

Executive Summary

NP and 1st Avenue North Corridor Development Plan

Study Background

The City of Fargo, in conjunction with the Downtown Community Partnership, has recognized the need to preserve and enhance the physical attributes of 1st Avenue North and NP Avenue through a coordinated planning effort. They understand Fargo is an exceptional city with opportunities to improve quality of life for its citizens by enhancing aesthetics and increasing the efficiency of basic infrastructure. These opportunities could also help existing businesses, reduce turnover, and encourage future development along these corridors. The Broadway street improvements and the Main Avenue/Red River bridge replacement are two examples of recent investments that are transforming the downtown into a place where citizens want to work, shop, play, and live.

An important effort in the process of transforming this vital area of the metropolitan area was the completion of the “Fargo – Moorhead Downtown Framework Plan”. Updated in 2007, the plan identifies the need to study a Fargo one-way conversion project. In the narrative describing the project it states: “The one-way pair operation of NP Avenue and 1st Ave N moves traffic efficiently, but there is more to consider than only traffic operations. Directness of travel, safety, bicycle and pedestrian movements, and economic vitality are also part of the equation”.

The impetus for this statement stems from an ongoing trend that emerged in the 1990s regarding the conversion of downtown one-way pairs (instituted in the 1950s) back to two-way operation. While the one-way pairs did not necessarily suffer poor operations or experience a decrease in traffic volume, two-way streets were thought to increase the appeal of an area. The conversion caused a reduction of speed limits that better suited pedestrians and gave the appearance of a busier street. Some jurisdictions noticed better retail sales, increased property values, a more healthy business climate, and better neighborhoods in general. As a result, the City of Fargo selected Alfred Benesch & Company (formerly HWS Consulting Group) to conduct a study of 1st Avenue North and NP Avenue to determine the best strategies to encourage development and multimodal transportation on these important corridors. This project involves transportation planning, traffic engineering, preliminary engineering and design, streetscape concept development, economic analysis, and public involvement.

Study Review Committee

The Study Review Committee is comprised of the following members:

- City of Fargo: Mark Bittner (Engineering), Kim Citrowske (Planning), Jeremy Gorden (Engineering), Bob Stein (Planning), Mike Williams (City Commission)
- City of Moorhead: Bob Zimmerman
- Fargo Business Community: Dave Anderson (formerly of the Downtown Community Partnership), Mike Hahn (DCP), Randy Thorson
- F-M Metro Area Transit: Julie Bommelman
- Metro COG: Peggy Harter, Justin Kristan
- North Dakota State University: Bruce Frantz, Rob Lynch
- North Dakota Department of Transportation: Bob Walton

Study Team

The study team is comprised of the following members (each firm's role is noted):

- Alfred Benesch & Company (formerly HWS Consulting Group), lead consultant: public participation, roadway concepts, traffic analysis
- Rich Caplan & Associates: economic analysis
- Wilbur Smith Associates: transit analysis
- LA Group: streetscape concepts, local contact

NP and 1st Avenue North Corridor Development Plan Mission Statement

At the beginning of this study, the Study Review Committee and the study team formulated a mission statement to guide this study:

“This study will recommend a plan that accommodates all travelers: pedestrians, bicyclists, transit users, and drivers. The plan's design and safety features will improve the physical health of individuals, the environmental quality of the community, and further increase opportunities for development.”

The mission statement is the yardstick with which to measure the fitness of each alternative to become the preferred alternative. Through Study Review Committee meetings and the public input process, four alternatives were developed (including the No Build option):

- **No Build.** Taking no action; leaving the corridors as they are today: one-way, with three lanes. 1st Avenue North would remain three lanes westbound and NP Avenue would remain three lanes eastbound.
- **Alternative 1: 2+1.** Leaving two lanes in the direction of the existing one-way operations and using the third lane for two-way traffic. 1st Avenue North would be two lanes westbound and one lane eastbound. NP Avenue would be two lanes eastbound and one lane westbound. Parallel parking will be provided on both sides on NP Avenue and 1st Avenue North.

- **Alternative 2: Two-way, Two-lane.** This alternative features two-way traffic, like Alternative 1, but the existing three lane roadways would be converted to one lane in each direction with a center two-way left-turn lane. In this alternative, both NP Avenue and 1st Avenue North would have the same configuration: one lane westbound, one lane eastbound, and a center turn lane. Parallel parking will be provided on both sides on NP Avenue and 1st Avenue North.
- **Alternative 3: One-way, Two-lane.** Leaving the existing one-way operations but reducing the three lanes to two lanes. 1st Avenue North would be two lanes westbound and NP Avenue would be two lanes eastbound. Parallel parking will be provided on both sides on NP Avenue and 1st Avenue North.

