Appendix B

Transportation Analysis

Central Coast Transportation Consulting
Traffic Engineering & Transportation Planning

MEMORANDUM

Date: June 14, 2023

To: Michael Scott and Kathryn Hicks, RRM Design Group

From: Michelle Matson and Joe Fernandez, CCTC

Subject: Seaside Fire Station Number 2 – Draft Transportation Analysis

This memorandum summarizes the transportation analysis for Seaside Fire Station Number 2 located on the northwest corner of Gigling Road/1st Avenue in the City of Seaside.

SUMMARY

The project proposes the construction of a 13,157 square-foot fire station and a 58,806 square-foot training facility. The project is expected to generate fewer than 110 net new daily trips under typical operations and would not impact intersection operations at Gigling Road/1st Avenue or be expected to significantly impact vehicle miles traveled (VMT). We recommend the following improvements at the intersection and in the project vicinity:

- Gigling Road/1st Avenue
  - Replace missing westbound STOP (R1-1) sign on Gigling Road at 1st Avenue located in the white striped median and replace the other two older STOP (R1-1) signs at the intersection.
  - Install additional westbound YIELD (R1-2) sign, YIELD pavement marking, and yield lines visible from Second Division Place.
  - Replace existing street name (D3-1) signs.
  - Install crosswalk and curb ramps on Gigling Road on west side of intersection.
- Lightfighter Drive/1st Avenue
  - Install emergency vehicle preemption.
  - Modify or replace traffic signal including additional signal heads, lighting, pedestrian accommodations, and updated signal timing for compliance with the California Manual on Uniform Traffic Control Devices (CAMUTCD) and Caltrans Traffic Manual.
  - Reduce pavement width or install island on Lightfighter Drive on west side of intersection.
  - Provide crosswalk and curb ramps on east side of intersection. Restrict pedestrians crossing on west side of intersection.
  - Replace DO NOT ENTER (R5-1), WRONG WAY (R5-1a), ONE WAY (R6-1), signal ahead (W3-3), and other older signage, as needed.
  - Improve delineation for Lightfighter Drive west of the intersection with a right turn lane drop (CAMUTCD Figure 3B-11) or lane reduction (CAMUTCD Figure 3B-14 (CA)).
- Additional Recommendations
  - Replace the two 35 MPH (R2-1) speed limit signs on 1st Avenue.
  - Construct frontage improvements including ten-foot travel lanes, seven foot parking lanes, a five foot planting strip, and a six foot sidewalk. Prohibit parking at Gigling Road/1st Avenue and project driveways consistent with the CAMUTCD.

- Consider installing emergency vehicle preemption at other area traffic signals, as needed.

The site plan, vicinity map, and recommended improvements are shown in **Figure 1.**

The following sections summarize the trip generation, California Environmental Quality Act (CEQA) analysis, and site access and circulation.

PROJECT TRIP GENERATION

The parcel is currently vacant. The project proposes the construction of a 13,157 square-foot fire station and a 58,806 square-foot training facility including community room, sleeping quarters, restrooms, day room, kitchen, office space, turnout storage, exercise room, interior storage, two apparatus bays, exterior fueling area, and butler building. The fire station is planned to accommodate four firefighters in the near-term, with a minimum of three firefighters per shift, and seven firefighters in the long-term.

The Institute of Transportation Engineers (ITE) *Trip Generation Manual* 11th Edition was used to estimate project trip generation for typical operations as shown in **Table 1.**

