

August 10, 2023

Mr. Tim Miller
Yellowstone County
PO Box 35024
Billings, MT 59107

Reference: Yellowstone County – Traffic Engineering Services
Task Order No. 11 – Black Rock Estates Speed Study
Project No. 21001.11

Dear Tim:

The purpose of this letter is to summarize the results of the neighborhood traffic study evaluating traffic and pedestrian safety within Black Rock Estates north of Central Avenue in Yellowstone County. The Public Works Department has received numerous complaints about safety concerns within the subdivision due to travel speeds and an increase of vehicular traffic due to local development and connectivity to the neighboring Vintage Estates Subdivision. Previously, the County installed speed limit signs on all entrances to the neighborhood which has not alleviated the concerns from the public. As such, the purpose of this study is to evaluate conditions and operations of these roads and intersections to provide recommendations to mitigate the speeding and increase safety for pedestrians.

Existing Conditions

Black Rock Estates sits north of Central Avenue and approximately 1.5 miles west of Shiloh Road in Billings, Montana. The neighborhood is comprised of Pavestone Trail, Moonstone Lane, Evening Shadow Lane, and 52nd Street West. The 2018 Billings Urban Area Long Range Transportation Plan (Amended in 2020) identifies 52nd Street as a Collector and all others as Local Streets. The speed limit is 25 mph on all roads within the subdivision. Other than an



Figure 1: Existing stop sign and S-Curve alignment

existing stop sign on Pavestone Trail at 52nd Street, none of the intersections are stop controlled. Twenty-five miles per hour speed limit signs with “ALL STREETS” supplementary plaques are posted at every entrance to the neighborhood. Pavestone Trail and Moonstone Lane have an “S-curve” style horizontal alignment throughout. Moonstone Lane is a dead-end street with minimal traffic. Evening Shadow Lane is planned for a connection to the future subdivision to the west

traffic. Evening Shadow Lane is planned for a connection to the future subdivision to the west and ends at 52nd Street West. 52nd Street is primarily straight with one S-curve in the middle and one at the north end of the neighborhood near the intersection with Pavestone Trail. Hazelnut, Sweet William, and Coneflower Avenues provide connections to the Wells Garden Estates Subdivision to the east along the south end of 52nd Street West. The entire neighborhood is flat and generally the southern half has been built out. The north half is primarily vacant lots. Sidewalks and trails run throughout with well-manicured grass lawns separating them from the roads (on the developed lots). See the attached Exhibits 1 and 2 for an overview of the neighborhood including its relation to the broader transportation system and the locations of existing signage within the neighborhood.

Notably, the S-curves along Pavestone Trail and 52nd Street West serve to break up the line of sight for drivers, naturally providing a traffic calming effect along that street. The manicured boulevards within the developed portion of the subdivision encourage on-street parking which has resulted in a few cars parking on the roadway. This provides an additional traffic calming effect throughout the developed portion of the neighborhood. The north halves of Pavestone Trail and 52nd Street West within Black Rock Estates currently have neither of those traffic calming features. The vacant lots create a feeling of inactivity from both pedestrian and homeowner traffic. Due to the more direct connectivity to subdivisions to the north and the Collector designation, 52nd Street West carries higher traffic volumes than the other streets and may warrant a higher level of mitigation than the local streets adjacent to it.

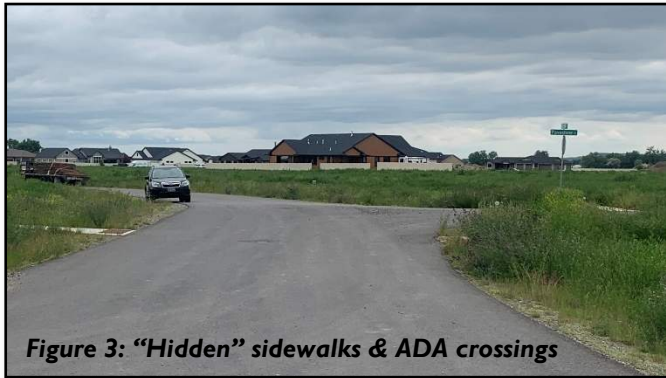
Site Visit & Field Observations

Sanderson Stewart performed a site visit on June 21, 2023 to observe existing traffic conditions and determine any critical field observations. The following notes/observations were made in respect to traffic impacts:

Construction Traffic Parking: As development is continuing on multiple lots – particularly on 52nd Street West – the construction crews' vehicles and equipment are having a direct impact on the surrounding streets. Large delivery trucks and crew equipment are being parked along the subdivision's streets which impacts the visibility for residential traffic. The larger vehicles oftentimes extend into the street and create a narrow street passing that eliminates the ability for opposing traffic to pass side-by-side and requires one driver to merge to the other. While this may help slow speeds in the immediate vicinity of the constriction, the limited visibility creates a safety concern.



