

REPLINGER & ASSOCIATES LLC
TRANSPORTATION ENGINEERING

May 4, 2015

Ms. Kelly Moosbrugger
City of Oregon City
PO Box 3040
Oregon City, OR 97045

**SUBJECT: REVIEW OF TRANSPORTATION IMPACT STUDY – OREGON CITY
 SCHOOL DISTRICT HIGH SCHOOL AND MAINTENANCE FACILITY
 CAMPUS – CP15-03**

Dear Mr. Moosbrugger:

In response to your request, I have reviewed the Traffic Impact Study (TIS) in support of the proposed establishment of a bus storage and maintenance facility immediately west of the existing high school and changes associated with the entire campus. The land use application also involves a master plan allowing for phases with various on-site changes for the school campus. The TIS was prepared by Michael T. Ard, PE of Lancaster Engineering. The Final TIS is dated February 23, 2015.

The TIS describes a proposal by the Oregon City School District (OCSD) to construct a bus maintenance and storage facility on approximately 7 acres in the northwest quadrant of the intersection of Meyers Road and High School Avenue. The site for the maintenance facility is immediately west of the existing Oregon City High School. The TIS assumes the maintenance and school bus storage facility will be completed and be operational by 2016.

Overall

I find the TIS addresses the city's requirements and provides an adequate basis to evaluate impacts of the proposed development.

Comments

1. Study Area. The study addresses the appropriate intersections. It includes an analysis of the following intersections:

- Highway 213/Molalla Avenue/Clackamas Community College Entrance
- Highway 213/Meyers Road
- Highway 213/Glen Oak Road/Caufield Road
- Beaver Creek Road/Meyers Road

Two additional intersections received a limited analysis. These were: High School Avenue/Meyers Road and High School Avenue/Glen Oak Road. The applicant should be required to provide some additional information for these intersections as a condition of approval.

These intersections are appropriate for the purposes of assessing the impact of the development.

- 2. Traffic Counts.** The traffic counts were conducted in October 2014 during the AM and PM peak periods. The counts appear reasonable. Traffic counts were not conducted during the “end of school day” period as would normally be done when a school is being modified. As pointed out by the engineer, during the end-of-school period, the school buses are already at the school getting ready for departure or are on their routes. The relocation of the maintenance facility from the north part of the city to this location makes essentially no difference during this period. I concur with this analysis and conclusion.
- 3. Trip Generation.** The TIS relies upon trip generation information from the OCSD’s existing site on Maplelane Court and on a detailed analysis of the arrivals and departures of school buses on their routes serving the district’s schools. A key factor in the analysis is that it focuses on the AM and PM peak hour of street traffic on the major street network. Inbound and outbound traffic at the maintenance facility is unique with moderately high levels of activity several times during the course of the day. The activities include arrivals and departures of drivers in their personal vehicles, mechanics and administrative staff and the separate arrivals and departures of school buses making both morning and afternoon runs. As is evident from a review of the counts at the existing maintenance facility, relatively little of this activity occurs during the AM and PM peak hours.

For the year of opening (2016), the engineer calculated that the facility would produce 41 AM peak hour trips (22 entering and 19 exiting); 25 PM peak hour trips (4 entering and 21 exiting); and 744 weekday trips (equal inbound and outbound).

To provide a long-term forecast of site operations, the engineer used school enrollment forecasts produced by Portland State University (PSU). Using the middle range school enrollment forecasts produced by PSU, the engineer extrapolated a 20-year Oregon City School District enrollment increase of ten percent. He assumed activities at the maintenance facility would increase by a like percentage. For year 2035, he calculated the facility would produce 45 AM peak hour trips (24 entering and 21 exiting); 27 PM peak hour trips (4 entering and 23 exiting); and 814 weekday trips (equal inbound and outbound).

For those more familiar with other types of employment sites, the predicted traffic for the school bus maintenance facility might initially appear to be low, but the facility does have unique travel characteristics. I found the engineer's explanation and calculations of peak hour trips to be reasonable and justified.

- 4. Trip Distribution.** According to the engineer, the trip distribution for buses is based on detailed information about bus routes and schedules. For passenger vehicles it is based on area travel patterns, the location of major transportation facilities and likely trip origins. I found the trip distribution developed by the engineer for the AM and PM peak hours to be reasonable.
- 5. Traffic Growth.** The TIS uses a two percent annual growth rate for traffic through 2020. For the intersection of Highway 213 and Meyers Road, the engineer assumes it will be a four-leg intersection in 2020. For the 2020 traffic analysis, he uses what might be a low estimate of traffic volumes on Meyers Road and its new connection to Highway 213. Future traffic volumes on Meyers Road and the impact of its connection to Highway 213 will be refined in the Meyers Road Concept Plan that is currently underway.
- 6. Analysis.** Traffic operations analyses were conducted for the AM and PM peak hours for 2014 existing conditions; 2016 background conditions; 2016 total conditions with the maintenance facility; 2020 background conditions with the Meyers Road extension; and 2020 total conditions with Meyers Road extension and the maintenance facility.

