

Appendix G. Emergency Response Technical Memo

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Technical Memorandum

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DATE: 10/28/2016

SUBJECT: North Coast Highway 101 Streetscape Improvement Project - Project Effects on Emergency Response Times

This Technical Memorandum was prepared to evaluate potential adverse (or beneficial) effects of the North Coast Highway 101 Streetscape Improvement Project (proposed “Project”), located in the City of Encinitas (“City”), California, on the circulation of emergency vehicles within, and adjacent to, the Project boundaries (Figure 1). The Project proposes a number of improvements along the North Highway 101 corridor in Leucadia that are intended to increase public safety, improve traffic flows, enhance opportunities for alternative means of transportation, provide parking, and visually improve the streetscape to attract visitors and provide space for public gathering. However, the proposed improvements may have the potential to influence existing response times of the City’s emergency service providers (i.e., City Fire and Police Departments). As such, this Technical Memorandum describes the provision of emergency services under existing conditions and provides an evaluation of how the proposed Project design elements and Project effects may potentially affect emergency vehicle movement, including effects of reducing the maximum speed limit along the corridor; potential conflicts with pedestrian, bike lanes, or train track crossings; and effects of any queueing at proposed roundabouts and impacted intersections.

Background

From 2008 to 2014, the City conducted a public outreach program involving five community participation workshops, a number of stakeholder meetings, and other public informational meetings through which the proposed Project was ultimately selected as the preferred design alternative. The City of Encinitas Fire Department actively participated in this process, providing input as to necessary design requirements to ensure that adequate emergency access was provided with the proposed improvements. During the design process, the Fire Department reviewed the proposed alternatives and attended several workshops to help City staff respond to public concerns regarding emergency access and potential Project effects on emergency response times.

As part of the City Council's visioning and strategic planning process, staff from the Fire Department made presentations at two City Council meetings to provide data pertaining to the City's existing and anticipated facilities for the provision of emergency services. On March 23, 2011, the Fire Department presented information to the City Council with regard to the distribution and concentration of its fixed and mobile resources ("Standards of Coverage") which considered a population assessment, past and current incident activity, response and travel time from stations, and community risks and hazards. Such findings help the City to determine the most effective use of resources in order to minimize the loss of life and property and to determine proper location of resources and appropriate levels of staffing.

Subsequently, and as directed by the City Council, on January 12, 2015, staff from the Fire Department provided the City Council with an additional evaluation of current response times, proper placement of fire stations in relation to incidents, and an overall assessment of the effectiveness of Fire and Emergency Medical Services response capabilities for the City.

Information from these presentations has been incorporated into this Technical Memorandum to support the findings made.

Existing Conditions

Circulation Patterns

North Highway 101 provides two vehicle travel lanes in the southbound (SB) direction. Two vehicle travel lanes are provided in the northbound (NB) direction except for the segment between Diana Street and south of La Costa Avenue, where the number of lanes is reduced to one.

Signalized intersections occur at Leucadia Boulevard at approximately the midpoint and at La Costa Avenue at the north end of the corridor. These are the only two streets that intersect with North Highway 101 from areas east of the corridor. An all-way stop-controlled (stop sign) intersection occurs at Marcheta Street at the south end of the corridor. These three intersections provide the only non-vehicular crossings between the east and west sides of the corridor. All remaining side streets intersecting the corridor are stop controlled, without affecting traffic flow in the corridor. Encinitas Boulevard, just to the south of the site, is also signalized and allows access to the corridor.

A dedicated bike lane exists in the SB direction to a point just south of La Costa Avenue. From here, bikes are accommodated in a "sharrow" lane to just south of Marcheta Street where a dedicated bike lane begins. In the NB direction, a dedicated bike lane exists up to just north of Encinitas Boulevard where the bike lane transitions to a sharrow lane. The bike sharrow transitions back to a dedicated bike lane at Glaucus Street.

Parking is restricted along the east side of the street and permitted along the majority of the west side. Bus stops are provided at key locations along the corridor.

The NCTD railroad right-of-way (ROW) runs parallel to the corridor on the east side. The Leucadia Boulevard and La Costa Avenue intersections with North Highway 101 provide the only legal railroad crossings, with a third crossing occurring at Encinitas Boulevard, south of the corridor.