Figure 2: Construction Traffic Parking impacts



Weed/Vision Obstructions: The developers of Black Rock Subdivision have done an admirable job installing sidewalks throughout the majority of the subdivision – even within the undeveloped portions of the subdivision. However, it is very difficult to see the sidewalks – and more importantly, the sidewalk crossings – due to the extreme overgrowth of weeds in the undeveloped portions of the subdivision surrounding these sidewalks

and crossings. The lack of visibility of pedestrian facilities is likely contributing to drivers lack of awareness of pedestrians and presence of residential activities.

Traffic Data

Yellowstone County Public Works Department provided traffic count and speed data at three locations within Black Rock Estates. Exhibit 3 and Table 1 display the summarized data.

Table 1: Existing Traffic Data

Location	Dates Collected	Average Daily Traffic (vpd)	Average Speed (mph)	85 th Percentile Speed (mph)
Pavestone – N. of Evening Shadow	7/19/23 – 7/27/23	208	19	24
Pavestone – N. of Evening Shadow	7/19/23 – 7/27/23	199	21	27
52 nd – N. of Evening Shadow	7/19/23 – 7/27/23	469	26	31
52 nd – S. of Sweet William	7/19/23 – 7/27/23	610	27	31

As shown, the prevailing traffic speeds along Pavestone Trail are consistent with the intended and posted speed limit and the traffic volumes are low. No further action is required for the traffic along Pavestone Trail. The traffic along 52nd Street West is higher both in volume and prevailing traffic speeds. The higher volumes are due the connectivity between Grand and Central Avenues through the Vintage Estates Subdivision to the north. As 52nd Street West is classified as a Collector, the increased traffic volumes are expected. The increased connectivity is likely resulting in the higher prevailing traffic speeds and can be mitigated accordingly.

Mitigation Alternatives

As shown in the preceding traffic data analysis, the prevailing traffic speeds are slightly higher than the posted speed limits along 52nd Street West. There are a variety of mitigation

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alternatives that could be used to decrease the prevailing traffic speeds and help with potential pedestrian and vehicular conflicts. These alternatives include:

1. Continued maintenance of overgrown vegetation – particularly in the empty lots along the northern end of the subdivision
2. Installation of a stop sign on the north leg of the intersection of Pavestone Trail with Beringer Way
3. Installation of pedestrian warning signs and crosswalks at ADA ramp locations (mailbox clusters at 52nd Street West & Pavestone Trail, intersections of Pavestone Trail with 52nd Street West, Beringer Way, and Evening Shadow Lane, and 52nd Street West with Evening Shadow Lane)
4. Dynamic speed feedback signs along 52nd Street West
5. Rectangular rapid flashing beacons (RRFBs) can be utilized in select crosswalk locations as development continues and pedestrian activity increases

Conclusions & Recommendations

Any one of the mitigation alternatives will improve the pedestrian and traffic safety within the Black Rock Estates subdivision. It is our recommendation that mitigation alternatives 1 – 3 listed above be implemented as staff time is available. This would require the installation of signing and striping as detailed in the previous section and the attached Exhibits 4 – 8 and requirements of the Manual of Uniform Traffic Control Devices. The dynamic speed signs in the fourth alternative can be added at a later date if it is determined that additional mitigation is needed. As the subdivision continues to develop, traffic (both pedestrian and vehicular) will increase and may require a RRFB to be installed at select crosswalks. However, until the development occurs, it may be difficult to predict which crossing locations will necessitate the RRFBs.

Please feel free to contact me at 406/869-3320 or eclaunch@sandersonstewart.com if you have any questions or would like to discuss this further.

Sincerely,



Erin S. Claunch, PE, PTOE
Director of Public Infrastructure Division/Senior Engineer

ESC/hl

Enc.

