

The Aurora Highlands North Area, Area A Traffic Impact Study

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Introduction

The Aurora Highlands is a 2,550-acre development located between Denver International Airport (DEN) and Interstate 70 (I-70). The Aurora Highland North (TAH North) phase includes the majority of the planning areas between 42nd Avenue and 28th Avenue. TAH North has been split into three sub-areas; Area A, Area B and Area C.

The purpose of this study is to assess the effects the development of the TAH North, Area A will have on the surrounding transportation system.

The report is organized as follows:

- **Introduction** – Describes the purpose and intent of this study.
- **Area Conditions** – Describes the study area land uses as well as the existing and future roadway network.
- **Proposed Development** – Describes the proposed development and the location.
- **Projected Traffic** – Identifies the expected number of daily and peak hour trips that will be generated by the Aurora Highlands, North Area, Area A development. The expected external trip distribution is also shown.
- **Traffic Analysis** – Will analyze horizon year (2040) conditions with and without the project.
- **Findings and Conclusions** – Identifies any deficiencies in the study area roadway network with or without the project and mitigation measures that will alleviate any identified deficiencies.
- **Recommendations** – Provides a summary of the study findings.

Figure 1. Vicinity Map

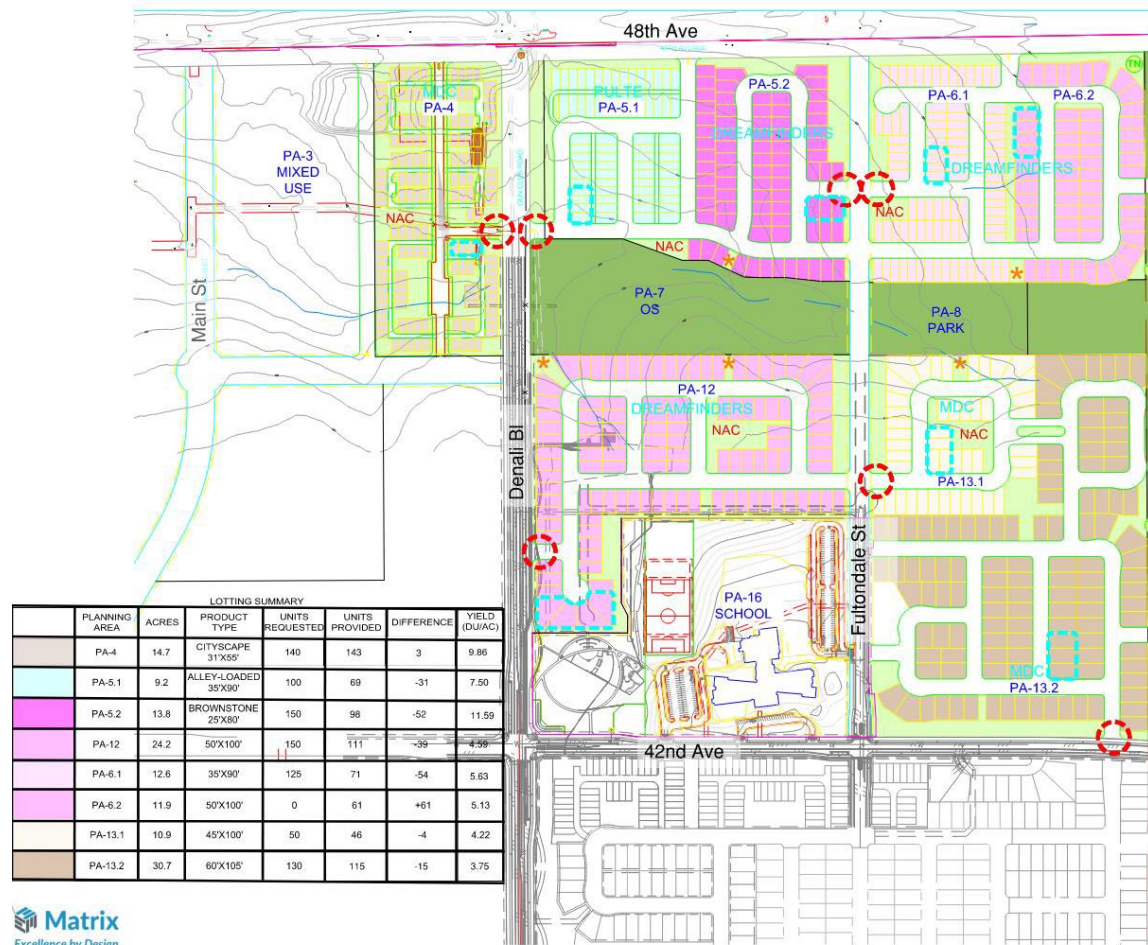


Proposed Development

The Aurora Highlands North Area will consist of 2,043 single family detached homes. Area A consists of 714 single family detached dwelling units.

Figure 2 illustrates The Aurora Highlands North site plan for Area A.

Figure 2. The Aurora Highlands North Area Site Plan



Area Conditions

This section describes the existing conditions and the planned level of improvements adjacent to the Aurora Highlands North Area, Area A development.

Study Area Land Use

The Aurora Highlands, North Area, Area A will be constructed on vacant land and is bound on the west by E-470, on the south by the future The Aurora Highlands Parkway, on the east by the future Powhaton Road and the north by 48th Avenue. This area of Aurora is mostly vacant land but is growing rapidly and includes other developments such as other areas of The Aurora Highlands, Windler, and ATEC.

Site Accessibility

The existing roadway system is largely non-existent in this area of Aurora. However, the future roadway network consists of the following transportation facilities:

E-470 is a north-south four-lane tollway that runs along The Aurora Highlands' west side. A grade-separated interchange is provided at 56th Avenue. An interchange is planned at 48th Avenue and the bridge over E-470 at 48th Avenue is in place (the roadway connecting to it is not yet built, nor are the ramps).

26th Avenue is a minor two-lane roadway facility along the south side of The Aurora Highlands spanning E-470 (no interchange) and extending to Picadilly Road to the west and Watkins Road to the east. The Northeast Area Transportation Study (NEATS) recommends this road as a four-lane minor arterial in the 2040 plan.

Powhaton Road is a two-lane road that will ultimately define the east side of the residential development within The Aurora Highlands. Currently, this road extends south from 26th Avenue as a two-lane facility, crossing the Union Pacific (UP) Railroad at-grade, spanning I-70, and extending south to Jewell Avenue. This road is anticipated to be a 6-lane major arterial per NEATS recommendations and will be renamed Aerotropolis Parkway.

48th Avenue will be constructed on the north side of The Aurora Highlands prior to issuance of any Certificate of Occupancy for lots within TAH North. 48th Avenue will ultimately be a 6-lane major arterial and have a grade-separate interchange with E-470. The south half of this arterial will be built in conjunction with The Aurora Highlands by ARTA (Aerotropolis Regional Transportation Authority). The north half of 48th Avenue will be constructed by the Windler development to the north. The timing of individual developments is unclear, so it is difficult to determine when 48th Avenue will need to be constructed beyond each half-road section. It is assumed that if only the north or south half of 48th Avenue is constructed first, that it would serve temporarily as a 3-lane collector road with one lane in each direction and a center turn lane. In this scenario, the daily threshold for the half roadway section would be 12,000 vehicles-per-day. Daily traffic from Area A alone would not require more than the south half three-lane collector road section on its own.

Denali Boulevard currently exists as a two-lane, north-south roadway extending from 56th Avenue south to The Aurora Highlands Parkway terminating in a roundabout intersection. Denali Boulevard will ultimately be a four-lane minor arterial road.

The Aurora Highlands Parkway currently exists as an east-west four-lane to six-lane facility between Main Street and 38th Parkway. It has a large median east of Denali Boulevard containing a creek and recreational trail. The Aurora Highlands Parkway will ultimately be a four-lane minor arterial.

38th Parkway currently exists as a three-lane (striped median/center turn lane) roadway between The Aurora Highlands Parkway and Reserve Loop (western connection). It will ultimately connect to Powhaton Road as a three-lane collector road.

No existing conditions analysis will be completed for this study as the land is mostly vacant at this time and has no traffic other than construction traffic. No new traffic counts were conducted for this study. This study builds on the traffic volumes presented *The Aurora Highlands Traffic Impact Study*, dated

August 2019 which looked at the entirety of The Aurora Highlands development. The studies of surrounding developments are as follows:

- The Northeast Area Transportation Study Refresh (NEATS), 2018
- The Aurora Highlands Transportation Impact Study; August 2019
- ATEC Traffic Impact Analysis; November 2019
- Windler Master Plan Master Traffic Study; October 2021
- The Aurora Highlands Filings 4, Filing 5 and Filing 8 - Planning Areas 18 and 19, April 2020
- The Aurora Highlands Filing Number 1, and 2 Future Filing East of Filing No.2 – Planning Areas 21 and 38, July 2019
- Powhaton Road Alignment Study, October 2022

Projected Development Traffic

This section documents how much traffic The Aurora Highlands, North Area, Area A development is expected to generate and how the external site trips will be distributed on the adjacent roadway network.

Trip Generation

The vehicle trips associated with The Aurora Highlands, North Area, Area A were calculated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*. This methodology consists of choosing an independent variable for the land use for a particular time of day. The independent variable correlates to the variation in trip ends and is related to the land use. The value of the independent variable is either multiplied by a weighted average or used in a regression equation to calculate the trips generated by the land use. The *ITE Trip Generation Manual* provides guidance on when to use the weighted average versus the regression equation. In most cases, the regression equations are recommended when there are adequate study data points.

Table 1 shows the trips that are expected to be generated by The Aurora Highlands, North Area, Area A at build out.

Table 1. TAH North Area A Trip Generation

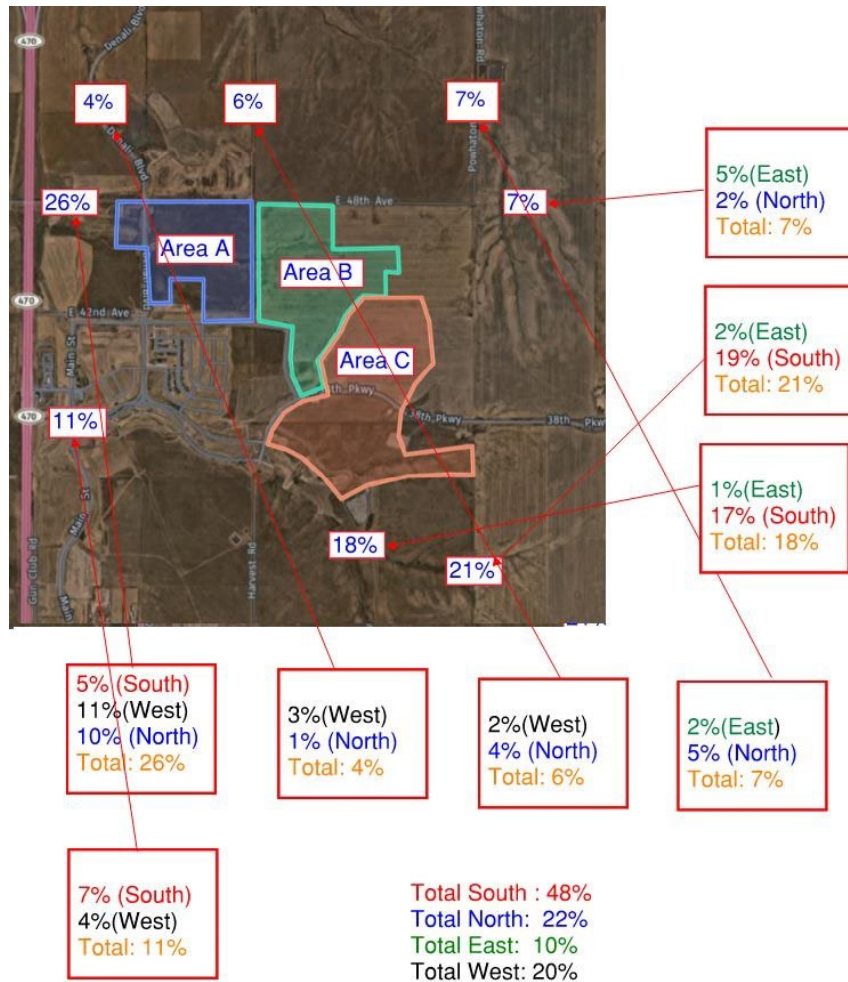
| The Aurora Highlands - Area A | | | | | | | | | | | | |
|-------------------------------|--------------------------------------|------------|-----------|-------------|-------------|-------------|--------------|------------|------------|--------------|------------|------------|
| Parcel | ITE Code and Land Use | Size | Units | Weekday | | | AM Peak Hour | | | PM Peak Hour | | |
| | | | | Total | Entering | Exiting | Total | Entering | Exiting | Total | Entering | Exiting |
| PA-4 | 210 - Single-Family Detached Housing | 143 | DU | 1402 | 701 | 701 | 103 | 27 | 76 | 139 | 88 | 51 |
| PA-5.1 | 210 - Single-Family Detached Housing | 69 | DU | 718 | 359 | 359 | 53 | 14 | 39 | 70 | 44 | 26 |
| PA-5.2 | 210 - Single-Family Detached Housing | 98 | DU | 990 | 495 | 495 | 73 | 19 | 54 | 97 | 61 | 36 |
| PA-12 | 210 - Single-Family Detached Housing | 111 | DU | 1110 | 555 | 555 | 82 | 21 | 61 | 110 | 69 | 41 |
| PA-6.1 | 210 - Single-Family Detached Housing | 71 | DU | 736 | 368 | 368 | 54 | 14 | 40 | 72 | 45 | 27 |
| PA-6.2 | 210 - Single-Family Detached Housing | 61 | DU | 640 | 320 | 320 | 47 | 12 | 35 | 62 | 39 | 23 |
| PA-13.1 | 210 - Single-Family Detached Housing | 46 | DU | 494 | 247 | 247 | 37 | 10 | 27 | 48 | 30 | 18 |
| PA-13.2 | 210 - Single-Family Detached Housing | 115 | DU | 1148 | 574 | 574 | 85 | 22 | 63 | 113 | 71 | 42 |
| Totals | | 714 | DU | 7238 | 3619 | 3619 | 534 | 139 | 395 | 711 | 447 | 264 |

No trip reduction is accounted for because there is only one land-use.

Trip Distribution

Figure 3 illustrates the expected external distribution of travel for the site-generated trips. This distribution was determined by reviewing the general distribution of trips on the roadway network in 2019 - *The Aurora Highlands Traffic Impact Study (Derived from NEATS 2018)* ,

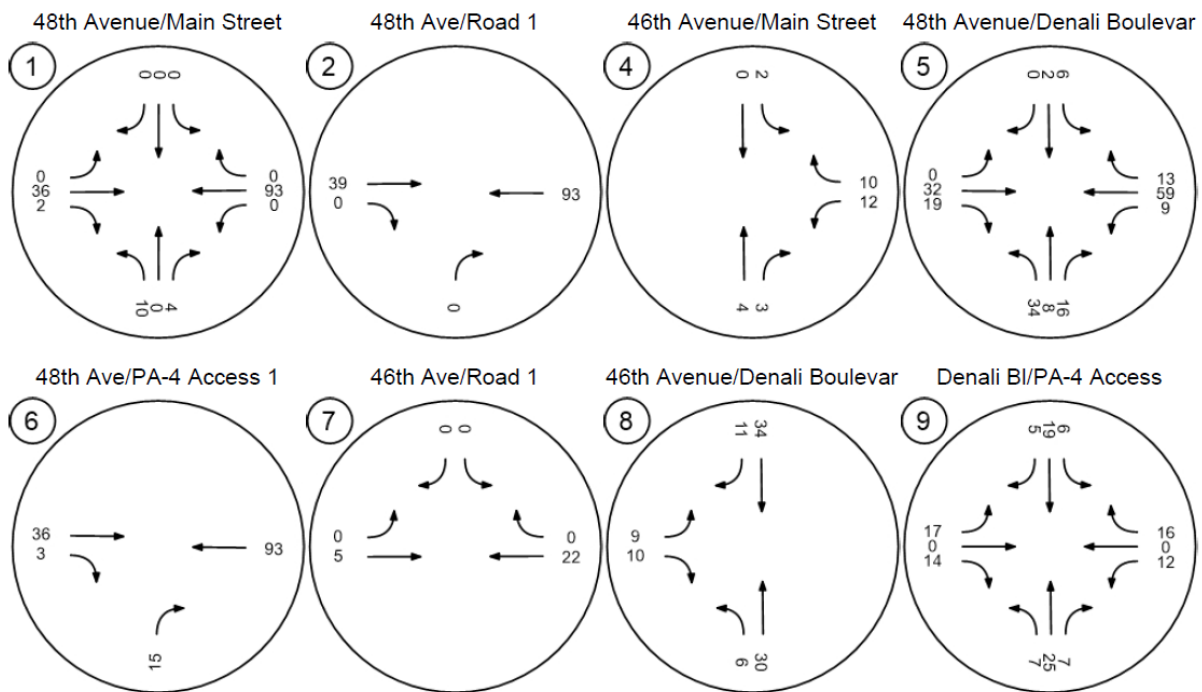
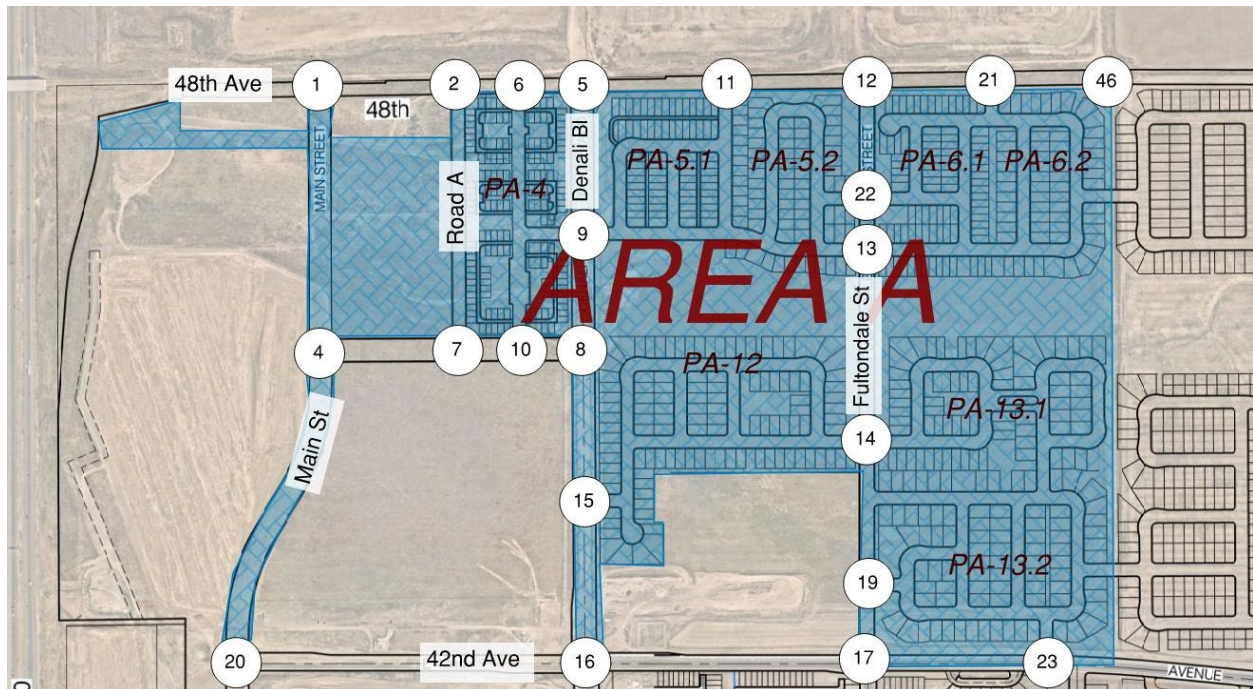
Figure 3. Trip Distribution



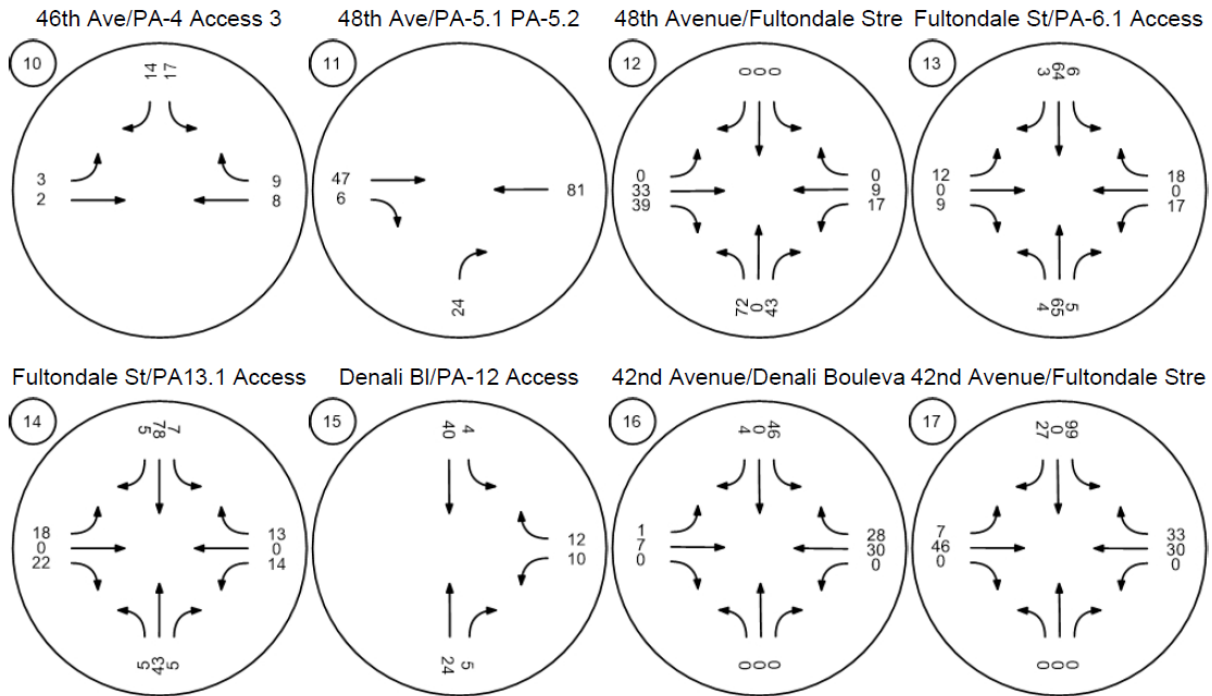
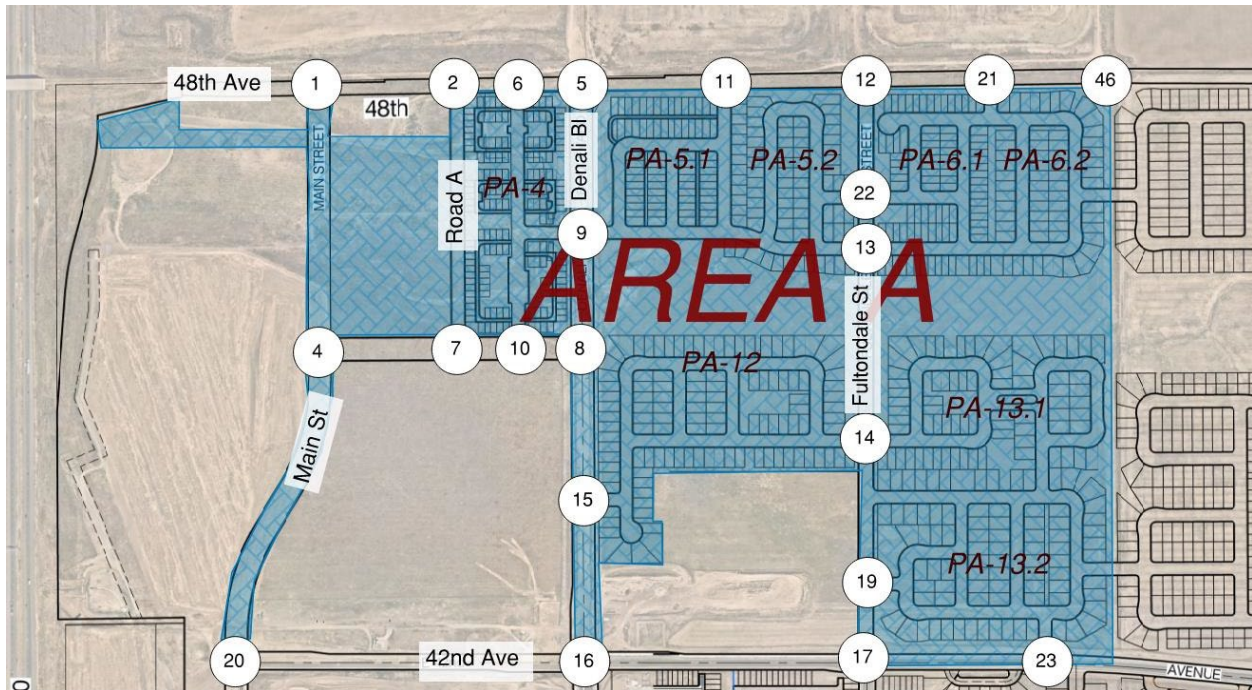
The overall distribution based on the previous study is 48% of the trips will travel to/from the south; 20% of the trips will travel to/from the west; 22% of the trips will travel to/from the north and 10% of the trips will travel to/from the east. Recently, a new connection from Powhatan Road (Aerotropolis Parkway) to Jackson Gap Way was proposed that would ultimately affect the traffic on 48th Avenue, Powhatan Road, and Harvest Road. After a careful review of this new alignment and its impact on the adjacent road we concluded that it would have a minimal impact on our site trips due to the distance between the new alignment and the project. However, to address this small impact we adjusted the trip distribution on Denali Boulevard, Harvest Road and Powhatan Road in a way that 2 percent of the trips that were supposed to be made through Denali Boulevard and Harvest Road are now shifted to this new alignment. The overall distribution remained unchanged and when those overall distributions are distributed among the available lanes traveling in each direction, the distributions shown in Figure 3 is the result. This new improvement would mainly alleviate the background traffic on 48th Avenue since it will provide an alternative for long distance travelers especially for trips to/from the DEN airport.

The project trips for both the AM and PM peak hours are shown in Figures 4 and 5 and daily project trips are shown in Figure 6.

Figure 4. The Aurora Highlands North, Area A Project Trips (AM Peak Hour)



The Aurora Highlands North, Area A Project Trips (AM Peak Hour) Continued



The Aurora Highlands North, Area A Project Trips (AM Peak Hour) Continued

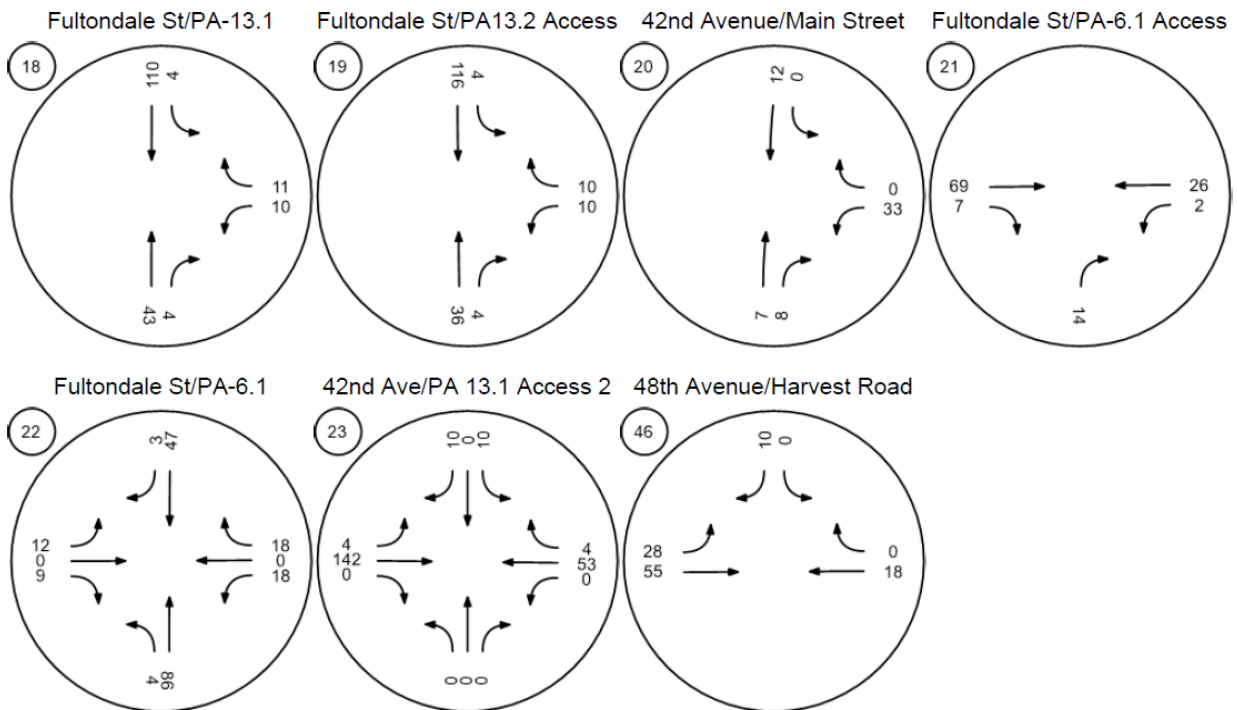
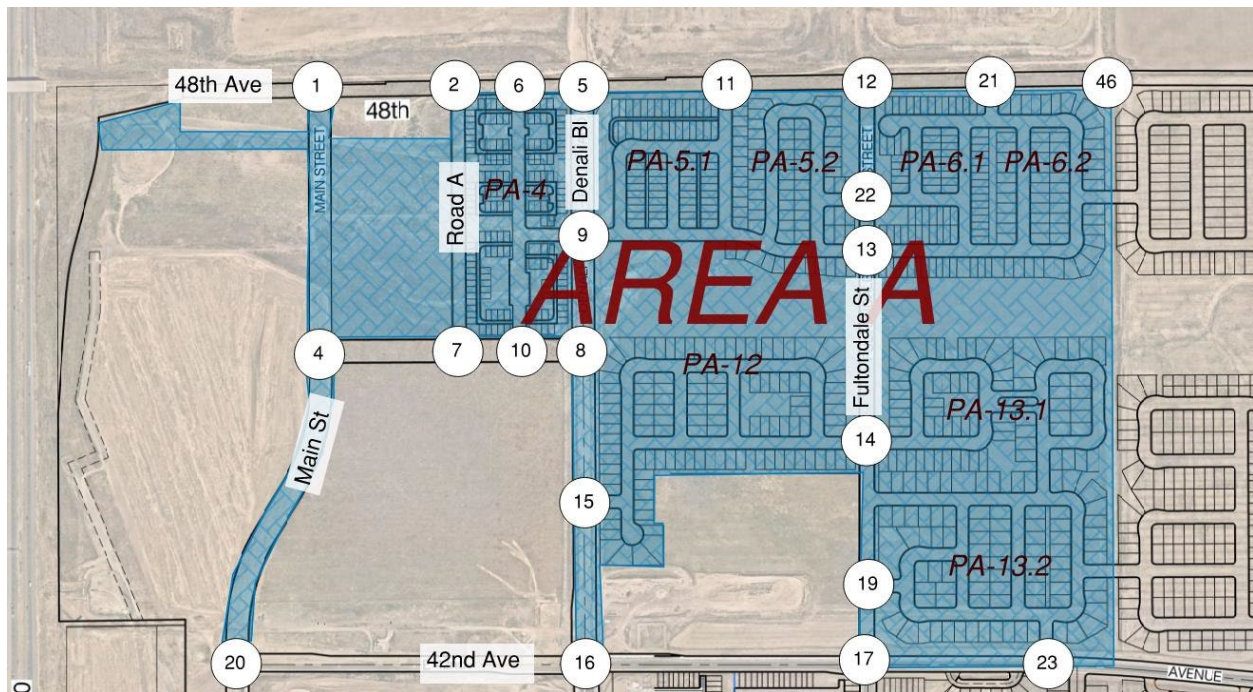
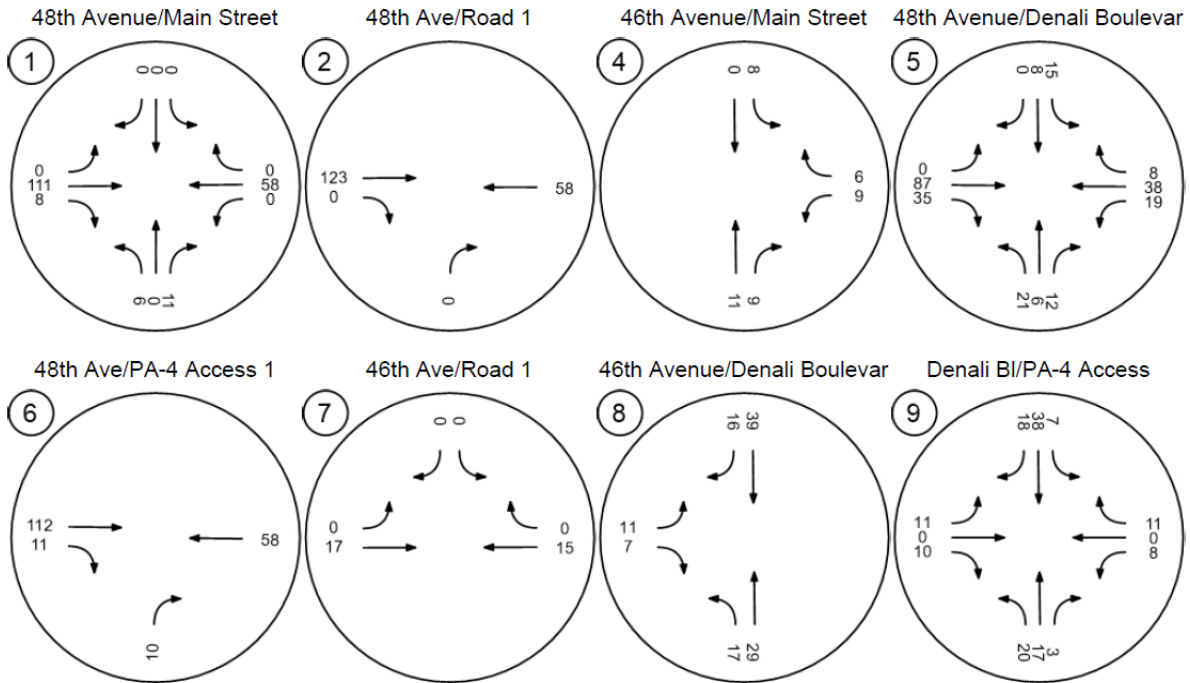
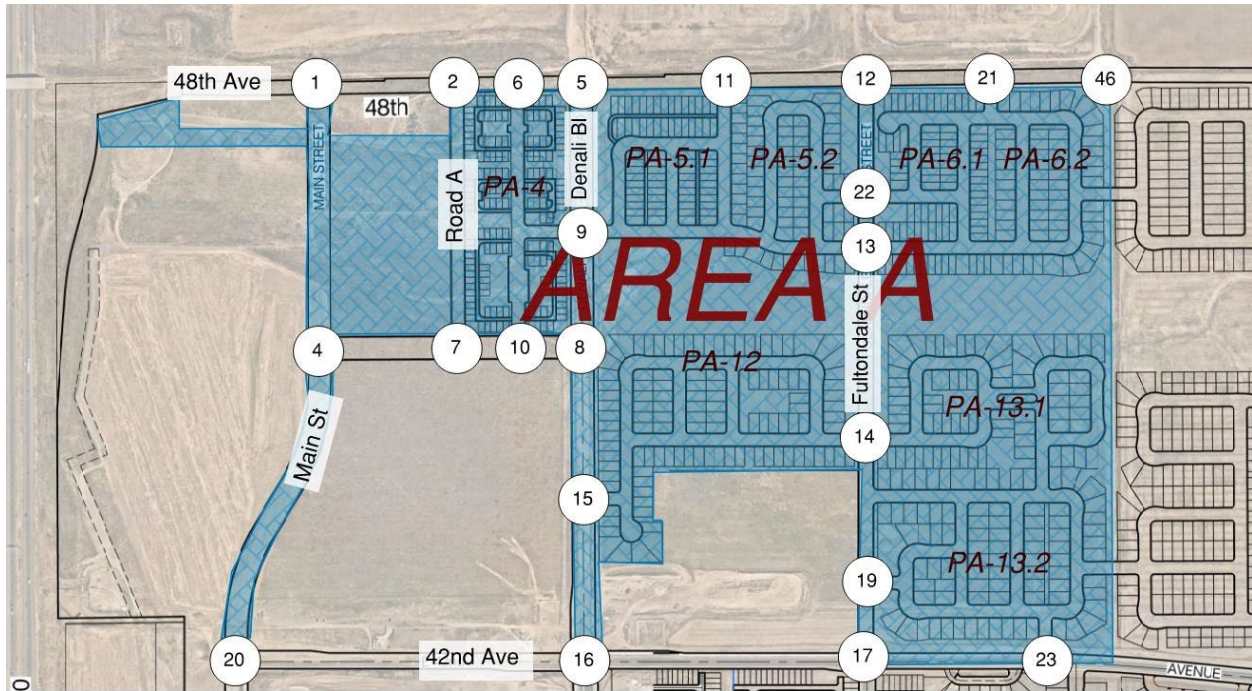
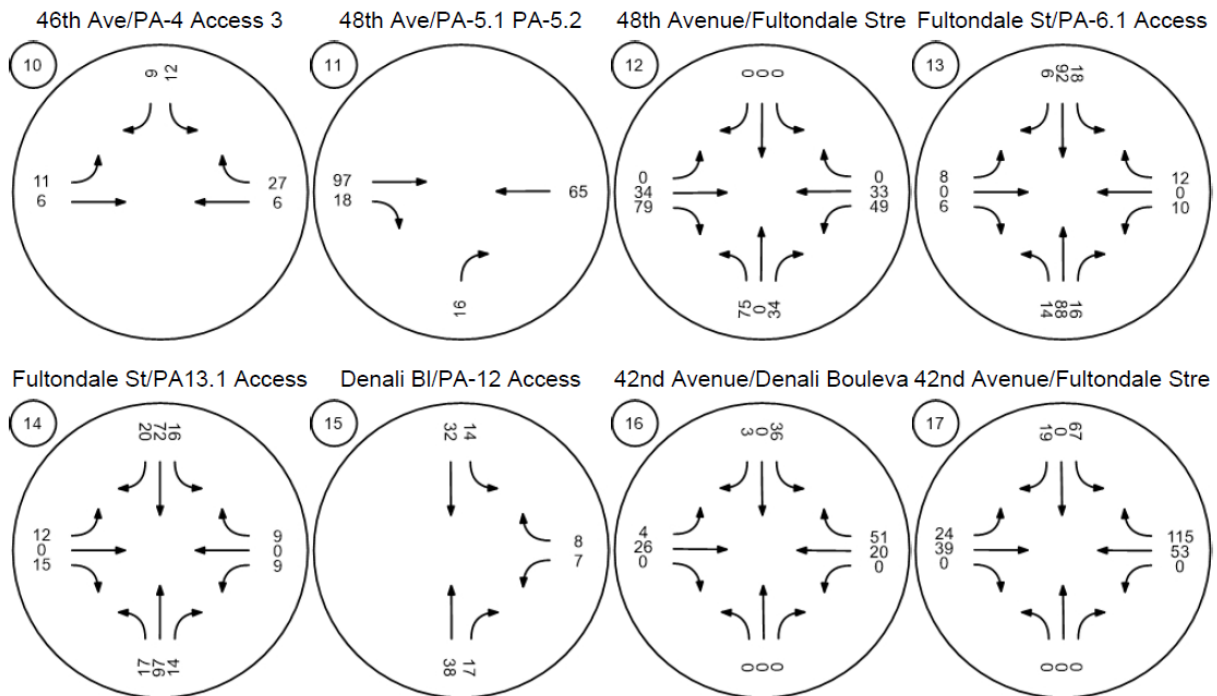
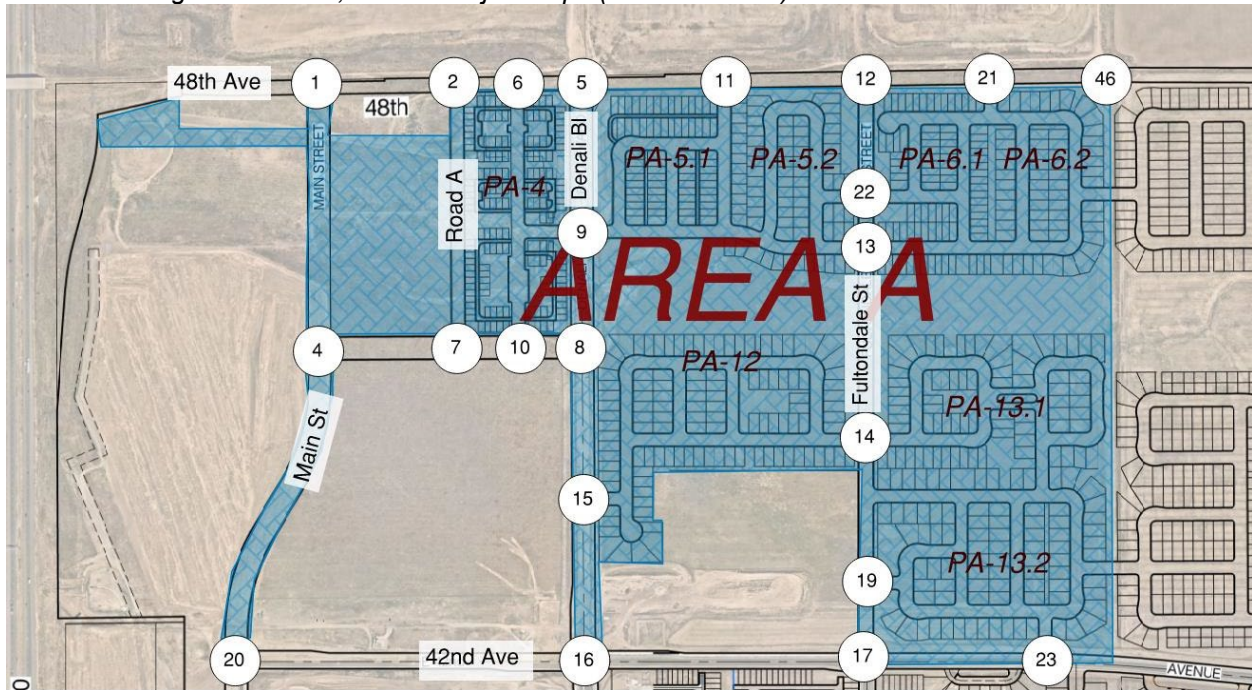


Figure 5. The Aurora Highlands North, Area A Project Trips (PM Peak)



The Aurora Highlands North, Area A Project Trips (PM Peak Hour) Continued



The Aurora Highlands North, Area A Project Trips (PM Peak Hour) Continued

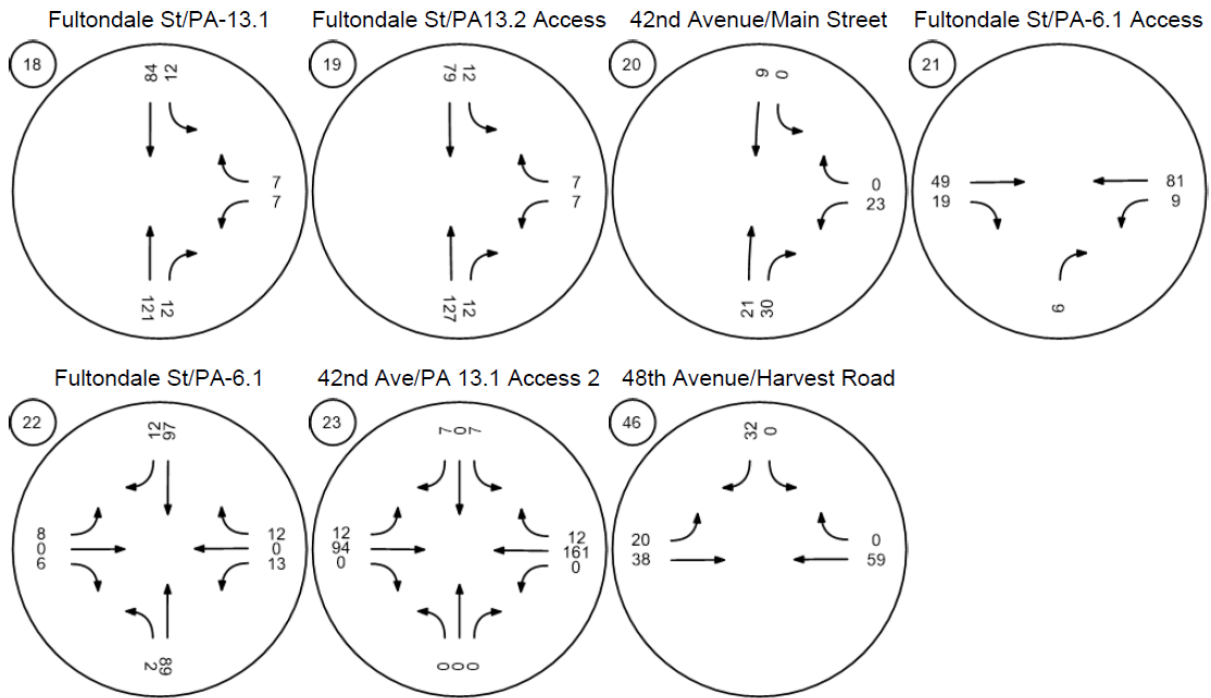
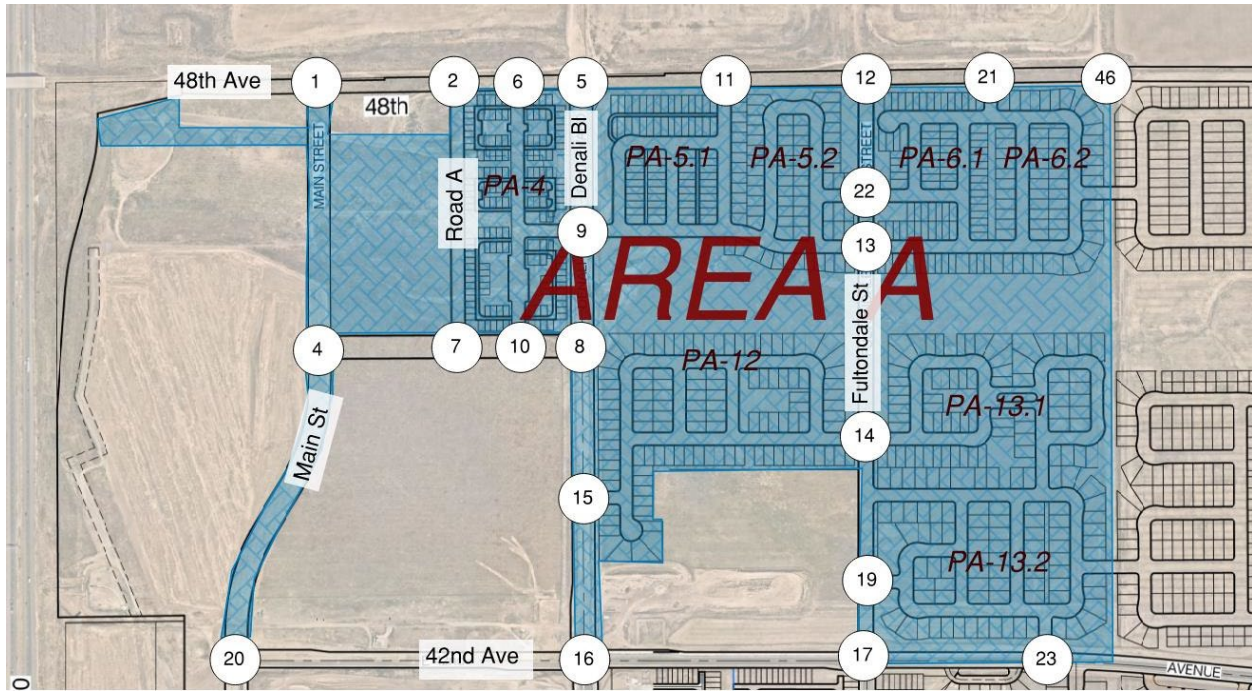
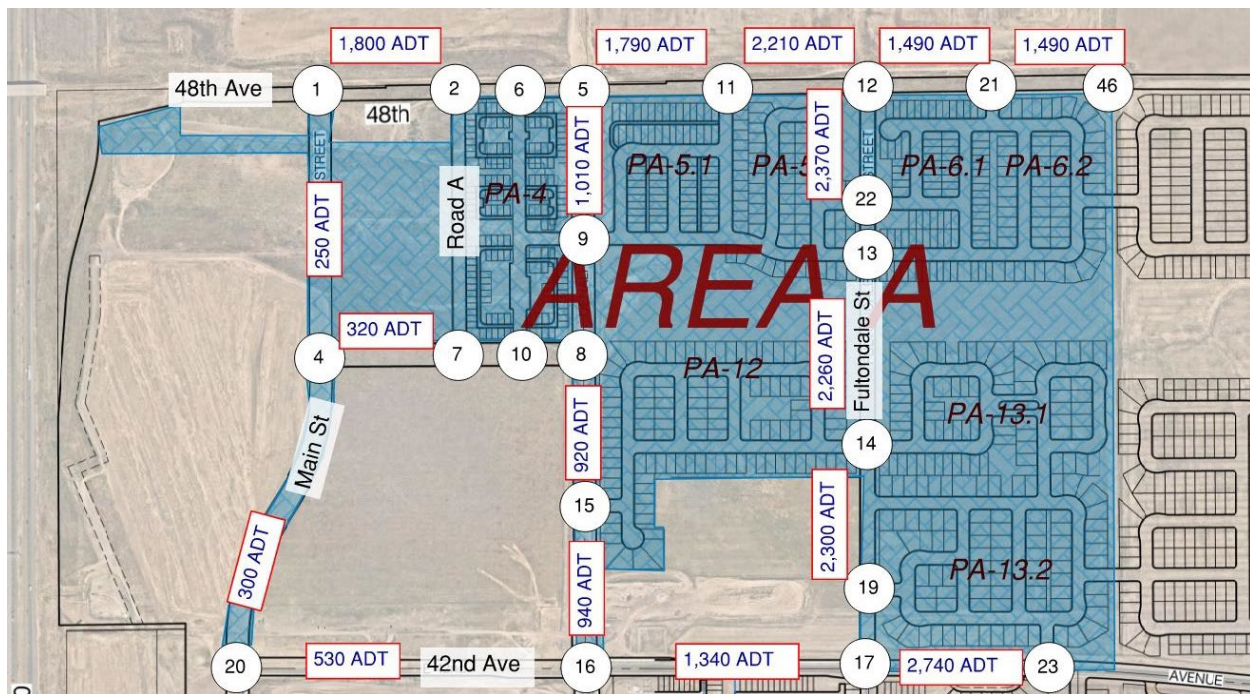


Figure 6. The Aurora Highlands North, Area A Daily Site Trips



Traffic Analysis

Traffic conditions both with and without the project have been analyzed for horizon year (2040) conditions.

Horizon (2040) Year No Project Conditions

The horizon year traffic volumes without the Aurora Highlands project are shown in Figures 7 and 8 and daily traffic volumes are shown in Figure 9. The background volumes along 48th Avenue were taken from a combination of the *NEATS (2018)*, *The Aurora Highlands TIS*, *Windler Master Plan TIS*, and *Powhatan Road Alignment Study*. Intersection configurations are taken from the *Aurora Highlands TIS*, *Windler Master Plan TIS*, and *ATEC TIS*.