The posted speed limit along the corridor in the NB direction is 40 miles per hour (mph) and reduces to 35 mph north of Jupiter Street. The posted speed limit in the SB direction is 35 mph and increases to 40 mph south of Leucadia Boulevard.

Emergency Services

Fire Protection

The Project corridor is located within the jurisdiction of the City Fire Department (Fire and Marine Safety) which provides the following services: Fire Administration; Fire Prevention; Fire Operations, Suppression, and Emergency Medical Services (EMS); Marine Safety; Emergency Preparedness; and Community Education.¹ The Department has 63 full time employees and five divisions including: Fire Operations and Support Services; Fire Administration; Loss Prevention and Planning (Fire Prevention); Disaster Preparedness; and Marine Safety Services. Services are provided from six fire stations within the 26-square mile service area.

The Fire Department also has automatic and mutual aid agreements with all surrounding cities and districts, including the City of Carlsbad to the north, the cities of Solana Beach and Del Mar to the south, and the Rancho Santa Fe district to the east. Additionally, the County of San Diego's County Service Area (CSA) 17 consists of Del Mar, Del Mar Heights, Solana Beach, Encinitas, Rancho Santa Fe and portions of Elfin Forest.²

The six fire stations that currently serve the City are located in various areas of the City to enable efficient 24-hour emergency services coverage to the community. The stations house the Department's personnel, fire engines, and other emergency apparatus in support of specialized responses.

As the City continues to grow in population, the demand for such services continues to increase. From 2011-2015, call volumes increased by 28.3% compared to years 2000-2010; however, the City's population increased by only 2.6% during the same period. The Department responded to 5,698 calls involving fire and medical emergencies in year 2015, including structural fires, vegetation fires, vehicle fires, and medical aid.

Several fire stations may provide service to areas in and around the Project corridor in the event of an emergency. The closest station is Fire Station 3, located at 801 Orpheus Avenue in Leucadia, approximately 0.53 mile to the east of the corridor.³ Fire Station 1, located at 415 2nd Street, approximately 0.05 mile to the west of the corridor, may also serve the Project area; refer to Figures 2 to 4 which show the location of the City's existing fire stations. If additional services are

¹ <http://www.ci.encinitas.ca.us/index.aspx?page=46>. Accessed: October 21, 2016.

² <http://www.cityofencinitas.org/modules/showdocument.aspx?documentid=1451>. Accessed October 30, 2015.

³ <http://www.ci.encinitas.ca.us/index.aspx?page=195>. Accessed October 21, 2016.

required in the event of an emergency, services may be provided from other fire stations operated by the City, as needed.

The City also coordinates with the City of Carlsbad for the provision of emergency services. As of early 2015, Carlsbad responded to 3.2 percent of incidents within the City of Encinitas; Encinitas responded to 3.8 percent of incidents within the City of Carlsbad.⁴

Police Protection

The Project corridor is located within the jurisdiction of the San Diego County Sheriff's Department which operates its Encinitas Station at 175 North El Camino Real, approximately two miles to the east of the corridor. This station serves an approximately 60 square mile area which includes the cities of Del Mar, Encinitas, and Solana Beach, as well as the unincorporated communities of Rancho Santa Fe, Del Dios, Camp Pendleton, and San Onofre.

Public Safety Element Policy 1.11 of the City's General Plan states the City's goal of one 24-hour deputy per 10,000 residents. Currently, the San Diego County Sheriff's Law Enforcement Bureau deploys approximately 275 patrol cars and employs 1,300 personnel, of which half are deputies. The Bureau provides general and specialized law enforcement operations which include patrol, traffic, general and specialized investigations; crime prevention, crime lab, crime analysis, and criminal intelligence; narcotics enforcement; emergency services; and, licensing and communications.

