TECHNICAL MEMORANDUM

Project: Thorndyke Elementary Site Improvements

Subject: Traffic and Access Review

Date: December 16, 2018

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The Tukwila School District is evaluating options to improve internal circulation as well as school bus and passenger vehicle load/unload facilities as part of a site renovation effort for Thorndyke Elementary School, located at 4415 S 150th Street, in Tukwila, Washington. Heffron Transportation reviewed the preliminary improvement plans prepared by Rolluda Architects and conducted on-site observations of morning arrival and afternoon dismissal on Tuesday, November 27, 2018. This memorandum summarizes the observations and review of the proposal.

1. On-Site Observations

1.1. Morning Arrival

Passenger-vehicle Drop-off and Parking: The morning drop-offs progressed relatively smoothly. There was a steady stream of drop-offs from 8:30 to about 9:10 A.M. Assistant Principal (Caspar van Haalen) noted that there is a morning program prior to school attended by approximately 40 students (with capacity for up to 80 students). Since those students arrive earlier, that helps stagger morning volumes. We observed four drivers parked in the far west lot and who walked students into the school. Two parking spaces opened up between 8:30 and 9:00 A.M. in the drop-off area and drivers pulled out of the queue, parked in those spots and walked with their children into the school. There were seven stalls (including two disabled spaces) available at 8:30 A.M. and 11 stalls (including two disabled) at 9:10 A.M. Only one driver used S 150th Street for to drop off a student in the morning.

Queues: The longest queue of eight vehicles (which backed up to the throat of the access to the drop-off area) occurred once. Between 8:45 and 9:00 A.M., the queues range between 5 and 7 vehicles. There was one assistant helping with unload during the entire observation period and two assistants during the last 10 minutes. Both were stationed at the beginning of the queue and did not encourage drivers to move forward or stay in their vehicles.

School-Bus Loop: A total of three buses dropped off students at the school, one before 8:15 A.M. and two buses between 8:40 and 8:55 A.M. Each bus was in the loop at a separate time. Two private daycare vans also utilized the bus loop. Although it is signed for buses only, seven family vehicles utilized the bus loop for student drop-off.

Pedestrians: Approximately 25 students were observed walking to the school. Most arrived from the west, crossed the main driveway, and then followed the path to the south side of the bus loop. There were no crossing guards observed at any of the crossing locations. Our staff observed four students who used the on-site crosswalk near the drop-off loop.

Figure 1 provides additional information recorded during the morning observation.

1.2. Afternoon Dismissal

Passenger-vehicle Loading and Parking: About 15 drivers parked in available stalls in the on-site parking lot; the majority arrived more than a half an hour prior to dismissal. As the queue started to build, most arriving drivers joined the queue, leaving about four or five empty spaces in the western parking lot.

Queues: The maximum afternoon queue extended almost to the throat of the school access driveway but did not spill onto the street. A maximum queue of 31 vehicles was observed. Assistant Principal van Haalen indicated that the queue often does extend to the street (two out of the five school days). Two drivers left their vehicles in the queue, entered the school, and returned with students before the queue started moving. We did not observe any assistants directing pick-up activities in the afternoon. During periods with long queues, many drivers did not enter the school property. About 40 to 45 school-related vehicles used S 150th Street for the afternoon pick-up with an estimated peak of about 35 vehicles at one time. At least a dozen of these vehicles parked illegally and once all parking spaces were occupied, some drivers turned around in the street and circulate along S 150th Street while waiting for a spot to open up. Some drivers stopped in the drive-lane to wait for their child(ren).

Bus Loop: A total of three buses picked up students at the school—two buses between 2:55 and 3:20 P.M., which were there together, and one small bus around 3:35 P.M. Two daycare vans and three family vehicles also utilized the bus loop.

Pedestrians: We were unable to quantify pedestrian volumes in the afternoon due to the volumes and dispersed patterns. For most of the dismissal period, no crossing guards were observed any of the crossing locations. We observed four students using the on-site crosswalk where the Principal served as crossing guard.

