

TriValley Subdivision HOA

Road Improvement Plan

Purpose:

The safety of all community members and the accessibility of roads for emergency vehicles and daily use are paramount. Our subdivision is home to the only licensed childcare facility in the Denali Borough, which serves daily commuters from Cantwell to Bear Creek. There are also three churches that offer public events, classes, and meeting spaces. Given that a quarter of the Denali Borough population resides within our boundaries, maintaining the integrity of our public roads is crucial for the borough's overall strength.

Overview:

Initially constructed to high standards, the roads within the Tri-Valley Subdivision have widened over time due to regular plowing and grading eliminating snow storage and proper drainage areas. Additionally, some culverts have sustained damage. In 2023, HOA members inventoried all culverts and consulted with local road experts, leading to the development of this Road Improvement Plan. It outlines eight priority projects with detailed project summaries.

Project Summary:

Projects are listed in priority order; however, available funds may be allocated to lower-priority projects as needed.

Project #1	Graphite Road Improvement <i>Objective: Replace and add culverts to improve drainage and eliminate standing water.</i>
Project #2	Carbon Way Enhancement <i>Objective: Elevate road and create ditches for better water drainage.</i>
Project #3	Partnership with Borough for Drainage Improvements <i>Objective: Install ditches with bullrock to redirect water flow.</i>
Project #4	Quartz Road Upgrade <i>Objective: Address erosion and enhance road safety.</i>
Project #5	Intersection Improvements at Quartz and Dry Creek <i>Objective: Control drainage through culvert installation.</i>
Project #6	Culvert Installation across Quartz to Rutile <i>Objective: Direct water runoff and prevent erosion.</i>
Project #7	Culvert Replacement near Preschool <i>Objective: Improve drainage to prevent overflow and erosion.</i>
Project #8	Gravel Addition at Cassiterite <i>Objective: Address ruts and erosion caused by heavy trucks.</i>

Assumptions:

- Consultations with current and former DOT contractors, road engineers, and private contractors informed the development of these priorities.
- Projects prioritize effective water drainage and are designed with long-term durability in mind, including the use of structural steel pipes for culverts.

Notes and Descriptions:

Each project is accompanied by specific notes and descriptions to clarify objectives, methodologies, and expected outcomes, ensuring all stakeholders have a comprehensive understanding of the plan's scope and impact.

Project #1: Enhancement of Graphite Road

Objective:

The primary goal for Graphite Road is to address and rectify the persistent issue of standing water, particularly at the intersection with Carbon Way and the cul-de-sac end. The project entails replacing the current culvert at Diamond Place and installing a new culvert across Graphite Road before the Catholic Church driveway. The introduction of new ditches and culverts is designed to facilitate the diversion of water to a designated vacant tract, enabling natural evaporation and preventing accumulation on the road surface.

Justification:

Positioned at a lower elevation, Graphite Road is critical in the subdivision's drainage hierarchy, receiving runoff from higher areas targeted for subsequent improvements. Prioritizing its drainage enhancement is essential to prevent exacerbating existing water accumulation issues, particularly with the planned enhancements in areas like Project #2. Addressing Graphite Road first is strategic, ensuring that the increased runoff from these projects does not overwhelm its capacity, which is vital for maintaining road safety, accessibility, and protecting resident properties.

This approach not only mitigates immediate water-related risks but also secures a foundational step for the entire road improvement plan. It safeguards the effectiveness of subsequent upgrades, ensuring that improvements do not compromise Graphite Road's functionality or the subdivision's overall safety and infrastructure integrity.

Strategy and Execution:

- Road Elevation: Building up the road's base with pit run gravel to ensure proper elevation for water runoff. This process will also narrow the driving surface to 20 feet.
- Ditch Construction: The narrower and elevated driving surface will naturally create ditches along the road to provide a clear pathway for water to drain away from the roadway and provide space for snow storage in the winter.
- Culvert Installation and Replacement: Install 2 culverts of structural steel for durability

Outcome:

Upon completion, the project will significantly mitigate the issue of standing water on Graphite Road, enhancing road safety, and ensuring unimpeded access for all community members. The improvements will also contribute to the longevity of the road infrastructure within the TriValley Subdivision.