Project Improvements Affecting Emergency Vehicle Access/Circulation

The number of SB vehicular lanes in the Project corridor between A Street and La Costa Avenue would be reduced to one travel lane to accommodate a new dedicated bike lane. On the NB side of the corridor, two travel lanes would be retained from A Street to south of Marcheta Street and a new dedicated bike lane added in this segment; the number of vehicular lanes in the segment between south of Marcheta Street and south of Leucadia Boulevard would be reduced to one travel lane to accommodate a new dedicated bike lane; and the lane configuration in the segment between south of Leucadia Boulevard and La Costa Avenue would remain unchanged with one travel lane and a bike lane.

Roundabouts are proposed at six locations along Project corridor at the intersections of: La Costa Avenue; new street (between La Costa Avenue and Bishops Gate Road); Bishops Gate Road; Grandview Street; Jupiter Street; and, El Portal Street. Additionally, the intersection control at North Highway 101/Marcheta Street would be changed from an all-way stop to a side street stop, with the stop sign control being retained on the Marcheta Street approach.

A raised landscaped median (8- to 10-feet in width) would be provided in two small sections between A Street and Marcheta Street, but the majority of this segment would not include a raised median. A raised landscaped median (8- to 13-feet in width) would be provided between Marcheta Street and La Costa Avenue, except for openings for signalized intersections, signalized

⁴ Encinitas City Council Meeting. Presentation by City Fire Department, Agenda Item #1. January 12, 2015.

pedestrian crossings at North Court and Diana Street, and side street access along the west side of the Project corridor.

Widening and other streetscape improvements are proposed for the existing sidewalk on the west side of the Project corridor, and a new sidewalk is proposed along the east side. Curb extensions are proposed at driveways and minor street approaches along the west side. The majority of proposed parking spaces on the west side of the corridor would be reverse-angle, with a few parallel spaces, and a seven-foot-wide “Park-Assist” lane between the bike lane and parking spaces along the following segments: A Street and Marcheta Street; and Phoebe Street and Jason Street. Additionally, three new parking pockets would be provided within NCTD ROW along the east side of the corridor.

A number of additional Project design elements are proposed which are aimed at increasing public safety along the corridor, including reduction in vehicular speed limit and removal of some existing eucalyptus trees that present hazardous conditions (i.e., potential for falling limbs) to vehicles, cyclists, and pedestrians. As such, the Project is expected to have a reduced need for emergency services by providing a safer environment for motorized and non-motorized modes than what currently exists, which may reduce the overall number of incidents requiring emergency response.

Emergency Response

The City’s North Highway 101 Specific Plan (N101SP), which applies to the Project corridor, indicates that buildout of the Specific Plan area would generate new population that would require the provision of public services. Such projected growth as it affects the corridor would be increased even further under the recently-approved General Plan Housing Element Update which calls for greater housing densities, compared to the prior General Plan buildout growth projections, and greater population pressures on the surrounding infrastructure. The prior General Plan Housing Element (2007) estimated that full buildout (assuming a mid-range density buildout) would result in 26,356 residential dwelling units, adding an additional 7,391 units to the City’s existing housing stock (based on a 1987 inventory). For the current 2013-2021 Housing Element Update, the City has been assigned a total Regional Housing Needs Allocation (RHNA) of 2,606 residential units, along with carryover RHNA allocations from prior planning periods. To meet anticipated regional housing needs, the Housing Element Update proposes a rezoning program that would result in the rezoning of 101.53 net acres of land within the City to create an opportunity for construction of at least 1,987 new residential units that are allowed by-right during the planning period, pursuant to California Government Code Section 65583.2.

Such rezoning could affect development densities along the Project corridor, allowing for a potential increase in the number of housing units in the area, and therefore, an increase in population. Emergency response times along the Project corridor would worsen due to the increase in population from this additional housing expected along and surrounding the Project corridor. However, the Project itself would not include nor fuel new development along the corridor, nor would it change the existing General Plan land use or zoning designations permitting

higher-intensity uses that would otherwise generate additional population growth and increased need for emergency services in the area.