Figure 2 provides additional information recorded during the afternoon observation.

2. Review of Proposed Site Improvements

The following review comments refer to the plan set provided by Rolluda Architects titled *THN DD 20181107* (see Figure 3). The proposal would expand the western parking lot and increase on-site parking by 34 spaces. It would also extend the on-site queue/stacking area and connect with the circulation route to the load/unload zone.

Parking and Load/Unload: The existing queue area used by family drivers to circulate through the site and wait for dismissal was measured from Google aerial maps. From the start of load/unload zone (painted white line) to south side of sidewalk at the school entrance, this stacking area is approximately 895 feet long. With the proposed modifications, the queue length would be extended to an estimated 1,045 feet. This accounts for the longer stacking length provided to the west in the larger parking lot and the reduction created with the new connection to the main load/unload zone. Assuming 20 feet per vehicle, the proposal would allow for an additional seven vehicles to wait in the queue without spilling onto S 150th Street. However, site observations found the when longest queue of 31 vehicles occurred, stacking was less efficient with approximately 28 feet used per vehicle.

With encouragement to drivers to pull up to close gaps, the longer queueing area could accommodate about five to seven additional vehicles. The proposal would also result in an additional 34 parking stalls. If these are used by family drivers, the majority of the observed overspill demand could be accommodated on site. As previously discussed, approximately 40 to 45 parents were observed to park on S 150th Street with 12 parked illegally. The additional on-site capacity could reduce the number of parents choosing to park on S 150th Street, which could also reduce the amount of illegal parking and

stopping. Some drivers may still be reluctant to the enter the site during times of peak congestion and may benefit from encouragement to utilize the available on-site parking stalls. Staff assistance with student drop-off/pick-up could also help improve on-site circulation and reduce queues.

The improvement plans show possible removable bollards to help channelize traffic flows to the load/unload zone. Generally, we believe these would be helpful in avoiding undesirable movements and controlling egress from the loop. However, if the front of the queue is not moving effectively, drivers could become frustrated and avoid entering the site. Staff loading assistants monitoring and facilitating the loading process could help the queue move more efficiently. Note that some schools use temporary traffic cones to accomplish this type of circulation control instead of the more permanent bollards contemplated.

Bus Loop Access: For afternoon conditions with or without the project, automobile queues could extend past the on-site bus access point and prevent or delay buses entering the load zone. The designers indicated that the entry could be striped/signed for no standing/stopping in that area to ensure bus access. That may help bus access but would eliminate most of the added queue/stacking capacity created by the longer internal circulation route.

Pedestrians: The proposed new connection to the load/unload area would create a new conflict point where pedestrian and vehicle paths would cross. Crossing guard assistance could be beneficial at this location.

