



APPENDIX G

August 31, 2016

MEMORANDUM

To: Ms. Colleen Cummins, Aviation

From: Lyle DeVries, PE, PTOE
Shea Suski, AICP

Re: DRO Environmental Assessment
Initial Traffic Analysis Findings
FHU Reference No. 115443-01

FHU has completed preliminary traffic analyses associated with the proposed Durango-La Plata County Airport (DRO) alternatives included in the airport's 2016 Master Plan. The Master Plan identified three alternatives for the future of DRO. Alternatives 1 and 2 would retain a terminal on the west side of the runway, respectively either by renovation or new construction, and Alternative 3 would construct a new terminal on the east side of the runway. Alternative 3 was identified as the Preferred Alternative in the Master Plan.

This memorandum describes existing and future traffic conditions, including daily and peak hour traffic volumes and Levels of Service (LOS) at two intersections with State Highway (SH) 172: County Roads (CR) 309 and 338. Existing LOS is also provided for the intersection of CR 309/CR 309A. Weekday and Saturday peaks are examined in order to capture variations in airport traffic.

Summary of Findings

An analysis of existing peak hour traffic counts conducted in early June 2016 revealed all movements at the three analysis intersections – SH 172/CR 309, SH 172/CR338, and CR 309/CR 309A – operate at LOS B or better.

Using historical traffic and enplanement growth data along with Year 2035 enplanement forecasts provided by the Master Plan, existing peak hour turning movements were projected to the Year 2040 for the two intersections along SH 172 for the three terminal alternatives (which include a new south leg to the SH 172/CR 338 intersection to provide access to DRO) and a "No Action" condition. Year 2040 forecasts were developed by extending 2035 Master Plan forecasts as continued straight-line growth. The "No Action" analysis revealed all movements would continue operating at LOS B or better during peak hours, with the exception of the northbound left turn at SH 172/CR 309 operating at LOS C during weekday peak hours. These same conditions were generally found to exist at this intersection for Alternatives 1-3. If the SH 172/CR 309 intersection remains a full movement intersection, the northbound left turn at the SH 172/CR 338 intersection would operate between LOS C and D during peak hours, while converting SH 172/CR 309 to a right-in/right-out (RIRO) would cause these movements to operate between LOS E and F during

weekday peak hours. Operations for this movement may be improved by installing a left turn acceleration lane. A more detailed description of the conditions described above are provided in the remainder of this memorandum.

Existing Conditions

Existing traffic volume data were gathered on June 9-11 of 2016, a Thursday-Saturday during a higher-than-average time of year for DRO traffic according to historical monthly enplanement, deplanement, and parking revenue data provided by the Airport. Daily traffic volumes were recorded along nine roadway segments in the vicinity of DRO. Weekday AM and PM peak and Saturday peak hour turning movements were recorded at the intersections of SH 172 and both CR 309 and CR 338. The main airport access intersection of CR 309 with CR 309A was also recorded, allowing for clear identification of main terminal, General Aviation (GA), and local office traffic.

Daily traffic counts show that SH 172 west of CR 309 currently carries over 7700 vehicles per day (vpd) on weekdays and nearly 6000 vpd on a Saturday. Approximately 2750 vpd utilize CR 309 to access the DRO terminal, GA and other uses. **Figure 1** depicts current traffic volumes.

Traffic operations within the study area were evaluated according to techniques documented in the *Highway Capacity Manual* (Transportation Research Board, 2010) using the existing traffic volumes, intersection geometry, and traffic control. Level of Service (LOS) is a qualitative measure of traffic operational conditions based on roadway capacity and vehicle delay. LOS is described by a letter designation ranging from A to F, with LOS A representing almost free-flow travel, while LOS F represents congested conditions. For stop-sign controlled intersections, LOS is calculated for each movement that must yield the right-of-way. **LOS D is typically considered to be acceptable for peak hour intersection operations.**

As shown on **Figure 1**, movements at each of the three analyzed intersections operate at LOS A or B during peak hours.

Future Conditions

Year 2040 traffic volume forecasts were developed using DRO enplanement growth projections made available by Jviation and knowledge of historical growth patterns along area roadways. Enplanement forecasts indicate that passenger traffic will increase to more than double current levels by 2035, and 2040 traffic forecasts were developed by extending this growth beyond 2035 in linear fashion. Traffic along SH 172 is forecast to grow by nearly 40 percent over current levels. **Figure 2** depicts projected Year 2040 daily and peak hour traffic volumes. SH 172 traffic levels are anticipated to exceed 12,000 vpd west of CR 309.