Fire Protection

In 2015, the Department’s average response time throughout the City was approximately 4 minutes and 36 seconds⁵, which was within the Department’s goal (i.e., under 5 minutes 80% of the time), excluding 1-minute dispatch process time⁶ (Table 1); within the Insurance Services Organization (ISO) ideal travel time (without a turnout time of 80 seconds added to the travel time)⁷; and within the National Fire Protection Association Standard 1710 (i.e., 6 minutes and 20 seconds 90% of the time from receipt of a “9-1-1” call)⁸. The Department’s standard for ladder truck response is 10 minutes for 80% of emergency calls. Table 2 shows the average emergency response times for each of the City’s fire stations for high-priority calls; also refer to Figures 2-4 which show the service areas and associated response times for these stations.

TABLE 1. EMERGENCY FIRE RESPONSE GOALS⁶

Organization	Dispatch	Turnout Time	Travel Time	Goal
Encinitas	1 Minute	1 minute 30 sec. in Policy	3 minutes 30 seconds	80% of Time
NFPA	1 minute	1 minute 20 seconds	4 minutes	90% of Time
ISO	--	--	Engine 3 to 4 Truck 7 to 8	Engine 1.5 miles Truck 2.5 miles
County Agencies	Most were 1 minute	1 to 2 minutes	5 to 8 Mostly 7	Average 6 min. 40 sec.

TABLE 2. AVERAGE EMERGENCY FIRE RESPONSE TIMES (HIGH PRIORITY CALLS)⁶

	# of Total Calls	# of High Priority (Code 3) Calls***	Average Response Time for High Priority (Code 3) Calls (50% of Calls)	Average Response Time for High Priority (Code 3) Calls (80% of Calls)	Percentage of Calls 5 minutes or Less
Fire Station 1	1775	1299	4:03	5:21	53%
Fire Station 2	2097	1446	4:42	5:26	43%
Fire Station 3	2013	1368	5:44	6:14	29%
Fire Station 4	2327	1655	5:01	5:56	43%
Fire Station 5	1552	1087	4:40	5:45	44%
*Olivenhain Community	313	192	6:26	7:54	21%
**Olivenhain Study Area	150	95	8:57	11:02	0%

*Olivenhain Community (including Manchester to S. El Camino Real) Blue area

**Olivenhain Study Area (east of 11th Street to City Limits) Red area

***High Priority Calls include Fires, EMS/Rescue, and Hazardous Conditions

Totals are for calendar years 2009 and 2010.

⁵ <http://www.cityofencinitas.org/modules/showdocument.aspx?documentid=1451>. Accessed October 30, 2015.

⁶ City of Encinitas Fire Department, *Standards of Coverage*.

⁷ ISO has given the City Fire Department a good rating based on the effectiveness of its response capabilities.

⁸ Encinitas City Council Meeting Agenda Report. March 23, 2011.

Police Protection

On an annual basis, the Encinitas Police Department responds to over 300,000 “9-1-1” calls and another 400,000 non-emergency calls⁹ including service in contract cities and in unincorporated areas of San Diego County. For the first half of calendar year 2015, the average adjusted response time for the Department’s personnel serving the Project area was 10.9 minutes for Priority 1 calls, as shown in Table 3.¹⁰

TABLE 3. AVERAGE EMERGENCY POLICE RESPONSE TIMES (PRIORITY CALLS)

Priority	Total	Response Time	Received Dispatch	Dispatch - Enroute	Enroute - Arrive	Arrive - Cleared	Enroute - Cleared	Dispatch - Arrive
1	3	10.90	0.40	1.27	9.27	422.97	432.27	10.50
2	54	7.98	1.09	1.16	5.72	73.04	75.22	6.92
1+2	57	8.15	1.05	1.17	5.92	92.84	94.35	7.12

Source: City of Encinitas Police Department. July 28, 2015. Statistics from 1/1/2015 to 6/30/2015 for North Coast Highway 101, Encinitas, and Spur Streets. CAD Extractor 11.

