

## Gooch Hill Road Corridor

### INTRODUCTION

Gooch Hill Road, from US 191 to Huffine Lane, is a rural corridor experiencing increasing traffic volumes due to its growing use as a cut-through route by Big Sky commuters seeking to avoid congestion in the Four Corners area and by Montana State University students and staff bypassing 19th Avenue and Main Street via Stucky Road. This growing traffic demand has contributed to 230 recorded crashes along the corridor (between 2019 and 2023) and generated significant public concern about safety.

Both the *Greater Transportation Area Transportation Plan (GTATP)* and *Safe Streets and Roads for All (SS4A) Action Plan* identified several smaller, targeted improvements to address issues such as run-off-the-road crashes on curves and conflicts at unconventional intersections. In the GTATP, curve signing enhancements at Enders Road and Gant Road are recommended along with intersection improvements at Blackwood Road, and reconstruction to urban standards between Huffine Lane and Stucky Road. The SS4A plan perpetuates the curve signing recommendations at Enders Road and Gant Road, and proposes additional intersection improvements at Stucky Road, Chapman Road, US 191, and Huffine Lane.

In July 2025, the project team conducted a detailed field review of the corridor, observing roadway conditions first-hand and collecting comprehensive traffic data. This included 24-hour turning movement counts at key intersections as well as speed and volume data from radar units placed along the corridor. Based on the findings, the team developed conceptual designs for a series of lower-cost improvements intended to meet growing travel demands while improving safety in the short- to mid-term. These measures, when implemented, will target the most critical safety concerns while providing incremental capacity upgrades, laying the groundwork for longer-term investment in the corridor's infrastructure.

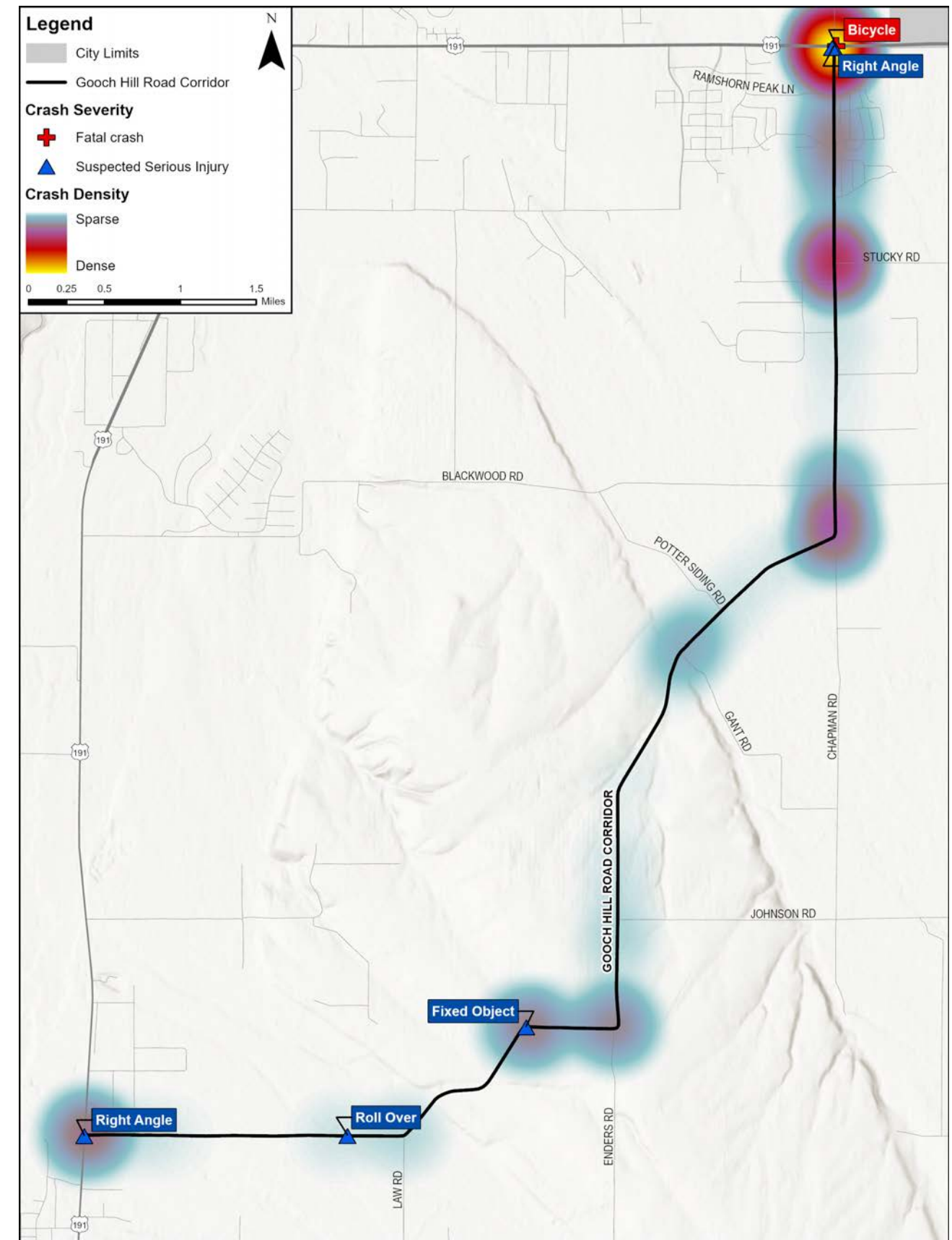
### EXISTING CONDITIONS

#### Crash History

Between January 1, 2019, and December 31, 2023, the Gooch Hill Road corridor experienced 230 reported crashes, concentrated in several "hot spot" locations as shown on the map to the right and summarized below.