No Action

The forecasts shown on **Figure 2** represent a “No Action” condition of no changes to the existing DRO facility while growth at the airport continues. As shown, intersection movements are expected to remain at LOS B or better by the Year 2040. One exception is the peak hour left turn movement from CR 309 onto SH 172, which is expected to operate at LOS C during weekday peak hours compared to LOS B today.

Alternatives 1 and 2 – West Side Terminal

Alternatives 1 and 2 involve improving the existing terminal or replacing it at or near its current location. Both alternatives would keep the terminal on the west side of the runway and reconfigure

airport access from SH 172 by adding a south leg to the intersection at CR 338 and limiting the existing SH 172/CR 309 intersection to Right-in/Right-out movements only. Growth in activity at DRO by the Year 2040 would continue at the same pace analyzed as part of the “No Action” condition. **Figure 3** depicts projected traffic volumes and operational conditions associated with this option. As shown, all movements would operate at LOS C or better, with the exception of left turn movements entering SH 172 at its intersection with CR 338 during the weekday AM and PM peak hours operating at LOS E and LOS F, respectively. Analyses indicate that LOS for left turns onto SH 172 could be improved to LOS C or better by the addition of a left turn acceleration lane. Construction of a left turn acceleration would increase the overall intersection footprint. If such an impact cannot be accommodated, consideration could be given to improving operations with signalization or a different intersection configuration such as a roundabout.

Alternative 3 – New East Side Terminal

Figures 4a-4c represent forecasted traffic conditions with a new terminal constructed east of the runway – Alternative 3. This alternative also assumes reuse of the existing terminal building by an airport-related business. Trips generated by this user were estimated using the Institute of Transportation Engineers’ (ITE) *Trip Generation Manual: 9th Edition* trip generation rates for General Light Industrial uses. Growth in activity at DRO by the Year 2040 would continue at the same pace analyzed as part of the “No Action.”

There are three options identified for accessing a new east side terminal. Two options assume the same addition as Alternatives 1 and 2 of a new south leg to the intersection of SH 172 with CR 338. **Figure 4a** depicts the SH 172/CR 309 intersection converted to a RIRO, while **4b** depicts the intersection remaining as a full movement intersection. **Figure 4c** depicts the option of providing no new connection to SH 172 and serving the east side terminal via the existing intersection of SH 172 with CR 309.

Traffic operations results associated with these variations are described as follows:

- **SH 172/CR 309 Right-in/Right-out (Figure 4a):** Conversion of the SH 172/CR 309 intersection to RIRO would place additional pressure on the new CR 338 approach to SH 172, and operations would deteriorate to LOS E/F for the northbound left turn movement during weekday peaks.
- **SH 172/CR 309 Full Movement (Figure 4b):** SH 172/CR 309 remaining as a full movement intersection would balance traffic fairly evenly between the CR 309 and CR 338 intersections and LOS for left turn movements entering SH 172 would operate at LOS D or better during all peaks. This option would eliminate the need for a connection between the east and west sides of the runway. Analyses indicate that LOS for left turns onto SH 172 could be improved to LOS C or better by the addition of a left turn acceleration lane. Construction of a left turn acceleration would increase the overall intersection footprint. If such an impact cannot be accommodated, consideration could be given to improving operations with signalization or an alternative intersection configuration such as a roundabout.
- **No New Connection to SH 172 (Figure 4c):** Providing access to the east side terminal using only the existing SH 172/CR 309 intersection would provide operational conditions similar to the No Action Alternative analyzed in **Figure 2**, with one difference being increased traffic demand along CR 309A through the Runway Protection Zone (RPZ). As

shown on **Figure 3c**, daily traffic forecasts along this section of roadway would exceed 5,000 vpd. The typical capacity of a two-lane roadway is approximately 16,000 vpd. Therefore, at this forecasted traffic volume CR 309A through the RPZ would continue to function acceptably as a two-lane roadway.

Further discussion of these findings is anticipated to occur at upcoming project meetings. Please feel free to contact Lyle DeVries or Shea Suski should any questions arise.

