



MEMORANDUM

Subject: Casey Road and Almond Road Feasibility Study – Executive Summary

Date: 8/26/2026

To: Libertyville Township Road District
Martin J. Neal
Highway Commissioner
343 Merrill Ct.
Libertyville, Illinois 60048

From: Christopher B. Burke Engineering
Phase I Engineering Department
Matt Huffman, PE - Project Manager
Noor Salim - Project Engineer

Executive Summary

The scope of this feasibility study is to evaluate potential intersection improvements at Casey Road and Almond Road in Libertyville Township. The study considers a range of improvement alternatives intended to address existing and future year 2050 operational needs, safety, geometric, and property-impact considerations at the intersection, and reviewed existing and future traffic conditions, safety history, intersection operations, geometric deficiencies, and feasible improvement alternatives to determine which options should be carried forward for more detailed Phase I engineering.

Purpose and Need

The intersection currently operates within acceptable capacity levels. Existing traffic volumes also meet traffic signal warrants, making signal control a reasonable improvement option to evaluate. By 2050, average daily traffic is projected to increase by approximately 31 percent on Casey Road and 30 percent on Almond Road, which is expected to degrade operations to an unacceptable level during the morning peak period. While this condition is not severe, it warrants further evaluation because the delay is concentrated on Almond Road, which is stop-controlled, while Casey Road remains free-flow.

The study also identified operational, geometric, and safety issues that support considering improvements. The most significant deficiency is limited sight distance for drivers approaching from the east on Casey Road, where an existing crest vertical curve is substandard for the posted speed. Other issues include tight turning geometry for school buses or similar vehicles, the lack of a warranted eastbound left-turn lane, and shoulders that do not meet current design criteria. The crash review found 11 crashes from 2020 through 2024, including two injury crashes, with nearly half involving drivers failing to reduce speed when approaching the intersection.

Alternatives and Land Acquisition Considerations

The alternatives developed for this feasibility study are conceptual 2-D designs based on current design standards and intended to compare the general footprint, operational benefits, and potential property impacts of each improvement option. Detailed grading analysis was not performed at this stage and would be evaluated during the next phase of design once topographic survey is available. As a result, the proposed potential property acquisition shown in the feasibility study should be considered conservative; future design refinements may provide opportunities to minimize or avoid some of the currently identified potential acquisition needs, particularly near the conservation-related properties in the northeast and southwest quadrants of the intersection.

The range of alternatives evaluated included the following:

- **Alternative 1: All-Way Stop Control.** This option would be the lowest-cost improvement and would have limited property impacts, but it is not recommended as a long-term solution because it would increase delay on Casey Road and would not adequately address future operations.
- **Alternative 2A: Signalized Intersection without Turn Lanes.** This option provides a viable long-term improvement with comparatively limited geometric changes and the lowest right-of-way impact among the recommended alternatives.
- **Alternative 2B: Signalized Intersection with an Eastbound Left-Turn Lane.** This option provides similar overall operations to Alternative 2A, while adding left-turn separation on Casey Road to improve driver expectancy and reduce turning-related conflicts; however, it would require more widening and potential property acquisition.
- **Alternative 3A: Single-Lane Roundabout with West Alignment Shift.** This option provides strong traffic-calming and operational benefits but would require the most potential property acquisition due to the westward shift and Almond Road realignment.
- **Alternative 3B: Centered Single-Lane Roundabout.** This option provides the strongest operational and speed-management benefits while reducing impacts compared with the west-shifted roundabout, although it would still require more potential property acquisition than the signalized options.

Casey Road and Almond Road have posted speed limits of 45 mph and 40 mph, respectively. Because Casey Road is posted at 45 mph, future design phases could evaluate barrier curb and gutter in lieu of shoulders to reduce the roadway footprint, create a more constrained driving environment, and provide a traffic-calming benefit. Although Alternatives 2A and 2B were conceptually developed with shoulders, converting to barrier curb and gutter, with storm sewer as needed for drainage, may

allow these alternatives to be advanced with minimal to no potential property acquisition, but further design evaluation is needed.