Figure 7. Horizon Year No Project Traffic Volumes (AM Peak Hour)

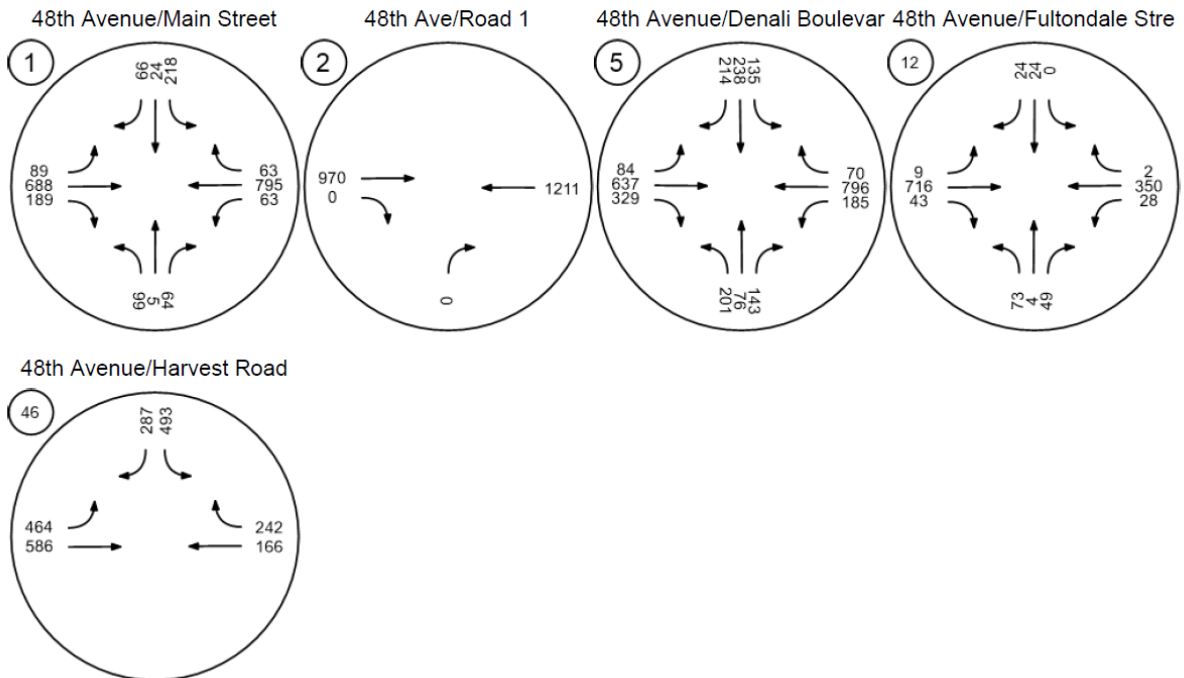


Figure 8. Horizon Year No Project Traffic Volumes (PM Peak Hour)

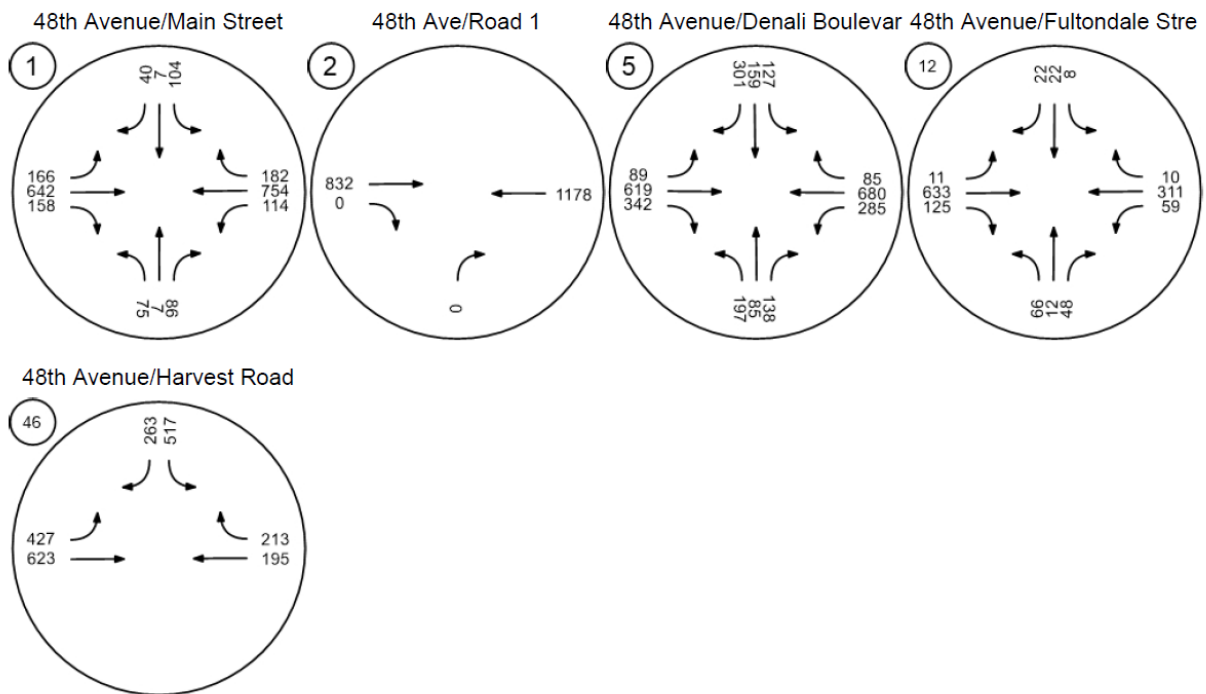
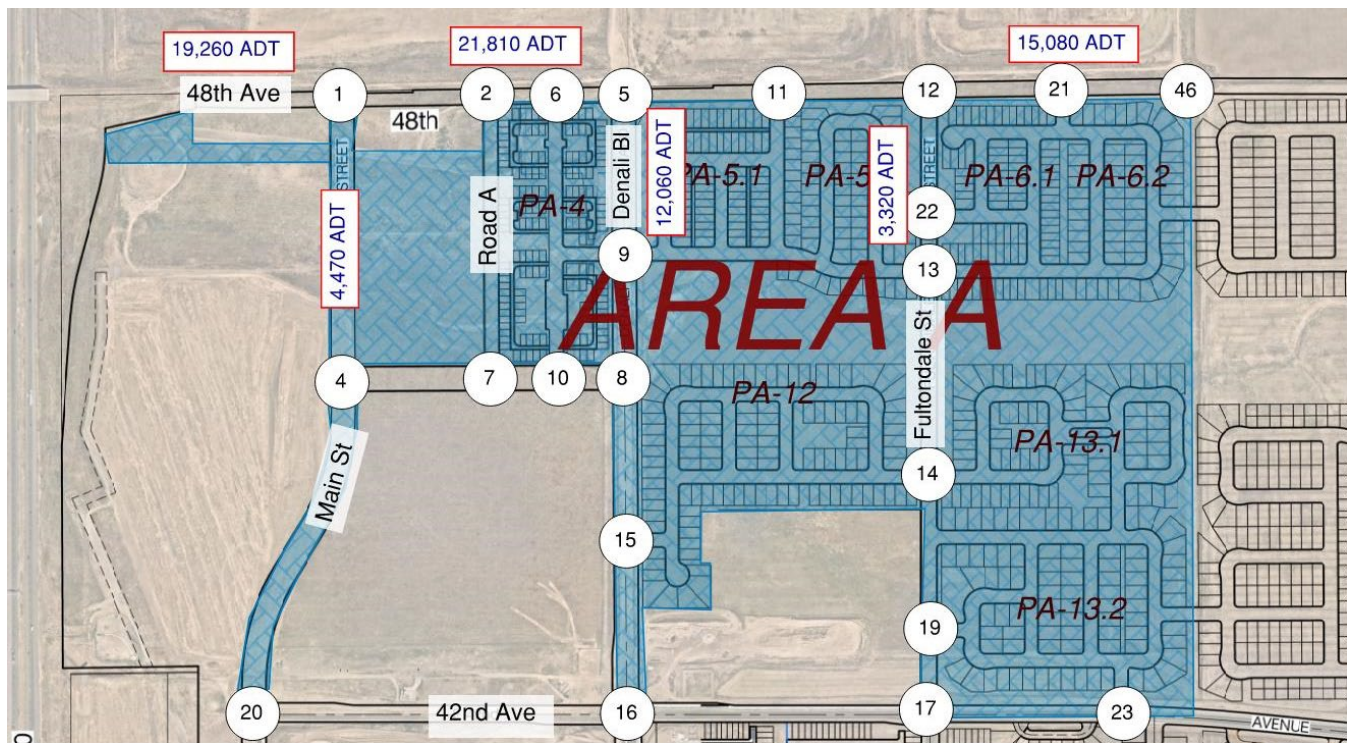
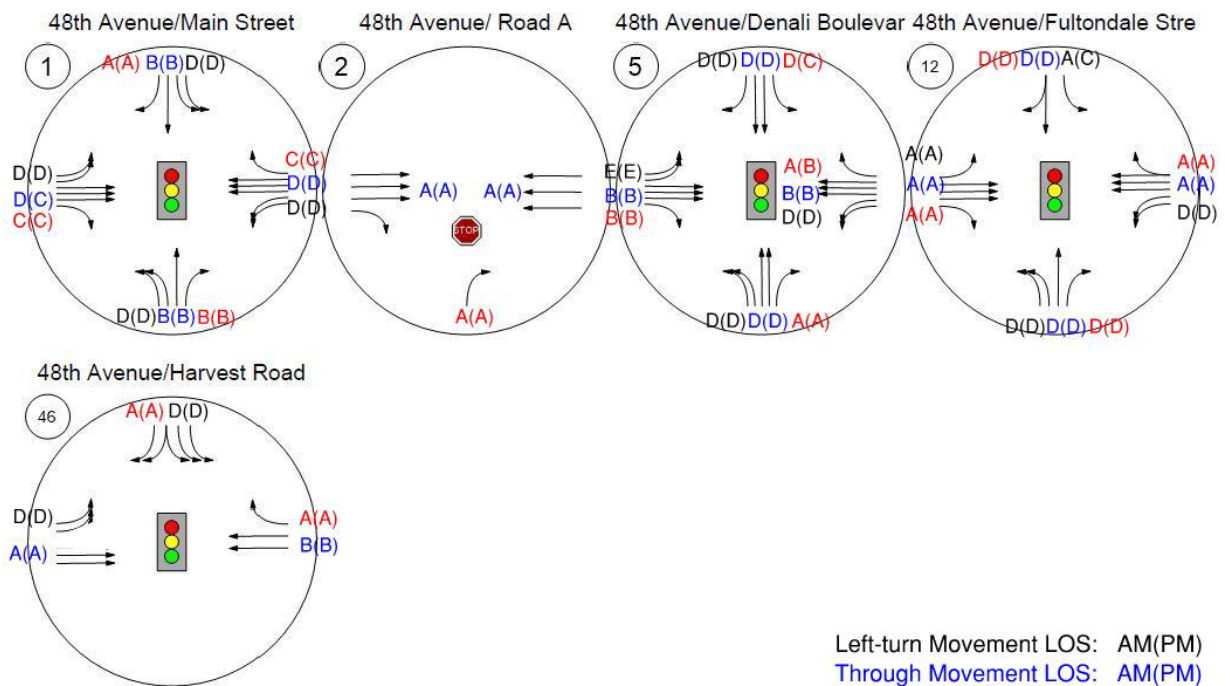


Figure 9. Horizon No Project Daily Traffic Volumes



The assumed intersection configurations and level-of-service for each movement are shown in Figure 10. The operations of the study area intersections in the build out background (no project) scenario are shown in Tables 2 and 3.

Figure 10. Horizon No Project Intersection Configurations and LOS



Intersection configurations were taken from a combination of the Windler Master Plan TIS and the ATEC TIS.

Table 2. Horizon Background Intersection Operations (AM Peak Hour)

| Intersection Analysis Summary | | | | | | | |
|-------------------------------|-------------------------------|--------------|-----------------|------------|-------|---------------|-----|
| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
| 1 | 48th Avenue/Main Street | Signalized | HCM 7th Edition | EB Left | 0.320 | 39.6 | D |
| 2 | 48th Ave/Road 1 | Two-way stop | HCM 7th Edition | WB Thru | 0.013 | 0.0 | A |
| 5 | 48th Avenue/Denali Boulevard | Signalized | HCM 7th Edition | EB Left | 0.369 | 26.3 | C |
| 12 | 48th Avenue/Fultondale Street | Signalized | HCM 7th Edition | WB Left | 0.229 | 10.4 | B |
| 46 | 48th Avenue/Harvest Road | Signalized | HCM 7th Edition | EB Left | 0.390 | 29.8 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Table 3. Horizon Background Intersection Operations (PM Peak Hour)

| Intersection Analysis Summary | | | | | | | |
|-------------------------------|-------------------------------|--------------|-----------------|------------|-------|---------------|-----|
| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
| 1 | 48th Avenue/Main Street | Signalized | HCM 7th Edition | SB Left | 0.306 | 39.8 | D |
| 2 | 48th Ave/Road 1 | Two-way stop | HCM 7th Edition | WB Thru | 0.013 | 0.0 | A |
| 5 | 48th Avenue/Denali Boulevard | Signalized | HCM 7th Edition | EB Left | 0.429 | 28.6 | C |
| 12 | 48th Avenue/Fultondale Street | Signalized | HCM 7th Edition | NB Left | 0.216 | 11.7 | B |
| 46 | 48th Avenue/Harvest Road | Signalized | HCM 7th Edition | EB Left | 0.396 | 29.0 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

All study area intersections are projected to operate at an acceptable LOS in the horizon year without the project traffic as shown in Tables 2 and 3. Additionally, all the roadways will carry a daily volume of traffic that is generally consistent with the Aurora Highlands TIS from August 2019 (adjusted for the new alignment) and the NEATS Refresh from 2018. For more information see Appendix A – Background Volumes

Turn lanes for the studied intersection were evaluated based on the State Highway Access Code (SHAC) and City of Aurora Specifications. The results are summarized in Table 4

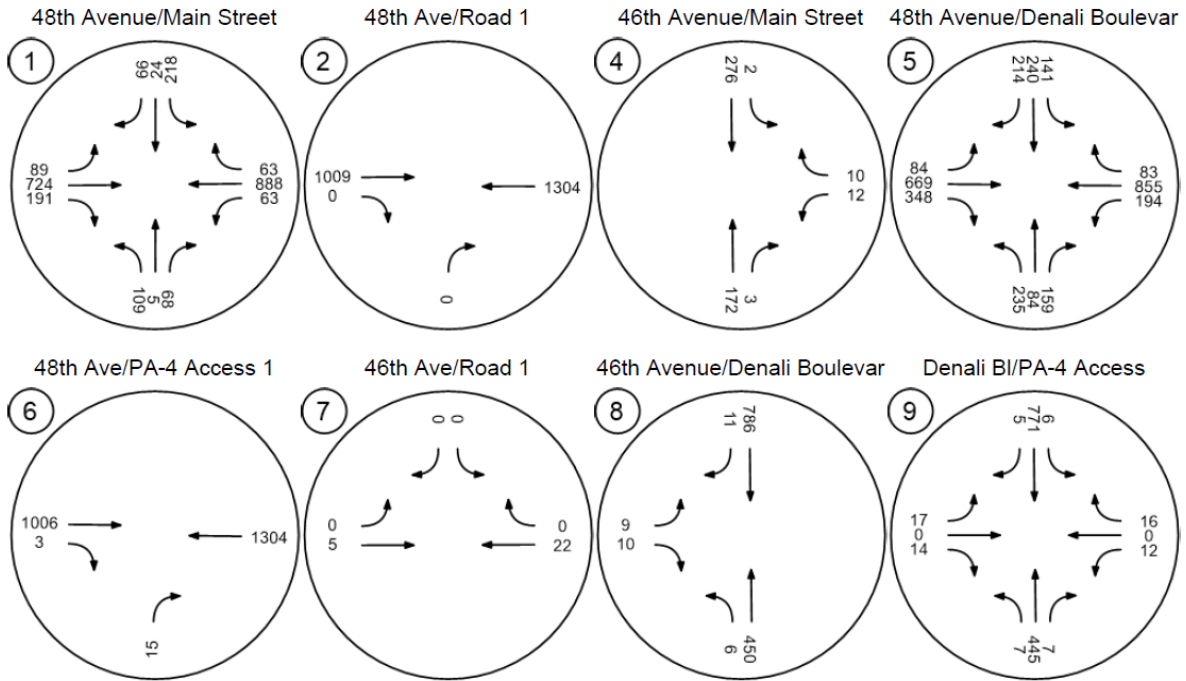
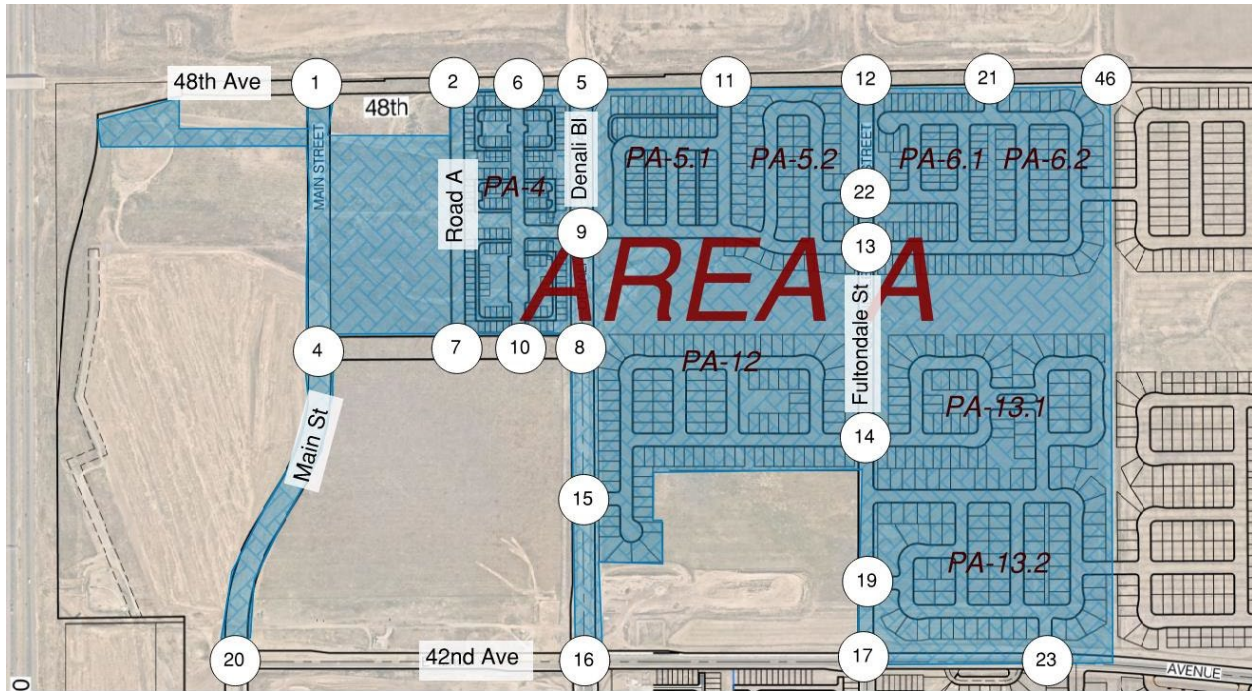
Table 4. Horizon Background Turn Lane Evaluations

| ID | Intersection | Movement | # of Lanes | Access Category | Speed Limit (mph) | Turning Vol | Lane Width | SHAC | Lane | Storage | Taper Length | COA min Storage+ Decel | Recommended |
|----|------------------------|----------|------------|-----------------|-------------------|-------------|------------|------|------|---------|--------------|------------------------|-------------|
| 1 | 48th Ave/Main St | NBL | 2 | NR-C | 35 | 99 | 12 | 220 | | 100 | 120 | 150 | 270 |
| | | NBR | 1 | NR-C | 35 | 86 | 12 | 220 | | 100 | 120 | | 220 |
| | | SBL | 2 | NR-C | 35 | 218 | 12 | 230 | | 109 | 120 | 150 | 270 |
| | | SBR | 1 | NR-C | 35 | 66 | 12 | 220 | | 100 | 120 | | 220 |
| | | EBL | 2 | NR-A | 45 | 166 | 12 | 535 | 435 | 100 | | 200 | 535 |
| | | EBR | 1 | NR-A | 45 | 189 | 12 | 435 | 435 | | | | 435 |
| | | WBL | 2 | NR-A | 45 | 114 | 12 | 485 | 435 | 50 | | 200 | 485 |
| 5 | 48th Ave/Denali Bl | WBR | 1 | NR-A | 45 | 182 | 12 | 435 | 435 | | | | 435 |
| | | NBL | 2 | NR-B | 40 | 201 | 12 | 245 | | 101 | 144 | 200 | 345 |
| | | NBR | 1 | NR-B | 40 | 143 | 12 | 285 | | 143 | 144 | | 285 |
| | | SBL | 1 | NR-B | 40 | 135 | 12 | 280 | | 138 | 144 | 200 | 345 |
| | | SBR | 1 | NR-B | 40 | 301 | 12 | 445 | | 301 | 144 | | 445 |
| | | EBL | 2 | NR-A | 45 | 89 | 12 | 485 | 435 | 50 | | 200 | 485 |
| | | EBR | 1 | NR-A | 45 | 329 | 12 | 435 | 435 | | | | 435 |
| 12 | 48th Ave/Fultondale St | WBL | 2 | NR-A | 45 | 285 | 12 | 580 | 435 | 143 | | 200 | 580 |
| | | WBR | 1 | NR-A | 45 | 85 | 12 | 435 | 435 | | | | 435 |
| | | NBL | 2 | NR-C | 35 | 73 | 12 | 170 | | 50 | 120 | 150 | 270 |
| | | NBR | 1 | NR-C | 35 | 49 | 12 | 170 | | 50 | 120 | | 170 |
| | | EBL | 1 | NR-A | 45 | 11 | 12 | 460 | 435 | 25 | | 200 | 460 |
| 46 | 48th Ave/Harvest Rd | EBR | 1 | NR-A | 45 | 125 | 12 | 435 | 435 | | | | 435 |
| | | WBL | 2 | NR-A | 45 | 59 | 12 | 460 | 435 | 25 | | 200 | 460 |
| | | SBL | 2 | NR-B | 40 | 517 | 12 | 405 | | 259 | 144 | 200 | 405 |
| | | EBL | 2 | NR-A | 45 | 464 | 12 | 665 | 435 | 232 | | 200 | 665 |
| | | WBR | 1 | NR-B | 45 | 242 | 12 | 435 | 435 | | | | 435 |

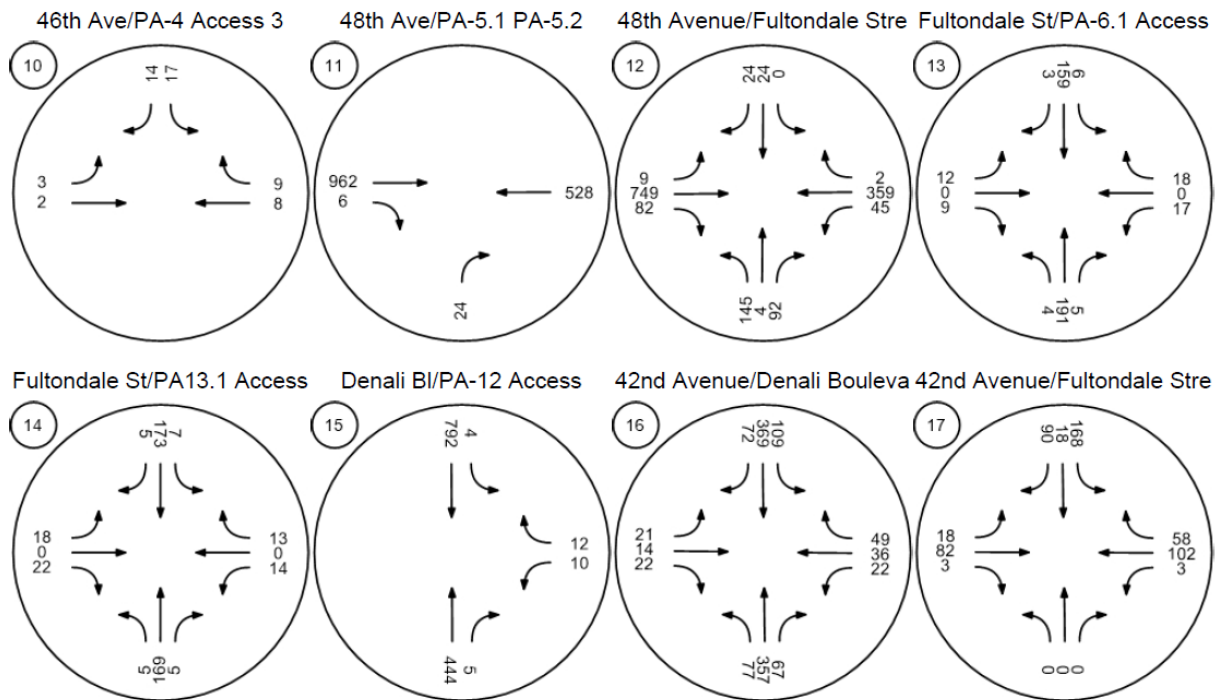
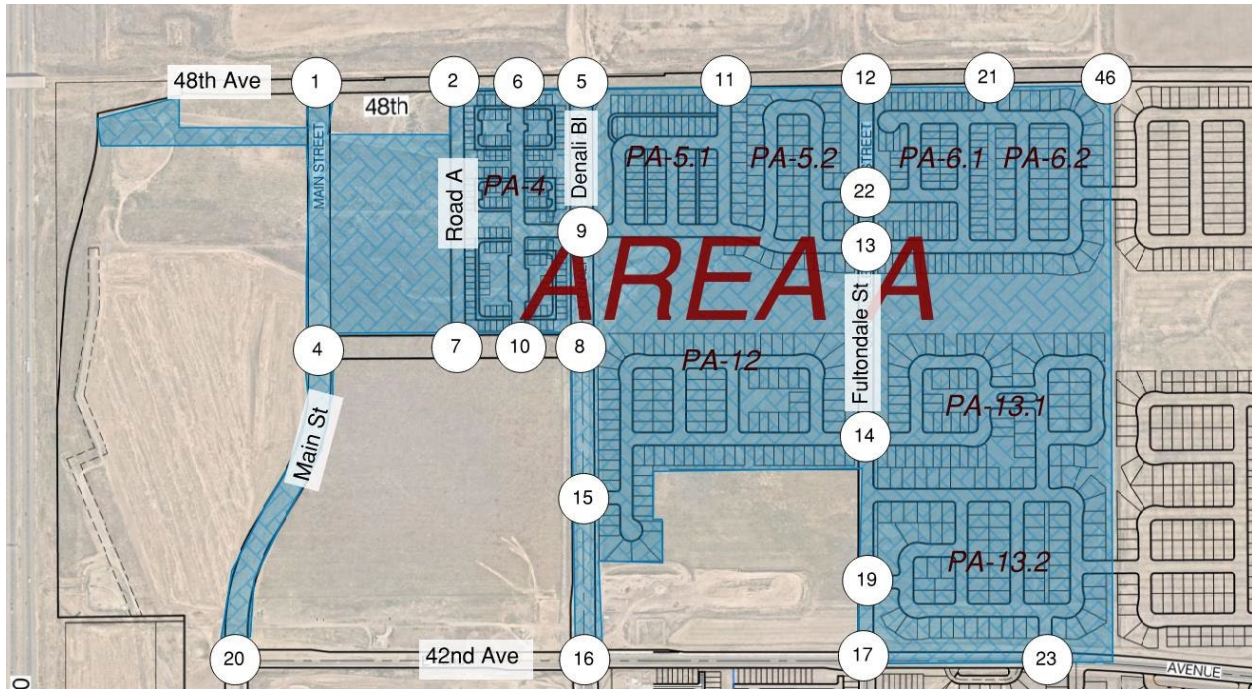
Horizon (2040) Year With Project Conditions

When the project traffic is added to the 2040 background traffic, the resulting AM Peak Hour, PM Peak Hour and Daily traffic volumes are as shown in Figures 11, 12 and 13. To address the impact of the elementary school located at northwest corner of 42nd Avenue/Fultondale Street the PHF for AM peak hour was reduced to 0.5 at 42nd Avenue/Fultondale and 42nd Avenue/Denali Boulevard. Minimum pedestrians walk time also increased to 7 seconds at all intersections.

Figure 11. Horizon Total Traffic Volumes (AM Peak Hour)



Horizon Total Traffic Volumes (AM Peak Hour) Continued



Horizon Total Traffic Volumes (AM Peak Hour) Continued

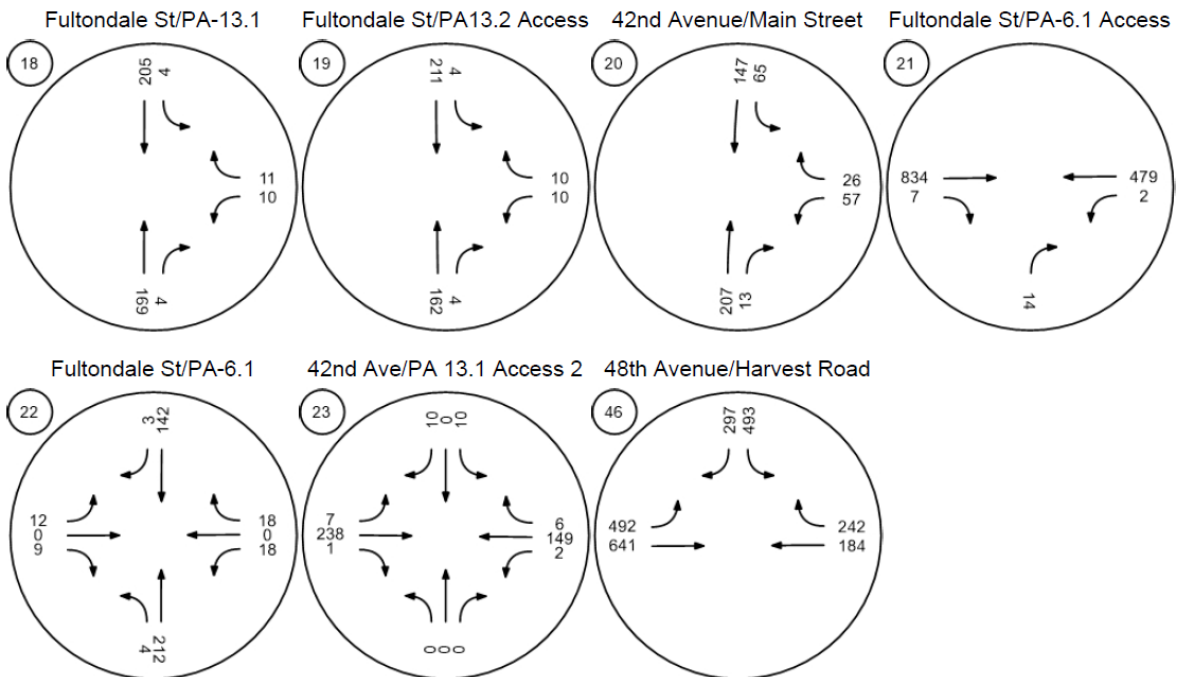
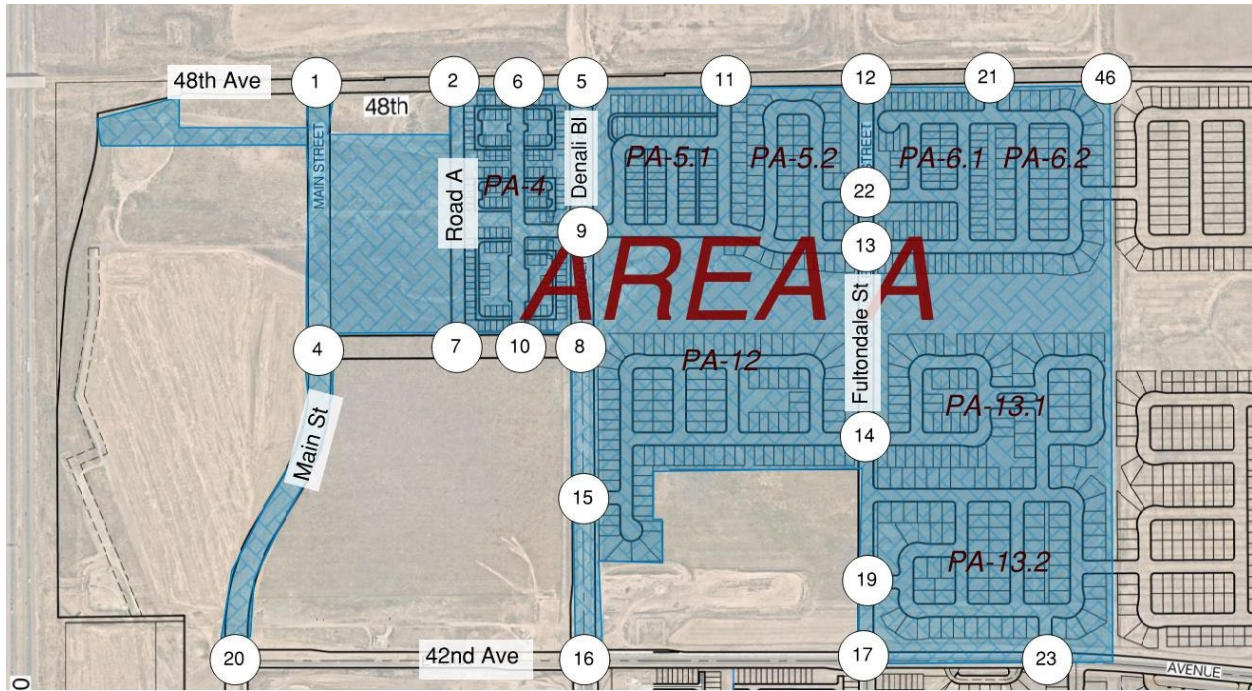
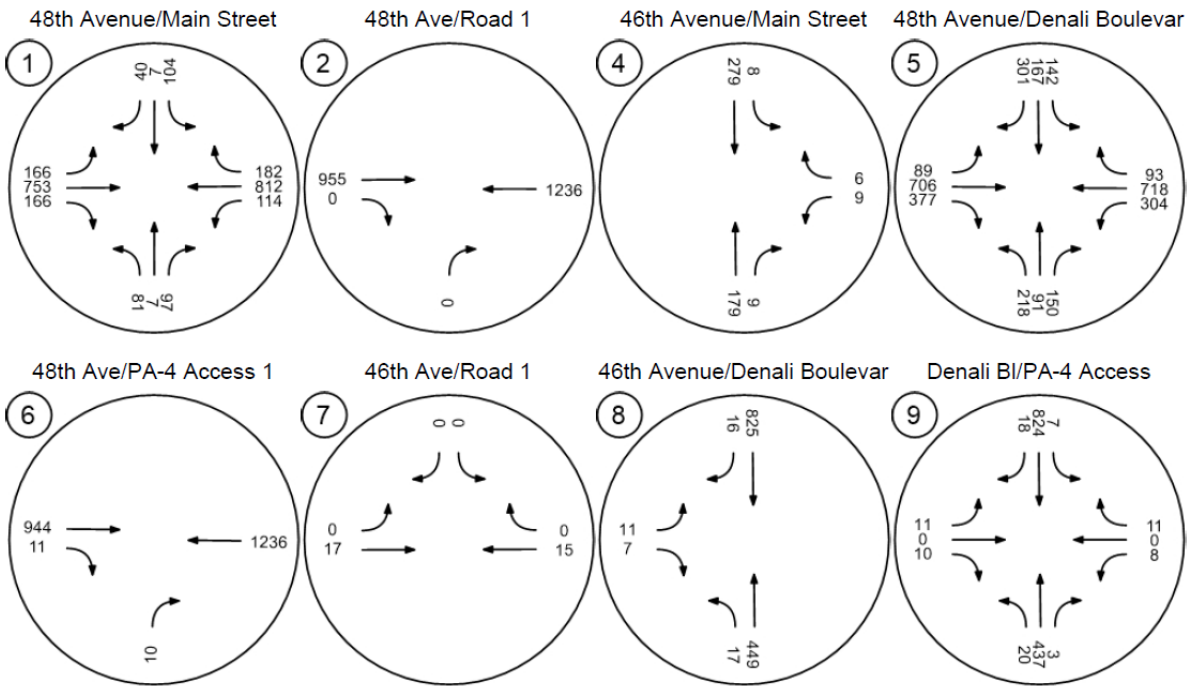
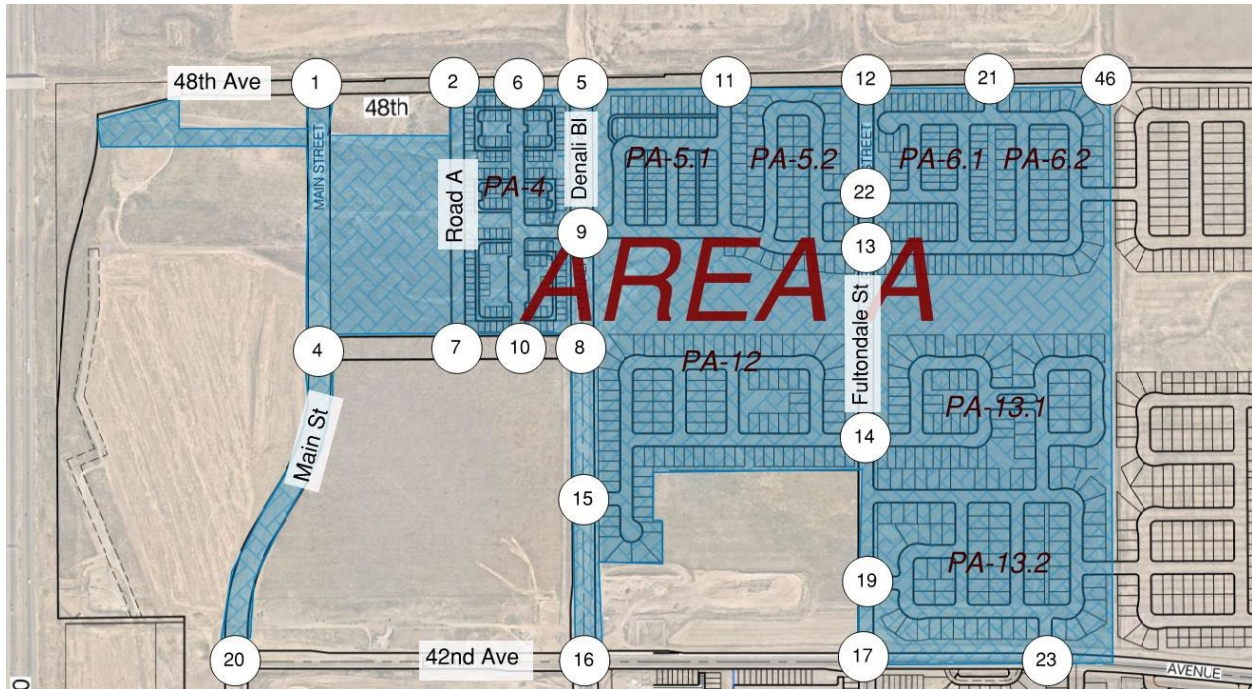
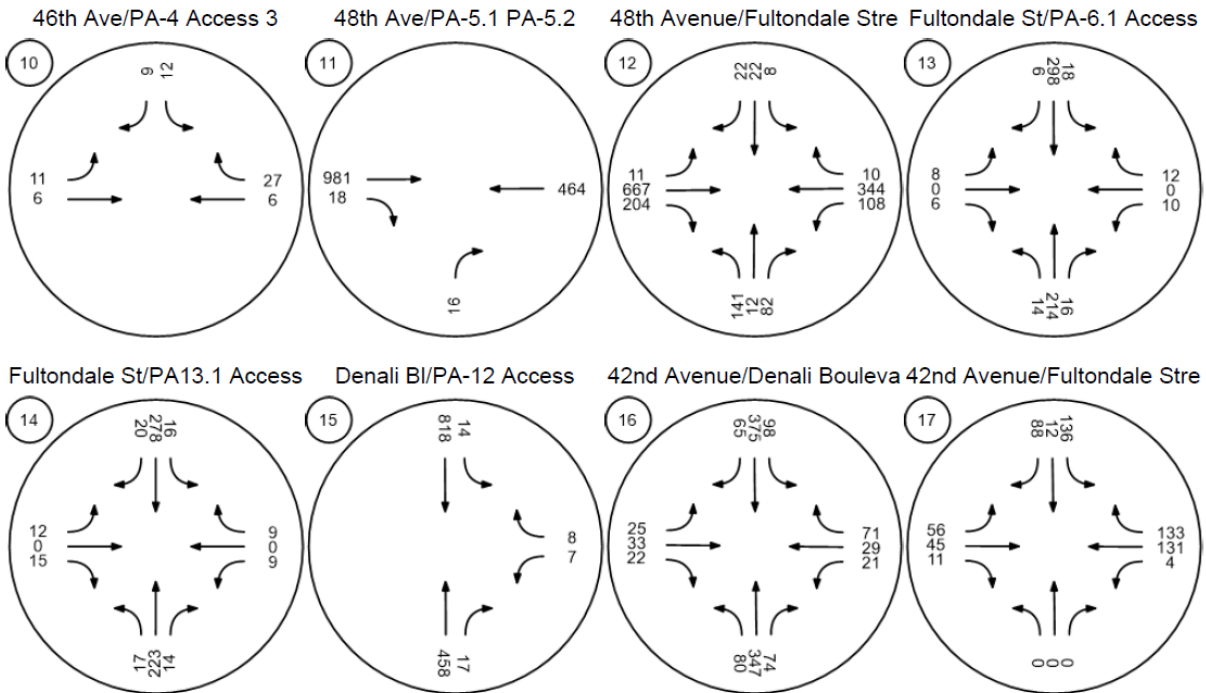
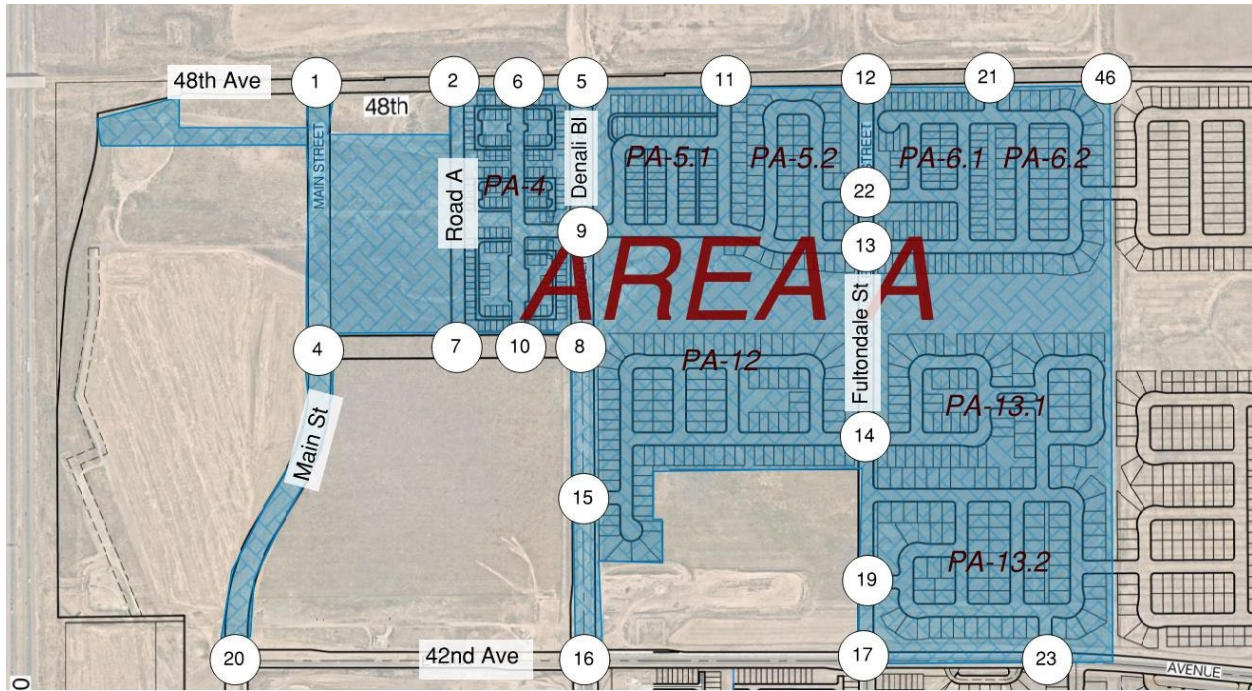


Figure 12. Horizon With Project Traffic Volumes (PM Peak Hour)



Horizon Total Traffic Volumes (PM Peak Hour) Continued



Horizon Total Traffic Volumes (PM Peak Hour) Continued

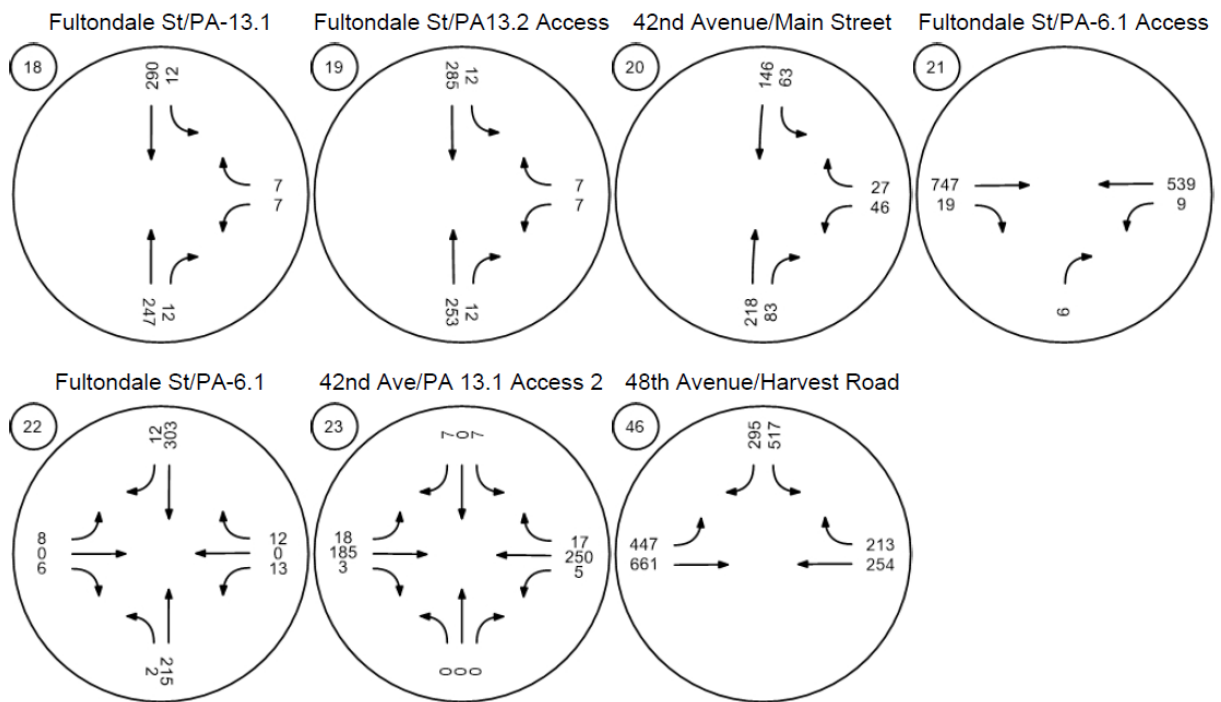
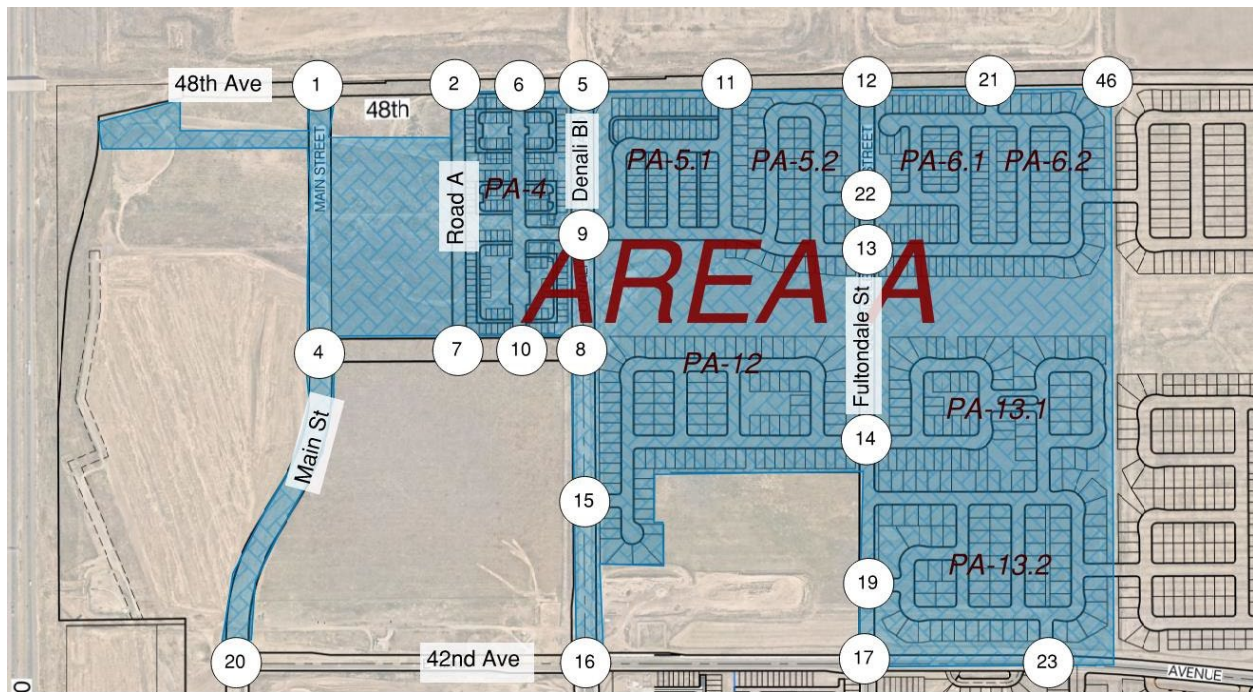
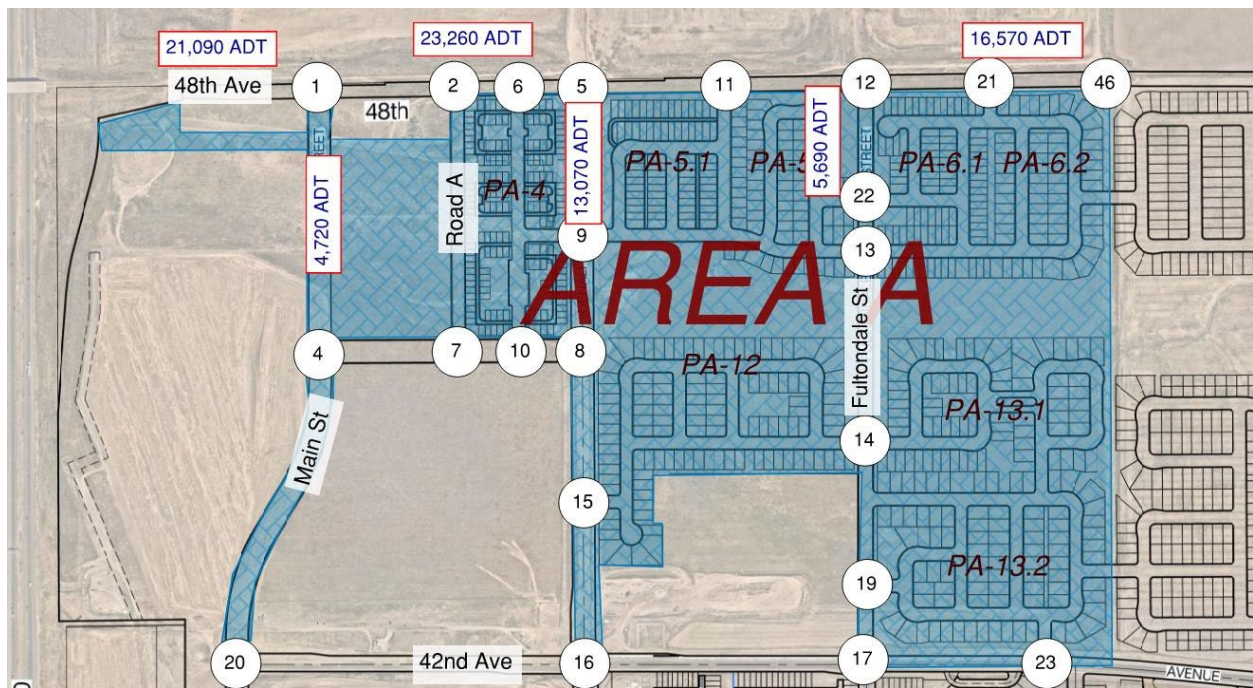


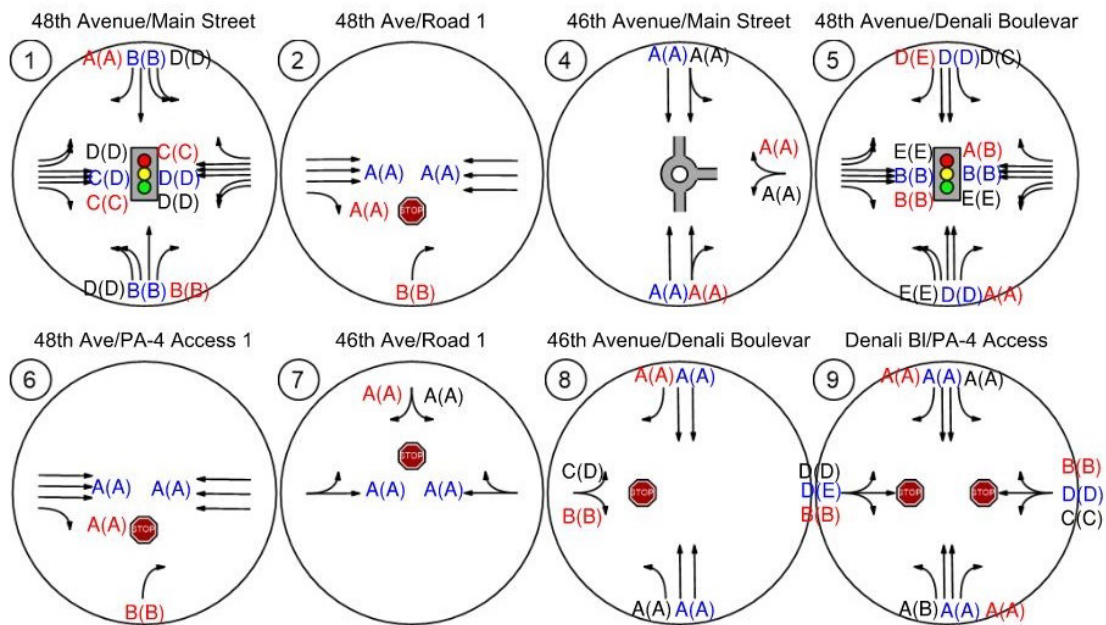
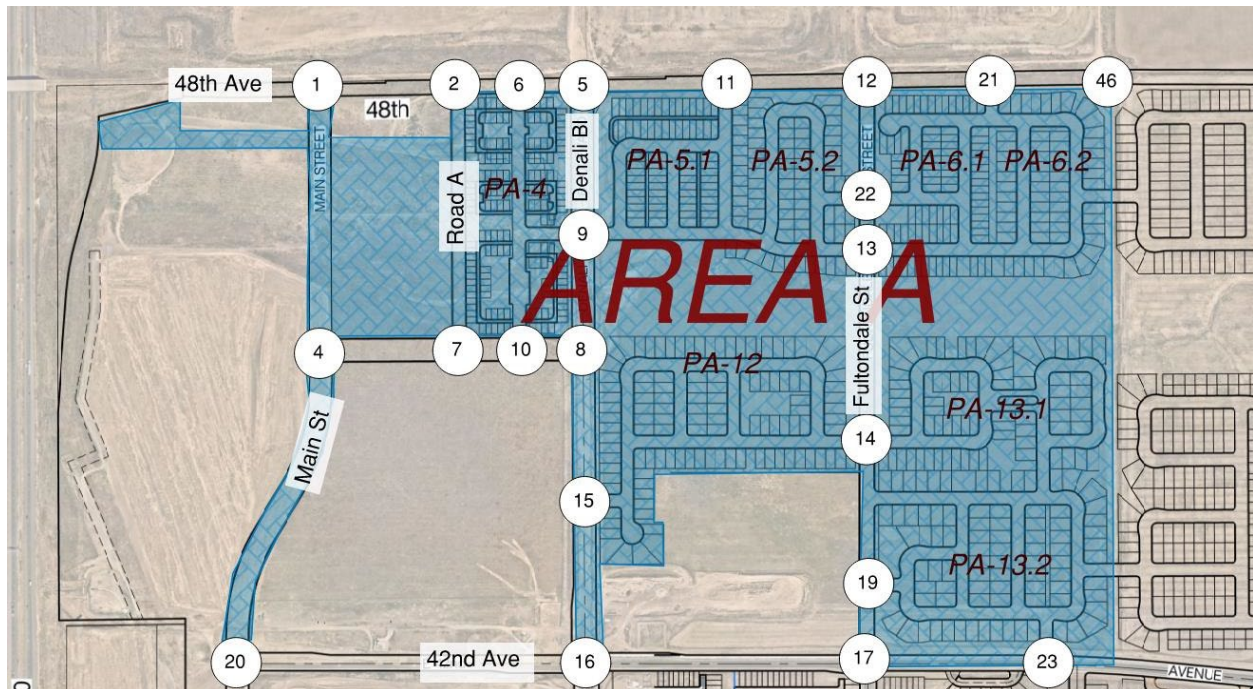
Figure 13. Horizon With Project Total Daily Traffic Volumes



Assumed intersection configurations for the study area intersections are shown in Figure 14.

