should be used on a state highway and other types of parking requires an exception. Design exceptions should be granted in cooperation with the State Traffic Engineer and Roadway Section.

RESEARCH SUMMARIES

Safety Evaluation Of Converting On-Street Parking From Parallel To Angle (1991) *(3)*

A case study of converting on-street parking from parallel to angle in Lincoln, Nebraska was conducted by McCoy et al. Beginning in September of 1987, 27 block faces in Lincoln were converted from parallel to angle parking to increase the supply of downtown parking. All of the conversions were to 9 foot stalls with 55 degree parking angle. Four of the sites were two-lane, two-way the rest were three-lane, one-way streets. Because of data concerns, only 11 of these block faces were included in the study. For comparison, 8 block faces that had not been converted were included in the study.

All of the study and comparison block faces had posted speed limits of 25 mph. The utilization of the study sites ranged from 2.97 to 8.05 cars per 8 hour day with an average utilization rate of 85-100% per 8 hour parking days on the study sites and 92-94% on the comparison sites. The average daily traffic (ADT) on the study sites ranged from 1,000 to 5,730 vehicles per day (vpd) and 11,600 to 15,200 (vpd) on the comparison sites. Data on crashes were collected that occurred on weekdays between 9 am and 5 pm for a period from 3 months after the conversion to the end of 1989. The number of crashes in the study sites increased from 2 to 11 but the comparison sites also increased from 3.5 to 6.7 (average). Given this increase, the expected crashes on the study site should have been from 2 to 4 so the increase over the expected number of crashes that was attributed to the change in parking arrangement was from 4 to 11 (175 percent)

Crash rates were calculated for the study sites in crashes per million vehicle miles and in crashes per million space-hours per 1,000 parkers per million vehicle miles as a measure of exposure of parking activity. Adjusted rates were calculated based upon the increase of crashes at the control sites. Before and after rates were compared for the study sites for both rates. In all cases the before and after crash rates were significantly higher at the 5 percent level of confidence. When the before and after rates per million space-hours per 1,000 parkers per million vehicle miles were compared, there was no significant difference at the 5 percent level of confidence. There also was no statistical change in the severity of crashes.

The researchers concluded that while angle parking clearly has a higher crash rate and frequency it is more likely due to the increased activity of parking rather than the characteristics of either type of parking. The researchers summary was that "when the supply of parking is sufficient, the conversion of on-street parking from parallel to angle should *not* be considered because the number of accidents will increase as a result of more parking activity because of more spaces."

Safety Comparisons of Types of Parking on Urban Streets in Nebraska (1990) *(4)*

The objective of the research was to determine the safest type of parking on urban sections of the state highway system in Nebraska. Using the Nebraska Department of Roads's (NDOR) road inventory,491 sections in 126 cities were identified as possible study sites. 260 of the sites were surveyed in a field visit and 162 sites were mailed surveys to answer questions that could not be answered by examining the video log. Altogether, 171 miles of roadway with on-street parking were included in the study. The study sections included 28,886 stalls of which 22,214 were not painted. A majority of the unpainted stalls were for parallel parking. Of the painted stalls, 3,036 were for parallel and 3,636 were for angle parking. Parallel parking was the most common and most of the angle parking occurred on two-way, two-lane roadways.

Crash data from 1985 to 1986 were obtained for all sections in the study. Stepwise regression was conducted to determine a relationship between safety and type of parking. Dependent variables of type of parking, parking use, number of stalls, speed limit, ADT, roadway alignment, roadway width, block length, land use type and land-use density were tried in the model but none produced a statistically valid model.

Instead of the statistical model, the mean crash rates were used to determine the relationship between highway safety and the type of parking. Crash rates were calculated using only those crashes that included parked vehicles and parking maneuvers. Rates were calculated in terms of crashes per million vehicle-miles of travel and in terms of billions of vehicle-mile-hours per stall. Rates were compared by type of parking (angle, parallel, painted, unpainted) and type of street (major streets, two-way, two-lane streets). In almost all cases, the rates for angle parking were found to be statistically significantly higher than parallel parking. Additionally, low angle parking may be safer than high angle parking but the difference in crash rates were not statistically significant.

The research concluded that "when parking must be allowed on urban sections of the state highway system, parallel parking should be used instead of angle parking whenever feasible."

Synthesis of Safety Research Related to Traffic Control and Roadway Elements (1982) (*2*)

Chapter 9 of this research synthesis documented the results of many studies conducted prior to 1982. Many of the studies mentioned are empirical studies. Almost all of the studies summarized do not take into account the increased parking exposure as result of changes from angle to parallel and most included no treatment of crashes on nearby streets. None of the studies included changes from parallel to angle parking.

A series of before and after studies found crash reductions from 19% to 63% in a range of years from 1947 to 1967 when changing from angle to parallel parking. One such study was of eight cities in Utah and found a 28% reduction in total crashes, a 57% reduction in parking related crashes, and a 29% reduction in the overall crash rate (*5*).

A series of cross sectional studies reported differences in crash rates between similar sections of roadway with parallel and angle parking in the range of 50% to 71%. One these studies by the Arizona Highway Department reported a mean crash rate of 4.9 per million vehicle miles for a section of US101 with angle parking and a rate of 1.4 for a similar section of US101 with parallel parking (*6*). Another study of 1,523 urban sites in Maine found an 88% lower crash rate for parallel parking as compared to angle parking (*7*).

Safety Considerations in the Use of On-Street Parking (1979) *(8)* and Safety Aspects of Curb Parking (1978) *(9)*

In this comprehensive research published in the Transportation Research Record and as a FHWA Final Technical Report parking data were collected in five states and ten cities for 170 miles of urban streets. The study sites were geographically distributed and generally had consistent land use along each side. Both one and two-way streets were selected for analysis. Field visits were made to each site to determine parking activity in terms of annual space hour use (hours space was occupied per year). Crash data were obtained for two years for all sites.

To make safety comparisons between parking types, streets were defined by street classification, parking arrangement, land use and parking use. Six types of parking arrangements (parallel parking, parallel parking with skips, low angle parking, 30 degree angle parking, and high angle parking) were used in the analysis. Land use was classified as retail, office, single-family residential, apartments, motel, industrial, and school/park. Four levels of parking use were assigned. Combinations of the streets, parking, land use, and parking use yielded 2700 potential configurations.

Using statistical techniques (ANOVA, Bonferroni, Scheffe) the researchers drew the following conclusions by comparing the data:

1) parking use level is a significant factor for all street categories (crash rate increases with use until 1.5 million space hours per mile per year where the rate is constant);
2) all streets show an increase in crash rate for changes in land use: 1) from single family to apartment; 2) from apartment to office; and 3) from office to retail (again suggesting that increase parking use contributes to increase in crash rate)
3) parking configurations were not found to have any statistical effect on crash rate when land use and type of street were included in the analysis.
4) parking use above 1,000,000 space-hours per mile per year angle parking was no more hazardous than parallel parking given similar land use.