- The **Huffine Lane** intersection experienced the highest volume of crashes (66), with mostly rear-end and right-angle collisions.
- **Between Huffine Lane and Stucky Road**, where the bulk of the corridor's dense residential and commercial development is located, relatively few crashes were recorded. Those that did occur were primarily linked to intersection conflicts at Ramshorn Peak Lane, Gallahad Way, and Talon Way, with most involving property damage only from rear-end and fixed-object collisions.
- The three-legged **Stucky Road** intersection accounted for 28 crashes, predominantly single-vehicle, fixed-object incidents (64%), often occurring in dark, unlighted conditions (46%).
- The **Blackwood Road** intersection reported 10 crashes, 90% of which were right-angle collisions. In 2022, near the end of the crash analysis period, "Cross Traffic Does Not Stop" placards and flashing beacons were added to the stop signs.
- Where Gooch Hill Road veers southwest to meet **Chapman Road** (19 crashes), a high proportion of fixed-object (68%) and rollover (21%) crashes were observed, frequently in dark (42%) or snowy/icy conditions (53%), indicating significant run-off-the-road risks.
- The **Gant Road** intersection, located on a partially blind S-curve, saw 8 crashes (75% fixed-object and 25% rollover) with half occurring on icy roads and half under dark lighting conditions.
- Similar to the Chapman Road area, Gooch Hill Road curves southwest at its intersection with **Enders Road**. The majority of the 14 reported crashes were fixed-object (57%) or rollover (29%) collisions, with half occurring on snowy or icy surfaces.
- The curved section **between Enders Road and Law Road** also recorded a notable number of fixed-object and rollover crashes, including one suspected serious injury. While adverse road conditions were less common here, dark lighting conditions appeared to contribute to about half of the incidents.
- At the **US 191** intersection (18 crashes), right-angle collisions (28%) and wild animal incidents (22%) were the most frequent. One suspected serious injury occurred during the analysis period, with a recent high-profile fatal crash heightening public concern.

Overall, the crash data reveals consistent patterns of intersection conflicts, hazardous roadway geometry, poor lighting, adverse weather conditions, and roadside hazards such as steep, unrecoverable slopes. All of these factors underscore the need for targeted safety improvements throughout this high-risk corridor.



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### Traffic Operations

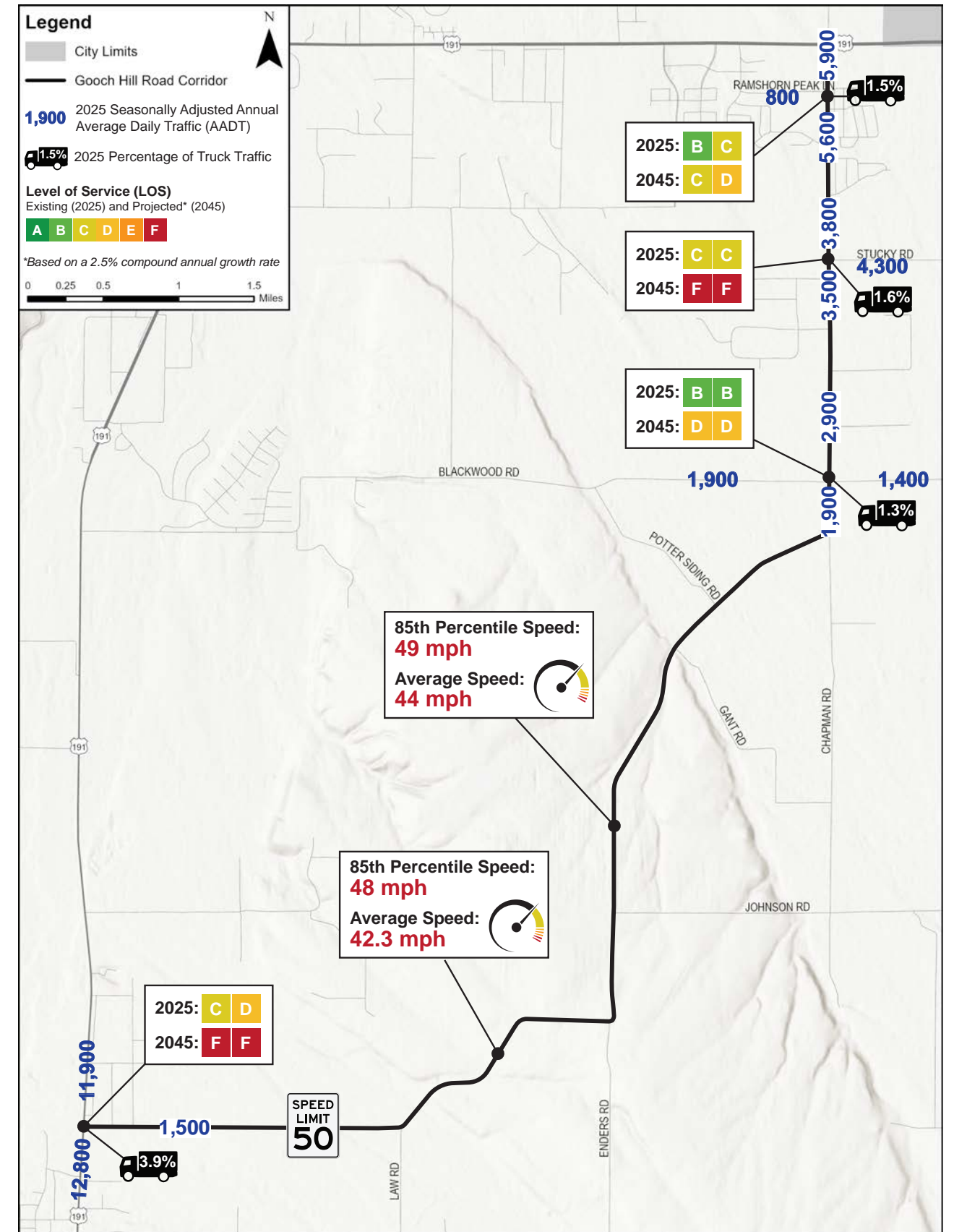
Average daily traffic volumes (AADT) on Gooch Hill Road measure approximately 5,900 vehicles south of Huffine Lane, gradually decreasing at each subsequent intersection. Volumes drop to around 1,900 south of Blackwood Road as the roadway enters the curved section, and further decline to about 1,500 vehicles near the US 191 intersection. Heavy trucks account for less than 2% of corridor traffic, equating to approximately 90 per day south of Huffine Lane, decreasing to about 30 south of Blackwood Road, before increasing again to roughly 60 near US 191. A handful of bicyclists (less than 15) were observed traveling the corridor on a daily basis.

Closer to US 191, traffic patterns show a pronounced directional split, with the majority of vehicles traveling southbound during the morning peak period (6–8 AM) and northbound during the evening peak period (4–6 PM). Near Huffine Lane, traffic volumes are more evenly distributed by direction, though with a more pronounced northbound peak in the morning and a noticeable southbound peak in the evening.

Intersection Level of Service (LOS) is a standardized measure used to evaluate how well an intersection handles traffic demand, with grades ranging from A (free-flow conditions) to F (severe congestion and long delays). It is determined through traffic analysis methods that consider vehicle volumes, delay times, and roadway capacity, providing planners and engineers with a benchmark for identifying operational deficiencies and prioritizing improvements.