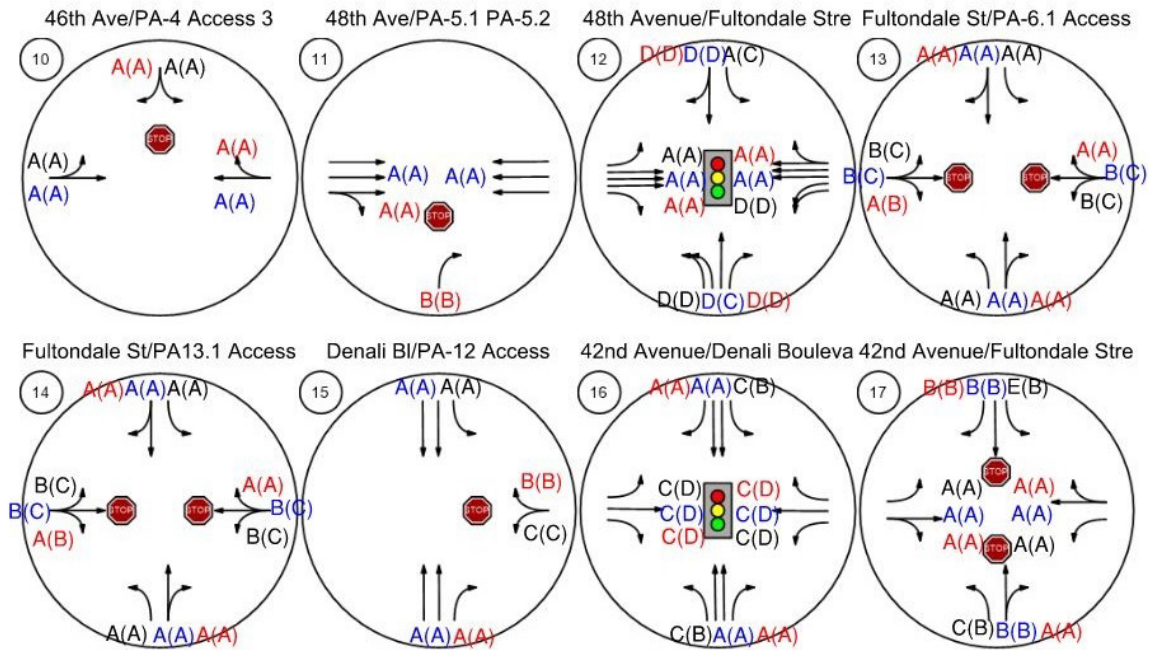
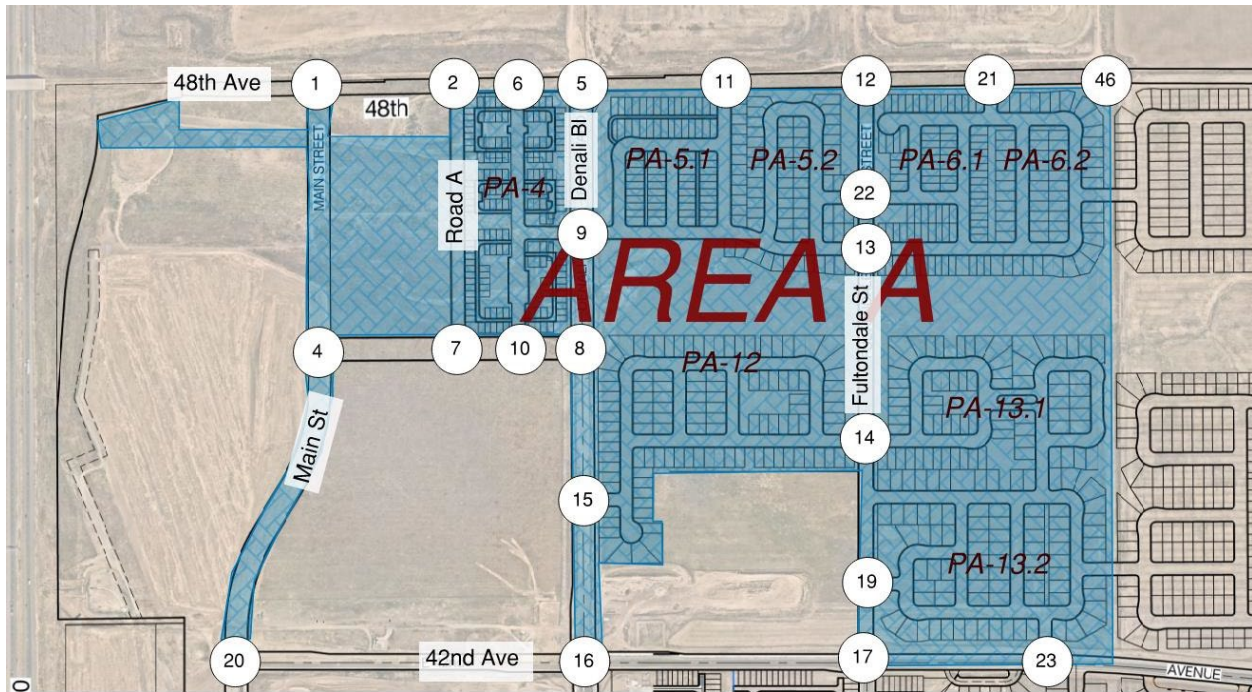
Analysis of the intersections and roadways for horizon year conditions with the volumes and configurations shown above results in the operations shown in Table 5 and Table 6. Turn lane evaluations are shown in Table 7.

Figure 14. Horizon With Project Intersection Configurations and LOS



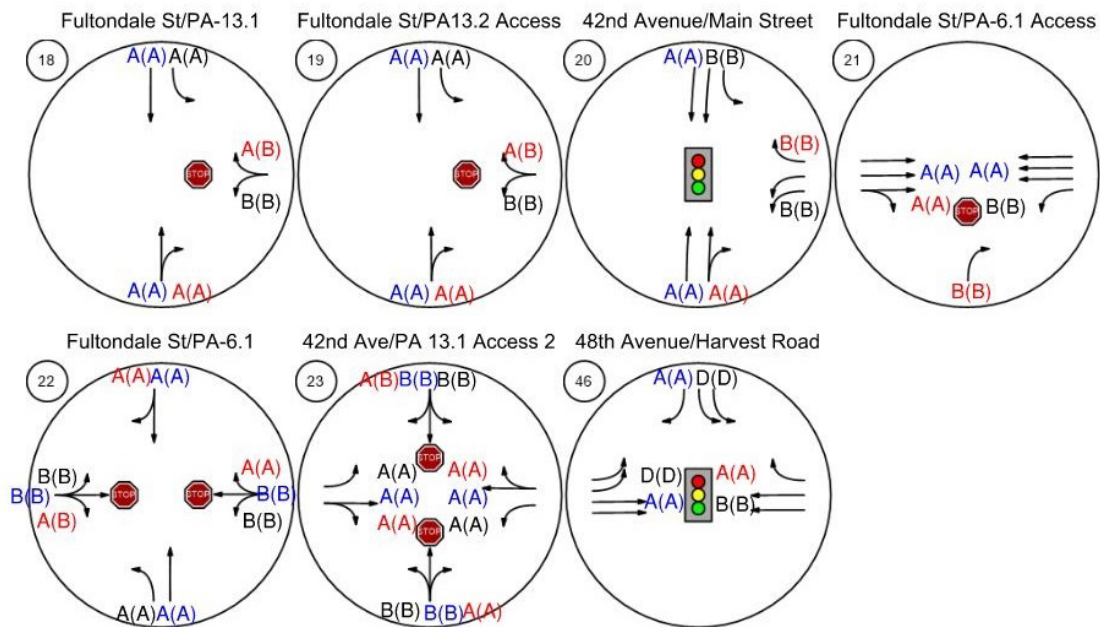
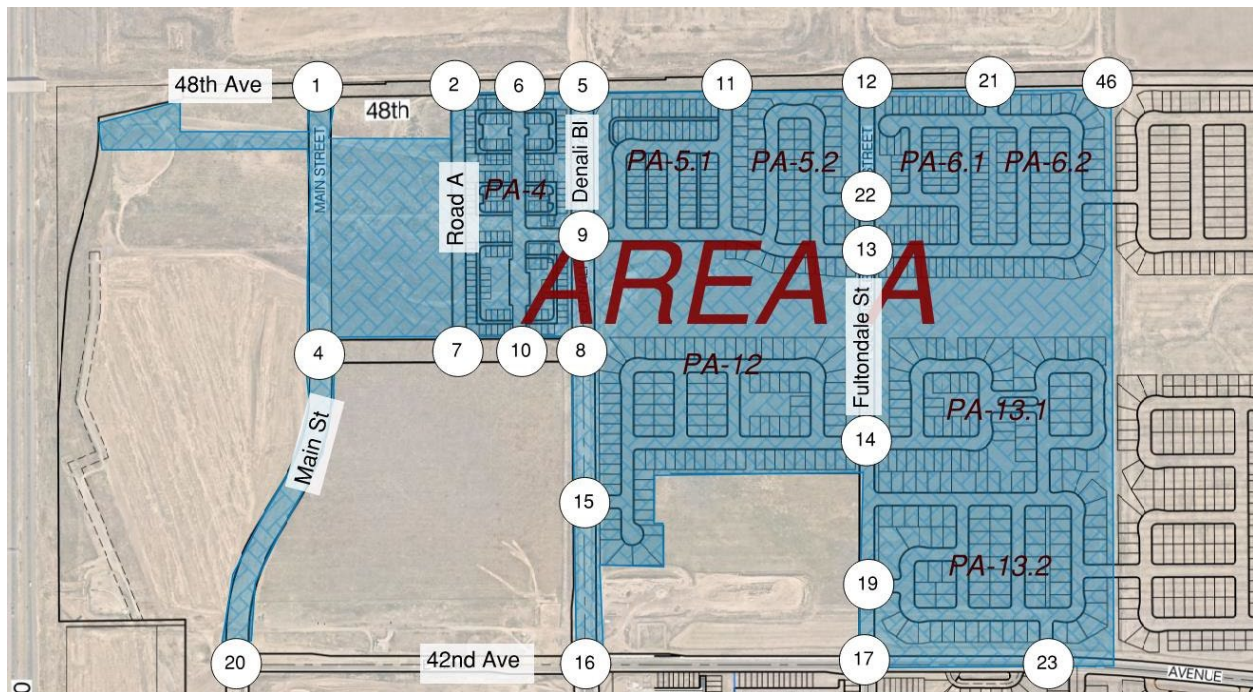
Left-turn Movement LOS: AM(PM)
Through Movement LOS: AM(PM)
Right-turn Movement LOS: AM(PM)

Horizon With Project Intersection Configurations Continued



Left-turn Movement LOS: AM(PM)
 Through Movement LOS: AM(PM)
 Right-turn Movement LOS: AM(PM)

Horizon With Project Intersection Configurations Continued



Left-turn Movement LOS: AM(PM)
 Through Movement LOS: AM(PM)
 Right-turn Movement LOS: AM(PM)

Table 5. Horizon Total Intersection Operations (AM Peak Hour)

| Intersection Analysis Summary | | | | | | | |
|-------------------------------|-------------------------------|--------------|-----------------|------------|-------|---------------|-----|
| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
| 1 | 48th Avenue/Main Street | Signalized | HCM 7th Edition | EB Left | 0.344 | 39.0 | D |
| 2 | 48th Ave/Road 1 | Two-way stop | HCM 7th Edition | WB Thru | 0.014 | 0.0 | A |
| 4 | 46th Avenue/Main Street | Roundabout | HCM 7th Edition | SB Thru | | 3.4 | A |
| 5 | 48th Avenue/Denali Boulevard | Signalized | HCM 7th Edition | NB Left | 0.395 | 27.0 | C |
| 6 | 48th Ave/PA-4 Access 1 | Two-way stop | HCM 7th Edition | NB Right | 0.039 | 14.1 | B |
| 7 | 46th Ave/Road 1 | Two-way stop | HCM 7th Edition | WB Thru | 0.000 | 0.0 | A |
| 8 | 46th Avenue/Denali Boulevard | Two-way stop | HCM 7th Edition | EB Left | 0.050 | 23.8 | C |
| 9 | Denali Bl/PA-4 Access | Two-way stop | HCM 7th Edition | EB Left | 0.114 | 30.3 | D |
| 10 | 46th Ave/PA-4 Access 3 | Two-way stop | HCM 7th Edition | SB Left | 0.018 | 8.7 | A |
| 11 | 48th Ave/PA-5.1 PA-5.2 | Two-way stop | HCM 7th Edition | NB Right | 0.061 | 14.0 | B |
| 12 | 48th Avenue/Fultondale Street | Signalized | HCM 7th Edition | NB Left | 0.269 | 14.3 | B |
| 13 | Fultondale St/PA-6.1 Access | Two-way stop | HCM 7th Edition | EB Left | 0.025 | 12.0 | B |
| 14 | Fultondale St/PA13.1 Access | Two-way stop | HCM 7th Edition | WB Left | 0.028 | 12.1 | B |
| 15 | Denali Bl/PA-12 Access | Two-way stop | HCM 7th Edition | WB Left | 0.041 | 18.9 | C |
| 16 | 42nd Avenue/Denali Boulevard | Signalized | HCM 7th Edition | SB Left | 0.393 | 13.8 | B |
| 17 | 42nd Avenue/Fultondale Street | Two-way stop | HCM 7th Edition | SB Left | 0.737 | 31.9 | D |
| 18 | Fultondale St/PA-13.1 | Two-way stop | HCM 7th Edition | WB Left | 0.019 | 11.3 | B |
| 19 | Fultondale St/PA13.2 Access | Two-way stop | HCM 7th Edition | WB Left | 0.019 | 11.2 | B |
| 20 | 42nd Avenue/Main Street | Signalized | HCM 7th Edition | SB Left | 0.090 | 10.0 | B |
| 21 | Fultondale St/PA-6.1 Access | Two-way stop | HCM 7th Edition | WB Left | 0.005 | 13.4 | B |
| 22 | Fultondale St/PA-6.1 | Two-way stop | HCM 7th Edition | WB Left | 0.036 | 11.9 | B |
| 23 | 42nd Ave/PA 13.1 Access 2 | Two-way stop | HCM 7th Edition | SB Left | 0.021 | 12.1 | B |
| 46 | 48th Avenue/Harvest Road | Signalized | HCM 7th Edition | EB Left | 0.406 | 30.4 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Table 6. Horizon Total Intersection Operations (PM Peak Hour)**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|----|-------------------------------|--------------|-----------------|------------|-------|---------------|-----|
| 1 | 48th Avenue/Main Street | Signalized | HCM 7th Edition | SB Left | 0.323 | 39.1 | D |
| 2 | 48th Ave/Road 1 | Two-way stop | HCM 7th Edition | WB Thru | 0.013 | 0.0 | A |
| 4 | 46th Avenue/Main Street | Roundabout | HCM 7th Edition | SB Thru | | 3.4 | A |
| 5 | 48th Avenue/Denali Boulevard | Signalized | HCM 7th Edition | EB Left | 0.463 | 30.8 | C |
| 6 | 48th Ave/PA-4 Access 1 | Two-way stop | HCM 7th Edition | NB Right | 0.025 | 13.5 | B |
| 7 | 46th Ave/Road 1 | Two-way stop | HCM 7th Edition | EB Thru | 0.000 | 0.0 | A |
| 8 | 46th Avenue/Denali Boulevard | Two-way stop | HCM 7th Edition | EB Left | 0.067 | 26.3 | D |
| 9 | Denali Bl/PA-4 Access | Two-way stop | HCM 7th Edition | EB Left | 0.089 | 33.8 | D |
| 10 | 46th Ave/PA-4 Access 3 | Two-way stop | HCM 7th Edition | SB Left | 0.014 | 8.9 | A |
| 11 | 48th Ave/PA-5.1 PA-5.2 | Two-way stop | HCM 7th Edition | NB Right | 0.041 | 14.1 | B |
| 12 | 48th Avenue/Fultondale Street | Signalized | HCM 7th Edition | WB Left | 0.268 | 16.3 | B |
| 13 | Fultondale St/PA-6.1 Access | Two-way stop | HCM 7th Edition | EB Left | 0.024 | 15.0 | C |
| 14 | Fultondale St/PA13.1 Access | Two-way stop | HCM 7th Edition | WB Left | 0.027 | 15.1 | C |
| 15 | Denali Bl/PA-12 Access | Two-way stop | HCM 7th Edition | WB Left | 0.032 | 20.1 | C |
| 16 | 42nd Avenue/Denali Boulevard | Signalized | HCM 7th Edition | EB Left | 0.360 | 13.4 | B |
| 17 | 42nd Avenue/Fultondale Street | Two-way stop | HCM 7th Edition | SB Left | 0.278 | 14.3 | B |
| 18 | Fultondale St/PA-13.1 | Two-way stop | HCM 7th Edition | WB Left | 0.018 | 13.2 | B |
| 19 | Fultondale St/PA13.2 Access | Two-way stop | HCM 7th Edition | WB Left | 0.018 | 13.2 | B |
| 20 | 42nd Avenue/Main Street | Signalized | HCM 7th Edition | SB Left | 0.105 | 10.2 | B |
| 21 | Fultondale St/PA-6.1 Access | Two-way stop | HCM 7th Edition | WB Left | 0.021 | 12.8 | B |
| 22 | Fultondale St/PA-6.1 | Two-way stop | HCM 7th Edition | WB Left | 0.033 | 13.9 | B |
| 23 | 42nd Ave/PA 13.1 Access 2 | Two-way stop | HCM 7th Edition | SB Left | 0.018 | 13.2 | B |
| 46 | 48th Avenue/Harvest Road | Signalized | HCM 7th Edition | EB Left | 0.423 | 28.7 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Table 7. Horizon Total Turn Lane Evaluations

| ID | Intersection | Movement | # of Lanes | Access Category | Speed Limit (mph) | Turning Vol | Lane Width | SHAC | Lane | Storage | Taper Length | COA min Storage+ Decel | Recommended | Improvement |
|----|------------------------|----------|------------|-----------------|-------------------|-------------|------------|------|------|---------|--------------|------------------------|-------------|-------------|
| 1 | 48th Ave/Main St | NBL | 2 | NR-C | 35 | 109 | 12 | 230 | | 110 | 120 | 150 | 270 | |
| | | NBR | 1 | NR-C | 35 | 97 | 12 | 220 | | 100 | 120 | | 220 | |
| | | SBL | 2 | NR-C | 35 | 218 | 12 | 230 | | 109 | 120 | 150 | 270 | |
| | | SBR | 1 | NR-C | 35 | 66 | 12 | 220 | | 100 | 120 | | 220 | |
| | | EBL | 2 | NR-A | 45 | 166 | 12 | 535 | 435 | 100 | | 200 | 535 | |
| | | EBR | 1 | NR-A | 45 | 191 | 12 | 435 | 435 | | | | 435 | |
| | | WBL | 2 | NR-A | 45 | 114 | 12 | 485 | 435 | 50 | | 200 | 485 | |
| 5 | 48th Ave/Denali Bl | WBR | 1 | NR-A | 45 | 182 | 12 | 435 | 435 | | | | 435 | |
| | | NBL | 2 | NR-B | 40 | 235 | 12 | 260 | | 118 | 144 | 200 | 345 | |
| | | NBR | 1 | NR-B | 40 | 159 | 12 | 305 | | 159 | 144 | | 305 | 20 |
| | | SBL | 1 | NR-B | 40 | 141 | 12 | 285 | | 141 | 144 | 200 | 345 | |
| | | SBR | 1 | NR-B | 40 | 301 | 12 | 445 | | 301 | 144 | | 445 | |
| | | EBL | 2 | NR-A | 45 | 89 | 12 | 485 | 435 | 50 | | 200 | 485 | |
| | | EBR | 1 | NR-A | 45 | 377 | 12 | 435 | 435 | | | | 435 | |
| 12 | 48th Ave/Fultondale St | WBL | 2 | NR-A | 45 | 304 | 12 | 585 | 435 | 152 | | 200 | 585 | 5 |
| | | WBR | 1 | NR-A | 45 | 93 | 12 | 435 | 435 | | | | 435 | |
| | | NBL | 2 | NR-C | 35 | 145 | 12 | 220 | | 100 | 120 | 150 | 270 | |
| | | NBR | 1 | NR-C | 35 | 92 | 12 | 220 | | 100 | 120 | | 220 | 50 |
| | | EBL | 1 | NR-A | 45 | 11 | 12 | 460 | 435 | 25 | | 200 | 460 | |
| 46 | 48th Ave/Harvest Rd | EBR | 1 | NR-A | 45 | 204 | 12 | 435 | 435 | | | | 435 | |
| | | WBL | 2 | NR-A | 45 | 108 | 12 | 485 | 435 | 50 | | 200 | 485 | 25 |
| | | WBR | 1 | NR-B | 45 | 242 | 12 | 435 | 435 | | | 200 | 435 | |
| 16 | 42nd Ave/Denali Bl | SBL | 2 | NR-B | 40 | 517 | 12 | 405 | | 259 | 144 | 200 | 405 | |
| | | EBL | 2 | NR-A | 45 | 492 | 12 | 680 | 435 | 246 | | 200 | 680 | 15 |
| | | WBR | 1 | NR-B | 45 | 242 | 12 | 435 | 435 | | | 200 | 435 | |
| | | NBL | 1 | NR-B | 40 | 80 | 12 | 245 | | 100 | 144 | 200 | 345 | |
| | | NBR | 1 | NR-B | 40 | 74 | 12 | 245 | | 100 | 144 | | 245 | |
| 17 | 42nd Ave/Fultondale St | SBL | 1 | NR-B | 40 | 109 | 12 | 255 | | 109 | 144 | 200 | 345 | |
| | | SBR | 1 | NR-B | 40 | 72 | 12 | 245 | | 100 | 144 | | 245 | |
| | | WBR | 1 | NR-C | 35 | 71 | 12 | 220 | | 100 | 120 | | 220 | 220 |
| | | EBL | 1 | NR-C | 35 | 58 | 12 | 170 | | 50 | 120 | 150 | 270 | |
| | | WBL | 1 | NR-C | 35 | 146 | 12 | 265 | | 146 | 120 | | 265 | 265 |
| 20 | 42nd Ave/Main St | NBR | 1 | NR-C | 35 | 83 | 12 | 220 | | 100 | 120 | | 220 | 50 |
| | | SBL | 1 | NR-C | 35 | 65 | 12 | 220 | | 100 | 120 | 150 | 270 | |
| | | WBL | 2 | NR-C | 35 | 57 | 12 | 160 | | 40 | 120 | 150 | 270 | 270 |

All of the intersections operate at an acceptable LOS in the horizon year with addition of the project.

Conclusions and Recommendations

The development of the Aurora Highlands, North Area, Area A has been studied for traffic impacts to the assumed roadway network. The roadway network assumptions were developed from a combination of *NEATS Final Report, 2018*, *The Aurora Highlands Traffic Impact Study, August 2019*, the *Winder Master Plan Master Traffic Study, October 2021*, *ATEC Traffic Impact Analysis, November 2019*, *The Aurora Highlands Filings 4, Filing 5 and Filing 8 - Planning Areas 18 and 19, April 2020*, *The Aurora Highlands Filing Number 1, and 2 Future Filing East of Filing No.2 – Planning Areas 21 and 38, July 2019*, and *Pawhaton Road Alignment Study, October 2022*. These studies were used to assume the 2040 roadway network, intersection configurations and 2040 background traffic volumes in the study area. The new project trips for The Aurora Highlands, North Area, Area A were generated using the *ITE Trip Generation Manual, 11th Edition*, distributed to the roadway network following the trip distribution assumptions from the other area studies and assigned to the roadway network. When the 2040 roadway network was analyzed with the addition of project traffic, no mitigations were required for the studied intersections. In terms of traffic calming, automated speed radar signs and school zone flashing beacons are recommended in the vicinity of the elementary school. Turn lane requirements and recommended improvements are listed below.

2040 Background Conditions

48th Avenue/Main Street (#1)

- Two 270-ft northbound left-turn. Included a 150-ft storage plus deceleration lane based on the City of Aurora (COA) minimum requirement, and a 120-ft taper lane based on the SHAC.
- A 220-ft northbound right-turn. Included a 100-ft storage and a 120-ft taper.
- Two 270-ft southbound left-turn. Included a 150-ft storage and deceleration lane plus a 120-ft taper.
- A 220-ft southbound right-turn. Included a 100-ft storage and a 120-ft taper.
- Two 535-ft eastbound left-turn. (435-ft deceleration lane and 100-ft storage).
- A 435-ft eastbound right-turn deceleration lane.
- Two 485-ft westbound left-turn. (435-ft deceleration lane and 50-ft storage).
- A 435-ft westbound right-turn deceleration lane.

48th Avenue/Denali Boulevard (#5)

- Two 345-ft northbound left-turn (200ft storage and deceleration and 144-ft taper).
- A 285-ft northbound right-turn. Included a 143-ft storage and a 144-ft taper.
- A 345-ft southbound left-turn (200ft storage and deceleration and 144-ft taper).
- A 445-ft southbound right-turn. Included a 301-ft storage and a 144-ft taper.
- Two 485-ft eastbound left-turn (435-ft deceleration lane and a 143-ft storage)
- A 435-ft eastbound right-turn deceleration lane.
- Two 580-ft westbound left-turn (435-ft deceleration lane plus a 143-ft storage)
- A 435-ft westbound right-turn deceleration lane.

48th Avenue/Fultondale Street (#12)

- Two 270-ft northbound left-turn. Included a 150-ft storage and deceleration lane plus a 120-ft taper.
- A 170-ft northbound right-turn (50-ft storage and a 120-ft taper)
- A 460-ft eastbound left-turn (435-ft deceleration lane plus a 25-ft storage)
- A 435-ft eastbound right-turn deceleration lane.

- Two 460-ft westbound left-turn (435-ft deceleration lane plus a 25-ft storage)

48th Avenue/Harvest Road (#46)

- Two 405-ft southbound left-turn (259-ft storage and 144-ft taper)
- Two 665-ft eastbound left-turn (435-ft deceleration and 232-ft storage)
- A 435-ft westbound right-turn deceleration lane.

2040 Total Conditions

48th Avenue/Denali Boulevard (#5)

- A 20-ft extension of northbound right-turn
- A 5-ft extension of westbound left-turn

48th Avenue/Fultondale Street (#12)

- A 50-ft extension of northbound right-turn
- A 25-ft extension of westbound left-turn

48th Avenue/Harvest Road (#46)

- A 15-ft extension of eastbound left-turn.

42nd Avenue/Denali Boulevard (#16)

- A 220-ft westbound right-turn (100-ft storage and a 120-ft taper)

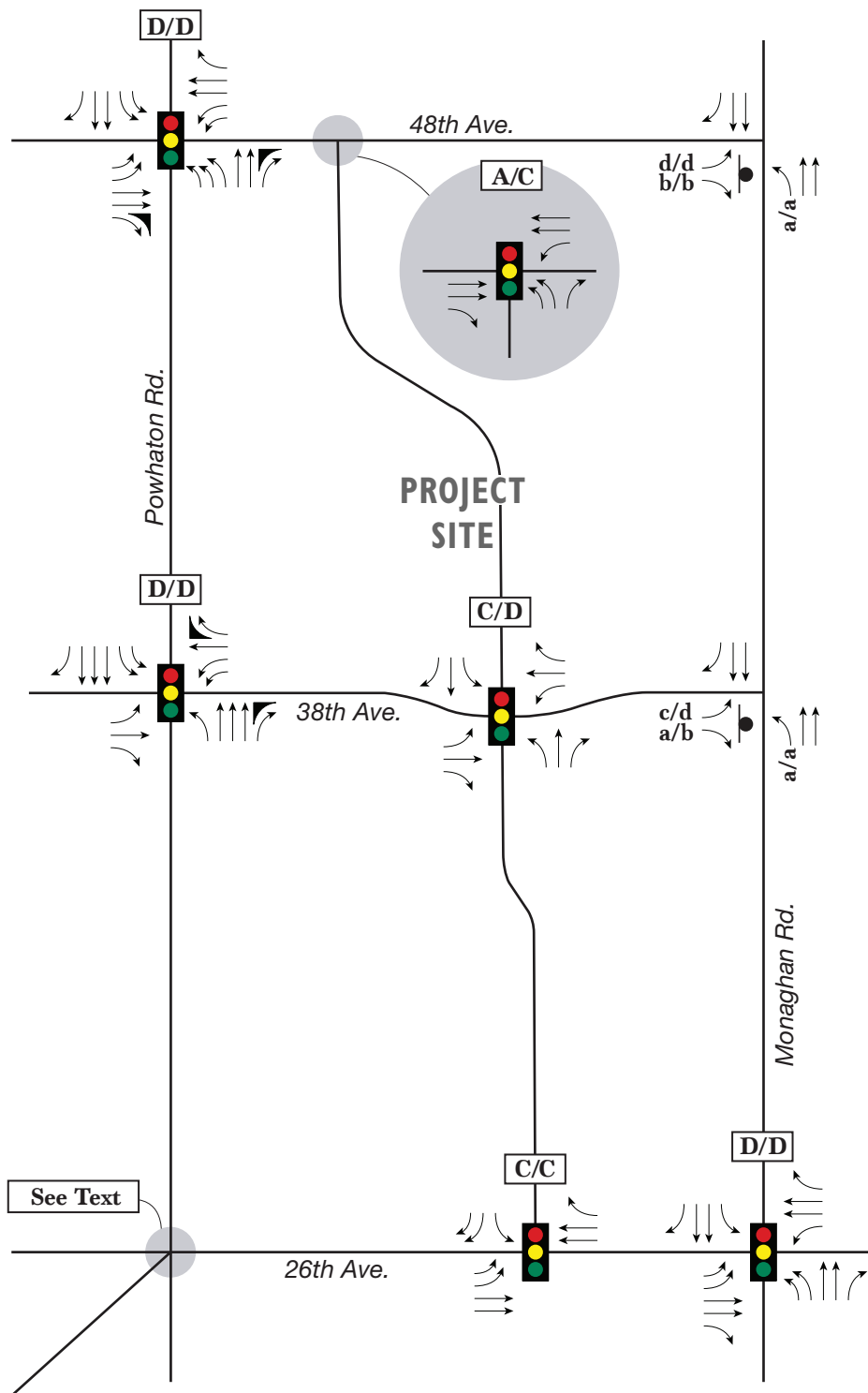
42nd Avenue/Fultondale Street (#17)

- A 265-ft westbound right-turn (146-ft storage and a 120-ft taper)
- A 20-ft extension of southbound left-turn (270-ft lane in background)



42nd Avenue/Main Street (#20)

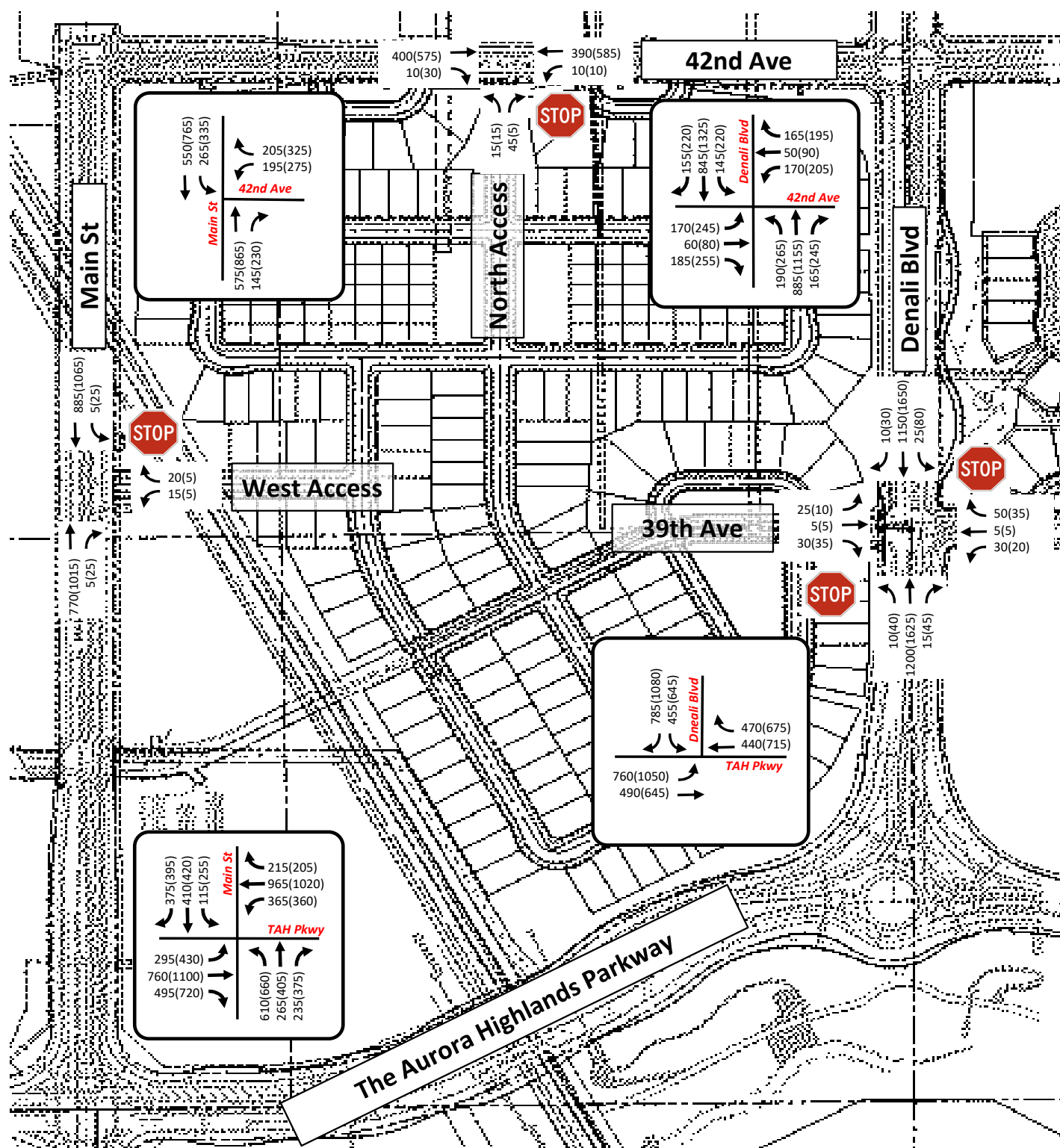
- A 50-ft extension of northbound right-turn
- Two 270-ft westbound left-turn. Included a 150-ft deceleration and storage and a 120-ft taper.

Appendix A – Background Traffic Volumes



LEGEND

- X/X** = AM/PM Peak Hour Signalized Intersection Level of Service
- x/x** = AM/PM Peak Hour Unsignalized Intersection Level of Service
-  = Stop Sign
-  = Traffic Signal



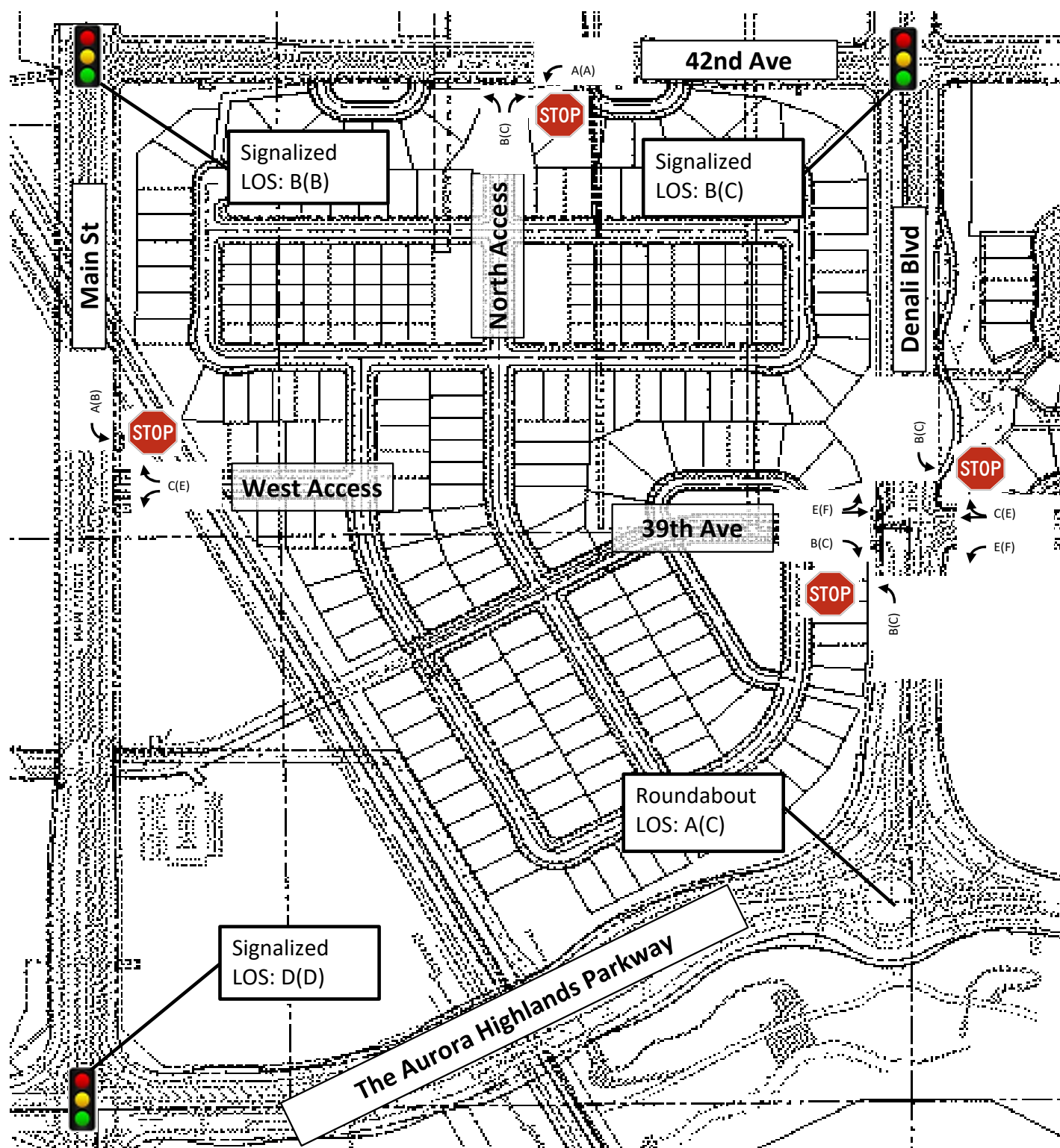
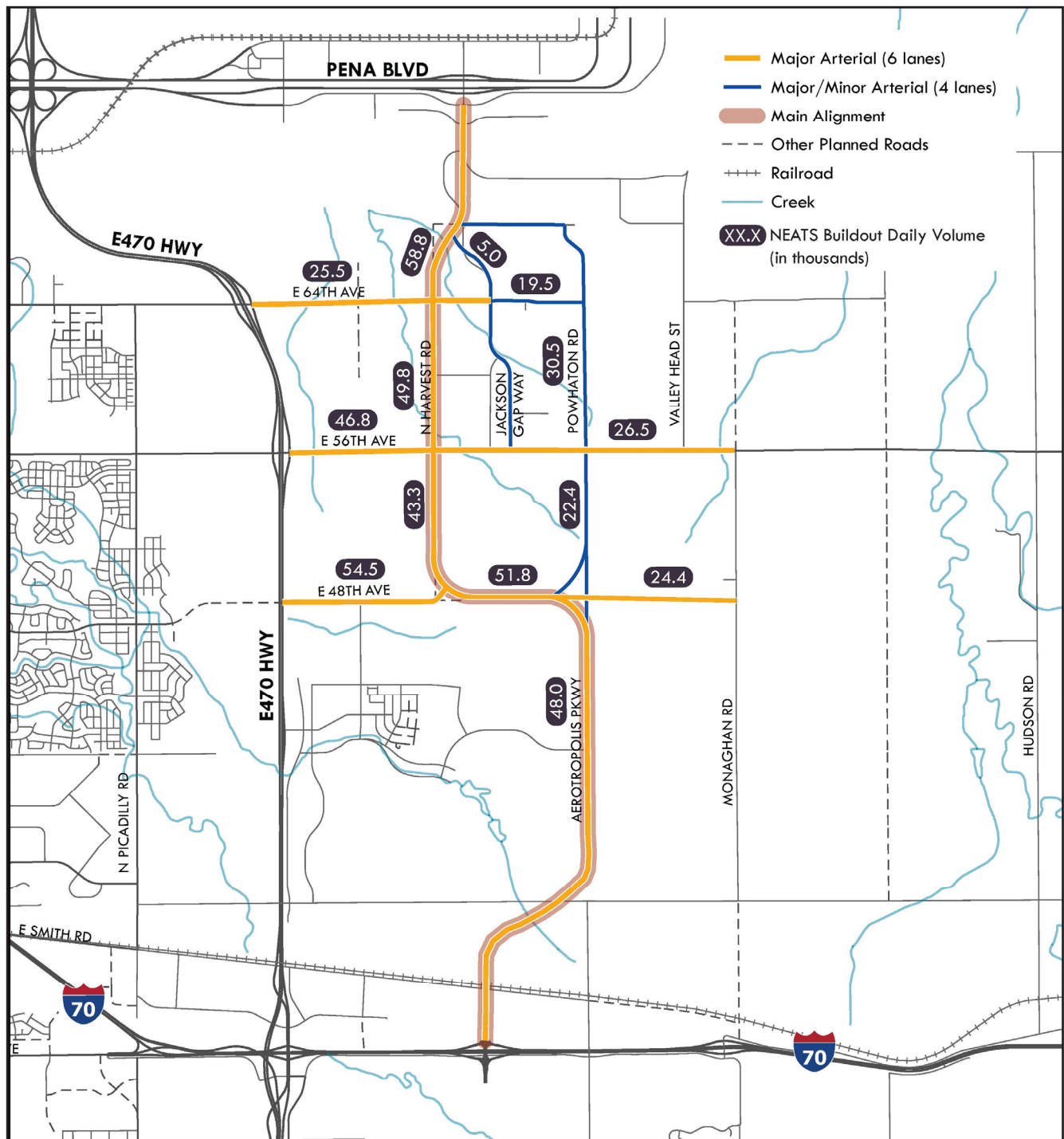




Figure 10
2040 Total Traffic Volumes

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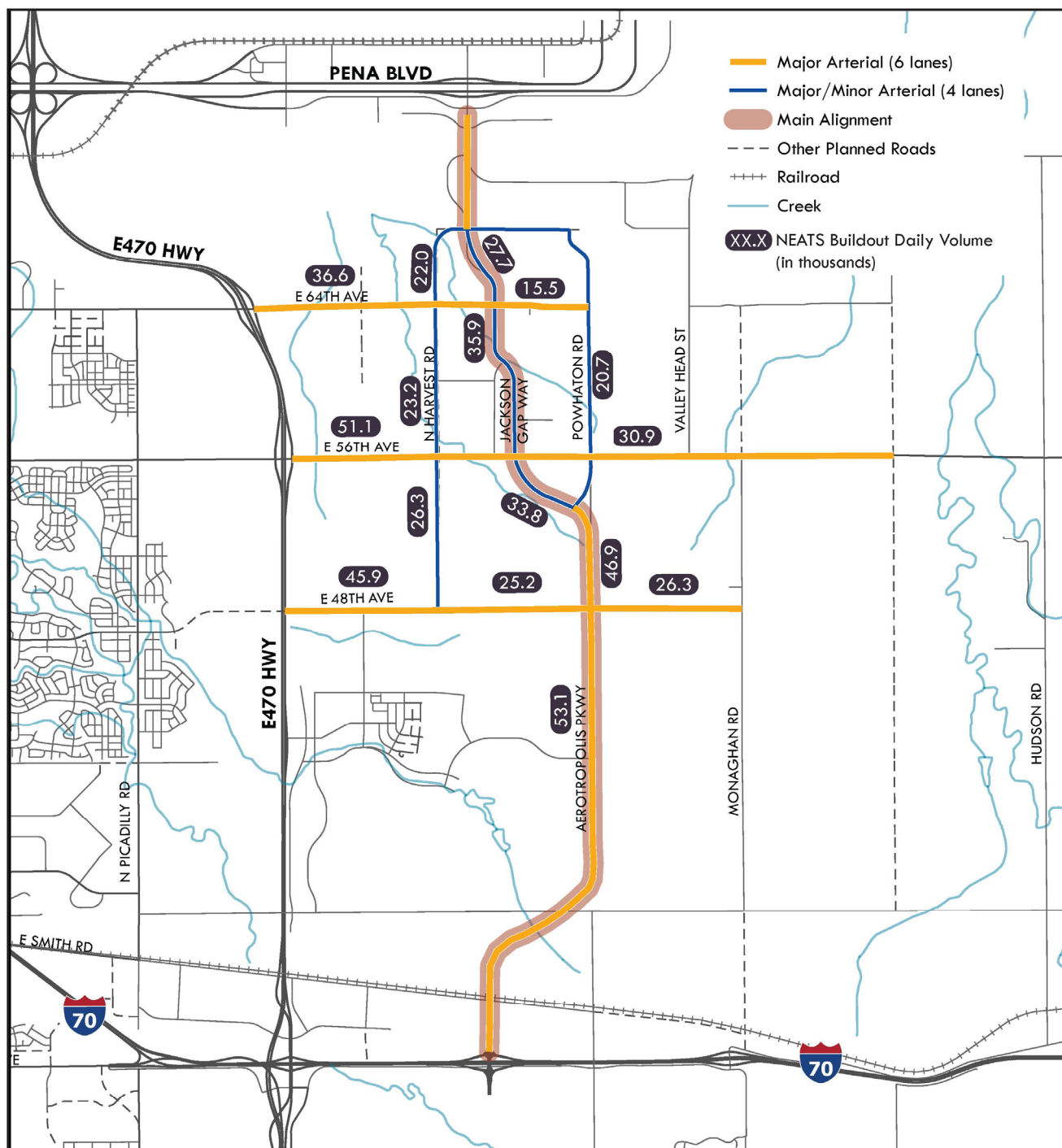
Figure 6 | NEATS Buildout Volumes



NEATS Refresh, October 2018.

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**Figure 7 | Buildout Volumes with
Powhatan to Jackson Gap Way Alignment**



Source: David Evans and Associates, Inc.

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Roadway Network Assumptions

Roadway capacity is defined as the maximum traffic volume that a roadway can carry at a desired level of service (LOS). Roadway capacity varies for different roadway types based on multiple geometric and operational factors. Facility laneage consistent with *NEATS Refresh* volume thresholds was determined for acceptable performance at Buildout (LOS D-E threshold) (see **Table 1**).

W d e c h # 1 = # U h f r p p h q g h g # W u d i l f # Y r o p h # W k u h v k r o g v # U # Q H D W V # U h i u h v k #

| ROADWAY CLASSIFICATION | NUMBER OF LANES EACH DIRECTION | RECOMMENDED DAILY TRAFFIC VOLUME LOS THRESHOLDS (VEHICLES PER DAY) | | |
|-------------------------------|--------------------------------|--|----------------------|--------------------|
| | | LOS C | LOS D ⁽²⁾ | LOS E |
| Collector | 1 | > 9,500 to 10,500 | > 10,500 to 12,000 | > 12,000 to 13,500 |
| Minor Arterial | 2 | > 22,500 to 25,500 | > 25,500 to 28,500 | > 28,500 to 32,000 |
| Minor Arterial ⁽¹⁾ | 3 | > 30,000 to 34,500 | > 34,500 to 38,500 | > 38,500 to 43,000 |
| Major Arterial | 2 | > 30,000 to 36,000 | > 36,000 to 40,000 | > 40,000 to 45,000 |
| Major Arterial | 3 | > 46,000 to 53,000 | > 53,000 to 60,000 | > 60,000 to 67,000 |
| Major Arterial ⁽¹⁾ | 4 | > 56,000 to 64,000 | > 64,000 to 72,000 | > 72,000 to 80,000 |
| Expressway | 2 | > 38,000 to 44,000 | > 44,000 to 49,000 | > 49,000 to 55,000 |
| Expressway | 3 | > 56,000 to 64,000 | > 64,000 to 72,000 | > 72,000 to 80,000 |

⁽¹⁾ System performance evaluation only.

⁽²⁾ LOS D threshold volumes used for development roadway planning consistent with traffic impact study guidelines.

Source: NEATS Refresh, October 2018

Alternatives Evaluation

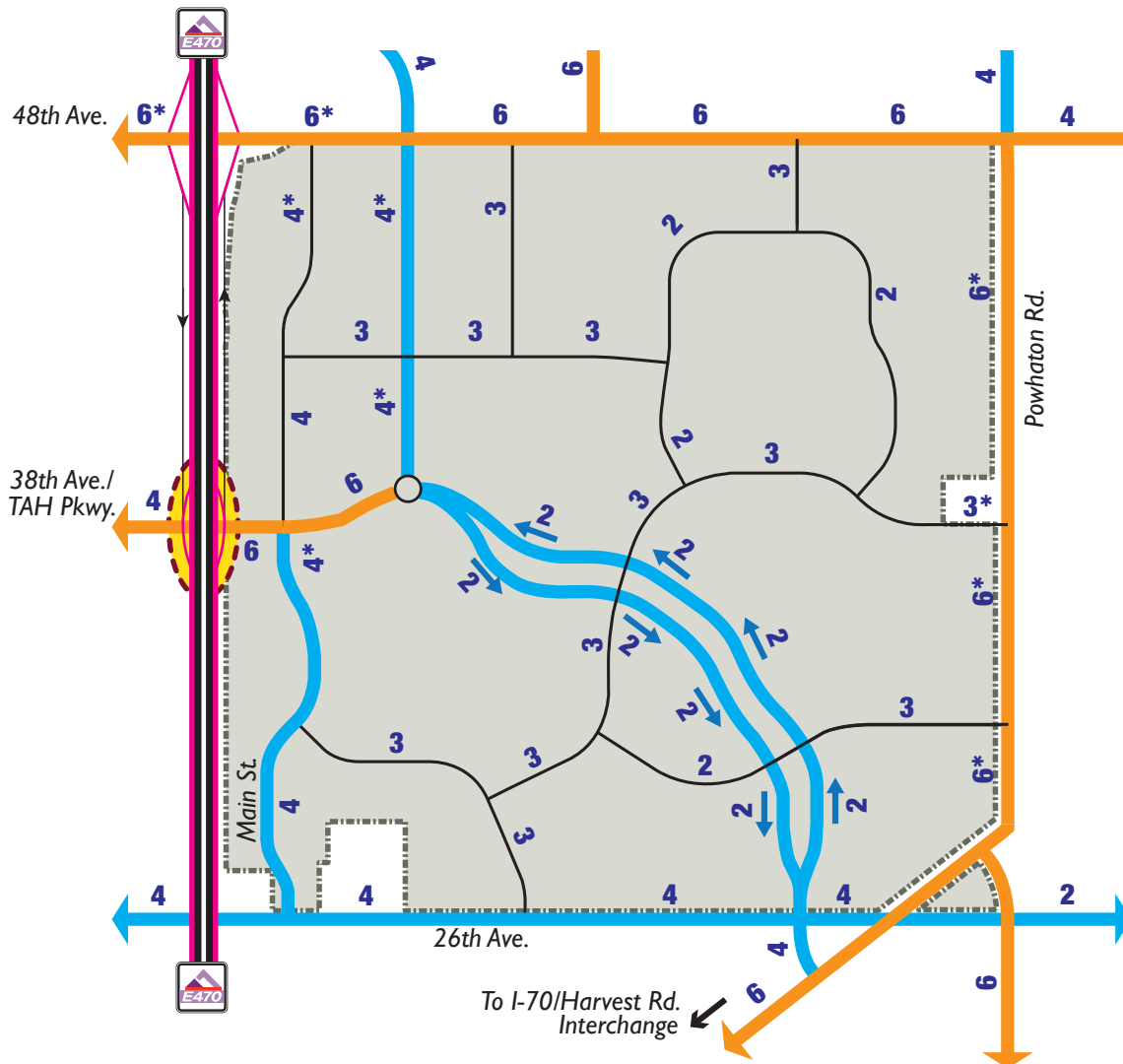
A summary of the roadway needs of the alternative alignments is provided in **Table 2**.

W d e c h # 5 = # U r d g z d | # O d q h v # d q g # F o d v v l i l f d w l r q v # z l w k # D o w h u g d w l y h # D o l j q p h q w v #

| ROADWAY SEGMENT | ROADWAY CLASSIFICATION AND LANES | | |
|--|----------------------------------|--------------------------|---------------------------------------|
| | NEATS BASE ALIGNMENT | NEATS OPTIONAL ALIGNMENT | POWHATON TO JACKSON GAP WAY ALIGNMENT |
| Harvest - 48 th to 56 th | 6-lane arterial | 4-lane arterial | 4-lane arterial |
| Harvest - 56 th to 68 th | 6-lane arterial | 6-lane arterial | 4-lane arterial |
| Jackson Gap Way - 56 th to 68 th | 4-lane collector | 4-lane collector | 4-lane arterial* |
| Jackson Gap St. - 68 th to Pena | 6-lane arterial | 6-lane arterial | 6-lane arterial |
| Powhaton - 48 th to 56 th | 4-lane arterial | 4-lane arterial | 6-lane arterial** |
| Powhaton - 56 th to 68 th | 4-lane arterial | 4-lane arterial | 4-lane arterial |
| 48 th - Harvest to Powhaton | 6-lane arterial | 4-lane arterial | 4-lane arterial |
| Diagonal Connection - Harvest to Powhaton | N/A | 6-lane arterial | N/A |
| Diagonal Connection - Powhaton to Jackson Gap Way | N/A | N/A | 4-lane arterial |

* Access control and other measures to enhance capacity of collector to arterial

** 4-lane arterial from diagonal connection to 56th Avenue



LEGEND

| | | | |
|--|---|--|---------------------------------|
| | = Tollway | | = Divided Minor Arterial |
| | = Major Arterial | | = Laneage |
| | = Minor Arterial | | = Accel/Decel Lanes also Needed |
| | = Collector Roads (Subject to traffic calming measures at time of contextual site plan) | | = Aurora Highlands |
| | = Potential Interchange | | |

NOTE:

Access Control and restrictions will along the arterial roadways in the proximity of E-470 interchanges be required.



