

# TECHNICAL MEMORANDUM 

Date:
To:
September 17, 2021
Project \#: 23898.5

Zach Piepmeyer, Project Manager

Capital City Development Corporation
121 N 9th St \#501
Boise, ID 83702
From:
Rebecca Hoffman, Rachel Grosso, Nick Foster, AICP, RSP, and Evan Reed, PE, PTOE
Project:
8th Street Improvements, State to Franklin
Subject:

Technical Memorandum \#1: Existing Conditions

## INTRODUCTION

The Capital City Development Corporation (CCDC) has initiated a project to improve 8th Street from State Street to Franklin Street. The project is focused on providing a low stress biking experience, improving streetscapes, and undergrounding overhead utilities. This memorandum provides a summary of the existing plans, projects, and conditions along this corridor. It includes a summary of documents reviewed, multimodal volumes and operations, parking inventory and analysis, and crash history. The information contained in this memorandum will be used in developing alternative conceptual designs for this section of 8th Street.

## Corridor Context

As shown in Figure 1, the study section of $8^{\text {th }}$ Street is north of downtown Boise, linking it to the North End neighborhood. The study corridor is contained in CCDC's Westside Urban Renewal District. CCDC and the City of Boise recently improved streetscapes, added on-street angle parking, and a southbound protected bike lane to $8^{\text {th }}$ Street from State Street to Bannock Street. At Franklin Street, 8th Street intersects with the Ada County Highway District's (ACHD's) planned Franklin Street Bikeway, which will be a low-stress bike route connecting to Boise High School and the $11^{\text {th }}$ Street Bikeway. ACHD is also planning to prepare a concept design for $8^{\text {th }}$ Street from Franklin Street to Union Street in the next fiscal year.

Surrounding land-uses are a mix of office buildings, government buildings, and St. Michael's Episcopal Cathedral.


## Document Review Summary

The project team reviewed existing plans from CCDC, the City of Boise, ACHD, and development proposals to understand what is already planned or proposed for the corridor. This section summarizes relevant findings from this review.

## AGENCY PLANS \& PROGRAMS REVIEW

This section summarizes the plans and programs of partner agencies relevant to the project area.

## ACHD Livable Streets Performance Measures

The ACHD Commission adopted the Livable Streets Performance Measures in June 2021 (Reference 1). This document provides methods to gauge the experience of the transportation system's various users, including people walking, biking, and driving. The method for vehicular Level of Service (LOS) is based on peak hour traffic volumes and infrastructure. Bicycle Level of Traffic Stress (BLTS) is based on roadway and bike lane infrastructure, and Pedestrian Level of Traffic Stress (PLTS) is based on roadway and sidewalk infrastructure.

## ACHD Roadways to Bikeways Plan

The ACHD Commission adopted the Roadways to Bikeways 2018 Addendum in February 2018 (Reference 2). This addendum serves as ACHD's current bicycle master plan. It identifies $8^{\text {th }}$ Street and Franklin Street as shared-street bikeways. However, based on conversations with ACHD staff, the Livable Streets Performance Measures guidance described previously is expected to supersede the planned bikeway treatments in Roadways to Bikeways.

## ACHD Integrated Five Year Work Plan (2021-2025/2022-2026)

The ACHD Commission adopted the 2021-2025 Integrated Five-Year Work Plan (IFYWP) in September 2020 (Reference 3). The Draft 2022-2026 IFYWP is currently open for public comment and planned to be adopted in September 2021 (Reference 4). The planned projects that will impact the concept design of $8^{\text {th }}$ Street include:

- Franklin Street Bikeway, Resseguie Street / Bannock Street (2021-2025/2022-2026 IFYWPs) is a community project that plans to improve Franklin Street as a bikeway to include wayfinding and bikeway signage, enhanced crossings, a connection through Fort Boise, and roadway markings.
- $8^{\text {th }}$ Street Bike Facility, Washington Street / Union Street (Draft 2022-2026 IFYWP) plans to improve pedestrian facilities, ADA facilities, and bike facilities.


## ACHD North Boise Neighborhood Bicycle \& Pedestrian Plan

The ACHD Commission adopted the North Boise Neighborhood Bicycle and Pedestrian Plan in September 2016 (Reference 5). The Plan proposes several walking and biking projects based on technical analysis and community input. Relevant projects from this plan include:

- Planned bike lane along $8^{\text {th }}$ Street north of State Street, with the intent to match south of State Street.
- Designated bike route along Franklin Street from $18^{\text {th }}$ Street to $6^{\text {th }}$ Street using sharrows/wayfinding, traffic calming, and crossings at 16th St, 15th St, 13th St, 9th St, 8th St, and 6th St.
- Addition of a leading pedestrian interval for north side crossing at the intersection of $8^{\text {th }}$ Street and Fort Street.


## City of Boise Transportation Action Plan

The City of Boise Transportation Action Plan (TAP) identifies a set of actions with strategic importance and provides a framework for prioritizing projects in the City of Boise based on shared values for high quality of life (Reference 6). This plan outlines Mobility Moves as high-level initiatives to advance the City's mobility. The following Moves are relevant to the concept design of $8^{\text {th }}$ Street:

- Move 1: Safety For All - focused on adding pedestrian safety improvements to dangerous intersections, protected bike lanes, bicycle intersection treatments, implementing automobile lane width reduction, access management, and traffic calming strategies.
- Move 2: Walk and Bike to the Store - focused on adding pedestrian improvements within $1 / 4$ mile of activity centers and creating pedestrian friendly environments within activity centers. Move 2 also prioritizes "all ages" bikeways, providing secure bike parking at activity centers, and implementing traffic calming and access management within walksheds of activity centers.
- Move 3: All Ages Bike Network - construct new bicycle infrastructure to "all ages" standard and create a network of traffic-calmed bicycle boulevards. Move 3 also aims to improve intersection treatments for people biking to support an all ages experience.