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BLACKROCK ESTATES SPEED STUDY

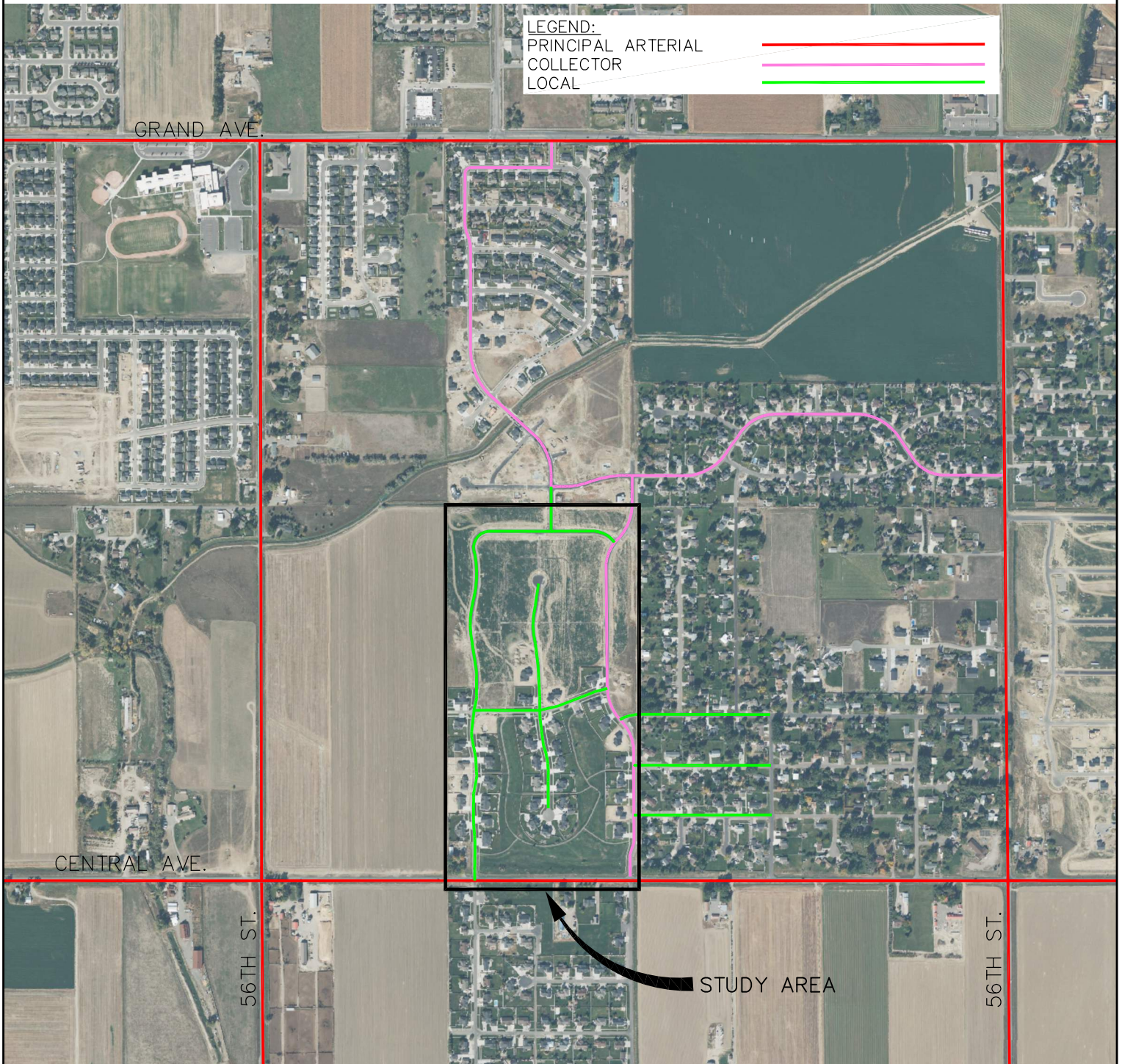
EXHIBIT 1 – VICINITY MAP

PREPARED FOR : YELLOWSTONE COUNTY

PREPARED BY : **SANDERSON STEWART** 

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SCALE: 1" = 1000'