For maintenance of traffic, a full closure of the intersection is likely for any of the improvement alternatives given the anticipated Casey Road profile adjustments and the overall scope of intersection reconstruction. A full closure would also eliminate the need for temporary pavement and may reduce or avoid potential temporary construction easements.

Safety and Operation

The signalized alternatives, Alternatives 2A and 2B, would help address speeding concerns to some extent by creating a stopping condition for some vehicles, which could help reduce speeds while providing clear right-of-way control. They can also improve how traffic moves through the intersection as volumes increase. However, the additional stopping and queuing associated with a traffic signal may increase the potential for rear-end crashes, even as it helps reduce other types of conflicts and provides more consistency in driver behavior. Compared to an all-way stop, a traffic signal is better able to handle the higher traffic volumes expected in the future. Traffic operations will improve, with overall intersection performance improving from LOS E under all-way stop control to LOS B during peak hours.

The roundabout alternatives, Alternatives 3A and 3B, would substantially reduce vehicle speeds on all approaches and eliminate high-severity crossing conflicts typically associated with signalized and stop-controlled intersections. However, they may also change crash patterns, including the potential for more lower-severity crashes such as rear-end or sideswipe collisions. Operationally, a roundabout would substantially reduce stopped delay compared to a signalized or all-way stop-controlled intersection because of its continuous traffic flow and yield-controlled operation. Alternative 3A and 3B provide the highest level of operational performance among the alternatives evaluated.

Conclusions

Each alternative was evaluated using key criteria, including level of service (LOS), safety, property impacts, and programming cost, to support a consistent and comprehensive comparison. Table 1 summarizes the relative performance and tradeoffs of each alternative. The programming cost does not include land acquisition or potential improvements needed to address the substandard vertical crest curve on the east leg of Casey Road.

Based on the feasibility study, Alternatives 2A and 2B appear to provide the most practical path forward if the Road District's priority is to minimize or avoid potential property acquisition, particularly near the conservation-related properties. With further design evaluation, the signalized alternatives may be refined using barrier curb and

gutter, drainage adjustments, and other context-sensitive design modifications (i.e. retaining walls) that could allow the improvements to be constructed with minimal to no potential property acquisition.

Alternative 3B, the centered single-lane roundabout, provides the strongest speed-management and operational benefit; however, there is a much higher level of certainty that it would require potential property acquisition. If impacts to the conservation-related properties are deemed unacceptable or a fatal flaw by the Road District, Alternative 3B should be dismissed from further consideration and Alternatives 2A and 2B should proceed for additional design evaluation.

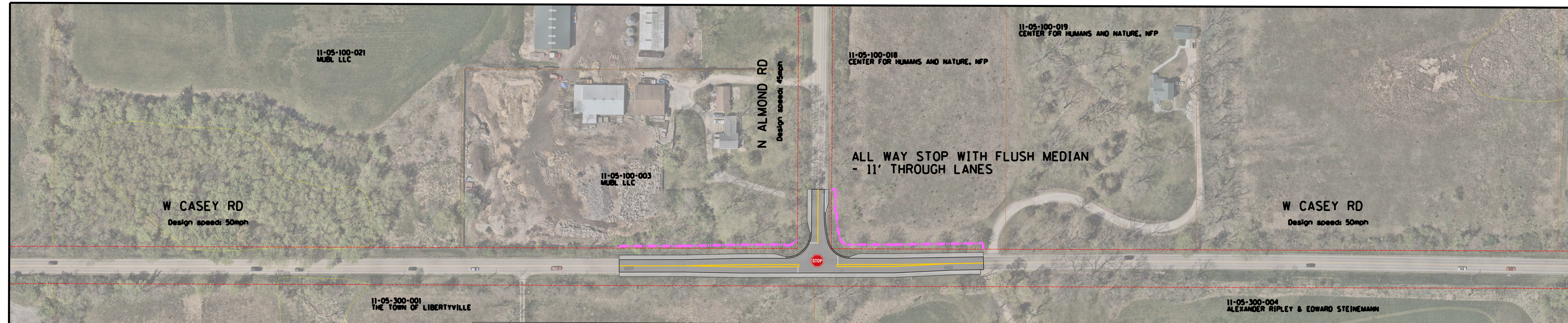
All alternatives should consider addressing the deficient crest vertical curve east of the Casey Road intersection to provide adequate sight distance. Addressing this roadway deficiency will improve the intersection sight distance and meeting design standards. If the project would like to utilize state or federal funding, this existing deficiency will need to be addressed due to its proximity to the intersection, either with securing approval from IDOT for a design exception to leave the existing condition or reconstructing the roadway to lower the crest vertical curve. This would be further evaluated during the next phase of design.