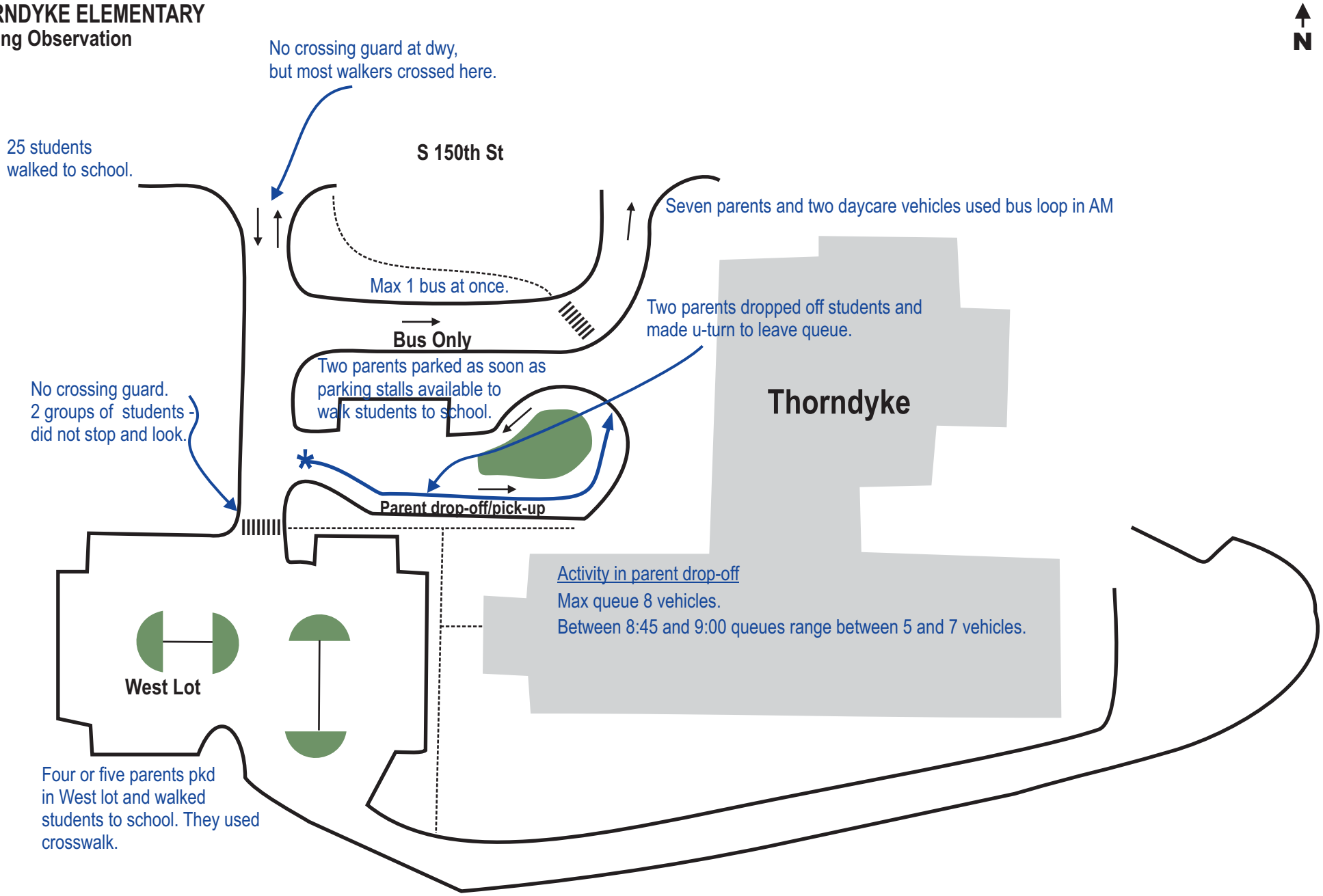
With the modifications shown on the site plan, the length of the 'official' load/unload zone (the white-striped curbside) would decrease in length from about 205 feet to about 130 feet. This would reduce the available load/unload space and may increase load/unload activity within the parking lot and the stacking queue.

Overall, the proposed improvements would likely provide some incremental benefit by making it possible to accommodate more of the afternoon queuing/stacking demand on-site. If drivers can be encouraged to use the new on-site parking, that would benefit operations along S 150th Street. However, on-site congestion may be a deterrent and demand is still likely to exceed the on-site capacity. Staff assisting with the loading process, crossing assistants, and other measures could also be explored to facilitate the afternoon dismissal process.