Table 1: Project Trip Generation

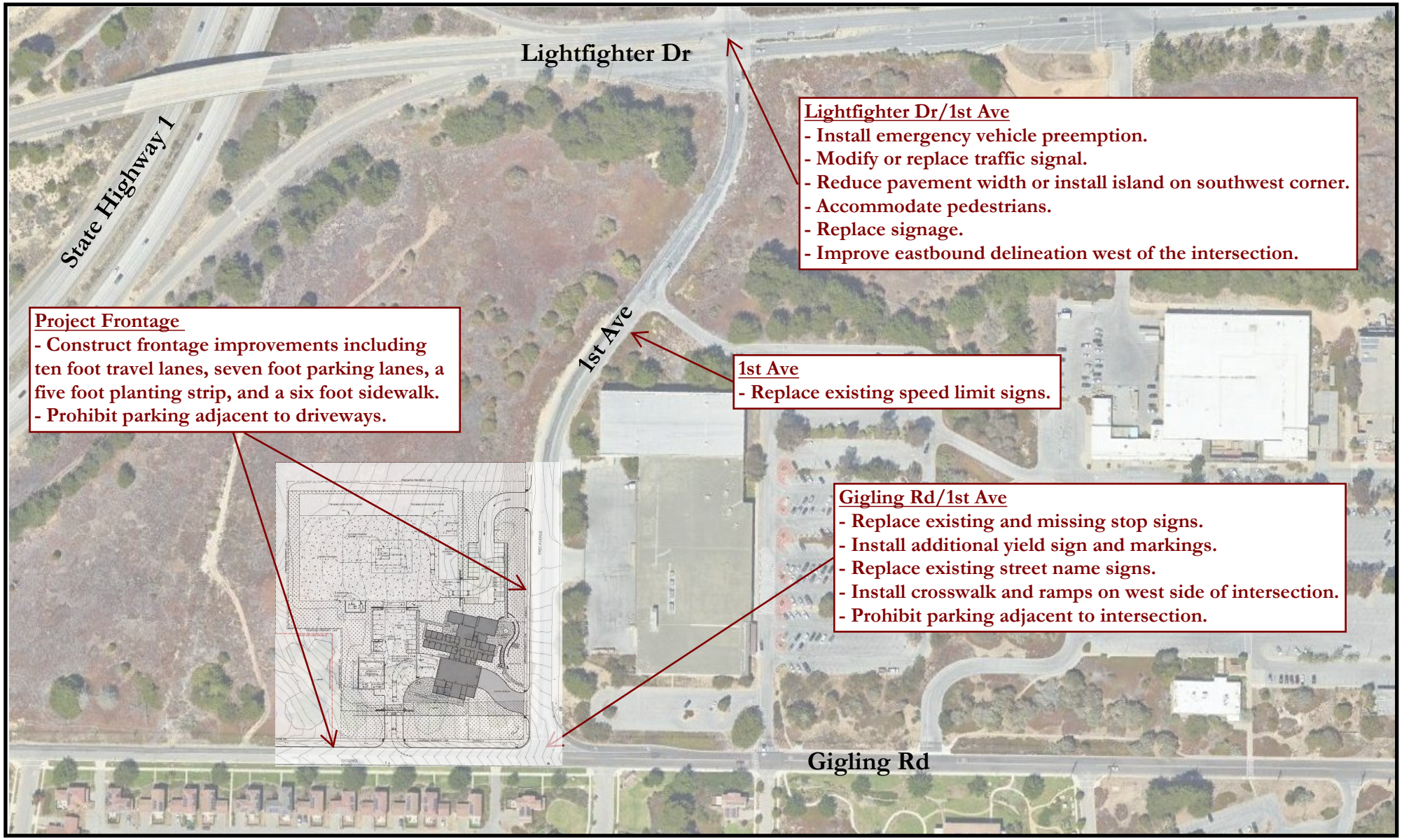
Project Trip Generation					
		Daily	PM Peak Hour		
Land Use	Size	Total	In	Out	Total
Fire Station[1]	13,157 SF	60	2	4	6
Total Project Trips (Typical Operations)		**60**	**2**	**4**	**6**

1. ITE Land Use Code #575, Fire and Rescue Station. Average rate used for PM peak hour. Daily assumed to be 10 times PM peak.
Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition.

The project would generate approximately 60 new vehicle trips per weekday including six PM peak hour trips for typical fire station operations. Daily and AM peak hour trip rates were not available from ITE. The daily trip rate was assumed to be ten times the PM peak hour based on industry standards practices. Note that all traffic (garbage, deliveries, public, etc.) are included in the ITE rates.

The training center would not operate daily and was not included in the trip estimate for typical operations. The training center will be used daily by up to seven firefighters from Seaside. When monthly classes are hosted, up to 20 firefighters from Monterey County may attend. Additionally, the site could host a weeklong State Fire Marshal class where Monterey County Firefighters and Firefighters from other Regions can come and take a course. Assuming the Seaside employees would already be on site, the training center would typically add up to 20 additional firefighters. The training center could be considered an industrial use with the firefighters as employees. Using the ITE rate for Light Industrial (Land Use #110) up to 62 trips per day including 10 PM peak hour trips would be anticipated during these monthly classes.

Figure 1 - Site Plan, Vicinity Map, and Recommended Improvements



Seaside Fire Station Number 2

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CEQA ANALYSIS

This section presents analysis relevant to the California Environmental Quality Act (CEQA), notably analysis of the existing setting, vehicle miles traveled (VMT), and safety.

