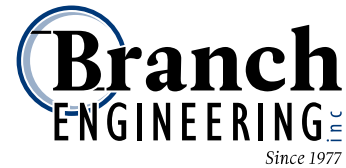


TECHNICAL MEMORANDUM



civil • transportation
structural • geotechnical
SURVEYING

DATE: August 31, 2016

PROJECT: South Lane School District
New Elementary School Site
Branch Project No. 16-204

TO: Amanda Ferguson, City Planner
Ron Bradsby, City Engineer
City of Cottage Grove

FROM: Dan Haga, P.E.
Damien Gilbert, P.E.

RE: Traffic Study Scope of Work
Cottage Grove Elementary School Project
South 8th Street and Taylor Ave



EXPIRES: JUNE 30, 2017

In an effort to assist the City of Cottage Grove in the process to identify the scope of traffic impact analysis that is required for development and site review approval criteria for a new elementary school to be constructed on tax lot 100 of tax map 20-03-33-31, I am supplying this memorandum summarizing the potential site generated traffic and land use assumptions. The land use will require a conditional use permit to comply with the City of Cottage Grove's existing low density residential zoning and codified entitlements. The result of this memorandum is intended to be the basis for concurring on the scope of analysis required to analyze development traffic impacts in compliance with City of Cottage Grove Development Code, Chapter 4.1.900.

Existing Conditions

The subject site is located south of Taylor Avenue between S. 8th Street and S. Gateway Boulevard. The site is within city limits and urban growth boundary (UGB) of Cottage Grove, Oregon. The property was previously utilized as Cottage Grove SR High School and more recently as Al Kennedy Alternative High School. The subject site is a single tax lot that features approximately 18.69 acres of land. The site location is provided on the following page.

Trip Generation

To project trip generation for the proposed development application, a reference was made to Trip Generation, 9th Edition, published by the Institute of Transportation Engineers (ITE). A preliminary site plan (attached) has been prepared for the subject site, which includes approximate building and parking areas shown schematically for development of the new elementary school. The plan includes accommodations for parent pick-up and drop off areas, bus parking and loading areas and staff parking, as well as potential driveway accesses located on Taylor Ave and on S. 8th Street.

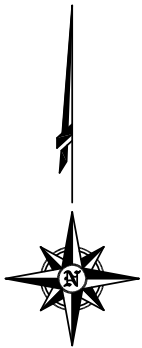
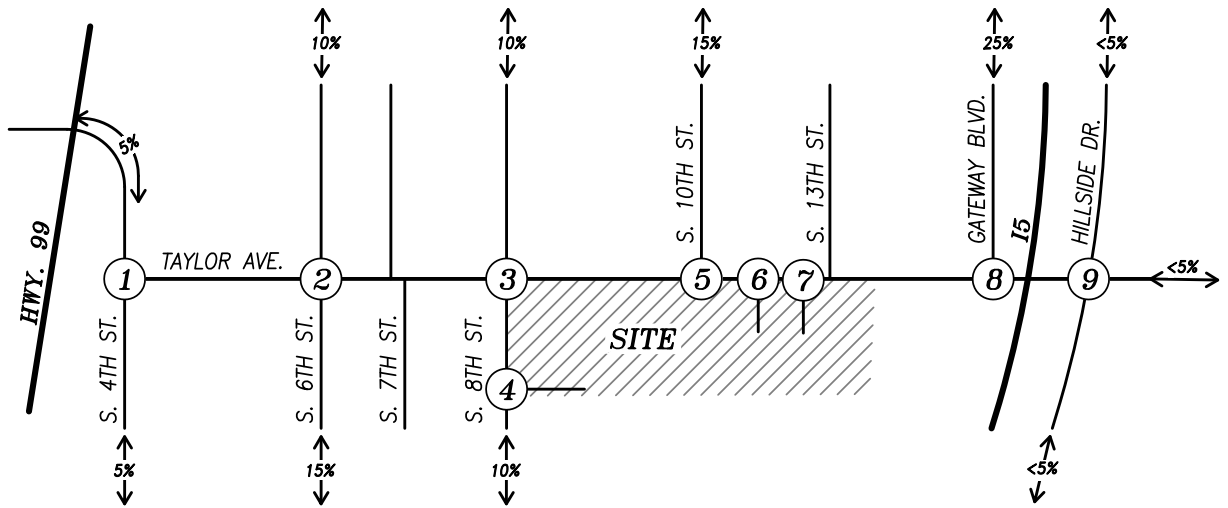
The following table summarizes the potential site generated traffic based on available published ITE data:

ITE School Trip Generation								
Site	Units	Quantity	Rate/Unit	Total Trips	Trips In		Trips Out	
					%	#	%	#
AM Peak Hour - Year of Opening New Vehicle Trips								
Elementary School	Students	460	0.45	207	55%	114	45%	93
Day Care Center	Students	100	0.80	80	53%	42	47%	38
Total Year of Opening New Site AM Trips:				244	-	156	-	131
AM Peak Hour New Site Trips - Future Year Conditions with Growth								
Elementary School	Students	650	0.45	293	55%	161	45%	132
Day Care Center	Students	100	0.80	80	53%	42	47%	38
Total Future Year New Site AM Trips:				330	-	203	-	170
Average Daily Trips - Year of Opening								
Elementary School (YOP)	Students	460	1.29	594	50%	297	50%	297
Day Care Center	Employees	10	26.73	268	50%	134	50%	134
Total Year of Opening New Site ADT:				862	-	431	-	431
Average Daily Trips - Future Year								
Elementary School (FY)	Students	650	1.29	838	50%	419	50%	419
Day Care Center	Employees	10	26.73	268	47%	134	53%	134
Total Future Year New Site ADT Trips:				1106	-	553	-	553
Al Kennedy Alternative High School Trip Generation								
AM Peak Hour	Students	100	0.43	-43	68%	-29	32%	-14
ADT	Students	100	1.73	-174*	50%	-87	50%	-87
*Rounded up to the nearest even number to get even in/out split								

Trip Distribution

To determine trip distribution patterns, consideration was given to neighborhood character, nearby transportation facilities and the existing Harrison Elementary School district boundary. The Harrison Elementary School boundary includes most of the City of Cottage Grove east of Highway 99. Harrison Elementary School's designated boundary does not include any land west of Highway 99; however, the school district has an open enrollment policy that allows students to attend the school of their choice even if it's not within their neighborhood. The likely trip distribution will include existing elementary school travel patterns and will not add a significant amount of new traffic to the nonlocal transportation system, other than diverting traffic from the existing Harrison Elementary School driveways and nearby intersections to the new site's driveways and nearby intersections. The trip distribution of potential site generated traffic is shown on the following illustration. Existing Al Kennedy Alternate High School trips should be deducted and credited as trips already on the roadway with the trip distribution shown that.

TRIP DISTRIBUTION AND STUDY AREA



N.T.S.

SCALE: NTS

TRIP DISTRIBUTION AND STUDY AREA



HARRISON ELEMENTARY SCHOOL REPLACEMENT

COTTAGE GROVE, OR

AUGUST 31, 2016

Study Area

The City of Cottage Grove Development Code Chapter 4.1.900 requires a traffic impact analysis when a development will generate 300 or more average daily vehicle trips or traffic from 10 or more daily vehicles that exceed 20,000 pounds of gross vehicle weight. The recently adopted Cottage Grove Transportation System Plan Update (2015) and the Cottage Grove Development Code refer to the PM peak hour of the transportation system for performance and mobility standards. The PM peak hour of the transportation system is the highest volume contiguous one-hour period of traffic between 4:00 PM and 6:00 PM. The new elementary school use is not expected to generate a significant amount of traffic during a one-hour period that coincides with the transportation system's PM peak hour, but its use is expected to create its own local peak hour when combined with the transportation system traffic conditions during the AM period directly prior to and around the morning arrival bell. The elementary school dismissal at Harrison Elementary occurs at around 2:30 PM and is expected to continue at the new elementary school site after opening. The first bell in the morning sounds at about 8:10 AM to start a typical school day. It is proposed that the analysis period to be studied for this development proposal substitutes the AM peak hour period for the Codified PM peak hour to analyze traffic impacts because the elementary school AM peak hour typically coincides with the transportation system's AM peak hour and not the reverse for PM conditions. The AM peak hour will be determined from traffic counts in the local area and will capture the school arrival period at the site. The PM pick-up period at school dismissal is not as high of a trip generator as the morning arrival/drop-off. Often parents have work or other afternoon activities to tend to. For reference, the AM peak hour rate for the site is three times higher than the site's PM peak hour rate during the PM peak hour of the transportation system.

