TRAFFIC IMPACT ANALYSIS

FOR THE PROPOSED

NORTH ELEMENTARY SCHOOL

417 25TH STREET – HERMOSA BEACH

Prepared for

HERMOSA BEACH CITY SCHOOL DISTRICT
&
PLACEWORKS

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I.
INTRODUCTION AND PROJECT DESCRIPTION

This report summarizes the results of a traffic impact analysis that was conducted for the North Elementary School that is proposed by the Hermosa Beach City School District at 417 25th Street in Hermosa Beach. The proposed 400-student school would accommodate 3rd and 4th grades and is located at a site that was previously occupied by an elementary school, but was closed because of declining enrollment in the District. The former North School building is currently occupied by the Children's Journey Learning Center preschool, which has an enrollment of approximately 210 students with 36 staff members, and the South Bay Adult School, which operates a "mommy and me" program with 94 students and 36 parent volunteers on Mondays, Wednesdays, and Fridays and 91 students and 38 volunteers on Tuesdays and Thursdays. The peak drop-off time for the existing pre-school is between 7:45 and 8:30 AM and the peak pick-up time is between 5:00 and 6:00 PM. The mommy and me programs begin at 8:30 and 8:45 AM and run until 12:15, 12:30, or 1:00 PM. The school site is bounded by 25th Street on the south, Myrtle Avenue on the west, 24th Street on the north, and Valley Park on the east.

Two site plan options are currently under consideration, which are provided in Appendix 1. One option would have a surface level parking lot at the west end of the school site. The other option would have a lower level (subterranean) parking lot at the west end of the school site. Access to the parking lot would be the same for both options; i.e., a driveway would be provided on the north side of 25th Street east of Myrtle Avenue. For the option with a surface parking lot, a hard-surface play area would be provided at the east end of the school site adjacent to Valley Park. For the option with lower level parking, the hard-surface play area would be provided above the parking lot and an existing berm would remain in place at the east end of the school site. Other than the parking lot and the play area, the layout of the proposed school would be the same for the two options.

The methodology for the traffic study, in general, was to 1) establish the existing baseline traffic conditions, 2) develop the projected future baseline conditions without the proposed project by considering the cumulative effects of regional growth and traffic generated by other development projects proposed in the study vicinity, 3) estimate the increased levels of traffic that would be generated by the proposed school, 4) conduct a comparative analysis of traffic conditions with and without the proposed school, and 5) identify potential mitigation measures.

The analysis is based on the morning (AM) peak hour traffic volumes on the streets and intersections in the project vicinity. The levels of service (LOS) at the 14 intersections shown in Table 1 were analyzed. The table lists the intersections and shows the type of traffic control that is in place at each intersection. All of the intersections are under the jurisdiction of the City of Hermosa Beach. An analysis of the traffic volumes, volume/capacity ratios, and levels of service on the street segments in the study area was also conducted.

Only the AM peak hour was addressed in the traffic analysis because the proposed reopening of the project site as an elementary school would not typically generate any traffic during the late afternoon commuter peak period. The afternoon peak period for the proposed reopened elementary school would occur around 2:00 to 2:30 PM, when traffic volumes are relatively light on the study area street network, while the afternoon commuter peak period generally occurs around 5:00 to 6:00 PM. During the morning peak period, the traffic generated by the proposed

school would coincide with the morning commuter peak period traffic. This is the typical methodology used for traffic impact analyses for elementary schools.

TABLE 1
STUDY AREA INTERSECTIONS

Intersection	Type of Traffic Control
Manhattan Avenue at 27th Street	4-Way Stop Signs
Manhattan Avenue at 26th Street	Stop Signs on 26th Street
Manhattan Avenue at 25th Street	4-Way Stop Signs
Manhattan Avenue at 24th Street	Stop Signs on 24th Street
Myrtle Avenue at 26th Street	Stop Sign on Myrtle Avenue
Myrtle Avenue at 25th Street	4-Way Stop Signs
Myrtle Avenue at 24th Street	Stop Sign on Myrtle Avenue
Morningside Drive at 27th Street/Gould Avenue	4-Way Stop Signs
Park Avenue at 25th Street	Stop Sign on 25th Street
Park Avenue at 24th Street	4-Way Stop Signs
Valley Drive at Gould Avenue	4-Way Stop Signs
Valley Drive at 25th Street	Stop Sign on 25th Street
Valley Drive at 24th Street	Stop Sign on 24th Street
Ardmore Avenue at Gould Avenue	4-Way Stop Signs

II.
EXISTING AND FUTURE BASELINE TRAFFIC CONDITIONS

The street network in the project vicinity, the existing traffic volumes, and the levels of service (LOS) at the affected study area intersections are described below.

Street Network

The streets within the area that provide access to the school site include Manhattan Avenue, 24th Street, 25th Street, 26th Street, 27th Street, Gould Avenue, Morningside Drive, Myrtle Avenue, Park Avenue, Valley Drive, and Ardmore Avenue. These streets are described below and Figure 1 in Appendix 2 shows the type of traffic control at each intersection, the lane configuration at each intersection, the speed limit on each street segment, and the number of lanes on each street segment.

Manhattan Avenue is a two lane north-south street located one block west of the school site. It is an arterial roadway that extends throughout Hermosa Beach and to the north into Manhattan Beach. The speed limit on Manhattan Avenue is 25 miles per hour (mph) south of 27th Street and 30 mph north of 27th Street.

24th Street is a two lane east-west street located one block south of the school site. It is a local residential street that extends from Manhattan Avenue to Valley Drive. The speed limit on 24th Street is 25 mph.

25th Street is a two lane east-west street that abuts the south side of the school site. To the east of the school site, this local residential street curves to the south and connects with Park Avenue. Then 25th Street continues to the east as a link between Park Avenue and Valley Drive. The speed limit on 25th Street is 25 mph.

