P21150

Local Transportation Analysis

Town and Country Village - El Dorado
Bass Lake Hills, California

Prepared for:
County of El Dorado, California,
Raney Planning and Management, and
Mohanna Development Co.

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REVISION HISTORY

Description	Date	Notes
Draft	April 15, 2024	Draft LTA.
	June 13, 2024	Response to preliminary comments on process.
	August 26, 2024	Response to comments of analysis.
	Sep 12, 2024	Language added to note that RTOR calculations are likely conservative.

EXECUTIVE SUMMARY

This Local Transportation Analysis (LTA) documents the effects of the proposed Town and Country Village - El Dorado project relative to El Dorado County General Plan policies. It focuses on traffic operations using level-of-service and 95th percentile queue lengths as performance measures. Where traffic from the proposed Town and Country Village - El Dorado project creates new or worsens pre-existing deficiencies relative to General Plan policies, abatement measures are provided such that address those deficiencies.

A companion report provides a California Environmental Quality Act (CEQA) analysis of the proposed Town and Country Village - El Dorado project. That report identified potential Project impacts as **significant** or **less-than-significant** under CEQA. It addresses potential impacts related to:

- Anticipated vehicle miles of travel[1] (VMT),
- Anticipated impacts to transit, bicycle, and pedestrian circulation, and
- Safety related impacts evaluated through a review of accident history.

After describing the proposed Town and Country Village - El Dorado project this report discusses the study area, methodology, and reports on eight study scenarios:

- 2023 Existing conditions with and without Town and Country Village - El Dorado.
- 2033 Existing Plus Approved Project (EPAP) conditions with and without Town and Country Village - El Dorado. EPAP conditions assume interpolated traffic volumes between the existing and cumulative scenarios and reflect all approved land development projects in the vicinity.
- 2040 cumulative conditions which reflect market rate build-out of the adopted General Plan land use through 2040 with and without Town and Country Village - El Dorado.
- 2040 Super-cumulative conditions. Super-cumulative conditions include traffic from the proposed developments of Marble Valley, Lime Rock, and EDH52 (Costco) with and without Town and Country Village - El Dorado.

[1] VMT is often incorrectly referred to in the past tense: “vehicle miles traveled” when referring to the future. For future tense discussions the appropriate terminology is “vehicle miles of travel”.

Project Description

The Town & Country Village project consists of two development areas: the **Project-Development** area and the **Program-Study** area. The Project-Development area consists of 25.8-acres and includes two hotels, retail services, restaurants, a museum, an event center, parking, residential cottages for hotel employee housing and residential cottages that will be rented on a daily or extended stay basis by the hotels. The Program-Study area consists of an additional 34.7-acres to be developed in the future and may include a mix of uses such as additional hotels, medical facilities, senior housing, townhomes, cottages, and other uses allowed with proposed rezoning.

The Project-Development area is evaluated based on specific Project-Development area land uses and is evaluated under existing (2023), and cumulative conditions. Project-level entitlements being sought for the Project-Development area include General Plan and Specific Plan amendments, rezoning, a development agreement, a planned development permit, and tentative map. The Program-Study area is evaluated at a programmatic-level based on more generalized housing and commercial uses that would be allowed with the proposed rezoning. The Program-Study area is only evaluated under cumulative conditions. Programmatic-level entitlements being sought for the Program-Study area include General Plan and Specific Plan amendments, and rezoning.

The Project-Development and Program-Study areas are located proximate to the intersection of Bass Lake Road and Country Club Drive, within the Bass Lake Hills Specific Plan (BLHSP) in western El Dorado County. **Figure ES-1** below shows the relative size and location of the two areas. Three parcels are involved: APN 119-080-012, 119-080-021, and 119-080-023. These parcels currently have a General Plan land use designation under the BLHSP of L.2-PD and L.7-PD which allow for 0.2 dwelling units per acre south of Country Club Drive and 0.7 dwelling units per acre north of Country Club Drive. Current zoning for all three parcels is Residential Estate 10-Acre (RE-10) which allows for a minimum lot size of 10 acres. The El Dorado Hills Community Region boundary currently runs along Country Club Drive, with the area to the south of Country Club Drive considered as a Rural Region. The Project-Development and Program-Study areas will require amendments to the BLHSP, General Plan, and moving the Community Region boundary. Should the Board of Supervisors elect not to approve the proposed relocation of the community region boundary and the proposed rezone, the Town and Country Village El Dorado project will not be able to move forward.

LTA Findings

Note that CEQA related analysis and findings are documented in a separate report focused on vehicle miles of travel, crash history, bicycle, pedestrian, and transit impacts. This report's findings focus on documenting the Project's impact on level-of-service relative to General Plan policies.

Program-Development and Project-Study area site generated trips are detailed in section 5.1. The Project development area is anticipated to generate 2110 daily trips, 137 AM peak hour trips, and 185 PM peak hour trips. the Program Study area is anticipated to generate

12044 daily trips, 922 AM peak-hour trips, and 916 PM peak hour trips. The combined trip generation is anticipated to be 14154 daily trips, 1059 AM peak hour trips, and 1101 PM peak hour trips.

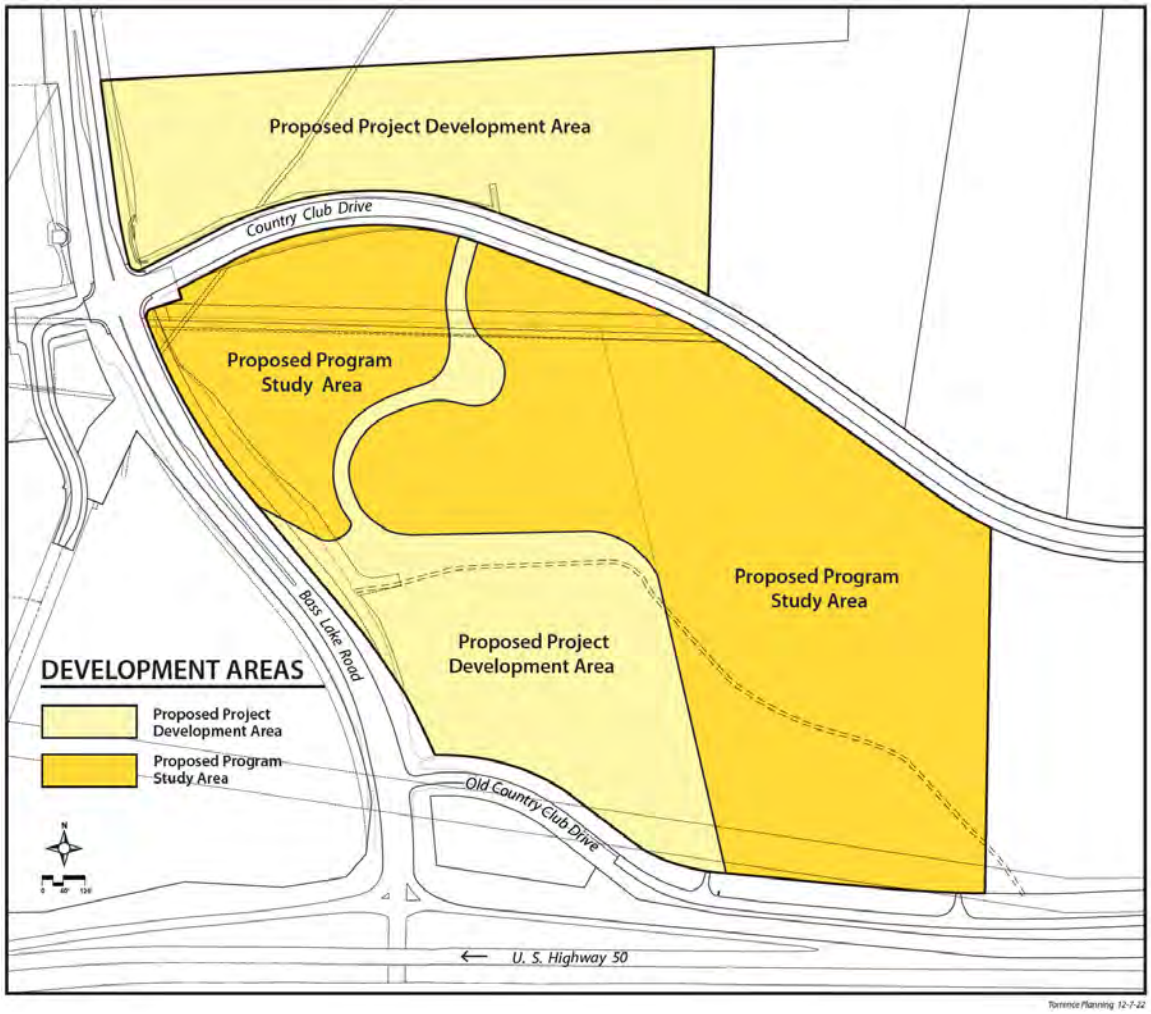

Figure ES-1. Project and Program-Study areas

Abatement measures were identified at 13 locations:

- One arterial segment,
- Four US-50 segments (only under super-cumulative conditions), and
- Eight arterial intersections.

Abatements are summarized in **Table 42** below and detailed in sections 6.3, 8.3, 10.3, and 12.3 of this report.

Table 1. Summary of abatement measures

ID	Location	Existing 2023 Plus Project-Development Area	EPAP 2033 Plus Project-Development Area	Cumulative 2040 Plus Project-Development and Program-Study Areas	Super-Cumulative 2040 Plus Project-Development and Program-Study Areas	Relevant Report Sections	Related CIP Project
Arterial Segments							
i	Bass Lake Rd between Country Club Dr and Silver Dove Wy	n/a	n/a	**(i) C (widen to 4-lanes)**	Implement (i)C	10.3	Unfunded #GP166, CIP #72BASS/36105054
US-50 Segments							
US-50-8	Westbound US 50 merge from Bass Lake Rd	n/a	n/a	n/a	**(US-50-8)D (Add auxillery lane)**	12.3	Unfunded CIP #36104022/53117
US-50-9	Westbound US 50 between Bass Lake Rd and Silva Valley Pkwy	n/a	n/a	n/a	**(US-50-9)D (Add auxillery lane)**	12.3	
US-50-10	Westbound US 50 diverge to Silva Valley Pkwy	n/a	n/a	n/a	**(US-50-10)D (Add auxillery lane)**	12.3	
US-50-11	Eastbound US-50 diverge to Bass Lake Rd	n/a	n/a	n/a	**(US-50-16)D (widen to a 2-lane offramp)**	12.3	65104005
Intersections							
13	Bass Lake Rd/Sienna Ridge Rd (north)	n/a	n/a	**13C (lengthen turn pocket)**	**13D (expand intersection)**	10.3 and 12.3	TBD
15	Bass Lake Rd/Hawk View Rd	n/a	**15B (Signalize)**	Implement 15B	n/a	8.3	TBD
17	Bass Lake Rd/Hollow Oak Dr	n/a	**17B (Roundabout)**	Implement 17B	Implement 17B	8.3	TBD
19	Bass Lake Rd/Country Club Dr	n/a	**19B (Dual southbound left)**	**19C (Expand intersection)**	**19D (Additional intersection expansion)**	8.3, 10.3, and 12.3	65105009
21	Country Club Dr/Driveway#2	n/a	n/a	**21C (Roundabout)**	Implement 21B	10.3	n/a - Project Frontage
22	Country Club Dr/Driveway#3	n/a	n/a	**22C (Norbound left receiving lane)**	n/a	10.3	n/a - Project Frontage
28	Bass Lake Rd/US-50 westbound	**29A* (Signalize, expand intersection)**	Implement 29A	Implement 29A	**28D (Replace interchange)**	6.3 and 12.3	65104005
29	Bass Lake Rd/US-50 eastbound	**29A (Expand intersection)**	Implement 29A	Implement 29A	**29D (Replace interchange)**	6.3 and 12.3	65104005

* Note that intersection 28 improvements for existing, EPAP, and Cumulative are first implemented as part of the improvements for abatement 29A.
TBD = (To be determined) denotes improvements that should be added to the CIP.

"Old Country Club Drive" Access Findings and Recommendations

Secondary access to the Town and Country Village - El Dorado project via "Old County Club Drive" was reviewed as a Project alternative. That access option is anticipated to worsen traffic operations, constrain the design of the eventual reconstruction or replacement of the Bass Lake Rd interchange, and potentially increase accident rates (see **Section 13**). Town and Country Village - El Dorado project access via "Old County Club Drive" is therefore not recommended.

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Table of Contents

1.0 INTRODUCTION AND PROJECT DESCRIPTION 1
1.1 Project Overview 1
1.2 Project-Development Area Land Uses 3
1.3 Program-Study Area Land Uses 3
1.4 Parking and Access 5
1.5 Bicycle Access 5
1.6 Project and Program-Study Area Trip Generation 7
2.0 STUDY AREA 9
Project Area Roadways 9
Study Intersections and Segments 11
Transit Service 13
Bicycle Facilities 13
Study Scenarios 15
Existing 2023 15
EPAP 2033 15
Cumulative 2040 and Super-Cumulative 2040 15
3.0 LOCAL TRANSPORTATION ANALYSIS METHODOLOGY 17
Process Overview 17
Traffic Forecasting Methodology 17
TDM Segment Level Calibration 18
2040 Traffic Forecasts and Interpolation of 2033 Link Volumes 18
Intersection Turn Movement Forecast Methodology 18
Level-of-Service Methodology 19
Intersection Traffic Operations Analysis 19
El Dorado County Roadway Segments 23
Caltrans Merge/Diverge/Weave Level-of-Service Analysis 23
General Plan Level-of-Service Deficiency Standards 24
Analysis Tools 26
El Dorado County Travel Demand Model (TDM) 26
NCHRP 255 Adjustment 26
Macroscopic Intersection Analysis 26

4.0 EXISTING (2023) CONDITIONS 27
4.1 Data Sources 27
Roadway Geometry and Usage Characteristics 27
Intersection Turning Movement Counts and Segment Counts 28
4.2 Existing Condition Intersection and Segment Level-of-Service 28
5.0 PROJECT TRIP GENERATION, DISTRIBUTION, AND ASSIGNMENT 37
5.1 Trip Generation 37
5.2 Trip Distribution and Assignment 37
6.0 EXISTING 2023 PLUS PROJECT-DEVELOPMENT AREA TRAFFIC CONDITIONS 49
6.1 Traffic Volumes 49
6.2 Level-of-Service 49
6.3 Existing 2023 Plus Project General Plan Deficiency Findings 58
7.0 EPAP 2033 CONDITIONS 61
8.0 EPAP 2033 PLUS PROJECT-DEVELOPMENT AREA TRAFFIC CONDITIONS 71
8.1 Traffic Volumes 71
8.2 Level-of-Service 71
8.3 EPAP 2033 Plus Project General Plan Deficiency Findings 80
9.0 CUMULATIVE 2040 CONDITIONS 85
10.0 CUMULATIVE 2040 PLUS PROJECT-DEVELOPMENT AND PROGRAM-STUDY AREA TRAFFIC CONDITIONS 95
10.1 Traffic Volumes 95
10.2 Level-of-Service 95
10.3 Cumulative 2040 Plus Project-Development and Program Study Area General Plan Deficiency Findings 105
11.0 SUPER-CUMULATIVE 2040 CONDITIONS 115
12.0 SUPER-CUMULATIVE 2040 PLUS PROJECT-DEVELOPMENT AND PROGRAM-STUDY AREA TRAFFIC CONDITIONS 125
12.1 Traffic Volumes 125
12.2 Level-of-Service 125
12.3 Cumulative 2040 Plus Project-Development and Program Study Area General Plan Deficiency Findings 135
13.0 “OLD COUNTRY CLUB DRIVE” DRIVEWAY ALTERNATIVE 147
13.1 “Old Country Club Dr” Traffic Operations under Cumulative conditions with the Project-Development and Program-Study Area Traffic 147

13.2 Constraint of "Old Country Club Dr" Access on Future Interchange Replacement148
13.3 Bass Lake Hills Phase 1A Traffic Impact Study Safety Analysis 148
13.4 "Old Country Club Drive" Access Finding/Recommendation.....149
14.0 FINDINGS.....151

Appendices

Appendix A: Trip Generation Calculations A-1
Appendix B: Furness/NCHRP 255 calculations..... B-1
Appendix C: Traffic Counts and Timing Sheets C-1
Appendix D: Level-of-Service Calculation Sheets D-1

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1.0 INTRODUCTION AND PROJECT DESCRIPTION

This Local Transportation Analysis (LTA) evaluates traffic operations for the proposed Town and Country Village - El Dorado Project to identify any potential project deficiencies relative to adopted policies in El Dorado County's General Plan. A companion transportation impact study (TIS) report evaluated the Town and Country Village - El Dorado Project's impacts under the California Environmental Quality Act (CEQA). The LTA and TIS are presented separately because El Dorado County's General Plan include, and largely focuses on, policies requiring that minimum level-of-service be maintained on County roadways, whereas CEQA documents are prohibited from considering level-of-service.

This report starts with a Project description. Followed by setting, methodology and evaluation sections. Findings are presented within each of those analysis sections and in a findings section at the end of the report.

1.1 Project Overview

The Town & Country Village project consists of two development areas: the **Project-Development** area and the **Program-Study** area. The Project-Development area consists of 25.8-acres and includes two hotels, retail services, restaurants, a museum, an event center, parking, residential cottages for hotel employee housing and residential cottages that will be rented on a daily or extended stay basis by the hotels. The Program-Study area consists of an additional 34.7-acres to be developed in the future and may include a mix of uses such as additional hotels, medical facilities, senior housing, townhomes, cottages, and other uses allowed with proposed rezoning. Program-Study area land use is only considered under the cumulative and super-cumulative study scenarios (with Project and Program-Study area land use).

The Project-Development area is evaluated based on specific Project-Development area land uses and is evaluated under existing (2023), and cumulative conditions under the California Environmental Quality Act. Project-level entitlements being sought for the Project-Development area include General Plan and Specific Plan amendments, rezoning, a Development Agreement, a Planned Development permit, and a tentative map. The Program-Study area is evaluated at a programmatic-level based on more generalized housing and commercial uses that would be allowed with the proposed rezoning. The Program-Study area is only evaluated under cumulative conditions. Programmatic-level entitlements being sought for the Program-Study area include General Plan and Specific Plan amendments, and rezoning.

The Project-Development and Program-Study areas are located proximate to the intersection of Bass Lake Road and Country Club Drive, within the Bass Lake Hills Specific Plan (BLHSP) in western El Dorado County. **Figure 1** below shows the relative size and location of the two areas. Three parcels are involved: APN 119-080-012, 119-080-021, and 119-080-023. These parcels currently have a General Plan land use designation under the BLHSP of L.2-PD and L.7-PD which allow for 0.2 dwelling units per acre south of Country Club

Drive and 0.7 dwelling units per acre north of Country Club Drive. Current zoning for all three parcels is Residential Estate 10-Acre (RE-10) which allows for a minimum lot size of 10 acres. The El Dorado Hills Community Region boundary currently runs along Country Club Drive, with the area to the south of Country Club Drive considered as a Rural Region. The Project-Development and Program-Study areas will require amendments to the BLHSP, General Plan, and moving the Community Region boundary. Should the Board of Supervisors elect not to approve the proposed relocation of the community region boundary and the proposed rezone, the Town and Country Village El Dorado project will not be able to move forward.

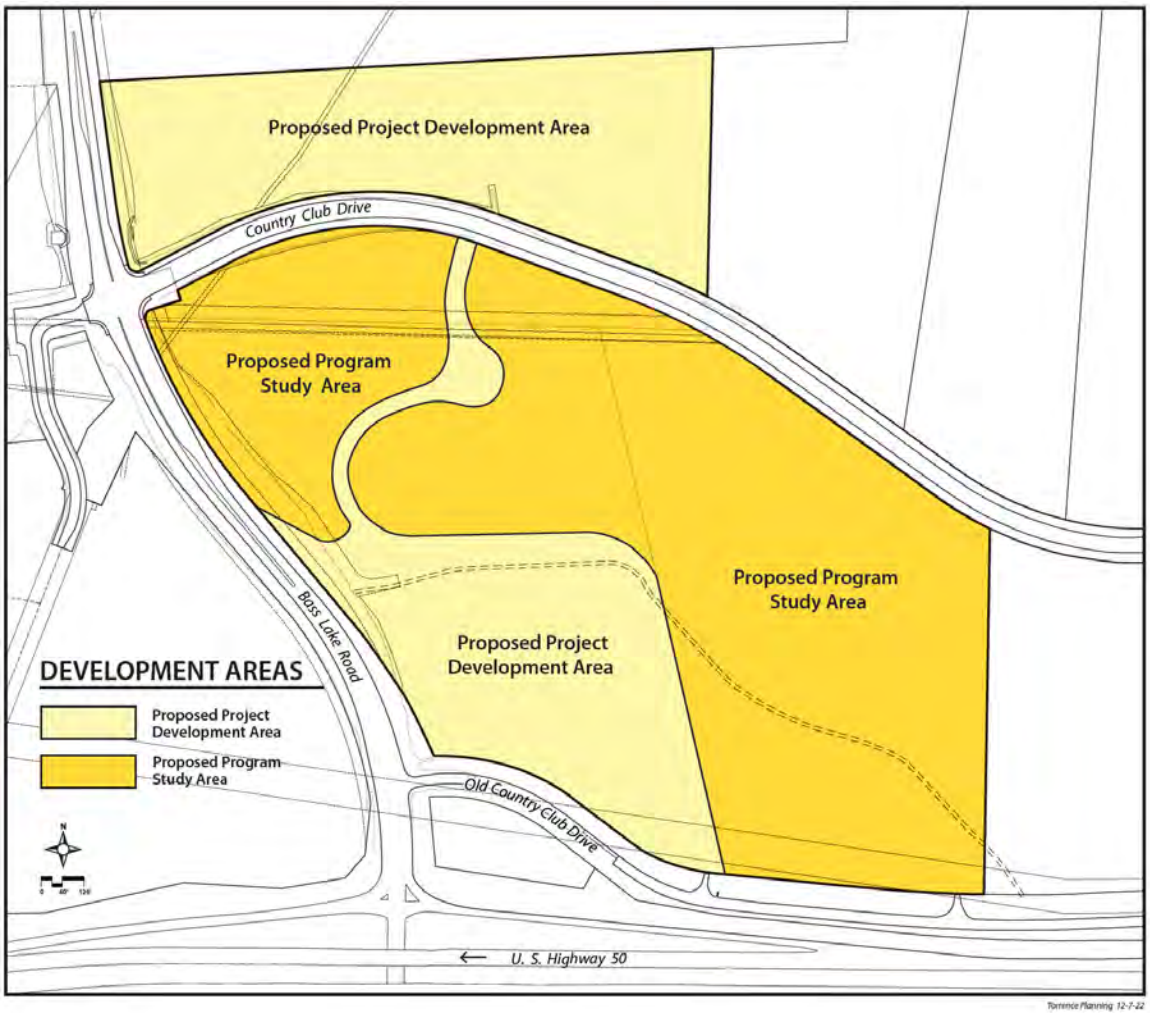

Figure 1. Project and Program-Study areas

1.2 Project-Development Area Land Uses

A preliminary site plan for the Project-Development area is provided as **Figure 2**. Key components of the Project-Development area development include two 150-room hotels, boutique retail shops, restaurants, an event center, a historic museum, recreational amenities and parking (all of which are considered as incidental uses with the proposed resort-hotel). Additional components include 56 residential cottages for employee housing and 56 residential cottages that may be rented on a daily or extended stay basis, and a class 1 bicycle path located on the historic Clarksville Toll Road.

The hotel component of the Project-Development area consists of two 5-story structures totaling 160,000 square feet. Both hotels share centralized facilities in the event center including two restaurants. The ground floor of each hotel will feature retail boutique shops focusing on local arts and crafts that promote the El Dorado County agricultural-tourism and Gold Country history. Boutique personal services such as beauty salons and spas will also be located on the first floor. The wedding venue/event center/museum are accommodated in a separate 3-story structure of 21,000 square feet shared between the two hotels.

112 cottages are to be located north of Country Club Drive. 56 of the cottage units will be reserved for hotel employee-housing and 56 remaining cottage units may be rented on a daily or an extended stay basis. The cottages are designed as individual two-story units measuring 560 square feet and contain a separate bedroom as well as a bathroom, full kitchen facilities and an outdoor deck. Duet or triplex building configuration may also be included in this area with the same features as previously described. On-site amenities will include a clubhouse, swimming pools, recreation areas, and meandering hiking trails. Deed restrictions will ensure that 56 cottages are used exclusively for hotel employee housing.

1.3 Program-Study Area Land Uses

The Program-Study area consists of 34.2-acres and may include a mix of uses such as hotels, senior housing units, medical facilities, townhomes, and cottages. These uses are anticipated to include 90,000 square feet of commercial land use and 702 dwelling units as follows:

- 6 acres of commercial land reserved for mixed use senior housing with 150 age restricted dwelling units and 10,000 square feet of commercial space. (The Project is amending the Specific Plan to allow mixed use on commercial parcels).
- 9.3 acres of commercial land reserved for 200 apartments/condominiums and 80,000 square feet of commercial units. (The Project is amending the Specific Plan to allow mixed use on commercial parcels).
- 15.3 acres of multi-family residential land reserved for 352 dwelling units.
- Open space.

There is not a specific development application for the Program-Study area at this time.

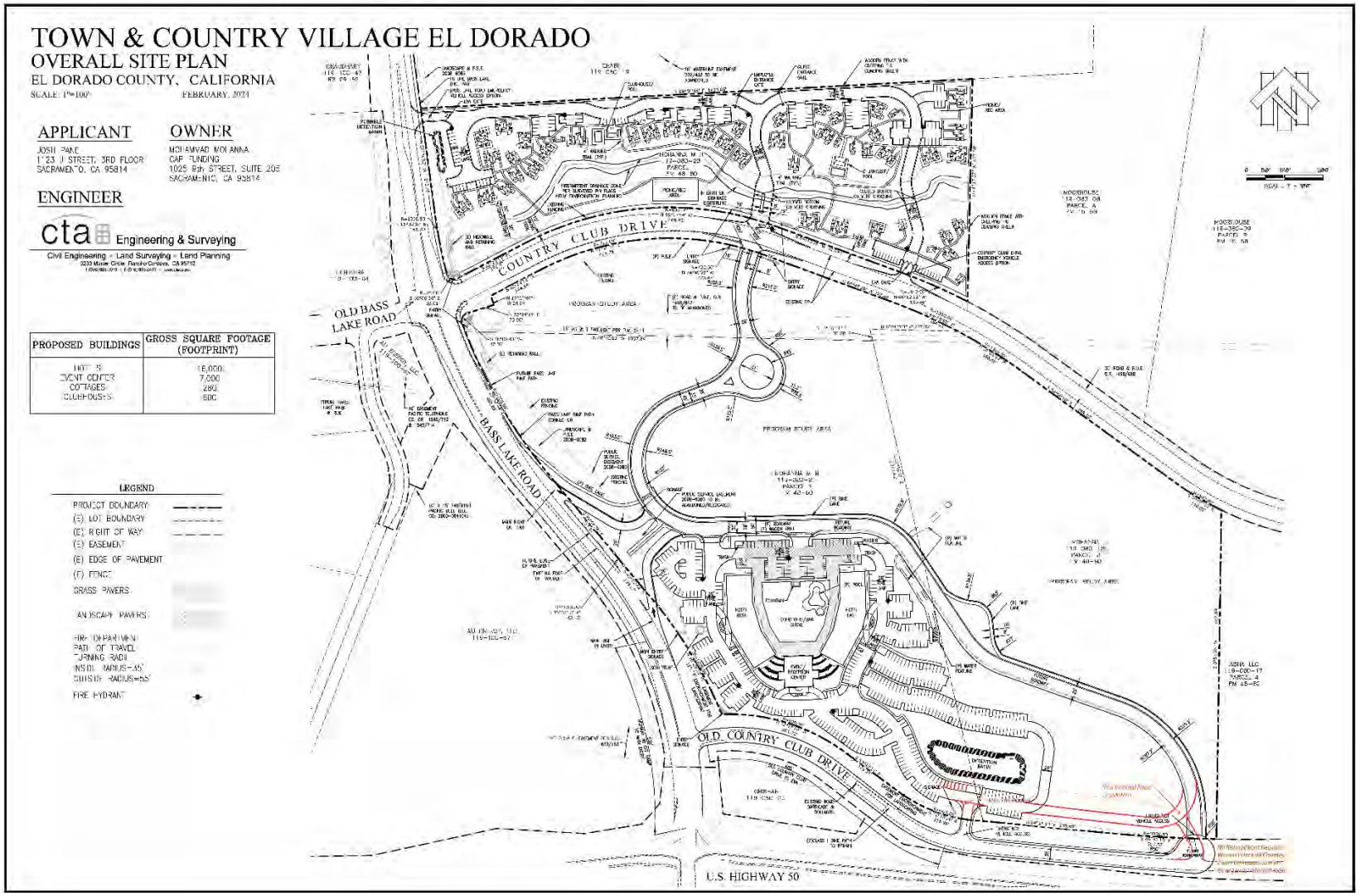

Figure 2. Preliminary Project-Development area site plan

1.4 Parking and Access

Proposed parking for the Project-Development area consists of 577 spaces for the 2 traditional hotels, 56 employee housing units, 56 guest cottages and the convention facilities. Additional parking may be accommodated off-site via reciprocal parking agreements and shuttle buses. (Note that the County and state encourage parking be minimized in order to discourage single occupancy vehicle use.) Future development of the Program-Study area will require additional, Program-Study area specific analysis when development applications are filed for those areas; with parking and internal circulation being part of that additional analysis.

Proposed access points for both the Project-Development area and the Program-Study area are shown in **Figure 3**. Primary access to the hotel and event center will be via a right-in/right-out driveway to Bass Lake Road and a full access driveway to Country Club Drive. Primary access to the 112 cottages will be via a full access driveway to Country Club Drive (aligned with the hotel access). Additional access to the Program-Study area will be provided via an additional full access driveway to Country Club Drive near the eastern edge of the Project-Study area.

The applicant is interested in two driveways accessing "Old Country Club Drive" along the southern edge of the Project-Development and Program-Study areas. These are currently limited to emergency vehicle access (EVA) only (and thus not analyzed) because Old Country Club Drive was converted to a class 1 bike path when Country Club Drive was realigned to its present location to improve safety at the Bass Lake Rd interchange. The potential impact of the two proposed driveways accessing Old Country Club Drive is considered in an appendix to this local transportation analysis. County staff anticipate that they will recommend against allowing driveways accessing Old Country Club Drive, with the decision ultimately falling on the Board of Supervisors if the applicant pursues that design element further.

Additional emergency vehicle access (EVA) only gates will be provided to Bass Lake Road and Country Club Drive from the northwest and southeast corner of the cottages.

1.5 Bicycle Access

Proposed Project-Development and Program-Study area bicycle access is shown in **Figure 4**. The Project-Development and Program-Study areas propose to augment the existing class 1 bike trail on the "Old Country Club Drive" alignment with additional trails running through the Project-Development and Program-Study areas. The Project-Development and Program-Study areas will also be required to construct frontage improvements on Bass Lake Road to the road's ultimate configuration, including a class 1 bike trail on the Project-Development and Program-Study areas' Bass Lake Road frontage. In addition, the Program-Study area proposes to add a grade-separate crossing of Bass Lake Road connecting the class 1 trail through the Project-Development and Program-Study areas to the future extension of Country Club Drive toward Silva Valley Parkway.

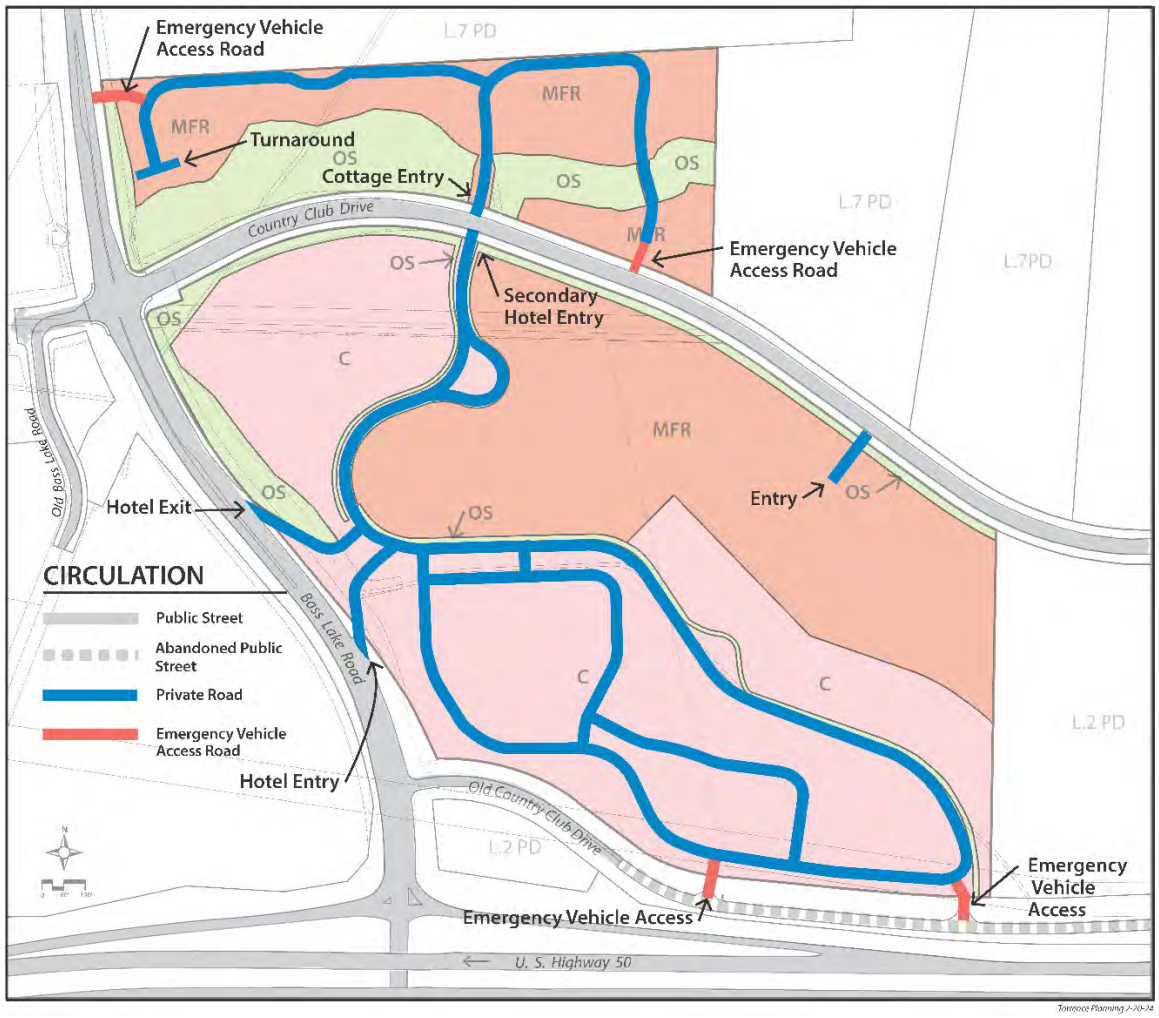

Figure 3. Project-Development area and Program-Study area access points from development application

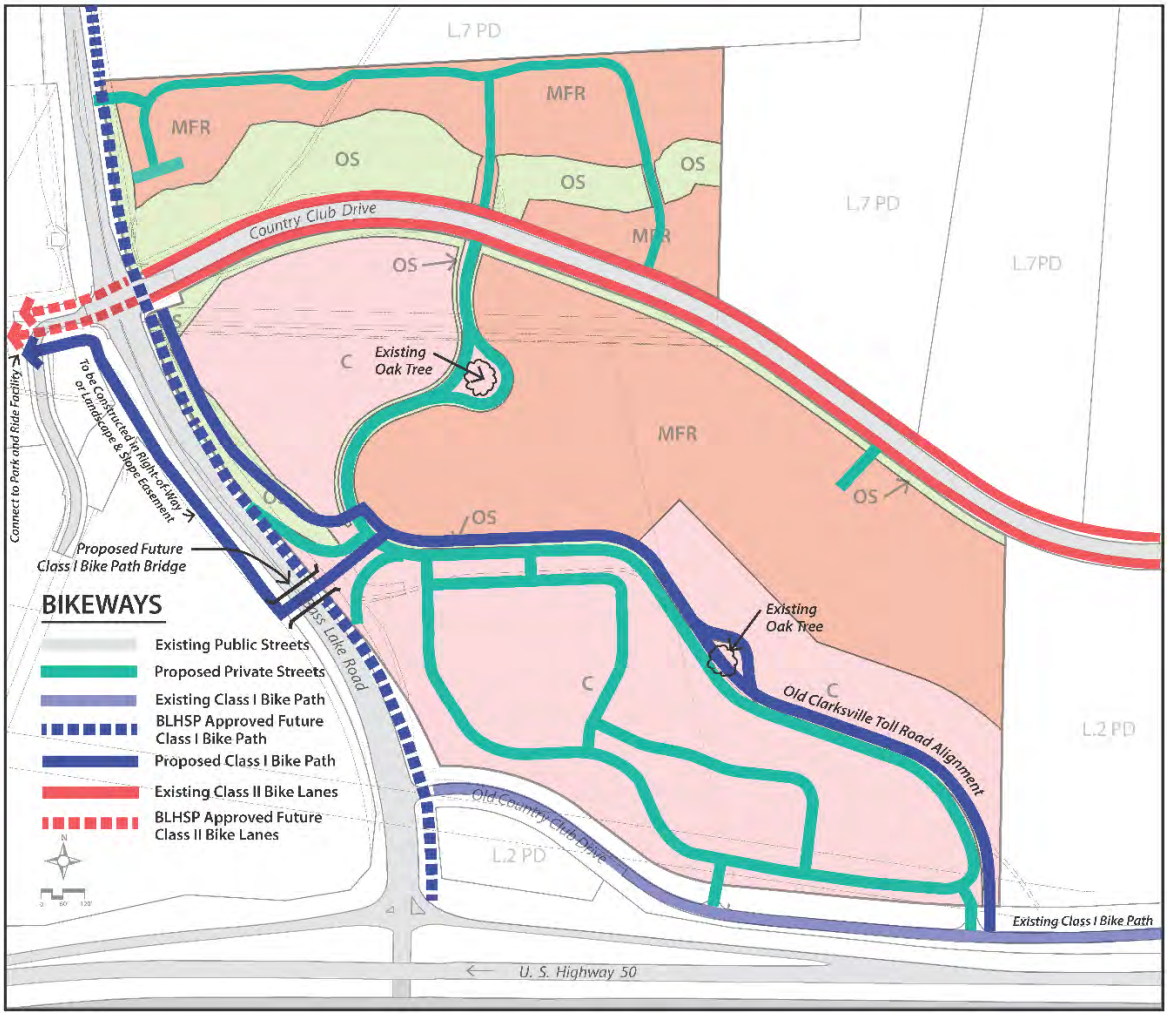

Figure 4. Project-Development area and Program-Study area bicycle connections from development application

1.6 Project and Program-Study Area Trip Generation

Trip Generation is discussed in more detail in **Section 5.1**. Project trip generation is based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021), which is the standard for traffic operations analysis of land development projects. ITE methods generally overstate trip generation and are appropriate for making conservative estimates of how Project-Development and Program-Study area traffic may impact traffic operations in the vicinity of the Project-Development and Program-Study areas.

The Project-Development area is anticipated to generate 2,110 daily trips, 137 AM peak hour trips, and 185 PM peak hour trips. Th Program-Study area is anticipated to generate 12,044 daily trips, 922 AM peak hour trips, and 9165 PM peak hour trips. theses estimates include adjustments were made to account internal trip capture during the AM and PM peak hours (detailed in **Section 5.1**). In total, the ITE methodology resulted in 14,154 daily vehicle trips

2.0 STUDY AREA

The traffic study area (**Figure 5**), includes portions of Bass Lake Road, Country Club Drive, US-50, and surrounding roadways in El Dorado County, California. These facilities were selected with consideration of the requirements of General Plan policies TC-Xd and TC-Xe. Specifically, the study was selected to include El Dorado County locations where project traffic would constitute:

A. A two percent increase in traffic during the AM peak hour, PM peak hour, or daily; or,
B. The addition of 100 or more daily trips; or,
C. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

The intersection list was coordinated with input from County staff to focus the study where the Project is anticipated to change/increase traffic level without making the transportation study report unduly complex.

Project Area Roadways

The following are descriptions of the primary roadways in the project vicinity.

- **US Route 50 (US-50)** is an east-west freeway located south of the Project and Program-Study areas. US-50 serves all of El Dorado County's major population centers with access to Sacramento County to the west, and the Tahoe basin to the east. US-50 carried an annual average daily traffic (AADT) of approximately 100,000 vehicles in 2019 at the El Dorado/Sacramento County line[2]. Within the vicinity of the Project, US-50 has three eastbound mixed flow lanes plus one eastbound high occupancy vehicle (HOV) lane; westbound there are two mixed flow lanes plus one HOV lane. East of Bass Lake Road, eastbound US-50 is reduced to two mixed flow lanes plus one HOV lane. AADT on the Bass Lake Grade, just west of the Project and Program-Study Areas, was approximately 83,000 in 2021.
- **Bass Lake Road** is a two lane, north-south roadway that connects Green Valley Road to the north with US-50 to the south. Bass Lake Road accommodated approximately 13,000 vehicles per day[3] in the vicinity of the Project and Program-Study areas in 2022. South of US-50, Bass Lake Road becomes Marble Valley Road.
- **Country Club Drive** is a two-lane roadway that parallels US-50 north of Bass Lake Road and accommodates approximately 3,300 vehicles per day[4] near the Project and Program-Study areas.

[2] Caltrans Traffic Data Branch, https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes, accessed March 10, 2024.
[3] El Dorado County (2023) traffic count data, https://edcroads.edcgov.us/Traffic/TrafficCountSummaryPdf/87, accessed March 10, 2024.
[4] El Dorado County (2023) traffic count data, https://edcroads.edcgov.us/Traffic/TrafficCountSummaryPdf/87, accessed March 10, 2024.

Figure 5. Study Area

- **Silva Valley Parkway** is a north-south roadway that generally runs parallel to El Dorado Hills Boulevard north of US-50. The General Plan identifies Silva Valley Parkway as a four-lane divided road. A new US-50 interchange at Silva Valley/White Rock Road opened in 2016, which provides a realigned Silva Valley Parkway that connects to the existing four-lane Silva Valley Parkway to the north and the existing two-lane White Rock Road on the south. Silva Valley Parkway served about 16,000 vehicles per day north of US-50 in 2023
- **White Rock Road** is an east-west arterial that extends through several jurisdictions from Silva Valley Parkway in El Dorado County to International Drive in Rancho Cordova. Within El Dorado County, it is a two-lane urban arterial road from the Sacramento County – El Dorado County line to Manchester Drive, a four-lane urban arterial between Manchester Drive and Post Street, and a two-lane urban arterial road between Post Street and Silva Valley Parkway. White Rock Road carried approximately 5,700 vehicles per day at the Sacramento County – El Dorado County Line in 2021 (which was higher than 2020 counts prior to COVID) and 16,000 vehicles per day just west (south) of the Silva Valley Parkway Interchange in 2023[5].
- **Serrano Parkway** is an east-west roadway running between Bass Lake Road and El Dorado Hills Blvd East of the Serrano Country Club. It is a two-lane divided roadway that carried approximately 7,000 ADT[6] in 2022.

Study Intersections and Segments

The following intersections are included in this evaluation and are marked in the preceding **Figure 5**:

1. Silva Valley Pkwy/Tong Rd
2. Silva Valley Pkwy/US-50 westbound ramps
3. Silva Valley Pkwy/US-50 eastbound ramps
4. Green Valley Pkwy/Cameron Park Dr
5. Bass Lake Rd/Green Valley Rd
6. Silver Springs Pkwy/Green Valley Rd
7. Bass Lake Rd/Woodleigh Ln
8. Bass Lake Rd/Magnolia Dr
9. Bass Lake Rd/Silver Springs Pkwy
10. Bass Lake Rd/Madera Wy
11. Bass Lake Rd/Bridlewood Wy
12. Bass Lake Rd/Whistling Wy
13. Bass Lake Rd/Serrano Pkwy
14. Bass Lake Rd/Brannan Wy
15. Bass Lake Rd/Hawk View Rd

[5] El Dorado County (2023) traffic count data, https://edcroads.edcgov.us/Traffic/TrafficCountSummaryPdf/87, accessed March 10, 2024.
[6] El Dorado County (2023) traffic count data, https://edcroads.edcgov.us/Traffic/TrafficCountSummaryPdf/87, accessed March 10, 2024.

16. Bass Lake Rd/Sienna Ridge Rd
17. Bass Lake Rd/Hollow Oak Dr
18. Bass Lake Rd/Silver Dove Wy
19. Bass Lake Rd/Country Club Dr
20. Bass Lake Rd/Bass Lake Rd Drwy #1
21. Country Club Dr/Country Club Dr Drwy #2
22. Country Club Dr/Country Club Dr Drwy #3
23. Country Club Dr/Church Pl
24. Country Club Dr/Morrison Rd
25. Bass Lake Rd/Old County Club Dr
26. Old County Club Dr/Old County Club Dr Drwy #4
27. Old County Club Dr/Old County Club Dr Drwy #5
28. Bass Lake Rd/US-50 eastbound ramps
29. Bass Lake Rd/US-50 westbound ramps
30. Country Club Dr/El Norte Rd
31. Country Club Dr/Merrychase Dr
32. Cambridge Rd/US-50 eastbound ramps
33. Cambridge Rd/US-50 westbound ramps

Merge/diverge/weave analysis for traffic entering and exiting US-50 was be conducted on US-50 at the following locations:

Westbound US-50

1. East of Cambridge Rd
2. Cambridge Rd Offramp
3. Cambridge Rd between ramps
4. Cambridge Rd Onramp
5. Cambridge Rd to Bass Lake Rd
6. Bass Lake Rd Offramp
7. Bass Lake Rd between ramps
8. Bass Lake Rd Onramp
9. Bass Lake Rd to Silva Valley Pkwy
10. Silva Valley Pkwy Offramp
11. Silva Valley Pkwy between ramps

Eastbound US-50

12. Silva Valley Pkwy between ramps
13. Silva Valley Pkwy Loop Onramp
14. Silva Valley Pkwy Slip Onramp
15. Silva Valley Pkwy to Bass Lake Rd
16. Bass Lake Rd Offramp
17. Bass Lake Rd between ramps
18. Bass Lake Rd Onramp
19. Bass Lake Rd to Cambridge Rd
20. Cambridge Rd Offramp
21. Cambridge Rd between ramps

Arterial segment analysis was conducted on three local road segments:

1. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)
2. Bass Lake Rd (between US-50 and Country Club Dr)
3. Country Club Dr (between Bass Lake Rd and Morrison Rd)

Transit Service

El Dorado Transit is the primary public transit service provider in El Dorado County and provides local transit services within and between community areas of the county including Placerville and Cameron Park. Within the study area, El Dorado Transit provides:

- Route 40 (Cameron Park) connecting the Cambridge Road park-and-ride lot and the Cameron Park library with stops along Cameron Park Drive, Durock Road, and the area around the Ponderosa Road interchange. Buses run on an approximate 1-hour headway.
- Route 50 express commuter service connecting the Cambridge Road park-and-ride lot, with Placerville, downtown Sacramento, and several locations in Folsom including the Iron Point Light Rail Station, Ingersoll Way & Parker Drive, Intel, Kaiser Permanente, and Folsom Lake College.

