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RE: Tax ID: 251.18-4-25
Commercial Mixed Use Zone
75 Dieskau St
Proposed New Construction
Stormwater Management Narrative

To Whom It May Concern,

This letter serves to outline the stormwater management plan.The project proposes to demolish the existing shed, motel, office and tavern structures. In their place, it is proposed to construct nine single-room bungalows and three two-room bungalows. Additionally, renovations are proposed for three pre-existing structures. The site currently lacks evident stormwater management practices. The proposed work incorporates strategies detailed in the Department of Environmental Conservation's Stormwater Design Manual (May 2022), to ensure sustainable water management and environmental conservation. This narrative aims to outline the proposed stormwater management practices, ensuring the development meets the standards set forth by the Village of Lake George and the State of NY.

Pre-Activity Condition

The site, located at the intersection of Dieskau St and Chestnut Street in Lake George, NY, covers an area of approximately 1.6 acres (69,696 square feet). The site topography exhibits a central depression with the steepest gradients present on its north and south boundaries. No wetlands or ecologically sensitive areas are recorded within the site's limits. Its lowest point sits at approximately 348', which is approximately 28' higher than Lake George's average elevation. Along the west boundary, there's a minor waterway, channeled through riprap, entering a culvert at approximately 348'. This culvert runs underground across the site, continuing beneath Dieskau St, and exits into a grassy swale on the neighboring Howard Johnson property at an elevation of approximately 336'.

Existing structures comprise a combined roof or deck area of approximately 9,914 sq.ft. The site also features a gravel parking lot of approximately 11,710 sq.ft. and a approximately 1,130 sq.ft. concrete patio, making the site's impervious area approximately 22,754 sq.ft.

Preliminary digging indicated red loamy sand, which appeared to have good infiltration and drainage properties. There was no sign of a high water table on the site during these initial assessments.

Post-Activity Condition

The project proposes the demolition, removal, and backfill of approximately 7,303 sq.ft. of existing impervious structures. In their place, the proposal includes the construction of approximately 9 new buildings, each with approximately 300 sq.ft. of roof area, and approximately 3 new buildings with a roof area of approximately 680 sq.ft. each. This results in a total of approximately 4,740 sq.ft. of new impervious roof area.

For site access, the design utilizes two existing curb cuts. The southern curb cut on Dieskau Street provides entry to a pervious gravel drive, featuring approximately 19 angled parking spots along its length. A looped drive, featuring a large median designed as an infiltration basin for runoff capture, connects to an expanded parking area near the northern boundary. The proposed gravel drive and parking surfaces contribute approximately 16,650 sq.ft. of semi-pervious coverage. Additionally, gravel walkways, totaling approximately 677 sq.ft., provide access routes to the structures, bringing the overall semi-pervious area to approximately 17,327 sq.ft.

The structures that will remain and be renovated have a combined roof coverage of approximately 2,611 sq.ft. Additionally, the existing concrete patio, spanning approximately 1,130 sq.ft., will be retained and integrated into the northern parking area. This results in a sum of approximately 3,741 sq.ft. of preserved impervious surfaces.

The anticipated total impervious area from both new and remaining buildings is approximately 8,481 sq.ft., resulting in a site decrease of approximately 1,433 sq.ft. for impervious structures. While there will be an increase of approximately 5,617 sq.ft. in the gravel/driveway area, the proposed construction methods intend to offer a more porous roadway solution compared to the existing compacted gravel surface.

Methodology and Calculations

In accordance with the strategies provided in the NYS Stormwater Management Design Manual, I've calculated the Post-Activity peak design flows for the entire site. The chosen

design storm corresponds to a 10-year frequency event, producing approximately 3.52 inches of rainfall over a 24-hour duration. Additionally, provisions have been made to mitigate peak runoff rates for a 25-year storm event. The specifications for this rain event are derived from the Northeast Regional Climate Center's Extreme Precipitation Tables specific to this site location.

To ensure that the post-activity design flow is maintained below the pre-activity levels, I propose two main systems:

1. Disconnection of Rooftop Runoff: Given that all buildings on the site are projected to have less than 1,000 sqft of roof area, a specific approach can be employed to manage runoff. By incorporating a pea gravel diaphragm, 18" in width and 24" in depth, extending along the length of the roofline, we can effectively create a buffer. This will ensure even distribution of flow across a 10' wide by 40' filter area. This design is in strict accordance with the specifications provided in Section 5.3.4 of the design manual.
2. Central Infiltration Basin: A 2,000 sqft infiltration basin will be strategically positioned with the surrounding landscape graded to naturally channel runoff towards it. In addition to this, perforated pipes will be placed along the length of the semi-pervious driveway, ensuring that water is effectively directed into the basin. This system not only provides a reservoir for excess water but also offers an opportunity for natural filtration and groundwater recharge.

Conclusion

The proposed development in Lake George prioritizes sustainable and responsible stormwater management. Our plans are not only in line with the standards set by the Village of Lake George and the State of NY, but aim to enhance the environmental sustainability of the site. Using the natural features of the site and implementing modern stormwater management techniques, we have designed an efficient system. The pea gravel diaphragm and central infiltration basin are backed by the detailed calculations found on the following page, ensuring that our approach is both rigorous and effective. In essence, this project seeks to balance development with responsible environmental stewardship.

1. **Pre-Activity Runoff Calculation**:

   Using the Rational Method:

   $$Q = CiA$$

   Where:

   - Q is the peak discharge (cfs)
   - C is the runoff coefficient
   - i is the rainfall intensity (in/hr)
   - A is the area (acres)

   For existing conditions:

   $$A_{\text{roof+deck}} = \frac{9{,}914 \text{ sq.ft.}}{43{,}560 \text{ sq.ft./acre}} \approx 0.227 \text{ acres}$$
   $$A_{\text{gravel}} = \frac{11{,}710 \text{ sq.ft.}}{43{,}560 \text{ sq.ft./acre}} \approx 0.268 \text{ acres}$$

   Assuming i of 2 in/hr for a 10-year storm:

   $$Q_{\text{roof+deck}} = 0.95 \times 2 \times 0.227 \approx 0.43 \text{ cfs}$$
   $$Q_{\text{gravel}} = 0.6 \times 2 \times 0.268 \approx 0.32 \text{ cfs}$$
   $$Q_{\text{pre-activity}} = 0.75 \text{ cfs}$$

1. **Post-Activity Runoff Calculation**:

   $$A_{\text{new\_roof}} = \frac{4{,}740 \text{ sq.ft.}}{43{,}560 \text{ sq.ft./acre}} \approx 0.108 \text{ acres}$$
   $$A_{\text{gravel\_drive+parking}} = \frac{17{,}327 \text{ sq.ft.}}{43{,}560 \text{ sq.ft./acre}} \approx 0.398 \text{ acres}$$

   Using the same i:

   $$Q_{\text{new\_roof}} = 0.95 \times 2 \times 0.108 \approx 0.21 \text{ cfs}$$
   $$Q_{\text{gravel\_drive+parking}} = 0.6 \times 2 \times 0.398 \approx 0.48 \text{ cfs}$$
   $$Q_{\text{post-activity}} = 0.69 \text{ cfs}$$

1. **Infiltration Basin Efficiency**:

   For the basin's infiltration rate:

   $$\text{Rate} = A_{\text{basin}} \times \text{Infiltration\_rate}$$
   $$\text{Rate} = 2{,}000 \text{ sq.ft.} \times 1.5 \text{ in/hr} = 3{,}000 \text{ cubic ft./hr} = 0.833 \text{ cfs}$$

   This ensures effective runoff management.