FIGURE 5

Proposed 2040 Geometry - II

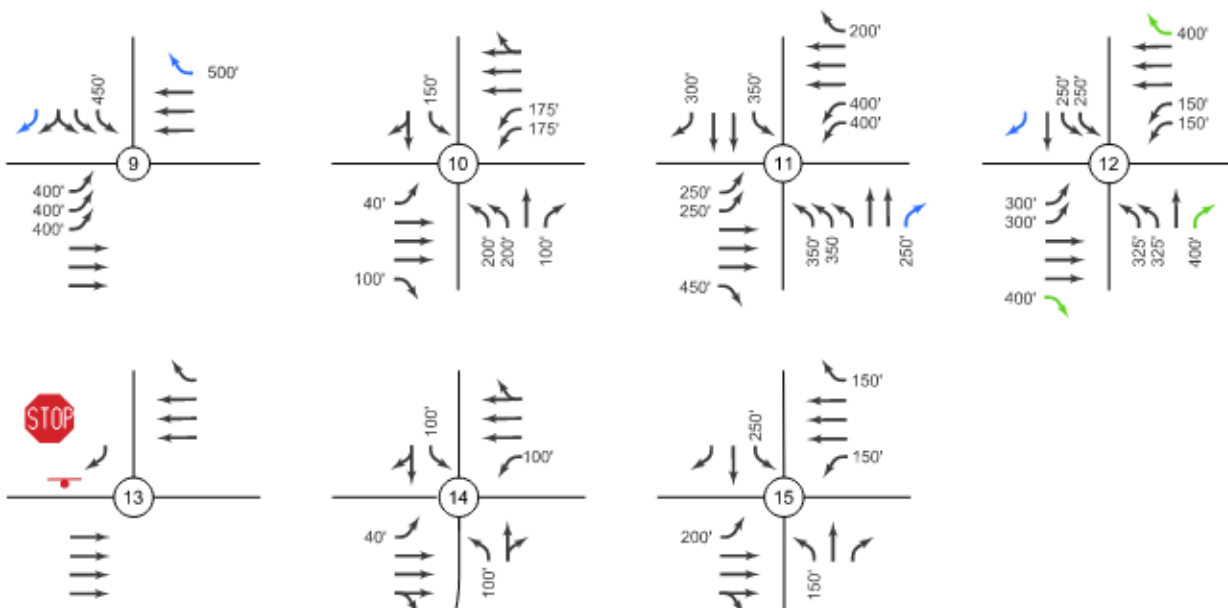
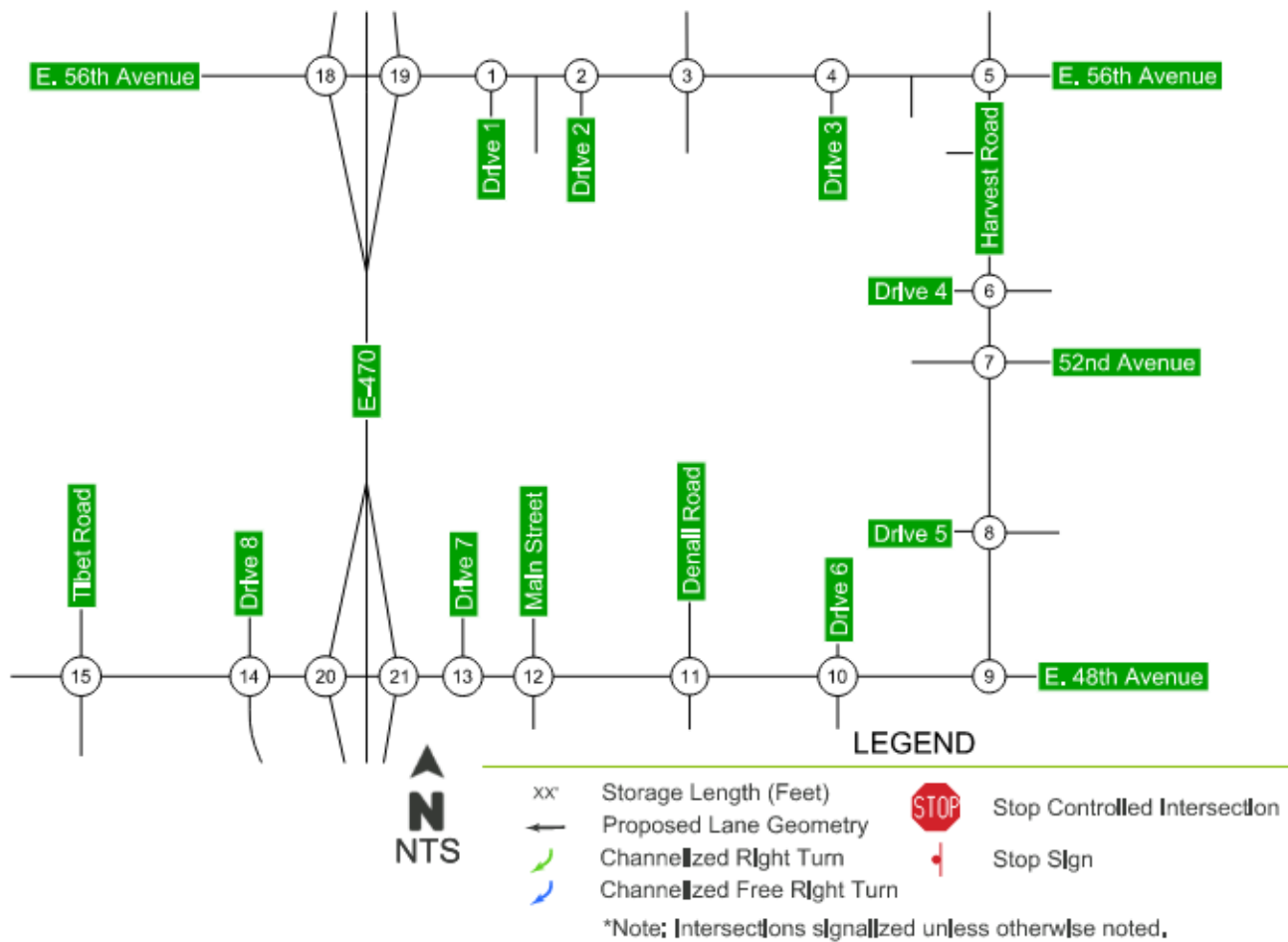
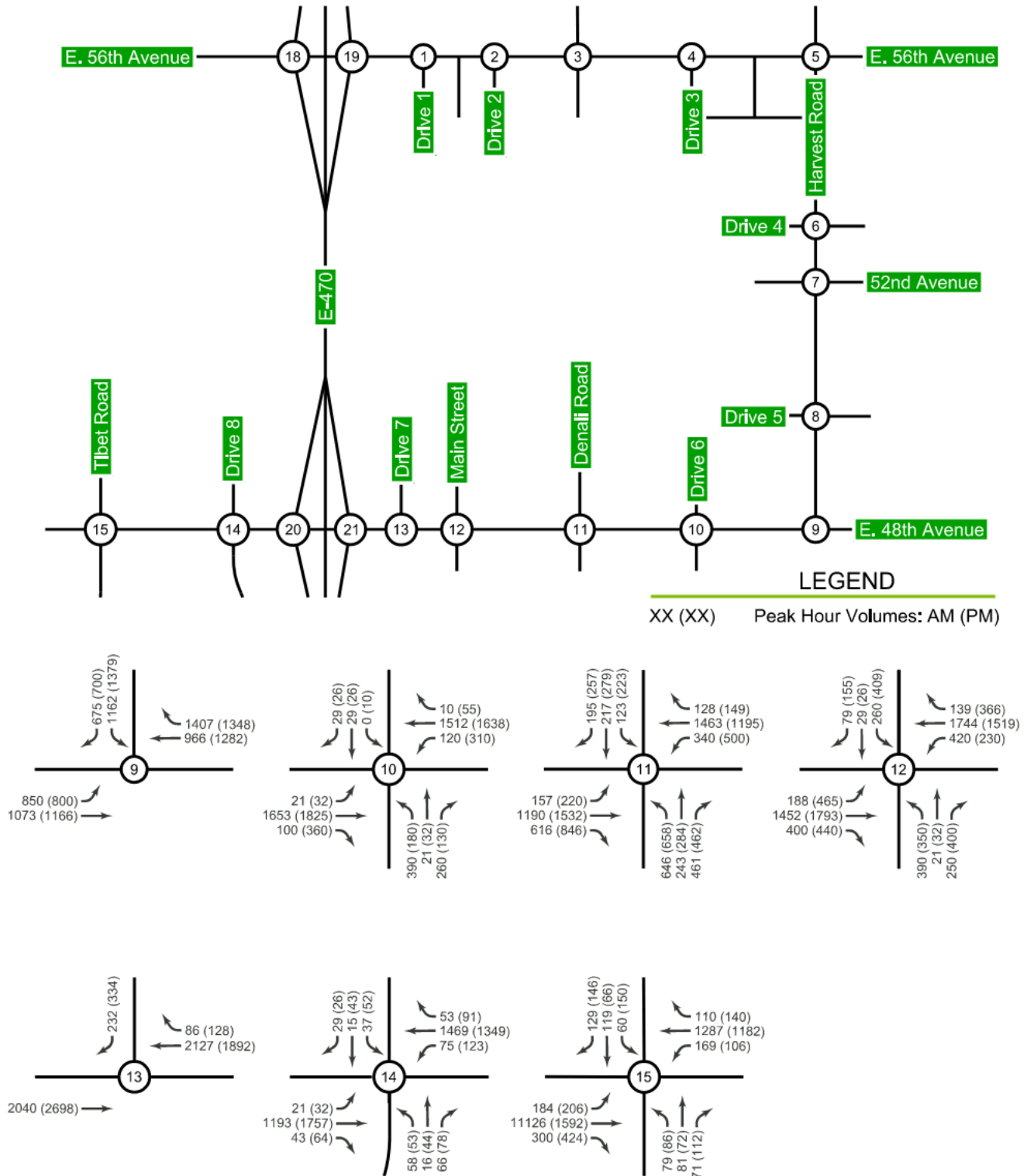


FIGURE 18

2040 Site Plus Background Traffic Volumes - II



1. HRG Horizon Total Turning movements counts (Figure 9 and Figure 10 Filings 4&5 and CSP1 , also Winder TIS Figure 18) used to obtain Turning Movements percentages at each intersections
2. FHU Figure 5 Background traffic at each leg (i.e. ADT/2) * percentages obtained in step 1 = Background Turning Movements
3. New Adjustment were made to FHU background traffic based on the new proposed extension on Pawhaton Road

HRG= HR Green TIS Filings 1&2&4&5&8

FHU= The Aurora Highlands MTIS

Winder = Winder Master Plan , MTIS

| 48th Avenue | | | | | | | | | | 42nd Avenue | | | | | | | | | | 48th Avenue | | | | | | | | | | | | | | | | | | | |
|--------------------|-----------------------------------|-----------------------------------|-----------------|----------|----------|----------|---------------------------------|---|----------|-----------------|----------|--------|----------|----------|----------|----------|----------|----------|----------|-----------------|----------|----------|--------|----|--------|--------|-----|-----|-----|----------------|--|--|--|--|--|--|--|--|--|
| AM | | | | | | | | | | PM | | | | | | | | | | AM | | | | | | | | | | PM | | | | | | | | | |
| Intersection 12 | | | | | | | | | | Intersection 12 | | | | | | | | | | Intersection 11 | | | | | | | | | | Intersection 9 | | | | | | | | | |
| Main | | | | | | | | | | Main | | | | | | | | | | Main | | | | | | | | | | Main | | | | | | | | | |
| Previous study TMC | EB | LT | 188 | 0.092157 | 106 | EB | LT | 465 | 0.17235 | 198 | EB | LT | | | EB | LT | | | | EB | LT | | | | EB | LT | | | | | | | | | | | | | |
| | | TH | 1452 | 0.711765 | 819 | | TH | 1793 | 0.664566 | 764 | | TH | | | | TH | | | | | TH | | | | TH | | | | | | | | | | | | | | |
| | | RT | 400 | 0.196078 | 225 | | RT | 440 | 0.163084 | 188 | | RT | | | | RT | | | | | RT | | | | RT | | | | | | | | | | | | | | |
| | | SUM | 2040 | | | | SUM | 2698 | | | | SUM | | | | SUM | | | | | SUM | | | | SUM | | | | | | | | | | | | | | |
| | | FHU BG | 1150 | | | | | | | | | | FHU BG | | | | | | | | | | | | | FHU BG | | | | | | | | | | | | | |
| | NB | LT | 390 | 0.590015 | 118 | NB | LT | 350 | 0.44757 | 90 | NB | LT | 0 | 0 | 0 | NB | LT | 0 | 0 | | NB | LT | | | | 99 | | | 75 | | | | | | | | | | |
| | | TH | 21 | 0.03177 | 6 | | TH | 32 | 0.040921 | 8 | | TH | 575 | 0.798611 | 200 | | TH | 865 | 0.789954 | 197 | | TH | | | | 5 | | | 7 | | | | | | | | | | |
| | | RT | 250 | 0.378215 | 76 | | RT | 400 | 0.511509 | 102 | | RT | 145 | 0.201389 | 50 | | RT | 230 | 0.210046 | 53 | | RT | | | | 64 | | | 86 | | | | | | | | | | |
| | | SUM | 661 | | | | | 782 | | | | SUM | 720 | | | | | 1095 | | | | SUM | | | | | | | | | | | | | | | | | |
| | | FHU BG | 200 | | | | | | | | | FHU BG | 250 | | | | | | | | | FHU BG | | | | | | | | | | | | | | | | | |
| | WB | LT | 420 | 0.060356 | 75 | WB | LT | 230 | 0.108747 | 136 | WB | LT | 195 | 0.4875 | 24 | WB | LT | 275 | 0.458333 | 23 | | WB | LT | | | 63 | | | 114 | | | | | | | | | | |
| | | TH | 1744 | 0.757273 | 947 | | TH | 1519 | 0.718203 | 898 | | TH | 0 | 0 | 0 | | TH | 0 | 0 | 0 | | TH | | | | 795 | | | 754 | | | | | | | | | | |
| | | RT | 139 | 0.182371 | 228 | | RT | 366 | 0.17305 | 216 | | RT | 205 | 0.5125 | 26 | | RT | 325 | 0.541667 | 27 | | RT | | | | 191 | | | 182 | | | | | | | | | | |
| | | SUM | 2303 | | | | | 2115 | | | | SUM | 400 | | | | | 600 | | | | | SUM | | | | | | | | | | | | | | | | |
| | | FHU BG | 1250 | | | | | | | | | FHU BG | 50 | | | | | | | | | FHU BG | | | | | | | | | | | | | | | | | |
| Previous study TMC | SB | LT | 260 | 1.452514 | 260 | SB | LT | 409 | 0.69322 | 124 | SB | LT | 265 | 0.325153 | 65 | SB | LT | 355 | 0.316964 | 63 | | SB | LT | | | 218 | | | 104 | | | | | | | | | | |
| | | TH | 29 | 0.162011 | 29 | | TH | 26 | 0.044068 | 8 | | TH | 550 | 0.674847 | 135 | | TH | 765 | 0.683036 | 137 | | TH | | | | 24 | | | 7 | | | | | | | | | | |
| | | RT | 79 | 0.441341 | 79 | | RT | 155 | 0.262712 | 47 | | RT | 0 | 0 | 0 | | RT | 0 | 0 | 0 | | RT | | | | 66 | | | 40 | | | | | | | | | | |
| | | SUM | 179 | | | | | 590 | | | | SUM | 815 | | | | | 1120 | | | | | SUM | | | | | | | | | | | | | | | | |
| | | FHU BG | | | | | | | | | | FHU BG | 200 | | | | | | | | | FHU BG | | | | | | | | | | | | | | | | | |
| | Previous study TMC | Denali | Intersection 11 | | | | | Intersection Denali | | | | | EB | LT | 170 | 0.409639 | 20 | EB | LT | 245 | 0.422414 | 21 | | EB | LT | | | 84 | | | | | | | | | | | |
| | | | | TH | 157 | 0.07998 | 100 | EB | TH | 220 | 0.084681 | 106 | | | TH | 60 | 0.144578 | 7 | | TH | 80 | 0.137931 | 7 | | | TH | | | 637 | | | | | | | | | | |
| | | | | RT | 1190 | 0.606215 | 758 | RT | RT | 1532 | 0.589684 | 737 | | | RT | 185 | 0.445783 | 22 | | RT | 255 | 0.439655 | 22 | | | RT | | | 329 | | | | | | | | | | |
| | | | | SUM | 616 | 0.313805 | 392 | | | 846 | 0.325635 | 407 | | | SUM | 415 | | | | 580 | | | | | | | | | | | | | | | | | | | |
| | | | | FHU BG | 1963 | | | | | 2598 | | | | FHU BG | 50 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | NB | LT | 646 | 0.478519 | 239 | NB | LT | 658 | 0.468661 | 234 | NB | LT | 190 | 0.153226 | 77 | NB | LT | 265 | 0.159159 | 80 | | NB | LT | | | 201 | | | 197 | | | | | | | | | |
| | | | TH | 243 | 0.18 | 90 | TH | TH | 284 | 0.202279 | 101 | | TH | 885 | 0.71371 | 357 | | TH | 1155 | 0.693694 | 347 | | TH | | | | 76 | | | 85 | | | | | | | | | |
| | | | RT | 461 | 0.341481 | 171 | | RT | 462 | 0.32906 | 165 | | RT | 165 | 0.133065 | 67 | | RT | 245 | 0.147147 | 74 | | RT | | | | 143 | | | 138 | | | | | | | | | |
| | | | SUM | 1350 | | | | | 1404 | | | | SUM | 1240 | | | | 1665 | | | | | SUM | | | | | | | | | | | | | | | | |
| | | | FHU BG | 500 | | | | | | | | | FHU BG | 500 | | | | | | | | | FHU BG | | | | | | | | | | | | | | | | |
| WB | | LT | 340 | 0.176075 | 220 | WB | LT | 500 | 0.27115 | 339 | WB | LT | 170 | 0.441558 | 22 | WB | LT | 205 | 0.418367 | 21 | | WB | LT | | | 185 | | | 285 | | | | | | | | | | |
| | | TH | 1463 | 0.757639 | 947 | | TH | 1195 | 0.648048 | 810 | | TH | 50 | 0.12987 | 6 | | TH | 90 | 0.183673 | 9 | | TH | | | | 796 | | | 680 | | | | | | | | | | |
| | | RT | 128 | 0.066287 | 83 | | RT | 149 | 0.080803 | 101 | | RT | 165 | 0.428571 | 21 | | RT | 195 | 0.397959 | 20 | | RT | | | | 70 | | | 85 | | | | | | | | | | |
| | | SUM | 1931 | | | | | 1844 | | | | SUM | 385 | | | | 490 | | | | | SUM | | | | | | | | | | | | | | | | | |
| | | FHU BG | 1250 | | | | | | | | | FHU BG | 50 | | | | | | | | | FHU BG | | | | | | | | | | | | | | | | | |
| Previous study TMC | SB | LT | 123 | 0.229907 | 161 | SB | LT | 223 | 0.216715 | 152 | SB | LT | 145 | 0.126638 | 63 | SB | LT | 220 | 0.124646 | 62 | | SB | LT | | | 135 | | | 127 | | | | | | | | | | |
| | | TH | 217 | 0.405607 | 284 | | TH | 279 | 0.271137 | 190 | | TH | 845 | 0.737991 | 369 | | TH | 1325 | 0.750708 | 375 | | TH | | | | 238 | | | 159 | | | | | | | | | | |
| | | RT | 195 | 0.364486 | 255 | | RT | 527 | 0.512148 | 359 | | RT | 155 | 0.135371 | 68 | | RT | 220 | 0.124646 | 62 | | RT | | | | 214 | | | 301 | | | | | | | | | | |
| | | SUM | 535 | | | | | 1029 | | | | SUM | 1145 | | | | 1765 | | | | | SUM | | | | | | | | | | | | | | | | | |
| | | FHU BG | 700 | | | | | | | | | FHU BG | 500 | | | | | | | | | FHU BG | | | | | | | | | | | | | | | | | |
| | Previous study TMC | Harvest | Intersection 9 | | | | | Intersection 17(Vistro)/Fultondale/NW Acc | | | | | EB | LT | 79 | 0.221289 | 11 | EB | LT | 35 | 0.648148 | 32 | | EB | LT | | | | | | | | | | | | | | |
| | | | | TH | 850 | 44% | 553 | EB | TH | 800 | 0.406918 | 509 | | | TH | 257 | 0.719888 | 36 | | TH | 7 | 0.12963 | 6 | | | TH | | | 265 | | | | | | | | | | |
| | | | | RT | 1073 | 56% | 697 | RT | RT | 1166 | 0.593082 | 741 | | | RT | 21 | 0.058824 | 3 | | RT | 12 | 0.222222 | 11 | | | RT | | | 586 | | | | | | | | | | |
| | | | | SUM | 0 | 0% | 0 | | | 0 | | 0 | | | SUM | 357 | | | | 54 | | | | | | SUM | | | 0 | | | | | | | | | | |
| | | | | FHU BG | 1923 | | | | | 1966 | | | | FHU BG | 50 | | | | | | | | | | FHU BG | | | 0 | | | | | | | | | | | |
| | | NB | | | | | NB | | | | | NB | LT | 39 | 0.4875 | 39 | NB | LT | 35 | 0.54688 | 35 | | | | | | | | | | | | | | | | | | |
| | | | TH | | | | | | | | | | TH | 31 | 0.3875 | 31 | | TH | 17 | 0.26563 | 17 | | | | | | | | | | | | | | | | | | |
| | | | RT | | | | | | | | | | RT | 10 | 0.125 | 10 | | RT | 12 | 0.1875 | 12 | | | | | | | | | | | | | | | | | | |
| | | | SUM | | | | | | | | | | SUM | 80 | | | | 64 | | | | | | | | | | | | | | | | | | | | | |
| | | | FHU BG | | | | | | | | | | FHU BG | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WB | | LT | 0 | #REF! | #REF! | WB | LT | 0 | 0 | | WB | LT | 10 | 0.027397 | 3 | WB | LT | 23 | 0.044574 | 4 | | WB | LT | | | | | | | | | | | | | | | | |
| | | TH | 966 | 41% | 346 | TH | TH | 1282 | 0.476757 | 405 | | TH | 262 | 0.717808 | 72 | | TH | 400 | 0.775194 | 78 | | TH | | | | 291 | | | 340 | | | | | | | | | | |
| | | RT | 1407 | 59% | 504 | RT | RT | 1407 | 0.523243 | 445 | | RT | 93 | 0.254795 | 25 | | RT | 93 | 0.180233 | 18 | | RT | | | | 302 | | | 267 | | | | | | | | | | |
| | | SUM | 2373 | | | | | 2689 | | | | SUM | 365 | | | | 516 | | | | | SUM | | | | | | | | | | | | | | | | | |
| | | FHU BG | 850 | | | | | | | | | FHU BG | 100 | | | | | | | | | FHU BG | | | | | | | | | | | | | | | | | |
| SB | LT | 1162 | 63% | 822 | SB | LT | 1379 | 0.6633 | 862 | SB | LT | 99 | 0.462617 | 69 | SB | LT | 36 | 0.461538 | 69 | | SB | LT | | | 395 | | | 414 | | | | | | | | | | | |
| | TH | 0 | 0% | 0 | | TH | 0 | 0 | 0 | | TH | 25 | 0.116822 | 18 | | TH | 6 | 0.076923 | 12 | | TH | | | | 0 | | | | | | | | | | | | | | |
| | RT | 675 | 37% | 478 | | RT | 700 | 0.3367 | 438 | | RT | 90 | 0.420561 | 63 | | RT | 36 | 0.461538 | 69 | | RT | | | | 401 | | | 368 | | | | | | | | | | | |
| | SUM | 1837 | | | | | 2079 | | | | SUM | 214 | | | | 78 | | | | | SUM | | | | | | | | | | | | | | | | | | |
| | FHU BG | 1300 | | | | | | | | | FHU BG | 150 | | | | | | | | | FHU BG | | | | | | | | | | | | | | | | | | |
| Previous study TMC | Intersection 10/Fultondale St(12) | Intersection 10/Fultondale St(12) | | | | | Intersection NE ACC/23 (Vistro) | | | | | EB | LT | 9 | 0.02521 | 3 | EB | LT | 29 | 0.057769 | 6 | | EB | LT | | | | | | | | | | | | | | | |

| Segment | NEATS (ADT) | New Study (ADT) | Factor |
|----------------------|-------------|-----------------|----------|
| 48th Ave W.O Harvest | 54.5 | 45.9 | 0.842202 |
| 48th Ave E.O Harvest | 51.8 | 25.2 | 0.486486 |
| 48th E.O Pawhaton | 24.47 | 26.3 | 1.074785 |
| Harvest N.O 48th Ave | 43.3 | 26.3 | 0.60739 |
| Pawhaton N.O 48th | 22.4 | 46.9 | 2.09375 |
| Pawhaton S.O 48th | 48 | 53.1 | 1.10625 |

Appendix B – Trip Generation

| PROJECT DETAILS | | | |
|------------------|-------------------|-----------------------|---|
| Project Name: | TAH Area A - copy | Type of Project: | |
| Project No: | | City: | |
| Country: | | Built-up Area(Sq.ft): | |
| Analyst Name: | Scott Barnhart | Clients Name: | |
| Date: | 1/24/2022 | ZIP/Postal Code: | |
| State/Province: | | No. of Scenarios: | 3 |
| Analysis Region: | | | |
| SCENARIO SUMMARY | | | |

| Scenarios | Name | No. of Land Uses | Phases of Development | No. of Years to Project Traffic | User Group | Estimated New Vehicle Trips | | |
|--------------|--------------|------------------|-----------------------|---------------------------------|------------|-----------------------------|------|-------|
| | | | | | | Entry | Exit | Total |
| Scenario - 1 | Weekday | 8 | 1 | 0 | | 3619 | 3619 | 7238 |
| Scenario - 2 | AM Peak Hour | 8 | 1 | 0 | | 139 | 395 | 534 |
| Scenario - 3 | PM Peak Hour | 8 | 1 | 0 | | 447 | 264 | 711 |

Scenario - 1

Scenario Name: Weekday

Dev. phase: 1

Analyst Note:

User Group:

No. of Years to Project 0

Traffic :

Warning:

VEHICLE TRIPS BEFORE REDUCTION

| Land Use & Data Source | Location | IV | Size | Time Period | Method | Entry | Exit | Total |
|---|---------------------------|----------------|------|-------------|-------------------------|--------|--------|-------|
| | | | | | Rate/Equation | Split% | Split% | |
| 210 - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 143 | Weekday | Best Fit (LOG) | 701 | 701 | 1402 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.92Ln(X) + 2.68 | 50% | 50% | |
| 210(1) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 69 | Weekday | Best Fit (LOG) | 359 | 359 | 718 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.92Ln(X) + 2.68 | 50% | 50% | |
| 210(2) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 98 | Weekday | Best Fit (LOG) | 495 | 495 | 990 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.92Ln(X) + 2.68 | 50% | 50% | |
| 210(3) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 111 | Weekday | Best Fit (LOG) | 555 | 555 | 1110 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.92Ln(X) + 2.68 | 50% | 50% | |
| 210(4) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 71 | Weekday | Best Fit (LOG) | 368 | 368 | 736 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.92Ln(X) + 2.68 | 50% | 50% | |
| 210(5) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 61 | Weekday | Best Fit (LOG) | 320 | 320 | 640 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.92Ln(X) + 2.68 | 50% | 50% | |
| 210(6) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 46 | Weekday | Best Fit (LOG) | 247 | 247 | 494 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.92Ln(X) + 2.68 | 50% | 50% | |
| 210(7) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 115 | Weekday | Best Fit (LOG) | 574 | 574 | 1148 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.92Ln(X) + 2.68 | 50% | 50% | |

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

| Land Use | Baseline Site Vehicle Mode Share | | Baseline Site Vehicle Occupancy | | Baseline Site Vehicle Directional Split | |
|---|----------------------------------|----------|---------------------------------|------|---|----------|
| | Entry (%) | Exit (%) | Entry | Exit | Entry (%) | Exit (%) |
| 210 - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 50 | 50 |
| 210(1) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 50 | 50 |
| 210(2) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 50 | 50 |
| 210(3) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 50 | 50 |
| 210(4) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 50 | 50 |
| 210(5) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 50 | 50 |
| 210(6) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 50 | 50 |
| 210(7) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 50 | 50 |

ESTIMATED BASELINE SITE PERSON TRIPS:

| Land Use | Person Trips by Vehicle | | Person Trips by Other Modes | | Total Baseline Site Person Trips | |
|---|-------------------------|------|-----------------------------|------|----------------------------------|------|
| | Entry | Exit | Entry | Exit | Entry | Exit |
| 210 - Single-Family Detached Housing | 701 | 701 | 0 | 0 | 701 | 701 |
| | 1402 | | 0 | | 1402 | |
| 210(1) - Single-Family Detached Housing | 359 | 359 | 0 | 0 | 359 | 359 |
| | 718 | | 0 | | 718 | |
| 210(2) - Single-Family Detached Housing | 495 | 495 | 0 | 0 | 495 | 495 |
| | 990 | | 0 | | 990 | |
| 210(3) - Single-Family Detached Housing | 555 | 555 | 0 | 0 | 555 | 555 |
| | 1110 | | 0 | | 1110 | |

| | | | | | | |
|---|------|-----|---|---|------|-----|
| 210(4) - Single-Family Detached Housing | 368 | 368 | 0 | 0 | 368 | 368 |
| | 736 | | 0 | | 736 | |
| 210(5) - Single-Family Detached Housing | 320 | 320 | 0 | 0 | 320 | 320 |
| | 640 | | 0 | | 640 | |
| 210(6) - Single-Family Detached Housing | 247 | 247 | 0 | 0 | 247 | 247 |
| | 494 | | 0 | | 494 | |
| 210(7) - Single-Family Detached Housing | 574 | 574 | 0 | 0 | 574 | 574 |
| | 1148 | | 0 | | 1148 | |

NEW VEHICLE TRIPS

| Land Use | New Vehicle Trips | | |
|---|-------------------|------|-------|
| | Entry | Exit | Total |
| 210 - Single-Family Detached Housing | 701 | 701 | 1402 |
| 210(1) - Single-Family Detached Housing | 359 | 359 | 718 |
| 210(2) - Single-Family Detached Housing | 495 | 495 | 990 |
| 210(3) - Single-Family Detached Housing | 555 | 555 | 1110 |
| 210(4) - Single-Family Detached Housing | 368 | 368 | 736 |
| 210(5) - Single-Family Detached Housing | 320 | 320 | 640 |
| 210(6) - Single-Family Detached Housing | 247 | 247 | 494 |
| 210(7) - Single-Family Detached Housing | 574 | 574 | 1148 |

RESULTS

| Site Totals | Entry | Exit | Total |
|--------------------------------|-------|------|-------|
| Vehicle Trips Before Reduction | 3619 | 3619 | 7238 |
| External Vehicle Trips | 3619 | 3619 | 7238 |
| New Vehicle Trips | 3619 | 3619 | 7238 |

Scenario - 2

Scenario Name: AM Peak Hour

User Group:

Dev. phase: 1

No. of Years to Project 0

Analyst Note:

Traffic :

Warning:

VEHICLE TRIPS BEFORE REDUCTION

| Land Use & Data Source | Location | IV | Size | Time Period | Method | Entry | Exit | Total |
|---|---------------------------|----------------|------|---|------------------------------|--------|--------|-------|
| | | | | | Rate/Equation | Split% | Split% | |
| 210 - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 143 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 27 | 76 | 103 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | $\ln(T) = 0.91\ln(X) + 0.12$ | 26% | 74% | |
| 210(1) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 69 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 14 | 39 | 53 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | $\ln(T) = 0.91\ln(X) + 0.12$ | 26% | 74% | |
| 210(2) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 98 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 19 | 54 | 73 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | $\ln(T) = 0.91\ln(X) + 0.12$ | 26% | 74% | |
| 210(3) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 111 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 21 | 61 | 82 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | $\ln(T) = 0.91\ln(X) + 0.12$ | 26% | 74% | |
| 210(4) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 71 | Weekday, Peak Hour of Adjacent Street | Best Fit (LOG) | 14 | 40 | 54 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | $\ln(T) = 0.91\ln(X) + 0.12$ | 26% | 74% | |
| 210(5) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 61 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 12 | 35 | 47 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | $\ln(T) = 0.91\ln(X) + 0.12$ | 26% | 74% | |
| 210(6) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 46 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 10 | 27 | 37 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | $\ln(T) = 0.91\ln(X) + 0.12$ | 26% | 74% | |
| 210(7) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 115 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 22 | 63 | 85 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | $\ln(T) = 0.91\ln(X) + 0.12$ | 26% | 74% | |

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

| Land Use | Baseline Site Vehicle Mode Share | | Baseline Site Vehicle Occupancy | | Baseline Site Vehicle Directional Split | |
|---|----------------------------------|----------|---------------------------------|------|---|----------|
| | Entry (%) | Exit (%) | Entry | Exit | Entry (%) | Exit (%) |
| 210 - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 26 | 74 |
| 210(1) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 26 | 74 |
| 210(2) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 26 | 74 |
| 210(3) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 26 | 74 |
| 210(4) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 26 | 74 |
| 210(5) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 26 | 74 |
| 210(6) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 26 | 74 |
| 210(7) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 26 | 74 |

ESTIMATED BASELINE SITE PERSON TRIPS:

| Land Use | Person Trips by Vehicle | | Person Trips by Other Modes | | Total Baseline Site Person Trips | |
|---|-------------------------|------|-----------------------------|------|----------------------------------|------|
| | Entry | Exit | Entry | Exit | Entry | Exit |
| 210 - Single-Family Detached Housing | 27 | 76 | 0 | 0 | 27 | 76 |
| | 103 | | 0 | | 103 | |
| 210(1) - Single-Family Detached Housing | 14 | 39 | 0 | 0 | 14 | 39 |
| | 53 | | 0 | | 53 | |
| 210(2) - Single-Family Detached Housing | 19 | 54 | 0 | 0 | 19 | 54 |
| | 73 | | 0 | | 73 | |
| 210(3) - Single-Family Detached Housing | 21 | 61 | 0 | 0 | 21 | 61 |
| | 82 | | 0 | | 82 | |

| | | | | | | |
|---|----|----|---|---|----|----|
| 210(4) - Single-Family Detached Housing | 14 | 40 | 0 | 0 | 14 | 40 |
| | 54 | | 0 | | 54 | |
| 210(5) - Single-Family Detached Housing | 12 | 35 | 0 | 0 | 12 | 35 |
| | 47 | | 0 | | 47 | |
| 210(6) - Single-Family Detached Housing | 10 | 27 | 0 | 0 | 10 | 27 |
| | 37 | | 0 | | 37 | |
| 210(7) - Single-Family Detached Housing | 22 | 63 | 0 | 0 | 22 | 63 |
| | 85 | | 0 | | 85 | |

NEW VEHICLE TRIPS

| Land Use | New Vehicle Trips | | |
|---|-------------------|------|-------|
| | Entry | Exit | Total |
| 210 - Single-Family Detached Housing | 27 | 76 | 103 |
| 210(1) - Single-Family Detached Housing | 14 | 39 | 53 |
| 210(2) - Single-Family Detached Housing | 19 | 54 | 73 |
| 210(3) - Single-Family Detached Housing | 21 | 61 | 82 |
| 210(4) - Single-Family Detached Housing | 14 | 40 | 54 |
| 210(5) - Single-Family Detached Housing | 12 | 35 | 47 |
| 210(6) - Single-Family Detached Housing | 10 | 27 | 37 |
| 210(7) - Single-Family Detached Housing | 22 | 63 | 85 |

RESULTS

| Site Totals | Entry | Exit | Total |
|--------------------------------|-------|------|-------|
| Vehicle Trips Before Reduction | 139 | 395 | 534 |
| External Vehicle Trips | 139 | 395 | 534 |
| New Vehicle Trips | 139 | 395 | 534 |

Scenario - 3

Scenario Name: PM Peak Hour

User Group:

Dev. phase: 1

No. of Years to Project 0

Analyst Note:

Traffic :

Warning:

VEHICLE TRIPS BEFORE REDUCTION

| Land Use & Data Source | Location | IV | Size | Time Period | Method | Entry | Exit | Total |
|---|---------------------------|----------------|------|---|-------------------------|--------|--------|-------|
| | | | | | Rate/Equation | Split% | Split% | |
| 210 - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 143 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 88 | 51 | 139 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.94Ln(X) + 0.27 | 63% | 37% | |
| 210(1) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 69 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 44 | 26 | 70 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.94Ln(X) + 0.27 | 63% | 37% | |
| 210(2) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 98 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 61 | 36 | 97 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.94Ln(X) + 0.27 | 63% | 37% | |
| 210(3) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 111 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 69 | 41 | 110 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.94Ln(X) + 0.27 | 63% | 37% | |
| 210(4) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 71 | Weekday, Peak Hour of Adjacent Street | Best Fit (LOG) | 45 | 27 | 72 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.94Ln(X) + 0.27 | 63% | 37% | |
| 210(5) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 61 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 39 | 23 | 62 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.94Ln(X) + 0.27 | 63% | 37% | |
| 210(6) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 46 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 30 | 18 | 48 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.94Ln(X) + 0.27 | 63% | 37% | |
| 210(7) - Single-Family Detached Housing | General Urban/Suburban | Dwelling Units | 115 | Weekday, Peak Hour of Adjacent Street Traffic, | Best Fit (LOG) | 71 | 42 | 113 |
| Data Source: Trip Generation Manual 11.1 Ed | | | | | Ln(T) =0.94Ln(X) + 0.27 | 63% | 37% | |

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

| Land Use | Baseline Site Vehicle Mode Share | | Baseline Site Vehicle Occupancy | | Baseline Site Vehicle Directional Split | |
|---|----------------------------------|----------|---------------------------------|------|---|----------|
| | Entry (%) | Exit (%) | Entry | Exit | Entry (%) | Exit (%) |
| 210 - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 63 | 37 |
| 210(1) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 63 | 37 |
| 210(2) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 63 | 37 |
| 210(3) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 63 | 37 |
| 210(4) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 63 | 37 |
| 210(5) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 63 | 37 |
| 210(6) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 63 | 37 |
| 210(7) - Single-Family Detached Housing | 100 | 100 | 1 | 1 | 63 | 37 |

ESTIMATED BASELINE SITE PERSON TRIPS:

| Land Use | Person Trips by Vehicle | | Person Trips by Other Modes | | Total Baseline Site Person Trips | |
|---|-------------------------|------|-----------------------------|------|----------------------------------|------|
| | Entry | Exit | Entry | Exit | Entry | Exit |
| 210 - Single-Family Detached Housing | 88 | 51 | 0 | 0 | 88 | 51 |
| | 139 | | 0 | | 139 | |
| 210(1) - Single-Family Detached Housing | 44 | 26 | 0 | 0 | 44 | 26 |
| | 70 | | 0 | | 70 | |
| 210(2) - Single-Family Detached Housing | 61 | 36 | 0 | 0 | 61 | 36 |
| | 97 | | 0 | | 97 | |
| 210(3) - Single-Family Detached Housing | 69 | 41 | 0 | 0 | 69 | 41 |
| | 110 | | 0 | | 110 | |

| | | | | | | |
|---|-----|----|---|---|-----|----|
| 210(4) - Single-Family Detached Housing | 45 | 27 | 0 | 0 | 45 | 27 |
| | 72 | | 0 | | 72 | |
| 210(5) - Single-Family Detached Housing | 39 | 23 | 0 | 0 | 39 | 23 |
| | 62 | | 0 | | 62 | |
| 210(6) - Single-Family Detached Housing | 30 | 18 | 0 | 0 | 30 | 18 |
| | 48 | | 0 | | 48 | |
| 210(7) - Single-Family Detached Housing | 71 | 42 | 0 | 0 | 71 | 42 |
| | 113 | | 0 | | 113 | |

NEW VEHICLE TRIPS

| Land Use | New Vehicle Trips | | |
|---|-------------------|------|-------|
| | Entry | Exit | Total |
| 210 - Single-Family Detached Housing | 88 | 51 | 139 |
| 210(1) - Single-Family Detached Housing | 44 | 26 | 70 |
| 210(2) - Single-Family Detached Housing | 61 | 36 | 97 |
| 210(3) - Single-Family Detached Housing | 69 | 41 | 110 |
| 210(4) - Single-Family Detached Housing | 45 | 27 | 72 |
| 210(5) - Single-Family Detached Housing | 39 | 23 | 62 |
| 210(6) - Single-Family Detached Housing | 30 | 18 | 48 |
| 210(7) - Single-Family Detached Housing | 71 | 42 | 113 |

RESULTS

| Site Totals | Entry | Exit | Total |
|--------------------------------|-------|------|-------|
| Vehicle Trips Before Reduction | 447 | 264 | 711 |
| External Vehicle Trips | 447 | 264 | 711 |
| New Vehicle Trips | 447 | 264 | 711 |

Appendix C – Horizon Without Project Analyses

Intersection Level Of Service Report

Intersection 1: 48th Avenue/Main Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 39.6 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.320 |

Intersection Setup

| Name | Main Street | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|-------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | L | | | L | | | L | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 |
| Entry Pocket Length [ft] | 325.0 | 100.0 | 400.0 | 250.0 | 100.0 | 250.0 | 300.0 | 100.0 | 400.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 400.0 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Main Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|--|-------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 99 | 5 | 64 | 218 | 24 | 66 | 89 | 688 | 189 | 63 | 795 | 63 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 32 | 0 | 0 | 66 | 0 | 0 | 95 | 0 | 0 | 32 |
| Total Hourly Volume [veh/h] | 99 | 5 | 32 | 218 | 24 | 0 | 89 | 688 | 94 | 63 | 795 | 31 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 27 | 1 | 9 | 59 | 7 | 0 | 24 | 187 | 26 | 17 | 216 | 8 |
| Total Analysis Volume [veh/h] | 108 | 5 | 35 | 237 | 26 | 0 | 97 | 748 | 102 | 68 | 864 | 34 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 14 | 43 | 0 | 14 | 43 | 0 | 13 | 34 | 0 | 9 | 30 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 34 | 0 | 0 | 34 | 0 | 0 | 21 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 5 | 47 | 47 | 10 | 52 | 52 | 5 | 23 | 23 | 4 | 22 | 22 |
| g / C, Green / Cycle | 0.05 | 0.47 | 0.47 | 0.10 | 0.52 | 0.52 | 0.05 | 0.23 | 0.23 | 0.04 | 0.22 | 0.22 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.00 | 0.02 | 0.08 | 0.02 | 0.00 | 0.03 | 0.16 | 0.07 | 0.02 | 0.19 | 0.02 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1431 | 3113 | 1683 | 1431 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 166 | 796 | 676 | 298 | 867 | 737 | 152 | 1046 | 326 | 135 | 1022 | 319 |
| d1, Uniform Delay [s] | 46.49 | 13.96 | 14.27 | 44.31 | 11.95 | 0.00 | 46.75 | 35.64 | 32.12 | 46.83 | 37.26 | 30.98 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.27 | 0.01 | 0.15 | 4.81 | 0.06 | 0.00 | 4.38 | 0.93 | 0.54 | 2.86 | 2.03 | 0.15 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.65 | 0.01 | 0.05 | 0.79 | 0.03 | 0.00 | 0.64 | 0.71 | 0.31 | 0.50 | 0.85 | 0.11 |
| d, Delay for Lane Group [s/veh] | 50.77 | 13.98 | 14.42 | 49.12 | 12.01 | 0.00 | 51.13 | 36.57 | 32.66 | 49.69 | 39.29 | 31.12 |
| Lane Group LOS | D | B | B | D | B | A | D | D | C | D | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.41 | 0.06 | 0.45 | 3.05 | 0.29 | 0.00 | 1.27 | 5.62 | 2.09 | 0.88 | 6.83 | 0.66 |
| 50th-Percentile Queue Length [ft/ln] | 35.25 | 1.55 | 11.22 | 76.36 | 7.36 | 0.00 | 31.81 | 140.5 | 52.20 | 21.95 | 170.8 | 16.62 |
| 95th-Percentile Queue Length [veh/ln] | 2.54 | 0.11 | 0.81 | 5.50 | 0.53 | 0.00 | 2.29 | 9.51 | 3.76 | 1.58 | 11.12 | 1.20 |
| 95th-Percentile Queue Length [ft/ln] | 63.45 | 2.79 | 20.20 | 137.4 | 13.25 | 0.00 | 57.26 | 237.7 | 93.97 | 39.52 | 278.0 | 29.91 |

Movement, Approach, & Intersection Results

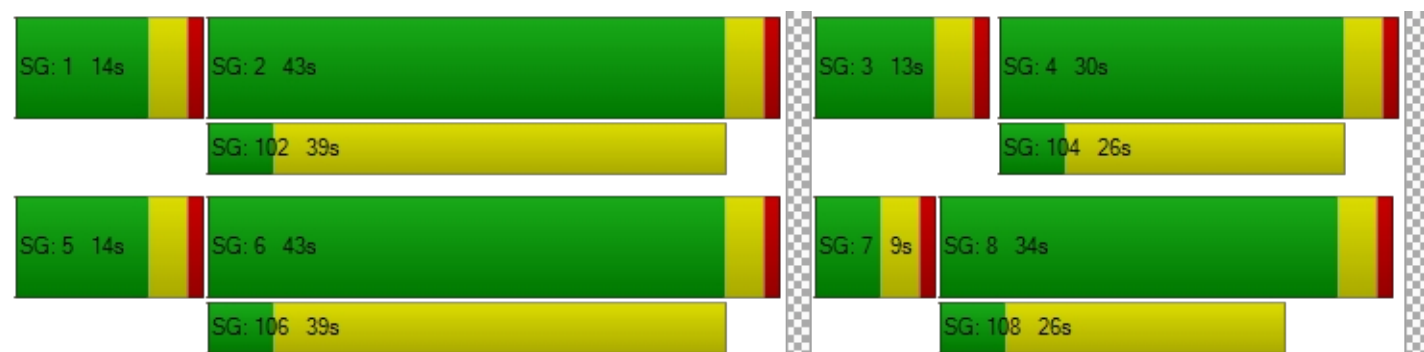
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 50.77 | 13.98 | 14.42 | 49.12 | 12.01 | 0.00 | 51.13 | 36.57 | 32.66 | 49.69 | 39.29 | 31.12 |
| Movement LOS | D | B | B | D | B | A | D | D | C | D | D | C |
| d_A, Approach Delay [s/veh] | 40.93 | | | 45.45 | | | 37.64 | | | 39.74 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 39.60 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.320 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | | | 9.0 | | | 9.0 | | | 9.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 41.44 | | | 41.44 | | | 41.44 | | | 41.44 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.582 | | | 2.634 | | | 3.311 | | | 3.123 | | |
| Crosswalk LOS | B | | | B | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 779 | | | 779 | | | 600 | | | 520 | | |
| d_b, Bicycle Delay [s] | 18.63 | | | 18.63 | | | 24.53 | | | 27.41 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.857 | | | 2.102 | | | 2.133 | | | 2.109 | | |
| Bicycle LOS | A | | | B | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |






Intersection Level Of Service Report
Intersection 2: 48th Ave/Road 1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 0.0
 Level Of Service: A
 Volume to Capacity (v/c): 0.013

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|---|--------|---|--------|---|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 970 | 0 | 0 | 1211 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 970 | 0 | 0 | 1211 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 264 | 0 | 0 | 329 |
| Total Analysis Volume [veh/h] | 0 | 0 | 1054 | 0 | 0 | 1316 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results





| | | | | | | |
|---------------------------------------|-------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 13.48 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | B | A | A | | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 13.48 | | 0.00 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | |
| Intersection LOS | A | | | | | |

Intersection Level Of Service Report

Intersection 5: 48th Avenue/Denali Boulevard

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 26.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.369 |

Intersection Setup

| Name | Denali Boulevard | | | Denali Boulevard | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|---|-------|-------|--|-------|-------|---|-------|-------|---|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 3 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 |
| Entry Pocket Length [ft] | 350.0 | 100.0 | 250.0 | 350.0 | 100.0 | 300.0 | 250.0 | 100.0 | 450.0 | 400.0 | 100.0 | 200.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.0 | 0.00 | 0.00 | 300.0 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Denali Boulevard | | | Denali Boulevard | | | 48th Avenue | | | 48th Avenue | | |
|--|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 201 | 76 | 143 | 135 | 238 | 214 | 84 | 637 | 329 | 185 | 796 | 70 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 143 | 0 | 0 | 107 | 0 | 0 | 165 | 0 | 0 | 35 |
| Total Hourly Volume [veh/h] | 201 | 76 | 0 | 135 | 238 | 107 | 84 | 637 | 164 | 185 | 796 | 35 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 55 | 21 | 0 | 37 | 65 | 29 | 23 | 173 | 45 | 50 | 216 | 10 |
| Total Analysis Volume [veh/h] | 218 | 83 | 0 | 147 | 259 | 116 | 91 | 692 | 178 | 201 | 865 | 38 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 110 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | ProtP | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|-------|-------|-------|--------|-------|-------|--------|-------|-------|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 0 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 14 | 48 | 0 | 9 | 43 | 0 | 23 | 36 | 0 | 17 | 30 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 37 | 0 | 0 | 34 | 0 | 0 | 27 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| C, Cycle Length [s] | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 10 | 16 | 16 | 26 | 12 | 12 | 5 | 63 | 63 | 9 | 68 | 68 |
| g / C, Green / Cycle | 0.09 | 0.15 | 0.15 | 0.23 | 0.11 | 0.11 | 0.05 | 0.58 | 0.58 | 0.08 | 0.61 | 0.61 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.03 | 0.00 | 0.11 | 0.08 | 0.08 | 0.03 | 0.15 | 0.12 | 0.06 | 0.19 | 0.03 |
| s, saturation flow rate [veh/h] | 3113 | 3204 | 1431 | 1300 | 3204 | 1431 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 273 | 480 | 214 | 372 | 347 | 155 | 144 | 2635 | 822 | 261 | 2808 | 876 |
| d1, Uniform Delay [s] | 49.26 | 40.86 | 0.00 | 36.12 | 47.63 | 47.64 | 51.59 | 11.72 | 11.36 | 49.40 | 10.19 | 8.49 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 5.30 | 0.17 | 0.00 | 0.68 | 3.22 | 7.06 | 4.53 | 0.24 | 0.60 | 4.79 | 0.29 | 0.09 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.80 | 0.17 | 0.00 | 0.40 | 0.75 | 0.75 | 0.63 | 0.26 | 0.22 | 0.77 | 0.31 | 0.04 |
| d, Delay for Lane Group [s/veh] | 54.56 | 41.03 | 0.00 | 36.80 | 50.85 | 54.70 | 56.12 | 11.96 | 11.97 | 54.19 | 10.48 | 8.59 |
| Lane Group LOS | D | D | A | D | D | D | E | B | B | D | B | A |
| Critical Lane Group | Yes | No | No | No | No | Yes | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 3.13 | 1.00 | 0.00 | 3.40 | 3.59 | 3.38 | 1.32 | 2.80 | 2.19 | 2.87 | 3.25 | 0.37 |
| 50th-Percentile Queue Length [ft/ln] | 78.32 | 24.90 | 0.00 | 85.12 | 89.77 | 84.55 | 33.06 | 69.97 | 54.69 | 71.85 | 81.21 | 9.28 |
| 95th-Percentile Queue Length [veh/ln] | 5.64 | 1.79 | 0.00 | 6.13 | 6.46 | 6.09 | 2.38 | 5.04 | 3.94 | 5.17 | 5.85 | 0.67 |
| 95th-Percentile Queue Length [ft/ln] | 140.9 | 44.82 | 0.00 | 153.2 | 161.5 | 152.2 | 59.52 | 125.9 | 98.45 | 129.3 | 146.1 | 16.71 |

Movement, Approach, & Intersection Results

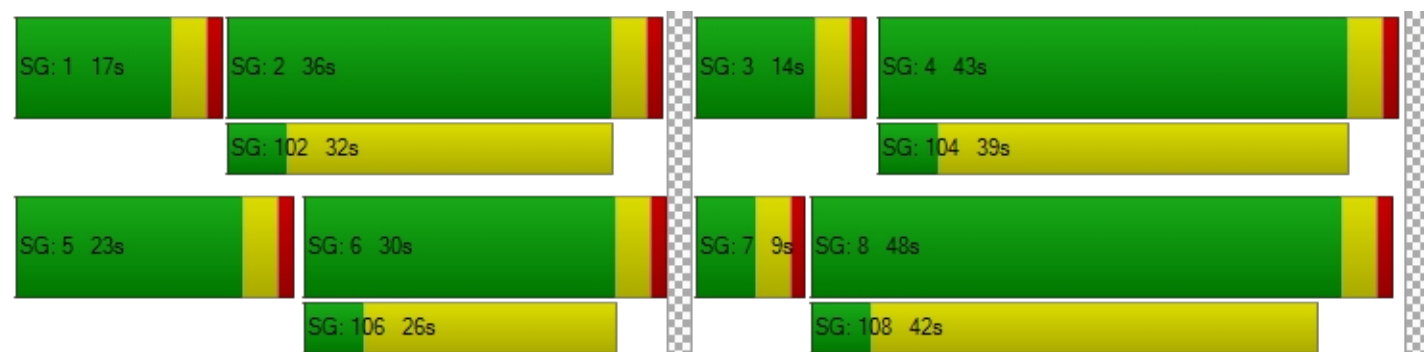
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| d_M, Delay for Movement [s/veh] | 54.56 | 41.03 | 0.00 | 36.80 | 50.85 | 54.70 | 56.12 | 11.96 | 11.97 | 54.19 | 10.48 | 8.59 |
| Movement LOS | D | D | A | D | D | D | E | B | B | D | B | A |
| d_A, Approach Delay [s/veh] | 50.83 | | | 47.75 | | | 16.15 | | | 18.37 | | |
| Approach LOS | D | | | D | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 26.32 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.369 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | | | 9.0 | | | 9.0 | | | 9.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 46.39 | | | 46.39 | | | 46.39 | | | 46.39 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.982 | | | 2.759 | | | 3.359 | | | 3.269 | | |
| Crosswalk LOS | C | | | C | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 800 | | | 709 | | | 582 | | | 473 | | |
| d_b, Bicycle Delay [s] | 19.82 | | | 22.94 | | | 27.68 | | | 32.10 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.926 | | | 2.079 | | | 2.179 | | | 2.186 | | |
| Bicycle LOS | A | | | B | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 12: 48th Avenue/Fultondale Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 10.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.229 |

