



**Braun Intertec Corporation**  
11001 Hampshire Avenue S  
Minneapolis, MN 55438

Phone: 952.995.2000  
Fax: 952.995.2020  
Web: braunintertec.com

December 15, 2020

Project B2010536

Mr. Shane LaFave  
Roers Companies, LLC  
110 Cheshire Lane, Suite 120  
Minnetonka, MN 55305

Re: Slope Evaluation Letter  
Proposed Bloomington Apartments  
8131 34th Avenue  
Bloomington, Minnesota

Dear Mr. LaFave:

We are pleased to present this Slope Evaluation Letter for the proposed apartment development referenced above in Bloomington, Minnesota.

## Site Background

The Site is approximately 106,508 square feet and currently consists of surficial parking lots, drive lanes, and lightly landscaped areas located just west of the Mississippi River. On the east side of the site, a retaining wall supports the upper and lower parking lot areas. To the east of the retaining wall, the grades drop off and borders the Minnesota Valley National Wildlife Refuge located adjacent to the Mississippi River.

We understand the project will consist of construction of a six-story apartment building, with two levels below grade for parking. The below grade levels of the building will be partially exposed on the east side due to the steep slopes. We were provided conceptual project plans by Roers Companies, LLC, developed by ESG, and dated October 8, 2020.

Because of the proposed building construction and proximity to the nearby slopes, we understand that an evaluation of the existing slope for stability will be necessary as part of this project.

Figure 1 provides the existing site layout with the planned Phase I site development area. The green line in the figure represents the retaining wall and the yellow line to the east represents the property line and border with the Minnesota Valley National Wildlife Refuge.