Dial-a-ride services are also provided within many portions of El Dorado County, including El Dorado Hills and Cameron Park. Dial-A-Ride is available to seniors (60 and older) and persons with disabilities who are registered in the El Dorado Transit Dial-A-Ride system. A transit system map is provided as **Figure 6**.

Bicycle Facilities

There are existing class II bike lanes along White Rock Road, Silva Valley Parkway, Serrano Parkway, and Country Club Drive. A class I bike trail fronts the south side of the Project and Program-Study areas along the "Old Country Club Drive" alignment, and there is a class 1 Bike trail connecting Bass Lake Road to the Serrano trail network via Hawk View Drive. A portion of Bass Lake Road, north of Hollow Oak Drive also currently has a class 1 bike trail parallel to the roadway.

The 2020 Active Transportation Plan[7] calls for class 3 bike routes along Hollow Oak Drive and a class 1 bike trail along Bass Lake Road between the existing class 1 trail on the "Old Country Club Drive" alignment, and the existing class 1 trail along Bass Lake Road north of Hollow Oak Drive. The Project and Program-Study areas incorporate portions of that class 1 trail system.

[7] El Dorado County Transportation Commission (2020) El Dorado County Active Transportation Plan, https://www.edctc.org/atp-plans.

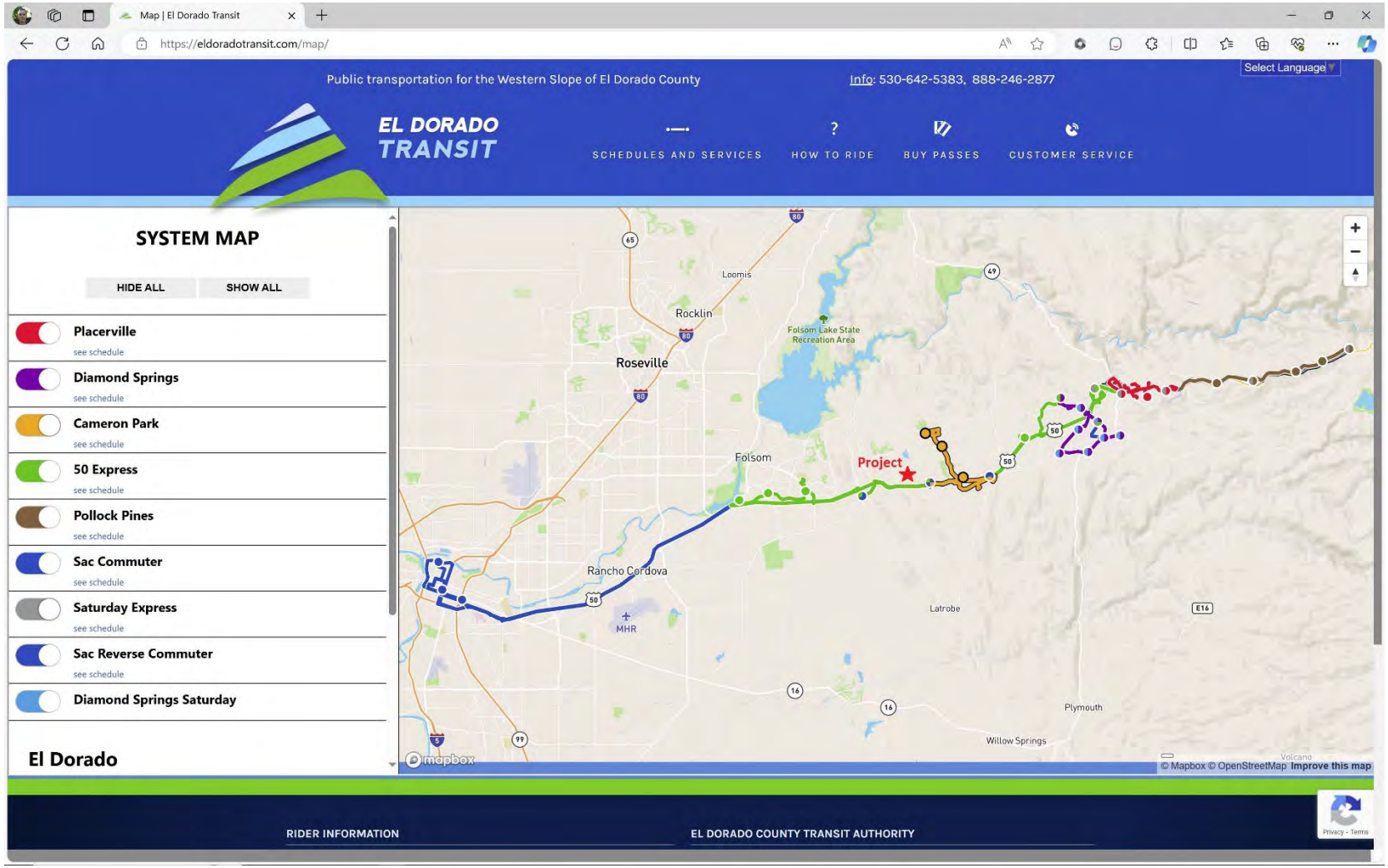

Figure 6. Transit service map, Project site denoted by red star.

Study Scenarios

Eight scenarios were identified for inclusion in this Traffic Impact Analysis through consultation with the development team and El Dorado County staff. The study determines the weekday AM peak hour and PM peak hour level-of-service at the study intersections and segments under the following scenarios:

Existing 2023

1. Existing 2023 (without Project-Development or Program-Study Areas); and
2. Existing 2023 Plus Project-Development Area;

Existing Plus Planned Projects and Approved Projects (EPAP) 2033

3. EPAP 2033 (without Project-Development or Program-Study Areas); and
4. EPAP 2033 Plus Project-Development Area;

Cumulative 2040

5. Cumulative 2040 (without Project-Development or Program-Study Areas); and
6. Cumulative 2040 Plus Project-Development and Program-Study Areas.

Super-Cumulative 2040

7. Super-Cumulative 2040 (without Project-Development or Program-Study Areas); and
8. Super-Cumulative 2040 Plus Project-Development and Program-Study Areas.

Existing 2023

An analysis of the existing condition, which reflects the traffic volumes and roadway geometry at the time the study was initiated. This scenario is analyzed both with and without Project-development area traffic to identify any Project area related traffic impacts.

EPAP 2033

These scenarios, with and without the Project-development area traffic, will analyze conditions ten years from the current year calculated using a straight-line interpolation from existing traffic levels to the General Plan's 2040 traffic projections. These scenarios include an interpolated level of traffic from all projects with development agreements and approved tentative maps.

Cumulative 2040 and Super-Cumulative 2040

These Cumulative 2040 scenarios reflect:

- No Project-Development or Program-Study area land use; and
- Both the Project-Development and Program-Study area's land uses.

By having Existing and EPAP analysis with just the Project-Development area added and both the Project and Program-Study areas added, this transportation study is able to identify off-site improvements that are only triggered by buildout of the Program-Study area.

The Super-Cumulative 2040 analysis is similar to Cumulative 2040, with the addition of the proposed Marble Valley, Lime Rock and EDH 52 (Costco) projects included in the no project scenario. These proposed projects represent 4340 homes, 635.7 ksf of commercial space, and two schools for almost 1400 students. Unsurprisingly, the Super-Cumulative scenarios anticipate traffic operations deficiencies on segments of US-50 and at the Bass Lake Rd interchange.

3.0 LOCAL TRANSPORTATION ANALYSIS METHODOLOGY

This section provides a process overview, discusses traffic forecasting, and describes the methods/criteria used to evaluate level-of-service. A discussion of the significance criteria for conformity to General Plan policies is included. CEQA analysis of transportation is limited to vehicle miles of travel (VMT) and safety, which are addressed in a companion report.

Process Overview

The overall analysis process was structured to identify potential adverse Project traffic effects relative to either General Plan level-of-service policies, or CEQA.

- Traffic counts were collected in 2022 and 2023 to support this analysis.
- Traffic volumes and turning movements for the Existing 2023 conditions were determined from traffic counts. Future-year volume forecasts were based on growth estimates from the El Dorado County TDM[8] applied to the observed count data. The NCHRP 255 procedure[9] was used to refine forecasted turning movements.
- Study intersections and the US-50 merge/diverge/basic segments were analyzed both with and without the Project and Project Study area to identify potential significant project impacts.
- General Plan level-of-service thresholds were based on El Dorado County General Plan, Transportation and Circulation Element policies TC-Xa (Measure Y policies), TC-Xd and TC-Xe.

Traffic Forecasting Methodology

The TDM catalog "EDC_CAT_082118c" was used to generate existing and future traffic volume estimates for calculation of growth factors, and to estimate the distribution for trips generated by the Project and Program-Study areas. The TDM includes a 2016 baseline and 2040 cumulative scenario. Straight line interpolation was applied to estimate incremental growth from the base year through 2023, 2033, and 2040. For forecasting purposes, the Saratoga Way extension connecting El Dorado Hills Boulevard to Empire Ranch Road (City of Folsom) was assumed to be built for the 2016 base year model runs. This allows changes in traffic volume to be based on land use changes rather than the new roadway capacity parallel to US-50.

[8] El Dorado Travel Demand Model version "EDC_CAT_082118c".
[9] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.

TDM Segment Level Calibration

The TDM was calibrated to local roadways by estimating and applying link level adjustment factors based on the difference between traffic counts and a 2023 TDM scenario without the Saratoga Way extension. That calibration factor is applied to the 2023, 2033, and 2040 TDM to improve the accuracy of the volume forecasts at each intersection. The NCHRP 255 process was used in combination with observed turning movements, and the calibrated 2023, 2033, and 2040 model volumes, to refine turning movements for no-project conditions.

2040 Traffic Forecasts and Interpolation of 2033 Link Volumes

Growth in traffic for the EPAP scenario was based on linear interpolation of segment volumes between the baseline 2016 scenario (with the Saratoga Way extension), and a cumulative (2040) TDM scenario. Land use was checked to ensure that it reflected a reasonable degree of buildout of the nearby specific plan areas and to ensure that interpolation of that land use would account for all approved tentative maps in the El Dorado Hills and Bass Lake Hills communities.

- The model reflects buildout of the Carson Creek Specific Plan housing. There are 1925 age-restricted dwelling units currently allowed within the CCSP. Age restricted dwelling units have lower trip generation than traditional homes[10] and the TDM reflects this by coding the land use as a smaller number of traditional homes. The 1925 age-restricted homes would be reflected as 866 traditional single-family homes in the TDM. The model includes 1042 homes in the CCSP area (reflecting approximately 2315 age-restricted homes). The County's buildout estimate is conservatively high and was not adjusted.
- Buildout of the El Dorado Hills Specific Plan is included in the 2040 model land use.
- Buildout of Promontory is included in the 2040 model land use.
- Buildout of VVSP White Rock Village and West Valley Village is included in the 2040 model land use.
- Without development of the Project and Program-Study areas, Bass Lake Hills is a little under 85% buildout (1,217 DUs out of 1,448). In the Bass Lake Hills Specific Plan Area, 99 homes have been constructed in phase 1 (Laurel Oaks) and an additional 371 units have been approved (Hawk View, Bell Woods, Bell Ranch, and Bass Lake North). The assumption of 85% buildout for Bass Lake Hills appears conservative and was not increased.

Intersection Turn Movement Forecast Methodology

Directional link level volume estimates from the 2016 and 2040 TDM model forecasts were used to scale traffic counts using the NCHRP 255 methodology. The methodology was

[10] Age restricted housing generates about 45% of the daily trips of traditional housing, 33% of the AM peak hour trips, and 30% of the PM peak hour trips (Source: ITE Trip Generation Manual, 11th edition).

applied through the TurnsW32 v2.0 software[11]. The Furness reports for the AM and PM peak hour turn movement forecasts under EPAP 2030 and Cumulative 2040 conditions are provided in **Appendix B**.

Level-of-Service Methodology

Level-of-service (LOS) is a qualitative indication of the level of delay and congestion experienced by motorists using an intersection. Levels-of-service are designated by the letters A through F, with "A" being the best conditions and "F" being the worst (high delay and congestion). Calculation methodologies, measures of performance, and thresholds for each letter grade differ for road segments, signalized intersections, and unsignalized intersections.

Based on guidance from El Dorado County Community Development Agency staff, and the *County of El Dorado Department of Transportation – Traffic Impact Study Protocols and Procedures* (Dated November 2014), the following procedures described below for intersection traffic operations analysis were selected for this study.

Intersection Traffic Operations Analysis

Signalized Intersections

The methodology from Highway Capacity Manual (HCM) 6th Edition[12] are used to analyze signalized intersections. Level-of-service can be characterized for the entire intersection, each approach, or by lane group. Control delay alone (the weighted average delay for all vehicles entering the intersection) is used to characterize level-of-service for the entire intersection or an approach. Control delay and volume to capacity ratio are used to characterize level-of-service for lane groups. The average delay criteria used to determine the level-of-service at signalized intersections is presented in **Table 2**.

Table 2. Level-of-Service Criteria for Signalized Intersections

Level-of-Service	Description	Average Delay[1] (Sec. /Vehicle.)
A	Very Low Delay: This level-of-service occurs when progression is extremely favorable, and most vehicles arrive during a green phase. Most vehicles do not stop at all.	≤ 10.0
B	Minimal Delays: This level-of-service generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.	10.1-20.0
C	Acceptable Delay: Delay increases due to only fair progression, longer cycle lengths, or both. Individual cycle failures (*to service all waiting vehicles*) may begin to appear at this level of service. The number of	20.1-35.0

[11] Dowling Associates (2002), http://sites.kittelson.com/kittelsondownloads/Downloads/Download/12544.

[12] TRB (2016) Highway Capacity Manual 6th Edition, Transportation Research Board, Washington D.C. Note that the 7th Ed. Of the Highway Capacity Manual has been released but has yet to be implemented in the Synchro software package used to evaluate level-of-service.

	vehicles stopping is significant, though many still pass through the intersection without stopping.	
D	Approaching Unstable/Tolerable Delays: The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.1-55.0
E	Unstable Operation/Significant Delays: This is considered by many agencies the upper limit of acceptable delays. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	55.1-80.0
F	Excessive Delays: This level, considered to be unacceptable to most drivers, often occurs with oversaturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delay levels.	> 80.0 or v/c >1.0

Note 1: Weighted average of delay on all approaches. This is the measure used by the Highway Capacity Manual to determine level-of-service. Any movement with a volume to capacity ratio (v/c) greater than 1.0 is considered to be level-of-service "F".

Source: Transportation Research Board (2022) Highway Capacity Manual, 7th Edition, Washington D.C., Chapter 19;

Unsignalized Intersections

The methodology from HCM 7th Edition is used for the analysis of unsignalized intersections. For unsignalized intersections, most of the main street traffic is un-delayed, and by definition have acceptable conditions. The main street left-turn movements and the minor street movements are all susceptible to delay of varying degrees. Generally, the higher the main street traffic volumes, the higher the delay for the minor movements. Separate methods are utilized for Two-Way Stop-Controlled (TWSC) intersections, and All-Way Stop-Controlled (AWSC) intersections.

- **TWSC**: The methodology for analysis of two-way stop-controlled intersections calculates an average total delay per vehicle for each minor street movement and for the major street left-turn movements, based on the availability of adequate gaps in the main street through traffic. A level-of-service designation is assigned to individual movements or to combinations of movements (in the case of shared lanes) based upon delay, it is not defined for the intersection as a whole. Unsignalized intersection level-of-service reported herein is for each movement (or group of movements) based upon the respective average delay per vehicle. **Table 3** presents the average delay criteria used to determine the level-of-service at TWSC and at AWSC intersections.
- **AWSC:** At all-way stop-controlled intersections, the level-of-service is determined by the weighted average delay for all vehicles entering the intersection. The methodologies for these types of intersections calculate a single weighted average delay and level-of-service for the intersection as a whole. The average delay criteria

used to determine the level-of-service at all-way stop intersections is the same as that presented in **Table 3**. Level-of-service for specific movements can also be determined based on the TWSC methodology.

- **Roundabouts:** at Roundabouts**,** the capacity is influenced by entering, circulating and exiting flows. Level-of-service can be estimated for each lane, approach, or the roundabout as a whole. In this study, the worst approach is used to characterize the operation of the roundabout as a whole. The level-of-service thresholds are the same as those utilized for AWSC and TWSC intersections presented in **Table 3**.

It is not unusual for some of the minor street movements at unsignalized intersections to have level-of-service D, E, or F conditions while the major street movements have level-of-service A, B, or C conditions. In such a case, the minor street traffic experiences delay that can be substantial for individual minor street vehicles, but the majority of vehicles using the intersection have very little delay. Usually in such cases, the minor street traffic volumes are relatively low. If the minor street volume is large enough, improvements to reduce the minor street delay may be justified, such as channelization, widening, roundabout, or signalization.

Table 3. Level-of-Service Criteria for Unsignalized Intersections

Level of Service (LOS)	Description	TWSC[1] Average Delay by Movement (seconds / vehicle)	AWSC[2] Intersection Wide Average Delay (seconds / vehicle)
A	Little or no delay	< 10	< 10
B	Short traffic delay	> 10 and < 15	> 10 and < 15
C	Average traffic delays	> 15 and < 25	> 15 and < 25
D	Long traffic delays	> 25 and < 35	> 25 and < 35
E	Very long traffic delays	> 35 and < 50	> 35 and < 50
F	Extreme delays potentially affecting other traffic movements in the intersection	> 50 (or, v/c >1.0)	> 50

Note 1: Two-Way Stop-Control (TWSC) level-of-service is calculated separately for each minor street movement (or shared movement) as well as major street left turns using these criteria. Any movement with a volume to capacity ratio (v/c) greater than 1.0 is considered to be level-of-service F.

Note 2: All-Way Stop-Control (AWSC) assessment of level-of-service at the approach and intersection levels is based solely on control delay.

Source: Transportation Research Board (2022) Highway Capacity Manual, 7th Edition, Washington D.C., Chapter 20 (TWSC) and Chapter 21 (AWSC).

Signal Warrants

At each unsignalized intersection, the potential need for a traffic signal was evaluated. Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate. Signal warrant analyses are typically conducted at intersections of uncontrolled major streets and stop sign-controlled minor streets. If one or more signal warrants are met, signalization of the intersection may be appropriate. However, a signal should not be installed if none of the warrants are met, since the installation of signals would

increase delays on the previously uncontrolled major street and may increase the occurrence of particular types of accidents.

As stated in the 2014 California Edition of the Manual on Uniform Traffic Control Devices (California MUTCD 2014)[13], "*An engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location.*

The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:

- *Warrant 1, Eight-Hour Vehicular Volume*
- *Warrant 2, Four-Hour Vehicular Volume*
- *Warrant 3, Peak Hour*
- *Warrant 4, Pedestrian Volume*
- *Warrant 5, School Crossing*
- *Warrant 6, Coordinated Signal System*
- *Warrant 7, Crash Experience*
- *Warrant 8, Roadway Network*
- *Warrant 9, Intersection Near a Grade Crossing*

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal."

Consistent with the industry standard of practice, this Traffic Impact Analysis did not evaluate the full panoply of warrants for traffic signals, but instead focused on the peak hour warrant. The MUTCD states that, "*This [peak hour] signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.*" So, the peak hour warrant is being used in this impact analysis study as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed the peak hour warrant are considered (for the purposes of this impact analysis) to be likely to meet one or more of the other signal warrants (such as the 4-hour or 8-hour warrants). This peak hour analysis is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction.

Unsignalized intersections were evaluated using the Peak Hour Volume Warrant (Warrant No. 3) in the California MUTCD 2014. The Peak Hour Volume Warrant was applied where the minor street experiences long delays in entering or crossing the major street for at least one hour in a day.

[13] Caltrans (2019) California Manual on Uniform Traffic Control Devices - FHWA's MUTCD 2009 Edition as amended for use in California - 2014 Edition - Revision 8, January 11, 2024. Section 4C.

Even if the Peak Hour Volume Warrant is met, a more detailed signal warrant study is recommended before a signal is installed. The more detailed study should consider volumes during the daily peak hours of roadway traffic, pedestrian traffic, and accident histories.

El Dorado County Roadway Segments

Several methods are available to evaluate roadway segments. The methodology selected for this analysis was chosen to be consistent with the 2014 El Dorado County Transportation Impact Study Guidelines.

Table 1 of that document contains the maximum flow rates for each level-of-service grade as a function of roadway classification. Those level-of-service criteria are shown in **Table 4**.

Table 4. Level-of-Service Criteria for County Roadway Segments

		HCM 2010 Planning Level Volumes[1]				
Code	**Functional Class Codes (Updated to HCM 2010)**	**A**	**B**	**C**	**D**	**E**
2A	Two-Lane Arterial	-	-	850	1,540	1,650
4AU	Four-Lane Arterial, Undivided	-	-	1,760	3,070	3,130
4AD	Four-Lane Arterial, Divided	-	-	1,850	3,220	3,290
6AD	Six-Lane Arterial, Divided	-	-	2,760	4,680	4,710
4M	Four-Lane Multi-Highway (Two Dir.)	-	2,240	3,230	4,250	4,970
2F	Two Freeway Lanes (One Dir.)	-	2,070	2,880	3,590	4,150
2FA	Two Freeway Lanes + Auxiliary Lane (One Dir.)	-	2,610	3,630	4,520	5,230
3F	Three Freeway Lanes (One Dir.)	-	3,100	4,320	5,380	6,230
3FA	Three Freeway Lanes + Auxiliary Lane (One Dir.)	-	3,640	5,070	6,320	7,310
4F	Four Freeway Lanes (One Dir.)	-	4,140	5,760	7,180	8,310

1 *Freeway LOS based on HCM 2010, Exhibit 10-8, Urban Area, Rolling Terrain, K-factor of 0.09, and D-factor of 0.60*

2-lane highway (and arterial 2-lane) LOS based on HCM 2010, Exhibit 15-30, Class II Rolling, .09 K-factor, and D-factor of 0.6

Arterial LOS based on HCM 2010, Exhibit 16-14, K-factor of 0.09, posted speed 45 mi/h

Volumes are for both directions unless noted

Caltrans Merge/Diverge/Weave Level-of-Service Analysis

Freeway merge/diverge segments, basic segments, and weaving segments were analyzed utilizing the methodologies outlined in Chapters 12-14 of the Highway Capacity Manual, 7th Edition (HCM 2022)[14]. Freeway operations and level-of-service is defined by density (passenger cars per mile per lane) which depends upon traffic volumes and the ramp characteristics. These characteristics include the length and type of acceleration/deceleration lanes; free-flow speeds; number of lanes; grade; and types of

[14] Transportation Research Board (2022) Highway Capacity Manual, 7th Edition, Washington, D.C.

facilities. **Table 5** through **Table 7** shows the relationship of level-of-service to freeway density. Note that the Leisch Method[15], which Caltrans prefers for weaving segments, was not applied because the State of California no longer considers level-of-service under CEQA, and the Leisch Method is not relevant to adopted General Plan policies.

Table 5. Level-of-Service Criteria – Basic Freeway Segment

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	0-11
B	>11-18
C	>18-26
D	>26-35
E	>35-45
F	>45, or demand exceeds capacity

Source: Transportation Research Board (2022) Highway Capacity Manual, Chapters 12, Washington, D.C.

Table 6. Level-of-Service Criteria - Freeway Ramp Merge/Diverge Areas

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	0-10
B	>10-20
C	>20-28
D	>28-35
E	> 35
F	Demand exceeds capacity

Source: Transportation Research Board (2022) Highway Capacity Manual, Chapters 14, Washington, D.C.

Table 7. Level-of-Service Criteria - Freeway Weaving Areas

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	0-10
B	>10-20
C	>20-28
D	>28-35
E	> 35-43
F	>43, or demand exceeds capacity

Source: Transportation Research Board (2022) Highway Capacity Manual, Chapters 13, Washington, D.C.

General Plan Level-of-Service Deficiency Standards

Conformity to General Plan level-of-service policies for the Project were determined based on the methods described above and identified as either "deficient" or "non-deficient" in

[15] Caltrans (2012) Highway Design Manual, Index 504.7

accordance with El Dorado County protocols and procedures[16]. However, level-of-service is only applicable to General Plan conformity. Delay and level-of-service is not a significant impact under CEQA.

General Plan Circulation Policy TC-Xd provides that level-of-service for county-maintained roads and state highways within the unincorporated areas of the county shall not be worse than level-of-service E in the community regions or level-of-service D in the rural centers and rural regions, unless specifically exempted as shown in **Table 8**.

Table 8. General Plan Exceptions to Level-of-Service Standards

El Dorado County Roads Allowed to Operate at Level-of-Service F[a] (Through December 31, 2029)		
Road Segments		**Max. v/c[b]**
Cambridge Road	Country Club Drive to Oxford Road	1.07
Cameron Park Drive	Robin Lane to Coach Lane	1.11
Missouri Flat Road	US-50 to Mother Lode Drive	1.12
	Mother Lode Drive to China Garden Road	1.20
Pleasant Valley Road	El Dorado Road to State Route 49	1.28
US-50	Canal Street to junction of State Route 49 (Spring Street)	1.25
	Junction of State Route 49 (Spring Street) to Coloma Street	1.59
	Coloma Street to Bedford Avenue	1.61
	Bedford Avenue to beginning of freeway	1.73
	Beginning of freeway to Washington overhead	1.16
	Ice House Road to Echo Lake	1.16
State Route 49	Pacific/Sacramento Street to new four-lane section	1.31
	US-50 to State Route 193	1.32
	State Route 193 to county line	1.51

Note a: Roads improved to their maximum width given right-of-way and physical limitations
Note b: Volume-to-Capacity ratio.
Source: 2004 General Plan (Amended January 2009) Table TC-2

All but two study intersections are within the El Dorado Hills community region and shall operate at level-of-service E or better. Intersection #28 and #29 (the Bass Lake Rd interchange) are outside of the community region and shall operate at level-of-service D or better. Additionally, the US-50 study segments along the Bass Lake Grade are outside of the community region and shall operate at level-of-service D or better. If a project causes the peak hour level-of-service or volume/capacity ratio on a county road or state highway that would otherwise meet the county standards (without the project) to exceed the values listed in the above tables and text, then the impact shall be considered significant. Because this Traffic Impact Analysis is not a CEQA document, facilities and intersections will be noted as having deficient level-of-service rather than an impact.

[16] Traffic Impact Study Protocols and Procedures, County of El Dorado, Department of Transportation, 2008.

If any county road or state highway fails to meet the above listed county standards for peak hour level-of-service or volume/capacity ratios under existing conditions, and the project will "significantly worsen" conditions on the road or highway, then the impact shall be considered significant. The term, "significantly worsen" is defined for the purpose of this paragraph according to General Plan Policy TC-Xe as follows:

A. A two percent increase in traffic during the AM peak hour, PM peak hour, or daily; or,

B. The addition of 100 or more daily trips; or,

C. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

Analysis Tools

El Dorado County Travel Demand Model (TDM)

As noted in prior sections, The El Dorado County Travel Demand Model (version EDC_CAT_082118c) was utilized to forecast growth in traffic volumes on study area roadways. The TDM includes a 2016 baseline year and a 2040 cumulative year. Modifications to the TDM land use and roadway networks are discussed in Section 4.2.

NCHRP 255 Adjustment

The NCHRP 255[17] adjustment procedure was used to improve turning movement forecasts for EPAP 2030 and Cumulative 2040 conditions.

Macroscopic Intersection Analysis

Control delay and level-of-service for study intersections were calculated using the Synchro 12 software package. Synchro is a complete traffic analysis software package used for evaluating development impacts, optimizing traffic signal timings, and evaluating intersection levels of service. It implements the methodologies of the HCM 2000, 2010, 6th, and 7th Ed. for signalized and unsignalized intersections, and requires data on road characteristics (geometric), traffic counts, and the signal timing data for each analysis intersection.

When calculating intersection control delay and level-of-service for all study intersections, default parameters were used, except for locations where specific field data were available (e.g., peak-hour factors). Heavy vehicle percentages during the peak-hour of 2% were assumed.

Freeway segments were evaluated using the FREEVAL 2015e software package. FEEVAL evaluates freeway facilities based on the Highway Capacity Manual 6th Ed methodology.

[17] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.

4.0 EXISTING (2023) CONDITIONS

4.1 Data Sources

The analysis tools require a variety of data to generate the evaluation criteria. The following sections describe data collection procedures for Existing conditions. There were three primary data elements (roadway characteristics, intersection turning movement counts, and traffic control data); and two supplementary elements (other recent studies, and field data) that comprised the data collection program for this traffic analysis.

Roadway Geometry and Usage Characteristics

The geometry and usage data for the analysis were collected using aerial photographs, field visits, and prior studies. Current intersection geometry was field validated. **Table 9** shows the key items included in the geometric data and the source for each item.

Table 9. Key items and sources for geometry and usage data

Key Item	Source
Lane configurations & width	Aerial photographs and field visits
Lane utilization	Prior studies, aerial photographs, and field visits
Intersection spacing	Aerial photographs and field visits
Length of storage bays	Aerial photographs and field visits
Transit stops and routes	Transit schedules, aerial photographs, and field visits
Turn prohibitions or allowance	Aerial photographs and field visits
Signal timing	Timing sheets provided by El Dorado County

Lane configurations and width – These data specify the number of lanes and the width of the roadway in each direction, and the directional turns that are allowed from each lane.

Lane utilization – These data specify how lanes are used by drivers, such as traffic distribution between lanes on a multi-lane roadway.

Intersection spacing – These data refer to the distance between intersections, which is recorded in feet.

Length of storage bays – These data refer to the length (feet) of available storage for left- or right-turning vehicles where exclusive turn lanes are available. These data are collected for right-turn lanes when the parking lane is used as a right- turn lane.

Transit stops and routes – A transit stop is an area where passengers await, board, alight, and transfer between transit vehicles. A transit route is the roadway that transit vehicles operate on.

Turn prohibitions or allowance – This data specifies if right turns on red (RTOR) are allowed on the roadway. The Synchro software does not use a true implementation of the Highway Capacity Manual 7th Ed methodology. The resulting right turn delays do not fully account for

RTOR and have a conservative bias (i.e., RTOR delay estimated by Synchro is likely longer than what would be observed in the field).

Intersection Turning Movement Counts and Segment Counts

Existing morning and evening peak-period vehicle and pedestrian turning movement counts collected in May 2022 were used for this study. Traffic count data sheets are provided in **Appendix C** of this report. Traffic volumes between intersections were balanced where differences could not reasonably be attributed to a vehicle platoon being held at one of the lights, driveway access between intersections, or shifts in the time of the peak hour from one intersection to another. All balancing was done by adding vehicle trips to the 2022 turning movements. Observed intersection peak hour factors (PHF) were applied. **Figure 7** provides a summary of the intersection lane geometry and peak period turning movements under Existing 2023 conditions.

4.2 Existing Condition Intersection and Segment Level-of-Service

Table 10 through **Table 12** present a summary of level-of-service results for the study intersections and segments under Existing 2023 conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in yellow highlight denote deficient traffic operations,

The results indicate two intersections operate deficiently with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths.

- #4 Cambridge & Green Valley AM and PM
- #32 Cambridge & US-50 WB AM and PM

Calculation sheets for delay and level-of-service are provided in **Appendix D**. The remainder of the study intersections, all of the US-50 study segments, and arterial study segments were found to operate acceptably.

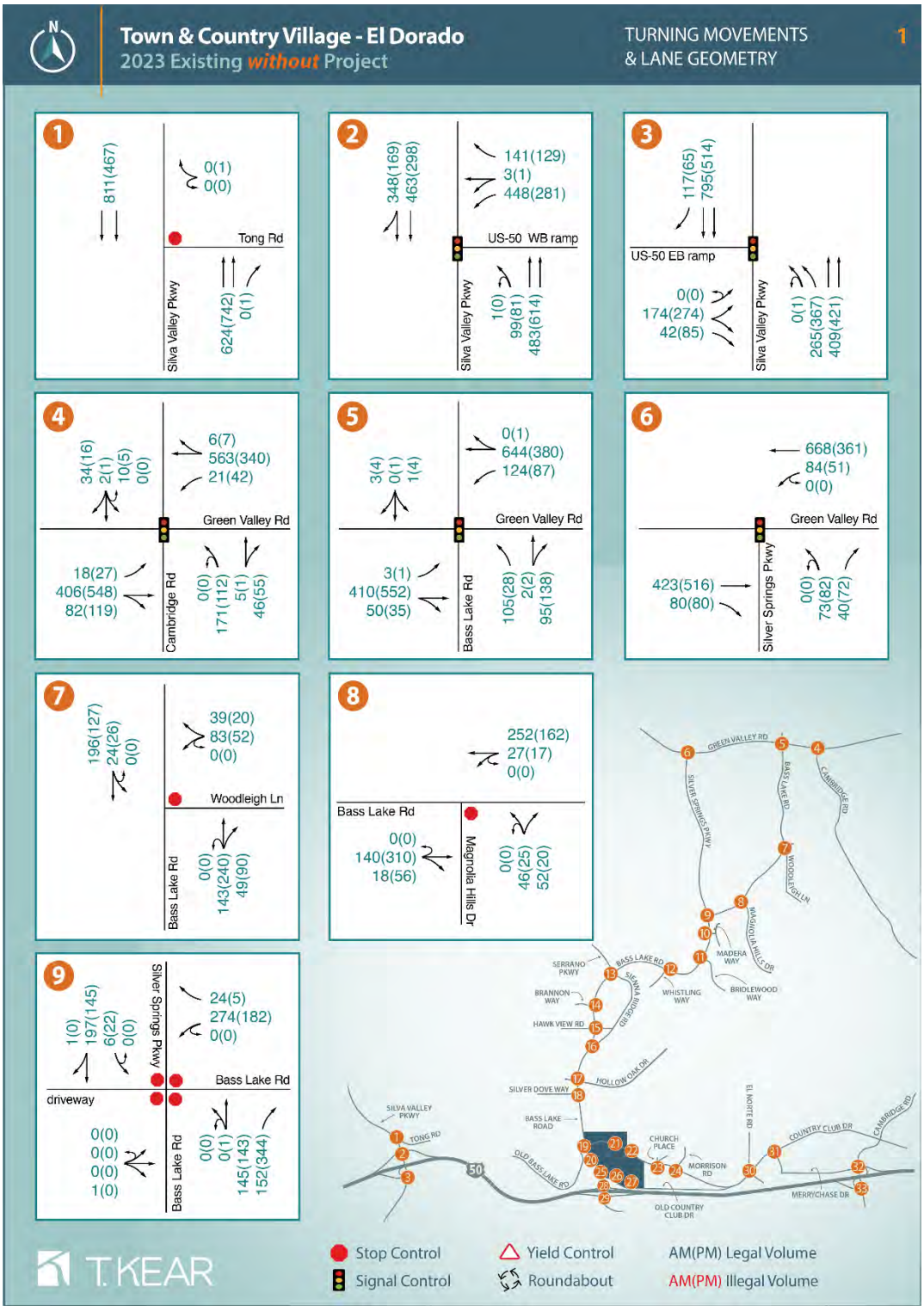

Figure 7. Existing 2023 conditions lane geometry and turning movements

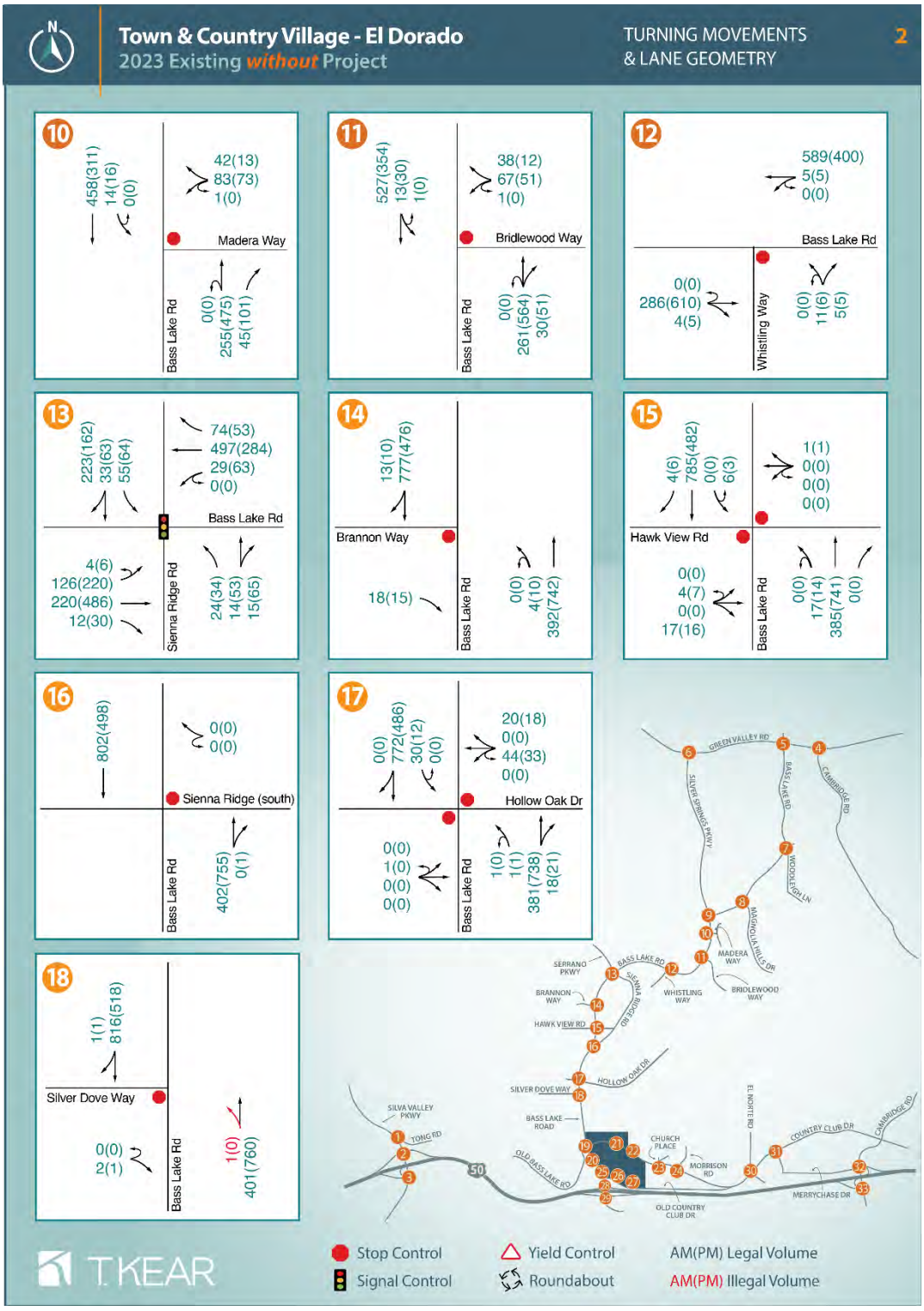

Figure 7. Existing 2023 conditions lane geometry and turning movements (continued)

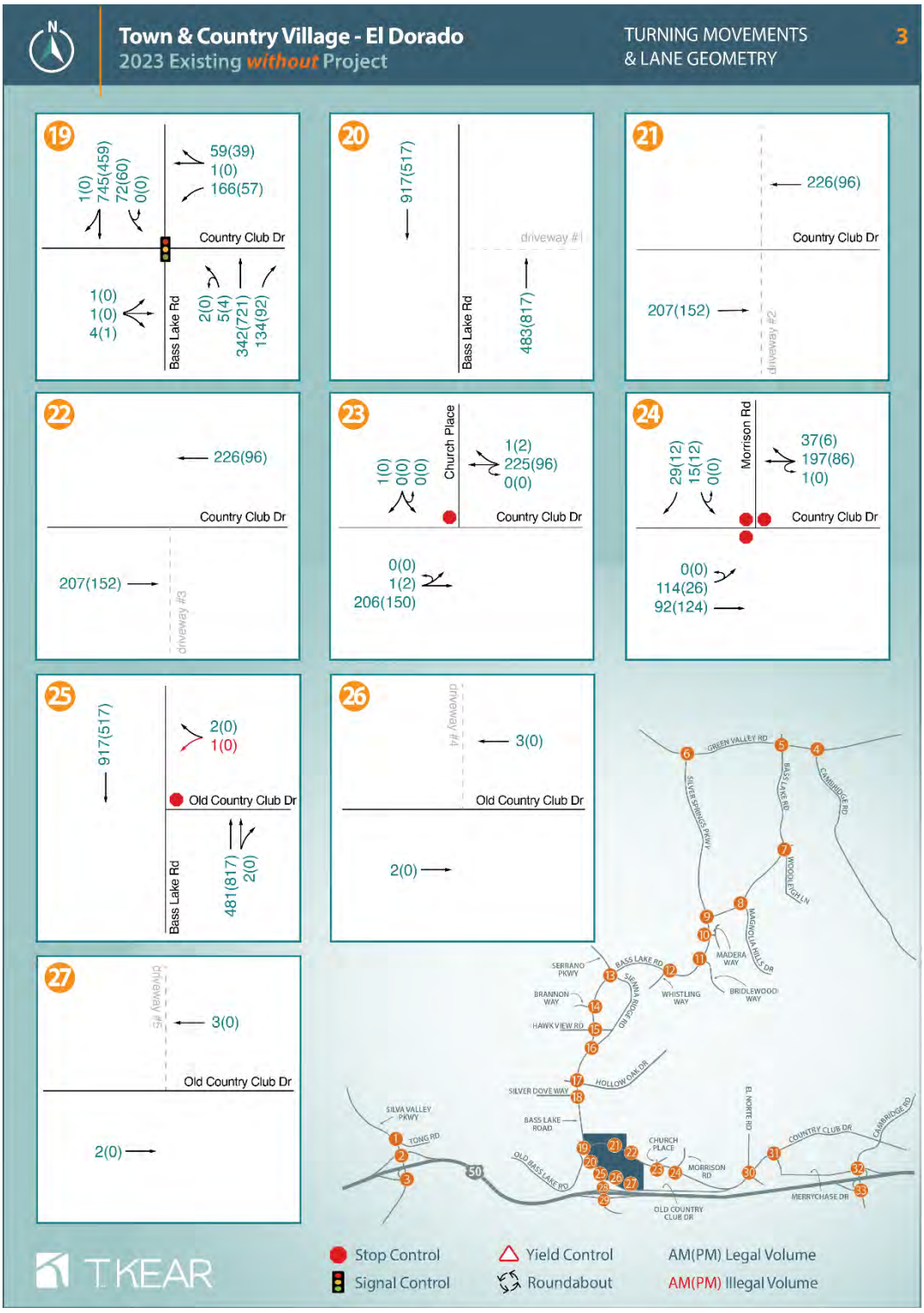

Figure 7. Existing 2023 conditions lane geometry and turning movements (continued)

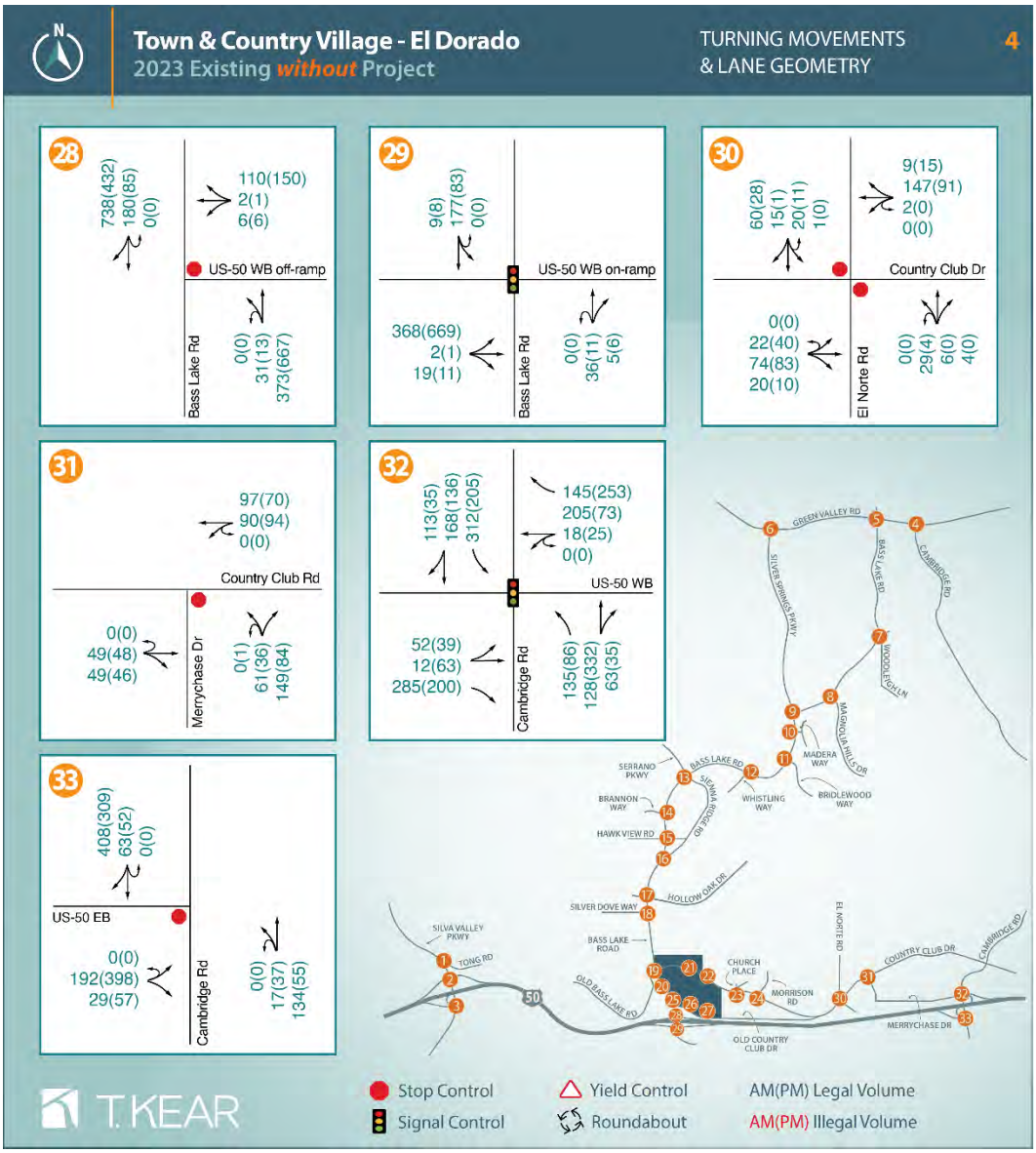

Figure 7. Existing 2023 conditions lane geometry and turning movements (continued)

Table 10. Existing 2023 intersection delay, level-of-service, and queueing without the Project

ID	Location	Metric	No Project Pocket Length (Feet)	2023 AM No Project 95% Left Turn Queue (Feet)	2023 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 PM No Project 95% Left Turn Queue (Feet)	2023 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
1	Silva Valley & Tong	LOS (TWSC)			A / 0.0 (n/a)		B / 10.9 (WB)
		EBL Queue	n/a	n/a		n/a	
		WBL Queue	n/a	n/a		n/a	
		NBL Queue	n/a	n/a		n/a	
		SBL Queue	n/a	n/a		n/a	
2	Silva Valley & US-50 WB	LOS (Signal)			B / 16.1		B / 11.4
		WBL Queue	1200*	211		88	
		NBL Queue	550	113		59	
3	US-50 EB & Silva Valley	LOS (Signal)			B / 13.8		B / 13.2
		EBL Queue	1200*	77		88	
		NBL Queue	385	105		107	
4	Cambridge & Green Valley	LOS (Signal)			B / 18.4		B / 14.6
		EBL Queue	90	39		49	
		WBL Queue	130	42		68	
		NBL Queue	120	195		126	
5	Bass Lake & Green Valley	LOS (Signal)			B / 15.9		B / 14.4
		EBL Queue	280	12		6	
		WBL Queue	440	139		107	
		NBL Queue	160	122		42	
6	Silver Springs & Green Valley	LOS (Signal)			A / 8.1		A / 8.9
		WBL Queue	420	126		60	
		NBL Queue	130	65		64	
7	Bass Lake & Woodleigh	LOS (TWSC)			B / 13.7 (WB)		B / 12.4 (WB)
8	Magnolia & Bass Lake	LOS (TWSC)			B / 11.7 (NB)		B / 12.5 (NB)
		WBL Queue	50	2.5		0	
9	Bass Lake & Silver Springs	LOS (AWSC)			B / 14.3		B / 11.0
		SBL Queue	75	0		2.5	
10	Bass Lake & Madera	LOS (TWSC)			C / 21.1 (WB)		C / 19.0 (WB)
		NBL Queue	80	0		0	
		SBL Queue	150	0		0	
11	Bass Lake & Bridlewood	LOS (TWSC)			C / 20.5 (WB)		C / 22.7 (WB)
12	Whistling & Bass Lake	LOS (TWSC)			C / 16.8 (NB)		C / 17.7 (NB)
13	Bass Lake & Sienna Ridge (north)	LOS (Signal)			C / 26.7		C / 24.1
		EBL Queue	340	203		263	
		WBL Queue	380	67		98	
		NBL Queue	210	58		62	
		SBL Queue	155	105		99	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 10. Existing 2023 intersection delay, level-of-service, and queueing without the Project (continued)

ID	Location	Metric	No Project Pocket Length (Feet)	2023 AM No Project 95% Left Turn Queue (Feet)	2023 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 PM No Project 95% Left Turn Queue (Feet)	2023 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
14	Bass Lake & Brannon	LOS (TWSC)			C / 15.8 (EB)		B / 11.7 (EB)
		NBL Queue	335	0		0	
15	Bass Lake & Hawk View	LOS (TWSC)			C / 19.3 (EB)		C / 19.5 (EB)
		NBL Queue	290	2.5		0	
		SBL Queue	250	0		0	
16	Bass Lake & Sienna Ridge (south)	LOS (TWSC)			A / 0 (n/a)		A / 0 (n/a)
17	Bass Lake & Hollow Oak	LOS (TWSC)			E / 37.8 (WB)		E / 35.4 (WB)
		NBL Queue	300	0		0	
		SBL Queue	300	2.5		0	
18	Bass Lake & Silver Dove	LOS (TWSC)			C / 15.6 (EB)		B / 11.7 (EB)
19	Bass Lake & Country Club	LOS (Signal)			C / 30.6		B / 19.7
		WBL Queue	300	224		86	
		NBL Queue	300	25		17	
		SBL Queue	300	128		111	
20	Bass Lake & Drwy #1	LOS (TWSC)		Does not Exist		Does not Exist	
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist	
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist	
23	Country Club & Church	LOS (TWSC)			B / 10.6 (SB)		A / 7.5 (EB)
24	Country Club & Morrison	LOS (AWSC)			B / 12.7		A / 8.2
		EBL Queue	275	37.5		2.5	
		SBL Queue	240	5		2.5	
25	Bass Lake & Old Country Club	LOS (TWSC)			B / 10.2 (WB)		A / 0 (n/a)
26	Old Country Club & Drwy #4	LOS (TWSC)		Does not Exist		Does not Exist	
27	Old Country Club & Drwy #5	LOS (TWSC)		Does not Exist		Does not Exist	
28	Bass Lake & US-50 WB	LOS (TWSC)			B / 14.8 (WB)		C / 15.9 (WB)
		WBL Queue	850*	2.5		2.5	
		NBL Queue	n/a	2.5		0	
29	Bass Lake & US-50 EB	LOS (Signal)			B / 16.0		B / 12.0
		EBL Queue	480*	313		369	
		SBL Queue	n/a	182		87	
30	Country Club & El Norte	LOS (TWSC)			B / 13.7 (NB)		B / 11.1 (NB)
31	Merrychase & Country Club	LOS (TWSC)			C / 16.5 (NB)		B / 10.5 (NB)
32	Cambridge & US-50 WB	LOS (Signal)			D / 41.5		C / 27.8
		WBL Queue	1000*	307		129	
		NBL Queue	150	210		133	
		SBL Queue	100	417		265	
33	Cambridge & US-50 EB	LOS (TWSC)			B / 14.3 (EB)		C / 19.1 (EB)
		EBL Queue	1250*	55		62.5	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket
* At intersection 15 during the PM peak hour with the Project, calculated level of service and delay of C / 19.3 was increased to C 19.5 for consistency with no project results.

