# Antelope Ridge at Bull Hill Phase 1
# Traffic Impact Study
# PUDSP255

***Prepared for:***

El Paso County, CO

***Prepared by:***


Matrix
Excellence by Design

2435 Research Parkway, Suite 300
Colorado Springs, CO 80920

Contact: MaríaAngélica Deeb, PE, PTOE, PTP, RSP1, ENV SP


***On Behalf of:***

The Landhuis Company
212 N. Wahsatch Avenue, Suite 301
Colorado Springs, CO 80903

**May 26, 2026**

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**On Behalf of**: The Landhuis Company
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Colorado Springs, CO 80903

**Traffic Engineer's Statement**

The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

_____ _____

*MaríaAngélica Deeb, PE, PTOE, PTP, RSP1, ENV SP* Date

**Developer's Statement**

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

_____ _____

*Jeff Mark, President* Date

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# Executive Summary

**Project Description**

The Rolling Meadows/Bull Hill development (hereafter referred to as "the project" or "RMBH") is a 1,136.9-acre mixed-use project located at the southeast corner of Colorado Springs in unincorporated El Paso County. It is bounded by Drennan Road to the north, Fontaine Boulevard to the south, and Meridian Road to the east. Rolling Meadows will be located north of Bradley Road, while Bull Hill will be located to the south. The project will include 4,607 single-family detached residences, 840 multi-family residences, three elementary schools, and one middle school. At full buildout, RMBH is projected to generate approximately 47,500 daily trips. Completion is expected by the year 2035.

Antelope Ridge at Bull Hill (Phase 1 of the project) will include 472 single-family units located south of Bradley Road. A future north–south collector roadway is planned approximately 3,800 feet west of Meridian Road and will run through this phase. Phase 1 is expected to generate approximately 4,200 daily trips, with a planned buildout year of 2028.

**Study Area**

Eleven intersections were selected for analysis of existing and background traffic conditions, in coordination with the Colorado Department of Transportation (CDOT), El Paso County (EPC), and the City of Colorado Springs (CCS). The distance from the southernmost intersection (Marksheffel Road/Fontaine Boulevard) to the northernmost intersection (SH-24/SH-94) is approximately 8 miles. The distance between the westernmost intersection (Powers Boulevard/Milton E. Proby Parkway) and the easternmost intersection (Meridian Road/Bradley Road) is approximately 7 miles. In addition to the key intersections, 20 intersections internal to RMBH or intersecting major roadways were studied to assess impacts across the full development (a total of 31 intersections). For Phase 1, six additional intersections were analyzed (a total of 17 intersections). Intersection configurations, turn lane requirements, and roadway classifications were determined for the 2028 phase year, the 2035 buildout year, and the 2045 long-range planning horizon.

**Growth**

The study area is experiencing rapid growth, with several large-scale developments planned in the surrounding area. These include Bradley Heights, Lorson Ranch Commercial South, The Village at Lorson Ranch, Corvallis, Reagan Ranch, Crossroads North, Crossroads Mixed-Use, Meadow Brook Park, The Trails at Aspen Ridge, and the Karmen Line (Norris Ranch) development. Matrix included traffic from these developments and applied appropriate growth factors to the collected count data after coordination with the reviewing agencies to estimate background traffic for the 2028, 2035, and 2055 scenarios. It was assumed that all developments, except for Karmen Line, would be completed by 2035. Karmen Line traffic was included in the 2055 horizon year analysis only. For the 2028 Phase 1 background analysis, it was assumed that 30 percent of each adjacent development would be built by 2028, except for the Karmen Line development. Daily traffic volumes from **adjacent developments** were evaluated conservatively, without applying reductions for internal capture or pass-by trips. However, for AM and PM peak hour conditions, trip generation estimates were adjusted in accordance with the assumptions of their respective approved traffic studies. In addition to accounting for adjacent developments, appropriate growth factors were applied to the collected counts to reflect overall traffic growth.

Matrix also compared its estimated daily trips with projections from the Pikes Peak Area Council of Governments (PPACG) 2050 travel demand model. Results for roadways near the project generally aligned with the 1 percent annual growth rate tolerance used in this study. For purposes of this TIS, Phase I will be buildout in 2028 and RMBH will be buildout in 2035.

**Criteria**

This study followed guidelines from the CDOT State Highway Access Code (SHAC), the El Paso County Engineering Criteria Manual (ECM), the City of Colorado Springs Traffic Criteria Manual (TCM), and the Highway Capacity Manual (HCM) 7th Edition.

**Recommendations for Phase 1 - Buildout Year (2028)**

Intersection configurations, turn lane requirements, and roadway classifications were identified for the Phase 1 buildout (2028) year. The required improvements for the buildout year (2028) are in respect that the improvements in the existing conditions have been met. The developer acknowledges the improvements required as a direct result of their project and is willing to take responsibility for them. This includes either constructing the improvements or reimbursing the county for the associated costs.

However, deficiencies in existing conditions of the current road system that are not related to the project itself will not be the sole responsibility of the developer. Instead, these deficiencies may be addressed by the County, developer and/or other parties prior to development, and the costs will be shared among adjacent developments and the municipality that owns the facility, as mutually agreed upon. Cost recovery could also be an option from future developments.

For required improvements in the existing conditions see Table 3. A summary of the recommended improvements in the year 2028 is as follows:

**Powers Boulevard/Fontaine Boulevard (#1)**

- A 175-ft extension of southbound left-turn lane.
- A 150-ft extension of eastbound left-turn lane.
- A 305-ft extension of westbound left-turn lane.
- A 150-ft extension of eastbound right-turn to southbound thru acceleration lane.

**Marksheffel Road/Fontaine Boulevard (#2)**

- A 105-ft extension of eastbound right-turn lane.

**Powers Boulevard/Bradley Road (#4)**

- A 185-ft extension of southbound left-turn lane.

**Powers Boulevard/Milton E Proby Parkway (#7)**

- A 95-ft extension of northbound left-turn lane.
- A 10-ft extension of westbound left-turn lane.

**Highway-24/Highway-94 (#10)**

- A 70-ft extension of northbound left-turn (US-94) lane.

**Highway-94/Marksheffel Road (#11)**

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

**Bradley Road/Rolling Meadows Parkway (#49)**

- A 515-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 200-ft of storage lane.
- A 435-ft eastbound right-turn lane. Include 200-ft of taper and 235-ft of deceleration lane.
- A 485-ft westbound left-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 50-ft of storage.

**Rolling Meadows Parkway /Calf Creek Drive (#60)**

- A 385-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 70-ft of storage.

**Rolling Meadows Parkway / Echoing Grass Way (#61)**

- A 365-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.

**Prairie Song Drive/ Hoof Hollow Place(#63)**

- A 365-ft eastbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.

**Recommendations for the RMBH Buildout Year (2035)**

Intersection configurations, turn lane requirements, and roadway classifications were identified for the 2035, and 2045 scenarios. A total of 31 intersections and a large transportation network were evaluated. Detailed recommendations are provided in the corresponding sections of the report and including them all in the executive summary would make this section overly lengthy. Therefore, this summary focuses on one key finding that warrant additional attention in the year 2035 due to their complexity or potential impact.

***Bradley Road***

Although projected daily volumes along Bradley Road in 2035 exceed the threshold for a four-lane principal arterial, Matrix concluded in this study that a four-lane configuration will adequately accommodate traffic without any operational deficiencies. Additionally, a planned future connection between Meridian Road and Mesa Ridge Parkway may divert some demand away from Bradley Road and alleviate the daily traffic on this roadway. Therefore, Matrix recommends that Bradley Road be constructed in accordance with the City of Colorado Springs' standards for a four-lane principal arterial. Note that daily traffic volumes from adjacent developments were evaluated conservatively, without applying reductions for internal capture or pass-by capture. As a result, daily traffic on this roadway may be lower than the estimates derived from the ITE Trip Generation Manual for the adjacent developments.

***US-94 and Marksheffel Road***

This intersection is expected to operate at LOS F during the AM peak and LOS D during the PM peak in 2035, even with Marksheffel Road modeled as a six-lane roadway and US-94 as a four-lane roadway with dual left-turn lanes on all approaches. CDOT directed the inclusion of this intersection to evaluate its performance both with and without project traffic in this study. Given the broader trip distribution assumed for external development traffic, many of these trips would likely be intra-zonal or limited to

adjacent TAZs. A sensitivity analysis was conducted to assess potential internal capture effects. Due to the proximity of Reagan Ranch, Crossroads North, and the Crossroads Mixed-Use developments to this intersection, they were excluded from the sensitivity analysis, and their traffic volumes remained unchanged. Results showed that if 88.5% of trips from the remaining developments are assumed not to reach this intersection, it would operate at LOS D during the AM peak hour. It appears that a grade-separated interchange should be considered as a long-term solution at this location.

**Report Organization**

This study first analyzes traffic conditions for the existing year, buildout year (2035), and 30-year planning horizon (2055) for the entire development (RMBH). It then focuses on Phase 1 impacts projected for the year 2028 (Antelope Ridge at Bull Hill). Traffic operations, turn lane requirements, and roadway classifications are provided for each scenario. The project's roadway impact fee is also provided in this study.

# 1. Introduction

The Rolling Meadows/Bull Hill project (project) is a 1,136.9-acre development located in southern El Paso County. The project consists of 4,607 single-family residences, 840 multi-family residences, three elementary schools and one middle school.

The project will be constructed on vacant land and lies on the west side of Meridian Road, bounded on the north by Drennan Road and bounded on the south by Fontaine Boulevard.

Antelope Ridge at Bull Hill (Phase 1) is a residential development located to the south of Bradley Road, on both sides of a future north-south collector road which will be constructed approximately 3,800-ft west of Meridian Road. This phase encompasses a total of 472 single-family detached dwelling units. Figure 1 shows the vicinity map and the location of the project.

The purpose of this master traffic impact study is to assess the effects this proposed development will have on the surrounding transportation system. Moreover, a traffic study for the first phase of the project is provided to assess the buildout year traffic operations with the focus on this development. It is anticipated that the Antelope Ridge at Bull Hill (Phase 1) will be constructed by the end of 2028.

The report is organized as follows:

- ***Executive Summary –*** Describes the overall overview of the study findings and recommendations from the studies.
- ***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 developments and their location.
- ***Projected Traffic –*** Identifies the expected number of daily and peak hour trips that will be generated by the Rolling Meadows/Bull Hill development as well as the Antelope Ridge at Bull Hill development. The expected external trip distribution is also shown.
- ***Traffic Analysis –*** Analyzes the existing conditions in the study area, as well as the buildout year (2035) and horizon year (2055) conditions, both with and without the project, for Rolling Meadow/Bull Hill. It also analyzes the buildout year (2028) conditions, with and without the project, for Antelope Ridge at Bull Hill.
- ***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.

# 2. Area Conditions

This section describes the existing conditions and the planned level of improvements adjacent to the proposed development.

## 2.1 Site Accessibility

A brief overview of the location of the Rolling Meadows/Bull development and its surrounding transportation system is provided below.

Rolling Meadows is located north of Bradley Road and west of Meridian Road. The Bull Hill development lies directly south of Bradley Road, west of Meridian Road, and extends north of Fontaine Boulevard. The entire project consists of 4,607 single-family residences, 840 multi-family residences, three elementary schools and one middle school. Within the Bull Hill development, the Antelope Ridge (Phase 1), is located south of Bradley Road on both sides of a future north-south collector road which will be constructed approximately 3,800-ft west of Meridian Road. This phase encompasses a total of 472 single-family detached dwelling units. Figure 1 shows the vicinity map and the location of the project. The existing roadway system consists of the following transportation facilities:

**State Highway 21 (Powers Boulevard)** is a north-south facility that provides a 4-lane divided roadway. State Highway 21 is owned and maintained by CDOT. The speed limit on this roadway is 55 miles per-hour (mph). CDOT classifies this road as a principal arterial. The City of Colorado Springs classifies this road as a freeway in Major Thoroughfare Plan (MTP).

**State Highway 24 (SH-24) –** is an east-west facility which provides a 4-lane divided roadway. SH-24 is owned and maintained by CDOT. The speed limit is 55-mph on the eastbound and 65-mph on the westbound at the studied area. CDOT classifies this road as a principal arterial. City of Colorado Springs Major Thoroughfare plan classifies this roadway as an expressway.

**State Highway 94 (SH-94) –** is an east-west facility which intersects SH-24 at the studied area. SH-94 provides two lanes in each direction with a posted speed limit of 65 mph. This facility is owned and maintained by CDOT, and it is classified as a principal arterial. City of Colorado Springs classifies this roadway as an expressway.

**Marksheffel Road** is a north-south transportation facility and is a three-lane facility between Fontaine Boulevard and Bradley Road, and a 4-lane facility north of Bradley Road. Marksheffel Road provides a paved shoulder to accommodate cyclists. The City of Colorado Springs Major Thoroughfare Plan classifies this road as a principal arterial. The City of Colorado Springs has taken over the ownership and maintenance of this roadway.

**Fontaine Boulevard** is an east-west facility classified as a 4-lane minor arterial in the 2045 MTCP. Fontaine Boulevard is currently providing 2 lanes in each direction and a paved shoulder to accommodate cyclists. Fontaine Boulevard east of Marksheffel Road is owned and maintained by El Paso County and is classified as an urban minor arterial. The City of Colorado Springs classifies this road as a principal arterial.

**Meridian Road** is a north-south road that is classified as a 2-lane minor arterial south of Drennan Road in the 2045 MTCP. This road is a local road north of Drennan Road and a collector road between Bradley Road and Drennan Road. Meridian road is currently an unpaved transportation facility in the project area.

For the future roadway classification, Matrix used the urban design and standards for all roadways, including Meridian Road.

**Drennan Road** is an east-west road that provides one lane in each direction. Curb and gutter are not provided along Drennan Road, and there is no pedestrian sidewalk. The Colorado Springs Major Thoroughfare Plan classifies Drennan Road as a principal arterial between Marksheffel Road and Banning Lewis Parkway and minor arterial east of Marksheffel Road. El Paso County classifies this road as a rural major collector in unincorporated county areas. Drennan Road west of Mockingbird Lane is owned by the City of Colorado Springs. The posted speed limit on Drennan Road is 45 mph.

**Bradley Road** is an east–west roadway currently providing one lane in each direction. Opposing directions are separated by double yellow lines at the centerline. posted speed limit on Bradley Road is 45 mph west of Marksheffel Road and 50 mph east of Marksheffel Road. This study assumes that Bradley Road will be extended west of Powers Boulevard sometime after 2035, with the connection expected to be in place by the 2055 horizon year. Bradley Road is classified as a principal arterial in the Colorado Springs Major Thoroughfare Plan.

The study area is rapidly growing, and multiple large-scale developments are planned to be built in the future in the vicinity of the project. Namely, Bradley Heights, Lorson Ranch Commercial South, The Village at Lorson Ranch, Corvallis, Reagan Ranch, Crossroad North, Crossroads Mixed-Use, Meadow Brook Park, The Trial at Aspen Ridge and Karmen Line (Norris Ranch) Developments. In this study, Matrix aggregated the traffic that is expected to be generated by these developments and applied additional growth factors to collected counts to obtain the background traffic for the buildout (2035) a horizon (2055) year. It was assumed that all the adjacent development except for Karmen Line will be built by the year 2035. The traffic generated from the Karmen Line was added to the horizon (2055) conditions.

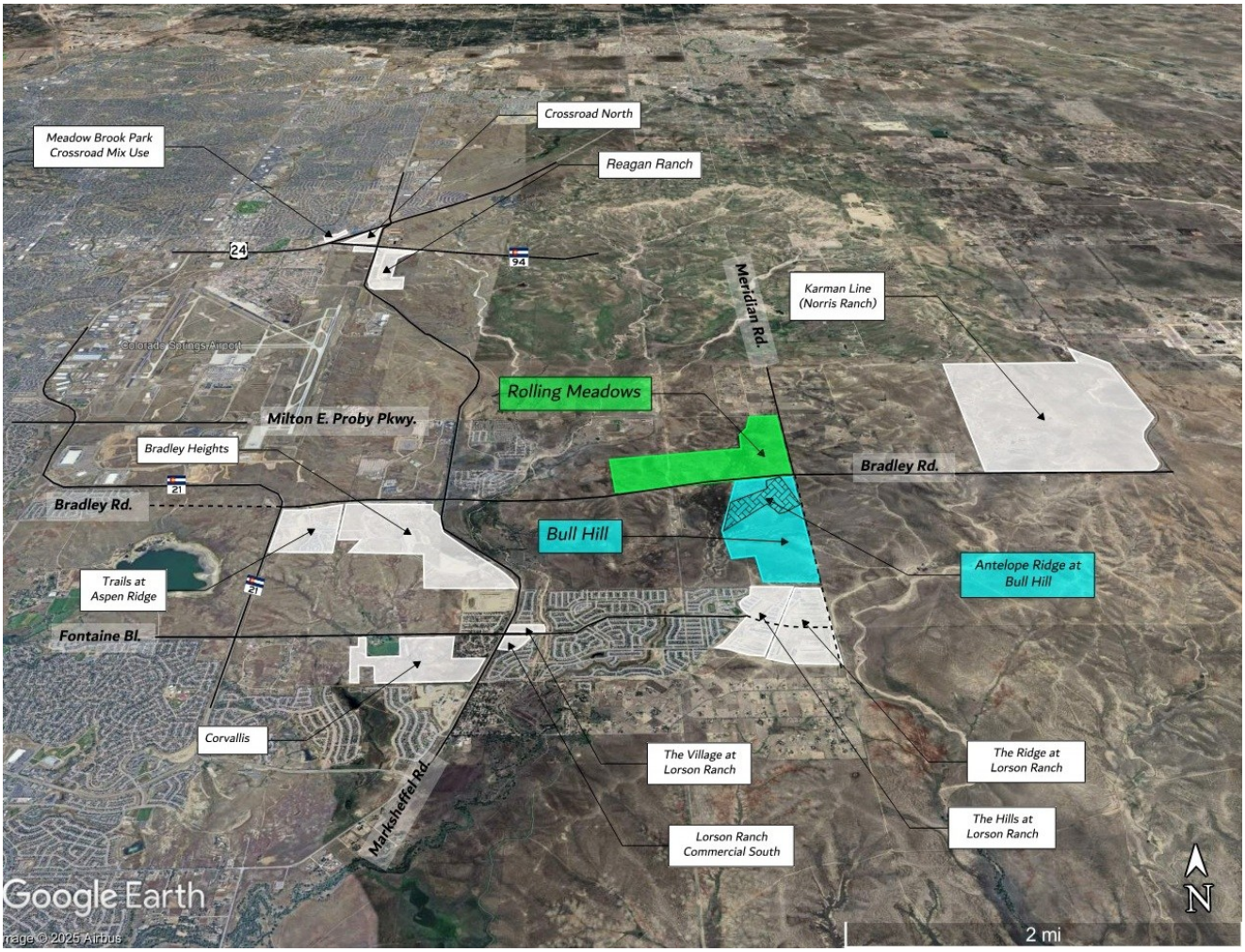
To study Phase 1 background traffic conditions, Matrix assumed that 30 percent of all adjacent developments would be completed by 2028. Consistent with the MTIS, additional growth factors were applied to background traffic volumes as appropriate.

Traffic counts were collected on November 19, 2024, to analyze existing and future conditions. Data collection focused on the intersections listed below, which were selected in coordination with CDOT, El Paso County, and the City of Colorado Springs. The existing traffic counts are provided in Appendix A – Traffic Counts. The existing conditions analysis focuses on the following intersections:

- SH-24/SH-94
- Marksheffel Road/SH-94
- Powers Boulevard (SH-21)/Milton E. Proby Parkway
- Marksheffel Road/Drennan Road
- Meridian Road/Drennan Road
- Marksheffel Road/Bradley Road
- Meridian Road/Bradley Road
- Marksheffel Road/Fontaine Boulevard
- Lamprey Drive/Fontaine Boulevard
- Powers Boulevard/Bradley Road
- Powers Boulevard/Fontaine Boulevard

The vicinity map is shown in Figure 1.

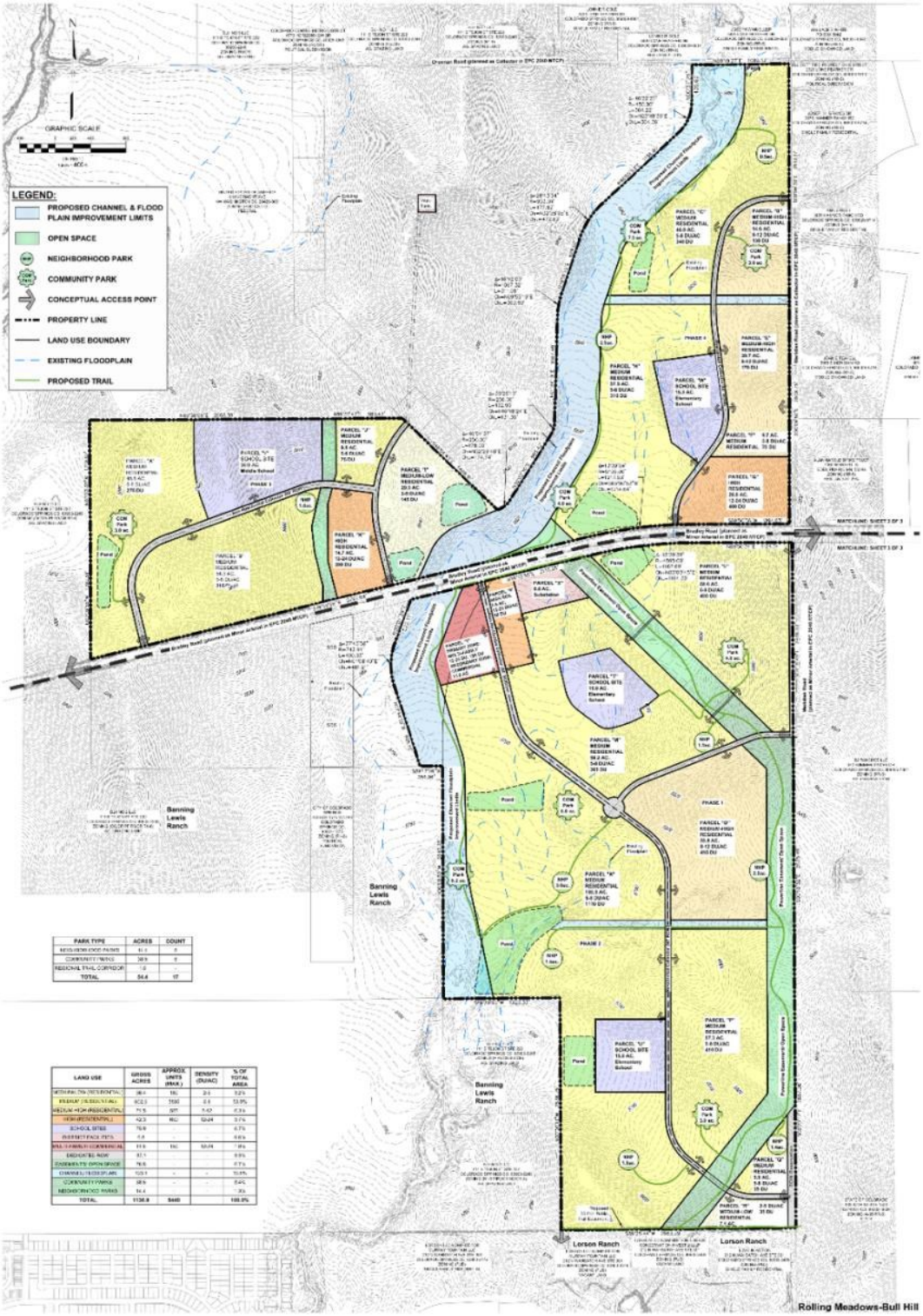
**Figure 1. Vicinity Map**




# 3. Proposed Development

The project will include 4,607 single-family residences, 840 multi-family residences, three elementary schools, and one middle school. A detailed breakdown of land use is provided in Table 3. The overall site plan for the development is presented in Figure 2. The study area is undergoing rapid growth, with several large-scale developments planned as shown in Figure 1, above. These developments include Bradley Heights, Lorson Ranch, Corvallis, Reagan Ranch, Trails at Aspen Ridge, Karmen Line, and Crossroads.

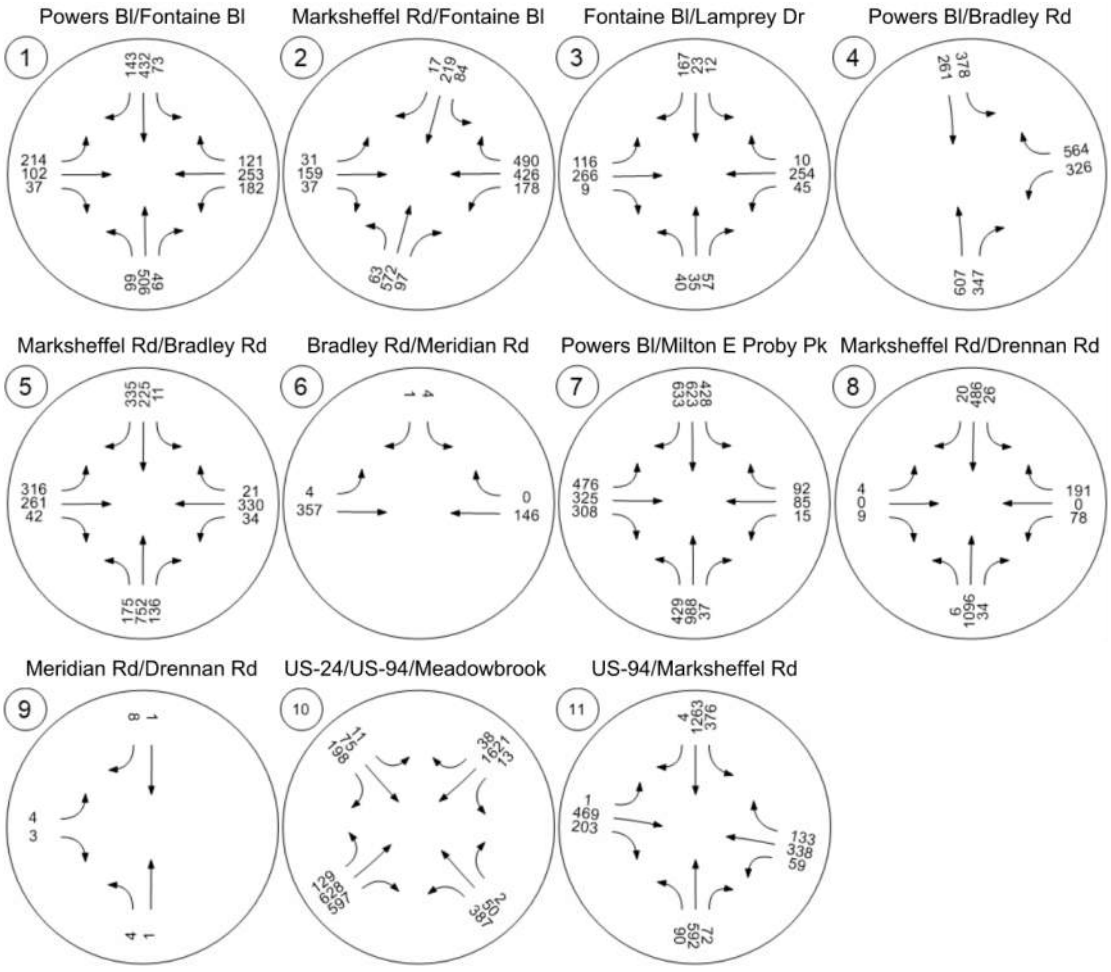
## Figure 2. Rolling Meadows/Bull Hill Site Plan



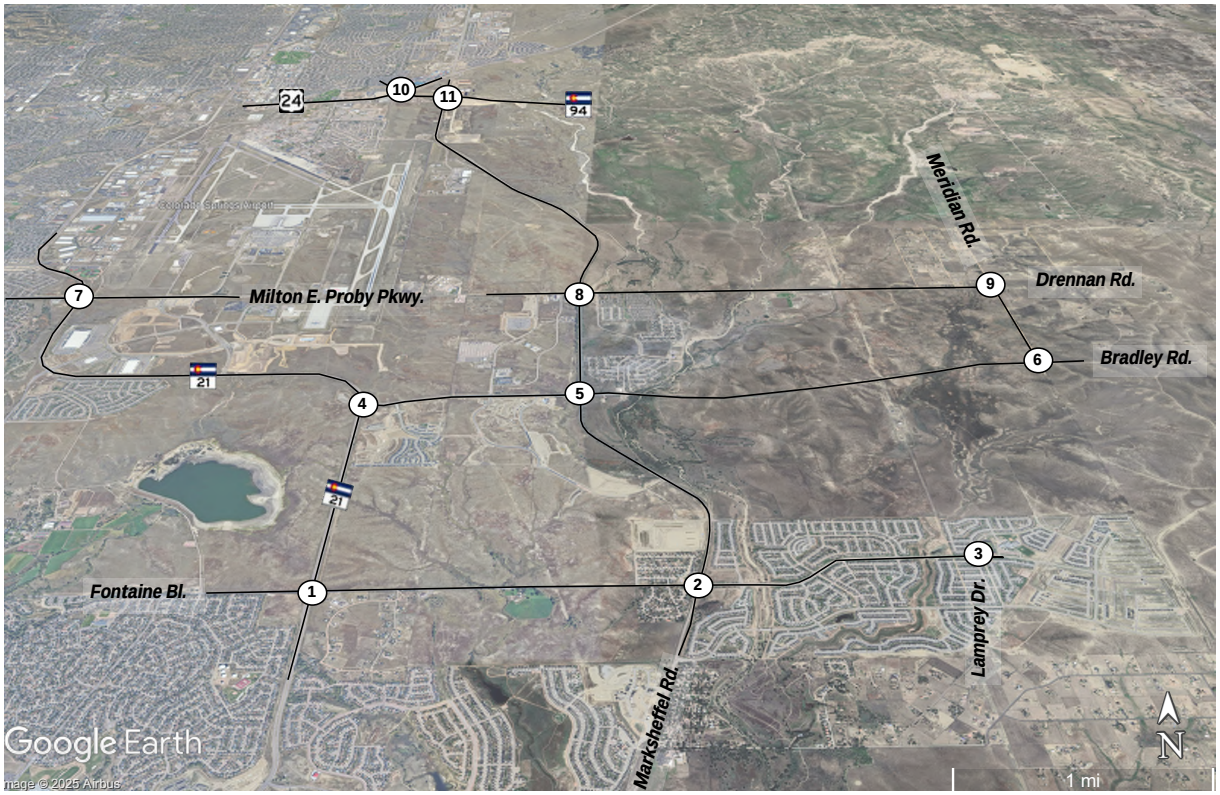

The AM and PM peak hour volumes at the studied intersections are shown in Figure 3 and Figure 4. The daily traffic volumes in the existing conditions are shown in Figure 5.

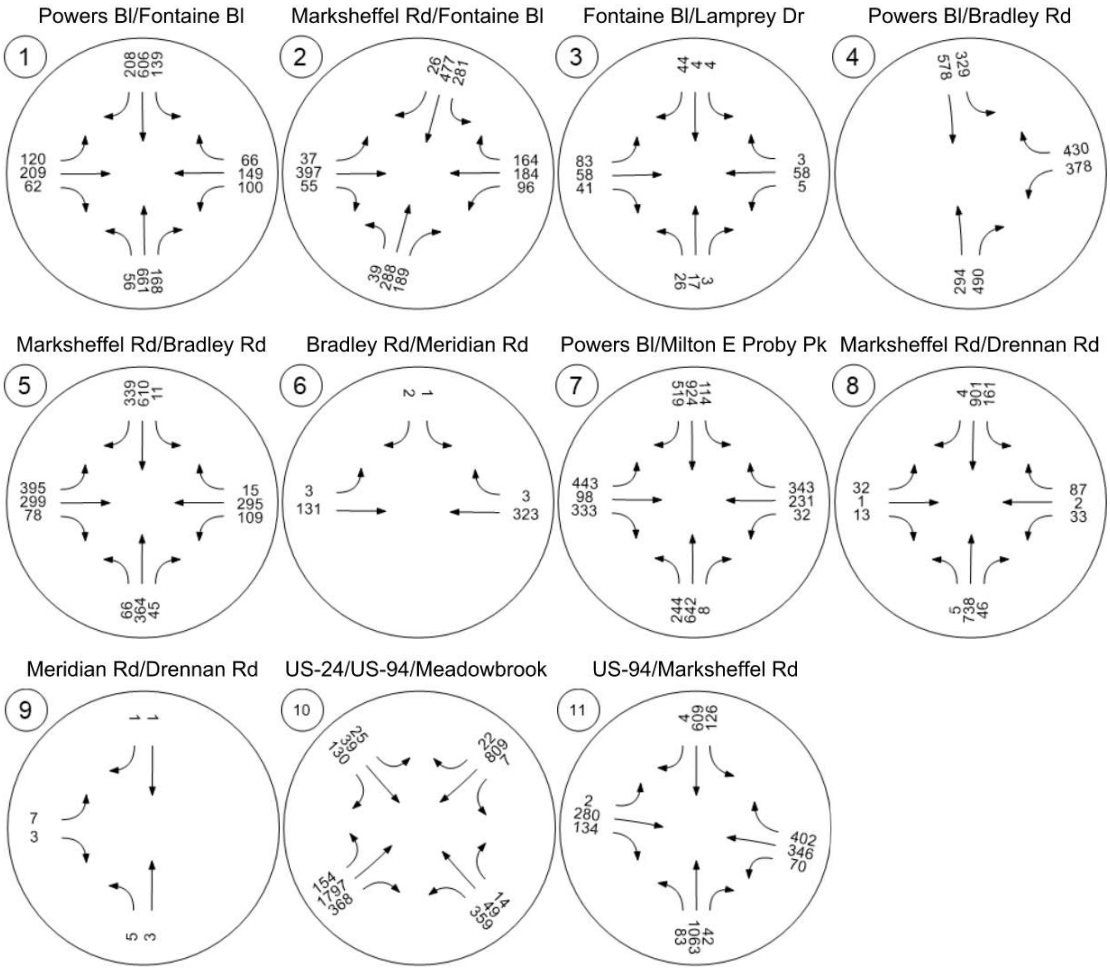
## Figure 3. Existing Traffic Volumes (AM Peak Hour)



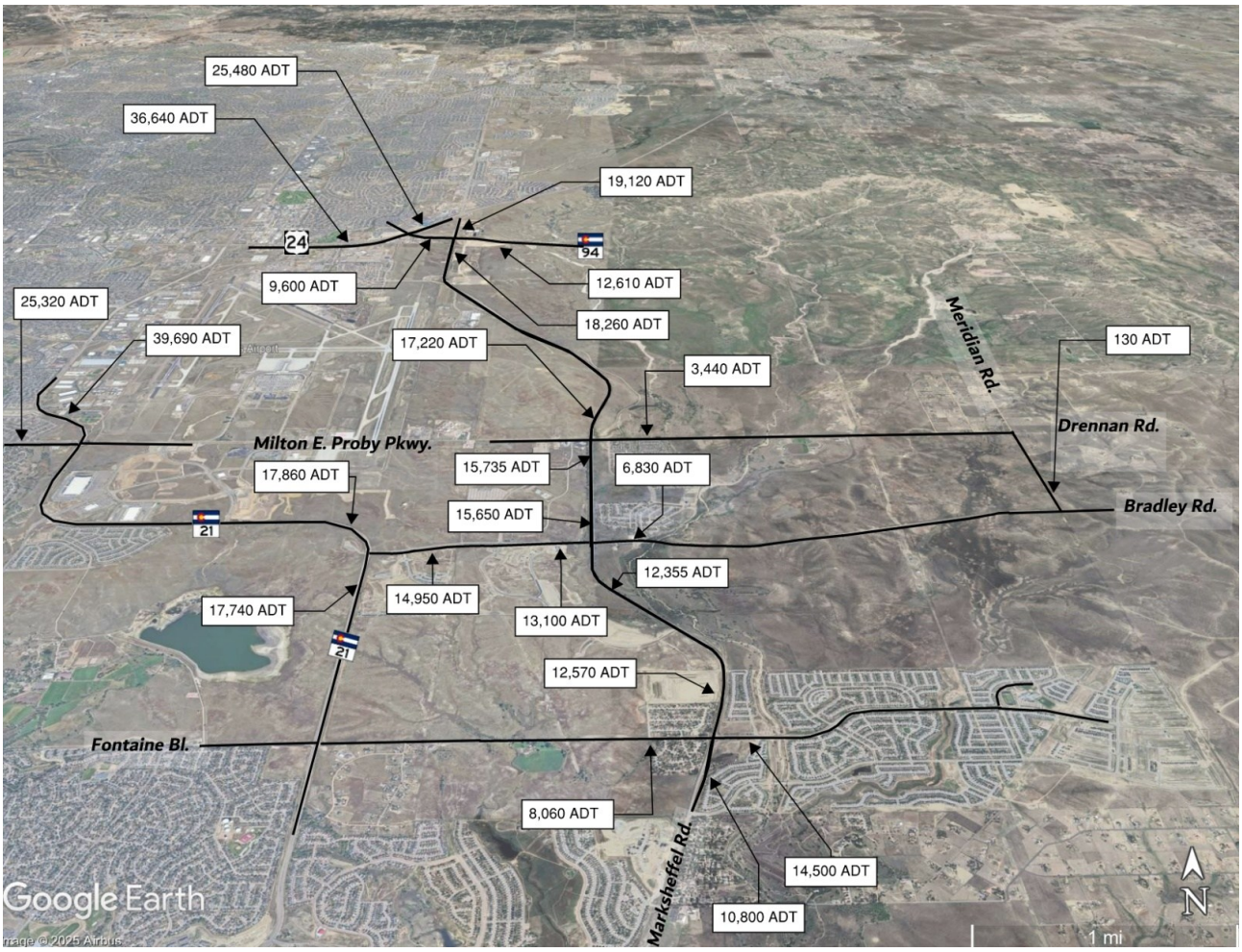



# Figure 4. Existing Traffic Volumes (PM Peak Hour)



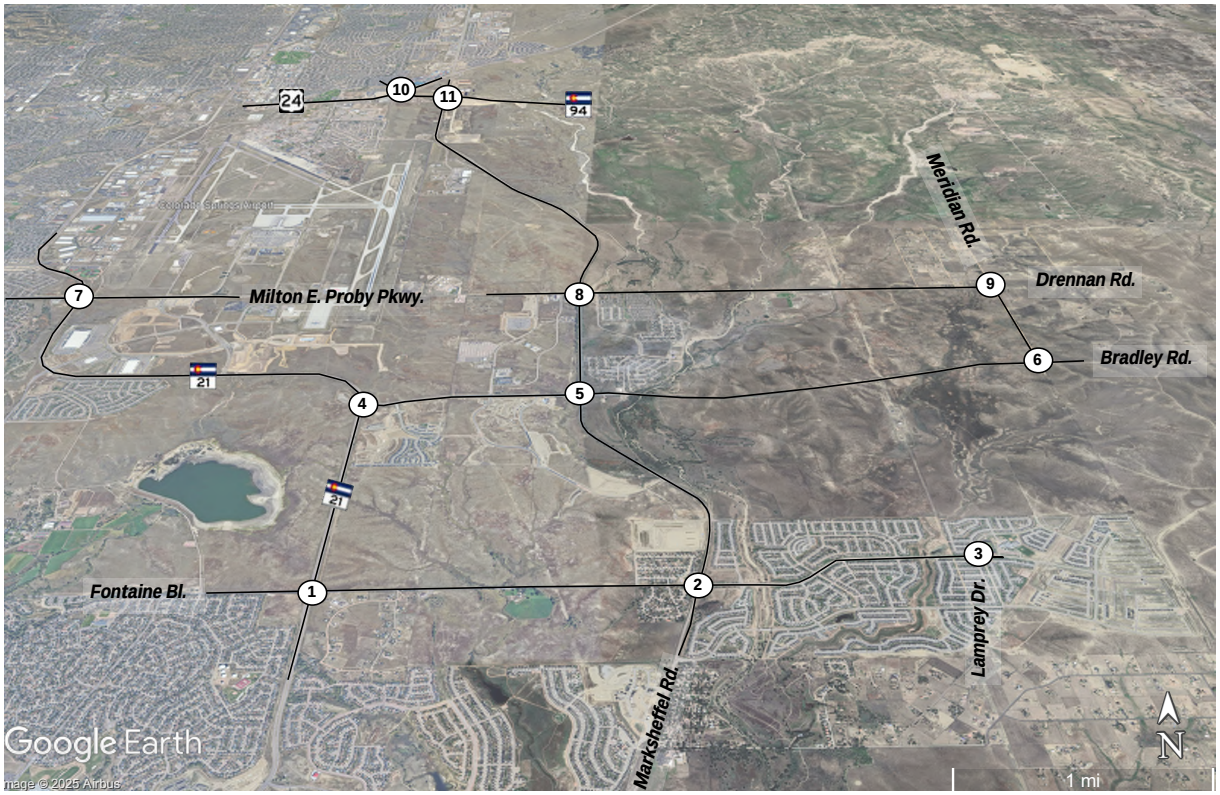



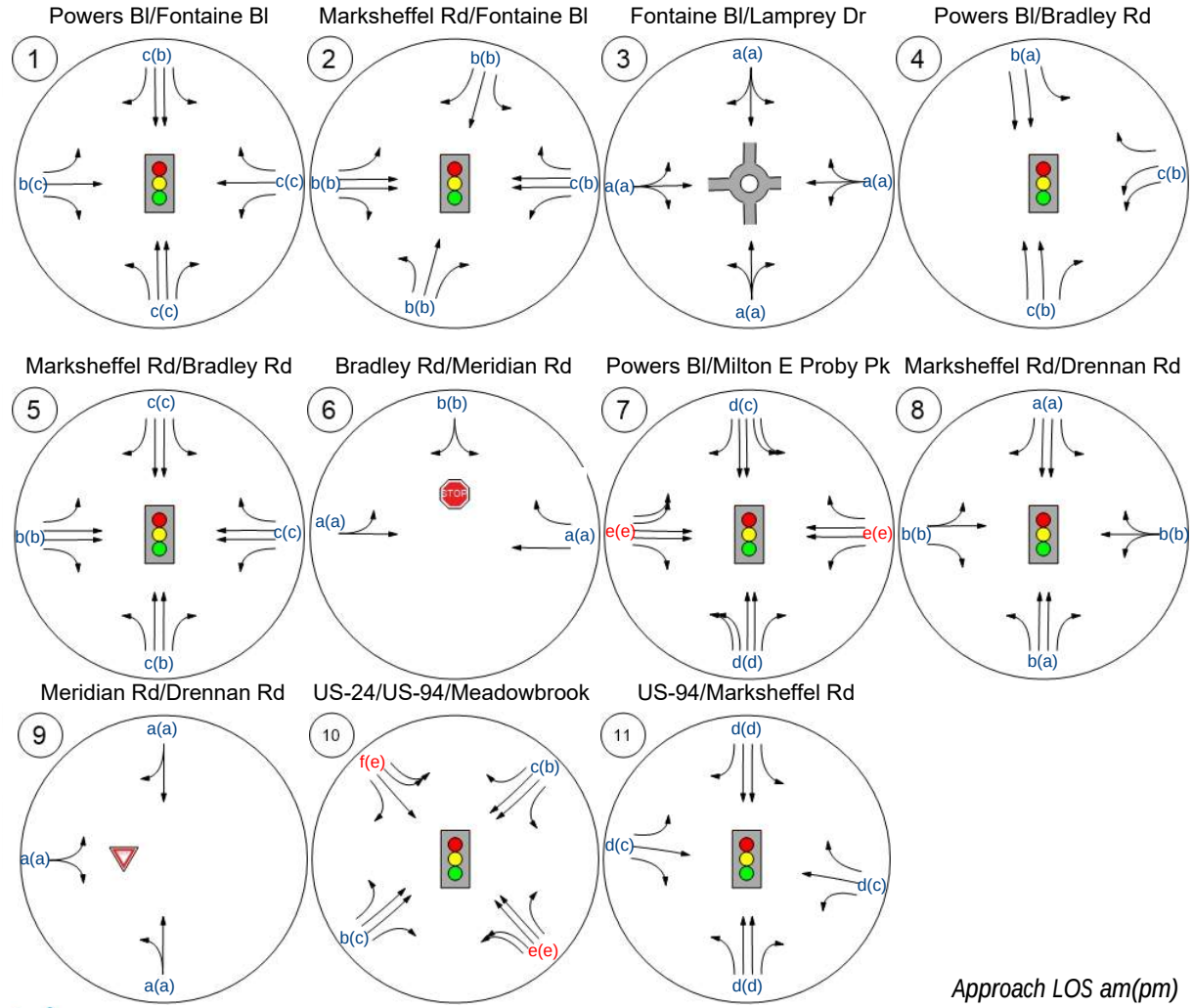
## Figure 5. Existing Daily Traffic




The existing intersection configurations are shown in Figure 6.

## Figure 6. Existing Intersection Configurations




*Approach LOS am(pm)*

Intersection LOS analysis was performed for the study area intersections, and the results are shown in Table 1 and Table 2.

## Table 1. Existing Conditions Intersection Operations (AM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | WB Thru | 0.441 | 20.7 | C |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | SB Left | 0.529 | 17.5 | B |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | SB Right | | 8.6 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | WB Right | 0.551 | 18.2 | B |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | WB Thru | 0.493 | 21.0 | C |
| 6 | Bradley Rd/Meridian Rd | Two-way stop | HCM 7th Edition | SB Left | 0.011 | 13.0 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Left | 0.631 | 48.5 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | SB Left | 0.451 | 10.0 | B |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.005 | 3.7 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Right | 0.709 | 34.3 | C |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | WB Left | 0.671 | 42.1 | D |

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 2. Existing Conditions Intersection Operations (PM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | EB Thru | 0.432 | 19.9 | B |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | WB Left | 0.408 | 15.0 | B |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | EB Left | | 3.7 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | NB Right | 0.439 | 13.0 | B |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | WB Thru | 0.481 | 20.3 | C |
| 6 | Bradley Rd/Meridian Rd | Two-way stop | HCM 7th Edition | SB Left | 0.002 | 12.1 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Left | 0.589 | 44.1 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | WB Right | 0.324 | 7.5 | A |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.010 | 3.7 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Right | 0.678 | 27.9 | C |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | SB Left | 0.535 | 36.0 | D |

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 1 and Table 2 indicate all intersections operate at an acceptable LOS. Acceptable operations are generally defined as any operations at LOS D or better. The turn lane evaluation for the existing conditions is shown in Table 3.