Project #2: Enhancement of Carbon Way

Objective:

To elevate and stabilize Carbon Way from Quartz to Platinum, addressing the current issues of rutting and erosion caused by inadequate drainage. The project aims to construct new ditches along the road to facilitate effective water diversion away from the roadway, enhancing the road's longevity and safety.

Justification:

Carbon Way is a high-traffic artery within the subdivision, experiencing significant wear and erosion due to poor drainage, particularly near the curve at the east end that leads to the coal tipple. This section's deterioration not only poses a risk to vehicle safety but also undermines the road's structural integrity. The planned improvements are essential for redirecting water flow away from vulnerable areas, mitigating erosion, and preventing further damage.

Strategy and Execution:

- **Road Elevation:** Building up the road's base with pit run gravel to ensure proper elevation for water runoff. This process will also narrow the driving surface to 20 feet.
- **Ditch Construction:** The narrower and elevated driving surface will naturally create ditches along the road to provide a clear pathway for water to drain away from the roadway and provide space for snow storage in the winter.

Outcome:

The enhancement of Carbon Way is expected to significantly improve road safety and durability, ensuring reliable access for residents and mitigating future maintenance costs. By addressing the root cause of the current erosion and wear, this project will contribute to the longevity of the road infrastructure within the TriValley Subdivision.

Project #3: Partnership with Borough for Drainage Improvements

Objective:

The project's objective is to install ditches lined with 6" bullrock to redirect water flow along Coal Street and near the Mental Health Building, thus improving drainage in critical areas. This project, which is contingent upon a partnership with the borough, specifically aims to address and mitigate the adverse effects of water runoff on properties located along this area of road and will prevent the erosion currently affecting the intersection of Dry Creek Road and Quartz.

Justification:

This project, while itself a high priority, directly supports the goals of Project #5 by addressing a key source of the problem outside the subdivision boundaries. The collaboration with the borough is crucial, as it extends the project's scope to include areas beyond the subdivision, targeting the root cause of the runoff and ensuring a comprehensive solution to protect the subdivision's streets.

Strategy and Execution:

- **Installation of Ditches:** Constructing 2 ditches lined with 6" bullrock involves excavating the designated areas and placing the bullrock to ensure proper water diversion. This method is chosen for its effectiveness in managing heavy water flow, preventing erosion by stabilizing the soil. One ditch would be near the Mental Health building along Coal Street and the other ditch would be through Track F across from Lot 2 on Dry Creek Road.
- **Collaboration with Borough:** This project would involve close coordination with the borough to leverage resources, expertise and leadership.
- **Community Engagement:** Informing and engaging the community, especially those directly affected by the construction, is a priority to ensure transparency and address any concerns.

Outcome:

Upon completion, Project #3 will significantly enhance the drainage system within the northeastern boundary of the TriValley Subdivision, reducing the risk of erosion and water damage to roads and adjacent properties. This project not only improves the subdivision's road infrastructure resilience but also fosters a cooperative relationship with the borough, setting a precedent for future community projects.

Project #4: Quartz Road Upgrade

Objective:

The project's objective is to rehabilitate Quartz Road from Magnetite to Hematite by adding two feet of new gravel to cover exposed large boulders, thereby addressing the road's severe erosion and surface irregularities. This enhancement will stabilize the road base, facilitate effective water drainage to prevent standing water, and ensure a consistently smooth and durable surface for all vehicles. The project is designed to significantly improve road safety and accessibility for the community, ensuring that this heavily utilized section can accommodate traffic reliably and safely.

Justification:

Quartz Road serves as a crucial artery within the TriValley Subdivision, experiencing significant traffic from residents and visitors alike. The section from Magnetite to Hematite has seen substantial wear, with visible large boulders posing hazards to vehicles, especially motorcycles and bicycles. Additionally, standing water during the thaw season exacerbates erosion, further compromising road safety and integrity. Addressing these issues through the Quartz Road Upgrade is essential for preventing accidents, reducing maintenance costs, and prolonging the road's lifespan.

Strategy and Execution:

- Road Elevation: Building up the road's base with pit run gravel to ensure proper elevation for water runoff. This process will also narrow the driving surface to 20 feet.
- Ditch Construction: The narrower and elevated driving surface will naturally create ditches along the road to provide a clear pathway for water to drain away from the roadway and provide space for snow storage in the winter.