Table 11. Existing 2023 freeway facility density and level-of-service without the Project

ID	Segment	Type	2023 No Project AM (Density/LOS)	2023 No Project PM (Density/LOS)
Westbound US-50				
1	East of Cambridge Rd	Basic	17.6 / B	16.1 / B
2	Cambridge Rd Offramp	Diverge	20.9 / C	19.2 / B
3	Cambridge Rd between ramps	Basic	14.9 / B	13.6 / B
4	Cambridge Rd Onramp	Merge	21.5 / C	19.4 / B
5	Cambridge Rd to Bass Lake Rd	Basic	17.7 / B	15.8 / B
6	Bass Lake Rd Offramp	Diverge	21.1 / C	18.7 / B
7	Bass Lake Rd between ramps	Basic	16.9 / B	14.6 / B
8	Bass Lake Rd Onramp	Merge	26.5 / C	21.7 / C
9	Bass Lake Rd to Silva Valley Pkwy	Basic	23.0 / C	17.9 / B
10	Silva Valley Pkwy Offramp	Diverge	26.8 / C	21.3 / C
11	Silva Valley Pkwy between ramps	Basic	18.1 / C	14.8 / B
Eastbound US-50				
12	Silva Valley Pkwy between ramps	Basic	7.9 / A	12.5 / B
13	Silva Valley Pkwy Loop Onramp	Merge	13.4 / B	18.5 / B
14	Silva Valley Pkwy Slip Onramp	Merge	8.9 / A	14.0 / B
15	Silva Valley Pkwy to Bass Lake Rd	Basic	9.7 / A	14.5 / B
16	Bass Lake Rd Offramp	Diverge	13.7 / B	19.9 / B
17	Bass Lake Rd between ramps	Basic	7.9 / A	11.3 / B
18	Bass Lake Rd Onramp	Merge	11.9 / B	14.8 / B
19	Bass Lake Rd to Cambridge Rd	Basic	8.8 / A	11.8 / B
20	Cambridge Rd Offramp	Diverge	12.2 / B	16.4 / B
21	Cambridge Rd between ramps	Basic	7.7 / A	9.6 / A

Density in units of passenger cars per mile per lane.

Table 12. Existing 2023 arterial level-of-service check without the Project

Arterial Segment	Description	2023 AM No Project (Volume and level-of-Service)	2023 PM No Project (Volume and level-of-Service)
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1220 (Level-of-Service D)	1279 (Level-of-Service D)
ii. Bass Lake Rd (between US-50 Country Club Dr)	No Project: 2-lane arterial (threshold 1540) With Project: 4-lane arterial (threshold 3130)	1398 (Level-of-Service D)	1334 (Level-of-Service D)
iii. Country Club Dr (between Bass Lake Rd and Morrison Rd)	2-lane arterial (threshold 1650)	431 (Level-of-Service C)	248 (Level-of-Service C)

5.0 PROJECT TRIP GENERATION, DISTRIBUTION, AND ASSIGNMENT

5.1 Trip Generation

Anticipated trips are based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021). **Table 13** shows anticipated Project-Development and Program-Study area trip generation. Adjustments were made for internal trip capture:

- For the 56 employee housing units in the Project area a conservative estimate was made that 50% of the employee housing units would have one employee trip from home to work and one return trip each day; it was further assumed that 75% of those trips would occur during the daytime, and 25% would be night shift or swing shift.
- The NCHRP 684 methodology was used to estimate internal capture between the commercial, residential and hotel land uses in the Project and Program-Study areas.

To be conservative, trip generation estimates are generally based on the higher rates for the peak hour of the generator rather than the peak hour of adjacent street traffic. The higher of either the average trip generation rate or equation-based trip generation rate was also used. Use of these higher rates has historically been preferred by El Dorado County. Note that the resort hotel land use (ITE land use 330) does not have a published daily trip generation rate. Anticipated daily trip generation for the hotel was therefore based on ten times the average of the AM and PM peak-hour hotel trip generation rate. NCHRP 684 calculation sheets can be found in **Appendix A**.

5.2 Trip Distribution and Assignment

Project trip distribution was based on the El Dorado County TDM, observed counts, prior studies in the vicinity of the Project, and consultation with El Dorado County staff. Trip distribution is shown in **Figure 8**. Assignment of the Project-Development area trips to study intersections is shown in **Figure 9** (for use in 2023 and 2033 scenarios). Assignment of the combined Project-Development and Program-Study area trips to study intersections is shown in **Figure 10** (for use in 2040 and 2040 Super-Cumulative scenarios).

Table 13. Trip generation

Description	ITE Land Use	Quantity	Units	Measure	Daily	AM Total	AM Inbound	AM Outbound	PM Total	PM Inbound	PM Outbound	Notes
Project-Development Area (Project)												
Resort Hotel: (300 rooms, 56 cottages, 46 ksf restaurants/commercial/conference)	330	356	rooms	rate	n/a	0.41	63%	37%	0.5	50%	50%	"Peak Hour of Generator" AM: Average Rate, PM: Fitted Curve Daily: (average of AM & PM)*10
				trips	1,630	146	92	54	180	90	90	
Hotel Adjustment for Employee Housing: Assume 50% of HH have 1 employee working per day (75% on day shift)					-56	-28	-21	-7	-28	-7	-21	
Subtotal Project Hotel					1,574	118	71	47	152	83	69	
Single-Family Detached Housing: (56 cottages as employee housing)	210	56	DU	rate	10.57	0.84	264	74%	1.08	0.64	36%	"Peak Hour of Generator" AM, PM, Daily: Fitted Curve
				trips	592	47	12	35	61	39	22	
Housing Adjustment for Employee Housing: Assume 50% of HH have 1 employee working per day (75% on day shift)					-56	-28	-7	-21	-28	-21	-7	
Subtotal Project Housing					536	19	5	14	33	18	15	
Project Subtotal					**2,110**	**137**	**76**	**61**	**185**	**101**	**84**	
Program-Study Area (Program)												
Mixed Use Site: Age Restricted Attached Housing	252	150	DU	rate	3.24	0.29	45%	55%	0.3	54%	46%	"Peak Hour of Generator" AM, PM, Daily: Average Rate
				trips	486	44	20	24	45	24	21	
Mixed Use Site: Retail	822	10	ksf	rate	65.17	7.60	50%	50%	13.24	54%	46%	"Peak Hour of Generator" AM, PM: Average Rate Daily: Fitted Curve
				trips	652	76	38	38	132	71	61	
Multi-Family Residential	220	552	DU	rate	6.74	0.47	24%	76%	0.57	62%	38%	"Peak Hour of Generator" AM, PM, Daily: Average Rate
				trips	3,712	259	62	197	315	195	120	
Retail	821	80	ksf	rate	94.64	7.06	52%	48%	9.72	49%	51%	"Peak Hour of Generator" AM, PM: Average Rate Daily: fitted Curve
				trips	7,570	565	294	271	778	381	397	
NCHRP 684 Adjustment (Project + Program)					-376	-22	-11	-11	-354	-177	-177	
Program Subtotal					**12,044**	**922**	**403**	**519**	**916**	**494**	**422**	
Town and Country Village Project-Development Plus Program-Study Areas												
Project + Program Total					**14,154**	**1,059**	**479**	**580**	**1,101**	**595**	**506**	

Notes:
Land use 330 (Resort Hotel), daily rates are based on ten times the average of the AM and PM peak hour rates.
To be conservative, trip generation rates were based on the higher of either the average rate or the rate based on the fitted curve as published by the Institute of Transportation Engineers.

Figure 8. Creekside Village Project trip distribution

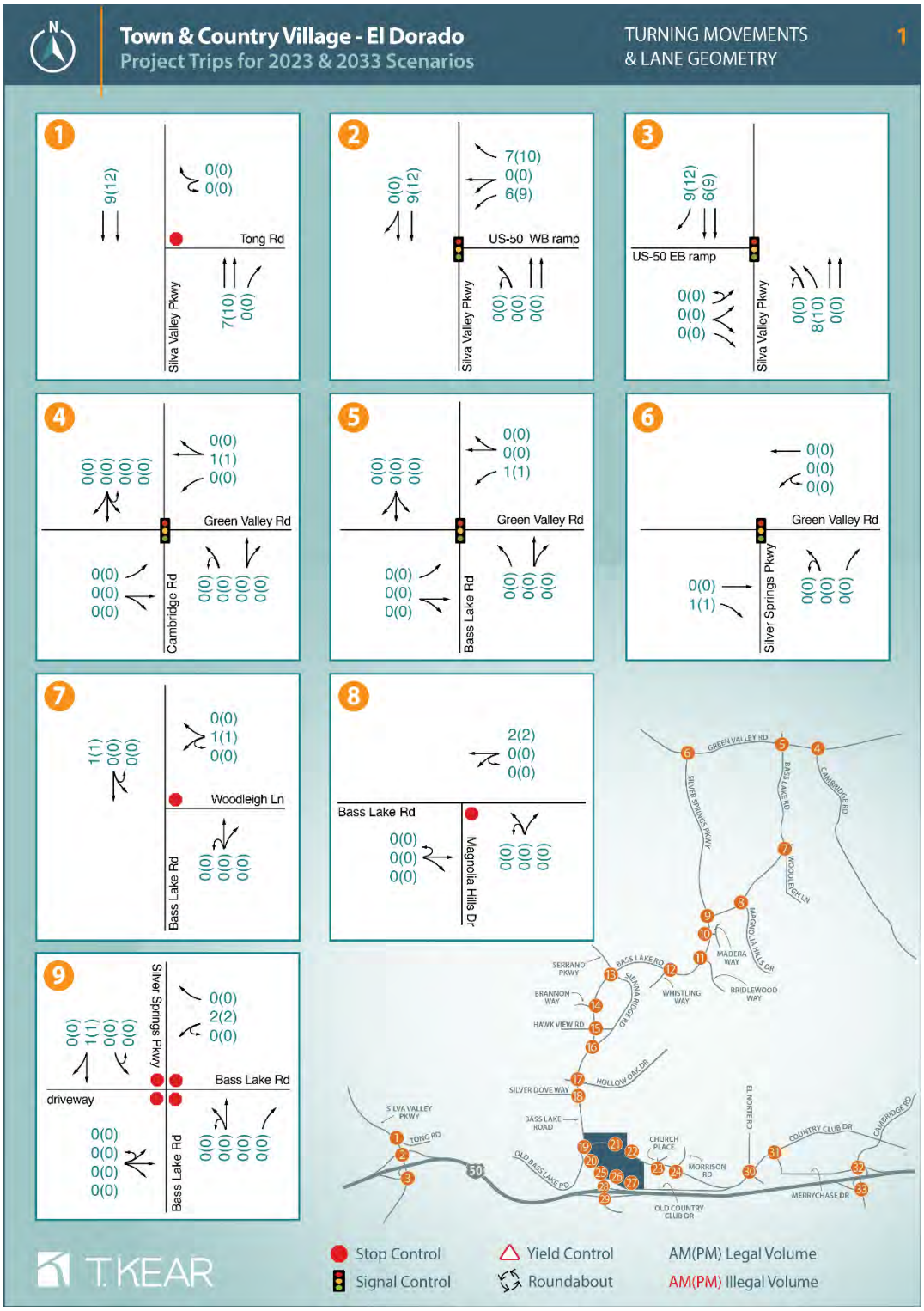

Figure 9. Project-Development area trip assignment

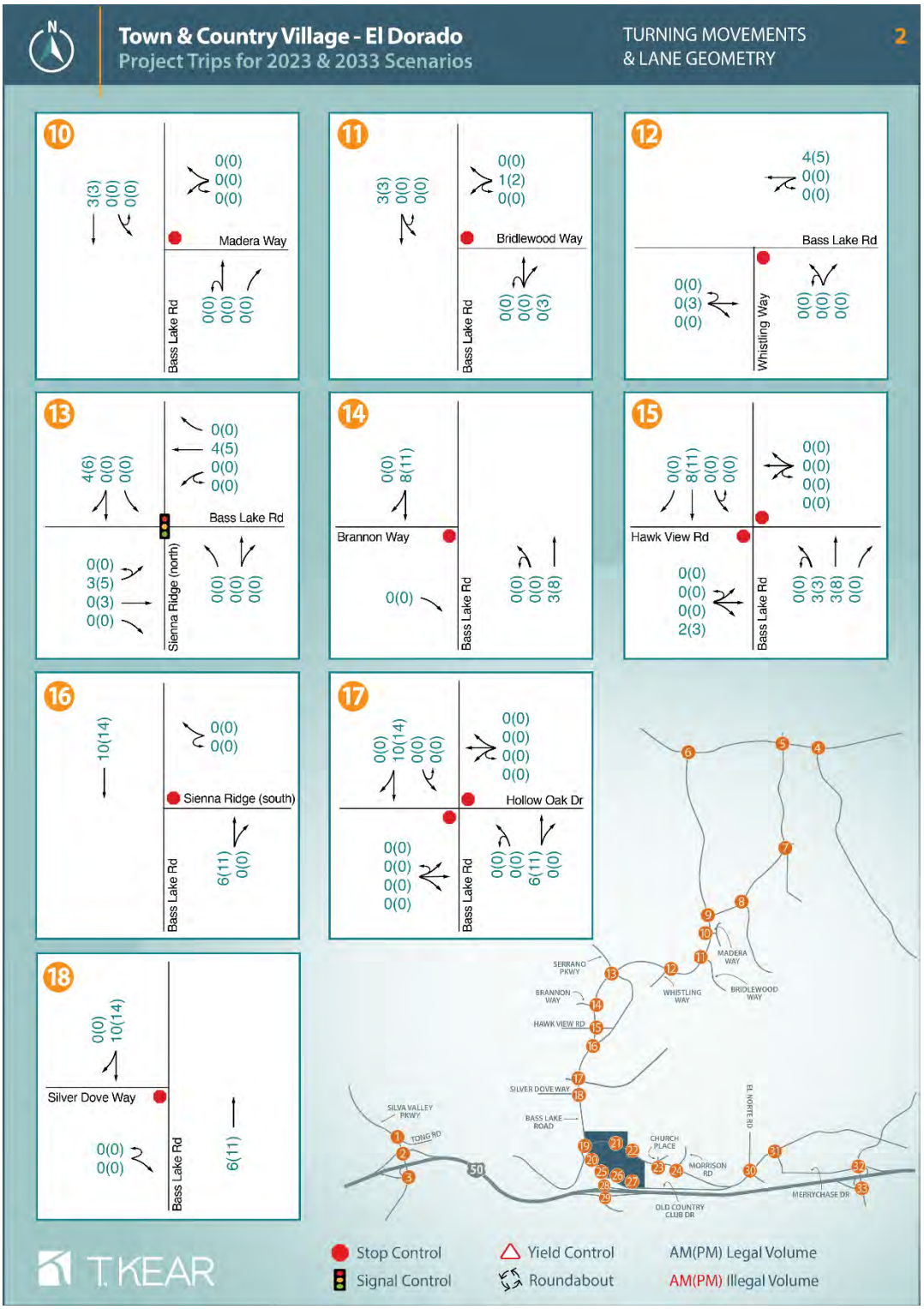

Figure 9. Project-Development area trip assignment (continued)

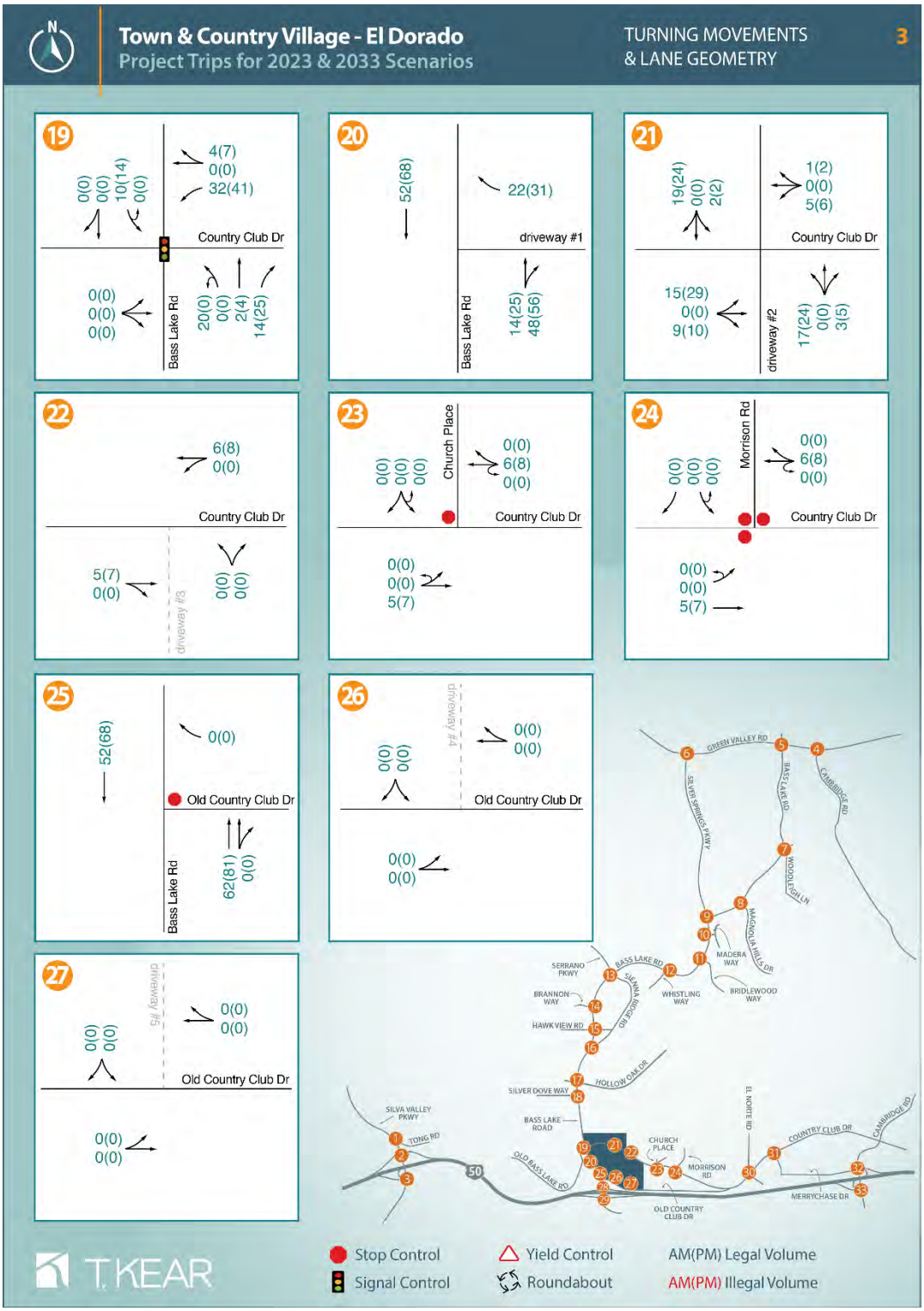

Figure 9. Project-Development area trip assignment (continued)

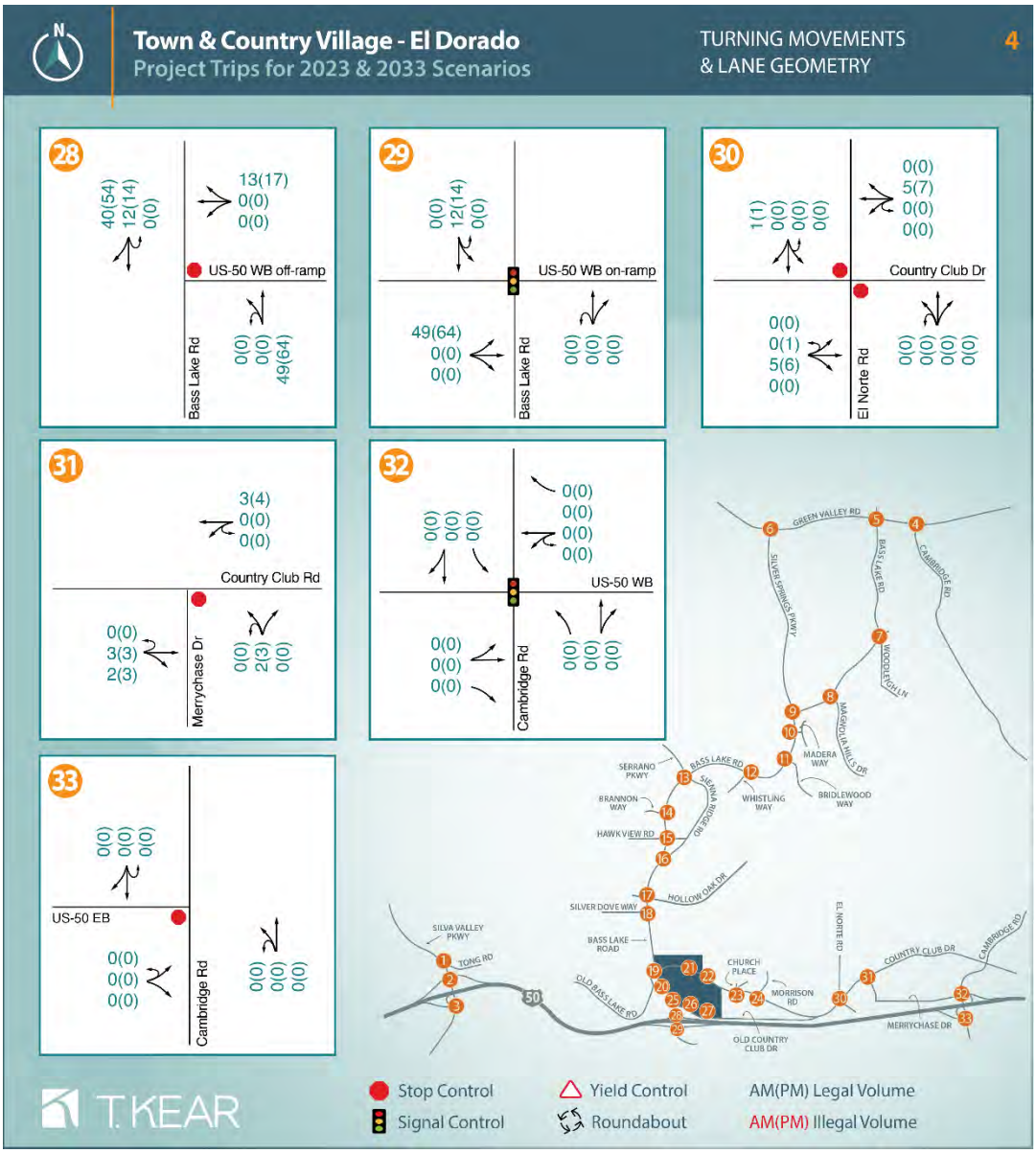

Figure 9. Project-Development area trip assignment (continued)

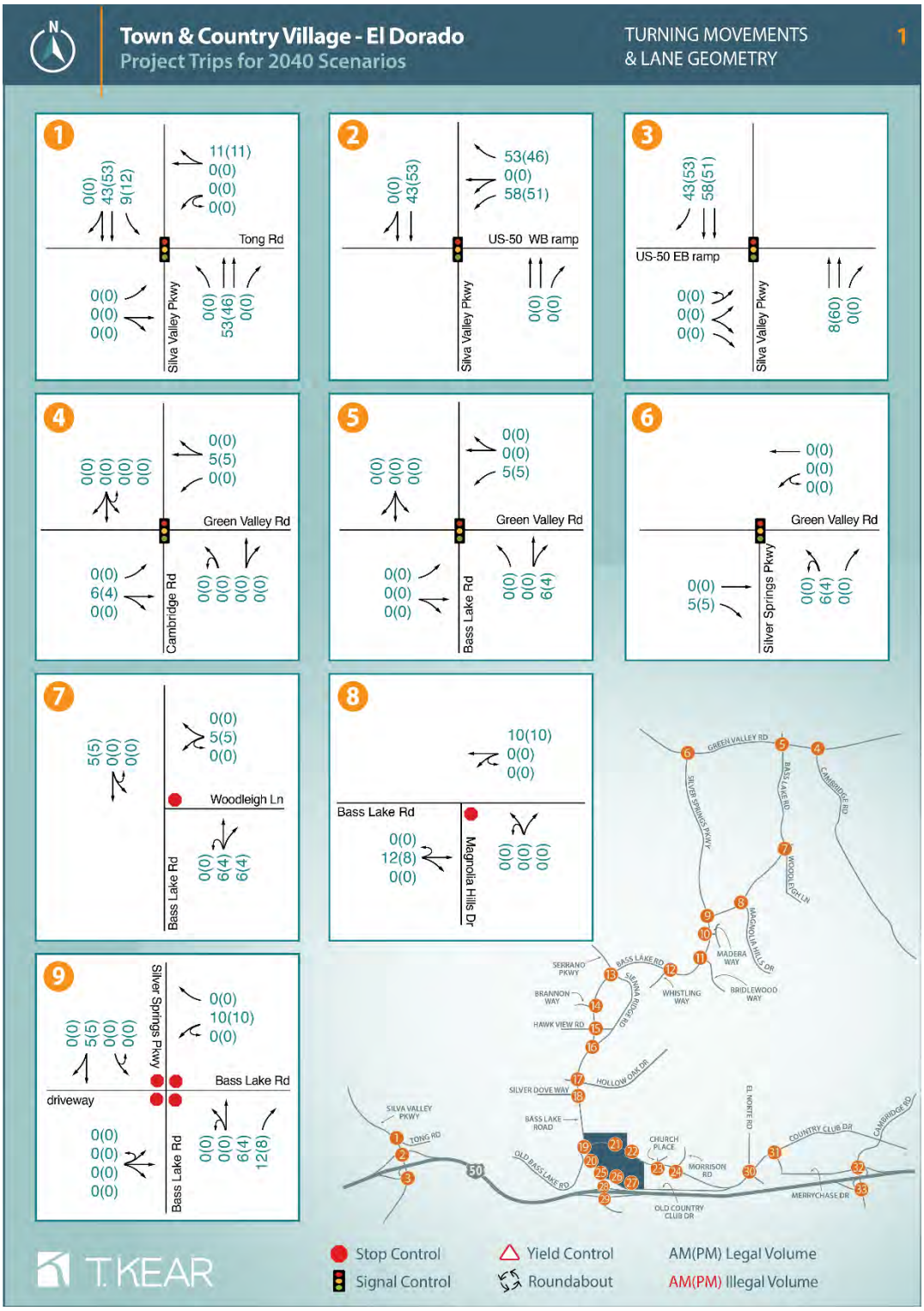

Figure 10. Project-Development and Program-Study area trip assignment

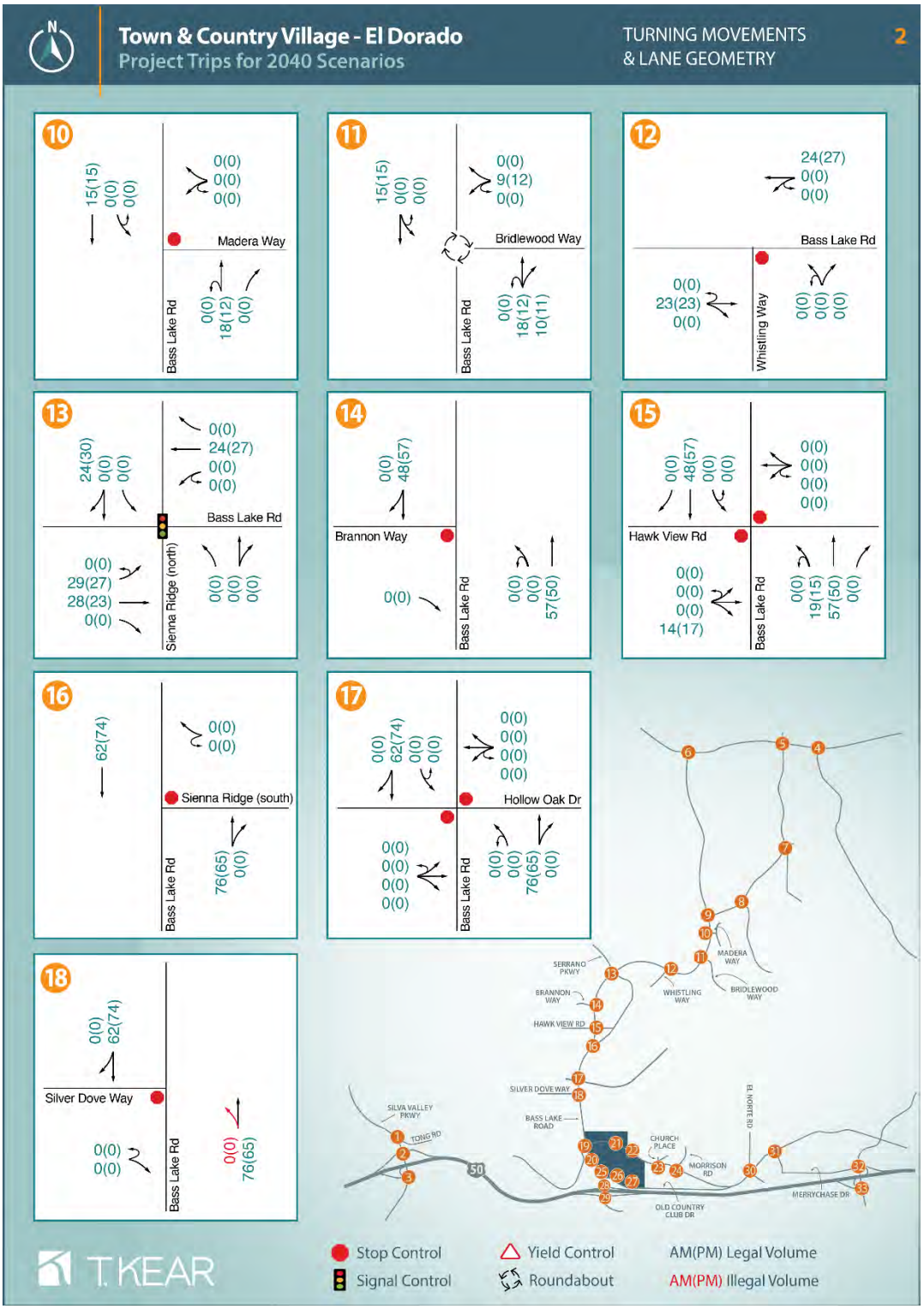

Figure 10. Project-Development and Program-Study area trip assignment (continued)

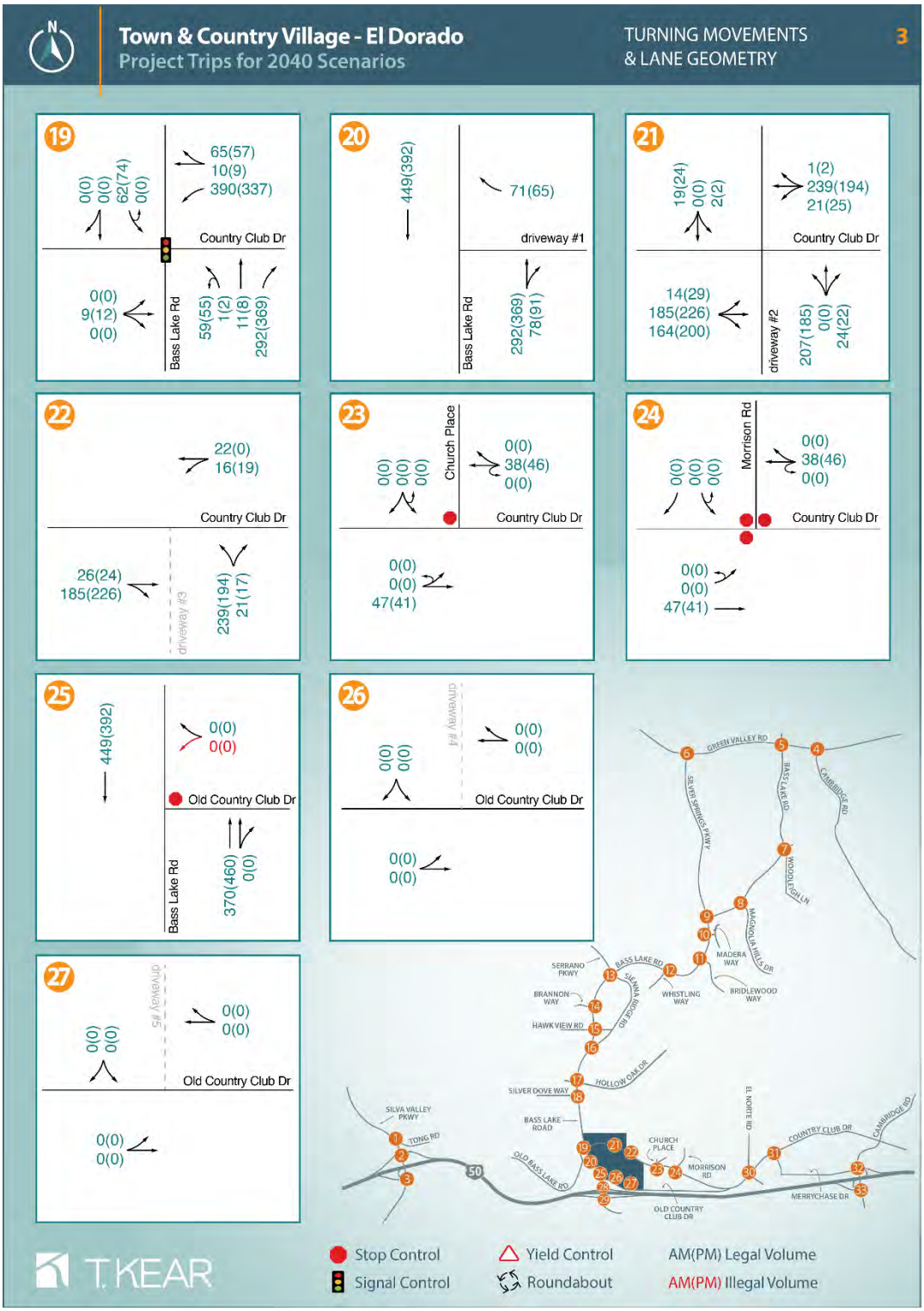

Figure 10. Project-Development and Program-Study area trip assignment (continued)

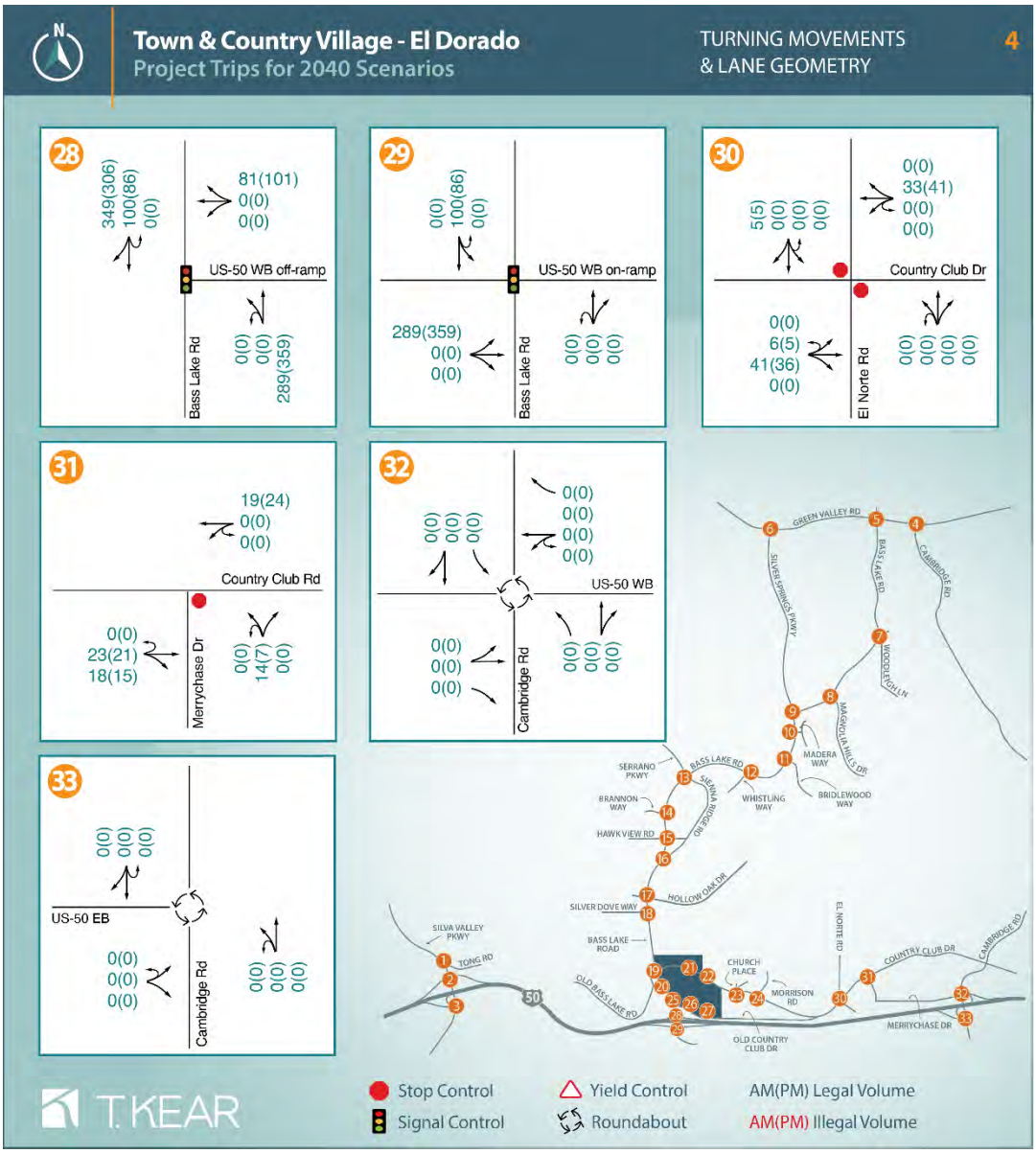

Figure 10. Project-Development and Program-Study area trip assignment (continued)

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6.0 EXISTING 2023 PLUS PROJECT-DEVELOPMENT AREA TRAFFIC CONDITIONS

6.1 Traffic Volumes

Peak hour traffic associated with the proposed Project (**Figure 9**, page 40) was added to the Existing 2023 condition scenario's traffic volumes, delay and level-of-service were determined at the study intersections and segments. **Figure 11** summarizes the turning movements and lane configurations for the Existing 2023 Plus Proposed Project scenario.

6.2 Level-of-Service

Table 14 through **Table 16** present a summary of level-of-service results for the study intersections and segments under Existing 2023 conditions with and without Project-Development area traffic. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in yellow highlight text in **Table 14** through **Table 16** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. Red highlighted text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies.

Three intersections are anticipated have level-of-service and/or queue spillback deficiencies.

Two locations that are deficient with or without the Project that are not worsened:

- #4 Cambridge & Green Valley AM and PM
- #32 Cambridge & US-50 WB AM and PM

One location where the Project is anticipated to cause new deficiencies:

- (19) Bass Lake & US-50 EB PM

Calculation sheets for delay and level-of-service are provided in **Appendix D**. The remainder of the study intersections, all of the US-50 study segments, and arterial study segments, are anticipated to operate acceptably.