Given existing traffic volumes, all intersections along Gooch Hill Road currently operate at LOS B or C during both AM and PM peak hours, with the exception of the US 191 intersection, which operates at LOS D during the PM peak. According to the MDT *Road Design Manual*, LOS C or better is considered adequate for rural collectors like Gooch Hill Road, while LOS B or better is desirable for rural principal arterials such as US 191—making the US 191 intersection a candidate for operational improvements. By 2045, assuming a 2.5% compound annual growth rate (as projected in the GTATP), both the US 191 and Stucky Road intersections are expected to deteriorate to LOS F in both peak periods. Blackwood Road is projected to operate at LOS D, while Ramshorn Peak Lane is expected to drop to LOS C in the AM and LOS D in the PM.

Speed data collected along Gooch Hill Road indicates that driver behavior generally aligns with the posted 50 mph speed limit, though a small percentage of motorists still exceed it. North of Johnson Road, the 85th percentile speed was recorded at 49 mph, with an average speed of 44 mph. Between 8 and 12 percent of vehicles were observed traveling above the posted limit, and the highest speed captured reached 74 mph. Farther south, between Law Road and Enders Road, the 85th percentile speed measured 48 mph, with an average of 42.3 mph. In this segment, 5 to 7 percent of drivers exceeded the speed limit, with a maximum observed speed of 80 mph.



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### RECOMMENDATIONS

Gooch Hill Road serves as an increasingly important connection within the Gallatin Valley, linking residential neighborhoods, agricultural lands, and commercial centers. As development continues to expand throughout the triangle area, traffic volumes along the corridor are rising and safety challenges are becoming more pronounced. Crash histories, geometric deficiencies, and operational analyses highlight several priority locations where improvements are warranted to address both current and future needs. The following recommendations outline short-term, mid-term, and long-term strategies at key intersections and roadway segments. These range from low-cost countermeasures such as vegetation management, pavement markings, and targeted signage, to larger-scale projects including corridor reconstruction, intersection realignment, roundabouts, and signalization. Together, these improvements aim to enhance safety, support multimodal access, and ensure the corridor can accommodate anticipated growth while preserving the function of Gooch Hill Road as a critical transportation link.

#### US 191 Intersection

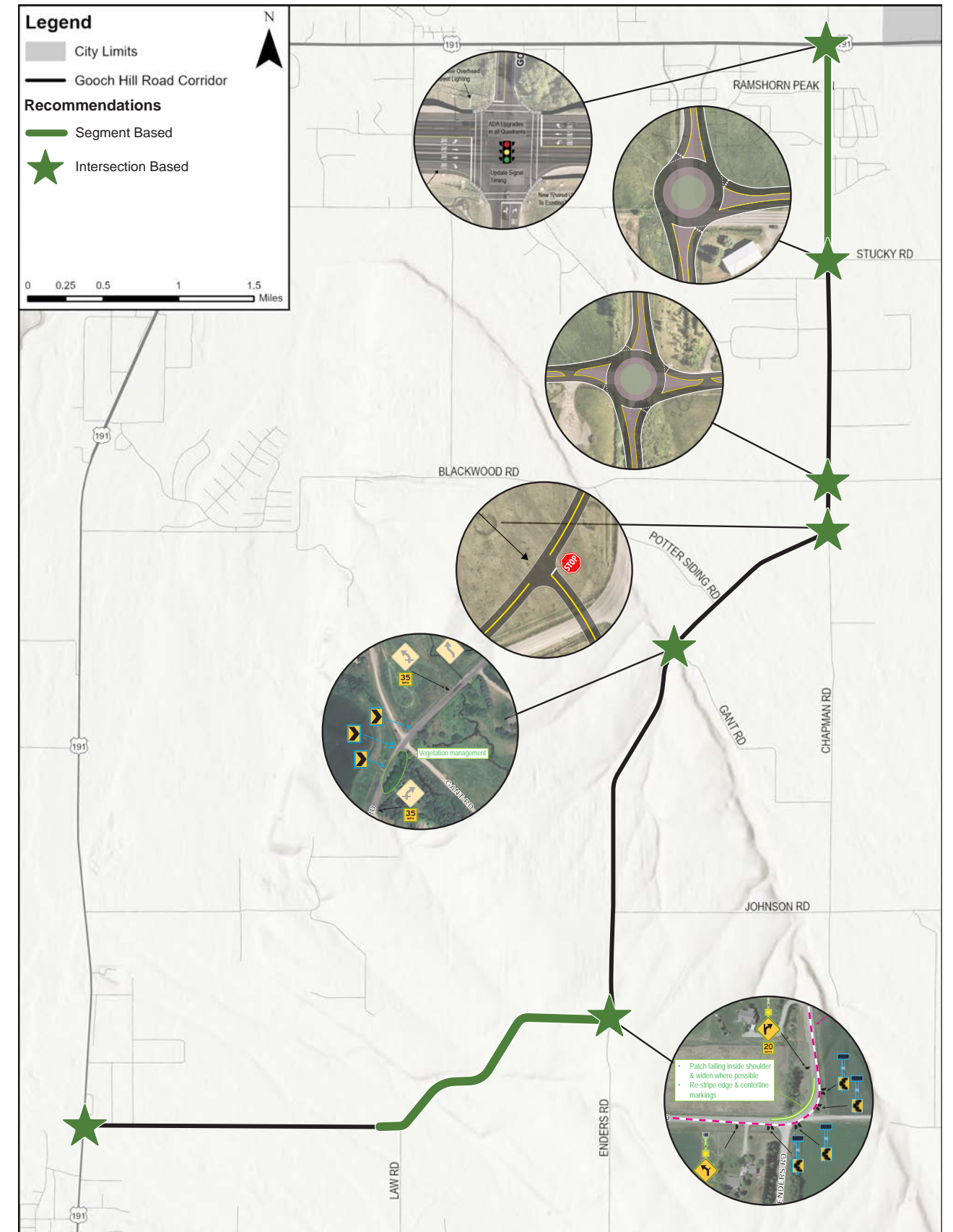
The intersection of US 191 and Gooch Hill Road currently operates at LOS C during the AM peak and LOS D during the PM peak, with conditions projected to deteriorate to LOS F in both peak hours by 2045. Although the intersection does not presently meet signal warrants, it is expected to within the next five years. Safety is a growing concern at this location with 18 crashes were reported between 2019 and 2023, including one suspected serious injury. A recent fatal motorcycle crash at this intersection has heightened public concern.