## City of Boise North End Plan

Within the City of Boise North End Plan (Reference 7), the City of Boise and the North End Neighborhood Association identified a placemaking project for creating gateway signage for major entrances to the North End, including the entrance along $8^{\text {th }}$ Street.

## DEVELOPMENT PLANS \& APPLICATIONS

Within the project area, three parcels are currently under development or will likely develop in the near future. Currently, there is a vacant building at 800 W State St; an active demolition permit application for $622 \mathrm{~N} 8^{\text {th }}$ St, the former site of an auto mechanic garage; and the State of Idaho recently authorized the purchase of the former Carnegie Public Library building at 815 W Washington St for the University of Idaho.

## TRANSPORTATION SYSTEM OVERVIEW

Located in the transition zone between Downtown Boise and the North End neighborhood, $8^{\text {th }}$ Street is a oneway northbound two-lane town center collector roadway, with metered parking and sidewalks present on both sides of the street. Study intersections for this project include:
/ $8^{\text {th }}$ Street \& Washington Street
/ $8^{\text {th }}$ Street \& Franklin Street
/ $8^{\text {th }}$ Street \& State Street (bicycle and pedestrian operations only)
As displayed in Figure 2, the Washington and Franklin Street intersections are two-way stop controlled. There are marked crosswalks across all approaches at both intersections. State Street is signalized.

## 8th Street \& Washington Street



8th Street \& Franklin Street


-     - STOP SIGN

FIGURE 2 STUDY INTERSECTION LANE CONFIGURATIONS \& TRAFFIC CONTROL
Valley Regional Transit maintains one bus stop in the project area, at the southeast corner of the $8^{\text {th }}$ Street \& Franklin intersection. This bus stop currently includes a bench and serves Route 10. The Route 16 buses also traverse the $8^{\text {th }}$ Street corridor.

Table 1 delineates the roadway characteristics of the project area, and Figure 3 displays the pedestrian, bicycle, transit, and roadway facilities.

TABLE 1 PROJECT AREA ROADWAY CHARACTERISTICS

| Roadway | Lanes | Functional <br> Classification | Posted <br> Speed <br> Limit | Sidewalk <br> Presence | Bicycle <br> Facility <br> Presence | On-Street <br> Parking |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| State Street | 2 | Collector | 25 | Yes | South of State <br> Street | Yes - <br> Metered |
| $\left.8^{\text {th }}\right) / 2$ <br> $\left.\mathrm{E} / \mathrm{O}^{\text {th }}\right)$ | Minor Arterial | 30 | Yes | No | Yes - <br> Metered |  |
| Washington Street | 2 | Local | 20 | Yes | No | Yes - <br> Metered |
| Franklin Street | 2 | Local | 20 | Yes | Planned | Yes - <br> Unregulated |



## EXISTING CONDITIONS EVALUATION

This section describes the analyses performed to evaluate the existing conditions of the project area, including pedestrian and bicycle level of traffic stress, vehicular operations, vehicular parking, and crash data evaluations.

## Traffic Volume and Parking Data Collection

Traffic volume and parking data collection at the study intersections includes:
/ Pedestrian, bicycle, scooter, and vehicle turning movement counts
) Parking utilization
Turning movement count data was collected during a typical midweek (Tuesday through Thursday) AM peak period (7:00 AM - 9:00 AM) and PM peak period (4:00 PM - 6:00 PM). Due to change in travel patterns caused by the COVID-19 pandemic, collection of accurate traffic counts that represent normal travel activity was not possible, and a modification factor was applied to traffic counts (detailed in the 'Traffic Volumes' section). Additionally, parking utilization data was also collected on a typical Sunday at 8:00 AM and 10:00 AM to quantify the effect of in-person religious services on parking availability, as well as during typical midweek AM peak period (8:00 AM) and PM peak period (6:00PM). Appendix 1 contains the turning movement count data, and Appendix 2 contains the parking utilization data.

## Performance Measurement

In accordance with ACHD's recently adopted Livable Streets Performance Measures, this memorandum evaluates existing transportation system performance at intersections and along segments by utilizing multimodal performance measures:

> A MEASUREMENT FOR ALL
/ Pedestrian Level of Traffic Stress (PLTS)
/ Bicycle Level of Traffic Stress (BLTS)
/ Vehicular Level of Service (LOS), Volume-to-Capacity ratio (V/C), and Delay

The PLTS and BLTS analyses are performed in accordance with the methodologies outlined in ACHD's
 Livable Streets Performance Measures guide. The intersection motor vehicle traffic operations performance measures of LOS, V/C ratio, and delay are based on the peak 15-minutes of the peak hour and therefore, conditions may be better during other times of the day. Intersection operations results are reported by critical
movement for both two-way stop-controlled intersections in the project area. The vehicular operations analysis was performed in accordance with the methodologies stated in Section 7106.6 of the ACHD Policy Manual. Intersection and segment LOS are reported per ACHD thresholds. ACHD desires operations of LOS "D" or better on collectors, with v/c of 0.90 or better for the critical lane group at study intersections. The intersection operations analyses were prepared using Synchro 10.