Existing Setting

The existing roadways in the vicinity of the project include:

- *Lightfighter Drive* is a five-lane, east-west arterial roadway with a speed limit of 40 miles per hour (MPH) in the project vicinity. The west end of Lightfighter Drive terminates at a full access interchange with Highway 1. The intersection of Lightfighter Drive/1st Avenue is controlled by a traffic signal with central medians. There is a sidewalk on the southside east of 1st Avenue.
- *1st Avenue* is a two-lane, north-south local roadway with a 35 MPH posted speed limit. There are no pedestrian or bicycle facilities.
- *Gigling Road* is a two-lane, east-west arterial roadway with a 35 MPH posted speed limit. Gigling Road/1st Avenue is an all-way stop controlled intersection with a channelized yield-controlled right-turn lane for westbound traffic. There are pedestrian facilities along the south side of the roadway within the project vicinity. There are no bike facilities. Gigling Road will be reclassified as a collector in the Seaside 2040 General Plan. Monterey Salinas Transit Route 18 runs hourly on Gigling Road providing access between the Marina Transit Exchange and the Sand City Station.

The Monterey County Active Transportation Plan proposes future Class IV protected bike lanes on Lightfighter Drive east of 1st Avenue and a future Class III Bike Route on Gigling Road west of 1st Avenue. No bicycle facilities are currently proposed on 1st Avenue adjacent to the project site.

Vehicle Miles Traveled (VMT)

The State Office of Planning and Research (OPR) published a Technical Advisory in December 2018 with recommendations for evaluating VMT for various project types. The Technical Advisory notes that "absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact."

The City of Seaside has not adopted VMT thresholds. Many jurisdictions consider essential services that support health, safety, and welfare to be exempt from VMT analysis since their trips are non-discretionary. VMT for work-based land uses is typically analyzed per employee and does not include non-typical or emergency operations. Therefore, since the project trips are non-discretionary and generate fewer than 110 daily trips under typical operations, the project is presumed to have a less-than-significant impact on VMT.

Collision History

Traffic collision data was obtained from the Statewide Integrated Traffic Records System (SWITRS) for Lightfighter Drive, 1st Avenue, and Gigling Road. Between September 2017 and August 2022, seven collisions occurred at Lightfighter Drive/1st Avenue. Three rear-end, two sideswipe, one hit object, and one unknown collision occurred. The two sideswipe collisions occurred with eastbound drivers on Lightfighter Drive and no other collision patterns were observed. Striping improvements for eastbound Lightfighter Drive are detailed later in this report. No collisions occurred on Gigling Road or 1st Avenue within the project vicinity.

SITE ACCESS & CIRCULATION

This section summarizes the site access and circulation recommendations in the vicinity of the project.

Site Access

The project will construct two driveways on 1st Avenue and one on Gigling Road. CCTC observed the sight distance at the proposed driveway locations in March 2023. The stopping and corner sight distance was met for 35 miles per hour for the proposed driveways. Since the site visit, the northmost driveway location on 1st Street has been moved north of the eastside driveway. Based on the existing topography, it is anticipated that the stopping and corner sight distance will be met.

Gigling Road/1st Avenue

Turning movement counts were collected at the intersection of at Gigling Rd/1st Avenue from 4:00 PM to 6:00 PM in March 2023 and the intersection was also observed during the AM peak hour. No queuing was observed during the AM or PM peak hour. The stop-controlled intersection was analyzed using Synchro 11 and the Highway Capacity Manual (HCM) 6th edition methodology. All intersection approaches operate at level of service (LOS) A with less than ten seconds average delay with or without the proposed project. We recommend the older signage at the intersection be replaced as noted in the previous section.

Westbound right turning vehicles were observed traveling through the Gigling Road/1st Avenue intersection without yielding. The existing yield sign for the westbound to northbound right turn is not visible in advance of the intersection and there are no yield markings. We recommend the existing and missing stop signs at the intersection be replaced and an additional yield sign and markings be installed. Replacement of the existing street name signs at the intersection is also recommended.

The Seaside 2040 General Plan Public Draft proposes reclassifying Gigling Road adjacent to the project site as a collector. The draft plan identifies two ten foot travel lanes with seven foot parking lanes, five foot planting strips, and six foot sidewalks on both sides of the roadway requiring 56 feet of right-of-way. 1st Avenue, classified as a local street in the current and draft plan, has the same typical cross section. We recommend the project construct frontage improvements consistent with the recommended cross sections. We also recommend the project replace the two 35 MPH (R2-1) speed limit signs on 1st Avenue located near Lightfighter Drive and Gigling Road.

Per CAMUTCD guidance, "At all intersections, one stall length on each side measured from the crosswalk or end of curb return should have parking prohibited. A clearance of 6 feet measured from the curb return should be provided at alleys and driveways." We recommend red curb and/or no parking signs be installed on 1st Avenue and Gigling Road consistent with CAMUTCD guidance.

To provide access to the existing sidewalk on the south side of Gigling Road and the commissary, a crosswalk on Gigling Road is recommend on the west side of the intersection including curb ramps.