Given the combination of operational and safety issues, this intersection requires further evaluation to identify an appropriate improvement strategy. Options that may warrant consideration include a traffic signal, roundabout, or continuous T-intersection design. Each alternative carries distinct benefits and challenges related to safety, efficiency, and cost. A full intersection study should be conducted to determine the most effective long-term solution, particularly given the presence of a bridge just south of Gooch Hill Road that may constrain future design options.

A traffic signal could provide improved access for side-street traffic and would offer consistency with other intersections along the US 191 corridor, many of which are signalized, making this option familiar to drivers. Signalization also demonstrates the best long-term operational benefit, with LOS B during the AM peak and LOS C during the PM peak under projected 2045 conditions. However, signals can contribute to greater delay during off-peak hours and may increase the likelihood of rear-end crashes.

A roundabout, by contrast, would reduce the severity of crashes by lowering conflict speeds and could also serve as a beneficial traffic-calming tool along this high-speed corridor, particularly as vehicles enter the Gallatin Gateway area. Under 2045 conditions, however, a single lane roundabout is projected to operate at LOS D in the AM and LOS F in the PM, suggesting that while it may provide safety benefits, operational performance could be limited. In addition, roundabouts typically require more right-of-way and carry higher construction costs.

A continuous T-intersection is another option that could improve flow along US 191 by reducing turning conflicts and potentially lowering delay compared to a traditional two-way stop. However, this design is less familiar to most drivers and provides limited accommodation for pedestrians. It should also be noted that simply adding turn lanes to the existing two-way stop control does not offer any meaningful operational benefit under projected future volumes but may offer some safety benefits to separate through traffic from turning vehicles.



### Law Road to Enders Road Segment

The segment of Gooch Hill Road between Law Road and Enders Road presents several geometric and roadside challenges. The existing curves in this section do not meet current design standards for a 50-mph roadway, raising concerns about long-term safety and consistency with driver expectations. While speed data shows that most motorists travel at or below the posted speed limit, a reduced speed zone of 35 to 40 mph could be helpful to better align operating speeds with roadway geometry and improve driver expectation and safety. However, a formal speed study should be conducted to confirm an appropriate speed.

The crash history through this segment also highlights the need for near-term safety enhancements. This curved section has recorded a notable number of fixed-object and rollover crashes, including one suspected serious injury. While adverse road conditions were not frequently cited, dark lighting conditions appeared to contribute to nearly half of the incidents. Given that the curves are already well signed, additional low-cost measures such as enhanced pavement markings, reflective delineators, or targeted lighting could help drivers better navigate this section in the short-term.

Roadside conditions also contribute to safety risks. Tall grasses and vegetation along the road edge reduce visibility through the curves, limiting sight distance and driver reaction time. Regular mowing and vegetation management would improve sightlines, while flattening steep, non-recoverable ditches adjacent to the roadway would enhance recoverability for vehicles leaving the travel lane.

In the longer term, flattening the roadway alignment to bring the curves up to design standards should be considered if and when future development occurs, providing a more permanent safety improvement for this corridor segment.

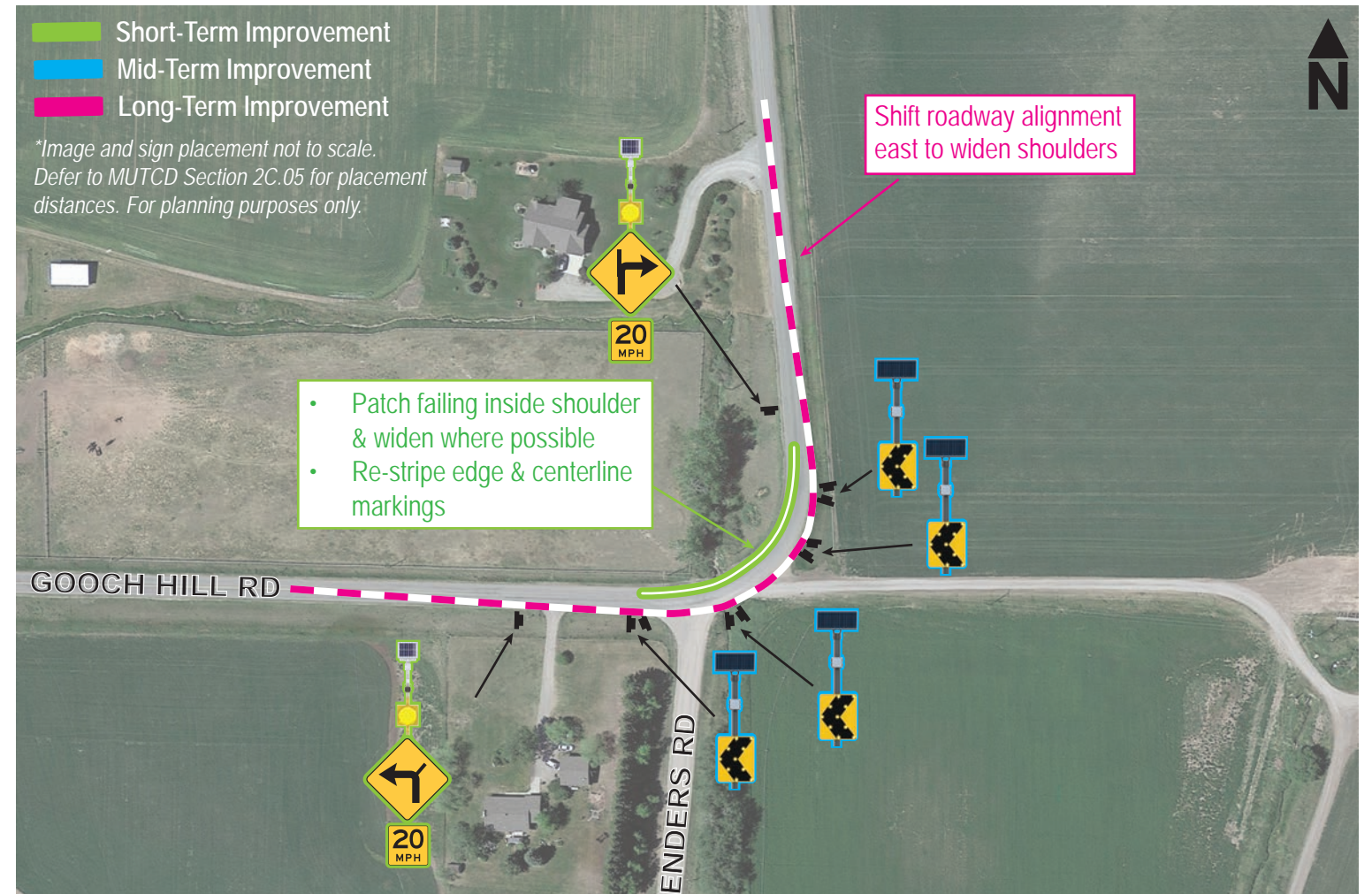


### Enders Road Intersection

The Enders Road intersection has been identified as a high-priority curve in the Run-off-the-Road Supplemental Planning area. At this location, Gooch Hill Road curves southwest as it intersects Enders Road, creating multiple conflict points with a residential driveway, Enders Road itself, and a nearby farm field approach. In recent years, 14 crashes were reported with the majority being fixed-object (57%) or rollover (29%) collisions. Roughly half of these crashes occurred on snowy or icy surfaces.