Figure 1. Existing Site Layout and Development Area

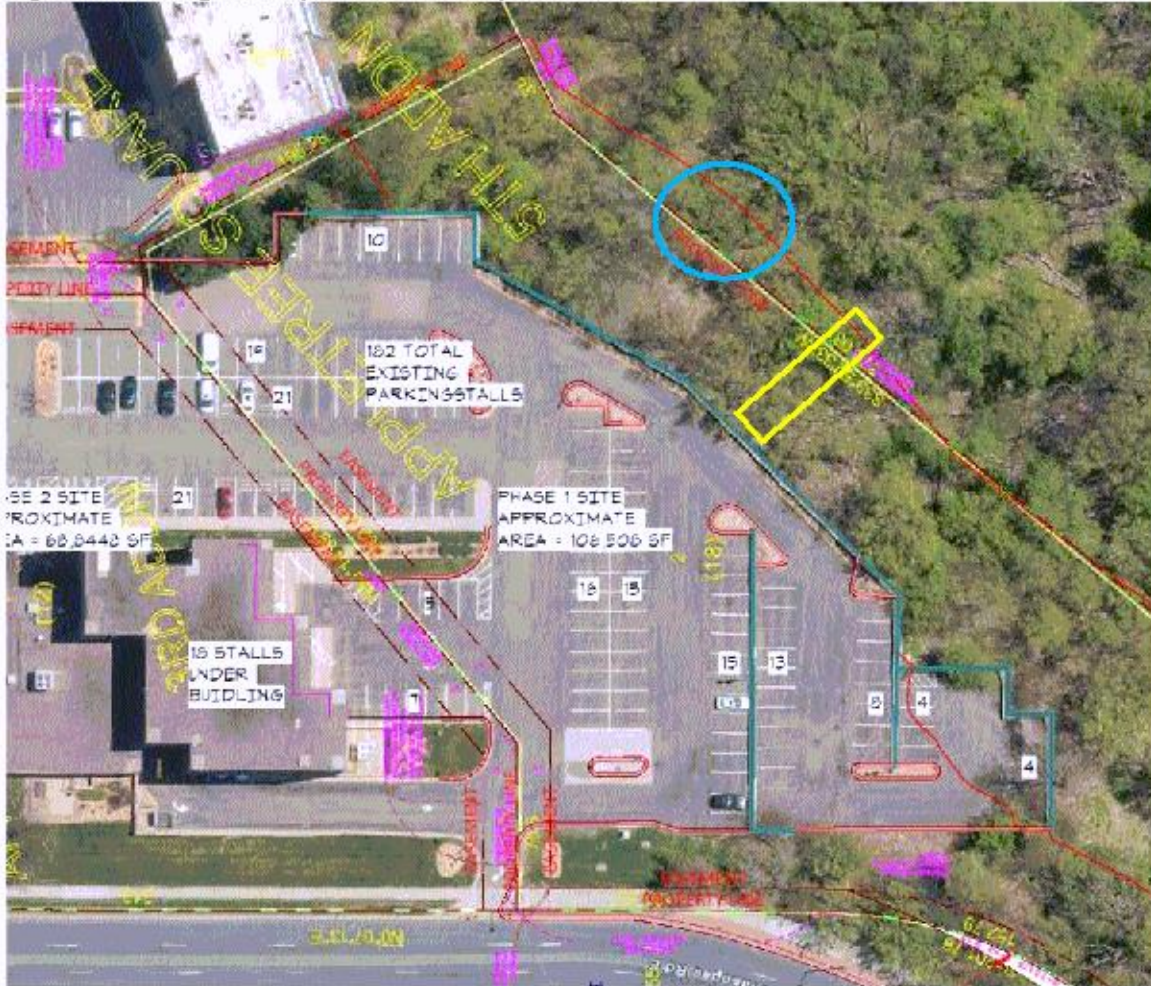


Figure provided by Roers Companies, LLC, dated October 8, 2020

Figure 2 displays the conceptual building layout for the site. The existing retaining wall is shown by the small-dashed line and the property line is shown by the large-dashed line. Based on the provided conceptual plans, the planned development will remove the retaining wall and excavate down to an elevation 786 feet. The conceptual plan states that the base of the retaining wall is at approximate elevation 790 feet. As shown in Figure 2, the proposed building extends to the east to the location of the retaining wall with small areas extending past the retaining wall.

**Figure 2. Existing Site Layout and Development Area**

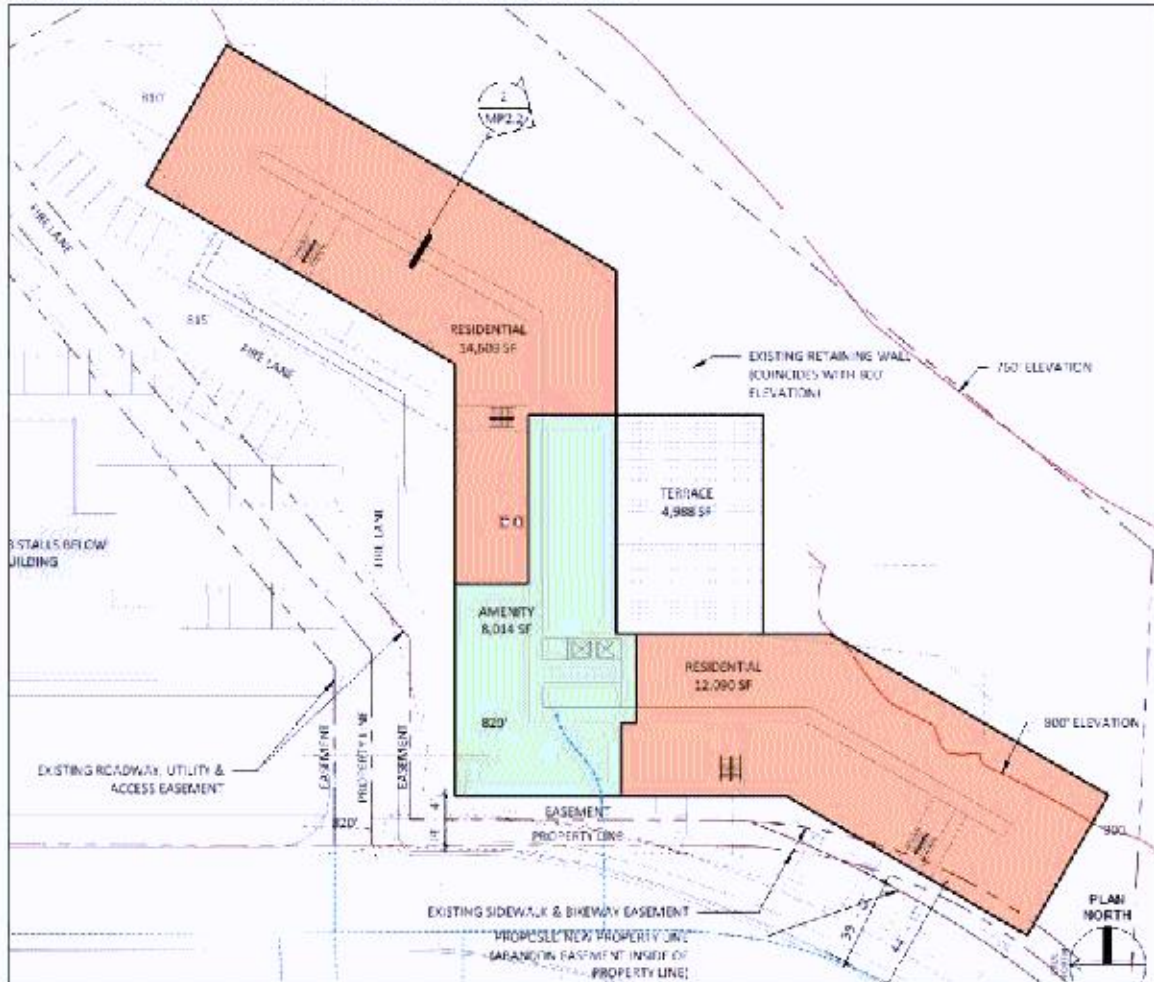


Figure provided by Roers Companies, LLC, dated October 8, 2020

## Scope of Services

We visited the site on December 9, 2020 to observe the condition of the slopes to the east of the existing retaining wall and extending east to the approximate boundary of the Minnesota Valley National Wildlife Refuge where the slope leveled off. The purpose of our site visit was to look for evidence of deep seated and surface instability as well as evidence of historic or recent seepage and slope movement. We walked the slope along the base of the existing retaining wall, on the slope and along the property boundary. We also reviewed historic aerial images.