BLACKROCK ESTATES SPEED STUDY

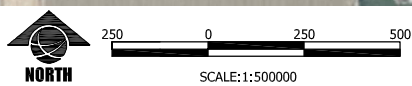
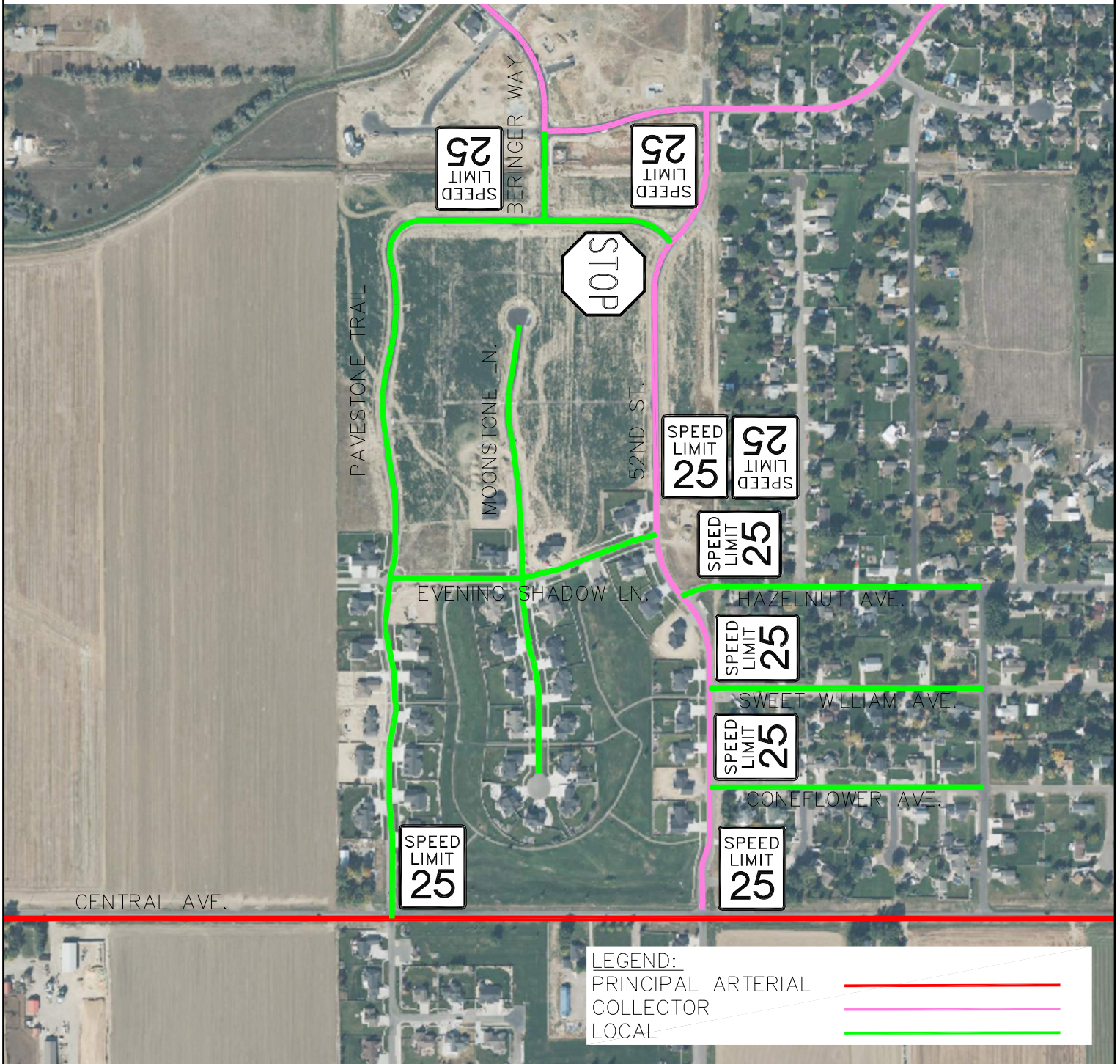
EXHIBIT 2 – SITE OVERVIEW