The Safely Ditch crosses Gooch Hill Road in the middle of the curve, following the north-south alignment of Enders Road, which further complicates roadway and roadside conditions. Pavement conditions also contribute to safety risks. On the inside edge of the curve, the pavement is sloughing into the ditch, and previously patched areas of the shoulder are failing. This has reduced the effective roadway width, creating difficulties for vehicles traveling in opposite directions to safely pass through the curve.

Short-term recommendations include patching the failing inside shoulder and widening shoulders along the inside edge where feasible. Edge and centerline re-striping using durable thermoplastic materials should be undertaken to improve visibility, and the advisory speed should be reduced from 25 mph to 20 mph. In addition, updated curve signing is recommended to more accurately convey roadway conditions. Flashing beacons could also be added to advance warning signs to heighten driver awareness, particularly in low-light or adverse weather conditions. Mid-term measures could include installation of LED-enhanced chevrons as a pilot project if crash trends persist, providing additional visual cues to guide drivers through the curve. In the long-term, it is recommended that the roadway alignment be shifted further east to allow for permanent shoulder widening, particularly along the inside edge of the curve.



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### Gant Road Intersection

The Gant Road intersection was also identified as a high-priority curve in the Run-off-the-Road Supplemental Planning area. The intersection itself is located on a curve along Gooch Hill Road, creating additional safety concerns. Mature vegetation along the southeast edge of the roadway obstructs sightlines to Gant Road, the approaching curve, and oncoming traffic from both directions, limiting driver visibility and reaction time.

Between 2019 and 2023, eight crashes were reported in this segment, with 75 percent involving fixed-object collisions and 25 percent involving rollovers. Contributing factors included adverse conditions, with half of the crashes occurring on icy roads and the other half under dark lighting conditions.

In the short term, vegetation management is recommended to clear roadside obstructions and restore adequate sight distance for vehicles approaching from Gant Road and navigating the curve. A reduction in the advisory speed from 40 mph to 35 mph should also be implemented to better reflect the available sight distance and roadway geometry.

In the mid-term, installation of chevron signs along the curve is advised to provide enhanced driver guidance, improve curve visibility, and reinforce alignment awareness, particularly during nighttime and low-light conditions. These measures would improve safety until longer-term improvements are considered for this corridor.

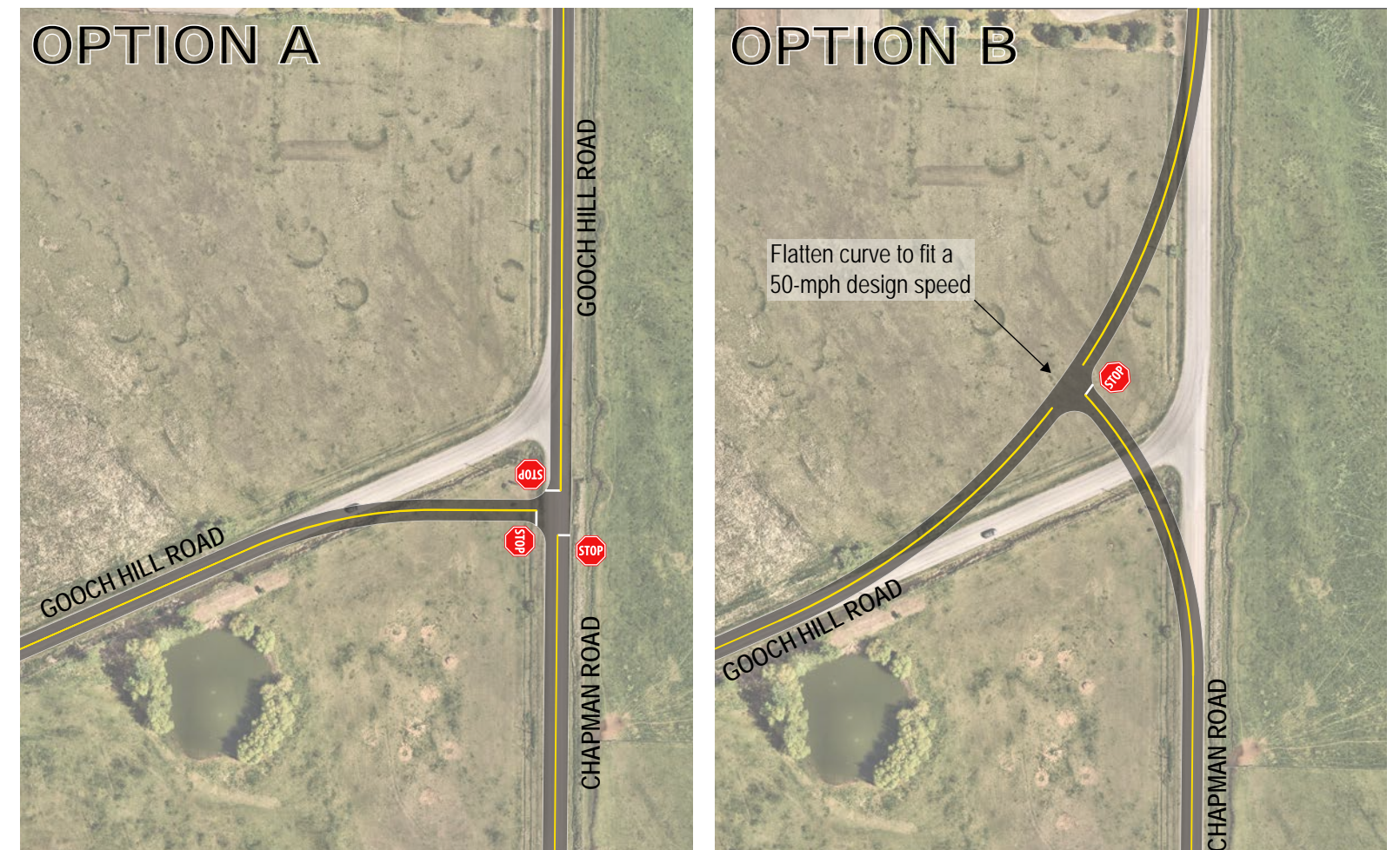


### Chapman Road Intersection

Chapman Road intersects Gooch Hill Road at a sharp, nearly 90-degree curve, forming a three-legged intersection. The through movement on Gooch Hill Road (west to north) is given priority, while Chapman Road, forming the south leg, is stop-controlled. Although the curve is well-signed, the location has experienced a recurring pattern of run-off-the-road crashes. About two-thirds of these crashes occurred in adverse weather conditions, while roughly one-third happened at night. Notably, all nighttime crashes were associated with snow or icy surfaces. These factors suggest that environmental and roadway surface conditions, rather than intersection layout alone, are the primary contributors to the crash history.

