



Updated Technical Memorandum No. 6

March 21, 2019

To: Lily Toy
City of Redding
Planning Division

Project: Dignity Mercy Medical Center
Redding North State Pavilion

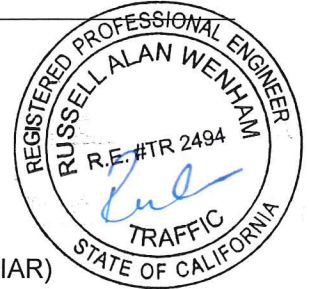
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Subject: Supplement to the October 29, 2018 Final Traffic Impact Analysis Report (TIAR)



1. Introduction

Dignity Health has retained GHD to prepare a Technical Memorandum to:

1. Clarify specific items in the TIAR.
2. Provide supplemental supporting information for the TIAR.

To date, the following technical memorandums have been prepared (or will be prepared) that supplement the information in the TIAR:

- A. **Technical Memorandum No. 1** "Henderson Road/Wilshire Drive Traffic Cut-Through Analysis", October 24, 2018.
- B. **Technical Memorandum No. 3** "Vehicle Miles Traveled (VMT)", Pending.
- C. **Technical Memorandum No. 4** "Traffic Impacts at Intersections No. 8 and No. 10 for Existing General Plan Project Alternative, and Reduced Intensity Project Alternative", March 13, 2019.
- D. **Technical Memorandum No. 5** "Potential Traffic Impacts and Mitigations for Mercy Oaks Alternative Project", March 11, 2019.

Since the above identified technical memorandums reference the October 29, 2018 TIAR, this memorandum is provided to further supplement the October 29, 2018 TIAR.

2. Study Intersections (Supplemental Information)

Pages 3 and 4 of the TIAR identify the critical study intersections that were selected in coordination with City of Redding staff. The following principals were used to identify the study intersections:



2.1 Caltrans Guidelines

In December 2002, Caltrans published their "Guide for the Preparation of Traffic Impact Studies". One of the stated objectives for the guide is the "provide guidance in determining if and when a traffic impact study (TIS) is needed". The guide goes on to suggest that a TIS is needed "When a project Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS "C" or "D")."

Based on consultation with City staff, it was estimated that the Caltrans freeway interchange area (Interstate 5 at Cypress Avenue) currently operates at LOS "C" and "D" and that more than 50 peak hour trips may use the interchange.

Thus, the intersections on Cypress Avenue, in the Interstate 5 area, were included in the study.

2.2 City Guidelines

In January 2009, the City of Redding published their "Traffic Impact Analysis Guidelines". One of the stated requirements in the guidelines is "A TIA is required when a project would potentially cause a substantial increase in traffic in relation to the traffic levels and capacity of the street system. This is often the case when a project would add thirty-five (35) or more new vehicle trips (one-way) to City streets during a peak hour."

In consultation with City staff, a preliminary trip generation and trip distribution was developed and critical intersections identified.

3. Use of the Highway Capacity Manual (Supplemental Information)

Page 7 of the TIAR identifies that intersection LOS was calculated for all control types using the methods documented by the Transportation Research Board publications Highway Capacity Manual 2000 and 2010.

3.1 Caltrans Guidelines

In December 2002, Caltrans published their "Guide for the Preparation of Traffic Impact Studies". The guide identifies the procedures contained in the Highway Capacity Manual for analyzing signalized intersections.

3.2 City Guidelines

In January 2009, the City of Redding published their "Traffic Impact Analysis Guidelines". One of the stated requirements in the guidelines is that the "LOS analysis for signalized and stop controlled intersections in the study area shall be based on the last edition of the Highway Capacity Manual (HCM)."

3.3 Professional Judgement

The methodologies contained in the Highway Capacity Manual are the most widely used in the traffic engineering industry and are used on the vast majority of the studies performed in California. GHD professionals have used the Highway Capacity Manual methods for hundreds of studies that involve



Caltrans and dozens of studies in the City of Redding. The GHD professionals that provided the analysis for this project consider the Highway Capacity Manual methods to be the best available in the industry.

4. Use of the Synchro 10 Software (Supplemental Information)

Page 7 of the TIAR identifies that intersection LOS was calculated of all control types using Synchro 10 software by Trafficware.