Attachments: Figure 1 – Morning Observations
Figure 2 – Afternoon Observations
Figure 3 – Proposed Improvements

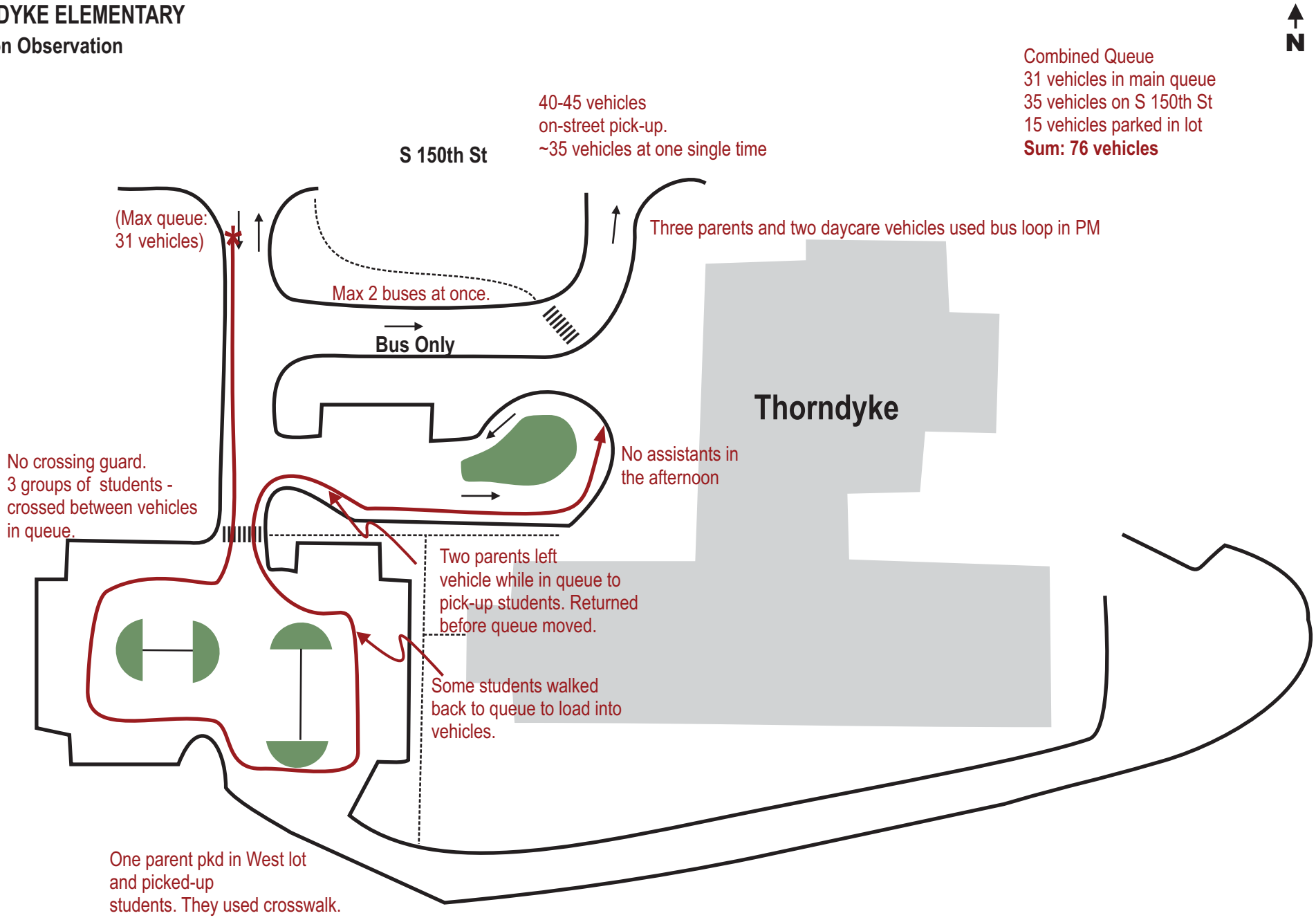
TSD Thorndyke Site Imps Traffic Review - DRAFT