The school district has indicated that approximately 70 percent of students in the school district ride the bus, but the number is expected to be lower at the project site because the site is centrally located in an established residential urban neighborhood area. The arrival and dismissal periods are generally very different in traffic character and volume for elementary school sites. The AM peak hour typically involves parents arriving at the site, pulling up to the curb long enough for students to exit the vehicle onto adjacent sidewalks, with parents leaving the site immediately thereafter. Parent arrivals are frequent and irregular as some elementary aged students arrive prior to breakfast offered at the school. During the PM pick-up period, parents arrive on the site up to half of an hour early and wait until dismissal to pick up students and egress the site immediately after the dismissal bell, with most of the egress traffic occurring over a short period of time after the bell.

The current site development proposal includes a bus driveway and separate parent parking and circulation driveways on Taylor Avenue in addition to a parking area for staff and day care traffic accessed from S. 8th Avenue. The proposed study area intersections for the traffic study include the following unsignalized public intersections:

1. Taylor Ave at South 4th Street;
2. Taylor Ave at South 6th Street;
3. Taylor Ave at S.8th Street;
4. Taylor Ave at S.10th Street;
5. Taylor Ave at S. Gateway Blvd;
6. Taylor Ave at Hillside Drive, and;
7. Site Driveways on Taylor Ave and on S. 8th Street.

The City of Cottage Grove's performance mobility standards are identified as level of service (LOS) E at unsignalized intersections and with volume to capacity (v/c) ratio of 0.90 at signalized intersections for the PM peak hour in the TSP (*Mobility Standards* - page 63). City of Cottage Grove Development Code, Section 4.1.900(C)(3) identifies with LOS D as the City's performance/mobility standard with no specific reference to intersection control type. For the purpose of this study, it is proposed that the study area intersections (all unsignalized) be studied during the AM peak hour and meet the minimum mobility standard of LOS D identified in the development code.

Analysis Year(s)

The City of Cottage Grove does not have a future year identified for traffic studies in the development code, therefore; a reference was made to the Oregon Department of Transportation's Development Review Guidelines, Chapter 3.3 (August 2014). Table 3.3.2 of the ODOT DRG document includes analysis periods for various levels of development traffic generated by a site. Based on the ODOT recommendations for future year analyses, a site that generates a projected 1,000 - 2,999 ADT would include a five year planning horizon year window to evaluate traffic impacts. Therefore, a five year planning horizon year to evaluate traffic impacts is proposed. With the five year planning horizon, the future analysis year would include year 2017 as the year of opening and the year 2022 as the future year. It would be assumed that all 650 students at the Elementary School would be in attendance during the year 2022 future conditions.

To project future year background traffic volumes, collected year 2016 traffic count volumes will be factored by a 1.71 percent (%) linear adjusted annual growth rate. The 1.71% AAGR is based on Table 4 of Technical Memorandum #6 of the year 2015 Cottage Grove TSP update. Table 4 indicates a trip generation increase in Cottage Grove's internal trip making characteristics of approximately 36 percent from the year 2014 TSP background conditions to the year 2035 TSP horizon year.

Scope of Analysis

As discussed previously, the performance mobility standards will be evaluated during the higher volume AM peak hour during year of opening (year 2017) traffic conditions and during a five year - 2022 planning horizon year. In addition to the performance for motor vehicle at public intersection facilities, the local transportation infrastructure will be evaluated for pedestrian and bicycle traffic, school signage and crossing locations, as well as Transportation System Plan identified transportation system design standards applicable to existing street conditions along the site's frontages for compliance with City criteria. A crash analysis will be performed for study area intersections over the most recent five year period of available data to ensure there are not any mitigatable improvements that need attention prior to adding site generated traffic loading.

Conclusion

In summary, based on the City of Cottage Grove Development Code, Section 4.1.900, the proposed new Harrison Elementary School replacement will require a traffic impact analysis to determine if there are any impacts to the transportation system and to ensure that there are adequate facilities to accommodate all modes of traffic for users of the site. The forthcoming analysis will determine traffic impacts based on and updates to the site plan. We look forward to working with you through the traffic impact analysis and review process. Please do not hesitate to contact me if I can provide any additional information.