Christopher M. Monsere
Traffic Investigation Specialist

SOURCES

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3 McCoy, T.A., P.T. McCoy, R.J. Haden, V.A. Singh. Safety Evaluation of Converting On-Street Parking from Parallel to Angle. In *Transportation Research Record 1327*, TRB, National research Council, Washington D.C. 1991, pp 36-41.

4 McCoy, P.T., M. Ramanujam, M. Moussavi, J. L. Ballard. Safety Comparison of Types of Parking on Urban Streets in Nebraska. In *Transportation Research Record 1270*, TRB, National research Council, Washington D.C. 1990, pp 28-41.

5 *Community Guide to Parallel Parking*. Utah State Department of Highways. June 1966.

6 *Downtown Parking Study, Mesa, Arizona*. Arizona Highway Department. February 1960.

7 Seagal, M.D., *Highway Safety Research Study*, Maine State Highway Commission, April 1972

8 Humphreys, J., D. J. Wheeler, P.C. Box, T.D. Sullivan. *Safety Aspects of Curb Parking*. Report DOT-FH-11-8879. FHWA, Washington D.C. September 1978.

9 Humphreys, J., D. J. Wheeler, P.C. Box, T.D. Sullivan. Safety Considerations in the Use of On-Street Parking. In *Transportation Research Record 722*, TRB, National research Council, Washington D.C. 1979, pp 26-35

Published in 1990

Safety Comparison of Types of Parking on Urban Streets in Nebraska

PATRICK T. MCCOY, MURALI RAMANUJAM, MASSOUM MOUSSAVI, AND JOHN L. BALLARD

Without exception, previous research has found that streets with no parking are safer than similar streets with parking. But the common conclusion of many studies, that parallel parking is safer than angle parking, has been questioned by some researchers, particularly in regard to low-angle parking. The objective of this study was to determine the safest type of parking on urban sections of the state highway system in Nebraska. The accident experience on the urban sections of the state highway system with parking was analyzed. Results of the analysis were used to identify the safest type of parking over the range of traffic, roadway, and land use conditions on the urban system. The accident analysis indicated that (a) parking results in accidents on urban streets, (b) the type of parking affects highway safety even when parking use, land use, and type of roadway are taken into account, (c) the safest type of parking on urban streets is parallel parking, and (d) low-angle parking may be safer than high-angle parking, but it is not as safe as parallel parking. Thus, whenever feasible, parking should not be allowed on urban sections of the state highway system. However, when parking must be allowed, consideration should be given to using parallel parking instead of angle parking.

Several studies (*1*) comparing accidents involving angle and parallel parking have been conducted. Accident reduction factors from 19 to 71 percent were reported after a change from angle to parallel parking. Therefore, the common conclusion of these studies was that parallel parking is safer than angle parking. But none of these studies accounted for the change in accident exposure associated with a change from angle to parallel parking. When angle parking is converted to parallel parking, the accident exposure is reduced, because fewer parking stalls are available after the conversion. In addition, the parking activity may also change with the conversion to parallel parking and the reduction in the number of spaces. Thus, the reductions in accidents that have been experienced with changes from angle to parallel parking may have been caused more by the change in accident exposure than by the change in parking maneuvers associated with the parking configurations.

In 1971, Zeigler (*2*) analyzed the operational characteristics of low-angle and parallel parking patterns. Graphical methods and full-scale vehicle tests were used to evaluate the parking and unparking maneuvers of each pattern. The evaluation indicated that low-angle parking results in less disruption of traffic flow and improved safety for pedestrians entering and exiting parked vehicles. Zeigler (*2*) concluded that low-angle parking provides safer and more efficient traffic operations than parallel parking. However, the study did not include an analysis of accident data related to type of parking.

One of the most comprehensive studies of the safety effects of curb parking was conducted by Humphreys et al. (*3*) in 1978. This study involved the collection and analysis of parking and accident data on over 170 mi of streets in 10 cities. A comparative-type statistical analysis was performed on the accident data using parking type, parking use, abutting land use, and functional classification of the street as the independent variables. Parking use was found to be a primary factor affecting midblock accident rates. Increases in parking use up to 1.5 million annual space hours per mile resulted in higher accident rates. The study also found that an increasing accident rate was generally associated with changes in land use from single-family dwelling to apartment, from apartment to office, and from office to retail. Because each of these changes in land use indicated an increase in parking turnover rates and pedestrian activity, the associated increases in accident rates were deemed appropriate. However, type of parking was found to have no effect on accident rates when parking use, abutting land use, and street classification were taken into account. In other words, angle parking was found to be no more hazardous than parallel parking for similar levels of parking demand, land use, and street type.

Without exception, previous research has found that streets with no parking are safer than similar streets with parking. But the common conclusion of many studies, that parallel parking is safer than angle parking, was brought into question by the findings of Zeigler (*2*) and Humphreys et al. (*3*), particularly with respect to low-angle parking (i.e., 30 degrees or less).

OBJECTIVE AND SCOPE

The objective of this research was to determine the safest type of parking on urban sections of the state highway system in Nebraska. A review of the state highway system was conducted to identify the urban sections that had parking on them. The urban sections with parking were surveyed to obtain information about the type and amount of parking, the roadway and traffic conditions, and the land use characteristics of each section. The accident experience on the urban sections surveyed was analyzed to determine the relationship between highway safety and type of parking. The results of the accident analysis were used to determine the safest type of parking

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over the range of traffic, roadway, and land use conditions found on urban sections of the state highway system.

PARKING INVENTORY

An inventory of the state highway system was conducted to determine the types and amounts of parking on the urban sections of the system. The roadway, traffic, and land-use characteristics of each section with parking were also determined. These data were used in the accident analysis to examine the relationship between accident experience and type of parking.

Procedure

A listing of all urban sections on the state highway system was obtained from the roadway inventory computer file maintained by the Nebraska Department of Roads (NDOR). This listing was reviewed to identify urban sections that might have parking on them, on the basis of number of traffic lanes and roadway width. Sections that were obviously too narrow to provide parking were eliminated from further consideration. Approximately 603 sections, comprising over 274 mi of roadway, were identified as possibly having parking. The NDOR photologs of these sections were examined to determine which of them actually had parking. A total of 491 sections were found to have parking. These sections were in 126 cities and comprised 183 mi of roadway. Surveys of the sections were made to collect the necessary information about the parking, roadway, and land use characteristics. Two types of surveys were used—field and questionnaire surveys.

Field Surveys

To obtain as much first-hand information as possible within the limits of the available resources, the field surveys were made in the cities that had the most sections with parking. Field surveys were conducted in 55 cities, which included all cities with 1980 populations greater than 4,000. Altogether, 260 sections comprising 86 mi of roadway were surveyed in the field. The accidents on these sections accounted for 87 percent of the parking accidents that occurred during 1985 and 1986 on the 491 sections with parking. The following parking and roadway information was recorded for each section: (a) amounts and types of parking, (b) numbers and types of land uses, (c) numbers and lengths of blocks, (d) speed limits, (e) intersection controls, (f) numbers of driveways and alleys, (g) numbers of lanes, (h) directional controls, and (i) roadway alignment. Also the number of each of the following types of land use was counted on each block face: (a) retail, (b) service, (c) office, (d) medical, (e) institutional, (f) industrial, (g) recreational, (h) agricultural, (i) residential, and (j) other.

