CITY OF BLOOMINGTON

TRAFFIC COMMISSION **Case #:** TC-24-02
STAFF REPORT **Date:** April 24, 2024

FROM: Andrew Cibor, PE, PTOE, Engineering Department

REQUEST: 7-Line Project Update and All-Way Stop Control Installation

Location: 7th Street (B-Line Trail to Woodlawn)

Background:

The 7-Line project was one of seven Bicentennial Bond projects approved by the City Council in 2018 and was identified as a Phase 1 priority project in the Transportation Plan adopted by City Council in 2019. The project was envisioned to provide a protected east-west bicycle lane and improved transit corridor to connect the B-Line, downtown, Indiana University campus, and eastside neighborhoods. In August 2020, City Council unanimously approved Ordinance 20-14 with parking and stop sign changes associated with the project. These changes were also supported by the city's Parking, Traffic, and Bicycle & Pedestrian Safety Commissions. Project construction was completed in late 2021.

As a part of the City's effort to monitor the 7th Street corridor after the completion of the 7-Line project, the Engineering Department prepared a report regarding all-way stop control reinstallation that was reviewed and discussed by the Bicycle & Pedestrian Safety Commission and the Traffic Commission at their March 2023 meetings. After reviewing and discussing the report, both Commissions voted to convert the 7th Street and Dunn Street intersection from a one-way stop controlled intersection (southbound traffic on Dunn St was required to stop for traffic on 7th Street) to an all-way (3-Way) stop controlled intersection where all approaching traffic would be required to stop. This recommendation was largely due to a pattern of crashes that were susceptible to correction with the installation of all-way stop control. Due to the pattern of crashes, and consistent with the Commission recommendations, a 180 Day Order was issued on April 10, 2023 and the intersection was converted to all-way stop control on April 12, 2023.

The Bloomington City Council voted to retain the all-way stop control at 7th Street and Dunn Street intersection and directed that three additional all-way stop controlled intersections be reinstalled along 7th Street at the Morton Street, Washington Street, and Lincoln Street intersections on October 4, 2023. However, Mayor Hamilton vetoed Ordinance 23-23 on October 13, 2023 noting, "Additional time, hopefully enough to allow a full year of data since the April 2023 changes, will allow for more robust and meaningful data to inform any significant adjustments."

The intersection of 7th Street and Dunn Street has operated as an all-way stop controlled intersection under a reissued 180 day order since April 12, 2023. This report provides a brief