## Existing Conditions Analysis

## TRAFFIC VOLUMES

Pedestrian, bicycle, scooter, and vehicle turning movement counts were collected at both study intersections for the AM and PM peak periods on a typical mid-weekday. Due to the travel impacts of the on-going COVID19 pandemic, an adjustment factor of $12 \%$ was applied to the turning movement counts to estimate "regular" traffic volumes in the project area. This factor was obtained by reviewing average daily traffic volumes from the Idaho Transportation Department's (ITD's) automatic traffic recorder (ATR) \#230 on Harrison Boulevard for the month of June in 2021 and 2019 (i.e., June 2019/June 2021 = 14,014/12,474 = 1.12). Figure 4 displays the weekday AM and PM peak hour multi-modal volumes. Total pedestrian ("peds") counts are displayed with motor vehicle volumes. Total bicycles using sidewalks ("sdwlk bike") and scooter counts are depicted with bicycle volumes. In general, most people riding bikes are doing so in the roadway, with the percentage of people riding on the sidewalk ranging from about $25 \%$ to $60 \%$, depending on the intersection and time period. Appendix 1 contains the turning movement count data.


FIGURE 4 MULTIMODAL VOLUMES - WEEKDAY AM \& PM PEAK HOURS

## PEDESTRIAN \& BICYCLE LEVEL OF TRAFFIC STRESS ANALYSIS

Pedestrian Level of Traffic Stress was calculated considering roadway segments and intersections along $8^{\text {th }}$ Street from State Street to Franklin Street. Segments were evaluated for sidewalk presence, sidewalk buffer, and sidewalk width and condition, and intersections were evaluated based on characteristics such as speed limit, traffic control devices, and number of lanes. Sidewalks along $8^{\text {th }}$ Street from State Street to Franklin Street are complete on both sides and are adjacent to two travel lanes with a posted speed limit of 25 miles per hour. The total buffer width along each segment ranges from about 9 to 20 feet (including on-street parking) and the sidewalks are about 5 feet wide and in good condition. The resulting PLTS is generally 2 (High Comfort for Adults). Additional buffer space in areas without a landscaped buffer or furnishing zone would increase the PLTS to 1 . The study intersections are both unsignalized with 2 lanes, and have inaccessible ADA ramps, thus they both have a PLTS 2 (High Comfort for Adults). The State Street intersection is a signalized 4-lane crossing, so it is a PLTS 2.

Bicycle Level of Traffic Stress was also calculated for each study intersection and segment. Given the posted speed of 25 MPH and that the 24 -hour volume on $8^{\text {th }}$ Street is 6,474 vehicles (Reference 8 ), the BLTS of both $8^{\text {th }}$ Street segments is 3 (Increasing Stress for Most). The BLTS could be improved by providing dedicated space for people biking separate from motor vehicle traffic. The study intersections are both unsignalized with 2 lanes, thus they both have a BLTS 1 (High Comfort for All). The State Street intersection is a signalized 4lane crossing. There is no northbound bike lane so the intersection does not neatly fit in ACHD's table. Given that people biking are directed by the shared lane marking to occupy the travel lane, the project team has assigned a BLTS 3 (Increasing Stress for Most) to the intersection to match the segment.

Figure 5 illustrates the PLTS and BLTS results.


## VEHICULAR OPERATIONS ANALYSIS

The intersection operational analysis was performed using the Highway Capacity Manual (HCM) 6 ${ }^{\text {th }}$ Edition analysis procedures (Reference 9).

Table 2 presents the traffic operation results for each intersection and its corresponding lane groups during existing weekday AM and PM peak hours. Both intersections operate within ACHD's desired parameters under current conditions in the AM and PM peak periods. Appendix 3 includes the Synchro Reports for the existing conditions analysis.

TABLE 2 EXISTING INTERSECTION OPERATIONS - WEEKDAY AM \& PM PEAK HOUR

| No. | Intersection | Intersection Control | Lane Group | AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | V/C | LOS | Delay | V/C | LOS | Delay |
| 1 | $8^{\text {th }}$ Street \& Washington Street | Two Way Stop Control | NBTL | - | - | - | - | - | - |
|  |  |  | NBTR | - | - | - | - | - | - |
|  |  |  | WBTR | 0.04 | B | 11.1 | 0.24 | B | 12.9 |
|  |  |  | EBLT | 0.01 | B | 11.6 | 0.03 | B | 11.6 |
| 2 | $8^{\text {th }}$ Street \& Franklin Street | Two Way Stop Control | NBTL | - | - | - | - | - | - |
|  |  |  | NBTR | - | - | - | - | - | - |
|  |  |  | WBTR | 0.03 | B | 10.3 | 0.12 | B | 11.3 |
|  |  |  | EBLT | 0.07 | B | 10.6 | 0.06 | B | 11.6 |

South of State Street, $8^{\text {th }}$ Street has only one northbound through travel lane. Since there is only one lane sending traffic north of State Street, the project team analyzed how this section of $8^{\text {th }}$ Street would operate with only one northbound through lane as well. Table 3 summarizes the operations results with only one northbound travel lane on $8^{\text {th }}$ Street.

TABLE 3 INTERSECTION OPERATIONS WITH ONE NB TRAVEL LANE - WEEKDAY AM \& PM PEAK HOUR

| No. | Intersection | Intersection Control | Lane Group | AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | V/C | LOS | Delay | V/C | LOS | Delay |
| 1 | $8^{\text {th }}$ Street \& Washington Street | Two Way Stop Control | NBTL | - | - | - | - | - | - |
|  |  |  | NBTR | - | - | - | - | - | - |
|  |  |  | WBTR | 0.04 | B | 11.4 | 0.25 | B | 13.2 |
|  |  |  | EBLT | 0.01 | B | 12.7 | 0.03 | B | 12.3 |
| 2 | $8^{\text {th }}$ Street \& Franklin Street | Two Way Stop Control | NBTL | - | - | - | - | - | - |
|  |  |  | NBTR | - | - | - | - | - | - |
|  |  |  | WBTR | 0.04 | B | 10.4 | 0.14 | B | 11.9 |
|  |  |  | EBLT | 0.07 | B | 10.9 | 0.07 | B | 12.5 |

Both intersections would continue to meet ACHD's desired parameters if $8^{\text {th }}$ Street were reduced to one northbound through lane in this section.