## Table 3. Existing Conditions Turn Lane Requirements

| ID | Intersection | Access Category/Roadway Classificaiton | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Provided (Existing) (ft) | Improvement (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl CDOT -SHAC Signalized | E-X | NBL | 1 | 55 | 66 | 24 | 222 | **600** | **100** | **920** | 965 | - |
| | | E-X | NBR | 1 | 55 | 168 | 37 | 222 | **600** | **-** | **820** | 860 | - |
| | | E-X | SBL | 1 | 55 | 139 | 42 | 222 | **600** | **140** | **960** | 800 | 160 |
| | | E-X | SBR | 1 | 55 | 208 | 44 | 222 | **600** | **-** | **820** | 685 | 135 |
| | | NR-A | EBL | 1 | 35 | 214 | 84 | 120 | **190** | **215** | **525** | 405 | 120 |
| | | NR-A | EBR | 1 | 35 | 62 | 17 | 120 | **190** | **-** | **310** | 670 | - |
| | | NR-A | WBL | 1 | 35 | 182 | 69 | 120 | **190** | **180** | **490** | 425 | 65 |
| | | NR-A | WBR | 1 | 35 | 121 | 34 | 120 | **190** | **-** | **310** | 670 | - |
| | | NR-A | NBR to EBT Acceleration Lane | 1 | 35 | 168 | - | 120 | ***150 (Accel. Lane)*** | | **270** | 660 | - |
| | | NR-A | SBR to WBT Acceleration Lane | 1 | 35 | 208 | - | 120 | ***150 (Accel. Lane)*** | | **270** | 400 | - |
| | | E-X | EBR to SBT Acceleration Lane | 1 | 55 | 62 | - | 222 | ***960 (Accel. Lane)*** | **-** | **1180** | 1,070 | 110 |
| | | E-X | WBR to NBT Acceleration Lane | 1 | 55 | 35 | - | 222 | ***960 (Accel. Lane)*** | **-** | **1180** | 545 | 635 |
| 2 | Marksheffel Rd/Fontaine Bl CCS - TCM Signalized | Principal Arterial | NBL | 1 | 45 | 63 | 28 | 180 | **200** | **-** | **380** | 700 | - |
| | | Principal Arterial | NBR | 1 | 45 | 189 | 24 | 180 | **200** | **-** | **380** | 700 | - |
| | | Principal Arterial | SBL | 1 | 55 | 281 | 133 | 220 | **260** | **-** | **480** | 560 | - |
| | | Principal Arterial | SBR | 1 | 55 | 26 | 3 | 220 | **260** | **-** | **480** | 560 | - |
| | | Principal Arterial | EBL | 1 | 35 | 37 | 22 | 140 | **120** | **-** | **260** | 500 | - |
| | | Principal Arterial | EBR | 1 | 35 | 55 | 12 | 140 | **120** | **-** | **260** | 275 | - |
| | | Principal Arterial | WBL | 1 | 45 | 178 | 123 | 180 | **200** | **-** | **380** | 515 | - |
| | | Principal Arterial | WBR | 1 | 45 | 490 | 150 | 180 | **200** | **-** | **380** | Continuous | - |
| 4 | Powers Bl/Bradley Rd CDOT -SHAC Signalized | E-X | NBR | 1 | 65 | 490 | 90 | 300 | **800** | **-** | **1100** | 880 | 220 |
| | | E-X | SBL | 1 | 65 | 378 | 101 | 300 | **800** | **378** | **1480** | 890 | 590 |
| | | NR-A | WBL | 2 | 50 | 378 | 79 | 360 | **140** | **189** | **690** | 830 | - |
| | | NR-A | WBR | 1 | 50 | 564 | 167 | 180 | **320** | **-** | **500** | Continuous | - |
| | | NR-A | NBR to EBT Acceleration Lane | 1 | 50 | 490 | - | 180 | ***560 (Accel. Lane)*** | **-** | **760** | 860 | - |
| | | E-X | WBR to NBT Acceleration Lane | 1 | 65 | 564 | - | 300 | ***1380 (Accel. Lane)*** | | **1680** | 710 | 970 |
| 5 | Marksheffel Rd/Bradley Rd CCS - TCM Signalized | Principal Arterial | NBL | 1 | 55 | 175 | 69 | 220 | **260** | **-** | **480** | 940 | - |
| | | Principal Arterial | NBR | 1 | 55 | 136 | 31 | 220 | **260** | **-** | **480** | 940 | - |
| | | Principal Arterial | SBL | 1 | 55 | 11 | 4 | 220 | **260** | **-** | **480** | 920 | - |
| | | Principal Arterial | SBR | 1 | 55 | 339 | 101 | 220 | **260** | **-** | **480** | 965 | - |
| | | Principal Arterial | EBL | 1 | 50 | 395 | 170 | 200 | **235** | **-** | **435** | 720 | - |
| | | Principal Arterial | EBR | 1 | 50 | 78 | 18 | 200 | **235** | **-** | **435** | 720 | - |
| | | Principal Arterial | WBL | 1 | 45 | 109 | 39 | 180 | **200** | **-** | **380** | 965 | - |
| | | Principal Arterial | WBR | 1 | 45 | 21 | 6 | 180 | **200** | **-** | **380** | Continuous | - |

*Existing Conditions Turn Lane Requirements (Continued)*

| ID | Intersection | Access Category/Roadway Classificaiton | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Provided (Existing) (ft) | Improvement (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Powers Bl/Milton E Proby Pkwy CDOT -SHAC Signalized | E-X | NBL | 2 | 60 | 429 | 341 | 600 | **700** | **215** | **1515** | 895 | 620 |
| | | E-X | NBR | 1 | 60 | 37 | 16 | 300 | **700** | - | **1000** | 450 | 550 |
| | | E-X | SBL | 2 | 55 | 428 | 375 | 444 | **600** | **214** | **1260** | 750 | 510 |
| | | E-X | SBR | 1 | 55 | 633 | 338 | 222 | **600** | - | **820** | 865 | - |
| | | E-X | EBL | 2 | 55 | 476 | 368 | 444 | **600** | **238** | **1280** | 780 | * |
| | | E-X | EBR | 1 | 55 | 333 | 231 | 222 | **600** | - | **820** | 275 | ** |
| | | E-X | WBL | 1 | 55 | 32 | 66 | 222 | **600** | **40** | **860** | 715 | 145 |
| | | E-X | WBR | 1 | 55 | 343 | 279 | 222 | **600** | - | **820** | 590 | 230 |
| | | E-X | NBR to EBT Acceleration Lane | 1 | 55 | 37 | - | 222 | ***960 (Accel. Lane)*** | - | **1180** | 500 | 680 |
| | | E-X | SBR to WBT Acceleration Lane | 1 | 55 | 633 | - | 222 | ***960 (Accel. Lane)*** | - | **1180** | 725 | 455 |
| | | E-X | EBR to SBT Acceleration Lane | 1 | 55 | 333 | - | 222 | ***960 (Accel. Lane)*** | - | **1180** | 355 | 825 |
| | | E-X | WBR to NBT Acceleration Lane | 1 | 60 | 343 | - | 300 | ***1170 (Accel. Lane)*** | - | **1470** | 770 | 700 |
| 8 | Marksheffel Rd/Drennan Rd CCS - TCM Signalized | Principal Arterial | NBL | 1 | 55 | 6 | 1 | 220 | **260** | - | **480** | 895 | - |
| | | Principal Arterial | NBR | 1 | 55 | 46 | 2 | 220 | **260** | - | **480** | 895 | - |
| | | Principal Arterial | SBL | 1 | 45 | 161 | 47 | 180 | **200** | - | **380** | 650 | - |
| | | Principal Arterial | SBR | 1 | 45 | 20 | 1 | 180 | **200** | - | **380** | 650 | - |
| | | Minor Arterial | EBL | 1 | 45 | 32 | 11 | 180 | **200** | - | **380** | - | *** |
| | | Minor Arterial | EBR | 1 | 45 | 13 | 2 | 180 | **200** | - | **380** | 270 | 110 |
| | | Principal Arterial | WBL | 1 | 45 | 78 | 29 | 180 | **200** | - | **380** | 0 | 380 |
| 10 | Highway-24/Highway-94 CDOT -SHAC Signalized | E-X | NBL (US-94) | 2 | 55 | 387 | 294 | 444 | **600** | **194** | **1240** | 1015 | 225 |
| | | E-X | NBR (US-94) | 1 | 55 | 14 | 9 | 222 | **600** | - | **820** | 1015 | - |
| | | F-R | SBL (Newt Dr.) | 2 | 30 | 25 | 21 | 192 | - | **25** | **215** | 400 | - |
| | | F-R | SBR (Newt Dr.) | 1 | 30 | 198 | 243 | 96 | - | **25** | **120** | 400 | - |
| | | E-X | EBL (US-24) | 1 | 55 | 154 | 88 | 222 | **600** | **154** | **975** | 1120 | - |
| | | E-X | EBR (US-24) | 1 | 55 | 597 | 216 | 222 | **600** | - | **820** | 710 | 110 |
| | | E-X | WBL (US-24) | 1 | 65 | 13 | 6 | 300 | **800** | **25** | **1125** | 975 | 150 |
| | | E-X | WBR (US-24) | 1 | 65 | 38 | 12 | 300 | **800** | - | **1100** | 975 | 125 |
| | | NR-A | NBR to EBT Acceleration Lane | 1 | 55 | 14 | - | 220 | ***740 (Accel. Lane)*** | - | **960** | 1570 | - |
| | | NR-A | SBR to WBT Acceleration Lane | 1 | 65 | 198 | - | 300 | ***1080 (Accel. Lane)*** | - | **1380** | 895 | 485 |
| | | E-X | EBR to SBT Acceleration Lane | 1 | 55 | 597 | - | 222 | ***960 (Accel. Lane)*** | | **1180** | 640 | 540 |
| 11 | Highway-94/Marksheffel Rd CDOT -SHAC Signalized | NR-A | NBL | 1 | 55 | 90 | 79 | 222 | **378** | **100** | **700** | 600 | 100 |
| | | NR-A | NBR | 1 | 55 | 72 | 41 | 222 | **378** | - | **600** | 600 | - |
| | | NR-A | SBL | 1 | 50 | 376 | 347 | 180 | **320** | **375** | **875** | 630 | 245 |
| | | NR-A | SBR | 1 | 50 | 4 | 2 | 180 | **320** | - | **500** | 630 | - |
| | | E-X | EBL | 1 | 50 | 2 | 3 | 180 | **500** | **25** | **705** | 280 | 425 |
| | | E-X | EBR | 1 | 50 | 203 | 122 | 180 | **500** | - | **680** | 475 | 205 |
| | | E-X | WBL | 1 | 65 | 70 | 120 | 300 | **500** | **100** | **900** | 500 | 400 |
| | | E-X | WBR | 1 | 65 | 402 | 212 | 300 | **500** | - | **800** | 500 | 300 |
| | | E-X | NBR to EBT Acceleration Lane | 1 | 50 | 168 | - | 180 | ***760 (Accel. Lane)*** | | **940** | 0 | 940 |
| | | E-X | SBR to WBT Acceleration Lane | 1 | 65 | 208 | - | 300 | ***1,170 (Accel. Lane)*** | | **1470** | 0 | 1470 |
| | | NR-A | EBR to SBT Acceleration Lane | 1 | 50 | 62 | - | 180 | ***580 (Accel. Lane)*** | - | **760** | 0 | 760 |
| | | NR-A | WBR to NBT Acceleration Lane | 1 | 55 | 35 | - | 220 | ***740 (Accel. Lane)*** | - | **960** | 0 | 960 |

*Turn lane is currently provided to the available intersection spacing
**Improvement should be made to the available intersection spacing
***Exclusive left-turn is not recommended due to low through traffic volume

The City of Colorado Springs (CCS) Traffic Criteria Manual (TCM), El Paso County Engineering Criteria Manual (ECM) and the CDOT State Highway Access Code (SHAC) were used to study the required turn lanes. A summary of the recommended improvements is as follows:

**Powers Boulevard/Fontaine Boulevard (#1)**

- A 160-ft extension of southbound left-turn lane.
- A 135-ft extension of southbound right-turn lane.
- A 120-ft extension of eastbound left-turn lane.
- A 65-ft extension of westbound left-turn lane.
- A 110-ft extension of eastbound right-turn to southbound thru acceleration lane.
- A 635-ft extension of westbound right-turn to northbound thru acceleration lane.

**Powers Boulevard/Bradley Road (#4)**

- A 220-ft extension of northbound right-turn lane.
- A 590-ft extension of southbound left-turn lane.
- A 970-ft extension of westbound right-turn to northbound thru acceleration lane.

**Powers Boulevard/Milton E Proby Parkway (#7)**

- A 620-ft extension of northbound left-turn lane.
- A 550-ft extension of northbound right-turn lane.
- A 510-ft extension of southbound left-turn lane.
- A 500-ft extension of eastbound left-turn lane. However, the turn lane is currently provided to the available intersection spacing.
- A 545-ft extension of eastbound right-turn lane. Turn lane should be maximized to the available intersection spacing.
- A 145-ft extension of westbound left-turn lane.
- A 230-ft extension of westbound right-turn lane.
- A 680-ft extension of northbound right-turn to eastbound thru acceleration lane.
- A 455-ft extension of southbound right-turn to westbound thru acceleration lane.
- A 825-ft extension of eastbound right-turn to southbound thru acceleration lane.
- A 700-ft extension of westbound right-turn to northbound thru acceleration lane.

**Marksheffel Road/Drennan Road (#8)**

- A 110-ft extension of eastbound right-turn lane.
- A 380-ft westbound left-turn lane. Include a 180-ft taper and 200-ft of deceleration lane.

**Highway-24/Highway-94 (#10)**

- A 225-ft extension of northbound left-turn (US-94) lane.
- A 110-ft extension of eastbound right-turn (US-24) lane.
- A 150-ft extension of westbound left-turn (US-24) lane.
- A 125-ft extension of westbound right-turn (US-24) lane.

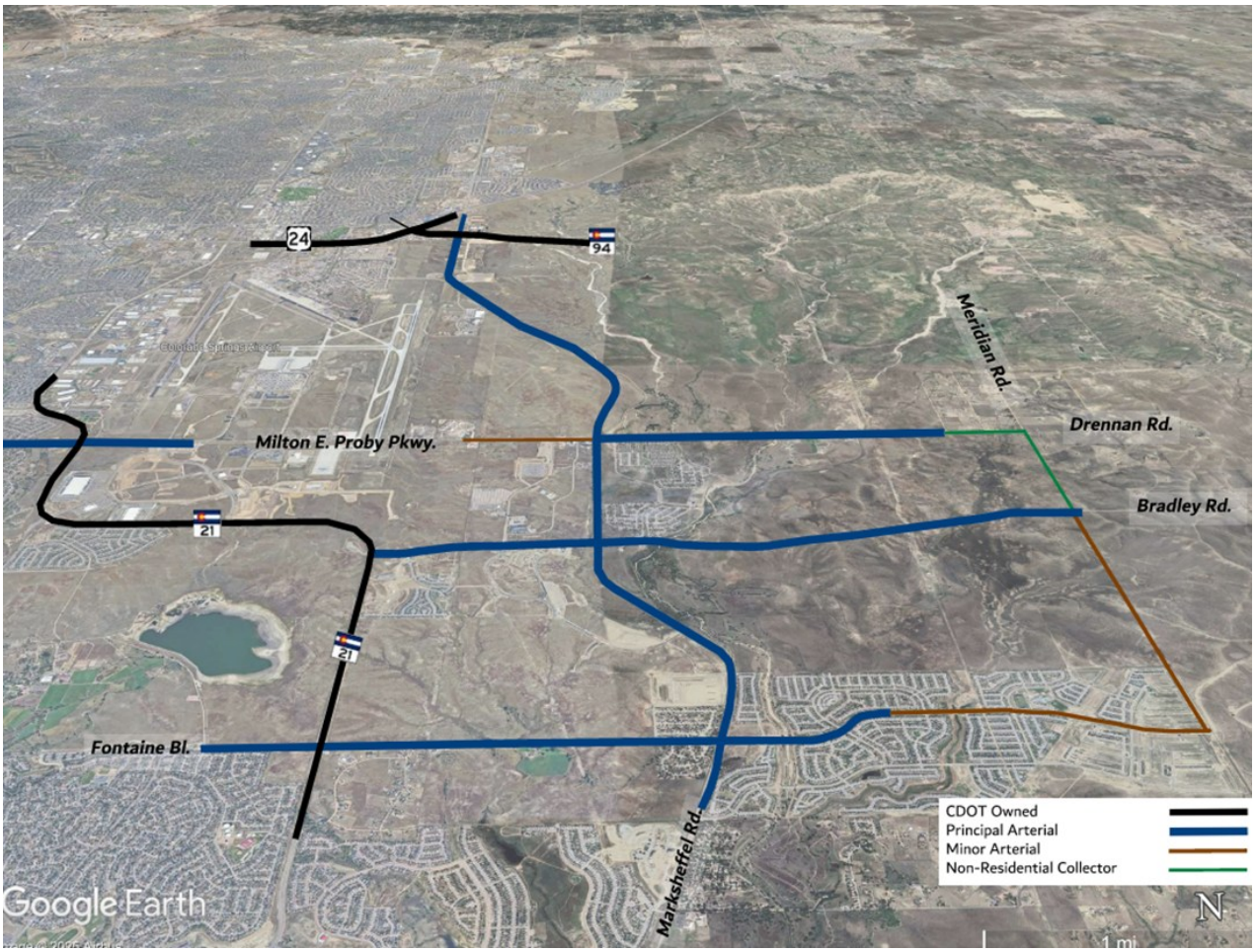
- A 485-ft extension of southbound right-turn to westbound thru acceleration lane.
- A 540-ft extension of eastbound right-turn to southbound thru acceleration lane.

**Highway-94/Marksheffel Road (#11)**

- A 100-ft extension of northbound left-turn lane.
- A 245-ft extension of southbound left-turn lane.
- A 425-ft extension of eastbound left-turn lane.
- A 205-ft extension of eastbound right-turn lane.
- A 400-ft extension of westbound left-turn lane.
- A 300-ft extension of westbound right-turn lane.
- A 940-ft northbound right-turn to eastbound thru acceleration lane. Include 180-ft of taper and 760-ft of acceleration lane.
- A 1,470-ft southbound right-turn to westbound thru acceleration lane. Include 300-ft of taper and 1,170-ft of acceleration lane.
- A 760-ft eastbound right-turn to southbound thru acceleration lane. Include 180-ft of taper and 580-ft of acceleration lane.
- A 960-ft westbound right-turn to northbound thru acceleration lane. Include 220-ft of taper and 740-ft of acceleration lane.

In this study, future conditions were evaluated under the assumption that the necessary improvements outlined above to the existing conditions have been implemented. Roadways adjacent to the new development were classified based on the 2045 Major Transportation Corridor Plan (EPC), or the City of Colorado Springs Major Thoroughfare Plan (CCS) and are shown in Figure 7.

Figure 7. Roadway Classification




## 3.1 Crash History

The El Paso County Road Safety Plan website was used to obtain the number of fatal and severe crashes in the vicinity of the project. Crash data from the year 2015 to 2019 were collected and shown as a density map on the website. As shown in Figure 8 and Figure 9, two fatal crashes occurred near the project. The development will ultimately convert the isolated roadways to well-traveled urban roadways which will improve the safety of the roadways by adding more lanes in each direction and concrete curb and gutter. Standard roadway cross-sections provided by the El Paso County will be used to ensure safe and ADA compliant sidewalks. However, unless the school plan is determined, it is impossible to define the exact school routes. This will be studied in future traffic impacts studies as details of each phase and/or filing are known. The first phase of the project does not include a school and only contains residential units. No public transit is available for this development. As a result, it was assumed 100 percent of the trips would be made by personal vehicles. Refer to section 4 for more information on trip generation.

Figure 8. Fatality Crash Map

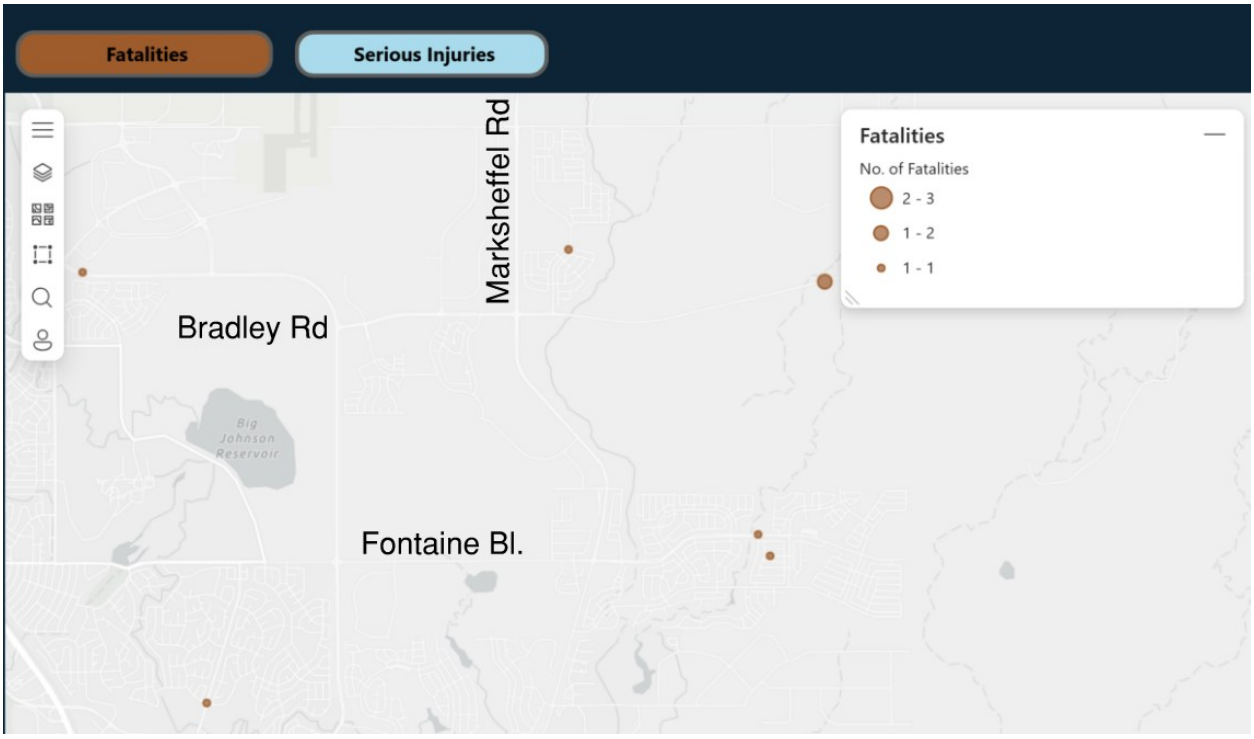
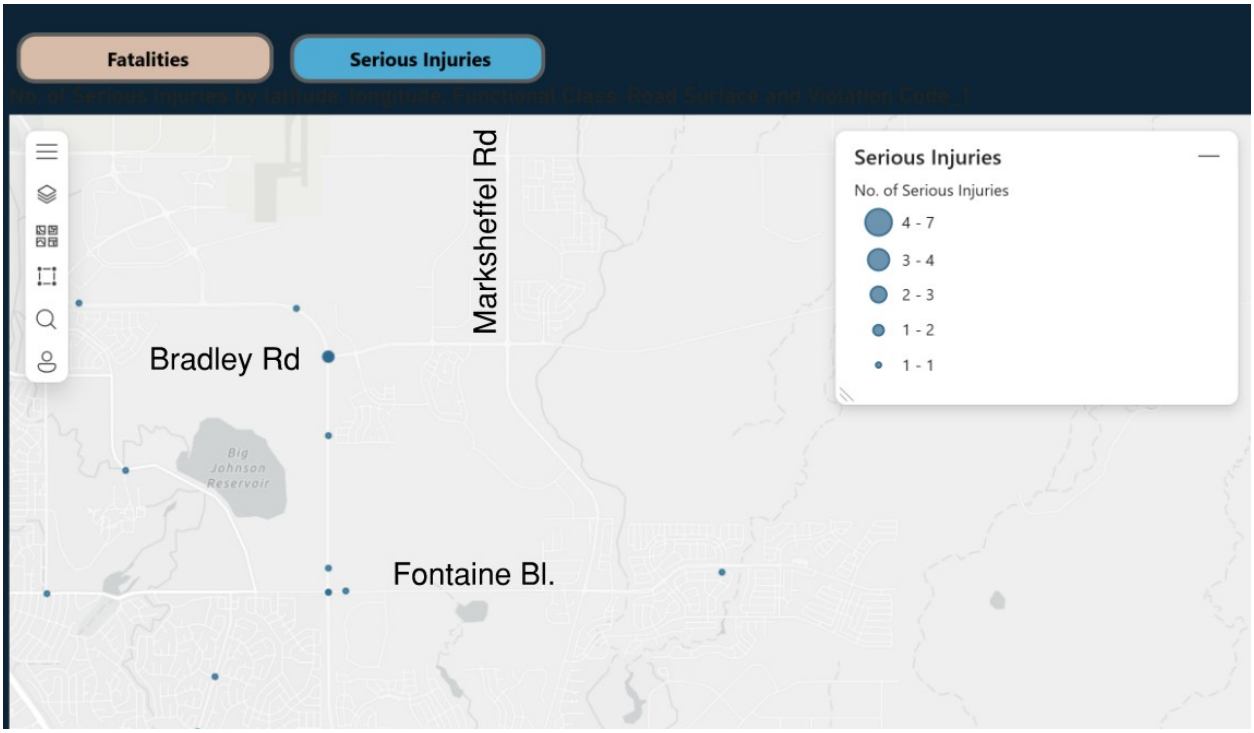



Figure 9. Serious Injury Crash Map



# 4. Projected Development Traffic

This section documents how much traffic the project development is expected to generate and how the external site trips will be distributed on the adjacent roadway network.

## 4.1 Trip Generation

The vehicle trips associated with the project 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 category. The *ITE Trip Generation Manual* provides guidance on when to use the weighted average versus the regression equation. Table 4 shows the trips that are expected to be generated by Rolling Meadows/Bull Hill at build out (2035) year. It was assumed that 100% of trips would be made by personal vehicles and no public transit use was assumed for this development. The single-family residences were generated for all of Rolling Meadows and all of Bull Hill separately with the total number of trips distributed to each zone based on the percentage of single-family units proposed in each zone. The same logic was followed for multi-family homes. The Antelope Ridge at Bull Hill (Phase 1) trip generation for the buildout (2028) year is discussed in Section 7. Antelope Ridge at Bull Hill.

## Table 4. Rolling Meadows/Bull Hill Trip Generation

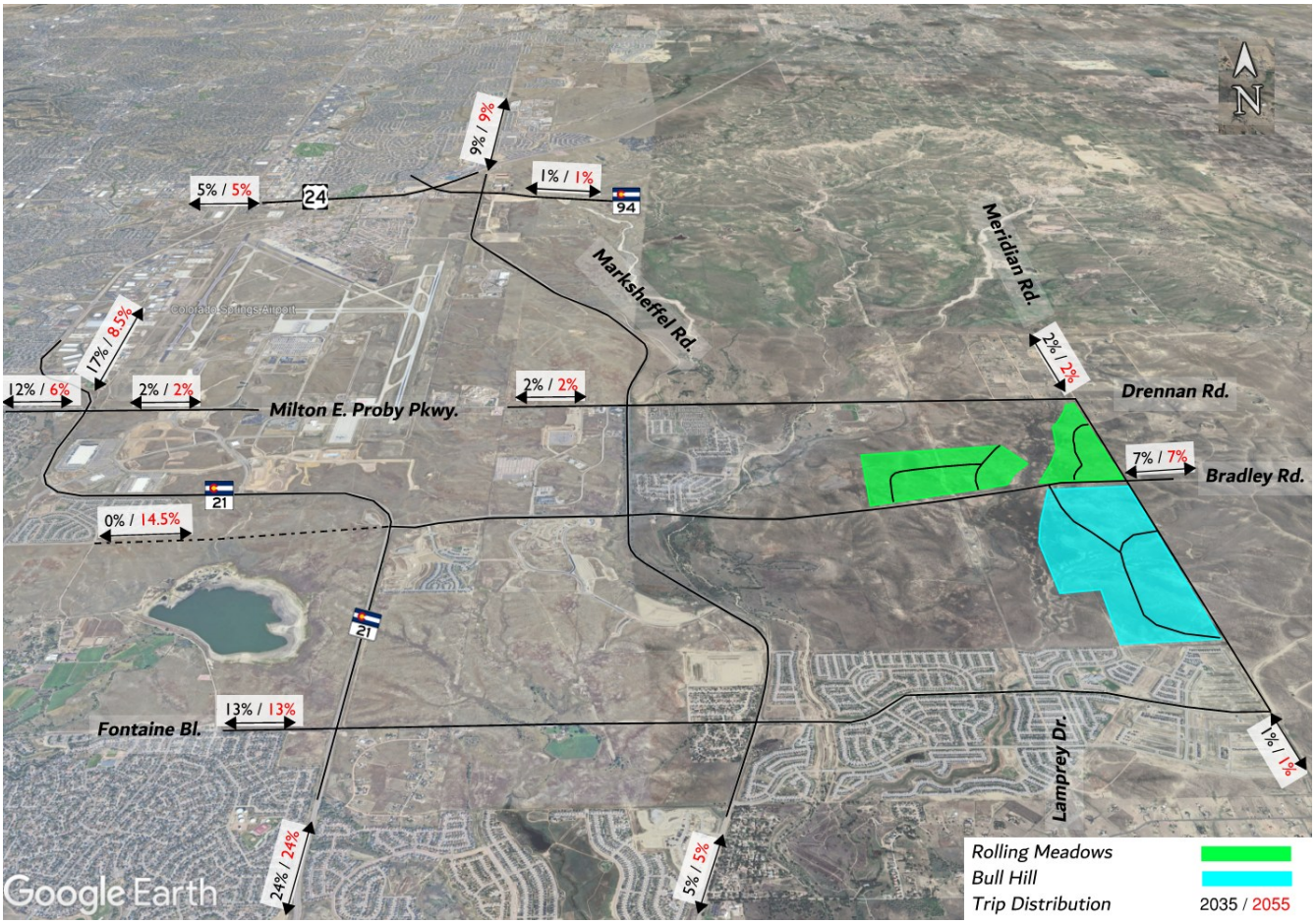
| *Rolling Meadows* | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parcel | ITE Code - Land Use | Quantity | Unit | Size(Acre) | %SFDU | %MFDU | AM Peak Hour Trips | | | PM Peak Hour Trips | | | Weekday Trips | | |
| | | | | | | | In | Out | Total | In | Out | Total | In | Out | Total |
| A | 210- Single-Family Detached Housing | 275 | Dwelling Unit | 48.8 | 15.03% | | 39 | 118 | 158 | 145 | 85 | 229 | 1100 | 1100 | 2199 |
| B | 210- Single-Family Detached Housing | 315 | Dwelling Unit | 54.3 | 17.21% | | 45 | 135 | 181 | 166 | 97 | 263 | 1259 | 1259 | 2519 |
| C | 210- Single-Family Detached Housing | 340 | Dwelling Unit | 46 | 18.58% | | 49 | 146 | 195 | 179 | 105 | 284 | 1359 | 1359 | 2719 |
| D | 210- Single-Family Detached Housing | 130 | Dwelling Unit | 14.6 | 7.10% | | 19 | 56 | 75 | 68 | 40 | 108 | 520 | 520 | 1040 |
| E | 210- Single-Family Detached Housing | 170 | Dwelling Unit | 20.7 | 9.29% | | 24 | 73 | 97 | 89 | 52 | 142 | 680 | 680 | 1359 |
| F | 210- Single-Family Detached Housing | 70 | Dwelling Unit | 9.7 | 3.83% | | 10 | 30 | 40 | 37 | 22 | 58 | 280 | 280 | 560 |
| G | 220- Multifamily Housing (Low-Rise) | 400 | Dwelling Unit | 20 | | 66.67% | 33 | 106 | 139 | 117 | 69 | 185 | 1307 | 1307 | 2615 |
| H | 210- Single-Family Detached Housing | 310 | Dwelling Unit | 57.5 | 16.94% | | 44 | 133 | 178 | 163 | 96 | 259 | 1239 | 1239 | 2479 |
| I | 210- Single-Family Detached Housing | 145 | Dwelling Unit | 29.3 | 7.92% | | 21 | 62 | 83 | 76 | 45 | 121 | 580 | 580 | 1160 |
| J | 210- Single-Family Detached Housing | 75 | Dwelling Unit | 9.8 | 4.10% | | 11 | 32 | 43 | 39 | 23 | 63 | 300 | 300 | 600 |
| K | 220- Multifamily Housing (Low-Rise) | 200 | Dwelling Unit | 14.7 | | 33.33% | 17 | 53 | 70 | 58 | 34 | 93 | 654 | 654 | 1307 |
| W | 520-Elementary School | 515 | Student | 15.9 | | | 206 | 175 | 381 | 38 | 44 | 82 | 585 | 585 | 1170 |
| V | 522-Middle School | 1140 | Student | 30 | | | 412 | 351 | 763 | 82 | 89 | 171 | 1193 | 1193 | 2386 |
| **Total** | | | | | | | **930** | **1,472** | **2,402** | **1,257** | **801** | **2,058** | **11,056** | **11,056** | **22,112** |

| *Bull Hill* | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parcel | ITE Code - Land Use | Quantity | Unit | Size(Acre) | %SFDU | %MFDU | AM Peak Hour Trips | | | PM Peak Hour Trips | | | Weekday Trips | | |
| | | | | | | | In | Out | Total | In | Out | Total | In | Out | Total |
| L | 210- Single-Family Detached Housing | 400 | Dwelling Unit | 58.6 | 14.40% | | 55 | 166 | 221 | 205 | 120 | 326 | 1547 | 1547 | 3094 |
| M | 210- Single-Family Detached Housing | 372 | Dwelling Unit | 59.2 | 13.40% | | 51 | 154 | 205 | 191 | 112 | 303 | 1439 | 1439 | 2877 |
| N(1) | 210- Single-Family Detached Housing | 100 | Dwelling Unit | 180.9 | 3.60% | | 14 | 41 | 55 | 51 | 30 | 81 | 387 | 387 | 773 |
| N(II) | 210- Single-Family Detached Housing | 350 | Dwelling Unit | | 12.60% | | 48 | 145 | 193 | 179 | 105 | 285 | 1353 | 1353 | 2707 |
| N(III) | 210- Single-Family Detached Housing | 300 | Dwelling Unit | | 10.80% | | 41 | 124 | 166 | 154 | 90 | 244 | 1160 | 1160 | 2320 |
| N(IV) | 210- Single-Family Detached Housing | 360 | Dwelling Unit | | 12.96% | | 50 | 149 | 199 | 185 | 108 | 293 | 1392 | 1392 | 2784 |
| O | 210- Single-Family Detached Housing | 415 | Dwelling Unit | 50.8 | 14.94% | | 57 | 172 | 229 | 213 | 125 | 338 | 1605 | 1605 | 3210 |
| P | 210- Single-Family Detached Housing | 410 | Dwelling Unit | 57.3 | 14.76% | | 57 | 170 | 226 | 210 | 123 | 334 | 1586 | 1586 | 3171 |
| Q | 210- Single-Family Detached Housing | 35 | Dwelling Unit | 5.9 | 1.26% | | 5 | 14 | 19 | 18 | 11 | 28 | 135 | 135 | 271 |
| R | 210- Single-Family Detached Housing | 35 | Dwelling Unit | 7.1 | 1.26% | | 5 | 14 | 19 | 18 | 11 | 28 | 135 | 135 | 271 |
| S | 220- Multifamily Housing (Low-Rise) | 90 | Dwelling Unit | 7.6 | | 38% | 9 | 28 | 36 | 29 | 17 | 47 | 303 | 303 | 605 |
| T | 520-Elementary School | 490 | Student | 15 | | | 196 | 167 | 363 | 36 | 42 | 78 | 556 | 556 | 1112 |
| U | 520-Elementary School | 490 | Student | 15 | | | 196 | 167 | 363 | 36 | 42 | 78 | 556 | 556 | 1112 |
| Y | 220- Multifamily Housing (Low-Rise) | 150 | Dwelling Unit | 11.8 | | 63% | 14 | 46 | 61 | 49 | 29 | 78 | 504 | 504 | 1009 |
| **Total** | | | | | | | **798** | **1,558** | **2,356** | **1,574** | **966** | **2,540** | **12,658** | **12,658** | **25,316** |
| **Grand Total** | | | | | | | **1,728** | **3,030** | **4,758** | **2,831** | **1,767** | **4,598** | **23,714** | **23,714** | **47,428** |

## 4.2 Trip Distribution

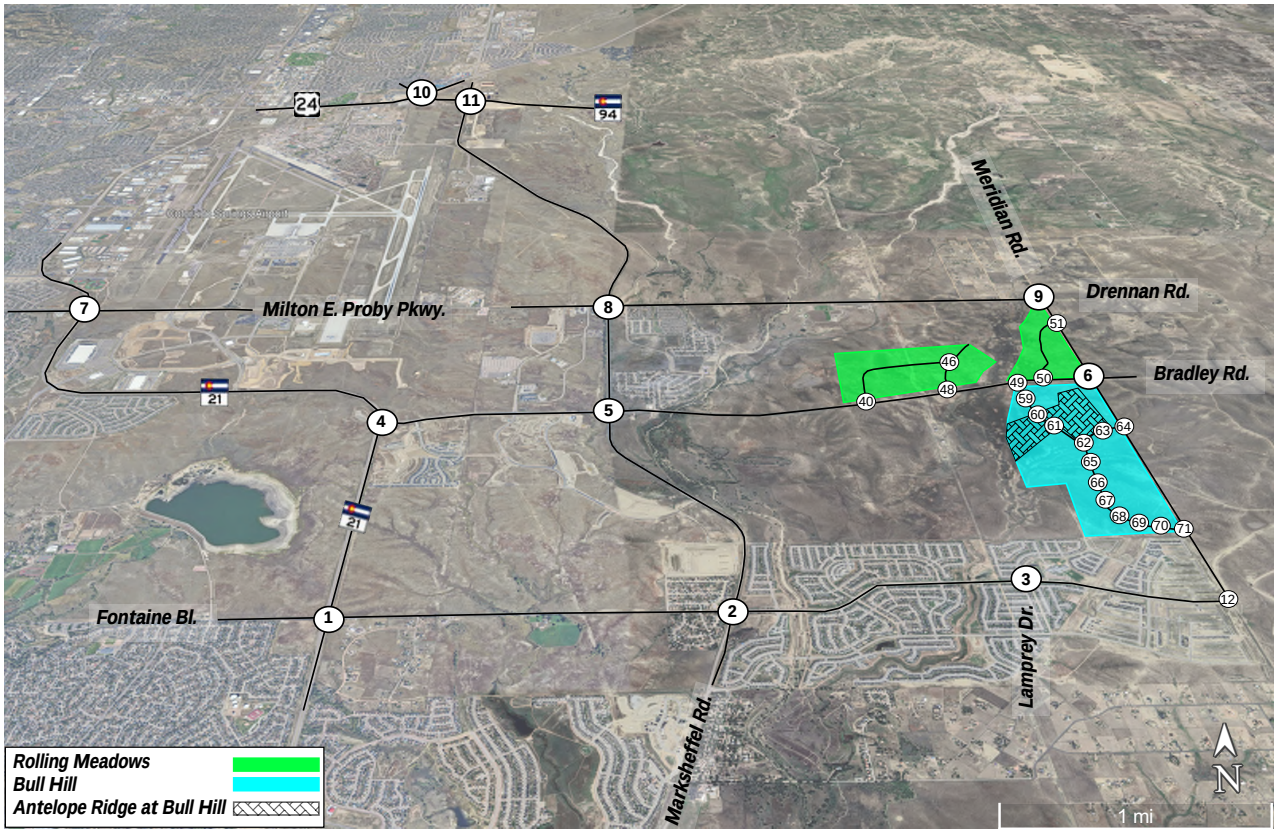
Figure 10 illustrates the expected external distribution of travel for the site-generated trips. This distribution was determined by reviewing current traffic volumes, future connections near the study area per the MTCP 2045 and trip distributions of surrounding developments. A different assumption for motorists traveling to and from the east was used for the first phase of the project (Antelope Ridge at Bull Hill), as roadway improvements on Bradley Road, Mesa Ridge Parkway, Curtis Road, and Meridian Road are not expected to be completed by 2028. For more information see the 2028 trip distribution, Figure 32.

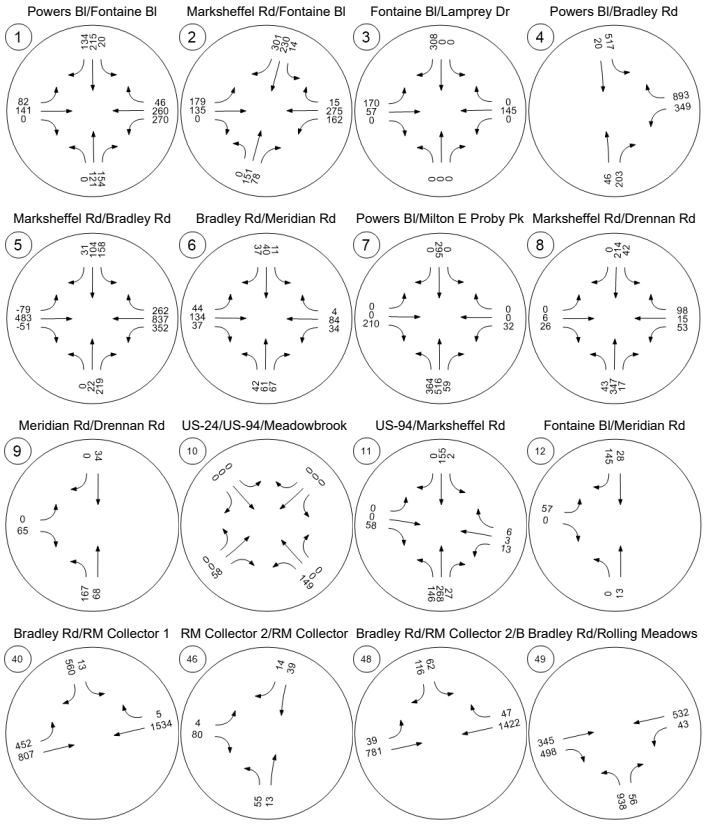
**Figure 10. Trip Distribution**

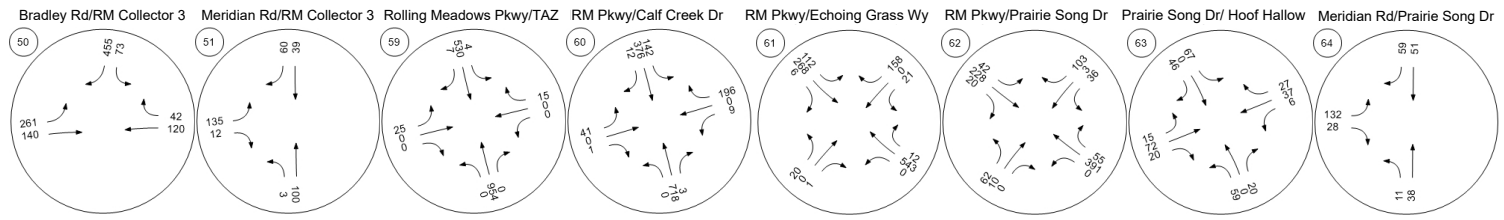


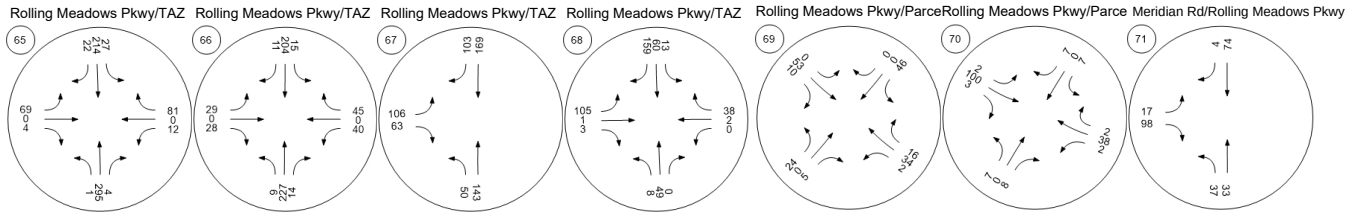

Note that an adjusted trip distribution assumption was assumed for other future developments located north of Drennan Road in the background and total conditions analyses. The AM and PM site traffic for Rolling Meadows/Bull Hill is shown in Figure 11 and Figure 12, respectively. The daily site traffic is shown in Figure 13.

# Figure 11. RMBH Full Buildout (2035) Site Traffic (AM Peak Hour)

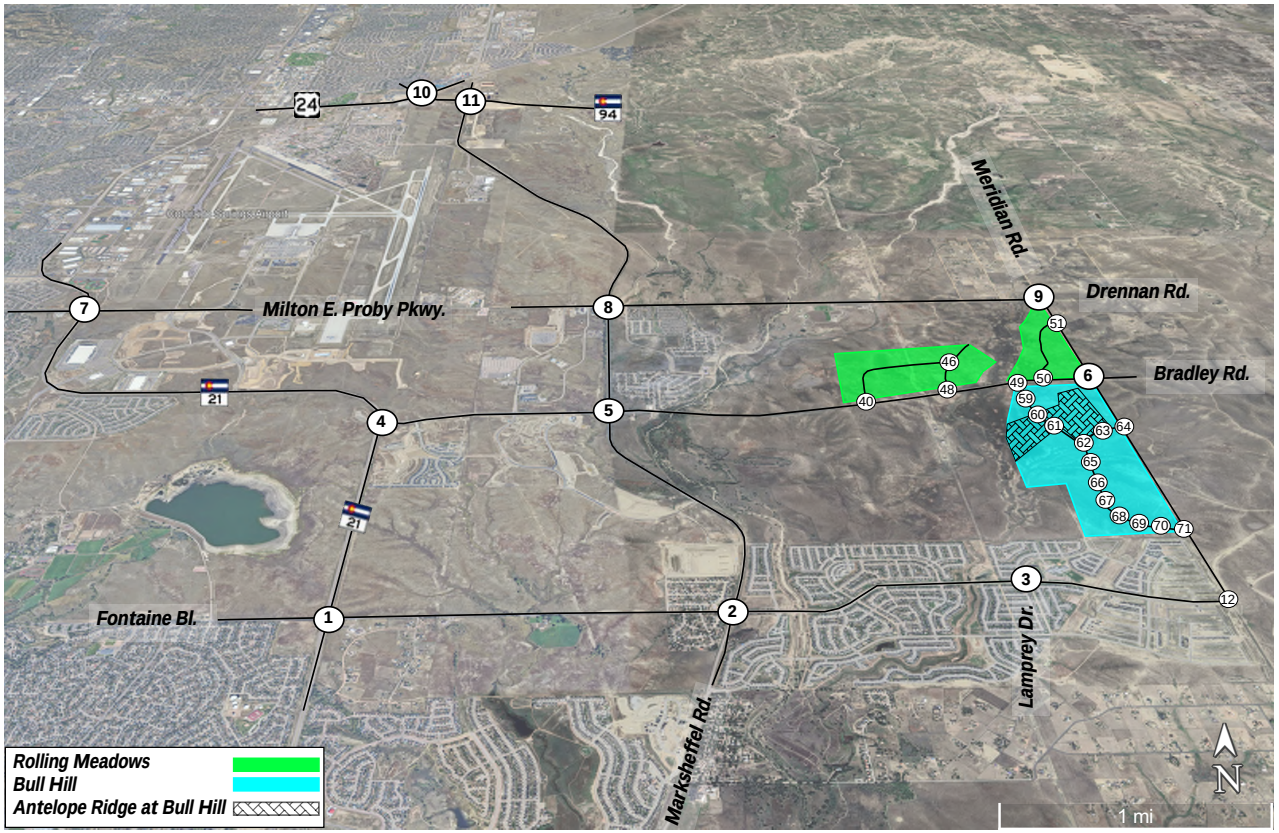


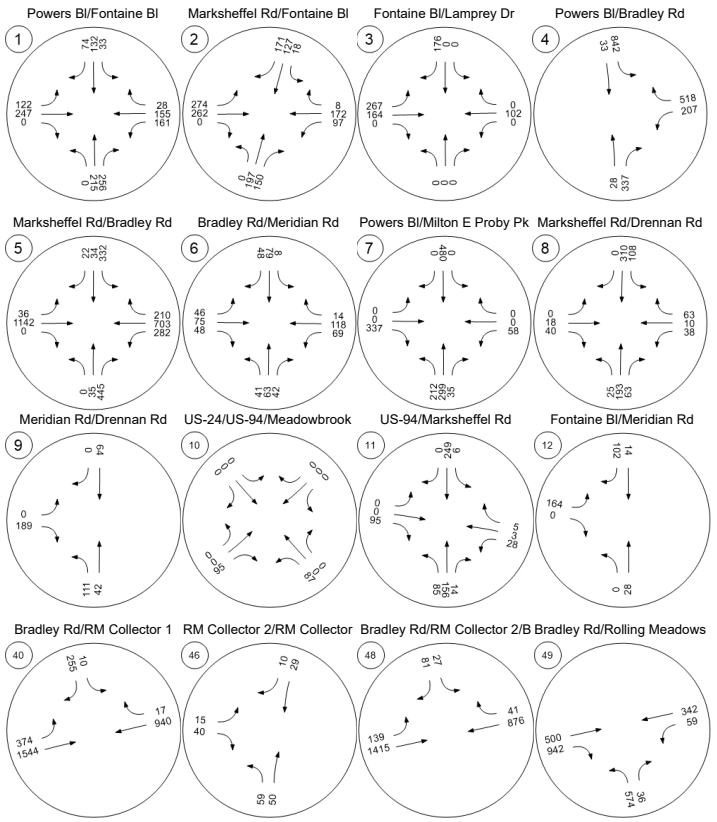



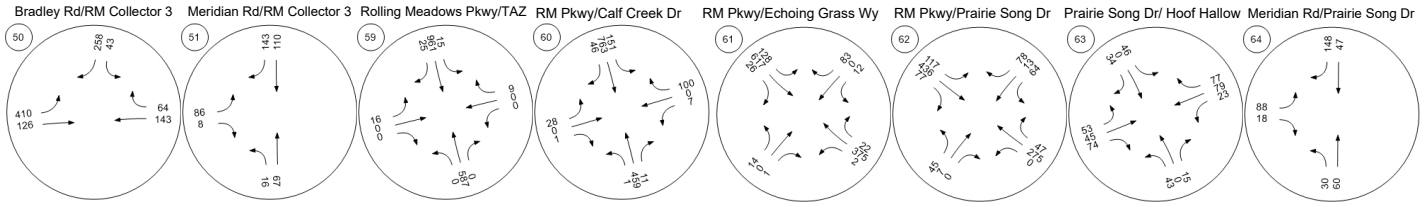



# Figure 12. RMBH Full Buildout (2035) Site Traffic (PM Peak Hour)



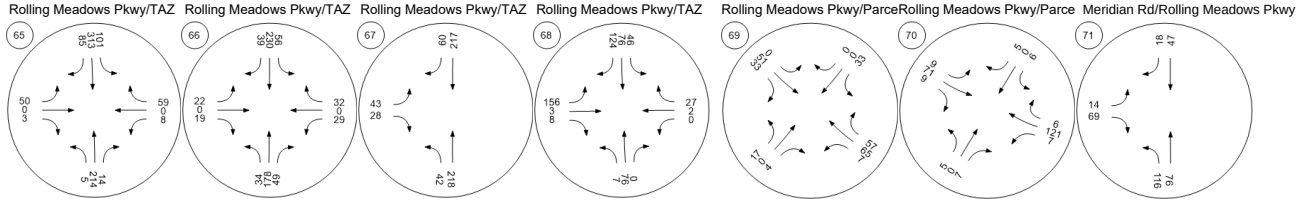
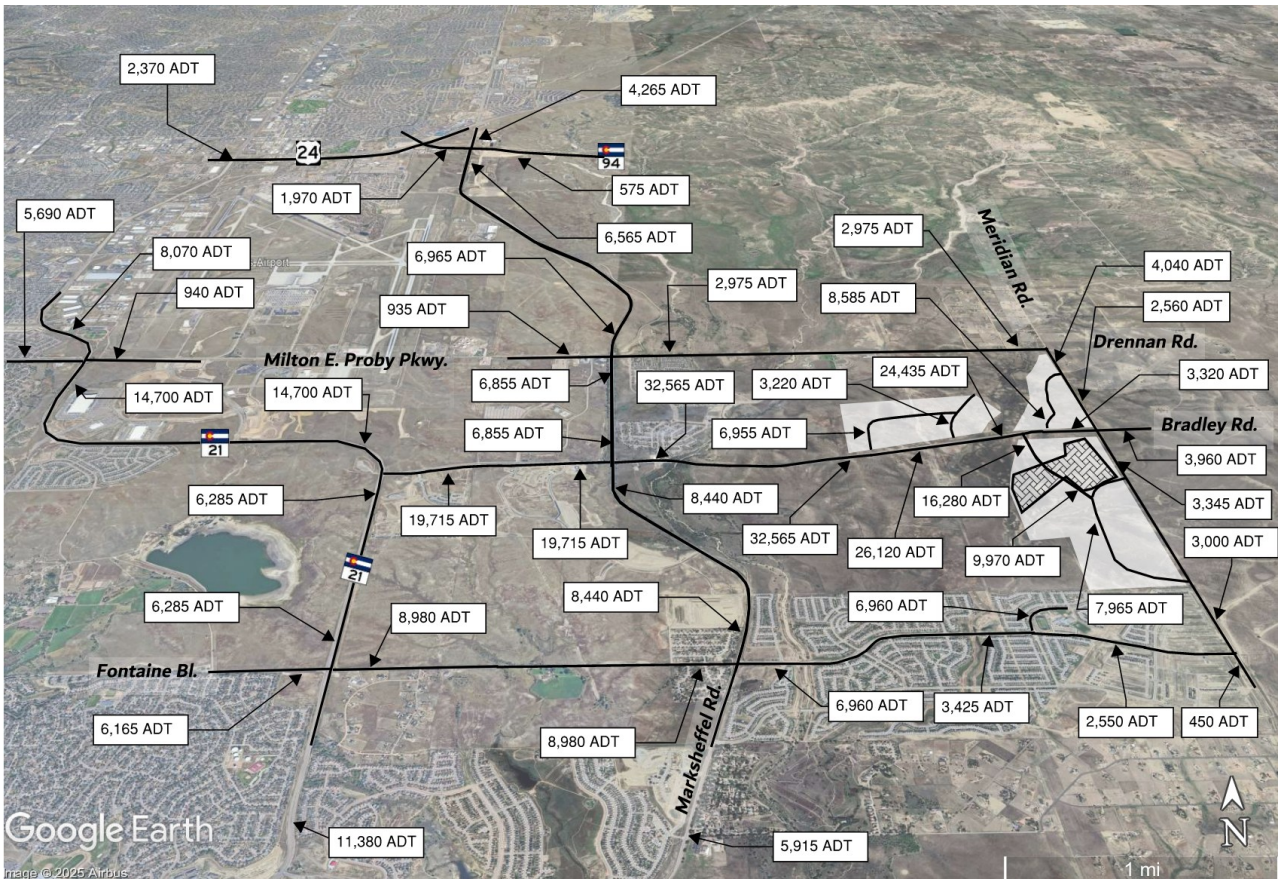



Figure 13. RMBH Full Buildout (2035) Daily Site Traffic




# 5. Buildout (2035) Traffic Analysis

Traffic conditions without the project have been analyzed for the buildout year (2035) and horizon year (2055) conditions.

