Memorandum

Project: 11-008.20 Spruce Creek Rd

To: Town of Blue River

From: Muller Engineering Company

Date: January 4, 2024

Subject: Design Decision Matrix

The following matrix details specific design decisions for the design of Spruce Creek Rd.

Horizontal Alignment	• Follows existing centerline. • Perpendicular to CO 9 at intersection which formalizes the intersection.
Alignment Profile	• Spruce Creek Rd regraded from Miners Ct to CO 9. Work begins here due to constraints on Miners Ct. The grade of Miners Ct is already steep and regrading/lowering Spruce Creek Rd will increase this grade. Also, there is a driveway just off of Spruce Creek Rd on Miners Ct. By limiting the grading on Miners Ct, this driveway can be protected instead of replaced. • 12% grade from Miners Ct toward CO 9 is close to existing grade between Gold Nugget and Miners Ct. • A sag curve at the intersection with CO 9 provides a longer and flatter area for traffic to slow to a stop before turning onto CO 9. • -1% slope off CO 9 shoulder prevents any runoff from Spruce Creek accumulating in the SB lane of CO 9.
CO 9 Shoulder	• 8’ shoulder meets CDOT desired width. • Provides some space for vehicles to utilize as they turn right from SB CO 9 onto Spruce Creek Rd.

	• 8’ shoulder is not wide enough that drivers will treat it as an auxiliary lane or expect turning vehicles to use only the shoulder.
Intersection Radii	• Tighter radii of 25’ and 40’ define the intersection and direct traffic towards a perpendicular intersection with CO 9. • These radii provide more definition to the intersection helping to raise visibility for traffic on CO 9.
Stop Sign Placement	• Moving the stop sign 15’ closer to CO 9 significantly increases the sight distance along CO 9. • Moving the stop sign closer to the highway also increases visibility of the intersection for traffic on CO 9.
Drainage Conveyance	• Roadside swale section geometry is limited by steep and tall embankments adjacent to the roadway. • Preferred ditch section with 3:1 side slopes and 1.5’ depth is recommended. Maximum side slopes of 2:1 (1.5:1 in select locations) and a minimum depth of 1’ are required. • No additional culverts will be provided. The existing culvert at Miner Ct is assumed to be reset during construction. Culvert will be replaced in kind if condition during construction is determined by the Town to be inadequate. • Drainage conveyance capacity is based on site geometry rather than design storm requirements. • A drainage memo can be developed at the direction of the Town.