Additionally, the peak hour volumes on $8^{\text {th }}$ Street are within ACHD's level of service planning thresholds (i.e., Table 2 in Section 7100 of the ACHD Policy Manual) for a one or two-lane collector.

## VEHICULAR PARKING ANALYSIS

The project team and City of Boise inventoried the existing on-street vehicular parking in the project area and collected utilization data during the morning, midday, evening peak hours on a typical mid-weekday, as well as on a typical Sunday during religious services hosted by St. Michael's Episcopal Cathedral. Along 8 ${ }^{\text {th }}$ Street, State Street, and Washington Street, there is short-term, metered parking (4 hours maximum). Along Franklin Street there is regulated, residential parking. Parking capacity for the entire corridor is shown in Figure 7. Capacity for the unmarked spaces along Franklin Street is estimated using an assumption that each space occupies 20 feet of curb, which is based on the measured length of most marked parking stalls along the corridor. There is one special-purpose space for accessible vehicles and delivery loading adjacent to St. Michael's Episcopal Cathedral, in addition to one bus stop adjacent to $622 \mathrm{~N} 8^{\text {th }}$ Street.

Figure 6 displays the parking utilization during the weekday peak hours, in addition to the highest utilized Sunday AM period. In general, there is available parking capacity along most streets during all observed periods. The exceptions to this are the unmetered spaces along the south side of Franklin Street east of $8^{\text {th }}$ Street during the weekday periods and three of the four block faces of Washington Street on Sunday mornings when St. Michael's is conducting services.

Table 4 delineates parking utilization by time-period along each road.

## TABLE 4 PARKING UTILIZATION

| Street | Capacity | Sunday 8AM ${ }^{1}$ | Sunday $\text { 10AM }{ }^{1}$ | Weekday 8AM | Weekday 12PM | Weekday 6PM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $8^{\text {th }}$ Street | 30 | 43\% | 73\% | 20\% | 50\% | 53\% |
| State Street | 4 | 75\% | 0\% | 25\% | 25\% | 0\% |
| Washington Street | 34 | 15\% | 26\% | 15\% | 24\% | 26\% |
| Franklin Street | 37 | 59\% | 65\% | 59\% | 78\% | 68\% |
| Project Area Total | 105 | 41\% | 52\% | 32\% | 50\% | 48\% |

${ }^{1}$ Sunday services at St. Michael's services are currently capacity constrained due to COVID-19 precautions. According to St. Michael's staff and leadership, the second Sunday morning service is limited to about one-third of normal attendance. During normal attendance, adjacent on-street parking may be at capacity

A few block faces are at capacity during each observed time periods, however on-street parking is generally below $80 \%$, and often below $50 \%$, utilization on each roadway during all analyzed time periods. It is possible that on-street parking may be at or near capacity during a typical mid-morning Sunday period when St. Michael's is at full attendance. Appendix 2 includes the parking data.

$8^{\text {TH }}$ STREET IMPROVEMENTS

Parking Utilization

## SAFETY ANALYSIS

The project team reviewed crash data from ITD for the most recent ten-year period for which data was available, 2011-2020. Figure 7 shows the total crashes for all modes. Table 5 delineates the total crashes by type and severity. Appendix 4 includes the summary of the crash data.

TABLE 5 TOTAL CRASHES - ALL MODES (2011-2020)

|  |  | Crash Severity |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Crash Type |  | Fatal | Injury A | Injury B | Injury C | Property Damage Only | Total |
|  | Angle | - | 1 | 2 | 5 | 7 | 15 |
|  | Backed Into | - | - | - | - | 1 | 1 |
|  | Bicycle | - | - | 4 | - | - | 4 |
|  | Pedestrian | - | - | 2 | - | - | 2 |
|  | Rear-End | - | - | - | 1 | 3 | 4 |
|  | Side Swipe | - | - | - | - | 3 | 3 |
|  | Turning | - | - | 2 | 1 | 7 | 10 |
|  | Total | 0 | 1 | 10 | 7 | 21 | 39 |

Most (i.e., $54 \%$ ) crashes resulted in property damage only, while the remaining $46 \%$ of crashes resulted in an injury. There were no reported fatalities during the study period, but one crash did result in a suspected serious injury (Injury A). The most common crash type is angle crashes, followed by turning crashes. Table 5 summarizes the crash rates along the study corridor and at the study intersections.

TABLE 5: STUDY CORRIDOR CRASH RATES (2011-20)



Crash rates at both intersections and along the $8^{\text {th }}$ Street segment are below 1.0 crashes $/ \mathrm{mev}(\mathrm{mvm})$. The intersection of $8^{\text {th }}$ Street \& State Street had the highest number at 20 crashes over the ten-year period (i.e., two crashes per year on average). The intersection of $8^{\text {th }}$ Street \& Washington Street had 13 crashes, while the intersection of $8^{\text {th }}$ Street \& Franklin Street had 4 crashes. The remaining two crashes occurred along $8^{\text {th }}$ Street between intersections.