## Site Reconnaissance Results

In our review of historic aerial images from Google Earth and Minnesota Historical Aerial Photographs Online (MHAPO), we noted that the parking lot and retaining wall was in place in 1991. The tree cover of the slope limits the use of the available aerial photographs to evaluate the general slope condition. Figure 3 shows an aerial photograph from 2018. In the photograph, existing drainage chutes can be seen extending downslope from each end of the wall, as highlighted by the red boxes. These existing chutes were observed during our limited site reconnaissance discussed below.

Figure 3. 2018 Aerial Photograph



We completed our limited site reconnaissance on December 9, 2020. In general, the slope is partially tree and brush covered, approximately 20 to 40 feet in height, with a slope inclination that ranges from less than 2H:1V to approximately 1.5H:1V in limited areas. At approximately the boundary with the Minnesota Valley National Wildlife Refuge, the slope flattens to near horizontal and extends to the east for 100+ feet before steepening down towards the river. Figures 4 and 5 provides photographs of the general slope conditions on the south and north ends, respectively, taken during our site reconnaissance.

As shown in the photographs, mature trees are present on the slope and show limited to no apparent signs of slope movement (bending, pistol-butted trunk form, toppling).

**Figure 4. Photograph of General Slope Condition Looking North from South End**



**Figure 5. Photograph of General Slope Condition Looking North to North End**



We did not observe tension cracks or signs of deep-seated slope movement during our site reconnaissance.

We observed drainage gullies at each end of the retaining walls created by surface water runoff. The gullies are approximately 1 to 3 feet deep. Additionally, we observed a drainage/erosion gully in the central section of the wall. The wall panels are slightly separated, and it appears that water has flown through the crack and down the slope. The location of this drainage gully is outlined by the yellow rectangle shown in Figure 1 above. Figure 6 shows a photograph of this drainage gully that extends from the base of the wall down the slope.

**Figure 6. Drainage/Erosion Gully Located near the Center of the Retaining Wall on the Slope**



We observed apparent human and animal created slope erosion. The retaining wall is partially covered with graffiti and the upper section of the slope has trash on it. Additionally, we observed two encampments near the retaining wall and slope. This indicates that people have been on the slope below the wall and in our opinion have created some surficial erosion on the slope.

We observed an area of seepage from the slope approximately 100 feet downslope of the retaining wall. The approximate area of seepage is highlighted by the blue circle shown in Figure 1 above. We did not observe signs of slope instability near the slope seepage.

## Opinions and Recommendations

Based on the information noted in our site visit and historical document review, it is our professional opinion there is little risk to instability of the slopes downhill from the existing retaining wall and the planned development. We recommend that site drainage be addressed during construction of the planned development to reduce the potential for surficial water runoff down the slope. Additionally, we recommend that the existing drainage/erosion gullies on the slope be properly filled during site construction to reduce the potential for future erosion near the proposed development.

For the slopes directly adjacent the proposed development, we recommend that we be engaged to review the stability of the slope if structures will be placed within a horizontal distance from the top edge of the slope equal to the height of the slope. Depending on the location and depth of proposed structures, a review of the slope stability may reveal that some modifications may be needed to the existing slopes. Potential modifications could include flattening the slopes, incorporating some form of slope reinforcement, or providing surface protection to the slope face. Furthermore, we recommend that no structures (including pavements) be planned for location within the current slopes, unless a detailed slope stability assessment is conducted as part of the design.

## Use of Report

This report is for the exclusive use of the addressed parties. Without written approval, we assume no responsibility to other parties regarding this report. Our evaluation, analyses, and recommendations may not be appropriate for other parties or projects.

## Standard of Care

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

Thank you for making Braun Intertec your geotechnical consultant for this project. If you have questions about this report, or if there are other services that we can provide in support of our work to date, please contact Chad Lukkarila at 952.995.2322 (clukkarila@braunintertec.com) or Ray Huber at 612.366.6506 (rhuber@braunintertec.com).

Sincerely,

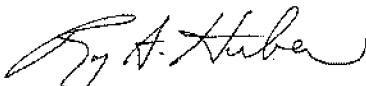
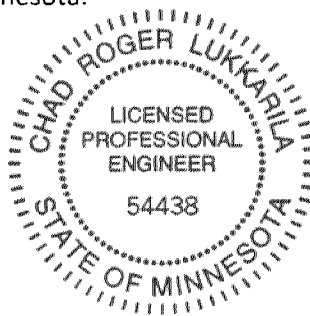
BRAUN INTERTEC CORPORATION

**Professional Certification:**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Chad R. Lukkarila, PE  
Group Manager, Senior Engineer  
License Number: 54438  
December 15, 2020



Ray A. Huber, PE  
Vice President, Principal Engineer

c: James Riley, Roers Companies, LLC  
Aaron Schulzetenberg, PE, Braun Intertec Corporation