Several low-cost countermeasures could be implemented in the near term to improve safety. Installing a combination curve/intersection sign with a road name placard would provide clearer guidance to drivers, and flashing beacons could be added to increase driver awareness of the upcoming curve and intersection. Lighting at the intersection could also improve nighttime visibility, though this may be undesirable for nearby residents due to potential light spillover. In addition, increasing sanding and de-icing efforts during winter maintenance activities could help reduce run-off-the-road crashes under snowy and icy conditions.

In the longer term, intersection layout modifications could be considered. One option would be to realign the west leg to form a standard T intersection and implement all-way stop control to reduce conflicts. While this could improve safety, it may also reduce operational efficiency and cause some confusion for frequent users accustomed to the current configuration which gives Gooch Hill Road free-flow priority. Another alternative would be to flatten the curve and reconfigure Chapman Road to intersect at a more direct angle. This would improve visibility and provide a clearer priority for traffic movement, enhancing safety and operations on Gooch Hill Road.



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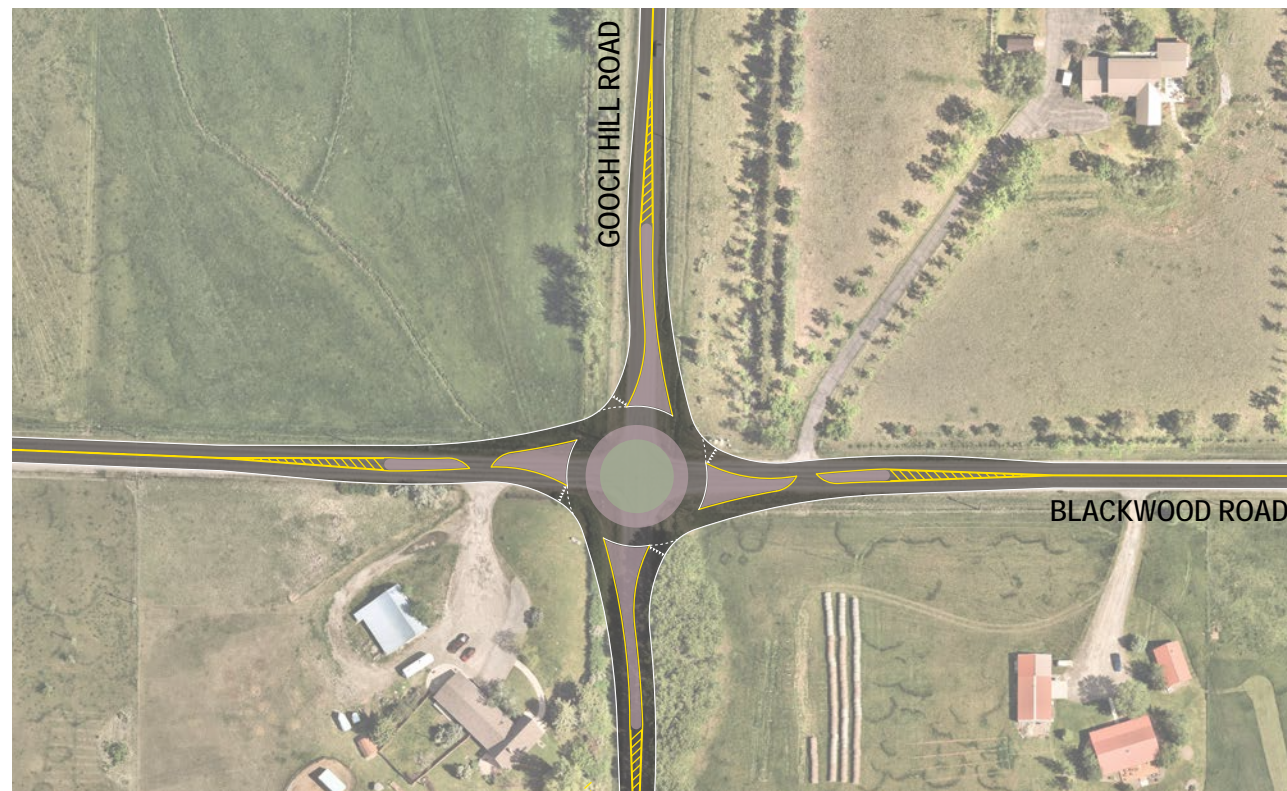
### Blackwood Road Intersection

The Blackwood Road intersection has experienced a notable crash history, with 10 crashes reported during the analysis period, and 90 percent of which were right-angle collisions. The intersection is currently configured as a four-leg intersection, with stop control on the east and west legs of Blackwood Road. The stop signs on Blackwood Road have small flashing red beacons and toward the end of the crash analysis period in 2022, "Cross Traffic Does Not Stop" placards were also added. From an operational standpoint, the intersection currently functions at LOS B during both AM and PM peak hours. However, by 2045, conditions are projected to degrade to LOS D during both peak periods as traffic volumes increase. Importantly, traffic volumes at this location do not currently meet signal warrants, making near-term signalization an unlikely solution.

In the short term, several low-cost countermeasures could improve visibility and driver awareness. These include installing "Stop Ahead" signs on Blackwood Road at least 250 feet in advance of the intersection, as well as enhancing the visibility of existing stop signs with reflective tape or flashing lights around the edges of the stop signs.

Conversion to all-way stop control should also be evaluated. While all-way stop is somewhat unconventional for a 50-mph corridor and may be unfamiliar to some drivers, conditions here are similar to the Love Lane/Durston Road intersection, which experienced improved safety and operations following all-way stop implementation. With targeted advance warning signage and public messaging, all-way stop control could provide immediate operational and safety benefits, improving projected performance to LOS B.

