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May 23rd, 2017

MEMORANDUM

TO: Chad Salli, Town of Vail

FROM: Chris Fasching

SUBJECT: Proposed Parking Structure Traffic Impact – Red Sandstone Elementary
FHU Project 117177-01

This memorandum provides information concerning the traffic impact associated with a proposed new parking structure to be located next to the Red Sandstone Elementary School in Vail. The structure is proposed to contain 160 spaces (40 of which would be used by the school), and it has been intentionally located to leverage the pedestrian overpass of I-70 connecting to Lionshead Village and the ski lift access to Vail Mountain.

The information provided here is specific to the parking structure's access onto the North Frontage Road relative to peak hour turning movement traffic and the need for acceleration/deceleration lanes. Access to the North Frontage Road is controlled by CDOT, and this study is intended to inform turn lane accel/deceleration lane needs pertaining to the new parking structure.

EXISTING CONDITIONS

The access onto the North Frontage Road currently exists, and it serves the Red Sandstone Elementary school and a gymnastics facility. Turning movement counts were collected at the access intersection to capture current use traffic demands for three peak hours of the day including the AM peak hour, mid-afternoon peak hour (when school lets out), and the PM peak hour. The through movements along the North Frontage Road were also collected, but it is recognized that the through traffic along the North Frontage Road is not at its peak given a "mud" season traffic count, but school was in full session as was the gymnastics facility**. Figure 1** shows the collected turning movement data, as is frontage road data that were collected during a winter peak season.

An eastbound left turn deceleration lane currently exists at the site access, measuring approximately 150 feet long (plus a lead-in taper). There is currently no westbound right turn deceleration lane. The posted speed limit is 35 MPH.

PROJECTED CONDITIONS

The proposed parking structure will serve Lionshead activity including the commercial area as well as skiing. Some of the parking will also be made available for the elementary school. Trip

generation estimates associated with the 160-space structure were estimated from the Lionshead parking structure's entering and existing transactions. A five weekdays worth of data were compiled and averaged representing a peak winter season (the last week of March). These data were related to the size of the Lionshead structure of 1100 spaces to develop trip generation rates. From this analysis, the average hourly trip generation rates for Lionsheads are:

- AM peak hour - 0.25 trips per space, 85% inbound
- 2:30 to 3:30 PM hour - .25 trips per space, 35% inbound
- PM Peak hour – 0.40 trips per space, 30% inbound.

Applying these to the 160-space parking structure yields the following trip generation estimates directly associated with the parking structure:

- AM peak hour – 34 in, 6 out
- 2:30 to 3:30 hour – 14 in, 26 out
- PM peak hour – 19 in, 45 out

Trips were assigned to the proposed access point based on the distribution of trips in and out of the school today as well as trips in and out of Lionshead structure, yielding the following distribution percentage estimates:

- 60% to/from the east
- 40% to/from the west

Applying these trip distribution percentages to the trip estimates presented, **Figure 2** was developed that shows the increase in traffic specifically related to the parking structure. **Figure 3** then shows the total peak hour projections developed by summing the traffic of Figure 1 with Figure 2 and rounding up to the nearest five vehicles per hour. Through traffic shown along the North Frontage Road was estimated from peak season projections presented in the I-70 Underpass Vail, Colorado Freeway Operations Traffic Study prepared by FHU in 2015, which accounts for traffic shifts due to the new I-70 underpass currently under construction. These shifts will ultimately result in less traffic traveling this section of the North Frontage Road than otherwise would occur given future growth.

AUXILARY LANE NEEDS

The State Highway Access Code criteria was consulted to assess turn lane needs given the Frontage Road classification.

The EB left should be 50 feet long. A total of 150 feet is provided, and therefore no additional lengthening of the lane is needed.

The WB right turn deceleration lane is needed when this volume exceeds 50 vehicles per hour, provided at least 150 vehicles per hour occur along the adjacent through lane. Given this, there is not a strong need for a right turn deceleration lane. The PM peak hour is the one time-period representing a border-line condition during peak season. Since this border-line condition would only occur during peak season, it is not a prevailing condition. As such, a right turn deceleration lane is not recommended and is not needed.