26th Street is a two lane east-west street that abuts the north side of the school site. It is a local residential street that extends from Manhattan Avenue to Morningside Drive. The speed limit on 26th Street is 25 mph.

27th Street is a two lane east-west street located one block north of the school site. It extends east from Manhattan Avenue to Morningside Drive, where the street name changes to Gould Avenue. The speed limit on 27th Street is 25 mph.

Gould Avenue is a two lane east-west street located one block north of the school site. It is the continuation of 27th Street that extends easterly from Morningside Drive. The speed limit on Gould Avenue is25 mph.

Morningside Drive is a two lane north-south street that runs between 26th Street and 27th Street and connects to an existing parking lot at the northeast corner of the school site. The speed limit on this local residential street is 25 mph.

Myrtle Avenue is a two lane north-south street that abuts the west side of the school site. It is a local residential street that runs between 24th Street and 26th Street. The speed limit on Myrtle Avenue is 25 mph.

Park Avenue is a two lane north-south street located southeast of the school site. This local residential street runs between 24th Street and 25th Street. The speed limit on Park Avenue is 25 mph.

Valley Drive and *Ardmore Avenue* are two lane north-south streets located approximately one-quarter mile east of the school site. These parallel arterial roadways run throughout the length of Hermosa Beach and extend north through Manhattan Beach. The speed limit on Valley Drive is 25 mph. The speed limit on Ardmore Avenue is 30 mph south of Gould Avenue and 35 mph north of Gould Avenue.

In addition to the streets listed above and shown on Figure 1, there are other local streets in the vicinity of the school that might be used as access routes; i.e., *Silverstrand Avenue*, *Ozone Court*, and *24th Place*. These are two lane streets located south of the school site. Silverstrand Avenue is a north-south street located between Myrtle Avenue and Park Avenue, Ozone Court is a north-south street located between Myrtle Avenue and Manhattan Avenue, and 24th Place is an east-west street located between 24th Street and 25th Street.

Existing Transit Service

There are several bus companies that operate routes in the vicinity of the school site. The Los Angeles County Metropolitan Transportation Authority (Metro) operates Metro Lines 130 and 232 along Pacific Coast Highway, which is located approximately one-half mile east of the school site. Beach Cities Transit (BCT) operates Route 109 on Hermosa Avenue, which is located three blocks west of the school site. The City of Los Angeles Department of Transportation (LADOT) runs Commuter Express Route 438 along Hermosa Avenue.

Existing Traffic Volumes

Manual traffic counts were taken at the 14 study area intersections in November and December 2015 during the morning peak period from 7:00 to 9:00 a.m. The counts were taken on Thursday, November 19 at eight of the intersections and on Tuesday, December 1 at six of the intersections. The one-hour interval of peak traffic flow within the two-hour monitoring period was identified for each intersection. Figure 2 in Appendix 2 shows the existing peak hour traffic volumes and turning movements at each intersection.

Intersection Levels of Service

A level of service (LOS) analysis at the study area intersections was conducted using the Highway Capacity Manual (HCM) methodology. The average levels of vehicle delay at the stop signs for each intersection and the resulting levels of service were determined using the Highway Capacity Software (HCS).

Level of service values range from LOS A to LOS F. LOS A indicates excellent operating conditions with little or no delay to motorists, while LOS F represents congested conditions with excessive vehicle delay. LOS E is typically defined as the operating "capacity" of a roadway. The City of Hermosa Beach defines LOS C as the lowest acceptable operating condition. The relationship between delay values and the corresponding levels of service is shown in Table 2.

TABLE 2
RELATIONSHIP BETWEEN DELAY VALUES & LEVELS OF SERVICE – INTERSECTIONS

Level of Service	Delay Value (seconds) Unsignalized Intersections
A	0.0 to 10.0
B	> 10.0 to 15.0
C	> 15.0 to 25.0
D	> 25.0 to 35.0
E	> 35.0 to 50.0
F	> 50.0

To quantify the existing baseline traffic conditions, the 14 study area intersections were analyzed to determine their operating conditions during the morning peak hour. Based on the peak hour traffic volumes, the turning movement counts, and the existing number of lanes at each intersection, the delay values and levels of service have been determined at each intersection, as summarized in Table 3.

TABLE 3
EXISTING (2015) INTERSECTION LEVELS OF SERVICE

Intersection	Delay Value & Level of Service
Manhattan Avenue at 27th Street	13.0 – B
Manhattan Avenue at 26th Street	10.4 – B
Manhattan Avenue at 25th Street	8.4 – A
Manhattan Avenue at 24th Street	11.7 – B
Myrtle Avenue at 26th Street	8.8 – A
Myrtle Avenue at 25th Street	7.2 – A
Myrtle Avenue at 24th Street	8.9 – A
Morningside Drive at 27th Street/Gould Avenue	9.1 – A
Park Avenue at 25th Street	9.0 – A
Park Avenue at 24th Street	7.2 – A
Valley Drive at Gould Avenue	14.3 – B
Valley Drive at 25th Street	12.7 – B
Valley Drive at 24th Street	12.3 – B
Ardmore Avenue at Gould Avenue	25.5 – D

The delay values and levels of service shown in Table 3 for the intersections with four-way stop signs represent the average level of vehicle delay for the entire intersection. The delay values and levels of service for the intersections with one or two stop signs represent the vehicle delay at the stop sign with the highest delay value. As shown in Table 3, seven of the 14 study area intersections currently operate at LOS A, six intersections operate at LOS B, and one intersection operates at LOS D during the morning peak hour.

Future Baseline Traffic Conditions

The next step in analyzing traffic conditions was to determine the future baseline traffic volumes without the proposed school project. The year 2019 was used as the future baseline analysis year because it is anticipated to be the first full year of occupancy for the proposed elementary school.