Each alternative was analyzed with respect to the tenets identified in the mission statement. The following briefly describes the alternatives in relation to the mission statement.

Accommodation of all travelers

Accommodation of Pedestrians

There is no doubt that one-way roadways efficiently move motorized vehicular traffic. The elimination of conflicting turning movements enables unparalleled progression of traffic due to the coordinability of the traffic signals. However, a result of such well-timed signals is increased vehicle speeds. Such speeds can be dangerous to pedestrians and cyclists attempting to use the roadway facilities. Two-way traffic has the effect of slowing overall vehicle speeds due to drivers simply seeing cars heading in the opposite direction, as well as losing the level of progression of a one-way facility. Granted, pedestrians crossing two-way traffic must negotiate traffic flow from two directions instead of one (on a one-way street) but if the number of lanes is kept the same, there will be the same number of conflict points with vehicles. In the unfortunate event of pedestrian-involved crash, the reduced speed of a two-way street can translate to increased survivability of pedestrians.

Each of the alternatives feature pedestrian amenities such as intersection and midblock curb extensions to provide better crossing locations for pedestrians.

Accommodation of Bicyclists

Each alternative features a bike lane on both NP Avenue and 1st Avenue North. Due to roadway width restrictions, there can only be one bike lane on each of NP Avenue and 1st Avenue North. To have a shared bike lane or a striped bike lane led to interesting discussions with the cycling community in Fargo-Moorhead. In order to be consistent with bicycle facilities elsewhere in Fargo, it was determined that separate, striped bike lanes will be included in this study.

Each alternative includes the addition of a striped bike lane to both NP Avenue and 1st Avenue North. In Alternative 1, the bike lanes are on the single lane of the 2+1 (an eastbound bike lane on the south side of 1st Avenue North and a westbound bike lane on the north side of NP Avenue). The bike lane was placed there to enable the cyclists to only have to maneuver through one lane of traffic (in the same direction) to make a left turn and to keep cyclists on the opposite side of the street from transit buses. Metro Area Transit, the bus agency in Fargo-Moorhead, has determined that a conversion to two-way traffic would not alter their existing route structure; buses will be on the two-lane side of 2+1. Additionally, having the bike lane on the single lane side of the 2+1 enables bikes to make right turns to access the block between NP Avenue and 1st Avenue North.

In Alternative 2, the bike lanes will be in the same location as Alternative 1: an eastbound bike lane on the south side of 1st Avenue North and a westbound bike lane on the north side of NP Avenue. As discussed under Alternative 1, the bike lane on this side keeps bikes and buses on opposite sides of the street and allows for right turns to access the block between NP Avenue and 1st Avenue North.

Alternative 3 features bike lanes on the right side of each one-way street, in the prevailing direction of traffic: a westbound bike lane on the north side of 1st Avenue North and an eastbound bike lane on the south side of NP Avenue. The bike lanes were placed on the right side of the one-way pairs to provide a smooth transition at the eastern and western ends of the project. If placed on the left side of the one-way streets, the bike lanes would terminate against oncoming traffic at the eastern and western ends of the project. The right-side bike lanes provide the opportunity for the rider continue with the flow of traffic.

With the addition of the bike lane, each of the improvement alternatives provides an opportunity for the bicyclist to use the bike lane a mode of transportation.