Next Steps

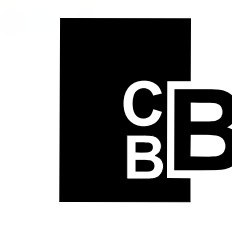
The Phase I process could be structured in three parts. **Part A – Feasibility Study** is complete and documented the project purpose and need, existing conditions, and range of improvement alternatives. **Part B – Preliminary Design Evaluation** would include topographic survey and additional design analysis focused on drainage, traffic signal design, vertical geometry, cross sections, and footprint refinements to determine whether an alternative can meet the Road District's goals, including minimizing potential property acquisition. **Part C – IDOT Coordination and Phase I Documentation** would proceed only if the results of Part B are acceptable to the Road District. If Part B does not identify an acceptable alternative, Part C would not move forward.

Table 1: Alternatives Evaluation Summary

Evaluation Criteria	Existing 2023		Two-Way Stop Controlled (No Build)		All-Way Stop (No turn lane) Alt 1		Signalized (No turn lanes) Alt 2A		Signalized (EB left turn lane) Alt 2B		Roundabout (West) Alt 3A		Roundabout (Center) Alt 3B	
Travel Performance														
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Intersection (LOS - sec/veh)	C – 18.2	B – 14.1	E – 37.6	C – 21.5	E – 42.1	E – 36.6	B – 11.2	B – 14.9	B – 11.8	B – 14.5	A – 5.5	A – 5.7	A – 5.5	A – 5.7
Safety														
Conflict Points	9		9		9		9		9		6		6	
Speed Reduction	Low		Low		Medium		Medium		Medium		High		High	
Socio-Economic Impacts														
Parcels Affected					2		2		5		5		4	
ROW acquisition (acres)					0.11		0.11		0.52		2.02		0.89	
Cost (\$)														
Construction Total (2030)					\$ 837,000		\$ 1,475,000		\$ 2,530,000		\$ 4,051,000		\$ 2,775,000	
Phase 1 Engineering (6%)					\$ 44,000		\$ 77,000		\$ 131,000		\$ 210,000		\$ 144,000	
Phase 2 Engineering (9%)					\$ 65,000		\$ 115,000		\$ 197,000		\$ 315,000		\$ 216,000	
Construction Engineering (15%)					\$ 126,000		\$ 222,000		\$ 380,000		\$ 608,000		\$ 417,000	
Estimated Total Cost					\$ 1,070,000		\$ 1,887,000		\$ 3,237,000		\$ 5,182,000		\$ 3,550,000	
Scale Key - Relative Comparison Relatively Weak in Comparison Relatively Strong in Comparison														



Note: Proposed ROW to be finalized in Phase 1



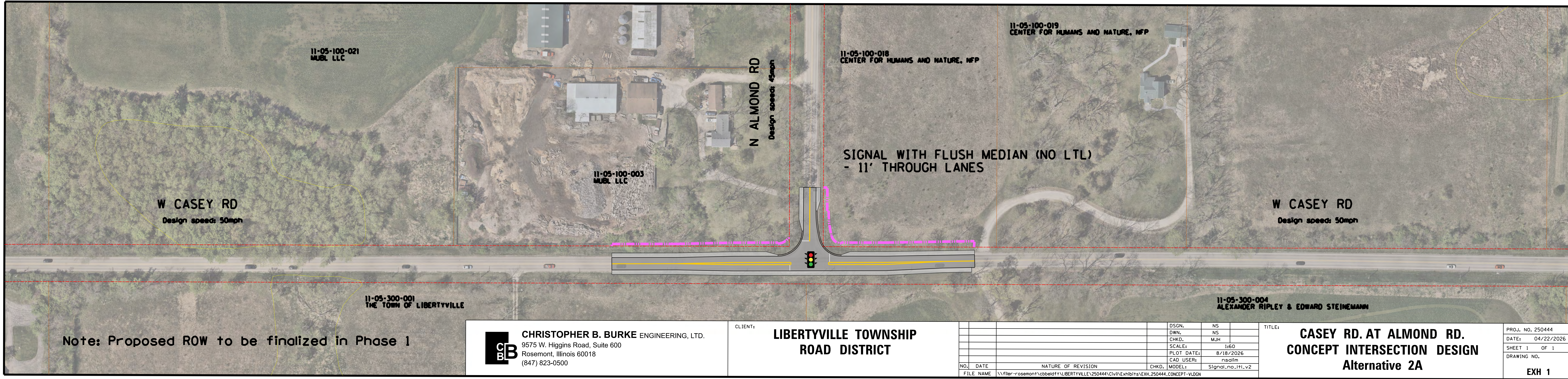
CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT: **LIBERTYVILLE TOWNSHIP
ROAD DISTRICT**