Assessment of Project Elements on Emergency Response

As described above, the proposed Project would provide a number of multi-modal functions affecting emergency vehicle access and circulation within the Project corridor, such as road diet measures (i.e., striping to reduce the number/width of vehicle lanes; added/enhanced bicycle lanes/facilities; and/or shared vehicle/bicycle lanes), and traffic calming measures (i.e., roundabouts; new signalized intersections and pedestrian crossings; reduced speed limits; and more efficient reverse-angle parking spaces with a “Park Assist” lane). A limited number of studies have been performed by other public agencies to assess the potential effects of such road diet and traffic calming measures, and the incorporation of “healthy streets” initiatives in general, on emergency vehicle travel times for fire engines, police cars and ambulances. The results of these studies are mixed. Some traffic calming measures have proven to be effective without significantly impacting emergency response, while others such as roundabouts have been shown to increase overall response times. The degree to which such measures reduce emergency response times is dependent upon the specific types of emergency vehicles; the maximum speeds at which such vehicles can safely maneuver and pass through the road diet and traffic calming areas; traffic congestion along the emergency route; and availability of alternative routes.¹¹ The potential impacts of traffic calming measures on emergency response times are also weighed against the benefits of such measures on reducing speeding and enhancing public safety and livability along the affected roadways.

⁹ San Diego County Sheriff’s Department, Law Enforcement Bureau. https://www.sdsheriff.net/about_lesb.html. Accessed June 25, 2015.

¹⁰ San Diego County Sheriff’s Department. Personal communication with Joe Tomaiko on June 25, 2015 and data provided by Crime Analysis Division.

¹¹ Portland Bureau of Fire, Rescue and Emergency Service and Bureau of Traffic Management, Portland Department of Transportation. *The Influence of Traffic Calming Devices of Fire Vehicle Travel Times*. January 1996.

Below is an assessment of how the proposed Project components may affect emergency response times within the corridor.

Travel Speed

Reduction in the posted speed limit along the entire Project corridor from 40 to 30 mph is proposed to create a safer environment and travel conditions for motorists, bicyclists and pedestrians. Although the reduced speed would cause a slower rate of travel within the corridor, in the event of an emergency any vehicles within the travel lanes are required to pull over to allow emergency vehicles to safely pass by. As such, the allowed rate of vehicle travel is not anticipated to adversely affect the circulation of emergency vehicles or interfere with emergency response times.

Travel Lanes

The City Fire Department has been involved throughout the public outreach program and Project design process to ensure that adequate emergency access and circulation can continue to be maintained along the corridor with the proposed improvements. For example, a minimum 20-foot-wide paved travel width is provided in each direction, as stipulated by the City Fire Marshal, to enable emergency vehicles to safely pass by any parked cars or moving vehicles that have pulled over, especially where the highway transitions from two lanes to one lane in which traffic can pull into the bike lane to allow emergency vehicles to pass.¹² Therefore, the proposed Project would not inhibit emergency response times with regard to inadequate travel lanes.

Roundabouts

Where roundabouts replace traffic signals, studies have shown average speeds are substantially reduced and generally causing traffic congestion. Based on such concerns raised by Fire Department personnel, the Project has been designed to incorporate mountable curbs in each of the proposed roundabouts allowing emergency vehicles to maneuver around other vehicles that may be stuck in standard travel lanes within the roundabouts. Upon approaching a roundabout, emergency vehicles have priority during a response. The design of the proposed roundabouts has been reviewed and verified by the City's Fire Marshal as meeting anticipated access and efficient circulation requirements of the Fire Department.¹³ Additionally, the Sheriff's Department has indicated that such improvements would also meet the emergency circulation requirements for police vehicles, particularly as they are of lesser size and have smaller turning radii (i.e., for maneuvering through the roundabouts) than do fire trucks.¹⁴

As discussed above, the results from a limited number of studies indicate some traffic calming measures have proven to be effective without significantly impacting emergency response, while others such as roundabouts have been shown to increase overall response times due to traffic

¹² City of Encinitas Fire Department, Letter from Robert Scott, Fire Marshal. October 6th, 2009.

¹³ Ibid.