In addition to these data, parking use on each block face was measured. At the beginning of the field survey in each city, the number of vehicles parked on each block face was counted. A second count was made at the end of the field survey. The time of day that each count was made was also noted. These data were used to estimate the vehicle-hours of parking on each block face. The estimates were computed from parking-use curves for similar block faces. The parking-use curves related percentage of average daily vehicle-hours of parking to time of day. They were developed from the results of parking-use studies, which were conducted on typical block faces in central business districts and residential neighborhoods in cities representative of the following population ranges: below 8,000, from 8,000 to 35,000, from 35,000 to 200,000, and over 200,000.

Questionnaire Survey

Conducting field surveys in all 126 cities that had sections of the state highway system with parking was not possible because of resource limitations. Therefore, a questionnaire survey was conducted to obtain the necessary information from the 71 cities in which field surveys were not made. To keep the questionnaire as short as possible and maximize the likelihood that it would be returned, only information that could not be obtained accurately enough from the photologs was requested. Therefore, the questionnaire was limited to questions about parking layout, use, and restrictions.

The questionnaire consisted of a parking survey form for each block face. Each parking survey form was prelabeled with the name of the city, the highway number, and the block designation. A plat of the city designating each block face was included with the parking survey forms to facilitate proper identification of the block faces. The form was divided into three sections. The first section asked for information about the parking layout on the block face. If the parking stalls were painted, the dimensions of the stalls and their number were requested. If the stalls were unpainted, the type of parking and number of stalls were requested. The second section of the form asked for a count of the numbers of vehicles parked on the block face at 9:00 a.m., noon, and 4:00 p.m. These data were used to estimate the parking use on the block face. The third section of the form asked for information about any parking restrictions that might be in effect on the block face.

The responses to the questionnaire were checked for accuracy by comparing them to the parking data obtained from the photologs. If a discrepancy was found, a letter was sent to the city asking that the particular discrepancy be checked. Unverified data were not used.

Of the 71 cities surveyed, 44 (62 percent) responded to the questionnaire with usable data. These towns accounted for 162 sections comprising 85 mi of roadway. The accident experience on these sections accounted for 10 percent of the parking accidents that occurred during 1985 and 1986 on the 491 sections with parking. Thus, the field and questionnaire surveys together provided the data for 422 of the 491 sections, which amounted to 171 of the 183 mi of urban sections of the state highway system with parking. The accident experience on the 422 sections included 97 percent of the parking accidents that occurred on the 491 sections.

Findings

The 422 urban sections surveyed included 2,336 block faces. Of these block faces, 292 had more than one type of parking

TABLE 1 DISTRIBUTION OF PARKING TYPES

Type of Parking	No. of Stalls	Miles
Painted Parking:		
Parallel	3,036	15.7
Low-Angle	377	1.6
High-Angle	3,259	10.9
Unpainted Parking:		
Parallel	19,536	97.9
Angle	2,678	9.4
Total	28,886	135.5

pattern on them. In order to avoid confounding the results of the study with the effects of uncommon combinations of parking patterns, the block faces with more than one type of parking were not included in the study. Thus, 2,044 block faces, each with only one type of parking, were used. The 2,044 block faces included 28,886 parking stalls on 135.5 mi of street.

Types of Parking

The distribution of the types of parking patterns on the 2,044 block faces with only one type is shown in Table 1. Only 6,672 stalls were painted. The other 22,214 stalls were not painted. Of the painted stalls, 3,036 were for parallel parking and 3,636 were for angle parking. Only 377 stalls were for low-angle parking.

Roadway Type

The distribution of the types of parking by roadway type is presented in Table 2. Parallel parking was the most common parking pattern on all roadway types. On major streets (i.e., one-way; two-way divided; and two-way, multilane, undi-

TABLE 2 DISTRIBUTION OF PARKING TYPES BY ROADWAY TYPE

	Number of Stalls			
Type of Parking	One-Way	Two-Way Divided	Two-Way Multilane Undivided	Two-Way Two-Lane
Painted Parking:				
Parallel	692	320	1,012	1,012
Low-Angle	0	0	0	377
High-Angle	219	20	159	2,861
Unpainted Parking:				
Parallel	926	1,177	1,190	16,243
Angle	0	0	57	2,621
Total	1,837	1,517	2,418	23,114

vided roadways), over 90 percent of the stalls were for parallel parking. Most of the angle parking was on two-way, two-lane roadways. In fact, this was the only type of roadway with all types of parking. Also, it was the only type of roadway with low-angle parking.

Population

The distribution of the types of parking by city population on the major streets and the two-way, two-lane streets is presented in Tables 3 and 4, respectively. Practically all parking on urban sections of the state highway system in cities with populations of 8,000 or more was parallel parking. Angle parking was found primarily on two-way, two-lane streets in cities with populations below 8,000.

Land Use

The distribution of land uses served by the types of parking on the major streets is presented in Table 5. On major streets, the distribution of land uses served by painted parallel and painted angle parking was similar: about two-thirds served by both types were retail, service, and office land uses. The unpainted parallel parking on major streets served mainly residential and retail land uses.

The distribution of land uses served by the types of parking on two-way, two-lane streets is presented in Table 6. On two-way, two-lane streets, both painted parallel and high-angle parking had similar land-use distributions, serving about 75 percent retail, service, and office land uses. The painted low-angle parking and the unpainted angle parking on two-way, two-lane streets had similar land-use distributions, serving mostly retail, office, and other land uses. Residential land uses were most commonly served by unpainted parallel parking.

ACCIDENT STUDY

The accident experience on the urban sections with parking was analyzed to determine the relationship between highway safety and type of parking. The results of the analysis were used to determine the safest type of parking for the conditions on urban sections of the state highway system in Nebraska.

Procedure

Data were obtained from NDOR's computerized accident record system on all reported accidents that occurred during 1985 and 1986, in the 422 urban sections surveyed. The data included the following information for each accident: date, day of week, time of day, reference post of location, directional analysis code, intersection code, severity code, movements of vehicles involved, and directions of travel of vehicles involved. The block within which each accident occurred was

TABLE 3 DISTRIBUTION OF PARKING TYPES BY POPULATION ON MAJOR STREETS

	Number of Stalls		
Type of Parking	Population Below 8,000	Population Between 8,000 & 35,000	Population Over 35,000
Painted Parking			
Parallel	756	551	717
Low-Angle	0	0	0
High-Angle	318	40	40
Unpainted Parking:			
Parallel	820	780	1,693
Angle	19	38	0
Total	1,913	1,409	2,450

Note: Major streets include one-way, two-way divided, and two-way multilane undivided streets.