Outcome:

Upon completion, the Quartz Road Upgrade will significantly improve road safety and durability, ensuring that the road remains passable and secure for all users.

Project #5: Intersection of Quartz and Dry Creek

Objective:

To install new culverts at the intersection of Quartz and Dry Creek, thereby improving water management and controlling erosion at this critical juncture. This project aims to ensure efficient drainage across the intersection, preventing water from accumulating and causing damage to the road infrastructure.

Justification:

The intersection of Quartz and Dry Creek is a vital conduit for both local traffic and access to surrounding areas, but it suffers from significant erosion due to inadequate drainage. This erosion not only poses a safety risk to vehicles, especially during heavy rainfall or snowmelt, but also undermines the structural integrity of the road. By introducing new culverts, water flow will be redirected away from the road surface, thereby mitigating the risk of erosion and enhancing the longevity of the road infrastructure. This intervention is critical to maintaining safe, continuous access for all subdivision residents and mitigating potential damage to vehicles and property.

Strategy and Execution:

- Road Elevation: Building up the road's base with pit run gravel to ensure proper elevation for water runoff.
- Culvert Installation and Replacement: Install 2 culverts of structural steel for durability

Outcome:

The installation of culverts at this strategic location is expected to dramatically improve road conditions by ensuring proper drainage and preventing water accumulation.

Project #6: Culvert Installation across Quartz to Rutile

Objective:

The goal is to install a new culvert across Quartz to Rutile, accompanied by the addition of material to taper the hillside, facilitating effective water runoff management. This project seeks to enhance drainage efficiency, preventing erosion and water damage to adjacent residential properties.

Justification:

Current water runoff patterns from the eastern section of Quartz, particularly around the curve and down the hill towards the creek, have led to significant erosion, adversely affecting the hillside and residential lots. This situation not only compromises the structural integrity of the land but also poses potential risks to property and road safety. The installation of a culvert, designed to redirect water flow to more suitable drainage areas, is a critical measure to address these challenges.

Strategy and Execution:

- Road Elevation: Building up the road's base with pit run gravel to ensure proper elevation to accommodate the new culvert.
- Culvert Installation: Install a culvert of structural steel for durability

Outcome:

The installation of a culvert at this strategic location is expected to dramatically improve road conditions by ensuring proper drainage and preventing erosion.

Project #7: Culvert Replacement near Preschool

Objective:

To replace an existing damaged culvert and install a new culvert across Stibnite, aiming to effectively manage spring meltwater and prevent seasonal flooding. This project intends to enhance drainage in a low-lying area that historically accumulates water, thereby reducing overflow and improving road and pedestrian access near the preschool.

Justification:

Each spring, the meltwater collection in the specified area leads to the formation of a shallow, temporary stream across Sulfide, causing erosion. The existing damaged culvert fails to adequately manage this water flow. Addressing this issue is important for preserving the integrity of local infrastructure.

Strategy and Execution:

- Culvert Replacement: Install a culvert of structural steel for durability

Outcome:

The installation of a culvert at this strategic location is expected to dramatically improve road conditions by ensuring proper drainage and preventing erosion.

Project #8: Gravel Addition at Cassiterite

Objective:

To distribute and compact one foot of gravel over a notably soft area at the end of Cassiterite, thereby stabilizing the road surface and preventing the formation of ruts and erosion caused by heavy vehicles. This project aims to enhance the durability and safety of this section of the road, ensuring it remains passable and reliable for all users.

Justification:

The targeted area has become problematic due to its insufficient gravel base, which allows heavy trucks to sink, especially during the wet season, creating ruts and leading to erosion. This not only poses a hazard to vehicles but also undermines the structural integrity of the road. Addressing this area with additional gravel will provide the necessary support and drainage to maintain the road's condition, preventing further degradation.

Strategy and Execution:

- Road Elevation: Building up the road's base with pit run gravel to ensure stability of road surface.

Outcome:

Implementing this project will result in a significantly improved road surface at the end of Cassiterite, resulting in enhanced stability and reduced maintenance requirements.