Figure 7 also displays the locations of the 6 pedestrian and bicycle crashes reported between 2011 and 2020; it is worth noting that additional crashes may have occurred that were not reported to the police. There were no reported fatalities, but all bicycle and pedestrian crashes resulted in an injury. In most instances, driver failure to yield or inattention contributed to the crash.

## SUMMARY OF FINDINGS

Key findings from this analysis include:
/ ACHD, the City of Boise, and the North End Neighborhood Association identify $8^{\text {th }}$ Street as a corridor in need of improvements to enhance safety and mobility for all transportation modes.
/ The Pedestrian LTS is 2 for walking along this section of $8^{\text {th }}$ Street. The PLTS is 2 at all the intersections.

- A consistent wide landscaped buffer could achieve Pedestrian LTS 1 for the segments.
/ The Bicycle LTS along $8^{\text {th }}$ Street is 3 , which is not comfortable for most adults. Crossing $8^{\text {th }}$ Street is BLTS 1 at the unsignalized intersections. The State Street intersection is BLTS 3.
- Separate space for people biking would be required to achieve Bicycle LTS 2 or better for the segment.
- Most people who bike on $8^{\text {th }}$ Street today bike in the road, but a notable portion bike on the sidewalk.
/ Both study intersections operate acceptably under current conditions in the AM and PM peak periods.
/ Parking in the vicinity of $8^{\text {th }}$ Street is primarily under-utilized during weekday conditions. Parking along $8^{\text {th }}$ Street experiences more utilization on Sunday during the religious services held at St. Michael's Episcopal Cathedral than it does during the week.
/ The intersection of $8^{\text {th }}$ Street and State Street had 20 crashes over the ten-year period. There were a total of 6 pedestrian and bicycle crashes that all resulted in an injury. No fatalities were reported in the project area over the ten-year period.


## REFERENCES

1. Ada County Highway District. ACHD Livable Streets Performance Measures. https://achdidaho.org/Documents/Projects/LivableStreetsPerformanceMeasures_ADOPTED.pdf. 23 June 2021.
2. Ada County Highway District. ACHD Roadways to Bikeways Master Plan Update. https://www.achdidaho.org/Documents/Projects/BikeMasterPlan_Final.pdf. 28 February 2018.
3. Ada County Highway District. ACHD Integrated Five Year Work Plan (2021-2025). https://www.achdidaho.org/Documents/IFYWP/2021_2025/2021_IFYWP_AnnualReport.pdf. 23 September 2021.
4. Ada County Highway District. ACHD Integrated Five Year Work Plan Draft (2022-2026). https://achd.maps.arcgis.com/apps/MapSeries/index.html?appid=c1b6fafe7b384b45918666e472f9 767b.
5. Ada County Highway District. North Boise Neighborhood Bicycle \& Pedestrian Plan.https://www.achdidaho.org/Documents/Projects/2628_Final_North_Boise_Neig__Bike__Ped_ Plan__2016_sm.pdf. 28 September 2016.
6. City of Boise. City of Boise Transportation Action Plan. https://www.cityofboise.org/media/3143/boisetap.pdf. April 2016.
7. City of Boise. City of Boise North End Plan. https://www.cityofboise.org/northendplan. May 2021.
8. Ada County Highway District. Traffic Counts. https://www.achdidaho.org/Departments/Engineering/Traffic/trafficCounts.aspx
9. Transportation Research Board. Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis, 2016.