Accommodation of Transit Users

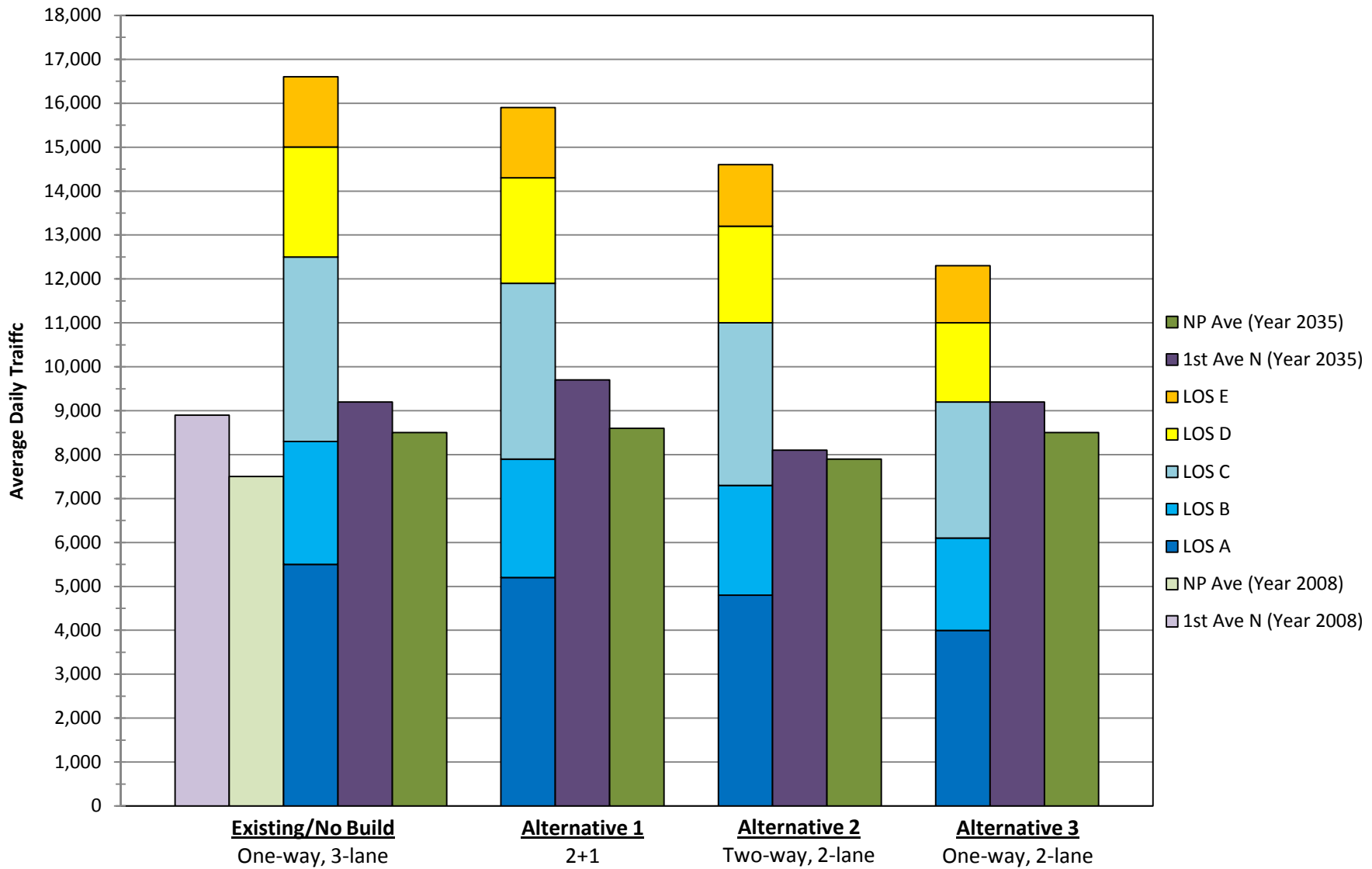
MAT Bus has determined that a two-way conversion will not alter their existing bus routes in downtown Fargo, as previously stated. Since transit users are typically also pedestrian or bicycle travelers, the two-way alternatives, Alternatives 1 and 2 would better accommodate them, as stated previously. However, Alternative 1 has a clear advantage over Alternative 2 because the 2+1 provides a travel lane to allow vehicles to legally pass around a bus stopping to embark/debark riders. Alternative 2, having only one travel lane in each direction, would mean that a bus stopping would temporarily halt the flow of traffic in that lane.

Alternative 1 accommodates transit users better than the other alternatives.

Accommodation of Drivers

None of the alternatives can move traffic as efficiently as the existing, one-way, three-lane system. In fact, the existing configuration is underutilized. Each of the corridors has a well-timed coordinated signal system that provides excess capacity resulting in very good levels of service. Each alternative proposes a reduction in capacity on NP Avenue and 1st Avenue North; however, reducing the capacity of those streets only slightly worsens the overall traffic operation. Capacity of a roadway section is based on studies and research completed by the Transportation Research Board (TRB) and the National Cooperative Highway Research Program (NCHRP). **Table E-1** provides a summary of the existing capacity for a 3-lane one-way roadway section compared the proposed alternatives. As illustrated in the table, each of the alternatives, including the no build option, are expected to operate with a Level of Service C or better based on the amount of available capacity for the roadway section type. **Chapter 2**, the Alternatives Development and Analysis section, provides a summary of the detailed capacity analysis of the corridors during the peak commuter traffic periods. The capacity analyses revealed that each of the study intersections, in each alternative, are expected to operate with a Level of Service C or better during the peak morning and afternoon commuter periods.

Table E-1. Capacity Comparison



Source: Alfred Benesch & Company, calculations from NCHRP 365, Chapter 10.
 Capacities based on signalization set to high priority with high turns, parking on both sides.
 Existing and future ADT volumes provided by Metro COG.