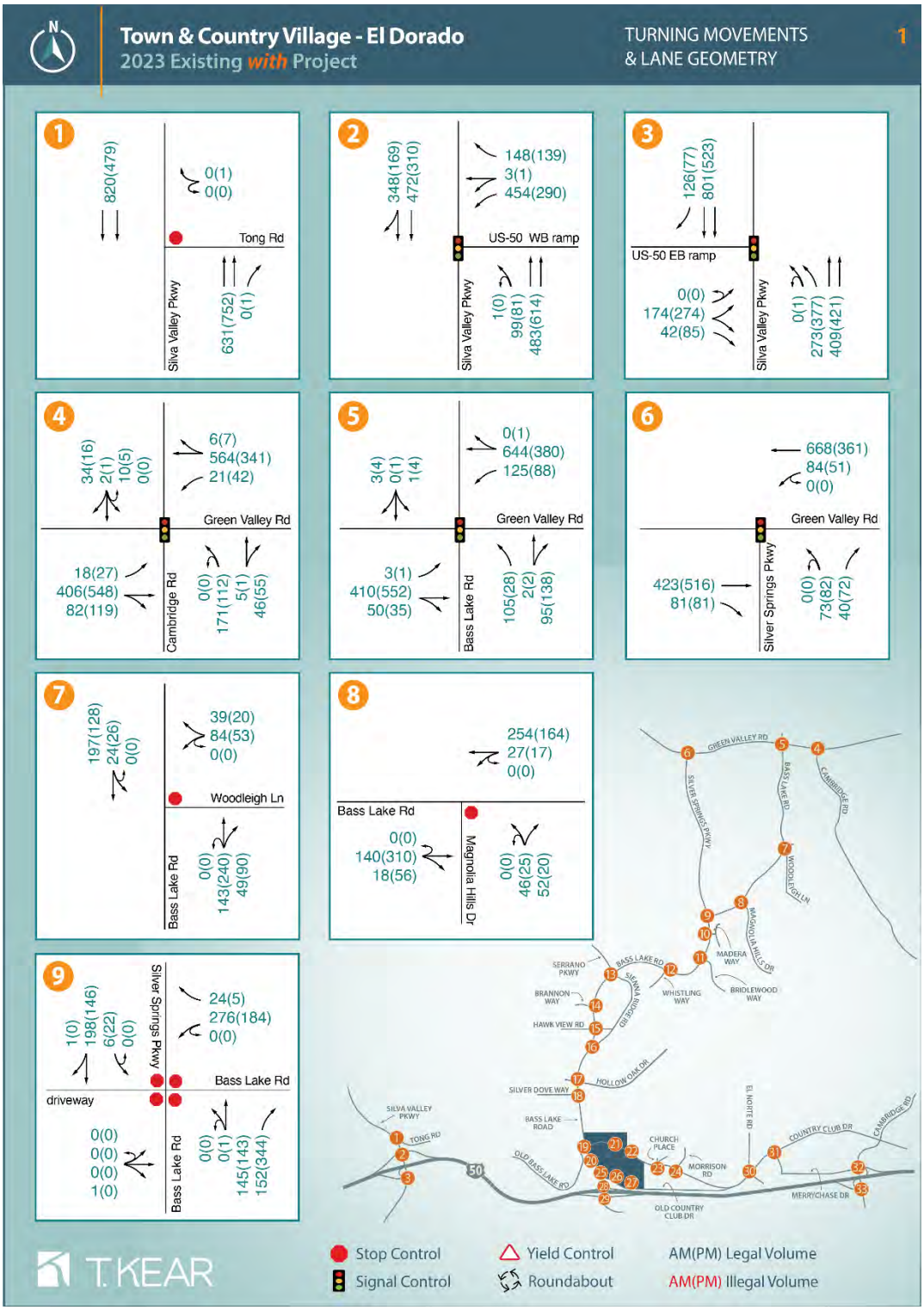

Figure 11. Existing 2023 plus Project-Development area lane geometry and turning movements

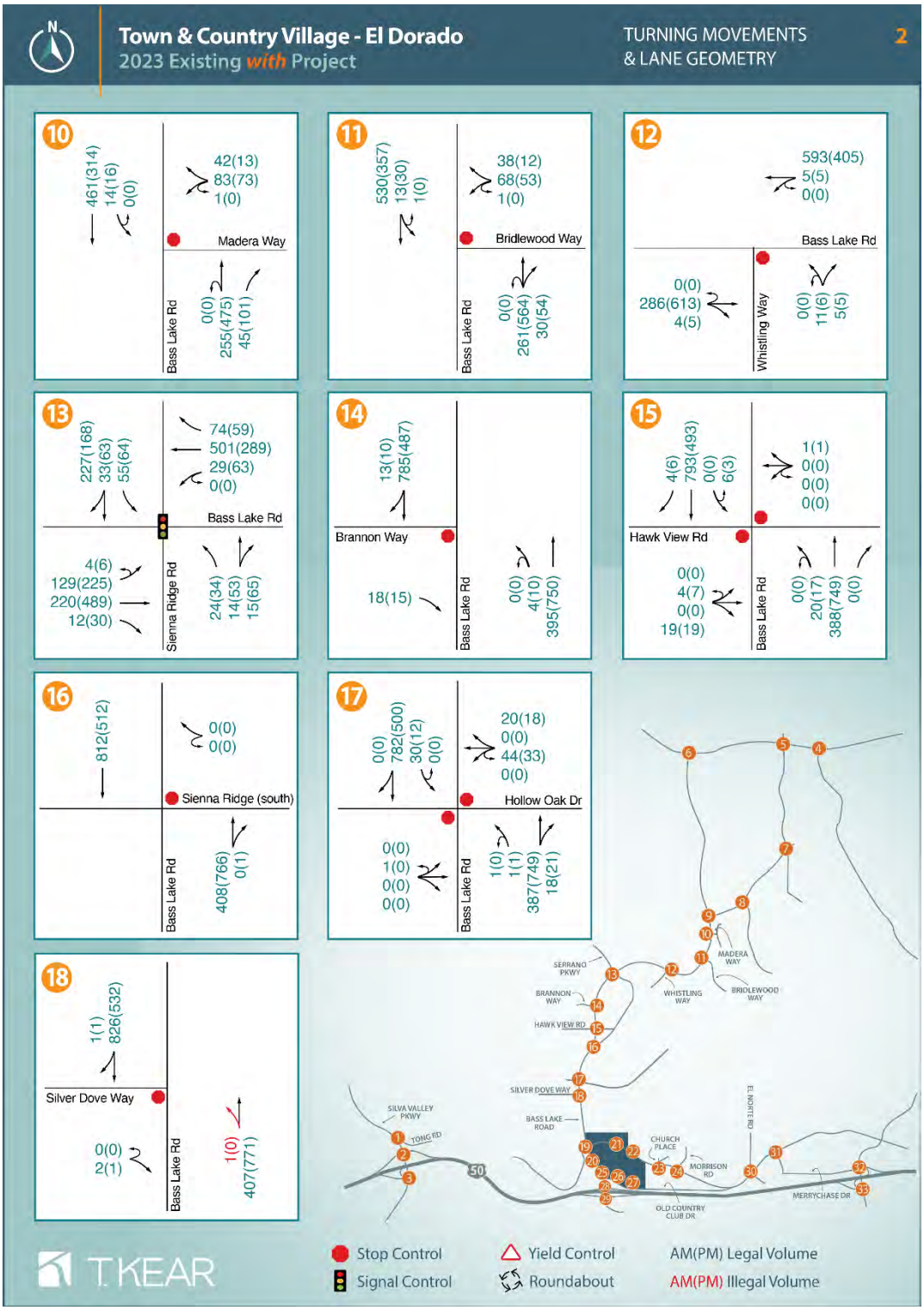

Figure 11. Existing 2023 plus Project-Development area lane geometry and turning movements (continued)

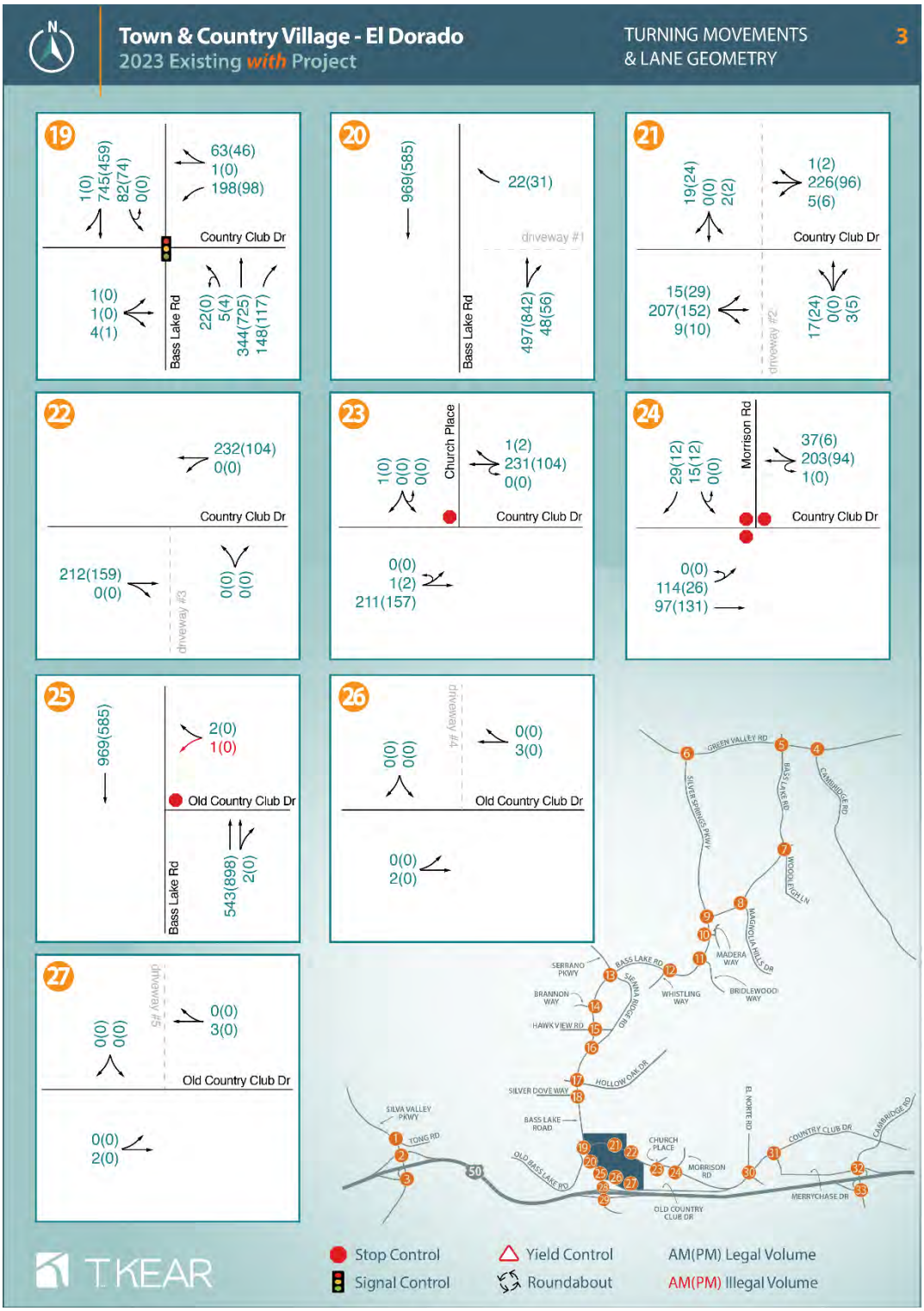

Figure 11. Existing 2023 plus Project-Development area lane geometry and turning movements (continued)

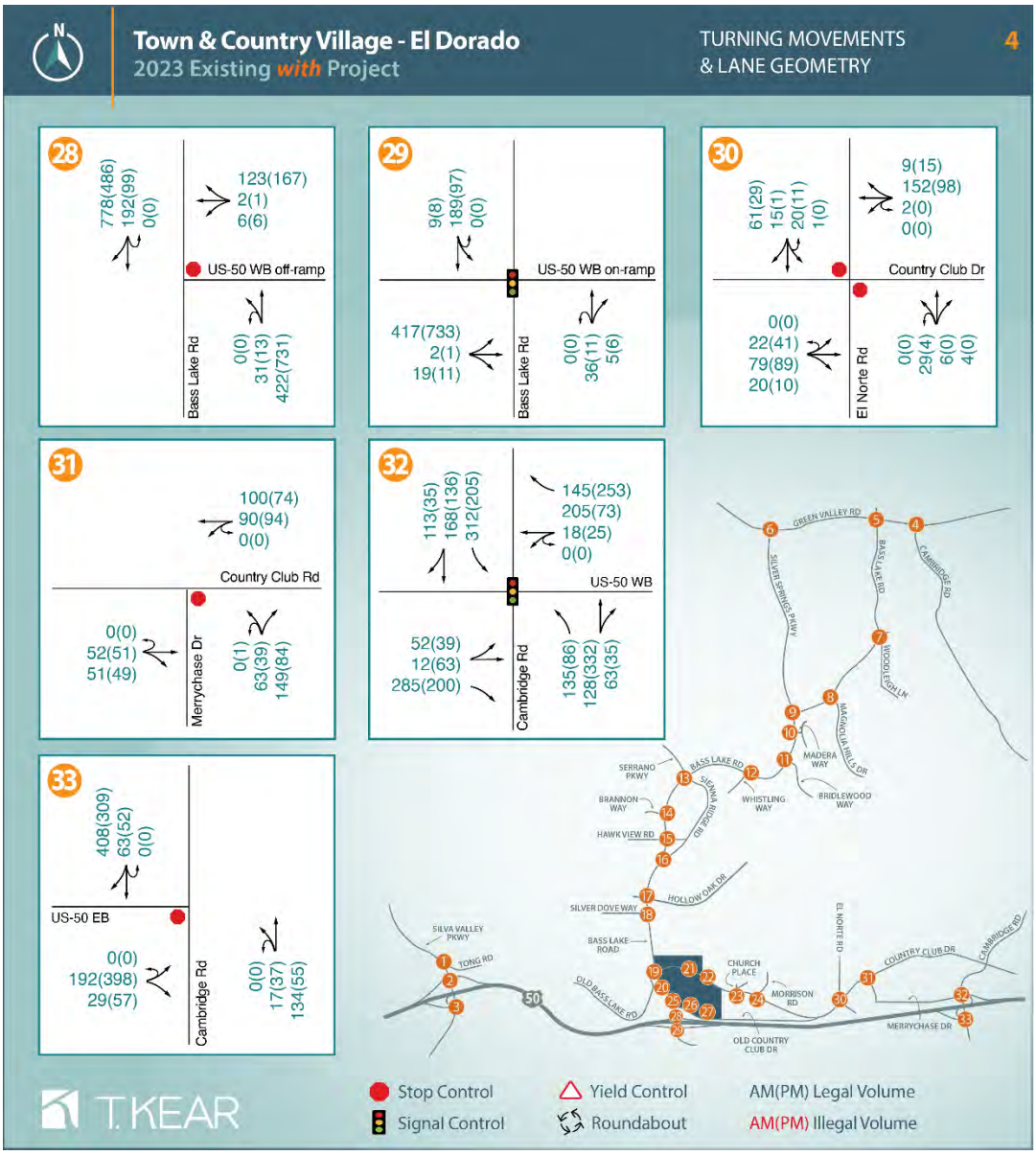

Figure 11. Existing 2023 plus Project-Development area lane geometry and turning movements (continued)

Table 14. Existing 2023 intersection delay, level-of-service, and queueing with and without the Project-Development area

ID	Location	Metric	No Project Pocket Length (Feet)	2023 AM No Project 95% Left Turn Queue (Feet)	2023 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 PM No Project 95% Left Turn Queue (Feet)	2023 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 AM Plus Project 95% Left Turn Queue (Feet)	2023 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 PM Plus Project 95% Left Turn Queue (Feet)	2023 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
1	Silva Valley & Tong	LOS (TWSC)			A / 0.0 (n/a)		B / 10.9 (WB)		A / 0.0 (n/a)		B / 11.0 (WB)
		EBL Queue	n/a	n/a		n/a		n/a		n/a	
		WBL Queue	n/a	n/a		n/a		n/a		n/a	
		NBL Queue	n/a	n/a		n/a		n/a		n/a	
		SBL Queue	n/a	n/a		n/a		n/a		n/a	
2	Silva Valley & US-50 WB	LOS (Signal)			B / 16.1		B / 11.4		B / 16.2		B / 11.5
		WBL Queue	1200*	211		88		215		92	
		NBL Queue	550	113		59		114		59	
3	US-50 EB & Silva Valley	LOS (Signal)			B / 13.8		B / 13.2		B / 13.9		B / 13.3
		EBL Queue	1200*	77		88		78		89	
		NBL Queue	385	105		107		110		112	
4	Cambridge & Green Valley	LOS (Signal)			B / 18.4		B / 14.6		B / 18.5		B / 14.6
		EBL Queue	90	39		49		39		49	
		WBL Queue	130	42		68		42		68	
		NBL Queue	120	195		126		195		126	
5	Bass Lake & Green Valley	LOS (Signal)			B / 15.9		B / 14.4		B / 15.9		B / 14.4
		EBL Queue	280	12		6		12		6	
		WBL Queue	440	139		107		140		108	
		NBL Queue	160	122		42		122		42	
6	Silver Springs & Green Valley	LOS (Signal)			A / 8.1		A / 8.9		A / 8.1		A / 8.9
		WBL Queue	420	126		60		126		60	
		NBL Queue	130	65		64		65		64	
7	Bass Lake & Woodleigh	LOS (TWSC)			B / 13.7 (WB)		B / 12.4 (WB)		B / 13.8 (WB)		B / 12.5 WB)
8	Magnolia & Bass Lake	LOS (TWSC)			B / 11.7 (NB)		B / 12.5 (NB)		B / 11.7 (NB)		B / 12.5 (NB)
		WBL Queue	50	2.5		0		15		0	
9	Bass Lake & Silver Springs	LOS (AWSC)			B / 14.3		B / 11.0		B / 14.4		B / 11.1 (NB)
		SBL Queue	75	0		2.5		0		2.5	
10	Bass Lake & Madera	LOS (TWSC)			C / 21.1 (WB)		C / 19.0 (WB)		C / 21.12(WB)		C / 19.1 (WB)
		NBL Queue	80	0		0		0		0	
		SBL Queue	150	0		0		0		2.5	
11	Bass Lake & Bridlewood	LOS (TWSC)			C / 20.5 (WB)		C / 22.7 (WB)		C / 20.7 (WB)		C / 23.1 (WB)
12	Whistling & Bass Lake	LOS (TWSC)			C / 16.8 (NB)		C / 17.7 (NB)		C / 16.8 (NB)		C / 17.8 (NB)
13	Bass Lake & Sienna Ridge (north)	LOS (Signal)			C / 26.7		C / 24.1		C / 27.4		C / 24.4
		EBL Queue	340	203		263		210		268	
		WBL Queue	380	67		98		67		98	
		NBL Queue	210	58		62		58		62	
		SBL Queue	155	105		99		107		99	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 14. Existing 2023 intersection delay, level-of-service, and queueing with and without the Project-Development area (continued)

ID	Location	Metric	No Project Pocket Length (Feet)	2023 AM No Project 95% Left Turn Queue (Feet)	2023 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 PM No Project 95% Left Turn Queue (Feet)	2023 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 AM Plus Project 95% Left Turn Queue (Feet)	2023 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 PM Plus Project 95% Left Turn Queue (Feet)	2023 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
14	Bass Lake & Brannon	LOS (TWSC)			C / 15.8 (EB)		B / 11.7 (EB)		C / 16.0 (EB)		B / 11.8 (EB)
		NBL Queue	335	0		0		0		0	
15	Bass Lake & Hawk View	LOS (TWSC)			C / 19.3 (EB)		C / 19.5 (EB)		C / 19.5 (EB)		C / 19.5 (EB)
		NBL Queue	290	2.5		0		2.5		2.5	
		SBL Queue	250	0		0		0		0	
16	Bass Lake & Sienna Ridge (south)	LOS (TWSC)			A / 0 (n/a)		A / 0 (n/a)		A / 0 (n/a)		A / 0 (n/a)
17	Bass Lake & Hollow Oak	LOS (TWSC)			E / 37.8 (WB)		E / 35.4 (WB)		E / 39.2 (WB)		E / 37.1 (WB)
		NBL Queue	300	0		0		0		0	
		SBL Queue	300	2.5		0		2.5		0	
18	Bass Lake & Silver Dove	LOS (TWSC)			C / 15.6 (EB)		B / 11.7 (EB)		C / 15.8 (EB)		B / 11.8 (EB)
19	Bass Lake & Country Club	LOS (Signal)			C / 30.6		B / 19.7		C / 34.6		C / 21.3
		WBL Queue	300	224		86		267		136	
		NBL Queue	300	25		17		63		68	
		SBL Queue	300	128		111		142		131	
20	Bass Lake & Drwy #1	LOS (TWSC)		Does not Exist		Does not Exist			B / 12.0 (WB)		C / 17.1 (WB)
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist			B /12.9 (NB)		B /11.2 (NB)
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
23	Country Club & Church	LOS (TWSC)			B / 10.6 (SB)		A / 7.5 (EB)		B / 10.7 (SB)		A / 7.5 (EB)
24	Country Club & Morrison	LOS (AWSC)			B / 12.7		A / 8.2		B / 13.0		A / 8.3
		EBL Queue	275	37.5		2.5		37.5		2.5	
		SBL Queue	240	5		2.5		5		2.5	
25	Bass Lake & Old Country Club	LOS (TWSC)			B / 10.2 (WB)		A / 0 (n/a)		B / 10.5 (WB)		A / 0 (n/a)
26	Old Country Club & Drwy #4	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
27	Old Country Club & Drwy #5	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
28	Bass Lake & US-50 WB	LOS (TWSC)			B / 14.8 (WB)		C / 15.9 (WB)		C / 15.9 (WB)		C / 17.2 (WB)
		WBL Queue	850*	2.5		2.5		2.5		2.5	
		NBL Queue	n/a	2.5		0		2.5		0	
29	Bass Lake & US-50 EB	LOS (Signal)			B / 16.0		B / 12.0		B / 16.9		B / 13.6
		EBL Queue	480*	313		369		317		486	
		SBL Queue	n/a	182		87		190		100	
30	Country Club & El Norte	LOS (TWSC)			B / 13.7 (NB)		B / 11.1 (NB)		B / 13.9 (NB)		B / 11.2 (NB)
31	Merrychase & Country Club	LOS (TWSC)			C / 16.5 (NB)		B / 10.5 (NB)		C / 17.1 (NB)		B / 10.7 (NB)
32	Cambridge & US-50 WB	LOS (Signal)			D / 41.5		C / 27.8		D / 41.5		C / 27.8
		WBL Queue	1000*	307		129		307		129	
		NBL Queue	150	210		133		210		133	
		SBL Queue	100	417		265		417		265	
33	Cambridge & US-50 EB	LOS (TWSC)			B / 14.3 (EB)		C / 19.1 (EB)		B / 14.3 (EB)		C / 19.1 (EB)
		EBL Queue	1250*	55		62.5		55		62.5	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 15. Existing 2023 freeway facility density and level-of-service with and without the Project-Development area

ID	Segment	Type	2023 No Project AM (Density/LOS)	2023 No Project PM (Density/LOS)	2023 with Project AM (Density/LOS)	2023 with Project PM (Density/LOS)
Westbound US-50						
1	East of Cambridge Rd	Basic	17.6 / B	16.1 / B	17.7 / B	16.2 / B
2	Cambridge Rd Offramp	Diverge	20.9 / C	19.2 / B	21.1 / C	19.3 / B
3	Cambridge Rd between ramps	Basic	14.9 / B	13.6 / B	15.0 / B	13.7 / B
4	Cambridge Rd Onramp	Merge	21.5 / C	19.4 / B	21.6 / C	19.6 / B
5	Cambridge Rd to Bass Lake Rd	Basic	17.7 / B	15.8 / B	17.8 / B	15.9 / B
6	Bass Lake Rd Offramp	Diverge	21.1 / C	18.7 / B	21.2 / C	18.9 / B
7	Bass Lake Rd between ramps	Basic	16.9 / B	14.6 / B	16.9 / B	14.6 / B
8	Bass Lake Rd Onramp	Merge	26.5 / C	21.7 / C	26.8 / C	22.1 / C
9	Bass Lake Rd to Silva Valley Pkwy	Basic	23.0 / C	17.9 / B	23.4 / C	18.3 / C
10	Silva Valley Pkwy Offramp	Diverge	26.8 / C	21.3 / C	27.2 / C	21.8 / C
11	Silva Valley Pkwy between ramps	Basic	18.1 / C	14.8 / B	18.3 / C	15.0 / B
Eastbound US-50						
12	Silva Valley Pkwy between ramps	Basic	7.9 / A	12.5 / B	8.1 / A	12.7 / B
13	Silva Valley Pkwy Loop Onramp	Merge	13.4 / B	18.5 / B	13.7 / B	18.9 / B
14	Silva Valley Pkwy Slip Onramp	Merge	8.9 / A	14.0 / B	9.1 / A	14.3 / B
15	Silva Valley Pkwy to Bass Lake Rd	Basic	9.7 / A	14.5 / B	9.9 / A	14.8 / B
16	Bass Lake Rd Offramp	Diverge	13.7 / B	19.9 / B	14.1 / B	20.4 / C
17	Bass Lake Rd between ramps	Basic	7.9 / A	11.3 / B	7.9 / A	11.3 / B
18	Bass Lake Rd Onramp	Merge	11.9 / B	14.8 / B	12 / B	14.9 / B
19	Bass Lake Rd to Cambridge Rd	Basic	8.8 / A	11.8 / B	8.8 / A	11.8 / B
20	Cambridge Rd Offramp	Diverge	12.2 / B	16.4 / B	12.3 / B	16.4 / B
21	Cambridge Rd between ramps	Basic	7.7 / A	9.6 / A	7.8 / A	9.7 / A

Density in units of passenger cars per mile per lane.

Table 16. Existing 2023 arterial level-of-service check with and without the Project-Development area

Arterial Segment	Description	2023 AM No Project (Volume and level-of-Service)	2023 PM No Project (Volume and level-of-Service)	2023 AM with Project-Development Area (Volume and level-of-Service)	2023 PM with Project-Development Area (Volume and level-of-Service)
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1220 (Level-of-Service D)	1279 (Level-of-Service D)	1236 (Level-of-Service D)	1304 (Level-of-Service D)
ii. Bass Lake Rd (between US-50 Country Club Dr)	No Project: 2-lane arterial (threshold 1540) With Project: 4-lane arterial (threshold 3130)	1398 (Level-of-Service D)	1334 (Level-of-Service D)	1466 (Level-of-Service D)	1404 (Level-of-Service D)
iii. Country Club Dr (between Bass Lake Rd and Morrison Rd)	2-lane arterial (threshold 1650)	431 (Level-of-Service C)	248 (Level-of-Service C)	491 (Level-of-Service C)	335 (Level-of-Service C)

6.3 Existing 2023 Plus Project General Plan Deficiency Findings

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "deficiency", and improvements to address those deficiencies are referred to as "abatements". Throughout this document, Intersection deficiencies and abatements are numbered using the intersection number (1-33) and a year code (2023 = "A", 2033 = "B", 2040 = "C", and 2040 Super-Cumulative = "D"). Similarly, segment level deficiencies and abatement measures are numbered using the segment number (i through iii) for arterial segments or (US-50(1) US-50(21)) for freeway segments, and a year code (A, B, C or D).

All deficiencies and abatements described below include the deficiency number/abatement number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing.

There is one intersection where the Project-Development area traffic is anticipated to create new or worsen existing deficiencies under existing 2023 conditions.

Deficiency/Abatement 29A: Bass Lake Rd interchange

Deficiency: The 95th percentile left turn queue from the eastbound offramp at intersection 29 (Bass Lake Rd/US-50 eastbound offramp) is anticipated to grow from 369-feet without the Project-Development area traffic to 486-feet with Project-Development area traffic during the PM peak hour. The offramp has an approximate 850-foot length. This places the back of the queue too close to the freeway mainline.

Abatement: Improvements affect both intersections at the Bass Lake Rd interchange, and the segment of Bass Lake Rd underneath the freeway overpass:

- Widen the eastbound offramp (intersection 29) to include a 350-foot left turn pocket and a 350-foot through-right turn pocket (for a total of three lanes).
- Two northbound receiving lanes are required on Bass Lake Rd. This requires widening underneath the overpass to accommodate a total of two northbound lanes and one southbound lane underneath the freeway. While this can be accommodated between the existing bridge pillars, sidewalks need to be constructed outside of the existing pillars along with retaining walls to facilitate the required width.
- Signalize the westbound ramp intersection (note that the peak-hour signal warrant is met). No changes are required to the westbound and southbound approach geometry. The northbound approach requires widening to two-lanes, striped as a through-left and a through lane. Split phasing should be used for the northbound approach to allow for safe northbound left turns.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy

deficiencies at this location. **Table 17** presents the segment level-of-service results with this abatement.

Project responsibility: Ten-year CIP project 36104005 includes ramp widenings, road widening and signals, as well as planning studies, to determine the interchanges ultimate configuration. The proposed abatement is a subset of the planned improvements and under General Plan policy TC-Xf requires the County to either condition the Project to construct the required abatements or, include required abatements in the CIP (10-year SIP for residential projects and/or 20-year CIP for all other development projects). The Project's responsibility for these improvements may be met through payment of required fees.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 28B, 29B, 28C, 29C, 28D, and 29D.

Table 17. Existing 2023 intersection delay, level-of-service, and queueing with and without the abated Project-Development area traffic

ID	Location	Metric	No Project Pocket Length (Feet)	2023 AM No Project 95% Left Turn Queue (Feet)	2023 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 PM No Project 95% Left Turn Queue (Feet)	2023 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 AM Plus Project 95% Left Turn Queue (Feet)	2023 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2023 PM Plus Project 95% Left Turn Queue (Feet)	2023 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
28	Bass Lake & US-50 WB	LOS (TWSC)			B / 14.8 (WB)		C / 15.9 (WB)		C / 15.9 (WB)		C / 17.2 (WB)
		WBL Queue	850*	2.5		2.5		2.5		2.5	
		NBL Queue	n/a	2.5		0		2.5		0	
28	Bass Lake & US-50 WB (Abatement: 2nd NB thru lane and optimize/coordinate timing for both ramp intersections)	LOS (Signal)							B / 16.3		B / 13.0
		WBL Queue	850*					50		60	
		NBL Queue	n/a					50		250	
29	Bass Lake & US-50 EB	LOS (Signal)			B / 16.0		B / 12.0		B / 16.9		B / 13.6
		EBL Queue	480*	313		369		317		486	
		SBL Queue	n/a	182		87		190		100	
29	Bass Lake & US-50 EB (Abatement: Widen EB offramp and optimize/coordinate timing for both ramp intersections)	LOS (Signal)							D / 41.0		B / 10.4
		EBL Queue	350					157		148	
		SBL Queue	n/a					19		112	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

7.0 EPAP 2033 CONDITIONS

The EPAP 2033 conditions analysis started with lane configurations from Existing 2023 conditions, turning movements derived from existing traffic counts, growth factors from the Travel Demand Model, and the NCHRP 255 adjustment procedure[18]. One Capital Improvement Program (CIP) project that affects study intersection geometry was accounted for:

- CIP Project 36104005: "US-50 / Bass Lake Road Interchange Improvements" is anticipated to signalize intersect 28 (Bass Lake Rd/US-50 westbound ramps).

Traffic volumes from 2033 without the Project were used as a floor. **Figure 12** summarizes the turning movements and lane configurations for the EPAP 2033 conditions scenario.

Delay and level-of-service is presented in **Table 18** through **Table 20**. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in yellow highlight denote deficient traffic operations.

The results indicate that one study segment (Bass Lake Rd between US-50 and Country Club Dr) and eight study intersections operate deficiently with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths.

<u>One Arterial segments with a deficiency:</u>

- (ii) Bass Lake Rd (between US-50 Country Club Dr) AM and PM

<u>Eight Study intersections with deficiencies:</u>

- (4) Cambridge & Green Valley AM and PM
- (13) Bass Lake & Sienna Ridge (north) PM
- (15) Bass Lake & Hawk View AM and PM
- (17) Bass Lake & Hollow Oak AM and PM
- (19) Bass Lake & Country Club AM
- (28) Bass Lake & US-50 WB AM and PM
- (29) Bass Lake & US-50 EB AM and PM
- (32) Cambridge & US-50 WB AM and PM

Calculation sheets for delay and level-of-service are provided in **Appendix D**. The remainder of the study intersections, all of the US-50 study segments, and arterial study segments, were found to operate acceptably.

[18] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.

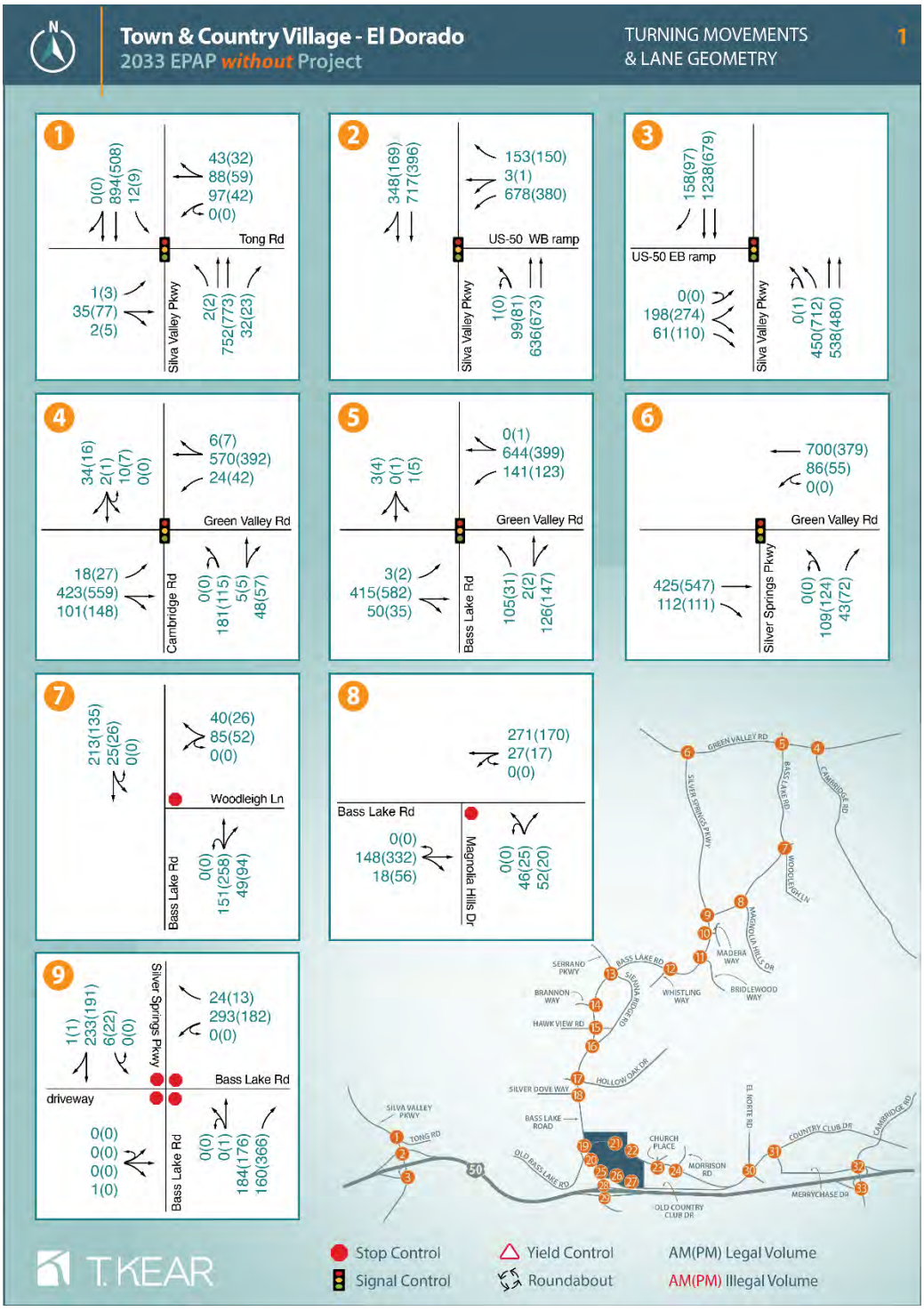

Figure 12. EPAP 2033 conditions lane geometry and turning movements

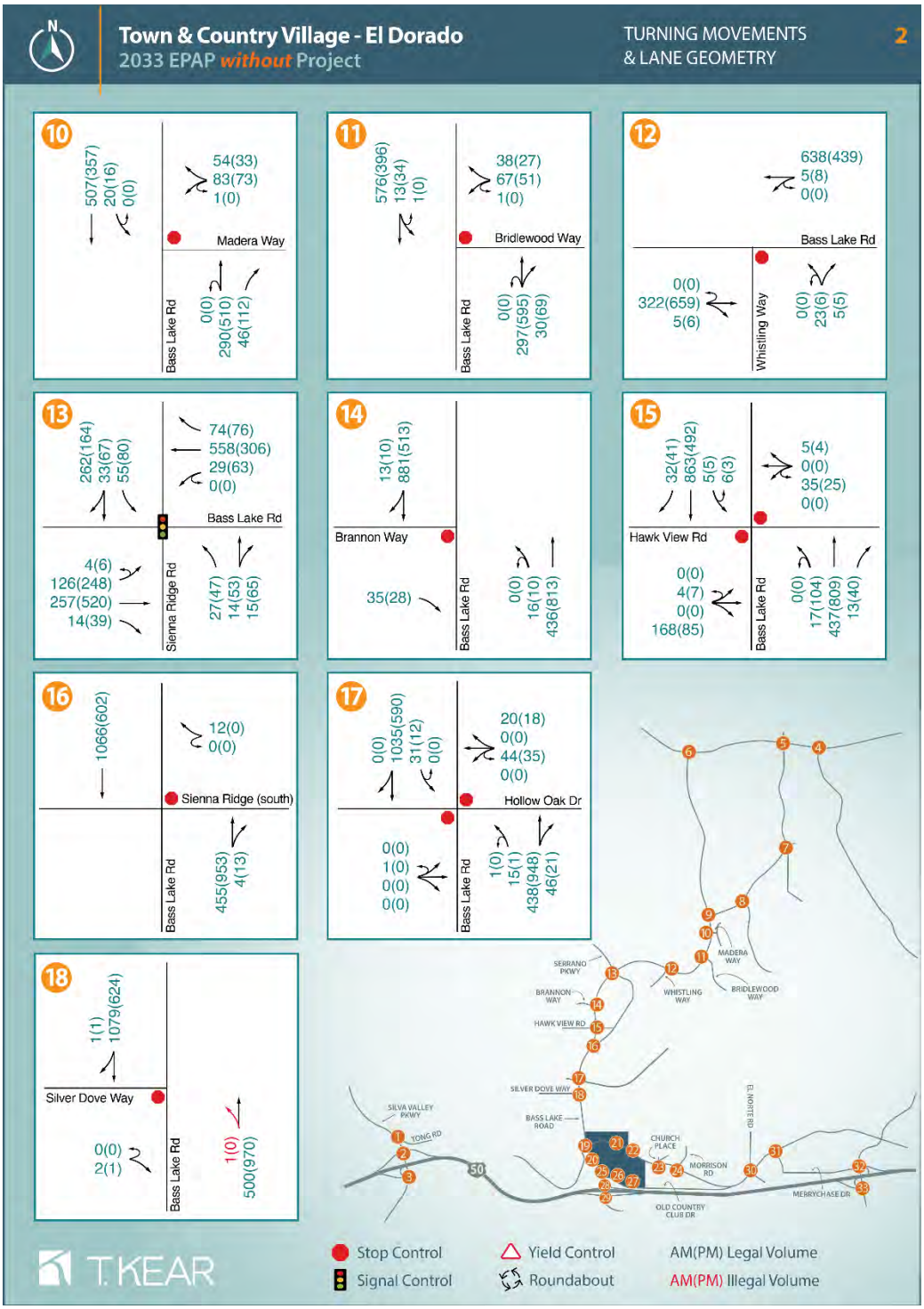

Figure 12. EPAP 2033 conditions lane geometry and turning movements (continued)

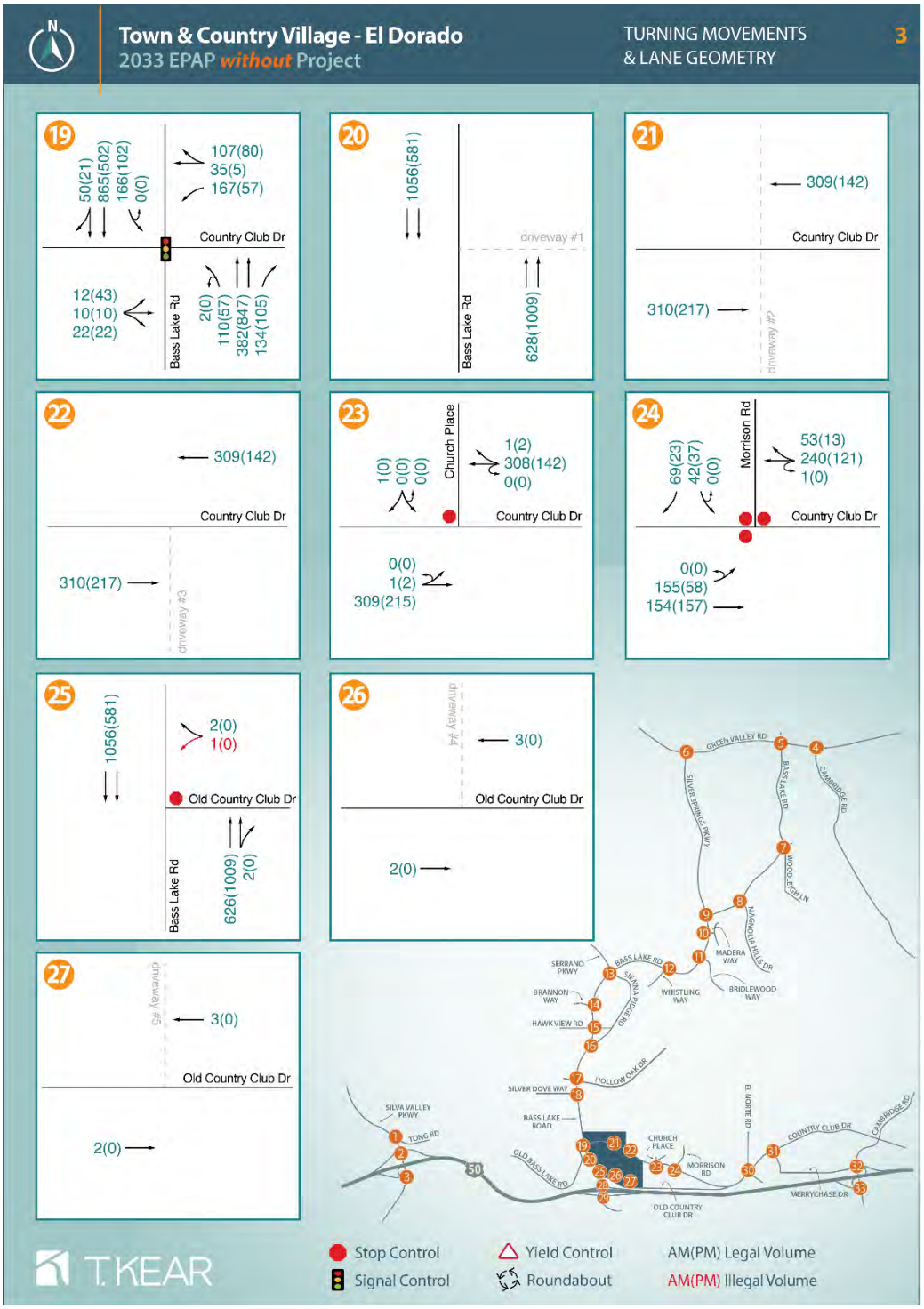

Figure 12. EPAP 2033 conditions lane geometry and turning movements (continued)

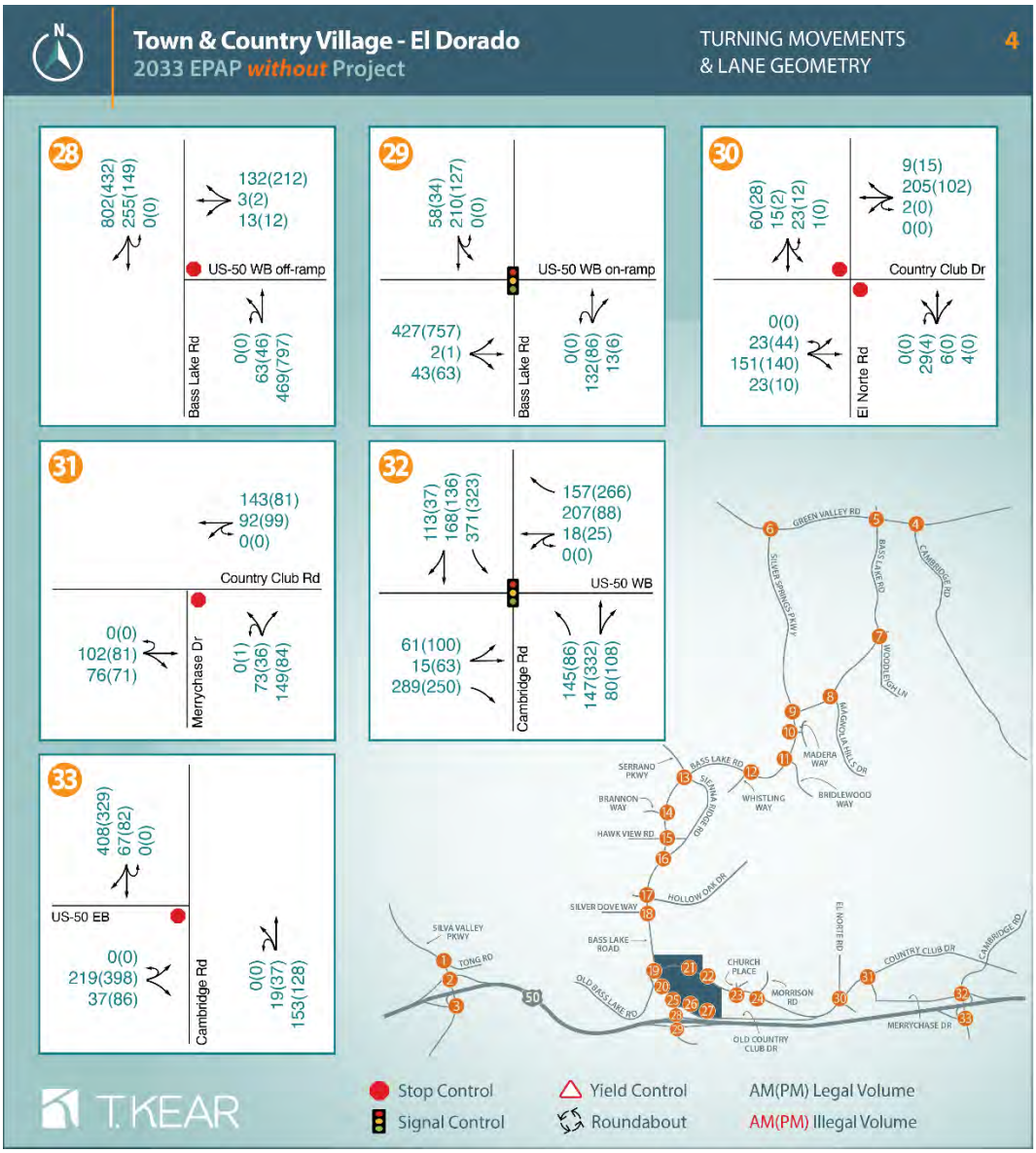

Figure 12. EPAP 2033 conditions lane geometry and turning movements (continued)

Table 18. EPAP 2033 intersection delay, level-of-service, and queueing without the Project

ID	Location	Metric	No Project Pocket Length (Feet)	2033 AM No Project 95% Left Turn Queue (Feet)	2033 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 PM No Project 95% Left Turn Queue (Feet)	2033 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
1	Silva Valley & Tong	LOS (Signal)			B / 16.2		B / 12.3
		EBL Queue	200	5		10	
		WBL Queue	200	116		58	
		NBL Queue	200	11		11	
		SBL Queue	200	29		25	
2	Silva Valley & US-50 WB	LOS (Signal)			C / 20.0		B / 11.9
		WBL Queue	1200*	370		128	
		NBL Queue	550	138		69	
3	US-50 EB & Silva Valley	LOS (Signal)			C / 21.1		B / 16.7
		EBL Queue	1200*	103		131	
		NBL Queue	385	194		275	
4	Cambridge & Green Valley	LOS (Signal)			B / 19.3		B / 15.1
		EBL Queue	90	39		49	
		WBL Queue	130	46		69	
		NBL Queue	120	205		129	
5	Bass Lake & Green Valley	LOS (Signal)			B / 17.4		B / 16.1
		EBL Queue	280	12		9	
		WBL Queue	440	156		142	
		NBL Queue	160	124		47	
6	Silver Springs & Green Valley	LOS (Signal)			A / 9.0		A / 9.6
		WBL Queue	420	136		69	
		NBL Queue	130	95		95	
7	Bass Lake & Woodleigh	LOS (TWSC)			B / 14.3 (WB)		B / 12.7 (WB)
8	Magnolia & Bass Lake	LOS (TWSC)			B / 12.0 (NB)		B / 12.8 (NB)
		WBL Queue	50	2.5		2.5	
9	Bass Lake & Silver Springs	LOS (AWSC)			B / 16.5		B / 11.8
		SBL Queue	75	0		2.5	
10	Bass Lake & Madera	LOS (TWSC)			D / 25.6 (WB)		C / 20.8 (WB)
		NBL Queue	80	0		0	
		SBL Queue	150	2.5		2.5	
11	Bass Lake & Bridlewood	LOS (TWSC)			C / 23.7 (WB)		C / 25.0 (WB)
12	Whistling & Bass Lake	LOS (TWSC)			C / 20.9 (NB)		C / 19.4 (NB)
13	Bass Lake & Sienna Ridge (north)	LOS (Signal)			C / 33.6		C / 26.0
		EBL Queue	340	206		337	
		WBL Queue	380	68		102	
		NBL Queue	210	65		82	
		SBL Queue	155	107		122	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 18. EPAP 2033 intersection delay, level-of-service, and queueing without the Project (continued)

ID	Location	Metric	No Project Pocket Length (Feet)	2033 AM No Project 95% Left Turn Queue (Feet)	2033 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 PM No Project 95% Left Turn Queue (Feet)	2033 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
14	Bass Lake & Brannon	LOS (TWSC)			C / 18.6 (EB)		B / 12.2 (EB)
		NBL Queue	335	2.5		0	
15	Bass Lake & Hawk View	LOS (TWSC)			F / 195.1 (WB)		F / 96.9 (WB)
		NBL Queue	290	2.5		10	
		SBL Queue	250	0		0	
16	Bass Lake & Sienna Ridge (south)	LOS (TWSC)			B / 11.6 (WB)		A / 0 (n/a)
17	Bass Lake & Hollow Oak	LOS (TWSC)			F / 99.6 (WB)		F / 75.1 (WB)
		NBL Queue	300	0		0	
		SBL Queue	300	2.5		2.5	
18	Bass Lake & Silver Dove	LOS (TWSC)			C / 20.5 (EB)		B / 12.7 (EB)
19	Bass Lake & Country Club	LOS (Signal)			C / 31.4		C / 22.1
		WBL Queue	300	225		87	
		NBL Queue	300	189		107	
		SBL Queue	300	334		171	
20	Bass Lake & Drwy #1	LOS (TWSC)		Does not Exist		Does not Exist	
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist	
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist	
23	Country Club & Church	LOS (TWSC)			B / 11.8 (SB)		A / 7.6 (EB)
24	Country Club & Morrison	LOS (AWSC)			C / 22.9		A / 8.9
		EBL Queue	275	75		7.5	
		SBL Queue	240	15		5	
25	Bass Lake & Old Country Club	LOS (TWSC)			B / 10.9 (WB)		A / 0 (n/a)
26	Old Country Club & Drwy #4	LOS (TWSC)		Does not Exist		Does not Exist	
27	Old Country Club & Drwy #5	LOS (TWSC)		Does not Exist		Does not Exist	
28	Bass Lake & US-50 WB	LOS (Signal)			B / 15.0		B / 13.7
		WBL Queue	850*	70		74	
		NBL Queue	n/a	555		749	
29	Bass Lake & US-50 EB	LOS (Signal)			C / 21.8		C / 23.0
		EBL Queue	480*	488		747	
		SBL Queue	n/a	289		152	
30	Country Club & El Norte	LOS (TWSC)			B / 17.7 (NB)		B / 12.0 (NB)
31	Merrychase & Country Club	LOS (TWSC)			D / 29.1 (NB)		B / 11.2 (NB)
32	Cambridge & US-50 WB	LOS (Signal)			E / 57.3		D / 39.2
		WBL Queue	1000*	328		181	
		NBL Queue	150	232		158	
		SBL Queue	100	553		456	
33	Cambridge & US-50 EB	LOS (TWSC)			C / 16.5 (EB)		D / 30.5 (EB)
		EBL Queue	1250*	77.5		222.5	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 19. EPAP 2033 freeway facility level-of-service without the Project

ID	Segment	Type	2033 No Project AM (Density/LOS)	2033 No Project PM (Density/LOS)
Westbound US-50				
1	East of Cambridge Rd	Basic	18.6 / C	17.6 / B
2	Cambridge Rd Offramp	Diverge	22.2 / C	20.9 / C
3	Cambridge Rd between ramps	Basic	15.8 / B	14.8 / B
4	Cambridge Rd Onramp	Merge	23.1 / C	22.2 / C
5	Cambridge Rd to Bass Lake Rd	Basic	19.3 / C	18.4 / C
6	Bass Lake Rd Offramp	Diverge	22.9 / C	21.9 / C
7	Bass Lake Rd between ramps	Basic	18.2 / C	16.8 / B
8	Bass Lake Rd Onramp	Merge	28.7 / D	24.2 / C
9	Bass Lake Rd to Silva Valley Pkwy	Basic	25.6 / C	20.4 / C
10	Silva Valley Pkwy Offramp	Diverge	29.2 / D	24.2 / C
11	Silva Valley Pkwy between ramps	Basic	18.3 / C	16.3 / B
Eastbound US-50				
12	Silva Valley Pkwy between ramps	Basic	8.4 / A	11.6 / B
13	Silva Valley Pkwy Loop Onramp	Merge	15.6 / B	20.5 / C
14	Silva Valley Pkwy Slip Onramp	Merge	10.5 / B	14.9 / B
15	Silva Valley Pkwy to Bass Lake Rd	Basic	11.2 / B	15.4 / B
16	Bass Lake Rd Offramp	Diverge	15.7 / B	21.2 / C
17	Bass Lake Rd between ramps	Basic	9.0 / A	11.5 / B
18	Bass Lake Rd Onramp	Merge	13.4 / B	15.3 / B
19	Bass Lake Rd to Cambridge Rd	Basic	10.1 / A	12.2 / B
20	Cambridge Rd Offramp	Diverge	13.9 / B	16.8 / B
21	Cambridge Rd between ramps	Basic	8.9 / A	10.1 / A

Density in units of passenger cars per mile per lane.