## APPENDICES

1. Traffic Volume Data
2. Parking Data \& Summary
3. Synchro Reports
4. Crash Data \& Summary

## Appendix 1 Traffic Volume Data

| Start <br> Time | $\begin{gathered} \text { Mon } \\ \text { 02-Apr-18 } \end{gathered}$ | Tue 03-Apr-18 | Wed 04-Apr-18 | Thu 05-Apr-18 | $\begin{gathered} \text { Fri } \\ 06-A p r-18 \end{gathered}$ | Average Day | $\begin{gathered} \text { Sat } \\ \text { 07-Apr-18 } \end{gathered}$ | $\begin{gathered} \text { Sun } \\ \text { 08-Apr-18 } \end{gathered}$ |  | Week <br> Average |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 12:00 AM | * | 43 | 30 | 35 | 34 | 36 | 72 | 78 |  | $49 \square$ |  |  |
| 01:00 | * | 16 | 12 | 17 | 28 | 18 | 43 | 45 |  | 27 - |  |  |
| 02:00 | * | 10 | 19 | 16 | 17 | 16 | 37 | 53 |  | 25 - |  |  |
| 03:00 | * | 9 | 3 | 8 | 10 | 8 | 21 | 24 |  | 12 ] |  |  |
| 04:00 | * | 16 | 13 | 16 | 16 | 15 | 9 | 14 |  | 14 ] |  |  |
| 05:00 | * | 60 | 56 | 54 | 44 | 54 | 16 | 14 |  | $41 \square$ |  |  |
| 06:00 | * | 213 | 216 | 209 | 179 | 204 | 23 | 30 |  | 145 |  |  |
| 07:00 | * | 552 | 507 | 528 | 519 | 526 | 78 | 84 |  | 378 |  |  |
| 08:00 | * | 440 | 507 | 393 | 403 | 436 | 126 | 118 |  | 331 |  |  |
| 09:00 | * | 300 | 328 | 362 | 323 | 328 | 158 | 203 |  | 279 |  |  |
| 10:00 | * | 278 | 308 | 286 | 284 | 289 | 244 | 246 |  | 274 |  |  |
| 11:00 | * | 327 | 370 | 373 | 372 | 360 | 320 | 338 |  | 350 |  |  |
| 12:00 PM | * | 434 | 398 | 404 | 405 | 410 | 318 | 370 |  | 388 |  |  |
| 01:00 | 383 | 391 | 382 | 417 | 386 | 392 | 313 | 356 |  | 375 |  |  |
| 02:00 | 352 | 394 | 425 | 383 | 406 | 392 | 338 | 344 |  | 377 |  |  |
| 03:00 | 434 | 488 | 493 | 484 | 534 | 487 | 310 | 290 |  | 433 |  |  |
| 04:00 | 506 | 512 | 484 | 524 | 494 | 504 | 331 | 300 |  | 450 |  |  |
| 05:00 | 544 | 615 | 629 | 589 | 570 | 589 | 330 | 280 |  | 508 |  |  |
| 06:00 | 388 | 409 | 412 | 416 | 314 | 388 | 262 | 244 |  | 349 |  |  |
| 07:00 | 280 | 256 | 294 | 301 | 256 | 277 | 298 | 186 |  | 267 |  |  |
| 08:00 | 212 | 236 | 226 | 261 | 241 | 235 | 200 | 158 |  | 219 |  |  |
| 09:00 | 144 | 150 | 210 | 198 | 202 | 181 | 174 | 98 |  | 168 |  |  |
| 10:00 | 74 | 100 | 95 | 98 | 134 | 100 | 134 | 78 |  | 102 |  |  |
| 11:00 | 48 | 64 | 57 | 67 | 118 | 71 | 88 | 36 |  | 68 |  |  |
| Day Total | 3365 | 6313 | 6474 | 6439 | 6289 | 6316 | 4243 | 3987 |  | 5629 |  |  |
| \% Avg. WkDay | 53.3\% | 100.0\% | 102.5\% | 101.9\% | 99.6\% |  |  |  |  |  |  |  |
| \% Avg. <br> Week | 59.8\% | 112.2\% | 115.0\% | 114.4\% | 111.7\% | 112.2\% | 75.4\% | 70.8\% |  |  |  |  |
| AM Peak | - | 07:00 | 07:00 | 07:00 | 07:00 | 07:00 | 11:00 | 11:00 | - | 07:00 | - | - |
| Vol. | - | 552 | 507 | 528 | 519 | 526 | - 320 | 338 | - | 378 | - | - |
| PM Peak | 17:00 | 17:00 | 17:00 | 17:00 | 17:00 | 17:00 | 14:00 | 12:00 | - | 17:00 | - | - |
| Vol. | 544 | 615 | 629 | 589 | 570 | - 589 | - 338 | 370 | - | 508 | - | - |



Grand

## Appendix 2 Parking Data \& Summary

## PARKING UTILIZATION

| Street | Extents | Blockface | Sunday 8AM | Sunday 10AM | Weekday 8AM | Weekday 6PM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $8^{\text {th }}$ Street | State Street / <br> Washington Street | West | 88\% | 88\% | 25\% | 75\% |
|  |  | East | 86\% | 100\% | 14\% | 71\% |
|  | Washington Street / Franklin Street | West | 0\% | 88\% | 0\% | 25\% |
|  |  | East | 0\% | 14\% | 43\% | 43\% |
| State Street | $8^{\text {th }}$ Street $/ 7^{\text {th }}$ Street | North | 75\% | 0\% | 25\% | 0\% |
|  | $9^{\text {th }}$ Street $/ 8^{\text {th }}$ Street | North | 0\% | 0\% | 0\% | 29\% |
| Washington Street |  | South | 0\% | 25\% | 0\% | 25\% |
|  | $8^{\text {th }}$ Street $/ 7^{\text {th }}$ Street | North | 50\% | 67\% | 17\% | 17\% |
|  |  | South | 22\% | 22\% | 44\% | 33\% |
| Franklin Street | $9^{\text {th }}$ Street $/ 8^{\text {th }}$ Street | North | 42\% | 67\% | 42\% | 58\% |
|  |  | South | 50\% | 63\% | 38\% | 63\% |
|  | $8^{\text {th }}$ Street $/ 7^{\text {th }}$ Street | North | 70\% | 60\% | 70\% | 70\% |
|  |  | South | 86\% | 71\% | 100\% | 86\% |




20335429


$$
\frac{\text { 品 }}{2 \operatorname{tax}}
$$




govistreet

$\frac{a}{\frac{a}{2}}$


## Appendix 3 Synchro Reports






| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 2.5 |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NEL | NET | NER | SWL | SWT | SWR |  |
| Lane Configurations |  | $\uparrow$ |  |  | $\hat{}$ |  |  | * 1 |  |  |  |  |  |
| Traffic Vol, veh/h | 12 | 24 | 0 | 0 | 13 | 3 | 24 | 171 | 18 | 0 | 0 | 0 |  |
| Future Vol, veh/h | 12 | 24 | 0 | 0 | 13 | 3 | 24 | 171 | 18 | 0 | 0 | 0 |  |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Sign Control Sta | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Stop | Stop | Stop |  |
| RT Channelized |  | - | None | - | - | None | - | - | None | - |  | None |  |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |  |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - |  | 16965 | - |  |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |  |
| Peak Hour Factor | 75 | 75 | 75 | 67 | 67 | 67 | 92 | 92 | 92 | 25 | 25 | 25 |  |
| Heavy Vehicles, \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |  |
| Mvmt Flow | 16 | 32 | 0 | 0 | 19 | 4 | 26 | 186 | 20 | 0 | 0 | 0 |  |



| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 2.6 |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NEL | NET | NER | SWL | SWT | SWR |  |
| Lane Configurations |  | $\uparrow$ |  |  | $\hat{}$ |  |  | (1) |  |  |  |  |  |
| Traffic Vol, veh/h | 9 | 13 | 0 | 0 | 31 | 29 | 10 | 325 | 9 | 0 | 0 | 0 |  |
| Future Vol, veh/h | 9 | 13 | 0 | 0 | 31 | 29 | 10 | 325 | 9 | 0 | 0 | 0 |  |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Sign Control St | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Stop | Stop | Stop |  |
| RT Channelized |  | - | None | - | - | None | - | - | None | - |  | None |  |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |  |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - |  | 16965 | - |  |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |  |
| Peak Hour Factor | 66 | 66 | 66 | 74 | 74 | 74 | 88 | 88 | 88 | 25 | 25 | 25 |  |
| Heavy Vehicles, \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Mvmt Flow | 14 | 20 | 0 | 0 | 42 | 39 | 11 | 369 | 10 | 0 | 0 | 0 |  |



| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 0.7 |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NEL | NET | NER | SWL | SWT | SWR |  |
| Lane Configurations |  | $\uparrow$ |  |  | $\uparrow$ |  |  | ¢ |  |  |  |  |  |
| Traffic Vol, veh/h | 2 | 2 | 0 | 0 | 7 | 8 | 31 | 182 | 190 | 0 | 0 | 0 |  |
| Future Vol, veh/h | 2 | 2 | 0 | 0 | 7 | 8 | 31 | 182 | 190 | 0 | 0 | 0 |  |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Sign Control St | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Stop | Stop | Stop |  |
| RT Channelized |  | - | None | - | - | None | - | - | None | - |  | None |  |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |  |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - |  | 16965 | - |  |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |  |
| Peak Hour Factor | 64 | 64 | 64 | 58 | 58 | 58 | 79 | 79 | 79 | 25 | 25 | 25 |  |
| Heavy Vehicles, \% | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 2 | 0 | 0 | 0 | 0 |  |
| Mvmt Flow | 3 | 3 | 0 | 0 | 12 | 14 | 39 | 230 | 241 | 0 | 0 | 0 |  |




| Major/Minor | Minor2 | Minor1 |  |  |  |  |  |  |  | Major1 |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 437 | 377 | - | - | 365 | 359 | 0 | 0 |  |  |  |  |  |  |  |  |


| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 2.5 |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NEL | NET | NER | SWL | SWT | SWR |  |
| Lane Configurations |  | $\uparrow$ |  |  | $\hat{\beta}$ |  |  | ¢ |  |  |  |  |  |
| Traffic Vol, veh/h | 12 | 24 | 0 | 0 | 13 | 3 | 24 | 171 | 18 | 0 | 0 | 0 |  |
| Future Vol, veh/h | 12 | 24 | 0 | 0 | 13 | 3 | 24 | 171 | 18 | 0 | 0 | 0 |  |
| Conflicting Peds, \#hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Sign Control Stor | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Stop | Stop | Stop |  |
| RT Channelized | - | - | None | - | - | None | - | - | None | - |  | None |  |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |  |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - |  | 16965 | - |  |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |  |
| Peak Hour Factor | 75 | 75 | 75 | 67 | 67 | 67 | 92 | 92 | 92 | 25 | 25 | 25 |  |
| Heavy Vehicles, \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |  |
| Mvmt Flow | 16 | 32 | 0 | 0 | 19 | 4 | 26 | 186 | 20 | 0 | 0 | 0 |  |



| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 2.7 |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NEL | NET | NER | SWL | SWT | SWR |  |
| Lane Configurations |  | $\uparrow$ |  |  | $\hat{\beta}$ |  |  | ¢ |  |  |  |  |  |
| Traffic Vol, veh/h | 9 | 13 | 0 | 0 | 31 | 29 | 10 | 325 | 9 | 0 | 0 | 0 |  |
| Future Vol, veh/h | 9 | 13 | 0 | 0 | 31 | 29 | 10 | 325 | 9 | 0 | 0 | 0 |  |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Sign Control Stor | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Stop | Stop | Stop |  |
| RT Channelized | - | - | None | - | - | None | - | - | None | - |  | None |  |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |  |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - |  | 16965 | - |  |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |  |
| Peak Hour Factor | 66 | 66 | 66 | 74 | 74 | 74 | 88 | 88 | 88 | 25 | 25 | 25 |  |
| Heavy Vehicles, \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Mvmt Flow | 14 | 20 | 0 | 0 | 42 | 39 | 11 | 369 | 10 | 0 | 0 | 0 |  |



## Appendix 4 Crash Data \& Summary

Total Accidents: 20 Total Fatalities: 0
Total Units: 40 Total Injuries: 10
Total People: 56

## Report Criteria: 8th St-Boise And State St

Streets :
8th St-Boise Counties:ALL, Cities:ALL - In City And Rural, State St
Use intersection related crashes
Data From: 2020,2019,2018,2017,2016,2015,2014,2013,2012,2011,

| Year | Total |
| ---: | ---: |
| 2011 | 2 |
| 2012 | 4 |
| 2013 | 2 |
| 2014 | 2 |
| 2016 | 2 |
| 2017 | 3 |
| 2019 | 4 |
| 2020 | 1 |


| Severity | Total |
| :--- | ---: |
| A Injury Accident | 1 |
| B Injury Accident | 4 |
| C Injury Accident | 3 |
| Property Dmg Report | 12 |


| Event Name | Total |
| :--- | ---: |
| Angle | 10 |
| Head-On Turning | 10 |
| Rear-End | 6 |
| Pedestrian | 4 |
| Side Swipe Same | 4 |
| Angle Turning | 2 |
|  | 2 |
| Backed Into | 2 |
| Pedalcycle | 2 |


|  |  |
| :--- | ---: |
| Contributing Circumstance | Total |
| Failed to Obey Signal | 6 |
| Failed to Yield | 6 |
| Following Too Close | 3 |
| Improper Turn | 2 |
| Inattention | 2 |
| Improper Backing | 1 |
|  | 1 |
| Wrong Side or Wrong Way | 99 |
| None |  |


| Injury | Total |
| :--- | ---: |
| Suspected Serious Injury | 1 |
| Suspected Minor Injury | 4 |
| Possible Injury | 5 |
| No Apparent Injury | 46 |

