REGISTERED PROFESSIONAL ENGINEER
53,044
Digitally Signed
2023.09.01 09:54:52-07'00'
OREGON
JANUARY 15, 2002
DANA M. BECKWITH
EXPIRES: DEC. 31, 2023

GLOBAL Transportation Engineering

MEMORANDUM

DATE: September 1, 2023

TO: Multnomah County

FROM: Dana Beckwith, PE, PTOE

SUBJECT: Bull Run Filtration Facility – Construction Transportation Demand Management Plan Update

---

This updated memorandum summarizes the Transportation Demand Management (TDM) Plan that will be utilized to mitigate traffic impacts created by construction-related traffic for the Portland Water Bureau's (PWB) Bull Run Filtration Facility (the Filtration Facility) and its associated pipelines (together, the Project) located within Multnomah County and adjacent to Clackamas County, Oregon. This plan outlines the strategies that will be implemented during the construction period to minimize construction impacts and maintain roadway and intersection capacity standards.

Peak Hour Vehicle Operational Capacity

The operational capacity of the Carpenter Lane access related to construction traffic is revised to a limit of 296 total peak hour vehicles, as documented in the Carpenter Lane One-Access Analysis memorandum (dated August 1, 2023, Exhibit I.86 in the land use record). The revised capacity limit of 296 is due to consideration of a more conservative trip distribution scenario combined with the removal of the option to use Access B. The peak hour is defined as a one-hour period during the heaviest traffic use of area roadways which occurs between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM.

Trip generation and distribution forecasts developed in the Construction TIA for operational capacity at study intersections are conservative. However, the revised capacity limits for Carpenter Lane will be exceeded at various times during construction without implementation of TDM measures. PWB is committed to mitigating construction traffic impacts through a TDM strategy that monitors construction traffic and implements mitigation before it is necessary.

Travel Demand Management Plan

The PWB Construction Manager will ensure the number of vehicles accessing the site does not exceed the 296 peak hour vehicle capacity threshold. This will be done by forecasting trips so that appropriate TDM measures can be implemented proactively and by monitoring the actual trips to both validate forecasting and to demonstrate compliance to Multnomah County Transportation.

Forecasting and Monitoring

The high-level forecast for the entire project begins before construction starts. A detailed resource-loaded project schedule is being prepared and will be maintained to show the steps required to complete the project. Because the project schedule is resource-loaded, it inherently plans for the number of trips needed (employees and trucks) for any given day of the project, based on the work to be performed that day. The schedule will be updated monthly and will identify when each of the activities will occur along with the required work force (one of the resources in the "resource-loaded" schedule). This schedule will forecast a month-in-advance view of the trips to come so that PWB can

direct its contractors to anticipate the timing for implementation of TDM measures with a high level of accuracy.

The forecasting process will also include use of a more detailed 2-week look ahead schedule the contractors will prepare each week. The Construction Manager will use these schedules and data from a tube counter (or similar device capable of 15-minute data bins) to forecast trips on a bi-weekly (once every two weeks) basis. These forecasts and data will be provided to the County as further described below. This information will be used to identify actual site traffic trends for the AM peak hour, PM peak hour, and total daily traffic. This monitoring will remain in place until the peak hour vehicles accessing the site are less than 200 for a one-month period and are forecast to continue at this level or less for the remainder of Filtration Facility construction.[1]

Tiers of TDM Measures

When the total peak hour trips are forecast to exceed 75 percent of the peak hour vehicle capacity threshold for Carpenter Ln, the following TDM measures will be implemented:

- Vanpooling for construction crews
- Offset construction crew shifts

When these measures have been implemented and total peak hour vehicles are forecast to exceed 90 percent of the peak hour vehicle capacity threshold for Carpenter Ln, the following TDM measure will be implemented (in addition to vanpooling and offset crew shifts) at a level to ensure actual peak hour vehicles are kept below the operational capacity:

- Off-site parking with shuttle buses for construction crews

Vanpooling Details

The contractors will encourage the use of vanpools for construction crews by providing the opportunity to use contractor-provided commuter vans. This TDM measure will be implemented similarly to how it has been used on other projects by the contractors:

- Contractors will obtain multiple “15 passenger” late model transit commuter vans to be used for this program specifically. Contractors will communicate the benefits to site personnel with the expectation that groups of individuals who live close to one another or are in the same crew or trade will want to participate in the program. There will be a minimum requirement for 8 personnel to request a van.
- Once a group of volunteers wants to participate, they provide the name of one or more drivers who shares their personal information for evaluation of their driving history and ensuring they meet criteria for safety.
- Once groups are established, they will each be provided a van and start commuting to and from the site. The contractors will establish rules and guidelines to ensure the program is successful. For example, though the groups will determine their logistics of pickup and drop-off

[1] This reduction is consistent with the point at which there is a permanent downward trend in total vehicle trips per day accessing the site as shown in the Construction TIA Appendix B Total Vehicle Trips Per Day 3.8.23 graph.

and where the vans are parked off-hours, these must be located outside of the project study area. During work hours, after commuting, the vans will be parked at the work site.