Table 20. EPAP 2033 arterial level-of-service check without the Project

Arterial Segment	Description	2023 AM No Project (Volume and level-of-Service)	2023 PM No Project (Volume and level-of-Service)
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1582 (Level-of-Service E)	1595 (Level-of-Service E)
ii. Bass Lake Rd (between US-50 Country Club Dr)	No Project: 2-lane arterial (threshold 1540) With Project: 4-lane arterial (threshold 3130)	1682 (Level-of-Service F)	1590 (Level-of-Service E)
iii. Country Club Dr (between Bass Lake Rd and Morrison Rd)	2-lane arterial (threshold 1650)	619 (Level-of-Service C)	359 (Level-of-Service C)

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8.0 EPAP 2033 PLUS PROJECT-DEVELOPMENT AREA TRAFFIC CONDITIONS

8.1 Traffic Volumes

Peak hour Project trips (**Figure 9**, page 40) was added to the EPAP 2033 conditions traffic volumes. Delay and level-of-service were determined at the study intersections and segments. **Figure 13** summarizes the turning movements and lane configurations for the EPAP 2033 Plus Proposed Project scenario.

8.2 Level-of-Service

Table 21 through **Table 23** present a summary of the level-of-service results for the study intersections and segments under EPAP 2033 Plus Proposed Project conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in yellow highlighted text in **Table 21** through **Table 23** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. Red highlighted text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies.

Five intersections are anticipated to have level-of-service and/or queue spillback deficiencies that are created and/or worsened by Project-Development area traffic:

- (15) Bass Lake & Hawk View — AM and PM
- (17) Bass Lake & Hollow Oak — AM and PM
- (19) Bass Lake & Country Club — AM
- (28) Bass Lake & US-50 WB — AM and PM
- (29) Bass Lake & US-50 EB — AM and PM

Calculation sheets for delay and level-of-service are provided in **Appendix D**. the remainder of the study intersections, all of the US-50 study segments, and arterial study segments, were found to either operate acceptably, and/or to not be worsened by Project-Development area traffic.

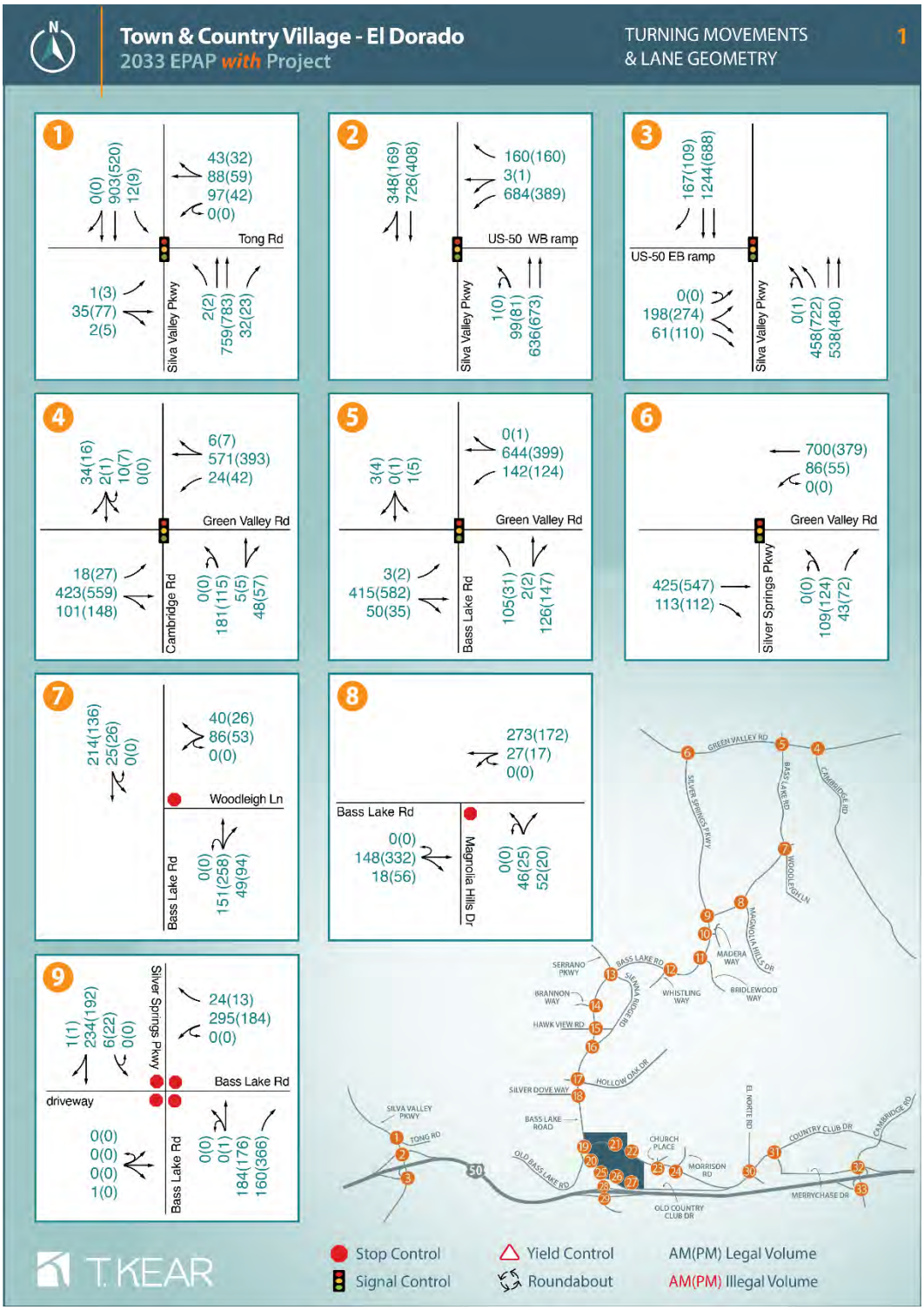

Figure 13. EPAP 2033 plus Project lane geometry and turning movements

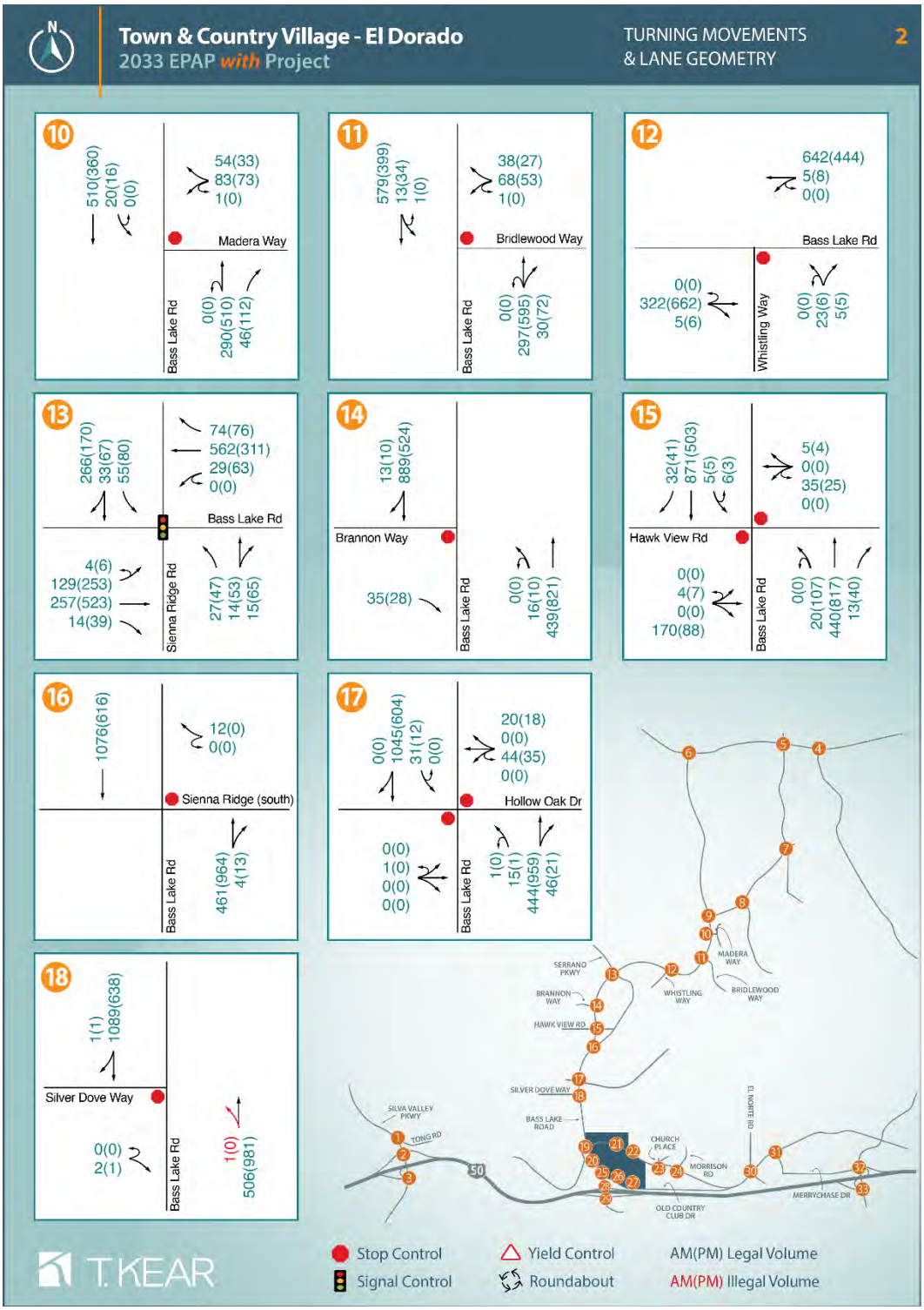

Figure 13. EPAP 2033 plus Project lane geometry and turning movements (continued)

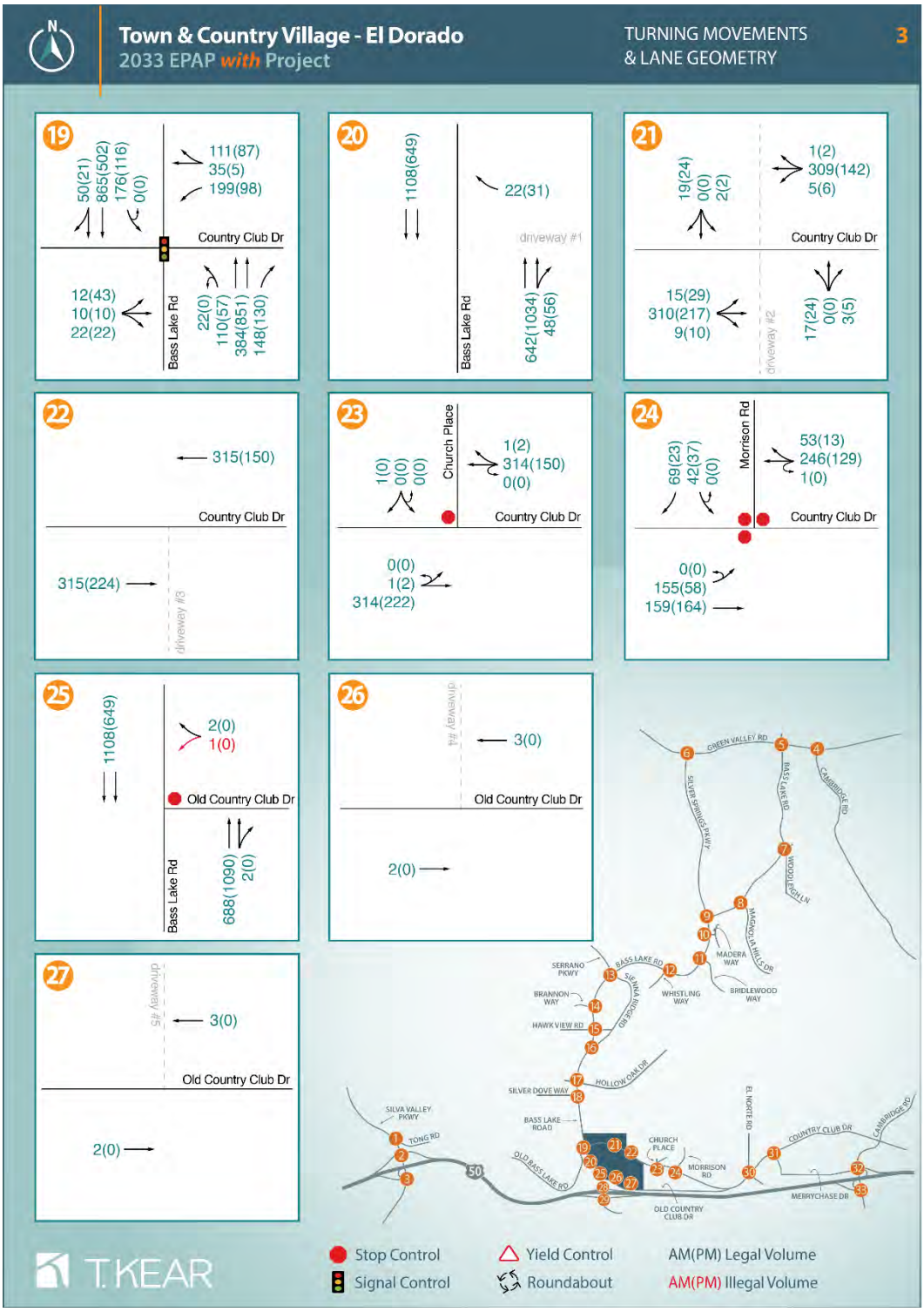

Figure 13. EPAP 2033 plus Project lane geometry and turning movements (continued)

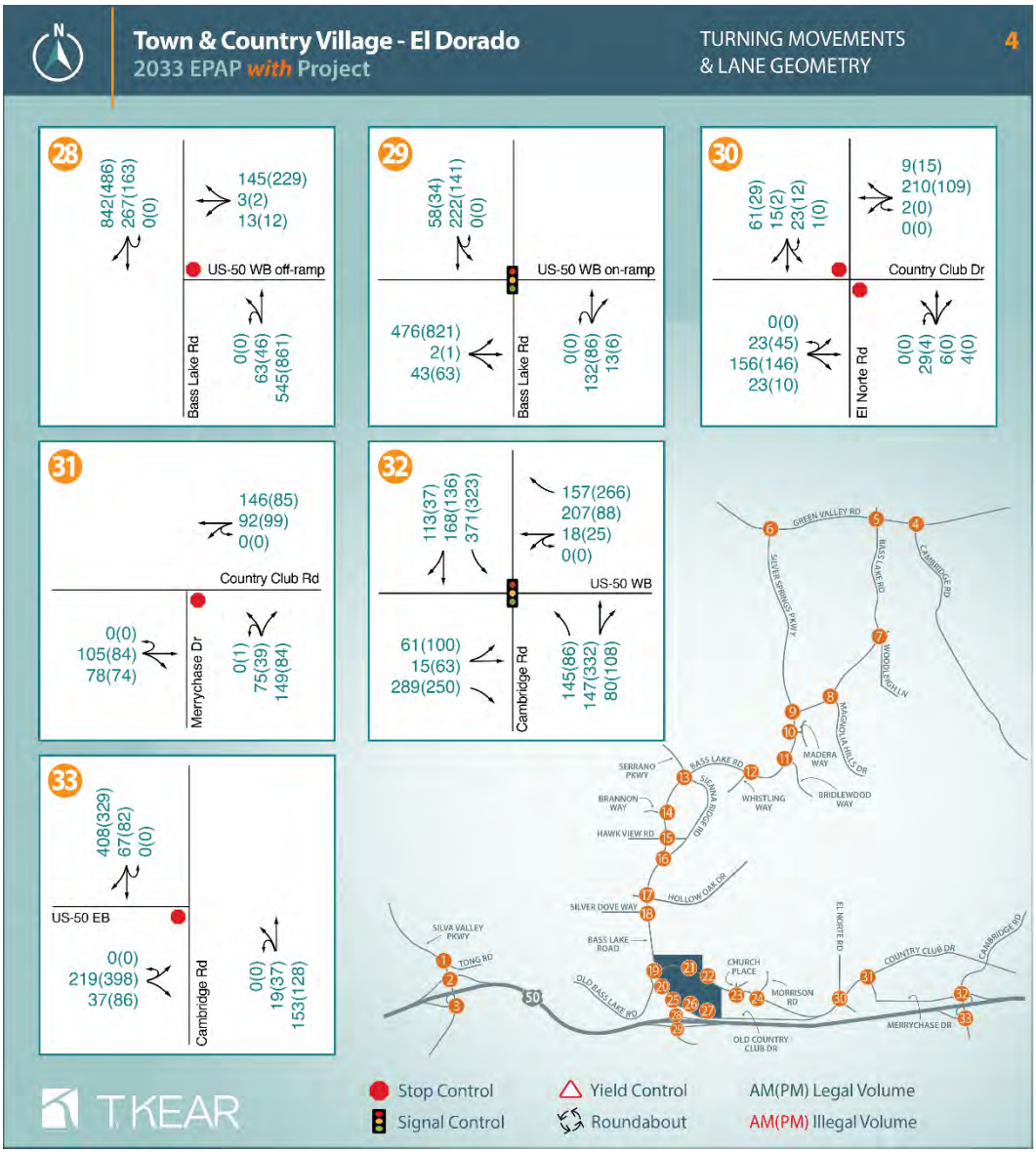

Figure 13. EPAP 2033 plus Project lane geometry and turning movements (continued)

Table 21. EPAP 2033 intersection delay, level-of-service, and queueing with and without the Project-Development area traffic

ID	Location	Metric	No Project Pocket Length (Feet)	2033 AM No Project 95% Left Turn Queue (Feet)	2033 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 PM No Project 95% Left Turn Queue (Feet)	2033 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 AM Plus Project 95% Left Turn Queue (Feet)	2033 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 PM Plus Project 95% Left Turn Queue (Feet)	2033 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
1	Silva Valley & Tong	LOS (Signal)			B / 16.2		B / 12.3		B / 16.2		B / 12.3 (WB)
		EBL Queue	200	5		10		5		10	
		WBL Queue	200	116		58		116		58	
		NBL Queue	200	11		11		11		11	
		SBL Queue	200	29		25		29		25	
2	Silva Valley & US-50 WB	LOS (Signal)			C / 20.0		B / 11.9		C / 20.2		B / 12.0
		WBL Queue	1200*	370		128		373		132	
		NBL Queue	550	138		69		138		69	
3	US-50 EB & Silva Valley	LOS (Signal)			C / 21.1		B / 16.7		C / 21.4		B / 16.9
		EBL Queue	1200*	103		131		103		133	
		NBL Queue	385	194		275		197		282	
4	Cambridge & Green Valley	LOS (Signal)			B / 19.3		B / 15.1		B / 19.3		B / 15.1
		EBL Queue	90	39		49		39		49	
		WBL Queue	130	46		69		46		69	
		NBL Queue	120	205		129		205		129	
5	Bass Lake & Green Valley	LOS (Signal)			B / 17.4		B / 16.1		B / 17.5		B / 16.1
		EBL Queue	280	12		9		12		9	
		WBL Queue	440	156		142		157		142	
		NBL Queue	160	124		47		124		47	
6	Silver Springs & Green Valley	LOS (Signal)			A / 9.0		A / 9.6		A / 9.0		A / 9.6
		WBL Queue	420	136		69		136		69	
		NBL Queue	130	95		95		95		95	
7	Bass Lake & Woodleigh	LOS (TWSC)			B / 14.3 (WB)		B / 12.7 (WB)		B / 14.4 (WB)		B / 12.7 (WB)
8	Magnolia & Bass Lake	LOS (TWSC)			B / 12.0 (NB)		B / 12.8 (NB)		B / 12.0 (NB)		B / 12.9 (NB)
		WBL Queue	50	2.5		2.5		2.5		2.5	
9	Bass Lake & Silver Springs	LOS (AWSC)			B / 16.5		B / 11.8		C / 16.7		B / 11.8
		SBL Queue	75	0		2.5		0		2.5	
10	Bass Lake & Madera	LOS (TWSC)			D / 25.6 (WB)		C / 20.8 (WB)		D / 25.7 (WB)		C / 20.8 (WB)
		NBL Queue	80	0		0		0		0	
		SBL Queue	150	2.5		2.5		2.5		2.5	
11	Bass Lake & Bridlewood	LOS (TWSC)			C / 23.7 (WB)		C / 25.0 (WB)		C / 24.0 (WB)		D / 29.5 (WB)
12	Whistling & Bass Lake	LOS (TWSC)			C / 20.9 (NB)		C / 19.4 (NB)		C / 21.0 (NB)		C / 19.6 (NB)
13	Bass Lake & Sienna Ridge (north)	LOS (Signal)			C / 33.6		C / 26.0		C / 34.6		C / 26.4
		EBL Queue	340	206		337		212		350	
		WBL Queue	380	68		102		68		103	
		NBL Queue	210	65		82		65		83	
		SBL Queue	155	107		122		107		122	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 21. EPAP 2033 intersection delay, level-of-service, and queueing with and without the Project-Development area traffic (continued)

ID	Location	Metric	No Project Pocket Length (Feet)	2033 AM No Project 95% Left Turn Queue (Feet)	2033 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 PM No Project 95% Left Turn Queue (Feet)	2033 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 AM Plus Project 95% Left Turn Queue (Feet)	2033 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 PM Plus Project 95% Left Turn Queue (Feet)	2033 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
14	Bass Lake & Brannon	LOS (TWSC)			C / 18.6 (EB)		B / 12.2 (EB)		C / 18.8 (EB)		B / 12.3 (EB)
		NBL Queue	335	2.5		0		2.5		0	
15	Bass Lake & Hawk View	LOS (TWSC)			F / 195.1 (WB)		F / 96.9 (WB)		F / 219.0 (EB)		F / 105.7 (WB)
		NBL Queue	290	2.5		10		2.5		10	
		SBL Queue	250	0		0		0		0	
16	Bass Lake & Sienna Ridge (south)	LOS (TWSC)			B / 11.6 (WB)		A / 0 (n/a)		B / 11.6 (WB)		A / 0 (n/a)
17	Bass Lake & Hollow Oak	LOS (TWSC)			F / 99.6 (WB)		F / 75.1 (WB)		F / 104.9 (WB)		F / 80.,2 (WB)
		NBL Queue	300	0		0		0		0	
		SBL Queue	300	2.5		2.5		2.5		2.5	
18	Bass Lake & Silver Dove	LOS (TWSC)			C / 20.5 (EB)		B / 12.7 (EB)		C / 20.7 (EB)		B / 12.7 (EB)
19	Bass Lake & Country Club	LOS (Signal)			C / 31.4		C / 22.1		C / 33.8		C / 22.5
		WBL Queue	300	225		87		268		136	
		NBL Queue	300	189		107		248		143	
		SBL Queue	300	334		171		360		171	
20	Bass Lake & Drwy #1	LOS (TWSC)		Does not Exist		Does not Exist			B / 10.8 (WB)		B / 13.2 (WB)
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist			C /15.9 (NB)		B /12.5 (NB)
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
23	Country Club & Church	LOS (TWSC)			B / 11.8 (SB)		A / 7.6 (EB)		B / 11.9 (SB)		A / 7.6 (EB)
24	Country Club & Morrison	LOS (AWSC)			C / 22.9		A / 8.9		C / 24.1		A / 9.0
		EBL Queue	275	75		7.5		75		7.5	
		SBL Queue	240	15		5		15		5	
25	Bass Lake & Old Country Club	LOS (TWSC)			B / 10.9 (WB)		A / 0 (n/a)		B / 11.2 (WB)		A / 0 (n/a)
26	Old Country Club & Drwy #4	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
27	Old Country Club & Drwy #5	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
28	Bass Lake & US-50 WB	LOS (Signal)			B / 15.0		B / 13.7		B / 16.0 (WB)		B / 13.9
		WBL Queue	850*	70		74		71		90	
		NBL Queue	n/a	555		749		657		970	
29	Bass Lake & US-50 EB	LOS (Signal)			C / 21.8		C / 23.0		C / 24.1		C / 28.8
		EBL Queue	480*	488		747		618		853	
		SBL Queue	n/a	289		152		303		164	
30	Country Club & El Norte	LOS (TWSC)			B / 17.7 (NB)		B / 12.0 (NB)		C / 18.1 (NB)		B / 12.2 (NB)
31	Merrychase & Country Club	LOS (TWSC)			D / 29.1 (NB)		B / 11.2 (NB)		D / 31.2 (NB)		B / 11.4 (NB)
32	Cambridge & US-50 WB	LOS (Signal)			E / 57.3		D / 39.2		E / 57.3		D / 39.2
		WBL Queue	1000*	328		181		328		181	
		NBL Queue	150	232		158		232		158	
		SBL Queue	100	553		456		553		456	
33	Cambridge & US-50 EB	LOS (TWSC)			C / 16.5 (EB)		D / 30.5 (EB)		C / 16.5 (EB)		D / 30.5 (EB)
		EBL Queue	1250*	77.5		222.5		77.5		222.5	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 22. EPAP 2033 freeway facility level-of-service with and without the Project-Development area traffic

ID	Segment	Type	2033 No Project AM (Density/LOS)	2033 No Project PM (Density/LOS)	2033 with Project AM (Density/LOS)	2033 with Project PM (Density/LOS)
Westbound US-50						
1	East of Cambridge Rd	Basic	18.6 / C	17.6 / B	18.7 / C	17.7 / B
2	Cambridge Rd Offramp	Diverge	22.2 / C	20.9 / C	22.3 / C	21.1 / C
3	Cambridge Rd between ramps	Basic	15.8 / B	14.8 / B	15.9 / B	14.9 / B
4	Cambridge Rd Onramp	Merge	23.1 / C	22.2 / C	23.2 / C	22.4 / C
5	Cambridge Rd to Bass Lake Rd	Basic	19.3 / C	18.4 / C	19.4 / C	18.6 / C
6	Bass Lake Rd Offramp	Diverge	22.9 / C	21.9 / C	23 / C	22.1 / C
7	Bass Lake Rd between ramps	Basic	18.2 / C	16.8 / B	18.2 / C	16.8 / B
8	Bass Lake Rd Onramp	Merge	28.7 / D	24.2 / C	29 / D	24.7 / C
9	Bass Lake Rd to Silva Valley Pkwy	Basic	25.6 / C	20.4 / C	26 / C	20.9 / C
10	Silva Valley Pkwy Offramp	Diverge	29.2 / D	24.2 / C	29.6 / D	24.6 / C
11	Silva Valley Pkwy between ramps	Basic	18.3 / C	16.3 / B	18.5 / C	16.5 / B
Eastbound US-50						
12	Silva Valley Pkwy between ramps	Basic	8.4 / A	11.6 / B	8.6 / A	11.8 / B
13	Silva Valley Pkwy Loop Onramp	Merge	15.6 / B	20.5 / C	15.9 / B	20.8 / C
14	Silva Valley Pkwy Slip Onramp	Merge	10.5 / B	14.9 / B	10.7 / B	15.2 / B
15	Silva Valley Pkwy to Bass Lake Rd	Basic	11.2 / B	15.4 / B	11.4 / B	15.7 / B
16	Bass Lake Rd Offramp	Diverge	15.7 / B	21.2 / C	16.1 / B	21.7 / C
17	Bass Lake Rd between ramps	Basic	9.0 / A	11.5 / B	9.0 / A	11.5 / B
18	Bass Lake Rd Onramp	Merge	13.4 / B	15.3 / B	13.5 / B	15.4 / B
19	Bass Lake Rd to Cambridge Rd	Basic	10.1 / A	12.2 / B	10.1 / A	12.2 / B
20	Cambridge Rd Offramp	Diverge	13.9 / B	16.8 / B	14.0 / B	16.9 / B
21	Cambridge Rd between ramps	Basic	8.9 / A	10.1 / A	8.9 / A	10.1 / A

Density in units of passenger cars per mile per lane.

Table 23. EPAP 2033 arterial level-of-service check with and without the Project-Development area traffic

Arterial Segment	Description	2023 AM No Project (Volume and level-of-Service)	2023 PM No Project (Volume and level-of-Service)	2023 AM with Project-Development Area (Volume and level-of-Service)	2023 PM with Project-Development Area (Volume and level-of-Service)
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1582 (Level-of-Service E)	1595 (Level-of-Service E)	1598 (Level-of-Service E)	1620 (Level-of-Service E)
ii. Bass Lake Rd (between US-50 Country Club Dr)	No Project: 2-lane arterial (threshold 1540) With Project: 4-lane arterial (threshold 3130)	1682 (Level-of-Service F)	1590 (Level-of-Service E)	1750 (Level-of-Service C)	1660(Level-of-Service C)
iii. Country Club Dr (between Bass Lake Rd and Morrison Rd)	2-lane arterial (threshold 1650)	619 (Level-of-Service C)	359 (Level-of-Service C)	679 (Level-of-Service C)	446 (Level-of-Service C)

8.3 EPAP 2033 Plus Project General Plan Deficiency Findings

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "deficiency", and improvements to address those deficiencies are referred to as "abatements". Throughout this document, Intersection deficiencies and abatements are numbered using the intersection number (1-33) and a year code (2023 = "A", 2033 = "B", 2040 = "C", and 2040 super-cumulative = "D"). Similarly, segment level deficiencies and abatement measures are numbered using the segment number (i through iii) for arterial segments or (US-50(1) US-50(21)) for freeway segments, and a year code (A, B, C or D).

All deficiencies and abatements described below include the deficiency number/abatement number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing

Deficiency/Abatement 15B: Bass Lake & Hawk View

Deficiency: Prior to the addition of Project-Development area traffic, the intersection is anticipated to operate at level-of-service F during both the morning and afternoon. Project traffic worsens the pre-existing deficiency.

Abatement: The peak hour signal warrant is met at this location both with and without Project-Development area traffic. The intersection should be signalized with existing geometry. Signals masts shall be placed far enough back to allow for future widening of Bass Lake Rd to a four-lane arterial.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 24** presents the segment level-of-service results with this abatement.

Project responsibility: The project is responsible for its fair-share of the cost to signalize this intersection, which would be addressed by payment of fees after the signal is added to the 10-year CIP.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 15C.

Deficiency/Abatement 17B: Bass Lake & Hollow Oak

Deficiency: Prior to the addition of Project-Development area traffic, the intersection is anticipated to operate at level-of-service F during both the morning and afternoon. Project traffic worsens the pre-existing deficiency.

Abatement: The peak hour signal warrant is not met at this location, and all-way-stop-control was anticipated to worsen intersection operation. The intersection should be converted to a roundabout which would also include the widening of Bass Lake Rd to four lanes for the approach and departure from the roundabout.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 24** presents the segment level-of-service results with this abatement.

Project responsibility: The project is responsible for its fair-share of the roundabout, which would be addressed by payment of fees after the roundabout is added to the 10-year CIP.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 17C, 7D, (i)C and (i)D.

Deficiency/Abatement 19B: Bass Lake & Country Club

Deficiency: Prior to the addition of Project-Development area traffic, the 95th percentile southbound left turn queue is anticipated to exceed available storage space during the morning. Project-Development area traffic is anticipated to add just over 1-car length to the queue.

Abatement: construct a second southbound left turn lane and optimize signal timing. Note that a second receiving lane on Country Club Dr is required.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 24** presents the segment level-of-service results with this abatement.

Project responsibility: CIP project 65105009 extends Country Club Drive from Bass Lake Rd to Tong Rd, with $3 million of $11million of the construction funds in the 10-year CIP, and the balance in the 20-year CIP. The project is responsible for its fair-share of the additional 2nd SB left turn lane , which can be addressed by payment of fees. The applicant may enter a fee-credit agreement with the County to construct these improvements when the Project widens Bass Lake Rd from two-lanes to four-lanes between US-50 and Country Club Drive.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 17C and 17D.

Deficiency/Abatement 28B: Bass Lake Rd interchange (westbound ramp interchange)

Deficiency: The 95th percentile northbound left turn queue from Bass Lake Rd to US-50 westbound exceeds the available storage space and stretches beyond the eastbound ramp intersection. Project-Development area traffic is anticipated to worsen the queue lengths by 102-feet in the morning and 221-feet in the afternoon.

Abatement: Implement Abatement 29A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 24** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 29A.

Timing: Not applicable, addressed through abatement 29A.

Cross Reference: See abatement: 29A, 29B, 28C, 29C, 28D, and 29D.

Deficiency/Abatement 29B: Bass Lake Rd interchange (eastbound ramp interchange)

Deficiency: The northbound left-turn queues underneath the freeway are anticipated to extend back through and block the eastbound offramp. The 95th percentile left turn queue from the eastbound offramp at intersection 29 (Bass Lake Rd/US-50 eastbound offramp) is anticipated to grow from 488-feet without the Project-Development area traffic to 618-feet with Project-Development area traffic during the AM peak hour. The same eastbound queue is anticipated to grow from 747-feet without the Project-Development area traffic to 853-feet with Project-Development area traffic during the PM peak hour. The offramp has an approximate 850-foot length. This places the back of the queue too close to the freeway mainline.

Abatement: Implement Abatement 29A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 24** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 29A.

Timing: Not applicable, addressed through abatement 29A.

Cross Reference: See abatement: 29A, 28B, 28C, 29C, 28D, and 29D.

Table 24. EPAP 2033 intersection delay, level-of-service, and queueing with and without the abated Project-Development area traffic

ID	Location	Metric	No Project Pocket Length (Feet)	2033 AM No Project 95% Left Turn Queue (Feet)	2033 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 PM No Project 95% Left Turn Queue (Feet)	2033 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 AM Plus Project 95% Left Turn Queue (Feet)	2033 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2033 PM Plus Project 95% Left Turn Queue (Feet)	2033 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
15	Bass Lake & Hawk View	LOS (TWSC)			F / 195.1 (WB)		F / 96.9 (WB)		F / 219.0 (EB)		F / 105.7 (WB)
		NBL Queue	290	2.5		10		2.5		10	
		SBL Queue	250	0		0		0		0	
15	Bass Lake & Hawk View (Abatement: Signalize)	LOS (Signal)							C / 31.4		B / 16.4
		NBL Queue						34		116	
		SBL Queue						22		11	
17	Bass Lake & Hollow Oak	LOS (TWSC)			F / 99.6 (WB)		F / 75.1 (WB)		F / 104.9 (WB)		F / 80.,2 (WB)
		NBL Queue	300	0		0		0		0	
		SBL Queue	300	2.5		2.5		2.5		2.5	
17	Bass Lake & Hollow Oak (Abatement: 4x2 Roundabout)	LOS (Roundabout)							A / 9.3		A / 7.7
		EB Queue						1		0	
		WB Queue						7		9	
		NB Queue						26		62	
		SB Queue						80		32	
19	Bass Lake & Country Club	LOS (Signal)			C / 31.4		C / 22.1		C / 33.8		C / 22.5
		WBL Queue	300	225		87		268		136	
		NBL Queue	300	189		107		248		143	
		SBL Queue	300	334		171		360		171	
19	Bass Lake & Country Club (Abatement: Add second SBL pocket)	LOS (Signal)							C / 31.8		C / 22.4
		EBL Queue	N/A					N/A		N/A	
		WBL Queue	300					268		136	
		NBL Queue	300					148		143	
		SBL Queue	300					134		86	
28	Bass Lake & US-50 WB	LOS (Signal)			B / 15.0		B / 13.7		B / 16.0 (WB)		B / 13.9
		WBL Queue	850*	70		74		71		90	
		NBL Queue	n/a	555		749		657		970	
28	Bass Lake & US-50 WB (Abatement: 2nd NB thru lane and optimize/coordinate timing for both ramp intersections)	LOS (Signal)							B / 18.4		B / 11.0
		WBL Queue	850*					58		73	
		NBL Queue	n/a					59		33	
29	Bass Lake & US-50 EB	LOS (Signal)			C / 21.8		C / 23.0		C / 24.1		C / 28.8
		EBL Queue	480*	488		747		618		853	
		SBL Queue	n/a	289		152		303		164	
29	Bass Lake & US-50 EB (Abatement: Widen EB offramp and optimize/coordinate timing for both ramp intersections)	LOS (Signal)							D / 38.0		B / 16.6
		EBL Queue	350					172		219	
		SBL Queue	n/a					9		12	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

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9.0 CUMULATIVE 2040 CONDITIONS

The Cumulative 2040 conditions analysis started with lane configurations from EPAP 2033 conditions, turning movements derived from existing traffic counts, growth factors from the Travel Demand Model, and the NCHRP 255 adjustment procedure[19]. Four Capital Improvement Program (CIP) projects that effects study intersection geometry was accounted for:

- CIP Project 36104005: "US-50 / Bass Lake Road Interchange Improvements" is anticipated to signalize intersect 28 (Bass Lake Rd/US-50 westbound ramps).
- CIP Project 36104006: "Cambridge Road Interchange Improvements" is anticipated to reconstruct the ramp intersections by 2040. For this analysis roundabouts were assumed at this location as the Caltrans Intersection Capacity Evaluation (ICE) process pushes updated interchanges to use roundabouts to minimize lifetime costs. However, the Project is not anticipated to send traffic through these intersections, and altering the roundabout assumption does not affect the findings of this local transportation analysis.
- CIP Project 36105079 will construct a roundabout at the Bass Lake Rd/Bridlewood Wy intersection by 2040.
- CIP Projects 36105009, 36105008, and 36105007 will extend Country Club Dr from Bass Lake Rd to Saratoga Wy by 2040.

Traffic volumes from 2033 without the Project were used as a floor. **Figure 14** summarizes the turning movements and lane configurations for the Cumulative 2040 conditions scenario.

Delay and level-of-service is presented in **Table 25** through **Table 27**. Intersection control is listed as signal, two-way stop-controlled (TWSC), all-way stop-control (AWSC), or roundabout. Both the estimated delay and level-of-service (LOS) is provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in yellow highlight denote deficient traffic operations.

The results indicate that two study segments and eight study intersections operate deficiently with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths.

[19] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.

Two Arterial segments with a deficiency:

- (i) Bass Lake Rd (between Country Club Dr and Silver Dove Wy) AM and PM
- (ii) Bass Lake Rd (between US-50 Country Club Dr) AM and PM

Eight Study intersections with deficiencies:

- (4) Cambridge & Green Valley AM and PM
- (13) Bass Lake & Sienna Ridge (north) PM
- (15) Bass Lake & Hawk View AM and PM
- (17) Bass Lake & Hollow Oak AM and PM
- (18) Bass Lake & Silver Dove AM
- (19) Bass Lake & Country Club AM
- (28) Bass Lake & US-50 WB AM and PM
- (29) Bass Lake & US-50 EB AM and PM

Calculation sheets for delay and level-of-service are provided in **Appendix D**. The remainder of the study intersections, the remainder of the arterial study segments, and all of the US-50 study segments, were found to operate acceptably.