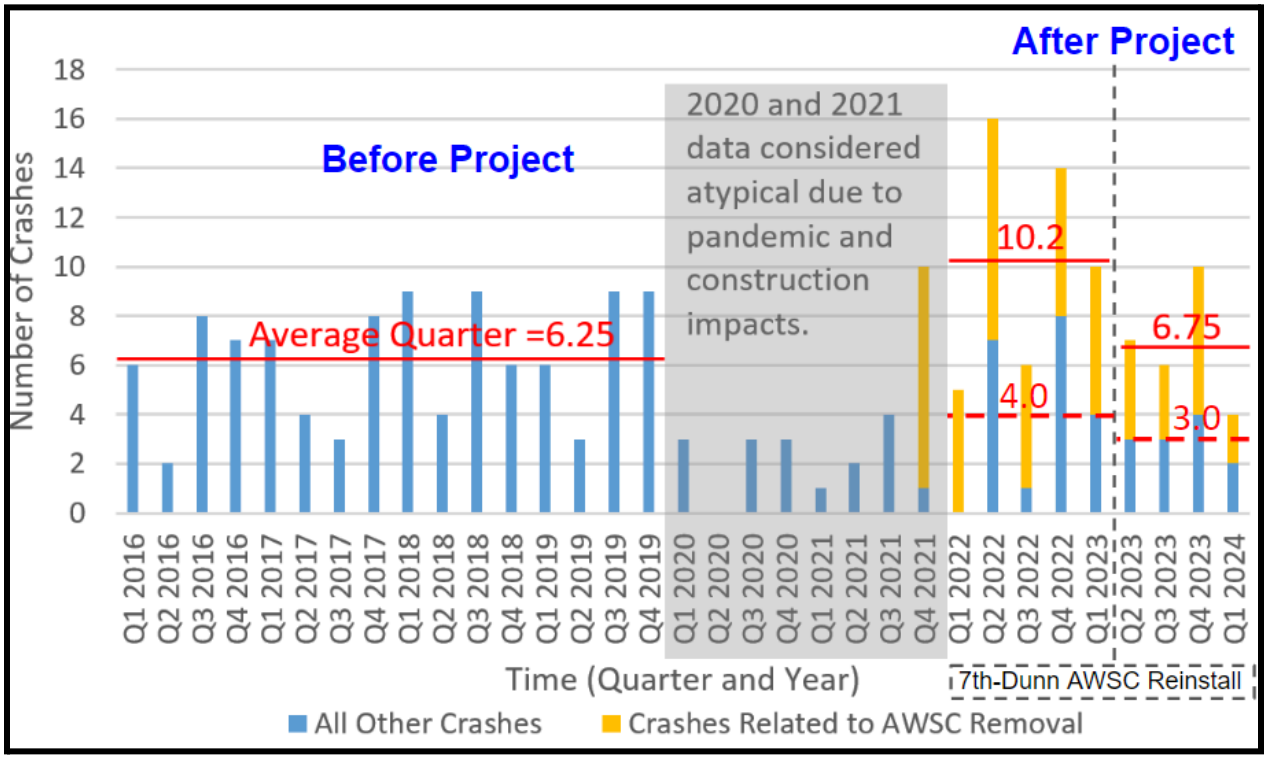
update on the status of the corridor and makes recommendations for updates to several intersections along the corridor.

Data Trend Summary:

Since completion of the 7-Line project in 2021 the following traffic trends have been observed:

- Automobile traffic volumes increased on 7th Street between Walnut and Indiana since the installation of the protected bike lane and removal of stop signs, and traffic volumes on intersecting streets where all-way stop control was removed decreased.
- A majority of vehicles on 7th Street exceed the 25mph regulatory speed limit. Measured 85th percentile speeds are approximately 30mph. Vehicle speeds decreased approximately 2mph in the vicinity of the Dunn Street intersection after the all-way stop was reinstalled.
- After the project, bike lane traffic counts increased approximately 27% to 50% adjacent to the Indiana University campus where the two-way protected bicycle lane replaced standard bicycle lanes. In a block that previously did not have bicycle lanes (Grant to Dunn) bicycle/scooter use increased 259%.
- Limited pedestrian traffic data available indicates more pedestrians are crossing 7th Street. Corridor-wide reported pedestrian crashes decreased since completion of the project.
- Vulnerable road user crash frequency is similar to pre-project rates despite increased vulnerable road user traffic.
- The number of reported crashes resulting in injuries is higher than pre-project rates.
- As illustrated in Figure 1, the corridor averaged 6.25 reported crashes per quarter (3 month period) before the 7-Line project was constructed and intersection traffic control was changed. Since the 7-Line project was completed and the all-way stop was reinstalled at the Dunn Street intersection, the corridor is averaging 6.75 total reported crashes per quarter. More than half of the reported corridor-wide crashes post project are susceptible to correction with the reinstallation of all-way stop control at the one/two-way stop controlled intersections. If all-way stop control is installed at these intersections, then the corridor-wide crash rate is estimated to average between 3 and 4 crashes per quarter.
- The reported crash frequency of the stop controlled intersections that did not change with the 7-Line project (e.g., Indiana Avenue, Woodlawn Ave, etc.) did not see a reported crash rate increase after completion of the project.
- There has only been one reported crash at the intersection of 7th Street and Dunn Street since reinstalling the all-way stop at the intersection and that crash occurred shortly after the all-way stop was reinstalled.