Intersection Setup

| Name | Fultondale Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|-------------------|-------|-------|------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | T T T | | | T T | | | T T T T | | | T T T T | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 200.0 | 100.0 | 100.0 | 150.0 | 100.0 | 100.0 | 40.00 | 100.0 | 100.0 | 175.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 100.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|--|-------------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 73 | 4 | 49 | 0 | 24 | 24 | 9 | 716 | 43 | 28 | 350 | 2 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 25 | 0 | 0 | 12 | 0 | 0 | 22 | 0 | 0 | 1 |
| Total Hourly Volume [veh/h] | 73 | 4 | 24 | 0 | 24 | 12 | 9 | 716 | 21 | 28 | 350 | 1 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 20 | 1 | 7 | 0 | 7 | 3 | 2 | 195 | 6 | 8 | 95 | 0 |
| Total Analysis Volume [veh/h] | 79 | 4 | 26 | 0 | 26 | 13 | 10 | 778 | 23 | 30 | 380 | 1 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | ProtP | Permi | Permi | ProtP | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 0 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 9 | 39 | 0 | 9 | 39 | 0 | 9 | 32 | 0 | 10 | 33 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 21 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | L | C | R | L | C | C |
|---|-------|-------|-------|------|-------|------|------|------|-------|------|------|
| C, Cycle Length [s] | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 4 | 11 | 11 | 15 | 6 | 67 | 61 | 61 | 3 | 62 | 62 |
| g / C, Green / Cycle | 0.05 | 0.12 | 0.12 | 0.16 | 0.07 | 0.75 | 0.67 | 0.67 | 0.03 | 0.69 | 0.69 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.00 | 0.02 | 0.00 | 0.02 | 0.01 | 0.17 | 0.02 | 0.01 | 0.08 | 0.08 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1431 | 1293 | 1589 | 935 | 4584 | 1431 | 3113 | 3204 | 1681 |
| c, Capacity [veh/h] | 153 | 199 | 169 | 327 | 112 | 783 | 3081 | 962 | 96 | 2208 | 1158 |
| d1, Uniform Delay [s] | 41.84 | 35.13 | 35.69 | 0.00 | 39.92 | 2.95 | 5.84 | 4.93 | 42.78 | 4.72 | 4.72 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.70 | 0.04 | 0.42 | 0.00 | 1.83 | 0.03 | 0.20 | 0.05 | 1.85 | 0.10 | 0.20 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|------|-------|------|-------|------|-------|-------|-------|
| X, volume / capacity | 0.52 | 0.02 | 0.15 | 0.00 | 0.35 | 0.01 | 0.25 | 0.02 | 0.31 | 0.11 | 0.11 |
| d, Delay for Lane Group [s/veh] | 44.53 | 35.17 | 36.11 | 0.00 | 41.76 | 2.98 | 6.03 | 4.97 | 44.63 | 4.83 | 4.92 |
| Lane Group LOS | D | D | D | A | D | A | A | A | D | A | A |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 0.91 | 0.08 | 0.53 | 0.00 | 0.87 | 0.04 | 1.70 | 0.14 | 0.35 | 0.69 | 0.75 |
| 50th-Percentile Queue Length [ft/ln] | 22.63 | 1.98 | 13.20 | 0.00 | 21.81 | 1.02 | 42.60 | 3.39 | 8.71 | 17.22 | 18.84 |
| 95th-Percentile Queue Length [veh/ln] | 1.63 | 0.14 | 0.95 | 0.00 | 1.57 | 0.07 | 3.07 | 0.24 | 0.63 | 1.24 | 1.36 |
| 95th-Percentile Queue Length [ft/ln] | 40.74 | 3.56 | 23.75 | 0.00 | 39.26 | 1.84 | 76.68 | 6.10 | 15.68 | 31.00 | 33.91 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|------|------|------|-------|------|------|
| d_M, Delay for Movement [s/veh] | 44.53 | 35.17 | 36.11 | 0.00 | 41.76 | 41.76 | 2.98 | 6.03 | 4.97 | 44.63 | 4.86 | 4.92 |
| Movement LOS | D | D | D | A | D | D | A | A | A | D | A | A |
| d_A, Approach Delay [s/veh] | 42.18 | | | 41.76 | | | 5.97 | | | 7.76 | | |
| Approach LOS | D | | | D | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 10.41 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.229 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | | | 9.0 | | | 9.0 | | | 9.0 | | |
| M_corner, Corner Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft ² /ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 36.49 | | | 36.49 | | | 36.49 | | | 36.49 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.528 | | | 1.991 | | | 2.919 | | | 2.880 | | |
| Crosswalk LOS | B | | | A | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 777 | | | 777 | | | 622 | | | 644 | | |
| d_b, Bicycle Delay [s] | 16.84 | | | 16.84 | | | 21.40 | | | 20.71 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.781 | | | 1.644 | | | 2.018 | | | 1.786 | | |
| Bicycle LOS | A | | | A | | | B | | | A | | |

Sequence




| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 46: 48th Avenue/Harvest Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 29.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.390 |

Intersection Setup

| Name | Harvest Road | | 48th Avenue | | 48th Avenue | |
|------------------------------|---|--------|---|--------|---|--------|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 1 | 3 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 450.00 | 200.00 | 400.00 | 100.00 | 100.00 | 500.00 |
| No. of Lanes in Exit Pocket | 0 | 2 | 0 | 1 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 174.61 | 0.00 | 400.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Harvest Road | | 48th Avenue | | 48th Avenue | |
|--|--------------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 493 | 287 | 464 | 586 | 166 | 242 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 287 | 0 | 0 | 0 | 242 |
| Total Hourly Volume [veh/h] | 493 | 0 | 464 | 586 | 166 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 134 | 0 | 126 | 159 | 45 | 0 |
| Total Analysis Volume [veh/h] | 536 | 0 | 504 | 637 | 180 | 0 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 110 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Protected | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|-----------|------------|------------|------------|
| Signal Group | 7 | 0 | 5 | 2 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 10 | 0 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 46 | 0 | 28 | 64 | 36 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 37 | 0 | 0 | 10 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | No | No | No | |
| Maximum Recall | No | | No | No | No | |
| Pedestrian Recall | No | | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | R | L | C | C | R |
|---|-------|------|-------|------|-------|------|
| C, Cycle Length [s] | 110 | 110 | 110 | 110 | 110 | 110 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 22 | 22 | 20 | 80 | 56 | 56 |
| g / C, Green / Cycle | 0.20 | 0.20 | 0.18 | 0.73 | 0.51 | 0.51 |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | 0.00 | 0.16 | 0.20 | 0.06 | 0.00 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 619 | 285 | 569 | 2334 | 1632 | 729 |
| d1, Uniform Delay [s] | 42.62 | 0.00 | 43.83 | 5.07 | 14.03 | 0.00 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.80 | 0.00 | 4.87 | 0.29 | 0.14 | 0.00 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|--------|------|--------|--------|-------|------|
| X, volume / capacity | 0.87 | 0.00 | 0.89 | 0.27 | 0.11 | 0.00 |
| d, Delay for Lane Group [s/veh] | 46.43 | 0.00 | 48.70 | 5.35 | 14.17 | 0.00 |
| Lane Group LOS | D | A | D | A | B | A |
| Critical Lane Group | Yes | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 7.32 | 0.00 | 7.03 | 2.25 | 1.19 | 0.00 |
| 50th-Percentile Queue Length [ft/ln] | 182.90 | 0.00 | 175.64 | 56.19 | 29.64 | 0.00 |
| 95th-Percentile Queue Length [veh/ln] | 11.75 | 0.00 | 11.37 | 4.05 | 2.13 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 293.80 | 0.00 | 284.31 | 101.14 | 53.36 | 0.00 |

Movement, Approach, & Intersection Results

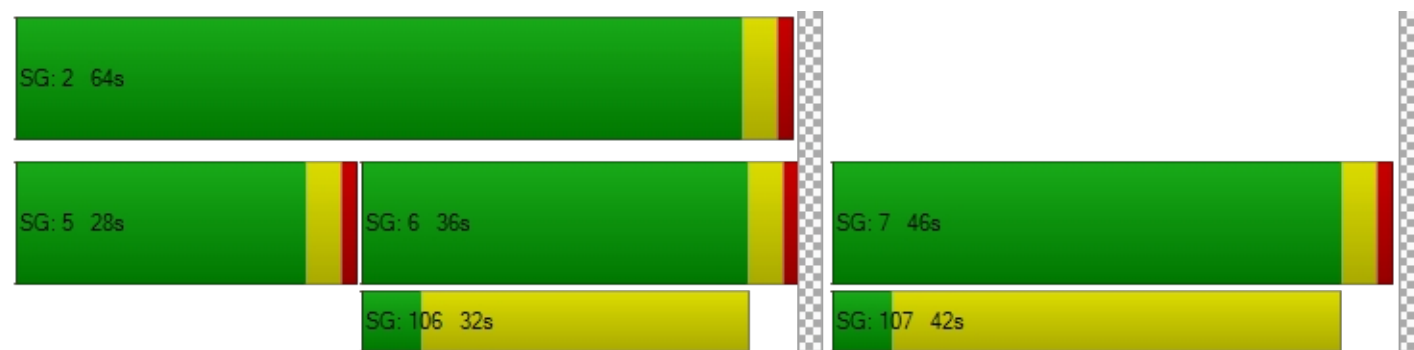
| | | | | | | |
|---------------------------------|-------|------|-------|------|-------|------|
| d_M, Delay for Movement [s/veh] | 46.43 | 0.00 | 48.70 | 5.35 | 14.17 | 0.00 |
| Movement LOS | D | A | D | A | B | A |
| d_A, Approach Delay [s/veh] | 46.43 | | 24.50 | | 14.17 | |
| Approach LOS | D | | C | | B | |
| d_I, Intersection Delay [s/veh] | 29.83 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.390 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | 9.0 | 9.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 46.36 | 46.36 | 46.36 |
| I_p,int, Pedestrian LOS Score for Intersection | 3.232 | 2.933 | 3.067 |
| Crosswalk LOS | C | C | C |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 764 | 1091 | 582 |
| d_b, Bicycle Delay [s] | 21.01 | 11.36 | 27.65 |
| I_b,int, Bicycle LOS Score for Intersection | 1.560 | 2.501 | 1.908 |
| Bicycle LOS | A | B | A |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Signal Warrants Report For Intersection 2: 48th Ave/Road 1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | E | W | S |
| 1 | 1211 | 970 | 0 |
| 2 | 1175 | 941 | 0 |
| 3 | 1150 | 922 | 0 |
| 4 | 1078 | 863 | 0 |
| 5 | 957 | 766 | 0 |
| 6 | 945 | 757 | 0 |
| 7 | 932 | 747 | 0 |
| 8 | 848 | 679 | 0 |
| 9 | 836 | 669 | 0 |
| 10 | 823 | 660 | 0 |
| 11 | 714 | 572 | 0 |
| 12 | 666 | 534 | 0 |
| 13 | 654 | 524 | 0 |
| 14 | 484 | 388 | 0 |
| 15 | 484 | 388 | 0 |
| 16 | 339 | 272 | 0 |
| 17 | 194 | 155 | 0 |
| 18 | 194 | 155 | 0 |
| 19 | 109 | 87 | 0 |
| 20 | 61 | 49 | 0 |
| 21 | 36 | 29 | 0 |
| 22 | 12 | 10 | 0 |
| 23 | 12 | 10 | 0 |
| 24 | 12 | 10 | 0 |

Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 2181 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 2116 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 2072 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 1941 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 1723 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 1702 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 1679 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 1527 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 1505 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 1483 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 1286 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 1200 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 1178 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 872 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 872 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 611 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 349 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 349 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 196 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 110 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 65 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 13.5 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 0 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 2181 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |

Intersection Level Of Service Report

Intersection 1: 48th Avenue/Main Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 39.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.306 |

Intersection Setup

| Name | Main Street | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|-------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | T L T | | | T L T | | | T L T | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 |
| Entry Pocket Length [ft] | 325.0 | 100.0 | 400.0 | 250.0 | 100.0 | 250.0 | 300.0 | 100.0 | 400.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 400.0 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Main Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|--|-------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 75 | 7 | 86 | 104 | 7 | 40 | 166 | 642 | 158 | 114 | 754 | 182 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 43 | 0 | 0 | 40 | 0 | 0 | 79 | 0 | 0 | 91 |
| Total Hourly Volume [veh/h] | 75 | 7 | 43 | 104 | 7 | 0 | 166 | 642 | 79 | 114 | 754 | 91 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 20 | 2 | 12 | 28 | 2 | 0 | 45 | 174 | 21 | 31 | 205 | 25 |
| Total Analysis Volume [veh/h] | 82 | 8 | 47 | 113 | 8 | 0 | 180 | 698 | 86 | 124 | 820 | 99 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 15 | 43 | 0 | 15 | 43 | 0 | 12 | 30 | 0 | 12 | 30 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 34 | 0 | 0 | 34 | 0 | 0 | 21 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 5 | 50 | 50 | 5 | 51 | 51 | 8 | 23 | 23 | 6 | 21 | 21 |
| g / C, Green / Cycle | 0.05 | 0.50 | 0.50 | 0.05 | 0.51 | 0.51 | 0.08 | 0.23 | 0.23 | 0.06 | 0.21 | 0.21 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.00 | 0.03 | 0.04 | 0.00 | 0.00 | 0.06 | 0.15 | 0.06 | 0.04 | 0.18 | 0.07 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1431 | 3113 | 1683 | 1431 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 143 | 837 | 712 | 172 | 853 | 725 | 241 | 1049 | 327 | 183 | 964 | 301 |
| d1, Uniform Delay [s] | 46.81 | 12.71 | 13.08 | 46.37 | 12.24 | 0.00 | 45.25 | 35.12 | 31.68 | 46.20 | 38.03 | 33.55 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.60 | 0.02 | 0.18 | 4.21 | 0.02 | 0.00 | 4.61 | 0.73 | 0.42 | 4.35 | 2.22 | 0.63 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.57 | 0.01 | 0.07 | 0.66 | 0.01 | 0.00 | 0.75 | 0.67 | 0.26 | 0.68 | 0.85 | 0.33 |
| d, Delay for Lane Group [s/veh] | 50.41 | 12.73 | 13.26 | 50.58 | 12.26 | 0.00 | 49.86 | 35.86 | 32.10 | 50.55 | 40.25 | 34.18 |
| Lane Group LOS | D | B | B | D | B | A | D | D | C | D | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.07 | 0.09 | 0.57 | 1.47 | 0.09 | 0.00 | 2.33 | 5.16 | 1.74 | 1.61 | 6.54 | 2.08 |
| 50th-Percentile Queue Length [ft/ln] | 26.68 | 2.35 | 14.34 | 36.80 | 2.29 | 0.00 | 58.25 | 129.0 | 43.38 | 40.37 | 163.5 | 52.00 |
| 95th-Percentile Queue Length [veh/ln] | 1.92 | 0.17 | 1.03 | 2.65 | 0.16 | 0.00 | 4.19 | 8.89 | 3.12 | 2.91 | 10.74 | 3.74 |
| 95th-Percentile Queue Length [ft/ln] | 48.03 | 4.22 | 25.81 | 66.24 | 4.12 | 0.00 | 104.8 | 222.1 | 78.08 | 72.66 | 268.4 | 93.60 |

Movement, Approach, & Intersection Results

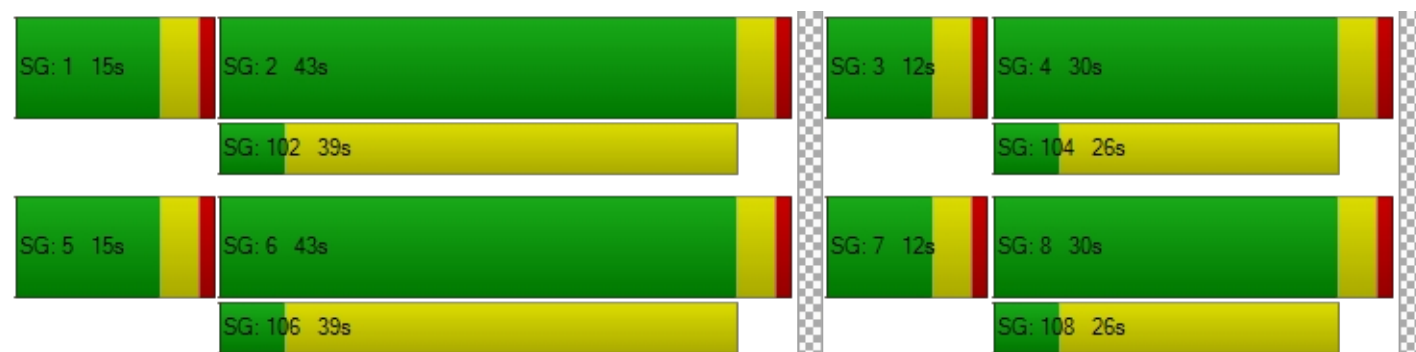
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 50.41 | 12.73 | 13.26 | 50.58 | 12.26 | 0.00 | 49.86 | 35.86 | 32.10 | 50.55 | 40.25 | 34.18 |
| Movement LOS | D | B | B | D | B | A | D | D | C | D | D | C |
| d_A, Approach Delay [s/veh] | 35.46 | | | 48.05 | | | 38.14 | | | 40.90 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 39.78 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.306 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | | | 9.0 | | | 9.0 | | | 9.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 41.44 | | | 41.44 | | | 41.44 | | | 41.44 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.598 | | | 2.604 | | | 3.279 | | | 3.206 | | |
| Crosswalk LOS | B | | | B | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 779 | | | 779 | | | 520 | | | 520 | | |
| d_b, Bicycle Delay [s] | 18.63 | | | 18.63 | | | 27.41 | | | 27.41 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.857 | | | 1.825 | | | 2.133 | | | 2.183 | | |
| Bicycle LOS | A | | | A | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |






Intersection Level Of Service Report
Intersection 2: 48th Ave/Road 1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 0.0
 Level Of Service: A
 Volume to Capacity (v/c): 0.013

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|---|--------|---|--------|---|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 832 | 0 | 0 | 1178 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 832 | 0 | 0 | 1178 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 226 | 0 | 0 | 320 |
| Total Analysis Volume [veh/h] | 0 | 0 | 904 | 0 | 0 | 1280 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |





Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 12.59 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | B | A | A | | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 12.59 | | 0.00 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | |
| Intersection LOS | A | | | | | |

Intersection Level Of Service Report
Intersection 5: 48th Avenue/Denali Boulevard

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 28.6 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.429 |

Intersection Setup

| Name | Denali Boulevard | | | Denali Boulevard | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|---|-------|-------|--|-------|-------|---|-------|-------|---|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 3 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 |
| Entry Pocket Length [ft] | 350.0 | 100.0 | 250.0 | 350.0 | 100.0 | 300.0 | 250.0 | 100.0 | 450.0 | 400.0 | 100.0 | 200.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.0 | 0.00 | 0.00 | 300.0 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Denali Boulevard | | | Denali Boulevard | | | 48th Avenue | | | 48th Avenue | | |
|--|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 197 | 85 | 138 | 127 | 159 | 301 | 89 | 619 | 342 | 285 | 680 | 85 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 138 | 0 | 0 | 151 | 0 | 0 | 171 | 0 | 0 | 43 |
| Total Hourly Volume [veh/h] | 197 | 85 | 0 | 127 | 159 | 150 | 89 | 619 | 171 | 285 | 680 | 42 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 54 | 23 | 0 | 35 | 43 | 41 | 24 | 168 | 46 | 77 | 185 | 11 |
| Total Analysis Volume [veh/h] | 214 | 92 | 0 | 138 | 173 | 163 | 97 | 673 | 186 | 310 | 739 | 46 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 110 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | ProtP | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|-------|-------|-------|--------|-------|-------|--------|-------|-------|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 0 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 14 | 48 | 0 | 9 | 43 | 0 | 23 | 36 | 0 | 17 | 30 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 37 | 0 | 0 | 34 | 0 | 0 | 27 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 9 | 20 | 20 | 29 | 15 | 15 | 5 | 56 | 56 | 13 | 64 | 64 |
| g / C, Green / Cycle | 0.09 | 0.18 | 0.18 | 0.26 | 0.14 | 0.14 | 0.05 | 0.51 | 0.51 | 0.12 | 0.58 | 0.58 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.03 | 0.00 | 0.11 | 0.05 | 0.11 | 0.03 | 0.15 | 0.13 | 0.10 | 0.16 | 0.03 |
| s, saturation flow rate [veh/h] | 3113 | 3204 | 1431 | 1279 | 3204 | 1431 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 270 | 576 | 257 | 403 | 447 | 199 | 151 | 2347 | 732 | 364 | 2660 | 830 |
| d1, Uniform Delay [s] | 49.32 | 38.14 | 0.00 | 32.97 | 43.10 | 46.02 | 51.43 | 15.37 | 15.08 | 47.69 | 11.57 | 10.03 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 5.26 | 0.13 | 0.00 | 0.50 | 0.55 | 7.97 | 4.47 | 0.31 | 0.83 | 5.69 | 0.26 | 0.13 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.79 | 0.16 | 0.00 | 0.34 | 0.39 | 0.82 | 0.64 | 0.29 | 0.25 | 0.85 | 0.28 | 0.06 |
| d, Delay for Lane Group [s/veh] | 54.58 | 38.27 | 0.00 | 33.47 | 43.65 | 53.99 | 55.91 | 15.68 | 15.91 | 53.38 | 11.83 | 10.16 |
| Lane Group LOS | D | D | A | C | D | D | E | B | B | D | B | B |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 3.08 | 1.06 | 0.00 | 3.03 | 2.18 | 4.75 | 1.41 | 3.22 | 2.74 | 4.44 | 2.98 | 0.50 |
| 50th-Percentile Queue Length [ft/ln] | 76.88 | 26.54 | 0.00 | 75.72 | 54.42 | 118.8 | 35.16 | 80.62 | 68.44 | 111.0 | 74.44 | 12.52 |
| 95th-Percentile Queue Length [veh/ln] | 5.54 | 1.91 | 0.00 | 5.45 | 3.92 | 8.33 | 2.53 | 5.80 | 4.93 | 7.90 | 5.36 | 0.90 |
| 95th-Percentile Queue Length [ft/ln] | 138.3 | 47.77 | 0.00 | 136.2 | 97.95 | 208.1 | 63.28 | 145.1 | 123.1 | 197.4 | 133.9 | 22.54 |

Movement, Approach, & Intersection Results

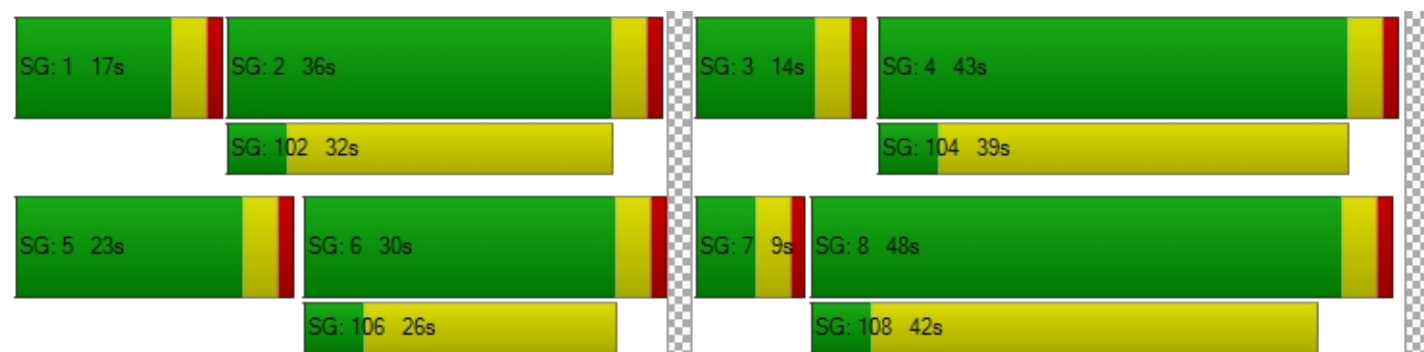
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 54.58 | 38.27 | 0.00 | 33.47 | 43.65 | 53.99 | 55.91 | 15.68 | 15.91 | 53.38 | 11.83 | 10.16 |
| Movement LOS | D | D | A | C | D | D | E | B | B | D | B | B |
| d_A, Approach Delay [s/veh] | 49.68 | | | 44.24 | | | 19.81 | | | 23.52 | | |
| Approach LOS | D | | | D | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 28.56 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.429 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | | | 9.0 | | | 9.0 | | | 9.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 46.39 | | | 46.39 | | | 46.39 | | | 46.39 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.980 | | | 2.826 | | | 3.363 | | | 3.281 | | |
| Crosswalk LOS | C | | | C | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 800 | | | 709 | | | 582 | | | 473 | | |
| d_b, Bicycle Delay [s] | 19.82 | | | 22.94 | | | 27.68 | | | 32.10 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.926 | | | 2.075 | | | 2.179 | | | 2.186 | | |
| Bicycle LOS | A | | | B | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report

Intersection 12: 48th Avenue/Fultondale Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 11.7 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.216 |

Intersection Setup

| Name | Fultondale Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|-------------------|-------|-------|------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | ↵↵↵ | | | ↵↵ | | | ↵↵↵↵ | | | ↵↵↵↵ | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 200.0 | 100.0 | 100.0 | 150.0 | 100.0 | 100.0 | 40.00 | 100.0 | 100.0 | 175.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 100.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|--|-------------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 66 | 12 | 48 | 8 | 22 | 22 | 11 | 633 | 125 | 59 | 311 | 10 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 24 | 0 | 0 | 11 | 0 | 0 | 63 | 0 | 0 | 5 |
| Total Hourly Volume [veh/h] | 66 | 12 | 24 | 8 | 22 | 11 | 11 | 633 | 62 | 59 | 311 | 5 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 18 | 3 | 7 | 2 | 6 | 3 | 3 | 172 | 17 | 16 | 85 | 1 |
| Total Analysis Volume [veh/h] | 72 | 13 | 26 | 9 | 24 | 12 | 12 | 688 | 67 | 64 | 338 | 5 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

Intersection Settings

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | ProtP | Permi | Permi | ProtP | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 0 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 10 | 39 | 0 | 10 | 39 | 0 | 9 | 32 | 0 | 9 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 21 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | C | R | L | C | L | C | R | L | C | C |
|---|-------|-------|-------|-------|-------|------|------|------|-------|------|------|
| C, Cycle Length [s] | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 4 | 9 | 9 | 14 | 6 | 68 | 60 | 60 | 4 | 62 | 62 |
| g / C, Green / Cycle | 0.05 | 0.10 | 0.10 | 0.16 | 0.07 | 0.75 | 0.66 | 0.66 | 0.04 | 0.69 | 0.69 |
| (v / s)_i Volume / Saturation Flow Rate | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.15 | 0.05 | 0.02 | 0.07 | 0.07 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1431 | 1312 | 1589 | 967 | 4584 | 1431 | 3113 | 3204 | 1670 |
| c, Capacity [veh/h] | 148 | 172 | 147 | 319 | 107 | 813 | 3035 | 947 | 142 | 2217 | 1156 |
| d1, Uniform Delay [s] | 41.87 | 36.61 | 37.00 | 32.04 | 40.13 | 2.84 | 6.06 | 5.41 | 41.93 | 4.61 | 4.61 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.45 | 0.18 | 0.57 | 0.04 | 1.83 | 0.03 | 0.17 | 0.14 | 2.23 | 0.09 | 0.18 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.49 | 0.08 | 0.18 | 0.03 | 0.34 | 0.01 | 0.23 | 0.07 | 0.45 | 0.10 | 0.10 |
| d, Delay for Lane Group [s/veh] | 44.32 | 36.79 | 37.57 | 32.08 | 41.95 | 2.88 | 6.24 | 5.55 | 44.16 | 4.70 | 4.79 |
| Lane Group LOS | D | D | D | C | D | A | A | A | D | A | A |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 0.82 | 0.27 | 0.54 | 0.17 | 0.81 | 0.05 | 1.54 | 0.43 | 0.73 | 0.61 | 0.66 |
| 50th-Percentile Queue Length [ft/ln] | 20.58 | 6.64 | 13.55 | 4.19 | 20.21 | 1.18 | 38.54 | 10.67 | 18.26 | 15.19 | 16.58 |
| 95th-Percentile Queue Length [veh/ln] | 1.48 | 0.48 | 0.98 | 0.30 | 1.46 | 0.09 | 2.77 | 0.77 | 1.31 | 1.09 | 1.19 |
| 95th-Percentile Queue Length [ft/ln] | 37.04 | 11.95 | 24.39 | 7.55 | 36.38 | 2.13 | 69.37 | 19.21 | 32.87 | 27.34 | 29.85 |

Movement, Approach, & Intersection Results

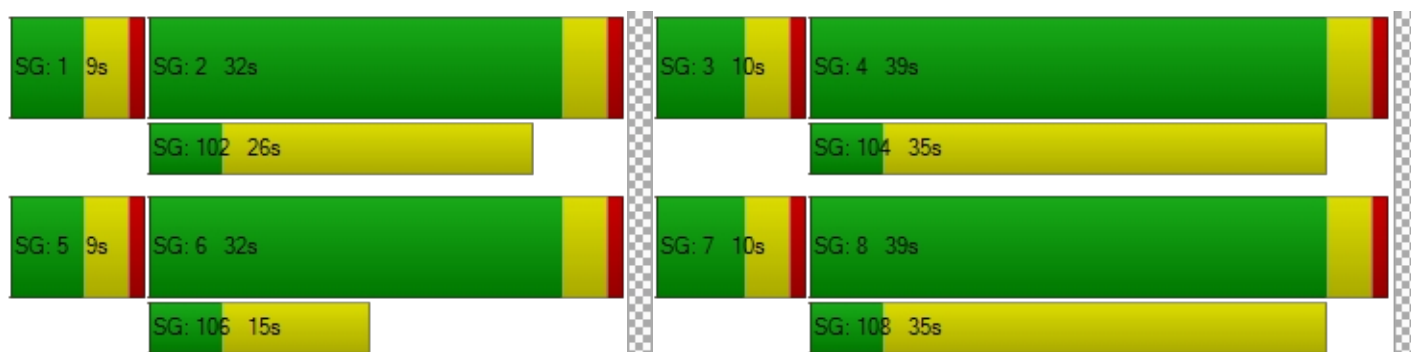
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|------|------|------|-------|------|------|
| d_M, Delay for Movement [s/veh] | 44.32 | 36.79 | 37.57 | 32.08 | 41.95 | 41.95 | 2.88 | 6.24 | 5.55 | 44.16 | 4.73 | 4.79 |
| Movement LOS | D | D | D | C | D | D | A | A | A | D | A | A |
| d_A, Approach Delay [s/veh] | 41.86 | | | 39.98 | | | 6.12 | | | 10.93 | | |
| Approach LOS | D | | | D | | | A | | | B | | |
| d_I, Intersection Delay [s/veh] | 11.72 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.216 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | | | 9.0 | | | 9.0 | | | 9.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 36.49 | | | 36.49 | | | 36.49 | | | 36.49 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.546 | | | 1.999 | | | 2.971 | | | 2.877 | | |
| Crosswalk LOS | B | | | A | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 777 | | | 777 | | | 622 | | | 622 | | |
| d_b, Bicycle Delay [s] | 16.84 | | | 16.84 | | | 21.40 | | | 21.40 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.782 | | | 1.652 | | | 2.016 | | | 1.786 | | |
| Bicycle LOS | A | | | A | | | B | | | A | | |

Sequence




| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Intersection Level Of Service Report
Intersection 46: 48th Avenue/Harvest Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 29.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.396 |

Intersection Setup

| Name | Harvest Road | | 48th Avenue | | 48th Avenue | |
|------------------------------|---|--------|---|--------|---|--------|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 1 | 3 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 450.00 | 200.00 | 400.00 | 100.00 | 100.00 | 500.00 |
| No. of Lanes in Exit Pocket | 0 | 2 | 0 | 1 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 174.61 | 0.00 | 400.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Harvest Road | | 48th Avenue | | 48th Avenue | |
|--|--------------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 517 | 263 | 427 | 623 | 195 | 213 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 263 | 0 | 0 | 0 | 213 |
| Total Hourly Volume [veh/h] | 517 | 0 | 427 | 623 | 195 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 140 | 0 | 116 | 169 | 53 | 0 |
| Total Analysis Volume [veh/h] | 562 | 0 | 464 | 677 | 212 | 0 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

Intersection Settings

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 110 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Protected | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|-----------|------------|------------|------------|
| Signal Group | 7 | 0 | 5 | 2 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 10 | 0 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 46 | 0 | 28 | 64 | 36 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 37 | 0 | 0 | 10 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | No | No | No | |
| Maximum Recall | No | | No | No | No | |
| Pedestrian Recall | No | | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

Lane Group Calculations

| Lane Group | L | R | L | C | C | R |
|---|-------|------|-------|------|-------|------|
| C, Cycle Length [s] | 110 | 110 | 110 | 110 | 110 | 110 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 23 | 23 | 19 | 79 | 56 | 56 |
| g / C, Green / Cycle | 0.21 | 0.21 | 0.17 | 0.72 | 0.51 | 0.51 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.00 | 0.15 | 0.21 | 0.07 | 0.00 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 646 | 297 | 531 | 2306 | 1643 | 733 |
| d1, Uniform Delay [s] | 42.13 | 0.00 | 44.45 | 5.48 | 13.98 | 0.00 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.78 | 0.00 | 4.68 | 0.32 | 0.16 | 0.00 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|--------|------|--------|--------|-------|------|
| X, volume / capacity | 0.87 | 0.00 | 0.87 | 0.29 | 0.13 | 0.00 |
| d, Delay for Lane Group [s/veh] | 45.91 | 0.00 | 49.13 | 5.80 | 14.14 | 0.00 |
| Lane Group LOS | D | A | D | A | B | A |
| Critical Lane Group | Yes | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 7.65 | 0.00 | 6.47 | 2.54 | 1.40 | 0.00 |
| 50th-Percentile Queue Length [ft/ln] | 191.27 | 0.00 | 161.68 | 63.56 | 34.99 | 0.00 |
| 95th-Percentile Queue Length [veh/ln] | 12.19 | 0.00 | 10.64 | 4.58 | 2.52 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 304.68 | 0.00 | 265.95 | 114.41 | 62.99 | 0.00 |

Movement, Approach, & Intersection Results

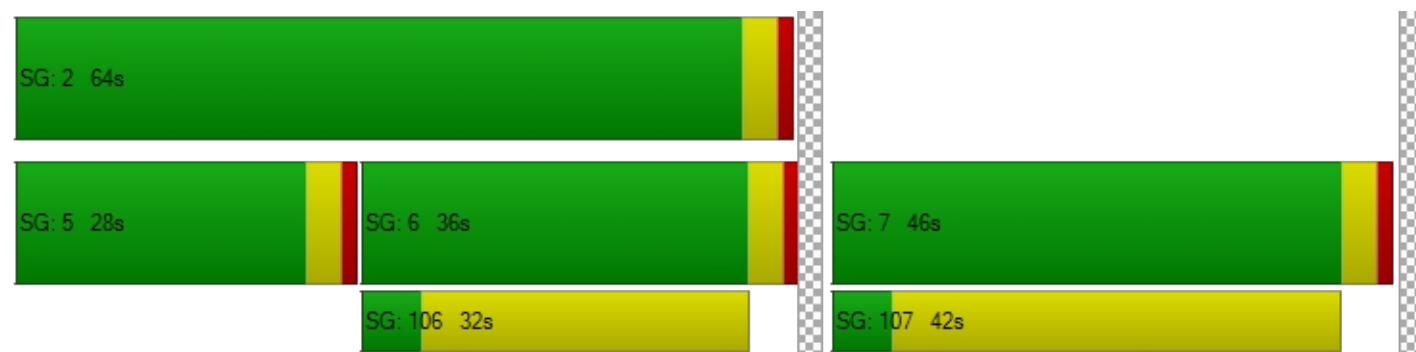
| | | | | | | |
|---------------------------------|-------|------|-------|------|-------|------|
| d_M, Delay for Movement [s/veh] | 45.91 | 0.00 | 49.13 | 5.80 | 14.14 | 0.00 |
| Movement LOS | D | A | D | A | B | A |
| d_A, Approach Delay [s/veh] | 45.91 | | 23.42 | | 14.14 | |
| Approach LOS | D | | C | | B | |
| d_I, Intersection Delay [s/veh] | 28.99 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.396 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 9.0 | 9.0 | 9.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 46.36 | 46.36 | 46.36 |
| I_p,int, Pedestrian LOS Score for Intersection | 3.188 | 2.934 | 3.037 |
| Crosswalk LOS | C | C | C |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 764 | 1091 | 582 |
| d_b, Bicycle Delay [s] | 21.01 | 11.36 | 27.65 |
| I_b,int, Bicycle LOS Score for Intersection | 1.560 | 2.501 | 1.910 |
| Bicycle LOS | A | B | A |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Signal Warrants Report For Intersection 2: 48th Ave/Road 1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | E | W | S |
| 1 | 1178 | 832 | 0 |
| 2 | 1143 | 807 | 0 |
| 3 | 1119 | 790 | 0 |
| 4 | 1048 | 740 | 0 |
| 5 | 931 | 657 | 0 |
| 6 | 919 | 649 | 0 |
| 7 | 907 | 641 | 0 |
| 8 | 825 | 582 | 0 |
| 9 | 813 | 574 | 0 |
| 10 | 801 | 566 | 0 |
| 11 | 695 | 491 | 0 |
| 12 | 648 | 458 | 0 |
| 13 | 636 | 449 | 0 |
| 14 | 471 | 333 | 0 |
| 15 | 471 | 333 | 0 |
| 16 | 330 | 233 | 0 |
| 17 | 188 | 133 | 0 |
| 18 | 188 | 133 | 0 |
| 19 | 106 | 75 | 0 |
| 20 | 59 | 42 | 0 |
| 21 | 35 | 25 | 0 |
| 22 | 12 | 8 | 0 |
| 23 | 12 | 8 | 0 |
| 24 | 12 | 8 | 0 |

Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 2010 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 1950 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 1909 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 1788 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 1588 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 1568 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 1548 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 1407 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 1387 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 1367 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 1186 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 1106 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 1085 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 804 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 804 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 563 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 321 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 321 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 181 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 101 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 60 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 20 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 20 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 20 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 12.6 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 0 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 2010 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |

Appendix D – Horizon With Project Analyses



Intersection Level Of Service Report

Intersection 1: 48th Avenue/Main Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 39.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.344 |

Intersection Setup

| Name | Main Street | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|-------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | T L T | | | T L T | | | T L T | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 |
| Entry Pocket Length [ft] | 325.0 | 100.0 | 400.0 | 250.0 | 100.0 | 250.0 | 300.0 | 100.0 | 400.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 400.0 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Main Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|--|-------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 99 | 5 | 64 | 218 | 24 | 66 | 89 | 688 | 189 | 63 | 795 | 63 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 10 | 0 | 4 | 0 | 0 | 0 | 0 | 36 | 2 | 0 | 93 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 34 | 0 | 0 | 66 | 0 | 0 | 96 | 0 | 0 | 32 |
| Total Hourly Volume [veh/h] | 109 | 5 | 34 | 218 | 24 | 0 | 89 | 724 | 95 | 63 | 888 | 31 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 30 | 1 | 9 | 59 | 7 | 0 | 24 | 197 | 26 | 17 | 241 | 8 |
| Total Analysis Volume [veh/h] | 118 | 5 | 37 | 237 | 26 | 0 | 97 | 787 | 103 | 68 | 965 | 34 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 14 | 45 | 0 | 14 | 45 | 0 | 9 | 32 | 0 | 9 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 34 | 0 | 0 | 34 | 0 | 0 | 21 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 46 | 46 | 10 | 50 | 50 | 5 | 25 | 25 | 4 | 24 | 24 |
| g / C, Green / Cycle | 0.06 | 0.46 | 0.46 | 0.10 | 0.49 | 0.49 | 0.05 | 0.25 | 0.25 | 0.04 | 0.24 | 0.24 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.00 | 0.03 | 0.08 | 0.02 | 0.00 | 0.03 | 0.17 | 0.07 | 0.02 | 0.21 | 0.02 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1431 | 3113 | 1683 | 1431 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 177 | 768 | 653 | 298 | 833 | 708 | 150 | 1121 | 350 | 135 | 1099 | 343 |
| d1, Uniform Delay [s] | 46.28 | 14.84 | 15.19 | 44.31 | 12.96 | 0.00 | 46.81 | 34.49 | 30.79 | 46.83 | 36.65 | 29.64 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.24 | 0.02 | 0.17 | 4.81 | 0.07 | 0.00 | 4.57 | 0.81 | 0.46 | 2.86 | 2.43 | 0.12 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.67 | 0.01 | 0.06 | 0.79 | 0.03 | 0.00 | 0.65 | 0.70 | 0.29 | 0.50 | 0.88 | 0.10 |
| d, Delay for Lane Group [s/veh] | 50.52 | 14.86 | 15.36 | 49.12 | 13.03 | 0.00 | 51.38 | 35.30 | 31.25 | 49.69 | 39.08 | 29.76 |
| Lane Group LOS | D | B | B | D | B | A | D | D | C | D | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.54 | 0.06 | 0.49 | 3.05 | 0.31 | 0.00 | 1.28 | 5.81 | 2.05 | 0.88 | 7.67 | 0.65 |
| 50th-Percentile Queue Length [ft/ln] | 38.40 | 1.62 | 12.37 | 76.36 | 7.77 | 0.00 | 31.90 | 145.2 | 51.30 | 21.95 | 191.7 | 16.16 |
| 95th-Percentile Queue Length [veh/ln] | 2.76 | 0.12 | 0.89 | 5.50 | 0.56 | 0.00 | 2.30 | 9.76 | 3.69 | 1.58 | 12.21 | 1.16 |
| 95th-Percentile Queue Length [ft/ln] | 69.12 | 2.91 | 22.27 | 137.4 | 13.98 | 0.00 | 57.43 | 244.1 | 92.34 | 39.52 | 305.2 | 29.08 |

**Movement, Approach, & Intersection Results**

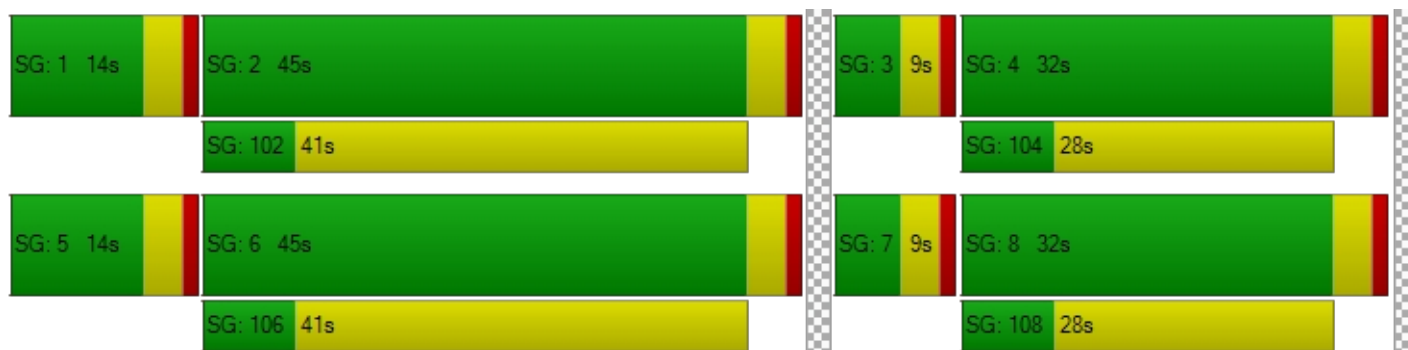
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 50.52 | 14.86 | 15.36 | 49.12 | 13.03 | 0.00 | 51.38 | 35.30 | 31.25 | 49.69 | 39.08 | 29.76 |
| Movement LOS | D | B | B | D | B | A | D | D | C | D | D | C |
| d_A, Approach Delay [s/veh] | 41.28 | | | 45.55 | | | 36.46 | | | 39.46 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 39.03 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.344 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | | | 11.0 | | | 11.0 | | | 11.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 39.64 | | | 39.64 | | | 39.64 | | | 39.64 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.585 | | | 2.632 | | | 3.326 | | | 3.137 | | |
| Crosswalk LOS | B | | | B | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 819 | | | 819 | | | 560 | | | 560 | | |
| d_b, Bicycle Delay [s] | 17.43 | | | 17.43 | | | 25.95 | | | 25.95 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.880 | | | 2.102 | | | 2.155 | | | 2.164 | | |
| Bicycle LOS | A | | | B | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 2: 48th Ave/Road 1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 0.0
 Level Of Service: A
 Volume to Capacity (v/c): 0.014

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 970 | 0 | 0 | 1211 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 39 | 0 | 0 | 93 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 1009 | 0 | 0 | 1304 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 274 | 0 | 0 | 354 |
| Total Analysis Volume [veh/h] | 0 | 0 | 1097 | 0 | 0 | 1417 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 13.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | B | A | A | | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 13.76 | | 0.00 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | |
| Intersection LOS | A | | | | | |



Intersection Level Of Service Report

Intersection 4: 46th Avenue/Main Street

Control Type: Roundabout
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 3.4
 Level Of Service: A

Intersection Setup

| Name | Main Street | | Main Street | | 46th Avenue | |
|------------------------------|-------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Main Street | | Main Street | | 46th Avenue | |
|---|-------------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 168 | 0 | 0 | 276 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 3 | 2 | 0 | 12 | 10 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 172 | 3 | 2 | 276 | 12 | 10 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 47 | 1 | 1 | 75 | 3 | 3 |
| Total Analysis Volume [veh/h] | 187 | 3 | 2 | 300 | 13 | 11 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | | | | |
|---|-----|---|-----|-----|-----|----|
| Number of Conflicting Circulating Lanes | 1 | | 1 | | 1 | |
| Circulating Flow Rate [veh/h] | 2 | | 13 | | 191 | |
| Exiting Flow Rate [veh/h] | 319 | | 202 | | 5 | |
| Demand Flow Rate [veh/h] | 172 | 3 | 2 | 276 | 12 | 10 |
| Adjusted Demand Flow Rate [veh/h] | 187 | 3 | 2 | 300 | 13 | 11 |

Lanes

| | | | | | |
|--|---------|---------|---------|---------|---------|
| Overwrite Calculated Critical Headway | No | No | No | No | No |
| User-Defined Critical Headway [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| Overwrite Calculated Follow-Up Time | No | No | No | No | No |
| User-Defined Follow-Up Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| A (intercept) | 1420.00 | 1420.00 | 1420.00 | 1420.00 | 1380.00 |
| B (coefficient) | 0.00091 | 0.00091 | 0.00091 | 0.00091 | 0.00102 |
| HV Adjustment Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Entry Flow Rate [veh/h] | 92 | 103 | 145 | 164 | 25 |
| Capacity of Entry and Bypass Lanes [veh/h] | 1418 | 1418 | 1403 | 1403 | 1137 |
| Pedestrian Impedance | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Capacity per Entry Lane [veh/h] | 1390 | 1390 | 1376 | 1376 | 1114 |
| X, volume / capacity | 0.06 | 0.07 | 0.10 | 0.12 | 0.02 |

Movement, Approach, & Intersection Results

| | | | | | |
|------------------------------------|------|------|------|------|------|
| Lane LOS | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.21 | 0.23 | 0.34 | 0.39 | 0.07 |
| 95th-Percentile Queue Length [ft] | 5.14 | 5.85 | 8.61 | 9.85 | 1.65 |
| Approach Delay [s/veh] | 3.12 | | 3.49 | | 3.41 |
| Approach LOS | A | | A | | A |
| Intersection Delay [s/veh] | 3.35 | | | | |
| Intersection LOS | A | | | | |



Intersection Level Of Service Report

Intersection 5: 48th Avenue/Denali Boulevard

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 27.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.395 |

Intersection Setup

| Name | Denali Boulevard | | | Denali Boulevard | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 3 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 |
| Entry Pocket Length [ft] | 350.0 | 100.0 | 250.0 | 350.0 | 100.0 | 300.0 | 250.0 | 100.0 | 450.0 | 400.0 | 100.0 | 200.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.0 | 0.00 | 0.00 | 300.0 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Denali Boulevard | | | Denali Boulevard | | | 48th Avenue | | | 48th Avenue | | |
|--|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 201 | 76 | 143 | 135 | 238 | 214 | 84 | 637 | 329 | 185 | 796 | 70 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 34 | 8 | 16 | 6 | 2 | 0 | 0 | 32 | 19 | 9 | 59 | 13 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 159 | 0 | 0 | 107 | 0 | 0 | 174 | 0 | 0 | 42 |
| Total Hourly Volume [veh/h] | 235 | 84 | 0 | 141 | 240 | 107 | 84 | 669 | 174 | 194 | 855 | 41 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 64 | 23 | 0 | 38 | 65 | 29 | 23 | 182 | 47 | 53 | 232 | 11 |
| Total Analysis Volume [veh/h] | 255 | 91 | 0 | 153 | 261 | 116 | 91 | 727 | 189 | 211 | 929 | 45 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 110 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | ProtP | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|-------|-------|-------|--------|-------|-------|--------|-------|-------|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 0 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 14 | 50 | 0 | 9 | 45 | 0 | 10 | 38 | 0 | 13 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 37 | 0 | 0 | 34 | 0 | 0 | 27 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| C, Cycle Length [s] | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 10 | 17 | 17 | 26 | 12 | 12 | 5 | 63 | 63 | 9 | 67 | 67 |
| g / C, Green / Cycle | 0.09 | 0.15 | 0.15 | 0.24 | 0.11 | 0.11 | 0.04 | 0.57 | 0.57 | 0.08 | 0.61 | 0.61 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.03 | 0.00 | 0.12 | 0.08 | 0.08 | 0.03 | 0.16 | 0.13 | 0.07 | 0.20 | 0.03 |
| s, saturation flow rate [veh/h] | 3113 | 3204 | 1431 | 1291 | 3204 | 1431 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 285 | 493 | 220 | 373 | 349 | 156 | 140 | 2622 | 818 | 257 | 2793 | 872 |
| d1, Uniform Delay [s] | 49.49 | 40.55 | 0.00 | 36.00 | 47.60 | 47.58 | 51.71 | 11.99 | 11.63 | 49.71 | 10.54 | 8.68 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.66 | 0.18 | 0.00 | 0.72 | 3.23 | 6.91 | 4.96 | 0.26 | 0.66 | 6.46 | 0.32 | 0.11 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.89 | 0.18 | 0.00 | 0.41 | 0.75 | 0.75 | 0.65 | 0.28 | 0.23 | 0.82 | 0.33 | 0.05 |
| d, Delay for Lane Group [s/veh] | 59.15 | 40.73 | 0.00 | 36.72 | 50.84 | 54.49 | 56.67 | 12.25 | 12.29 | 56.18 | 10.86 | 8.79 |
| Lane Group LOS | E | D | A | D | D | D | E | B | B | E | B | A |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 3.84 | 1.09 | 0.00 | 3.54 | 3.62 | 3.37 | 1.33 | 2.99 | 2.37 | 3.08 | 3.59 | 0.45 |
| 50th-Percentile Queue Length [ft/ln] | 96.00 | 27.21 | 0.00 | 88.43 | 90.47 | 84.37 | 33.26 | 74.87 | 59.15 | 76.99 | 89.73 | 11.17 |
| 95th-Percentile Queue Length [veh/ln] | 6.91 | 1.96 | 0.00 | 6.37 | 6.51 | 6.07 | 2.39 | 5.39 | 4.26 | 5.54 | 6.46 | 0.80 |
| 95th-Percentile Queue Length [ft/ln] | 172.7 | 48.98 | 0.00 | 159.1 | 162.8 | 151.8 | 59.87 | 134.7 | 106.4 | 138.5 | 161.5 | 20.10 |

**Movement, Approach, & Intersection Results**

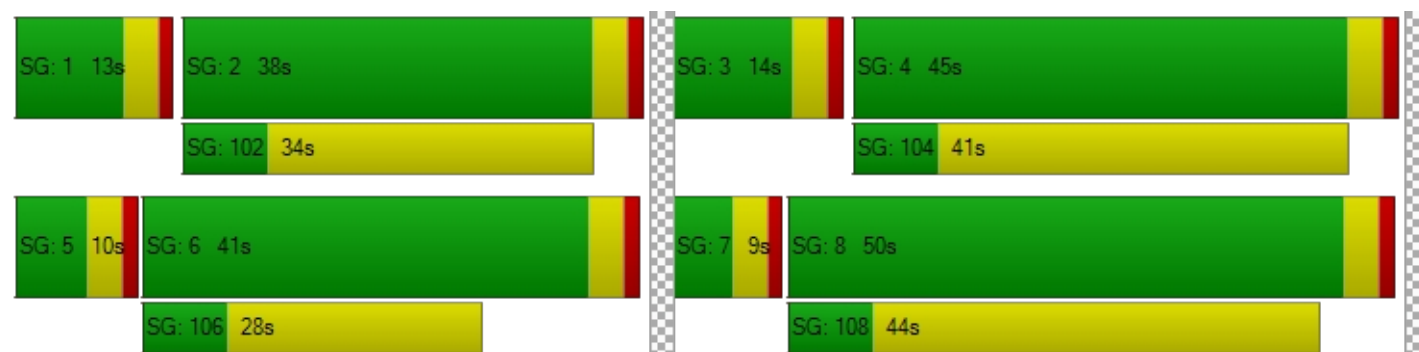
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| d_M, Delay for Movement [s/veh] | 59.15 | 40.73 | 0.00 | 36.72 | 50.84 | 54.49 | 56.67 | 12.25 | 12.29 | 56.18 | 10.86 | 8.79 |
| Movement LOS | E | D | A | D | D | D | E | B | B | E | B | A |
| d_A, Approach Delay [s/veh] | 54.30 | | | 47.56 | | | 16.27 | | | 18.85 | | |
| Approach LOS | D | | | D | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 26.96 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.395 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | | | 11.0 | | | 11.0 | | | 11.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 44.58 | | | 44.58 | | | 44.58 | | | 44.58 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 3.016 | | | 2.762 | | | 3.387 | | | 3.294 | | |
| Crosswalk LOS | C | | | C | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 836 | | | 745 | | | 618 | | | 672 | | |
| d_b, Bicycle Delay [s] | 18.64 | | | 21.66 | | | 26.28 | | | 24.25 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.976 | | | 2.085 | | | 2.209 | | | 2.234 | | |
| Bicycle LOS | A | | | B | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 6: 48th Ave/PA-4 Access 1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.1
 Level Of Service: B
 Volume to Capacity (v/c): 0.039

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 970 | 0 | 0 | 1211 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 15 | 36 | 3 | 0 | 93 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 15 | 1006 | 3 | 0 | 1304 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 4 | 273 | 1 | 0 | 354 |
| Total Analysis Volume [veh/h] | 0 | 16 | 1093 | 3 | 0 | 1417 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.04 | 0.01 | 0.00 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 14.09 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | B | A | A | | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 3.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 14.09 | | 0.00 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.09 | | | | | |
| Intersection LOS | B | | | | | |



Intersection Level Of Service Report Intersection 7: 46th Ave/Road 1

Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 0.0
Level Of Service: A
Volume to Capacity (v/c): 0.000

Intersection Setup

| Name | | | 46th Avenue | | 46th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 46th Avenue | | 46th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 5 | 22 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 5 | 22 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 1 | 6 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 5 | 24 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 8.65 | 8.42 | 7.26 | 0.00 | 0.00 | 0.00 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 8.54 | | 0.00 | | 0.00 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | |
| Intersection LOS | A | | | | | |



Intersection Level Of Service Report

Intersection 8: 46th Avenue/Denali Boulevard

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 23.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.050 |

Intersection Setup

| Name | Denali Boulevard | | Denali Boulevard | | 46th Avenue | |
|------------------------------|------------------|--------|------------------|--------|-------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Denali Boulevard | | Denali Boulevard | | 46th Avenue | |
|---|------------------|--------|------------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 420 | 752 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 6 | 30 | 34 | 11 | 9 | 10 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 6 | 450 | 786 | 11 | 9 | 10 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 2 | 122 | 214 | 3 | 2 | 3 |
| Total Analysis Volume [veh/h] | 7 | 489 | 854 | 12 | 10 | 11 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|-------|-------|
| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.01 | 0.00 | 0.05 | 0.02 |
| d_M, Delay for Movement [s/veh] | 9.70 | 0.00 | 0.00 | 0.00 | 23.80 | 12.12 |
| Movement LOS | A | A | A | A | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.03 | 0.00 | 0.00 | 0.00 | 0.22 | 0.22 |
| 95th-Percentile Queue Length [ft/ln] | 0.69 | 0.00 | 0.00 | 0.00 | 5.52 | 5.52 |
| d_A, Approach Delay [s/veh] | 0.14 | | 0.00 | | 17.68 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 0.32 | | | | | |
| Intersection LOS | C | | | | | |