4.1 Caltrans Guidelines

In December 2002, Caltrans published their "Guide for the Preparation of Traffic Impact Studies". The guide identifies Synchro software as accepted without prior consultation for intersection analysis.

4.2 City Guidelines

In January 2009, the City of Redding published their "Traffic Impact Analysis Guidelines". The guidelines do not identify a specific software tool for analysis.

4.3 Professional Judgement

Synchro has been in use for over twenty years and has become the most commonly used software for intersection analysis for typical traffic impact studies. GHD professionals have used the Highway Capacity Manual methods for hundreds of studies that involve Caltrans and dozens of studies in the City of Redding. The GHD professionals that provided the analysis for this project consider the Highway Capacity Manual methods to be the best available in the industry.

5. LOS Policies (Supplemental Information)

5.1 Caltrans Guidelines

Refer to Page 9 of the TIAR for Caltrans guidelines regarding LOS targets.

In December 2016 and January 2017, GHD consulted with Caltrans via a request for review of the draft TIAR. On behalf of Caltrans, on January 11, 2017, Marcelino Gonzalez, stated: "No Caltrans comments regarding the traffic study".

The Caltrans Guidelines do not identify any criteria for how to determine significant impacts when the LOS is already at LOS "D" or worse.

5.2 City General Plan Policies

Refer to Page 9 of the TIAR for City General Plan Policy T5A regarding LOS standards.

General Plan Policy T5B states: "Require development projects to construct both on- and off-site improvements as necessary to mitigate the effects of increased traffic generated by the project and maintain peak-hour LOS standards established by Policy T[5]A. The traffic analysis used to establish mitigating



measures shall be based on the City's Traffic Model or other City-approved method. Improvements may be deferred by the City upon approval of a Deferred Improvement Plan which identifies improvements needed, costs, funding sources, and other pertinent data required by the City."

To implement the intent of the City's General Plan policies, in January 2009, the City of Redding published their "Traffic Impact Analysis Guidelines". The guidelines memorialized the following approaches to further refine the determination of significant impacts:

5.2.1 Signalized Intersections

The City's Traffic Impact Analysis Guidelines state that the project will have a significant impact when:

- An acceptable LOS declines to an unacceptable LOS.
Or
- The overall average delay increase by more than 5 seconds per vehicle at an intersection having an unacceptable LOS without project traffic.
Or
- The project causes an unacceptable increase in vehicular queues at an intersection.

5.2.2 Unsignalized (Two-Way Stop) Intersections

The City's Traffic Impact Analysis Guidelines state that the project will have a significant impact when:

- The following occur for the worst-case movement:
 - The LOS declines to an unacceptable LOS.
And
 - The volume to capacity ratio exceeds 0.75.
And
 - The 95th percentile queue exceeds 75 feet (3 vehicles).Or
- The worst-case movement's acceptable LOS declines to an unacceptable LOS and the peak hour volume signal warrant is met.
Or
- The average delay for the worst-case movement increases by more than 5 seconds per vehicle at an intersection that has an unacceptable LOS without the project and the intersection also meets the peak hour volume signal warrant.
Or
- The project causes an unacceptable increase in vehicular queues at an intersection.



5.3 Discussion

Even prior to the City publishing their Traffic Impact Analysis Guidelines in 2009, the City had begun implementing refinements to the simple General Plan Goals (e.g. Shastina Ranch Final EIR – approved 2005, Westridge Master Plan Final EIR – approved 2006, and Salt Creek Heights Final EIR – approved 2009). The refinements included:

- **Signalized Intersections:** The impact would be significant if the overall average delay increased by more than 5 seconds per vehicle at an intersection having an unacceptable LOS without project traffic.
- **Unsignalized (Two-Way Stop) Intersections:** The impact would be significant if the worst-case movement increases by more than 5 seconds per vehicle at an intersection that has an unacceptable LOS without the project and the intersection also meets the peak hour volume signal warrant.