Figure 1 - Reported Corridor Total Crashes



Intersection Traffic Control Analysis:

The data and observations available to date indicate that while the protected bicycle lanes are generally operating as intended, the five intersections where all-way stop control was removed in conjunction with the 7-Line project (7th Street at Morton Street, Washington Street, Lincoln Street, Grant Street, and Dunn Street) would benefit from modifications. The crash data for these intersections indicates that nearly all reported crashes were a result of drivers on the side street failing to yield to drivers on 7th Street. In many of these crash reports, the driver on the side street told the reporting police officer that they mistakenly thought the intersection had all-way stop control. Since 2022 there were also two reported crashes at these intersections involving drivers failing to yield to users of the protected bicycle lane (one scooter at Dunn Street and one bicycle at Washington Street) and one reported crash involving a scooter failing to yield to a driver (southbound scooter on Morton Street). There were no reported crashes involving pedestrians at these five intersections.

Each of these five intersections has visible stop bars on the pavement and a stop sign with a "cross traffic does not stop" plaque (this was true for the Dunn Street intersection prior to the 180 day order). The one-way intersecting streets (Washington Street, Lincoln Street) have these signs located both on the left and right side of the road where it intersects with 7th Street. Additional signs and markings are not expected to be beneficial for clarifying the existing stop control at these intersections.

Installation of all-way stop control was evaluated at these intersections as an option to address the observed crash patterns. The Indiana Manual on Uniform Traffic Control Devices (IN MUTCD) includes four specific criteria to consider when studying whether to install all-way stop

control at intersections. Table 1 summarizes an evaluation of those criteria by subject intersection cross street.

Table 1 - IN MUTCD All-Way Stop Evaluation (2022-current)

Intersection Cross Street	Interim measure for traffic signal installation?	≥ 5 reported crashes susceptible to correction by all-way stop in a 12-month period?	Meets minimum volume threshold?	Meets a combination of thresholds to at least 80% of values?
Morton St	No	No (3)	No	No
Washington St	No	Yes (5)	No	N/A
Lincoln St	No	Yes (7)	No	N/A
Grant St	No	Yes (6)	No	N/A
Dunn St	No	Yes (12)	Yes*	N/A

*The Dunn Street intersection did not meet the minimum volume criteria based on pre-project data, but does meet the criteria using post-project data.

As summarized in Table 1, the Washington Street, Lincoln Street, Grant Street, and Dunn Street intersections meet at least one IN MUTCD criteria for all-way stop control installation; however, the Morton Street intersection does not meet the criteria.

Since October 2012 the IN MUTCD has been the adopted document to be used for evaluation of traffic control in the State of Indiana and is based on the Federal Highway Administration's (FHWA's) 10th Edition of the MUTCD that was published in 2009. While not yet adopted by the State, the FHWA published the 11th Edition of the MUTCD in December 2023 which offers some additional insight relevant to this study. Relevant items include:

- The IN MUTCD presents the above-mentioned all-way stop criteria as guidance; whereas, the 2023 MUTCD presents similar criteria as warrants. Both manuals suggest the importance of an engineering study that may include engineering judgment.
- Both MUTCD versions include a criterion related to five or more reported crashes susceptible to correction within a 12-month period; however, the 2023 MUTCD introduces another option related to crash experience if there are six or more reported crashes susceptible to correction within a 36-month period.

The 2023 MUTCD updates do not significantly alter the all-way stop evaluation findings summarized in Table 1; however, the only intersection that does not meet any of the criteria in Table 1 (Morton Street) has experienced 5 reported crashes susceptible to correction by an all-way stop in less than 24 months. If current trends continue, then this intersection is expected to meet the threshold established by the 2023 MUTCD in the coming months.

