

## TECHNICAL MEMORANDUM

Date: May 11, 2018

To: David Mohlenbrok, Justin Nartker, and Dave Palmer – City of Rocklin

From: John Gard, P.E. – Fehr & Peers

**Subject: *Tractor Supply Store Project Access Evaluation and Traffic Impact Assessment***

RS18-36233

This memorandum summarizes the results of our project access evaluation of the proposed Tractor Supply Store to be located on Granite Drive in Rocklin, CA. This memorandum also includes a traffic impact assessment of the store's potential impacts on the City's roadway system.

### Project Description

According to the most recent project site plan (*Proposed New Development: Tractor Supply Co, API Planning and Architecture, February 2018*), the proposed project would consist of a 19,000 square-foot Tractor Supply Store (plus an additional 15,000 square feet of outdoor sales) located on the south side of Granite Drive west of Sierra College Boulevard. Refer to Figure 1 for project site plan.

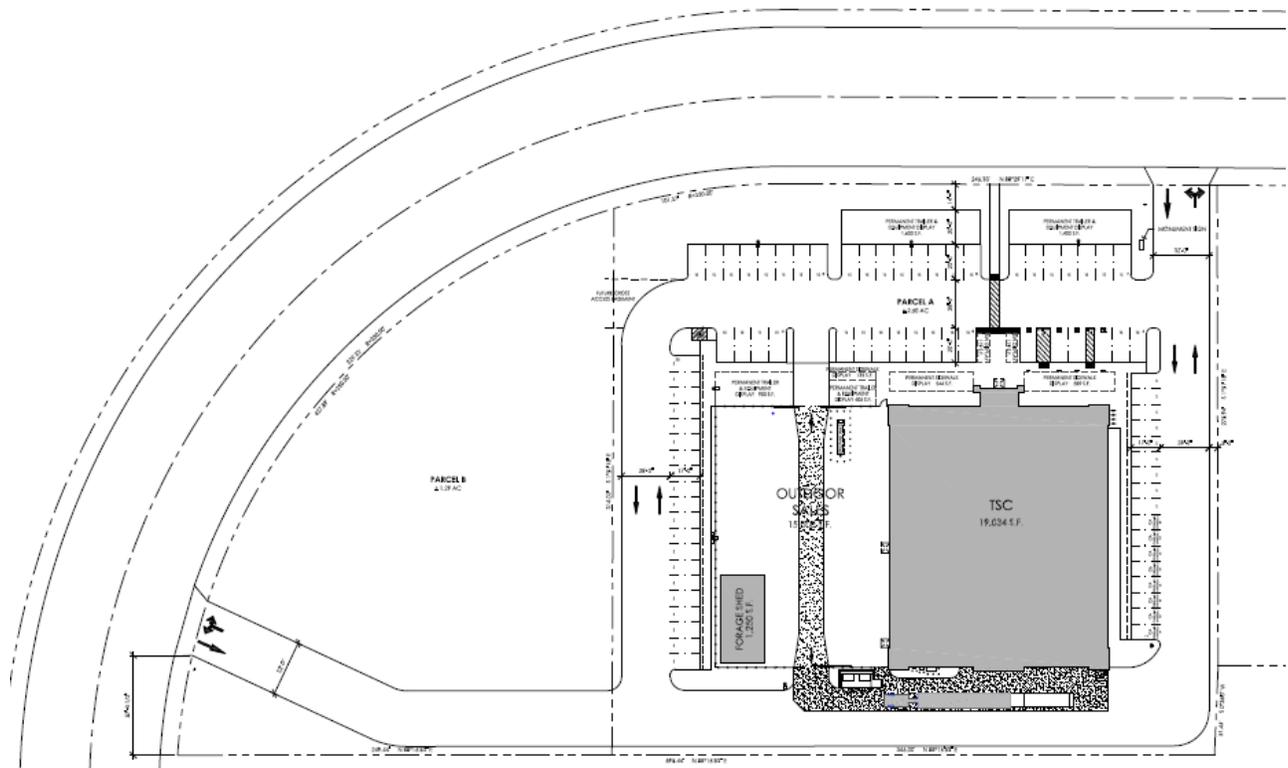


Figure 1: Project Site Plan

Access to the project would be provided by two driveways on Granite Drive, as described below:

- Westerly Driveway – would be situated about 60 feet north of the project’s southern property line (that abuts the Rocklin Commons Shopping Center). Permitted movements at this driveway are evaluated later in this memorandum.
- Northerly Driveway – would be situated at the easterly edge of the project site approximately 750 feet west of Sierra College Boulevard (measured from centerline to centerline). Movements at this driveway are proposed to be full-access.

## **Background**

The currently proposed site plan reflects input provided by Fehr & Peers and City staff to address various access-related issues including sight distance, access needs of adjacent properties, etc. Those initial studies evaluated a project that was situated further to the west, which caused sight distance limitations at the Northerly Driveway due to the horizontal curvature of Granite Drive. Details of those evaluations are not presented in this memorandum as they are not relevant to this study.

## **Project Access Evaluation**

The following specific access-related issues were analyzed:

- Consistency with City design standards
- Permitted turning movements at project driveways
- Sight distance at project driveways

### *Consistency with City Design Standards*

A review of the project site plan did not reveal any inconsistencies of driveways in terms of their spacing, width, and proximity to property lines with applicable City standards as described in *City of Rocklin Improvement Standards and Standard Drawings* (November 2016).

Drawing 3-13 specifies that driveways and intersections located on the inside of horizontal curves with less than a 1,000-foot radius require special design for sight distance subject to approval by the City Engineer. Since Granite Drive features a 400-foot horizontal curvature radius between the two driveways, special sight distance design considerations are warranted.