This should provide adequate information with respect to lane needs at the structure access. If you have any questions or need additional information, please call.

LEGEND

XXX(XXX)[XXX] = AM(Mid Afternoon)[PM] Peak Hour Traffic Volumes

NOTE: Data collected on Thursday, May 4, 2017 except where noted

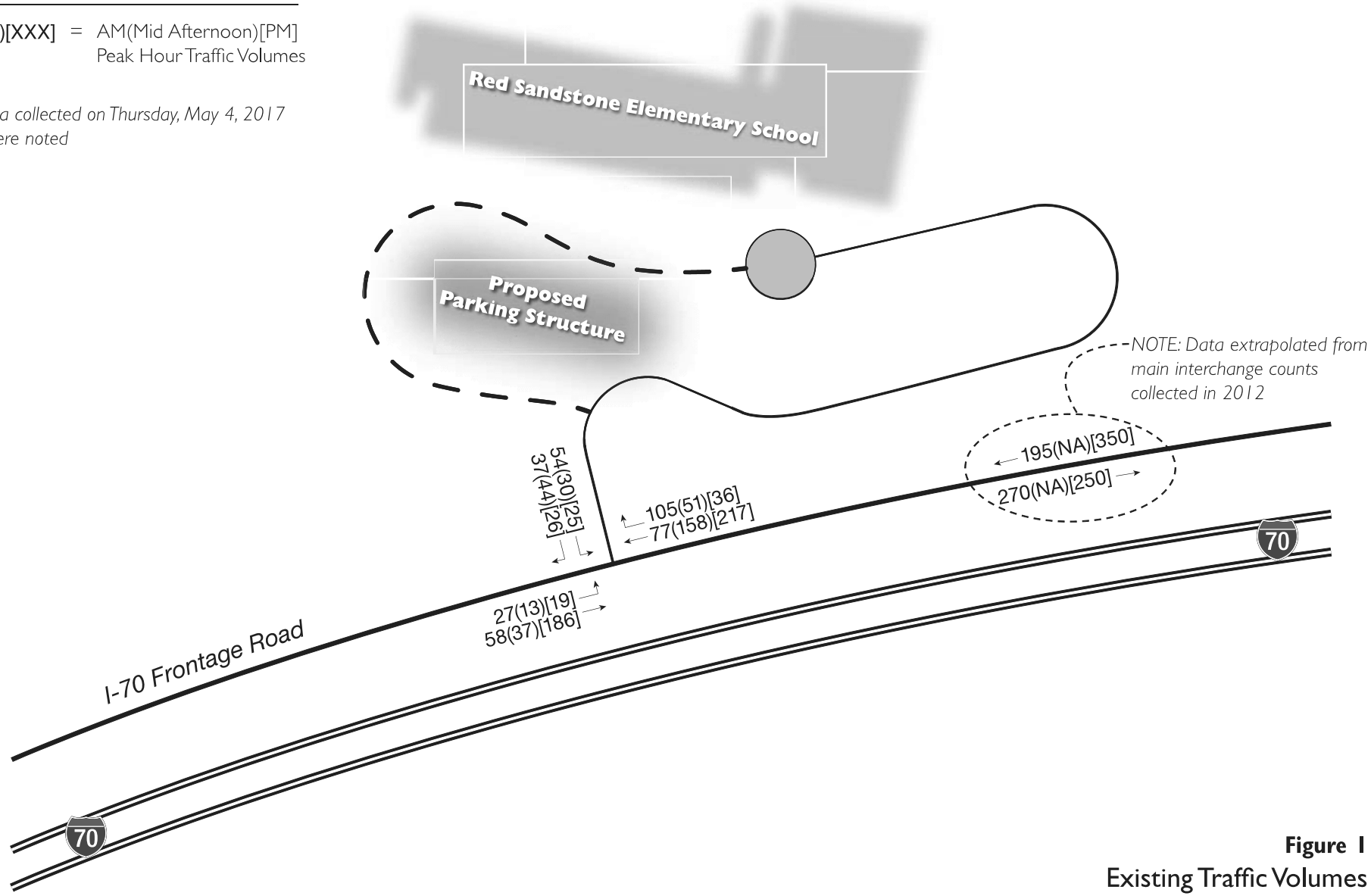

Figure 1
Existing Traffic Volumes

LEGEND

XXX(XXX)[XXX] = AM(Mid Afternoon)[PM] Peak Hour Traffic Volumes