Following is a partial list of major land-development projects that have been approved in the City of Redding and used the 2009 Traffic Impact Analysis Guidelines:

- Neighborhood Church of Redding (Mitigated Negative Declaration under CEQA) – Approved 2010.
- Churn Creek Marketplace Shopping Center (Mitigated Negative Declaration) – Approved in 2016.
- Bethel Church Collyer Campus (Final EIR) – Approved in 2017.
- Center of Hope (Mitigated Negative Declaration) – Approved 2019.

The 2009 Traffic Impact Analysis Guidelines have been accepted as appropriate implementing refinements to the General Plan Goals. The guidelines meet the intent of the General Plan and provide flexibility to determine appropriate mitigation thresholds.

The individual refinements contained in the City's guidelines are further discussed below:

5.3.1 Signalized Intersections

The refinement considers the situation where the LOS is already below the CEQA threshold and the project's impacts are nominal (i.e. increases the total intersection delay by more than five seconds). A small increase in overall delay would not be determined as significant under this situation.

5.3.2 Unsignalized (Two-Way Stop) Intersections

The refinement considers the situation where a side-street or driveway intersects the arterial street being analyzed.

Volume to Capacity Ratio

The City's criteria can find the project's impact less than significant if the volume-to-capacity (v/c) ratio is 0.75 or less. Under this scenario, the side-street or driveway consumes no more than 75-percent of the available capacity and thus does not trigger a significant impact.



95th Percentile Queue

The City's criteria can find the project's impact less than significant if, during the analysis period, side-street or driveway vehicular queues are less than 75-feet (3 vehicles). Under this scenario, the side-street or driveway queues are not excessive and thus a significant impact is not triggered.

Meeting the Traffic Signal Warrant

The City's criteria can find the project's impact less than significant if the California Manual of Traffic Control Devices (MUTCD) Peak Hour signal warrant is not met. The MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. The peak hour warrant (Warrant 3) is considered representative as is typically the only warrant considered in a CEQA technical study.

Under this scenario, the total volume of traffic using the study intersection does not meet the peak hour warrant as defined in the MUTCD and thus a significant impact is not triggered.

6. Mitigations (Supplemental Information)

6.1 MM 5.14-1 Hartnell Avenue & Cypress Avenue (Intersection No. 10)

The mitigation requires converting the intersection to an eight phase traffic signal and adding an additional southbound lane. The mitigation is required prior to occupancy of the first phase of development.

For *existing plus project* conditions, the westbound left queue is projected to be 463 feet as compared to 232 feet in the *existing* conditions.

With implementation of the mitigation measure, the westbound left queue is projects to be 259 feet.

6.2 MM 5.14-4 Hartnell Avenue & Cobblestone Shopping Center Main Driveway (Intersection No. 8)

While the TIAR identifies a "fair share" payment toward one of three options that will mitigate the significant impact, it is recommended that the Draft EIR identify the mitigation measure as:

"Prior to Certificate of Occupancy for the first building the following improvements shall be completed by the project applicant to the satisfaction of the City of Redding Public Works Department:

- Restripe southbound left turn lane to a two-way left turn lane.
- Restripe eastbound left/thru/right lane to a left/thru lane and a right turn pocket."

This revision is recommended to address the uncertainty that an appropriate entitlement action will occur for redevelopment of the existing Cobblestone Shopping Center that will afford the City the opportunity to ensure construction of the identified improvement.

For *Year 2040 Plus Project* conditions, the intersection LOS will be LOS "F" and the traffic signal warrant will be met.



With implementation of the mitigation measure, the intersection will operate with:

- LOS will be LOS "D".
- The eastbound thru/left lane volume to capacity ratio is reduced to 0.509 - below the City's significance threshold of 0.75.
- The eastbound thru/left lane 95th percentile queue is also reduced to 65-feet – below the City's significance threshold (75-feet) 3 vehicles.

Pursuant to the City's significance criteria, the significant project impact will be mitigated.

Two other mitigation alternatives were presented in the TIAR but are not recommended in this Supplement.

7. No Major Transportation Improvements are Assumed "In Place" (Clarification)

Page 27 of the TIAR identified major approved or approval-pending developments that impact the project area.

For cumulative (Year 2040) base conditions, there are not any transportation improvements assumed "in place". In other words, the configuration of the existing roadways are assumed to remain unchanged for the cumulative base analysis.