PREPARED FOR : YELLOWSTONE COUNTY

PREPARED BY : **SANDERSON STEWART**

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LEGEND:
PRINCIPAL ARTERIAL
COLLECTOR
LOCAL

BLACKROCK ESTATES SPEED STUDY

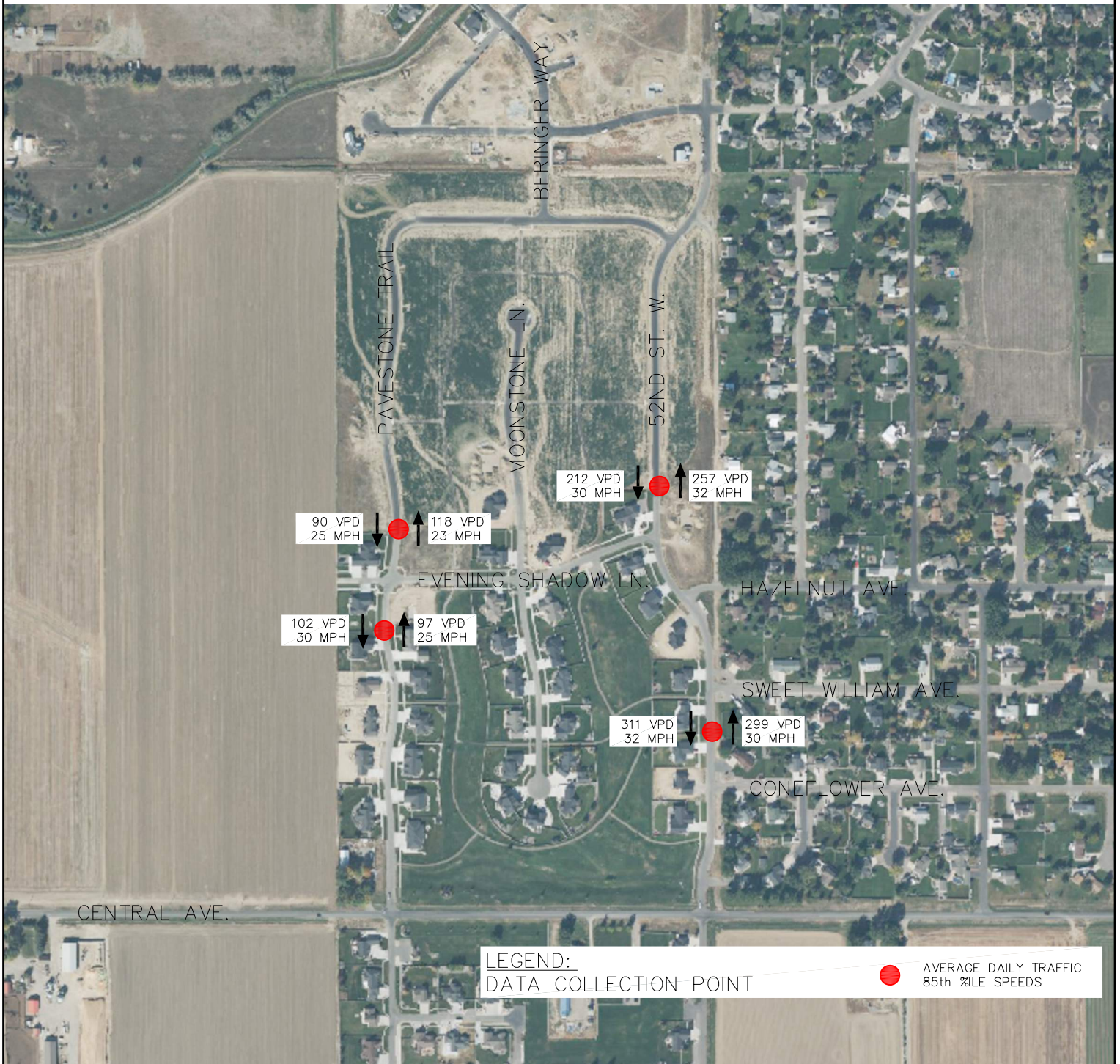
EXHIBIT 3 – VOLUME/SPEED STUDY ANALYSIS

PREPARED FOR : YELLOWSTONE COUNTY

PREPARED BY : **SANDERSON STEWART** 

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SCALE:1:500000

BLACKROCK ESTATES SPEED STUDY

EXHIBIT 4 – RECOMMENDED IMPROVEMENTS (FIG. 1 OF 5)

PREPARED FOR : YELLOWSTONE COUNTY

PREPARED BY : **SANDERSON STEWART** 

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50 0 50 100

SCALE: 1" = 100'