Drawing 3-14 presents visibility requirements within controlled areas at driveways on tangential streets. To maintain adequate sight distance, these areas (i.e., sight distance triangles) should not have fences, shrubs or signs in excess of 30 inches above the roadway surface. Similarly, large trees should have a minimum 6-foot foliage clearance above the street, while street signs must have a

clearance of at least 10 feet (excluding the tree trunk and sign poles). This standard is applicable to the Westerly Driveway and applied in the sight distance evaluation that follows.

#### *Permitted Turning Movements at Project Driveways*

The Westerly Driveway would be situated about 100 feet north of the full access Granite Drive/Rocklin Commons Driveway/Dovetail Drive intersection (measured centerline to centerline). This segment of Granite Drive features two lanes in each direction separated by a two-way left-turn lane. Several options regarding permitted movements at this driveway were evaluated. Based on those evaluations, the following is recommended:

- **Install a triangular raised concrete median in the Westerly Driveway to physically prohibit outbound left-turns, while permitting inbound left-turns and right-turn movements.**

Recognizing that access needs to serve adjacent (currently undeveloped) properties could eventually require median channelization, the City has indicated that they will condition the project to pay a fair-share in lieu payment for such future median improvements.

The following is recommended at the Northerly Driveway:

- **Maintain full-access and stripe one inbound lane and separate outbound left and right turn lanes (controlled by a stop sign).**

This driveway placement would enable construction of a potential four-way traffic signal to support a larger commercial parcel located on the north side of Granite Drive. The traffic signal would not be warranted with the proposed project, but could be needed to accommodate traffic from the larger commercial parcel to the north. The provision of separate outbound left and right turn lanes provides the opportunity for protected left-turn phasing on the north/south approaches, which is more efficient than split phasing that would be associated with a single driveway exit lane.

#### *Sight Distance at Project Driveways*

As directed by City of Rocklin staff, the available sight distance for motorists exiting each driveway (looking to the left) was analyzed using guidelines in the *Highway Design Manual – HDM* (Caltrans, 2014). Table 405.1A of the HDM describes corner sight distance, which corresponds to providing a motorist with 7.5 seconds of sight distance. Guidelines in Standard Drawing 3-14 of the *City of Rocklin Improvement Standards and Standard Drawings* (November 2016) also pertain to the sight distance recommendations provided below.

During the off-peak period of a dry weekday in January 2018, City of Rocklin staff conducted a speed survey for two distinct segments of Granite Drive. The results are described below:

- Segment 1: Northbound Granite Drive (south of Rocklin Commons/Dovetail Drive intersection)
  - Posted speed limit = 40 MPH
  - 85<sup>th</sup> percentile speed = 43 MPH
  
- Segment 2: Northeast Granite Drive (between Westerly and Northerly Driveways)
  - Posted speed limit = 40 MPH
  - Advisory Speed = 30 MPH
  - 85<sup>th</sup> percentile speed = 34 MPH

It is typical to select a design speed that corresponds to the first 5 MPH increment above the 85<sup>th</sup> percentile speed, but not less than the posted speed limit. Accordingly, a design speed of 45 MPH was selected for Segment 1, and a design speed value of 40 MPH was selected for Segment 2. Driver's eye, vehicle height, and driver setback distance were applied in accordance with the *HDM*.

Figure 2 shows the available sight distance at each driveway. Key findings from this figure are:

- Northerly Driveway – the available sight distance of 430 feet is within ten feet of the 440 feet required. The following are recommended to provide adequate sight distance at this driveway:
  - **Recommendation: Reduce by 1.5 feet both the depth and length of the westerly permanent trailer and equipment display.**

The Westerly Driveway would have adequate sight distance for vehicles turning right out of the driveway (i.e., looking to the left). Although there is a fence/wall just south of the project's southerly property line, this feature does not pose a sight distance constraint as shown on Figure 2.

A detailed evaluation of vertical sight distance has not been performed due to the lack of final parking lot and driveway elevations. Based on information provided by the applicant's civil engineer (Rick Chavez with RSC Engineering), a motorist exiting the Northerly Driveway would experience a slight downhill grade (due to the site being at slightly higher elevation than Granite Drive). The Westerly Driveway would feature very little slope. The horizontal sight distance findings do not rely upon a motorist having improved visibility by virtue of being at a higher point on the site. Additionally, motorists would not have a limited view of traffic on Granite Drive due to a driveway having an upslope approaching Granite Drive. Thus, this evaluation has concluded, based on the

data available at this time, that vertical sight distance constraints are unlikely to be present. A final review of vertical sight distance is recommended once final parking lot elevations are available.

### **Traffic Impact Assessment**

According to information provided by Mr. Tim Hoelscher, Director of Real Estate for the Tractor Supply Company, these stores provide for the needs of recreational farmers and ranchers, while also serving the equipment maintenance needs of rural residents, tradesmen, and small businesses. Stores are typically open from 8 AM to 8 PM on weekdays and Saturdays, with reduced hours on Sundays. Employment levels may vary from 12 to 18 persons depending on the store location.

During a typical weekday, between 200 and 250 customers visit the store. The busiest periods occur from 11 AM to 1 PM and from 5 to 8 PM. These two periods each experience between 25 and 50 customers.

The City of Rocklin measures impacts to its roadway network based on weekday PM peak hour conditions. During this hour, the proposed Tractor Supply Store on Granite Drive could generate 15 to 20 inbound vehicle trips and 15 to 20 outbound vehicle trips. The addition of 30 to 40 total peak hour trips when assigned onto various two-lane and four-lane roadways such as Granite Drive, Sierra College Boulevard, Taylor Road, and Rocklin Road would be inconsequential when compared to the total volume of traffic on these streets. Therefore, the project is presumed to not cause any significant traffic impacts.

Please call or e-mail with any questions or comments.