## 5.1 Traffic Growth

In this study, the traffic from adjacent developments was aggregated to provide a more accurate representation of future conditions in the study area. As mentioned earlier, traffic from the Karmen Line development was included only in the horizon year (2055) analysis, while traffic from the remaining 11 developments was included in both the buildout year (2035) and horizon year (2055) analyses. In addition to the adjacent developments' traffic, Matrix applied appropriate growth factors to the studied intersections. Details on how the annual growth rates were estimated are provided below:

Marksheffel Road:

Matrix identified approximately 3,500 single-family detached homes already built within the Lorson Ranch development, located on both the north and south sides of Fontaine Boulevard. Additionally, the Grand Mountain K–8 school is located along Fontaine Boulevard and the traffic from this institution was also considered on our daily traffic analysis. Matrix also counted 660 single-family homes at the northwest corner of Marksheffel Road and Mesa Ridge Parkway. Aerial imagery from Google Earth and data from the

Assessor's website confirm that none of these developments existed prior to 2011. Collectively, these developments generate approximately 35,000 daily trips. As a result, Matrix concludes that the vast majority of current traffic on Marksheffel Road is attributable to these existing developments, and that it is not realistic to apply further growth to estimate future traffic volumes. Instead, Matrix used available data from 2006 to 2009 on the TCDS website to estimate background growth on Marksheffel Road and adjacent roadways. As a result, an annual growth rate of 0.65% was determined for this roadway, which equates to a growth factor of 1.0738 for the buildout year, and a growth factor of 1.222 for the horizon year.

Powers Boulevard:
The earliest (2004) and latest (2021) available traffic counts from the TCDS website were used to estimate the annual growth rate. The estimated annual growth rate for this roadway is 0.11%, which results in a growth factor of 1.0121 for the buildout year and 1.0346 for the horizon year.

State Highway 24 (US-24):
The earliest (2004) and latest available traffic counts (2024 on the west leg and 2025 on the east leg) from the TCDS website were used to estimate the annual growth rate. The estimated weighted average annual growth rate for this roadway is 2.54%, which results in a growth factor of 1.3177 for the buildout year and 2.1761 for the horizon year.

State Highway 94 (US-94):
The earliest (2006) and latest (2022) available traffic counts from the TCDS website were used to estimate the annual growth rate. The estimated annual growth rate for this roadway is 1.74 %, which results in a growth factor of 1.2089 for the buildout year and 1.7070 for the horizon year.

Adjacent Developments Traffic

Traffic studies for the adjacent developments were obtained, and the projected traffic from these developments was aggregated to provide a better representation of future background conditions. This approach ensured that cumulative traffic impacts from regional growth were appropriately considered in the analysis. A summary of the trip generation modeled in PTV Vistro is provided in Appendix C – Trip Generation. The list of referenced studies is as follows:

- Bradley Heights TIS prepared by Matrix Design Group (September 2021)
- Lorson Ranch Commercial South TIS P-22-011 prepared by Matrix Design Group (October 2022)
- The Village at Lorson Ranch TIS CS242 SF 248 prepared by Matrix Design Group (August 2024)
- Corvallis TIS OAR21115 prepared by Matrix Design Group (June 2021)
- Reagan Ranch TIS Addendum prepared by Matrix Design Group (January 2025)
- Crossroads North TIS prepared by Kimley-Horn and Associates (September 2024)
- Crossroads Mixed-Use TIS CR201 & SP207 prepared by Kimley-Horn and Associates (April 2021)
- Meadow Brook Park TIS CR201 & SP207 prepared by Kimley-Horn and Associates (April 2021)
- The Trails at Aspen Ridge TIS prepared by Matrix Design Group (April 2021)

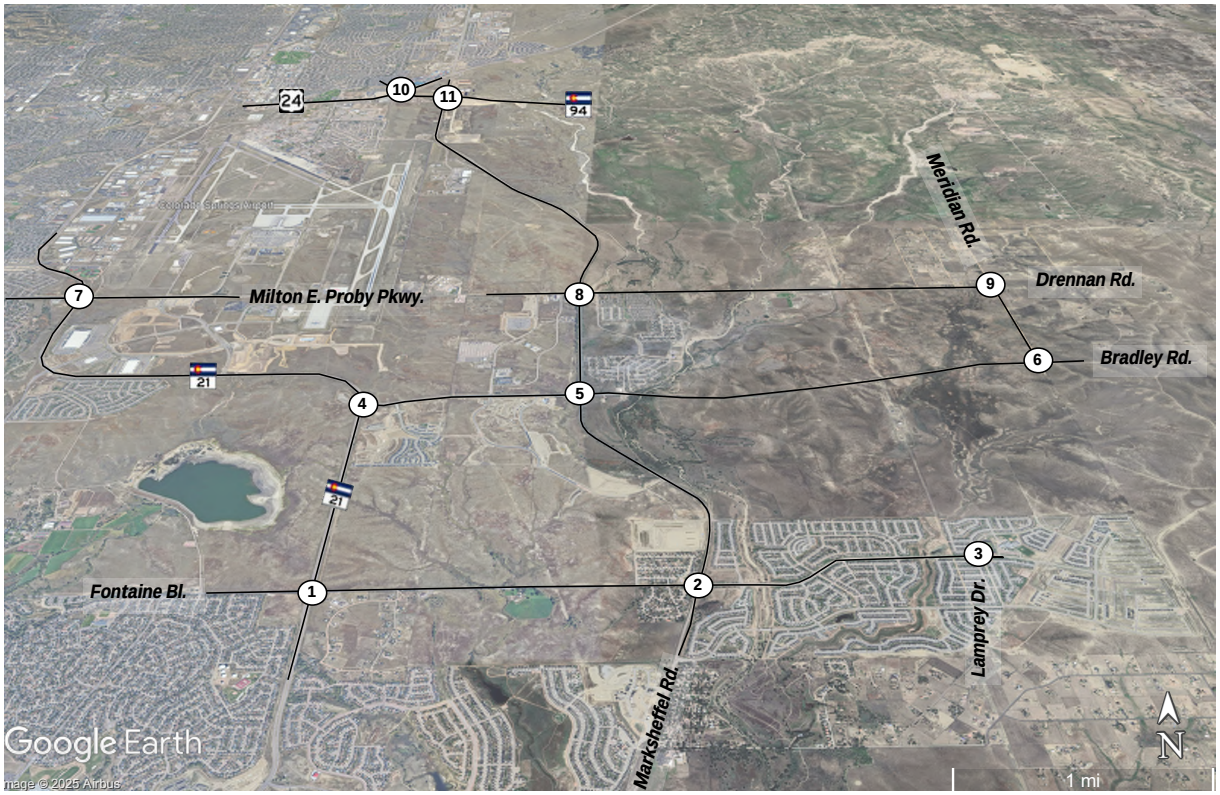
- Karmen Line (Norris Ranch) Traffic Study prepared by LSC Transportation Consultants (March 2023). Included only in 2055 analyses.
- Ridges at Lorson Ranch TIS PUDSP216 prepared by LSC Transportation Consultants (October 2021)
- The Hills at Lorson Ranch Transportation Memorandum PUDSP203 prepared by LSC Transportation Consultants (July 2021)

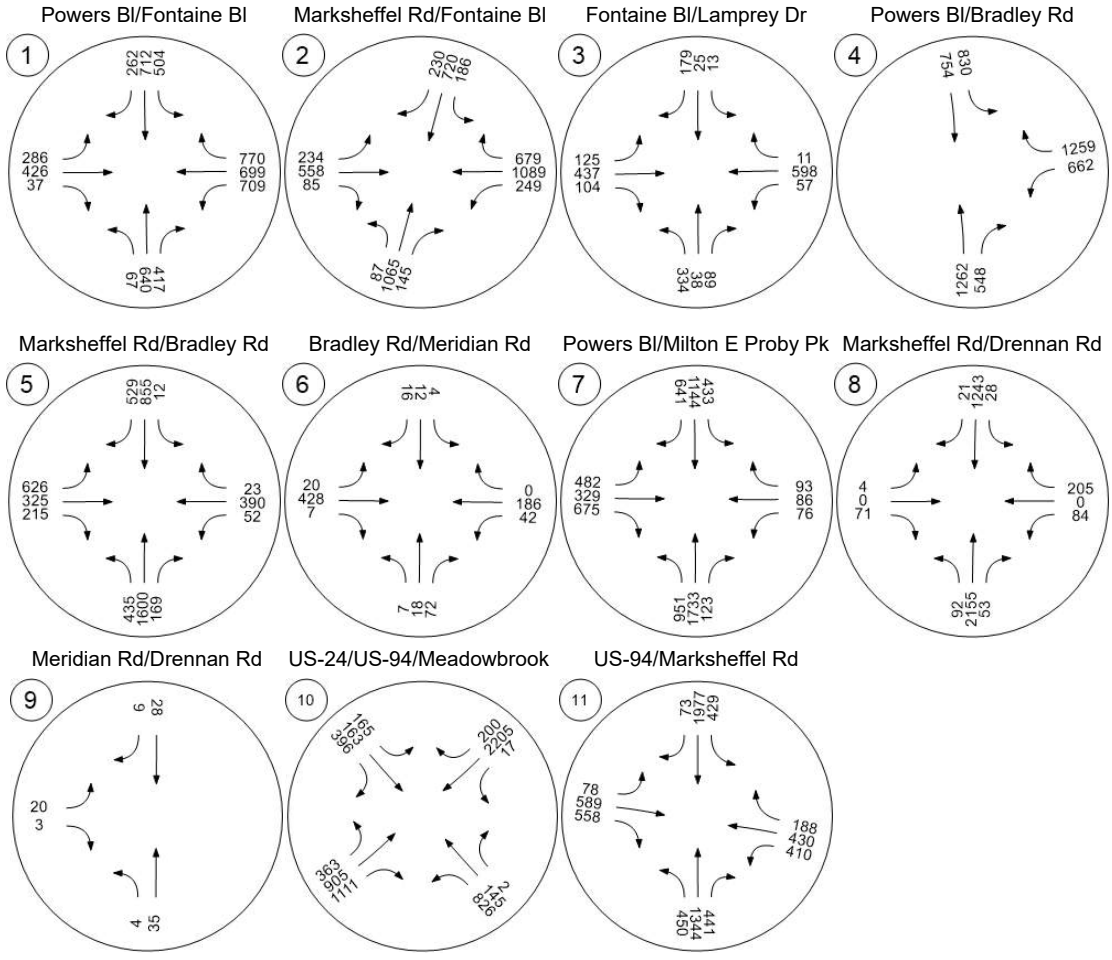
An excerpt from each TIS is provided in Appendix G – Supporting Documents.

## 5.2 Buildout (2035) Background Conditions

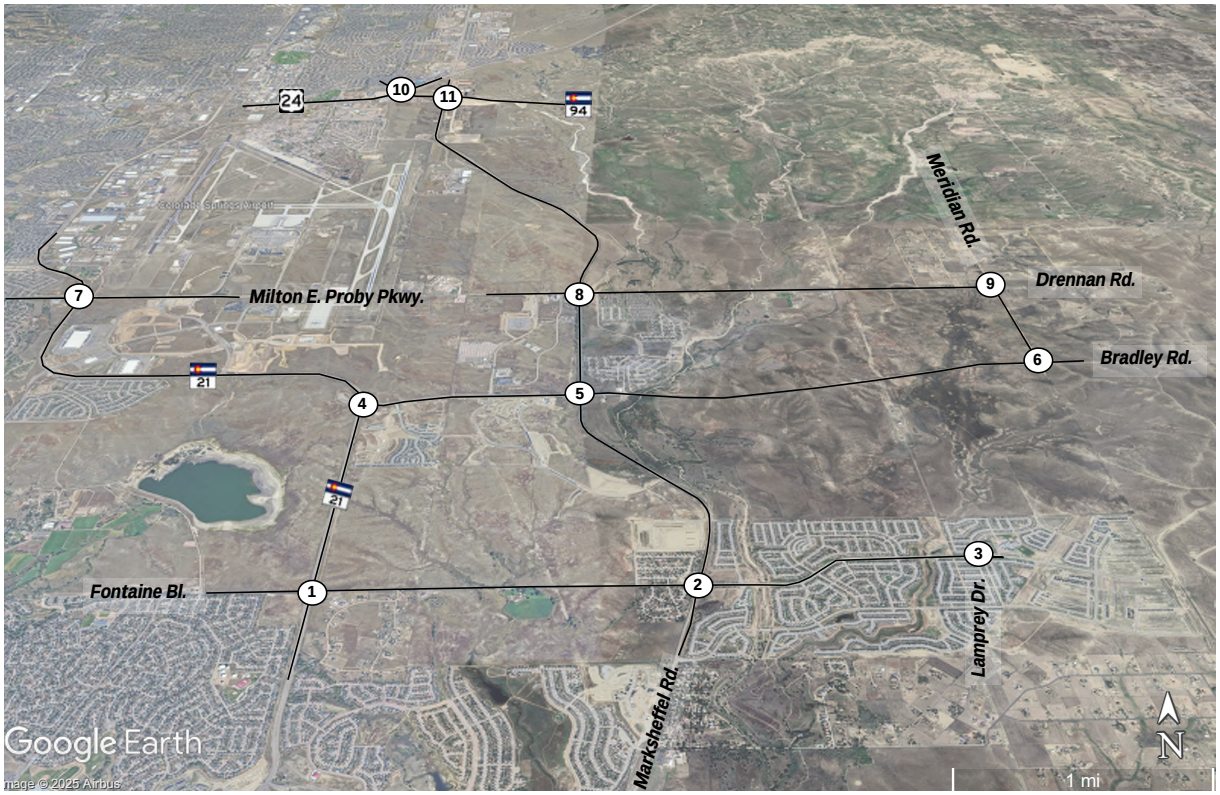
The buildout year's traffic volumes without the project are shown in Figure 14 and Figure 15. The buildout background daily volumes are shown in Figure 16 and the intersection configuration with approach LOS is shown in Figure 17. The intersection operations for the AM and PM peak hours are shown in Table 5 and Table 6, respectively.

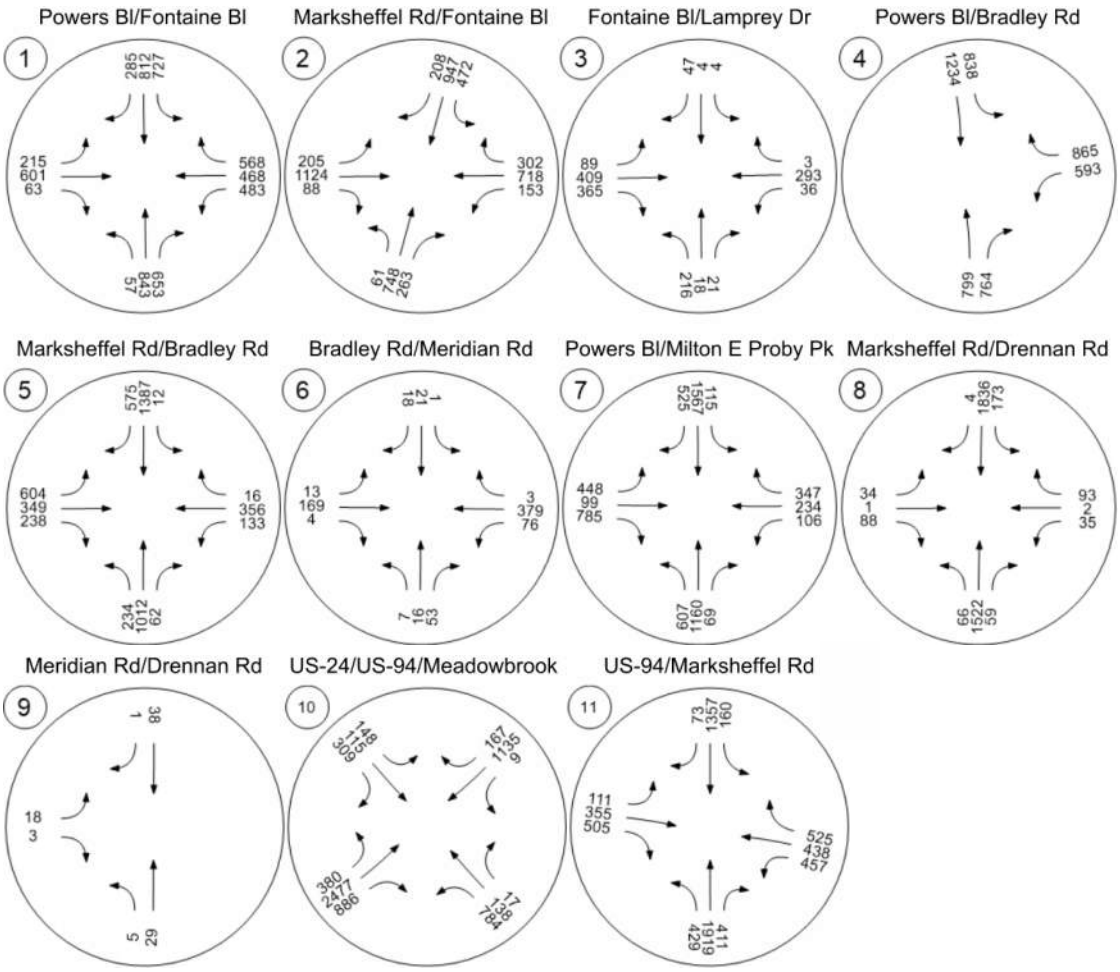
# Figure 14. Buildout (2035) Background Volumes (AM Peak Hour)



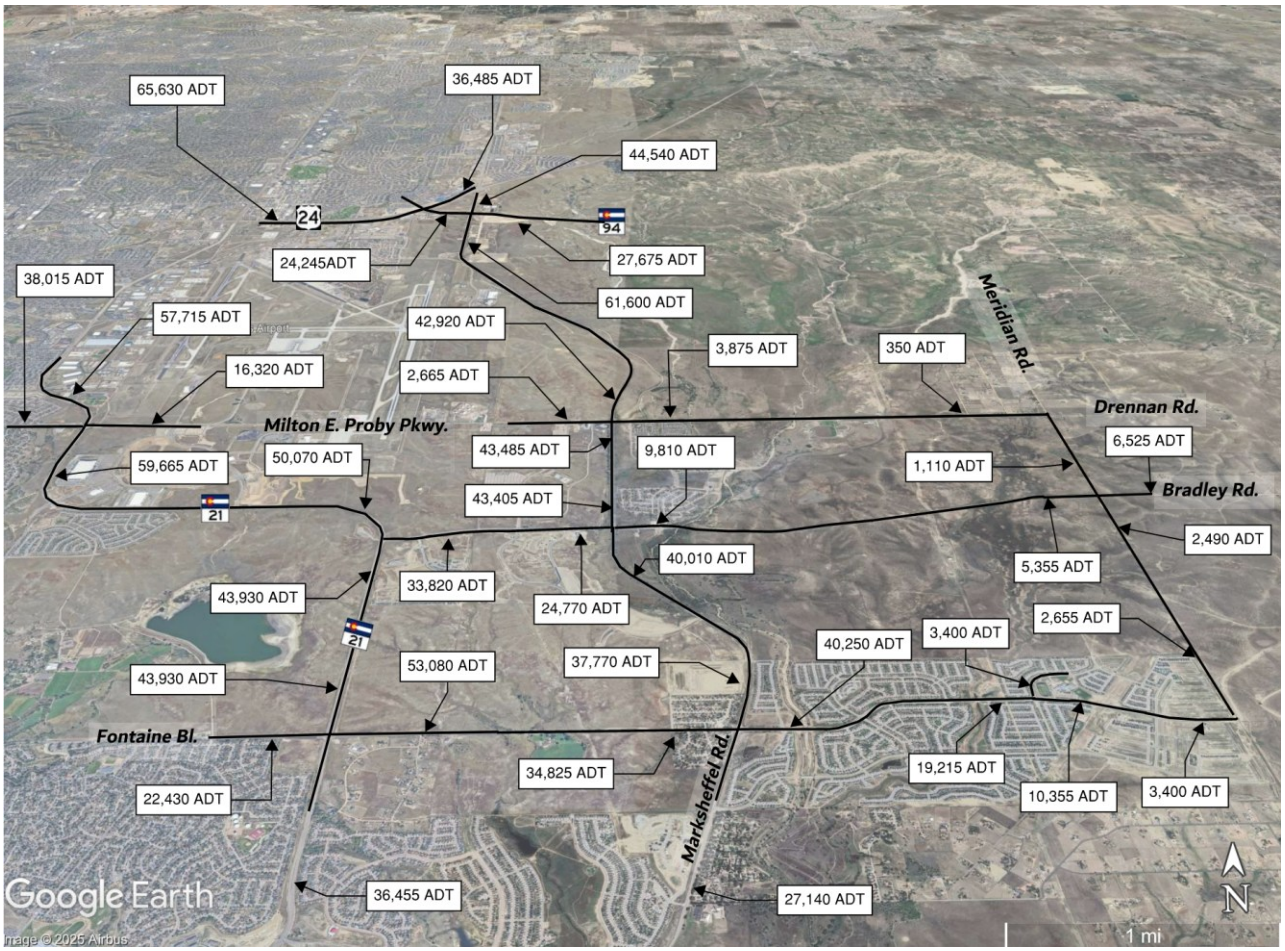



# Figure 15. Buildout (2035) Background Volumes (PM Peak Hour)



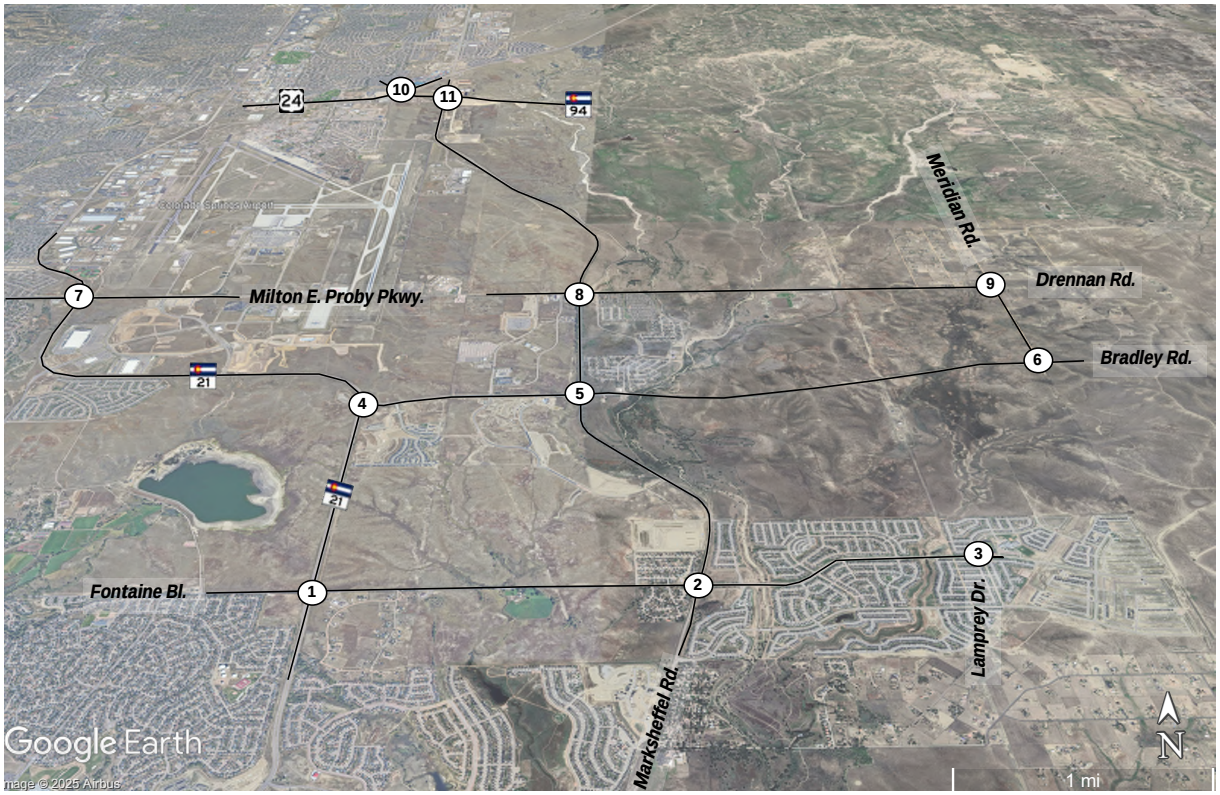



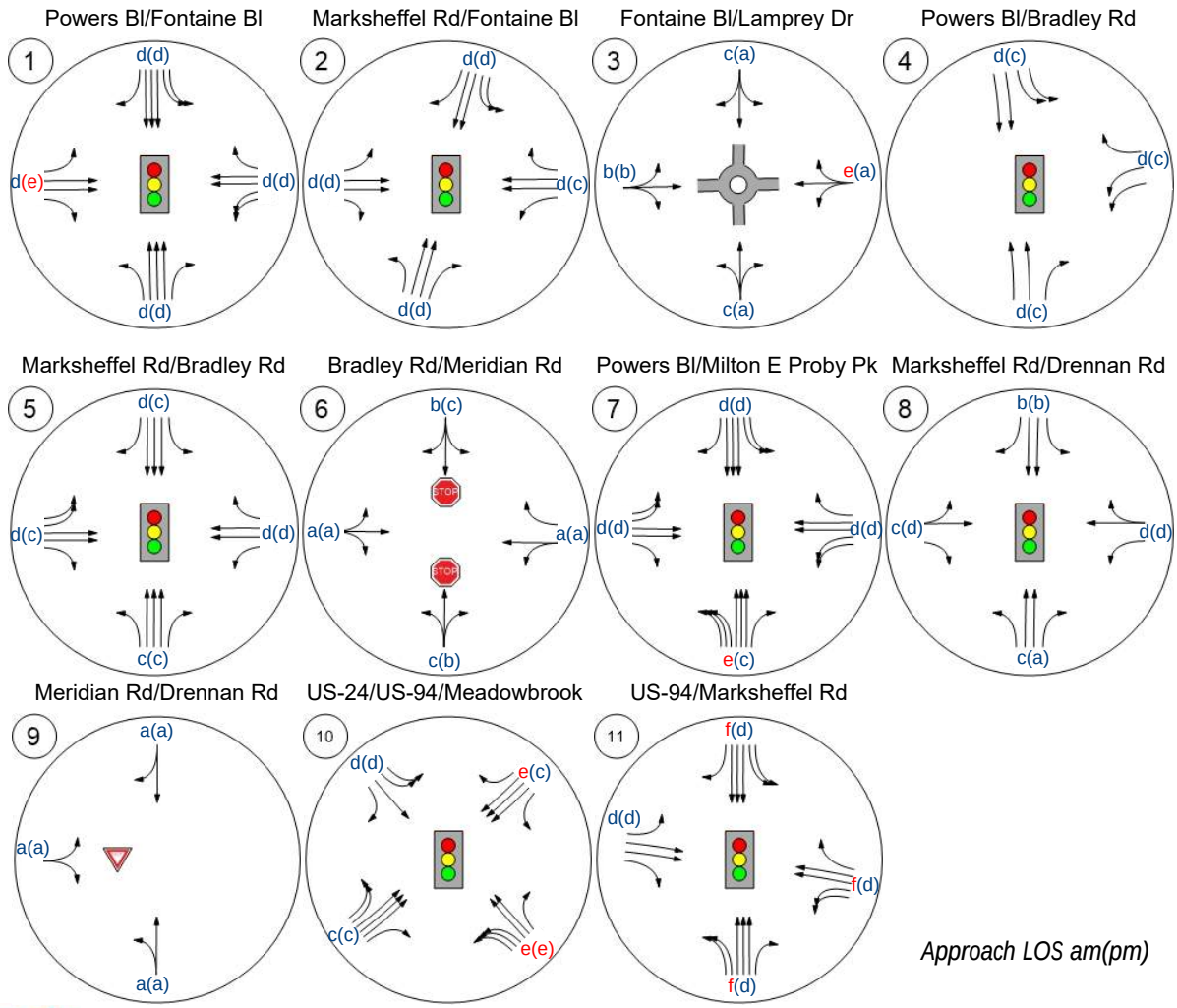
## Figure 16. Buildout (2035) Background Daily Volumes




The turn lane configurations and LOS for the studied intersections are shown in Figure 17. The intersection analysis summary for the AM and PM peak hour is shown in Table 5 and Table 6, respectively.

# Figure 17. Buildout (2035) Background Intersection Configuration and LOS



## Table 5. Buildout (2035) Background Intersection Operations (AM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | NB Left | 0.654 | 39.3 | D |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | EB Left | 0.807 | 45.3 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | WB Thru | | 24.0 | C |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | WB Left | 0.854 | 42.5 | D |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | WB Thru | 0.694 | 35.8 | D |
| 6 | Bradley Rd/Meridian Rd | Two-way stop | HCM 7th Edition | SB Left | 0.019 | 22.9 | C |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | EB Right | 0.760 | 53.0 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | SB Left | 0.728 | 25.2 | C |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.024 | 4.2 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Thru | 0.798 | 47.5 | D |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | NB Left | 0.872 | 118.0 | F |

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. Buildout (2035) Background Intersection Operations (PM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | NB Right | 0.786 | 49.8 | D |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | EB Thru | 0.778 | 41.7 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | EB Thru | | 11.3 | B |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | WB Left | 0.694 | 21.5 | C |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | NB Left | 0.684 | 31.3 | C |
| 6 | Bradley Rd/Meridian Rd | Two-way stop | HCM 7th Edition | SB Left | 0.004 | 21.7 | C |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | EB Right | 0.763 | 42.9 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | SB Left | 0.690 | 11.0 | B |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.022 | 4.2 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Thru | 0.762 | 36.4 | D |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | SB Left | 0.712 | 46.7 | D |

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 5 and Table 6 indicate all intersections operate at an acceptable LOS except for US-94/Marksheffel Road (#11). Even though this intersection operates at LOS D in the PM peak hour, the intersection operates at LOS F in the AM peak hour. In this study, Matrix applied a broader external trip distribution compared to other traffic studies, as shown in Figure 10. A sensitivity analysis was performed at this intersection to account for an estimated amount of intra-zonal trips from the adjacent developments, except for Reagan Ranch, Crossroads North, and the Crossroads Mixed-Use development. The results show that that if 88.5% of trips generated from the remaining developments do not reach this intersection, it will operate at LOS D during the AM peak hour. A summary of this scenario is provided in Appendix D – Buildout Conditions, labeled as Scenario A. (Note: the remainder of the analyses uses the previously established trip generation values from Table 4.

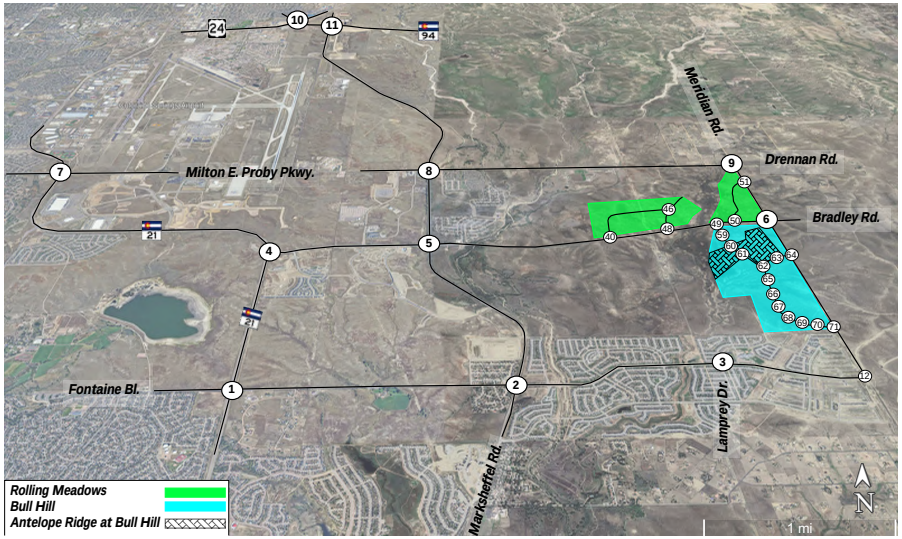
Based on the assumption that traffic from adjacent developments will follow the trip distribution showed in Figure 10, an at-grade intersection would not provide acceptable LOS (note that an adjusted trip distribution assumption was assumed for developments north of Drennan Road). To mitigate impacts to the transportation network and this intersection in particular, Matrix recommends that further studies are

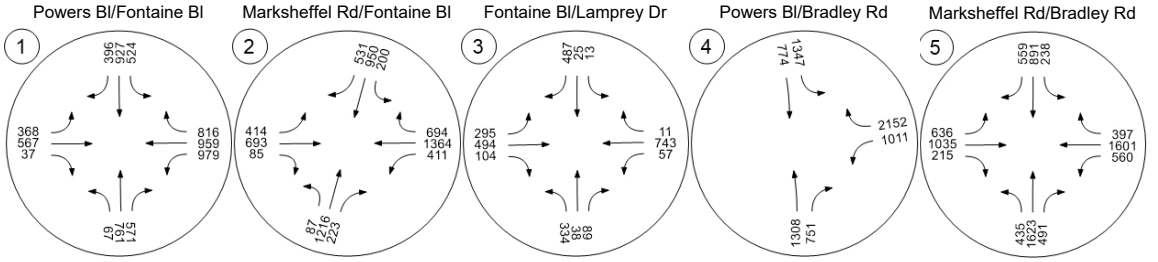
conducted by CDOT and/or El Paso County to identify the design options and opportunities for implementing an ultimate solution and determine the responsible party for its implementation. Options may include an at grade-separated interchange, which was also recommended in the Kimley-Horn study.

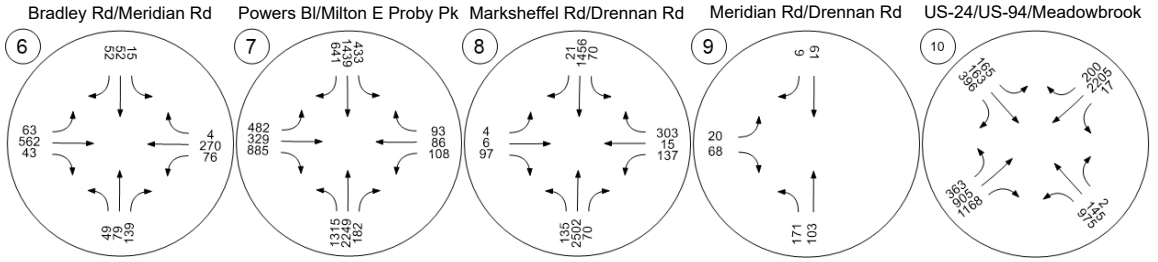
## 5.3 Buildout (2035) Total Conditions

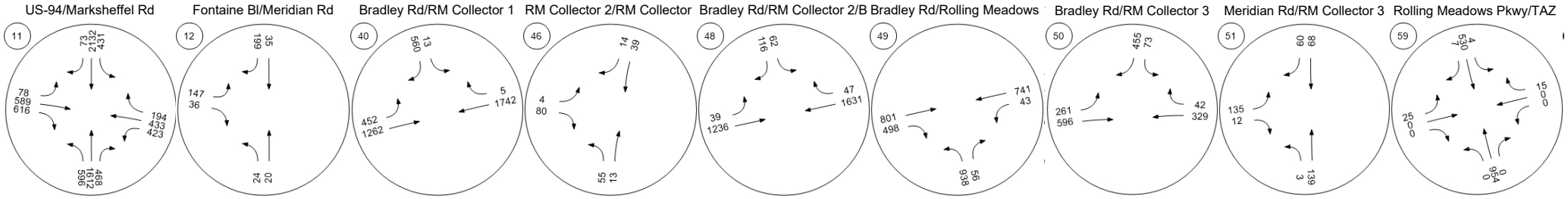
The AM and PM volumes with the addition of the project at buildout are shown in Figure 18 and Figure 19, respectively. The roadway classification and total daily volumes are shown in Figure 20. The turn lane configuration and approach LOS is shown in Figure 21. The intersection operations for the AM and PM peak hours are shown in Table 7 and Table 8, respectively. The turn lane evaluation for the buildout total is shown in Table 9.

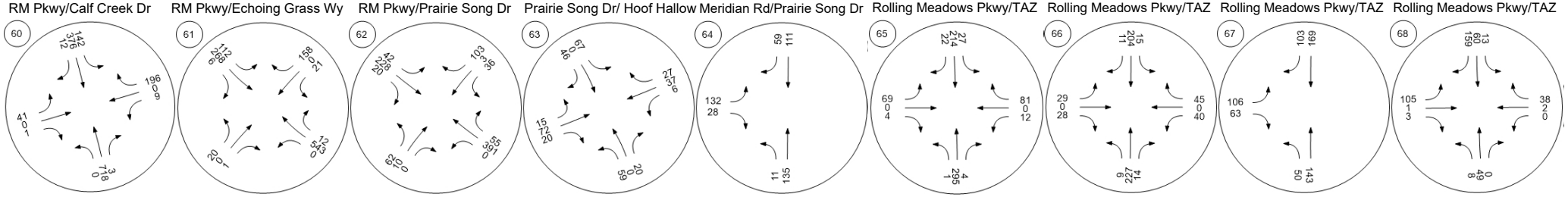
# Figure 18. Buildout (2035) Total Volumes (AM Peak Hour)

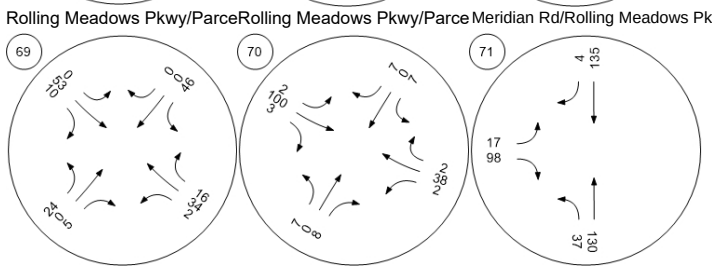


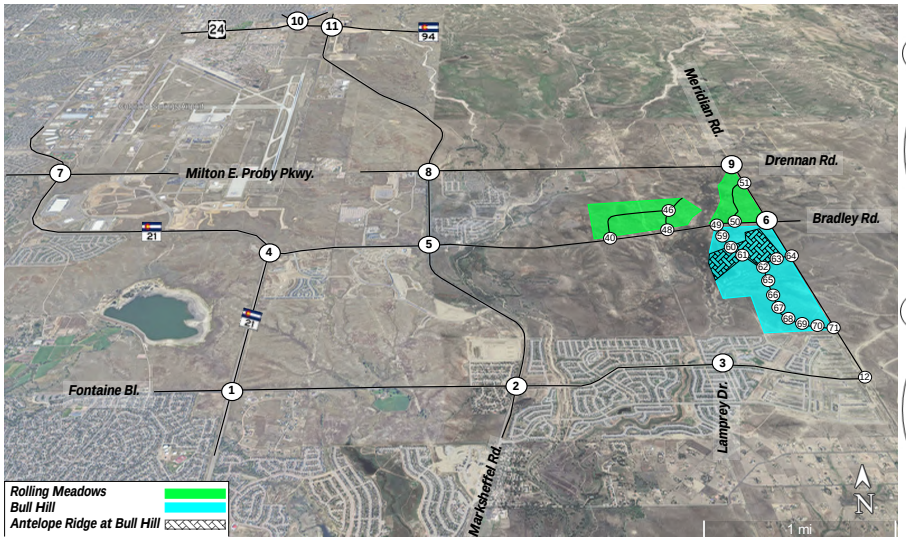



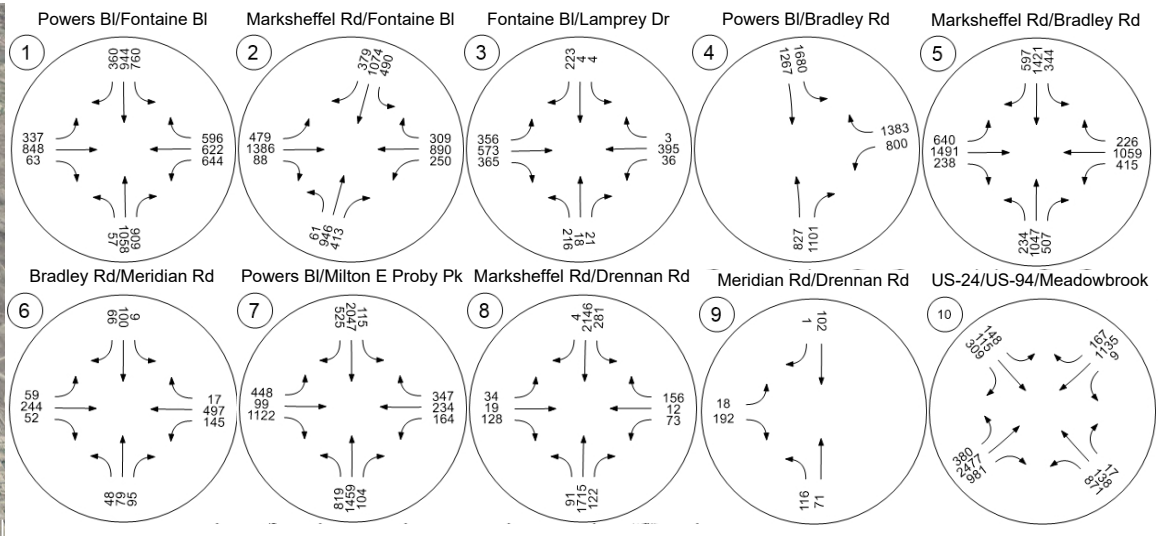



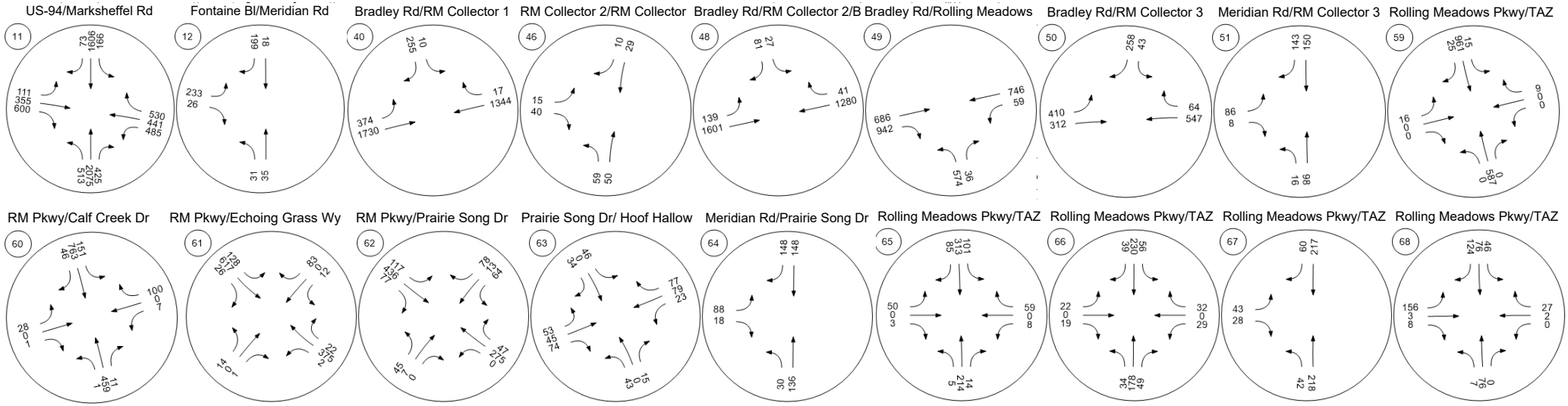



# Figure 19. Buildout (2035) Total Volumes (PM Peak Hour)

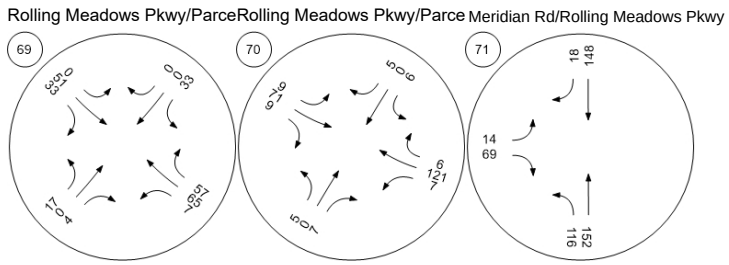


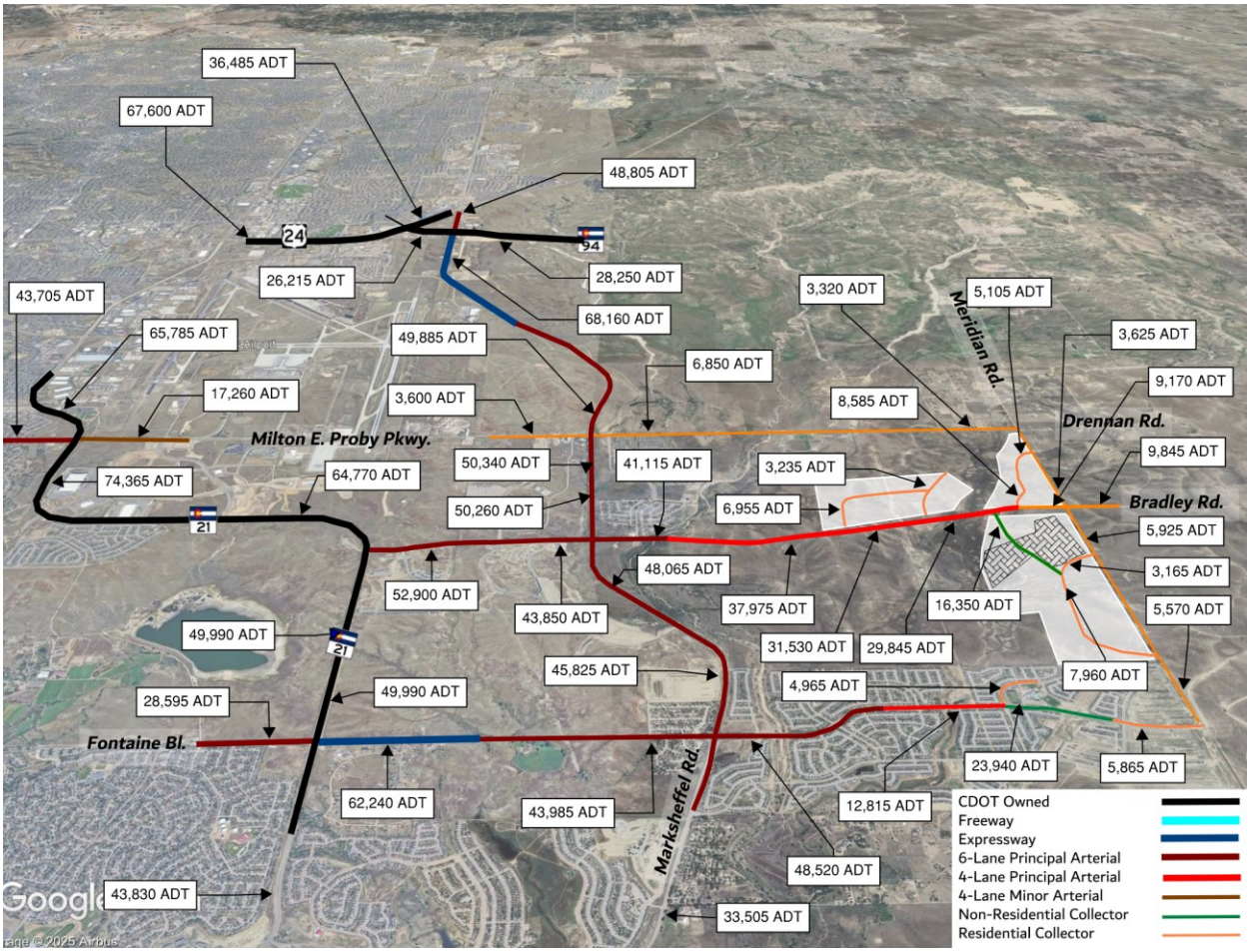






Roadways adjacent to the new development were classified based on the Roadway Design Standards from the El Paso County ECM and the City of Colorado Springs TCM. The roadway classification and daily volumes are shown in Figure 20.