Enclosures: Figures 1, 2, 3, and 4a-4c

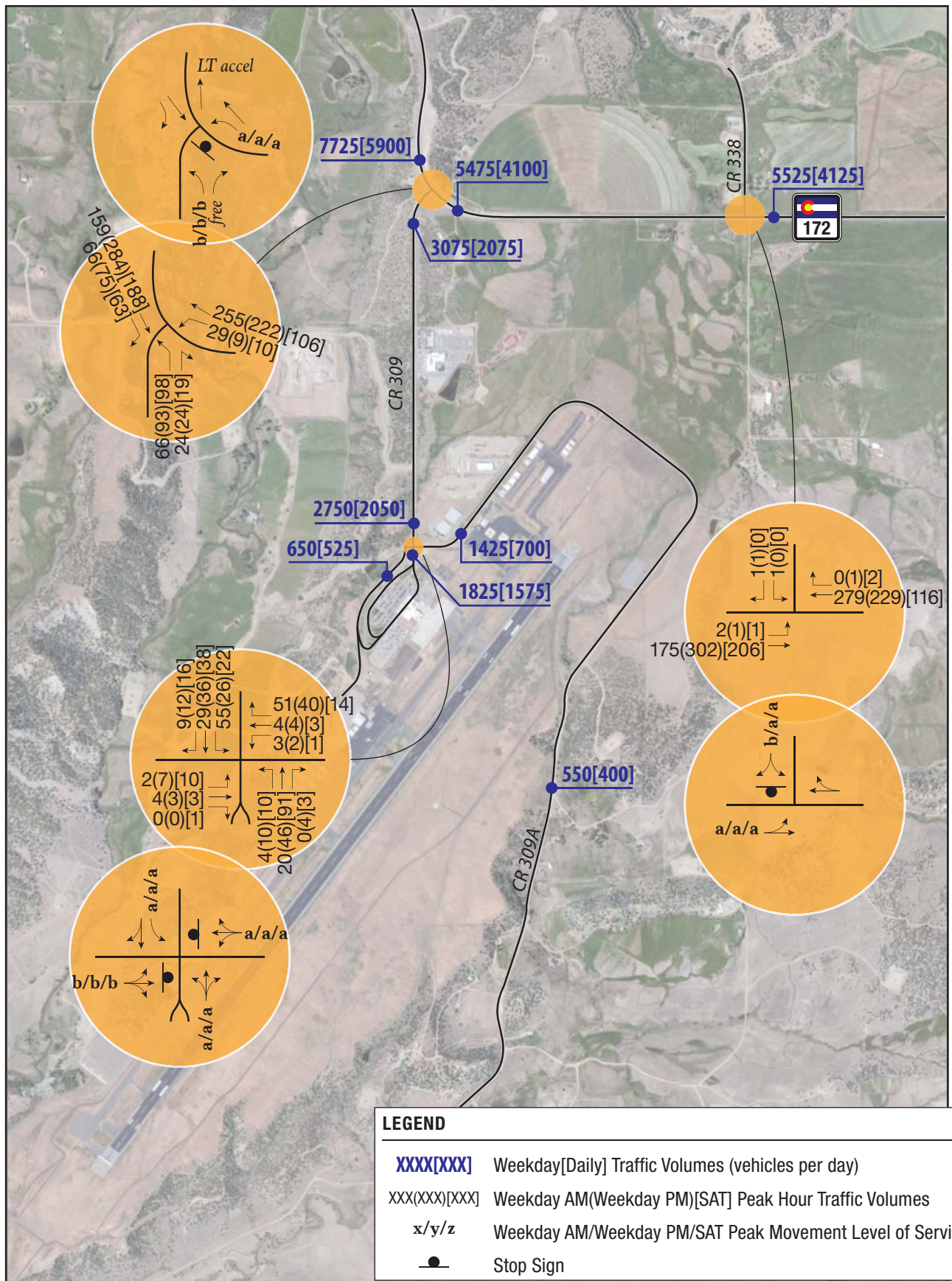


Figure 1
Existing Traffic Conditions



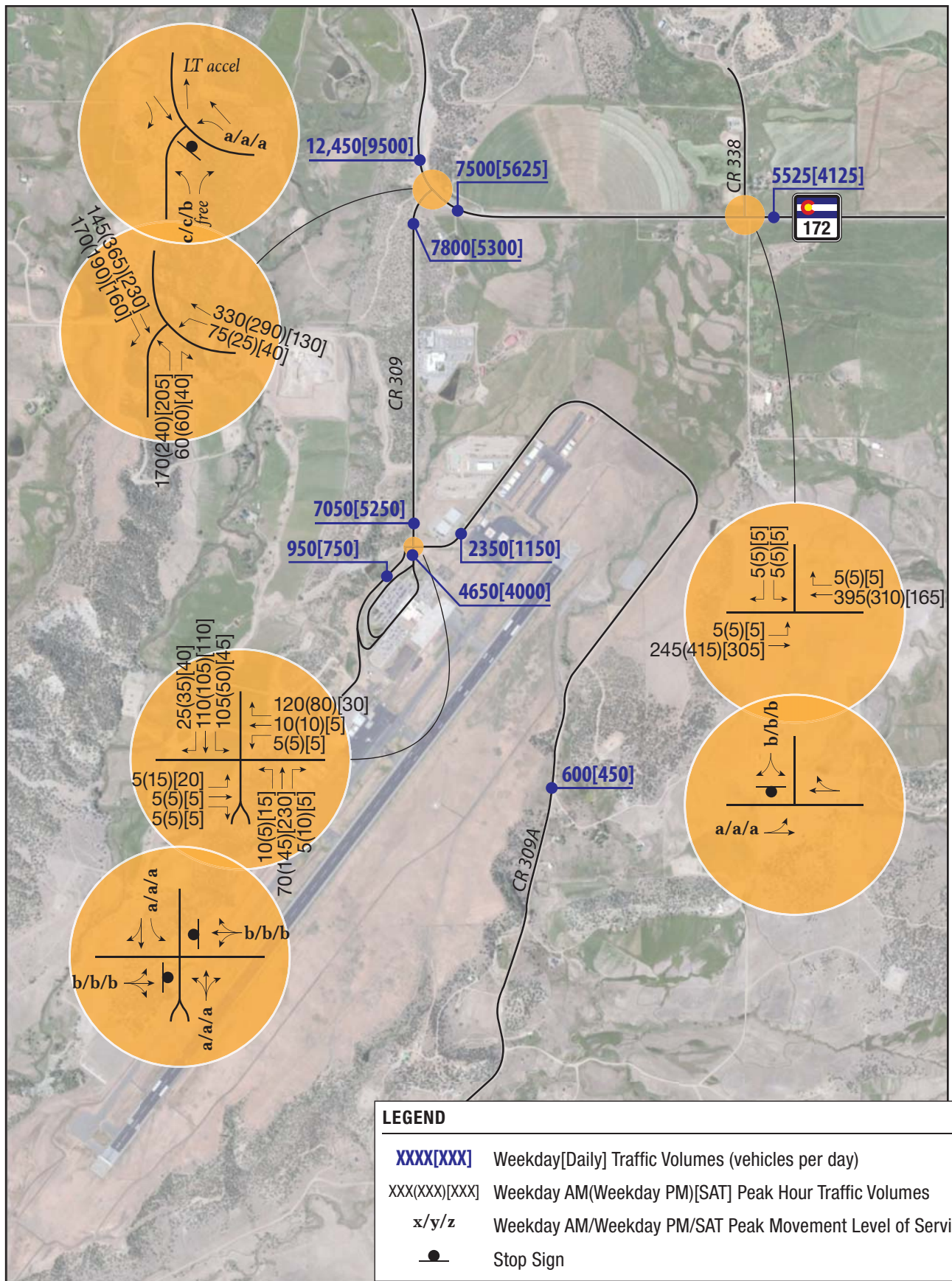


Figure 2
Year 2040 No Action Traffic Conditions





Figure 3
SH 172/CR 309 RI/RO Intersection



LEGEND	
XXXX[XXXX]	Weekday[Daily] Traffic Volumes (vehicles per day)
XXX(XXX)[XXX]	Weekday AM(Weekday PM)[SAT] Peak Hour Traffic Volumes
x/y/z	Weekday AM/Weekday PM/SAT Peak Movement Level of Service
	Stop Sign
	New Roadway

Figure 3

Westside Terminal SH 172 Access Options - Year 2040 Traffic Conditions





Figure 4a
SH 172/CR 309 RI/RO Intersection



Figure 4b
SH 172/CR 309 Full Intersection

LEGEND	
XXXX[XXX]	Weekday[Daily] Traffic Volumes (vehicles per day)
XXX(XXX)[XXX]	Weekday AM(Weekday PM)[SAT] Peak Hour Traffic Volumes
x/y/z	Weekday AM/Weekday PM/SAT Peak Movement Level of Service
	Stop Sign
	New Roadway