				DSGN.	NS	
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				CHKD.	MJH	
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CONCEPT INTERSECTION DESIGN
Alternative 1**

PROJ. NO. 250444
DATE: 04/22/2026
SHEET 1 OF 1
DRAWING NO.
EXH 1



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CLIENT:

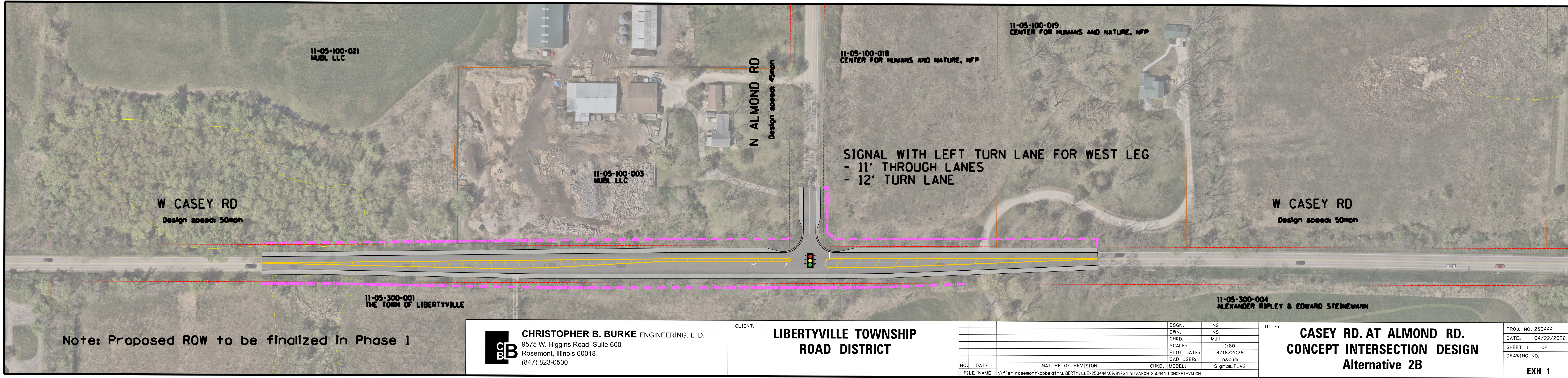
**LIBERTYVILLE TOWNSHIP
ROAD DISTRICT**

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CHKD.	MJH				
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PLOT DATE:	8/18/2026				
CAD USER:	nsalim				

TITLE:

**CASEY RD. AT ALMOND RD.
CONCEPT INTERSECTION DESIGN
Alternative 2A**

PROJ. NO. 250444
DATE: 04/22/2026
SHEET 1 OF 1
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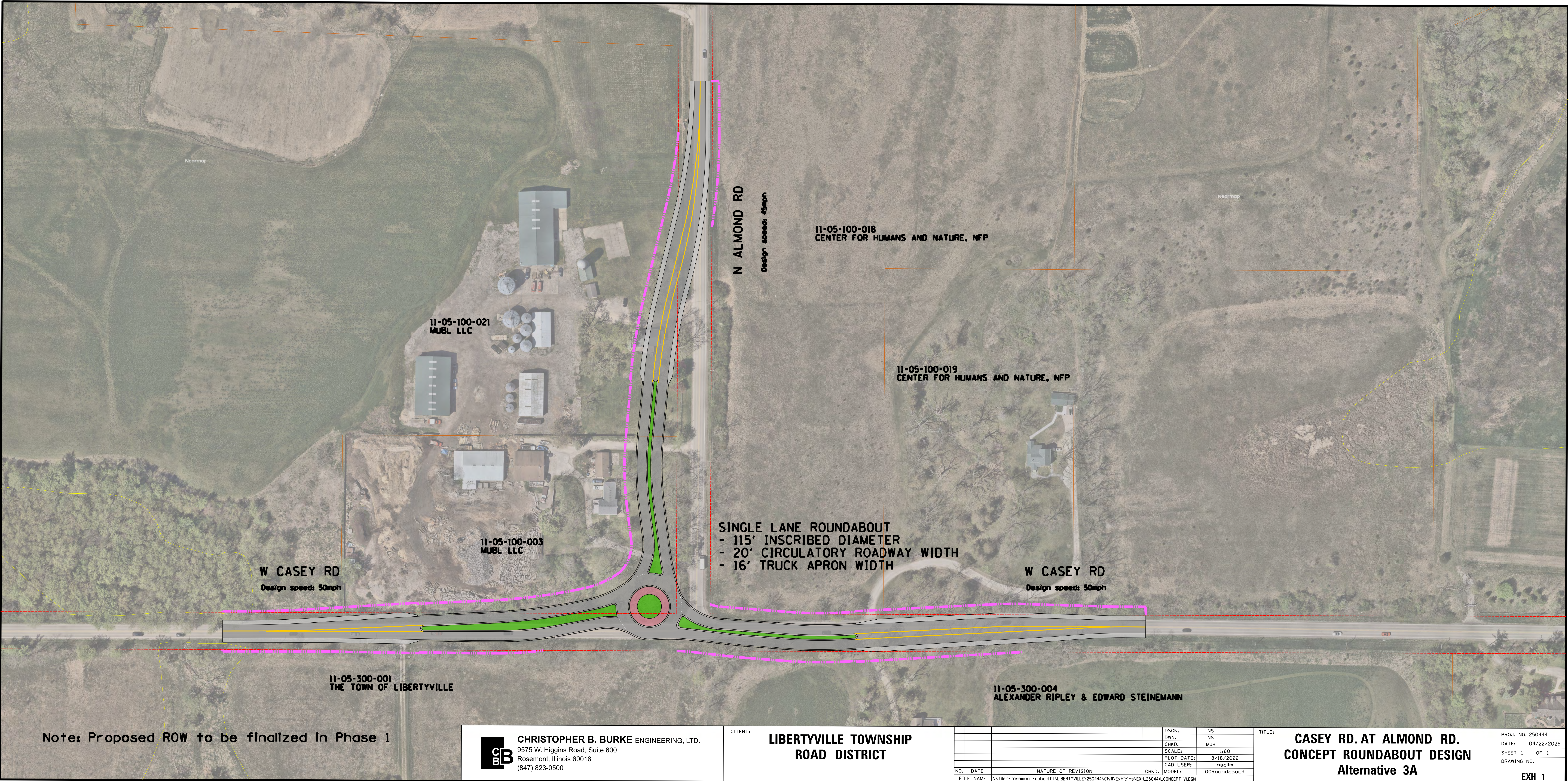
**LIBERTYVILLE TOWNSHIP
ROAD DISTRICT**

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CAD USER:	nsalim				

TITLE:

**CASEY RD. AT ALMOND RD.
CONCEPT INTERSECTION DESIGN
Alternative 2B**

PROJ. NO. 250444
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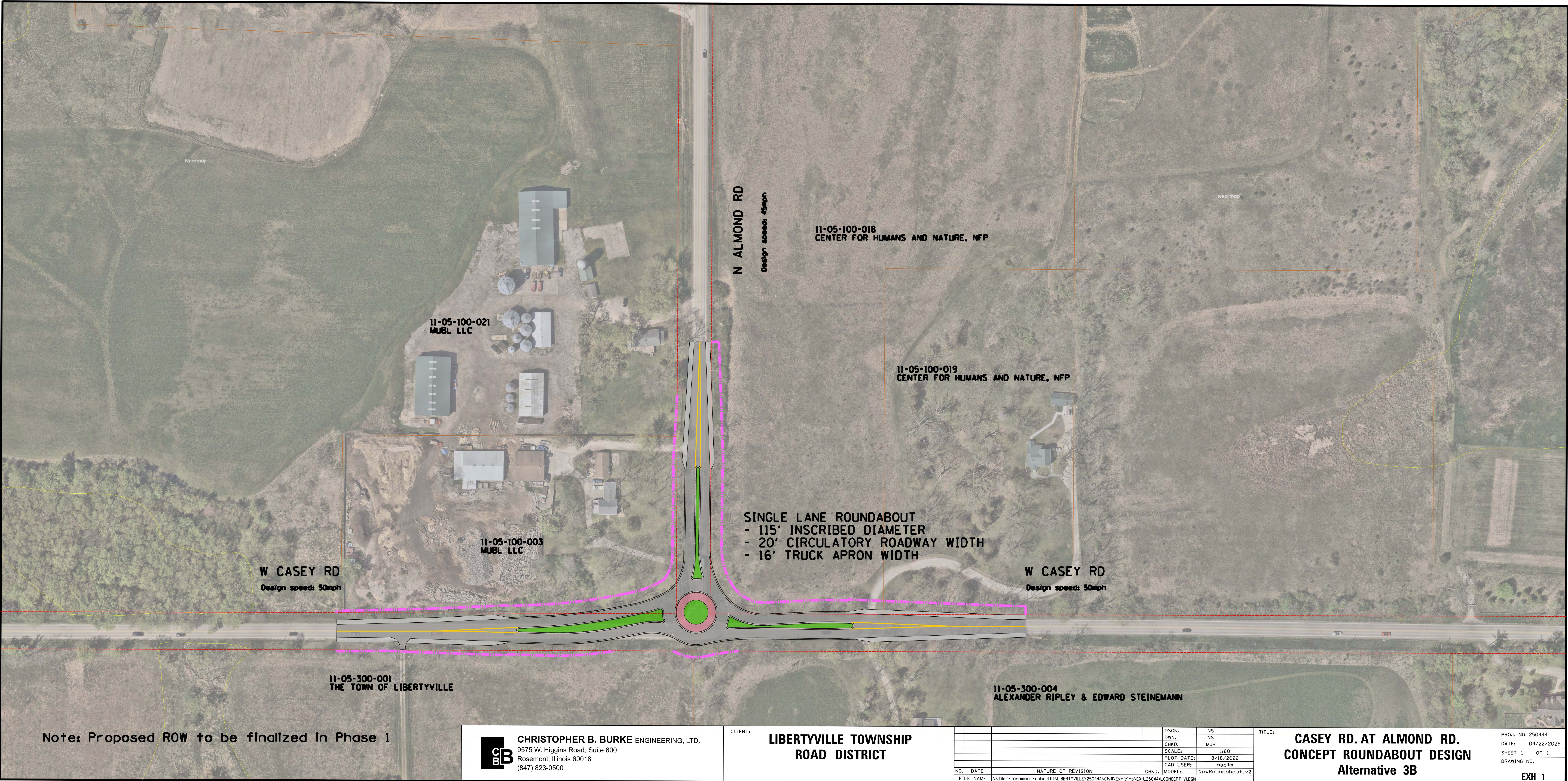
LIBERTYVILLE TOWNSHIP
ROAD DISTRICT

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TITLE:

CASEY RD. AT ALMOND RD.
CONCEPT ROUNDABOUT DESIGN
Alternative 3A

PROJ. NO. 250444
DATE: 04/22/2026
SHEET 1 OF 1
DRAWING NO.
EXH 1



Note: Proposed ROW to be finalized in Phase 1



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CLIENT:

LIBERTYVILLE TOWNSHIP
ROAD DISTRICT

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TITLE:

CASEY RD. AT ALMOND RD.
CONCEPT ROUNDABOUT DESIGN
Alternative 3B

PROJ. NO. 250444
DATE: 04/22/2026
SHEET 1 OF 1
DRAWING NO.
EXH 1