Intersection Level Of Service Report

Intersection 9: Denali Bl/PA-4 Access

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 30.3
 Level Of Service: D
 Volume to Capacity (v/c): 0.114

Intersection Setup

| Name | Denali Boulevard | | | Denali Boulevard | | | | | | | | |
|------------------------------|------------------|-------|-------|------------------|-------|-------|-----------|-------|-------|-----------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Denali Boulevard | | | Denali Boulevard | | | | | | | | |
|---|------------------|-------|-------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Base Volume Input [veh/h] | 0 | 420 | 0 | 0 | 752 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 7 | 25 | 7 | 6 | 19 | 5 | 17 | 0 | 14 | 12 | 0 | 16 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 7 | 445 | 7 | 6 | 771 | 5 | 17 | 0 | 14 | 12 | 0 | 16 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 2 | 121 | 2 | 2 | 210 | 1 | 5 | 0 | 4 | 3 | 0 | 4 |
| Total Analysis Volume [veh/h] | 8 | 484 | 8 | 7 | 838 | 5 | 18 | 0 | 15 | 13 | 0 | 17 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Free | Free | Stop | Stop |
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.11 | 0.00 | 0.03 | 0.06 | 0.00 | 0.02 |
| d_M, Delay for Movement [s/veh] | 9.61 | 0.00 | 0.00 | 8.39 | 0.00 | 0.00 | 30.31 | 32.34 | 13.64 | 22.93 | 30.69 | 10.66 |
| Movement LOS | A | A | A | A | A | A | D | D | B | C | D | B |
| 95th-Percentile Queue Length [veh/ln] | 0.03 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.48 | 0.48 | 0.48 | 0.27 | 0.27 | 0.27 |
| 95th-Percentile Queue Length [ft/ln] | 0.77 | 0.00 | 0.00 | 0.49 | 0.00 | 0.00 | 11.98 | 11.98 | 11.98 | 6.82 | 6.82 | 6.82 |
| d_A, Approach Delay [s/veh] | 0.15 | | | 0.07 | | | 22.74 | | | 15.98 | | |
| Approach LOS | A | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 0.97 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |



Intersection Level Of Service Report

Intersection 10: 46th Ave/PA-4 Access 3

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 8.7
 Level Of Service: A
 Volume to Capacity (v/c): 0.018

Intersection Setup

| Name | | | 46th Avenue | | 46th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 46th Avenue | | 46th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 17 | 14 | 3 | 2 | 8 | 9 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 17 | 14 | 3 | 2 | 8 | 9 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 5 | 4 | 1 | 1 | 2 | 2 |
| Total Analysis Volume [veh/h] | 18 | 15 | 3 | 2 | 9 | 10 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 8.74 | 8.49 | 7.26 | 0.00 | 0.00 | 0.00 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.10 | 0.10 | 0.01 | 0.01 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 2.49 | 2.49 | 0.13 | 0.13 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 8.63 | | 4.35 | | 0.00 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 5.38 | | | | | |
| Intersection LOS | A | | | | | |



Intersection Level Of Service Report

Intersection 11: 48th Ave/PA-5.1 PA-5.2

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.0
 Level Of Service: B
 Volume to Capacity (v/c): 0.061

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 915 | 0 | 0 | 447 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 24 | 47 | 6 | 0 | 81 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 24 | 962 | 6 | 0 | 528 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 7 | 261 | 2 | 0 | 143 |
| Total Analysis Volume [veh/h] | 0 | 26 | 1046 | 7 | 0 | 574 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.06 | 0.01 | 0.00 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 14.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | B | A | A | | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 4.87 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 14.03 | | 0.00 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.22 | | | | | |
| Intersection LOS | B | | | | | |



Intersection Level Of Service Report

Intersection 12: 48th Avenue/Fultondale Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 14.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.269 |

Intersection Setup

| Name | Fultondale Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|-------------------|-------|-------|------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | T T T | | | T T | | | T T T T | | | T T T T | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 200.0 | 100.0 | 100.0 | 150.0 | 100.0 | 100.0 | 40.00 | 100.0 | 100.0 | 175.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 100.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Fultondale Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|--|-------------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 73 | 4 | 49 | 0 | 24 | 24 | 9 | 716 | 43 | 28 | 350 | 2 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 72 | 0 | 43 | 0 | 0 | 0 | 0 | 33 | 39 | 17 | 9 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 46 | 0 | 0 | 12 | 0 | 0 | 41 | 0 | 0 | 1 |
| Total Hourly Volume [veh/h] | 145 | 4 | 46 | 0 | 24 | 12 | 9 | 749 | 41 | 45 | 359 | 1 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 39 | 1 | 13 | 0 | 7 | 3 | 2 | 204 | 11 | 12 | 98 | 0 |
| Total Analysis Volume [veh/h] | 158 | 4 | 50 | 0 | 26 | 13 | 10 | 814 | 45 | 49 | 390 | 1 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | ProtP | Permi | Permi | ProtP | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 0 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 18 | 50 | 0 | 9 | 41 | 0 | 9 | 32 | 0 | 9 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 21 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | R | L | C | C |
|---|-------|-------|-------|------|-------|------|------|------|-------|------|------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 7 | 14 | 14 | 18 | 7 | 74 | 67 | 67 | 4 | 69 | 69 |
| g / C, Green / Cycle | 0.07 | 0.14 | 0.14 | 0.18 | 0.07 | 0.74 | 0.66 | 0.66 | 0.04 | 0.69 | 0.69 |
| (v / s)_i Volume / Saturation Flow Rate | 0.05 | 0.00 | 0.03 | 0.00 | 0.02 | 0.01 | 0.18 | 0.03 | 0.02 | 0.08 | 0.08 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1431 | 1260 | 1589 | 925 | 4584 | 1431 | 3113 | 3204 | 1681 |
| c, Capacity [veh/h] | 222 | 232 | 197 | 327 | 106 | 761 | 3045 | 950 | 118 | 2209 | 1158 |
| d1, Uniform Delay [s] | 45.45 | 37.30 | 38.56 | 0.00 | 44.67 | 3.41 | 6.86 | 5.83 | 47.07 | 5.25 | 5.25 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.17 | 0.03 | 0.67 | 0.00 | 2.11 | 0.03 | 0.22 | 0.09 | 2.34 | 0.11 | 0.20 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|------|-------|------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.71 | 0.02 | 0.25 | 0.00 | 0.37 | 0.01 | 0.27 | 0.05 | 0.42 | 0.12 | 0.12 |
| d, Delay for Lane Group [s/veh] | 49.62 | 37.33 | 39.23 | 0.00 | 46.79 | 3.44 | 7.08 | 5.92 | 49.41 | 5.36 | 5.46 |
| Lane Group LOS | D | D | D | A | D | A | A | A | D | A | A |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.04 | 0.09 | 1.13 | 0.00 | 0.98 | 0.05 | 2.18 | 0.32 | 0.63 | 0.83 | 0.90 |
| 50th-Percentile Queue Length [ft/ln] | 50.92 | 2.16 | 28.23 | 0.00 | 24.60 | 1.24 | 54.52 | 8.09 | 15.81 | 20.78 | 22.60 |
| 95th-Percentile Queue Length [veh/ln] | 3.67 | 0.16 | 2.03 | 0.00 | 1.77 | 0.09 | 3.93 | 0.58 | 1.14 | 1.50 | 1.63 |
| 95th-Percentile Queue Length [ft/ln] | 91.65 | 3.89 | 50.82 | 0.00 | 44.29 | 2.23 | 98.13 | 14.55 | 28.45 | 37.41 | 40.68 |

**Movement, Approach, & Intersection Results**

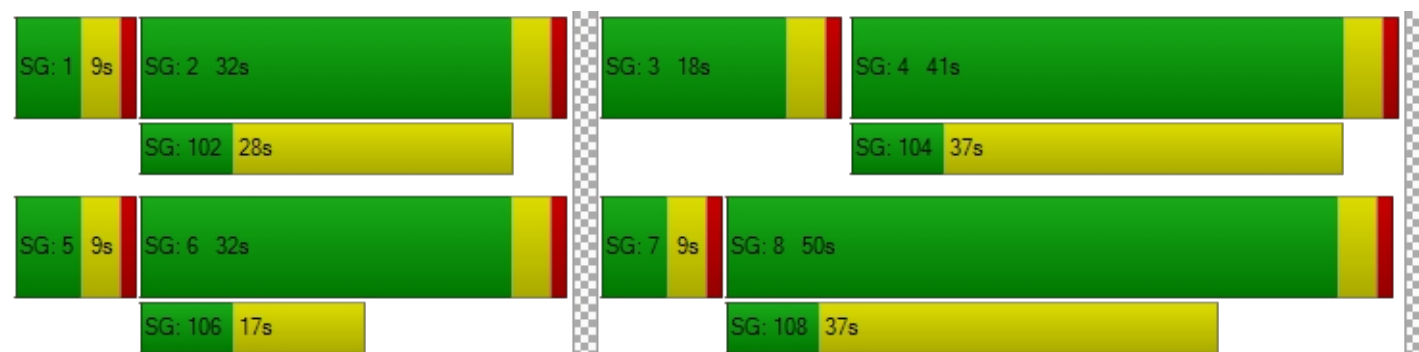
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|------|------|------|-------|------|------|
| d_M, Delay for Movement [s/veh] | 49.62 | 37.33 | 39.23 | 0.00 | 46.79 | 46.79 | 3.44 | 7.08 | 5.92 | 49.41 | 5.39 | 5.46 |
| Movement LOS | D | D | D | A | D | D | A | A | A | D | A | A |
| d_A, Approach Delay [s/veh] | 46.94 | | | 46.79 | | | 6.97 | | | 10.30 | | |
| Approach LOS | D | | | D | | | A | | | B | | |
| d_I, Intersection Delay [s/veh] | 14.34 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.269 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | | | 11.0 | | | 11.0 | | | 11.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 39.62 | | | 39.62 | | | 39.62 | | | 39.62 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.591 | | | 1.994 | | | 2.969 | | | 2.896 | | |
| Crosswalk LOS | B | | | A | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 920 | | | 740 | | | 560 | | | 560 | | |
| d_b, Bicycle Delay [s] | 14.59 | | | 19.86 | | | 25.94 | | | 25.94 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.985 | | | 1.644 | | | 2.060 | | | 1.802 | | |
| Bicycle LOS | A | | | A | | | B | | | A | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 13: Fultondale St/PA-6.1 Access

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 12.0
 Level Of Service: B
 Volume to Capacity (v/c): 0.025

Intersection Setup

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|------------------------------|-------------------|-------|-------|-------------------|-------|-------|-----------|-------|-------|-----------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|---|-------------------|-------|-------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Base Volume Input [veh/h] | 0 | 126 | 0 | 0 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 65 | 5 | 6 | 64 | 3 | 12 | 0 | 9 | 17 | 0 | 18 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 191 | 5 | 6 | 159 | 3 | 12 | 0 | 9 | 17 | 0 | 18 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 1 | 52 | 1 | 2 | 43 | 1 | 3 | 0 | 2 | 5 | 0 | 5 |
| Total Analysis Volume [veh/h] | 4 | 208 | 5 | 7 | 173 | 3 | 13 | 0 | 10 | 18 | 0 | 20 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Free | Free | Stop | Stop |
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|------|-------|-------|------|-------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.03 | 0.00 | 0.02 |
| d_M, Delay for Movement [s/veh] | 7.58 | 0.00 | 0.00 | 7.67 | 0.00 | 0.00 | 12.02 | 12.04 | 9.35 | 12.00 | 12.15 | 9.67 |
| Movement LOS | A | A | A | A | A | A | B | B | A | B | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.11 | 0.11 | 0.11 | 0.18 | 0.18 | 0.18 |
| 95th-Percentile Queue Length [ft/ln] | 0.21 | 0.00 | 0.00 | 0.39 | 0.00 | 0.00 | 2.80 | 2.80 | 2.80 | 4.56 | 4.56 | 4.56 |
| d_A, Approach Delay [s/veh] | 0.14 | | | 0.29 | | | 10.86 | | | 10.78 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.61 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |



Intersection Level Of Service Report

Intersection 14: Fultondale St/PA13.1 Access

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 12.1
 Level Of Service: B
 Volume to Capacity (v/c): 0.028

Intersection Setup

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|------------------------------|-------------------|-------|-------|-------------------|-------|-------|-----------|-------|-------|-----------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|---|-------------------|-------|-------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Base Volume Input [veh/h] | 0 | 126 | 0 | 0 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 5 | 43 | 5 | 7 | 78 | 5 | 18 | 0 | 22 | 14 | 0 | 13 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 169 | 5 | 7 | 173 | 5 | 18 | 0 | 22 | 14 | 0 | 13 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 1 | 46 | 1 | 2 | 47 | 1 | 5 | 0 | 6 | 4 | 0 | 4 |
| Total Analysis Volume [veh/h] | 5 | 184 | 5 | 8 | 188 | 5 | 20 | 0 | 24 | 15 | 0 | 14 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Free | Free | Stop | Stop |
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|------|-------|-------|------|-------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.04 | 0.00 | 0.03 | 0.03 | 0.00 | 0.02 |
| d_M, Delay for Movement [s/veh] | 7.62 | 0.00 | 0.00 | 7.61 | 0.00 | 0.00 | 12.07 | 12.17 | 9.60 | 12.09 | 12.06 | 9.47 |
| Movement LOS | A | A | A | A | A | A | B | B | A | B | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.21 | 0.21 | 0.21 | 0.14 | 0.14 | 0.14 |
| 95th-Percentile Queue Length [ft/ln] | 0.27 | 0.00 | 0.00 | 0.44 | 0.00 | 0.00 | 5.23 | 5.23 | 5.23 | 3.51 | 3.51 | 3.51 |
| d_A, Approach Delay [s/veh] | 0.20 | | | 0.30 | | | 10.72 | | | 10.82 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.89 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |






Intersection Level Of Service Report

Intersection 15: Denali BI/PA-12 Access

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 18.9
 Level Of Service: C
 Volume to Capacity (v/c): 0.041

Intersection Setup

| Name | Denali Boulevard | | Denali Boulevard | | | |
|------------------------------|---|--------|---|--------|---|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 1 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Denali Boulevard | | Denali Boulevard | | | |
|---|------------------|--------|------------------|--------|--------|--------|
| Base Volume Input [veh/h] | 420 | 0 | 0 | 752 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 24 | 5 | 4 | 40 | 10 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 444 | 5 | 4 | 792 | 10 | 12 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 121 | 1 | 1 | 215 | 3 | 3 |
| Total Analysis Volume [veh/h] | 483 | 5 | 4 | 861 | 11 | 13 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|-------|-------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.01 | 0.04 | 0.02 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 8.37 | 0.00 | 18.95 | 10.28 |
| Movement LOS | A | A | A | A | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.01 | 0.00 | 0.18 | 0.18 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.28 | 0.00 | 4.61 | 4.61 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.04 | | 14.25 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.27 | | | | | |
| Intersection LOS | C | | | | | |



Intersection Level Of Service Report

Intersection 16: 42nd Avenue/Denali Boulevard

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 13.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.393 |

Intersection Setup

| Name | Denali Boulevard | | | Denali Boulevard | | | 42nd Avenue | | | 42nd Avenue | | |
|------------------------------|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Denali Boulevard | | | Denali Boulevard | | | 42nd Avenue | | | 42nd Avenue | | |
|--|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 77 | 357 | 67 | 63 | 369 | 68 | 20 | 7 | 22 | 22 | 6 | 21 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 46 | 0 | 4 | 1 | 7 | 0 | 0 | 30 | 28 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 34 | 0 | 0 | 36 | 0 | 0 | 11 | 0 | 0 | 25 |
| Total Hourly Volume [veh/h] | 77 | 357 | 33 | 109 | 369 | 36 | 21 | 14 | 11 | 22 | 36 | 24 |
| Peak Hour Factor | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 39 | 179 | 17 | 55 | 185 | 18 | 11 | 7 | 6 | 11 | 18 | 12 |
| Total Analysis Volume [veh/h] | 154 | 714 | 66 | 218 | 738 | 72 | 42 | 28 | 22 | 44 | 72 | 48 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi |
|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Signal Group | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 58 | 0 | 0 | 58 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 21 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|------|------|-------|------|------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 54 | 54 | 54 | 54 | 54 | 54 | 28 | 28 | 28 | 28 | 28 | 28 |
| g / C, Green / Cycle | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| (v / s)_i Volume / Saturation Flow Rate | 0.25 | 0.22 | 0.05 | 0.35 | 0.23 | 0.05 | 0.04 | 0.02 | 0.02 | 0.04 | 0.04 | 0.03 |
| s, saturation flow rate [veh/h] | 606 | 3204 | 1431 | 623 | 3204 | 1431 | 1144 | 1683 | 1431 | 1219 | 1683 | 1431 |
| c, Capacity [veh/h] | 358 | 1923 | 858 | 369 | 1923 | 858 | 375 | 524 | 445 | 418 | 524 | 445 |
| d1, Uniform Delay [s] | 17.72 | 9.26 | 7.55 | 19.95 | 9.35 | 7.58 | 25.71 | 21.72 | 21.69 | 24.39 | 22.31 | 22.10 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.75 | 0.55 | 0.17 | 6.82 | 0.58 | 0.19 | 0.60 | 0.19 | 0.21 | 0.51 | 0.55 | 0.49 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.43 | 0.37 | 0.08 | 0.59 | 0.38 | 0.08 | 0.11 | 0.05 | 0.05 | 0.11 | 0.14 | 0.11 |
| d, Delay for Lane Group [s/veh] | 21.47 | 9.82 | 7.72 | 26.77 | 9.94 | 7.77 | 26.32 | 21.91 | 21.90 | 24.89 | 22.86 | 22.59 |
| Lane Group LOS | C | A | A | C | A | A | C | C | C | C | C | C |
| Critical Lane Group | No | No | No | Yes | No | No | No | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.57 | 3.42 | 0.53 | 4.23 | 3.57 | 0.59 | 0.75 | 0.44 | 0.35 | 0.75 | 1.16 | 0.77 |
| 50th-Percentile Queue Length [ft/ln] | 64.37 | 85.40 | 13.35 | 105.7 | 89.17 | 14.63 | 18.65 | 10.91 | 8.66 | 18.80 | 28.95 | 19.31 |
| 95th-Percentile Queue Length [veh/ln] | 4.63 | 6.15 | 0.96 | 7.61 | 6.42 | 1.05 | 1.34 | 0.79 | 0.62 | 1.35 | 2.08 | 1.39 |
| 95th-Percentile Queue Length [ft/ln] | 115.8 | 153.7 | 24.03 | 190.1 | 160.5 | 26.34 | 33.56 | 19.64 | 15.59 | 33.84 | 52.11 | 34.76 |

**Movement, Approach, & Intersection Results**

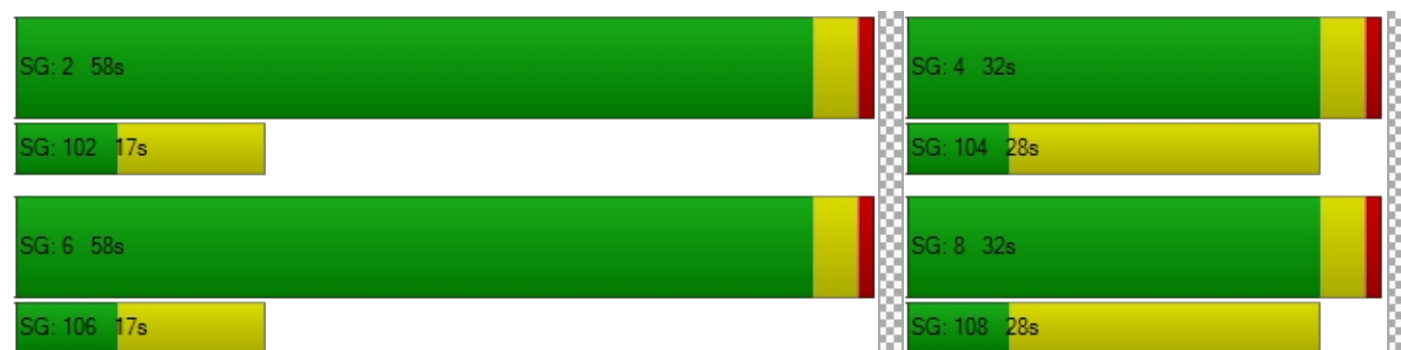
| | | | | | | | | | | | | |
|---------------------------------|-------|------|------|-------|------|------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 21.47 | 9.82 | 7.72 | 26.77 | 9.94 | 7.77 | 26.32 | 21.91 | 21.90 | 24.89 | 22.86 | 22.59 |
| Movement LOS | C | A | A | C | A | A | C | C | C | C | C | C |
| d_A, Approach Delay [s/veh] | 11.59 | | | 13.35 | | | 23.92 | | | 23.32 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 13.79 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.393 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | | | 11.0 | | | 11.0 | | | 11.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 34.67 | | | 34.67 | | | 34.67 | | | 34.67 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.853 | | | 2.871 | | | 2.619 | | | 2.607 | | |
| Crosswalk LOS | C | | | C | | | B | | | B | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1200 | | | 1200 | | | 622 | | | 622 | | |
| d_b, Bicycle Delay [s] | 7.20 | | | 7.20 | | | 21.36 | | | 21.36 | | |
| I_b,int, Bicycle LOS Score for Intersection | 2.358 | | | 2.437 | | | 1.730 | | | 1.871 | | |
| Bicycle LOS | B | | | B | | | A | | | A | | |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 17: 42nd Avenue/Fultondale Street

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 31.9
 Level Of Service: D
 Volume to Capacity (v/c): 0.737

Intersection Setup

| Name | Fultondale Street | | | Fultondale Street | | | 42nd Avenue | | | 42nd Avenue | | |
|------------------------------|-------------------|-------|-------|-------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | Fultondale Street | | | 42nd Avenue | | | 42nd Avenue | | |
|---|-------------------|-------|-------|-------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 69 | 18 | 63 | 11 | 36 | 3 | 3 | 72 | 25 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 99 | 0 | 27 | 7 | 46 | 0 | 0 | 30 | 33 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 168 | 18 | 90 | 18 | 82 | 3 | 3 | 102 | 58 |
| Peak Hour Factor | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 84 | 9 | 45 | 9 | 41 | 2 | 2 | 51 | 29 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 336 | 36 | 180 | 36 | 164 | 6 | 6 | 204 | 116 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Free | Free |
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|------|-------|-------|-------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.74 | 0.08 | 0.23 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 18.15 | 13.64 | 9.10 | 31.92 | 13.75 | 11.03 | 7.99 | 0.00 | 0.00 | 7.57 | 0.00 | 0.00 |
| Movement LOS | C | B | A | D | B | B | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 6.00 | 0.26 | 0.89 | 0.09 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 149.9 | 6.53 | 22.36 | 2.24 | 0.00 | 0.00 | 0.32 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 13.63 | | | 23.92 | | | 1.40 | | | 0.14 | | |
| Approach LOS | B | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 12.49 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |



Intersection Level Of Service Report

Intersection 18: Fultondale St/PA-13.1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 11.3
 Level Of Service: B
 Volume to Capacity (v/c): 0.019

Intersection Setup

| Name | Fultondale Street | | Fultondale Street | | | |
|------------------------------|-------------------|--------|-------------------|--------|-----------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Fultondale Street | | Fultondale Street | | | |
|---|-------------------|--------|-------------------|--------|--------|--------|
| Base Volume Input [veh/h] | 126 | 0 | 0 | 95 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 43 | 4 | 4 | 110 | 10 | 11 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 169 | 4 | 4 | 205 | 10 | 11 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 46 | 1 | 1 | 56 | 3 | 3 |
| Total Analysis Volume [veh/h] | 184 | 4 | 4 | 223 | 11 | 12 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.60 | 0.00 | 11.27 | 9.38 |
| Movement LOS | A | A | A | A | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.01 | 0.00 | 0.10 | 0.10 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.22 | 0.00 | 2.53 | 2.53 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.13 | | 10.28 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.61 | | | | | |
| Intersection LOS | B | | | | | |



Intersection Level Of Service Report

Intersection 19: Fultondale St/PA13.2 Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 11.2 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.019 |

Intersection Setup

| Name | Fultondale Street | | Fultondale Street | | | |
|------------------------------|-------------------|--------|-------------------|--------|-----------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Fultondale Street | | Fultondale Street | | | |
|---|-------------------|--------|-------------------|--------|--------|--------|
| Base Volume Input [veh/h] | 126 | 0 | 0 | 95 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 36 | 4 | 4 | 116 | 10 | 10 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 162 | 4 | 4 | 211 | 10 | 10 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 44 | 1 | 1 | 57 | 3 | 3 |
| Total Analysis Volume [veh/h] | 176 | 4 | 4 | 229 | 11 | 11 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.59 | 0.00 | 11.24 | 9.33 |
| Movement LOS | A | A | A | A | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.01 | 0.00 | 0.10 | 0.10 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.22 | 0.00 | 2.42 | 2.42 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.13 | | 10.29 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.59 | | | | | |
| Intersection LOS | B | | | | | |



Intersection Level Of Service Report

Intersection 20: 42nd Avenue/Main Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 10.0 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.090 |

Intersection Setup

| Name | Main Street | | Main Street | | 42nd Avenue | |
|------------------------------|-------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | Yes | | Yes | | Yes | |

**Volumes**

| Name | Main Street | | Main Street | | 42nd Avenue | |
|--|-------------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 200 | 5 | 65 | 135 | 24 | 26 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 7 | 8 | 0 | 12 | 33 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 7 | 0 | 0 | 0 | 13 |
| Total Hourly Volume [veh/h] | 207 | 6 | 65 | 147 | 57 | 13 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 56 | 2 | 18 | 40 | 15 | 4 |
| Total Analysis Volume [veh/h] | 225 | 7 | 71 | 160 | 62 | 14 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 6 | 0 | 0 | 2 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 0 | 10 | 5 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 32 | 0 | 0 | 32 | 28 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 17 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | L | C | L | R |
|---|------|------|-------|------|-------|-------|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 28 | 28 | 28 | 28 | 24 | 24 |
| g / C, Green / Cycle | 0.47 | 0.47 | 0.47 | 0.47 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.07 | 0.07 | 0.05 | 0.02 | 0.01 |
| s, saturation flow rate [veh/h] | 1683 | 1665 | 1033 | 3204 | 3113 | 1431 |
| c, Capacity [veh/h] | 785 | 777 | 527 | 1495 | 1245 | 572 |
| d1, Uniform Delay [s] | 9.17 | 9.17 | 11.85 | 8.98 | 11.02 | 10.91 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.40 | 0.41 | 0.53 | 0.14 | 0.08 | 0.08 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.15 | 0.15 | 0.13 | 0.11 | 0.05 | 0.02 |
| d, Delay for Lane Group [s/veh] | 9.56 | 9.58 | 12.39 | 9.13 | 11.10 | 10.99 |
| Lane Group LOS | A | A | B | A | B | B |
| Critical Lane Group | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.83 | 0.84 | 0.63 | 0.54 | 0.24 | 0.11 |
| 50th-Percentile Queue Length [ft/ln] | 20.87 | 20.91 | 15.72 | 13.39 | 5.95 | 2.83 |
| 95th-Percentile Queue Length [veh/ln] | 1.50 | 1.51 | 1.13 | 0.96 | 0.43 | 0.20 |
| 95th-Percentile Queue Length [ft/ln] | 37.56 | 37.64 | 28.29 | 24.10 | 10.72 | 5.09 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---------------------------------|-------|------|-------|------|-------|-------|
| d_M, Delay for Movement [s/veh] | 9.57 | 9.58 | 12.39 | 9.13 | 11.10 | 10.99 |
| Movement LOS | A | A | B | A | B | B |
| d_A, Approach Delay [s/veh] | 9.57 | | 10.13 | | 11.08 | |
| Approach LOS | A | | B | | B | |
| d_I, Intersection Delay [s/veh] | 10.02 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.090 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.01 | 20.01 | 20.01 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.231 | 2.371 | 2.270 |
| Crosswalk LOS | B | B | B |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 933 | 933 | 800 |
| d_b, Bicycle Delay [s] | 8.53 | 8.53 | 10.80 |
| I_b,int, Bicycle LOS Score for Intersection | 1.757 | 1.750 | 1.560 |
| Bicycle LOS | A | A | A |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 21: Fultondale St/PA-6.1 Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 13.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.005 |

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 2 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 765 | 0 | 0 | 453 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 14 | 69 | 7 | 2 | 26 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 14 | 834 | 7 | 2 | 479 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 4 | 227 | 2 | 1 | 130 |
| Total Analysis Volume [veh/h] | 0 | 15 | 907 | 8 | 2 | 521 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|-------|------|------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.03 | 0.01 | 0.00 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 12.90 | 0.00 | 0.00 | 13.41 | 0.00 |
| Movement LOS | | B | A | A | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.10 | 0.00 | 0.00 | 0.01 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 2.47 | 0.00 | 0.00 | 0.35 | 0.00 |
| d_A, Approach Delay [s/veh] | 12.90 | | 0.00 | | 0.05 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.15 | | | | | |
| Intersection LOS | B | | | | | |



Intersection Level Of Service Report

Intersection 22: Fultondale St/PA-6.1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 11.9
 Level Of Service: B
 Volume to Capacity (v/c): 0.036

Intersection Setup

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|------------------------------|-------------------|-------|-------|-------------------|-------|-------|-----------|-------|-------|-----------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|---|-------------------|-------|-------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Base Volume Input [veh/h] | 0 | 126 | 0 | 0 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 4 | 86 | 5 | 5 | 47 | 3 | 12 | 0 | 9 | 18 | 0 | 18 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 212 | 5 | 5 | 142 | 3 | 12 | 0 | 9 | 18 | 0 | 18 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 1 | 58 | 1 | 1 | 39 | 1 | 3 | 0 | 2 | 5 | 0 | 5 |
| Total Analysis Volume [veh/h] | 4 | 230 | 5 | 5 | 154 | 3 | 13 | 0 | 10 | 20 | 0 | 20 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Free | Free | Stop | Stop |
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|------|-------|-------|------|-------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.04 | 0.00 | 0.02 |
| d_M, Delay for Movement [s/veh] | 7.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 11.84 | 11.85 | 9.25 | 11.85 | 12.02 | 9.80 |
| Movement LOS | A | A | | | A | A | B | B | A | B | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.11 | 0.11 | 0.11 | 0.19 | 0.19 | 0.19 |
| 95th-Percentile Queue Length [ft/ln] | 0.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.73 | 2.73 | 2.73 | 4.85 | 4.85 | 4.85 |
| d_A, Approach Delay [s/veh] | 0.13 | | | 0.00 | | | 10.71 | | | 10.83 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.56 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |



Intersection Level Of Service Report

Intersection 23: 42nd Ave/PA 13.1 Access 2

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 12.1
 Level Of Service: B
 Volume to Capacity (v/c): 0.021

Intersection Setup

| Name | | | | | | | 42nd Avenue | | | 42nd Avenue | | |
|------------------------------|------------|-------|-------|------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | + | | | + | | | + + | | | + + | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | | | | | | | 42nd Avenue | | | 42nd Avenue | | |
|---|-------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 96 | 1 | 2 | 96 | 2 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 10 | 0 | 10 | 4 | 142 | 0 | 0 | 53 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 10 | 0 | 10 | 7 | 238 | 1 | 2 | 149 | 6 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 3 | 0 | 3 | 2 | 65 | 0 | 1 | 40 | 2 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 11 | 0 | 11 | 8 | 259 | 1 | 2 | 162 | 7 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Free | Free |
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|------|-------|-------|------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 12.08 | 12.17 | 9.62 | 12.12 | 12.34 | 9.29 | 7.57 | 0.00 | 0.00 | 7.76 | 0.00 | 0.00 |
| Movement LOS | B | B | A | B | B | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.10 | 0.10 | 0.10 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 2.61 | 2.61 | 2.61 | 0.43 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 11.29 | | | 10.70 | | | 0.23 | | | 0.09 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 0.68 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |



Intersection Level Of Service Report

Intersection 46: 48th Avenue/Harvest Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 30.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.406 |

Intersection Setup

| Name | Harvest Road | | 48th Avenue | | 48th Avenue | |
|------------------------------|--------------|--------|-------------|--------|-------------|--------|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 1 | 3 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 450.00 | 200.00 | 400.00 | 100.00 | 100.00 | 500.00 |
| No. of Lanes in Exit Pocket | 0 | 2 | 0 | 1 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 174.61 | 0.00 | 400.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | Yes | | Yes | | Yes | |

**Volumes**

| Name | Harvest Road | | 48th Avenue | | 48th Avenue | |
|--|--------------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 493 | 287 | 464 | 586 | 166 | 242 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 10 | 28 | 55 | 18 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 297 | 0 | 0 | 0 | 242 |
| Total Hourly Volume [veh/h] | 493 | 0 | 492 | 641 | 184 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 134 | 0 | 134 | 174 | 50 | 0 |
| Total Analysis Volume [veh/h] | 536 | 0 | 535 | 697 | 200 | 0 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 110 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Protected | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|-----------|------------|------------|------------|
| Signal Group | 7 | 0 | 5 | 2 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 10 | 0 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 48 | 0 | 24 | 62 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 7 | 0 |
| Pedestrian Clearance [s] | 37 | 0 | 0 | 10 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | No | No | No | |
| Maximum Recall | No | | No | No | No | |
| Pedestrian Recall | No | | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | R |
|---|-------|------|-------|------|-------|------|
| C, Cycle Length [s] | 110 | 110 | 110 | 110 | 110 | 110 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 22 | 22 | 20 | 80 | 56 | 56 |
| g / C, Green / Cycle | 0.20 | 0.20 | 0.18 | 0.73 | 0.51 | 0.51 |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | 0.00 | 0.17 | 0.22 | 0.06 | 0.00 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 620 | 285 | 567 | 2333 | 1633 | 729 |
| d1, Uniform Delay [s] | 42.61 | 0.00 | 44.41 | 5.19 | 14.10 | 0.00 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.78 | 0.00 | 8.58 | 0.33 | 0.15 | 0.00 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|--------|------|--------|--------|-------|------|
| X, volume / capacity | 0.86 | 0.00 | 0.94 | 0.30 | 0.12 | 0.00 |
| d, Delay for Lane Group [s/veh] | 46.39 | 0.00 | 52.99 | 5.52 | 14.25 | 0.00 |
| Lane Group LOS | D | A | D | A | B | A |
| Critical Lane Group | Yes | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 7.31 | 0.00 | 7.82 | 2.52 | 1.32 | 0.00 |
| 50th-Percentile Queue Length [ft/ln] | 182.83 | 0.00 | 195.42 | 63.03 | 33.12 | 0.00 |
| 95th-Percentile Queue Length [veh/ln] | 11.75 | 0.00 | 12.40 | 4.54 | 2.38 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 293.70 | 0.00 | 310.05 | 113.46 | 59.61 | 0.00 |

**Movement, Approach, & Intersection Results**

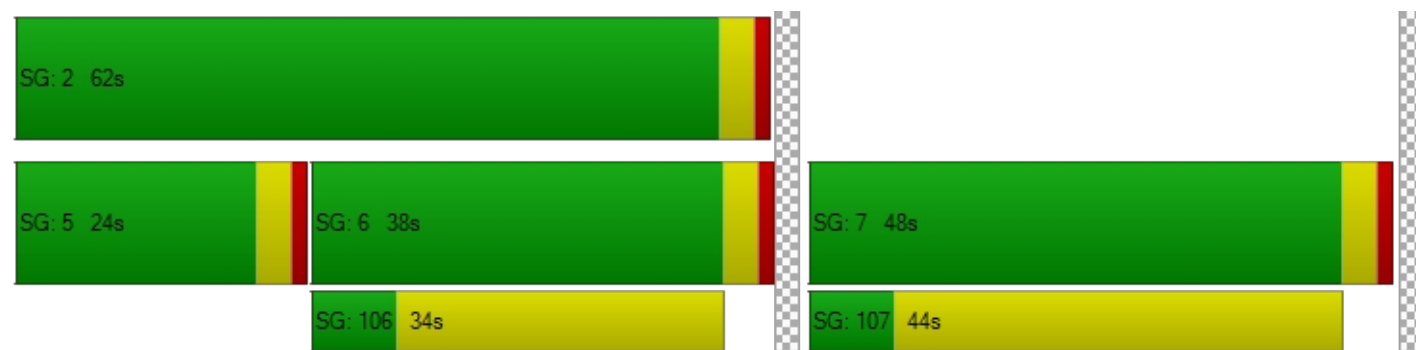
| | | | | | | |
|---------------------------------|-------|------|-------|------|-------|------|
| d_M, Delay for Movement [s/veh] | 46.39 | 0.00 | 52.99 | 5.52 | 14.25 | 0.00 |
| Movement LOS | D | A | D | A | B | A |
| d_A, Approach Delay [s/veh] | 46.39 | | 26.14 | | 14.25 | |
| Approach LOS | D | | C | | B | |
| d_I, Intersection Delay [s/veh] | 30.45 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.406 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 44.54 | 44.54 | 44.54 |
| I_p,int, Pedestrian LOS Score for Intersection | 3.250 | 2.946 | 3.079 |
| Crosswalk LOS | C | C | C |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 800 | 1055 | 618 |
| d_b, Bicycle Delay [s] | 19.79 | 12.29 | 26.25 |
| I_b,int, Bicycle LOS Score for Intersection | 1.560 | 2.576 | 1.924 |
| Bicycle LOS | A | B | A |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Signal Warrants Report For Intersection 2: 48th Ave/Road 1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|------|---------------|
| | E | W | S |
| 1 | 1304 | 1009 | 0 |
| 2 | 1265 | 979 | 0 |
| 3 | 1239 | 959 | 0 |
| 4 | 1161 | 898 | 0 |
| 5 | 1030 | 797 | 0 |
| 6 | 1017 | 787 | 0 |
| 7 | 1004 | 777 | 0 |
| 8 | 913 | 706 | 0 |
| 9 | 900 | 696 | 0 |
| 10 | 887 | 686 | 0 |
| 11 | 769 | 595 | 0 |
| 12 | 717 | 555 | 0 |
| 13 | 704 | 545 | 0 |
| 14 | 522 | 404 | 0 |
| 15 | 522 | 404 | 0 |
| 16 | 365 | 283 | 0 |
| 17 | 209 | 161 | 0 |
| 18 | 209 | 161 | 0 |
| 19 | 117 | 91 | 0 |
| 20 | 65 | 50 | 0 |
| 21 | 39 | 30 | 0 |
| 22 | 13 | 10 | 0 |
| 23 | 13 | 10 | 0 |
| 24 | 13 | 10 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 2313 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 2244 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 2198 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 2059 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 1827 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 1804 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 1781 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 1619 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 1596 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 1573 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 1364 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 1272 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 1249 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 926 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 926 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 648 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 370 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 370 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 208 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 115 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 69 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 23 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 23 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 23 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 13.8 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 0 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 2313 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 6: 48th Ave/PA-4 Access 1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|------|---------------|
| | E | W | S |
| 1 | 1304 | 1009 | 15 |
| 2 | 1265 | 979 | 15 |
| 3 | 1239 | 959 | 14 |
| 4 | 1161 | 898 | 13 |
| 5 | 1030 | 797 | 12 |
| 6 | 1017 | 787 | 12 |
| 7 | 1004 | 777 | 12 |
| 8 | 913 | 706 | 11 |
| 9 | 900 | 696 | 10 |
| 10 | 887 | 686 | 10 |
| 11 | 769 | 595 | 9 |
| 12 | 717 | 555 | 8 |
| 13 | 704 | 545 | 8 |
| 14 | 522 | 404 | 6 |
| 15 | 522 | 404 | 6 |
| 16 | 365 | 283 | 4 |
| 17 | 209 | 161 | 2 |
| 18 | 209 | 161 | 2 |
| 19 | 117 | 91 | 1 |
| 20 | 65 | 50 | 1 |
| 21 | 39 | 30 | 0 |
| 22 | 13 | 10 | 0 |
| 23 | 13 | 10 | 0 |
| 24 | 13 | 10 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 2313 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 2244 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 2198 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 2059 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 1827 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 1804 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 1781 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 1619 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 1596 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 1573 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 1364 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 1272 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 1249 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 926 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 926 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 648 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 370 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 370 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 208 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 115 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 69 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 23 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 23 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 23 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 14.1 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:03 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 15 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 2328 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 7: 46th Ave/Road 1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|---|---------------|
| | E | W | N |
| 1 | 22 | 5 | 0 |
| 2 | 21 | 5 | 0 |
| 3 | 21 | 5 | 0 |
| 4 | 20 | 4 | 0 |
| 5 | 17 | 4 | 0 |
| 6 | 17 | 4 | 0 |
| 7 | 17 | 4 | 0 |
| 8 | 15 | 4 | 0 |
| 9 | 15 | 3 | 0 |
| 10 | 15 | 3 | 0 |
| 11 | 13 | 3 | 0 |
| 12 | 12 | 3 | 0 |
| 13 | 12 | 3 | 0 |
| 14 | 9 | 2 | 0 |
| 15 | 9 | 2 | 0 |
| 16 | 6 | 1 | 0 |
| 17 | 4 | 1 | 0 |
| 18 | 4 | 1 | 0 |
| 19 | 2 | 0 | 0 |
| 20 | 1 | 0 | 0 |
| 21 | 1 | 0 | 0 |
| 22 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 1 | 27 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 2 | 1 | 26 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 3 | 1 | 26 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 4 | 1 | 24 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 5 | 1 | 21 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 6 | 1 | 21 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 7 | 1 | 21 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 8 | 1 | 19 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 9 | 1 | 18 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 10 | 1 | 18 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 11 | 1 | 16 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 12 | 1 | 15 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 13 | 1 | 15 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 14 | 1 | 11 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 15 | 1 | 11 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 16 | 1 | 7 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 17 | 1 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 18 | 1 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 19 | 1 | 2 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 20 | 1 | 1 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 21 | 1 | 1 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | N |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 8.5 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 0 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 27 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | No |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 8: 46th Avenue/Denali Boulevard

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | S | N | W |
| 1 | 456 | 797 | 19 |
| 2 | 442 | 773 | 18 |
| 3 | 433 | 757 | 18 |
| 4 | 406 | 709 | 17 |
| 5 | 360 | 630 | 15 |
| 6 | 356 | 622 | 15 |
| 7 | 351 | 614 | 15 |
| 8 | 319 | 558 | 13 |
| 9 | 315 | 550 | 13 |
| 10 | 310 | 542 | 13 |
| 11 | 269 | 470 | 11 |
| 12 | 251 | 438 | 10 |
| 13 | 246 | 430 | 10 |
| 14 | 182 | 319 | 8 |
| 15 | 182 | 319 | 8 |
| 16 | 128 | 223 | 5 |
| 17 | 73 | 128 | 3 |
| 18 | 73 | 128 | 3 |
| 19 | 41 | 72 | 2 |
| 20 | 23 | 40 | 1 |
| 21 | 14 | 24 | 1 |
| 22 | 5 | 8 | 0 |
| 23 | 5 | 8 | 0 |
| 24 | 5 | 8 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 3 | 1253 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 2 | 3 | 1215 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 3 | 3 | 1190 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 4 | 3 | 1115 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 5 | 3 | 990 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 6 | 3 | 978 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 7 | 3 | 965 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 8 | 3 | 877 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 9 | 3 | 865 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 10 | 3 | 852 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 11 | 3 | 739 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 12 | 3 | 689 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 13 | 3 | 676 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 14 | 3 | 501 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 15 | 3 | 501 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 16 | 3 | 351 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 17 | 3 | 201 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 18 | 3 | 201 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 19 | 3 | 113 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 3 | 63 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 3 | 38 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 3 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 3 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 3 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | W |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 17.7 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:05 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 19 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 1272 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 9: Denali BI/PA-4 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E, W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | S | N | E | W |
| 1 | 459 | 782 | 28 | 31 |
| 2 | 445 | 759 | 27 | 30 |
| 3 | 436 | 743 | 27 | 29 |
| 4 | 409 | 696 | 25 | 28 |
| 5 | 363 | 618 | 22 | 24 |
| 6 | 358 | 610 | 22 | 24 |
| 7 | 353 | 602 | 22 | 24 |
| 8 | 321 | 547 | 20 | 22 |
| 9 | 317 | 540 | 19 | 21 |
| 10 | 312 | 532 | 19 | 21 |
| 11 | 271 | 461 | 17 | 18 |
| 12 | 252 | 430 | 15 | 17 |
| 13 | 248 | 422 | 15 | 17 |
| 14 | 184 | 313 | 11 | 12 |
| 15 | 184 | 313 | 11 | 12 |
| 16 | 129 | 219 | 8 | 9 |
| 17 | 73 | 125 | 4 | 5 |
| 18 | 73 | 125 | 4 | 5 |
| 19 | 41 | 70 | 3 | 3 |
| 20 | 23 | 39 | 1 | 2 |
| 21 | 14 | 23 | 1 | 1 |
| 22 | 5 | 8 | 0 | 0 |
| 23 | 5 | 8 | 0 | 0 |
| 24 | 5 | 8 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 1241 | 1 | 31 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 1204 | 1 | 30 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 1179 | 1 | 29 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 1105 | 1 | 28 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 981 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 968 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 955 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 868 | 1 | 22 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 857 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 844 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 732 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 682 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 670 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 497 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 497 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 348 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 198 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 198 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 111 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 62 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 37 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | E | W |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 16 | 22.7 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:07 | 0:11 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 28 | 31 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 1300 | 1300 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | Yes | Yes |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 10: 46th Ave/PA-4 Access 3

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|---|---------------|
| | E | W | N |
| 1 | 17 | 5 | 31 |
| 2 | 16 | 5 | 30 |
| 3 | 16 | 5 | 29 |
| 4 | 15 | 4 | 28 |
| 5 | 13 | 4 | 24 |
| 6 | 13 | 4 | 24 |
| 7 | 13 | 4 | 24 |
| 8 | 12 | 4 | 22 |
| 9 | 12 | 3 | 21 |
| 10 | 12 | 3 | 21 |
| 11 | 10 | 3 | 18 |
| 12 | 9 | 3 | 17 |
| 13 | 9 | 3 | 17 |
| 14 | 7 | 2 | 12 |
| 15 | 7 | 2 | 12 |
| 16 | 5 | 1 | 9 |
| 17 | 3 | 1 | 5 |
| 18 | 3 | 1 | 5 |
| 19 | 2 | 0 | 3 |
| 20 | 1 | 0 | 2 |
| 21 | 1 | 0 | 1 |
| 22 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 1 | 22 | 1 | 31 | No | No | No | No | No | No | No | No | No | No |
| 2 | 1 | 21 | 1 | 30 | No | No | No | No | No | No | No | No | No | No |
| 3 | 1 | 21 | 1 | 29 | No | No | No | No | No | No | No | No | No | No |
| 4 | 1 | 19 | 1 | 28 | No | No | No | No | No | No | No | No | No | No |
| 5 | 1 | 17 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 6 | 1 | 17 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 7 | 1 | 17 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 8 | 1 | 16 | 1 | 22 | No | No | No | No | No | No | No | No | No | No |
| 9 | 1 | 15 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 10 | 1 | 15 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 11 | 1 | 13 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 12 | 1 | 12 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 13 | 1 | 12 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 14 | 1 | 9 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 15 | 1 | 9 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 16 | 1 | 6 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 17 | 1 | 4 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 18 | 1 | 4 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 19 | 1 | 2 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 20 | 1 | 1 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 21 | 1 | 1 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | N |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 8.6 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:04 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 31 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 53 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | No |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 11: 48th Ave/PA-5.1 PA-5.2

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | E | W | S |
| 1 | 528 | 968 | 24 |
| 2 | 512 | 939 | 23 |
| 3 | 502 | 920 | 23 |
| 4 | 470 | 862 | 21 |
| 5 | 417 | 765 | 19 |
| 6 | 412 | 755 | 19 |
| 7 | 407 | 745 | 18 |
| 8 | 370 | 678 | 17 |
| 9 | 364 | 668 | 17 |
| 10 | 359 | 658 | 16 |
| 11 | 312 | 571 | 14 |
| 12 | 290 | 532 | 13 |
| 13 | 285 | 523 | 13 |
| 14 | 211 | 387 | 10 |
| 15 | 211 | 387 | 10 |
| 16 | 148 | 271 | 7 |
| 17 | 84 | 155 | 4 |
| 18 | 84 | 155 | 4 |
| 19 | 48 | 87 | 2 |
| 20 | 26 | 48 | 1 |
| 21 | 16 | 29 | 1 |
| 22 | 5 | 10 | 0 |
| 23 | 5 | 10 | 0 |
| 24 | 5 | 10 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 3 | 1496 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 2 | 3 | 1451 | 1 | 23 | No | No | No | No | No | No | No | No | No | No |
| 3 | 3 | 1422 | 1 | 23 | No | No | No | No | No | No | No | No | No | No |
| 4 | 3 | 1332 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 5 | 3 | 1182 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 6 | 3 | 1167 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 7 | 3 | 1152 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 8 | 3 | 1048 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 9 | 3 | 1032 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 10 | 3 | 1017 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 11 | 3 | 883 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 12 | 3 | 822 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 13 | 3 | 808 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 14 | 3 | 598 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 15 | 3 | 598 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 16 | 3 | 419 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 17 | 3 | 239 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 18 | 3 | 239 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 19 | 3 | 135 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 3 | 74 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 3 | 45 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 3 | 15 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 3 | 15 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 3 | 15 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 14 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:05 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 24 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 1520 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 13: Fultondale St/PA-6.1 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E, W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | S | N | E | W |
| 1 | 200 | 168 | 35 | 21 |
| 2 | 194 | 163 | 34 | 20 |
| 3 | 190 | 160 | 33 | 20 |
| 4 | 178 | 150 | 31 | 19 |
| 5 | 158 | 133 | 28 | 17 |
| 6 | 156 | 131 | 27 | 16 |
| 7 | 154 | 129 | 27 | 16 |
| 8 | 140 | 118 | 25 | 15 |
| 9 | 138 | 116 | 24 | 14 |
| 10 | 136 | 114 | 24 | 14 |
| 11 | 118 | 99 | 21 | 12 |
| 12 | 110 | 92 | 19 | 12 |
| 13 | 108 | 91 | 19 | 11 |
| 14 | 80 | 67 | 14 | 8 |
| 15 | 80 | 67 | 14 | 8 |
| 16 | 56 | 47 | 10 | 6 |
| 17 | 32 | 27 | 6 | 3 |
| 18 | 32 | 27 | 6 | 3 |
| 19 | 18 | 15 | 3 | 2 |
| 20 | 10 | 8 | 2 | 1 |
| 21 | 6 | 5 | 1 | 1 |
| 22 | 2 | 2 | 0 | 0 |
| 23 | 2 | 2 | 0 | 0 |
| 24 | 2 | 2 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 368 | 1 | 35 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 357 | 1 | 34 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 350 | 1 | 33 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 328 | 1 | 31 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 291 | 1 | 28 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 287 | 1 | 27 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 283 | 1 | 27 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 258 | 1 | 25 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 254 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 250 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 217 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 202 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 199 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 147 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 147 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 103 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 59 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 59 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 33 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 18 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 11 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | E | W |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 10.8 | 10.9 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:06 | 0:03 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 35 | 21 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 424 | 424 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 14: Fultondale St/PA13.1 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | N, S |
| Minor Approaches | E, W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | N | S | E | W |
| 1 | 185 | 179 | 27 | 40 |
| 2 | 179 | 174 | 26 | 39 |
| 3 | 176 | 170 | 26 | 38 |
| 4 | 165 | 159 | 24 | 36 |
| 5 | 146 | 141 | 21 | 32 |
| 6 | 144 | 140 | 21 | 31 |
| 7 | 142 | 138 | 21 | 31 |
| 8 | 130 | 125 | 19 | 28 |
| 9 | 128 | 124 | 19 | 28 |
| 10 | 126 | 122 | 18 | 27 |
| 11 | 109 | 106 | 16 | 24 |
| 12 | 102 | 98 | 15 | 22 |
| 13 | 100 | 97 | 15 | 22 |
| 14 | 74 | 72 | 11 | 16 |
| 15 | 74 | 72 | 11 | 16 |
| 16 | 52 | 50 | 8 | 11 |
| 17 | 30 | 29 | 4 | 6 |
| 18 | 30 | 29 | 4 | 6 |
| 19 | 17 | 16 | 2 | 4 |
| 20 | 9 | 9 | 1 | 2 |
| 21 | 6 | 5 | 1 | 1 |
| 22 | 2 | 2 | 0 | 0 |
| 23 | 2 | 2 | 0 | 0 |
| 24 | 2 | 2 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 364 | 1 | 40 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 353 | 1 | 39 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 346 | 1 | 38 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 324 | 1 | 36 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 287 | 1 | 32 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 284 | 1 | 31 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 280 | 1 | 31 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 255 | 1 | 28 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 252 | 1 | 28 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 248 | 1 | 27 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 215 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 200 | 1 | 22 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 197 | 1 | 22 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 146 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 146 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 102 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 59 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 59 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 33 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 18 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 11 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | E | W |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 10.8 | 10.7 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:04 | 0:07 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 27 | 40 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 431 | 431 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 15: Denali Bl/PA-12 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | S | N | E |
| 1 | 449 | 796 | 22 |
| 2 | 436 | 772 | 21 |
| 3 | 427 | 756 | 21 |
| 4 | 400 | 708 | 20 |
| 5 | 355 | 629 | 17 |
| 6 | 350 | 621 | 17 |
| 7 | 346 | 613 | 17 |
| 8 | 314 | 557 | 15 |
| 9 | 310 | 549 | 15 |
| 10 | 305 | 541 | 15 |
| 11 | 265 | 470 | 13 |
| 12 | 247 | 438 | 12 |
| 13 | 242 | 430 | 12 |
| 14 | 180 | 318 | 9 |
| 15 | 180 | 318 | 9 |
| 16 | 126 | 223 | 6 |
| 17 | 72 | 127 | 4 |
| 18 | 72 | 127 | 4 |
| 19 | 40 | 72 | 2 |
| 20 | 22 | 40 | 1 |
| 21 | 13 | 24 | 1 |
| 22 | 4 | 8 | 0 |
| 23 | 4 | 8 | 0 |
| 24 | 4 | 8 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 3 | 1245 | 1 | 22 | No | No | No | No | No | No | No | No | No | No |
| 2 | 3 | 1208 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 3 | 3 | 1183 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 4 | 3 | 1108 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 5 | 3 | 984 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 6 | 3 | 971 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 7 | 3 | 959 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 8 | 3 | 871 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 9 | 3 | 859 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 10 | 3 | 846 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 11 | 3 | 735 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 12 | 3 | 685 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 13 | 3 | 672 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 14 | 3 | 498 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 15 | 3 | 498 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 16 | 3 | 349 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 17 | 3 | 199 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 18 | 3 | 199 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 19 | 3 | 112 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 3 | 62 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 3 | 37 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 3 | 12 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 3 | 12 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 3 | 12 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | E |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 14.3 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:05 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 22 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 1267 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 17: 42nd Avenue/Fultondale Street