As opposed to comparing intangible concepts like level of service and delay, perhaps a more fruitful basis of comparison of the alternatives would be travel time, i.e., the length of time it would take a driver to go from 2nd Street to University Drive (or vice versa) on each of the arterials: 1st Avenue North, NP Avenue, and Main Avenue. Using SimTraffic simulation software, the future year PM peak hour scenarios were simulated in order to compare arterial travel time. The result is that, for any alternative, there is no significant change in travel time. The travel times computed in SimTraffic for each arterial under the future No Build conditions are approximately 4 minutes; the travel times for any alternative will not increase (i.e., worsen) more than one minute. There will be slight increases in travel times on Main Avenue due to traffic volumes shifting south to utilize Main Avenue, but again, the increase in travel time is slight, approximately 30 seconds.

Any disadvantage in increased delay and travel time for converting NP Avenue and 1st Avenue North to two-way traffic is made up by decreasing the amount of indirect travel experienced in a one-way system. For example, consider destination of the parking lot on the south side of NP Avenue between Broadway and 8th Street North. If one is traveling from south of downtown on 6th Street South and wishes to park in that parking lot, there are two routes today: first, to take Main Avenue to 8th Street to NP Avenue, or second, to take Broadway to 1st Avenue North to Roberts Street to NP Avenue. In either case, there are at least two blocks of indirect travel. If NP Avenue was two-way, however, the shortest available trip is possible: Broadway to NP Avenue. Two-way traffic on NP Avenue and 1st Avenue North is more advantageous to drivers than a one-way system.

Comparing the two-way alternatives, Alternative 1 is much better than Alternative 2. Keeping two lanes of the existing three lanes in either direction enable the prevailing flow to remain on NP Avenue and 1st Avenue North. While the goals of this study are not exclusive to traffic operations, a consideration of traffic operations into the whole study would suggest that Alternative 1 is the best alternative for drivers.

In terms of accommodating all travelers, each alternative has its own strengths and weaknesses. Overall, the alternative with the potential to best accommodate all travelers is Alternative 1, the 2+1.

Freight Deliveries

Alfred Benesch & Company hosted a Freight Workshop May 25, 2010. Due to the lack of turn out, the study teamed reached to the members willing to meet in person. From the meetings with business owners, there were no freight issues that could not be resolved with a potential solution. A summary of the freight meetings will be located in the appendix of the study.

Design and Safety Features

Improving the Physical Health of Individuals

Creating more walkable, complete streets, which permits safe movement of all travelers, can increase the physical health of individuals. Features such as improved sidewalks and bike lanes allow people to not have to rely so heavily on a personally-owned vehicle for transportation. Slowing speeds of automobiles can reduce the severity of crashes, particularly automobile-pedestrian or automobile-bicycle crashes.

Alternatives 1 and 2 can better improve the physical health of individuals by providing a reduction of travel speeds along NP Avenue and 1st Avenue North.

Improving the Environmental Quality of the Community

More green space, especially in a downtown location, can greatly improve the environmental quality of a community. Generally speaking, streetscaping features would be part of the final design of any alternative. Particularly with the two-way alternatives, changing the geometry of the NP Avenue & Roberts Street/8th Street intersection allows for enlargement of Ole Tangen Triangle Park.

Each of the alternatives provide an improvement to the environmental quality of the community when compared the existing conditions.

Further Increasing Opportunities for Development

As shown in the corridor economics analysis, two-way traffic will provide a significant, positive economic impact to the Downtown Fargo area that will provide for more opportunities for development compared to the existing configuration. This is the main factor that differentiates the two-way alternatives from the one-way alternatives.

Economic Analysis

Richard Caplan and Associates provided a very detailed study of the economic analysis. The analysis included review of other cities across the United States that have recently converted from one way streets to two way streets. Cities included in the analysis were Des Moines, IA, Fort Collins, CO, Lafayette, IN, Vancouver, WA, and Austin, TX. The economic analysis provided a comparison of the two way streets versus the one way streets and the benefits that can be provided. The increase in revenue for the two way traffic is estimated to be about \$15.7 million over 10 years and \$92.9 million over 25 years. The one-way alternative is estimated to provide an increase of \$5.7 million over 10 years and \$33.5 million of 25 years.

Consultant's Recommendation

The traffic operations analysis of each alternative indicates that each alternative will operate with acceptable levels of service. There is no doubt there will be an increase in congestion through the downtown area when compared to the existing condition. As stated before, the purpose of this study was to assess the best alternative to improve access to all modes of travel and encourage development growth. The results of the engineering analyses in the study indicate that one specific alternative does not separate itself from the other two alternatives. The ultimate separating factor is the economic benefit that will develop with the addition of two-way access to each of these corridors.