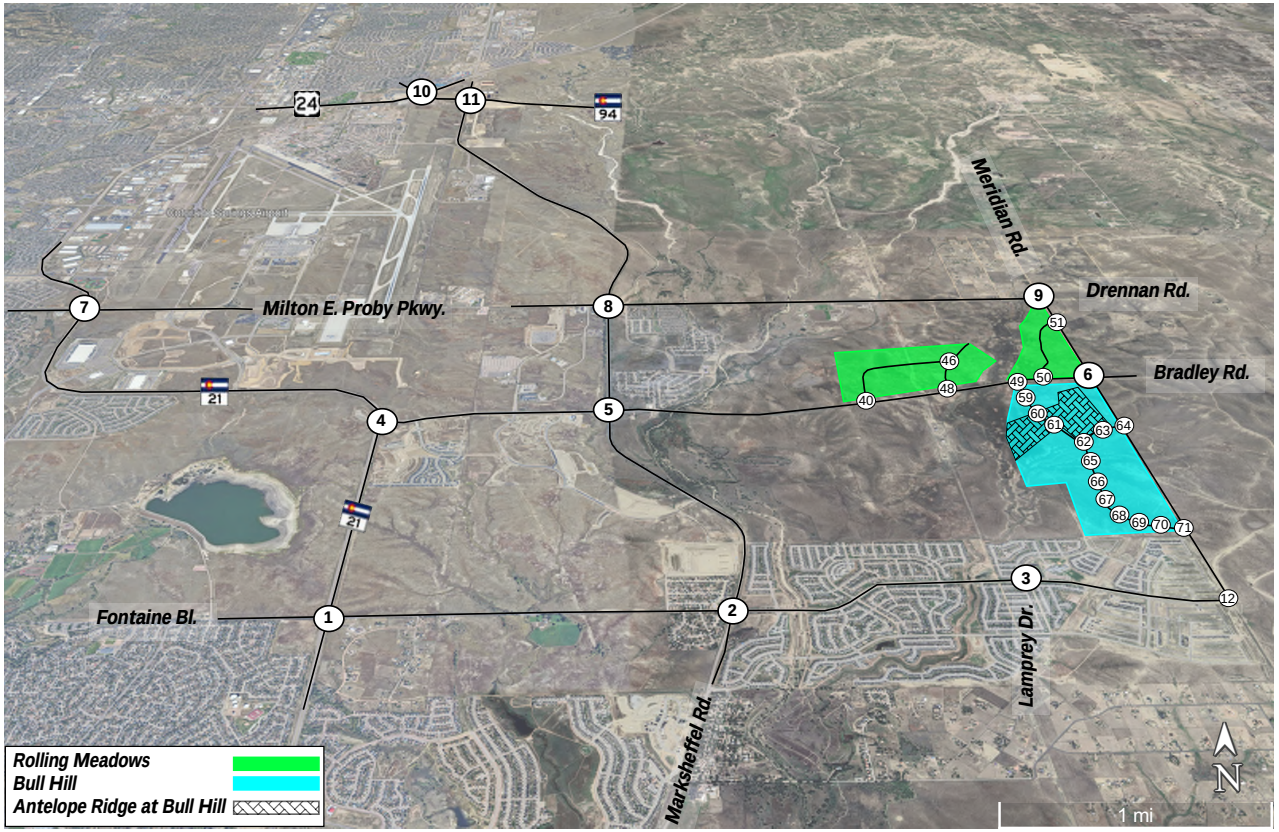
**Figure 20. Buildout (2035) Total Roadway Classification and Daily Volumes**

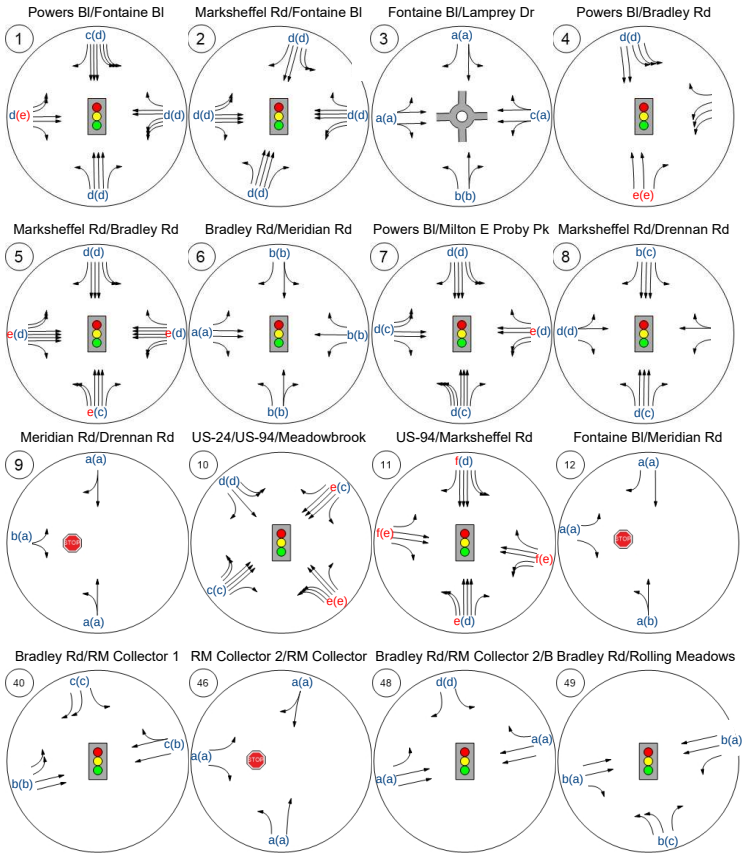


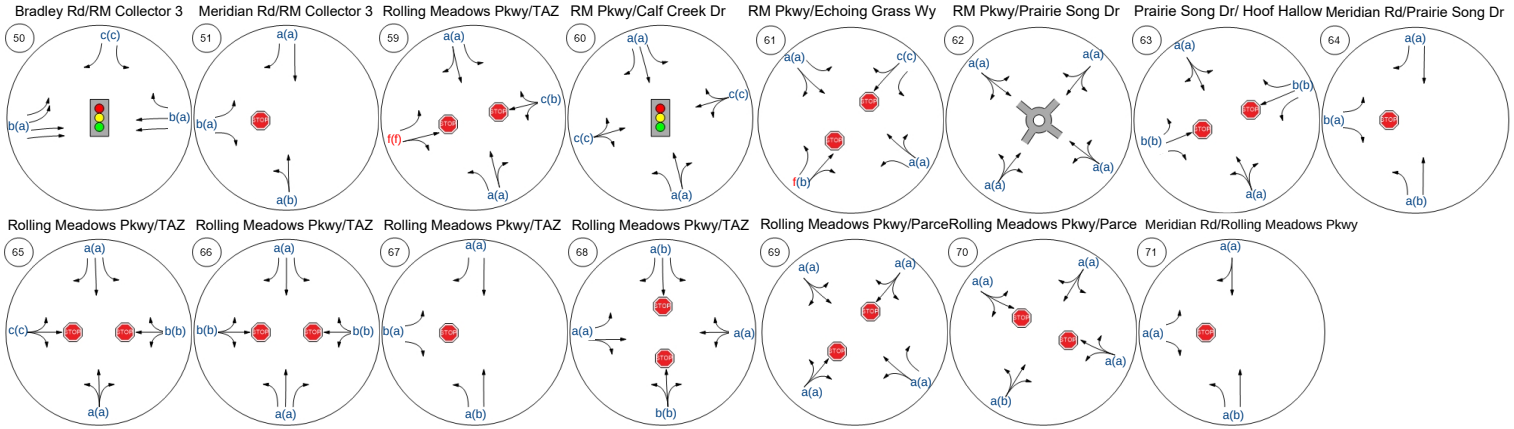

**Bradley Road Considerations:**

As shown in Figure 21, while Bradley Road is functionally classified as an urban six-lane arterial per the CCS TCM, the traffic operational analysis indicates that a four-lane cross-section will be sufficient to accommodate traffic volumes in the year 2035. Note that the aggregated daily site traffic for the adjacent development was not adjusted to account for internal or pass-by trips for mixed-use developments (MXD), as there are no complete data points in the ITE trip generation handbook for applying these types of reductions to daily trip estimates. Although the NCHRP Report 684 has expanded the ITE methodology to account for internal trip capture during the AM peak hour, the daily internal trip estimates lacking sufficient data. One approach is to apply a flat percentage reduction in external trips, as determined by local planning, zoning, or transportation engineering officials. However, since this reduction typically ranges from 5% to 25%, the resulting estimates are less reliable. As a result, the actual daily traffic on the roadway may be lower than the estimates based on the ITE Trip Generation Manual due to potential trip reductions for adjacent developments.

# Figure 21. Buildout (2035) Total Intersection Configuration and LOS




**Approach LOS am(pm)**

## Table 7. Buildout (2035) Total Intersection Operations (AM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | NB Left | 0.681 | 38.9 | D |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | NB Left | 0.765 | 43.8 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | WB Right | | 9.7 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | NB Thru | 0.893 | 54.2 | D |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | SB Left | 0.877 | 67.3 | E |
| 6 | Bradley Rd/Meridian Rd | Signalized | HCM 7th Edition | NB Left | 0.265 | 11.0 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Thru | 0.794 | 50.9 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | NB Thru | 0.665 | 35.3 | D |
| 9 | Meridian Rd/Drennan Rd | Two-way stop | HCM 7th Edition | EB Left | 0.051 | 14.1 | B |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Thru | 0.830 | 54.5 | D |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | NB Left | 0.955 | 94.1 | F |
| 12 | Fontaine Bl/Meridian Rd | Two-way stop | HCM 7th Edition | EB Left | 0.185 | 10.1 | B |
| 40 | Bradley Rd/RM Collector 1 | Signalized | HCM 7th Edition | SB Left | 0.736 | 21.9 | C |
| 46 | RM Collector 2/RM Collector 4 | Two-way stop | HCM 7th Edition | EB Left | 0.005 | 9.7 | A |
| 48 | Bradley Rd/RM Collector 2/BH Collector 1 | Signalized | HCM 7th Edition | SB Right | 0.538 | 5.5 | A |
| 49 | Bradley Rd/Rolling Meadows Pkwy | Signalized | HCM 7th Edition | WB Left | 0.540 | 15.0 | B |
| 50 | Bradley Rd/RM Collector 3 | Signalized | HCM 7th Edition | SB Right | 0.338 | 14.8 | B |
| 51 | Meridian Rd/RM Collector 3 | Two-way stop | HCM 7th Edition | EB Left | 0.195 | 10.9 | B |
| 59 | Rolling Meadows Pkwy/TAZ 14 Access 1/TAZ 15 Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.351 | 75.2 | F |
| 60 | Rolling Meadows Pkwy/Calf Creek Dr | Signalized | HCM 7th Edition | WB Right | 0.491 | 7.9 | A |
| 61 | Rolling Meadows Pkwy/Echoing Grass Wy | Two-way stop | HCM 7th Edition | EB Left | 0.244 | 57.3 | F |
| 62 | Rolling Meadows Pkwy/Prairie Song Dr | Roundabout | HCM 7th Edition | WB Thru | | 6.1 | A |
| 63 | Prairie Song Dr/Hoof Hallow Pl/TAZ 16A Access 1 | Two-way stop | HCM 7th Edition | WB Left | 0.015 | 12.9 | B |
| 64 | Meridian Rd/Prairie Song Dr | Two-way stop | HCM 7th Edition | EB Left | 0.206 | 11.5 | B |
| 65 | Rolling Meadows Pkwy/TAZ 14 Access 3/TAZ 16A Access 2 | Two-way stop | HCM 7th Edition | EB Left | 0.233 | 19.5 | C |
| 66 | Rolling Meadows Pkwy/TAZ 16B Access 1/TAZ 18 Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.078 | 14.7 | B |
| 67 | Rolling Meadows Pkwy/TAZ 16B Access 2/TAZ 18 Access 2 | Two-way stop | HCM 7th Edition | EB Left | 0.211 | 13.4 | B |
| 68 | Rolling Meadows Pkwy/TAZ 16B Access 3/TAZ 18 Access 3 | Two-way stop | HCM 7th Edition | NB Left | 0.022 | 14.7 | B |
| 69 | Rolling Meadows Pkwy/Parcel V Acees 2 | Two-way stop | HCM 7th Edition | WB Left | 0.058 | 9.4 | A |
| 70 | Rolling Meadows Pkwy/Parcel V Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.003 | 10.0 | A |
| 71 | Meridian Rd/BH Collector 1 | Two-way stop | HCM 7th Edition | EB Left | 0.029 | 11.1 | B |

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 8. Buildout (2035) Total Intersection Operations (PM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | NB Left | 0.779 | 46.7 | D |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | NB Left | 0.739 | 44.5 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | NB Left | | 8.0 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | NB Right | 0.896 | 50.8 | D |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | EB Left | 0.747 | 45.0 | D |
| 6 | Bradley Rd/Meridian Rd | Signalized | HCM 7th Edition | EB Left | 0.367 | 12.0 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Thru | 0.821 | 40.6 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | SB Thru | 0.586 | 35.2 | D |
| 9 | Meridian Rd/Drennan Rd | Two-way stop | HCM 7th Edition | EB Left | 0.038 | 13.3 | B |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Thru | 0.780 | 39.2 | D |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | NB Thru | 0.765 | 190.0 | F |
| 12 | Fontaine Bl/Meridian Rd | Two-way stop | HCM 7th Edition | EB Left | 0.299 | 11.1 | B |
| 40 | Bradley Rd/RM Collector 1 | Signalized | HCM 7th Edition | SB Left | 0.568 | 13.1 | B |
| 46 | RM Collector 2/RM Collector 4 | Two-way stop | HCM 7th Edition | EB Left | 0.022 | 10.0 | A |
| 48 | Bradley Rd/RM Collector 2/BH Collector 1 | Signalized | HCM 7th Edition | SB Right | 0.516 | 6.2 | A |
| 49 | Bradley Rd/Rolling Meadows Pkwy | Signalized | HCM 7th Edition | NB Left | 0.503 | 12.3 | B |
| 50 | Bradley Rd/RM Collector 3 | Signalized | HCM 7th Edition | SB Right | 0.384 | 15.7 | B |
| 51 | Meridian Rd/RM Collector 3 | Two-way stop | HCM 7th Edition | EB Left | 0.152 | 11.9 | B |
| 59 | Rolling Meadows Pkwy/TAZ 14 Access 1/TAZ 15 Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.254 | 76.3 | F |
| 60 | Rolling Meadows Pkwy/Calf Creek Dr | Signalized | HCM 7th Edition | WB Right | 0.482 | 5.5 | A |
| 61 | Rolling Meadows Pkwy/Echoing Grass Wy | Two-way stop | HCM 7th Edition | EB Left | 0.179 | 57.0 | F |
| 62 | Rolling Meadows Pkwy/Prairie Song Dr | Roundabout | HCM 7th Edition | EB Thru | | 7.8 | A |
| 63 | Prairie Song Dr/Hoof Hallow Pl/TAZ 16A Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.119 | 13.4 | B |
| 64 | Meridian Rd/Prairie Song Dr | Two-way stop | HCM 7th Edition | EB Left | 0.158 | 12.0 | B |
| 65 | Rolling Meadows Pkwy/TAZ 14 Access 3/TAZ 16A Access 2 | Two-way stop | HCM 7th Edition | EB Left | 0.227 | 24.5 | C |
| 66 | Rolling Meadows Pkwy/TAZ 16B Access 1/TAZ 18 Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.074 | 17.1 | C |
| 67 | Rolling Meadows Pkwy/TAZ 16B Access 2/TAZ 18 Access 2 | Two-way stop | HCM 7th Edition | EB Left | 0.100 | 13.5 | B |
| 68 | Rolling Meadows Pkwy/TAZ 16B Access 3/TAZ 18 Access 3 | Two-way stop | HCM 7th Edition | NB Left | 0.024 | 17.6 | C |
| 69 | Rolling Meadows Pkwy/Parcel V Acees 2 | Two-way stop | HCM 7th Edition | EB Left | 0.024 | 9.8 | A |
| 70 | Rolling Meadows Pkwy/Parcel V Access 1 | Two-way stop | HCM 7th Edition | WB Left | 0.014 | 10.4 | B |
| 71 | Meridian Rd/BH Collector 1 | Two-way stop | HCM 7th Edition | EB Left | 0.035 | 13.7 | B |

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.

A summary of deficient intersections is as follows:

Marksheffel Road/Bradley Road (#5)

This intersection operates at LOS E during the AM peak and at LOS D during the PM peak. As a mitigation scenario, Matrix assumed that 30 percent of the site traffic travelling to/from west and south will be rerouted to the future Mesa Ridge Parkway located to the south of Lorson Boulevard. Under this assumption the intersection will operate at LOS D during the AM peak hour and will remain operating at LOS D during the PM peak hour. The intersection operation summary with the assumed diverted trips (listed in the "Diverted" row) is shown in Appendix D- Buildout Conditions Analyses, labeled as Scenario B.

US-94/Marksheffel Road (#11)

This intersection operates at LOS F during the AM peak hour and at LOS D during the PM peak hour. Matrix applied a broader external trip distribution assumption for future developments after coordination with the reviewing agencies, as shown in Figure 10. A portion of these trips will likely be intra-zonal or will only cross into adjacent TAZs. To investigate this intersection further, a sensitivity analysis was performed at this intersection to account for internal trip capture from the RMBH and adjacent developments, except for Reagan Ranch, Crossroads North, and the Crossroads Mixed-Use development. The results show that, under the assumption that 88.5% of trips generated from the remaining developments will not reach this intersection, it will operate at LOS D during the AM peak hour. A summary of this scenario is located in Appendix D – Buildout Conditions, labeled as Scenario C.

Based on the assumption that traffic from adjacent developments will follow the trip distribution shown in Figure 10, it appears that an at-grade intersection would not provide acceptable traffic operations. Note that an adjusted trip distribution assumption was assumed for future developments located north of Drennan Road.

Rolling Meadows Parkway /TAZ 14 Access 1 (#59)

This stopped-controlled intersection operates at LOS F during both AM and PM peak hours. However, the queue on the worst movement (eastbound left-turn) is no more than 33-ft (which translates to maximum of two vehicles) at any hour. It should be noted that in urban and suburban settings, it is not uncommon for motorists on cross-streets to experience more than usual delays for one to two hours per day. As a result, Matrix does not recommend any mitigation.

Rolling Meadows Parkway /Echoing Grass Way (#61)

This stopped-controlled intersection operates at LOS F during the AM peak and LOS E during the PM peak hour. However, the queue on the worst movement (eastbound left-turn) is no more than 22-ft (1 vehicle) at any hour. As a result, Matrix does not recommend any mitigation.

## Table 9. Buildout (2035) Total Turn Lane Evaluations

| ID | Intersection | Access Category/Roadway Classificaiton | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Improvement (ft) (vs Improved Existing ) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl CDOT - SHAC Signalized | E-X | NBL | 1 | 55 | 67 | 99 | 222 | 600 | 100 | 920 | - |
| | | E-X | NBR | 1 | 55 | 909 | - | 222 | 600 | - | 820 | - |
| | | E-X | SBL | 3 | 55 | 760 | 332 | 667 | 600 | 253 | 1520 | Two Additional Turn Lanes |
| | | E-X | SBR | 1 | 55 | 396 | - | 222 | 600 | - | 820 | - |
| | | NR-A | EBL | 2 | 45 | 368 | 243 | 324 | 273 | 184 | 780 | Additional Turn Lane |
| | | NR-A | EBR | 1 | 45 | 63 | - | 162 | 273 | - | 435 | - |
| | | NR-A | WBL | 3 | 45 | 979 | 361 | 486 | - | 326 | 810 | Two Additional Turn Lanes |
| | | NR-A | WBR | 1 | 45 | 816 | - | 162 | 273 | - | 435 | - |
| | | NR-A | NBR to EBT Acceleration Lane | 1 | 45 | 909 | - | 162 | 388 *(Accel. Lane)* | - | 550 | - |
| | | NR-A | SBR to WBT Acceleration Lane | 1 | 45 | 396 | - | 162 | 388 *(Accel. Lane)* | - | 550 | 150 |
| | | E-X | EBR to SBT Acceleration Lane | 1 | 55 | 63 | - | 222 | 960 *(Accel. Lane)* | - | 1180 | - |
| | | E-X | WBR to NBT Acceleration Lane | 1 | 55 | 816 | - | 222 | 960 *(Accel. Lane)* | - | 1180 | - |
| 2 | Marksheffel Rd/Fontaine Bl CCS -TCM Signalized | Principal Arterial | NBL | 1 | 45 | 87 | 133 | 180 | 200 | - | 380 | - |
| | | Principal Arterial | NBR | 1 | 45 | 413 | 243 | 180 | 200 | - | 380 | - |
| | | Principal Arterial | SBL | 2 | 45 | 490 | 298 | 360 | 200 | - | 560 | Additional Turn Lane |
| | | Principal Arterial | SBR | 1 | 45 | 531 | 259 | 180 | 200 | - | 380 | - |
| | | Principal Arterial | EBL | 2 | 45 | 479 | 271 | 360 | 200 | - | 560 | Additional Turn Lane |
| | | Principal Arterial | EBR | 1 | 45 | 88 | 42 | 180 | 200 | - | 380 | 105 |
| | | Principal Arterial | WBL | 2 | 45 | 411 | 249 | 360 | 200 | - | 560 | Additional Turn Lane |
| | | Principal Arterial | WBR | 1 | 45 | 694 | - | 180 | 200 | - | 380 | |
| | | Principal Arterial | WBR to NBT Acceleration Lane | 1 | 45 | 694 | - | 162 | 388 *(Accel. Lane)* | - | 550 | New Accelration Lane |
| 3 | Fontaine Bl/Lamprey Dr EPC - ECM Roundabout | Local | NBL | 1 | 25 | 216 | 94 | 120 | 115 | 100 | 335 | 335 |
| | | Residential Collector | SBL/SBT | 1 | 35 | 487 | - | 160 | 155 | 50 | 365 | 365 |
| | | | SBR to WBT Acceleration Lane | 1 | Occurs at Roundabout | 487 | - | 90 | - | - | 90 | New Merging Taper |
| 4 | Powers Bl/Bradley Rd CDOT - SHAC Signalized | E-X | NBR | 1 | 65 | 1101 | 890 | 300 | 800 | - | 1100 | - |
| | | E-X | SBL | 3 | 65 | 1688 | 854 | 900 | 800 | 563 | 2265 | Two Additional Turn Lanes |
| | | NR-A | WBL | 3 | 45 | 1011 | 512 | 486 | - | 337 | 825 | Additional turn lane |
| | | NR-A | WBR | 1 | 45 | 2152 | - | 162 | 338 | - | 500 | - |
| | | E-X | WBR to NBT Acceleration Lane | 1 | 65 | 2168 | - | 300 | 1380 *(Accel. Lane)* | - | 1680 | - |
| 5 | Marksheffel Rd/Bradley Rd CCS -TCM Signalized | Principal Arterial | NBL | 2 | 45 | 435 | 579 | 360 | 260 | - | 620 | Additional turn lane |
| | | Principal Arterial | NBR | 1 | 45 | 507 | - | 180 | 260 | - | 440 | - |
| | | Principal Arterial | SBL | 2 | 45 | 344 | 518 | 360 | 260 | - | 620 | Additional turn lane |
| | | Principal Arterial | SBR | 1 | 45 | 597 | - | 180 | 260 | - | 440 | - |
| | | Principal Arterial | EBL | 2 | 45 | 640 | 922 | 360 | 235 | - | 595 | Additional turn lane |
| | | Principal Arterial | EBR | 1 | 45 | 238 | - | 180 | 235 | - | 415 | - |
| | | Principal Arterial | WBL | 2 | 45 | 560 | 716 | 360 | 200 | - | 560 | Additional turn lane |
| | | Principal Arterial | WBR | 1 | 45 | 397 | - | 180 | 200 | - | 380 | - |
| | | Principal Arterial | NBR to EBT Acceleration Lane | 1 | 45 | 507 | - | 162 | 388 *(Accel. Lane)* | - | 550 | - |
| | | Principal Arterial | SBR to WBT Acceleration Lane | 1 | 45 | 597 | - | 162 | 388 *(Accel. Lane)* | - | 550 | - |
| | | Principal Arterial | EBR to SBT Acceleration Lane | 1 | 45 | 238 | - | 162 | 388 *(Accel. Lane)* | - | 550 | - |
| | | Principal Arterial | WBR to NBT Acceleration Lane | 1 | 45 | 397 | - | 162 | 388 *(Accel. Lane)* | - | 550 | - |

*Buildout (2035) Total Turn Lane Evaluations (Continued)*

| ID | Intersection | Access Category/Roadway Classificaiton | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Improvement (ft) (vs Improved Existing ) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Bradley Rd/Meridian Rd<br>EPC-ECM<br>Signalized | Collector | NBL | 1 | 35 | 49 | 24 | **160** | **155** | **24** | **340** | 340 |
| | | Collector | SBR | 1 | 35 | 66 | 13 | **160** | **155** | **13** | **330** | 330 |
| | | Principal Arterial | EBL | 1 | 45 | 63 | 28 | **200** | **235** | **28** | **465** | 465 |
| | | Principal Arterial | EBR | 1 | 45 | 52 | 5 | **200** | **235** | **5** | **440** | 440 |
| | | Principal Arterial | WBL | 1 | 45 | 145 | 48 | **200** | **235** | **48** | **485** | 485 |
| | | Principal Arterial | WBR | 1 | 45 | 123 | 2 | **200** | **235** | **2** | **435** | - |
| 7 | Powers Bl/Milton E Proby Pkwy<br>CDOT -SHAC<br>Signalized | E-X | NBL | 3 | 60 | 1315 | 594 | **900** | **700** | **438** | **2040** | Additional turn lane |
| | | E-X | NBR | 1 | 60 | 182 | - | **300** | **700** | **-** | **1000** | - |
| | | E-X | SBL | 2 | 55 | 433 | 367 | **444** | **600** | **217** | **1260** | - |
| | | E-X | SBR | 1 | 55 | 641 | - | **222** | **600** | **-** | **820** | - |
| | | E-X | EBL | 2 | 55 | 482 | 395 | **444** | **600** | **241** | **1285** | Turn lane is currently provided to the available intersection spacing |
| | | E-X | EBR | 1 | 55 | 1122 | - | **222** | **600** | **-** | **820** | Improvement should be made to the available intersection spacing |
| | | E-X | WBL | 2 | 55 | 164 | 143 | **444** | **600** | **82** | **1125** | Additional turn lane |
| | | E-X | WBR | 1 | 55 | 347 | - | **222** | **600** | **-** | **820** | - |
| | | E-X | NBR to EBT Acceleration Lane | 1 | 55 | 182 | - | **222** | **960** ***(Accel. Lane)*** | **-** | **1180** | - |
| | | E-X | SBR to WBT Acceleration Lane | 1 | 55 | 641 | - | **222** | **960** ***(Accel. Lane)*** | **-** | **1180** | - |
| | | E-X | EBR to SBT Acceleration Lane | 1 | 55 | 1122 | - | **222** | **960** ***(Accel. Lane)*** | **-** | **1180** | - |
| | | E-X | WBR to NBT Acceleration Lane | 1 | 60 | 347 | - | **300** | **1170** ***(Accel. Lane)*** | **-** | **1470** | - |
| 8 | Marksheffel Rd/Drennan Rd<br>CCS - TCM<br>Signalized | Principal Arterial | NBL | 1 | 45 | 135 | 44 | **180** | **200** | **-** | **380** | - |
| | | Principal Arterial | NBR | 1 | 45 | 122 | 31 | **180** | **200** | **-** | **380** | - |
| | | Principal Arterial | SBL | 1 | 45 | 281 | 146 | **180** | **200** | **-** | **380** | - |
| | | Principal Arterial | SBR | 1 | 45 | 21 | 4 | **180** | **200** | **-** | **380** | - |
| | | Minor Arterial | EBL | 1 | 40 | 34 | 55 | **160** | **155** | **-** | **315** | Exclusive left-turn is not recommended due to low through traffic volume |
| | | Principal Arterial | WBL | 1 | 45 | 137 | 123 | **180** | **200** | **-** | **380** | - |
| 10 | Highway-24/Highway-94<br>CDOT -SHAC<br>Signalized | E-X | NBL (US-94) | 3 | 55 | 975 | 470 | **666** | **600** | **325** | **1590** | Additional turn lane |
| | | E-X | NBR (US-94) | 1 | 55 | 17 | 12 | **222** | **600** | **-** | **820** | - |
| | | F-R | SBL (Newt Dr.) | 2 | 30 | 165 | 140 | **192** | **-** | **83** | **275** | - |
| | | F-R | SBR (Newt Dr.) | 1 | 30 | 396 | - | **96** | **-** | **25** | **120** | - |
| | | E-X | EBL (US-24) | 2 | 55 | 380 | 212 | **444** | **600** | **190** | **1235** | Additional turn lane |
| | | E-X | EBR (US-24) | 1 | 55 | 1168 | - | **222** | **600** | **-** | **820** | - |
| | | E-X | WBL (US-24) | 1 | 65 | 17 | 10 | **300** | **800** | **25** | **1125** | - |
| | | E-X | WBR (US-24) | 1 | 65 | 200 | 84 | **300** | **800** | **-** | **1100** | - |
| | | NR-A | SBR to WBT Acceleration Lane | 1 | 65 | 396 | - | **300** | **1080** ***(Accel. Lane)*** | **-** | **1380** | - |
| | | E-X | EBR to SBT Acceleration Lane | 1 | 55 | 1168 | - | **222** | **960** ***(Accel. Lane)*** | **-** | **1180** | - |

## *Buildout (2035) Total Turn Lane Evaluations (Continued)*

| ID | Intersection | Access Category/Roadway Classificaiton | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Improvement (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | Highway-94/Marksheffel Rd<br>CDOT -SHAC<br>Signalized | NR-A | NBL | 2 | 45 | 596 | 613 | **324** | **111** | **298** | **735** | Additional turn lane |
| | | NR-A | NBR | 1 | 45 | 468 | - | **162** | **273** | **-** | **435** | - |
| | | NR-A | SBL | 2 | 45 | 431 | 373 | **324** | **111** | **216** | **650** | Additional turn lane |
| | | NR-A | SBR | 1 | 45 | 73 | 43 | **162** | **338** | **-** | **500** | - |
| | | E-X | EBL | 1 | 50 | 111 | 148 | **180** | **500** | **111** | **790** | 85 |
| | | E-X | EBR | 1 | 50 | 616 | - | **180** | **500** | **-** | **680** | - |
| | | E-X | WBL | 2 | 65 | 485 | 387 | **600** | **800** | **243** | **1645** | Additional turn lane |
| | | E-X | WBR | 1 | 65 | 530 | - | **300** | **800** | **-** | **1100** | 300 |
| | | E-X | SBR to WBT Acceleration Lane | 1 | 65 | 73 | - | **300** | **1,170 *(Accel. Lane)*** | **-** | **1470** | 1470 |
| | | NR-A | EBR to SBT Acceleration Lane | 1 | 45 | 616 | - | **180** | **580 *(Accel. Lane)*** | **-** | **760** | 760 |
| | | NR-A | WBR to NBT Acceleration Lane | 1 | 45 | 530 | - | **180** | **740 *(Accel. Lane)*** | **-** | **960** | - |
| 12 | Fontaine Bl/Meridian Rd<br>EPC - ECM<br>Stop-Controlled | Minor Arterial | SBR | 1 | 35 | 199 | - | **160** | **155** | **-** | **315** | Required New Turn Lane |
| | | Minor Arterial | EBLT | 1 | 35 | 233 | 31 | **160** | **155** | **233** | **550** | Required New Turn Lane |
| 40 | Bradley Rd/RM Collector #1<br>EPC - ECM<br>Signalized | Collector | SBL | 1 | 35 | 13 | 12 | **160** | **155** | **12** | **325** | Required New Turn Lane |
| | | Collector | SBR | 2 | 35 | 560 | 100 | **320** | **155** | **100** | **575** | Required New Turn Lane |
| | | Principal Arterial | EBL | 2 | 45 | 452 | 200 | **400** | **235** | **200** | **835** | Required New Turn Lane |
| | | Collector | EBLto NBT Receiving Lane | 1 | 35 | - | - | **120** | ***270 (Accel. Lane)*** | **-** | **390** | 270-ft accel. lane plus a 120-ft merging taper |
| 46 | RM Collector #2 / RM Collector #4<br>EPC - ECM<br>Stop-Controlled | Collector | NBL | 1 | 35 | 55 | 3 | **160** | **155** | **-** | **315** | Required New Turn Lane |
| | | Collector | EBL | 1 | 35 | 4 | - | **160** | **155** | **-** | **315** | Required New Turn Lane |
| 48 | Bradley Rd/RM Collector #2/BH Collector #1<br>EPC - ECM<br>Signalized | Collector | SBL | 1 | 35 | 62 | 80 | **160** | **155** | **80** | **395** | Required New Turn Lane |
| | | Principal Arterial | EBL | 1 | 45 | 139 | 22 | **200** | **235** | **22** | **455** | Required New Turn Lane |
| | | Principal Arterial | WBR | 1 | 45 | 47 | 4 | **200** | **235** | **4** | **440** | Required New Turn Lane |
| 49 | Bradley Rd/Rolling Meadows Pkwy<br>EPC - ECM<br>Signalized | Collector | NBL | 2 | 35 | 938 | 255 | **320** | **155** | **255** | **730** | Required New Turn Lane |
| | | Principal Arterial | EBR | 1 | 45 | 942 | 160 | **200** | **235** | **160** | **595** | Required New Turn Lane |
| | | Principal Arterial | WBL | 1 | 45 | 59 | 29 | **200** | **235** | **29** | **465** | Required New Turn Lane |
| 50 | Bradley Rd/RM Collector #3<br>EPC - ECM<br>Signalized | Collector | SBL | 1 | 35 | 73 | 41 | **160** | **155** | **41** | **355** | Required New Turn Lane |
| | | Principal Arterial | EBL | 2 | 45 | 410 | 136 | **400** | **235** | **135** | **770** | Required New Turn Lane |
| | | Principal Arterial | WBR | 1 | 45 | 64 | 9 | **200** | **235** | **9** | **445** | Required New Turn Lane |
| | | Collector | EBLto NBT Receiving Lane | 1 | 45 | - | - | **162** | ***550 (Accel. Lane)*** | **-** | **710** | 550-ft accel. lane plus a162-ft merging taper |
| 51 | Meridian Rd/RM Collector #3<br>CCS - TCM<br>Stop-Controlled | Collector | SBR | 1 | 35 | 143 | 18 | **140** | **120** | **-** | **260** | Required New Turn Lane |
| | | Collector | EBL | 1 | 35 | 86 | - | **140** | **120** | **-** | **260** | Required New Turn Lane |
| 59 | Rolling Meadows Pkwy/TAZ 14 Access<br>EPC - ECM<br>Stop-Controlled | Collector | NBL | 1 | 35 | - | - | **-** | **-** | **50** | **50** | Required New Turn Lane |
| | | Collector | SBL | 1 | 35 | 15 | 2 | **160** | **155** | **50** | **365** | Required New Turn Lane |
| | | Collector | SBR | 1 | 35 | 25 | - | **160** | **155** | **-** | **315** | Required New Turn Lane |
| | | Local | EBLT | 1 | 25 | 25 | 33 | **120** | **115** | **50** | **285** | Required New Turn Lane |
| 60 | Rolling Meadows Pkwy/Calf Creek Dr<br>EPC - ECM<br>Signalized | Collector | NBL | 1 | 35 | - | 2 | **160** | **155** | **50** | **365** | Required New Turn Lane |
| | | Collector | SBL | 1 | 35 | 151 | 85 | **160** | **155** | **70** | **385** | Required New Turn Lane |
| | | Collector | SBR | 1 | 35 | 46 | 9 | **160** | **155** | **25** | **340** | Required New Turn Lane |

*Buildout (2035) Total Turn Lane Evaluations (Continued)*

| ID | Intersection | Access Category/Roadway Classificaiton | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Improvement (ft) (vs Improved Existing ) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | Rolling Meadows Pkwy/Echoing Grass Wy EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 2 | - | 160 | 155 | 50 | 365 | Required New Turn Lane |
| | | Collector | SBL | 1 | 35 | 128 | 11 | 160 | 155 | 50 | 365 | Required New Turn Lane |
| | | Collector | EBL | 1 | 25 | 19 | 21 | 120 | 115 | 25 | 260 | Required New Turn Lane |
| | | Collector | WBL | 1 | 25 | 21 | 13 | 150 | 115 | 25 | 290 | Required New Turn Lane |
| 63 | Prairie Song Dr/Hoof Hallow Pl/TAZ 16A Access 1 EPC - ECM Stop-Controlled | Collector | EBL | 1 | 35 | 59 | 11 | 160 | 155 | 50 | 365 | Required New Turn Lane |
| | | Collector | EBR | 1 | 35 | 74 | 6 | 160 | 155 | - | 315 | Required New Turn Lane |
| | | Collector | WBL | 1 | 35 | 23 | 4 | 160 | 155 | 50 | 365 | Required New Turn Lane |
| | | Collector | WBR | 1 | 35 | 71 | 6 | 160 | 155 | - | 315 | Required New Turn Lane |
| 64 | Meridian Rd/Prairie Song Dr EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 30 | 2 | 160 | 155 | 50 | 365 | Required New Turn Lane |
| | | Collector | SBR | 1 | 35 | 142 | - | 160 | 155 | - | 315 | Required New Turn Lane |
| | | Collector | EBL | 1 | 35 | 127 | 20 | 160 | 155 | 150 | 465 | Required New Turn Lane |
| 65 | Rolling Meadows Pkwy/TAZ-14 Access 3 EPC - ECM Stop-Controlled | Collector | SBL | 1 | 35 | 101 | 8 | 160 | 155 | 100 | 415 | Required New Turn Lane |
| | | Collector | SBR | 1 | 35 | 55 | - | 160 | 155 | - | 315 | Required New Turn Lane |
| 66 | Rolling Meadows Pkwy/TAZ-16B Access 1 EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 34 | 2 | 160 | 155 | 25 | 340 | Required New Turn Lane |
| | | Collector | NBR | 1 | 35 | 49 | - | 160 | 155 | - | 315 | Required New Turn Lane |
| | | Collector | SBL | 1 | 35 | 56 | 4 | 160 | 155 | 25 | 340 | Required New Turn Lane |
| | | Collector | SBR | 1 | 35 | 47 | - | 160 | 155 | - | 315 | Required New Turn Lane |
| 67 | Rolling Meadows Pkwy/TAZ-16B Access 2 EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 50 | 3 | 160 | 155 | - | 315 | Required New Turn Lane |
| | | Collector | SBR | 1 | 35 | 102 | 0 | 160 | 155 | - | 315 | Required New Turn Lane |
| | | Local | EBL | 1 | 25 | 107 | 20 | 120 | 115 | 100 | 335 | Required New Turn Lane |
| 68 | Rolling Meadows Pkwy/TAZ-16B Access 3 EPC - ECM Stop-Controlled | Collector | SBL | 1 | 35 | 46 | 7 | 160 | 155 | 50 | 365 | Required New Turn Lane |
| | | Collector | SBR | 1 | 35 | 124 | 11 | 160 | 155 | - | 315 | Required New Turn Lane |
| | | Local | EBL | 1 | 25 | 156 | 29 | 120 | 155 | 150 | 425 | Required New Turn Lane |
| 69 | Rolling Meadows Pkwy/TAZ-16B Access 3 EPC - ECM | Collector | NBR | 1 | 35 | 57 | 6 | 160 | 155 | - | 315 | Required New Turn Lane |
| 71 | Rolling Meadows Pkwy/Meridian Rd EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 116 | 7 | 160 | 155 | 115 | 430 | Required New Turn Lane |
| | | Collector | EBL | 1 | 35 | 16 | 2 | 160 | 155 | 25 | 340 | Required New Turn Lane |

A summary of the recommended improvements is as follows:

**Powers Boulevard/Fontaine Boulevard (#1)**

- Two additional southbound left-turn lanes. Include 667-ft of taper, 600-ft of deceleration lane and 253-ft of storage for a total length of 1,520-ft.
- An additional eastbound left-turn lane. Include 324-ft of taper, 273-ft of deceleration lane and 184-ft of storage for a total length of 780-ft.
- Two additional westbound left-turn lanes. Include 486-ft of taper and 326-ft of storage for a total length of 810-ft.
- A 150-ft extension of southbound right-turn to westbound thru acceleration lane.

**Marksheffel Road/Fontaine Boulevard (#2)**

- An additional southbound left-turn lane. Include 360-ft of taper and 200-ft of deceleration lane for a total length of 560-ft.
- An additional eastbound left-turn lane. Include 360-ft of taper and 200-ft of deceleration lane for a total length of 560-ft.
- A 105-ft extension of eastbound right-turn lane.
- An additional westbound left-turn lane. Include 360-ft of taper and 200-ft of deceleration lane for a total length of 560-ft.
- A 550-ft westbound right-turn to northbound thru acceleration lane. Include 162-ft of taper and 1,380-ft of acceleration lane.

**Fontaine Boulevard/Lamprey Drive (#3)**

A multi lane roundabout is proposed, and two circulating lanes are recommended at this location. The required exclusive, and by-pass lanes in the vicinity of the roundabout are summarized below.

- A 335-ft northbound left-turn lane. Include 120-ft of taper and 115-ft of deceleration lane.
- A 365-ft shared southbound left/thru turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 90-ft merging taper for southbound right to westbound thru. A southbound right-turn by-pass lane is recommended at this roundabout.

**Powers Boulevard/Bradley Road (#4)**

- Two additional southbound left-turn lanes. Include 900-ft of taper, 800-ft of deceleration lane and 563-ft of storage for a total length of 2,265-ft.
- An additional westbound left-turn lane. Include a 486-ft of taper and 337-ft of storage for a total length of 825-ft.

**Marksheffel Road/Bradley Road (#5)**

- An additional northbound left-turn lane. Include 360-ft of taper and 260-ft of deceleration lane for a total length of 620-ft.
- An additional southbound left-turn lane. Include 360-ft of taper and 260-ft of deceleration lane for a total length of 620-ft.
- An additional eastbound left-turn lane. Include 360-ft of taper and 235-ft of deceleration lane for a total length of 595-ft.
- An additional westbound left-turn lane. Include 360-ft of taper and 200-ft of deceleration lane for a total length of 560-ft.

**Bradley Road/Meridian Road (#6)**

- A 340-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 25-ft of storage.
- A 330-ft southbound right-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 15-ft of storage.
- A 465-ft eastbound left-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 30-ft of storage.
- A 440-ft eastbound right-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 5-ft of storage.
- A 485-ft westbound left-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 50-ft of storage.

**Powers Boulevard/Milton E Proby Parkway (#7)**

- An additional northbound left-turn lane. Include 900-ft of taper, 700-ft of deceleration lane and 438-ft of storage for a total length of 2,040-ft.
- An additional westbound left-turn lane. Include 444-ft of taper, 600-ft of deceleration lane and 82-ft of storage for a total length of 1,125-ft.

**Highway-24/Highway-94 (#10)**

- An additional northbound left-turn lane. Include 666-ft of taper, 600-ft of deceleration lane and 325-ft of storage for a total length of 1,590-ft.
- An additional eastbound left-turn lane. Include 444-ft of taper, 600-ft of deceleration lane and 190-ft of storage for a total length of 1,235-ft.

**Highway-94/Marksheffel Road (#11)**

- An additional northbound left-turn lane. Include 324-ft of taper, 111-ft of deceleration lane and 298-ft of storage for a total length of 735-ft.
- An additional southbound left-turn lane. Include 324-ft of taper, 111-ft of deceleration lane and 216-ft of storage for a total length of 650-ft.
- A 85-ft extension of eastbound left-turn lane.
- An additional westbound left-turn lane. Include 600-ft of taper, 800-ft of deceleration lane and 243-ft of storage for a total length of 1,645-ft.
- A 300-ft extension of westbound right-turn lane.
- A 1470-ft southbound right-turn to westbound thru acceleration lane.
- A 760-ft eastbound right-turn to southbound thru acceleration lane.

**Fontaine Boulevard/Meridian Road (#12)**

- A 315-ft southbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 550-ft eastbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 233-ft of storage.

**Bradley Road/RM Collector #1 (#40)**

- A 325-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 10-ft of storage.
- A 575-ft southbound right-turn lane. Include 320-ft of taper, 155-ft of deceleration lane and 100-ft of storage.
- A 835-ft eastbound left-turn lane. Include 400-ft of taper, 235-ft of deceleration and 200-ft of storage.
- A 390-ft eastbound left to northbound thru acceleration lane. Include 120-ft of taper and 270-ft of acceleration lane.

**RM Collector #2/RM Collector #3 (#46)**

- A 315-ft northbound left-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 315-ft eastbound left-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.

**Bradley Road/RM Collector #2/BH Collector #1 (#48)**

- A 395-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 80-ft of storage.
- A 455-ft eastbound left-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 20-ft of storage.
- A 440-ft westbound right-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 5-ft of storage.

**Bradley Road/Rolling Meadows Parkway (#49)**

- A 730-ft double northbound left-turn lane. Include 320-ft of taper, 155-ft of deceleration lane and 255-ft of storage.
- A 595-ft eastbound right-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 160-ft of storage.
- A 465-ft westbound left-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 30-ft of storage.

**Bradley Road/RM Collector #3 (#50)**

- A 355-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 40-ft of storage.
- A 770-ft double eastbound left-turn lane. Include 400-ft of taper, 235-ft of deceleration lane and 135-ft of storage.
- A 445-ft westbound right-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 10-ft of storage.
- A 710-ft eastbound left to northbound thru acceleration lane. Include 162-ft of taper and 550-ft of acceleration lane.

**Meridian Road/RM Collector #3 (#51)**

- A 260-ft southbound right-turn lane. Include 140-ft of taper and 120-ft of deceleration lane.
- A 260-ft eastbound left-turn lane. Include 140-ft of taper and 120-ft of deceleration.