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S, N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|-----|
| | E | W | S | N |
| 1 | 163 | 103 | 0 | 276 |
| 2 | 158 | 100 | 0 | 268 |
| 3 | 155 | 98 | 0 | 262 |
| 4 | 145 | 92 | 0 | 246 |
| 5 | 129 | 81 | 0 | 218 |
| 6 | 127 | 80 | 0 | 215 |
| 7 | 126 | 79 | 0 | 213 |
| 8 | 114 | 72 | 0 | 193 |
| 9 | 112 | 71 | 0 | 190 |
| 10 | 111 | 70 | 0 | 188 |
| 11 | 96 | 61 | 0 | 163 |
| 12 | 90 | 57 | 0 | 152 |
| 13 | 88 | 56 | 0 | 149 |
| 14 | 65 | 41 | 0 | 110 |
| 15 | 65 | 41 | 0 | 110 |
| 16 | 46 | 29 | 0 | 77 |
| 17 | 26 | 16 | 0 | 44 |
| 18 | 26 | 16 | 0 | 44 |
| 19 | 15 | 9 | 0 | 25 |
| 20 | 8 | 5 | 0 | 14 |
| 21 | 5 | 3 | 0 | 8 |
| 22 | 2 | 1 | 0 | 3 |
| 23 | 2 | 1 | 0 | 3 |
| 24 | 2 | 1 | 0 | 3 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 266 | 3 | 276 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 258 | 3 | 268 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 253 | 3 | 262 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 237 | 3 | 246 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 210 | 3 | 218 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 207 | 3 | 215 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 205 | 3 | 213 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 186 | 3 | 193 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 183 | 3 | 190 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 181 | 3 | 188 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 157 | 3 | 163 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 147 | 3 | 152 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 144 | 3 | 149 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 106 | 3 | 110 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 106 | 3 | 110 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 75 | 3 | 77 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 42 | 3 | 44 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 42 | 3 | 44 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 24 | 3 | 25 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 13 | 3 | 14 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 8 | 3 | 8 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 3 | 3 | 3 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 3 | 3 | 3 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 3 | 3 | 3 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | S | N |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 13.6 | 23.9 |
| Number of Lanes on Minor Street Approach | 2 | 3 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 | 1:50 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 0 | 276 |
| High Minor Volume Condition Met | No | Yes |
| Total Entering Volume on All Approaches During Same Hour | 542 | 542 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 18: Fultondale St/PA-13.1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | S | N | E |
| 1 | 173 | 209 | 21 |
| 2 | 168 | 203 | 20 |
| 3 | 164 | 199 | 20 |
| 4 | 154 | 186 | 19 |
| 5 | 137 | 165 | 17 |
| 6 | 135 | 163 | 16 |
| 7 | 133 | 161 | 16 |
| 8 | 121 | 146 | 15 |
| 9 | 119 | 144 | 14 |
| 10 | 118 | 142 | 14 |
| 11 | 102 | 123 | 12 |
| 12 | 95 | 115 | 12 |
| 13 | 93 | 113 | 11 |
| 14 | 69 | 84 | 8 |
| 15 | 69 | 84 | 8 |
| 16 | 48 | 59 | 6 |
| 17 | 28 | 33 | 3 |
| 18 | 28 | 33 | 3 |
| 19 | 16 | 19 | 2 |
| 20 | 9 | 10 | 1 |
| 21 | 5 | 6 | 1 |
| 22 | 2 | 2 | 0 |
| 23 | 2 | 2 | 0 |
| 24 | 2 | 2 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 382 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 371 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 363 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 340 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 302 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 298 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 294 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 267 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 263 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 260 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 225 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 210 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 206 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 153 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 153 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 107 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 61 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 61 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 35 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 19 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 11 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | E |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 10.3 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:03 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 21 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 403 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | No |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 19: Fultondale St/PA13.2 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | S | N | E |
| 1 | 166 | 215 | 20 |
| 2 | 161 | 209 | 19 |
| 3 | 158 | 204 | 19 |
| 4 | 148 | 191 | 18 |
| 5 | 131 | 170 | 16 |
| 6 | 129 | 168 | 16 |
| 7 | 128 | 166 | 15 |
| 8 | 116 | 151 | 14 |
| 9 | 115 | 148 | 14 |
| 10 | 113 | 146 | 14 |
| 11 | 98 | 127 | 12 |
| 12 | 91 | 118 | 11 |
| 13 | 90 | 116 | 11 |
| 14 | 66 | 86 | 8 |
| 15 | 66 | 86 | 8 |
| 16 | 46 | 60 | 6 |
| 17 | 27 | 34 | 3 |
| 18 | 27 | 34 | 3 |
| 19 | 15 | 19 | 2 |
| 20 | 8 | 11 | 1 |
| 21 | 5 | 6 | 1 |
| 22 | 2 | 2 | 0 |
| 23 | 2 | 2 | 0 |
| 24 | 2 | 2 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 381 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 370 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 362 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 339 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 301 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 297 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 294 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 267 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 263 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 259 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 225 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 209 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 206 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 152 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 152 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 106 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 61 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 61 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 34 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 19 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 11 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | E |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 10.3 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:03 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 20 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 401 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | No |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 21: Fultondale St/PA-6.1 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | E | W | S |
| 1 | 481 | 841 | 14 |
| 2 | 467 | 816 | 14 |
| 3 | 457 | 799 | 13 |
| 4 | 428 | 748 | 12 |
| 5 | 380 | 664 | 11 |
| 6 | 375 | 656 | 11 |
| 7 | 370 | 648 | 11 |
| 8 | 337 | 589 | 10 |
| 9 | 332 | 580 | 10 |
| 10 | 327 | 572 | 10 |
| 11 | 284 | 496 | 8 |
| 12 | 265 | 463 | 8 |
| 13 | 260 | 454 | 8 |
| 14 | 192 | 336 | 6 |
| 15 | 192 | 336 | 6 |
| 16 | 135 | 235 | 4 |
| 17 | 77 | 135 | 2 |
| 18 | 77 | 135 | 2 |
| 19 | 43 | 76 | 1 |
| 20 | 24 | 42 | 1 |
| 21 | 14 | 25 | 0 |
| 22 | 5 | 8 | 0 |
| 23 | 5 | 8 | 0 |
| 24 | 5 | 8 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 1322 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 1283 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 1256 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 1176 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 1044 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 1031 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 1018 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 926 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 912 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 899 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 780 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 728 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 714 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 528 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 528 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 370 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 212 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 212 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 119 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 66 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 39 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 12.9 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:03 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 14 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 1336 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 22: Fultondale St/PA-6.1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E, W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | S | N | E | W |
| 1 | 216 | 145 | 36 | 21 |
| 2 | 210 | 141 | 35 | 20 |
| 3 | 205 | 138 | 34 | 20 |
| 4 | 192 | 129 | 32 | 19 |
| 5 | 171 | 115 | 28 | 17 |
| 6 | 168 | 113 | 28 | 16 |
| 7 | 166 | 112 | 28 | 16 |
| 8 | 151 | 102 | 25 | 15 |
| 9 | 149 | 100 | 25 | 14 |
| 10 | 147 | 99 | 24 | 14 |
| 11 | 127 | 86 | 21 | 12 |
| 12 | 119 | 80 | 20 | 12 |
| 13 | 117 | 78 | 19 | 11 |
| 14 | 86 | 58 | 14 | 8 |
| 15 | 86 | 58 | 14 | 8 |
| 16 | 60 | 41 | 10 | 6 |
| 17 | 35 | 23 | 6 | 3 |
| 18 | 35 | 23 | 6 | 3 |
| 19 | 19 | 13 | 3 | 2 |
| 20 | 11 | 7 | 2 | 1 |
| 21 | 6 | 4 | 1 | 1 |
| 22 | 2 | 1 | 0 | 0 |
| 23 | 2 | 1 | 0 | 0 |
| 24 | 2 | 1 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 361 | 1 | 36 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 351 | 1 | 35 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 343 | 1 | 34 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 321 | 1 | 32 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 286 | 1 | 28 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 281 | 1 | 28 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 278 | 1 | 28 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 253 | 1 | 25 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 249 | 1 | 25 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 246 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 213 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 199 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 195 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 144 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 144 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 101 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 58 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 58 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 32 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 18 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 10 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 3 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 3 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 3 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | E | W |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 10.8 | 10.7 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:06 | 0:03 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 36 | 21 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 418 | 418 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 23: 42nd Ave/PA 13.1 Access 2

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S, N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | E | W | S | N |
| 1 | 157 | 246 | 0 | 20 |
| 2 | 152 | 239 | 0 | 19 |
| 3 | 149 | 234 | 0 | 19 |
| 4 | 140 | 219 | 0 | 18 |
| 5 | 124 | 194 | 0 | 16 |
| 6 | 122 | 192 | 0 | 16 |
| 7 | 121 | 189 | 0 | 15 |
| 8 | 110 | 172 | 0 | 14 |
| 9 | 108 | 170 | 0 | 14 |
| 10 | 107 | 167 | 0 | 14 |
| 11 | 93 | 145 | 0 | 12 |
| 12 | 86 | 135 | 0 | 11 |
| 13 | 85 | 133 | 0 | 11 |
| 14 | 63 | 98 | 0 | 8 |
| 15 | 63 | 98 | 0 | 8 |
| 16 | 44 | 69 | 0 | 6 |
| 17 | 25 | 39 | 0 | 3 |
| 18 | 25 | 39 | 0 | 3 |
| 19 | 14 | 22 | 0 | 2 |
| 20 | 8 | 12 | 0 | 1 |
| 21 | 5 | 7 | 0 | 1 |
| 22 | 2 | 2 | 0 | 0 |
| 23 | 2 | 2 | 0 | 0 |
| 24 | 2 | 2 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 403 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 391 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 383 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 359 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 318 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 314 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 310 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 282 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 278 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 274 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 238 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 221 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 218 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 161 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 161 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 113 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 64 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 64 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 36 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 20 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 12 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 4 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | S | N |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 11.3 | 10.7 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 | 0:03 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 0 | 20 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 423 | 423 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Intersection Level Of Service Report
Intersection 1: 48th Avenue/Main Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 39.1 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.323 |

Intersection Setup

| Name | Main Street | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|-------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | |
| Lane Configuration | T L T | | | T L T | | | T L T | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 |
| Entry Pocket Length [ft] | 325.0 | 100.0 | 400.0 | 250.0 | 100.0 | 250.0 | 300.0 | 100.0 | 400.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 400.0 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Main Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|--|-------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 75 | 7 | 86 | 104 | 7 | 40 | 166 | 642 | 158 | 114 | 754 | 182 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 6 | 0 | 11 | 0 | 0 | 0 | 0 | 111 | 8 | 0 | 58 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 49 | 0 | 0 | 40 | 0 | 0 | 83 | 0 | 0 | 91 |
| Total Hourly Volume [veh/h] | 81 | 7 | 48 | 104 | 7 | 0 | 166 | 753 | 83 | 114 | 812 | 91 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 22 | 2 | 13 | 28 | 2 | 0 | 45 | 205 | 23 | 31 | 221 | 25 |
| Total Analysis Volume [veh/h] | 88 | 8 | 52 | 113 | 8 | 0 | 180 | 818 | 90 | 124 | 883 | 99 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|--------|-------|-------|--------|-------|-------|--------|-------|-------|
| Signal Group | 1 | 6 | 0 | 5 | 2 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 45 | 0 | 11 | 45 | 0 | 12 | 34 | 0 | 10 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 34 | 0 | 0 | 34 | 0 | 0 | 21 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 5 | 48 | 48 | 5 | 49 | 49 | 8 | 25 | 25 | 6 | 23 | 23 |
| g / C, Green / Cycle | 0.05 | 0.48 | 0.48 | 0.05 | 0.49 | 0.49 | 0.08 | 0.25 | 0.25 | 0.06 | 0.23 | 0.23 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.00 | 0.04 | 0.04 | 0.00 | 0.00 | 0.06 | 0.18 | 0.06 | 0.04 | 0.19 | 0.07 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1431 | 3113 | 1683 | 1431 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 145 | 812 | 690 | 170 | 825 | 701 | 241 | 1123 | 350 | 181 | 1036 | 323 |
| d1, Uniform Delay [s] | 46.83 | 13.48 | 13.92 | 46.44 | 13.07 | 0.00 | 45.25 | 34.74 | 30.46 | 46.25 | 37.16 | 32.23 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.02 | 0.02 | 0.21 | 4.41 | 0.02 | 0.00 | 4.61 | 0.92 | 0.38 | 4.49 | 2.10 | 0.53 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.61 | 0.01 | 0.08 | 0.66 | 0.01 | 0.00 | 0.75 | 0.73 | 0.26 | 0.68 | 0.85 | 0.31 |
| d, Delay for Lane Group [s/veh] | 50.85 | 13.50 | 14.13 | 50.85 | 13.09 | 0.00 | 49.86 | 35.67 | 30.84 | 50.74 | 39.26 | 32.76 |
| Lane Group LOS | D | B | B | D | B | A | D | D | C | D | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.15 | 0.10 | 0.66 | 1.48 | 0.10 | 0.00 | 2.33 | 6.10 | 1.78 | 1.62 | 6.99 | 2.03 |
| 50th-Percentile Queue Length [ft/ln] | 28.78 | 2.43 | 16.51 | 36.92 | 2.39 | 0.00 | 58.25 | 152.5 | 44.38 | 40.45 | 174.7 | 50.72 |
| 95th-Percentile Queue Length [veh/ln] | 2.07 | 0.18 | 1.19 | 2.66 | 0.17 | 0.00 | 4.19 | 10.15 | 3.20 | 2.91 | 11.33 | 3.65 |
| 95th-Percentile Queue Length [ft/ln] | 51.80 | 4.38 | 29.73 | 66.45 | 4.30 | 0.00 | 104.8 | 253.8 | 79.89 | 72.81 | 283.2 | 91.29 |

**Movement, Approach, & Intersection Results**

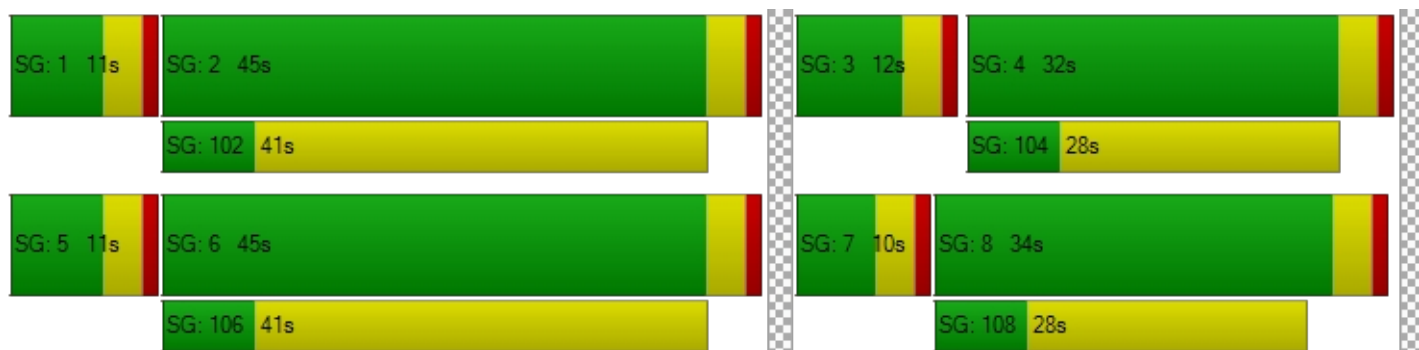
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 50.85 | 13.50 | 14.13 | 50.85 | 13.09 | 0.00 | 49.86 | 35.67 | 30.84 | 50.74 | 39.26 | 32.76 |
| Movement LOS | D | B | B | D | B | A | D | D | C | D | D | C |
| d_A, Approach Delay [s/veh] | 35.93 | | | 48.35 | | | 37.62 | | | 39.97 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 39.10 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.323 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | | | 11.0 | | | 11.0 | | | 11.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 39.64 | | | 39.64 | | | 39.64 | | | 39.64 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.609 | | | 2.602 | | | 3.302 | | | 3.225 | | |
| Crosswalk LOS | B | | | B | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 819 | | | 819 | | | 600 | | | 560 | | |
| d_b, Bicycle Delay [s] | 17.43 | | | 17.43 | | | 24.53 | | | 25.95 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.885 | | | 1.825 | | | 2.204 | | | 2.218 | | |
| Bicycle LOS | A | | | A | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 2: 48th Ave/Road 1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 0.0
 Level Of Service: A
 Volume to Capacity (v/c): 0.013

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 832 | 0 | 0 | 1178 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 123 | 0 | 0 | 58 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 955 | 0 | 0 | 1236 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 260 | 0 | 0 | 336 |
| Total Analysis Volume [veh/h] | 0 | 0 | 1038 | 0 | 0 | 1343 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 13.38 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | B | A | A | | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 13.38 | | 0.00 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | |
| Intersection LOS | A | | | | | |



Intersection Level Of Service Report

Intersection 4: 46th Avenue/Main Street

Control Type: Roundabout
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 3.4
 Level Of Service: A

Intersection Setup

| Name | Main Street | | Main Street | | 46th Avenue | |
|------------------------------|-------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Main Street | | Main Street | | 46th Avenue | |
|---|-------------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 168 | 0 | 0 | 279 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 11 | 9 | 8 | 0 | 9 | 6 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 179 | 9 | 8 | 279 | 9 | 6 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 49 | 2 | 2 | 76 | 2 | 2 |
| Total Analysis Volume [veh/h] | 195 | 10 | 9 | 303 | 10 | 7 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | | | | |
|---|-----|----|-----|-----|-----|---|
| Number of Conflicting Circulating Lanes | 1 | | 1 | | 1 | |
| Circulating Flow Rate [veh/h] | 9 | | 10 | | 199 | |
| Exiting Flow Rate [veh/h] | 319 | | 206 | | 19 | |
| Demand Flow Rate [veh/h] | 179 | 9 | 8 | 279 | 9 | 6 |
| Adjusted Demand Flow Rate [veh/h] | 195 | 10 | 9 | 303 | 10 | 7 |

Lanes

| | | | | | |
|--|---------|---------|---------|---------|---------|
| Overwrite Calculated Critical Headway | No | No | No | No | No |
| User-Defined Critical Headway [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| Overwrite Calculated Follow-Up Time | No | No | No | No | No |
| User-Defined Follow-Up Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| A (intercept) | 1420.00 | 1420.00 | 1420.00 | 1420.00 | 1380.00 |
| B (coefficient) | 0.00091 | 0.00091 | 0.00091 | 0.00091 | 0.00102 |
| HV Adjustment Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Entry Flow Rate [veh/h] | 99 | 111 | 150 | 169 | 18 |
| Capacity of Entry and Bypass Lanes [veh/h] | 1409 | 1409 | 1407 | 1407 | 1127 |
| Pedestrian Impedance | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Capacity per Entry Lane [veh/h] | 1381 | 1381 | 1380 | 1380 | 1105 |
| X, volume / capacity | 0.07 | 0.08 | 0.11 | 0.12 | 0.02 |

Movement, Approach, & Intersection Results

| | | | | | |
|------------------------------------|------|------|------|-------|------|
| Lane LOS | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.22 | 0.26 | 0.36 | 0.41 | 0.05 |
| 95th-Percentile Queue Length [ft] | 5.62 | 6.40 | 8.90 | 10.19 | 1.17 |
| Approach Delay [s/veh] | 3.19 | | 3.51 | | 3.39 |
| Approach LOS | A | | A | | A |
| Intersection Delay [s/veh] | 3.38 | | | | |
| Intersection LOS | A | | | | |



Intersection Level Of Service Report

Intersection 5: 48th Avenue/Denali Boulevard

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 30.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.463 |

Intersection Setup

| Name | Denali Boulevard | | | Denali Boulevard | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 3 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 |
| Entry Pocket Length [ft] | 350.0 | 100.0 | 250.0 | 350.0 | 100.0 | 300.0 | 250.0 | 100.0 | 450.0 | 400.0 | 100.0 | 200.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.0 | 0.00 | 0.00 | 300.0 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Denali Boulevard | | | Denali Boulevard | | | 48th Avenue | | | 48th Avenue | | |
|--|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 197 | 85 | 138 | 127 | 159 | 301 | 89 | 619 | 342 | 285 | 680 | 85 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 21 | 6 | 12 | 15 | 8 | 0 | 0 | 87 | 35 | 19 | 38 | 8 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 150 | 0 | 0 | 151 | 0 | 0 | 189 | 0 | 0 | 47 |
| Total Hourly Volume [veh/h] | 218 | 91 | 0 | 142 | 167 | 150 | 89 | 706 | 188 | 304 | 718 | 46 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 59 | 25 | 0 | 39 | 45 | 41 | 24 | 192 | 51 | 83 | 195 | 13 |
| Total Analysis Volume [veh/h] | 237 | 99 | 0 | 154 | 182 | 163 | 97 | 767 | 204 | 330 | 780 | 50 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | ProtP | Permi | Permi | Protec | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|-------|-------|-------|--------|-------|-------|--------|-------|-------|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 0 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 15 | 48 | 0 | 12 | 45 | 0 | 28 | 38 | 0 | 22 | 32 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 37 | 0 | 0 | 34 | 0 | 0 | 27 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 11 | 19 | 19 | 32 | 16 | 16 | 6 | 62 | 62 | 15 | 71 | 71 |
| g / C, Green / Cycle | 0.09 | 0.16 | 0.16 | 0.26 | 0.14 | 0.14 | 0.05 | 0.51 | 0.51 | 0.12 | 0.59 | 0.59 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.03 | 0.00 | 0.12 | 0.06 | 0.11 | 0.03 | 0.17 | 0.14 | 0.11 | 0.17 | 0.03 |
| s, saturation flow rate [veh/h] | 3113 | 3204 | 1431 | 1306 | 3204 | 1431 | 3113 | 4584 | 1431 | 3113 | 4584 | 1431 |
| c, Capacity [veh/h] | 287 | 520 | 232 | 400 | 441 | 197 | 149 | 2353 | 734 | 386 | 2702 | 843 |
| d1, Uniform Delay [s] | 53.57 | 43.48 | 0.00 | 36.13 | 47.34 | 50.40 | 56.19 | 17.08 | 16.59 | 51.54 | 12.19 | 10.49 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 6.03 | 0.18 | 0.00 | 0.61 | 0.62 | 8.59 | 4.78 | 0.37 | 0.94 | 5.50 | 0.27 | 0.13 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.83 | 0.19 | 0.00 | 0.38 | 0.41 | 0.83 | 0.65 | 0.33 | 0.28 | 0.86 | 0.29 | 0.06 |
| d, Delay for Lane Group [s/veh] | 59.60 | 43.65 | 0.00 | 36.74 | 47.96 | 58.99 | 60.96 | 17.45 | 17.53 | 57.04 | 12.46 | 10.62 |
| Lane Group LOS | E | D | A | D | D | E | E | B | B | E | B | B |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 3.75 | 1.29 | 0.00 | 3.77 | 2.53 | 5.23 | 1.54 | 4.17 | 3.36 | 5.15 | 3.44 | 0.59 |
| 50th-Percentile Queue Length [ft/ln] | 93.85 | 32.31 | 0.00 | 94.14 | 63.37 | 130.7 | 38.61 | 104.2 | 84.05 | 128.8 | 86.12 | 14.75 |
| 95th-Percentile Queue Length [veh/ln] | 6.76 | 2.33 | 0.00 | 6.78 | 4.56 | 8.98 | 2.78 | 7.51 | 6.05 | 8.88 | 6.20 | 1.06 |
| 95th-Percentile Queue Length [ft/ln] | 168.9 | 58.15 | 0.00 | 169.4 | 114.0 | 224.5 | 69.49 | 187.7 | 151.3 | 221.9 | 155.0 | 26.55 |

**Movement, Approach, & Intersection Results**

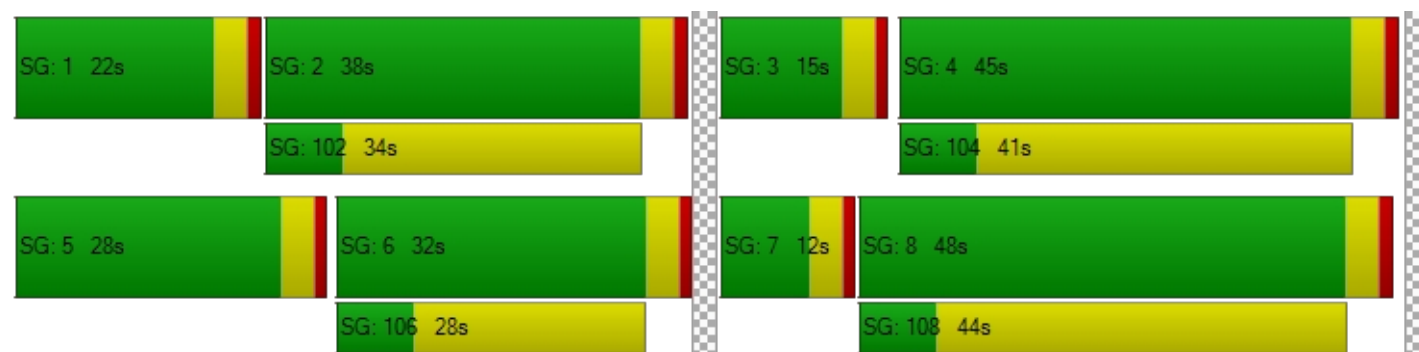
| | | | | | | | | | | | | |
|---------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 59.60 | 43.65 | 0.00 | 36.74 | 47.96 | 58.99 | 60.96 | 17.45 | 17.53 | 57.04 | 12.46 | 10.62 |
| Movement LOS | E | D | A | D | D | E | E | B | B | E | B | B |
| d_A, Approach Delay [s/veh] | 54.90 | | | 48.10 | | | 21.42 | | | 25.07 | | |
| Approach LOS | D | | | D | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 30.82 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.463 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | | | 11.0 | | | 11.0 | | | 11.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 49.52 | | | 49.52 | | | 49.52 | | | 49.52 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 3.015 | | | 2.835 | | | 3.412 | | | 3.308 | | |
| Crosswalk LOS | C | | | C | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 733 | | | 683 | | | 567 | | | 467 | | |
| d_b, Bicycle Delay [s] | 24.08 | | | 26.02 | | | 30.83 | | | 35.28 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.961 | | | 2.096 | | | 2.251 | | | 2.223 | | |
| Bicycle LOS | A | | | B | | | B | | | B | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 6: 48th Ave/PA-4 Access 1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 13.5
 Level Of Service: B
 Volume to Capacity (v/c): 0.025

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 832 | 0 | 0 | 1178 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 10 | 112 | 11 | 0 | 58 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 10 | 944 | 11 | 0 | 1236 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 3 | 257 | 3 | 0 | 336 |
| Total Analysis Volume [veh/h] | 0 | 11 | 1026 | 12 | 0 | 1343 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.03 | 0.01 | 0.00 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 13.52 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | B | A | A | | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 1.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 13.52 | | 0.00 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.06 | | | | | |
| Intersection LOS | B | | | | | |



Intersection Level Of Service Report

Intersection 7: 46th Ave/Road 1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 0.0
 Level Of Service: A
 Volume to Capacity (v/c): 0.000

Intersection Setup

| Name | | | 46th Avenue | | 46th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 46th Avenue | | 46th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 17 | 15 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 17 | 15 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 5 | 4 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 18 | 16 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 8.68 | 8.39 | 7.25 | 0.00 | 0.00 | 0.00 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 8.53 | | 0.00 | | 0.00 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | |
| Intersection LOS | A | | | | | |



Intersection Level Of Service Report

Intersection 8: 46th Avenue/Denali Boulevard

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 26.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.067 |

Intersection Setup

| Name | Denali Boulevard | | Denali Boulevard | | 46th Avenue | |
|------------------------------|------------------|--------|------------------|--------|-------------|--------|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Denali Boulevard | | Denali Boulevard | | 46th Avenue | |
|---|------------------|--------|------------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 420 | 786 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 17 | 29 | 39 | 16 | 11 | 7 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 17 | 449 | 825 | 16 | 11 | 7 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 5 | 122 | 224 | 4 | 3 | 2 |
| Total Analysis Volume [veh/h] | 18 | 488 | 897 | 17 | 12 | 8 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|-------|-------|
| V/C, Movement V/C Ratio | 0.02 | 0.00 | 0.01 | 0.00 | 0.07 | 0.01 |
| d_M, Delay for Movement [s/veh] | 9.98 | 0.00 | 0.00 | 0.00 | 26.34 | 12.74 |
| Movement LOS | A | A | A | A | D | B |
| 95th-Percentile Queue Length [veh/ln] | 0.07 | 0.00 | 0.00 | 0.00 | 0.26 | 0.26 |
| 95th-Percentile Queue Length [ft/ln] | 1.86 | 0.00 | 0.00 | 0.00 | 6.57 | 6.57 |
| d_A, Approach Delay [s/veh] | 0.35 | | 0.00 | | 20.90 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 0.42 | | | | | |
| Intersection LOS | D | | | | | |



Intersection Level Of Service Report Intersection 9: Denali BI/PA-4 Access

Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 33.8
Level Of Service: D
Volume to Capacity (v/c): 0.089

Intersection Setup

| Name | Denali Boulevard | | | Denali Boulevard | | | | | | | | |
|------------------------------|------------------|-------|-------|------------------|-------|-------|-----------|-------|-------|-----------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Denali Boulevard | | | Denali Boulevard | | | | | | | | |
|---|------------------|-------|-------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Base Volume Input [veh/h] | 0 | 420 | 0 | 0 | 786 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 20 | 17 | 3 | 7 | 38 | 18 | 11 | 0 | 10 | 8 | 0 | 11 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 20 | 437 | 3 | 7 | 824 | 18 | 11 | 0 | 10 | 8 | 0 | 11 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 5 | 119 | 1 | 2 | 224 | 5 | 3 | 0 | 3 | 2 | 0 | 3 |
| Total Analysis Volume [veh/h] | 22 | 475 | 3 | 8 | 896 | 20 | 12 | 0 | 11 | 9 | 0 | 12 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Free | Free | Stop | Stop |
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| V/C, Movement V/C Ratio | 0.03 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.09 | 0.00 | 0.02 | 0.05 | 0.00 | 0.02 |
| d_M, Delay for Movement [s/veh] | 10.01 | 0.00 | 0.00 | 8.36 | 0.00 | 0.00 | 33.75 | 35.23 | 13.51 | 24.49 | 34.56 | 10.43 |
| Movement LOS | B | A | A | A | A | A | D | E | B | C | D | B |
| 95th-Percentile Queue Length [veh/ln] | 0.09 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.36 | 0.36 | 0.36 | 0.20 | 0.20 | 0.20 |
| 95th-Percentile Queue Length [ft/ln] | 2.29 | 0.00 | 0.00 | 0.56 | 0.00 | 0.00 | 9.01 | 9.01 | 9.01 | 4.99 | 4.99 | 4.99 |
| d_A, Approach Delay [s/veh] | 0.44 | | | 0.07 | | | 24.07 | | | 16.46 | | |
| Approach LOS | A | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 0.81 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |



Intersection Level Of Service Report

Intersection 10: 46th Ave/PA-4 Access 3

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 8.9
 Level Of Service: A
 Volume to Capacity (v/c): 0.014

Intersection Setup

| Name | | | 46th Avenue | | 46th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 46th Avenue | | 46th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 12 | 9 | 11 | 6 | 6 | 27 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 12 | 9 | 11 | 6 | 6 | 27 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 3 | 2 | 3 | 2 | 2 | 7 |
| Total Analysis Volume [veh/h] | 13 | 10 | 12 | 7 | 7 | 29 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 8.88 | 8.50 | 7.30 | 0.00 | 0.00 | 0.00 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.07 | 0.07 | 0.02 | 0.02 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 1.78 | 1.78 | 0.50 | 0.50 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 8.71 | | 4.61 | | 0.00 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 3.69 | | | | | |
| Intersection LOS | A | | | | | |



Intersection Level Of Service Report

Intersection 11: 48th Ave/PA-5.1 PA-5.2

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.1
 Level Of Service: B
 Volume to Capacity (v/c): 0.041

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 884 | 0 | 0 | 399 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 16 | 97 | 18 | 43 | 65 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 16 | 981 | 18 | 43 | 464 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 4 | 267 | 5 | 12 | 126 |
| Total Analysis Volume [veh/h] | 0 | 17 | 1066 | 20 | 47 | 504 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|-------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.04 | 0.01 | 0.00 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 14.06 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | B | A | A | | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 3.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 14.06 | | 0.00 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.15 | | | | | |
| Intersection LOS | B | | | | | |



Intersection Level Of Service Report

Intersection 12: 48th Avenue/Fultondale Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 16.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.268 |

Intersection Setup

| Name | Fultondale Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|------------------------------|-------------------|-------|-------|------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 200.0 | 100.0 | 100.0 | 150.0 | 100.0 | 100.0 | 40.00 | 100.0 | 100.0 | 175.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 100.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Fultondale Street | | | | | | 48th Avenue | | | 48th Avenue | | |
|--|-------------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 66 | 12 | 48 | 8 | 22 | 22 | 11 | 633 | 125 | 59 | 311 | 10 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 75 | 0 | 34 | 0 | 0 | 0 | 0 | 34 | 79 | 49 | 33 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 41 | 0 | 0 | 11 | 0 | 0 | 102 | 0 | 0 | 5 |
| Total Hourly Volume [veh/h] | 141 | 12 | 41 | 8 | 22 | 11 | 11 | 667 | 102 | 108 | 344 | 5 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 38 | 3 | 11 | 2 | 6 | 3 | 3 | 181 | 28 | 29 | 93 | 1 |
| Total Analysis Volume [veh/h] | 153 | 13 | 45 | 9 | 24 | 12 | 12 | 725 | 111 | 117 | 374 | 5 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Protec | Permi | Permi | ProtP | Permi | Permi | ProtP | Permi | Permi | Protec | Permi | Permi |
|------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
| Signal Group | 3 | 8 | 0 | 7 | 4 | 0 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 | 5 | 10 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 41 | 0 | 11 | 41 | 0 | 9 | 32 | 0 | 16 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 21 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | R | L | C | C |
|---|-------|-------|-------|-------|-------|------|------|------|-------|------|------|
| C, Cycle Length [s] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 7 | 12 | 12 | 17 | 6 | 75 | 65 | 65 | 6 | 69 | 69 |
| g / C, Green / Cycle | 0.07 | 0.12 | 0.12 | 0.17 | 0.06 | 0.75 | 0.65 | 0.65 | 0.06 | 0.69 | 0.69 |
| (v / s)_i Volume / Saturation Flow Rate | 0.05 | 0.01 | 0.03 | 0.01 | 0.02 | 0.01 | 0.16 | 0.08 | 0.04 | 0.08 | 0.08 |
| s, saturation flow rate [veh/h] | 3113 | 1683 | 1431 | 1283 | 1589 | 936 | 4584 | 1431 | 3113 | 3204 | 1672 |
| c, Capacity [veh/h] | 211 | 202 | 172 | 318 | 101 | 777 | 2989 | 933 | 176 | 2223 | 1160 |
| d1, Uniform Delay [s] | 45.73 | 39.05 | 40.01 | 34.53 | 44.87 | 3.24 | 7.20 | 6.57 | 46.29 | 5.09 | 5.09 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.68 | 0.13 | 0.80 | 0.04 | 2.09 | 0.04 | 0.19 | 0.26 | 4.30 | 0.10 | 0.20 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.72 | 0.06 | 0.26 | 0.03 | 0.35 | 0.02 | 0.24 | 0.12 | 0.67 | 0.11 | 0.11 |
| d, Delay for Lane Group [s/veh] | 50.40 | 39.18 | 40.81 | 34.57 | 46.96 | 3.27 | 7.39 | 6.83 | 50.59 | 5.19 | 5.29 |
| Lane Group LOS | D | D | D | C | D | A | A | A | D | A | A |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.99 | 0.29 | 1.04 | 0.19 | 0.91 | 0.06 | 1.99 | 0.88 | 1.52 | 0.79 | 0.85 |
| 50th-Percentile Queue Length [ft/ln] | 49.74 | 7.25 | 26.02 | 4.64 | 22.78 | 1.43 | 49.87 | 22.03 | 38.09 | 19.69 | 21.37 |
| 95th-Percentile Queue Length [veh/ln] | 3.58 | 0.52 | 1.87 | 0.33 | 1.64 | 0.10 | 3.59 | 1.59 | 2.74 | 1.42 | 1.54 |
| 95th-Percentile Queue Length [ft/ln] | 89.53 | 13.05 | 46.83 | 8.35 | 41.01 | 2.58 | 89.77 | 39.66 | 68.57 | 35.44 | 38.46 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|------|------|------|-------|------|------|
| d_M, Delay for Movement [s/veh] | 50.40 | 39.18 | 40.81 | 34.57 | 46.96 | 46.96 | 3.27 | 7.39 | 6.83 | 50.59 | 5.22 | 5.29 |
| Movement LOS | D | D | D | C | D | D | A | A | A | D | A | A |
| d_A, Approach Delay [s/veh] | 47.67 | | | 44.48 | | | 7.26 | | | 15.93 | | |
| Approach LOS | D | | | D | | | A | | | B | | |
| d_I, Intersection Delay [s/veh] | 16.32 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.268 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | | | 11.0 | | | 11.0 | | | 11.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 39.62 | | | 39.62 | | | 39.62 | | | 39.62 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.615 | | | 2.002 | | | 3.058 | | | 2.900 | | |
| Crosswalk LOS | B | | | B | | | C | | | C | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 740 | | | 740 | | | 560 | | | 700 | | |
| d_b, Bicycle Delay [s] | 19.86 | | | 19.86 | | | 25.94 | | | 21.14 | | |
| I_b,int, Bicycle LOS Score for Intersection | 1.975 | | | 1.652 | | | 2.082 | | | 1.835 | | |
| Bicycle LOS | A | | | A | | | B | | | A | | |

Sequence

| | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 13: Fultondale St/PA-6.1 Access

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 15.0
 Level Of Service: C
 Volume to Capacity (v/c): 0.024

Intersection Setup

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|------------------------------|-------------------|-------|-------|-------------------|-------|-------|-----------|-------|-------|-----------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|---|-------------------|-------|-------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Base Volume Input [veh/h] | 0 | 126 | 0 | 0 | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 14 | 88 | 16 | 18 | 92 | 6 | 8 | 0 | 6 | 10 | 0 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 14 | 214 | 16 | 18 | 298 | 6 | 8 | 0 | 6 | 10 | 0 | 12 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 4 | 58 | 4 | 5 | 81 | 2 | 2 | 0 | 2 | 3 | 0 | 3 |
| Total Analysis Volume [veh/h] | 15 | 233 | 17 | 20 | 324 | 7 | 9 | 0 | 7 | 11 | 0 | 13 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Free | Free | Stop | Stop |
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|------|-------|-------|-------|-------|-------|------|
| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.03 | 0.00 | 0.02 |
| d_M, Delay for Movement [s/veh] | 7.97 | 0.00 | 0.00 | 7.78 | 0.00 | 0.00 | 15.05 | 14.77 | 10.32 | 15.00 | 14.77 | 9.84 |
| Movement LOS | A | A | A | A | A | A | C | B | B | B | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.11 | 0.11 | 0.11 | 0.14 | 0.14 | 0.14 |
| 95th-Percentile Queue Length [ft/ln] | 0.93 | 0.00 | 0.00 | 1.16 | 0.00 | 0.00 | 2.65 | 2.65 | 2.65 | 3.59 | 3.59 | 3.59 |
| d_A, Approach Delay [s/veh] | 0.45 | | | 0.44 | | | 12.98 | | | 12.21 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.18 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |



Intersection Level Of Service Report

Intersection 14: Fultondale St/PA13.1 Access

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 15.1
 Level Of Service: C
 Volume to Capacity (v/c): 0.027

Intersection Setup

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|------------------------------|-------------------|-------|-------|-------------------|-------|-------|-----------|-------|-------|-----------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|---|-------------------|-------|-------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Base Volume Input [veh/h] | 0 | 126 | 0 | 0 | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 17 | 97 | 14 | 16 | 72 | 20 | 12 | 0 | 15 | 9 | 0 | 9 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 17 | 223 | 14 | 16 | 278 | 20 | 12 | 0 | 15 | 9 | 0 | 9 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 5 | 61 | 4 | 4 | 76 | 5 | 3 | 0 | 4 | 2 | 0 | 2 |
| Total Analysis Volume [veh/h] | 18 | 242 | 15 | 17 | 302 | 22 | 13 | 0 | 16 | 10 | 0 | 10 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Free | Free | Stop | Stop |
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|------|-------|-------|-------|-------|-------|------|
| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.03 | 0.00 | 0.02 | 0.03 | 0.00 | 0.01 |
| d_M, Delay for Movement [s/veh] | 7.96 | 0.00 | 0.00 | 7.79 | 0.00 | 0.00 | 15.04 | 14.83 | 10.37 | 15.05 | 14.75 | 9.86 |
| Movement LOS | A | A | A | A | A | A | C | B | B | C | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.18 | 0.18 | 0.18 | 0.12 | 0.12 | 0.12 |
| 95th-Percentile Queue Length [ft/ln] | 1.11 | 0.00 | 0.00 | 0.99 | 0.00 | 0.00 | 4.50 | 4.50 | 4.50 | 3.10 | 3.10 | 3.10 |
| d_A, Approach Delay [s/veh] | 0.52 | | | 0.39 | | | 12.47 | | | 12.46 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 1.33 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |






Intersection Level Of Service Report

Intersection 15: Denali BI/PA-12 Access

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 20.1
 Level Of Service: C
 Volume to Capacity (v/c): 0.032

Intersection Setup

| Name | Denali Boulevard | | Denali Boulevard | | | |
|------------------------------|---|--------|---|--------|---|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 1 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Denali Boulevard | | Denali Boulevard | | | |
|---|------------------|--------|------------------|--------|--------|--------|
| Base Volume Input [veh/h] | 420 | 0 | 0 | 786 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 38 | 17 | 14 | 32 | 7 | 8 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 458 | 17 | 14 | 818 | 7 | 8 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 124 | 5 | 4 | 222 | 2 | 2 |
| Total Analysis Volume [veh/h] | 498 | 18 | 15 | 889 | 8 | 9 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|-------|-------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.01 | 0.01 | 0.03 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 8.49 | 0.00 | 20.06 | 10.23 |
| Movement LOS | A | A | A | A | C | B |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.04 | 0.00 | 0.14 | 0.14 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 1.09 | 0.00 | 3.48 | 3.48 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.14 | | 14.86 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.26 | | | | | |
| Intersection LOS | C | | | | | |



Intersection Level Of Service Report

Intersection 16: 42nd Avenue/Denali Boulevard

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 13.4 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.360 |

Intersection Setup

| Name | Denali Boulevard | | | Denali Boulevard | | | 42nd Avenue | | | 42nd Avenue | | |
|------------------------------|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Denali Boulevard | | | Denali Boulevard | | | 42nd Avenue | | | 42nd Avenue | | |
|--|------------------|-------|-------|------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 80 | 347 | 74 | 62 | 375 | 62 | 21 | 7 | 22 | 21 | 9 | 20 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | | | | | | | |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 36 | 0 | 3 | 4 | 26 | 0 | 0 | 20 | 51 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 37 | 0 | 0 | 33 | 0 | 0 | 11 | 0 | 0 | 36 |
| Total Hourly Volume [veh/h] | 80 | 347 | 37 | 98 | 375 | 32 | 25 | 33 | 11 | 21 | 29 | 35 |
| Peak Hour Factor | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 40 | 174 | 19 | 49 | 188 | 16 | 13 | 17 | 6 | 11 | 15 | 18 |
| Total Analysis Volume [veh/h] | 160 | 694 | 74 | 196 | 750 | 64 | 50 | 66 | 22 | 42 | 58 | 70 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi | Permi |
|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Signal Group | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 87 | 0 | 0 | 87 | 0 | 0 | 33 | 0 | 0 | 33 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 21 | 0 | 0 | 21 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|-------|------|------|-------|------|------|-------|-------|-------|-------|-------|-------|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 83 | 83 | 83 | 83 | 83 | 83 | 29 | 29 | 29 | 29 | 29 | 29 |
| g / C, Green / Cycle | 0.69 | 0.69 | 0.69 | 0.69 | 0.69 | 0.69 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| (v / s)_i Volume / Saturation Flow Rate | 0.27 | 0.22 | 0.05 | 0.31 | 0.23 | 0.04 | 0.04 | 0.04 | 0.02 | 0.04 | 0.03 | 0.05 |
| s, saturation flow rate [veh/h] | 604 | 3204 | 1431 | 630 | 3204 | 1431 | 1136 | 1683 | 1431 | 1178 | 1683 | 1431 |
| c, Capacity [veh/h] | 411 | 2216 | 989 | 432 | 2216 | 989 | 285 | 407 | 346 | 289 | 407 | 346 |
| d1, Uniform Delay [s] | 14.35 | 7.28 | 6.02 | 14.66 | 7.45 | 5.97 | 40.38 | 35.91 | 35.04 | 40.41 | 35.74 | 36.28 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| l, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.77 | 0.37 | 0.15 | 3.42 | 0.41 | 0.13 | 1.34 | 0.86 | 0.35 | 1.06 | 0.73 | 1.32 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.39 | 0.31 | 0.07 | 0.45 | 0.34 | 0.06 | 0.18 | 0.16 | 0.06 | 0.15 | 0.14 | 0.20 |
| d, Delay for Lane Group [s/veh] | 17.12 | 7.65 | 6.16 | 18.08 | 7.86 | 6.10 | 41.72 | 36.77 | 35.40 | 41.47 | 36.47 | 37.60 |
| Lane Group LOS | B | A | A | B | A | A | D | D | D | D | D | D |
| Critical Lane Group | No | No | No | Yes | No | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 2.73 | 3.39 | 0.62 | 3.48 | 3.75 | 0.53 | 1.35 | 1.63 | 0.53 | 1.13 | 1.43 | 1.77 |
| 50th-Percentile Queue Length [ft/ln] | 68.26 | 84.72 | 15.43 | 87.00 | 93.69 | 13.25 | 33.84 | 40.87 | 13.36 | 28.23 | 35.70 | 44.37 |
| 95th-Percentile Queue Length [veh/ln] | 4.91 | 6.10 | 1.11 | 6.26 | 6.75 | 0.95 | 2.44 | 2.94 | 0.96 | 2.03 | 2.57 | 3.19 |
| 95th-Percentile Queue Length [ft/ln] | 122.8 | 152.4 | 27.78 | 156.6 | 168.6 | 23.85 | 60.91 | 73.57 | 24.04 | 50.82 | 64.27 | 79.86 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---------------------------------|-------|------|------|-------|------|------|-------|-------|-------|-------|-------|-------|
| d_M, Delay for Movement [s/veh] | 17.12 | 7.65 | 6.16 | 18.08 | 7.86 | 6.10 | 41.72 | 36.77 | 35.40 | 41.47 | 36.47 | 37.60 |
| Movement LOS | B | A | A | B | A | A | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 9.16 | | | 9.73 | | | 38.34 | | | 38.17 | | |
| Approach LOS | A | | | A | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 13.41 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.360 | | | | | | | | | | | |

Other Modes

| | | | | | | | | | | | | |
|--|-------|--|--|-------|--|--|-------|--|--|-------|--|--|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | | | 11.0 | | | 11.0 | | | 11.0 | | |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| d_p, Pedestrian Delay [s] | 49.50 | | | 49.50 | | | 49.50 | | | 49.50 | | |
| I_p,int, Pedestrian LOS Score for Intersection | 2.870 | | | 2.892 | | | 2.647 | | | 2.616 | | |
| Crosswalk LOS | C | | | C | | | B | | | B | | |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | | | 2000 | | | 2000 | | | 2000 | | |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1383 | | | 1383 | | | 483 | | | 483 | | |
| d_b, Bicycle Delay [s] | 5.70 | | | 5.70 | | | 34.50 | | | 34.50 | | |
| I_b,int, Bicycle LOS Score for Intersection | 2.356 | | | 2.420 | | | 1.805 | | | 1.900 | | |
| Bicycle LOS | B | | | B | | | A | | | A | | |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 17: 42nd Avenue/Fultondale Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 14.3 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.278 |

Intersection Setup

| Name | Fultondale Street | | | Fultondale Street | | | 42nd Avenue | | | 42nd Avenue | | |
|------------------------------|-------------------|-------|-------|-------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | Fultondale Street | | | 42nd Avenue | | | 42nd Avenue | | |
|---|-------------------|-------|-------|-------------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 69 | 12 | 69 | 32 | 6 | 11 | 4 | 78 | 18 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 67 | 0 | 19 | 24 | 39 | 0 | 0 | 53 | 115 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 136 | 12 | 88 | 56 | 45 | 11 | 4 | 131 | 133 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 37 | 3 | 24 | 15 | 12 | 3 | 1 | 36 | 36 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 148 | 13 | 96 | 61 | 49 | 12 | 4 | 142 | 145 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Free | Free |
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|------|-------|-------|------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.28 | 0.03 | 0.12 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 13.52 | 12.73 | 8.56 | 14.34 | 12.28 | 9.93 | 7.97 | 0.00 | 0.00 | 7.34 | 0.00 | 0.00 |
| Movement LOS | B | B | A | B | B | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 1.13 | 0.08 | 0.39 | 0.15 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 28.19 | 1.97 | 9.83 | 3.76 | 0.00 | 0.00 | 0.20 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 11.60 | | | 12.59 | | | 3.98 | | | 0.10 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 5.60 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |



Intersection Level Of Service Report

Intersection 18: Fultondale St/PA-13.1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 13.2
 Level Of Service: B
 Volume to Capacity (v/c): 0.018

Intersection Setup

| Name | Fultondale Street | | Fultondale Street | | | |
|------------------------------|-------------------|--------|-------------------|--------|-----------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Fultondale Street | | Fultondale Street | | | |
|---|-------------------|--------|-------------------|--------|--------|--------|
| Base Volume Input [veh/h] | 126 | 0 | 0 | 206 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 121 | 12 | 12 | 84 | 7 | 7 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 247 | 12 | 12 | 290 | 7 | 7 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 67 | 3 | 3 | 79 | 2 | 2 |
| Total Analysis Volume [veh/h] | 268 | 13 | 13 | 315 | 8 | 8 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.01 | 0.00 | 0.02 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.84 | 0.00 | 13.19 | 9.90 |
| Movement LOS | A | A | A | A | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.03 | 0.00 | 0.09 | 0.09 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.77 | 0.00 | 2.18 | 2.18 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.31 | | 11.54 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.46 | | | | | |
| Intersection LOS | B | | | | | |



Intersection Level Of Service Report

Intersection 19: Fultondale St/PA13.2 Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 13.2 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.018 |

Intersection Setup

| Name | Fultondale Street | | Fultondale Street | | | |
|------------------------------|-------------------|--------|-------------------|--------|-----------|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | Fultondale Street | | Fultondale Street | | | |
|---|-------------------|--------|-------------------|--------|--------|--------|
| Base Volume Input [veh/h] | 126 | 0 | 0 | 206 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 127 | 12 | 12 | 79 | 7 | 7 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 253 | 12 | 12 | 285 | 7 | 7 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 69 | 3 | 3 | 77 | 2 | 2 |
| Total Analysis Volume [veh/h] | 275 | 13 | 13 | 310 | 8 | 8 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|------|------|------|------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.01 | 0.00 | 0.02 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.85 | 0.00 | 13.21 | 9.94 |
| Movement LOS | A | A | A | A | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.03 | 0.00 | 0.09 | 0.09 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.77 | 0.00 | 2.19 | 2.19 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.32 | | 11.58 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.46 | | | | | |
| Intersection LOS | B | | | | | |






Intersection Level Of Service Report

Intersection 20: 42nd Avenue/Main Street

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 10.2 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.105 |

Intersection Setup

| Name | Main Street | | Main Street | | 42nd Avenue | |
|------------------------------|---|--------|---|--------|---|--------|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 1 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | Yes | | Yes | | Yes | |

**Volumes**

| Name | Main Street | | Main Street | | 42nd Avenue | |
|--|-------------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 197 | 53 | 63 | 137 | 23 | 27 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 21 | 30 | 0 | 9 | 23 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 42 | 0 | 0 | 0 | 14 |
| Total Hourly Volume [veh/h] | 218 | 41 | 63 | 146 | 46 | 13 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 59 | 11 | 17 | 40 | 13 | 4 |
| Total Analysis Volume [veh/h] | 237 | 45 | 68 | 159 | 50 | 14 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Signal Group | 6 | 0 | 0 | 2 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 10 | 0 | 0 | 10 | 5 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 32 | 0 | 0 | 32 | 28 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 17 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | L | C | L | R |
|---|------|------|-------|------|-------|-------|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 28 | 28 | 28 | 28 | 24 | 24 |
| g / C, Green / Cycle | 0.47 | 0.47 | 0.47 | 0.47 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.09 | 0.07 | 0.05 | 0.02 | 0.01 |
| s, saturation flow rate [veh/h] | 1683 | 1593 | 987 | 3204 | 3113 | 1431 |
| c, Capacity [veh/h] | 785 | 744 | 497 | 1495 | 1245 | 572 |
| d1, Uniform Delay [s] | 9.31 | 9.36 | 12.32 | 8.98 | 10.98 | 10.91 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.50 | 0.57 | 0.57 | 0.14 | 0.06 | 0.08 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|-------|
| X, volume / capacity | 0.18 | 0.19 | 0.14 | 0.11 | 0.04 | 0.02 |
| d, Delay for Lane Group [s/veh] | 9.81 | 9.93 | 12.90 | 9.12 | 11.04 | 10.99 |
| Lane Group LOS | A | A | B | A | B | B |
| Critical Lane Group | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.03 | 1.05 | 0.62 | 0.53 | 0.19 | 0.11 |
| 50th-Percentile Queue Length [ft/ln] | 25.83 | 26.14 | 15.53 | 13.30 | 4.78 | 2.83 |
| 95th-Percentile Queue Length [veh/ln] | 1.86 | 1.88 | 1.12 | 0.96 | 0.34 | 0.20 |
| 95th-Percentile Queue Length [ft/ln] | 46.50 | 47.06 | 27.96 | 23.94 | 8.61 | 5.09 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---------------------------------|-------|------|-------|------|-------|-------|
| d_M, Delay for Movement [s/veh] | 9.86 | 9.93 | 12.90 | 9.12 | 11.04 | 10.99 |
| Movement LOS | A | A | B | A | B | B |
| d_A, Approach Delay [s/veh] | 9.87 | | 10.25 | | 11.03 | |
| Approach LOS | A | | B | | B | |
| d_I, Intersection Delay [s/veh] | 10.15 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.105 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.01 | 20.01 | 20.01 |
| I_p,int, Pedestrian LOS Score for Intersection | 2.298 | 2.373 | 2.282 |
| Crosswalk LOS | B | B | B |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 933 | 933 | 800 |
| d_b, Bicycle Delay [s] | 8.53 | 8.53 | 10.80 |
| I_b,int, Bicycle LOS Score for Intersection | 1.827 | 1.747 | 1.560 |
| Bicycle LOS | A | A | A |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Intersection Level Of Service Report