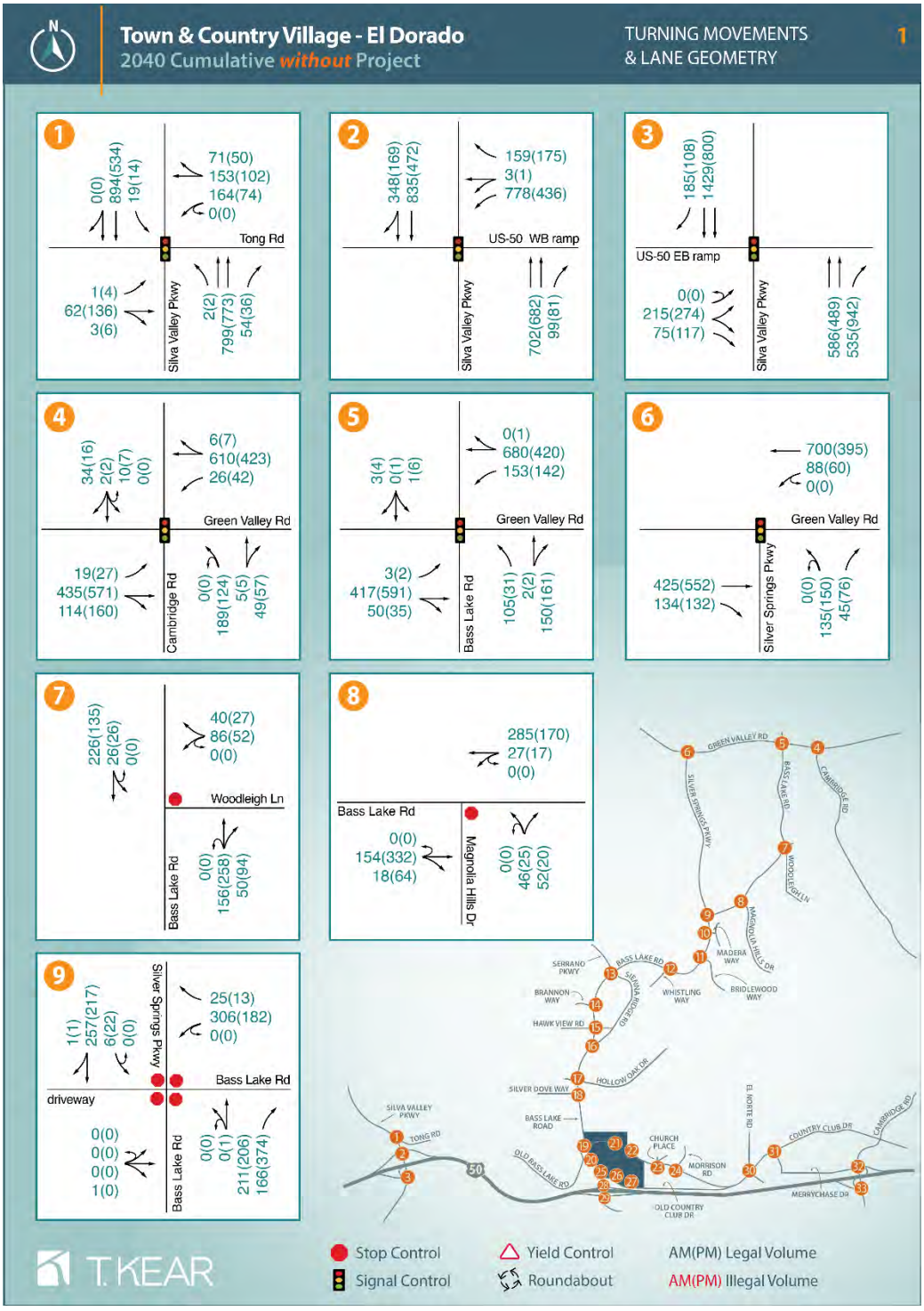

Figure 14. Cumulative 2040 conditions lane geometry and turning movements

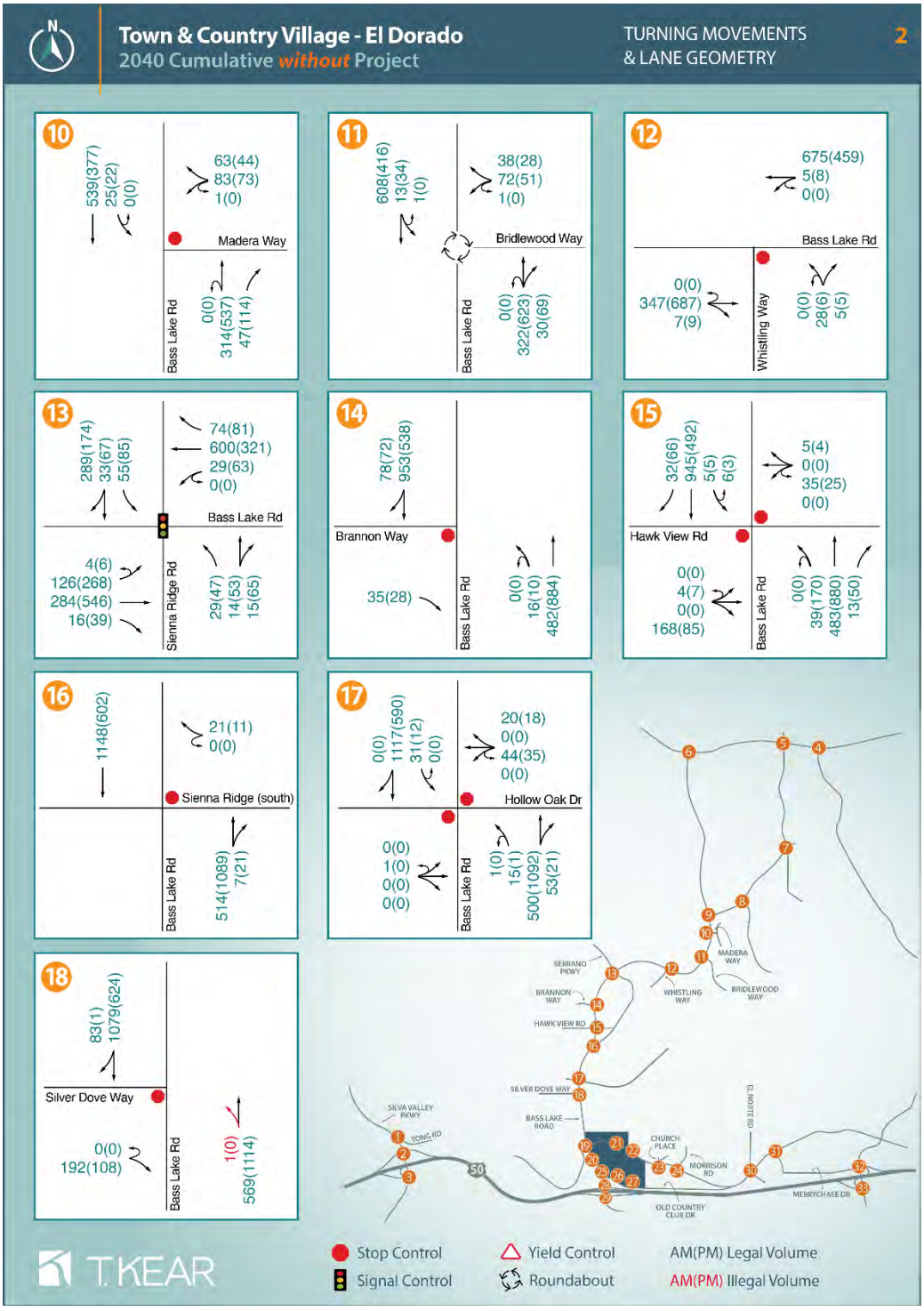

Figure *14*. Cumulative 2040 conditions lane geometry and turning movements (continued)

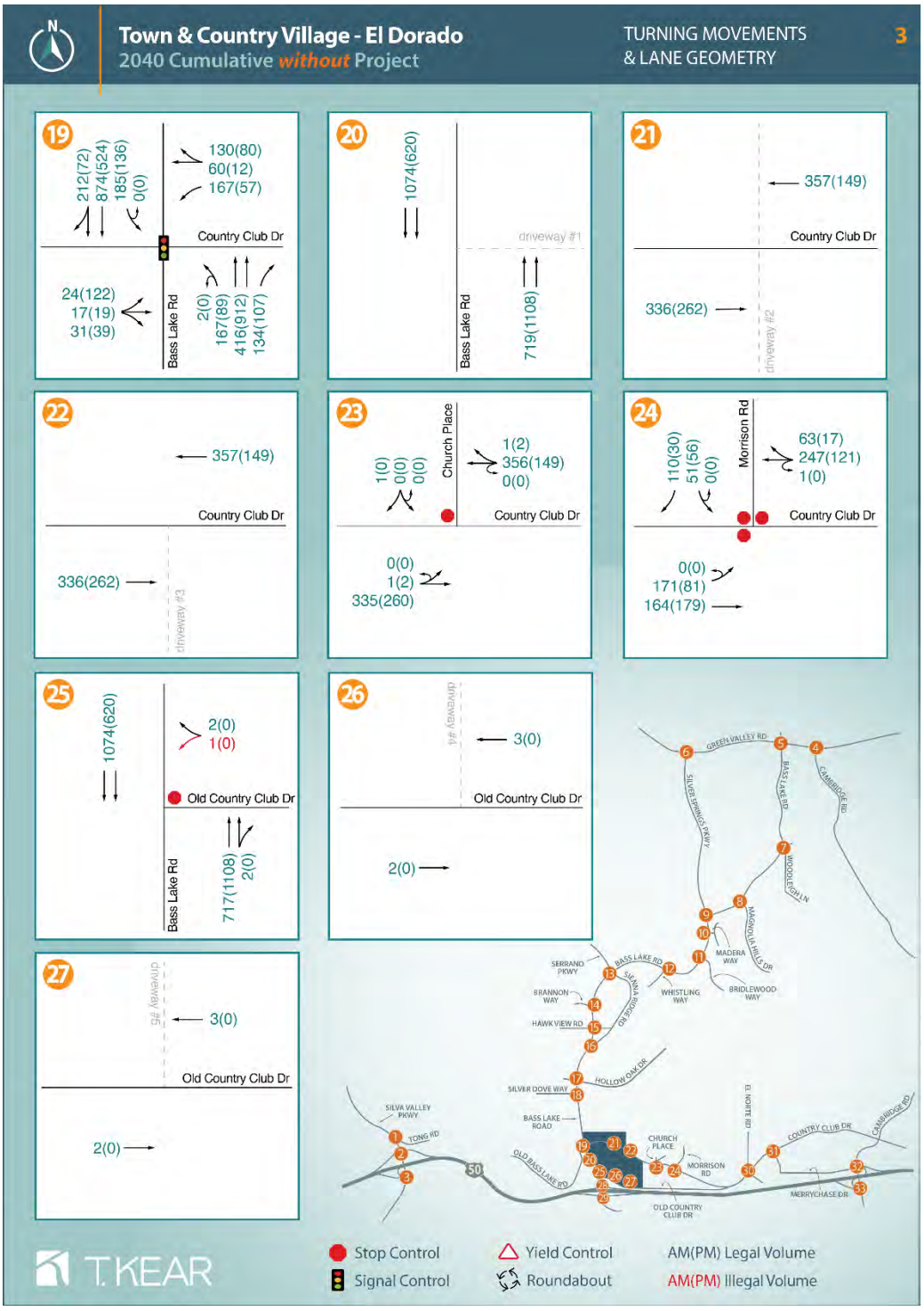

Figure *14*. Cumulative 2040 conditions lane geometry and turning movements (continued)

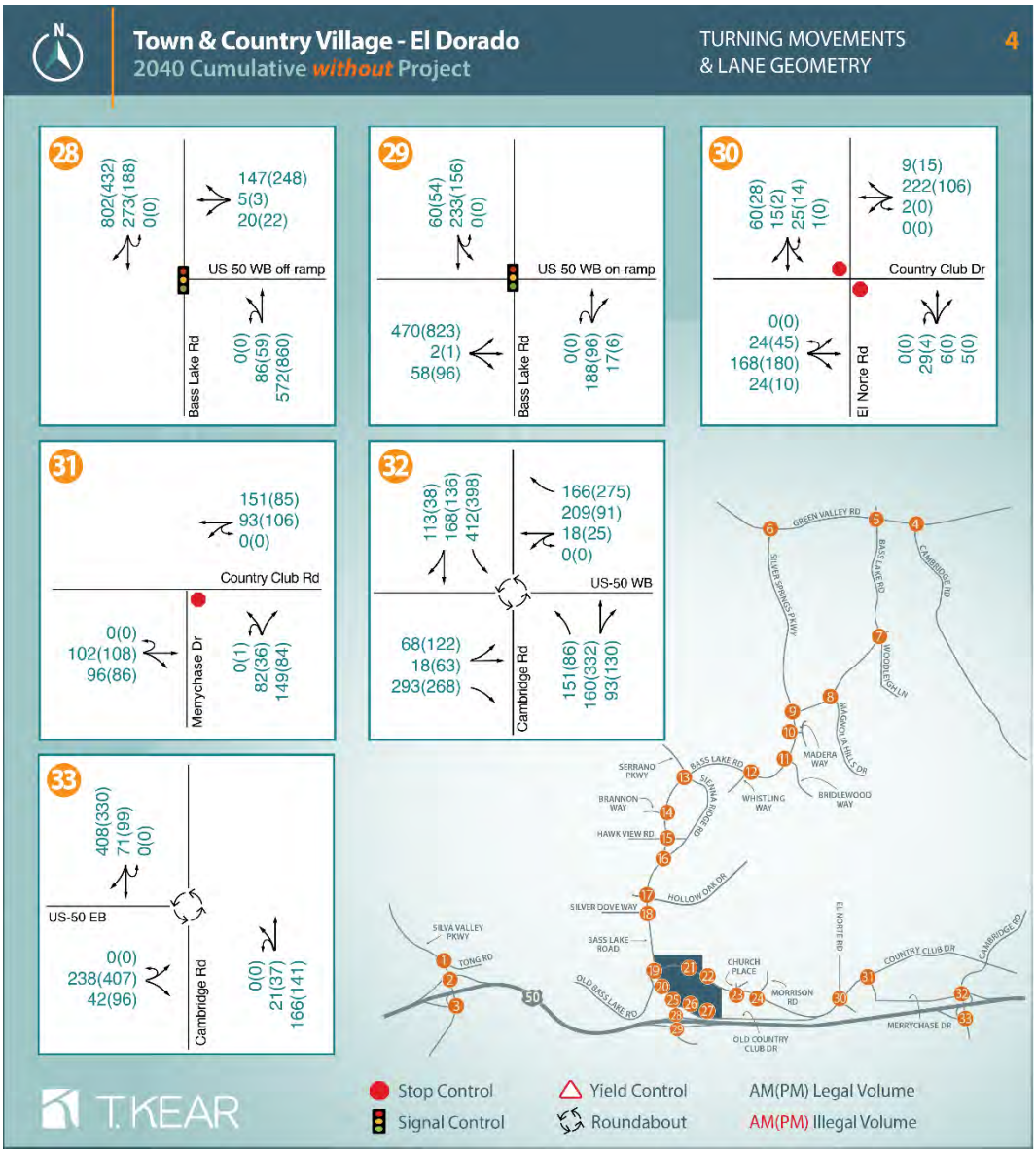

Figure *14*. Cumulative 2040 conditions lane geometry and turning movements (continued)

Table 25. Cumulative 2040 intersection delay, level-of-service, and queueing without the Project

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM No Project 95% Left Turn Queue (Feet)	2040 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM No Project 95% Left Turn Queue (Feet)	2040 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
1	Silva Valley & Tong	LOS (Signal)			B / 18.8		B / 15.5
		EBL Queue	200	5		12	
		WBL Queue	200	189		91	
		NBL Queue	200	10		11	
		SBL Queue	200	42		33	
2	Silva Valley & US-50 WB	LOS (Signal)			B / 10.6		A / 8.2
		WBL Queue	1200*	286		103	
		NBL Queue	n/a	n/a		n/a	
3	US-50 EB & Silva Valley	LOS (Signal)			A / 7.4		A / 9.0
		EBL Queue	1200*	104		88	
		NBL Queue	n/a	n/a		n/a	
4	Cambridge & Green Valley	LOS (Signal)			B / 17.6		B / 15.6
		EBL Queue	90	41		49	
		WBL Queue	130	50		69	
		NBL Queue	120	214		138	
5	Bass Lake & Green Valley	LOS (Signal)			B / 16.1		B / 17.3
		EBL Queue	280	12		9	
		WBL Queue	440	169		161	
		NBL Queue	160	123		48	
6	Silver Springs & Green Valley	LOS (Signal)			A / 9.3		B / 10.2
		WBL Queue	420	130		79	
		NBL Queue	130	107		115	
7	Bass Lake & Woodleigh	LOS (TWSC)			B / 13.2 (WB)		B / 12.7 (WB)
8	Magnolia & Bass Lake	LOS (TWSC)			B / 12.0 (NB)		B / 12.8 (NB)
		WBL Queue	50	2.5		2.5	
9	Bass Lake & Silver Springs	LOS (AWSC)			B / 15.9		B / 12.3
		SBL Queue	75	0		2.5	
10	Bass Lake & Madera	LOS (TWSC)			C / 22.9 (WB)		C / 22.7 (WB)
		NBL Queue	80	0		0	
		SBL Queue	150	2.5		2.5	
11	Bass Lake & Bridlewood	LOS (Roundabout)			A / 9.1		A / 8.6
12	Whistling & Bass Lake	LOS (TWSC)			C / 22,4 (NB)		C / 20.5 (NB)
13	Bass Lake & Sienna Ridge (north)	LOS (Signal)			D / 39.0		C / 27.2
		EBL Queue	340	204		403	
		WBL Queue	380	68		107	
		NBL Queue	210	68		85	
		SBL Queue	155	107		133	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 25. Cumulative 2040 intersection delay, level-of-service, and queueing without the Project (continued)

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM No Project 95% Left Turn Queue (Feet)	2040 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM No Project 95% Left Turn Queue (Feet)	2040 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
14	Bass Lake & Brannon	LOS (TWSC)			C / 20.3 (EB)		B / 12.5 (EB)
		NBL Queue	335	2.5		0	
15	Bass Lake & Hawk View	LOS (TWSC)			F / 465.7 (WB)		F / 194.1 (WB)
		NBL Queue	290	5		17.5	
		SBL Queue	250	0		0	
16	Bass Lake & Sienna Ridge (south)	LOS (TWSC)			B / 12.3 (WB)		C / 21.4 (WB)
17	Bass Lake & Hollow Oak	LOS (TWSC)			F / 164.7 (WB)		F / 115.6 (WB)
		NBL Queue	300	0		0	
		SBL Queue	300	2.5		2.5	
18	Bass Lake & Silver Dove	LOS (TWSC)			F / 74.4 (EB)		C / 15.2 (EB)
19	Bass Lake & Country Club	LOS (Signal)			D / 40.6		C / 26.5
		WBL Queue	300	225		87	
		NBL Queue	300	342		152	
		SBL Queue	300	380		247	
20	Bass Lake & Drwy #1	LOS (TWSC)		Does not Exist		Does not Exist	
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist	
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist	
23	Country Club & Church	LOS (TWSC)			B / 10.6 (SB)		A / 7.6 (EB)
24	Country Club & Morrison	LOS (AWSC)			B / 11.4		A / 9.2
		EBL Queue	275	33		12.5	
		SBL Queue	240	7.5		7.5	
25	Bass Lake & Old Country Club	LOS (TWSC)			B / 11.1 (WB)		A / 0 (n/a)
26	Old Country Club & Drwy #4	LOS (TWSC)		Does not Exist		Does not Exist	
27	Old Country Club & Drwy #5	LOS (TWSC)		Does not Exist		Does not Exist	
28	Bass Lake & US-50 WB	LOS (Signal)			B / 17.9		C / 23.5
		WBL Queue	850*	91		92	
		NBL Queue	n/a	829		929	
29	Bass Lake & US-50 EB	LOS (Signal)			C / 30.8		C / 26.3
		EBL Queue	480*	705		948	
		SBL Queue	n/a	324		279	
30	Country Club & El Norte	LOS (TWSC)			B / 14.1 (NB)		B / 12.3 (NB)
31	Merrychase & Country Club	LOS (TWSC)			B / 13.9 (NB)		B / 11.3 (NB)
32	Cambridge & US-50 WB	LOS (Roundabout)			C / 12.8		B / 13.5
		WBL Queue	1000*	25		50	
33	Cambridge & US-50 EB	LOS (Roundabout)			A / 5.3		A / 7.3
		EBL Queue	1250*	25		50	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 26. Cumulative 2040 freeway facility level-of-service without the Project

ID	Segment	Type	2040 No Project AM (Density/LOS)	2040 No Project PM (Density/LOS)
Westbound US-50				
1	East of Cambridge Rd	Basic	19.4 / C	18.9 / C
2	Cambridge Rd Offramp	Diverge	23.0 / C	22.4 / C
3	Cambridge Rd between ramps	Basic	16.5 / B	16.0 / B
4	Cambridge Rd Onramp	Merge	24.2 / C	24.2 / C
5	Cambridge Rd to Bass Lake Rd	Basic	20.4 / C	20.4 / C
6	Bass Lake Rd Offramp	Diverge	24.2 / C	24.2 / C
7	Bass Lake Rd between ramps	Basic	19.1 / C	18.3 / C
8	Bass Lake Rd Onramp	Merge	29.8 / D	26.0 / C
9	Bass Lake Rd to Silva Valley Pkwy	Basic	27.1 / D	22.3 / C
10	Silva Valley Pkwy Offramp	Diverge	30.5 / D	26.1 / C
11	Silva Valley Pkwy between ramps	Basic	18.6 / C	17.3 / B
Eastbound US-50				
12	Silva Valley Pkwy between ramps	Basic	8.9 / A	11.2 / B
13	Silva Valley Pkwy Loop Onramp	Merge	13.0 / B	14.7 / B
14	Silva Valley Pkwy Slip Onramp	Merge	13.0 / B	18.1 / B
15	Silva Valley Pkwy to Bass Lake Rd	Basic	12.2 / B	16.0 / B
16	Bass Lake Rd Offramp	Diverge	17.1 / B	24.2 / C
17	Bass Lake Rd between ramps	Basic	9.8 / A	11.7 / B
18	Bass Lake Rd Onramp	Merge	14.4 / B	15.7 / B
19	Bass Lake Rd to Cambridge Rd	Basic	11.0 / B	12.5 / B
20	Cambridge Rd Offramp	Diverge	15.1 / B	17.3 / B
21	Cambridge Rd between ramps	Basic	9.7 / A	10.1 / A

Density in units of passenger cars per mile per lane.

Table 27. Cumulative 2040 arterial level-of-service check without the Project

Arterial Segment	Description	2040 AM No Project (Volume and level-of-Service)	2040 PM No Project (Volume and level-of-Service)
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1841 (Level-of-Service F)	1846 (Level-of-Service F)
ii. Bass Lake Rd (between US-50 Country Club Dr)	No Project: 2-lane arterial (threshold 1540) With Project: 4-lane arterial (threshold 3130)	1791 (Level-of-Service F)	1728 (Level-of-Service F)
iii. Country Club Dr (between Bass Lake Rd and Morrison Rd)	2-lane arterial (threshold 1650)	693 (Level-of-Service C)	411 (Level-of-Service C)

10.0 CUMULATIVE 2040 PLUS PROJECT-DEVELOPMENT AND PROGRAM-STUDY AREA TRAFFIC CONDITIONS

10.1 Traffic Volumes

Peak hour Project trips (**Figure 10**, page 44) were added to the Cumulative 2040 condition traffic volumes. Delay and level-of-service were determined at the study intersections and segments. **Figure 15** summarizes the turning movements and lane configurations for the Cumulative 2040 Plus Project-Development and Program-Study Area scenario.

10.2 Level-of-Service

Table 28 through **Table 30** present a summary of the level-of-service results for the study intersections and segments under Cumulative 2040 Plus Project-Development and Program-Study Area conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), all-way stop-control (AWSC), or roundabout. Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in yellow highlighted text in **Table 28** through **Table 30** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. Red highlighted text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies.

The results indicate that one study segments and eight study intersections are anticipated to have level-of-service and/or queue spillback deficiencies that are created and/or worsened by Project-Development area traffic:

<u>One Arterial segments with a deficiency:</u>

- (i) Bass Lake Rd (between Country Club Dr and Silver Dove Wy) AM and PM

<u>Eight Study intersections with deficiencies:</u>

- (13) Bass Lake & Sienna Ridge (north) PM
- (15) Bass Lake & Hawk View AM and PM
- (17) Bass Lake & Hollow Oak AM and PM
- (19) Bass Lake & Country Club AM
- (21) Country Club & Drwy #2 AM and PM
- (22) Country Club & Drwy #3 AM
- (28) Bass Lake & US-50 WB AM and PM
- (29) Bass Lake & US-50 EB AM and PM

Calculation sheets for delay and level-of-service are provided in **Appendix D**. The remainder of the study intersections, the remainder of the arterial study segments, and all of the US-50 study segments, were found to not be worsened by Project-Development and Program-Study area traffic.

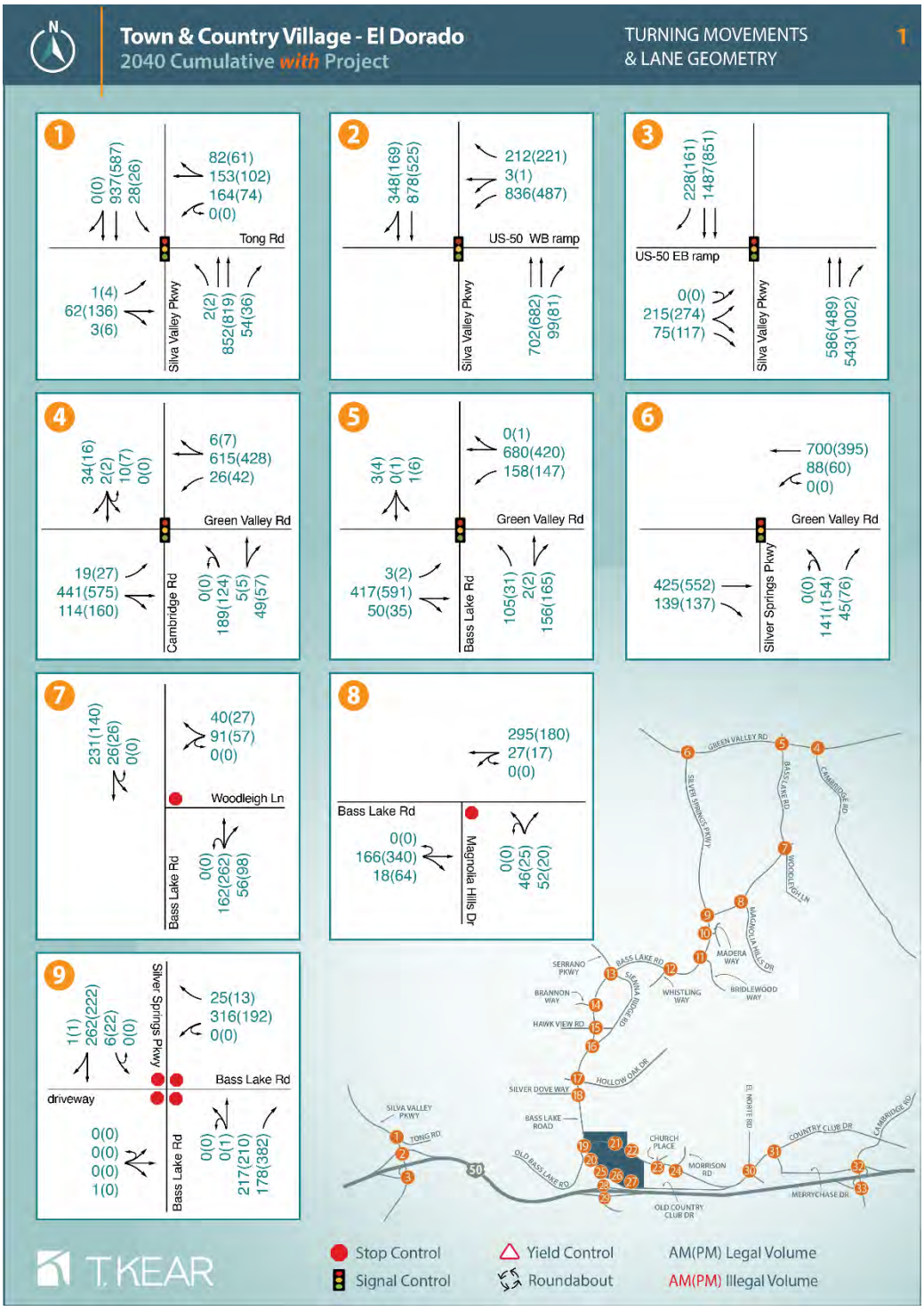

Figure 15. Cumulative 2040 plus Project-Development and Program Study area lane geometry and turning movements

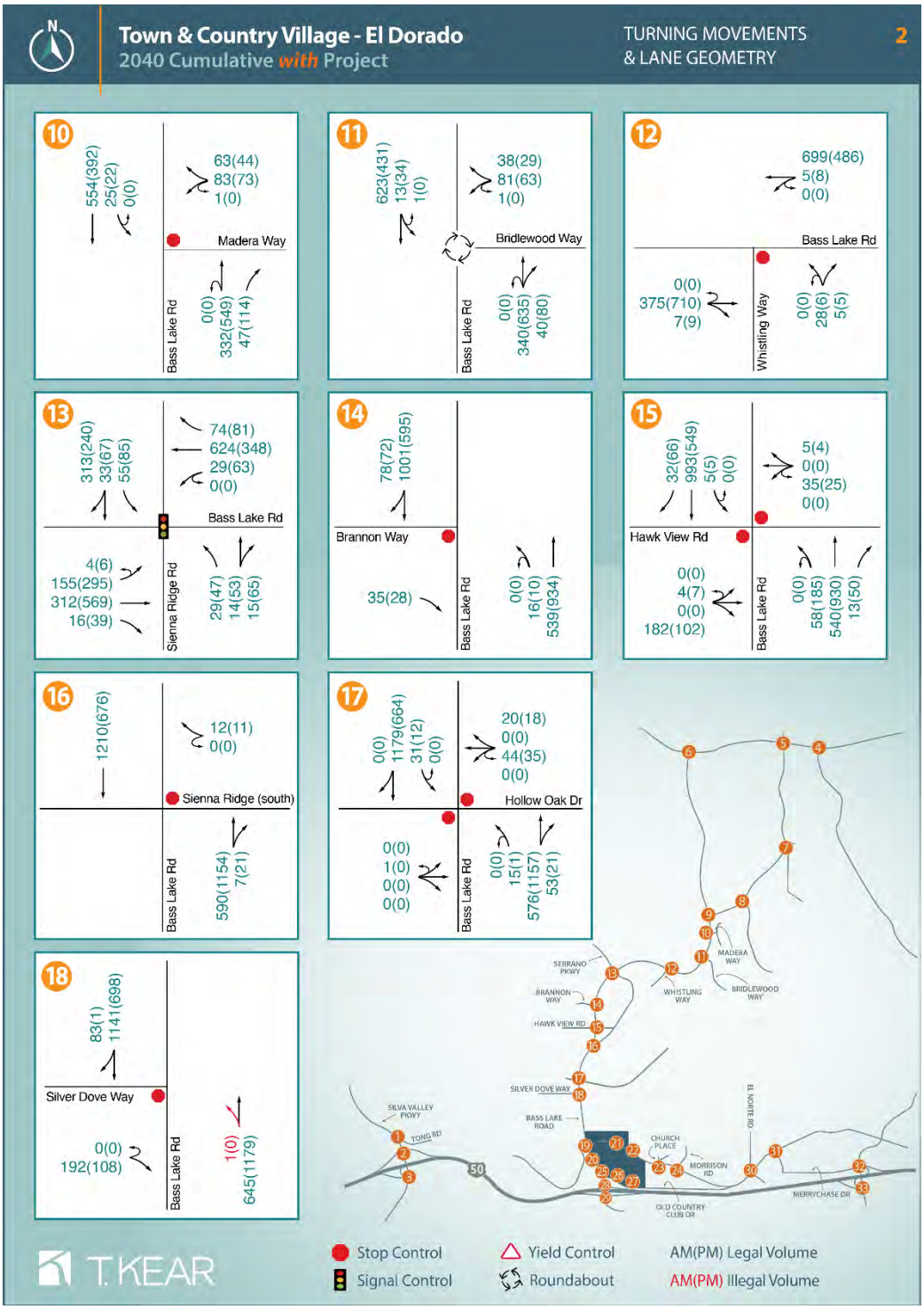

Figure 15. Cumulative 2040 plus Project-Development and Program Study area lane geometry and turning movements (continued)

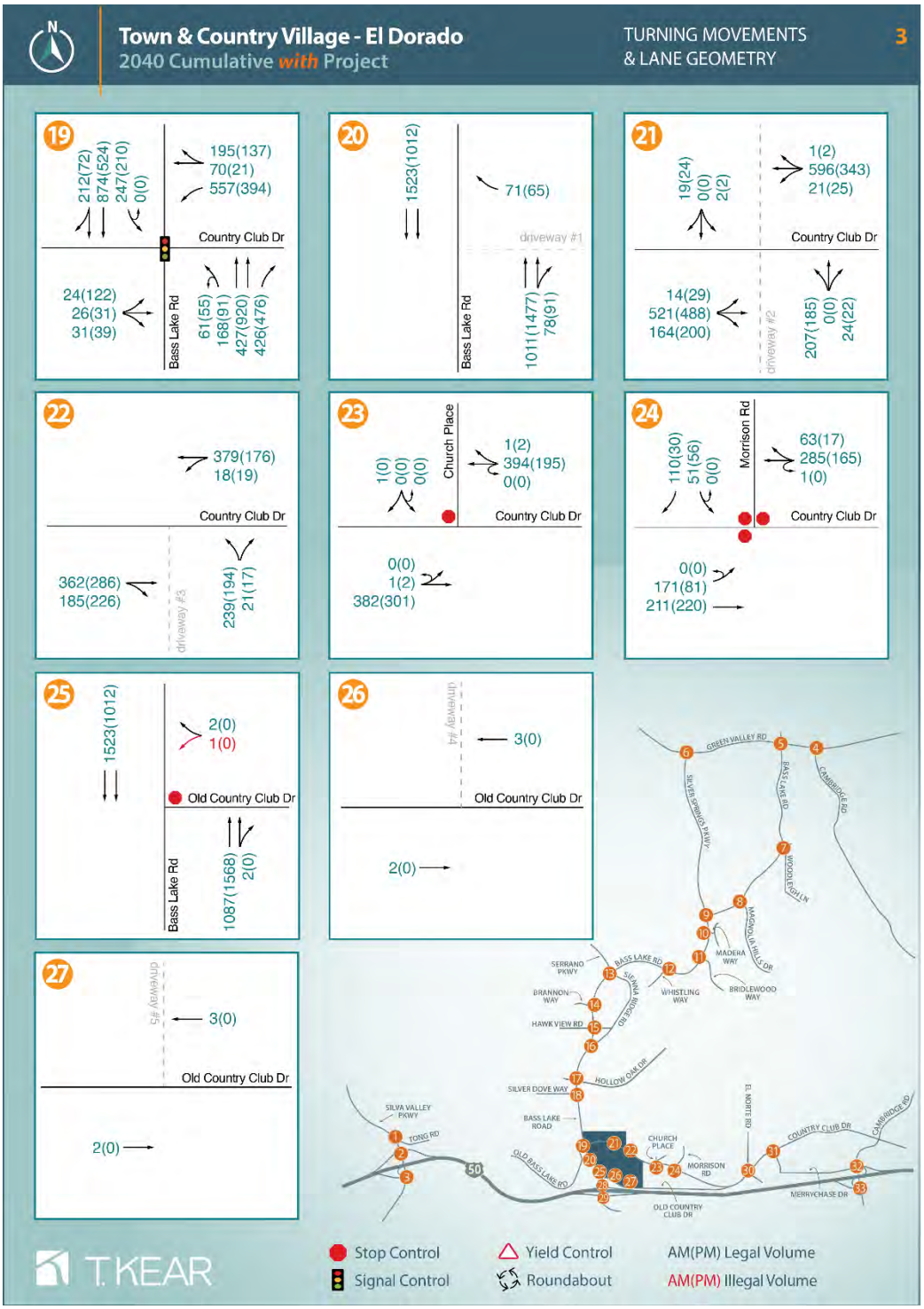

Figure 15. Cumulative 2040 plus Project-Development and Program Study area lane geometry and turning movements (continued)

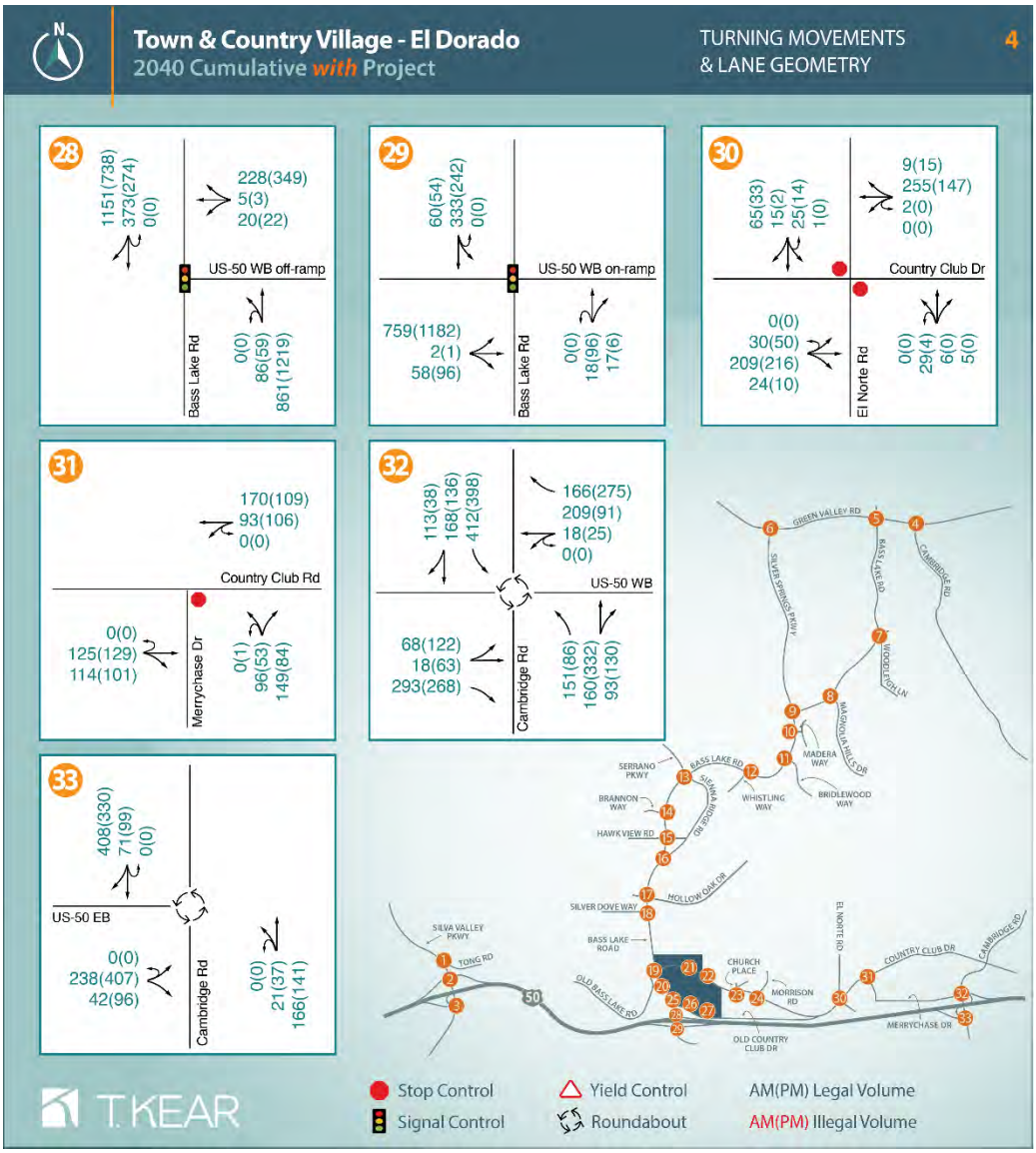

Figure 15. Cumulative 2040 plus Project-Development and Program Study area lane geometry and turning movements (continued)

Table 28. Cumulative 2040 intersection delay, level-of-service, and queueing with and without the Project-Development and Program-Study area traffic

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM No Project 95% Left Turn Queue (Feet)	2040 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM No Project 95% Left Turn Queue (Feet)	2040 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 AM Plus Project 95% Left Turn Queue (Feet)	2040 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Plus Project 95% Left Turn Queue (Feet)	2040 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
1	Silva Valley & Tong	LOS (Signal)			B / 18.8		B / 15.5		B / 19.9		B / 16.4
		EBL Queue	200	5		12		5		12	
		WBL Queue	200	189		91		189		91	
		NBL Queue	200	10		11		10		11	
		SBL Queue	200	42		33		54		53	
2	Silva Valley & US-50 WB	LOS (Signal)			B / 10.6		A / 8.2		B / 12.4 (NB)		A / 8.4
		WBL Queue	1200*	286		103		366		118	
		NBL Queue	n/a	n/a		n/a		n/a		n/a	
3	US-50 EB & Silva Valley	LOS (Signal)			A / 7.4		A / 9.0		A / 7.4		A / 9.3
		EBL Queue	1200*	104		88		112		95	
		NBL Queue	n/a	n/a		n/a		n/a		n/a	
4	Cambridge & Green Valley	LOS (Signal)			B / 17.6		B / 15.6		B / 17.6		B / 15.6
		EBL Queue	90	41		49		41		49	
		WBL Queue	130	50		69		50		69	
		NBL Queue	120	214		138		214		138	
5	Bass Lake & Green Valley	LOS (Signal)			B / 16.1		B / 17.3		B / 16.3		B / 17.6
		EBL Queue	280	12		9		12		10	
		WBL Queue	440	169		161		174		166	
		NBL Queue	160	123		48		123		48	
6	Silver Springs & Green Valley	LOS (Signal)			A / 9.3		B / 10.2		A / 9.4		B / 10.3
		WBL Queue	420	130		79		130		79	
		NBL Queue	130	107		115		110		118	
7	Bass Lake & Woodleigh	LOS (TWSC)			B / 13.2 (WB)		B / 12.7 (WB)		B / 13.6 (WB)		B / 13.0 (WB)
8	Magnolia & Bass Lake	LOS (TWSC)			B / 12.0 (NB)		B / 12.8 (NB)		B / 12.2 (NB)		B / 13.0 (NB)
		WBL Queue	50	2.5		2.5		2.5		2.5	
9	Bass Lake & Silver Springs	LOS (AWSC)			B / 15.9		B / 12.3		C / 16.7		B / 12.6
		SBL Queue	75	0		2.5		0		2.5	
10	Bass Lake & Madera	LOS (TWSC)			C / 22.9 (WB)		C / 22.7 (WB)		C / 24.3 (WB)		C / 23.6 (WB)
		NBL Queue	80	0		0		0		0	
		SBL Queue	150	2.5		2.5		2.5		2.5	
11	Bass Lake & Bridlewood	LOS (Roundabout)			A / 9.1		A / 8.6		A / 9.6		A / 9.0
12	Whistling & Bass Lake	LOS (TWSC)			C / 22,4 (NB)		C / 20.5 (NB)		C / 24.1 (NB)		C / 21.5 (NB)
13	Bass Lake & Sienna Ridge (north)	LOS (Signal)			D / 39.0		C / 27.2		D / 49.0		C / 30.4
		EBL Queue	340	204		403		244		476	
		WBL Queue	380	68		107		69		109	
		NBL Queue	210	68		85		69		87	
		SBL Queue	155	107		133		109		136	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 28. Cumulative 2040 intersection delay, level-of-service, and queueing with and without the Project-Development and Program-Study area traffic (continued)

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM No Project 95% Left Turn Queue (Feet)	2040 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM No Project 95% Left Turn Queue (Feet)	2040 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 AM Plus Project 95% Left Turn Queue (Feet)	2040 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Plus Project 95% Left Turn Queue (Feet)	2040 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
14	Bass Lake & Brannon	LOS (TWSC)			C / 20.3 (EB)		B / 12.5 (EB)		C / 21.7 (EB)		B / 13.2 (EB)
		NBL Queue	335	2.5		0		2.5		0	
15	Bass Lake & Hawk View	LOS (TWSC)			F / 465.7 (WB)		F / 194.1 (WB)		F / >500 (WB)		F / 336.9 (WB)
		NBL Queue	290	5		17.5		7.5		20	
		SBL Queue	250	0		0		0		0	
16	Bass Lake & Sienna Ridge (south)	LOS (TWSC)			B / 12.3 (WB)		C / 21.4 (WB)		B / 13.2 (WB)		C / 23.1 (WB)
17	Bass Lake & Hollow Oak	LOS (TWSC)			F / 164.7 (WB)		F / 115.6 (WB)		F / 265.0 (WB)		F / 177.5 (WB)
		NBL Queue	300	0		0		0		0	
		SBL Queue	300	2.5		2.5		2.5		2.5	
18	Bass Lake & Silver Dove	LOS (TWSC)			F / 74.4 (EB)		C / 15.2 (EB)		F / 74.4 (EB)		C / 15.2 (EB)
19	Bass Lake & Country Club	LOS (Signal)			D / 40.6		C / 26.5		F / 81.9		D / 51.3
		WBL Queue	300	225		87		1015		617	
		NBL Queue	300	342		152		490		273	
		SBL Queue	300	380		247		380		247	
20	Bass Lake & Drwy #1	LOS (TWSC)		Does not Exist		Does not Exist			B / 14.1 (WB)		C / 18.9 (WB)
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist			F / 608.2 (NB)		F /225.7 (NB)
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist			F / 80.7 (NB)		C / 22.7 (NB)
23	Country Club & Church	LOS (TWSC)			B / 10.6 (SB)		A / 7.6 (EB)		B / 10.9 (SB)		A / 7.7 (EB)
24	Country Club & Morrison	LOS (AWSC)			B / 11.4		A / 9.2		B / 12.3		A / 9.7
		EBL Queue	275	33		12.5		105		12.5	
		SBL Queue	240	7.5		7.5		10		10	
25	Bass Lake & Old Country Club	LOS (TWSC)			B / 11.1 (WB)		A / 0 (n/a)		B / 13.3 (WB)		A / 0 (n/a)
26	Old Country Club & Drwy #4	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
27	Old Country Club & Drwy #5	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
28	Bass Lake & US-50 WB	LOS (Signal)			B / 17.9		C / 23.5		E / 67.6		F / 129.1
		WBL Queue	850*	91		92		108		115	
		NBL Queue	n/a	829		929		1396		1747	
29	Bass Lake & US-50 EB	LOS (Signal)			C / 30.8		C / 26.3		F / 108.2		F / 185.0
		EBL Queue	480*	705		948		1363		1628	
		SBL Queue	n/a	324		279		465		278	
30	Country Club & El Norte	LOS (TWSC)			B / 14.1 (NB)		B / 12.3 (NB)		C / 15.9 (NB)		B / 13.6 (NB)
31	Merrychase & Country Club	LOS (TWSC)			B / 13.9 (NB)		B / 11.3 (NB)		C / 15.7 (NB)		B / 12.6 (NB)
32	Cambridge & US-50 WB	LOS (Roundabout)			C / 12.8		B / 13.5		B / 12.8		B / 13.5
		WBL Queue	1000*	25		50		25		50	
33	Cambridge & US-50 EB	LOS (Roundabout)			A / 5.3		A / 7.3		A / 5.3		A / 7.5
		EBL Queue	1250*	25		50		25		50	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 29. Cumulative 2040 freeway facility level-of-service with and without the Project-Development and Program-Study area traffic

ID	Segment	Type	2040 No Project AM (Density/LOS)	2040 No Project PM (Density/LOS)	2040 with Project AM (Density/LOS)	2040 with Project PM (Density/LOS)
Westbound US-50						
1	East of Cambridge Rd	Basic	19.4 / C	18.9 / C	20.4 / C	19.6 / C
2	Cambridge Rd Offramp	Diverge	23.0 / C	22.4 / C	24.2 / C	23.3 / C
3	Cambridge Rd between ramps	Basic	16.5 / B	16.0 / B	17.4 / B	16.7 / B
4	Cambridge Rd Onramp	Merge	24.2 / C	24.2 / C	25.3 / C	25.0 / C
5	Cambridge Rd to Bass Lake Rd	Basic	20.4 / C	20.4 / C	21.5 / C	21.3 / C
6	Bass Lake Rd Offramp	Diverge	24.2 / C	24.2 / C	25.3 / C	25.0 / C
7	Bass Lake Rd between ramps	Basic	19.1 / C	18.3 / C	19.5 / C	18.3 / C
8	Bass Lake Rd Onramp	Merge	29.8 / D	26.0 / C	32.8 / D	28.3 / D
9	Bass Lake Rd to Silva Valley Pkwy	Basic	27.1 / D	22.3 / C	31.7 / D	25.1 / C
10	Silva Valley Pkwy Offramp	Diverge	30.5 / D	26.1 / C	34.0 / D	28.8 / D
11	Silva Valley Pkwy between ramps	Basic	18.6 / C	17.3 / B	20.8 / C	18.0 / C
Eastbound US-50						
12	Silva Valley Pkwy between ramps	Basic	8.9 / A	11.2 / B	10.1 / A	12.3 / B
13	Silva Valley Pkwy Loop Onramp	Merge	13.0 / B	14.7 / B	14.5 / B	16.3 / B
14	Silva Valley Pkwy Slip Onramp	Merge	13.0 / B	18.1 / B	14.4 / B	20 / B
15	Silva Valley Pkwy to Bass Lake Rd	Basic	12.2 / B	16.0 / B	13.5 / B	17.8 / B
16	Bass Lake Rd Offramp	Diverge	17.1 / B	24.2 / C	20.6 / C	27.3 / C
17	Bass Lake Rd between ramps	Basic	9.8 / A	11.7 / B	9.7 / A	11.6 / B
18	Bass Lake Rd Onramp	Merge	14.4 / B	15.7 / B	15.1 / B	16.2 / B
19	Bass Lake Rd to Cambridge Rd	Basic	11.0 / B	12.5 / B	11.4 / B	12.8 / B
20	Cambridge Rd Offramp	Diverge	15.1 / B	17.3 / B	15.6 / B	17.7 / B
21	Cambridge Rd between ramps	Basic	9.7 / A	10.1 / A	10.1 / A	10.5 / A

Density in units of passenger cars per mile per lane.

Table 30. Cumulative 2040 arterial level-of-service check with and without the Project-Development and Program-Study area traffic

Arterial Segment	Description	2040 AM No Project (Volume and level-of-Service)	2040 PM No Project (Volume and level-of-Service)	2040 AM with Project-Development and Program-Study Area (Volume and level-of-Service)	2040 PM with Project-Development and Program-Study Area (Volume and level-of-Service)
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1841 (Level-of-Service F)	1846 (Level-of-Service F)	1986 (Level-of-Service F)	1985 (Level-of-Service F)
ii. Bass Lake Rd (between US-50 Country Club Dr)	No Project: 2-lane arterial (threshold 1540) With Project: 4-lane arterial (threshold 3130)	1791 (Level-of-Service F)	1728 (Level-of-Service F)	2192 (Level-of-Service D)	2073 (Level-of-Service D)
iii. Country Club Dr (between Bass Lake Rd and Morrison Rd)	2-lane arterial (threshold 1650)	693 (Level-of-Service C)	411 (Level-of-Service C)	1512 (Level-of-Service D)	1274 (Level-of-Service D)

10.3 Cumulative 2040 Plus Project-Development and Program Study Area General Plan Deficiency Findings

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "deficiency", and improvements to address those deficiencies are referred to as "abatements". Throughout this document, Intersection deficiencies and abatements are numbered using the intersection number (1-33) and a year code (2023 = "A", 2033 = "B", 2040 = "C", and 2040 super-cumulative = "D"). Similarly, segment level deficiencies and abatement measures are numbered using the segment number (i through iii) for arterial segments or (US-50(1) US-50(21)) for freeway segments, and a year code (A, B, C or D).

All deficiencies and abatements described below include the deficiency number/abatement number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing.

Deficiency/Abatement (i)C: Bass Lake between Country Club Dr and Silver Dove Wy

Deficiency: Prior to the addition of Project-Development and Program-Study area traffic, this segment is anticipated to operate at level-of-service F during the AM and PM peak-hour. The addition of traffic from the Project-Development and Program-Study areas is anticipated to further degrade level-of-service. Project-Development and Program-Study area traffic worsens the pre-existing deficiency.