It is the recommendation of the study team that Alternative 1, the 2+1 configuration, be carried forward for more detailed analysis as the preferred alternative.

Questions Requiring Additional Examination

The study has provided answers to many of the high level planning questions but several specific questions remain unanswered. Typically, a corridor study provides the level of effort to determine possible alternatives to study and how they will compare with each other. The areas of focus for the project have been traffic operation, pedestrian access, bicycle access, economic analysis, and freight access. Given the unique nature of this study and the ramifications of converting a roadway system from one-way to two-way traffic, it is desirable that the following questions be examined and resolved as part of the corridor study:

1. *Disruption to Businesses During Construction*

The conversion to two-way traffic could be accomplished by modifying the traffic signals, pavement marking, and signage, coupled with a mill and overlay and minimal curb work for the curb extensions. However, the underground utilities downtown are in need of repair and portions of the streets will be fully reconstructed. This underground utility work will happen regardless of the roadway configuration. The level of streetscaping will affect amount of disruption to business. Construction concerns: how will construction be phased? How will business be impacted? How will deliveries be made? How much of the existing sidewalk will be replaced?

2. *Freight and Delivery*

At the public meeting, members of the public made some comments about how two-way traffic would affect freight operations. The study team met with businesses (identified by the City) that receive freight on 1st Avenue North or NP Avenue. From the meetings with business owners, there were no freight issues that could not be resolved with a potential solution. To expand the discussion of freight delivery impact, should the delivery companies be contacted directly to obtain their input? Can the freight be accommodated with additional loading zones, revised alleys, and modified freight delivery schedules?

3. *Snow Clearance*

Currently, snow is plowed to the center lane for immediate pick-up or plowed to the right lane for later pick-up. Given a conversion to two-way streets, how can traffic be accommodated during heavy snow events?

4. *Two-way Traffic on NP Avenue at University Drive*

Some members of the Study Review Committee are concerned with the safety of the westbound left turn at NP Avenue & University Drive, specifically because the intersection is stop-controlled. Should the westbound left turn be restricted during the peak hours or all day or not at all? Should NP between University and 12th be one-way during peak hours or all day? What is the available intersection sight distance?

5. *Bike Lanes vs. Shared Lanes*

Some public comments questioned the proposal of the bike lane as opposed to a shared lane. The rationale behind the decision to show bike lanes was based on public input from the cyclist user group at the second public meeting. The avid cyclist may prefer a shared lane but the leisure cyclist would prefer a bike lane. Would providing a shared lane only allow for the removal of the bike lane to increase the lane

width of the travel lanes? One reason to use shared lanes would be to maximize the width of the lane without having to reduce sidewalk widths, in an effort to make the lanes more accommodating for the busses and large trucks to make turning movements. Regardless of which lane configuration is ultimately decided upon, an education piece to the public will be necessary to make sure people understand how the lanes are to be used.

6. Downtown Circulator

All of the proposed alternatives would slightly decrease on-street parking. If MAT Bus starts a downtown circulator route, how can downtown employees be encouraged to use transit to/from the fringe parking lots?

7. Streetscaping

The Study Review Committee has yet to decide what kind of streetscaping and to what extent. The general consensus is to extend the theme of Broadway but there are many options available. To help identify the level of disruption to businesses, the exact amount of streetscaping will need to be determined: will the sidewalks be replaced entirely or just in areas of repair, how will drainage be affected, etc.

8. Left turns onto Broadway and onto University Drive

More traffic analysis will need to be completed to assess the impact (and subsequent mitigation) of left turns onto Broadway from the single lane of the 2+1 on each of 1st and NP. Additionally, the impacts of the NP & University intersection will need to be addressed. Should railroad preemption be used at the intersections along NP Avenue to help traffic flow during railroad crossing blockage?

9. Lane Widths

MAT Bus drivers have expressed concerns about 11ft lanes and being able to pass stopped freight trucks. The 11ft lanes will have to remain one block either side of Broadway (54ft section) but the roadway section could be a little wider outside of that zone, both east and west of Broadway. Are there areas located along the corridor where the lanes can be widened? The roadway widths to date have been examined at a study level. No topographic survey has been completed to date. Survey and preliminary design will help answer the question the roadway widths and how can they be accommodated.

These questions need to be addressed prior to final selection of the preferred alternative by the Study Review Committee. These questions can be answered with more detailed analysis and preliminary design.