The baseline traffic volumes for the year 2019 were estimated by expanding the existing 2015 traffic volumes by a growth factor of two percent, which accounts for general area-wide growth and the cumulative impacts of traffic that would be generated by other proposed development projects in the area. According to the "2010 Congestion Management Program for Los Angeles County" (Los Angeles County Metropolitan Transportation Authority), the general traffic volume growth factor for Regional Statistical Area (RSA) 18 is 0.26 percent per year, which equates to a four-year growth factor of 1.04 percent. RSA 18 is called South Bay/LAX and includes the City of Hermosa Beach. This growth factor of 1.04 percent was rounded up to two percent so that the traffic projections for the year 2019 would be conservatively high.

The second step in forecasting the future baseline traffic volumes would typically be to quantify the cumulative levels of traffic that would be generated by other proposed development projects in the area and add this traffic to the future baseline levels that were calculated by using the ambient growth rate. A list of development projects obtained from the City of Hermosa Beach Planning Division, however, indicated that there are no proposed development projects within the immediate vicinity of the school site. New office buildings for Sketchers are proposed on Pacific Coast Highway near the boundary of Hermosa Beach and Manhattan Beach and a new hotel is proposed on Pier Avenue at The Strand in Hermosa Beach; however, these projects would not have a direct impact on the streets in the study area of the school. The traffic that would be generated by these developments is included in the growth factor that was applied to the existing traffic volumes. The 2019 traffic forecasts were determined, therefore, by applying the ambient growth factor to the existing (2015) traffic volumes. This methodology for projecting the future traffic volumes has been used for the traffic studies for other projects in Hermosa Beach and is acceptable to the City of Hermosa Beach.

The 2019 baseline traffic volumes without the proposed school project are shown on Figure 3 in Appendix 2 for the AM peak hour. Based on the peak hour traffic volumes, the turning movement counts, and the existing lane configuration, the future (year 2019) baseline delay values and levels of service were calculated for each study area intersection, as summarized in Table 4. As shown in Table 4, seven of the 14 study area intersections are projected to operate at LOS A, six intersections would operate at LOS B, and one intersection would operate at LOS D during the morning peak hour.

TABLE 4
YEAR 2019 INTERSECTION LEVELS OF SERVICE WITHOUT PROJECT

Intersection	Delay Value & Level of Service
Manhattan Avenue at 27th Street	13.4 – B
Manhattan Avenue at 26th Street	10.4 – B
Manhattan Avenue at 25th Street	8.4 – A
Manhattan Avenue at 24th Street	11.7 – B
Myrtle Avenue at 26th Street	8.8 – A
Myrtle Avenue at 25th Street	7.2 – A
Myrtle Avenue at 24th Street	8.9 – A
Morningside Drive at 27th Street/Gould Avenue	9.1 – A
Park Avenue at 25th Street	9.0 – A
Park Avenue at 24th Street	7.2 – A
Valley Drive at Gould Avenue	14.7 – B
Valley Drive at 25th Street	12.8 – B
Valley Drive at 24th Street	12.4 – B
Ardmore Avenue at Gould Avenue	28.0 – D

III.
TRAFFIC IMPACT ANALYSIS

The following sections summarize the analysis of the proposed school's impacts on the study area traffic conditions. First is a discussion of project generated traffic volumes. This is followed by an analysis of the impacts of the proposed reopened elementary school on traffic volumes and intersection levels of service.

Project Generated Traffic

The proposed elementary school would result in an increase in traffic volumes on the streets in the vicinity of the school site because students would be transported to and from the school by their parents or guardians and the faculty/staff would be driving to and from the school. The trip generation rates and the anticipated volumes of traffic that would be generated by the proposed elementary school are shown in Table 5.

The trip generation rates for the proposed elementary school represent values from the *Trip Generation Manual* (Institute of Transportation Engineers, 9th Edition, 2012) for the elementary school land use category. The trip rates that were used for the traffic analysis are the rates at the high end of the range of data from the manual. They are approximately double the value of the average trip generation rates. This assumption was used so that the worst-case scenario was evaluated. Although the trip generation rates and traffic volumes shown in the table are based on the number of students at the proposed school, the data represent the total number of vehicle trips generated by the site, including staff/faculty vehicles, drop-off/pick-up activities, visitors, and deliveries.

Table 5 also shows the volumes of traffic generated by the existing land uses that would be displaced by the proposed elementary school, which include a 210-student pre-school and a 91-student mommy and me program operated by the adult school. These traffic volumes were subtracted from the traffic volumes that would be generated by the proposed elementary school to quantify the net increase in traffic that would occur as a result of the school project. The trip rates for the existing land uses represent the average values from the *Trip Generation Manual* for the day care and private school land use categories.

Table 5 indicates that the proposed elementary school would result in a net increase of 116 trips during the morning peak hour (67 inbound and 49 outbound), a net decrease of 31 trips during the afternoon peak hour (19 inbound and 12 outbound), and a net decrease of 170 vehicle trips per day. It should be noted that the volumes of traffic that would be generated by the proposed school do not necessarily represent new traffic on the overall street network because the traffic associated with the students represents traffic that would be re-directed to this school site from the existing Hermosa View School (for 3rd graders) and Hermosa Valley School (for 4th graders). The number of students attending school in the area is a function of the school-age population rather than the number of schools or classrooms. However, for the traffic impact analysis, it has been assumed that the site-generated traffic represents new traffic. The afternoon peak hour was not evaluated in detail because the project would result in a net decrease of 31 peak hour trips and would not coincide with the afternoon commuter peak period.