In the long term, a roundabout presents a more desirable and durable solution to address both operational and safety needs. The balanced nature of traffic volumes at this location makes it well-suited for roundabout control, which would substantially reduce the potential for right-angle crashes while maintaining efficient operations. Under projected 2045 traffic volumes, the roundabout is expected to operate at LOS A.

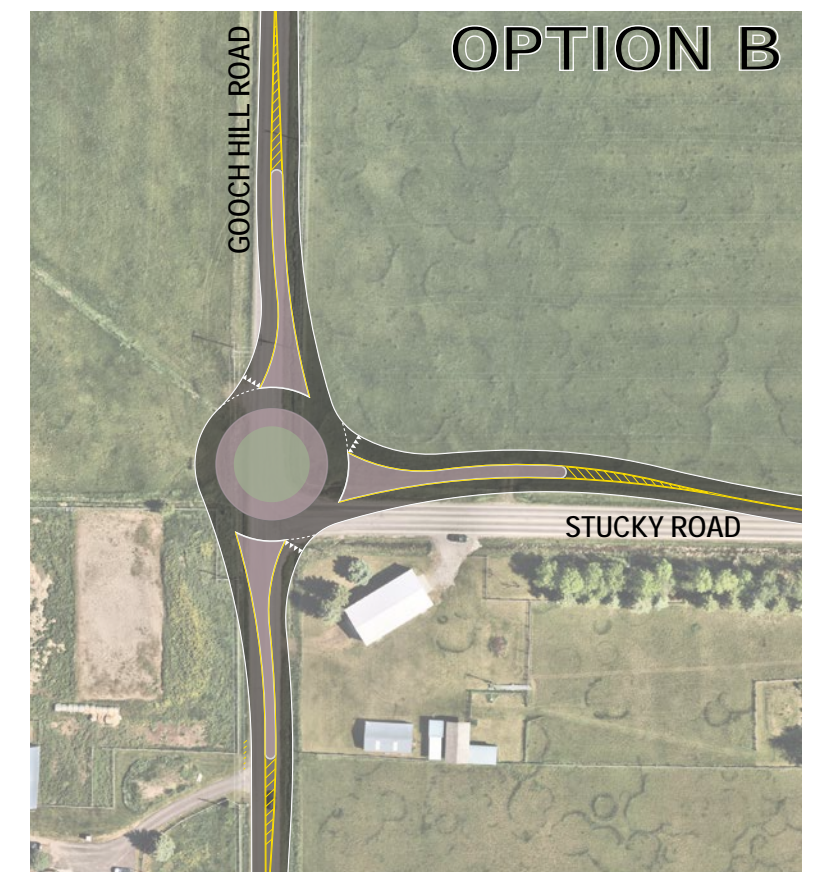
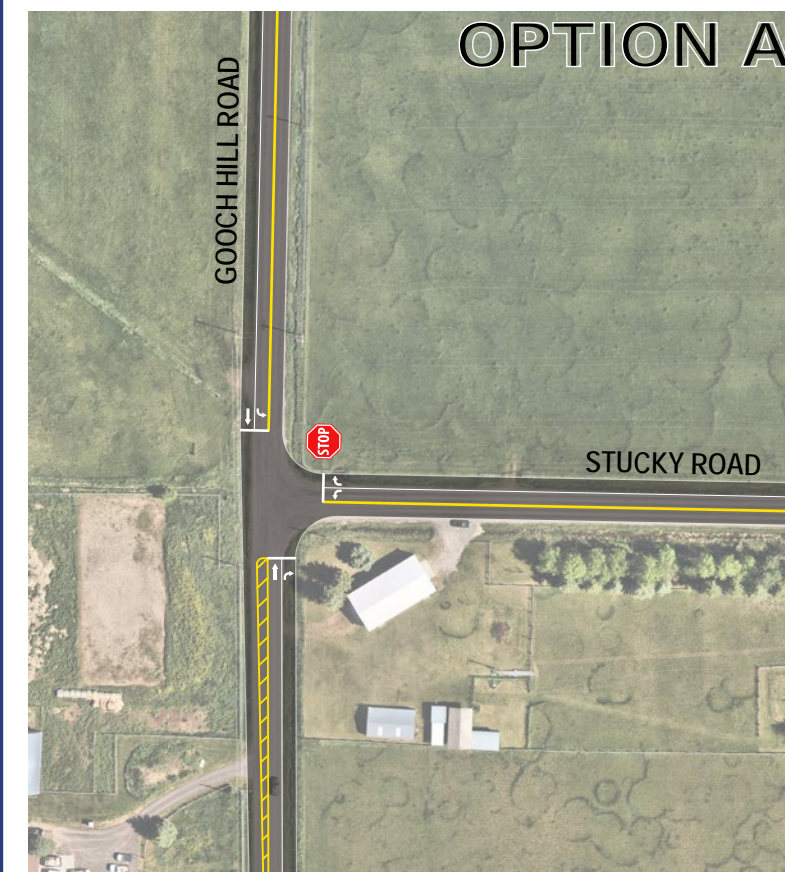


### Stucky Road Intersection

Stucky Road terminates at Gooch Hill Road, forming a three-legged intersection with stop control on Stucky Road. The intersection currently operates at LOS C under existing conditions but is projected to degrade to LOS F by 2045. Over the five-year analysis period, 27 crashes were reported, with dark lighting conditions and adverse roadway surfaces commonly cited as contributing factors. A collection of roadside crosses at the intersection suggests a history of fatal crashes, reinforcing public perception of the location as unsafe. Review of past street-view imagery shows that several low-cost safety countermeasures have already been implemented between 2019 and 2024, including the installation of "intersection ahead" warning signs on Gooch Hill Road and the addition of a road name placard atop the double arrow sign on the "T". Despite these improvements, the intersection remains a high-priority safety concern, although no severe injuries have been documented in recent years.

To further improve visibility and driver awareness, additional near-term measures could be pursued. These include applying reflective tape to the posts supporting the stop sign and double arrow sign, adding a placard below the stop sign indicating that cross traffic does not stop, or installing a flashing beacon on the "stop ahead" sign along Stucky Road. Alternatively, the existing stop sign could be replaced with one featuring an LED border to enhance nighttime visibility. Installation of street lighting could also be considered, though this would need to balance potential safety benefits with concerns about light pollution and impacts to adjacent properties and wildlife.