BLACKROCK ESTATES SPEED STUDY

EXHIBIT 5 – RECOMMENDED IMPROVEMENTS (FIG. 2 OF 5)

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SCALE: 1" = 100'

BLACKROCK ESTATES SPEED STUDY

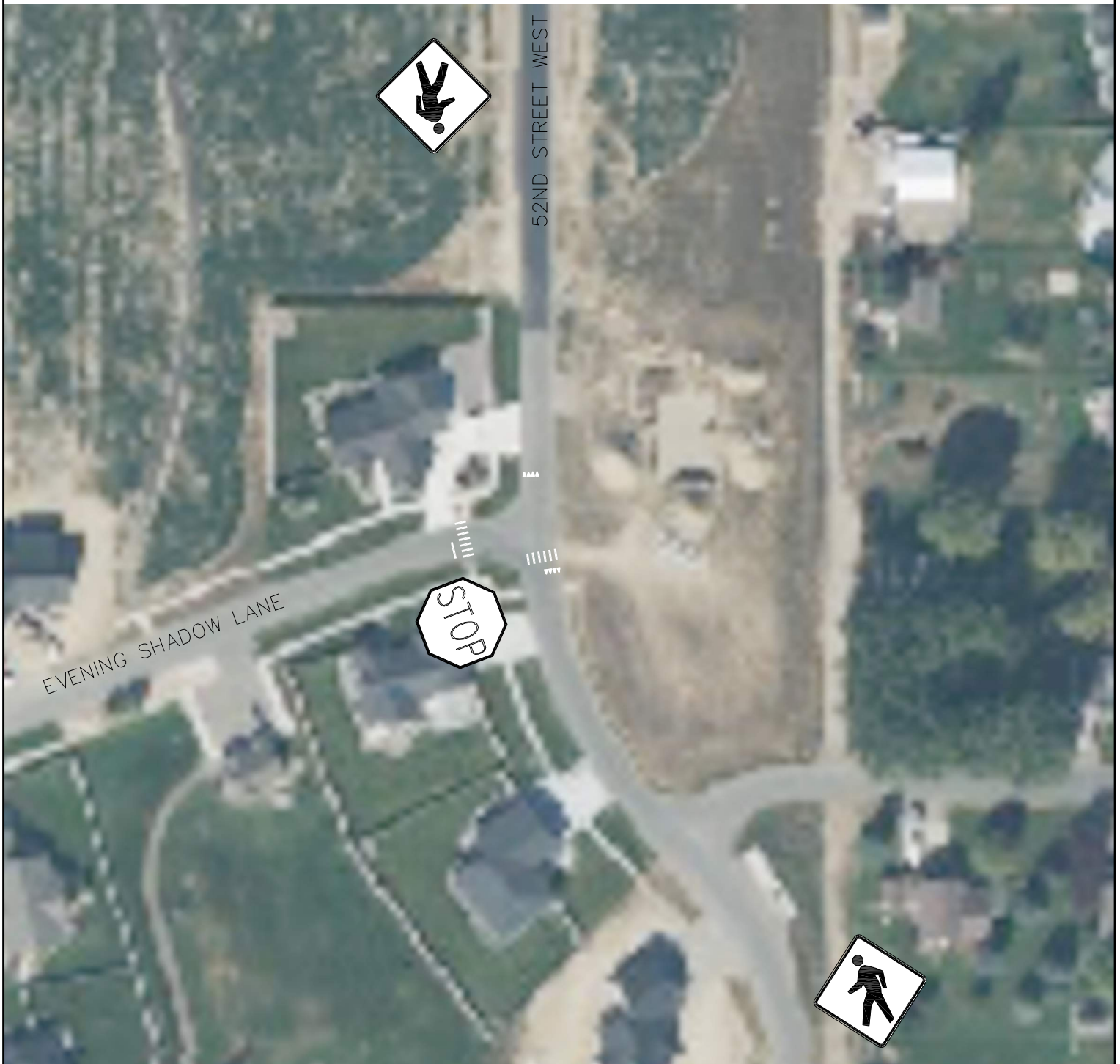
EXHIBIT 6 – RECOMMENDED IMPROVEMENTS (FIG. 3 OF 5)

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PREPARED BY : **SANDERSON STEWART** 

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SCALE: 1" = 100'