- Vanpooling is voluntary, but there are many benefits for van riders (gas savings, reduce wear/tear on their personal vehicles, chance for passengers to nap on the commute, freeing up personal vehicle for others in their families) which is why the voluntary program has been successful on other projects. PWB's contractors have seen 10-20 percent reductions in construction crew trips on similar projects with similar programs offered. The contractors expect a similar reduction for this project, which will be verified by review of the actual site traffic trends observed from the count data, as described above.

Offset Shifts Details

Staggering shifts for construction crews is a strategy to minimize peak traffic during the start and end of shifts. Within the allowable work hours, the start time of primary trades can be adjusted to begin and end 30 to 60 minutes earlier than that of other project trades as seasonal conditions allow. This measure does not reduce the total vehicle trips in/out of the site, but it spreads them out over a longer period of time, thereby reducing the peak hour vehicle trips.

PWB's contractors have seen 20-25 percent reductions in peak hour construction crew vehicle trips on similar projects with offsetting of crew start/end times. The contractors expect a similar reduction for this project, which will be verified by review of the actual site traffic trends observed from the count data, as described above.

Off-site Parking with Shuttle Buses Details

As described above, monitoring will be used to determine the actual trips, including with results of vanpooling and offsetting of shifts for construction crews; PWB will not have to rely on estimates of the trip reduction success of these other TDM measures. Instead, PWB's contractors will be prepared to implement an off-site parking and busing program at whatever level is needed to ensure the capacity threshold is not exceeded. PWB has already taken steps to determine this program is feasible to implement as needed.

Contractors have identified and vetted multiple sites that individually and/or collectively meet a set of criteria defined for site selection: 1) having sufficient capacity for up to approximately 300 vehicles, which is a conservative worst-case estimate of the maximum number of peak hour vehicles that would have to be reduced if there were minimal reductions from other TDM measures; 2) are located outside of the project study area; 3) are located inside of an Urban Growth Boundary (UGB); and 4) do not involve the parking of vehicles on public streets.

Remote parking and busing for construction crews has been successfully used on other projects by PWB's contractors. Contractors would use buses with capacity for approximately 25-30 construction workers. Based on the worst-case, extremely conservative assumptions, this would require a maximum of 10-12 bus trips in and out in the AM and PM periods. The actual number of bus trips required during the peak construction period is likely half this amount, but PWB and its contractors have identified the sites and other resources needed to implement this program for the higher, conservative assumption. Even under that conservative evaluation, the program is feasible to implement, and the needed resources and sites are available.

Contractors would designate who was required to bus based on scope of work. For example, subcontractors' workforces would be the first priorities to maintain consistency of their schedule and billing purposes. Volunteers would also be requested to increase numbers further. If needed beyond those categories, employee groups performing similar work would be selected.

Unlike voluntary vanpooling, mandatory programs, including the off-site parking/busing, are likely to result in employees being compensated for their travel time. With the parking location required to be outside of the project study area, this TDM measure will have significant cost impacts to PWB. Therefore, vanpooling and shift offsetting will be the first TDM measures implemented and off-site parking/busing will be implemented as needed based on verification of the actual site traffic trends observed from the tube counter data, as described above.

TDM Measures Monitoring Report

PWB will submit a TDM Strategies monitoring report to the County every month. The monitoring report will include the trip count data for the prior month, current TDM strategies in place, and a look-ahead at the next month's projected trips from the updated resource-loaded schedule as well as any TDM strategies that will be added, increased, or modified for the coming month based on that projection. The monitoring report will also include a look-ahead at the next rolling year's projected trips from the resource-loaded schedule. This will allow timely planning for implementation of any additions or modifications to TDM strategies. For example, if the look-ahead projection shows increased trips that would exceed the trip threshold, the contractors will notify the next pre-determined and sufficiently large employee group(s) that they will be required to start mandatory participation in the shuttle bus program before the time of the projected exceedance.

Based upon the conservative forecasting plan described above, TDM measures will be implemented in advance to avoid any exceedance. However, if at any time the peak hour trip forecast exceeds the 296-trip threshold, the monitoring report will describe the adjustments to mitigation method(s) used and provide subsequent data to confirm that the mitigation successfully lowered the peak hour trips below the threshold number.