¹⁴ San Diego County Sheriff's Department. Personal communication with Joe Tomaiko on June 25, 2015.

congestion at these locations. A study comparing travel times through a roadway segment with no traffic calming devices and the same segment with such measures identified the potential for a 1.3- to 10.7-second travel delay per roundabout.¹⁵ Such delays may be reduced via proper design measures (e.g., mountable curbs), but not to a degree to completely offset the traffic congestion caused by the queueing of cars at roundabouts.¹⁶

With regard to the proposed Project, it is unlikely that all emergency vehicles would need to travel the entire corridor length in an emergency event. This is because some emergency vehicles would access the corridor at the closest intersecting street and travel north or south a few blocks to reach the destination, thereby avoiding the need to travel through all of the roundabouts. Additionally, as stated above, potential impacts on emergency response times for a given set of traffic calming measures should be considered in light of the public safety benefits of such measures in reducing vehicle speed hazards and potential conflicts with cyclists and pedestrians.

Bike Lanes and Pedestrian Crossings

The Project would result in new dedicated bike lanes and enhanced pedestrian amenities to encourage safe alternative means of travel within the corridor, including two new signalized pedestrian crossings at North Court and Diana Street. These improvements would affect circulation along the Project corridor (i.e., stopping of vehicles to allow pedestrians to cross) resulting in further traffic congestion and slowing of emergency response times along the corridor.

Train Crossings

Under current and proposed conditions, emergency vehicles entering the Project corridor from the east would be required to cross the train tracks at Leucadia Boulevard. In the event an emergency vehicle encounters a train at these tracks, it would divert to either the north or south, based on the direction of the train, and access the corridor via an alternate intersection. Although an emergency event may occasionally occur at the same time that a train is crossing the tracks at this intersection, it is anticipated that such occurrences would be infrequent. Additionally, these conditions occur under present conditions and would not be a result of any improvements associated with the proposed Project. Therefore, this condition would remain the same under existing and proposed conditions, and would not directly delay or interfere emergency response times along the Project corridor.

Traffic Impact Analysis (TIA)

According to the TIA prepared for the Project by Michael Baker International (Appendix F of this EIR), the proposed Project would result in a significant impact at the North Highway 101/La Costa

¹⁵ Portland Bureau of Fire, Rescue and Emergency Service and Bureau of Traffic Management, Portland Department of Transportation. *The Influence of Traffic Calming Devices of Fire Vehicle Travel Times*. January 1996.

¹⁶ Burden Dan and Zykofsky, Paul. *Emergency Response – Traffic Calming and Traditional Neighborhood Streets*. http://nacto.org/docs/usdg/emergency_response_manual_burden.pdf.

Avenue intersection (LOS F) during the Year 2035 AM peak hour under both Alternatives 1 and 2 scenarios. As mitigation for this significant impact, if the Alternative 2 scenario is implemented (i.e., two lanes on Carlsbad Boulevard north of La Costa Avenue and two lanes on North Highway 101 between La Costa Avenue and Encinitas Boulevard), then the currently proposed roundabout at North Highway 101/La Costa Avenue shall be replaced in the Project improvement plans with a signalized intersection and an additional by-pass lane in the SB direction. If this mitigation measure is implemented, it would result in a slight improvement in emergency response times to the Project corridor due to elimination of the proposed roundabout at this intersection.

Conclusions

The City Fire Department has been involved throughout the public outreach program and the Project design to ensure appropriate road diet and traffic calming measures are incorporated to support the safe and efficient circulation of emergency vehicles along the corridor. The Encinitas Police Department has indicated that such measures accepted by the Fire Department would also be adequate to accommodate emergency police response, since police cars are much smaller than fire engines.

The proposed Project does not involve new development that would otherwise increase population growth and potential demand for emergency services along the corridor. The proposed improvements are intended to provide a safer environment for motorists, cyclists, and pedestrians, thereby reducing the potential for hazards or conflicts and increased emergency services. Nevertheless, there are no standard methodologies or adopted response time standards that can be reliably used for this Project. Further, the limited number of studies conducted by other public agencies clearly demonstrate that roundabouts impact emergency responses times. Therefore, the proposed Project would result in significant unavoidable impacts that would interfere with the City's ability to maintain acceptable service ratios, response times, and other performance objectives for fire and police protection and other emergency services within and adjacent to the Project corridor.

There are no other feasible Project design features, mitigation measures or alternatives to reduce this impact to less than significant. However, the significant impact would be offset by Project enhancements in travel for vehicular, bicycle and pedestrian travel modes, as fully described herein.