THORNDYKE ELEMENTARY
Morning Observation



THORNDYKE ELEMENTARY

Afternoon Observation



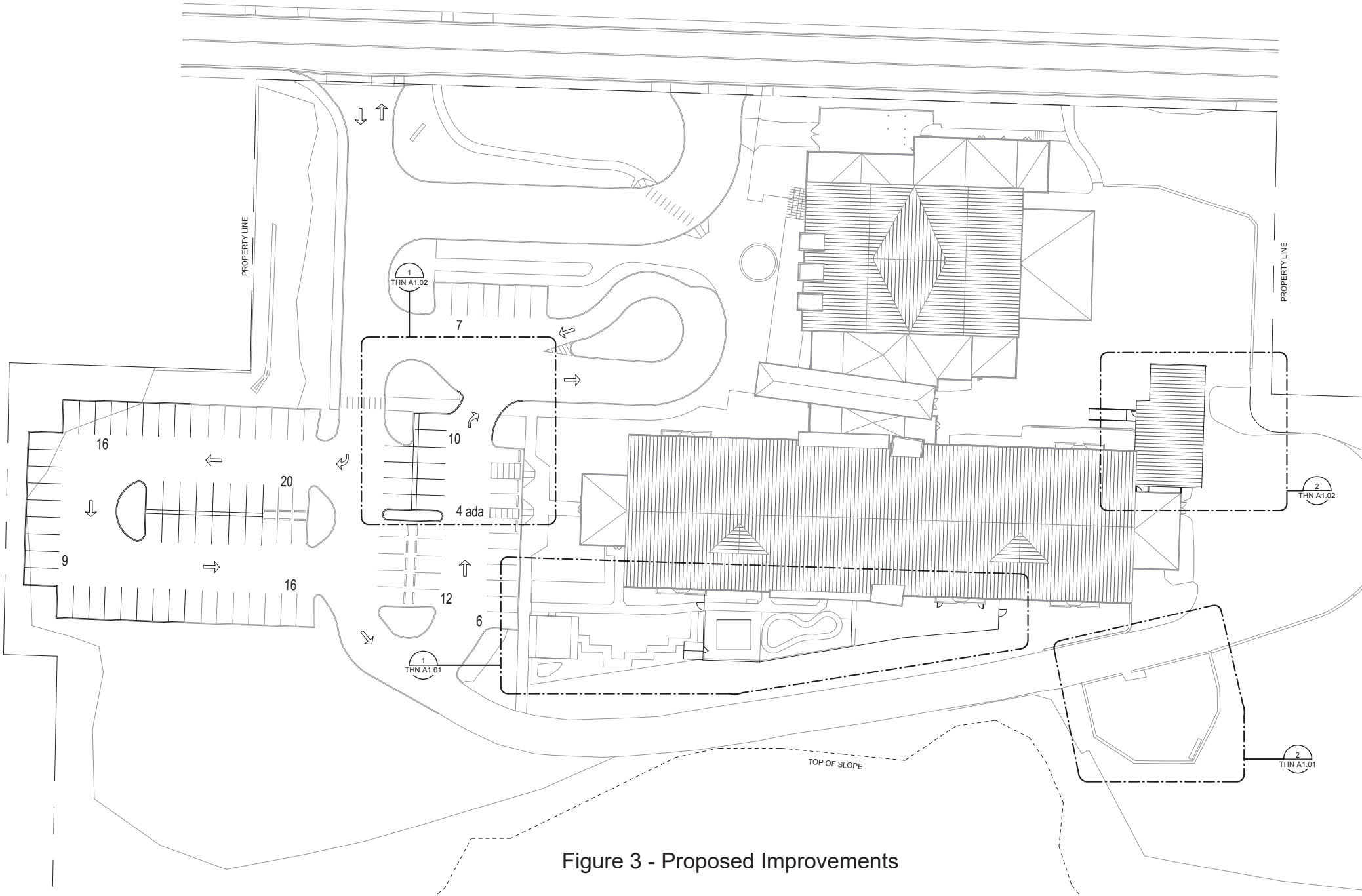


Figure 3 - Proposed Improvements