TABLE 5
PROJECT GENERATED TRAFFIC

Land Use	AM Peak Hour			PM Peak Hour			Daily Traffic
	Total	In	Out	Total	In	Out	
TRIP GENERATION RATES							
Elementary School	0.92	55%	45%	0.50	45%	55%	2.45
Pre-School	0.81	53%	47%	0.84	47%	53%	4.38
Adult School (trips per student)	0.90	55%	45%	0.60	47%	53%	2.48
GENERATED TRAFFIC VOLUMES							
Proposed School (400 students)	368	202	166	200	90	110	980
Existing Schools							
Pre-School (210)	170	90	80	176	83	93	920
Adult School (91)	82	45	37	55	26	29	230
Total	252	135	117	231	109	122	1,150
Net Increase	116	67	49	-31	-19	-12	-170

The increased volumes of traffic that would be generated by the proposed school during the morning peak hour were distributed onto the street network based on the anticipated geographical distribution of the students' residences and the observed traffic patterns on the study area street network. Figure 4 in Appendix 2 shows the assumed geographic distribution of project generated traffic.

Using the generated traffic volumes shown in Table 5 for the proposed school project and the geographical distribution assumptions outlined above, the volume of project traffic on each street and at each study area intersection was determined for the traffic impact analysis. The volume of project generated traffic at each study area intersection is shown on Figure 4.

For purposes of quantifying the impacts of the proposed school, the traffic analysis considers two scenarios. One is the project's impacts on existing (2015) conditions and the other is the project's impacts on the projected year 2019 conditions. To quantify the impacts on existing conditions, the project generated traffic volumes shown on Figure 4 were added to the existing traffic volumes. The resulting "existing plus project" traffic volumes are shown on Figure 5 in Appendix B.

The total volumes of traffic projected for the year 2019 traffic conditions were determined by adding the project generated traffic to the future year 2019 baseline traffic volumes. The "2019 with project" traffic volumes are shown on Figure 6 in Appendix B.

Significance Criteria

Intersections

According to the City of Hermosa Beach's significance criteria, an intersection would be significantly impacted if a project would result in either of the following:

- The project would change the level of service from an acceptable LOS A through C to an unacceptable LOS D, E, or F.
- The project would add 10 percent or more traffic to an intersection that is already operating at LOS D, E, or F.

Street Segments

The City of Hermosa Beach does not have significance criteria for street segments. As such, the significance criteria identified in the Los Angeles County Congestion Management Program (CMP) for intersections and freeway segments have been adopted for use in this analysis to determine potential impacts to street segments. The CMP identifies a significant impact as an increase in traffic volumes of two percent of capacity (i.e., an increase in the volume/capacity (V/C) ratio of 0.02 or greater), causing LOS F. If the street segment is already at LOS F, a significant impact occurs when the proposed project increases traffic volume on a roadway segment by two percent of capacity (V/C $\geq$ 0.02). This criterion has been used in the traffic studies for other projects in Hermosa Beach.

Intersection Impact Analysis

An analysis of traffic impacts was conducted by quantifying the before-and-after traffic volumes, then determining the average delay values and levels of service at the study area intersections for the "without project" and "with project" scenarios. Two baseline scenarios are addressed in the analysis: existing conditions and the projected year 2019 conditions.

Existing Conditions as Baseline

For the existing conditions baseline scenario, the before-and-after delay values and levels of service at each of the study area intersections are summarized in Table 6 for the morning peak hour. The table shows the existing (2015) traffic conditions, the traffic conditions with the addition of the proposed elementary school traffic, and the increase in delay values associated with the project. The final column in the table indicates if the intersection would be significantly impacted by the proposed school project according to the significance criteria outlined above.

The intersection of Manhattan Avenue at 27th Street, for example, currently operates with an average delay value of 13.0 seconds per vehicle and LOS B for existing conditions and with an average delay value of 13.2 seconds and LOS B for the existing scenario plus the proposed school. The additional school traffic would increase the average delay at the intersection by 0.2 seconds and the intersection would not be significantly impacted.

Table 6 indicates that 13 of the 14 intersections would continue to operate at acceptable levels of service (LOS A through C) for the scenario with the proposed school. These 13 intersections would not be significantly impacted according to the significance criteria. The intersection of Ardmore Avenue at Gould Avenue would operate at an unacceptable LOS D for existing conditions and for the scenario with the proposed school. The total volume of traffic that would be traveling through the intersection is 1,460 vehicles per hour (vph) for existing conditions and 1,483 vph with the additional school traffic, which represents an increase in traffic of 1.6 percent. As this is well below the significance threshold of 10 percent, the intersection would not be significantly impacted.

TABLE 6
PROJECT IMPACT ON INTERSECTION LEVELS OF SERVICE
EXISTING (2015) CONDITIONS AS BASELINE

Intersection	Delay Value & Level of Service		Increase In Delay Value (seconds)	Signif-icant Impact
	Existing Conditions (2015)	Existing Plus Project		
Manhattan Avenue at 27th Street	13.0 – B	13.2 – B	0.2	No
Manhattan Avenue at 26th Street	10.4 – B	10.4 – B	0.0	No
Manhattan Avenue at 25th Street	8.4 – A	8.5 – A	0.1	No
Manhattan Avenue at 24th Street	11.7 – B	11.9 – B	0.2	No
Myrtle Avenue at 26th Street	8.8 – A	8.8 – A	0.0	No
Myrtle Avenue at 25th Street	7.1 – A	7.3 – A	0.2	No
Myrtle Avenue at 24th Street	8.9 – A	9.0 – A	0.1	No
Morningside Dr at 27th St/Gould Ave	9.1 – A	9.2 – A	0.1	No
Park Avenue at 25th Street	9.0 – A	9.1 – A	0.1	No
Park Avenue at 24th Street	7.2 – A	7.3 – A	0.1	No
Valley Drive at Gould Avenue	14.3 – B	14.9 – B	0.6	No
Valley Drive at 25th Street	12.7 – B	12.9 – B	0.2	No
Valley Drive at 24th Street	12.3 – B	12.5 – B	0.2	No
Ardmore Avenue at Gould Avenue Traffic Volume through Intersection	25.5 – D 1,460 vph*	27.8 – D 1,483 vph*	2.3 1.6 %**	No

* vph = vehicles per hour ** Percent increase in traffic volume through intersection

The conclusion of the impact analysis that is summarized on Table 6, for the scenario where the existing conditions represent the baseline, is that none of the study area intersections would be significantly impacted by the proposed reopening of the elementary school according to the significance criteria presented previously.