Because the AM and PM peak hour traffic volumes generated by the facility are small and because the distribution patterns cause traffic to disperse to both Beavercreek Road and Highway 213, the analysis shows the impact of the facility to be minimal for both 2016 and 2020. According to the engineer's analysis, all four intersections are predicted to meet the applicable city and Oregon Department of Transportation mobility standards with and without the maintenance facility through 2020.

As indicated in #1, above, a limited analysis was conducted for the intersections of High School Avenue/Meyers Road and High School Avenue/Glen Oak Road. In his analysis, the engineer used traffic volumes collected elsewhere along Glen Oak Road to perform his calculation of intersection operations. While this is sufficient to demonstrate that these two intersections are likely to meet intersection performance standards, the lack of recent traffic counts at these two intersections makes it difficult for the city or the applicant to have a valid starting point for assessing traffic impacts associated with the proposed facility once the planned Meyers Road extension is constructed. Since the city's TIA Guidelines require the analysis require traffic counts and analyses of intersections on the city's collector network, the applicant should be required as a condition of approval to provide recent traffic counts and a complete assessment of operations for these two intersections. The analysis submitted by the applicant is

sufficient to determine that operational standards are met at these two intersections as well as those subject to the complete analysis.

I concur with the engineer's analysis showing that the impact of the proposed development is not significant and the performance of all intersections is likely to meet mobility standards without or with the proposed maintenance facility.

- 7. Turn Lanes.** TIS indicates that left-turn lanes are in place at the key intersections and the configuration of Meyers Road is planned to include a left-turn lane at the site driveways. The configuration satisfies the need to analyze turn lanes at the site.
- 8. Crash Information.** The TIS provided a five-year crash history for the intersections in the study area. Even the intersection with the most crashes (Highway 213/Molalla Avenue) was calculated to have a modest crash rate. All other intersections have experienced lower crash rates and no particular patterns were evident. The engineer concluded that no significant safety hazards were identified and no mitigations are recommended. I concur.
- 9. Pedestrian and Bicycle Facilities.** The site plan indicates sidewalks would be provided along the frontage for both High School Avenue and Meyers Road. Bike lanes are also indicated along Meyers Road, consistent with the specifications for a minor arterial street.
- 10. Site Plan and Access.** The TIS and conceptual site plan indicate two access points on Meyers Road and three on High School Avenue. The most southerly access on High School Avenue will provide access to the "staff parking lot" located in the southeastern portion of the site. The other four driveways provide access to the operational areas of the maintenance facility.

The "staff parking lot" is located outside the perimeter fence associated with the maintenance facility and will be used exclusively by automobiles and small trucks. The staff parking lot would be used by bus drivers and other employees by day and would be available for public use during the evening hours and on weekends.

The other access points would be utilized by school buses and others needing access to the maintenance facility itself. Gates would prevent access during non-operating hours.

The TIS did not provide a prediction of the inbound and outbound traffic volumes at the site access points. Such information is important for evaluating the length of turn lanes on the adjacent roads and related issues. Submittal of this information should be a condition of approval.

11. Intersection Spacing. No new intersections are created by this development proposal. The location of Meyers Road and High School Avenue is already established. This development will result in the westerly extension of Meyers Road.

12. Sight Distance. The engineer recommends the site access be designed at each access point to provide adequate sight distance. He recommends sight distance of 390 feet in each direction along Meyers Road based on an assumed speed of 35 mph. For High School Avenue, the engineer recommends a sight distance of 225 to the south based on an assumed speed of 20 mph and 290 feet to the north based on an assumed speed of 20 mph. These are reasonable recommendations. Some adjustment could occur depending on the outcome of the Meyers Road Concept Plan currently underway, but the importance of providing adequate sight distance should not be underestimated. Plans for signing, fencing and vegetation should take sight distance into account.

13. Consistency with the TSP. The planned extension of Meyers Road along the south boundary of the facility and to the west toward Highway 213 is consistent with the TSP. The site plan and related materials indicate the frontage improvements will comply with the TSP and city code requirements.

14. Parking. The TIS provides analyses and discussion of the parking associated with the maintenance facility and for the campus as a whole. The discussion presents information from the Oregon City code, City of Hillsboro requirements, and the Institute of Transportation Engineers' *Parking Generation*.

With regard to the maintenance facility, the TIS provides a breakdown of parking needs using office space, maintenance space, and for "vehicle storage yards." The first two are based on an interpretation of the Oregon City code; the third is based on a City of Hillsboro requirement, which the engineer cites as being a possibly relevant specification from a comparable community. A maximum of 81 bus drivers, which represent the majority of users, would account for between 41 and 81 spaces under the Hillsboro code. The engineer calculates office uses would require 30 to 37 spaces and the maintenance bays would require 26 to 32 spaces. That yields a total of 97 to 150 spaces. This compares with a proposal to provide 138 spaces in the staff lot.

With regard to the larger campus, the TIS includes a discussion about the school, the athletic fields, and the maintenance facility. The engineer suggests that peak use will overlap to a considerable degree though he states that the period of peak parking demand for sports fields is not well documented. He calculates school parking based on 0.2 to 0.3 spaces per person for 2750 persons. He calculates athletic parking at the rate of 13.3 to 60.5 spaces per field for five athletic fields. Added to the maintenance facility parking cited above, he calculates a total need for the campus in the range of 714 to 1278 spaces. He states that the proposal for the campus is 1176 spaces at the end of phase 1 and 1121 spaces for phases 2 through 4.