Figure 4

Eastside Terminal SH 172 Access Options - Year 2040 Traffic Conditions



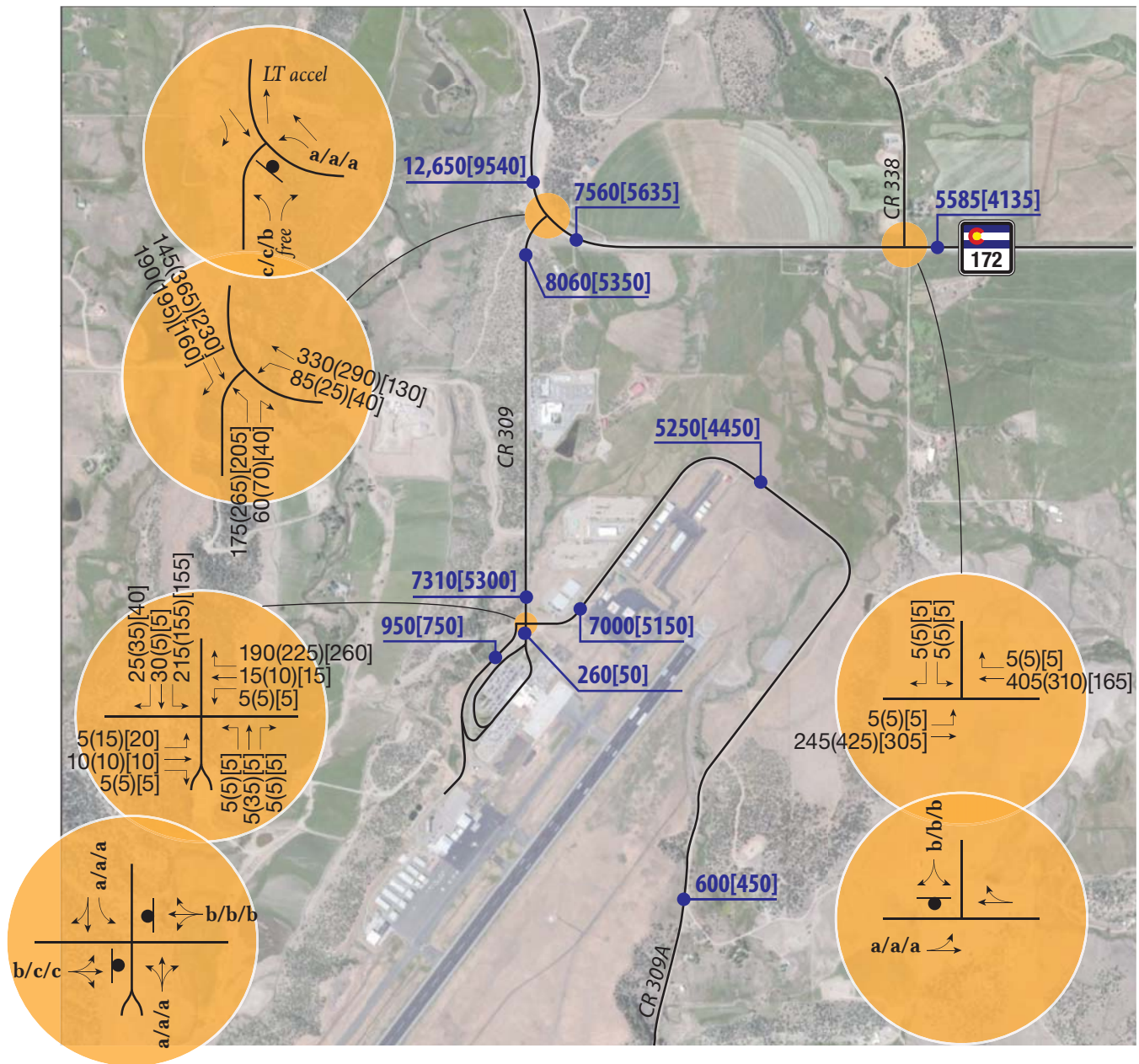


Figure 4c
No New Connection to SH 172

LEGEND	
XXXX[XXX]	Weekday[Daily] Traffic Volumes (vehicles per day)
XXX(XXX)[XXX]	Weekday AM(Weekday PM)[SAT] Peak Hour Traffic Volumes
x/y/z	Weekday AM/Weekday PM/SAT Peak Movement Level of Service
	Stop Sign
	New Roadway

Figure 4

Eastside Terminal SH 172 Access Options - Year 2040 Traffic Conditions