Year 2019 as Baseline

The comparative delay values and levels of service for the year 2019 analysis scenario are shown in Table 7. As shown, none of the study area intersections would be significantly impacted by the proposed school project for the scenario where the year 2019 conditions represent the baseline.

TABLE 7
PROJECT IMPACT ON INTERSECTION LEVELS OF SERVICE
YEAR 2019 AS BASELINE

Intersection	Delay Value & Level of Service		Increase In Delay Value (seconds)	Signif-icant Impact
	2019 Without Project	2019 With Project		
Manhattan Avenue at 27th Street	13.4 – B	13.6 – B	0.2	No
Manhattan Avenue at 26th Street	10.4 – B	10.5 – B	0.1	No
Manhattan Avenue at 25th Street	8.4 – A	8.5 – A	0.1	No
Manhattan Avenue at 24th Street	11.7 – B	12.0 – B	0.3	No
Myrtle Avenue at 26th Street	8.8 – A	8.8 – A	0.0	No
Myrtle Avenue at 25th Street	7.1 – A	7.3 – A	0.2	No
Myrtle Avenue at 24th Street	8.9 – A	9.0 – A	0.1	No
Morningside Dr at 27th St/Gould Ave	9.2 – A	9.3 – A	0.1	No
Park Avenue at 25th Street	9.0 – A	9.1 – A	0.1	No
Park Avenue at 24th Street	7.2 – A	7.3 – A	0.1	No
Valley Drive at Gould Avenue	14.7 – B	15.3 – B	0.6	No
Valley Drive at 25th Street	12.8 – B	13.1 – B	0.3	No
Valley Drive at 24th Street	12.4 – B	12.6 – B	0.2	No
Ardmore Avenue at Gould Avenue Traffic Volume through Intersection	28.0 – D 1,488 vph*	31.0 – D 1,511 vph*	3.0 1.5 %**	No

* vph = vehicles per hour ** Percent increase in traffic volume through intersection

It should be noted that the level of service analysis summarized in Tables 6 and 7 is based on the peak hour traffic volumes, which is the typical approach for a traffic impact analysis. As a school generally experiences an intense period of traffic flow for approximately 15 or 20 minutes within the peak one-hour study interval, there would likely be short intervals of time at the beginning and ending of each school session when the levels of service would be worse than the values shown in the tables. This is typical of a school operation and is not considered to constitute a significant impact if the peak one-hour period of traffic flow would be accommodated at an acceptable level of service and/or below the threshold of significance, which is the case for the proposed elementary school.

Street Segment Analysis

To evaluate the impacts of the proposed elementary school on the study area street segments, the peak hour traffic volumes on each street were quantified for the "without project" and "with project" scenarios to determine if the traffic that would be generated by the reopened school would exceed the street segment significance criteria cited previously. The street segments were evaluated based on the morning peak hour traffic volumes, the volume/capacity (V/C) ratios, and the levels of service (LOS). The relationship between the V/C ratios and LOS and a brief description of each LOS are provided in Table 8.

TABLE 8
RELATIONSHIP BETWEEN V/C RATIOS & LEVELS OF SERVICE
STREET SEGMENTS

Level of Service	Volume/Capacity Ratio	Description of Conditions
A	0.00 to 0.34	Free Flow
B	0.35 to 0.52	Free to Stable Flow
C	0.53 to 0.69	Stable Flow
D	0.70 to 0.92	Approaches Unstable Flow
E	0.93 to 1.00	Extremely Unstable Flow
F	> 1.00	Forced Flow with Heavy Congestion/Gridlock

The results of the street segment impact analysis are summarized in Table 9 for the existing conditions baseline scenario and Table 10 for the year 2019 baseline scenario. The tables show the capacity value, the traffic volume (vehicles per hour), the V/C ratio, and the LOS for each study area street segment. The source of the capacity values is the EIR for the E & B Oil Drilling and Production Project (City of Hermosa Beach, 2014).

TABLE 9
PROJECT IMPACT ON STREET SEGMENTS
EXISTING (2015) CONDITIONS AS BASELINE

Street Segment	Capacity (veh/hr)	Existing Conditions		Existing Plus Project		Signif-icant
		Volume	V/C-LOS	Volume	V/C-LOS	
24th Street						
W of Manhattan Ave	200	45	0.23 – A	50	0.25 – A	No
Manhattan to Myrtle	200	45	0.23 – A	59	0.30 – A	No
Myrtle to Park Ave	200	60	0.30 – A	60	0.30 – A	No
Park to Valley Drive	200	100	0.50 – B	112	0.56 – C	No
25th Street						
W of Manhattan Ave	200	55	0.28 – A	61	0.31 – A	No
Manhattan to Myrtle	200	65	0.33 – A	93	0.47 – B	No
Myrtle to Park Ave	200	100	0.50 – B	150	0.75 – D	No
Park to Valley Drive	200	100	0.50 – B	131	0.67 – C	No
26th Street						
Manhattan to Myrtle	200	55	0.28 – A	60	0.30 – A	No
Myrtle to Morningside	200	60	0.30 – A	81	0.41 – B	No
27th Street						
Manhattan to Myrtle	1,680	425	0.25 – A	425	0.25 – A	No
Gould Avenue						
Morningside to Valley	1,680	530	0.32 – A	546	0.33 – A	No
Valley to Ardmore	1,680	900	0.54 – C	923	0.55 – C	No
E of Ardmore Ave	2,000	970	0.49 – B	982	0.49 – B	No
Manhattan Avenue						
N of 27th Street	1,680	640	0.38 – B	652	0.39 – B	No
26th to 27th Street	1,680	360	0.21 – A	372	0.22 – A	No
25th to 26th Street	1,680	370	0.22 – A	377	0.22 – A	No
24th to 25th Street	1,680	365	0.22 – A	380	0.23 – A	No
S of 24th Street	1,680	375	0.22 – A	399	0.24 – A	No