Total Accidents: 13 Total Fatalities: 0
Total Units: 26 Total Injuries: 9
Total People: 32
Report Criteria: 8th St-Boise And Washington St

## Streets :

8th St-Boise Counties:ALL, Cities:ALL - In City And Rural, Washington St
Use intersection related crashes
Data From: 2020,2019,2018,2017,2016,2015,2014,2013,2012,2011,

| Year |  |
| ---: | ---: |
|  | Total |
| 2011 | 2 |
| 2013 | 3 |
| 2014 | 2 |
| 2015 | 1 |
| 2017 | 2 |
| 2019 | 2 |
|  | 2020 |


| Event Name | Total |
| :--- | ---: |
| Angle | 14 |
| Pedalcycle | 4 |
| Same Direction Turning | 4 |
| Head-On Turning | 2 |
| Rear-End | 2 |


| Severity | Total |
| :--- | ---: |
| B Injury Accident | 5 |
| C Injury Accident | 3 |
| Property Dmg Report | 5 |


| Injury | Total |
| :--- | ---: |
| Suspected Minor Injury | 5 |
| Possible Injury | 4 |
| No Apparent Injury | 23 |


| Circumstance | Total |
| :--- | ---: |
| Failed to Yield | 4 |
| Inattention | 3 |
| Failed to Obey Stop Sign | 2 |
| Alcohol Impaired | 1 |
| Vehic | 1 |
| Following Too Close | 1 |
| Caugh | 1 |
| Other | 1 |
| None | 64 |

Total Accidents: 4 Total Fatalities: 0
Total Units: 9 Total Injuries: 2
Total People: 11
Report Criteria: 8th St-Boise And Franklin St Streets :
8th St-Boise Counties:ALL, Cities:ALL - In City And Rural, Franklin St
Use intersection related crashes

| Data From: 2020,2019,201 |  |
| :--- | ---: |
| Year | Total |
| 2013 | 1 |
| 2015 | 1 |
| 2019 | 1 |
| 2020 | 1 |


| Severity | Total |
| :--- | ---: |
| B Injury Accident | 1 |
| C Injury Accident | 1 |
| Property Dmg Report | 2 |


| Event Name | Total |
| :--- | ---: |
| Angle | 6 |
| Pedalcycle | 2 |
|  | 1 |
| Parked Car | 1 |


| Injury | Total |
| :--- | ---: |
| Suspected Minor Injury | 1 |
| Possible Injury | 1 |
| No Apparent Injury | 9 |


| Contributing <br> Circumstance | Total |
| :--- | ---: |
| Failed to Yield | 2 |
| Inattention | 2 |
| Failed to Obey Stop Sign | 1 |
| None | 22 |

Total Accidents: 2 Total Fatalities: 0
Total Units: 4 Total Injuries: 0
Total People: 5
Report Criteria: 8th St-Boise And State St
Route ID: 02840AOH000 Measure Range: 0.258 to 0.386 Counties:ALL, Cities:ALL -
Data From: 2020,2019,2018,2017,2016,2015,2014,2013,2012,2011,
Sub-Query Filters: IsReportable - = 'Y', IntersectionRelated - IN('N'), Reportable Accidents Only

| Year | Total |
| :--- | ---: |
|  | 2012 |
| 2017 | 1 |


| Severity | Total |  |
| :--- | :--- | ---: |
| Property Dmg Report |  | 2 |


| Event Name | Total |
| :--- | ---: |
| Same Direction Turning | 2 |
| Side Swipe Same | 2 |


| Injury | Total |
| :--- | ---: |
| No Apparent Injury | 5 |


| Circumstance | Total |
| :--- | ---: |
| Failed to Maintain Lane | 1 |
| Failed to Yield | 1 |
| Inattention | 1 |
| None | 9 |



| Project Name: | 8th Street - State to Franklin |
| :--- | :--- |
| Project Number: | 23898.5 |
| Analyst: | Kittelson \& Associates |
| Date: | $08 / 12 / 2021$ |
| Filename: | H:\23\23898-CCDC 2019 On-Call Design $0005-8$ th |

KITTELSON \& ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230

Fax: (503) 273-8169

## ARTERIAL ANALYSIS

| Street Name: 8th Street |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| From: State Street | Mile Post - |  |  |  |
| To: Franklin Street | Mile Post - |  |  |  |
| Average Daily Traffic $=\quad$ 6,474 |  |  |  |  |
| Length of Segment (miles) $=\quad 0.125$ |  |  |  |  |
| Number of Accidents $=\quad 2$ |  |  |  |  |
| Time Period (years) = | 9 |  |  |  |
| Accident Rate $=$ | 2 | 1,000,000 |  | 0.75 Accidents / mvm |
|  | 365 | 9 ${ }^{\text {\| }}$ | 0.125 |  |

## INTERSECTION ANALYSIS