The easy availability of free or inexpensive parking is generally acknowledged to contribute to low vehicle occupancy. Given the region's and the city's commitment to trying to reduce per capita vehicle miles of travel, it might be cause for concern that this proposal seeks to provide parking near the maximum value of the range.

Providing parking in the range of one space per employee at the maintenance facility does not seem to provide much incentive for carpooling or other mode choices that reduce vehicle miles of travel. Limited parking in combination with other transportation demand management strategies can be effective means of reducing employees' tendency toward driving alone to work.

The assumption of overlap of peak demand for school parking and athletic field parking does not seem well supported. On the contrary, many of the users of athletic fields during weekday afternoons would seem to be student-athletes from the same school who do not have to travel to and park at the site. When athletic competitions or practices involve those from other schools, the travel time for the visitors would likely provide plenty of time for the majority of the host school's students to depart. Though I can offer no data to support a specific alternative calculation, I think the existing proposal errs on the high side in the provision of parking by assuming overlapping peak parking demand.

Making the staff parking lot at maintenance facility available for public use after hours is a definite positive. It will provide needed parking in close proximity to the planned city park on the south side of Meyers Road and to the athletic fields on the east side of High School Avenue during evenings and weekends.

In conclusion, assumptions about parking needs in this proposal and plans to provide the number of parking spaces proposed could have the effect of encouraging high levels of motor vehicle use in conflict with regional and city goals. The proposal is based on providing nearly one parking space per employee at the maintenance facility and assumes overlapping demand for the school, athletic fields, and maintenance facility. This leads to a proposal to provide parking near the top of the calculated range on the campus. The city and the OCSD might be better served by reducing the total allowable parking and instituting transportation demand management programs to better meet regional goals that include a reduction in per capita vehicle travel and achieving a non-single occupancy vehicle mode share of 40 to 45 percent.

15. Conclusions and Recommendations. The engineer concludes that all study area intersections will meet mobility standards in 2016 and in 2020 even with the completion of the proposed maintenance facility. This is due in part to the traffic characteristics of the OCSD's bus operations since little traffic occurs during the AM and PM peak periods. The engineer concludes that mitigation for traffic associated with the

maintenance facility is not necessary. The analysis of safety issues reveals on areas needing attention. I concur with his conclusions.

Conclusion and Recommendations

I find the TIS generally meets city requirements. Some items normally addressed in a TIS were lacking and should be provided as a condition of approval. These consist of: recent AM and PM peak hour traffic counts at the intersections of High School Avenue/Meyers Road and High School Avenue/Glen Oak Road; an operational analysis of these two intersections under current conditions; and estimates of AM and PM peak period traffic forecast at each proposed site access.

The TIS indicates that maintenance facility will cause only minor increases in traffic during the AM and PM peak hours. During these key periods, the effect of the additional traffic is minimal. The operational analysis indicates the mobility standards will be met at all locations with the development in year 2016 and year 2020. I concur that no off-site mitigation is required.

The frontage improvements associated with the maintenance facility will facilitate the implementation of Meyers Road, a minor arterial street specified in the Transportation System Plan (TSP) and upgrades to High School Avenue.

The applicant proposes that the staff parking lot be available for public parking during hours not needed for the facility's operation. This is a positive step in meeting parking needs associated with the planned park to the south and the athletic fields to the east. The amount of parking proposed by the applicant is a concern. The TIS describes in fair detail the assumptions used in calculating the parking needs. The proposed parking for the maintenance facility appears to be approximately one space per employee. This level of parking does little to help the city and the OCSD achieve city and regional goals that seek to reduce per capita vehicle miles of travel or the objective of significantly reducing daily single-occupancy vehicle commuting. On a campus-wide basis, the TIS also makes the assumption that peak parking demand for the school, athletic facilities, and the maintenance facility will overlap to a great degree. By making this assumption rather than assuming non-overlapping demand, the proposal inflates the predicted peak parking demand. This could lead to an overabundance of parking and encourage more, rather than less, vehicle travel and single-occupancy vehicle use. I recommend that the applicant and the city review the assumptions and refine the parking proposal to come to an agreement on a reduced number of spaces that is more supportive of regional and city goals. I further recommend that the OCSD commit to a transportation demand management program focused on the maintenance facility to help achieve the broader transportation goals and reduce the need for parking at that site.

Ms. Kelly Moosbrugger
May 4, 2015
Page 8

In the TIS, the engineer also recommended that adequate sight distance be provided at the access points. I concur with his recommendations and suggest that during the design and construction process special care be taken with the selection and installation of signs, fences and plantings to assure that sight distance is maximized and meet the minimums recommended by the applicant's engineer.

If you have any questions or need any further information concerning this review, please contact me at replinger-associates@comcast.net.

Sincerely,



John Replinger, PE
Principal

Oregon City\2015\CP15-03