Intersection 21: Fultondale St/PA-6.1 Access

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Two-way stop | Delay (sec / veh): | 12.8 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.021 |

Intersection Setup

| Name | | | 48th Avenue | | 48th Avenue | |
|------------------------------|------------|--------|-------------|--------|-------------|--------|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 2 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

Volumes

| Name | | | 48th Avenue | | 48th Avenue | |
|---|--------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 0 | 0 | 698 | 0 | 0 | 458 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 9 | 49 | 19 | 9 | 81 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 9 | 747 | 19 | 9 | 539 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 2 | 203 | 5 | 2 | 146 |
| Total Analysis Volume [veh/h] | 0 | 10 | 812 | 21 | 10 | 586 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|------------------------------------|------|------|------|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | |
|---------------------------------------|-------|-------|------|------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.02 | 0.01 | 0.00 | 0.02 | 0.01 |
| d_M, Delay for Movement [s/veh] | 0.00 | 12.35 | 0.00 | 0.00 | 12.81 | 0.00 |
| Movement LOS | | B | A | A | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.06 | 0.00 | 0.00 | 0.07 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 1.53 | 0.00 | 0.00 | 1.63 | 0.00 |
| d_A, Approach Delay [s/veh] | 12.35 | | 0.00 | | 0.21 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.17 | | | | | |
| Intersection LOS | B | | | | | |



Intersection Level Of Service Report

Intersection 22: Fultondale St/PA-6.1

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 13.9
 Level Of Service: B
 Volume to Capacity (v/c): 0.033

Intersection Setup

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|------------------------------|-------------------|-------|-------|-------------------|-------|-------|-----------|-------|-------|-----------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | Fultondale Street | | | Fultondale Street | | | | | | | | |
|---|-------------------|-------|-------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Base Volume Input [veh/h] | 0 | 126 | 0 | 0 | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 89 | 16 | 18 | 97 | 12 | 8 | 0 | 6 | 13 | 0 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 215 | 16 | 18 | 303 | 12 | 8 | 0 | 6 | 13 | 0 | 12 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 1 | 58 | 4 | 5 | 82 | 3 | 2 | 0 | 2 | 4 | 0 | 3 |
| Total Analysis Volume [veh/h] | 2 | 234 | 17 | 20 | 329 | 13 | 9 | 0 | 7 | 14 | 0 | 13 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Free | Free | Stop | Stop |
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|------|-------|-------|-------|-------|-------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.03 | 0.00 | 0.02 |
| d_M, Delay for Movement [s/veh] | 7.96 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 13.84 | 13.63 | 10.33 | 13.86 | 13.81 | 9.81 |
| Movement LOS | A | A | | | A | A | B | B | B | B | B | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.10 | 0.10 | 0.16 | 0.16 | 0.16 |
| 95th-Percentile Queue Length [ft/ln] | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.43 | 2.43 | 2.43 | 3.88 | 3.88 | 3.88 |
| d_A, Approach Delay [s/veh] | 0.07 | | | 0.00 | | | 12.30 | | | 11.91 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 0.86 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |



Intersection Level Of Service Report

Intersection 23: 42nd Ave/PA 13.1 Access 2

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 13.2
 Level Of Service: B
 Volume to Capacity (v/c): 0.018

Intersection Setup

| Name | | | | | | | 42nd Avenue | | | 42nd Avenue | | |
|------------------------------|------------|-------|-------|------------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

Volumes

| Name | | | | | | | 42nd Avenue | | | 42nd Avenue | | |
|---|-------|-------|-------|-------|-------|-------|-------------|-------|-------|-------------|-------|-------|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 91 | 3 | 5 | 89 | 5 |
| Base Volume Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 7 | 0 | 7 | 12 | 94 | 0 | 0 | 161 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 7 | 0 | 7 | 18 | 185 | 3 | 5 | 250 | 17 |
| Peak Hour Factor | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 | 0.920 |
| Other Adjustment Factor | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 2 | 0 | 2 | 5 | 50 | 1 | 1 | 68 | 5 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 8 | 0 | 8 | 20 | 201 | 3 | 5 | 272 | 18 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | | | | |
|------------------------------------|------|------|------|------|
| Priority Scheme | Stop | Stop | Free | Free |
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

Movement, Approach, & Intersection Results

| | | | | | | | | | | | | |
|---------------------------------------|-------|-------|------|-------|-------|------|------|------|------|------|------|------|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 13.17 | 13.21 | 9.29 | 13.22 | 13.32 | 9.94 | 7.88 | 0.00 | 0.00 | 7.64 | 0.00 | 0.00 |
| Movement LOS | B | B | A | B | B | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.09 | 0.09 | 0.09 | 0.05 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 2.19 | 2.19 | 2.19 | 1.20 | 0.00 | 0.00 | 0.28 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 11.89 | | | 11.58 | | | 0.70 | | | 0.13 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 0.71 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |



Intersection Level Of Service Report
Intersection 46: 48th Avenue/Harvest Road

| | | | |
|------------------|-----------------|---------------------------|-------|
| Control Type: | Signalized | Delay (sec / veh): | 28.7 |
| Analysis Method: | HCM 7th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.423 |

Intersection Setup

| Name | Harvest Road | | 48th Avenue | | 48th Avenue | |
|------------------------------|--------------|--------|-------------|--------|-------------|--------|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | ⇐⇐⇐ | | ⇐ | | ⇐ | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 1 | 3 | 0 | 0 | 1 |
| Entry Pocket Length [ft] | 450.00 | 200.00 | 400.00 | 100.00 | 100.00 | 500.00 |
| No. of Lanes in Exit Pocket | 0 | 2 | 0 | 1 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 174.61 | 0.00 | 400.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | Yes | | Yes | | Yes | |

**Volumes**

| Name | Harvest Road | | 48th Avenue | | 48th Avenue | |
|--|--------------|--------|-------------|--------|-------------|--------|
| Base Volume Input [veh/h] | 517 | 263 | 427 | 623 | 195 | 213 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Proportion of CAVs [%] | 0.00 | | | | | |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 32 | 20 | 38 | 59 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 295 | 0 | 0 | 0 | 213 |
| Total Hourly Volume [veh/h] | 517 | 0 | 447 | 661 | 254 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 140 | 0 | 121 | 180 | 69 | 0 |
| Total Analysis Volume [veh/h] | 562 | 0 | 486 | 718 | 276 | 0 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing major street [ped/h] | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing minor street [ped/h] | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---------------------------|---------------------------------------|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 110 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

Phasing & Timing

| Control Type | Permissive | Permissive | Protected | Permissive | Permissive | Permissive |
|------------------------------|------------|------------|-----------|------------|------------|------------|
| Signal Group | 7 | 0 | 5 | 2 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 0 | 5 | 10 | 10 | 0 |
| Maximum Green [s] | 30 | 0 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 48 | 0 | 24 | 62 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 5 | 7 | 0 |
| Pedestrian Clearance [s] | 37 | 0 | 0 | 10 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | No | No | No | |
| Maximum Recall | No | | No | No | No | |
| Pedestrian Recall | No | | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Exclusive Pedestrian Phase

| | |
|--------------------------|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | R |
|---|-------|------|-------|------|-------|------|
| C, Cycle Length [s] | 110 | 110 | 110 | 110 | 110 | 110 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| I1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| I2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 23 | 23 | 19 | 79 | 56 | 56 |
| g / C, Green / Cycle | 0.21 | 0.21 | 0.17 | 0.72 | 0.51 | 0.51 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.00 | 0.16 | 0.22 | 0.09 | 0.00 |
| s, saturation flow rate [veh/h] | 3113 | 1431 | 3113 | 3204 | 3204 | 1431 |
| c, Capacity [veh/h] | 647 | 297 | 539 | 2306 | 1634 | 730 |
| d1, Uniform Delay [s] | 42.12 | 0.00 | 44.55 | 5.58 | 14.45 | 0.00 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.75 | 0.00 | 5.85 | 0.35 | 0.22 | 0.00 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Lane Group Results

| | | | | | | |
|---------------------------------------|--------|------|--------|--------|-------|------|
| X, volume / capacity | 0.87 | 0.00 | 0.90 | 0.31 | 0.17 | 0.00 |
| d, Delay for Lane Group [s/veh] | 45.87 | 0.00 | 50.39 | 5.93 | 14.67 | 0.00 |
| Lane Group LOS | D | A | D | A | B | A |
| Critical Lane Group | Yes | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 7.65 | 0.00 | 6.88 | 2.74 | 1.88 | 0.00 |
| 50th-Percentile Queue Length [ft/ln] | 191.18 | 0.00 | 172.04 | 68.60 | 46.90 | 0.00 |
| 95th-Percentile Queue Length [veh/ln] | 12.18 | 0.00 | 11.18 | 4.94 | 3.38 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 304.56 | 0.00 | 279.59 | 123.49 | 84.43 | 0.00 |

**Movement, Approach, & Intersection Results**

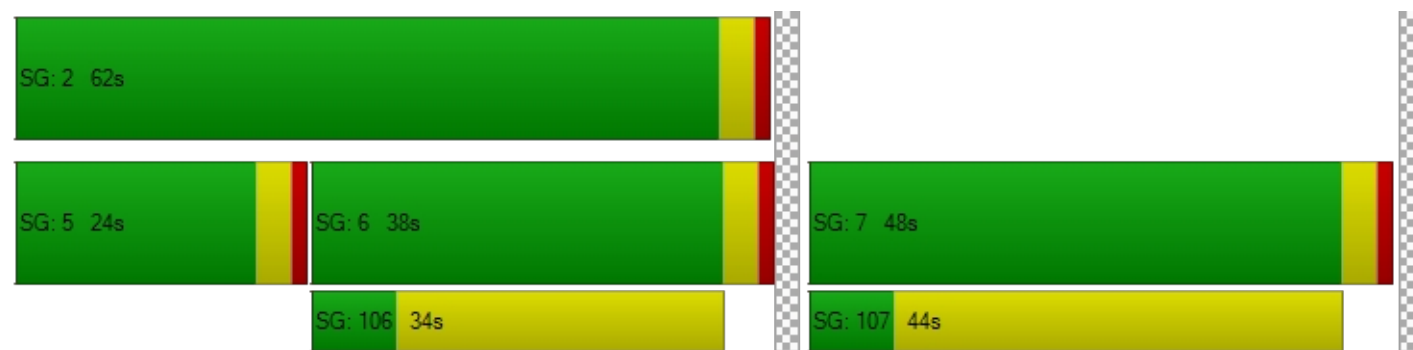
| | | | | | | |
|---------------------------------|-------|------|-------|------|-------|------|
| d_M, Delay for Movement [s/veh] | 45.87 | 0.00 | 50.39 | 5.93 | 14.67 | 0.00 |
| Movement LOS | D | A | D | A | B | A |
| d_A, Approach Delay [s/veh] | 45.87 | | 23.88 | | 14.67 | |
| Approach LOS | D | | C | | B | |
| d_I, Intersection Delay [s/veh] | 28.69 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.423 | | | | | |

Other Modes

| | | | |
|--|-------|-------|-------|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 44.54 | 44.54 | 44.54 |
| I_p,int, Pedestrian LOS Score for Intersection | 3.240 | 2.951 | 3.053 |
| Crosswalk LOS | C | C | C |
| s_b, Saturation Flow Rate of the bicycle lane [bicycles/h] | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 800 | 1055 | 618 |
| d_b, Bicycle Delay [s] | 19.79 | 12.29 | 26.25 |
| I_b,int, Bicycle LOS Score for Intersection | 1.560 | 2.553 | 1.963 |
| Bicycle LOS | A | B | A |

Sequence

| | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |





Signal Warrants Report For Intersection 2: 48th Ave/Road 1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | E | W | S |
| 1 | 1236 | 955 | 0 |
| 2 | 1199 | 926 | 0 |
| 3 | 1174 | 907 | 0 |
| 4 | 1100 | 850 | 0 |
| 5 | 976 | 754 | 0 |
| 6 | 964 | 745 | 0 |
| 7 | 952 | 735 | 0 |
| 8 | 865 | 669 | 0 |
| 9 | 853 | 659 | 0 |
| 10 | 840 | 649 | 0 |
| 11 | 729 | 563 | 0 |
| 12 | 680 | 525 | 0 |
| 13 | 667 | 516 | 0 |
| 14 | 494 | 382 | 0 |
| 15 | 494 | 382 | 0 |
| 16 | 346 | 267 | 0 |
| 17 | 198 | 153 | 0 |
| 18 | 198 | 153 | 0 |
| 19 | 111 | 86 | 0 |
| 20 | 62 | 48 | 0 |
| 21 | 37 | 29 | 0 |
| 22 | 12 | 10 | 0 |
| 23 | 12 | 10 | 0 |
| 24 | 12 | 10 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 2191 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 2125 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 2081 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 1950 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 1730 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 1709 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 1687 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 1534 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 1512 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 1489 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 1292 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 1205 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 1183 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 876 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 876 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 613 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 351 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 351 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 197 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 110 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 66 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 13.4 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 0 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 2191 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 6: 48th Ave/PA-4 Access 1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | E | W | S |
| 1 | 1236 | 955 | 10 |
| 2 | 1199 | 926 | 10 |
| 3 | 1174 | 907 | 10 |
| 4 | 1100 | 850 | 9 |
| 5 | 976 | 754 | 8 |
| 6 | 964 | 745 | 8 |
| 7 | 952 | 735 | 8 |
| 8 | 865 | 669 | 7 |
| 9 | 853 | 659 | 7 |
| 10 | 840 | 649 | 7 |
| 11 | 729 | 563 | 6 |
| 12 | 680 | 525 | 6 |
| 13 | 667 | 516 | 5 |
| 14 | 494 | 382 | 4 |
| 15 | 494 | 382 | 4 |
| 16 | 346 | 267 | 3 |
| 17 | 198 | 153 | 2 |
| 18 | 198 | 153 | 2 |
| 19 | 111 | 86 | 1 |
| 20 | 62 | 48 | 1 |
| 21 | 37 | 29 | 0 |
| 22 | 12 | 10 | 0 |
| 23 | 12 | 10 | 0 |
| 24 | 12 | 10 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 2191 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 2125 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 2081 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 1950 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 1730 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 1709 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 1687 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 1534 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 1512 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 1489 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 1292 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 1205 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 1183 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 876 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 876 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 613 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 351 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 351 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 197 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 110 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 66 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 13.5 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:02 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 10 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 2201 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 7: 46th Ave/Road 1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|----|---------------|
| | E | W | N |
| 1 | 15 | 17 | 0 |
| 2 | 15 | 16 | 0 |
| 3 | 14 | 16 | 0 |
| 4 | 13 | 15 | 0 |
| 5 | 12 | 13 | 0 |
| 6 | 12 | 13 | 0 |
| 7 | 12 | 13 | 0 |
| 8 | 11 | 12 | 0 |
| 9 | 10 | 12 | 0 |
| 10 | 10 | 12 | 0 |
| 11 | 9 | 10 | 0 |
| 12 | 8 | 9 | 0 |
| 13 | 8 | 9 | 0 |
| 14 | 6 | 7 | 0 |
| 15 | 6 | 7 | 0 |
| 16 | 4 | 5 | 0 |
| 17 | 2 | 3 | 0 |
| 18 | 2 | 3 | 0 |
| 19 | 1 | 2 | 0 |
| 20 | 1 | 1 | 0 |
| 21 | 0 | 1 | 0 |
| 22 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 1 | 32 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 2 | 1 | 31 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 3 | 1 | 30 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 4 | 1 | 28 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 5 | 1 | 25 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 6 | 1 | 25 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 7 | 1 | 25 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 8 | 1 | 23 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 9 | 1 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 10 | 1 | 22 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 11 | 1 | 19 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 12 | 1 | 17 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 13 | 1 | 17 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 14 | 1 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 15 | 1 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 16 | 1 | 9 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 17 | 1 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 18 | 1 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 19 | 1 | 3 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 20 | 1 | 2 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 21 | 1 | 1 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | N |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 8.5 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 0 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 32 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | No |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 8: 46th Avenue/Denali Boulevard

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | S | N | W |
| 1 | 466 | 841 | 18 |
| 2 | 452 | 816 | 17 |
| 3 | 443 | 799 | 17 |
| 4 | 415 | 748 | 16 |
| 5 | 368 | 664 | 14 |
| 6 | 363 | 656 | 14 |
| 7 | 359 | 648 | 14 |
| 8 | 326 | 589 | 13 |
| 9 | 322 | 580 | 12 |
| 10 | 317 | 572 | 12 |
| 11 | 275 | 496 | 11 |
| 12 | 256 | 463 | 10 |
| 13 | 252 | 454 | 10 |
| 14 | 186 | 336 | 7 |
| 15 | 186 | 336 | 7 |
| 16 | 130 | 235 | 5 |
| 17 | 75 | 135 | 3 |
| 18 | 75 | 135 | 3 |
| 19 | 42 | 76 | 2 |
| 20 | 23 | 42 | 1 |
| 21 | 14 | 25 | 1 |
| 22 | 5 | 8 | 0 |
| 23 | 5 | 8 | 0 |
| 24 | 5 | 8 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 3 | 1307 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 2 | 3 | 1268 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 3 | 3 | 1242 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 4 | 3 | 1163 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 5 | 3 | 1032 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 6 | 3 | 1019 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 7 | 3 | 1007 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 8 | 3 | 915 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 9 | 3 | 902 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 10 | 3 | 889 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 11 | 3 | 771 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 12 | 3 | 719 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 13 | 3 | 706 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 14 | 3 | 522 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 15 | 3 | 522 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 16 | 3 | 365 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 17 | 3 | 210 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 18 | 3 | 210 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 19 | 3 | 118 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 3 | 65 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 3 | 39 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 3 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 3 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 3 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | W |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 20.9 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:06 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 18 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 1325 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 9: Denali Bl/PA-4 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E, W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | S | N | E | W |
| 1 | 460 | 849 | 19 | 21 |
| 2 | 446 | 824 | 18 | 20 |
| 3 | 437 | 807 | 18 | 20 |
| 4 | 409 | 756 | 17 | 19 |
| 5 | 363 | 671 | 15 | 17 |
| 6 | 359 | 662 | 15 | 16 |
| 7 | 354 | 654 | 15 | 16 |
| 8 | 322 | 594 | 13 | 15 |
| 9 | 317 | 586 | 13 | 14 |
| 10 | 313 | 577 | 13 | 14 |
| 11 | 271 | 501 | 11 | 12 |
| 12 | 253 | 467 | 10 | 12 |
| 13 | 248 | 458 | 10 | 11 |
| 14 | 184 | 340 | 8 | 8 |
| 15 | 184 | 340 | 8 | 8 |
| 16 | 129 | 238 | 5 | 6 |
| 17 | 74 | 136 | 3 | 3 |
| 18 | 74 | 136 | 3 | 3 |
| 19 | 41 | 76 | 2 | 2 |
| 20 | 23 | 42 | 1 | 1 |
| 21 | 14 | 25 | 1 | 1 |
| 22 | 5 | 8 | 0 | 0 |
| 23 | 5 | 8 | 0 | 0 |
| 24 | 5 | 8 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 1309 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 1270 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 1244 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 1165 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 1034 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 1021 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 1008 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 916 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 903 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 890 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 772 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 720 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 706 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 524 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 524 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 367 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 210 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 210 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 117 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 65 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 39 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | E | W |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 16.5 | 24.1 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:05 | 0:08 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 19 | 21 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 1349 | 1349 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | Yes | Yes |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 10: 46th Ave/PA-4 Access 3

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|----|---------------|
| | E | W | N |
| 1 | 33 | 17 | 21 |
| 2 | 32 | 16 | 20 |
| 3 | 31 | 16 | 20 |
| 4 | 29 | 15 | 19 |
| 5 | 26 | 13 | 17 |
| 6 | 26 | 13 | 16 |
| 7 | 25 | 13 | 16 |
| 8 | 23 | 12 | 15 |
| 9 | 23 | 12 | 14 |
| 10 | 22 | 12 | 14 |
| 11 | 19 | 10 | 12 |
| 12 | 18 | 9 | 12 |
| 13 | 18 | 9 | 11 |
| 14 | 13 | 7 | 8 |
| 15 | 13 | 7 | 8 |
| 16 | 9 | 5 | 6 |
| 17 | 5 | 3 | 3 |
| 18 | 5 | 3 | 3 |
| 19 | 3 | 2 | 2 |
| 20 | 2 | 1 | 1 |
| 21 | 1 | 1 | 1 |
| 22 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 1 | 50 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 2 | 1 | 48 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 3 | 1 | 47 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 4 | 1 | 44 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 5 | 1 | 39 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 6 | 1 | 39 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 7 | 1 | 38 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 8 | 1 | 35 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 9 | 1 | 35 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 10 | 1 | 34 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 11 | 1 | 29 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 12 | 1 | 27 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 13 | 1 | 27 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 14 | 1 | 20 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 15 | 1 | 20 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 16 | 1 | 14 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 17 | 1 | 8 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 18 | 1 | 8 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 19 | 1 | 5 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 1 | 3 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 1 | 2 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 1 | 0 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | N |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 8.7 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:03 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 21 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 71 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | No |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 11: 48th Ave/PA-5.1 PA-5.2

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | E | W | S |
| 1 | 464 | 999 | 16 |
| 2 | 450 | 969 | 16 |
| 3 | 441 | 949 | 15 |
| 4 | 413 | 889 | 14 |
| 5 | 367 | 789 | 13 |
| 6 | 362 | 779 | 12 |
| 7 | 357 | 769 | 12 |
| 8 | 325 | 699 | 11 |
| 9 | 320 | 689 | 11 |
| 10 | 316 | 679 | 11 |
| 11 | 274 | 589 | 9 |
| 12 | 255 | 549 | 9 |
| 13 | 251 | 539 | 9 |
| 14 | 186 | 400 | 6 |
| 15 | 186 | 400 | 6 |
| 16 | 130 | 280 | 4 |
| 17 | 74 | 160 | 3 |
| 18 | 74 | 160 | 3 |
| 19 | 42 | 90 | 1 |
| 20 | 23 | 50 | 1 |
| 21 | 14 | 30 | 0 |
| 22 | 5 | 10 | 0 |
| 23 | 5 | 10 | 0 |
| 24 | 5 | 10 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 3 | 1463 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 2 | 3 | 1419 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 3 | 3 | 1390 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 4 | 3 | 1302 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 5 | 3 | 1156 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 6 | 3 | 1141 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 7 | 3 | 1126 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 8 | 3 | 1024 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 9 | 3 | 1009 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 10 | 3 | 995 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 11 | 3 | 863 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 12 | 3 | 804 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 13 | 3 | 790 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 14 | 3 | 586 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 15 | 3 | 586 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 16 | 3 | 410 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 17 | 3 | 234 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 18 | 3 | 234 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 19 | 3 | 132 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 20 | 3 | 73 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 3 | 44 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 3 | 15 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 3 | 15 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 3 | 15 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 14.1 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:03 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 16 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 1479 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 13: Fultondale St/PA-6.1 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E, W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | S | N | E | W |
| 1 | 244 | 322 | 22 | 14 |
| 2 | 237 | 312 | 21 | 14 |
| 3 | 232 | 306 | 21 | 13 |
| 4 | 217 | 287 | 20 | 12 |
| 5 | 193 | 254 | 17 | 11 |
| 6 | 190 | 251 | 17 | 11 |
| 7 | 188 | 248 | 17 | 11 |
| 8 | 171 | 225 | 15 | 10 |
| 9 | 168 | 222 | 15 | 10 |
| 10 | 166 | 219 | 15 | 10 |
| 11 | 144 | 190 | 13 | 8 |
| 12 | 134 | 177 | 12 | 8 |
| 13 | 132 | 174 | 12 | 8 |
| 14 | 98 | 129 | 9 | 6 |
| 15 | 98 | 129 | 9 | 6 |
| 16 | 68 | 90 | 6 | 4 |
| 17 | 39 | 52 | 4 | 2 |
| 18 | 39 | 52 | 4 | 2 |
| 19 | 22 | 29 | 2 | 1 |
| 20 | 12 | 16 | 1 | 1 |
| 21 | 7 | 10 | 1 | 0 |
| 22 | 2 | 3 | 0 | 0 |
| 23 | 2 | 3 | 0 | 0 |
| 24 | 2 | 3 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 566 | 1 | 22 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 549 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 538 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 504 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 447 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 441 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 436 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 396 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 390 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 385 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 334 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 311 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 306 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 227 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 227 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 158 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 91 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 91 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 51 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 28 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 17 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | E | W |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 12.2 | 13 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:04 | 0:03 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 22 | 14 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 602 | 602 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 14: Fultondale St/PA13.1 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | N, S |
| Minor Approaches | E, W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | N | S | E | W |
| 1 | 314 | 254 | 18 | 27 |
| 2 | 305 | 246 | 17 | 26 |
| 3 | 298 | 241 | 17 | 26 |
| 4 | 279 | 226 | 16 | 24 |
| 5 | 248 | 201 | 14 | 21 |
| 6 | 245 | 198 | 14 | 21 |
| 7 | 242 | 196 | 14 | 21 |
| 8 | 220 | 178 | 13 | 19 |
| 9 | 217 | 175 | 12 | 19 |
| 10 | 214 | 173 | 12 | 18 |
| 11 | 185 | 150 | 11 | 16 |
| 12 | 173 | 140 | 10 | 15 |
| 13 | 170 | 137 | 10 | 15 |
| 14 | 126 | 102 | 7 | 11 |
| 15 | 126 | 102 | 7 | 11 |
| 16 | 88 | 71 | 5 | 8 |
| 17 | 50 | 41 | 3 | 4 |
| 18 | 50 | 41 | 3 | 4 |
| 19 | 28 | 23 | 2 | 2 |
| 20 | 16 | 13 | 1 | 1 |
| 21 | 9 | 8 | 1 | 1 |
| 22 | 3 | 3 | 0 | 0 |
| 23 | 3 | 3 | 0 | 0 |
| 24 | 3 | 3 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 568 | 1 | 27 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 551 | 1 | 26 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 539 | 1 | 26 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 505 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 449 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 443 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 438 | 1 | 21 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 398 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 392 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 387 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 335 | 1 | 16 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 313 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 307 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 228 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 228 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 159 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 91 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 91 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 51 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 29 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 17 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 6 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 6 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 6 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | E | W |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 12.5 | 12.5 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:03 | 0:05 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 18 | 27 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 613 | 613 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 15: Denali Bl/PA-12 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | S | N | E |
| 1 | 475 | 832 | 15 |
| 2 | 461 | 807 | 15 |
| 3 | 451 | 790 | 14 |
| 4 | 423 | 740 | 13 |
| 5 | 375 | 657 | 12 |
| 6 | 371 | 649 | 12 |
| 7 | 366 | 641 | 12 |
| 8 | 333 | 582 | 11 |
| 9 | 328 | 574 | 10 |
| 10 | 323 | 566 | 10 |
| 11 | 280 | 491 | 9 |
| 12 | 261 | 458 | 8 |
| 13 | 257 | 449 | 8 |
| 14 | 190 | 333 | 6 |
| 15 | 190 | 333 | 6 |
| 16 | 133 | 233 | 4 |
| 17 | 76 | 133 | 2 |
| 18 | 76 | 133 | 2 |
| 19 | 43 | 75 | 1 |
| 20 | 24 | 42 | 1 |
| 21 | 14 | 25 | 0 |
| 22 | 5 | 8 | 0 |
| 23 | 5 | 8 | 0 |
| 24 | 5 | 8 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 3 | 1307 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 2 | 3 | 1268 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 3 | 3 | 1241 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 4 | 3 | 1163 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 5 | 3 | 1032 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 6 | 3 | 1020 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 7 | 3 | 1007 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 8 | 3 | 915 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 9 | 3 | 902 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 10 | 3 | 889 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 11 | 3 | 771 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 12 | 3 | 719 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 13 | 3 | 706 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 14 | 3 | 523 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 15 | 3 | 523 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 16 | 3 | 366 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 17 | 3 | 209 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 18 | 3 | 209 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 19 | 3 | 118 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 20 | 3 | 66 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 3 | 39 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 3 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 3 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 3 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | E |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 14.9 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:03 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 15 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 1322 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 17: 42nd Avenue/Fultondale Street

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S, N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|-----|
| | E | W | S | N |
| 1 | 268 | 112 | 0 | 236 |
| 2 | 260 | 109 | 0 | 229 |
| 3 | 255 | 106 | 0 | 224 |
| 4 | 239 | 100 | 0 | 210 |
| 5 | 212 | 88 | 0 | 186 |
| 6 | 209 | 87 | 0 | 184 |
| 7 | 206 | 86 | 0 | 182 |
| 8 | 188 | 78 | 0 | 165 |
| 9 | 185 | 77 | 0 | 163 |
| 10 | 182 | 76 | 0 | 160 |
| 11 | 158 | 66 | 0 | 139 |
| 12 | 147 | 62 | 0 | 130 |
| 13 | 145 | 60 | 0 | 127 |
| 14 | 107 | 45 | 0 | 94 |
| 15 | 107 | 45 | 0 | 94 |
| 16 | 75 | 31 | 0 | 66 |
| 17 | 43 | 18 | 0 | 38 |
| 18 | 43 | 18 | 0 | 38 |
| 19 | 24 | 10 | 0 | 21 |
| 20 | 13 | 6 | 0 | 12 |
| 21 | 8 | 3 | 0 | 7 |
| 22 | 3 | 1 | 0 | 2 |
| 23 | 3 | 1 | 0 | 2 |
| 24 | 3 | 1 | 0 | 2 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 380 | 3 | 236 | No | No | No | Yes | No | No | No | No | No | No |
| 2 | 2 | 369 | 3 | 229 | No | No | No | Yes | No | No | No | No | No | No |
| 3 | 2 | 361 | 3 | 224 | No | No | No | Yes | No | No | No | No | No | No |
| 4 | 2 | 339 | 3 | 210 | No | No | No | Yes | No | No | No | No | No | No |
| 5 | 2 | 300 | 3 | 186 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 296 | 3 | 184 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 292 | 3 | 182 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 266 | 3 | 165 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 262 | 3 | 163 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 258 | 3 | 160 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 224 | 3 | 139 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 209 | 3 | 130 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 205 | 3 | 127 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 152 | 3 | 94 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 152 | 3 | 94 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 106 | 3 | 66 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 61 | 3 | 38 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 61 | 3 | 38 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 34 | 3 | 21 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 19 | 3 | 12 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 11 | 3 | 7 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 4 | 3 | 2 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 4 | 3 | 2 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 4 | 3 | 2 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | S | N |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 11.6 | 12.6 |
| Number of Lanes on Minor Street Approach | 2 | 3 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 | 0:49 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 0 | 236 |
| High Minor Volume Condition Met | No | Yes |
| Total Entering Volume on All Approaches During Same Hour | 616 | 616 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 18: Fultondale St/PA-13.1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | S | N | E |
| 1 | 259 | 302 | 14 |
| 2 | 251 | 293 | 14 |
| 3 | 246 | 287 | 13 |
| 4 | 231 | 269 | 12 |
| 5 | 205 | 239 | 11 |
| 6 | 202 | 236 | 11 |
| 7 | 199 | 233 | 11 |
| 8 | 181 | 211 | 10 |
| 9 | 179 | 208 | 10 |
| 10 | 176 | 205 | 10 |
| 11 | 153 | 178 | 8 |
| 12 | 142 | 166 | 8 |
| 13 | 140 | 163 | 8 |
| 14 | 104 | 121 | 6 |
| 15 | 104 | 121 | 6 |
| 16 | 73 | 85 | 4 |
| 17 | 41 | 48 | 2 |
| 18 | 41 | 48 | 2 |
| 19 | 23 | 27 | 1 |
| 20 | 13 | 15 | 1 |
| 21 | 8 | 9 | 0 |
| 22 | 3 | 3 | 0 |
| 23 | 3 | 3 | 0 |
| 24 | 3 | 3 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 561 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 544 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 533 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 500 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 444 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 438 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 432 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 392 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 387 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 381 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 331 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 308 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 303 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 225 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 225 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 158 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 89 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 89 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 50 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 28 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 17 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 6 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 6 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 6 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | E |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 11.5 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:02 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 14 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 575 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | No |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 19: Fultondale St/PA13.2 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | S | N | E |
| 1 | 265 | 297 | 14 |
| 2 | 257 | 288 | 14 |
| 3 | 252 | 282 | 13 |
| 4 | 236 | 264 | 12 |
| 5 | 209 | 235 | 11 |
| 6 | 207 | 232 | 11 |
| 7 | 204 | 229 | 11 |
| 8 | 186 | 208 | 10 |
| 9 | 183 | 205 | 10 |
| 10 | 180 | 202 | 10 |
| 11 | 156 | 175 | 8 |
| 12 | 146 | 163 | 8 |
| 13 | 143 | 160 | 8 |
| 14 | 106 | 119 | 6 |
| 15 | 106 | 119 | 6 |
| 16 | 74 | 83 | 4 |
| 17 | 42 | 48 | 2 |
| 18 | 42 | 48 | 2 |
| 19 | 24 | 27 | 1 |
| 20 | 13 | 15 | 1 |
| 21 | 8 | 9 | 0 |
| 22 | 3 | 3 | 0 |
| 23 | 3 | 3 | 0 |
| 24 | 3 | 3 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 562 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 545 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 534 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 500 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 444 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 439 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 433 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 394 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 388 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 382 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 331 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 309 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 303 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 225 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 225 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 157 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 90 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 90 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 51 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 28 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 17 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 6 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 6 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 6 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | E |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 11.6 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:02 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 14 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 576 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | No |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 21: Fultondale St/PA-6.1 Access

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets |
|------|---------------|-----|---------------|
| | E | W | S |
| 1 | 548 | 766 | 9 |
| 2 | 532 | 743 | 9 |
| 3 | 521 | 728 | 9 |
| 4 | 488 | 682 | 8 |
| 5 | 433 | 605 | 7 |
| 6 | 427 | 597 | 7 |
| 7 | 422 | 590 | 7 |
| 8 | 384 | 536 | 6 |
| 9 | 378 | 529 | 6 |
| 10 | 373 | 521 | 6 |
| 11 | 323 | 452 | 5 |
| 12 | 301 | 421 | 5 |
| 13 | 296 | 414 | 5 |
| 14 | 219 | 306 | 4 |
| 15 | 219 | 306 | 4 |
| 16 | 153 | 214 | 3 |
| 17 | 88 | 123 | 1 |
| 18 | 88 | 123 | 1 |
| 19 | 49 | 69 | 1 |
| 20 | 27 | 38 | 0 |
| 21 | 16 | 23 | 0 |
| 22 | 5 | 8 | 0 |
| 23 | 5 | 8 | 0 |
| 24 | 5 | 8 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 4 | 1314 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 2 | 4 | 1275 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 3 | 4 | 1249 | 1 | 9 | No | No | No | No | No | No | No | No | No | No |
| 4 | 4 | 1170 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 5 | 4 | 1038 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 6 | 4 | 1024 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 7 | 4 | 1012 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 8 | 4 | 920 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 9 | 4 | 907 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 10 | 4 | 894 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 11 | 4 | 775 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 12 | 4 | 722 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 13 | 4 | 710 | 1 | 5 | No | No | No | No | No | No | No | No | No | No |
| 14 | 4 | 525 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 15 | 4 | 525 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 16 | 4 | 367 | 1 | 3 | No | No | No | No | No | No | No | No | No | No |
| 17 | 4 | 211 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 18 | 4 | 211 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 19 | 4 | 118 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 20 | 4 | 65 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 21 | 4 | 39 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 4 | 13 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| | |
|--|-----------|
| Orientation | S |
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 12.3 |
| Number of Lanes on Minor Street Approach | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:01 |
| Delay Condition Met | No |
| Volume on Minor Street Approach During Same Hour | 9 |
| High Minor Volume Condition Met | No |
| Total Entering Volume on All Approaches During Same Hour | 1323 |
| Number of Approaches on Intersection | 3 |
| Total Volume Condition Met | Yes |
| Warrant Met for Approach | No |
| Warrant Met for Intersection | No |



Signal Warrants Report For Intersection 22: Fultondale St/PA-6.1

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | S, N |
| Minor Approaches | E, W |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | S | N | E | W |
| 1 | 217 | 315 | 25 | 14 |
| 2 | 210 | 306 | 24 | 14 |
| 3 | 206 | 299 | 24 | 13 |
| 4 | 193 | 280 | 22 | 12 |
| 5 | 171 | 249 | 20 | 11 |
| 6 | 169 | 246 | 20 | 11 |
| 7 | 167 | 243 | 19 | 11 |
| 8 | 152 | 221 | 18 | 10 |
| 9 | 150 | 217 | 17 | 10 |
| 10 | 148 | 214 | 17 | 10 |
| 11 | 128 | 186 | 15 | 8 |
| 12 | 119 | 173 | 14 | 8 |
| 13 | 117 | 170 | 14 | 8 |
| 14 | 87 | 126 | 10 | 6 |
| 15 | 87 | 126 | 10 | 6 |
| 16 | 61 | 88 | 7 | 4 |
| 17 | 35 | 50 | 4 | 2 |
| 18 | 35 | 50 | 4 | 2 |
| 19 | 20 | 28 | 2 | 1 |
| 20 | 11 | 16 | 1 | 1 |
| 21 | 7 | 9 | 1 | 0 |
| 22 | 2 | 3 | 0 | 0 |
| 23 | 2 | 3 | 0 | 0 |
| 24 | 2 | 3 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 532 | 1 | 25 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 516 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 505 | 1 | 24 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 473 | 1 | 22 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 420 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 415 | 1 | 20 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 410 | 1 | 19 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 373 | 1 | 18 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 367 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 362 | 1 | 17 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 314 | 1 | 15 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 292 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 287 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 213 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 213 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 149 | 1 | 7 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 85 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 85 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 48 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 27 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 16 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | E | W |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 11.9 | 12.3 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:04 | 0:02 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 25 | 14 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 571 | 571 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |



Signal Warrants Report For Intersection 23: 42nd Ave/PA 13.1 Access 2

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | No |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S, N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|----|
| | E | W | S | N |
| 1 | 272 | 206 | 0 | 14 |
| 2 | 264 | 200 | 0 | 14 |
| 3 | 258 | 196 | 0 | 13 |
| 4 | 242 | 183 | 0 | 12 |
| 5 | 215 | 163 | 0 | 11 |
| 6 | 212 | 161 | 0 | 11 |
| 7 | 209 | 159 | 0 | 11 |
| 8 | 190 | 144 | 0 | 10 |
| 9 | 188 | 142 | 0 | 10 |
| 10 | 185 | 140 | 0 | 10 |
| 11 | 160 | 122 | 0 | 8 |
| 12 | 150 | 113 | 0 | 8 |
| 13 | 147 | 111 | 0 | 8 |
| 14 | 109 | 82 | 0 | 6 |
| 15 | 109 | 82 | 0 | 6 |
| 16 | 76 | 58 | 0 | 4 |
| 17 | 44 | 33 | 0 | 2 |
| 18 | 44 | 33 | 0 | 2 |
| 19 | 24 | 19 | 0 | 1 |
| 20 | 14 | 10 | 0 | 1 |
| 21 | 8 | 6 | 0 | 0 |
| 22 | 3 | 2 | 0 | 0 |
| 23 | 3 | 2 | 0 | 0 |
| 24 | 3 | 2 | 0 | 0 |



Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 2 | 478 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 2 | 2 | 464 | 1 | 14 | No | No | No | No | No | No | No | No | No | No |
| 3 | 2 | 454 | 1 | 13 | No | No | No | No | No | No | No | No | No | No |
| 4 | 2 | 425 | 1 | 12 | No | No | No | No | No | No | No | No | No | No |
| 5 | 2 | 378 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 6 | 2 | 373 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 7 | 2 | 368 | 1 | 11 | No | No | No | No | No | No | No | No | No | No |
| 8 | 2 | 334 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 9 | 2 | 330 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 10 | 2 | 325 | 1 | 10 | No | No | No | No | No | No | No | No | No | No |
| 11 | 2 | 282 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 12 | 2 | 263 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 13 | 2 | 258 | 1 | 8 | No | No | No | No | No | No | No | No | No | No |
| 14 | 2 | 191 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 15 | 2 | 191 | 1 | 6 | No | No | No | No | No | No | No | No | No | No |
| 16 | 2 | 134 | 1 | 4 | No | No | No | No | No | No | No | No | No | No |
| 17 | 2 | 77 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 18 | 2 | 77 | 1 | 2 | No | No | No | No | No | No | No | No | No | No |
| 19 | 2 | 43 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 20 | 2 | 24 | 1 | 1 | No | No | No | No | No | No | No | No | No | No |
| 21 | 2 | 14 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 22 | 2 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 23 | 2 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| 24 | 2 | 5 | 1 | 0 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Warrant 3 Condition A

| Orientation | S | N |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 11.9 | 11.6 |
| Number of Lanes on Minor Street Approach | 1 | 1 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:00 | 0:02 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 0 | 14 |
| High Minor Volume Condition Met | No | No |
| Total Entering Volume on All Approaches During Same Hour | 492 | 492 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | No | No |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |

Signal Warrants Report For Intersection 12: 48th Avenue/Fultondale Street

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | Yes |
| #2 | Four Hour Vehicular Volume | Yes |
| #3 | Peak Hour | Yes |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | N, S |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|-----|---------------|-----|
| | E | W | N | S |
| 1 | 470 | 893 | 52 | 250 |
| 2 | 456 | 866 | 50 | 243 |
| 3 | 447 | 848 | 49 | 238 |
| 4 | 418 | 795 | 46 | 223 |
| 5 | 371 | 705 | 41 | 198 |
| 6 | 367 | 697 | 41 | 195 |
| 7 | 362 | 688 | 40 | 193 |
| 8 | 329 | 625 | 36 | 175 |
| 9 | 324 | 616 | 36 | 173 |
| 10 | 320 | 607 | 35 | 170 |
| 11 | 277 | 527 | 31 | 148 |
| 12 | 259 | 491 | 29 | 138 |
| 13 | 254 | 482 | 28 | 135 |
| 14 | 188 | 357 | 21 | 100 |
| 15 | 188 | 357 | 21 | 100 |
| 16 | 132 | 250 | 15 | 70 |
| 17 | 75 | 143 | 8 | 40 |
| 18 | 75 | 143 | 8 | 40 |
| 19 | 42 | 80 | 5 | 23 |
| 20 | 24 | 45 | 3 | 13 |
| 21 | 14 | 27 | 2 | 8 |
| 22 | 5 | 9 | 1 | 3 |
| 23 | 5 | 9 | 1 | 3 |
| 24 | 5 | 9 | 1 | 3 |

Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 5 | 1363 | 4 | 250 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2 | 5 | 1322 | 4 | 243 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| 3 | 5 | 1295 | 4 | 238 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| 4 | 5 | 1213 | 4 | 223 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| 5 | 5 | 1076 | 4 | 198 | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| 6 | 5 | 1064 | 4 | 195 | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| 7 | 5 | 1050 | 4 | 193 | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| 8 | 5 | 954 | 4 | 175 | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | No |
| 9 | 5 | 940 | 4 | 173 | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | No |
| 10 | 5 | 927 | 4 | 170 | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | No |
| 11 | 5 | 804 | 4 | 148 | No | No | Yes | Yes | No | Yes | Yes | Yes | No | No |
| 12 | 5 | 750 | 4 | 138 | No | No | No | Yes | No | Yes | Yes | Yes | No | No |
| 13 | 5 | 736 | 4 | 135 | No | No | No | Yes | No | Yes | Yes | Yes | No | No |
| 14 | 5 | 545 | 4 | 100 | No | No | No | No | No | No | No | Yes | No | No |
| 15 | 5 | 545 | 4 | 100 | No | No | No | No | No | No | No | Yes | No | No |
| 16 | 5 | 382 | 4 | 70 | No | No | No | No | No | No | No | No | No | No |
| 17 | 5 | 218 | 4 | 40 | No | No | No | No | No | No | No | No | No | No |
| 18 | 5 | 218 | 4 | 40 | No | No | No | No | No | No | No | No | No | No |
| 19 | 5 | 122 | 4 | 23 | No | No | No | No | No | No | No | No | No | No |
| 20 | 5 | 69 | 4 | 13 | No | No | No | No | No | No | No | No | No | No |
| 21 | 5 | 41 | 4 | 8 | No | No | No | No | No | No | No | No | No | No |
| 22 | 5 | 14 | 4 | 3 | No | No | No | No | No | No | No | No | No | No |
| 23 | 5 | 14 | 4 | 3 | No | No | No | No | No | No | No | No | No | No |
| 24 | 5 | 14 | 4 | 3 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 4 | 10 | 11 | 13 | 10 | 13 | 13 | 15 | 7 | 1 |

Warrant 3 Condition A

| Orientation | N | S |
|--|------------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 45.7 | 81.8 |
| Number of Lanes on Minor Street Approach | 2 | 4 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 0:39 | 5:40 |
| Delay Condition Met | No | Yes |
| Volume on Minor Street Approach During Same Hour | 52 | 250 |
| High Minor Volume Condition Met | No | Yes |
| Total Entering Volume on All Approaches During Same Hour | 1665 | 1665 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | Yes | Yes |
| Warrant Met for Approach | No | Yes |
| Warrant Met for Intersection | Yes | |

Signal Warrants Report For Intersection 16: 42nd Avenue/Denali Boulevard

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | No |
| #2 | Four Hour Vehicular Volume | Yes |
| #3 | Peak Hour | No |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S, N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|----|---------------|-----|
| | E | W | S | N |
| 1 | 124 | 82 | 501 | 538 |
| 2 | 120 | 80 | 486 | 522 |
| 3 | 118 | 78 | 476 | 511 |
| 4 | 110 | 73 | 446 | 479 |
| 5 | 98 | 65 | 396 | 425 |
| 6 | 97 | 64 | 391 | 420 |
| 7 | 95 | 63 | 386 | 414 |
| 8 | 87 | 57 | 351 | 377 |
| 9 | 86 | 57 | 346 | 371 |
| 10 | 84 | 56 | 341 | 366 |
| 11 | 73 | 48 | 296 | 317 |
| 12 | 68 | 45 | 276 | 296 |
| 13 | 67 | 44 | 271 | 291 |
| 14 | 50 | 33 | 200 | 215 |
| 15 | 50 | 33 | 200 | 215 |
| 16 | 35 | 23 | 140 | 151 |
| 17 | 20 | 13 | 80 | 86 |
| 18 | 20 | 13 | 80 | 86 |
| 19 | 11 | 7 | 45 | 48 |
| 20 | 6 | 4 | 25 | 27 |
| 21 | 4 | 2 | 15 | 16 |
| 22 | 1 | 1 | 5 | 5 |
| 23 | 1 | 1 | 5 | 5 |
| 24 | 1 | 1 | 5 | 5 |

Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 3 | 206 | 4 | 538 | No | No | No | No | No | No | No | No | Yes | No |
| 2 | 3 | 200 | 4 | 522 | No | No | No | No | No | No | No | No | Yes | No |
| 3 | 3 | 196 | 4 | 511 | No | No | No | No | No | No | No | No | Yes | No |
| 4 | 3 | 183 | 4 | 479 | No | No | No | No | No | No | No | No | Yes | No |
| 5 | 3 | 163 | 4 | 425 | No | No | No | No | No | No | No | No | No | No |
| 6 | 3 | 161 | 4 | 420 | No | No | No | No | No | No | No | No | No | No |
| 7 | 3 | 158 | 4 | 414 | No | No | No | No | No | No | No | No | No | No |
| 8 | 3 | 144 | 4 | 377 | No | No | No | No | No | No | No | No | No | No |
| 9 | 3 | 143 | 4 | 371 | No | No | No | No | No | No | No | No | No | No |
| 10 | 3 | 140 | 4 | 366 | No | No | No | No | No | No | No | No | No | No |
| 11 | 3 | 121 | 4 | 317 | No | No | No | No | No | No | No | No | No | No |
| 12 | 3 | 113 | 4 | 296 | No | No | No | No | No | No | No | No | No | No |
| 13 | 3 | 111 | 4 | 291 | No | No | No | No | No | No | No | No | No | No |
| 14 | 3 | 83 | 4 | 215 | No | No | No | No | No | No | No | No | No | No |
| 15 | 3 | 83 | 4 | 215 | No | No | No | No | No | No | No | No | No | No |
| 16 | 3 | 58 | 4 | 151 | No | No | No | No | No | No | No | No | No | No |
| 17 | 3 | 33 | 4 | 86 | No | No | No | No | No | No | No | No | No | No |
| 18 | 3 | 33 | 4 | 86 | No | No | No | No | No | No | No | No | No | No |
| 19 | 3 | 18 | 4 | 48 | No | No | No | No | No | No | No | No | No | No |
| 20 | 3 | 10 | 4 | 27 | No | No | No | No | No | No | No | No | No | No |
| 21 | 3 | 6 | 4 | 16 | No | No | No | No | No | No | No | No | No | No |
| 22 | 3 | 2 | 4 | 5 | No | No | No | No | No | No | No | No | No | No |
| 23 | 3 | 2 | 4 | 5 | No | No | No | No | No | No | No | No | No | No |
| 24 | 3 | 2 | 4 | 5 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |

Warrant 3 Condition A

| Orientation | S | N |
|--|-----------|------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 24.5 | 20.7 |
| Number of Lanes on Minor Street Approach | 4 | 4 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 3:24 | 3:05 |
| Delay Condition Met | No | No |
| Volume on Minor Street Approach During Same Hour | 501 | 538 |
| High Minor Volume Condition Met | Yes | Yes |
| Total Entering Volume on All Approaches During Same Hour | 1245 | 1245 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | Yes | Yes |
| Warrant Met for Approach | No | No |
| Warrant Met for Intersection | No | |

Signal Warrants Report For Intersection 5: 48th Avenue/Denali Boulevard

Warrants Summary

| Warrant | Name | Met? |
|---------|-----------------------------|------|
| #1 | Eight Hour Vehicular Volume | Yes |
| #2 | Four Hour Vehicular Volume | Yes |
| #3 | Peak Hour | Yes |

Intersection Warrants Parameters

| | |
|---------------------|------|
| Major Approaches | E, W |
| Minor Approaches | S, N |
| Speed > 40mph | No |
| Population < 10,000 | No |
| Warrant Factor | 100% |

Warrant Analysis Traffic Volumes

| Hour | Major Streets | | Minor Streets | |
|------|---------------|------|---------------|-----|
| | E | W | S | N |
| 1 | 1122 | 1182 | 459 | 612 |
| 2 | 1088 | 1147 | 445 | 594 |
| 3 | 1066 | 1123 | 436 | 581 |
| 4 | 999 | 1052 | 409 | 545 |
| 5 | 886 | 934 | 363 | 483 |
| 6 | 875 | 922 | 358 | 477 |
| 7 | 864 | 910 | 353 | 471 |
| 8 | 785 | 827 | 321 | 428 |
| 9 | 774 | 816 | 317 | 422 |
| 10 | 763 | 804 | 312 | 416 |
| 11 | 662 | 697 | 271 | 361 |
| 12 | 617 | 650 | 252 | 337 |
| 13 | 606 | 638 | 248 | 330 |
| 14 | 449 | 473 | 184 | 245 |
| 15 | 449 | 473 | 184 | 245 |
| 16 | 314 | 331 | 129 | 171 |
| 17 | 180 | 189 | 73 | 98 |
| 18 | 180 | 189 | 73 | 98 |
| 19 | 101 | 106 | 41 | 55 |
| 20 | 56 | 59 | 23 | 31 |
| 21 | 34 | 35 | 14 | 18 |
| 22 | 11 | 12 | 5 | 6 |
| 23 | 11 | 12 | 5 | 6 |
| 24 | 11 | 12 | 5 | 6 |

Warrant Analysis by Hour

| Hour | Major Streets | | Minor Street | | Warrant 1 Condition A | | | | Warrant 1 Condition B | | | | Warrant 2 | Warrant 3 |
|-----------|---------------|--------|--------------|--------|-----------------------|-----|-----|-----|-----------------------|-----|-----|-----|-----------|-------------|
| | Number | Volume | Number | Volume | 100% | 80% | 70% | 56% | 100% | 80% | 70% | 56% | | Condition B |
| 1 | 6 | 2304 | 4 | 612 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2 | 6 | 2235 | 4 | 594 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 3 | 6 | 2189 | 4 | 581 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 4 | 6 | 2051 | 4 | 545 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 5 | 6 | 1820 | 4 | 483 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 6 | 6 | 1797 | 4 | 477 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 7 | 6 | 1774 | 4 | 471 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 8 | 6 | 1612 | 4 | 428 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 9 | 6 | 1590 | 4 | 422 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 10 | 6 | 1567 | 4 | 416 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 11 | 6 | 1359 | 4 | 361 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 12 | 6 | 1267 | 4 | 337 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 13 | 6 | 1244 | 4 | 330 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 14 | 6 | 922 | 4 | 245 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| 15 | 6 | 922 | 4 | 245 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| 16 | 6 | 645 | 4 | 171 | No | Yes | Yes | Yes | No | No | Yes | Yes | No | No |
| 17 | 6 | 369 | 4 | 98 | No | No | No | No | No | No | No | No | No | No |
| 18 | 6 | 369 | 4 | 98 | No | No | No | No | No | No | No | No | No | No |
| 19 | 6 | 207 | 4 | 55 | No | No | No | No | No | No | No | No | No | No |
| 20 | 6 | 115 | 4 | 31 | No | No | No | No | No | No | No | No | No | No |
| 21 | 6 | 69 | 4 | 18 | No | No | No | No | No | No | No | No | No | No |
| 22 | 6 | 23 | 4 | 6 | No | No | No | No | No | No | No | No | No | No |
| 23 | 6 | 23 | 4 | 6 | No | No | No | No | No | No | No | No | No | No |
| 24 | 6 | 23 | 4 | 6 | No | No | No | No | No | No | No | No | No | No |
| Hours Met | | | | | 15 | 16 | 16 | 16 | 15 | 15 | 16 | 16 | 15 | 13 |

Warrant 3 Condition A

| Orientation | S | N |
|--|------------|--------|
| Total Stopped Delay Per Vehicle on Minor Approach (s) | 6738.4 | 5101.5 |
| Number of Lanes on Minor Street Approach | 5 | 4 |
| VehicleHours of Stopped Delay on Minor Approach (h:mm) | 859:08 | 867:14 |
| Delay Condition Met | Yes | Yes |
| Volume on Minor Street Approach During Same Hour | 459 | 612 |
| High Minor Volume Condition Met | Yes | Yes |
| Total Entering Volume on All Approaches During Same Hour | 3375 | 3375 |
| Number of Approaches on Intersection | 4 | 4 |
| Total Volume Condition Met | Yes | Yes |
| Warrant Met for Approach | Yes | Yes |
| Warrant Met for Intersection | Yes | |