**Rolling Meadows Parkway /TAZ 14 Access #1 (#59)**

- A 50-ft northbound left-turn lane. Include 50-ft of storage.
- A 365-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.
- A 315-ft southbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 285-ft eastbound left-turn lane. Include 120-ft of taper, 155-ft of deceleration and 50-ft of storage.

**Rolling Meadows Parkway/Calf Creek Drive (#60)**

- A 365-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.
- A 385-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 70-ft of storage.
- A 340-ft southbound right-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 25-ft of storage.

**Rolling Meadows Parkway/Echoing Grass Way (#61)**

- A 365-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.
- A 365-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.
- A 260-ft eastbound left-turn lane. Include 120-ft of taper, 115-ft of deceleration and 25-ft of storage.
- A 290-ft westbound left-turn lane. Include 150-ft of taper and 115-ft of deceleration lane and 25-ft of storage.

**Prairie Song Drive/Hoof Hallow Place(#63)**

- A 365-ft eastbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.
- A 315-ft eastbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 365-ft westbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.
- A 315-ft westbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.

**Meridian Road/Prairie Song Drive (#64)**

- A 365-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.
- A 315-ft southbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 465-ft eastbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 150-ft of storage.

**Rolling Meadows Parkway / TAZ 14 Access #3 (#65)**

- A 415-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 100-ft of storage.
- A 315-ft southbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.

**Rolling Meadows Parkway / TAZ 16B Access #1 (#66)**

- A 340-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 25-ft of storage.
- A 315-ft northbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 340-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 25-ft of storage.
- A 315-ft southbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.

**Rolling Meadows Parkway / TAZ 16B Access #2 (#67)**

- A 315-ft northbound left-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 315-ft southbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 335-ft eastbound left-turn lane. Include 120-ft of taper, 115-ft of deceleration and 100-ft of storage.

**Rolling Meadows Parkway / TAZ 16B Access #3 (#68)**

- A 365-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.
- A 315-ft southbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.
- A 425-ft eastbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration and 150-ft of storage.

**Rolling Meadows Parkway / Parcel V Access #2 (#69)**

- A 315-ft northbound right-turn lane. Include 160-ft of taper and 155-ft of deceleration lane.

**Rolling Meadows Parkway /Meridian Road (#71)**

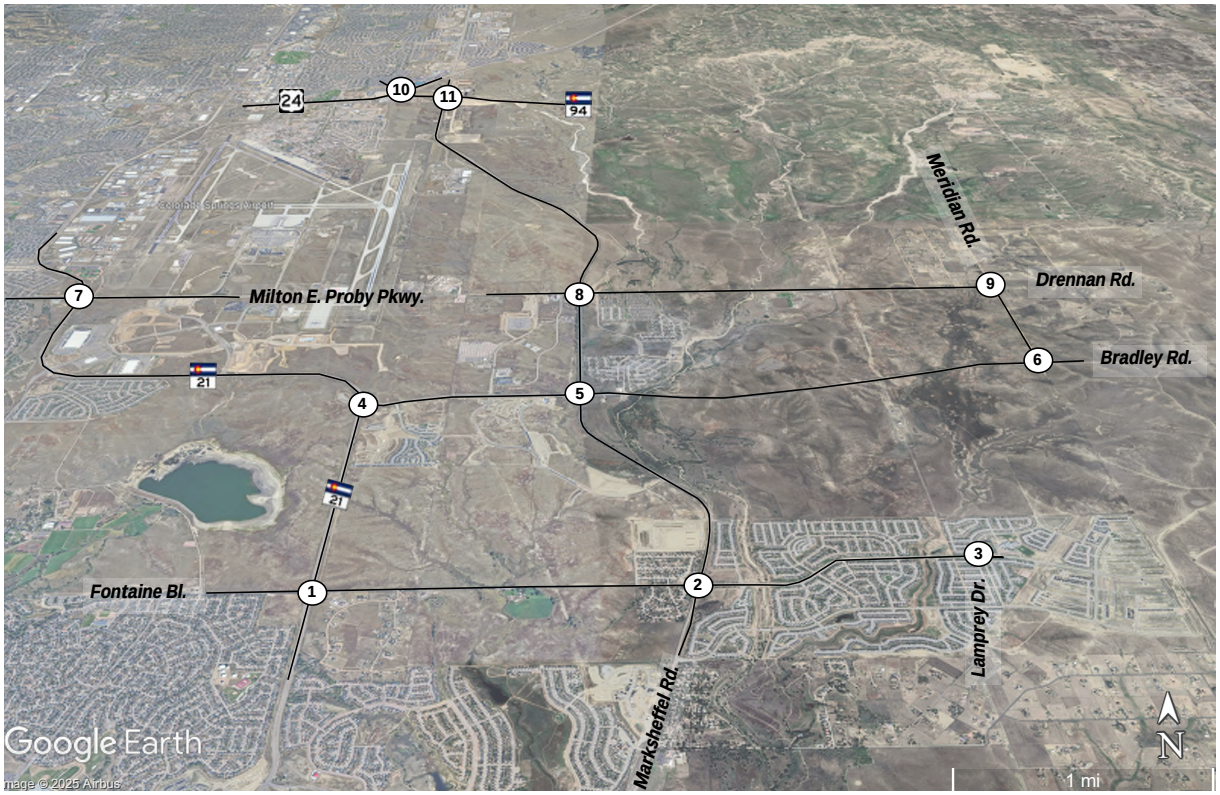
- A 430-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 115-ft of storage.
- A 340-ft eastbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 25-ft of storage.

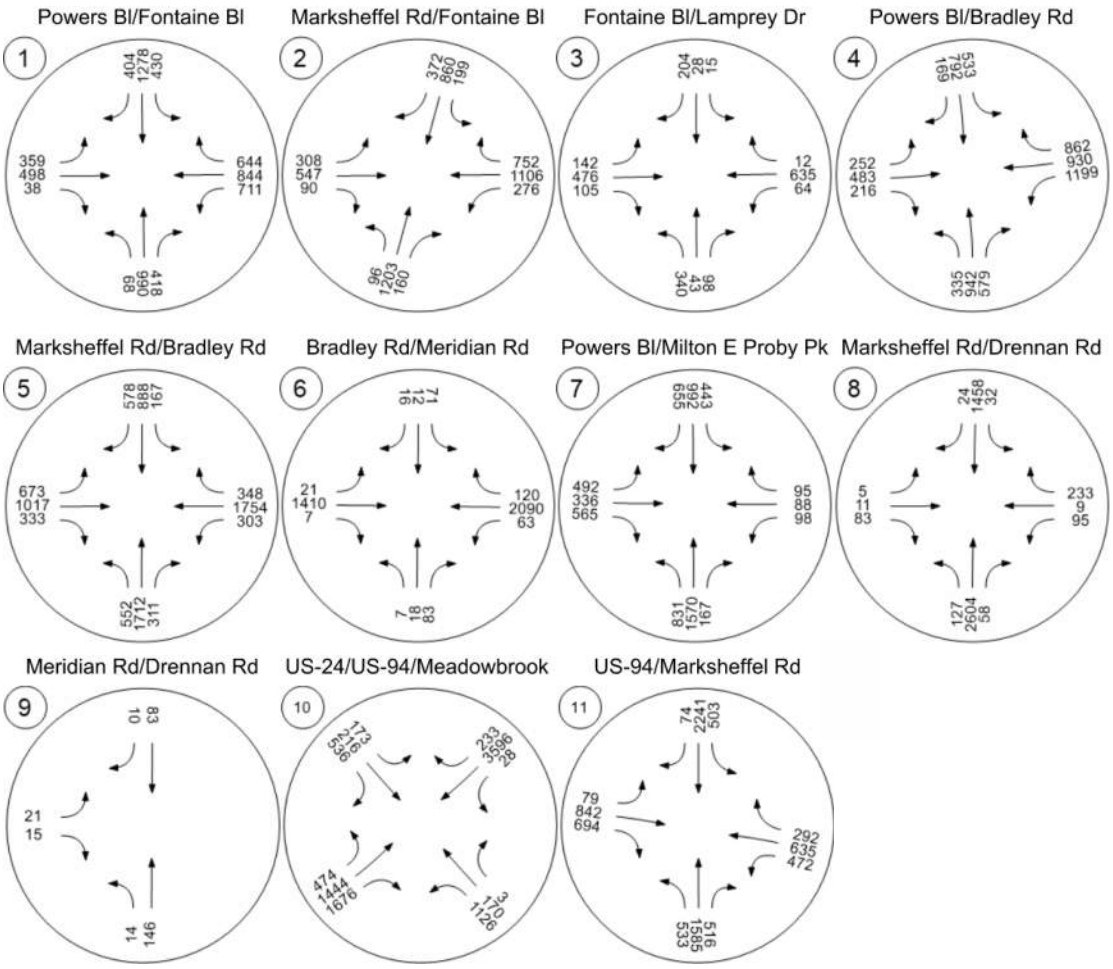
# 6. Horizon (2055) Analysis

## 6.1 Horizon (2055) Background Conditions

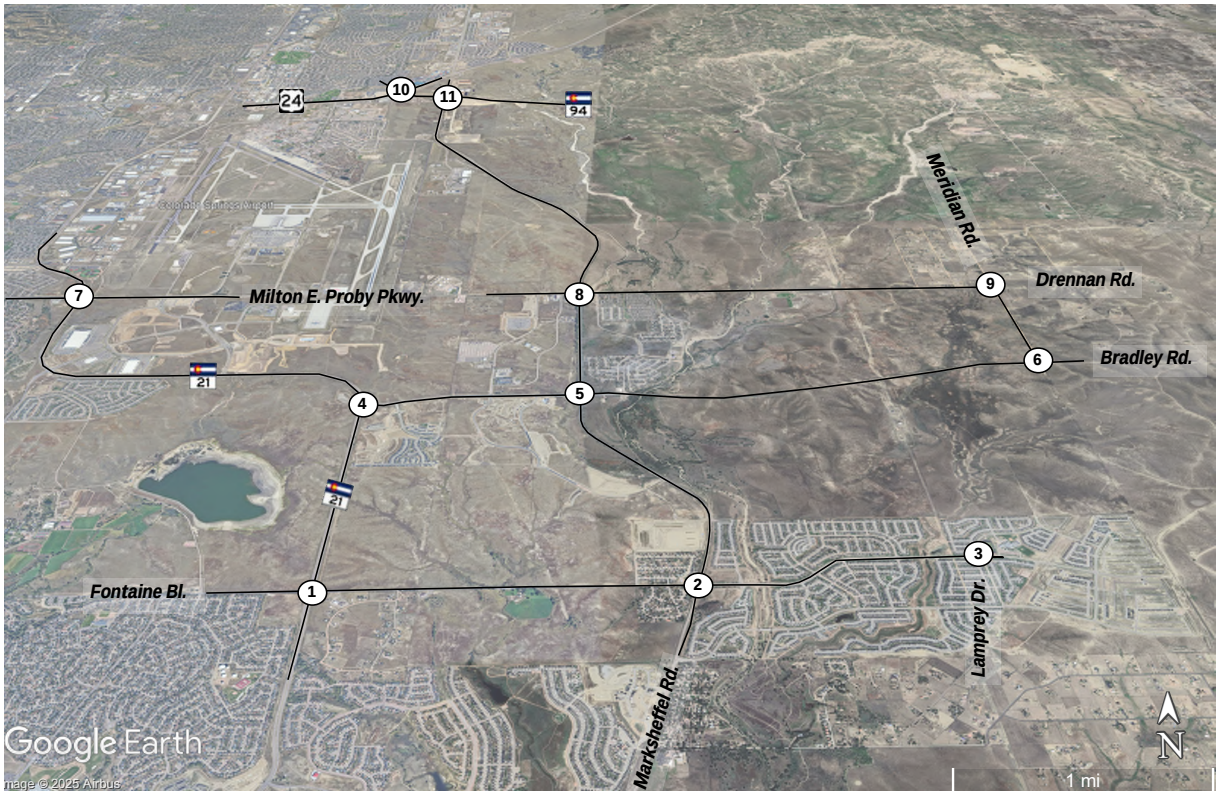
It was assumed that the Karmen Line development, located east of the RMBH site, will be constructed by 2055. By applying the growth factors discussed earlier to the existing traffic counts and including traffic from all adjacent developments into the transportation network, the projected AM and PM peak hour volumes were developed, as shown in Figure 22 and Figure 23 , respectively. Figure 24 shows the daily traffic volumes.

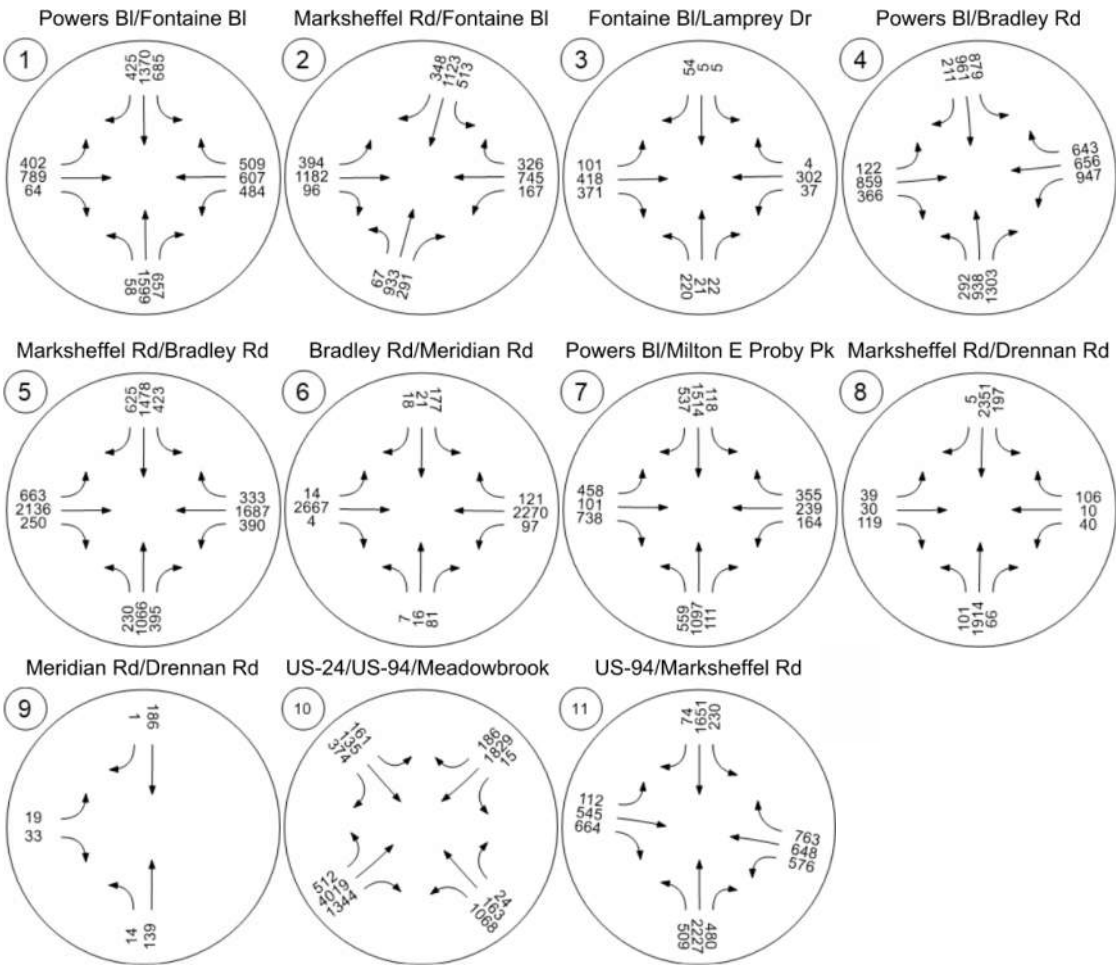
## Figure 22. Horizon (2055) Background Volumes (AM Peak Hour)



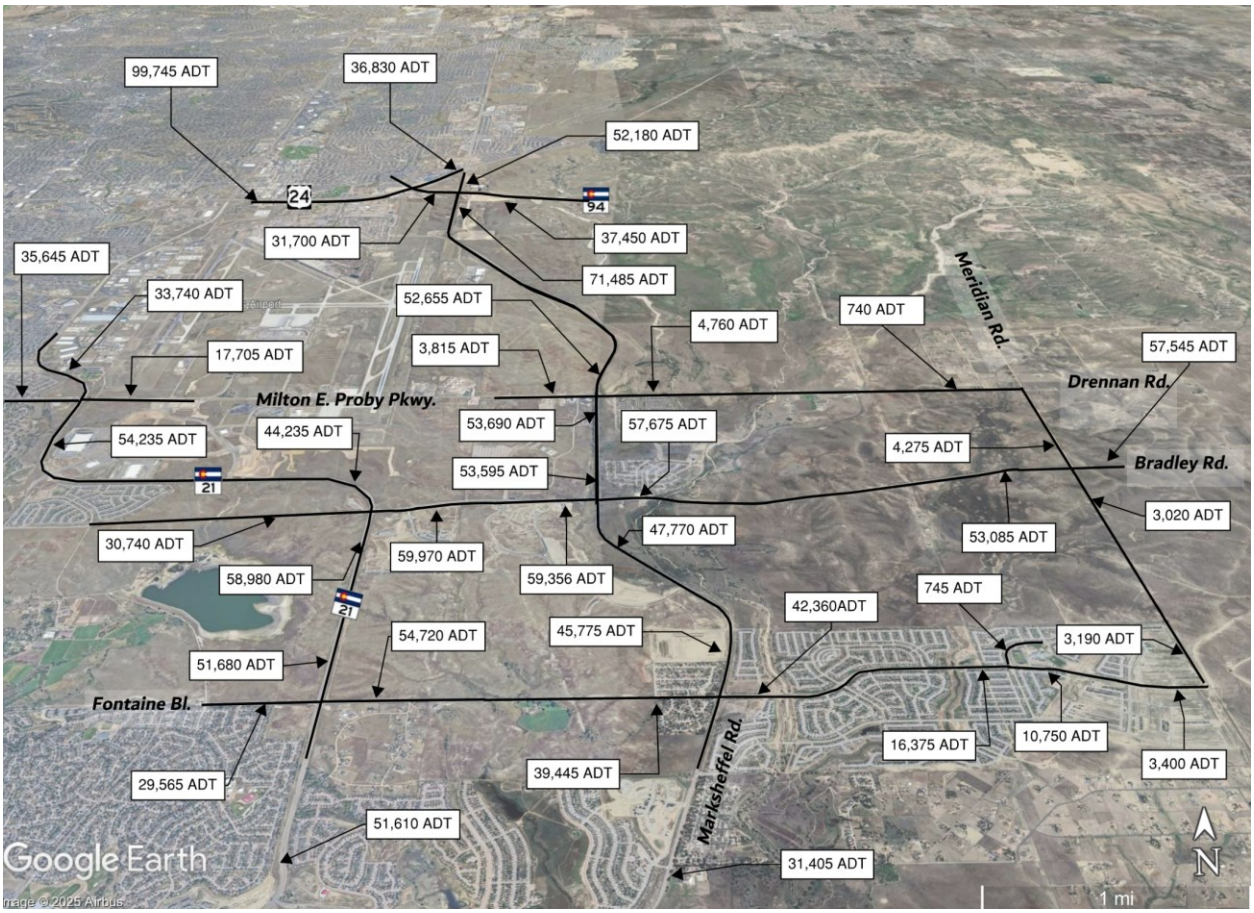



## Figure 23. Horizon (2055) Background Volumes (PM Peak Hour)



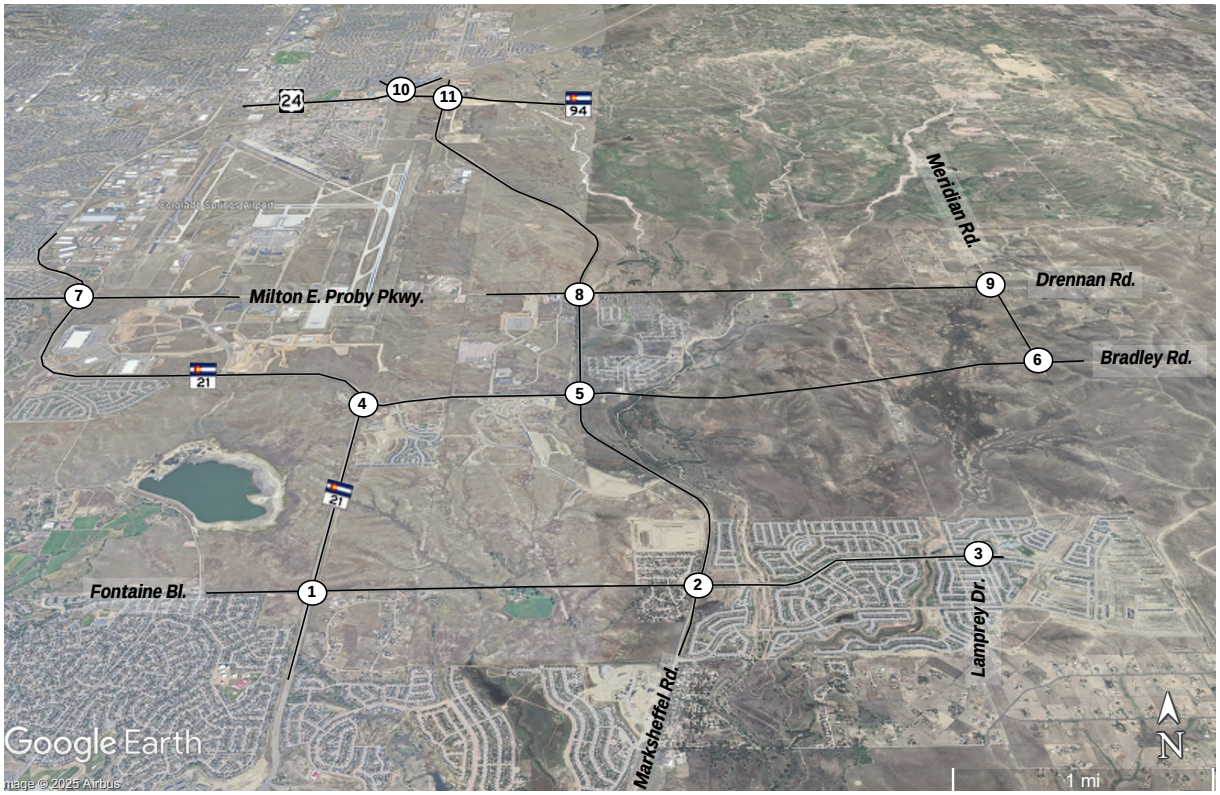



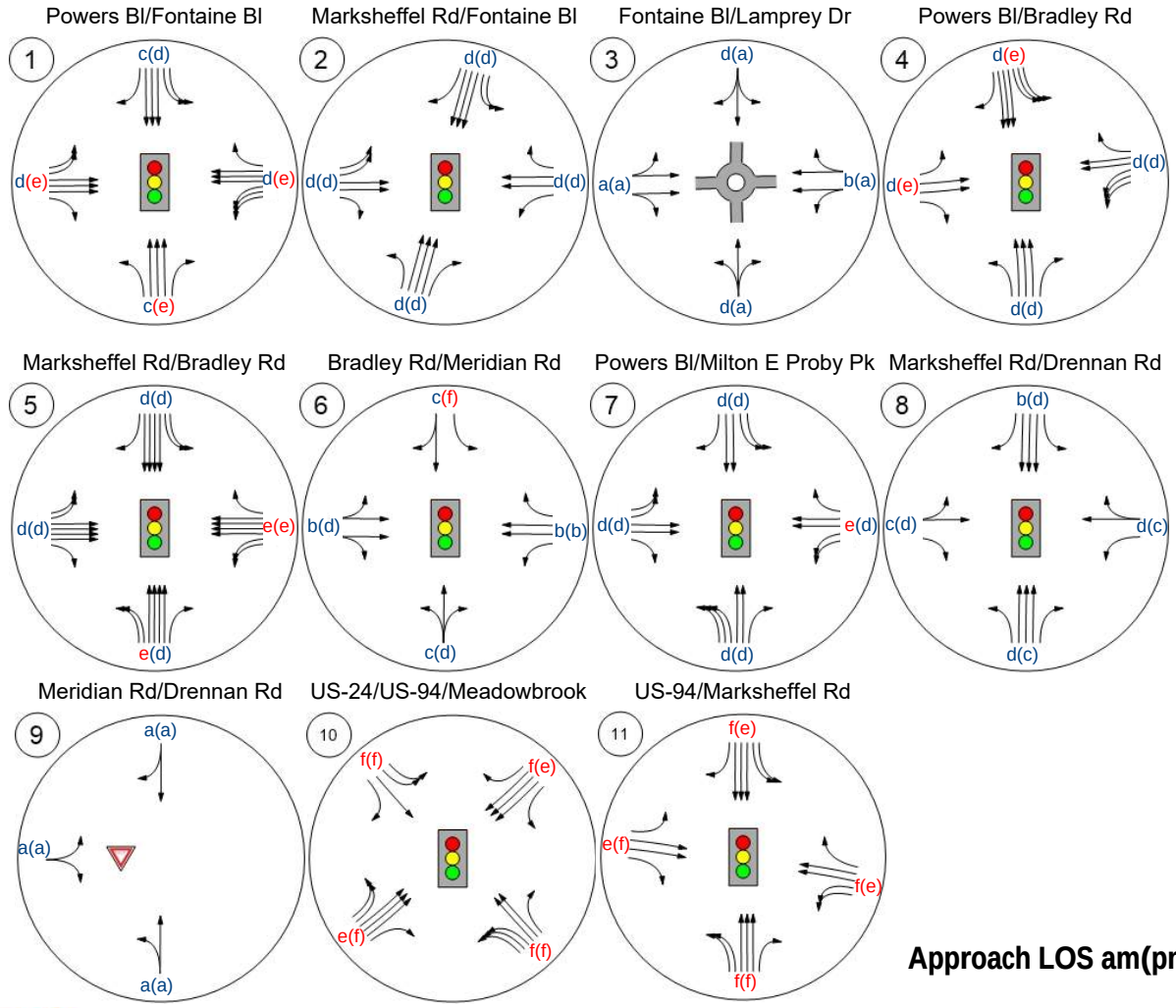
## Figure 24. Horizon (2055) Background Daily Volumes




The intersection configuration and approach LOS are shown in Figure 25. The intersection operations for AM and PM peak hour are shown in Table 10 and Table 11, respectively.

# Figure 25. Horizon (2055) Background Intersection Configuration and LOS



## Table 10. Horizon (2055) Background Intersection Operations (AM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | NB Left | 0.639 | 33.8 | C |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | WB Thru | 0.754 | 42.0 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | NB Left | | 14.4 | B |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | NB Left | 0.760 | 44.4 | D |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | SB Left | 0.819 | 54.1 | D |
| 6 | Bradley Rd/Meridian Rd | Signalized | HCM 7th Edition | SB Left | 0.696 | 14.8 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Thru | 0.800 | 49.5 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | WB Left | 0.649 | 30.3 | C |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.033 | 5.6 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Thru | 1.278 | 204.5 | F |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | WB Left | 1.051 | 165.0 | F |

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 11. Horizon (2055) Background Intersection Operations (PM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | NB Left | 0.826 | 54.5 | D |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | SB Left | 0.784 | 44.2 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | NB Left | | 6.5 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | EB Thru | 0.824 | 50.9 | D |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | NB Left | 0.787 | 50.9 | D |
| 6 | Bradley Rd/Meridian Rd | Signalized | HCM 7th Edition | WB Left | 1.340 | 37.0 | D |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | NB Left | 0.797 | 39.5 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | EB Left | 0.613 | 30.8 | C |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.034 | 6.7 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Thru | 1.163 | 148.2 | F |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | EB Left | 0.968 | 101.1 | F |

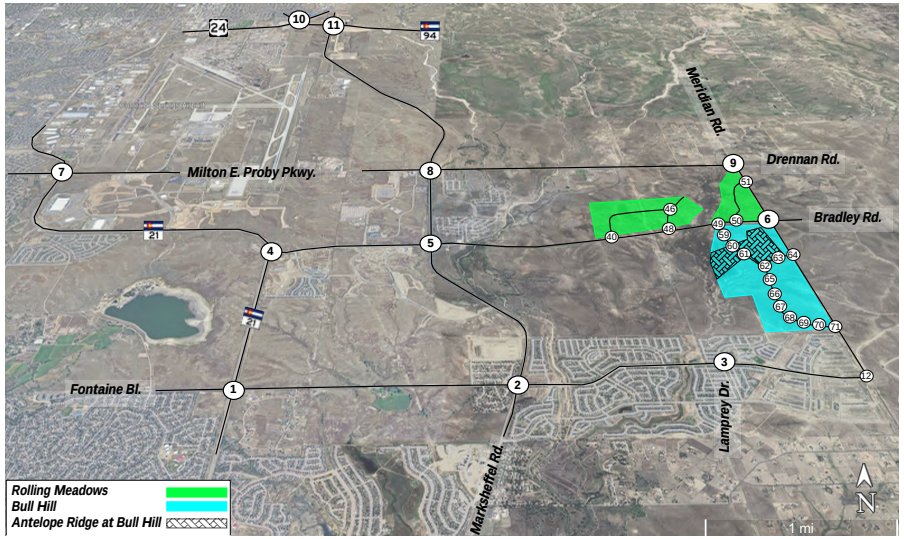
V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

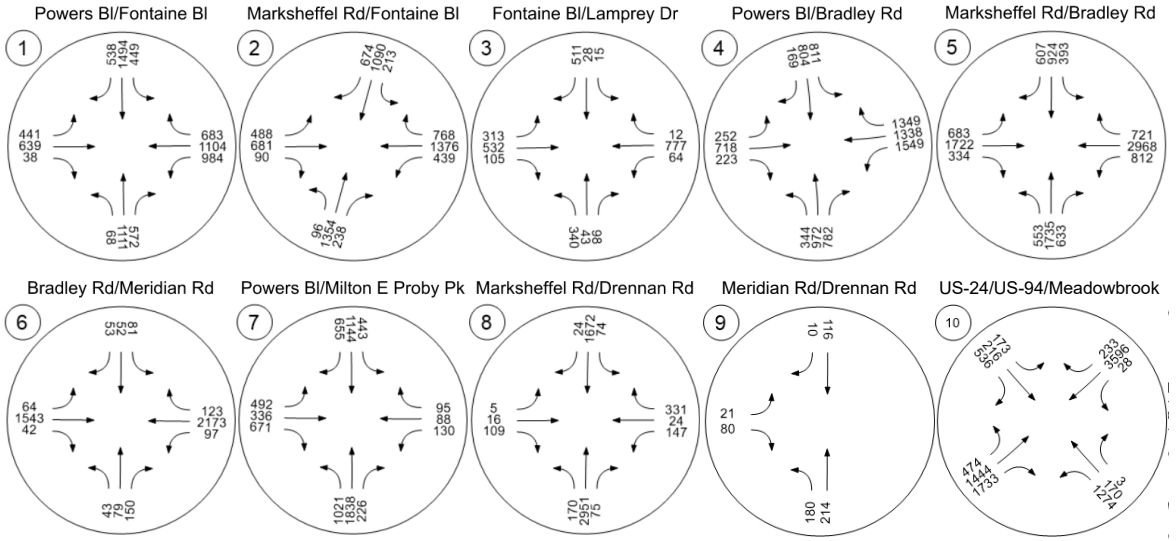
Table 10 and Table 11 indicate all intersections operate at an acceptable LOS except for the intersection of US-24/US-94/Meadowbrook Parkway (#10) and US-94/Marksheffel Road (#11). Both intersections operate at a LOS F in the AM and PM peak hour, with volume-to-capacity ratio at or over one. As shown in Table 10 and Table 11, the analysis indicates that an at-grade intersection will likely not operate adequately under horizon year conditions. Therefore, the feasibility of constructing interchanges at these two locations, or an additional arterial roadway may warrant further investigation. According to the Kimley-Horn Sensitivity Traffic Analysis (September 2024) for Crossroads North, Reagan Ranch, and Crossroads Mixed Use, the intersection of US-24/US-94 operates at an unacceptable LOS and is at full capacity. The letter indicates that a grade-separated intersection including a northbound-to-westbound left-turn flyover ramp will be required in the horizon year (2040). All other intersections studied operate at an acceptable LOS in the horizon background scenario.

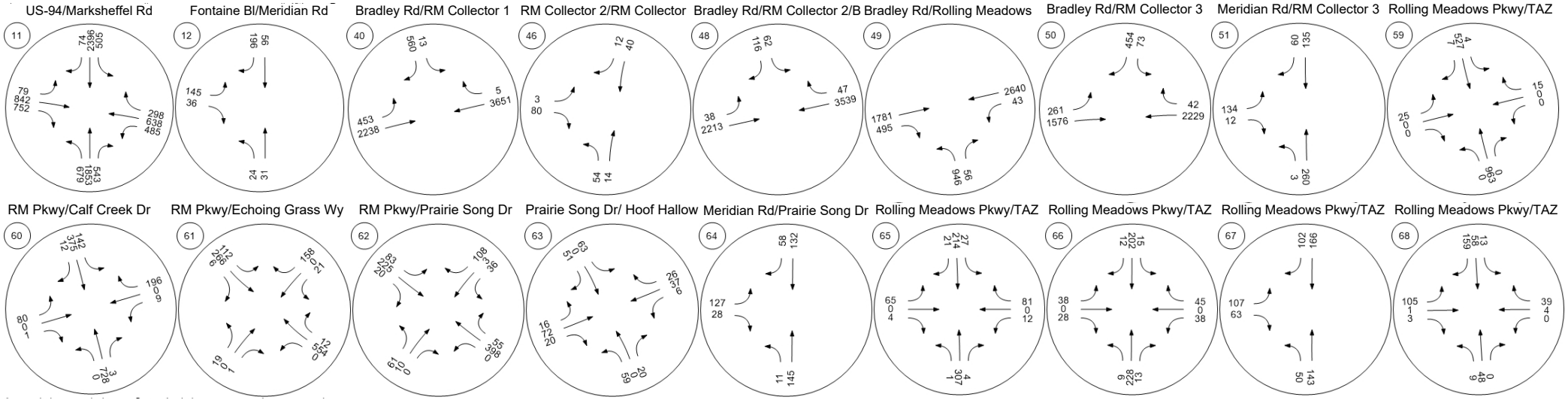
## 6.2 Horizon (2055) Total Conditions

When the project traffic is added to the 2055 background traffic, the resulting AM and PM peak hour volumes are shown in Figure 26 and Figure 27, respectively. Figure 28 shows the daily traffic volumes and roadway classifications under horizon year total conditions. The roadway intersections configuration with approach LOS are shown in Figure 29.

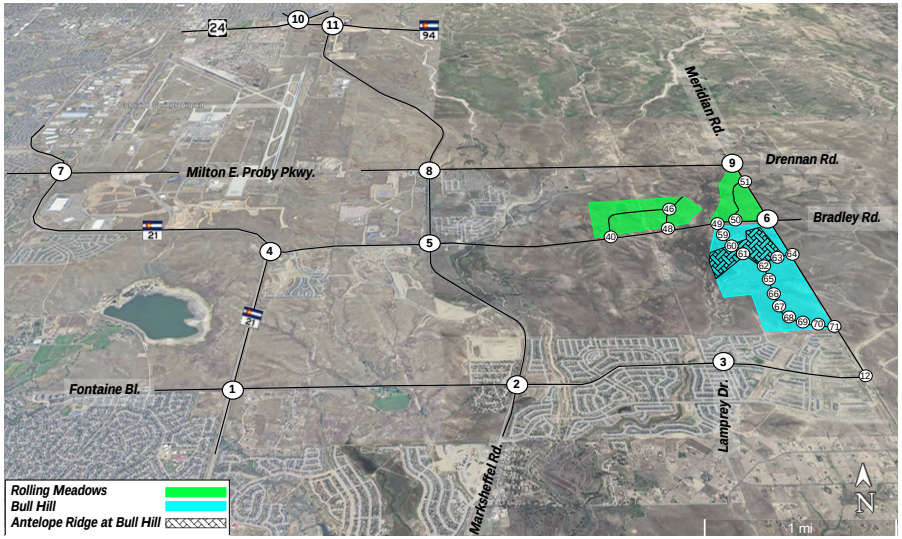
# Figure 26. Horizon (2055) Total Volumes (AM Peak Hour)

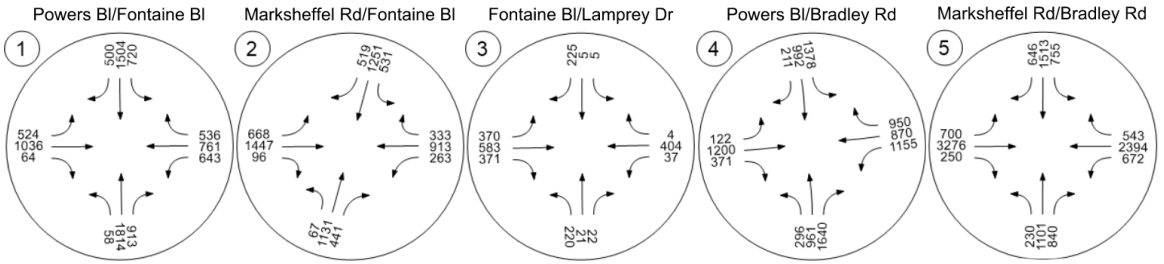


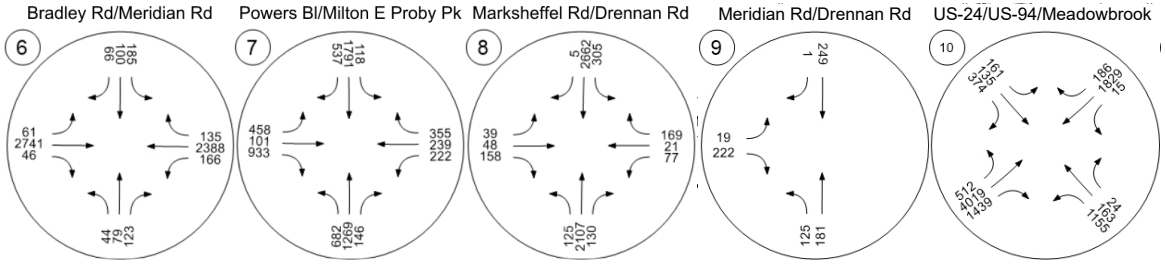



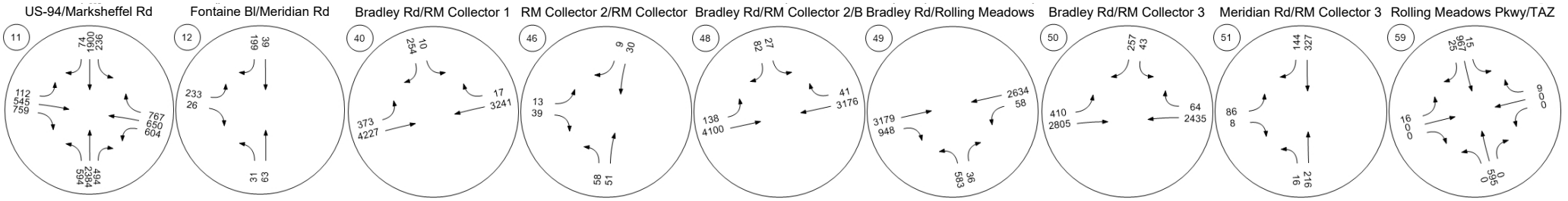



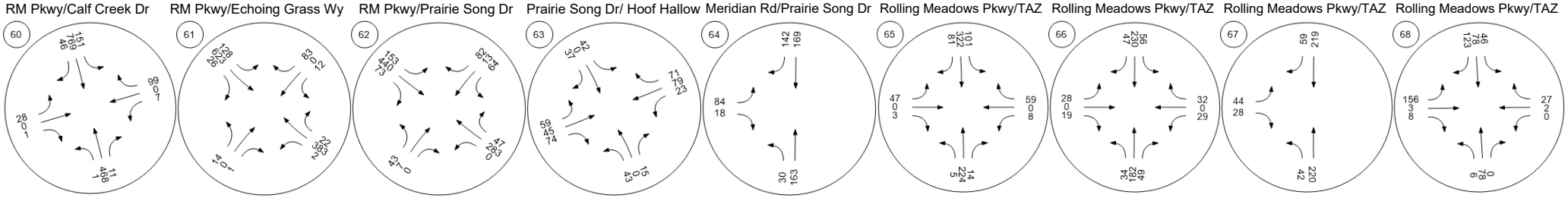
# Figure 27. Horizon (2055) Total Volumes (PM Peak Hour)

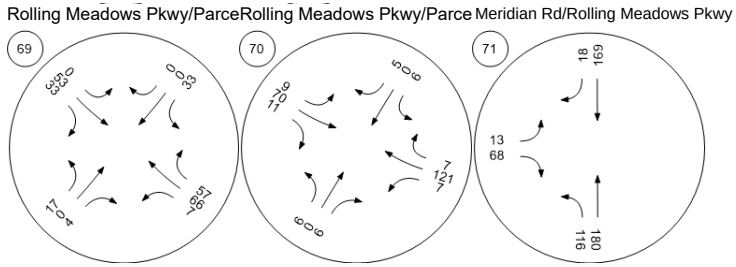


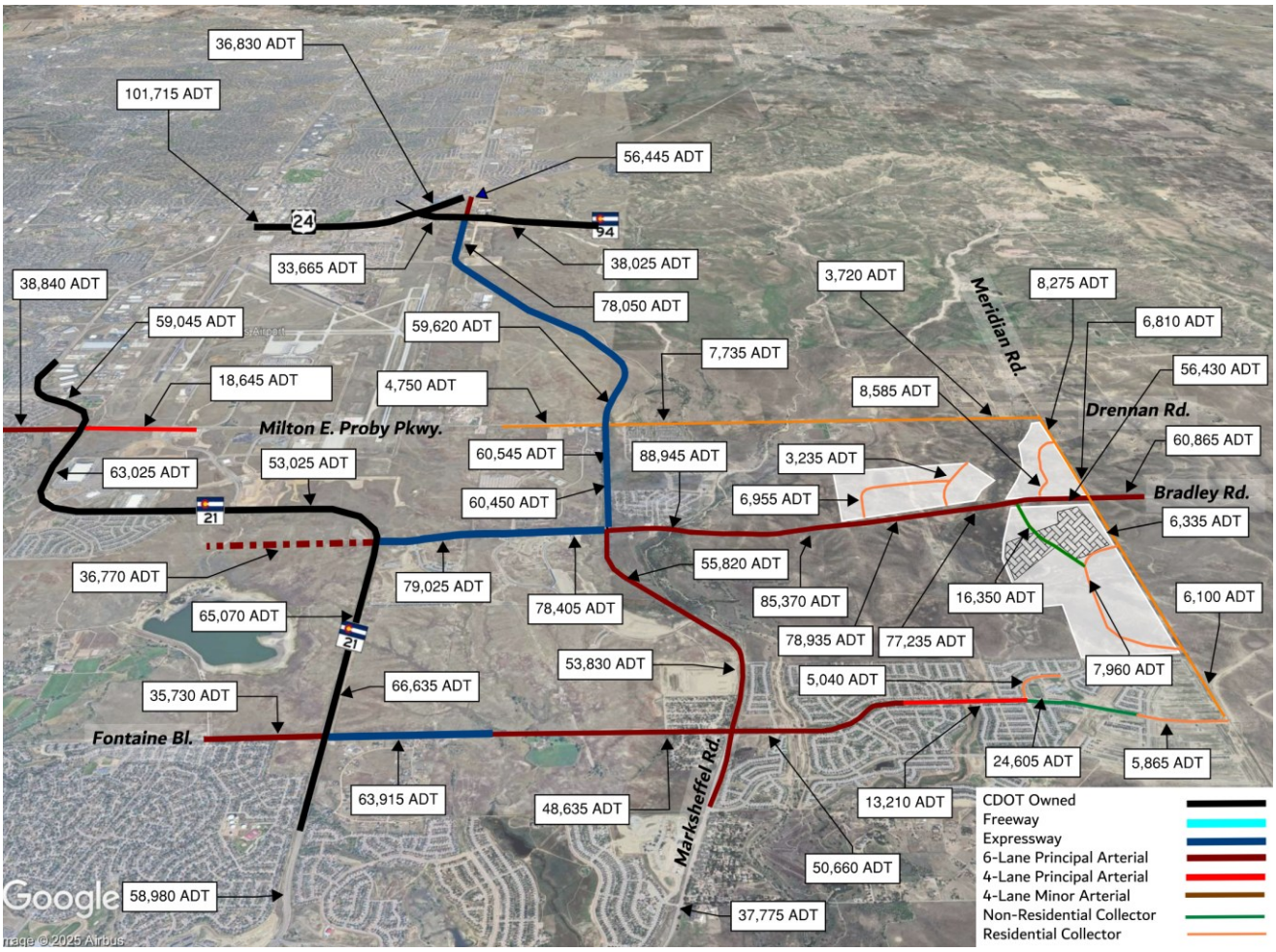



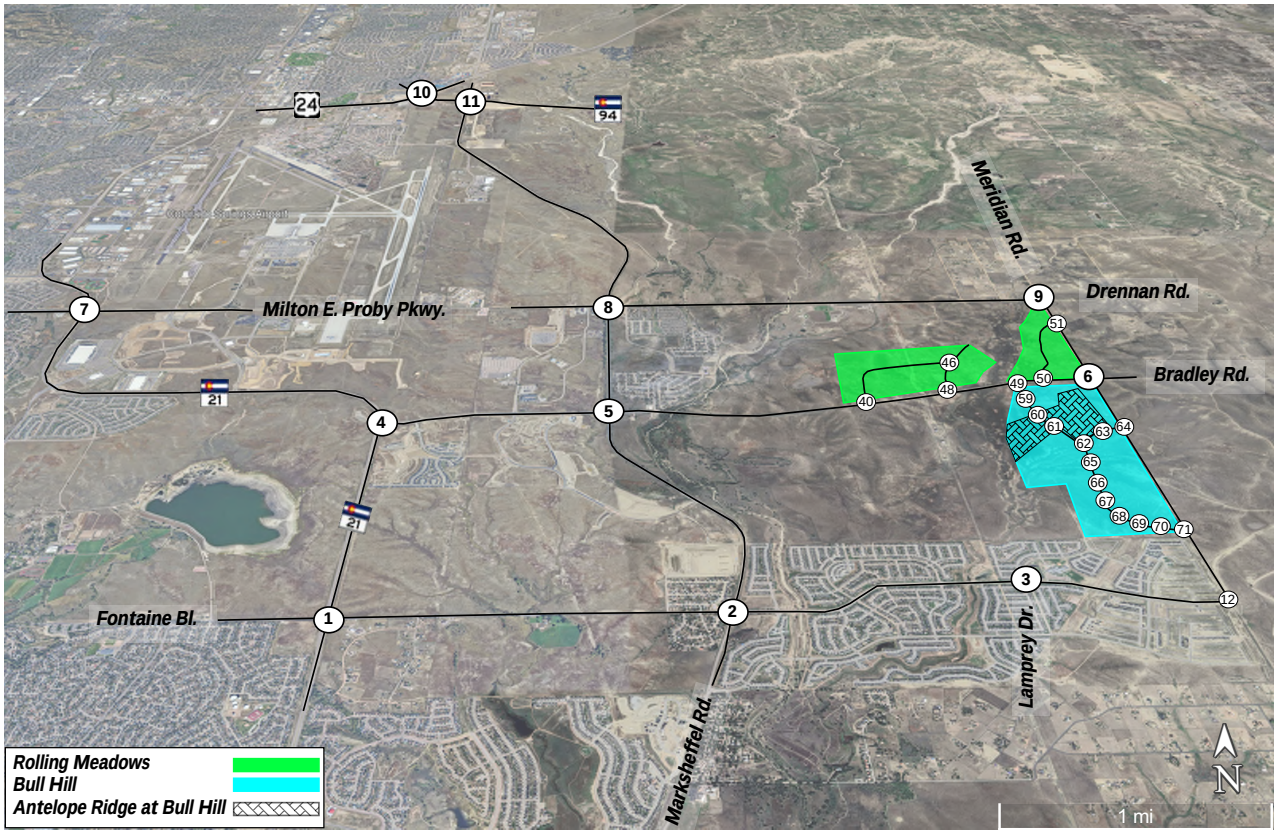
## Figure 28. Horizon (2055) Total Roadway Classification and Daily Volumes

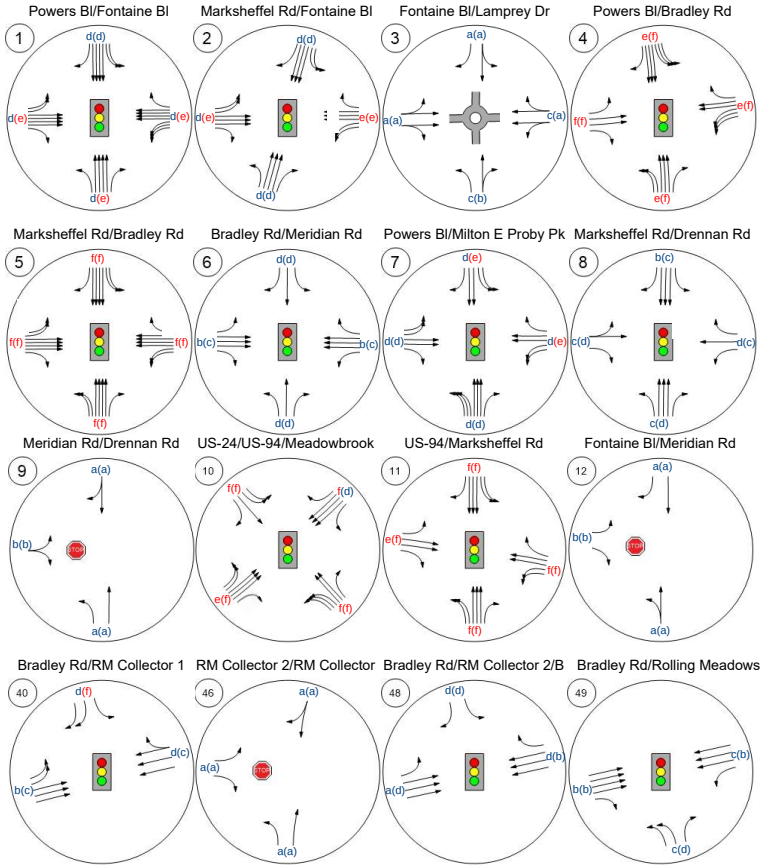


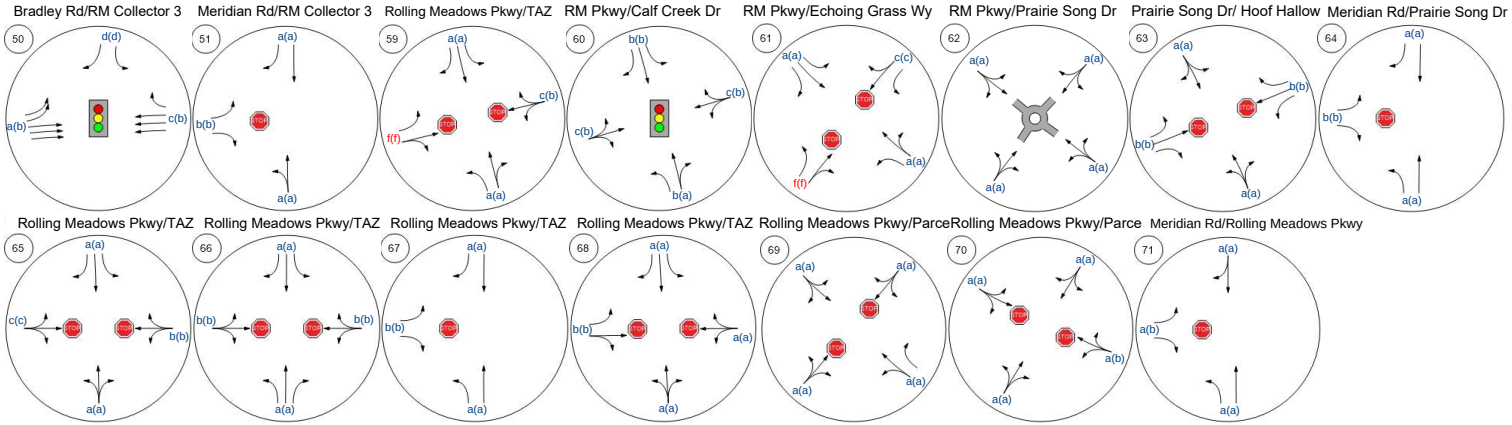

As shown in Figure 28, the 2055 horizon year cross section classifies certain segments as freeway or expressway facilities. However, Matrix's analysis indicate that the corridor will operate effectively as a six-lane arterial. Additional capacity beyond three through lanes in each direction is only needed at intersections. The roadway segments themselves function adequately as a six-lane roadway. Intersections requiring a fourth through lane will need to have the fourth lane added with sufficient length to not be blocked by the through queues and will require the receiving lane to have adequate length to allow for a proper merging condition. Even though the Karmen Line development was annexed , Matrix included the development in the horizon year analyses. Based on our analysis, without the Karmen Line development (similar condition to the buildout year), a four-lane roadway will be sufficient to accommodate the projected traffic volumes.

