



TO: Mayor Shaun Sipma
Members of the City Council

FROM: Lance Meyer, P.E., City Engineer

DATE: June 17, 2019

SUBJECT: **36TH AVENUE NW EAST FRONTAGE ROAD MEDIAN RECOMMENDATION
(4071)**

I. RECOMMENDED ACTION

1. Recommend council leave in place the east frontage road median.

II. DEPARTMENT CONTACT PERSONS

Lance Meyer, City Engineer	701-857-4100
Stephen Joersz, Traffic Engineer	701-857-4100

III. DESCRIPTION

A. Background

In 2015, the engineering department initiated the design of 36th Avenue NW from Broadway to 16th St NW. The City hired Moore Engineering as its consulting engineer.

The design includes a new traffic signal at the intersection of Broadway and 36th Avenue NW to provide the necessary intersection capacity. The design also includes installing concrete medians across both the east and west Broadway frontage roads to provide for capacity and safety improvements. All improvements were recommendations within the project's traffic study.

B. Proposed Project

The owner of Northgate 4th Addition, Northgate on Broadway LLC, has requested the council allow the removal of the concrete median across the east frontage road on 36th Avenue NW. Council requested that staff perform a traffic study at that intersection to determine the warrants of the median and potential impacts to the community.

Staff performed traffic counts in early May to update the existing count data for the area. This information was then fed into the traffic modeling software simtraffic.

In addition to new traffic count data, city staff relied upon the following data sources and engineering design references:

- Traffic Operations Study Northside 4th Addition, December 2013 (development's traffic study)
- Traffic Impact Analysis – 36th Ave NW/Broadway Intersection (city project traffic study)
- Current NDDOT Roadway Classifications

- 5-year crash analysis
- Northside 4th Addition Plat
- Institute of Transportation Engineer's (ITE) Trip Generation Manual
- Development's proposed land uses
- NDDOT Design Manual
- Transportation Research Board Access Management Manual, 2nd Addition
- AASHTO Green Book
- Safe Access is Good for Business, FHWA Publication
- NDDOT Traffic Operations Division review of the median

Our traffic study reviewed three different scenarios:

1. Existing Conditions Analysis (what is happening today)
2. Development with Existing Median Remaining In-Place
3. Development with Existing Median Removed

In summary of the full report, the level of service or measure of traffic delay, remained relatively the same in all three scenarios. Thus, scenarios 1 and 2 above can be treated relatively the same regarding delay and safety. However, when comparing scenarios 1 and 2 versus scenario 3, the intersection safety comparisons are vastly different.

Wherever possible, engineers attempt to reduce conflict points when designing intersections. When the number of conflicts cannot be reduced, the severity of conflict is attempted to be reduced.

In scenarios 1 and 2 with the median in place, the crossing conflicts (T-bone crashes) are removed at the frontage road/36th Avenue intersection. They are replaced with merging/diverging conflicts (sideswipe crashes).

The westbound left turn lane at the traffic signal extends past the east frontage road. Because of this, the function area of the Broadway/36th Avenue intersection extends past the functional area of the east frontage road/36th Avenue. Thus, you have an intersection within an intersection.

Design guidelines state that when this occurs, the appropriate design is to construct a median to limit traffic operations of the conflicting intersection to right-in right-out (page 332 of the Transportation Research Board Access Management Manual, 2nd Edition).

Removing the median across the east frontage road results in a 50% increase of crossing conflict points and a 78% increase in total conflict points. Thus, removing the median has a significantly negative safety impact on operations of both intersections. All civil engineering design guides are signifying the removal of the median is not a good solution regarding safety. In consulting the NDDOT, they strongly suggest leaving the median in place.

C. Consultant Selection/Peer Review

Staff performed the traffic study in house, as the city traffic engineer is a registered professional engineer.

However, staff did reach out to the NDDOT on this matter to obtain input from their traffic operations group. Staff felt the NDDOT would want input since the impacts of the median removal may effect highway operations.

The NDDOT traffic operations group concur with city staff that the median should remain in place. Installing an access east of the traffic signal's turn lanes and tapers would be best. Their other comments are cited in the full report.

IV. IMPACT:

A. Strategic Impact:

The City maintains an arterial street system made up of arterials, minor arterials, major and minor collector roadways. Emphasis is placed onto these roadways to ensure that the maximum traffic capacity is realized with any improvement. Due to the traffic volumes that the arterial street system carries, traffic safety is the upmost concern for city staff. The east frontage road is classified as a minor collector, which intersects with 36th Avenue, a major collector, which then intersects with Broadway, a principal arterial. This all occurs in a distance of less than 100 feet.

Ensuring that these roadways function with their classified intent all while providing a way to safely move people and goods, is a strategic consideration for the City.

B. Service/Delivery Impact:

As stated above, removal of the median across the east frontage road on 36th Avenue will have a negative safety impact to the corridor.

C. Fiscal Impact:

The City has spent \$21,168 to install the median and related improvements on 36th Avenue.

In addition, the developer still has not installed the top lift of pavement on the east frontage road with an approximate cost of \$15,000. Some curb & gutter has become damaged due to the lack of pavement and may have to be replaced. If the paving is not completed soon, the city will be forced to pave the frontage road before it falls into disrepair.

V. ALTERNATIVES

Two alternatives are available to the Council:

1. Leave the median in place (recommended)
2. Remove the entire median at the developer's expense (not recommended)

VI. TIME CONSTRAINTS

The developer is requesting a timely decision on this matter.

VII. LIST OF ATTACHMENTS

- A. Engineering Report: 36th Avenue NW Median Removal Study