TABLE 4 DISTRIBUTION OF PARKING TYPES BY POPULATION ON TWO-WAY, TWO-LANE STREETS

	Number of Stalls		
Type of Parking	Population Below 8,000	Population Between 8,000 & 35,000	Population Over 35,000
Painted Parking:			
Parallel	897	115	0
Low-Angle	377	0	0
High-Angle	2,861	0	0
Unpainted Parking:			
Parallel	15,516	529	198
Angle	2,583	38	0
Total	22,234	682	198

found by comparing the reference post of the accident location with those at the ends of the blocks. Once the block was found for an accident, the block face on which it occurred was determined from the type of accident and the directions of travel and the movements of the vehicles involved in the accident. After the accidents were assigned to the block faces, the number of accidents for each accident type was computed for each block face.

Regression Analysis

Regression analysis was conducted to determine the relationship between safety and type of parking. The stepwise regression analysis procedure of the SAS system (*4*) was used to evaluate numerous regression models. Separate regression runs were made for each type of street. The dependent variables in the models investigated were total number of nonintersection accidents and total number of parking accidents. The independent variables tried included type of parking, parking use, number of parking stalls, speed limit, average daily traffic (ADT), roadway alinement, roadway width, block length, percentages of land-use types, and land-use density.

None of the models was found to adequately explain the relationship between the numbers of accidents and the type of parking on a block face. Although some statistically significant variables were found, the highest coefficients of determination were about 0.15. One reason the regression analysis failed to find any relationships was that the data were not well distributed over the ranges of the independent variables. Instead, the data were clustered, with only a few combinations of the independent variable values being represented. For example, all of the low-angle parking was found on two-way, two-lane streets in cities with populations less than 8,000, and about 90 percent of the low-angle parking was on streets with ADT below 5,000. Nearly all parking in cities with populations above 8,000 or on two-way, two-lane streets with ADT above 5,000 was parallel parking.

Accident Rates

Therefore, the relationship between highway safety and the type of parking was determined by simply comparing the mean accident rates of the parking types on each type of roadway. Nonintersection accident rates and parking accident rates were computed. The parking accident rates included only collision with parked vehicles and parking maneuver accidents. It was not possible to identify parking-related accidents, such as rear-end and sideswipe collisions caused by parking activity, because the original accident reports were not available to the study. Consequently, the parking accident rates may underestimate the safety effects of parking.

Two measures of exposure were used to compute the rates. One was millions of vehicle-miles of travel, which is the measure of exposure commonly used to compute accident rates for roadway sections. However, this measure does not account for the level of parking activity on the sections. To account for the level of parking activity, as well as the amount of travel on the sections, another measure of exposure was also used. This measure was the product of travel and parking use per stall, which was expressed in terms of billions of vehicle-

TABLE 5 DISTRIBUTION OF LAND USES SERVED BY TYPES OF PARKING ON MAJOR STREETS

	Type of Parking				
	Painted			Unpainted	
Land Use	Parallel	Low-Angle[a]	High-Angle	Parallel	Angle
Retail	53%	--	43%	25%	90%
Service	3%	--	4%	2%	0%
Office	12%	--	21%	6%	0%
Medical	1%	--	1%	2%	0%
Institutional	1%	--	1%	2%	0%
Industrial	2%	--	3%	2%	0%
Recreational	2%	--	6%	2%	10%
Residential	9%	--	3%	42%	0%
Other	17%	--	18%	17%	0%
Total	100%	--	100%	100%	100%

Note: Major streets include one-way, two-way divided, and two-way multilane divided streets.

[a]Because there was no low-angle parking on major streets, data are not available for that category.

mile-hours per stall. The parking use used to compute this measure of exposure included only daytime parking, because resources were not sufficient for collecting nighttime parking use. However, the accidents used to compute the accident rates included both daytime and nighttime accidents. Consequently, some of the accident rates based on parking use may be overestimated.

The statistical significance of the differences between the mean accident rates was determined using the Poisson distribution test (5). The Poisson distribution test was conducted at the 5 percent level of significance.

Percentage of Parking Accidents

The percentages of parking accidents among the types of parking were compared. The percentage of nonintersection accidents that involved a parked vehicle or a parking maneuver was computed for each type of parking on the major and two-way, two-lane streets. The statistical significance of the differences between the percentages was determined using the normal approximation test. The normal approximation test was conducted at the 5 percent level of significance.

Comparison of Similar Block Faces

In addition to the comparison of the overall accident rates and parking accident percentages, parking types on similar two-way, two-lane streets were compared in an effort to account for the effects of traffic, roadway, and land use characteristics. Block faces with painted parallel, low-angle, and high-angle parking, which had similar characteristics, were identified. The mean accident rates for the painted parallel, low-angle, and high-angle parking on these similar block faces were then computed and compared. Block faces with unpainted parallel and angle parking, which had similar traffic, roadway, and land use characteristics, were also identified. The mean accident rates for the unpainted parallel and angle parking on the similar block faces were then computed and compared.

The Poisson distribution test was used to determine the statistical significance of the differences between the mean

TABLE 8 ACCIDENT EXPOSURE IN 2-YEAR PERIOD

Type of Parking	Major Streets[a]	Two-Way Two-Lane Streets
	Travel (million vehicle-miles)	
Painted Parking:		
Parallel	120	22.4
Low-Angle	--[b]	3.85
High-Angle	7.50	23.4
Unpainted Parking:		
Parallel	232	193
Angle	1.91	12.6
	Parking Utilization (1,000 vehicle-hours/stall)	
Painted Parking:		
Parallel	2.54	2.78
Low-Angle	--[b]	3.52
High-Angle	1.67	2.78
Unpainted Parking:		
Parallel	1.72	1.24
Angle	1.19	1.38

[a]One-way, two-way divided, and two-way multilane undivided streets.

[b]Data not available, because there was no low-angle parking on major streets.

dents on major streets with painted parallel parking was lower than that on major streets with painted high-angle parking. Similarly, the major streets with unpainted parallel parking had a lower percentage of parking accidents than major streets with unpainted angle parking. However, these differences were not statistically significant.

On two-way, two-lane streets, 56 percent of the nonintersection accidents were parking accidents. Among the painted parking types, low-angle and high-angle parking had significantly higher percentages of parking accidents than the parallel parking. There was no statistically significant difference in parking accident percentages between low-angle and high-angle parking. Of the unpainted parking types, streets with angle parking had a significantly higher percentage of parking accidents than streets with parallel parking.

Comparison of Similar Block Faces

The accident experience of similar block faces with painted parking is compared in Table 12, and that of similar block faces with unpainted parking is compared in Table 13.