Myrtle Avenue						
25th to 26th Street	200	40	0.20 – A	84	0.42 – B	No
24th to 25th Street	200	75	0.38 – B	89	0.45 – B	No
Morningside Drive						
N of 27th Street	200	115	0.58 – C	120	0.60 – C	No
26th to 27th Street	200	100	0.50 – B	121	0.61 – C	No
Park Avenue						
24th to 25th Street	200	90	0.45 – B	107	0.54 – C	No
S of 24th Street	200	70	0.35 – B	75	0.38 – B	No
Valley Drive						
N of Gould Avenue	2,000	400	0.20 – A	412	0.21 – A	No
Gould to 25th Street	2,000	600	0.30 – A	619	0.31 – A	No
24th to 25th Street	2,000	540	0.27 – A	552	0.28 – A	No
S of 24th Street	2,000	570	0.29 – A	594	0.30 – A	No
Ardmore Avenue						
N of Gould Avenue	2,000	580	0.29 – A	586	0.29 – A	No
S of Gould Avenue	2,000	470	0.24 – A	475	0.24 – A	No

TABLE 10
PROJECT IMPACT ON STREET SEGMENTS - YEAR 2019 AS BASELINE

Street Segment	Capacity (veh/hr)	2019 Without Project		2019 With Project		Signif-icant
		Volume	V/C-LOS	Volume	V/C-LOS	
24th Street						
W of Manhattan Ave	200	45	0.23 – A	50	0.25 – A	No
Manhattan to Myrtle	200	45	0.23 – A	59	0.30 – A	No
Myrtle to Park Ave	200	61	0.31 – A	61	0.31 – A	No
Park to Valley Drive	200	102	0.51 – B	114	0.57 – C	No
25th Street						
W of Manhattan Ave	200	55	0.28 – A	61	0.31 – A	No
Manhattan to Myrtle	200	65	0.33 – A	93	0.47 – B	No
Myrtle to Park Ave	200	102	0.51 – B	152	0.76 – D	No
Park to Valley Drive	200	102	0.51 – B	133	0.67 – C	No
26th Street						
Manhattan to Myrtle	200	56	0.28 – A	61	0.31 – A	No
Myrtle to Morningside	200	61	0.31 – A	82	0.41 – B	No
27th Street						
Manhattan to Myrtle	1,680	433	0.26 – A	433	0.26 – A	No
Gould Avenue						
Morningside to Valley	1,680	541	0.32 – A	557	0.33 – A	No
Valley to Ardmore	1,680	918	0.55 – C	941	0.56 – C	No
E of Ardmore Ave	2,000	989	0.49 – B	1001	0.50 – B	No
Manhattan Avenue						
N of 27th Street	1,680	653	0.39 – B	665	0.40 – B	No
26th to 27th Street	1,680	367	0.22 – A	379	0.23 – A	No
25th to 26th Street	1,680	377	0.22 – A	384	0.23 – A	No
24th to 25th Street	1,680	371	0.22 – A	386	0.23 – A	No
S of 24th Street	1,680	382	0.23 – A	406	0.24 – A	No
Myrtle Avenue						

25th to 26th Street	200	40	0.20 – A	84	0.42 – B	No
24th to 25th Street	200	76	0.38 – B	90	0.45 – B	No
Morningside Drive						
N of 27th Street	200	117	0.59 – C	122	0.63 – C	No
26th to 27th Street	200	102	0.51 – B	137	0.61 – C	No
Park Avenue						
24th to 25th Street	200	92	0.46 – B	109	0.55 – C	No
S of 24th Street	200	71	0.36 – B	76	0.38 – B	No
Valley Drive						
N of Gould Avenue	2,000	408	0.20 – A	420	0.21 – A	No
Gould to 25th Street	2,000	611	0.31 – A	630	0.32 – A	No
24th to 25th Street	2,000	550	0.28 – A	562	0.28 – A	No
S of 24th Street	2,000	582	0.29 – A	606	0.30 – A	No
Ardmore Avenue						
N of Gould Avenue	2,000	591	0.30 – A	597	0.30 – A	No
S of Gould Avenue	2,000	479	0.24 – A	484	0.24 – A	No

Tables 9 and 10 indicate that the proposed reopening of the elementary school would not have a significant impact on any of the street segments according to the significance criteria cited previously.

Construction Traffic Impacts

During the construction of the proposed school, it is estimated that up to 40 construction workers would drive to and from the site and approximately 10 to 20 truck trips would occur on a busy day of construction activity. This level of construction traffic would not result in a significant traffic impact. The staging area for construction equipment would be accommodated on site.

The construction activities may potentially require temporary roadway or sidewalk closures and/or traffic detours. It is recommended that the school developer and/or its construction contractors prepare a construction work site traffic control plan and submit it to the City of Hermosa Beach for review and approval. This would reduce the potential construction related traffic impacts to acceptable levels.

The recommended action relative to construction traffic impacts is as follows:

- Hermosa Beach City School District shall require its contractors to submit a construction work site traffic control plan to the City of Hermosa Beach for review and approval prior to construction. The plan will show the location of all haul routes, hours of operation, protective devices, warning signs, and access to abutting properties. The District shall encourage its contractors to limit construction-related trucks to off-peak commute periods. Applicable transportation related safety measures shall be implemented during construction.