The intersection operations for the horizon total scenario in the AM and PM peak hour are shown in Table 12 and Table 13, respectively. The turn lane evaluation for the horizon total scenario is shown in Table 14.

# Figure 29. Horizon (2055) Total Intersection Configuration and LOS




**Approach LOS am(pm)**

## Table 12. Horizon (2055) Total Intersection Operations (AM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | NB Left | 0.634 | 42.0 | D |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | WB Thru | 0.803 | 51.5 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | WB Right | | 11.0 | B |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | EB Thru | 0.904 | 76.1 | E |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | EB Left | 1.091 | 129.1 | F |
| 6 | Bradley Rd/Meridian Rd | Signalized | HCM 7th Edition | NB Right | 0.571 | 17.6 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Thru | 0.745 | 43.9 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | SB Left | 0.735 | 31.4 | C |
| 9 | Meridian Rd/Drennan Rd | Two-way stop | HCM 7th Edition | EB Left | 0.071 | 17.2 | C |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | NB Left | 1.309 | 220.0 | F |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | EB Thru | 1.134 | 158.5 | F |
| 12 | Fontaine Bl/Meridian Rd | Two-way stop | HCM 7th Edition | EB Left | 0.191 | 10.4 | B |
| 40 | Bradley Rd/RM Collector 1 | Signalized | HCM 7th Edition | SB Left | 0.961 | 34.5 | C |
| 46 | RM Collector 2/RM Collector 4 | Two-way stop | HCM 7th Edition | EB Left | 0.004 | 9.7 | A |
| 48 | Bradley Rd/RM Collector 2/BH Collector 1 | Signalized | HCM 7th Edition | SB Left | 0.799 | 26.7 | C |
| 49 | Bradley Rd/Rolling Meadows Pkwy | Signalized | HCM 7th Edition | NB Left | 0.861 | 23.8 | C |
| 50 | Bradley Rd/RM Collector 3 | Signalized | HCM 7th Edition | SB Right | 0.713 | 21.8 | C |
| 51 | Meridian Rd/RM Collector 3 | Two-way stop | HCM 7th Edition | EB Left | 0.253 | 13.4 | B |
| 59 | Rolling Meadows Pkwy/TAZ 14 Access 1/TAZ 15 Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.353 | 75.8 | F |
| 60 | Rolling Meadows Pkwy/Calf Creek Dr | Signalized | HCM 7th Edition | SB Left | 0.497 | 11.4 | B |
| 61 | Rolling Meadows Pkwy/Echoing Grass Wy | Two-way stop | HCM 7th Edition | EB Left | 0.239 | 58.4 | F |
| 62 | Rolling Meadows Pkwy/Prairie Song Dr | Roundabout | HCM 7th Edition | WB Thru | | 6.5 | A |
| 63 | Prairie Song Dr/Hoof Hallow Pl/TAZ 16A Access 1 | Two-way stop | HCM 7th Edition | WB Left | 0.015 | 12.8 | B |
| 64 | Meridian Rd/Prairie Song Dr | Two-way stop | HCM 7th Edition | EB Left | 0.208 | 11.8 | B |
| 65 | Rolling Meadows Pkwy/TAZ 14 Access 3/TAZ 16A Access 2 | Two-way stop | HCM 7th Edition | EB Left | 0.225 | 19.7 | C |
| 66 | Rolling Meadows Pkwy/TAZ 16B Access 1/TAZ 18 Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.100 | 14.9 | B |
| 67 | Rolling Meadows Pkwy/TAZ 16B Access 2/TAZ 18 Access 2 | Two-way stop | HCM 7th Edition | EB Left | 0.212 | 13.9 | B |
| 68 | Rolling Meadows Pkwy/TAZ 16B Access 3/TAZ 18 Access 3 | Two-way stop | HCM 7th Edition | WB Thru | 0.007 | 11.5 | B |
| 69 | Rolling Meadows Pkwy/Parcel V Acees 2 | Two-way stop | HCM 7th Edition | WB Left | 0.054 | 9.4 | A |
| 70 | Rolling Meadows Pkwy/Parcel V Access 1 | Two-way stop | HCM 7th Edition | WB Thru | 0.125 | 10.0 | A |
| 71 | Meridian Rd/BH Collector 1 | Two-way stop | HCM 7th Edition | EB Left | 0.029 | 11.3 | B |

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 13. Horizon (2055) Total Intersection Operations (PM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | SB Left | 0.817 | 52.6 | D |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | WB Thru | 0.813 | 54.4 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | NB Left | | 8.3 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | WB Left | 1.073 | 111.9 | F |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | SB Left | 1.149 | 148.9 | F |
| 6 | Bradley Rd/Meridian Rd | Signalized | HCM 7th Edition | WB Left | 0.765 | 28.7 | C |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | EB Left | 0.907 | 54.1 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | NB Left | 0.692 | 32.5 | C |
| 9 | Meridian Rd/Drennan Rd | Two-way stop | HCM 7th Edition | EB Left | 0.061 | 18.5 | C |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Thru | 1.181 | 154.3 | F |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | WB Left | 0.948 | 103.9 | F |
| 12 | Fontaine Bl/Meridian Rd | Two-way stop | HCM 7th Edition | EB Left | 0.320 | 11.7 | B |
| 40 | Bradley Rd/RM Collector 1 | Signalized | HCM 7th Edition | SB Right | 0.951 | 28.4 | C |
| 46 | RM Collector 2/RM Collector 4 | Two-way stop | HCM 7th Edition | EB Left | 0.019 | 10.0 | A |
| 48 | Bradley Rd/RM Collector 2/BH Collector 1 | Signalized | HCM 7th Edition | SB Right | 0.903 | 30.4 | C |
| 49 | Bradley Rd/Rolling Meadows Pkwy | Signalized | HCM 7th Edition | NB Left | 0.745 | 16.4 | B |
| 50 | Bradley Rd/RM Collector 3 | Signalized | HCM 7th Edition | SB Right | 0.736 | 15.0 | B |
| 51 | Meridian Rd/RM Collector 3 | Two-way stop | HCM 7th Edition | EB Left | 0.211 | 15.3 | C |
| 59 | Rolling Meadows Pkwy/TAZ 14 Access 1/TAZ 15 Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.255 | 76.6 | F |
| 60 | Rolling Meadows Pkwy/Calf Creek Dr | Signalized | HCM 7th Edition | NB Left | 0.485 | 13.2 | B |
| 61 | Rolling Meadows Pkwy/Echoing Grass Wy | Two-way stop | HCM 7th Edition | EB Left | 0.179 | 57.1 | F |
| 62 | Rolling Meadows Pkwy/Prairie Song Dr | Roundabout | HCM 7th Edition | EB Thru | | 8.3 | A |
| 63 | Prairie Song Dr/Hoof Hallow Pl/TAZ 16A Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.128 | 13.3 | B |
| 64 | Meridian Rd/Prairie Song Dr | Two-way stop | HCM 7th Edition | EB Left | 0.160 | 12.5 | B |
| 65 | Rolling Meadows Pkwy/TAZ 14 Access 3/TAZ 16A Access 2 | Two-way stop | HCM 7th Edition | EB Left | 0.222 | 25.0 | C |
| 66 | Rolling Meadows Pkwy/TAZ 16B Access 1/TAZ 18 Access 1 | Two-way stop | HCM 7th Edition | EB Left | 0.094 | 17.4 | C |
| 67 | Rolling Meadows Pkwy/TAZ 16B Access 2/TAZ 18 Access 2 | Two-way stop | HCM 7th Edition | EB Left | 0.103 | 13.6 | B |
| 68 | Rolling Meadows Pkwy/TAZ 16B Access 3/TAZ 18 Access 3 | Two-way stop | HCM 7th Edition | EB Left | 0.280 | 13.2 | B |
| 69 | Rolling Meadows Pkwy/Parcel V Acees 2 | Two-way stop | HCM 7th Edition | EB Left | 0.024 | 9.9 | A |
| 70 | Rolling Meadows Pkwy/Parcel V Access 1 | Two-way stop | HCM 7th Edition | WB Left | 0.014 | 10.5 | B |
| 71 | Meridian Rd/BH Collector 1 | Two-way stop | HCM 7th Edition | EB Left | 0.035 | 14.4 | B |

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.

As shown in Table 12 and Table 13, four out of six deficient intersections, namely Powers Boulevard/Bradley Road (#4), Marksheffel Road/Bradley Road (#5), US-24/US-94 (#10), and US-94/Marksheffel Road (#11) have the volume/capacity of above one or slightly lower than one despite the number of through and auxiliary lanes designed for these intersection in this study. Matrix compared its estimated volumes with the PPACG 2050 demand model, and the annual growth rates on Marksheffel Road north of Bradley Road, Fontaine Boulevard west of Marksheffel Road, and Powers Boulevard north of Bradley Road are all within one percent of the estimates in the 2050 travel demand model. Bradley Road west of Marksheffel Road, on the other hand, showed a higher annual growth rate, a 2 percent above the PPACG estimate (5.9% per year in the Matrix forecast vs. 3.92% per year in the PPACG model). Because adding too many lanes to a roadway can increase several safety risks such as increasing the length of the crosswalk or the length of the mast arm for signalized intersections, it is necessary to investigate additional arterial roadways, specifically east-west roadways as well grade separated interchanges in long term planning.

Rolling Meadows Parkway/TAZ 14 Access 1 (#59)

This stopped-controlled intersection operates at LOS F during both AM and PM peak hours. However, the queue on the worst movement (eastbound left-turn) is no more than 34-ft (1.34 vehicles) at any hour. As a result, Matrix does not recommend any mitigation.

Rolling Meadows Parkway/Echoing Grass Way (#61)

This stopped-controlled intersection operates at LOS F during both AM and PM peak hours. However, the queue on the worst movement (eastbound left-turn) is no more than 22-ft (1 vehicle) at any hour. As a result, Matrix does not recommend any mitigation.

## Table 14. Horizon (2055) Total Turn Lane Evaluations

| ID | Intersection | Access Category/Roadway Classification | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Improvement (ft) (vs Buildout Total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl<br>CDOT - SHAC<br>Signalized | E-X | NBL | 1 | 55 | 67 | 104 | 222 | 600 | 100 | 920 | - |
| | | E-X | NBR | 1 | 55 | 913 | - | 222 | 600 | - | 820 | - |
| | | E-X | SBL | 2 | 55 | 720 | 522 | 444 | 600 | 360 | 1405 | - |
| | | E-X | SBR | 1 | 55 | 538 | - | 222 | 600 | - | 820 | - |
| | | NR-A | EBL | 2 | 45 | 524 | 384 | 324 | 273 | 262 | 860 | 80 |
| | | NR-A | EBR | 1 | 45 | 64 | - | 162 | 273 | - | 435 | - |
| | | NR-A | WBL | 3 | 45 | 984 | 363 | 486 | - | 328 | 815 | - |
| | | NR-A | WBR | 1 | 45 | 683 | - | 162 | 273 | - | 435 | - |
| | | NR-A | NBR to EBT Acceleration | 1 | 45 | 913 | - | 162 | 388 *(Accel. Lane)* | N/A | 550 | - |
| | | NR-A | SBR to WBT Acceleration | 1 | 45 | 538 | - | 162 | 388 *(Accel. Lane)* | N/A | 550 | 550 |
| | | E-X | EBR to SBT Acceleration | 1 | 55 | 64 | - | 222 | 960 *(Accel. Lane)* | N/A | 1180 | - |
| | | E-X | WBR to NBT Acceleration | 1 | 55 | 683 | - | 222 | 960 *(Accel. Lane)* | N/A | 1180 | - |
| 2 | Marksheffel Rd/Fontaine Bl<br>CCS -TCM<br>Signalized | Principal Arterial | NBL | 1 | 45 | 96 | 84 | 180 | 200 | - | 380 | - |
| | | Principal Arterial | NBR | 1 | 45 | 441 | 258 | 180 | 200 | - | 380 | - |
| | | Principal Arterial | SBL | 2 | 45 | 531 | 368 | 360 | 200 | - | 560 | - |
| | | Principal Arterial | SBR | 1 | 45 | 674 | 356 | 180 | 200 | - | 380 | - |
| | | Principal Arterial | EBL | 2 | 45 | 668 | 454 | 360 | 200 | - | 560 | - |
| | | Principal Arterial | EBR | 1 | 45 | 96 | 50 | 180 | 200 | - | 380 | - |
| | | Principal Arterial | WBL | 2 | 45 | 439 | 284 | 360 | 200 | - | 560 | - |
| | | Principal Arterial | WBR | 1 | 45 | 768 | 512 | 180 | 200 | - | 380 | - |
| 3 | Fontaine Bl/Lamprey Dr<br>EPC - ECM<br>Roundabout | Local | NBL | 1 | 25 | 340 | 111 | 120 | 115 | 111 | 345 | 345 |
| | | Residential Collector | SBL/SBT | 1 | 35 | 487 | - | 160 | 155 | 50 | 365 | 365 |
| | | | SBR to WBT Acceleration | 1 | Occurs at Roundabout | 487 | - | 90 | - | - | 90 | - |
| 4 | Powers Bl/Bradley Rd<br>CDOT - SHAC<br>Signalized | E-X | NBL | 2 | 65 | 344 | 284 | 600 | 800 | 172 | 1570 | Additional turn lane |
| | | E-X | NBR | 1 | 65 | 1640 | - | 300 | 800 | - | 1100 | - |
| | | E-X | SBL | 3 | 65 | 1378 | 1042 | 900 | 800 | 459 | 2160 | Additional turn lane |
| | | E-X | SBR | 1 | 65 | 211 | - | 300 | 800 | - | 1100 | Additional turn lane |
| | | NR-A | EBL | 1 | 45 | 252 | 471 | 162 | 273 | 252 | 685 | Additional turn lane |
| | | NR-A | EBR | 1 | 45 | 371 | - | 162 | 273 | - | 435 | Additional turn lane |
| | | NR-A | WBL | 3 | 45 | 1549 | 918 | 486 | - | 516 | 1000 | 170 |
| | | NR-A | WBR | 1 | 45 | 1349 | - | 162 | 273 | - | 435 | - |
| | | NR-A | NBR to EBT Acceleration | 1 | 45 | 1640 | - | 162 | 388 *(Accel. Lane)* | - | 550 | - |
| | | NR-A | SBR to WBT Acceleration | 1 | 45 | 211 | - | 162 | 388 *(Accel. Lane)* | - | 550 | - |
| | | E-X | EBR to SBT Acceleration | 1 | 65 | 371 | - | 300 | 1380 *(Accel. Lane)* | - | 1680 | - |
| | | E-X | WBR to NBT Acceleration | 1 | 65 | 1349 | - | 300 | 1380 *(Accel. Lane)* | - | 1680 | - |
| 5 | Marksheffel Rd/Bradley Rd<br>CCS -TCM<br>Signalized | Principal Arterial | NBL | 2 | 45 | 553 | 560 | 360 | 260 | - | 620 | Additional turn lane |
| | | Principal Arterial | NBR | 1 | 45 | 840 | - | 180 | 260 | - | 440 | - |
| | | Principal Arterial | SBL | 2 | 45 | 755 | 1130 | 360 | 260 | - | 620 | Additional turn lane |
| | | Principal Arterial | SBR | 1 | 45 | 646 | - | 180 | 260 | - | 440 | - |
| | | Principal Arterial | EBL | 2 | 45 | 700 | 927 | 360 | 235 | - | 595 | - |
| | | Principal Arterial | EBR | 1 | 45 | 334 | - | 180 | 235 | - | 415 | - |
| | | Principal Arterial | WBL | 2 | 45 | 812 | 1003 | 360 | 200 | - | 560 | Additional turn lane |
| | | Principal Arterial | WBR | 1 | 45 | 721 | - | 180 | 200 | - | 380 | - |
| | | Principal Arterial | NBR to EBT Acceleration | 1 | 45 | 840 | - | 162 | 388 *(Accel. Lane)* | - | 550 | - |
| | | Principal Arterial | SBR to WBT Acceleration | 1 | 45 | 646 | - | 162 | 388 *(Accel. Lane)* | - | 550 | New Accelration Lane |
| | | Principal Arterial | EBR to SBT Acceleration | 1 | 45 | 334 | - | 162 | 388 *(Accel. Lane)* | - | 550 | - |
| | | Principal Arterial | WBR to NBT Acceleration | 1 | 45 | 812 | - | 162 | 388 *(Accel. Lane)* | - | 550 | New Accelration Lane |

## *Horizon (2055) Total Turn Lane Evaluations (Continued)*

| ID | Intersection | Access Category/Roadway Classification | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Improvement (ft) (vs Buildout Total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Bradley Rd/Meridian Rd<br>EPC -ECM<br>Signalized | Collector | NBL | 1 | 35 | 44 | 49 | **160** | **155** | **49** | **365** | 25 |
| | | Collector | NBR | 1 | 35 | 150 | 100 | **160** | **155** | **100** | **415** | Additional turn lane |
| | | Collector | SBL | 1 | 35 | 185 | 217 | **160** | **155** | **217** | **530** | Additional turn lane |
| | | Collector | SBR | 1 | 35 | 99 | 41 | **160** | **155** | **41** | **355** | 25 |
| | | Principal Arterial | EBL | 1 | 45 | 64 | 25 | **200** | **235** | **25** | **460** | 5 |
| | | Principal Arterial | EBR | 1 | 45 | 46 | 9 | **200** | **235** | **9** | **445** | 5 |
| | | Principal Arterial | WBL | 1 | 45 | 166 | 109 | **200** | **235** | **109** | **545** | 60 |
| | | Principal Arterial | WBR | 1 | 45 | 135 | 27 | **200** | **235** | **27** | **460** | 25 |
| 7 | Powers Bl/Milton E Proby Pkwy<br>CDOT - SHAC<br>Signalized | E-X | NBL | 3 | 60 | 1021 | 402 | **900** | **700** | **340** | **1940** | - |
| | | E-X | NBR | 1 | 60 | 226 | - | **300** | **700** | **-** | **1000** | - |
| | | E-X | SBL | 2 | 55 | 443 | 296 | **444** | **600** | **222** | **1265** | - |
| | | E-X | SBR | 1 | 55 | 655 | - | **222** | **600** | **-** | **820** | - |
| | | E-X | EBL | 2 | 55 | 492 | 416 | **444** | **600** | **246** | **1290** | Turn lane is currently provided to the available intersection |
| | | E-X | EBR | 1 | 55 | 933 | - | **222** | **600** | **-** | **820** | Improvement should be made to the available intersection spacing |
| | | E-X | WBL | 2 | 55 | 222 | 204 | **444** | **600** | **111** | **1155** | 30 |
| | | E-X | WBR | 1 | 55 | 355 | - | **222** | **600** | **-** | **820** | - |
| | | E-X | NBR to EBT Acceleration | 1 | 55 | 1021 | - | **222** | **960** ***(Accel. Lane)*** | **-** | **1180** | - |
| | | E-X | SBR to WBT Acceleration | 1 | 55 | 655 | - | **222** | **960** ***(Accel. Lane)*** | **-** | **1180** | - |
| | | E-X | EBR to SBT Acceleration | 1 | 55 | 933 | - | **222** | **960** ***(Accel. Lane)*** | **-** | **1180** | - |
| | | E-X | WBR to NBT Acceleration | 1 | 60 | 355 | - | **300** | **1170** ***(Accel. Lane)*** | **-** | **1470** | - |
| 8 | Marksheffel Rd/Drennan Rd<br>CCS -TCM<br>Signalized | Principal Arterial | NBL | 1 | 45 | 170 | 158 | **180** | **200** | **-** | **380** | - |
| | | Principal Arterial | NBR | 1 | 45 | 130 | 59 | **180** | **200** | **-** | **380** | - |
| | | Principal Arterial | SBL | 1 | 45 | 305 | 243 | **180** | **200** | **-** | **380** | - |
| | | Principal Arterial | SBR | 1 | 45 | 24 | 10 | **180** | **200** | **-** | **380** | - |
| | | Minor Arterial | EBL | 1 | 40 | 39 | 184 | **160** | **155** | **-** | **315** | Exclusive left-turn is not recommended due to low through |
| | | Minor Arterial | WBL | 1 | 45 | 147 | 368 | **180** | **200** | **-** | **380** | - |
| | | Principal Arterial | WBR | 1 | 45 | 331 | - | **180** | **200** | **-** | **380** | Additional turn lane |
| 9 | Meridian Rd/ Drennan Rd<br>EPC - ECM<br>Stop-Controlled | Collector | NBL | 1 | 35 | 180 | 12 | **160** | **155** | **-** | **315** | Additional turn lane |
| 10 | Highway-24/Highway-94<br>CDOT - SHAC<br>Signalized | E-X | NBL (US-94) | 3 | 55 | 1274 | 1347 | **666** | **600** | **425** | **1690** | 100 |
| | | E-X | NBR (US-94) | 1 | 55 | 24 | 26 | **222** | **600** | **-** | **820** | - |
| | | F-R | SBL (Newt Dr.) | 2 | 30 | 173 | 233 | **192** | **-** | **87** | **280** | - |
| | | F-R | SBR (Newt Dr.) | 1 | 30 | 536 | - | **96** | **-** | **25** | **120** | - |
| | | E-X | EBL (US-24) | 2 | 55 | 512 | 759 | **444** | **600** | **256** | **1300** | 65 |
| | | E-X | EBR (US-24) | 1 | 55 | 1733 | - | **222** | **600** | **-** | **820** | - |
| | | E-X | WBL (US-24) | 1 | 65 | 28 | 25 | **300** | **800** | **25** | **1125** | - |
| | | E-X | WBR (US-24) | 1 | 65 | 233 | 165 | **300** | **800** | **-** | **1100** | - |
| | | NR-A | NBR to EBT Acceleration | 1 | 55 | 24 | - | **222** | **740** ***(Accel. Lane)*** | **-** | **960** | New Acceleration Lane |
| | | NR-A | SBR to WBT Acceleration | 1 | 65 | 536 | - | **300** | **1080** ***(Accel. Lane)*** | **-** | **1380** | - |
| | | E-X | EBR to SBT Acceleration | 1 | 55 | 1733 | - | **222** | **960** ***(Accel. Lane)*** | **-** | **1180** | - |

*Horizon (2055) Total Turn Lane Evaluations (Continued)*

| ID | Intersection | Access Category/Roadway Classification | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Improvement (ft) (vs Buildout Total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | Highway-94/Marksheffel Rd<br>CDOT - SHAC<br>Signalized | NR-A | NBL | 2 | 45 | 679 | 1098 | 324 | 111 | 340 | 775 | 40 |
| | | NR-A | NBR | 1 | 45 | 543 | 276 | 162 | 273 | - | 435 | - |
| | | NR-A | SBL | 2 | 45 | 505 | 802 | 324 | 111 | 253 | 690 | 40 |
| | | NR-A | SBR | 1 | 45 | 74 | 72 | 162 | 338 | - | 500 | - |
| | | E-X | EBL | 1 | 50 | 112 | 157 | 180 | 500 | 112 | 790 | - |
| | | E-X | EBR | 1 | 50 | 759 | - | 180 | 500 | - | 680 | - |
| | | E-X | WBL | 2 | 65 | 604 | 120 | 600 | 800 | 302 | 1700 | 55 |
| | | E-X | WBR | 1 | 65 | 767 | - | 300 | 800 | - | 1100 | - |
| | | E-X | SBR to WBT Acceleration | 1 | 65 | 74 | - | 300 | 1,170 *(Accel. Lane)* | - | 1470 | - |
| | | NR-A | EBR to SBT Acceleration | 1 | 45 | 759 | - | 180 | 580 *(Accel. Lane)* | - | 760 | - |
| | | NR-A | WBR to NBT Acceleration | 1 | 45 | 767 | - | 180 | 740 *(Accel. Lane)* | - | 960 | - |
| 12 | Fontaine Bl/Meridian Rd<br>EPC - ECM<br>Stop-Controlled | Minor Arterial | SBR | 1 | 35 | 199 | - | 160 | 155 | - | 315 | - |
| | | Minor Arterial | EBLT | 1 | 35 | 233 | 35 | 160 | 155 | 233 | 550 | - |
| 40 | Bradley Rd/RM Collector #1<br>EPC - ECM<br>Signalized | Collector | SBL | 1 | 35 | 13 | 24 | 160 | 155 | 24 | 340 | 15 |
| | | Collector | SBR | 2 | 35 | 560 | 176 | 320 | 155 | 176 | 650 | 75 |
| | | Principal Arterial | EBL | 2 | 45 | 453 | 394 | 400 | 235 | 394 | 1030 | 195 |
| | | Collector | EBLto NBT Receiving Lane | 1 | 35 | - | - | 120 | *270 (Accel. Lane)* | - | 390 | - |
| 46 | RM Collector #2 / RM Collector #4<br>EPC - ECM<br>Stop-Controlled | Collector | NBL | 1 | 35 | 58 | 3 | 160 | 155 | - | 315 | - |
| | | Collector | EBL | 1 | 35 | 13 | - | 160 | 155 | - | 315 | - |
| 48 | Bradley Rd/RM Collector #2/BH Collector #1<br>EPC - ECM<br>Signalized | Collector | SBL | 1 | 35 | 62 | 78 | 160 | 155 | 78 | 395 | - |
| | | Principal Arterial | EBL | 1 | 45 | 139 | 30 | 200 | 235 | 30 | 465 | 10 |
| | | Principal Arterial | WBR | 1 | 45 | 47 | 5 | 200 | 235 | 5 | 440 | - |
| 49 | Bradley Rd/Rolling Meadows Pkwy<br>EPC - ECM<br>Signalized | Collector | NBL | 2 | 35 | 946 | 405 | 320 | 155 | 405 | 880 | 150 |
| | | Principal Arterial | EBR | 1 | 45 | 948 | 249 | 200 | 235 | 249 | 685 | 90 |
| | | Principal Arterial | WBL | 1 | 45 | 58 | 22 | 200 | 235 | 22 | 455 | - |
| | | Principal Arterial | EBT Accel. Lane | 1 | 45 | - | - | 162 | *550 (Accel. Lane)* | - | 710 | - |
| 50 | Bradley Rd/RM Collector #3<br>EPC - ECM<br>Signalized | Collector | SBL | 1 | 35 | 73 | 41 | 160 | 155 | 41 | 355 | - |
| | | Principal Arterial | EBL | 2 | 45 | 410 | 59 | 400 | 235 | 59 | 695 | - |
| | | Principal Arterial | WBR | 1 | 45 | 64 | 4 | 200 | 235 | 4 | 440 | - |
| | | Collector | EBLto NBT Receiving Lane | 1 | 45 | - | - | 162 | *550 (Accel. Lane)* | - | 710 | - |
| 51 | Meridian Rd/RM Collector #3<br>CCS -TCM<br>Stop-Controlled | Collector | SBR | 1 | 35 | 143 | 18 | 140 | 120 | - | 260 | - |
| | | Collector | EBL | 1 | 35 | 86 | - | 140 | 120 | - | 260 | - |
| 59 | Rolling Meadows Pkwy/TAZ 14 Access<br>EPC - ECM<br>Stop-Controlled | Collector | NBL | 1 | 35 | - | - | - | - | 50 | 50 | - |
| | | Collector | SBL | 1 | 35 | 15 | 2 | 160 | 155 | 50 | 365 | - |
| | | Collector | SBR | 1 | 35 | 25 | - | 160 | 155 | - | 315 | - |
| | | Local | EBLT | 1 | 25 | 25 | 33 | 120 | 115 | 50 | 285 | - |
| 60 | Rolling Meadows Pkwy/Calf Creek Dr<br>EPC - ECM<br>Signalized | Collector | NBL | 1 | 35 | - | 2 | 160 | 155 | 50 | 365 | - |
| | | Collector | SBL | 1 | 35 | 151 | 85 | 160 | 155 | 70 | 385 | - |
| | | Collector | SBR | 1 | 35 | 46 | 9 | 160 | 155 | 25 | 340 | - |

*Horizon (2055) Total Turn Lane Evaluations (Continued)*

| ID | Intersection | Access Category/Roadway Classification | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Improvement (ft) (vs Buildout Total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | Rolling Meadows Pkwy/Echoing Grass Wy EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 2 | - | 160 | 155 | 50 | 365 | - |
| | | Collector | SBL | 1 | 35 | 128 | 11 | 160 | 155 | 50 | 365 | - |
| | | Collector | EBL | 1 | 25 | 19 | 21 | 120 | 115 | 25 | 260 | - |
| | | Collector | WBL | 1 | 25 | 21 | 13 | 150 | 115 | 25 | 290 | - |
| 63 | Prairie Song Dr/Hoof Hallow Pl/TAZ 16A Access 1 EPC - ECM Stop-Controlled | Collector | EBL | 1 | 35 | 59 | 11 | 160 | 155 | 50 | 365 | - |
| | | Collector | EBR | 1 | 35 | 74 | 6 | 160 | 155 | - | 315 | - |
| | | Collector | WBL | 1 | 35 | 23 | 4 | 160 | 155 | 50 | 365 | - |
| | | Collector | WBR | 1 | 35 | 71 | 6 | 160 | 155 | - | 315 | - |
| 64 | Meridian Rd/Prairie Song Dr EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 30 | 2 | 160 | 155 | - | 315 | - |
| | | Collector | SBR | 1 | 35 | 142 | - | 160 | 155 | - | 315 | - |
| | | Collector | EBL | 1 | 35 | 127 | 20 | 160 | 155 | 150 | 465 | - |
| 65 | Rolling Meadows Pkwy/TAZ-14 Access 3 EPC - ECM Stop-Controlled | Collector | SBL | 1 | 35 | 101 | 8 | 160 | 155 | 100 | 415 | - |
| | | Collector | SBR | 1 | 35 | 55 | - | 160 | 155 | - | 315 | - |
| 66 | Rolling Meadows Pkwy/TAZ-16B Access 1 EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 34 | 2 | 160 | 155 | 25 | 340 | - |
| | | Collector | NBR | 1 | 35 | 49 | - | 160 | 155 | - | 315 | - |
| | | Collector | SBL | 1 | 35 | 56 | 4 | 160 | 155 | 25 | 340 | - |
| | | Collector | SBR | 1 | 35 | 47 | - | 160 | 155 | - | 315 | - |
| 67 | Rolling Meadows Pkwy/TAZ-16B Access 2 EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 50 | 3 | 160 | 155 | - | 315 | - |
| | | Collector | SBR | 1 | 35 | 102 | 0 | 160 | 155 | - | 315 | - |
| | | Local | EBL | 1 | 25 | 107 | 20 | 120 | 115 | 100 | 335 | - |
| 68 | Rolling Meadows Pkwy/TAZ-16B Access 3 EPC - ECM Stop-Controlled | Collector | SBL | 1 | 35 | 46 | 7 | 160 | 155 | 50 | 365 | - |
| | | Collector | SBR | 1 | 35 | 124 | 11 | 160 | 155 | - | 315 | - |
| | | Local | EBL | 1 | 25 | 156 | 29 | 120 | 155 | 150 | 425 | - |
| 69 | Rolling Meadows Pkwy/TAZ-16B Access 3 EPC - ECM Stop-Controlled | Collector | NBR | 1 | 35 | 57 | 6 | 160 | 155 | - | 315 | - |
| 71 | Rolling Meadows Pkwy/Meridian Rd EPC - ECM Stop-Controlled | Collector | NBL | 1 | 35 | 116 | 7 | 160 | 155 | 115 | 430 | - |
| | | Collector | EBL | 1 | 35 | 16 | 2 | 160 | 155 | 25 | 340 | - |

A summary of the recommended improvements is as follows:

**Powers Boulevard/Fontaine Boulevard (#1)**

- A 80-ft extension of eastbound left-turn lane.
- A 550-ft extension of southbound right-turn to westbound thru acceleration lane.

**Fontaine Boulevard/Lamprey Drive (#3)**

- A 345-ft northbound left-turn lane. Include 120-ft of taper, 115-ft of deceleration lane and 111-ft of storage.
- A 365-ft shared southbound left/thru turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.

**Powers Boulevard/Bradley Road (#4)**

- An additional northbound left-turn lane. Include 600-ft of taper, 800-ft of deceleration lane and 172-ft of storage for a total length of 1,570-ft.
- An additional southbound left-turn lane. Include 900-ft of taper, 800-ft of deceleration lane and 459-ft of storage for a total length of 2,160-ft.
- An additional southbound right-turn lane. Include 300-ft of taper and 800-ft of deceleration lane for a total length of 1,100-ft.
- An additional eastbound left-turn lane. Include 162-ft of taper, 273-ft of deceleration lane and 253-ft of storage for a total length of 685-ft.
- An additional eastbound right-turn lane. Include 162-ft of taper and 273-ft of deceleration lane for a total length of 435-ft.
- A 170-ft extension of westbound left-turn lane.

**Marksheffel Road/Bradley Road (#5)**

- An additional northbound left-turn lane. Include 360-ft of taper and 260-ft of deceleration lane for a total length of 620-ft.
- An additional southbound left-turn lane. Include 360-ft of taper and 260-ft of deceleration lane for a total length of 620-ft.
- An additional westbound left-turn lane. Include 360-ft of taper and 200-ft of deceleration lane for a total length of 560-ft.
- A 550-ft southbound right-turn to westbound thru acceleration lane. Include 162-ft of taper and 388-ft of acceleration lane.
- A 550-ft westbound right-turn to northbound thru acceleration lane. Include 162-ft of taper and 388-ft of acceleration lane.

**Bradley Road/Meridian Road (#6)**

- A 25-ft extension of northbound left-turn lane.
- An additional northbound right-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 100-ft of storage for a total length of 415-ft.
- An additional southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 215-ft of storage for a total length of 530-ft.
- A 25-ft extension of southbound right-turn lane.
- A 5-ft extension of eastbound left-turn lane.
- A 5-ft extension of eastbound right-turn lane.
- A 60-ft extension of westbound left-turn lane.
- A 25-ft extension of westbound right-turn lane.

**Powers Boulevard/Milton E Proby Parkway (#7)**

- A 30-ft extension of westbound left-turn lane.

**Marksheffel Road/Drennan Road (#8)**

- An additional westbound right-turn lane. Include 180-ft of taper and 200-ft of deceleration lane for a total length of 380-ft.

**Meridian Road/ Drennan Road (#9)**

- An additional northbound left-turn lane. Include 160-ft of taper and 155-ft of deceleration lane for a total length of 315-ft.

**Highway-24/Highway-94 (#10)**

- A 100-ft extension of northbound left-turn lane.
- A 65-ft extension of eastbound left-turn lane.
- A 960-ft northbound right to eastbound thru acceleration lane. Include 222-ft of taper and 740-ft of acceleration lane.

**Highway-94/Marksheffel Road (#11)**

- A 40-ft extension of northbound left-turn lane.
- A 40-ft extension of southbound left-turn lane.
- A 55-ft extension of westbound left-turn.

**Bradley Road/RM Collector #1 (#40)**

- A 15-ft extension of southbound left-turn lane.
- A 75-ft extension of southbound right-turn lane.
- A 195-ft extension of eastbound left-turn lane.

**Bradley Road/RM Collector #2/BH Collector #1 (#48)**

- A 10-ft extension of eastbound left-turn lane.

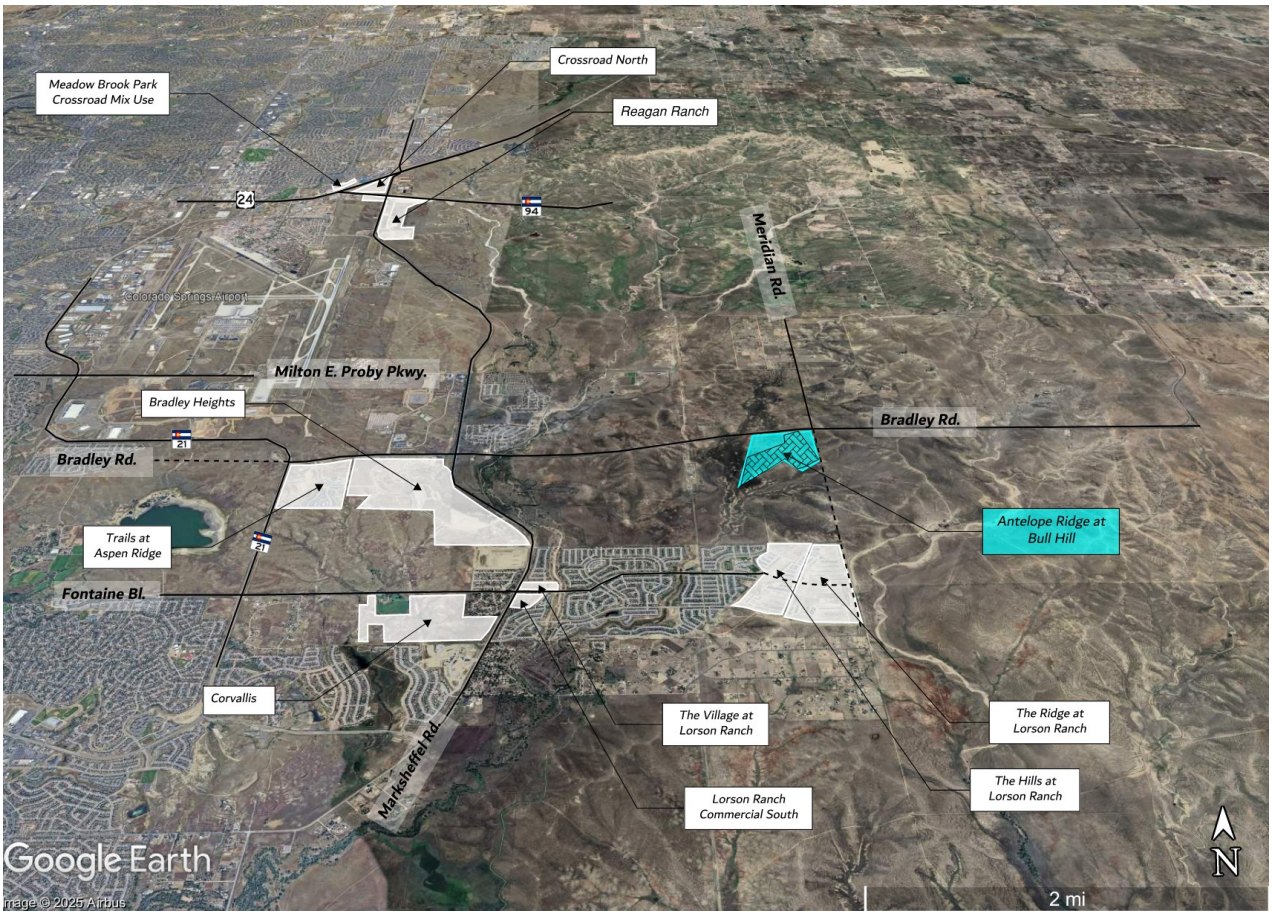
**Bradley Road/Rolling Meadows Parkway (#49)**

- A 150-ft extension of northbound left-turn lane.
- A 90-ft extension of eastbound right-turn lane.

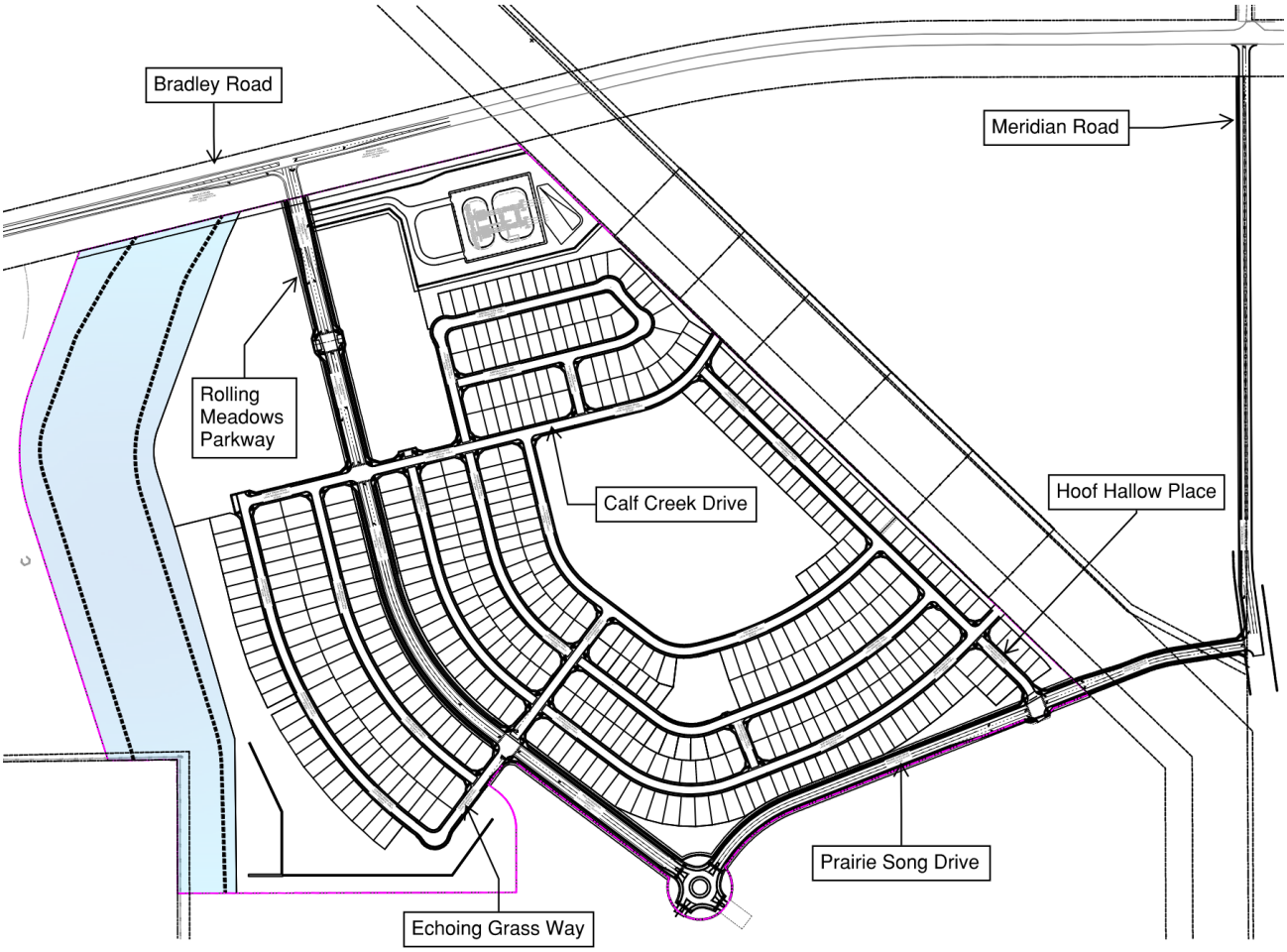
# 7. Antelope Ridge at Bull Hill

Antelope Ridge (Phase 1), a development within the Bull Hill development, is located south of Bradley Road and spans both sides of a planned north-south collector roadway. This collector is proposed to be constructed approximately 3,800 feet west of Meridian Road. Phase 1 is planned to include 472 single-family detached residential units. Buildout is anticipated in the year 2028. Figure 30 shows the vicinity map and the location of the project. The trip generation and trip distribution are shown in Table 15 and Figure 32, respectively. Figure 31 shows the site plan. This initial phase will consist of 472 single-family detached homes. It was assumed that 30 percent of the adjacent developments would be built by 2028.