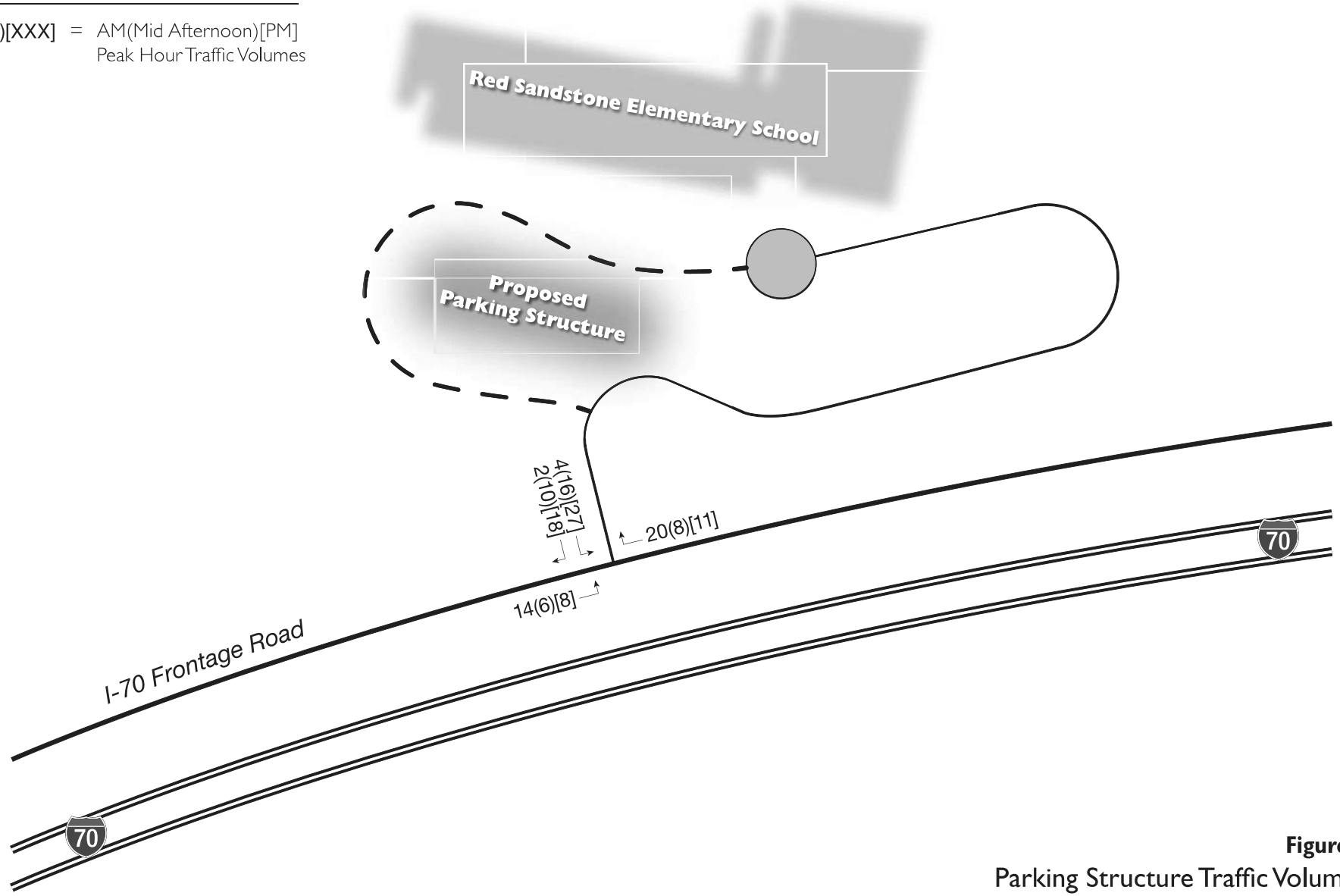

Figure 2
Parking Structure Traffic Volumes

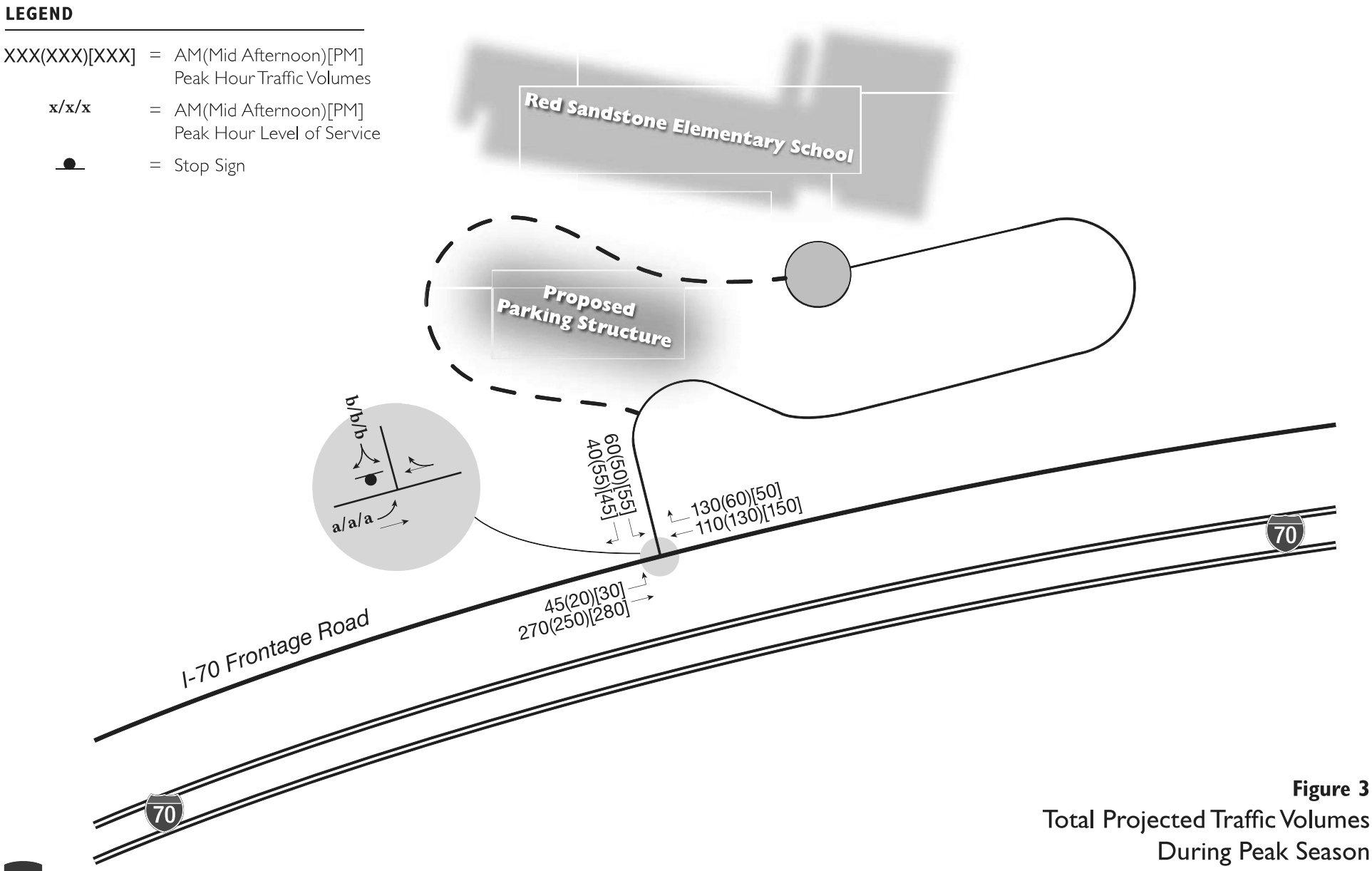

Figure 3
Total Projected Traffic Volumes
During Peak Season