Congestion Management Program

The Congestion Management Program (CMP) was created statewide because of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (Metro). The 2010 CMP for Los Angeles County (Los Angeles County Metropolitan Transportation Authority) requires that the traffic impact of individual development projects of

potentially regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system. Per the CMP Transportation Impact Analysis (TIA) Guidelines, a significant impact may result and a traffic impact analysis is required where:

- At CMP arterial monitoring intersections, including freeway on-ramps or off-ramps, where the proposed project will add 50 or more vehicle trips during either morning or afternoon weekday peak hours.
- At CMP mainline freeway-monitoring locations, where the project will add 150 or more trips, in either direction, during the either the morning or afternoon weekday peak hours.

The CMP arterial routes closest to the project site are Pacific Coast Highway (State Route 1), which is located approximately one-half mile east of the school site, and Artesia Boulevard (State Route 91), which is the continuation of Gould Avenue east of PCH. The closest CMP intersection is Pacific Coast Highway at Artesia Boulevard/Gould Avenue. It is estimated that approximately 10 percent of the project generated traffic would travel through this intersection, which is approximately 12 vehicles during the morning peak hour. As this is well below the CMP threshold of 50 trips per hour, a detailed CMP intersection analysis is not required and the project would not have a significant impact at a CMP intersection. The project would not have an adverse impact during the afternoon peak hour because the proposed elementary school would generate little or no traffic during the afternoon commuter peak period on a typical day of operation.

With regard to the proposed project's CMP-related freeway impacts, it is assumed that approximately five percent of the proposed school traffic would use any particular freeway segment as an access route, which equates to approximately six trips during the morning peak hour. As this volume is well below the CMP threshold of 150 trips for freeways, a detailed CMP freeway analysis is not required and the proposed project would not have a significant impact on the freeway network. The proposed project would not, therefore, exceed a LOS standard established by the congestion management agency.

Vehicular and Pedestrian Safety

The increased levels of traffic, the increased number of pedestrians and bicycles, and the increased number of vehicular turning movements at the school entrances, at the nearby intersections, and in the general vicinity of the school would result in an increased number of traffic conflicts and a corresponding increase in the probability of an accident occurring. These impacts could potentially be significant; however, they could be mitigated by taking the following actions:

- Install school area warning signs to notify drivers that they are entering a school zone on 25th Street west of Myrtle Avenue, 25th Street east of the school site, 26th Street west of Myrtle Avenue, Morningside Drive south of 27th Street, Myrtle Drive south of 25th Street, and Silverstrand Avenue south of the school site, subject to review and approval by the City of Hermosa Beach.
- Install yellow school crosswalks at the intersection of 25th Street and Myrtle Avenue (all four legs), 26th Street and Myrtle Avenue (south leg), and 27th Street/Gould Avenue at Morningside Drive (all four legs), subject to review and approval by the City of Hermosa Beach.

- Prepare a "School Route Plan" to provide information for students, parents, and faculty regarding pedestrian and bicycle safety. This plan would be prepared prior to the opening of the proposed school and would provide guidance as to the preferred travel routes and locations to cross the streets based on the existing and proposed traffic control devices and crosswalks.

According to the "California Manual on Uniform Traffic Control Devices" (Caltrans, 2014 Edition), a school route plan for each school serving elementary to high school students should be prepared in order to develop uniformity in the use of school area traffic controls and to serve as the basis for a school traffic control plan for each school. The school route plan, developed in a systematic manner by the school, law enforcement, and traffic officials responsible for school pedestrian safety, should consist of a map showing streets, the school, existing traffic controls, established school walk routes, and established school crossings.

Site Access and Circulation

Vehicular access to the proposed elementary school site would be provided by a driveway on the north side of 25th Street east of Myrtle Avenue. This driveway would provide access to the surface parking lot for option one and to a lower level parking structure for option two. An auxiliary driveway to the parking lot would be provided on the south side of 26th Street east of Myrtle Avenue for the option with the surface parking lot. In addition, a service driveway would be provided at the northeast corner of the school site at the intersection of 26th Street and Morningside Drive for both options.

The primary pedestrian access would be provided on the south side of the school site along the 25th Street frontage of the school site. Pedestrian access would also be provided on the north side of the school site along the 26th Street frontage near Morningside Drive. Sidewalks are in place on both sides of the streets in the vicinity of the school site except for 24th Street, 24th Place, and 25th Street between Park Avenue and Valley Drive. The existing network of sidewalks would readily accommodate pedestrian circulation through the project area.

Vehicular circulation to and from the school site would be provided by the network of local residential streets in the vicinity of the school; i.e., 24th Street, 24th Place, 25th Street, 26th Street, Morningside Drive, Myrtle Avenue, Park Avenue, Silverstrand Avenue, and Ozone Court. The width of these streets is inadequate to readily accommodate both directions of traffic flow, particularly when vehicles are parked on both sides of the street. So vehicular circulation to and from the school site would be constrained during peak arrival and departure times at the beginning and ending of each school session.

Although the narrow streets would be an inconvenience for motorists and would result in inefficient traffic flow, the street network could accommodate the anticipated traffic volumes because the levels of service would be acceptable, the existing schools have been operating without unreasonable traffic issues, and this facility previously operated as an elementary school similar to that which is being proposed without any substantial traffic issues. Observations on the streets in the area that were made on various occasions during field reconnaissance for this study indicate that there are sufficient pull-out opportunities for vehicles traveling in opposite directions to pass when one of the drivers pulls over to an open curb (where no vehicles are parked) or a driveway to allow oncoming vehicles to pass.

Student Drop-offs and Pick-ups

The existing school site has a short student drop-off/pick-up zone on the north side of 25th Street and on the east side of Myrtle Avenue adjacent to the school. The drop-off/pick-up zone on 25th Street has a white curb and signs that state "Passenger Loading & Unloading Only – 7 AM to 6 PM – Mon thru Fri." This zone is long enough to accommodate only two cars. The drop-off/pick-up zone on Myrtle Avenue has faded white curb, but no passenger loading signs. It is long enough to accommodate four cars. Most of the drop-off and pick-up activities at the existing school are accommodated within the on-site parking lot.