## Figure 30. Antelope Ridge at Bull Hill Vicinity Map



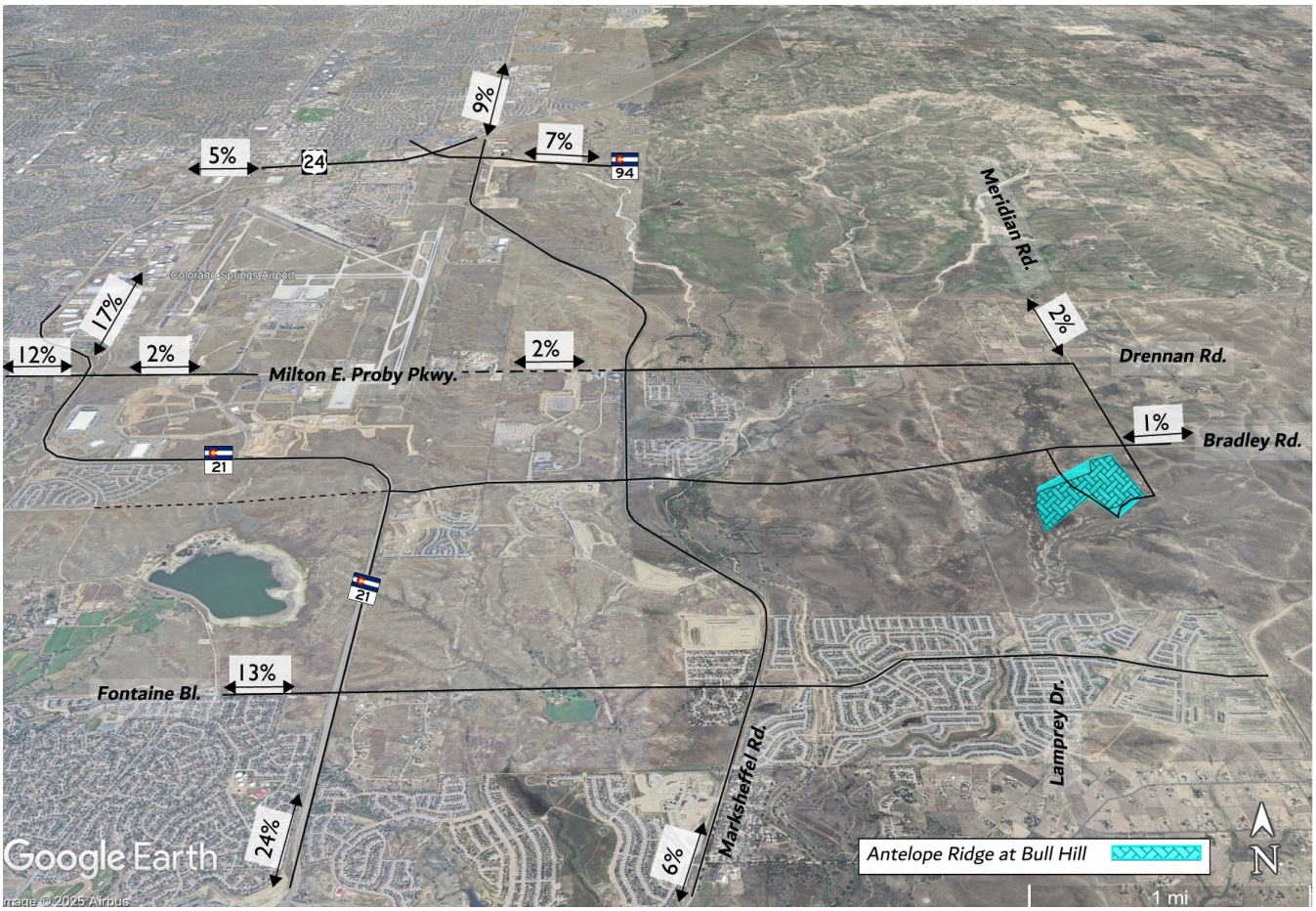
## Figure 31. Antelope Ridge at Bull Hill Site Plan




## Table 15. Antelope Ridge at Bull Hill Trip Generation

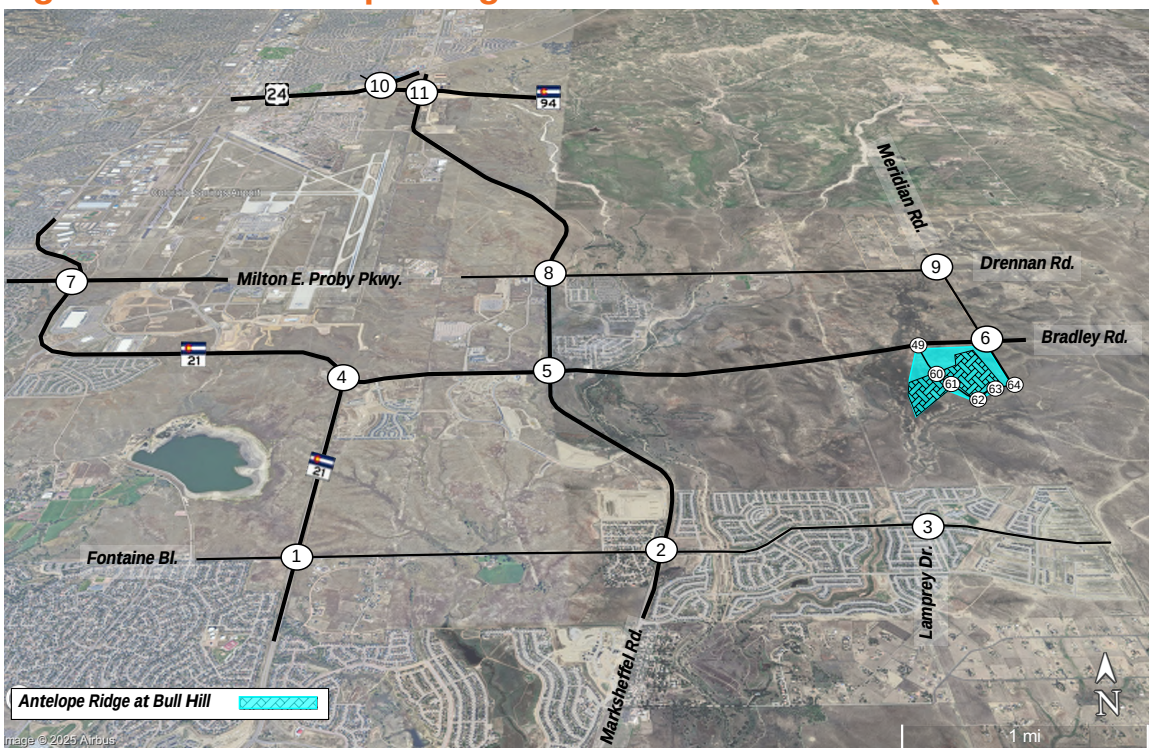
| Development | DU | Land Use | AM PEAK HOUR | | | PM PEAK HOUR | | | WEEKDAY | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Entry | Exit | Total | Entry | Exit | Total | Entry | Exit | Total |
| Antelope Ridge at Bull Hill | 472 | 210 - Single-Family Detached Housing | 76 | 229 | **305** | 269 | 158 | **427** | 2,103 | 2,103 | **4,206** |

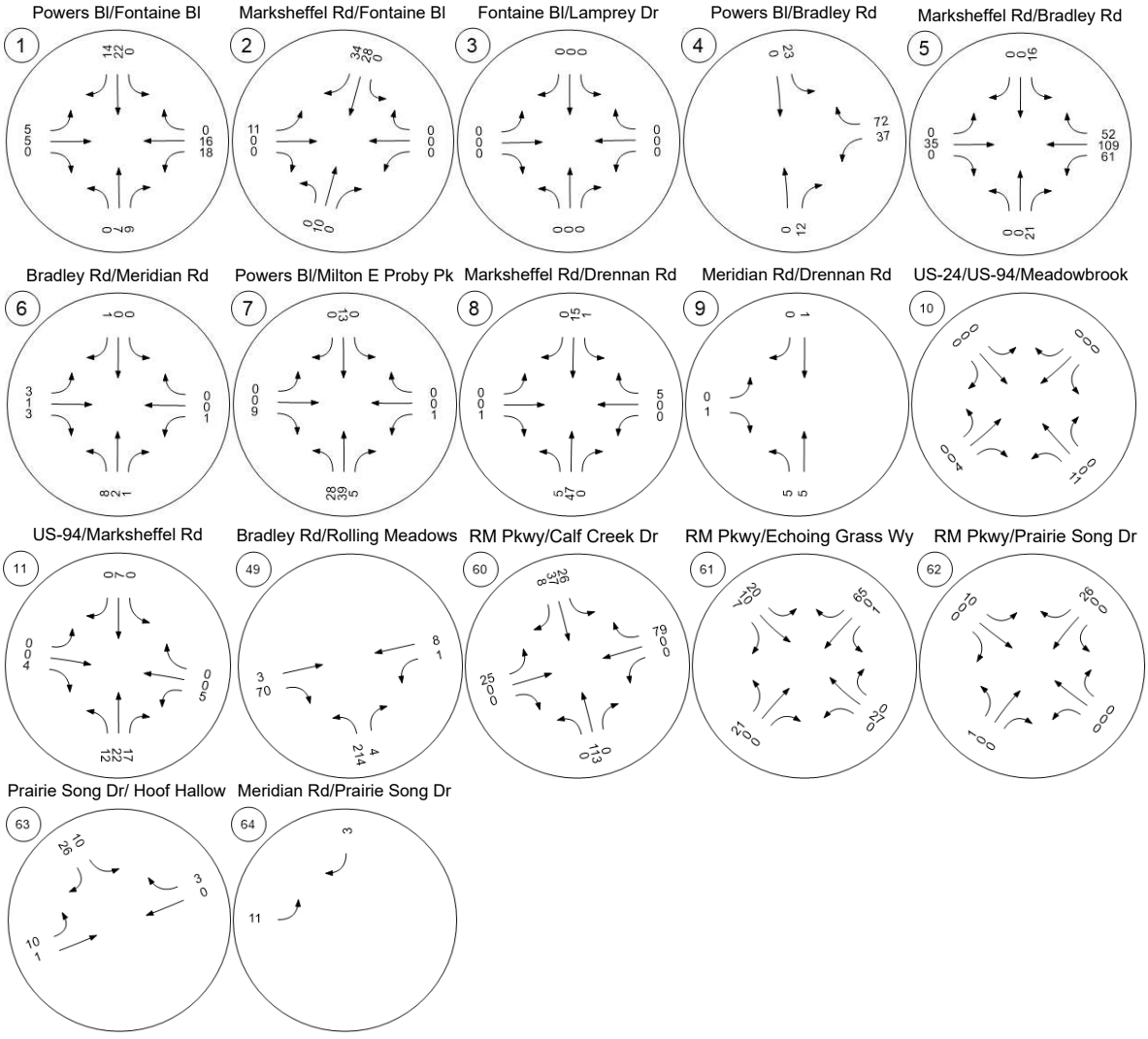
## Figure 32. Antelope Ridge at Bull Hill (Phase 1) Trip Distribution



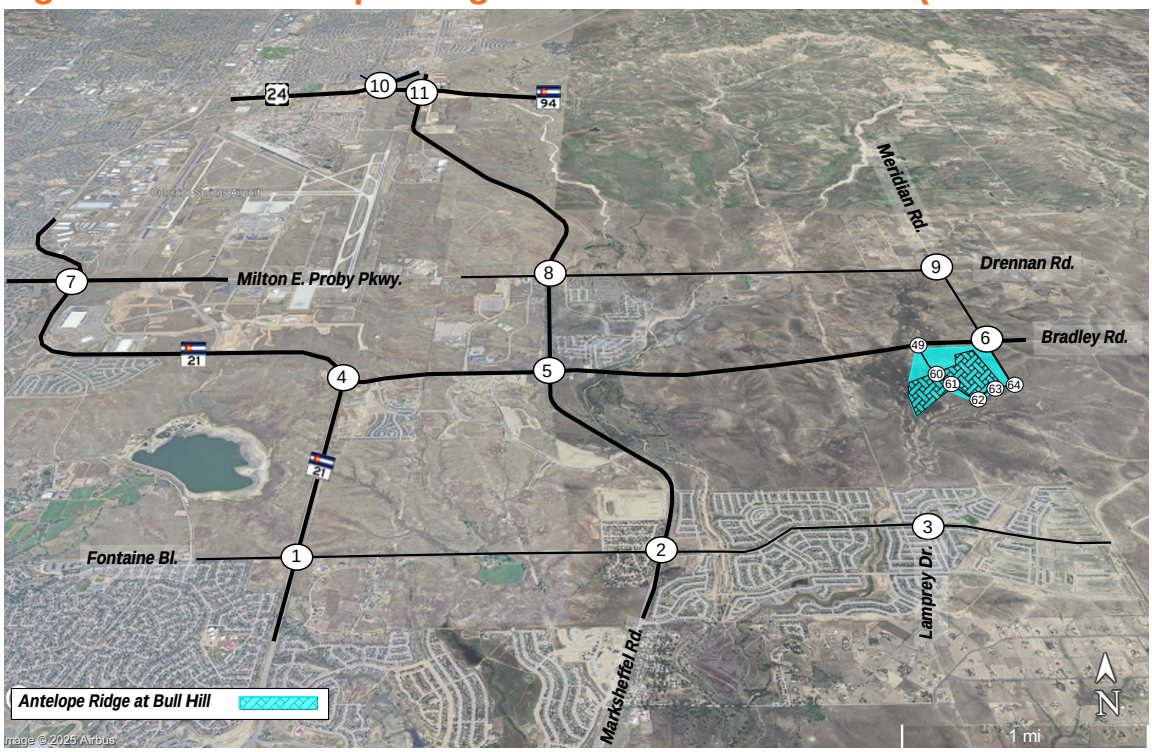

As shown in Figure 32, the trip distribution for the Antelope Ridge at Bull Hill Phase 1 development for the buildout year (2028) was adjusted, since Meridian Road north of Fontaine Boulevard will not be constructed and the improvements on Curtis Road are unlikely to be completed by then. The site trips for the Antelope Ridge project in the AM Peak hour are shown in Figure 33 and the site trips in the PM peak hour are shown in Figure 34. The daily site traffic is shown in Figure 35.

# Figure 33. Antelope Ridge at Bull Hill Site Traffic (AM Peak Hour)



# Figure 34. Antelope Ridge at Bull Hill Site Traffic (PM Peak Hour)



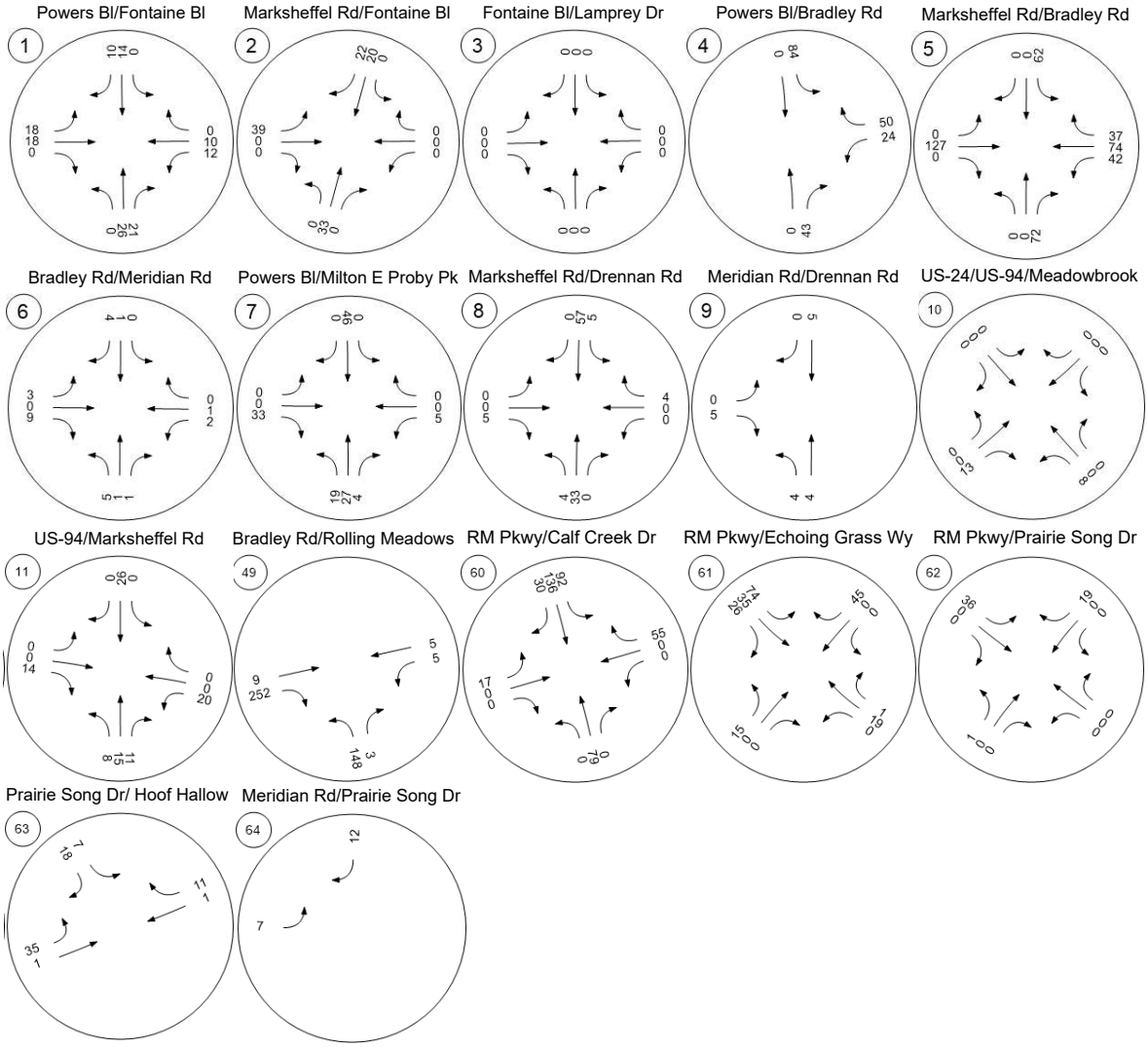
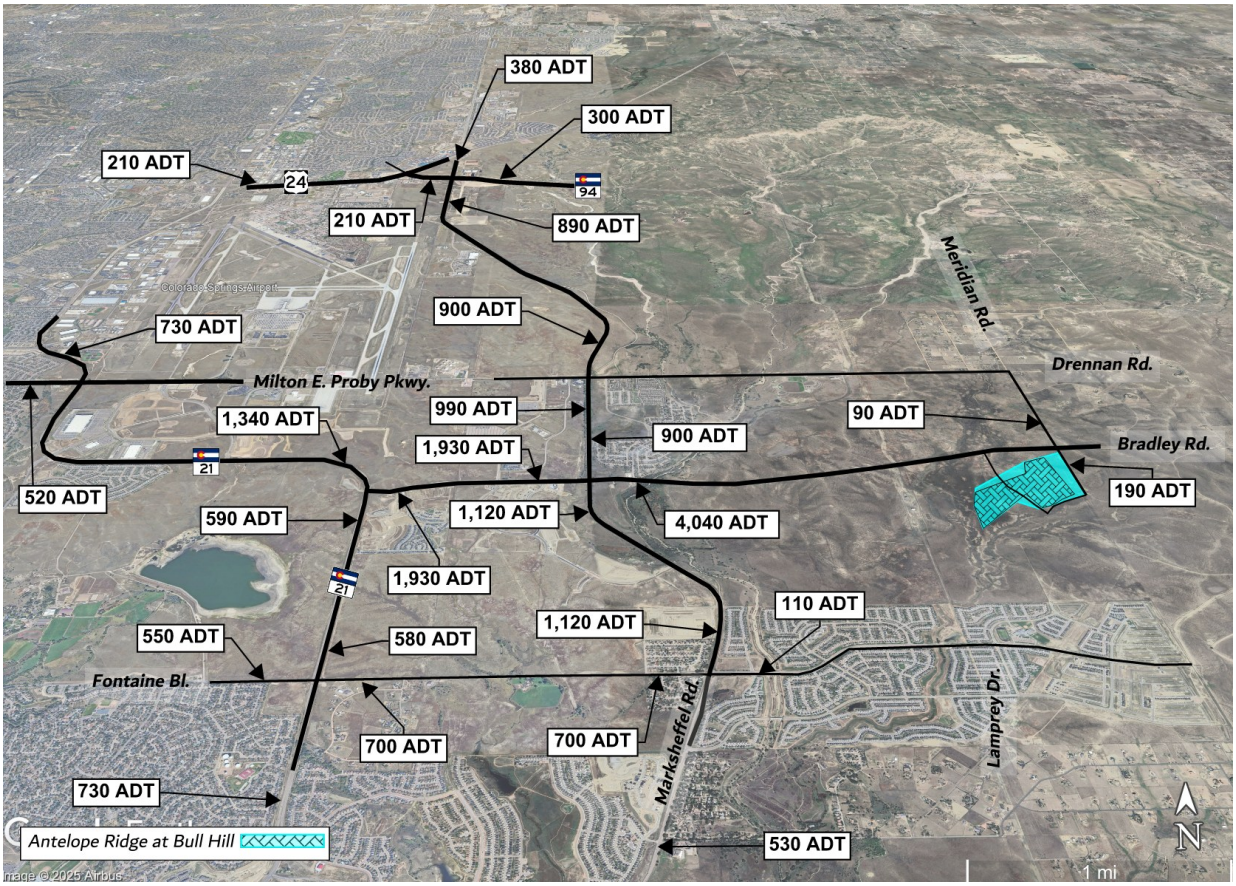



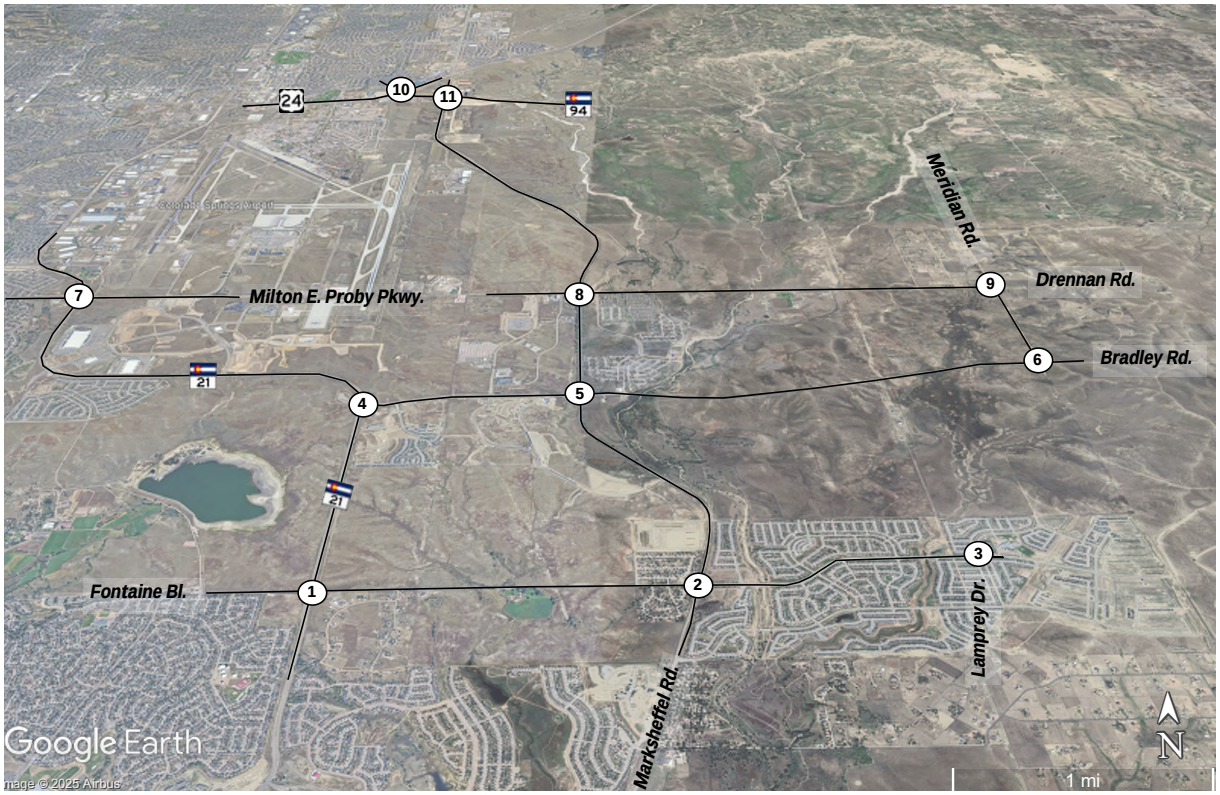
Figure 35. Antelope Ridge at Bull Hill Daily Site Traffic

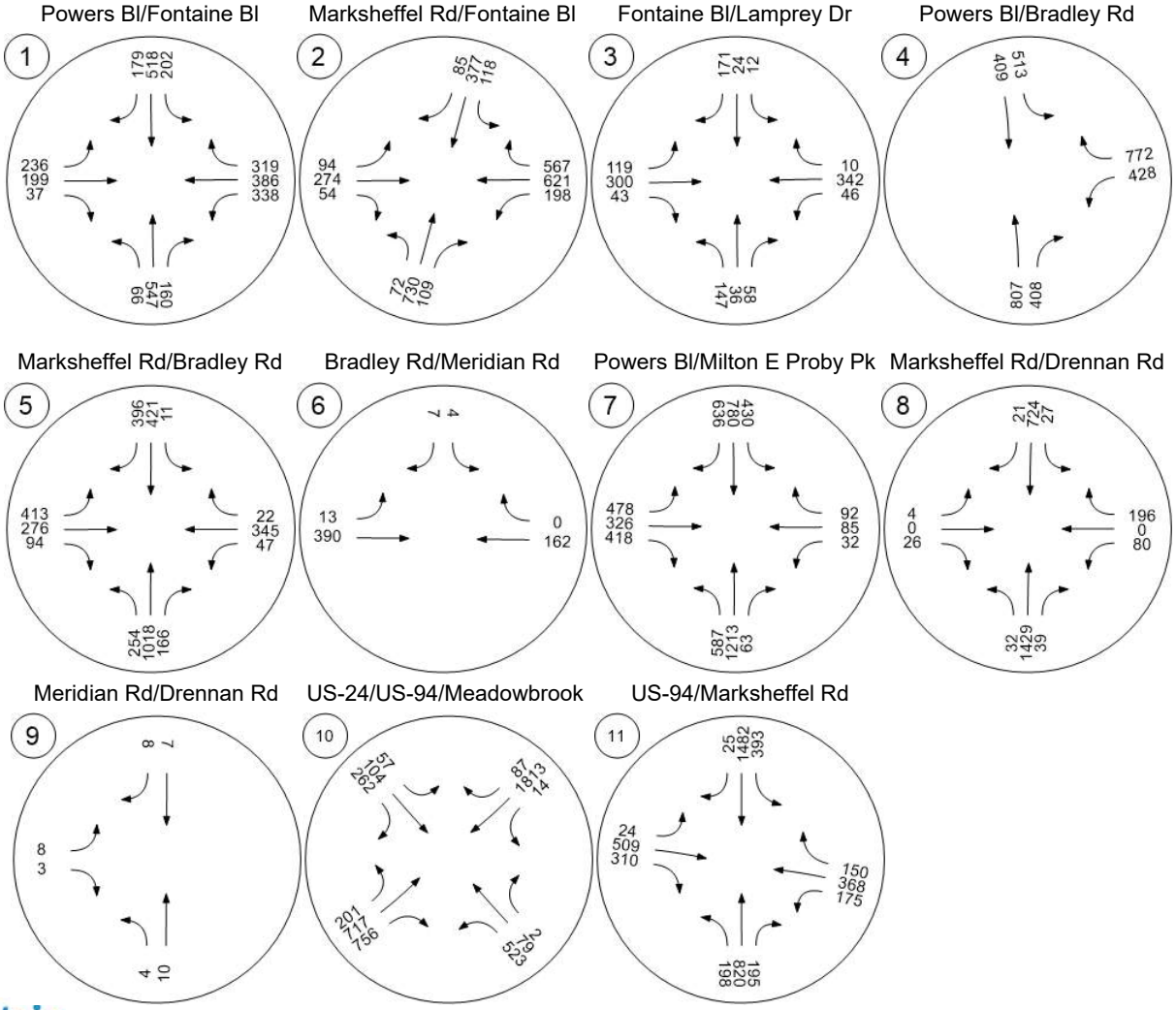



## 7.1 Buildout (2028) Background Conditions

The volumes for the AM and PM peak hour without the project are shown in Figure 36 and Figure 37, respectively. The daily volumes without the project are shown in Figure 38.

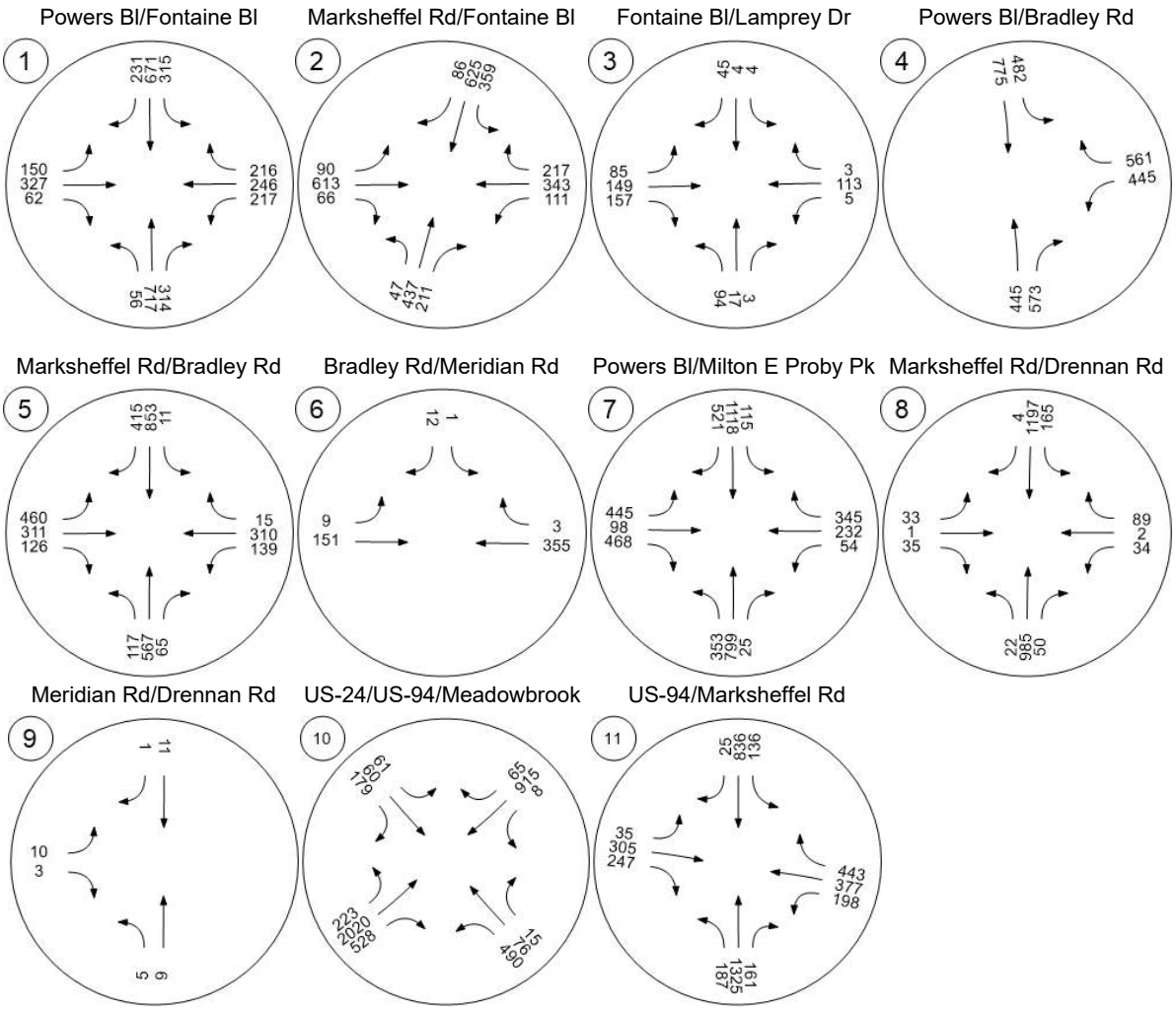
## Figure 36. Buildout (2028) Background Volumes (AM Peak Hour)



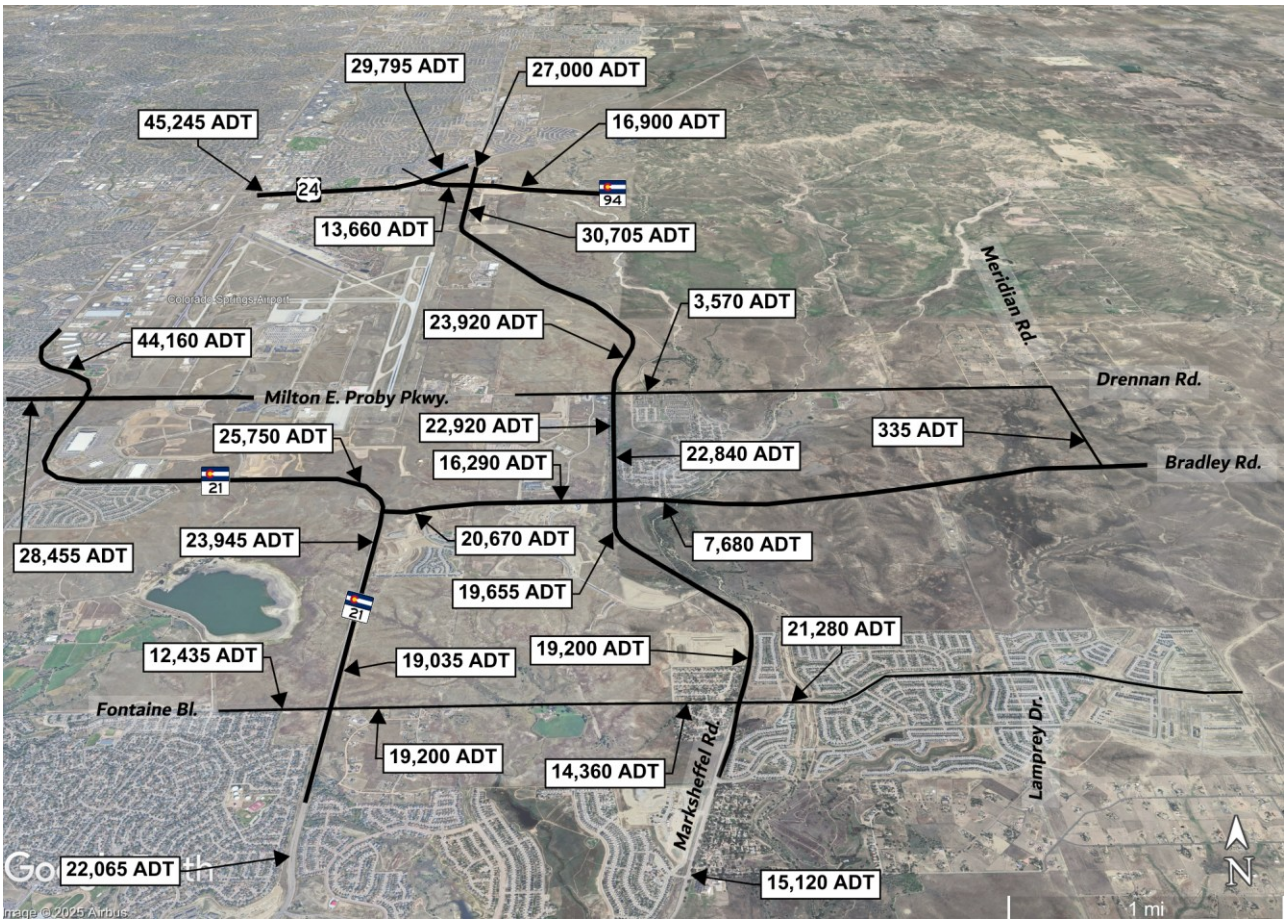



## Figure 37. Buildout (2028) Background Volumes (PM Peak Hour)



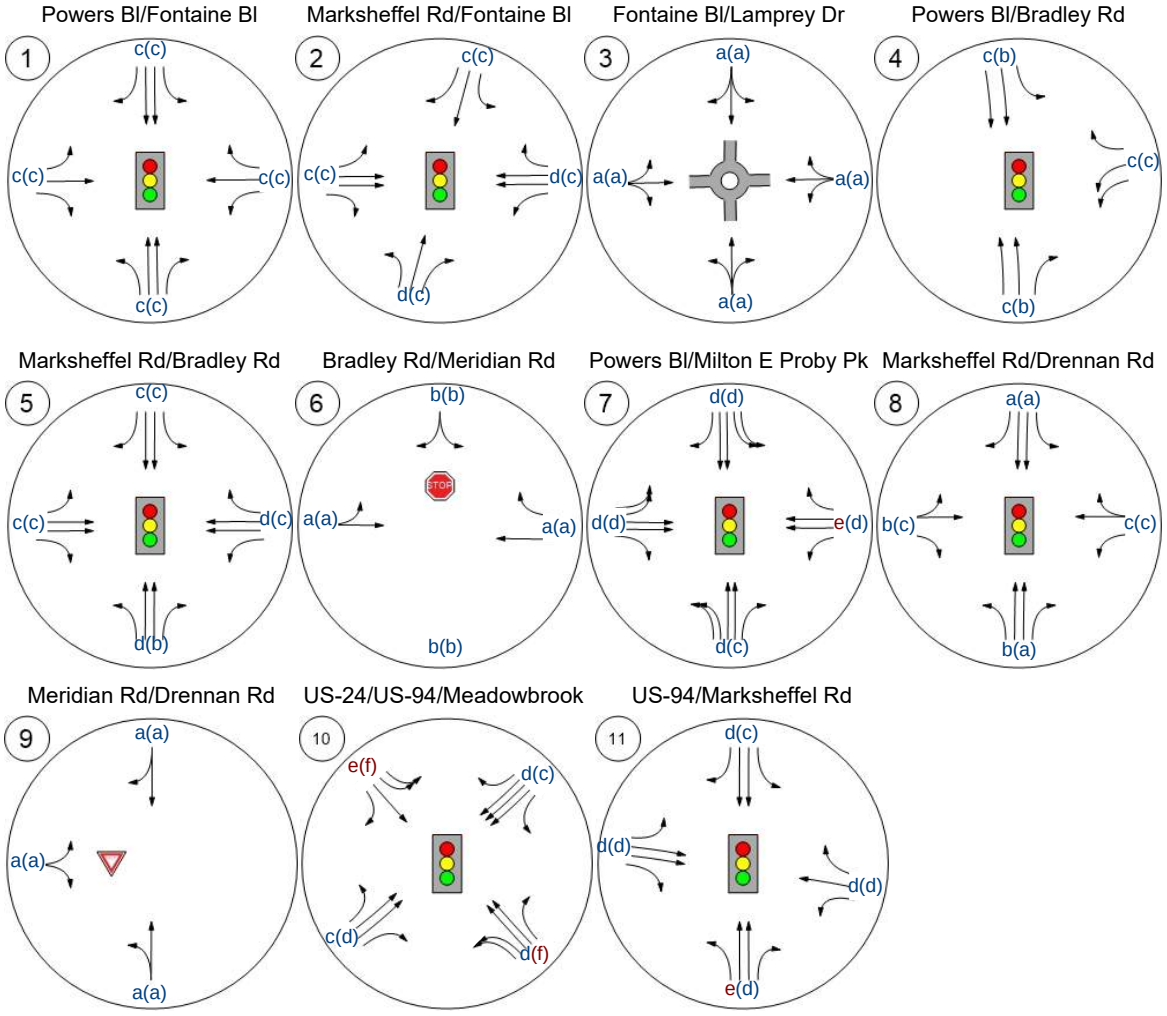
## Figure 38. Buildout (2028) Background Daily Volumes




The intersection configuration with approach LOS is shown below in Figure 39. The intersection operations for the buildout (2028) background in AM and PM peak hours are shown in Table 16 and Table 17, respectively.

# Figure 39. Buildout (2028) Background Intersection Configurations and LOS



## Table 16. Buildout (2028) Background Intersection Operations (AM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | WB Thru | 0.582 | 26.8 | C |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | WB Right | 0.699 | 38.2 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | WB Thru | | 8.0 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | SB Left | 0.716 | 30.7 | C |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | EB Left | 0.673 | 36.0 | D |
| 6 | Bradley Rd/Meridian Rd | Two-way stop | HCM 7th Edition | SB Left | 0.009 | 13.3 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Left | 0.687 | 41.4 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | WB Left | 0.503 | 11.3 | B |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.009 | 3.8 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Right | 0.707 | 36.3 | D |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | NB Left | 0.765 | 54.9 | D |

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 17. Buildout (2028) Background Intersection Operations (PM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | EB Thru | 0.636 | 26.6 | C |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | EB Thru | 0.646 | 30.9 | C |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | EB Right | | 5.0 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | WB Right | 0.560 | 16.9 | B |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | SB Thru | 0.617 | 25.8 | C |
| 6 | Bradley Rd/Meridian Rd | Two-way stop | HCM 7th Edition | SB Left | 0.002 | 12.6 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Left | 0.710 | 35.9 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | WB Left | 0.417 | 7.7 | A |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.011 | 3.8 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Right | 0.834 | 48.2 | D |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | SB Left | 0.676 | 35.4 | D |

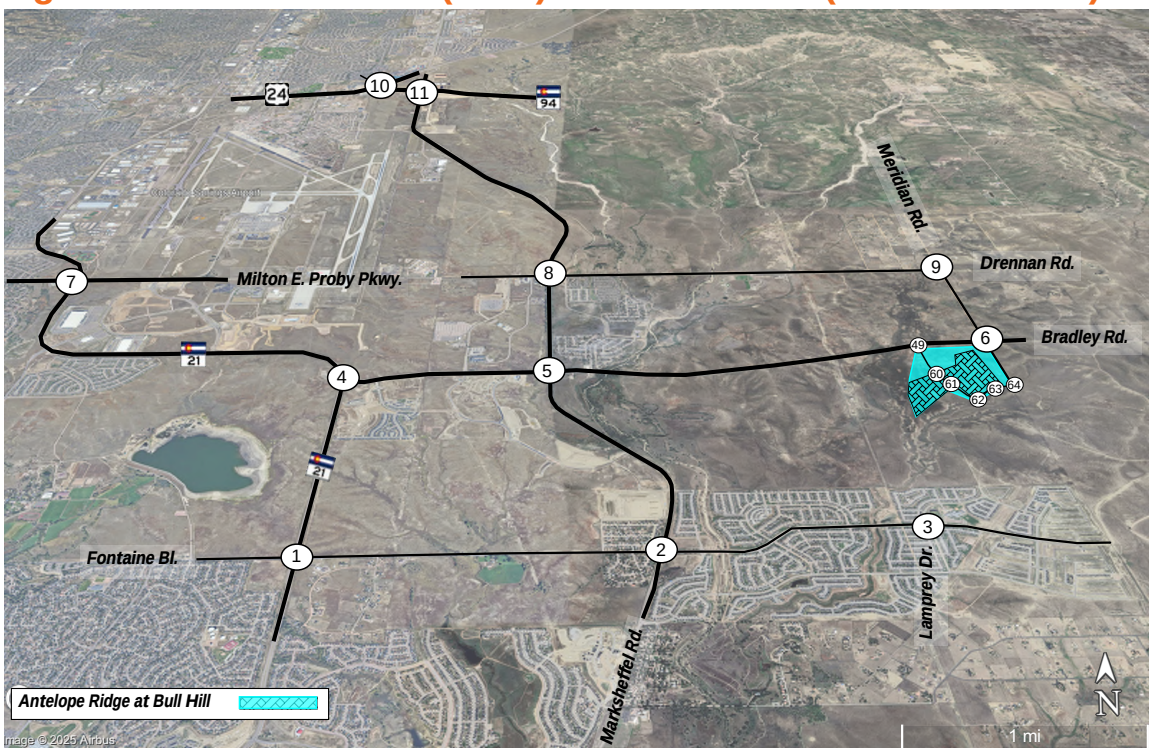
V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

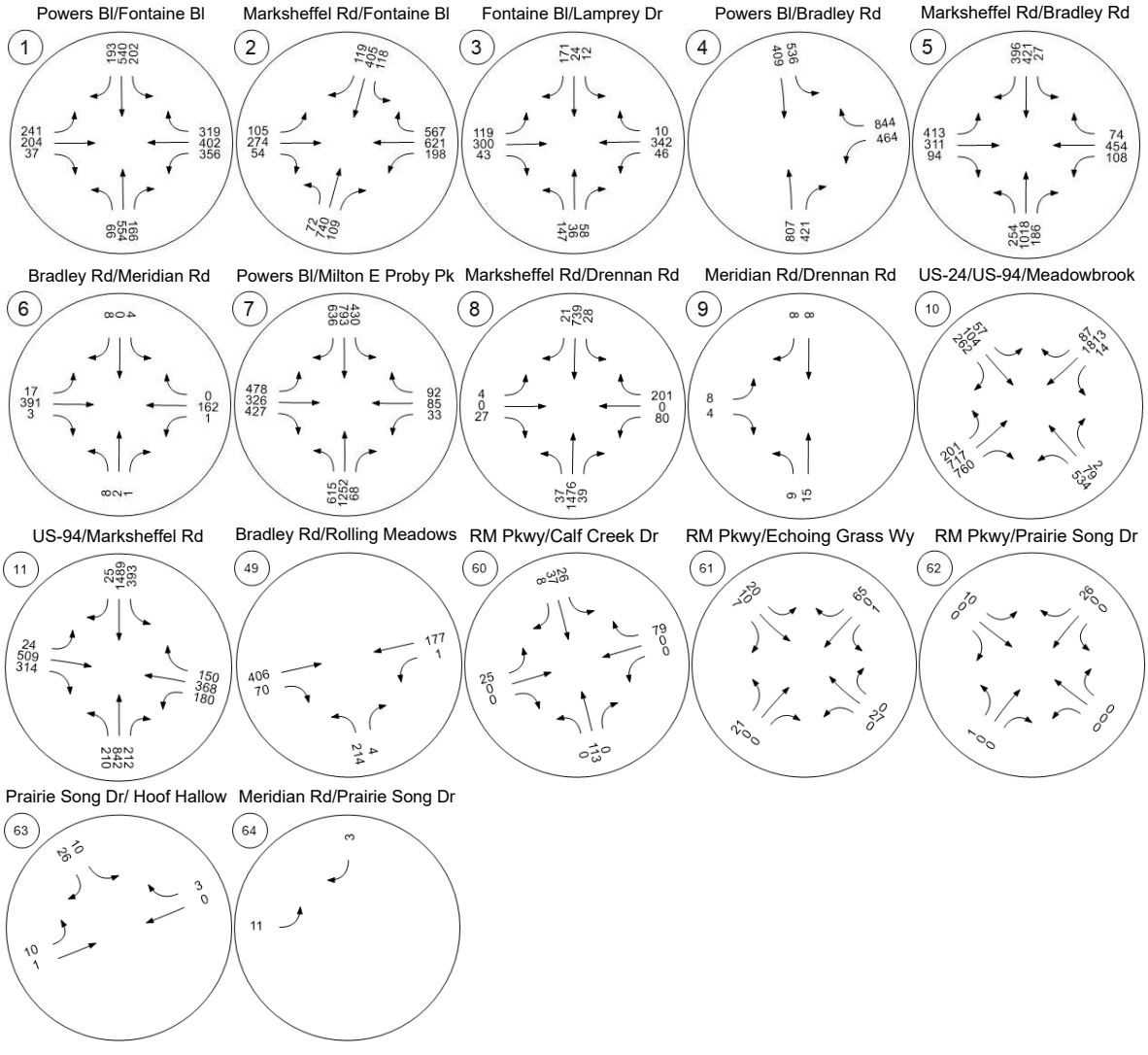
As shown in Table 16 and Table 17, all intersections operate at an acceptable LOS in the buildout (2028) year without the Phase 1 project.

## 7.2 Buildout (2028) Total Conditions

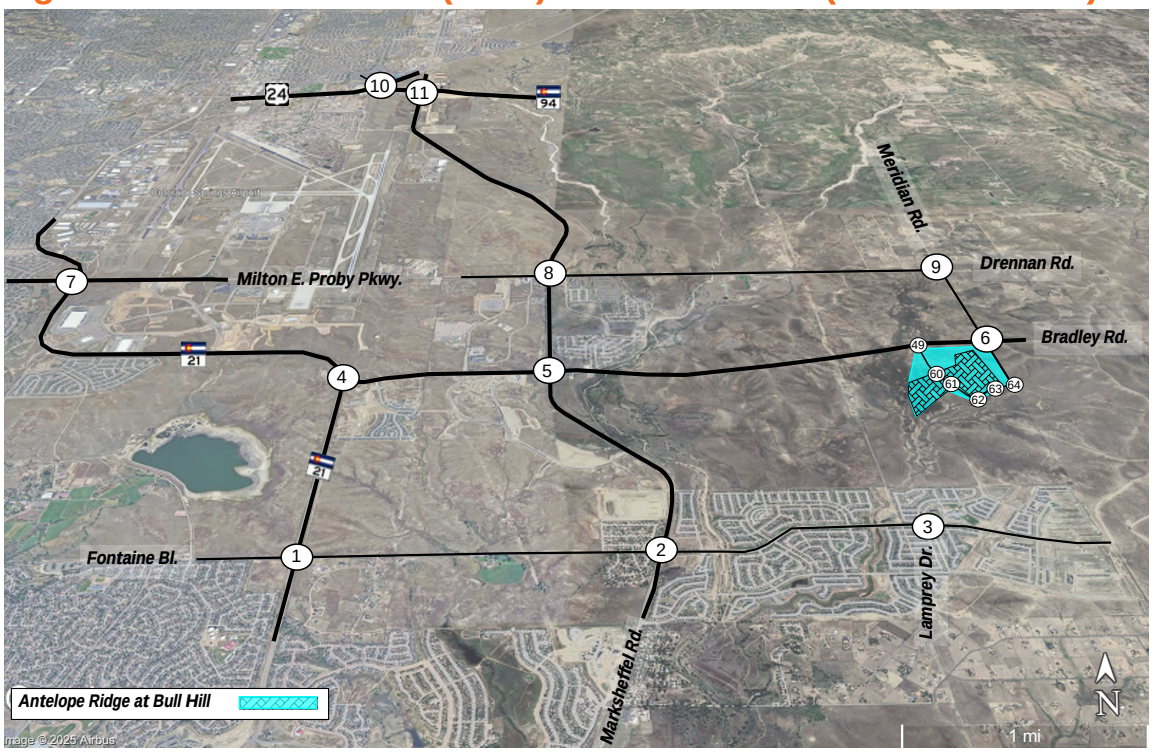
The AM and PM volumes with the addition of the project at buildout (2028) year are shown in Figure 40 and Figure 41, respectively. Daily traffic is shown in Figure 42. The lane configurations with approach LOS are shown in Figure 43.