Painted Parking A total of 57 similar block faces with painted parallel, low-angle, and high-angle parking on two-

TABLE 9 NONINTERSECTION ACCIDENT RATES

Type of Parking	Major Streets[a]	Two-Way Two-Lane Streets
	Accidents Per Million Vehicle Miles	
Painted Parking:		
Parallel	1.65	1.83
Low-Angle	--[b]	3.38
High-Angle	1.20	3.59
Unpainted Parking:		
Parallel	1.32	0.674
Angle	1.57	1.67
	Accidents Per 10 Billion Vehicle-Mile-Hours/Stall	
Painted Parking:		
Parallel	6.50	6.58
Low-Angle	--[b]	9.59
High-Angle	7.19	12.9[c]
Unpainted Parking:		
Parallel	7.67	5.44
Angle	13.19[d]	12.10[d]

[a]One-way, two-way divided, and two-way multilane undivided streets.

[b]Data not available, because there was no low-angle parking on major streets.

[c]Significantly higher than the rate for painted parallel parking at the 5% level of significance.

[d]Significantly higher than the rate for unpainted parallel parking at the 5% level of significance.

way, two-lane streets were identified. Six of the block faces had parallel parking, 21 had low-angle parking, and 30 had high-angle parking. The similarity of the block faces was defined in terms of the range of traffic, roadway, and land use characteristics found on the block faces with low-angle parking. All of the block faces were on level, tangent sections of roadway with posted speed limits of 25 mph. The ADT on these streets was between 1,400 and 4,250. The lengths of the block faces were between 300 and 500 ft, and the land-use densities on them were between 4 and 30 land uses per 1,000 ft. The daily parking use on the block faces was between 40 and 190 veh-hr per 8-hr parking day (i.e., from 9:00 a.m. to 5:00 p.m.). The maximum percentages of any one type of land use on the block faces were 100 percent retail, 34 percent service, 67 percent office, 12 percent medical, 17 percent institutional, 50 percent industrial, 50 percent recreational, 40 percent residential, and 56 percent other.

The accident exposure and the accident rates for the similar block faces are presented in Table 12. The nonintersection accident rates for the low-angle and high-angle parking were

TABLE 10 PARKING ACCIDENT RATES

Type of Parking	Major Streets[a]	Two-Way Two-Lane Streets
	Accidents Per Million Vehicle-Miles	
Painted Parking:		
Parallel	0.550	0.848
Low-Angle	--[b]	2.60[c]
High-Angle	0.533	2.91[c]
Unpainted Parking:		
Parallel	0.284	0.264
Angle	0.524	1.11[d]
	Accidents Per 10 Billion Vehicle-Mile-Hours/Stall	
Painted Parking:		
Parallel	2.17	3.05
Low-Angle	--[b]	7.38[c]
High-Angle	3.19	10.5[c]
Unpainted Parking:		
Parallel	1.65	2.13
Angle	4.40[d]	8.04[d]

[a]One-way, two-way divided, and two-way multilane undivided streets.

[b]Data not available, because there was no low-angle parking on major streets.

[c]Significantly higher than the rate for painted parallel parking at the 5% level of significance.

[d]Significantly higher than the rate for unpainted parallel parking at the 5% level of significance.

significantly higher than those for the parallel parking. The parking accident rates for the low-angle and high-angle parking were higher than those for the parallel parking, but only the rates for the high-angle parking were significantly higher. There were no statistically significant differences between the accident rates for the low-angle and high-angle parking.

Unpainted Parking A total of 70 similar block faces with unpainted parking on two-way, two-lane streets were identified: 46 had parallel parking, and 24 had angle parking. The similarity of the block faces was defined in terms of the range of traffic, roadway, and land use characteristics found on the block faces with unpainted angle parking. All of the block faces were on level, tangent sections of roadway with posted speed limits of 25 mph. The ADT was between 4,150 and 14,750. The block faces were between 300 and 500 ft long, and the land use densities were below 35 land uses per 1,000 ft. The maximum parking use on the block faces was 155 veh-hr per 8-hr parking day. The block faces had a maximum

TABLE 11 PERCENTAGES OF PARKING ACCIDENTS

Type of Parking	Major Streets[a]	Two-Way Two-Lane Streets
Painted Parking:		
Parallel	33%	46%
Low-Angle	--[b]	77%[c]
High-Angle	44%	81%[c]
Unpainted Parking:		
Parallel	21%	39%
Angle	33%	67%[d]

[a]One-way, two-way divided, and two-way multilane undivided streets.

[b]Data not available, because there was no low-angle parking on major streets.

[c]Significantly higher than the percentage for painted parallel parking at the 5% level of significance.

[d]Significantly higher than the percentage for unpainted paralled parking at the 5% level of significance.

of 25 percent service land uses and up to 100 percent of retail, office, medical, institutional, industrial, recreational, residential, and other land uses.

The accident exposure and the accident rates for the similar block faces are presented in Table 13. The nonintersection and parking accident rates for the angle parking were higher than those for the parallel parking. There were no statistically significant differences between the nonintersection accident rates for the angle parking and the nonintersection accident rates for the parallel parking. However, the parking accident rates for the angle parking were significantly higher than the parking accident rates for the parallel parking.

CONCLUSIONS

Parking on urban streets obviously results in accidents. None of the types of parking studied had a zero parking accident rate. Overall, 26 percent of the nonintersection accidents on major streets and 56 percent on two-way, two-lane streets were parking accidents. Therefore, whenever practical, parking should not be allowed.

However, parallel parking is the safest type of parking on urban sections of the state highway system in Nebraska. Parallel parking was consistently found to have lower accident rates and lower percentages of parking accidents than low-angle or high-angle parking over the range of traffic, roadway, and land use conditions on these roadways. In many cases, the accident rates and parking accident percentages for low-angle and high-angle parking were significantly higher than those for parallel parking. Therefore, when parking must be allowed on urban sections of the state highway system, parallel parking should be used instead of angle parking whenever feasible.

Another conclusion of the study was that type of parking affects accident rates. Contrary to the findings of others (*3*), the type of parking was a factor, even when parking use, abutting land use, and type of street were taken into account. In fact, the differences between the accident rates for parallel parking and those for angle parking were more likely to be significant when these factors were considered, particularly on two-way, two-lane streets.

Finally, low-angle parking may be safer than high-angle parking on two-way, two-lane streets. In most cases considered, the accident rates for low-angle parking were lower than those for high-angle parking. However, in no case was there a statistically significant difference in the accident rates. Also, on two-way, two-lane streets, the percentage of parking accidents for low-angle parking was not significantly different from that for high-angle parking. Although low-angle parking may be safer than high-angle parking, it is not as safe as parallel parking.