If the school site becomes occupied by an elementary school as proposed, the existing drop-off/pick-up zones would be inadequate. It is recommended, therefore, that the curbs on the north side of 25th Street and the east side of Myrtle Avenue be designated as a passenger loading and loading zone for the entire length of the school property frontage (not in front of the private non-school properties). This would provide an estimated eight spaces on 25th Street and eight spaces on Myrtle Avenue for a total of 16 drop-off/pick-up parking spaces adjacent to the school.

To maximize the number of drop-off/pick-up spaces at the proposed school, the following measure is recommended.

- Paint the curb white on the north side of 25th Street and the east side of Myrtle Avenue to create a drop-off/pick-up zone along the entire frontage of the school property. In addition, install signs that state "Passenger Loading & Unloading Only – 7 to 8:30 AM & 2 to 3 PM – School Days" (or whatever time periods are deemed appropriate by the District and the City of Hermosa Beach to coincide with the proposed elementary school's peak drop-off and pick-up times). The recommended white curb and signs are subject to review and approval by the City of Hermosa Beach.
- If feasible, 25th Street and/or Myrtle Avenue could be widened by approximately 8 feet at the proposed white curb locations so that the passenger loading and unloading activities would have an increased physical separation from the travel lanes on these streets.

IV.
SUMMARY OF IMPACTS AND RECOMMENDATIONS

The key findings of the traffic impact analysis are presented below.

- The proposed 400-student elementary school would generate 368 vehicle trips during the morning peak hour (202 inbound and 166 outbound), 200 trips during the afternoon peak hour (90 inbound and 110 outbound), and a total of 980 vehicle trips per day.
- The displacement of the existing pre-school and adult school/mommy and me program at the school site would eliminate existing site-generated traffic, which would result in a net increase of 116 trips during the morning peak hour (67 inbound and 49 outbound), a net decrease of 31 trips during the afternoon peak hour (19 inbound and 12 outbound), and a net decrease of 170 vehicle trips per day.
- An analysis of 14 intersections in the vicinity of the school site indicates that the additional traffic generated by the proposed reopening of the elementary school would not result in a significant impact at any of the study area intersections according to the City of Hermosa Beach's significance criteria.
- An analysis of the street segments in the study area indicates that the additional traffic generated by the proposed school would not result in a significant impact on any of the street segments according to the significance criteria.
- Even with the conservatively high assumptions regarding the growth rate for ambient traffic volumes and the trip generation rates for the proposed elementary school, the analysis indicates that there are no locations (intersections or street segments) that are even close to having a significant impact according to the significance criteria.
- As the volumes of school-generated traffic that would affect the Los Angeles County CMP network would be well below the CMP thresholds, a detailed CMP analysis is not required and the project would not have a significant impact at a CMP intersection or freeway segment.
- The widths of the local streets that provide access to the school site are inadequate to readily accommodate both directions of traffic flow, particularly when vehicles are parked on both sides of the street. So vehicular circulation to and from the school site would be constrained during peak arrival and departure times at the beginning and ending of each school session.
- Although the narrow streets in the school vicinity would be an inconvenience for motorists and would result in inefficient traffic flow, the street network could accommodate the anticipated traffic volumes because the levels of service would be acceptable, the existing schools have been operating without unreasonable traffic issues, and this facility previously operated as an elementary school similar to that which is being proposed without any substantial traffic issues.
- The following action is recommended to minimize traffic, pedestrian, and safety impacts during construction:

- Hermosa Beach City School District shall require its contractors to submit a construction work site traffic control plan to the City of Hermosa Beach for review and approval prior to construction. The plan will show the location of all haul routes, hours of operation, protective devices, warning signs, and access to abutting properties. The District shall encourage its contractors to limit construction-related trucks to off-peak commute periods. Applicable transportation related safety measures shall be implemented during construction.

- The following actions are recommended to alleviate the traffic, pedestrian, and safety impacts associated with the operation of the proposed elementary school. These features are subject to review and approval by the City of Hermosa Beach.
  - Install school area warning signs to notify drivers that they are entering a school zone on 25th Street west of Myrtle Avenue, 25th Street east of the school site, 26th Street west of Myrtle Avenue, Morningside Drive south of 27th Street, Myrtle Drive south of 25th Street, and Silverstrand Avenue south of the school site.
  - Install yellow school crosswalks at the intersection of 25th Street and Myrtle Avenue (all four legs), 26th Street and Myrtle Avenue (south leg), and 27th Street/Gould Avenue at Morningside Drive (all four legs).
  - Prepare a "School Route Plan" to provide information for students, parents, and faculty regarding pedestrian and bicycle safety. This plan would be prepared prior to the reopening of the proposed elementary school and would provide guidance as to the preferred travel routes and locations to cross the streets based on the existing and proposed traffic control devices and crosswalks.

- To maximize the number of drop-off/pick-up spaces at the proposed school, the following measures are recommended.
  - Paint the curb white on the north side of 25th Street and the east side of Myrtle Avenue to create a drop-off/pick-up zone along the entire frontage of the school property. In addition, install signs that state "Passenger Loading & Unloading Only – 7 to 8:30 AM & 2 to 3 PM – School Days" (or whatever time periods are deemed appropriate by the District and the City of Hermosa Beach to coincide with the proposed elementary school's peak drop-off and pick-up times). The recommended white curb and signs are subject to review and approval by the City of Hermosa Beach.
  - If feasible, 25th Street and Myrtle Avenue could be widened by approximately 8 feet at the proposed white curb locations so that the passenger loading and unloading activities would have an increased physical separation from the travel lanes on these streets.