BLACKROCK ESTATES SPEED STUDY

EXHIBIT 7 – RECOMMENDED IMPROVEMENTS (FIG. 4 OF 5)

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PREPARED BY : **SANDERSON STEWART** 

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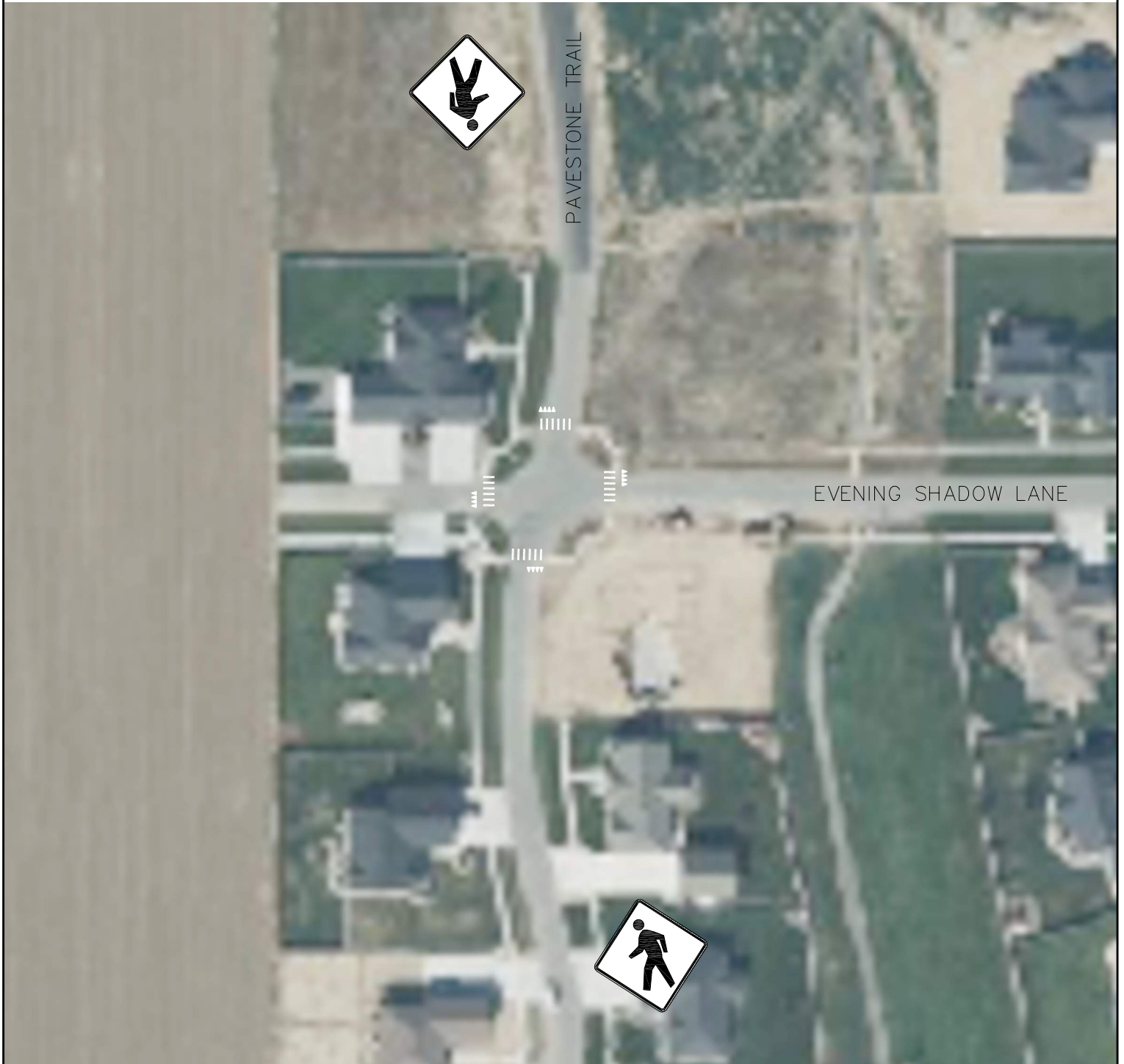
EXHIBIT 8 – RECOMMENDED IMPROVEMENTS (FIG. 5 OF 5)

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PREPARED BY : **SANDERSON STEWART** 

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SCALE: 1" = 100'