The conclusions of this study were based on only 2 years of accident experience on urban sections of the state highway system in Nebraska. Although a number of statistically significant differences in safety effects were found among the different types of parking, the conclusions of this study must be substantiated by further study before they can be recom-

TABLE 12 COMPARISON OF TYPES OF PAINTED PARKING ON SIMILAR BLOCK FACES ON TWO-WAY, TWO-LANE STREETS

Variable	Type of Parking		
	Parallel	Low-Angle	High-Angle
Accident Exposure (two-year period)			
Number of Block Faces	6	21	30
Number of Stalls	82	313	562
Travel (million vehicle-miles)	0.708	3.09	4.24
Parking Utilization (1,000 veh-hr/stall)	2.82	3.45	3.12
Non-Intersection Accidents			
Number	1	12	19
Accidents Per Million Vehicle Miles	1.41	3.88[a]	4.48[a]
Accidents Per 10 Billion Veh-M-H/Stall	5.00	8.96[a]	14.4[a]
Parking Accidents			
Number	1	9	16
Accidents Per Million Vehicle-Miles	1.41	2.91	3.77[a]
Accidents Per 10 Billion Veh-M-H/Stall	5.00	8.44	12.1[a]

[a]Significantly higher than the rate for painted parallel parking at the 5% level of significance.

mended as general parking policy. Additional research should avoid the limitations of this study by considering accident severity, parking-related accidents, and nighttime parking use.

ACKNOWLEDGMENTS

This research was conducted as part of the NDOR project *Parking on Urban Sections of the State Highway System*. The research was performed by the Department of Civil Engineering at the University of Nebraska at Lincoln in cooperation with the Nebraska Department of Roads. Special recognition is given to David J. Peterson of the Traffic Engineering Division of NDOR for his suggestions and assistance. Also, recognition is given to Robert A. Grant of the Highway Safety Division of NDOR for his excellent cooperation and assistance in providing the accident data used in the research.

TABLE 13 COMPARISON OF TYPES OF UNPAINTED PARKING ON SIMILAR BLOCK FACES ON TWO-WAY, TWO-LANE STREETS

Variable	Type of Parking: Parallel	Type of Parking: Angle
Accident Exposure (two-year period)		
Number of Block Faces	46	24
Number of Stalls	621	452
Travel (million vehicle-miles)	12.1	3.45
Parking Utilization (1,000 veh-hr/stall)	3.23	3.23
Non-Intersection Accidents		
Number	11	6
Accidents Per Million Vehicle Miles	0.909	1.74
Accidents Per 10 Billion Veh-M-H/Stall	2.81	5.39
Parking Accidents		
Number	3	5
Accidents Per Million Vehicle-Miles	0.248	1.45[a]
Accidents Per 10 Billion Veh-M-H/Stall	0.768	4.49[a]

[a]Significantly higher than the rate for painted parallel parking at the 5% level of significance.

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CITY OF BLOOMINGTON
REPORT FOR THE TRANSPORTATION COMMISSION
SEPTEMBER 17, 2019

CASE NUMBER:	SUBJECT:	ORIGINATING FROM:
INFORMATION	Summary of Citizen Comments/Complaints Received September 2019	Philip Allyn, PE, PTOE City Traffic Engineer
REQUEST:	Item submitted as information for the Transportation Commission. Any feedback or comments are welcome.	

STAFF RECOMMENDATION: N/A

Staff submits the following information to the Commission. Any comments or feedback is appreciated.

1. ATTACHMENTS:

a. None

2. BACKGROUND AND SUPPLEMENTAL INFORMATION:

The following comments were received by the Engineering Department between August 22, 2019 and September 13, 2019 or are updates of previous comments (additions to previous updates are **Bold-Underlined**):

1) Received request to review restricting parking to one side of street and install traffic calming on Tanner between Park Lake and Springfield. Reviewed file and location has been reviewed several times in past years with no findings of excessive speeding. Counters placed to gather speed and traffic data. Data is being evaluated.

2) Received Request to replace faded parking restriction signs along Washington Street. Need to visit site and submit work order to sign crew.

3) Received complaint of speeding on E. Oakland east of Hershey, especially around Watford. Due to hill east of Watford, can be worrisome turning from Watford onto Oakland and being overtaken. Request reduction from 40 mph to 30 mph. Completed field check. There is a hill to the east of Watford limiting the view of the intersection from westbound Oakland. There is also an existing "intersection warning" sign with a 30 mph plaque. Could consider speed reduction, but would need speed study. 85th percentile likely closer to 40 mph than 30 mph. Speed data collected. Need to review results.

4) Received request for increased pedestrian warnings at US 51 (Madison) and Front Street. To be reviewed following completion of Front Street work and likely referred to IDOT for consideration. May modify crosswalks with new ADA ramps.

5) Received request for clearly marked drop-off at the Arena on US 51 (Madison). To be reviewed and responded to but likely unable to provide due to moving lanes of traffic and IDOT jurisdiction. Passenger loading and unloading zone is currently posted on Front Street west of Madison.

6) Received request for crosswalk warnings at East and Locust for crossing from BCPA to/from north parking lot. To be reviewed and responded to after updating crosswalk policy.

7) Received request to relocate "CT" to Front Street by Arena. Need to contact submitter and clarify.

8) Received four coordinated requests for an all-way stop or other pedestrian warning enhancements at Stone Mountain and College for pedestrians walking north and south to/from Tipton Park. Due to close proximity to Northpoint Elementary School, will be reviewed and data collected when school resumes in the fall. Traffic counting completed. Traffic signal warrants not met. All-way stop warrants not met. Sent work order to mark crosswalk across College and install pedestrian warning signs at the crosswalk and in advance. Crosswalk has been marked. Warning signs have been installed. Need to evaluate sign indicating school crossing is further west at the school.

9) Received complaint about truck traffic on Fort Jesse Road. Observed a large number of trucks using Fort Jesse and traveling to and from properties along Fort Jesse. Need to follow up with requestor and discuss.

10) Received complaint of speeding and request for "Children at Play" signs on Gill Street at pass-through-cul-de-sac west of Airport. Need to evaluate "Yield" sign usage for clarity. **Installed traffic cameras to determine number of trucks utilizing the cul-de-sac to avoid traveling through the neighborhood to the west and south on Vladimir to observe if there are any usual traffic movements.**

11) Received request for traffic calming on Eastport Drive between Clearwater and Empire. Speed data collected. Need to review results and compare to traffic calming policy.

12) Received request for traffic calming on Gloucester Circle between Hersey and Dover. Collected speed and traffic volume data. Does not qualify for traffic calming under Traffic Calming Policy (excessing speeding threshold not met). Need to formalize report and respond to resident.

13) Received request for traffic calming on W. Oakland between Livingston and Euclid. Speed data collected. Need to review results and compare to traffic calming policy.

14) Received request to add flashing yellow arrows at Emerson and Towanda due to confusion of eastbound left turn drivers and non-90-degree angle of intersection. Contacted requester and indicated flashing yellow arrows are beginning to be incorporated as other signal maintenance work is completed at an intersection. This particular location will be reviewed closer due to unique geometry for higher priority of flashing yellow arrow implementation.

15) Received request to remove school zone on southbound Center Street by Thornton's for Corpus Christi is no longer needed due to school closing. Confirmed that this zone was just for Corpus Christi and not also Bent Elementary and that there are no longer school activities at old Corpus Christi building. Began coordination with IDOT on removal of school zone limits. Need to follow-up on completion.