The IN MUTCD and the 2023 MUTCD also note an all-way stop engineering study may consider other criteria such as sight distance and pedestrian and bicycle movements. Visibility is limited in some locations on the 7th Street corridor. As a result, drivers may pull forward after stopping which can generate conflict with vehicles temporarily blocking crosswalks and/or bike lanes. Additionally, vulnerable road user traffic is generally high along the corridor due to proximity to both downtown and Indiana University campus. Finally, while not specifically listed in the MUTCD, the following additional items may be considered:

- Driver confusion has been observed where traffic on 7th Street will treat an intersection as an all-way stop despite the intersection not being an all-way stop. This behavior is most frequently observed at the Morton Street intersection and is similar to what was previously observed at the intersection of Kirkwood and Madison prior to it being converted to an all-way stop controlled intersection.
- The Morton Street intersection is the location staff perceive as receiving the most public interest in reinstalling an all-way stop (e.g., see the Bloomington Safe Streets & Roads For All (SS4A) public feedback survey map), and stakeholders such as the Bloomington Police Department have specifically noted interest in converting this intersection back to an all-way stop.

The majority of crashes are a result of motor vehicle drivers failing to yield to other motor vehicles, but the improvement option of implementing all-way stop control would have the most negative impact to efficiency for transit and users of the protected bicycle lane. The crashes involving motor vehicles are primarily right angle collisions. While the majority of crashes have not resulted in injuries, this crash type has potential to create serious injuries. Additionally, the implementation of all-way stop control can also reduce the potential for crashes involving users of the protected bicycle lanes (there have been some reported crashes involving people on bicycle/scooter, and observations indicate that some bicycle/scooter users must rapidly brake to avoid conflict with turning motor vehicles that failed to properly yield).

Conclusion & Recommendation:

The 7-Line project successfully improved east-west accessibility and mobility for all modes of transportation; however, the removal of all-way stop control at the five subject intersections (Morton, Washington, Lincoln, Grant, and Dunn) resulted in an increase in intersection-related crashes generally unrelated to the two-way protected bike lane.

- Before the removal of the all-way stop controlled intersections the corridor averaged about 25 reported crashes/year.
- Without all-way stop control at the five subject intersections the corridor averaged about 40 crashes/year.
- With the reinstallation of all-way stop at the Dunn St intersection the corridor has been averaging about 30 crashes/year.
- If all five intersections are converted to all-way stop the corridor is expected to average about 15 to 20 crashes/year.

Staff recommends that a Title 15 amendment be forwarded to City Council to reinstall all-way stop control at the five locations listed below. While the data is more compelling for some of these intersections than others, staff believe that all-way stop control installation is appropriate at all five locations and consistent with the City's recently adopted goal of zero traffic deaths and serious injuries on the City's roadways by the year 2039.

Title 15 Changes:

In order for all-way stop control to be implemented, Section 15.12.010, Schedule B "Multi-Stop Intersections" would need to be edited with the following changes.

Section 15.12.010, entitled “Stop intersections,” shall be amended by deleting the following from Schedule A Stop Intersections:

Traffic on	Shall Stop for Traffic on
Morton Street	Seventh Street
Washington Street	Seventh Street
Lincoln Street	Seventh Street
Grant Street	Seventh Street
Dunn Street	Seventh Street

Section 15.12.010, entitled “Stop intersections,” shall be amended by adding the following to Schedule B Multi-Stop Intersections:

Seventh Street & Morton Street	4-Way
Seventh Street & Washington Street	3-Way
Seventh Street & Lincoln Street	3-Way
Seventh Street & Grant Street	4-Way
Seventh Street & Dunn Street	3-Way

Attachments:

1. March 22, 2023 Traffic/BPSC Staff Report
2. September 15, 2023 Proposed Ordinance 23-23 Memorandum to City Council
3. October 13, 2023 Mayor Hamilton Veto Message regarding Ordinance 23-23
4. April 3, 2024 City Council Resolution 2024-07
5. April 10, 2024 180 Day Order Extension for All-Way stop at 7th Street and Dunn Street