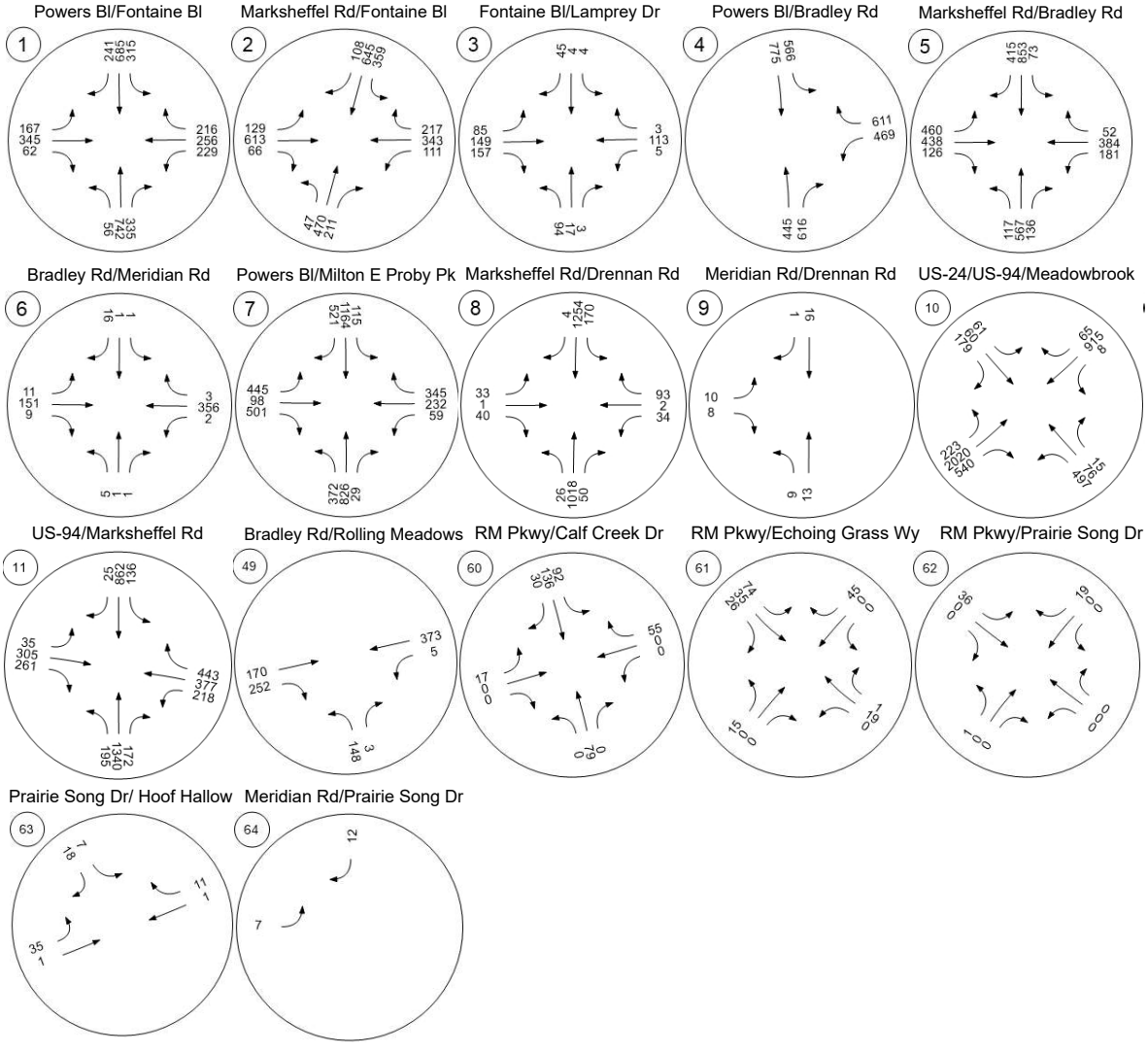
# Figure 40. Buildout (2028) Total Volumes (AM Peak Hour)



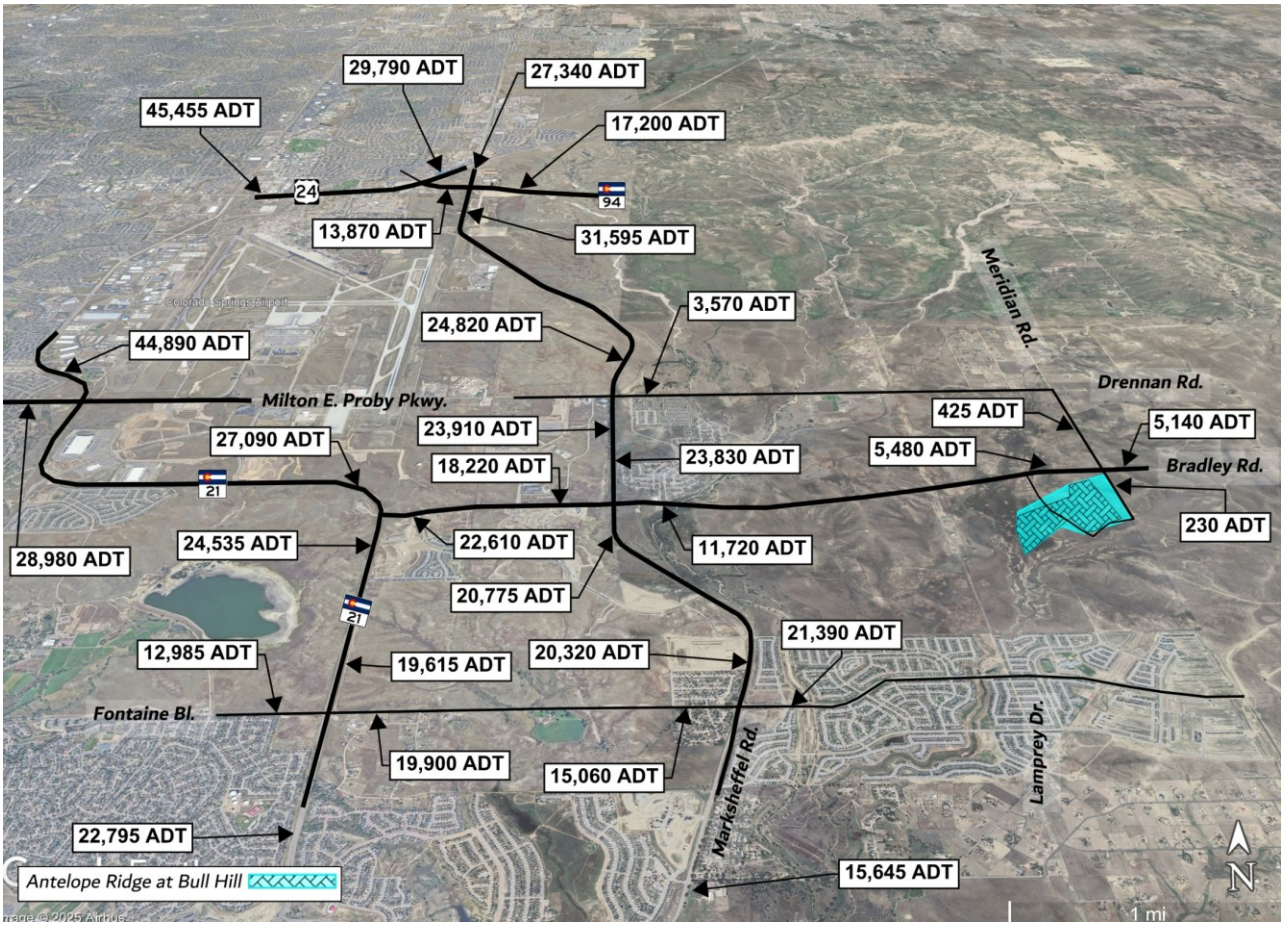



# Figure 41. Buildout (2028) Total Volumes (PM Peak Hour)

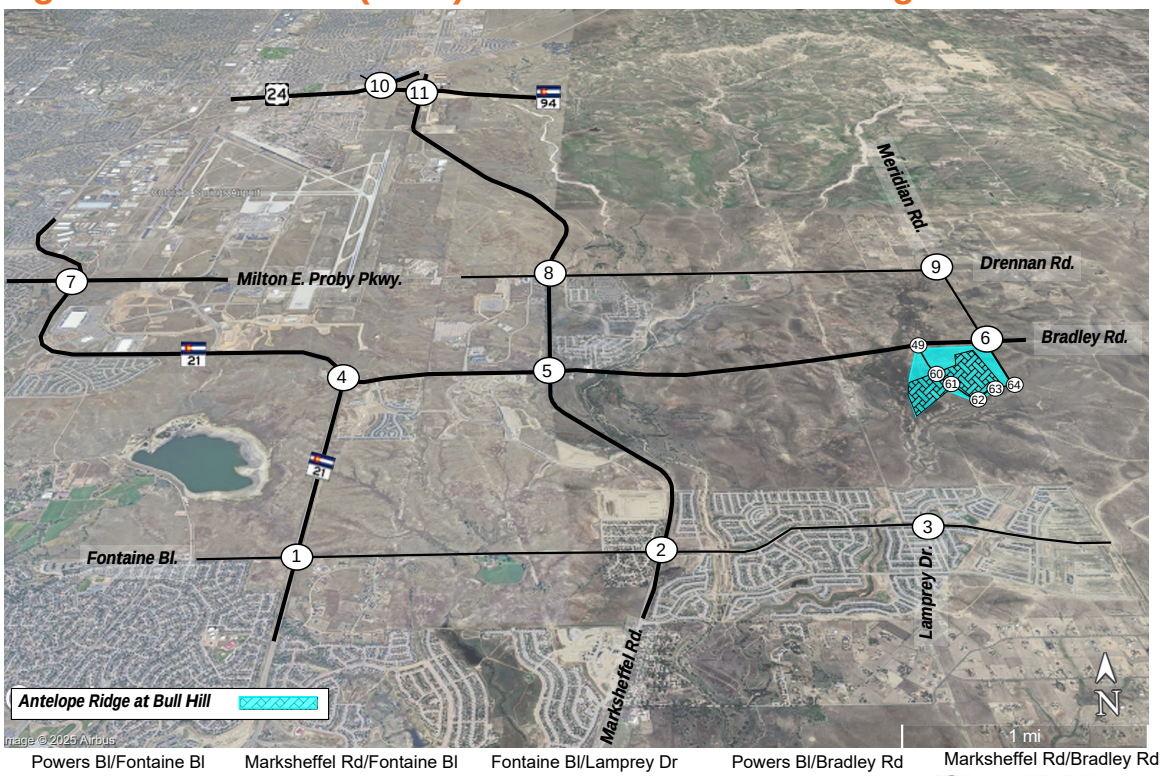


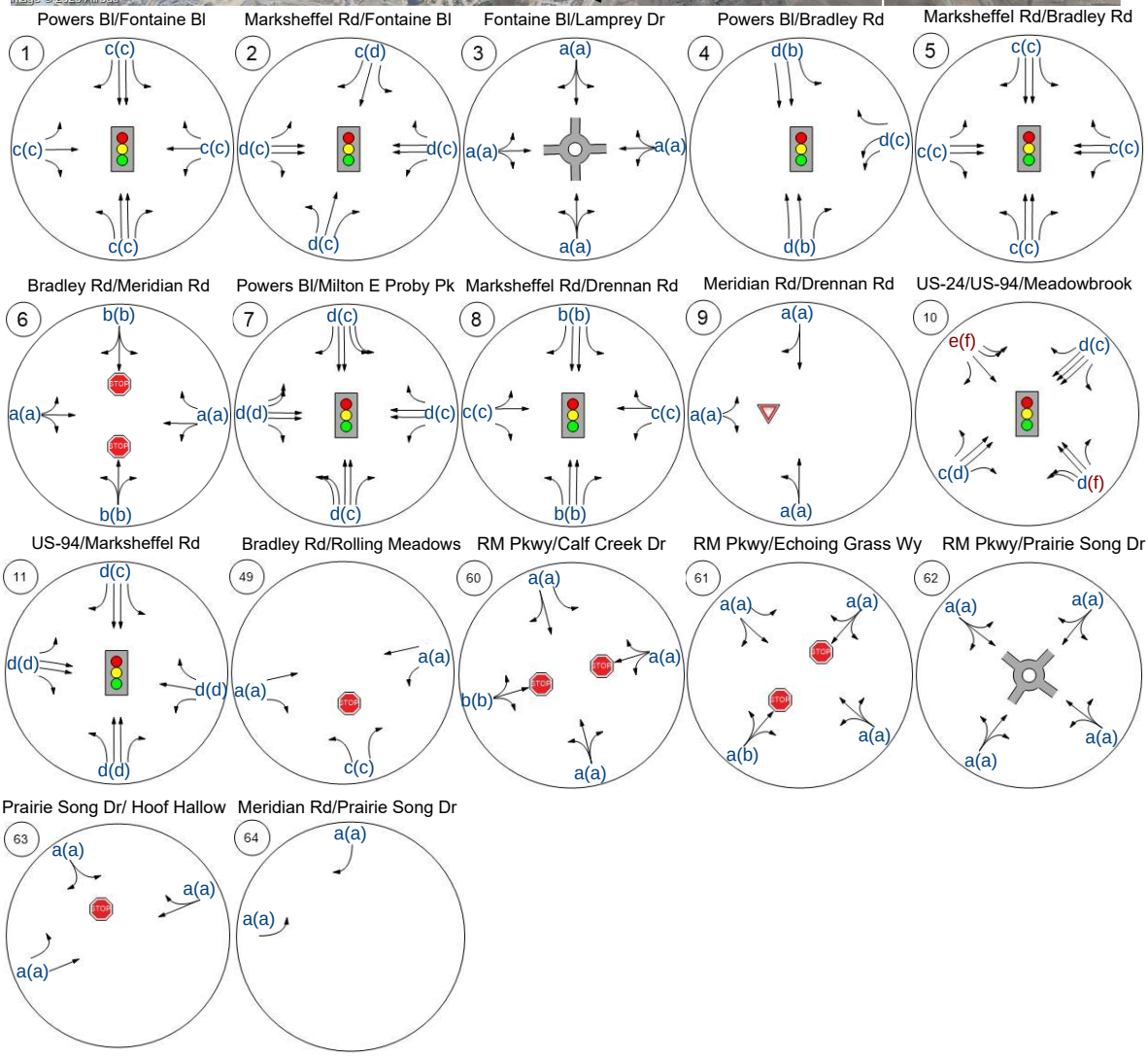



## Figure 42. Buildout (2028) Total Daily Volumes



# Figure 43. Buildout (2028) Total Intersection Configurations and LOS



The intersection analysis summary for the AM and PM peak hour is shown in Table 18 and Table 19, respectively.

## Table 18. Buildout (2028) Total Intersection Operations (AM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | WB Thru | 0.592 | 29.0 | C |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | NB Thru | 0.710 | 39.2 | D |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | WB Thru | | 8.0 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | SB Left | 0.764 | 37.6 | D |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | EB Left | 0.660 | 29.5 | C |
| 6 | Bradley Rd/Meridian Rd | Two-way stop | HCM 7th Edition | NB Left | 0.024 | 14.8 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Left | 0.693 | 42.2 | D |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | EB Left | 0.526 | 13.8 | B |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.009 | 3.9 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Right | 0.715 | 42.9 | D |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | NB Left | 0.787 | 44.5 | D |
| 49 | Bradley Rd/Rolling Meadows Pkwy | Two-way stop | HCM 7th Edition | NB Left | 0.527 | 21.9 | C |
| 60 | Rolling Meadows Pkwy/Calf Creek Dr | Two-way stop | HCM 7th Edition | EB Left | 0.044 | 11.2 | B |
| 61 | Rolling Meadows Pkwy/Echoing Grass Wy | Two-way stop | HCM 7th Edition | EB Left | 0.029 | 9.7 | A |
| 62 | Rolling Meadows Pkwy/Prairie Song Dr | Roundabout | HCM 7th Edition | SB Right | | 2.8 | A |
| 63 | Prairie Song Dr/ Hoof Hallow Pl | Two-way stop | HCM 7th Edition | SB Left | 0.011 | 8.8 | A |
| 64 | Meridian Rd/Prairie Song Dr | Two-way stop | HCM 7th Edition | EB Left | 0.000 | 0.0 | A |

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 19. Buildout (2028) Total Intersection Operations (PM Peak Hour)

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | Signalized | HCM 7th Edition | EB Thru | 0.662 | 28.8 | C |
| 2 | Marksheffel Rd/Fontaine Bl | Signalized | HCM 7th Edition | NB Thru | 0.654 | 31.9 | C |
| 3 | Fontaine Bl/Lamprey Dr | Roundabout | HCM 7th Edition | EB Right | | 5.0 | A |
| 4 | Powers Bl/Bradley Rd | Signalized | HCM 7th Edition | WB Right | 0.620 | 22.0 | C |
| 5 | Marksheffel Rd/Bradley Rd | Signalized | HCM 7th Edition | EB Left | 0.642 | 27.4 | C |
| 6 | Bradley Rd/Meridian Rd | Two-way stop | HCM 7th Edition | NB Left | 0.012 | 14.0 | B |
| 7 | Powers Bl/Milton E Proby Pkwy | Signalized | HCM 7th Edition | WB Left | 0.683 | 32.9 | C |
| 8 | Marksheffel Rd/Drennan Rd | Signalized | HCM 7th Edition | EB Left | 0.423 | 15.3 | B |
| 9 | Meridian Rd/Drennan Rd | Two-way yield | HCM 7th Edition | EB Left | 0.012 | 4.0 | A |
| 10 | US-24/US-94/Meadowbrook Pkwy | Signalized | HCM 7th Edition | SB Right | 0.836 | 49.1 | D |
| 11 | US-94/Marksheffel Rd | Signalized | HCM 7th Edition | SB Thru | 0.686 | 47.6 | D |
| 49 | Bradley Rd/Rolling Meadows Pkwy | Two-way stop | HCM 7th Edition | NB Left | 0.349 | 16.9 | C |
| 60 | Rolling Meadows Pkwy/Calf Creek Dr | Two-way stop | HCM 7th Edition | EB Left | 0.041 | 13.6 | B |
| 61 | Rolling Meadows Pkwy/Echoing Grass Wy | Two-way stop | HCM 7th Edition | EB Left | 0.025 | 10.9 | B |
| 62 | Rolling Meadows Pkwy/Prairie Song Dr | Roundabout | HCM 7th Edition | EB Left | | 2.8 | A |
| 63 | Prairie Song Dr/ Hoof Hallow Pl | Two-way stop | HCM 7th Edition | SB Left | 0.009 | 9.1 | A |
| 64 | Meridian Rd/Prairie Song Dr | Two-way stop | HCM 7th Edition | SB Right | 0.000 | 0.0 | A |

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.

As shown in Table 18 and Table 19 ,all studied intersections are projected to operate at acceptable LOS for the buildout (2028) year. The turn lane requirements for the Antelope Ridge at Bull Hill project in buildout (2028) year is shown in Table 20.

## Table 20. Buildout (2028) Total Turn Lane Evaluation

| ID | Intersection | Access Category/Roadway Classificaiton | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Provided (ft) | Improved Existing | Improvement (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl<br>CDOT -SHAC<br>Signalized | E-X | NBL | 1 | 55 | 66 | 37 | **222** | **600** | **100** | **920** | 965 | 920 | |
| | | E-X | NBR | 1 | 55 | 340 | 98 | **222** | **600** | **-** | **820** | 860 | 820 | |
| | | E-X | SBL | 1 | 55 | 315 | 220 | **222** | **600** | **315** | **1135** | 800 | 960 | 175 |
| | | E-X | SBR | 1 | 55 | 240 | 69 | **222** | **600** | **-** | **820** | 685 | 820 | |
| | | NR-A | EBL | 1 | 45 | 240 | 180 | **162** | **273** | **240** | **675** | 405 | 525 | 150 |
| | | NR-A | EBR | 1 | 45 | 62 | 31 | **162** | **273** | **-** | **435** | 670 | 310 | |
| | | NR-A | WBL | 1 | 45 | 361 | 281 | **162** | **273** | **361** | **795** | 425 | 490 | 305 |
| | | NR-A | WBR | 1 | 45 | 319 | 137 | **162** | **273** | **-** | **435** | 670 | 310 | |
| | | NR-A | NBR to EBT Acceleration | 1 | 45 | 340 | - | **162** | ***388 (Accel. Lane)*** | | **550** | 660 | 270 | |
| | | NR-A | SBR to WBT Acceleration | 1 | 45 | 240 | - | **162** | ***388 (Accel. Lane)*** | | **550** | 400 | 270 | 150 |
| | | E-X | EBR to SBT Acceleration | 1 | 55 | 62 | - | **222** | ***960 (Accel. Lane)*** | **-** | **1180** | 1,070 | 1,180 | |
| | | E-X | WBR to NBT Acceleration | 1 | 55 | 319 | - | **222** | ***960 (Accel. Lane)*** | **-** | **1180** | 545 | 1,180 | |
| 2 | Marksheffel Rd/Fontaine Bl<br>CCS - TCM<br>Signalized | Principal Arterial | NBL | 1 | 45 | 72 | 35 | **180** | **200** | **-** | **380** | 700 | 380 | |
| | | Principal Arterial | NBR | 1 | 45 | 211 | 74 | **180** | **200** | **-** | **380** | 700 | 380 | |
| | | Principal Arterial | SBL | 1 | 45 | 357 | 232 | **180** | **200** | **-** | **380** | 560 | 480 | |
| | | Principal Arterial | SBR | 1 | 45 | 117 | 32 | **180** | **200** | **-** | **380** | 560 | 480 | |
| | | Principal Arterial | EBL | 1 | 45 | 127 | 95 | **180** | **200** | **-** | **380** | 500 | 260 | |
| | | Principal Arterial | EBR | 1 | 45 | 66 | 27 | **180** | **200** | **-** | **380** | 275 | 260 | 105 |
| | | Principal Arterial | WBL | 1 | 45 | 198 | 203 | **180** | **200** | **-** | **380** | 515 | 380 | |
| | | Principal Arterial | WBR | 1 | 45 | 565 | 315 | **180** | **200** | **-** | **380** | Continuous | 380 | |
| 4 | Powers Bl/Bradley Rd<br>CDOT -SHAC<br>Signalized | E-X | NBR | 1 | 65 | 611 | 161 | **300** | **800** | **-** | **1100** | 880 | 1100 | - |
| | | E-X | SBL | 1 | 65 | 566 | 399 | **300** | **800** | **566** | **1665** | 890 | 1480 | 185 |
| | | NR-A | WBL | 2 | 45 | 466 | 155 | **324** | **176** | **233** | **735** | 830 | 690 | - |
| | | NR-A | WBR | 1 | 45 | 844 | 412 | **162** | **338** | **-** | **500** | Continuous | 500 | - |
| | | NR-A | NBR to EBT Acceleration | 1 | 45 | 611 | - | **162** | ***388 (Accel. Lane)*** | **-** | **550** | 860 | 760 | - |
| | | E-X | WBR to NBT Acceleration | 1 | 65 | 844 | - | **300** | ***1380 (Accel. Lane)*** | | **1680** | 710 | 1680 | - |
| 5 | Marksheffel Rd/Bradley Rd<br>CCS - TCM<br>Signalized | Principal Arterial | NBL | 1 | 45 | 254 | 126 | **180** | **200** | **-** | **380** | 940 | 480 | - |
| | | Principal Arterial | NBR | 1 | 45 | 184 | 41 | **180** | **200** | **-** | **380** | 940 | 480 | - |
| | | Principal Arterial | SBL | 1 | 45 | 73 | 23 | **180** | **200** | **-** | **380** | 920 | 480 | - |
| | | Principal Arterial | SBR | 1 | 45 | 415 | 126 | **180** | **200** | **-** | **380** | 965 | 480 | - |
| | | Principal Arterial | EBL | 1 | 45 | 460 | 317 | **180** | **200** | **-** | **380** | 720 | 435 | - |
| | | Principal Arterial | EBR | 1 | 45 | 126 | 40 | **180** | **200** | **-** | **380** | 720 | 435 | - |
| | | Principal Arterial | WBL | 1 | 45 | 178 | 72 | **180** | **200** | **-** | **380** | 965 | 380 | - |
| | | Principal Arterial | WBR | 1 | 45 | 74 | 20 | **180** | **200** | **-** | **380** | Continuous | 380 | - |
| 7 | Powers Bl/Milton E Proby Pkwy<br>CDOT -SHAC<br>Signalized | E-X | NBL | 2 | 60 | 615 | 312 | **600** | **700** | **308** | **1610** | 895 | 1515 | 95 |
| | | E-X | NBR | 1 | 60 | 68 | 22 | **300** | **700** | **-** | **1000** | 450 | 1000 | - |
| | | E-X | SBL | 2 | 55 | 430 | 257 | **444** | **600** | **215** | **1260** | 750 | 1260 | - |
| | | E-X | SBR | 1 | 55 | 636 | 284 | **222** | **600** | **-** | **820** | 865 | 820 | - |
| | | E-X | EBL | 2 | 55 | 478 | 303 | **444** | **600** | **239** | **1285** | 780 | 1280 | - |
| | | E-X | EBR | 1 | 55 | 501 | 245 | **222** | **600** | **-** | **820** | 275 | 820 | - |
| | | E-X | WBL | 1 | 55 | 59 | 71 | **222** | **600** | **50** | **870** | 715 | 860 | 10 |
| | | E-X | WBR | 1 | 55 | 345 | 52 | **222** | **600** | **-** | **820** | 590 | 820 | - |
| | | E-X | NBR to EBT Acceleration | 1 | 55 | 68 | - | **222** | ***960 (Accel. Lane)*** | **-** | **1180** | 500 | 1180 | - |
| | | E-X | SBR to WBT Acceleration | 1 | 55 | 636 | - | **222** | ***960 (Accel. Lane)*** | **-** | **1180** | 725 | 1180 | - |
| | | E-X | EBR to SBT Acceleration | 1 | 55 | 501 | - | **222** | ***960 (Accel. Lane)*** | **-** | **1180** | 355 | 1,180 | - |
| | | E-X | WBR to NBT Acceleration | 1 | 60 | 345 | - | **300** | ***1170 (Accel. Lane)*** | **-** | **1470** | 770 | 1,470 | - |

## Buildout (2028) Total Turn Lane Evaluation (Continued)

| ID | Intersection | Access Category/Roadway Classificaiton | Movement | No. Lanes | Speed (mph) | Volume (vph) | Queue (ft) | Taper (ft) | Deceleration (ft) | Storage (ft) | Total (ft) | Provided (ft) | Improved Existing | Improvement (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | Marksheffel Rd/Drennan Rd<br>CCS - TCM<br>Signalized | Principal Arterial | NBL | 1 | 45 | 37 | 10 | 180 | 200 | - | 380 | 895 | 480 | - |
| | | Principal Arterial | NBR | 1 | 45 | 50 | 11 | 180 | 200 | - | 380 | 895 | 480 | - |
| | | Principal Arterial | SBL | 1 | 45 | 165 | 68 | 180 | 200 | - | 380 | 650 | 380 | - |
| | | Principal Arterial | SBR | 1 | 45 | 21 | 4 | 180 | 200 | - | 380 | 650 | 380 | - |
| | | Minor Arterial | EBL | 1 | 40 | 33 | 26 | 160 | 155 | - | 315 | - | 380 | - |
| | | Minor Arterial | EBR | 1 | 40 | 40 | 14 | 160 | 155 | - | 315 | 270 | 380 | - |
| | | Principal Arterial | WBL | 1 | 45 | 80 | 48 | 180 | 200 | - | 380 | 0 | 380 | - |
| 10 | Highway-24/Highway-94<br>CDOT -SHAC<br>Signalized | E-X | NBL (US-94) | 2 | 55 | 534 | 531 | 444 | 600 | 267 | 1310 | 1015 | 1240 | 70 |
| | | E-X | NBR (US-94) | 1 | 55 | 15 | 15 | 222 | 600 | - | 820 | 1015 | 820 | - |
| | | F-R | SBL (Newt Dr. | 2 | 30 | 61 | 79 | 192 | - | 50 | 240 | 400 | 215 | - |
| | | F-R | SBR (Newt Dr. | 1 | 30 | 262 | 242 | 96 | - | 262 | 360 | 400 | 120 | - |
| | | E-X | EBL (US-24) | 1 | 55 | 223 | 200 | 222 | 600 | 223 | 1045 | 1120 | 975 | - |
| | | E-X | EBR (US-24) | 1 | 55 | 760 | 256 | 222 | 600 | - | 820 | 710 | 820 | - |
| | | E-X | WBL (US-24) | 1 | 65 | 14 | 7 | 300 | 800 | 25 | 1125 | 975 | 1125 | - |
| | | E-X | WBR (US-24) | 1 | 65 | 87 | 32 | 300 | 800 | - | 1100 | 975 | 1100 | - |
| | | NR-A | NBR to EBT Acceleration | 1 | 55 | 15 | - | 220 | *740 (Accel. Lane)* | - | 960 | 1570 | 960 | - |
| | | NR-A | SBR to WBT Acceleration | 1 | 65 | 262 | - | 300 | *1080 (Accel. Lane)* | - | 1380 | 895 | 1380 | - |
| | | E-X | EBR to SBT Acceleration | 1 | 55 | 760 | - | 222 | *960 (Accel. Lane)* | | 1180 | 640 | 1,180 | - |
| 11 | Highway-94/Marksheffel Rd<br>CDOT -SHAC<br>Signalized | NR-A | NBL | 1 | 45 | 209 | 188 | 162 | 273 | 209 | 645 | 600 | 700 | - |
| | | NR-A | NBR | 1 | 45 | 211 | 56 | 162 | 273 | - | 435 | 600 | 600 | - |
| | | NR-A | SBL | 1 | 45 | 393 | 295 | 162 | 273 | 393 | 830 | 630 | 875 | - |
| | | NR-A | SBR | 1 | 45 | 25 | 0 | 162 | 273 | - | 435 | 630 | 500 | - |
| | | E-X | EBL | 1 | 50 | 35 | 35 | 180 | 500 | 40 | 720 | 280 | 705 | 15 |
| | | E-X | EBR | 1 | 50 | 314 | 0 | 180 | 500 | - | 680 | 475 | 680 | - |
| | | E-X | WBL | 1 | 65 | 217 | 201 | 300 | 500 | 217 | 1015 | 500 | 900 | 115 |
| | | E-X | WBR | 1 | 65 | 443 | 0 | 300 | 500 | - | 800 | 500 | 800 | - |
| | | E-X | NBR to EBT Acceleration | 1 | 50 | 211 | - | 180 | *760 (Accel. Lane)* | | 940 | 0 | 940 | - |
| | | E-X | SBR to WBT Acceleration | 1 | 65 | 25 | - | 300 | *1,170 (Accel. Lane)* | | 1470 | 0 | 1470 | - |
| | | NR-A | EBR to SBT Acceleration | 1 | 45 | 314 | - | 162 | *388(Accel. Lane)* | - | 550 | 0 | 760 | - |
| | | NR-A | WBR to NBT Acceleration | 1 | 45 | 443 | - | 162 | *388 (Accel. Lane)* | - | 550 | 0 | 960 | - |
| 49 | Bradley Rd/Rolling Meadows Pkwy<br>EPC - ECM<br>Stopped - Controlled | Collector | NBL | 1 | 35 | 214 | 75 | 160 | 155 | 200 | 515 | | | Required New Turn Lane |
| | | Principal Arterial | EBR | 1 | 45 | 252 | - | 200 | 235 | - | 435 | | | Required New Turn Lane |
| | | Principal Arterial | WBL | 1 | 45 | 5 | 1 | 200 | 235 | 50 | 485 | | | Required New Turn Lane |
| 60 | Rolling Meadows Pkwy/Calf Creek Dr<br>EPC - ECM<br>Stopped - Controlled | Collector | SBL | 1 | 35 | 92 | 4 | 160 | 155 | 70 | 385 | | | Required New Turn Lane |
| 61 | Rolling Meadows Pkwy/Echoing Grass Wy<br>EPC - ECM<br>Stop-Controlled | Collector | SBL | 1 | 35 | 63 | 4 | 160 | 155 | 50 | 365 | | | Required New Turn Lane |
| 63 | Prairie Song Dr/Hoof Hallow Pl<br>EPC - ECM<br>Stop-Controlled | Collector | EBL | 1 | 35 | 35 | 2 | 160 | 155 | 50 | 365 | | | Required New Turn Lane |

The required improvements for the buildout year (2028) are in respect that the improvements in the existing conditions have been met. For required improvements in the existing conditions see Table 3. A summary of the recommended improvements is as follows:

**Powers Boulevard/Fontaine Boulevard (#1)**

- A 175-ft extension of southbound left-turn lane.
- A 150-ft extension of eastbound left-turn lane.
- A 305-ft extension of westbound left-turn lane.
- A 150-ft extension of eastbound right-turn to southbound thru acceleration lane.

**Marksheffel Road/Fontaine Boulevard (#2)**

- A 105-ft extension of eastbound right-turn lane.

**Powers Boulevard/Bradley Road (#4)**

- A 185-ft extension of southbound left-turn lane.

**Powers Boulevard/Milton E Proby Parkway (#7)**

- A 95-ft extension of northbound left-turn lane.
- A 10-ft extension of westbound left-turn lane.

**Highway-24/Highway-94 (#10)**

- A 70-ft extension of northbound left-turn (US-94) lane.

**Highway-94/Marksheffel Road (#11)**

- A 15-ft extension of eastbound left-turn lane.
- A 115-ft extension of westbound left-turn lane.

**Bradley Road/Rolling Meadows Parkway (#49)**

- A 515-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 200-ft of storage lane.
- A 435-ft eastbound right-turn lane. Include 200-ft of taper and 235-ft of deceleration lane.
- A 485-ft westbound left-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 50-ft of storage.

**Rolling Meadows Parkway /Calf Creek Drive (#60)**

- A 385-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 70-ft of storage.

**Rolling Meadows Parkway / Echoing Grass Way (#61)**

- A 365-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.

**Prairie Song Drive/ Hoof Hollow Place(#63)**

- A 365-ft eastbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage.

### Access Spacing and Line of Sight

Access spacing within the proposed development has been planned in accordance with the requirements established in the El Paso County ECM. As specified in Table 2-7, Roadway Design Standards for Urban Collectors and Locals, the minimum required spacing is 660 feet for non-residential collectors and 330 feet

when intersecting local roadways. The intersections of Rolling Meadows Parkway/Calf Creek Drive (#60), Rolling Meadows Parkway/Echoing Grass Way (#61), and Prairie Song Drive/Hoof Hollow Place (#63) comply with the applicable ECM criteria and design standards. A deviation is requested for the proposed local intersection along Rolling Meadows Parkway from the ROW line of Bradley Road. For more information regarding the deviation request, please see the summary of requested deviations at the end of this report. As for the line of sights, minimum sight distance for the proposed intersections complies with EPC standards and exhibits showing the line of sight for the first phase of the project are provided in Appendix F – Antelope Ridge at Bull Hill Analyses.

# Conclusions and Recommendations

This study evaluated the transportation impacts of the proposed RMBH development through three key planning horizons: Phase 1 (2028), full buildout (2035), and the long-range horizon year (2055). The analysis included 31 off-site and internal intersections, identified necessary improvements, and incorporated traffic growth from adjacent planned developments, and the current traffic. Traffic forecasts, and external trip distribution were developed in coordination with CDOT, El Paso County, and the City of Colorado Springs, using conservative assumptions and regionally accepted methodologies.

The findings indicate that, while the proposed development will generate significant traffic volumes, the transportation network can accommodate the demand with strategic improvements in the interim analysis (2035). Most intersections will operate at acceptable levels of service provided the recommended configurations, and turn lanes are implemented in a timely manner. Bradley Road is projected to exceed the daily volume threshold for a four-lane principal arterial by 2035 by only 1,000 vehicles per day at the intersection of Marksheffel Road and Bradley Road. At the location this occurs, additional through lanes are being added to address the increased demand. Otherwise, Bradley Road is expected to function adequately with a four-lane cross-section due to regional connectivity improvements and trip distribution patterns. More specifically, the connection between the future Mesa Ridge Parkway and Meridian Road. The estimated daily volumes are based on a conservative analysis and may not be reached under typical conditions.

In this analysis, the intersection of US-94 and Marksheffel Road presents operational challenges. Even with planned improvements, it is projected to operate at LOS F during the AM peak by 2035. A sensitivity analysis accounting for internal trip capture suggests only marginal improvement. Therefore, a long-term solution such as a grade-separated interchange should be explored further.

Matrix recommends that the City of Colorado Springs, El Paso County, and CDOT prioritize the implementation of the improvements identified for both the near-term (2028), buildout (2035), and horizon (2055) scenarios outlined in Table 20 for the first phase (2028), Table 9, Figure 21 for the buildout (2035) year, and Table 14, and Figure 29 for horizon (2055) year. Four of the studied intersections in the horizon (2055) analyses, namely, Powers Boulevard/Bradley Road (#4), Marksheffel Road/Bradley Road (#5), US-24/US-94 (#10), and US-94/Marksheffel Road (#11) are projected to operate over capacity. Considering the fact that adding too many lanes to a roadway can increase several safety risks such as increasing the length of the crosswalk or the length of the mast arm for signalized intersections, it is necessary to investigate additional arterial roadways, specifically east-west roadways as well grade separated interchanges in long term planning. Continuous monitoring of traffic growth, development phasing, and regional infrastructure projects will be essential to ensure adequate roadway performance as the area develops. At the time of writing this report, Karmen Line was voted out by the citizens of Colorado Springs. However, Matrix anticipated that there will be a new development in the next 20 years.

Our analysis indicated that if there is a similar development to Karmen Line, either an additional east-west roadway or converting these intersections to a grade separated roadway is required. In the case no development similar to Karmen Line will be developed, the volumes will be similar to the 2035 volumes, and the roadway network will work in both buildout and horizon years. Future traffic impact studies for adjacent developments should continue to coordinate with this report's assumptions and recommendations to ensure consistency and mitigate cumulative impacts. A traffic letter will be provided for each phase to demonstrate the trigger points for the required improvements outlined in this report.

The summary of required improvements for the existing and Phase 1 is outlined in Table 21. The required improvements for the buildout year (2028) are in respect that the improvements in the existing conditions have been met. All acceleration and deceleration lanes were designed per the EPC ECM criteria. There is enough space to provide a NBTR to EBT acceleration lane at Bradley Rd/Rolling Meadows Parkway (intersection #49). The deceleration lane on Rolling Meadows Parkway was designed to avoid any overlap. The cost estimate and escrow amount will be determined at final plat stage.

### Table 21. Summary of Required Improvements

| ID | Intersection | Improvements | Responsibility |
|---|---|---|---|
| Existing Conditions | | | |
| 1 | Powers Boulevard/Fontaine Boulevard | A 160-ft extension of southbound left-turn lane.<br>A 135-ft extension of southbound right-turn lane.<br>A 120-ft extension of eastbound left-turn lane.<br>A 65-ft extension of westbound left-turn lane.<br>A 110-ft extension of eastbound right-turn to southbound thru acceleration lane.<br>A 635-ft extension of westbound right-turn to northbound thru acceleration lane. | The Project is not responsible for these improvements. |
| 4 | Powers Boulevard/Bradley Road | A 220-ft extension of northbound right-turn lane.<br>A 590-ft extension of southbound left-turn lane.<br>A 970-ft extension of westbound right-turn to northbound thru acceleration lane. | The Project is not responsible for these improvements. |
| 7 | Powers Boulevard/Milton E Proby Parkway | A 620-ft extension of northbound left-turn lane.<br>A 550-ft extension of northbound right-turn lane.<br>A 510-ft extension of southbound left-turn lane.<br>A 500-ft extension of eastbound left-turn lane. However, the turn lane is currently provided to available intersection spacing.<br>A 545-ft extension of eastbound right-turn lane. Turn lane should be maximized to the available intersection spacing.<br>A 145-ft extension of westbound left-turn lane.<br>A 230-ft extension of westbound right-turn lane.<br>A 680-ft extension of northbound right-turn to eastbound thru acceleration lane.<br>A 455-ft extension of southbound right-turn to westbound thru acceleration lane.<br>A 825-ft extension of eastbound right-turn to southbound thru acceleration lane.<br>A 700-ft extension of westbound right-turn to northbound thru acceleration lane. | The Project is not responsible for these improvements. |

| ID | Intersection | Improvements | Responsibility |
|---|---|---|---|
| 8 | Marksheffel Road/Drennan Road | A 110-ft extension of eastbound right-turn lane.<br>A 380-ft westbound left-turn lane. Include a 180-ft taper and 200-ft of deceleration lane. | The Project is not responsible for these improvements. |
| 10 | Highway-24/Highway-94 | A 225-ft extension of northbound left-turn lane.<br>A 110-ft extension of eastbound right-turn lane.<br>A 150-ft extension of westbound left-turn lane.<br>A 125-ft extension of westbound right-turn lane.<br>A 485-ft extension of southbound right-turn to westbound thru acceleration lane.<br>A 540-ft extension of eastbound right-turn to southbound thru acceleration lane. | The Project is not responsible for these improvements. |
| 11 | Highway-94/Marksheffel Road | A 100-ft extension of northbound left-turn lane.<br>A 245-ft extension of southbound left-turn lane.<br>A 425-ft extension of eastbound left-turn lane.<br>A 205-ft extension of eastbound right-turn lane.<br>A 400-ft extension of westbound left-turn lane.<br>A 300-ft extension of westbound right-turn lane.<br>A 940-ft northbound right-turn to eastbound thru acceleration lane. Include 180-ft of taper and 760-ft of acceleration lane.<br>A 1,470-ft southbound right-turn to eastbound thru acceleration lane. Include 300-ft of taper and 1,170-ft of acceleration lane.<br>A 760-ft eastbound right-turn to southbound thru acceleration lane. Include 180-ft of taper and 580-ft of acceleration lane.<br>A 960-ft westbound right-turn to northbound thru acceleration lane. Include 220-ft of taper and 740-ft of acceleration lane. | The Project is not responsible for these improvements. |
| Buildout (2028) Total | | | |
| 1 | Powers Boulevard/Fontaine Boulevard | A 175-ft extension of southbound left-turn lane.<br>A 150-ft extension of eastbound left-turn lane.<br>A 305-ft extension of westbound left-turn lane.<br>A 150-ft extension of eastbound right-turn to southbound thru acceleration lane. | The project Fair Share is shown in Table 22. |
| 2 | Marksheffel Road/Fontaine Boulevard | A 105-ft extension of eastbound right-turn lane. | The project Fair Share is shown in Table 22. |
| 4 | Powers Boulevard/Bradley Road | A 185-ft extension of southbound left-turn lane. | The project Fair Share is shown in Table 22. |
| 6 | Bradley Road/Meridian Road | The south leg of Meridian Road from Bradley Road to Prairie Song Drive.<br>A shared northbound left/thru/right-turn lane. | The Project is responsible for these improvements. |
| 7 | Powers Boulevard/Milton E Proby Parkway | A 95-ft extension of northbound left-turn lane.<br>A 10-ft extension of westbound left-turn lane. | The project Fair Share is shown in Table 22. |
| 10 | Highway-24/Highway-94 | A 70-ft extension of northbound left-turn (US-94) lane. | The project Fair Share is shown in Table 22. |
| 11 | Highway-94/Marksheffel Road | A 15-ft extension of eastbound left-turn lane.<br>A 115-ft extension of westbound left-turn lane. | The project Fair Share is shown in Table 22. |
| 49 | Bradley Road/Rolling Meadows Parkway | A 515-ft northbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 200-ft of storage lane.<br>A 435-ft eastbound right-turn lane. Include 200-ft of taper and 235-ft of deceleration lane.<br>A 485-ft westbound left-turn lane. Include 200-ft of taper, 235-ft of deceleration lane and 50-ft of storage lane. | The Project is responsible for these Improvements. |

| ID | Intersection | Improvements | Responsibility |
|---|---|---|---|
| 60 | Rolling Meadows Parkway / Calf Creek Drive | A 385-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 70-ft of storage. | The Project is responsible for this Improvement. |
| 61 | Rolling Meadows Parkway / Echoing Grass Way | A 365-ft southbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage. | The Project is responsible for this Improvement. |
| 62 | Rolling Meadows Parkway / Prairie Song Drive | A roundabout. | The Project is responsible for this Improvement. |
| 63 | Prairie Song Drive/ Hoof Hollow Place | A 365-ft eastbound left-turn lane. Include 160-ft of taper, 155-ft of deceleration lane and 50-ft of storage. | The Project is responsible for this Improvement. |

The fair share calculations for the Antelope Ridge at Bull Hill project are shown in Table 22. With the possibility of Bradley Road returning to El Paso County, the development plans to amend the MTCP to add Bradley Road and the improvements required. Upon its inclusion in the MTCP, reimbursements of associated costs would be pursued.

### Table 22. Antelope Ridge at Bull Hill Fair Share Calculations

| ID | Intersection | 2028 Total AM | 2028 Total PM | Site AM | Site PM | Existing AM | Existing PM | Fair Share 2028 AM | Fair Share 2028 PM | 2028 Fair Share (Weighted Average) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Powers Bl/Fontaine Bl | 3280 | 3649 | 93 | 129 | 2178 | 2544 | 8.44% | 11.67% | 10.14% |
| 2 | Marksheffel Rd/Fontaine Bl | 3382 | 3319 | 83 | 114 | 2373 | 2233 | 8.23% | 10.50% | 9.35% |
| 4 | Powers Bl/Bradley Rd | 3481 | 3482 | 144 | 201 | 2483 | 2499 | 14.43% | 20.45% | 17.44% |
| 7 | Powers Bl/ Milton E. Proby | 5235 | 4707 | 95 | 134 | 4439 | 3931 | 11.93% | 17.27% | 14.46% |
| 10 | US-24/US-94/Meadowbrook Pkwy | 4630 | 4659 | 15 | 21 | 3749 | 3773 | 1.70% | 2.37% | 2.04% |
| 11 | US-94/Marksheffel Rd | 4711 | 4364 | 62 | 89 | 3600 | 3161 | 5.58% | 7.40% | 6.45% |

Finally, the applicant is required to pay road impact fees to El Paso County. The County allows the applicant to pay three different upfront fee amounts. The applicant can either pay the full fee amount, a smaller upfront fee to the 5 mill Public Improvement District (PID), or an even smaller upfront fee amount to the 10 mill PID. The different fee amounts are shown in Table 23, calculated based on 4,600 single-family dwelling units and 840 multi-family dwelling units for the entire development and based on 472 single-family dwelling units for the first phase of the project. The applicant will choose which fee method to follow at the subdivision application. If the applicant chooses one of the PIDs, the PID will collect taxes over time. Table 23 summarizes the road impact fees. The road impact fees are an estimate based upon the current fee schedule. Road impact fees are calculated at time of payment, and the fee schedule is subject to change.

Table 23. Road Impact Fee

| Rolling Meadows/Bull Hill | | | | | |
|---|---|---|---|---|---|
| **Land Use** | **Unit** | **No. Units** | **Full Fee** | **5 Mill PID** | **10 Mill PID** |
| Single-Family | Dwelling | 4,607 | $ 18,893,307.00 | $ 9,094,218.00 | $ 1,349,851.00 |
| Multi-Family | Dwelling | 840 | $ 2,171,400.00 | $ 1,320,480.00 | $ 469,560.00 |
| **Total** | | | **$ 21,064,707.00** | **$ 10,414,698.00** | **$ 1,819,411.00** |
| **Antelope Ridge at Bull Hill (Phase 1)** | | | | | |
| **Land Use** | **Unit** | **No. Units** | **Full Fee** | **5 Mill PID** | **10 Mill PID** |
| Single-Family | Dwelling | 472 | $ 1,935,672.00 | $ 931,728.00 | $ 138,296.00 |

The school impact fee will be determined as more information becomes available regarding this land use during the future access permit process. A traffic letter or traffic memorandum is required for each phase to determine the trigger point for the improvements outline in the MTIS.

Finally, there were three deviation requests to El Paso County, and they are listed as follows:

1) MAXIMUM CROSSWALK LENGTH AND PEDESTRIAN REFUGE AREAS

Requested Deviation: A deviation from providing 48 feet maximum crosswalk length is requested.

2) MID-BLOCK RAMPS ON LOCAL ROADWAYS

Requested Deviation: A deviation from providing mid-block crosswalks on local roadways when the distance between ramps is greater than 600 feet.

3) INTERSECTION SPACING BETWEEN ARTERIAL AND NON-RESIDENTIAL COLLECTOR

Requested Deviation: A reduction of the 660 feet minimum intersection spacing between a local road centerline and an arterial right-of-way. The spacing shall be approximately 547 feet for the first local intersection along Rolling Meadows Parkway south of Bradley Road.