16) Received request for school crossing sign added at Washington and Darrah. Need to determine which intersection leg is being requested and evaluate request. Contacted requestor and discussed. Determined request is in response to needing area for children drop off for Heartland Head-start. Identified location and completed work order for sign installation. Need to verify completion and update Code.

17) Received concern about an increase in collisions on GE Road between Golden Eagle and Towanda Barnes Road. Need to pull accident data, review for trends and evaluate options.

18) Received two separate concerns about commercial parking on residential portion of Norma Drive. Need to contact residents and discuss.

19) Received request for stop or yield sign at Ark Dr. and Matthew Dr. ("Tee" intersection). Need to visit site and review.

20) Received request for no parking in front of a residence on Colton due to constant blocking of driveway. Need to visit site and review.

21) Received complaint of landscaping creating a sight obstruction at Peirce and Mercer. Need to visit site and review when landscaping is in full bloom.

22) Received complaint of out of town school buses parking and blocking alley behind Elmwood Road and the BHS football/baseball fields during school sports activities. Need to visit site and review.

23) Received complaint about new power poles at Hershey and Jumer causing a sight obstruction. Visited site to review. Contacted Ameren to discuss poles. Ameren agreed at least one of the poles may not be necessary; they are reviewing internally.

24) Received request for street light at College and Stone Mountain. Evaluating options to add a street light to the southeast quadrant to light the south leg and the bike path crosswalk. Submitted request to contractor for an estimate to install; waiting for price.

25) Received complaint of speeding on GE Road between Towanda Barnes and Airport Road with numerous accidents on a consistent basis. Request study of adding traffic signals and/or stop signs. Contacted and will gather speeding and crash data.

26) Received request to limit parking on Beecher between Fell and Horenberger due to sight distance reasons. Visited site for preliminary evaluation. Need to contact requestor and discuss further.

27) Received concern about no turn on red at Six Points Road and S. Morris. Need to contact to clarify.

28) Received request for explanation on why parking not being allowed on Elmwood between Colton and Towanda. During football games many cars park on Colton, creating unsafe conditions, when they should be able to park on Elmwood. Need to research and evaluate.

29) Received complaints of bicyclists blowing stop sign at Bunn / Buchanan and Buchanan / Clayton. Request to evaluate options for additional signage and increased enforcement.

30) Received request for stop sign on Baker at Roosevelt (T intersection). Will review accident history and evaluate sight distance.

31) Received concern about inadequate school zone signage for Corpus Christi School. Requested multiple blinking lights. Complained of cars extending out onto Lincoln during pickup and drop-offs. Need to visit site and review school zone signage and discuss modifications to drop-off and pickup routing on school site with school. Met with the Principal and Facilities Manager and reviewed current signage. School zone appears to be correctly signed currently. Observed pick-up and drop-offs, which appear to minimize impacts to surrounding area as much as possible. Need to determine options for increased signage, if any.

32) Received concern about speeding and stop sign running in neighborhoods surrounding Corpus Christi School during school drop-off and pickup to avoid all-way stop at Lincoln and Mercer. Need to discuss modifications to drop-off and pickup routing on school site with school. Observed pick-up and drop-offs, which appear to minimize impacts to surrounding area as much as possible. Met with the Principal and Facilities Manager and reviewed. Provided information for school to share with parents relating to avoiding using the neighborhood streets to the north when possible. Need to evaluate installing stop signs at “T” intersections in the neighborhood area.

33) Received concern about parking availability in neighborhoods surrounding Sarah Raymond School during school drop-off, pickup, and special events. Need to evaluate parking in area and discuss with school.

34) Received request for school crossing guard at Irving. Completed data gathering, working on analysis.

35) Received request for curb painting at Summerfield and Hershey.

36) Received complaint of cars not stopping for stopped school bus at Harvest Pointe and Dry Sage Circle. Request 4-way stop, reduced speed limit or Children at Play sign. Contacted and discussed issues with submitter. There are several repeat offenders. Encouraged them to contact the school to request the bus driver submit a report of failure to stop when it occurs. Encouraged them to take photos and document and submit to the police department for enforcement. Contacting the school district to inquire about revising bus pickup locations to eliminate the need for children to cross Harvest Pointe. Need to research posted 35 mph speed limit on Harvest Pointe.

37) Received request for stop sign at corner of Sugarberry and Winterberry in the Grove ("T" intersection). Need to complete work order for sign installation.

38) Received request for street light on Cottage between Perry and Graham. Need to visit site and evaluate lighting levels.

39) Received request to consider changing speed limit on Streid Drive and Oakland between Hershey and Streid to reduce the speed of vehicles on these roads. Speed data currently being gathered and analyzed.

40) Received request for removal of handicap parking spot on 700 block of N. McLean due to person no longer living there. Need to verify, complete work order for removal, and update City Code.

41) Received notification of missing street name sign at East Street and Empire. Contacted requestor, need to evaluate location for new sign. **Work Order submitted 9/4/19. Need to verify completed.**

42) Received request for removal of handicap parking spot on 600 block of W. Chestnut due to person no longer there. Completed work order for removal and verified completed. Need to update City Code.

43) Received request for stop or yield signs at Matlock and Dorset Ct., Matlock and Yorkshire Ct., and Matlock and Cumbria Dr. Need to evaluate and complete work order if signs are warranted.

44) Received request to remove "End of School Speed Zone" signage on Center Street between Mulberry and Locust since Central Catholic moved many years ago and signs are no longer needed. Reviewed location: signage remained after the High School moved due to Corpus Christi school on the west half of this block. Met with the Principal and Facilities Manager and confirmed there are no longer school activities being held at the old location. Need to put together a work order for the removal of the school zone signage. Began coordination with IDOT on removal of school zone limits. Need to follow-up on completion.

45) 1/17/19 – Received a request to limit the parking on Ridgewood Terrace to only one side of the street. Letters notifying residents of the potential removal of parking on

the north side, including the cul-de-sac, and requesting comments were hand delivered on 4/3/19. Vote was not supportive of restricting parking. Need to review for adequate turning room in cul-de-sac for garbage trucks.

46) 2/21/19 – Received request for "Deer Crossing" warning signs on W. Washington Street between Caroline and I-74 after witnessing 5 hit deer within the last year and seeing a large heard of deer several times along the road.

47) 2/25/19 – Received a request to limit the parking along Williamsburg Drive. Discussed with requestor: sight issues pulling out of daycare. Sign crews replaced faded signs, work order completed for additional sign restricting parking immediately north of the daycare exit. Verified signs for new parking restriction installed; will monitor until Sept 15, 2019; if no issues, will update Code.

48) 3/5/19 – Received request for a Loading Zone on Mission Drive. Visited site to review with requestor. Completed work order for sign and markings to add a Loading Zone in this area. Verified work completed. Will monitor until 10/15/19; if no issues, will update Code.