The GTATP recommends extending Stucky Road east to connect with Elk Lane/Red Mountain Drive (MSN-16), thereby creating a four-legged intersection. In the long term, geometric and traffic control improvements will be necessary to address both operational and safety issues. A roundabout would improve safety and restore operations to LOS A under 2045 traffic conditions while easily accommodating a fourth leg in the future. The addition of turn lanes to the current two-way stop configuration would provide only marginal benefit, with operations still projected at LOS E. Signalization in combination with added turn lanes could achieve LOS B, however, traffic volumes at this location do not currently meet signal warrants.



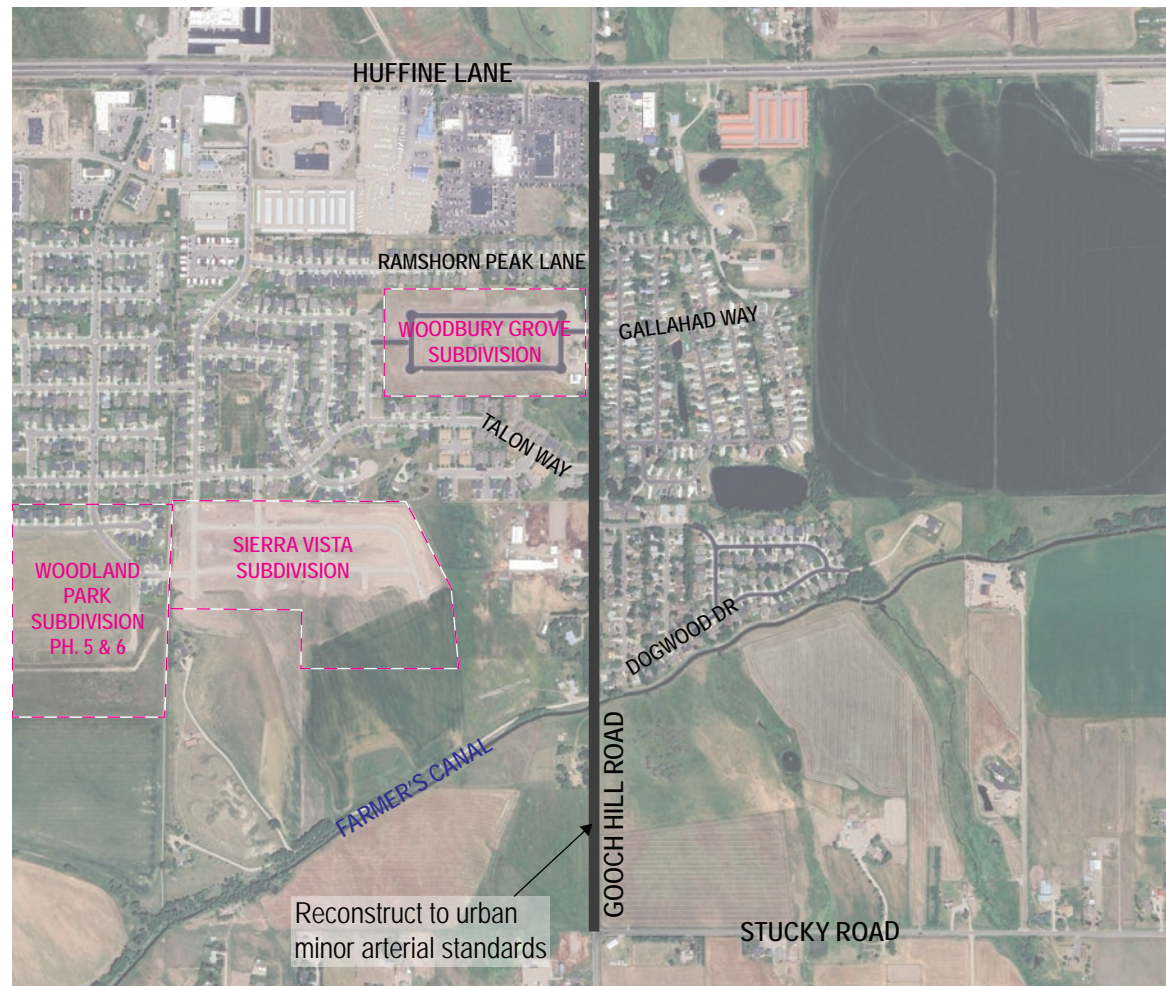
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### Stucky Road to Huffine Lane Segment

The segment of Gooch Hill Road between Stucky Road and Huffine Lane is experiencing increasing traffic pressures due to ongoing residential and commercial development. Several subdivisions exist adjacent to Gooch Hill Road between Ramshorn Peak Lane and the Farmer's Canal, while commercial development exists between Huffine Lane and Ramshorn Peak Lane. Additional growth is anticipated in both residential and commercial sectors, further contributing to traffic demand. As a result of development across the triangle area, Gooch Hill Road is increasingly used as a cut-through across the valley as well as providing a primary access route to existing developments.

The GTATP identifies this segment as MSN-13, recommending reconstruction of Gooch Hill Road between Huffine Lane and Stucky Road to urban minor arterial standards. This recommendation reflects the corridor's location on the fringe of the Bozeman area, as defined in the GTATP. Upgrading to minor arterial standards would improve roadway capacity, accommodate multimodal users, and provide the infrastructure needed to support planned growth.

In the near term, vegetation management is recommended along the corridor to ensure adequate sight lines and maintain safe operations as traffic volumes increase. Long-term, reconstruction to arterial standards will be necessary to accommodate anticipated development and to manage the corridor's growing role as a critical connection across the valley.



### Huffine Lane Intersection

The Huffine Lane intersection represents one of the most critical safety and operational challenges along Gooch Hill Road. Gallatin County recently submitted an application for a Safe Streets and Roads for All (SS4A) Implementation Grant to fund improvements at this location.

Over the five-year crash analysis period, 66 crashes were reported, the highest of any intersection along the corridor. Rear-end collisions were particularly prevalent, accounting for approximately half of all crashes, while right-angle collisions also occurred at a notable rate. Around 20 percent of crashes took place at night, and two of the three reported serious injury crashes were related to red-light running.

Reconstruction of this high-crash intersection is aimed at addressing recurring safety issues, including rear-end collisions, nighttime visibility, and red-light running. Proposed improvements include intersection lighting, construction of an eastbound right-turn lane, and signal timing upgrades to improve operations and reduce conflict points. The project also incorporates ADA-compliant facilities, including an accessible path in the southeast quadrant to connect with a nearby transit stop, along with ADA-compliant corners at all approaches. These upgrades will also link to a planned shared-use path on the north side of the intersection, further enhancing multimodal accessibility.

