FOX TUTTLE

# MEMORANDUM

**To:** Town of Castle Rock, Public Works Department

**From:** Cassie Slade, PE, PTOE

**Date:** July 7, 2023

**Project:** Dawson Trails

**Subject:** Costco Development Traffic Conformance Letter

The Fox Tuttle Transportation Group has prepared this traffic conformance letter for the proposed Costco store located in Planning Area F1.2 of the Dawson Trails development in Castle Rock, Colorado. The site is located in the northeast corner of the future intersection of Crystal Valley Parkway and Dawson Trails Boulevard, as shown on **Figure 1**. The project is proposing to construct one new 161,000 square foot (sq. ft.) building for the discount club store with one (1) restricted access on Dawson Trails Boulevard, two (2) accesses on Collector A, and one (1) access on Collector B. The purpose of this "traffic conformance letter" is to determine if the proposed use is significantly different than the trip generation assumptions for this site as analyzed in the "Master" study and the Phase 1 Traffic Study and to identify if additional traffic analysis is necessary.

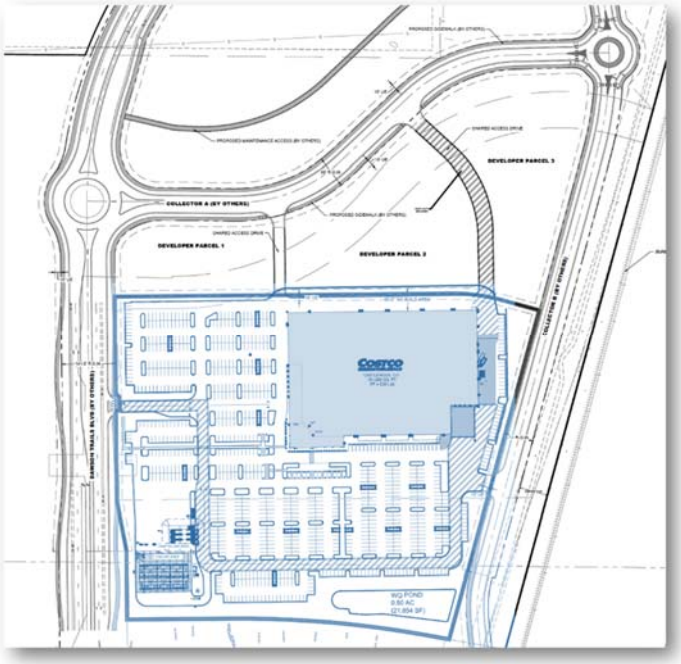


***Figure 1. Vicinity Map***

## Comparison to Master Traffic Study and Phase 1 Traffic Study

**A "Master" transportation study**[1] (MTS) was previously prepared for the entire 2,063± acres of Dawson Trails that will include a mix of residential, commercial, office, light industrial, schools, and recreation. The MTS assumed that Planning Area F1.2 would include a 180,000 sq. ft. discount club store. The MTS focused on the full movement intersections along Dawson Trails Boulevard and did not evaluate access intersection or collector/collector intersections since this detail would be more appropriate in traffic studies for phases or specific projects.

Within the more focused **traffic study for Phase 1**[2], the discount club store was updated to specifically be a Costco with a fueling station. The building size was updated to 160,500 sq. ft. The Phase 1 study also applied the trip generation rates provided by Costco that is specific to their store with a fueling station. These trip rates were utilized in lieu of the ITE trip rates for "discount club" that was utilized in the MTS, as the Costco rates are higher and provide a more refined assessment of adjacent intersection trips. The Phase 1 Traffic Study evaluated one (1) access on Dawson Trail Boulevard (right-in, right-out); three (3) accesses on Collector A [one right-in, right-out and others full-movement]; and two (2) accesses on Collector B [both full movement]. The analysis indicated that all of the access intersections would operate acceptably with the proposed restricted movements, auxiliary lanes, and traffic control.

The **latest site plan** shows that Costco will be 161,000 sq. ft. in size, which is 500 sq. ft. more than the building size in the Phase 1 traffic study. Access has been reduced slightly with the latest plan. The right-in, right-out on Collector A and the northmost access on Collector B were removed.

## Trip Generation

To establish the volume of trips associated with the proposed project, the Costco-specific data was utilized. The MTS applied the data contained in the *Institute of Transportation Engineers (ITE) Trip Generation Manual*[3] to the most applicable land use category prior to knowing the specific tenant. The proposed land use is estimated to mostly be new trips, known as 'primary trips', which is discussed below:

> Primary Trips. These trips are made specifically to visit the site and are considered "new" trips. Primary trips would not have been made if the proposed project did not exist.

1 *Dawson Trails Master Transportation Study*. Fox Tuttle Transportation Group, LLC. June 2022.
2 *Phase 1 – Costco Development (Updated)*. Fox Tuttle Transportation Group, LLC. February 2023.
3 *Trip Generation Manual*. 11th Edition. Institute of Transportation Engineers. Washington, DC. 2021.

Therefore, this is the only trip type that increases the number of trips made on a regional basis.

**Table 1** summarizes and compares the trip generation estimated from the MTS, Phase 1 TIS, and the latest site plan for weekday daily, weekday AM, weekday PM, and Saturday peak periods.

