

Memorandum

304 Lundin Blvd Renovation - Mankato, MN

ISG

To: Cory Bienfang, P.E., City of Mankato Interim City Engineer

From: Bryan Petzel, P.E.

Date: September 19, 2025

Subject: 304 Lundin Boulevard Renovation – Stormwater Management

STORMWATER MANAGEMENT

This stormwater management memo was prepared for the building renovation and site improvements project proposed by Rolls-Royce Solutions America, Inc. at 304 Lundin Boulevard in Mankato, Minnesota.

Existing Conditions

The existing 7.16-acre site is located within the Planned Industrial zoning district. Existing site features include an approximately 91,300 square foot building, truck docks, and paved exterior storage, circulation, and parking areas. The site currently has approximately 5.95 acres (83.1 %) of impervious coverage.

Soils

Soil borings were completed on site west of the building by Braun Intertec in July of 2025. In general, bedrock was encountered at depths ranging from two to five feet. Residuum (in-place bedrock weathered into soil), clayey sand fill, topsoil, and pavement sections were found above the bedrock. A copy of the geotechnical evaluation report is enclosed.

Drainage

Stormwater from the site is conveyed overland or through on-site storm sewer to two separate City storm sewer systems. In general, the northern 70% of the site drains to a storm sewer in the rear of the property that flows west to the 9th Avenue storm sewer system. This system ultimately drains north to a shallow stream near the Mankato power plant that later discharges into the Minnesota River. The remainder of the site drains to the Lundin Boulevard storm sewer system. This system drains east to a stormwater pond system on the east side of 3rd Avenue. The pond system outlets to a ditch system that flows to the same shallow stream that receives the 9th Avenue storm sewer system.

Proposed Conditions

The proposed site improvements include minimal expansion of the paved exterior storage and parking areas, reconstruction of the exterior storage area pavement, reconstruction of a ramp to an at-grade overhead door, widening of a driveway, and a mill-and-overlay of existing bituminous parking and circulation areas.

The proposed site improvements will result in a total impervious coverage of 6.17 acres (86.2%) for the site. This is a net increase of 0.22 acres and includes 1.80 acres of fully reconstructed impervious areas. Stormwater drainage from the site will remain consistent with existing conditions. No additional storm sewer is proposed.

Stormwater Treatment Requirements

The City of Mankato's municipal separate storm sewer system (MS4) permit and Grading Manual require post-construction stormwater management to treat the sum of the new and fully reconstructed impervious surfaces on a project when their sum equals one or more acres. The water quality volume to be treated is defined as 1.1 inches times the sum of the new and fully reconstructed impervious surfaces.

On-Site Stormwater Treatment Considerations

According to the MS4 permit, "Volume reduction practices (e.g. infiltration or other) to retain the water quality volume on-site must be considered first" for stormwater treatment. However, the permit also prohibits infiltration systems from being constructed in areas where the bottom of the system would have less than three (3) feet of separation distance to the top of bedrock. Considering the soil borings performed on site encountered bedrock at depths ranging primarily from two to five feet, it can be reasonably assumed that infiltration would be prohibited anywhere on site.

When infiltration is prohibited, wet sedimentation basins or filtration basins may be considered. However, construction of an on-site basin is impractical for the following reasons:

- The shallow bedrock conditions create significant difficulties for construction.
- The only open space available to construct an above-ground basin is in the northeast corner of the property near the upstream end of the shallow on-site storm sewer system. Even if the bedrock conditions were found to be more favorable in this location, the on-site storm sewer system lacks sufficient depth for it to be rerouted to a basin in this open area and then allow for a gravity flow outlet from the basin back into the system.
- The exterior storage area is proposed to be fully reconstructed with an extra heavy duty concrete pavement. The thickness of this pavement section will place it directly on top of the bedrock. As a result, construction of an underground stormwater management system under the reconstructed storage area would require extensive bedrock excavation. The system would need to be robustly designed to support the loads that required use of an extra heavy duty concrete pavement design. The shallow depth of the on-site storm sewer also presents challenges in the design and construction of an underground stormwater management system.

Request to Waive Stormwater Treatment Requirements

Construction of an on-site stormwater treatment system creates a unique and particular hardship for this property. Considering this in combination with the minimal amount of new impervious surfaces the project will create and that 30% of the site currently drains to an existing stormwater pond system on the east side of 3rd Avenue, a waiver of the City stormwater treatment requirements is requested for this project.