Abatement: Widen Bass Lake Road from two-lanes to four lanes between County Club Drive and Hawk View Rd.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 31** presents the segment level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair-share of the cost to widen this portion of Bass Lake Rd, which would be addressed by payment of fees after the widening project is added to the 10-year CIP. Not that widening of this portion of Bass Lake Rd is included in the unfunded projects list of the 2023 CIP as Project number "#GP166, CIP #72BASS/36105054".

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: (i)D.

Deficiency/Abatement 13C: Bass Lake & Sienna Ridge (north)

Deficiency: Prior to the addition of Project-Development and Program-Study area traffic, the 95th percentile queue for the eastbound left turn from Bass Lake Rd to Serrano Pkwy is anticipated to exceed the length of its storage pocket. Project-Development and Program-Study area traffic is anticipated to add 73-feet to that queue. Project-Development and Program-Study area traffic worsens the pre-existing deficiency.

Abatement: Extend the eastbound left turn pocket length from 340-feet to 385-feet and optimize signal timing.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table *32*** presents the segment level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair-share of the cost of improvements at this intersection, which would be addressed by payment of fees after the intersection improvements are added to the 10-year CIP.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 13D

Deficiency/Abatement 15C: Bass Lake & Hawk View

Deficiency: Prior to the addition of Project-Development and Program-Study area traffic, the intersection is anticipated to operate at level-of-service F during both the morning and afternoon. Project-Development and Program-Study area traffic worsens the pre-existing deficiency.

Abatement: Implement Abatement 15B.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 32** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 15B.

Timing: Not applicable, addressed through abatement 15B.

Cross Reference: See abatement: 15B

Deficiency/Abatement 17C: Bass Lake & Hollow Oak

Deficiency: Prior to the addition of Project-Development area traffic, the intersection is anticipated to operate at level-of-service F during both the morning and afternoon. Project traffic worsens the pre-existing deficiency.

Abatement: Implement Abatement 17B.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 32** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 17B.

Timing: Not applicable, addressed through abatement 17B.

Cross Reference: See abatement: 17B and 17D.

Deficiency/Abatement 19C: Bass Lake & Country Club

Deficiency: Prior to the addition of Project-Development area traffic, the 95th percentile northbound and southbound left turn queue are anticipated to exceed available storage space during the morning. The intersection is also anticipated to operate at level-of-service F. Project-Development and Program-Study area traffic is anticipated to add northbound queue spillback and cause a new spillback issue for the westbound left-turn queue.

Abatement: Expand Abatement 19B by additional intersection widening such that the intersection has the following approach configuration:

Eastbound	One left turn lane in a 200-foot pocket, one through lane, and one right turn lane in a 200-foot pocket.
Westbound	Two left turn lanes in a 400-foot pocket, one through lane, and one right turn lane in a 300-foot pocket.
Northbound	Two left turn lanes in a 300-foot pocket, two through lanes, and one right turn lane in a 300-foot pocket.
Southbound	One left turn lane in a 300-foot pocket, two through lanes, and one right turn lane in a 300-foot pocket. Note that this was a duel southbound left under EPAP abatements. The second southbound left is not necessary once other intersection legs are expanded. However, the 2nd left turn lane under the EPAP scenario can be converted to a through lane for this abatement to minimize any throwaway work.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 32** presents the segment level-of-service results with this abatement.

Project responsibility: CIP project 65105009 extends Country Club Drive from Bass Lake Rd to Tong Rd, with $3 million of $11million of the construction funds in the 10-year CIP, and the balance in the 20-year CIP. The Project is responsible for its fair-share of the cost to expand the intersection, which can be addressed by payment of fees. The applicant may enter a fee-credit agreement with the County to construct these improvements when the Project widens Bass Lake Rd from two-lanes to four-lanes between US-50 and Country Club Drive.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 19B and 19D.

Deficiency/Abatement 21C: Country Club & Drwy #2

Deficiency: The addition of traffic from the Project-Development and Program-Study areas causes this Project-frontage intersection to operate at level-of-service F.

Abatement: Construct a 1-lane roundabout.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 32** presents the segment level-of-service results with this abatement.

Project responsibility: this intersection is a Project driveway intersection. The Project is responsible for constructing the improvements.

Timing: Project shall construct this frontage improvement prior to issuance of the first building permit.

Cross Reference: See abatement: 21D.

Deficiency/Abatement 22C: Country Club & Drwy #3

Deficiency: The addition of traffic from the Project-Development and Program-Study areas causes this Project-frontage intersection to operate at level-of-service F.

Abatement: Widen Country Club Dr to include median storage for one or more vehicles making the northbound left turn from the Project.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy

deficiencies at this location. **Table 32** presents the segment level-of-service results with this abatement.

Project responsibility: this intersection is a Project driveway intersection. The Project is responsible for constructing the improvements.

Timing: Project shall construct this frontage improvement prior to issuance of the first building permit.

Cross Reference: See abatement: none.

Deficiency/Abatement 28C: Bass Lake Rd interchange (westbound ramp interchange)

Deficiency: The 95th percentile northbound left turn queue from Bass Lake Rd to US-50 westbound exceeds the available storage space and stretches beyond the eastbound ramp intersection. Project-Development and Program-Study area traffic is anticipated to worsen the queue lengths. Project-Development and Program-Study area traffic is also anticipated to worsen the level-of-service to F during both the morning and afternoon.

Abatement: Implement Abatement 29A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 32** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 29A.

Timing: Not applicable, addressed through abatement 29A.

Cross Reference: See abatement: 29A, 28b, 29B, 29C, 28D, and 29D.

Deficiency/Abatement 29C: Bass Lake Rd interchange (eastbound ramp interchange)

Deficiency: The northbound left-turn queues underneath the freeway are anticipated to extend back through and block the eastbound offramp. The 95th percentile left turn queue from the eastbound offramp at intersection 29 (Bass Lake Rd/US-50 eastbound offramp) is anticipated to grow from 705-feet without the Project-Development and Program-Study area traffic to 1363-feet with the Project-Development and Program-Study area traffic during the AM peak hour. The same eastbound queue is anticipated to grow from 948-feet without the Project-Development and Program-Study area traffic to 1628-feet with the Project-Development area traffic during the PM peak hour. The offramp has an approximate 850-foot length. This places the back of the queue too close to the freeway mainline.

Abatement: Implement Abatement 29A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 32** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 29A.

Timing: Not applicable, addressed through abatement 29A.

Cross Reference: See abatement: 29A, 28B, 28C, 29B, 28D, and 29D.

Table 31. Cumulative 2040 arterial level-of-service check with and without the Project-Development and Program-Study area traffic

Arterial Segment	Description	2040 AM No Project (Volume and level-of-Service	2040 PM No Project (Volume and level-of-Service	2040 AM with Project-Development and Program-Study Area (Volume and level-of-Service	2040 PM with Project-Development and Program-Study Area (Volume and level-of-Service
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1841 (Level-of-Service F)	1846 (Level-of-Service F)	1986 (Level-of-Service F)	1985 (Level-of-Service F)
i. Abated Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	4-lane arterial (threshold 3130)			1986 (Level-of-Service D)	1985 (Level-of-Service D)

Table 32. Cumulative 2040 intersection delay, level-of-service, and queueing with and without the abated Project-Development and Program-Study area traffic

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM No Project 95% Left Turn Queue (Feet)	2040 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM No Project 95% Left Turn Queue (Feet)	2040 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 AM Plus Project 95% Left Turn Queue (Feet)	2040 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Plus Project 95% Left Turn Queue (Feet)	2040 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
13	Bass Lake & Sienna Ridge (north)	LOS (Signal)			D / 39.0		C / 27.2		D / 49.0		C / 30.4
		EBL Queue	340	204		403		244		476	
		WBL Queue	380	68		107		69		109	
		NBL Queue	210	68		85		69		87	
		SBL Queue	155	107		133		109		136	
13	Bass Lake & Sienna Ridge (north) (Abatement: Extend EBL pocket & adjust signal timing)	LOS (Signal)							D / 46.5		C / 29.9
		EBL Queue	385					210		385	
		WBL Queue	380					60		114	
		NBL Queue	210					60		91	
		SBL Queue	155					94		143	
15	Bass Lake & Hawk View	LOS (TWSC)			F / 465.7 (WB)		F / 194.1 (WB)		F / >500 (WB)		F / 336.9 (WB)
		NBL Queue	290	5		17.5		7.5		20	
		SBL Queue	250	0		0		0		0	
15	Bass Lake & Hawk View (Abatement: Signalize)	LOS (Signal)							E / 69.2		C / 26.3
		NBL Queue	290					52		191	
		SBL Queue	250					12		19	
17	Bass Lake & Hollow Oak	LOS (TWSC)			F / 164.7 (WB)		F / 115.6 (WB)		F / 265.0 (WB)		F / 177.5 (WB)
		NBL Queue	300	0		0		0		0	
		SBL Queue	300	2.5		2.5		2.5		2.5	
17	Bass Lake & Hollow Oak (Abatement: 4x2 Roundabout)	LOS (Roundabout)							B / 10.6		A / 9.1
		EB Queue						1		0	
		WB Queue						8		10	
		NB Queue						36		89	
		SB Queue						101		37	
19	Bass Lake & Country Club	LOS (Signal)			D / 40.6		C / 26.5		F / 81.9		D / 51.3
		WBL Queue	300	225		87		1015		617	
		NBL Queue	300	342		152		490		273	
		SBL Queue	300	380		247		380		247	
19	Bass Lake & Country Club (Abatement: Expand intersection)	LOS (Signal)							D / 35.2		C / 30.0
		EBL Queue	200					61		191	
		WBL Queue	400					374		250	
		NBL Queue	300					177		114	
		SBL Queue	300					298		210	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table *32*. Cumulative 2040 intersection delay, level-of-service, and queueing with and without the abated Project-Development and Program-Study area traffic (continued)

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM No Project 95% Left Turn Queue (Feet)	2040 AM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM No Project 95% Left Turn Queue (Feet)	2040 PM No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 AM Plus Project 95% Left Turn Queue (Feet)	2040 AM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Plus Project 95% Left Turn Queue (Feet)	2040 PM Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist			F / 608.2 (NB)		F /225.7 (NB)
21	Country Club & Drwy #2 (Abatement: 2x2 Roundabout)	LOS (Roundabout)							B / 13.1		A / 9.4
		EB Queue						100		100	
		WB Queue						125		50	
		NB Queue						50		25	
		SB Queue						0		0	
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist			F / 80.7 (NB)		C / 22.7 (NB)
22	Country Club & Drwy #3 (Abatement: Add receiving / 1-vehicle median storage pocket for NBL from Project)	LOS (TWSC)							D / 29.4		C / 17.2
		EBL Queue						n/a		n/a	
		WBL Queue						n/a		n/a	
		NBL Queue						n/a		n/a	
		SBL Queue						n/a		n/a	
28	Bass Lake & US-50 WB	LOS (Signal)			B / 17.9		C / 23.5		E / 67.6		F / 129.1
		WBL Queue	850*	91		92		108		115	
		NBL Queue	n/a	829		929		1396		1747	
28	Bass Lake & US-50 WB (Abatement: 2nd NB thru lane and optimize/coordinate timing for both ramp intersections)	LOS (Signal)							C / 23.9		B / 18.7
		WBL Queue	850*					82		136	
		NBL Queue	n/a					82		68	
29	Bass Lake & US-50 EB	LOS (Signal)			C / 30.8		C / 26.3		F / 108.2		F / 185.0
		EBL Queue	n/a	705		948		1363		1628	
		SBL Queue	480*	324		279		465		278	
29	Bass Lake & US-50 EB (Abatement: Widen EB offramp and optimize/coordinate timing for both ramp intersections)	LOS (Signal)							D / 52.4		C /22.6
		EBL Queue	350					346		342	
		SBL Queue	n/a					8		19	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

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11.0 SUPER-CUMULATIVE 2040 CONDITIONS

The Super-Cumulative 2040 conditions analysis started with lane configurations from 2023 conditions, turning movements derived from existing traffic counts, growth factors from the Travel Demand Model, and the NCHRP 255 adjustment procedure[20]. Four Capital Improvement Program (CIP) projects that effects study intersection geometry were accounted for:

- CIP Project 36104005: "US-50 / Bass Lake Road Interchange Improvements" is anticipated to signalize intersect 28 (Bass Lake Rd/US-50 westbound ramps).
- CIP Project 36104006: "Cambridge Road Interchange Improvements" is anticipated to reconstruct the ramp intersections by 2040. For this analysis roundabouts were assumed at this location as the Caltrans Intersection Capacity Evaluation (ICE) process pushes updated interchanges to use roundabouts to minimize lifetime costs. However, the Project is not anticipated to send traffic through these intersections, and altering the roundabout assumption does not affect the findings of this local transportation analysis.
- CIP Project 36105079 will construct a roundabout at the Bass Lake Rd/Bridlewood Wy intersection by 2040.
- CIP Projects 36105009, 36105008, and 36105007 will extend Country Club Dr from Bass Lake Rd to Saratoga Wy by 2040.

Traffic volumes from 2023 without the Project were used as a floor. **Figure 16** summarizes the turning movements and lane configurations for the Super-Cumulative 2040 conditions scenario.

Delay and level-of-service is presented in **Table 33** through **Table 35**. Intersection control is listed as signal, two-way stop-controlled (TWSC), all-way stop-control (AWSC), or roundabout. Both the estimated delay and level-of-service (LOS) is provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in yellow highlight denote deficient traffic operations.

The results indicate that two arterial study segments, and seven study intersections operate deficiently with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths. Additionally, two freeway study segments, located outside of the community region, are anticipated to operate deficiently with level-of-service E conditions.

[20] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.

Two Arterial segments with a deficiency:

- (i) Bass Lake Rd (between Country Club Dr and Silver Dove Wy) AM and PM
- (ii) Bass Lake Rd (between US-50 Country Club Dr) AM and PM

Two freeway segments with a deficiency:

- (US-50-8) Eastbound Bass Lake Rd Onramp AM
- (US-50-9) Eastbound Bass Lake Rd to Silva Valley Pkwy (Bass Lake grade) AM

Seven Study intersections with deficiencies:

- (1) silva Valley & Tong AM and PM
- (4) Cambridge & Green Valley AM and PM
- (13) Bass Lake & Sienna Ridge (north) PM
- (17) Bass Lake & Hollow Oak AM and PM
- (19) Bass Lake & Country Club AM
- (28) Bass Lake & US-50 WB AM and PM
- (29) Bass Lake & US-50 EB AM and PM

Calculation sheets for delay and level-of-service are provided in **Appendix D**. The remainder of the study intersections, the remainder of the arterial study segments, and all of the US-50 study segments, were found to operate acceptably.

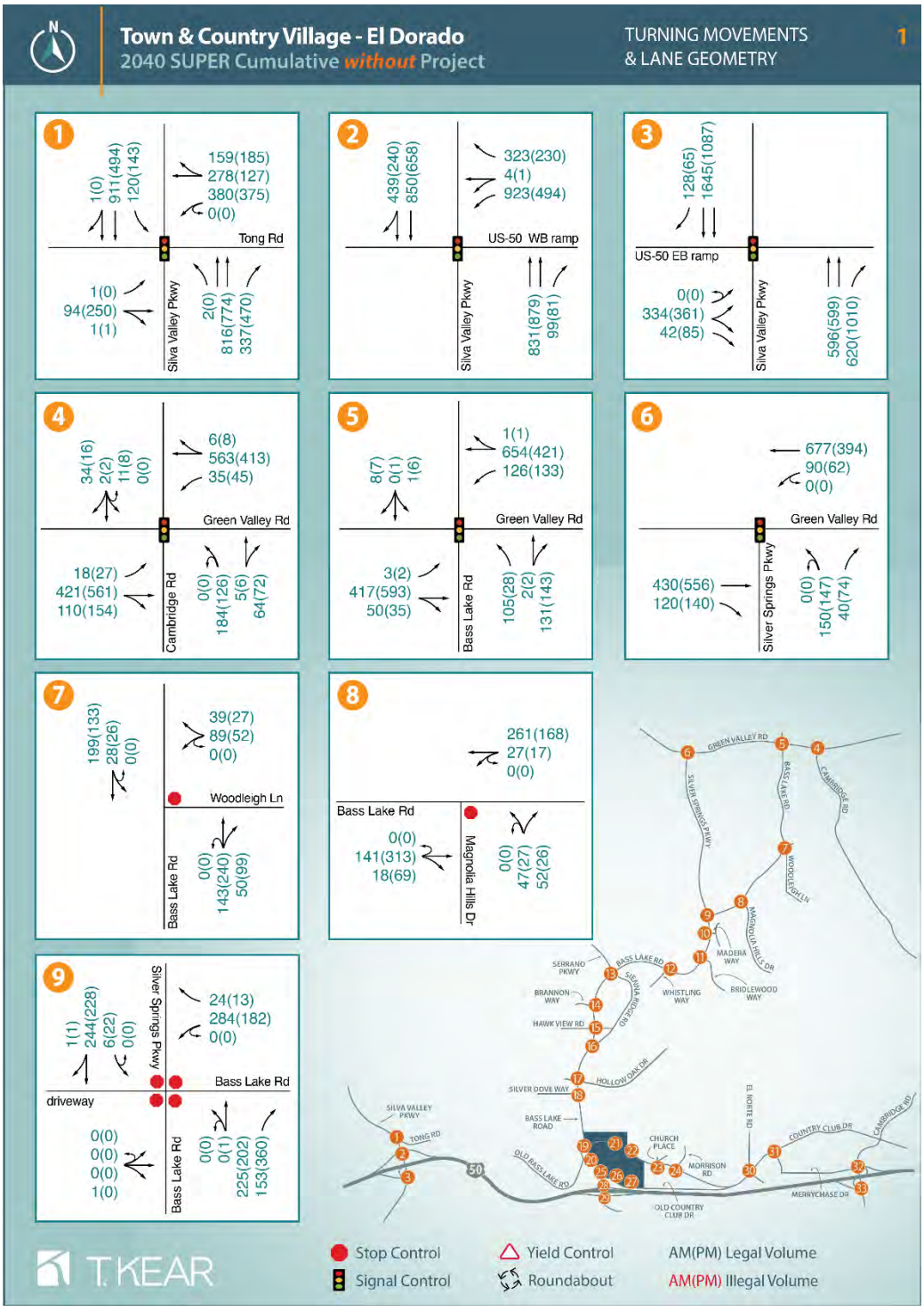

Figure 16. Super-Cumulative 2040 conditions lane geometry and turning movements

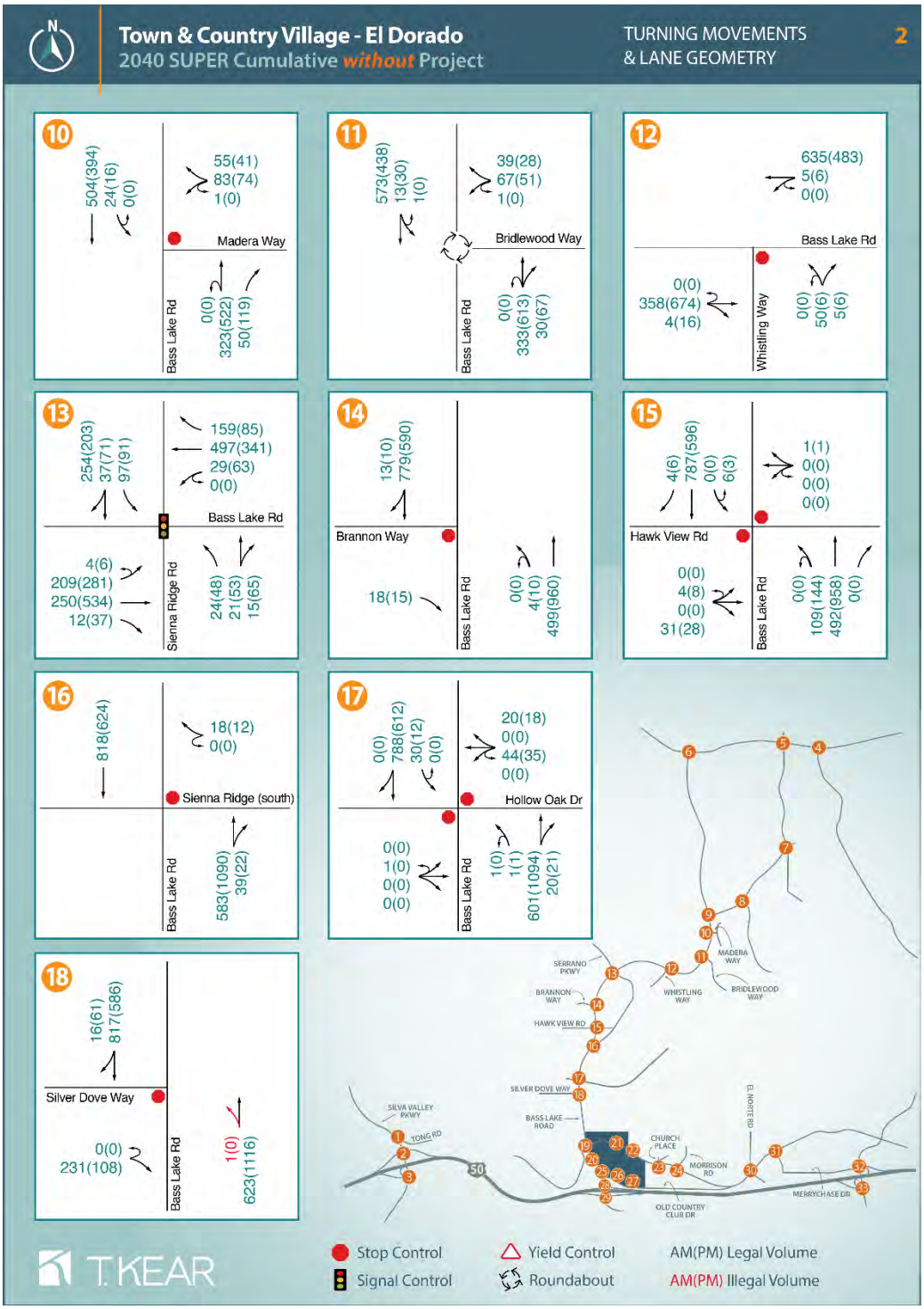

Figure *16*. Super-Cumulative 2040 conditions lane geometry and turning movements (continued)

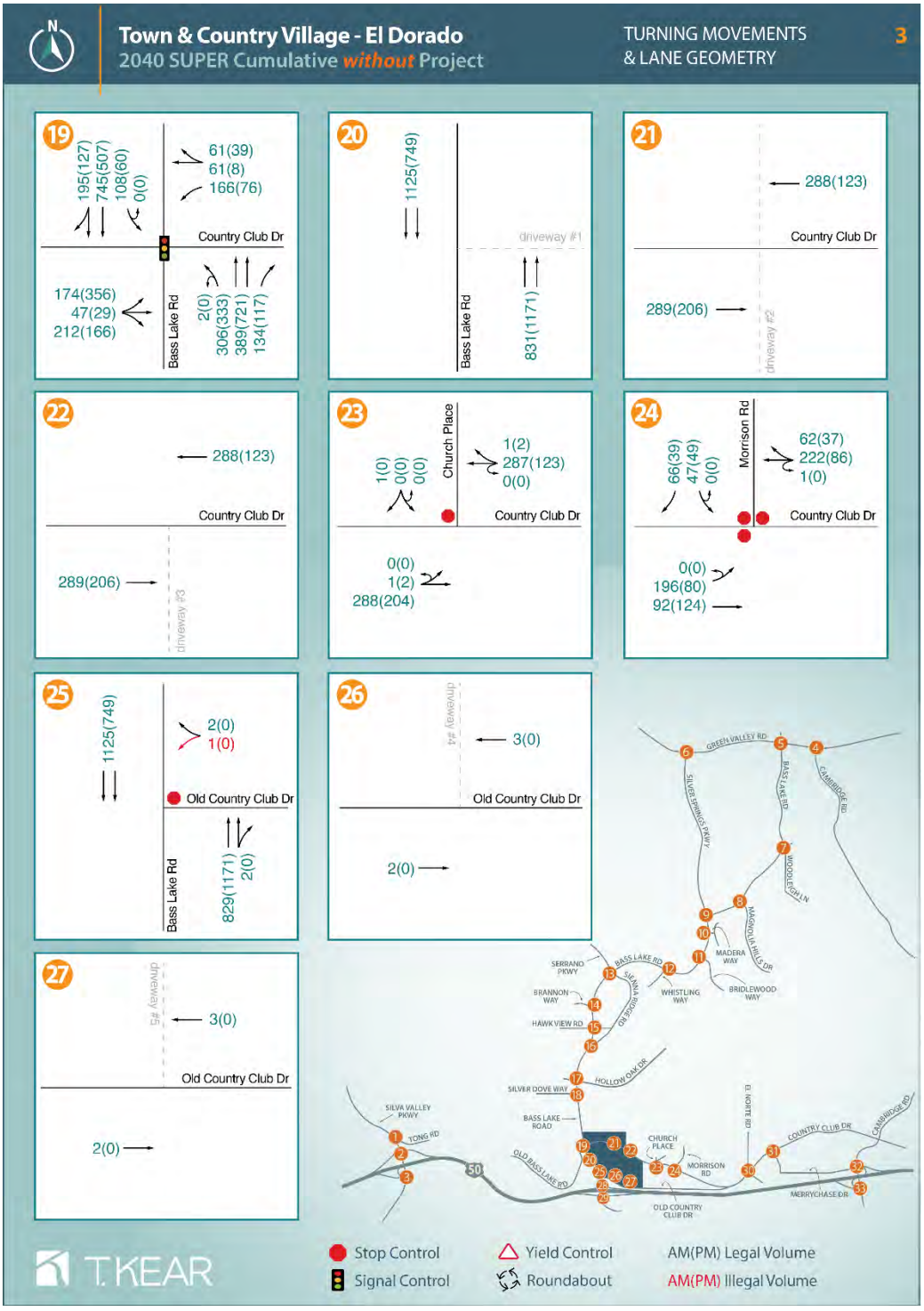

Figure *16*. Super-Cumulative 2040 conditions lane geometry and turning movements (continued)

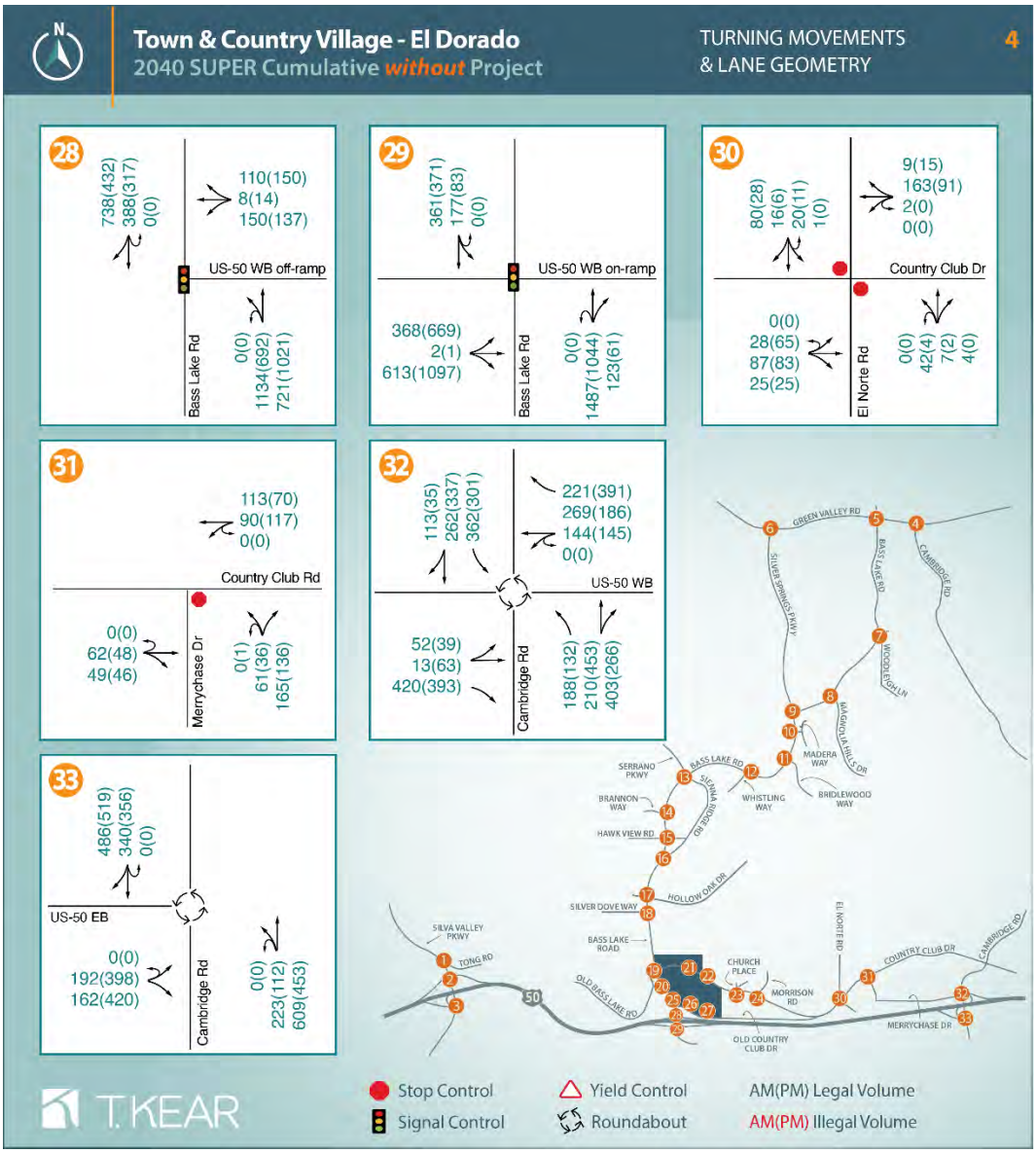

Figure *16*. Super-Cumulative 2040 conditions lane geometry and turning movements (continued)

Table 33. Super-Cumulative 2040 intersection delay, level-of-service, and queueing without the Project

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 AM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 PM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
1	Silva Valley & Tong	LOS (Signal)			D / 49.6		E / 67.5
		EBL Queue	200	5		0	
		WBL Queue	200	531		475	
		NBL Queue	200	10		0	
		SBL Queue	200	232		311	
2	Silva Valley & US-50 WB	LOS (Signal)			B / 121.9		A / 8.6
		WBL Queue	1200*	370		142	
		NBL Queue	n/a	n/a		n/a	
3	US-50 EB & Silva Valley	LOS (Signal)			A / 8.2		B / 10.4
		EBL Queue	1200*	205		138	
		NBL Queue	n/a	n/a		n/a	
4	Cambridge & Green Valley	LOS (Signal)			B / 17.5		B / 15.9
		EBL Queue	90	39		49	
		WBL Queue	130	63		72	
		NBL Queue	120	209		139	
5	Bass Lake & Green Valley	LOS (Signal)			B / 15.4		B / 16.6
		EBL Queue	280	11		9	
		WBL Queue	440	142		152	
		NBL Queue	160	119		44	
6	Silver Springs & Green Valley	LOS (Signal)			A / 9.7		B / 10.1
		WBL Queue	420	126		83	
		NBL Queue	130	111		113	
7	Bass Lake & Woodleigh	LOS (TWSC)			B / 12.8 (WB)		B / 12.5 (WB)
8	Magnolia & Bass Lake	LOS (TWSC)			B / 11.7 (NB)		B / 12.6 (NB)
		WBL Queue	50	2.5		2.5	
9	Bass Lake & Silver Springs	LOS (AWSC)			B / 14.8		B / 12.2
		SBL Queue	75	0		2.5	
10	Bass Lake & Madera	LOS (TWSC)			C / 22.0 (WB)		C / 22.2 (WB)
		NBL Queue	80	0		70	
		SBL Queue	150	2.5		2.5	
11	Bass Lake & Bridlewood	LOS (Roundabout)			A / 8.5		A / 8.4
12	Whistling & Bass Lake	LOS (TWSC)			C / 24.7 (NB)		C / 20.1 (NB)
13	Bass Lake & Sienna Ridge (north)	LOS (Signal)			C / 34.9		C / 29.0
		EBL Queue	340	377		424	
		WBL Queue	380	70		106	
		NBL Queue	210	61		86	
		SBL Queue	155	172		138	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 33. Super-Cumulative 2040 intersection delay, level-of-service, and queueing without the Project (continued)

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 AM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 PM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
14	Bass Lake & Brannon	LOS (TWSC)			C / 15.9 (EB)		B / 12.9 (EB)
		NBL Queue	335	0		0	
15	Bass Lake & Hawk View	LOS (TWSC)			C / 22.4 (EB)		E / 41.7 (EB)
		NBL Queue	290	12.5		14.5	
		SBL Queue	250	0		0	
16	Bass Lake & Sienna Ridge (south)	LOS (TWSC)			B / 13.2 (WB)		C / 21.6 (WB)
17	Bass Lake & Hollow Oak	LOS (TWSC)			F / 70.3 (EB)		F / 123.6 (WB)
		NBL Queue	300	0		0	
		SBL Queue	300	2.5		2.5	
18	Bass Lake & Silver Dove	LOS (TWSC)			E / 38.7 (EB)		B / 14.5 (EB)
19	Bass Lake & Country Club	LOS (Signal)			F / 98.6		F / 80.1
		WBL Queue	300	223		111	
		NBL Queue	300	684		728	
		SBL Queue	300	181		111	
20	Bass Lake & Drwy #1	LOS (TWSC)		Does not Exist		Does not Exist	
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist	
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist	
23	Country Club & Church	LOS (TWSC)			B / 10.1 (SB)		A / 7.5 (EB)
24	Country Club & Morrison	LOS (AWSC)			B / 10.7		A / 8.7
		EBL Queue	275	37.5		10	
		SBL Queue	240	7.5		7.5	
25	Bass Lake & Old Country Club	LOS (TWSC)			B / 11.7 (WB)		A / 0 (n/a)
26	Old Country Club & Drwy #4	LOS (TWSC)		Does not Exist		Does not Exist	
27	Old Country Club & Drwy #5	LOS (TWSC)		Does not Exist		Does not Exist	
28	Bass Lake & US-50 WB	LOS (Signal)			F / >500		F / 385.6
		WBL Queue	850*	329		336	
		NBL Queue	n/a	3579		3075	
29	Bass Lake & US-50 EB	LOS (Signal)			F / >500		F / >500
		EBL Queue	480*	1887		2412	
		SBL Queue	n/a	900		737	
30	Country Club & El Norte	LOS (TWSC)			B / 12.8 (NB)		B / 11.8 (NB)
31	Merrychase & Country Club	LOS (TWSC)			B / 11.7 (NB)		B / 10.6 (NB)
32	Cambridge & US-50 WB	LOS (Roundabout)			D / 30.9		C / 18.7
		WBL Queue	1000*	75		75	
		NBL Queue	n/a	n/a		n/a	
		SBL Queue	n/a	n/a		n/a	
33	Cambridge & US-50 EB	LOS (Roundabout)			C / 21.2		E / 44.3
		EBL Queue	1250*	50		425	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 34. Super-Cumulative 2040 freeway facility level-of-service without the Project

ID	Segment	Type	2040 Super-Cumulative No Project AM (Density/LOS)	2040 Super-Cumulative No Project PM (Density/LOS)
Westbound US-50				
1	East of Cambridge Rd	Basic	20.6 / C	20.8 / C
2	Cambridge Rd Offramp	Diverge	24.4 / C	24.5 / C
3	Cambridge Rd between ramps	Basic	15.8 / B	15.3 / B
4	Cambridge Rd Onramp	Merge	25.4 / C	23.8 / C
5	Cambridge Rd to Bass Lake Rd	Basic	21.8 / C	20.0 / C
6	Bass Lake Rd Offramp	Diverge	25.6 / C	23.7 / C
7	Bass Lake Rd between ramps	Basic	19.6 / C	17.7 / B
8	Bass Lake Rd Onramp	Merge	**37.7 / E**	30.1 / D
9	Bass Lake Rd to Silva Valley Pkwy	Basic	**42.0 / E**	27.7 / D
10	Silva Valley Pkwy Offramp	Diverge	**39.8 / E**	31.0 / D
11	Silva Valley Pkwy between ramps	Basic	24.9 / C	20.7 / C
Eastbound US-50				
12	Silva Valley Pkwy between ramps	Basic	10.8 / A	16.9 / B
13	Silva Valley Pkwy Loop Onramp	Merge	14.5 / B	20.2 / C
14	Silva Valley Pkwy Slip Onramp	Merge	15.2 / B	24.6 / C
15	Silva Valley Pkwy to Bass Lake Rd	Basic	14.1 / B	22.9 / C
16	Bass Lake Rd Offramp	Diverge	21.7 / C	34.2 / D
17	Bass Lake Rd between ramps	Basic	9.5 / A	13.4 / B
18	Bass Lake Rd Onramp	Merge	14.5 / B	17.3 / B
19	Bass Lake Rd to Cambridge Rd	Basic	10.9 / A	14.1 / B
20	Cambridge Rd Offramp	Diverge	15.2 / B	19.8 / B
21	Cambridge Rd between ramps	Basic	9.3 / A	10.4 / A

Density in units of passenger cars per mile per lane.

Table 35. Super-Cumulative 2040 arterial level-of-service check without the Project

Arterial Segment	Description	2040 Super-Cumulative AM No Project (Volume and level-of-Service)	2040 Super-Cumulative PM No Project (Volume and level-of-Service)
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1672 (Level-of-Service F)	1810 (Level-of-Service F)
ii. Bass Lake Rd (between US-50 Country Club Dr)	No Project: 2-lane arterial (threshold 1540) With Project: 4-lane arterial (threshold 3130)	1954 (Level-of-Service F)	1920 (Level-of-Service F)
iii. Country Club Dr (between Bass Lake Rd and Morrison Rd)	2-lane arterial (threshold 1650)	577 (Level-of-Service C)	329 (Level-of-Service C)

12.0 SUPER-CUMULATIVE 2040 PLUS PROJECT-DEVELOPMENT AND PROGRAM-STUDY AREA TRAFFIC CONDITIONS

12.1 Traffic Volumes

Peak hour Project trips (**Figure 10**, page 44) was added to the Super-Cumulative 2040 condition traffic volumes. Delay and level-of-service were determined at the study intersections and segments. **Figure 17** summarizes the turning movements and lane configurations for the Super-Cumulative 2040 Plus Proposed Project Development and Program Study Area conditions scenario.

12.2 Level-of-Service

Table 36 through **Table 38** present a summary of the level-of-service results for the study intersections and segments under Super-Cumulative 2040 Plus Proposed Project Development and Program Study Area conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), all-way stop-control (AWSC), or roundabout. Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in yellow highlighted text in **Table 36** through **Table 38** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. Red highlighted text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies.

The results indicate that one arterial study segment, four US-50 study segments, and six study intersections are anticipated to have level-of-service and/or queue spillback deficiencies that are created and/or worsened by Project-Development area traffic:

<u>One Arterial segments with a deficiency:</u>

- (i) Bass Lake Rd (between Country Club Dr and Silver Dove Wy) AM and PM

<u>four freeway segments with a deficiency:</u>

- (US-50-8) Eastbound Bass Lake Rd Onramp AM
- (US-50-9) Eastbound Bass Lake Rd to Silva Valley Pkwy (Bass Lake grade) AM
- (US-50-10) Eastbound Silva Valley Pkwy Offramp AM
- (US-50-16) Westbound Bass Lake Rd Offramp PM

<u>Six Study intersections with deficiencies:</u>

- (13) Bass Lake & Sienna Ridge (north) AM and PM
- (17) Bass Lake & Hollow Oak AM and PM
- (19) Bass Lake & Country Club AM and PM

- (21) Country Club & Drwy #2 AM and PM
- (28) Bass Lake & US-50 WB AM and PM
- (29) Bass Lake & US-50 EB AM and PM

Calculation sheets for delay and level-of-service are provided in **Appendix D**. The remainder of the study intersections, the remainder of the arterial study segments, and the remainder of the US-50 study segments, were found to not be worsened by Project-Development and Program-Study area traffic.

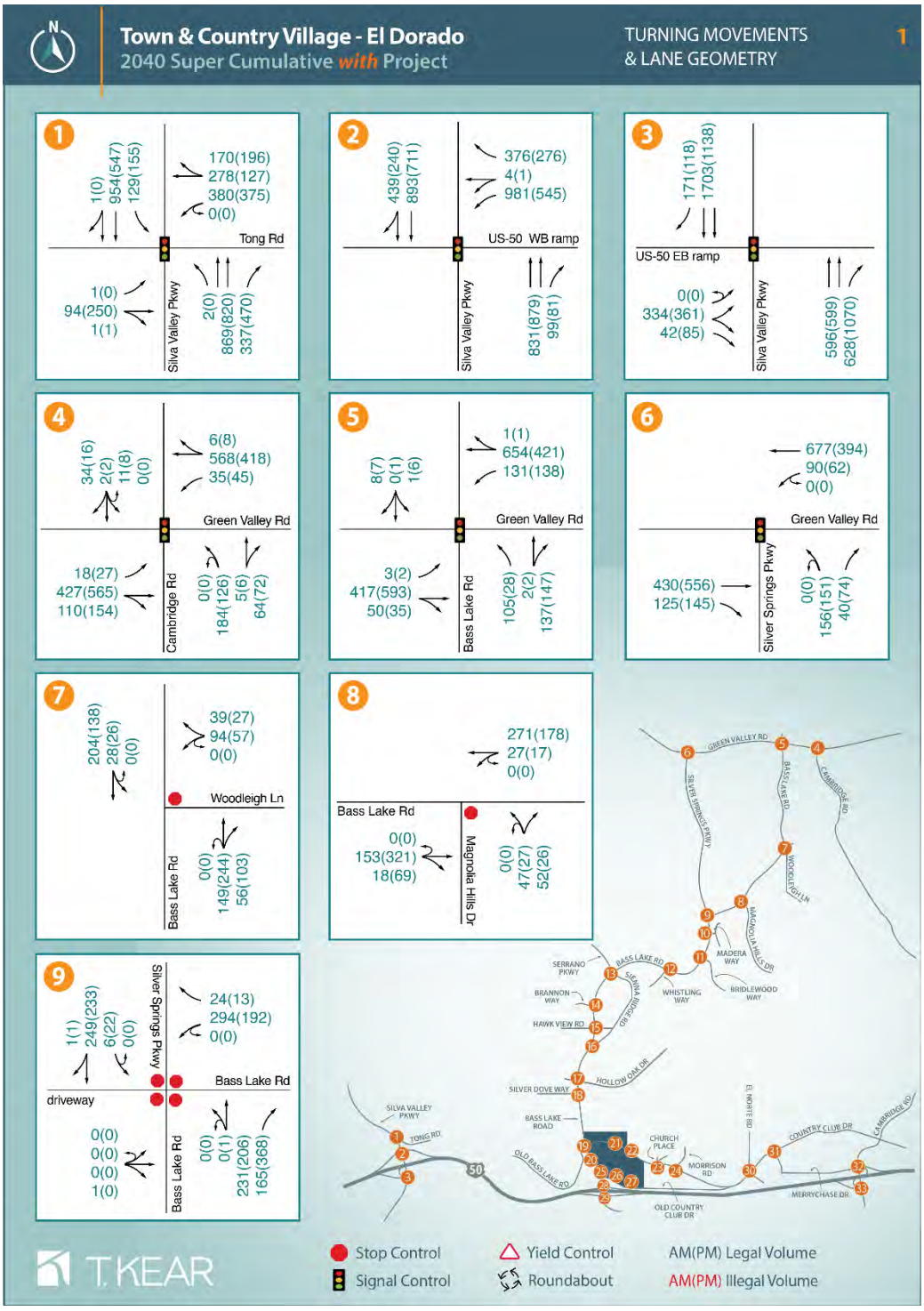

Figure 17. Super-cumulative 2040 plus Project-Development and Program Study area lane geometry and turning movements

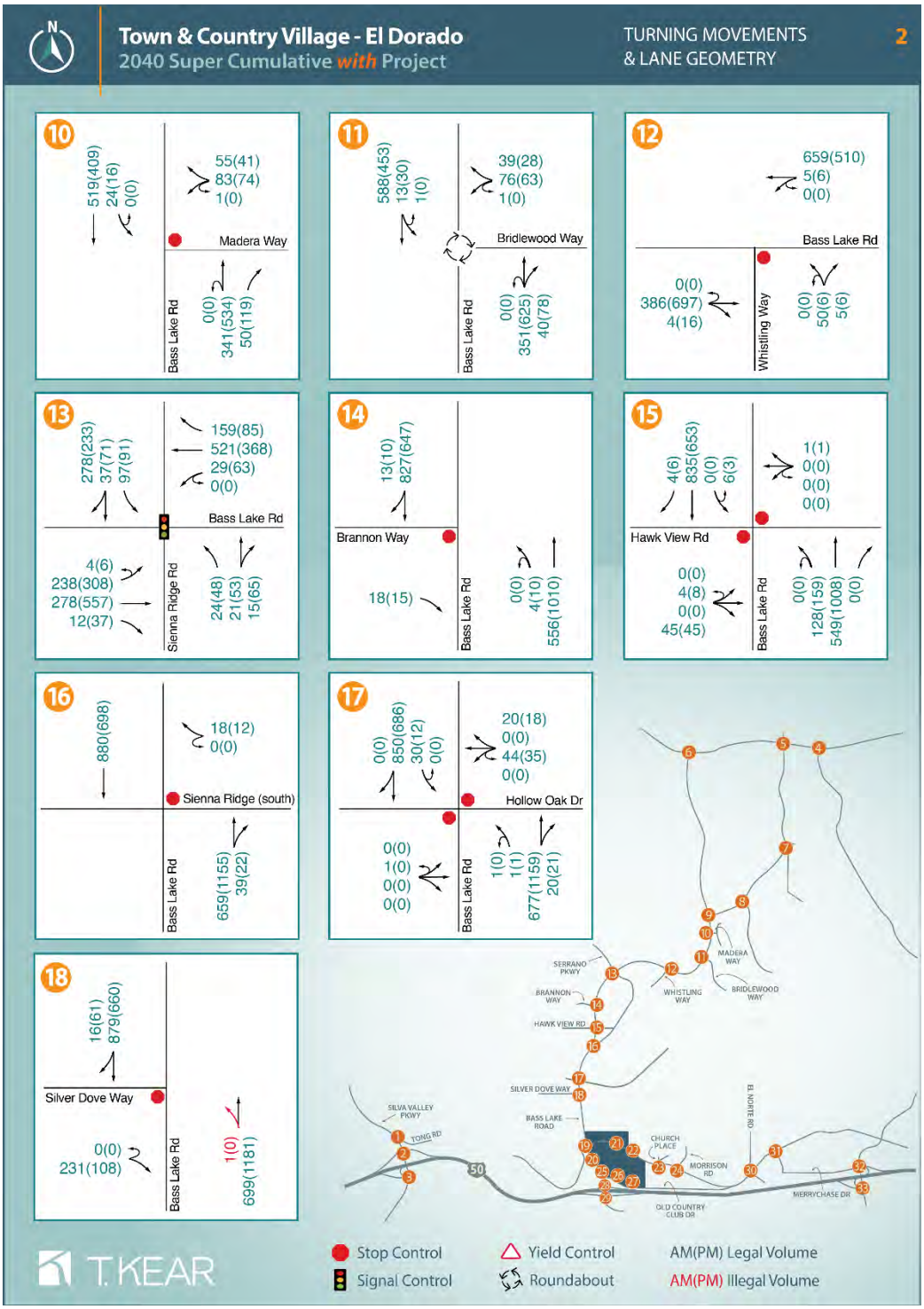

Figure 17. Super-cumulative 2040 plus Project-Development and Program Study area lane geometry and turning movements (continued)