***Table 1. Trip Generation Summary and Comparison***

| Land Use | Size | Unit | Non-Auto Factor | Internal Capture Adjust | Average Daily Trips | | | | AM Peak Hour Trips | | | | PM Peak Hour Trips | | | | Saturday Peak Hour Trips | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Rate | Total | In | Out | Rate | Total | In | Out | Rate | Total | In | Out | Rate | Total | In | Out |
| **Master Transportation Study** | | | | | | | | | | | | | | | | | | | | |
| Discount Club Store | 180.00 | 1,000 sq. ft. | 0.95 | 0.65 | 42.46 | 4,719 | 2,360 | 2,359 | 0.80 | 89 | 54 | 35 | 4.19 | 466 | 233 | 233 | 6.37 | 708 | 347 | 361 |
| **Phase 1 Traffic Study** | | | | | | | | | | | | | | | | | | | | |
| Costco | 160.50 | 1,000 sq. ft. | 1.00 | 0.80 | 72.40 | 9,296 | 4,648 | 4,648 | 1.33 | 171 | 91 | 80 | 7.09 | 910 | 446 | 464 | 10.97 | 1,409 | 705 | 704 |
| *Pass-by (AM) -50%* | *18%* | | | | | *1,673* | *837* | *836* | | *31* | *16* | *15* | | *0* | *0* | *0* | | *0* | *0* | *0* |
| *Pass-by (PM) -50%* | *17%* | | | | | *0* | *0* | *0* | | *0* | *0* | *0* | | *155* | *76* | *79* | | *0* | *0* | *0* |
| *Pass-by (Sat) -50%* | *15%* | | | | | *0* | *0* | *0* | | *0* | *0* | *0* | | *0* | *0* | *0* | | *211* | *106* | *105* |
| | | | | *Total New Trips* | | *7,623* | *3,811* | *3,812* | | *140* | *75* | *65* | | *755* | *370* | *385* | | *1,198* | *599* | *599* |
| **Updated Traffic Conformance Letter** | | | | | | | | | | | | | | | | | | | | |
| Costco | 161.00 | 1,000 sq. ft. | 1.00 | 0.80 | 72.40 | 9,325 | 4,663 | 4,662 | 1.33 | 171 | 91 | 80 | 7.09 | 913 | 447 | 466 | 10.97 | 1,413 | 707 | 706 |
| *Pass-by (AM) -50%* | *18%* | | | | | *1,679* | *839* | *840* | | *31* | *16* | *15* | | *0* | *0* | *0* | | *0* | *0* | *0* |
| *Pass-by (PM) -50%* | *17%* | | | | | *0* | *0* | *0* | | *0* | *0* | *0* | | *155* | *76* | *79* | | *0* | *0* | *0* |
| *Pass-by (Sat) -50%* | *15%* | | | | | *0* | *0* | *0* | | *0* | *0* | *0* | | *0* | *0* | *0* | | *212* | *106* | *106* |
| | | | | *Total New Trips* | | *7,646* | *3,824* | *3,822* | | *140* | *75* | *65* | | *758* | *371* | *387* | | *1,201* | *601* | *600* |
| | | | | *Difference in Trips (MTS vs. Updated)* | | *2,927* | *1,464* | *1,463* | | *51* | *21* | *30* | | *292* | *138* | *154* | | *493* | *254* | *239* |
| | | | | *Difference in Trips (Phase 1 vs. Updated)* | | *23* | *13* | *10* | | *0* | *0* | *0* | | *3* | *1* | *2* | | *3* | *2* | *1* |

*Source : ITE Trip Generation Manual and Handbook, 11th Edition, 2021.*

The ITE rates were significantly less than those that Costco has collected for their sites with fueling stations; hence the more significant increase in trips comparing to the MTS. As mentioned earlier, the *Phase 1 TIS* updated the trip rates to be Costco-specific. It was determined that the study intersections would operate acceptable (LOS D or better) and can accommodate the additional traffic. There was minimal impact to the intersection of **Crystal Valley Parkway at Dawson Trails Boulevard (#7)** and it was estimated to continue to operate at LOS D/E/E in the AM/PM/Saturday peak hours. All of the movements that were previously estimated to operate at LOS E in one or more peak hour were shown to remain the same level of service with only slight shifts in delay.

Compared to the *Phase 1 TIS*, the size of Costco increased by 500 sq. ft. which insignificantly increased the trip volume. The daily volume was estimated to increase by up to 23 trips (0.3% increase). The PM and Saturday peak hours were estimated to experience up to three (3) more vehicle trips (0.4% and 0.3%, respectively).

## Conclusions

The most current Costco site plan is consistent with the assumptions of the Phase 1 TIS with a minimal increase of 500 sq. ft., which equates to an additional 23 daily trips and up to three (3) peak hour trips (approximately 0.3% increase). **It is anticipated that the future planned roadway network and intersections can accommodate the project trips without the need for additional analysis or mitigation measures.**

Hopefully the contents of this memorandum are helpful. If you have any questions, please give me a call.

Sincerely,

**FOX TUTTLE TRANSPORTATION GROUP, LLC**

Cassie Slade

Cassie Slade, P.E., PTOE
Principal