49) 3/7/19 – Received a request for stops signs at Maizefield Drive and Harbord Drive. Currently stop signs on Maizefield. Need to contact and clarify request.

50) 3/8/19 – Received a request for additional no parking signs along Northbound Black Oak to help control parents during pickup and drop-offs. Visited and met with school staff. Completed work order for additional No Parking sign just north of school entrance. **Need to verify completed. Item Considered Closed.**

51) 3/12/19 – Received a complaint about speeding on Woodruff from Colton to Linden and on Linden. Will evaluate for traffic calming.

52) 3/13/19 – Received concerns about the speed of traffic on Beich Road presenting a hazard to drivers entering and exiting the Nestle plant. An employee inadvertently pulled onto Beich and was involved in a collision. The interstate presents an optical distraction. Need to review crash data and potentially gather speed data. Posted speed on this rural road is currently 45 mph. Contacted IDOT to inquire about replacing old and missing visual barrier panels in the existing ROW fence between Beich Road and the Interstate. Discussed additional options with requestor. Entrance owner plans to upgrade the stop sign to a higher-visibility sign and add "cross traffic does not stop". IDOT informed that they will not replace the visual barrier panels. Fence too short to adequately block view of traffic on the interstate that drivers are confusing for traffic on Beich Road. Original requestor asked for "Plant Entrance" sign on southbound Beich Road. **Contacting IDOT about planting trees in the I-55 right of way to create visual barrier.**

53) 3/24/19 – Received a request for a new street light at an entrance on the 500 block of E. Bell Street and for a stop or yield at the curve from S. McLean to E. Bell. Notified requestor that stop/yield sign not appropriate since there is no intersection and lighting of an entrance/doorway is the responsibility of the property owner. Verified

there is an existing light at this corner that is completed blocked due to an overgrown tree. Contacted Ameren about trimming the tree.

54) 3/25/19 – Received request for removal of handicap parking spot at 107 Packard St. due to person no longer living there. Verified spot is no longer needed. Completed work order for removal and verified removal completed. Need to update City Code.

55) 4/9/19 – Received a request to evaluate the parking in front of 613 E. Mill Street (corner of Mill and Evans intersection) to allow garbage trucks to be able to turn without running over the curb and sidewalk. Reviewed in field and confirmed narrow streets combined with allowed parking cause garbage trucks to have to driver over curve and sidewalk ramps (less than 2-year-old ramp is now severely cracked). Need to complete work order to restrict parking in front of 613 E. Mill Street and modify City Code.

56) 4/10/19 – Received request for additional lighting on Orchard. Evaluated existing street lighting: fixtures are older style, submitted request to Ameren to upgrade to newer, brighter, LED heads. Will evaluate further once upgrades are complete.

57) 4/12/19 – Received a complaint about speed on Vladimir and motorcycles and mopeds driving on the sidewalks.

58) 4/22/19 – Received a request for No Parking signs to be posted in North/South Alley adjacent to 504 E. Locust. Vehicles from apartment building park in alley rather than the building's parking lot and block the driveway.

59) 4/30/19 – Received request for "Deer Crossing" warning signs by 1608 Six Points Road. Deer regularly cross in this location.

60) 5/2/19 – Received concern about speeding in the alley between White Place and Constitution Trail north of Empire. Requested increased speed limit signage, No Through Traffic signage and speed bumps.

61) 6/7/19 – Received request for stop signs at Shaunessey/Casey and Shaunessey/Connemara.

62) 6/12/19 – Received request for removal of handicap parking spot at 506 E. Douglas due to person no longer living there. Need to verify, complete work order for removal, and update City Code.

63) 6/25/19 – Received request to limit parking on one side of the street on Forrest between Cottage and the dead-end west of Hinshaw. Letters notifying residents of the potential removal of parking and requesting comments to be written and delivered. After receiving resident feedback, a determination will be made on whether to implement the parking restriction.

64) 7/10/19 – Received request for handicap sign and markings at 604 W. Chestnut. Requestor submitted required paperwork; Work orders for sign and pavement markings submitted to crews; need to verify when complete and update City Code.

65) 7/30/19 – Received complaint about large number of vehicles traveling down Maysel St. (dead end) only to turn around at the end and speed back out. Requested additional or more visible dead-end signs.

66) 8/8/19 – Received complaint about speeding on Baywood east of Towanda Barnes. Requested additional speed limit sign or relocation of the existing sign further from the intersection to be more visible.

67) 8/11/19 – Received report of missing speed limits signs along Towanda Avenue between Empire and Vernon. Investigated and found one sign missing. Need to completed work order for replacement and evaluate if additional signs are needed.

68) 8/16/19 – Received report of several missing signs and broken posts Ireland Grove Road. **Reviewed and determined missing signs. Need to submit work order for replacement.**

69) 8/19/19 – Received request for stop or yield signs at Piney Run and Fiddlestix.

70) 8/20/19 – Received report of missing No Parking signs on north side of Beecher between Main and East. **Verified missing signs and notified sign crew for replacement. Need to confirm completed.**

71) 8/20/19 – Received request for No Parking signs on south side of Beecher between Main and East by mid-block driveway.

72) 8/22/19 – Received complaint of speeding on Vladimir between Gill and Rainbow and requested traffic calming.

73) 8/22/19 – Received request for all-way stop control at Allin and Monroe and additional One Way signage due to drivers traveling the wrong way on Monroe (It's one way westbound).

74) **NEW:** 8/23/19 – Received request related to whether several streets are public or private. Answered question. Item Considered Closed.

75) **NEW:** 8/24/19 – Received letter with concerns from Wood Hill Towers related to pedestrian safety at the Main/MacArthur and Main/Wood intersections.

76) **NEW:** 8/26/19 – Received request for camera footage at Veterans and Oakland. Notified requestor that the City does not record any foot from the traffic sign cameras, they are used solely for detecting vehicles to activate the signal. Item Considered Closed.

77) **NEW:** 8/26/19 – Received request for high visibility cross walk and "Playground" warning signs on Ridgecreek Drive at Scogin Creek Road/Grey Fox Trail

78) **NEW:** 8/31/19 – Received request to change a street light bulb on a light pole on Chesapeake Lane. Forwarded to the power company. Item Considered Closed.

79) **NEW:** 9/6/19 – Received request to repaint westbound right turn lane on Market Street at Truckers Lane due to faded markings resulting in drivers continuing straight. Notified requestor that this is an IDOT road. Discussed further with IDOT who is working to get the faded markings re-painted. Item Considered Closed.

80) **NEW:** 9/12/19 – Received complaint of traffic signal detection at Fairway and Eastland. Referred to electricians to check detection equipment. Item Considered Closed.

81) **NEW:** 9/13/19 – Received notification of missing parking signs on Seville. Need to verify signs are missing and complete work order for replacement

3. STAFF RECOMMENDATION:

Staff submits the above information to the Commission. Any comments or feedback is appreciated.

Respectfully submitted,

Philip Allyn, PE, PTOE
City Traffic Engineer