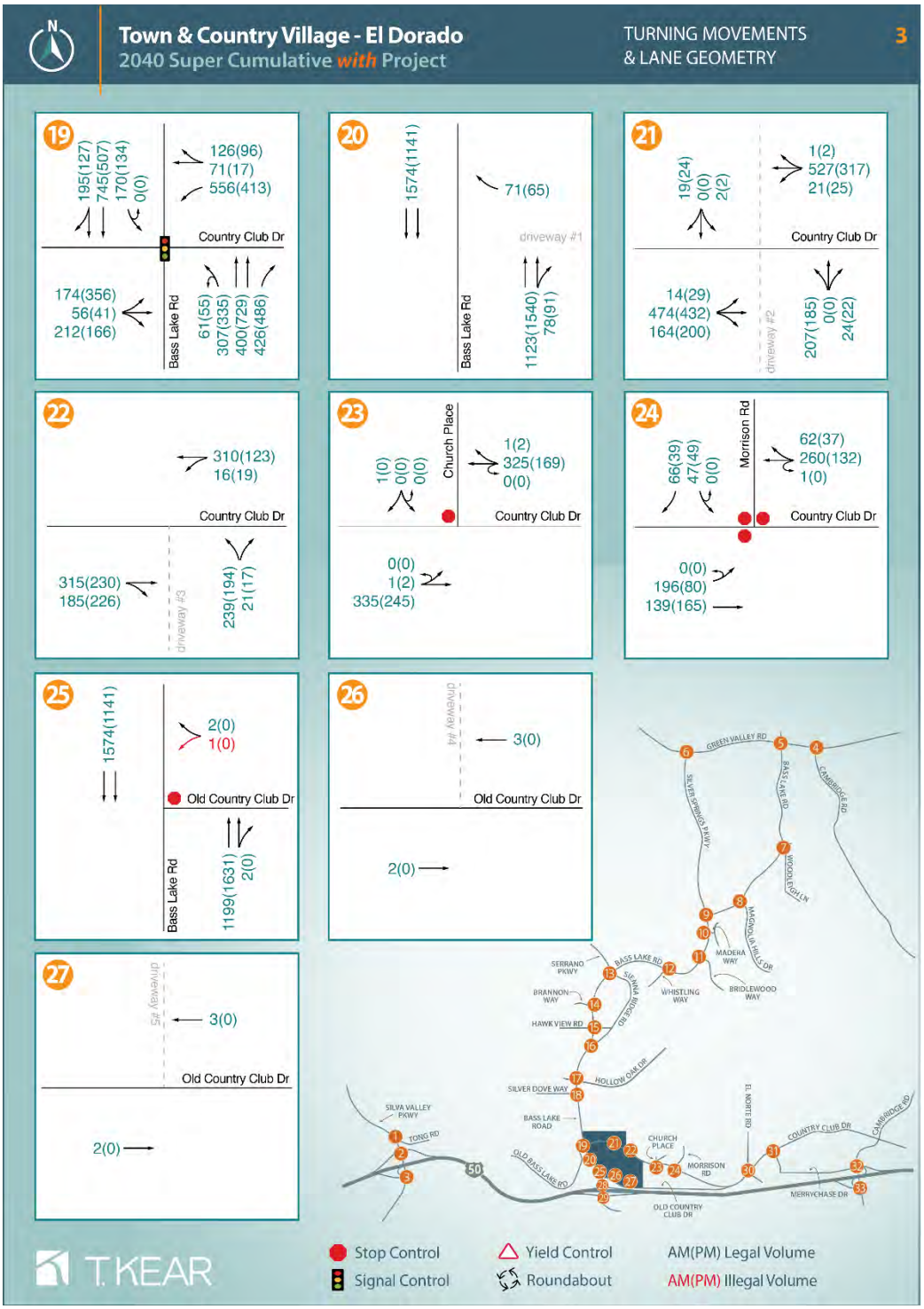

Figure 17. Super-cumulative 2040 plus Project-Development and Program Study area lane geometry and turning movements (continued)

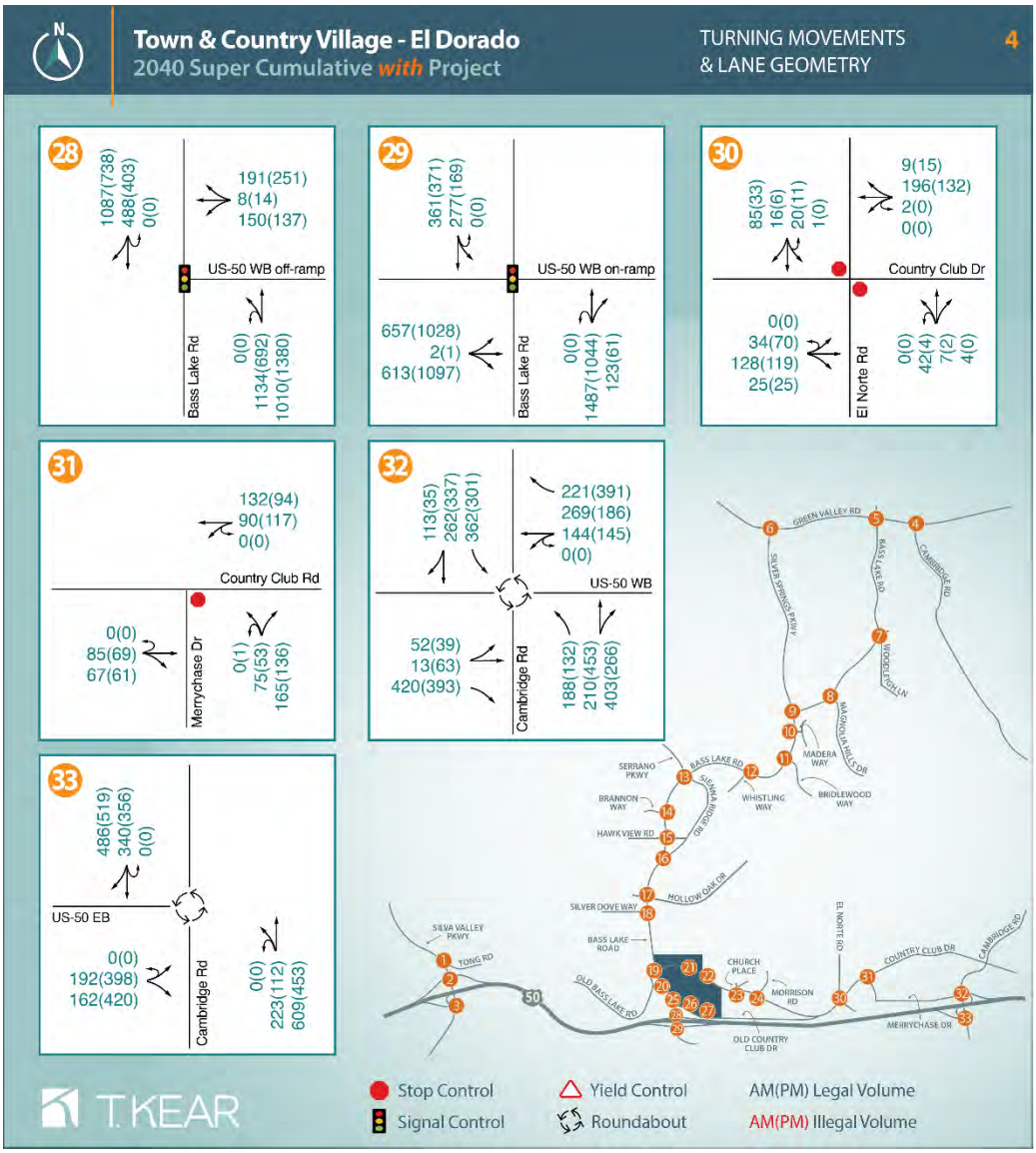

Figure 17. Super-cumulative 2040 plus Project-Development and Program Study area lane geometry and turning movements (continued)

Table 36. Super-cumulative 2040 intersection delay, level-of-service, and queueing with and without the Project-Development and Program-Study area traffic

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 AM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 PM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 AM Super Cumulative Plus Project 95% Left Turn Queue (Feet)	2040 AM Super Cumulative Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Super Cumulative Plus Project 95% Left Turn Queue (Feet)	2040 PM Super Cumulative Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
1	Silva Valley & Tong	LOS (Signal)			D / 49.6		E / 67.5		E / 55.7		E / 75.1
		EBL Queue	200	5		0		5		0	
		WBL Queue	200	531		475		531		521`	
		NBL Queue	200	10		0		10		0	
		SBL Queue	200	232		311		251		333	
2	Silva Valley & US-50 WB	LOS (Signal)			B / 121.9		A / 8.6		B / 15.4		A / 9.2
		WBL Queue	1200*	370		142		489		164	
		NBL Queue	n/a	n/a		n/a		n/a		n/a	
3	US-50 EB & Silva Valley	LOS (Signal)			A / 8.2		B / 10.4		A / 8.4		B / 15.9
		EBL Queue	1200*	205		138		222		174	
		NBL Queue	n/a	n/a		n/a		n/a		n/a	
4	Cambridge & Green Valley	LOS (Signal)			B / 17.5		B / 15.9		B / 17.6		B / 15.9
		EBL Queue	90	39		49		39		49	
		WBL Queue	130	63		72		63		72	
		NBL Queue	120	209		139		209		139	
5	Bass Lake & Green Valley	LOS (Signal)			B / 15.4		B / 16.6		B / 15.6		B / 16.9
		EBL Queue	280	11		9		11		9	
		WBL Queue	440	142		152		145		156	
		NBL Queue	160	119		44		119		44	
6	Silver Springs & Green Valley	LOS (Signal)			A / 9.7		B / 10.1		A / 9.9		B / 10.2
		WBL Queue	420	126		83		126		83	
		NBL Queue	130	111		113		115		116	
7	Bass Lake & Woodleigh	LOS (TWSC)			B / 12.8 (WB)		B / 12.5 (WB)		B / 13.2 (WB)		B / 12.7 (WB)
8	Magnolia & Bass Lake	LOS (TWSC)			B / 11.7 (NB)		B / 12.6 (NB)		B / 11.9 (NB)		B / 12.8 (NB)
		WBL Queue	50	2.5		2.5		2.5		2.5	
9	Bass Lake & Silver Springs	LOS (AWSC)			B / 14.8		B / 12.2		C / 15.4		C / 12.5
		SBL Queue	75	0		2.5		0		2.5	
10	Bass Lake & Madera	LOS (TWSC)			C / 22.0 (WB)		C / 22.2 (WB)		C / 23.4 (WB)		C / 23.2 (WB)
		NBL Queue	80	0		70		0		75	
		SBL Queue	150	2.5		2.5		2.5		2.5	
11	Bass Lake & Bridlewood	LOS (Roundabout)			A / 8.5		A / 8.4		A / 8.9		A / 8.7
12	Whistling & Bass Lake	LOS (TWSC)			C / 24.7 (NB)		C / 20.1 (NB)		D / 26.8 (NB)		C / 21.1 (NB)
13	Bass Lake & Sienna Ridge (north)	LOS (Signal)			C / 34.9		C / 29.0		D / 43.2		C / 33.5
		EBL Queue	340	377		424		454		502	
		WBL Queue	380	70		106		70		109	
		NBL Queue	210	61		86		61		88	
		SBL Queue	155	172		138		172		142	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 36. Super-cumulative 2040 intersection delay, level-of-service, and queueing with and without the Project-Development and Program-Study area traffic (continued)

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 AM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 PM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 AM Super Cumulative Plus Project 95% Left Turn Queue (Feet)	2040 AM Super Cumulative Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Super Cumulative Plus Project 95% Left Turn Queue (Feet)	2040 PM Super Cumulative Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
14	Bass Lake & Brannon	LOS (TWSC)			C / 15.9 (EB)		B / 12.9 (EB)		C / 16.7 (EB)		B / 13.5 (EB)
		NBL Queue	335	0		0		0		0	
15	Bass Lake & Hawk View	LOS (TWSC)			C / 22.4 (EB)		E / 41.7 (EB)		C / 24.8 (EB)		E / 46.3 (EB)
		NBL Queue	290	12.5		14.5		17.5		17.5	
		SBL Queue	250	0		0		0		0	
16	Bass Lake & Sienna Ridge (south)	LOS (TWSC)			B / 13.2 (WB)		C / 21.6 (WB)		B / 14.2 (WB)		C / 23.3 (WB)
17	Bass Lake & Hollow Oak	LOS (TWSC)			F / 70.3 (EB)		F / 123.6 (WB)		F / 108.3 (WB)		F / 190.9 (WB)
		NBL Queue	300	0		0		0		0	
		SBL Queue	300	2.5		2.5		2.5		2.5	
18	Bass Lake & Silver Dove	LOS (TWSC)			E / 38.7 (EB)		B / 14.5 (EB)		E/ 38.7 (EB)		B / 14.5 (EB)
19	Bass Lake & Country Club	LOS (Signal)			F / 98.6		F / 80.1		F / 161.3		F / 135.6
		WBL Queue	300	223		111		1011		661	
		NBL Queue	300	684		728		824		860	
		SBL Queue	300	181		111		181		111	
20	Bass Lake & Drwy #1	LOS (TWSC)		Does not Exist		Does not Exist			C / 15.1 (WB)		C / 19.9 (WB)
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist			F / 417.9 (NB)		F /152.6 (NB)
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist			E/ 47.0 (NB)		C / 19.1 (NB)
23	Country Club & Church	LOS (TWSC)			B / 10.1 (SB)		A / 7.5 (EB)		B / 10.4 (SB)		A / 7.6 (EB)
24	Country Club & Morrison	LOS (AWSC)			B / 10.7		A / 8.7		B / 11.3		A / 9.1
		EBL Queue	275	37.5		10		37.5		25	
		SBL Queue	240	7.5		7.5		7.5		7.5	
25	Bass Lake & Old Country Club	LOS (TWSC)			B / 11.7 (WB)		A / 0 (n/a)		B / 14.5 (WB)		A / 0 (n/a)
26	Old Country Club & Drwy #4	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
27	Old Country Club & Drwy #5	LOS (TWSC)		Does not Exist		Does not Exist		Does not Exist		Does not Exist	
28	Bass Lake & US-50 WB	LOS (Signal)			F / >500		F / 385.6		F / >500		F / >500
		WBL Queue	850*	329		336		429		473	
		NBL Queue	n/a	3579		3075		4439		4119	
29	Bass Lake & US-50 EB	LOS (Signal)			F / >500		F / >500		F / >500		F / >500
		EBL Queue	480*	1887		2412		2565		4224	
		SBL Queue	n/a	900		737		1133		827	
30	Country Club & El Norte	LOS (TWSC)			B / 12.8 (NB)		B / 11.8 (NB)		B / 14.4 (NB)		B / 12.9 (NB)
31	Merrychase & Country Club	LOS (TWSC)			B / 11.7 (NB)		B / 10.6 (NB)		B / 12.8 (NB)		B / 11.7 (NB)
32	Cambridge & US-50 WB	LOS (Roundabout)			D / 30.9		C / 18.7		D / 30.9		C / 18.7
		WBL Queue	1000*	75		75		75		75	
		NBL Queue	n/a	n/a		n/a		n/a		n/a	
		SBL Queue	n/a	n/a		n/a		n/a		n/a	
33	Cambridge & US-50 EB	LOS (Roundabout)			C / 21.2		E / 44.3		C / 21.2		E / 44.3
		EBL Queue	1250*	50		425		50		425	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table 37. Super-cumulative 2040 freeway facility level-of-service with and without the Project-Development and Program-Study area traffic

ID	Segment	Type	2040 Super-Cumulative No Project AM (Density/LOS)	2040 Super-Cumulative No Project PM (Density/LOS)	2040 Super-Cumulative with Project AM (Density/LOS)	2040 Super-Cumulative with Project PM (Density/LOS)
Westbound US-50						
1	East of Cambridge Rd	Basic	20.6 / C	20.8 / C	21.3 / C	21.6 / C
2	Cambridge Rd Offramp	Diverge	24.4 / C	24.5 / C	25.1 / C	25.4 / C
3	Cambridge Rd between ramps	Basic	15.8 / B	15.3 / B	16.4 / B	16.1 / B
4	Cambridge Rd Onramp	Merge	25.4 / C	23.8 / C	26.1 / C	24.6 / C
5	Cambridge Rd to Bass Lake Rd	Basic	21.8 / C	20.0 / C	22.5 / C	20.9 / C
6	Bass Lake Rd Offramp	Diverge	25.6 / C	23.7 / C	26.3 / C	24.6 / C
7	Bass Lake Rd between ramps	Basic	19.6 / C	17.7 / B	19.6 / C	17.7 / B
8	Bass Lake Rd Onramp	Merge	**37.7 / E**	30.1 / D	**38.8 / F**	32.4 / D
9	Bass Lake Rd to Silva Valley Pkwy	Basic	**42.0 / E**	27.7 / D	**45.0 / F**	31.3 / D
10	Silva Valley Pkwy Offramp	Diverge	**39.8 / E**	31.0 / D	**41.0 / F**	33.7 / D
11	Silva Valley Pkwy between ramps	Basic	24.9 / C	20.7 / C	25.8 / C	22.5 / C
Eastbound US-50						
12	Silva Valley Pkwy between ramps	Basic	10.8 / A	16.9 / B	11.9 / B	18.1 / C
13	Silva Valley Pkwy Loop Onramp	Merge	14.5 / B	20.2 / C	16 / B	21.7 / C
14	Silva Valley Pkwy Slip Onramp	Merge	15.2 / B	24.6 / C	16.6 / B	27 / C
15	Silva Valley Pkwy to Bass Lake Rd	Basic	14.1 / B	22.9 / C	15.4 / B	25.3 / C
16	Bass Lake Rd Offramp	Diverge	21.7 / C	34.2 / D	24.3 / C	**37.3 / E**
17	Bass Lake Rd between ramps	Basic	9.5 / A	13.4 / B	9.5 / A	13.4 / B
18	Bass Lake Rd Onramp	Merge	14.5 / B	17.3 / B	15.2 / B	18 / B
19	Bass Lake Rd to Cambridge Rd	Basic	10.9 / A	14.1 / B	11.4 / B	14.5 / B
20	Cambridge Rd Offramp	Diverge	15.2 / B	19.8 / B	15.7 / B	20.3 / C
21	Cambridge Rd between ramps	Basic	9.3 / A	10.4 / A	9.7 / A	10.8 / A

Density in units of passenger cars per mile per lane.

Table 38. Super-cumulative 2040 arterial level-of-service check with and without the Project-Development and Program-Study area traffic

Arterial Segment	Description	2040 Super-Cumulative AM No Project (Volume and level-of-Service)	2040 Super-Cumulative PM No Project (Volume and level-of-Service)	2040 Super-Cumulative AM with Project-Development and Program-Study Area (Volume and level-of-Service)	2040 Super-Cumulative PM with Project-Development and Program-Study Area (Volume and level-of-Service)
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1672 (Level-of-Service F)	1810 (Level-of-Service F)	1810 (Level-of-Service F)	1946 (Level-of-Service F)
ii. Bass Lake Rd (between US-50 Country Club Dr)	No Project: 2-lane arterial (threshold 1540) With Project: 4-lane arterial (threshold 3130)	1954 (Level-of-Service F)	1920 (Level-of-Service F)	2707 (Level-of-Service D)	2691 (Level-of-Service D)
iii. Country Club Dr (between Bass Lake Rd and Morrison Rd)	2-lane arterial (threshold 1650)	577 (Level-of-Service C)	329 (Level-of-Service C)	1415 (Level-of-Service D)	1187 (Level-of-Service D)

12.3 Cumulative 2040 Plus Project-Development and Program Study Area General Plan Deficiency Findings

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "deficiency", and improvements to address those deficiencies are referred to as "abatements". Throughout this document, Intersection deficiencies and abatements are numbered using the intersection number (1-33) and a year code (2023 = "A", 2033 = "B", 2040 = "C", and 2040 super-cumulative = "D"). Similarly, segment level deficiencies and abatement measures are numbered using the segment number (i through iii) for arterial segments or (US-50(1) US-50(21)) for freeway segments, and a year code (A, B, C or D).

All deficiencies and abatements described below include the deficiency number/abatement number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing.

Deficiency/Abatement (i)D: Bass Lake between Country Club Dr and Silver Dove Wy

Deficiency: Prior to the addition of Project-Development and Program-Study area traffic, this segment is anticipated to operate at level-of-service F during the AM and PM peak-hour. The addition of traffic from the Project-Development and Program-Study areas is anticipated to further degrade level-of-service. Project-Development and Program-Study area traffic worsens the pre-existing deficiency.

Abatement: Implement Abatement (i)C.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 39** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement (i)C.

Timing: Not applicable, addressed through abatement (i)C.

Cross Reference: See abatement: (i)C.

Deficiency/Abatement (US-50-8)D: Westbound US-50 merge from Bass Lake Rd onramp.

Deficiency: This westbound segment is outside of the Community region boundary and is anticipated to operate at a deficient level-of-service E during the morning prior to the addition of Project-Development and Program-Study area traffic. Addition of the Project-Development and Program-Study area traffic is anticipated to worsen the level-of-service to F.

Abatement: construct a westbound auxiliary lane between Bass Lake Rd and Silva Valley parkway.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 40** presents the segment level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair-share of the cost of the auxiliary lanes cost, which can be addressed through payment of fees after the auxiliary lane has been added to the ten-year CIP. Note that this improvement is in the current CIP as an unfunded project with project number "CIP #36104022/53117".

Timing: Payment of applicable fees after the auxiliary lane has been added to the ten-year CIP.

Cross Reference: Abatement (US-50-9)D, and US-50-10)D.

Deficiency/Abatement (US-50-9)D: Westbound US-50 mainline on the Bass Lake grade.

Deficiency: This westbound segment is outside of the Community region boundary and is anticipated to operate at a deficient level-of-service E during the morning prior to the addition of Project-Development and Program-Study area traffic. Addition of the Project-Development and Program-Study area traffic is anticipated to worsen the level-of-service to F.

Abatement: construct a westbound auxiliary lane between Bass Lake Rd and Silva Valley parkway.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 40** presents the segment level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair-share of the cost of the auxiliary lanes cost, which can be addressed through payment of fees after the auxiliary lane has been added to the ten-year CIP. Note that this improvement is in the current CIP as an unfunded project with project number "CIP #36104022/53117".

Timing: Payment of applicable fees after the auxiliary lane has been added to the ten-year CIP.

Cross Reference: Abatement (US-50-8)D, and US-50-10)D.

Deficiency/Abatement (US-50-10)D: Westbound US-50 diverge segment to Silva Valley Parkway.

Deficiency: This westbound segment is anticipated to operate at an acceptable level-of-service E during the morning prior to the addition of Project-Development and Program-Study area traffic. Addition of the Project-Development and Program-Study area traffic is anticipated to worsen the level-of-service to F.

Abatement: construct a westbound auxiliary lane between Bass Lake Rd and Silva Valley parkway.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 40** presents the segment level-of-service results with this abatement. Note that this improvement is in the current CIP as an unfunded project with project number "CIP #36104022/53117".

Project responsibility: The Project is responsible for its fair-share of the cost of the auxiliary lanes cost, which can be addressed through payment of fees after the auxiliary lane has been added to the ten-year CIP.

Timing: Payment of applicable fees after the auxiliary lane has been added to the ten-year CIP.

Cross Reference: Abatement (US-50-8)D, and US-50-9)D.

Deficiency/Abatement (US-50-16)D: Eastbound US-50 diverge segment to Bass Lake Road.

Deficiency: This westbound segment is anticipated to operate at an acceptable level-of-service D during the afternoon prior to the addition of Project-Development and Program-Study area traffic. Addition of the Project-Development and Program-Study area traffic is anticipated to worsen the level-of-service to F.

Abatement: Reconstruct the eastbound offramp to Bass Lake Road as a two-lane offramp.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 40** presents the segment level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair-share of the cost of the auxiliary lanes cost, which can be addressed through payment of fees after the offramp widening has been added to the ten-year CIP. Note that CIP project 65104005 in the 10-year CIP anticipates improvments to this offramps intersection with Bass Lake Rd, and could be expanded to incumpus the two-lane departure from eastbound US-50.

Timing: Payment of applicable fees after the auxiliary lane has been added to the ten-year CIP.

Cross Reference: Abatement 29D.

Deficiency/Abatement 13D: Bass Lake & Sienna Ridge (north)

Deficiency: Prior to the addition of Project-Development and Program-Study area traffic, the 95th percentile queue for the eastbound left turn from Bass Lake Rd to Serrano Pkwy is anticipated to exceed the length of its storage pocket. the 95th percentile queue for the southbound left turn from Serrano Pkwy to Bass Lake Rd is also anticipated is anticipated to exceed the length of its storage pocket.

Project-Development and Program-Study area traffic is anticipated to add to the eastbound left turn queues.

Abatement: Expand upon abatement 13C by widening the eastbound and westbound approaches and departures on Bass Lake Rd to accommodate two eastbound through lanes and two westbound through lanes and optimize signal timing.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 41** presents the segment level-of-service results with this abatement.

Project responsibility: The project is responsible for its fair-share of the cost of improvements at this intersection, which would be addressed by payment of fees after the intersection improvements are added to the 10-year CIP.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 13C.

Deficiency/Abatement 17D: Bass Lake & Hollow Oak

Deficiency: Prior to the addition of Project-Development area traffic, the intersection is anticipated to operate at level-of-service F during both the morning and afternoon. Project traffic worsens the pre-existing deficiency.

Abatement: Implement Abatement 17B.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 41** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 17B.

Timing: Not applicable, addressed through abatement 17B.

Cross Reference: See abatement: 17B and 17C.

Deficiency/Abatement 19D: Bass Lake & Country Club

Deficiency: Prior to the addition of Project-Development area traffic, the 95th percentile northbound and southbound left turn queue are anticipated to exceed available storage space during the morning. The intersection is also anticipated to operate at level-of-service F. Project-Development and Program-Study area traffic is anticipated to add northbound queue spillback and cause a new spillback issue for the westbound left-turn queue.

Abatement: Expand Abatement 19C by adding an additional eastbound left turn lane such that the intersection has the following approach configuration:

Eastbound	Two left turn lanes in a 300-foot pocket, one through lane, and one right turn lane in a 200-foot pocket.
Westbound	Two left turn lanes in a 400-foot pocket, one through lane, and one right turn lane in a 300-foot pocket.
Northbound	Two left turn lanes in a 300-foot pocket, two through lanes, and one right turn lane in a 300-foot pocket.
Southbound	One left turn lane in a 300-foot pocket, two through lanes, and one right turn lane in a 300-foot pocket. Note that this was a duel southbound left under EPAP abatements. The second southbound left is not necessary once other intersection legs are expanded. However, the 2nd left turn lane under the EPAP scenario can be converted to a through lane for this abatement to minimize any throwaway work.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 41** presents the segment level-of-service results with this abatement.

Project responsibility: CIP project 65105009 extends Country Club Drive from Bass Lake Rd to Tong Rd, with $3 million of $11million of the construction funds in the 10-year CIP, and the balance in the 20-year CIP. The Project is responsible for its fair-share of the cost to expand the intersection, which can be addressed by payment of fees. The applicant may enter a fee-credit agreement with the County to construct these improvements when the Project widens Bass Lake Rd from two-lanes to four-lanes between US-50 and Country Club Drive.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 19B and 19C.

Deficiency/Abatement 21D: Country Club & Drwy #2

Deficiency: The addition of traffic from the Project-Development and Program-Study areas causes this Project-frontage intersection to operate at level-of-service F.

Abatement: Implement Abatement 21C.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 41** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 21C.

Timing: Not applicable, addressed through abatement 21C.

Cross Reference: See abatement: 21C.

Deficiency/Abatement 28D: Bass Lake Rd interchange (westbound ramp interchange)

Deficiency: The 95th percentile northbound left turn queue from Bass Lake Rd to US-50 westbound exceeds the available storage space and stretches beyond the eastbound ramp intersection. Project-Development and Program-Study area traffic is anticipated to worsen the queue lengths. Project-Development and Program-Study area traffic is also anticipated to worsen the level-of-service to F during both the morning and afternoon.

Abatement: Expand the intersection and approaches as follows to widen the approaches and construct a loop onramp from northbound Bass Lake Rd to westbound US-50:

Westbound — Two left turn lanes in a 400-foot pocket, one through lane, and one right turn lane in a 200-foot pocket.

Northbound — Three through lanes and two right turn lanes in in a 250-foot pocket (accessing a new loop onramp to westbound US-50). The three northbound through lanes require an additional receiving lane north of the interchange on the two-lane portion of Bass Lake Rd. That receiving lane can be dropped, leaving two northbound lanes, after sufficient room for vehicles to merge.

Southbound — Two right turn lanes in a 300-foot pocket, one through lane.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy

deficiencies at this location. **Table 41** presents the segment level-of-service results with this abatement.

Project responsibility: Ten-year CIP project 36104005 includes ramp widenings, road widening and signals, as well as planning studies, to determine the interchanges ultimate configuration. The proposed abatement is a subset of the planned improvements and under General Plan policy TC-Xf requires the County to either condition the Project to construct the required abatements or, include required abatements in the CIP (10-year SIP for residential projects and/or 20-year CIP for all other development projects). The Project's responsibility for these improvements may be met through payment of required fees.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 29A, 28B, 29B, 28C, 29C, and 29D.

Deficiency/Abatement 29D: Bass Lake Rd interchange (eastbound ramp interchange)

Deficiency: The northbound left-turn queues underneath the freeway are anticipated to extend back through and block the eastbound offramp. The 95th percentile left turn queue from the eastbound offramp at intersection 29 (Bass Lake Rd/US-50 eastbound offramp) is anticipated to grow from 1887-feet without the Project-Development and Program-Study area traffic to 2565-feet with Project-Development and Program-Study area traffic during the AM peak hour. The same eastbound queue is anticipated to grow from 2412-feet without the Project-Development and Program-Study area traffic to 4224-feet with Project-Development area traffic during the PM peak hour. The offramp has an approximate 850-foot length. This places the back of the queue too close to the freeway mainline. Project-Development and Program-Study area traffic is also anticipated to worsen the pre-existing level-of-service to F conditions during both the morning and afternoon.

Abatement: Expand the intersection and approaches as follows to widen the approaches:

Eastbound	Two left turn lanes, one of which would be in a 375-foot pocket, one shared through-right turn lane and one right turn lane in a 300-foot pocket. Note that this configuration creates a two-lane offramp from US-50.
Northbound	Two through lanes and a right turn lane in a 300-foot pocket.
Southbound	Two through lanes and a left turn lane in a in a 300-foot pocket. Note that the 300-foot pocket requires the roughly 250-foot spacing between eastbound and westbound ramp intersections be expanded.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing General Plan level-of-service policy deficiencies at this location. **Table 41** presents the segment level-of-service results with this abatement.

Project responsibility: Ten-year CIP project 36104005 includes ramp widenings, road widening and signals, as well as planning studies, to determine the interchanges ultimate configuration. The proposed abatement is a subset of the planned improvements and under General Plan policy TC-Xf requires the County to either condition the Project to construct the required abatements or, include required abatements in the CIP (10-year SIP for residential projects and/or 20-year CIP for all other development projects). The Project's responsibility for these improvements may be met through payment of required fees.

Timing: Payment of fees with issuance of building permits.

Cross Reference: See abatement: 29A, 28b, 29B, 28C, 29C, 28D, and (US-50-16)D.

Table 39. Super-cumulative 2040 arterial level-of-service check with and without the abated Project-Development and Program-Study area traffic

Arterial Segment	Description	2040 Super-Cumulative AM No Project (Volume and level-of-Service)	2040 PM Super-Cumulative No Project (Volume and level-of-Service)	2040 Super-Cumulative AM with Project-Development and Program-Study Area (Volume and level-of-Service)	2040 Super-Cumulative PM with Project-Development and Program-Study Area (Volume and level-of-Service)
i. Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	2-lane arterial (threshold 1650)	1672 (Level-of-Service F)	1810 (Level-of-Service F)	1810 (Level-of-Service F)	1946 (Level-of-Service F)
i. Abated Bass Lake Rd (between Country Club Dr and Silver Dove Wy)	4-lane arterial (threshold 3130)			1810 (Level-of-Service D)	1946 (Level-of-Service D)

Table 40. Super-cumulative 2040 freeway facility level-of-service with and without the abated Project-Development and Program-Study area traffic

ID	Segment	Type	2040 Super-Cumulative No Project AM (Density/LOS)	2040 Super-Cumulative No Project PM (Density/LOS)	2040 Super-Cumulative with Project AM (Density/LOS)	2040 Super-Cumulative with Project PM (Density/LOS)
Westbound US-50						
8	Bass Lake Rd Onramp	Merge	**37.7 / E**	30.1 / D	**38.8 / F**	32.4 / D
8	Bass Lake Rd Onramp, Abated (WB auxiliary lane from Bass Lake Rd to Silva Valley Pkwy)	Merge			23.7 / C	18.8 / C
9	Bass Lake Rd to Silva Valley Pkwy	Basic	**42.0 / E**	27.7 / D	**45.0 / F**	31.3 / D
9	Bass Lake Rd to Silva Valley Pkwy, Abated (WB auxiliary lane from Bass Lake Rd to Silva Valley Pkwy)	Basic			23.7 / C	18.8 / C
10	Silva Valley Pkwy Offramp	Diverge	**39.8 / E**	31.0 / D	**41.0 / F**	33.7 / D
10	Silva Valley Pkwy Offramp, Abated (WB auxiliary lane from Bass Lake Rd to Silva Valley Pkwy)	Diverge			23.7 / C	18.8 / C
Eastbound US-50						
16	Bass Lake Rd Offramp	Diverge	21.7 / C	34.2 / D	24.3 / C	**37.3 / E**
16	Bass Lake Rd Offramp, Abated (2-lane offramp)	Diverge			19.3 / B	30.3 / D

Table 41. Cumulative 2040 intersection delay, level-of-service, and queueing with and without the abated Project-Development and Program-Study area traffic

ID	Location	Metric	No Project Pocket Length (Feet)	2040 AM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 AM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Super Cumulative No Project 95% Left Turn Queue (Feet)	2040 PM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 AM Super Cumulative Plus Project 95% Left Turn Queue (Feet)	2040 AM Super Cumulative Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)	2040 PM Super Cumulative Plus Project 95% Left Turn Queue (Feet)	2040 PM Super Cumulative Plus Project LOS / Average Delay (Worst approach or movement at TWSC, Delay in Seconds)
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist			F / 417.9 (NB)		F /152.6 (NB)
21	Country Club & Drwy #2 (Abatement: 2x2 Roundabout)	LOS (Roundabout)							B / 11.1		A / 8.6
		EB Queue						75		75	
		WB Queue						100		50	
		NB Queue						25		25	
		SB Queue						0		0	
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist			E/ 47.0 (NB)		C / 19.1 (NB)
28	Bass Lake & US-50 WB	LOS (Signal)			F / >500		F / 385.6		F / >500		F / >500
		WBL Queue	850*	329		336		429		473	
		NBL Queue	n/a	3579		3075		4439		4119	
28	Bass Lake & US-50 WB (Abatement: Expand intersection & adjust signal timing)	LOS (Signal)							A / 6.4		A / 6.2
		WBL Queue	850*					147		165	
		NBL Queue	n/a					121		220	
29	Bass Lake & US-50 EB	LOS (Signal)			F / >500		F / >500		F / >500		F / >500
		EBL Queue	480*	1887		2412		2565		4224	
		SBL Queue	n/a	900		737		1133		827	
29	Bass Lake & US-50 EB (Abatement: Expand intersection & adjust signal timing)	LOS (Signal)							D / 44.8		D / 41.8
		EBL Queue	375					211		374	
		SBL Queue	n/a					63		153	

* the ramp length is used in lieu of storage length when no left-turn for offramps without a left turn pocket

Table *41*. Cumulative 2040 intersection delay, level-of-service, and queueing with and without the abated Project-Development and Program-Study area traffic (continued)

ID	Location	Metric	No Project Pocket Length	2040 AM Super Cumulative No Project 95% Left Turn Queue	2040 AM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC)	2040 PM Super Cumulative No Project 95% Left Turn Queue	2040 PM Super Cumulative No Project LOS / Average Delay (Worst approach or movement at TWSC)	2040 AM Super Cumulative Plus Project 95% Left Turn Queue	2040 AM Super Cumulative Plus Project LOS / Average Delay (Worst approach or movement at TWSC)	2040 PM Super Cumulative Plus Project 95% Left Turn Queue	2040 PM Super Cumulative Plus Project LOS / Average Delay (Worst approach or movement at TWSC)
21	Country Club & Drwy #2	LOS (TWSC)		Does not Exist		Does not Exist			F / 417.9 (NB)		F /152.6 (NB)
21	Country Club & Drwy #2 (Abatement: 2x2 Roundabout)	LOS (Roundabout)							B / 11.1		A / 8.6
		EB Queue						75		75	
		WB Queue						100		50	
		NB Queue						25		25	
		SB Queue						0		0	
22	Country Club & Drwy #3	LOS (TWSC)		Does not Exist		Does not Exist			E/ 47.0 (NB)		C / 19.1 (NB)
28	Bass Lake & US-50 WB	LOS (Signal)			F / >500		F / 385.6		F / >500		F / >500
		WBL Queue	n/a	329		336		429		473	
		NBL Queue	n/a	3579		3075		4439		4119	
28	Bass Lake & US-50 WB (Abatement: Expand intersection & adjust signal timing)	LOS (Signal)							A / 6.4		A / 6.2
		WBL Queue	n/a					147		165	
		NBL Queue	n/a					121		220	
29	Bass Lake & US-50 EB	LOS (Signal)			F / >500		F / >500		F / >500		F / >500
		EBL Queue	n/a	1887		2412		2565		4224	
		SBL Queue	n/a	900		737		1133		827	
29	Bass Lake & US-50 EB (Abatement: Expand intersection & adjust signal timing)	LOS (Signal)							D / 44.8		D / 41.8
		EBL Queue	375					211		374	
		SBL Queue	n/a					63		153	

13.0 "OLD COUNTRY CLUB DRIVE" DRIVEWAY ALTERNATIVE

The applicant originally proposed two driveways accessing Old Country Club Dr, east of Bass Lake Rd and on the southern frontage of the Project-Development and Program-Study areas as secondary access point for all vehicle types. Subsequently that access was reduced to emergency vehicle access (EVA). However, there is still a desire to evaluate traffic operations with the "Old Country Club Dr" access open to all vehicle types as a Project alternative.

As part of the Bass Lake Hills Specific Plan Phase 1a (the Bell Ranch, Bell Woods, and Hawk View, tentative maps approved in 2014), in 2020 El Dorado County relocated Country Club Drive between Morrison Rd and Bass Lake Rd to its current location leaving the "Old country Club Drive" stub as a cul-de-sac which Town and Country Village - El Dorado is now considering for driveway access.

Three attributes of the proposed connection are considered here:

- The potential traffic operations of the Bass Lake Rd/Old Country Club Drive intersection.
- The constraint that re-utilization of "Old Country Club Dr" would put on the design of the planned Bass Lake Rd interchange replacement project.
- The safety discussion from the Bass Lake Hills Phase 1A traffic impact study[21].

Each of these are discussed below followed by a recommendation.

13.1 "Old Country Club Dr" Traffic Operations under Cumulative conditions with the Project-Development and Program-Study Area Traffic

Traffic operations were reviewed under Cumulative Plus Project conditions by shifting 20% of the driveway volume for the Project-Development and Program-Study areas to the proposed "Old Country Club Dr" driveways.

- With the Bass Lake Rd/"Old Country Club Drive" intersection configured as a full access intersection, any left turns out from "Old Country Club Drive" are anticipated to result in deficient level-of-service F conditions. Abatement for this would be restricting the "Old Country Club Drive" access from Bass Lake Rd to right-in right-out (RIRO) access.
- With the Bass Lake Rd/"Old Country Club Drive" intersection configured as RIRO, the intersection is anticipated to operate acceptably at level of service C with 18.2

[21] TKTPM (2014) Traffic Impact Analysis: Bass Lake Hills Phase 1a – Hawk View, Bell Woods, and Bell Ranch, T. Kear Transportation Planning and Management Inc., July 30, 2014.

seconds of delay in the morning and level-of-service D with 26.7 seconds of delay in the afternoon.

Thus, the intersection is anticipated operate at an acceptable level-of-service as long as it is restricted to RIRO access to "Old country Club Dr". However, that RIRO access likely offers little benefit to the Town and Country Village - El Dorado project relative to its main Bass Lake Rd driveway.

13.2 Constraint of "Old Country Club Dr" Access on Future Interchange Replacement

CIP project 65104005 includes a detailed study to determine the complete improvements needed at this location. The CIP project includes funding for that study in fiscal year 2025/2026. There is then just under $1.4 million budgeted for design and environmental studies during fiscal year 2025/2026. Thus, final design for the replacement interchange is unlikely to be available prior to entitlement of the Country Club Village project. $763k is budgeted for construction of interim improvements in fiscal year 2025/2026; another $3.709 million in construction funding is budgeted in the 10-year CIP (for a total construction budget of $4.47 million). That budget appears to be for interim improvements as the existing 36-foot two-lane portion of Bass Lake Rd underneath US-50 likely requires a 96-foot cross section. Interchange improvement projects that involve overpass/underpass replacement/widening typically have budgets of tens of millions rather than millions of dollars.

Under 2040 super-cumulative conditions, without traffic from the Project-Development and Program-Study areas, Bass Lake Road is anticipated to send about 1870 vehicles onto westbound US-50 during the morning (see **Figure 16**). About 740 of those are from southbound Bass Lake Rd and 1130 from northbound Bass Lake Road. That level of traffic is better handled by two onramps, a northbound loop ramp to westbound US-50 (serving 1130 vehicles) and a southbound slip ramp (serving 740 vehicles). Note that the 1130 vehicles from northbound Bass Lake Road are primarily from the proposed Marble Valley and Lime Rock projects. Construction of a loop onramp from northbound Bass Lake Road to westbound US-50 would prevent access to "Old country Club Drive" from Bass Lake Road.

Thus, Town and Country Village - El Dorado project access via "Old Country Club Drive", apart from EVA only, is likely incompatible with interchange designs that could accommodate traffic from the proposed Marble Valley and Lime Rock projects.

13.3 Bass Lake Hills Phase 1A Traffic Impact Study Safety Analysis

The Bass Lake Hills Phase 1a Traffic Impact Study[22] noted that the reconstruction of Bass Lake Road and relocation of the Bass Lake Rd/Country Club Dr intersection to its current location was expected to reduce accident rates by two thirds from 1.8 accidents per year to 0.6 accidents per year, with about a 50% reduction in injuries. Partially rolling back those improvements is anticipated to increase accident rates again, creating a potential CEQA

[22] See footnote 21.

safety issue should vehicular access to the Town and Country Village - El Dorado project be allowed via “Old Country Club Drive”.

13.4 “Old Country Club Drive” Access Finding/Recommendation

Town and Country Village - El Dorado project access via “Old Country Club Drive” would:

- Result in anticipated level-of-service F conditions if left turns from westbound “Old Country Club Drive” to southbound Bass Lake Road were allowed and would likely offer few Project benefits if “Old Country Club Drive” access from Bass Lake Road was restricted to RIRO.
- Limit options for a loop onramp from northbound Bass Lake Road to westbound US-50 when the interchange is redesigned. This could ultimately limit the development potential south of US-50 off of Bass Lake Rd/Marble Valley Rd.
- Likely increase accident rates along Bass Lake Road in the vicinity of US-50 and “Old Country Club Drive”.

Passenger vehicle access to the Town and Country Village - El Dorado project from “Old Country Club Drive” should not be implemented as it is anticipated to create traffic operations issues, constrain the design options for the reconstruction of the Bass Lake Rd interchange, and could potentially increase accident rates.

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14.0 FINDINGS

Note that CEQA related analysis and findings are documented in a separate report focused on vehicle miles of travel, crash history, bicycle, pedestrian, and transit impacts. This report's findings focus on documenting the Project's impact on level-of-service relative to General Plan policies.

Program-Development and Project-Study area site generated trips are detailed in section 5.1. The Project development area is anticipated to generate 2110 daily trips, 137 AM peak hour trips, and 185 PM peak hour trips. the Program Study area is anticipated to generate 12044 daily trips, 922 AM peak-hour trips, and 916 PM peak hour trips. The combined trip generation is anticipated to be 14154 daily trips, 1059 AM peak hour trips, and 1101 PM peak hour trips.

Abatement measures were identified at 13 locations:

- One arterial segment,
- Four US-50 segments (only under super-cumulative conditions), and
- Eight arterial intersections.

Abatements are summarized in **Table 42** below and detailed in sections 6.3, 8.3, 10.3, and 12.3 of this report.

Table 42. Summary of abatement measures

ID	Location	Existing 2023 Plus Project-Development Area	EPAP 2033 Plus Project-Development Area	Cumulative 2040 Plus Project-Development and Program-Study Areas	Super-Cumulative 2040 Plus Project-Development and Program-Study Areas	Relevant Report Sections	Related CIP Project
Arterial Segments							
i	Bass Lake Rd between Country Club Dr and Silver Dove Wy	n/a	n/a	**(i) C (widen to 4-lanes)**	Implement (i)C	10.3	Unfunded #GP166, CIP #72BASS/36105054
US-50 Segments							
US-50-8	Westbound US 50 merge from Bass Lake Rd	n/a	n/a	n/a	**(US-50-8)D (Add auxillery lane)**	12.3	Unfunded CIP #36104022/53117
US-50-9	Westbound US 50 between Bass Lake Rd and Silva Valley Pkwy	n/a	n/a	n/a	**(US-50-9)D (Add auxillery lane)**	12.3	
US-50-10	Westbound US 50 diverge to Silva Valley Pkwy	n/a	n/a	n/a	**(US-50-10)D (Add auxillery lane)**	12.3	
US-50-11	Eastbound US-50 diverge to Bass Lake Rd	n/a	n/a	n/a	**(US-50-16)D (widen to a 2-lane offramp)**	12.3	65104005
Intersections							
13	Bass Lake Rd/Sienna Ridge Rd (north)	n/a	n/a	**13C (lengthen turn pocket)**	**13D (expand intersection)**	10.3 and 12.3	TBD
15	Bass Lake Rd/Hawk View Rd	n/a	**15B (Signalize)**	Implement 15B	n/a	8.3	TBD
17	Bass Lake Rd/Hollow Oak Dr	n/a	**17B (Roundabout)**	Implement 17B	Implement 17B	8.3	TBD
19	Bass Lake Rd/Country Club Dr	n/a	**19B (Dual southbound left)**	**19C (Expand intersection)**	**19D (Additional intersection expansion)**	8.3, 10.3, and 12.3	65105009
21	Country Club Dr/Driveway#2	n/a	n/a	**21C (Roundabout)**	Implement 21B	10.3	n/a - Project Frontage
22	Country Club Dr/Driveway#3	n/a	n/a	**22C (Norbound left receiving lane)**	n/a	10.3	n/a - Project Frontage
28	Bass Lake Rd/US-50 westbound	**29A* (Signalize, expand intersection)**	Implement 29A	Implement 29A	**28D (Replace interchange)**	6.3 and 12.3	65104005
29	Bass Lake Rd/US-50 eastbound	**29A (Expand intersection)**	Implement 29A	Implement 29A	**29D (Replace interchange)**	6.3 and 12.3	65104005

* Note that intersection 28 improvements for existing, EPAP, and Cumulative are first implemented as part of the improvements for abatement 29A.
TBD = (To be determined) denotes improvements that should be added to the CIP.