Lightfighter Drive

The Campus Town Specific Plan Transportation Impact Analysis (Fehr & Peers, 2020) did not identify any capacity deficiencies at the Lightfighter Drive/1st Avenue intersection under Existing or Cumulative Conditions with the additional of the Specific Plan volumes.

Emergency response vehicles will use the intersection of Lightfighter Drive/1st Avenue to access State Highway 1 and other areas. The existing traffic signal is at least 25 years old and does not have visible emergency vehicle preemption. The intersection of Lightfighter Drive/General Jim Moore Boulevard also does not have

emergency vehicle preemption detectors; however, Lightfighter Drive/2nd Avenue has emergency vehicle preemption detectors. We recommend emergency vehicle preemption be installed at Lightfighter Drive/1st Avenue and other area traffic signals as needed.

The addition of emergency vehicle preemption could trigger cabinet and software upgrades and the intersection does not comply with the CAMUTCD. New signal heads, poles, lighting, pedestrian features, and other intersection improvements are recommended. At a minimum, we recommend the minimum green, yellow, and red clearance intervals be updated to comply with the CAMUTCD. We also recommend replacing the DO NOT ENTER (R5-1), WRONG WAY (R5-1a), ONE WAY (R6-1), signal ahead (W3-3), and other older signage, as needed, to meet current CAMUTCD retroreflectivity standards.

The State Highway 1 Northbound Off-ramp has two lanes beginning approximately 1,000 feet west of 1st Avenue and ending approximately 400 feet west of the intersection. Historically, the large eastbound pavement width was used to transition right turning traffic south and become stop controlled at 1st Avenue. Currently, there are no transitions in the area and without an island between the right turn and through lane, the STOP control at the traffic signal is not consistent with the CAMUTCD. The 2004 Circulation Element recommends weaving and traffic signal improvements. We recommend the delineation be improved with a right turn lane drop (CAMUTCD Figure 3B-11) or lane reduction (CAMUTCD Figure 3B-14 (CA)). We also recommend reduced pavement width or an island on Lightfighter Drive west side of intersection. We recommend providing a crosswalk and curb ramps on east side of intersection and restricting pedestrians crossing on west side of intersection.

Please let us know if you have any questions.

ATTACHMENTS

Synchro Worksheets

REFERENCES

California Department of Transportation. July 2020. Highway Design Manual

_____. 2020, Revision 6. California Manual on Uniform Traffic Control Devices, 2014 Edition.

California Governor's Office of Planning and Research (OPR). December 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA.

City of Seaside. 2017. Seaside 2040 General Plan (Public Draft).

_____. August 2004. Seaside General Plan Circulation Element.

Fehr & Peers. January 2020. Campus Town Specific Plan Transportation Impact Analysis.

Institute of Transportation Engineers (ITE). 2017. Trip Generation Manual, 10th Edition.

Transportation Agency of Monterey County (TAMC). 2018. Monterey County Active Transportation Plan.

Transportation Research Board (TRB). 2017. Highway Capacity Manual, 6th Edition.

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	20	21	62	117	53
Future Vol, veh/h	18	20	21	62	117	53
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	26	27	79	150	68
Number of Lanes	0	1	1	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.1	7.7	8.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	47%	0%	0%	69%
Vol Thru, %	53%	100%	0%	0%
Vol Right, %	0%	0%	100%	31%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	38	21	62	170
LT Vol	18	0	0	117
Through Vol	20	21	0	0
RT Vol	0	0	62	53
Lane Flow Rate	49	27	79	218
Geometry Grp	5	7	7	2
Degree of Util (X)	0.064	0.038	0.097	0.257
Departure Headway (Hd)	4.747	5.077	4.373	4.245
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	757	708	822	850
Service Time	2.763	2.79	2.086	2.256
HCM Lane V/C Ratio	0.065	0.038	0.096	0.256
HCM Control Delay	8.1	8	7.6	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.3	1

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	22	22	63	119	54
Future Vol, veh/h	22	22	22	63	119	54
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	28	28	81	153	69
Number of Lanes	0	1	1	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.2	7.7	8.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	50%	0%	0%	69%
Vol Thru, %	50%	100%	0%	0%
Vol Right, %	0%	0%	100%	31%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	44	22	63	173
LT Vol	22	0	0	119
Through Vol	22	22	0	0
RT Vol	0	0	63	54
Lane Flow Rate	56	28	81	222
Geometry Grp	5	7	7	2
Degree of Util (X)	0.075	0.04	0.098	0.263
Departure Headway (Hd)	4.766	5.094	4.39	4.268
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	754	705	818	845
Service Time	2.783	2.811	2.106	2.281
HCM Lane V/C Ratio	0.074	0.04	0.099	0.263
HCM Control Delay	8.2	8	7.6	8.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.3	1.1