CR_6996 ATTACHMENT 2

Mill Creek Ravine Park Trail Rehabilitation, Site Location Study, Edmonton, Alberta

Prepared for:
City of Edmonton

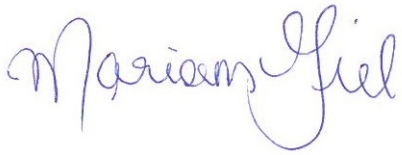
Prepared by:
Stantec Consulting Ltd.

January 2019

1161106255

Sign-off Sheet

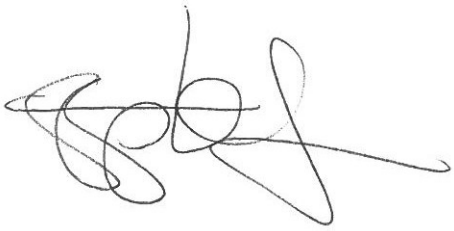
This document entitled Mill Creek Ravine Park Trail Rehabilitation, Site Location Study, Edmonton, Alberta was produced by the following individual(s):



Prepared by _____

(signature)

Mariam Gill, BES
Environmental Scientist



Technical Review by _____

(signature)

Stephanie Grossman, M. Sc., P.Biol
Environmental Scientist

Senior Review by _____

(signature)

Elaine Little, B.Sc.
Associate, Project Manager

Table of Contents

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by the City of Edmonton (COE; the City) to complete a Site Location Study (SLS) for activities associated with the rehabilitation of three sections of trail in Mill Creek Ravine Park that are currently deteriorating due to extensive trail use and natural creek bed erosion (the Project). Mill Creek Ravine Park is located within the North Saskatchewan River Valley (NSRV), and the three Sites (named Site 1, 2 and 3) associated with the Project are located within NE and SE 28-052-24 W4M in Edmonton, AB (Figure 1).

The Project is located within the bounds of the North Saskatchewan River Valley Area Redevelopment Plan (NSRVARP, Bylaw 7188) and has been deemed a major facility under this legislation; however, Section 1.4 also defines a recreational trail as a low intensity recreational use within the NSRV. In accordance with Bylaw 7188, Sustainable Development of the City of Edmonton (the City; COE) has requested that a Site Location Study (SLS) and an Environmental Review Report (ERR) be prepared for this Project. This report presents the results of the SLS; the ERR will be submitted under separate cover.

1.1 BACKGROUND

The NSRV is a beloved recreational destination for Edmontonians. Mill Creek Ravine Park features picnic areas, recreation areas, trails (paved and granular) for walking, hiking and biking, off-leash areas, and scenic viewpoints. The NSRV and the trails along the tributaries of the NSR are a source of pride for the COE and its citizens. In Mill Creek Ravine Park, the trail system is an important place for social activity and citizen connection with the River Valley landscape.

A geotechnical investigation completed by Stantec (2018) found that Mill Creek was undercutting the bank along the outside bends of meanders in three different locations (Site 1, 2 and 3) causing sections of the trail system to deteriorate.

1.2 SCOPE

The scope of this SLS is to examine the financial, social, environmental, and institutional opportunities and constraints associated with the development of the Project to aid the COE's determination of the Project as essential to occur at the proposed locations within the NSRVARP area.

The SLS is required as per the NSRVARP to understand the siting options for the proposed trail realignment. Additional design details and Project alternatives for the proposed Project have been explored in the accompanying ERR and other technical documents.

1.3 SITE DESCRIPTION

Regionally, the Project is located in the COE south of the NSR along the east side of Mill Creek. Mill Creek, a tributary to the NSR generally meanders from southeast to northwest, receiving runoff from nearby residential, commercial and industrial lands within the drainage basin (Stantec 2018). Locally, the Project is in Mill Creek Ravine Park (Figure 1). The Project is bound by Mill Creek Ravine Park to the north, the neighbourhoods of Bonnie Doon and King Edward Park to the east, 76 Ave to the south and the neighbourhoods of Ritchie and Strathcona to the west (COE 2017).

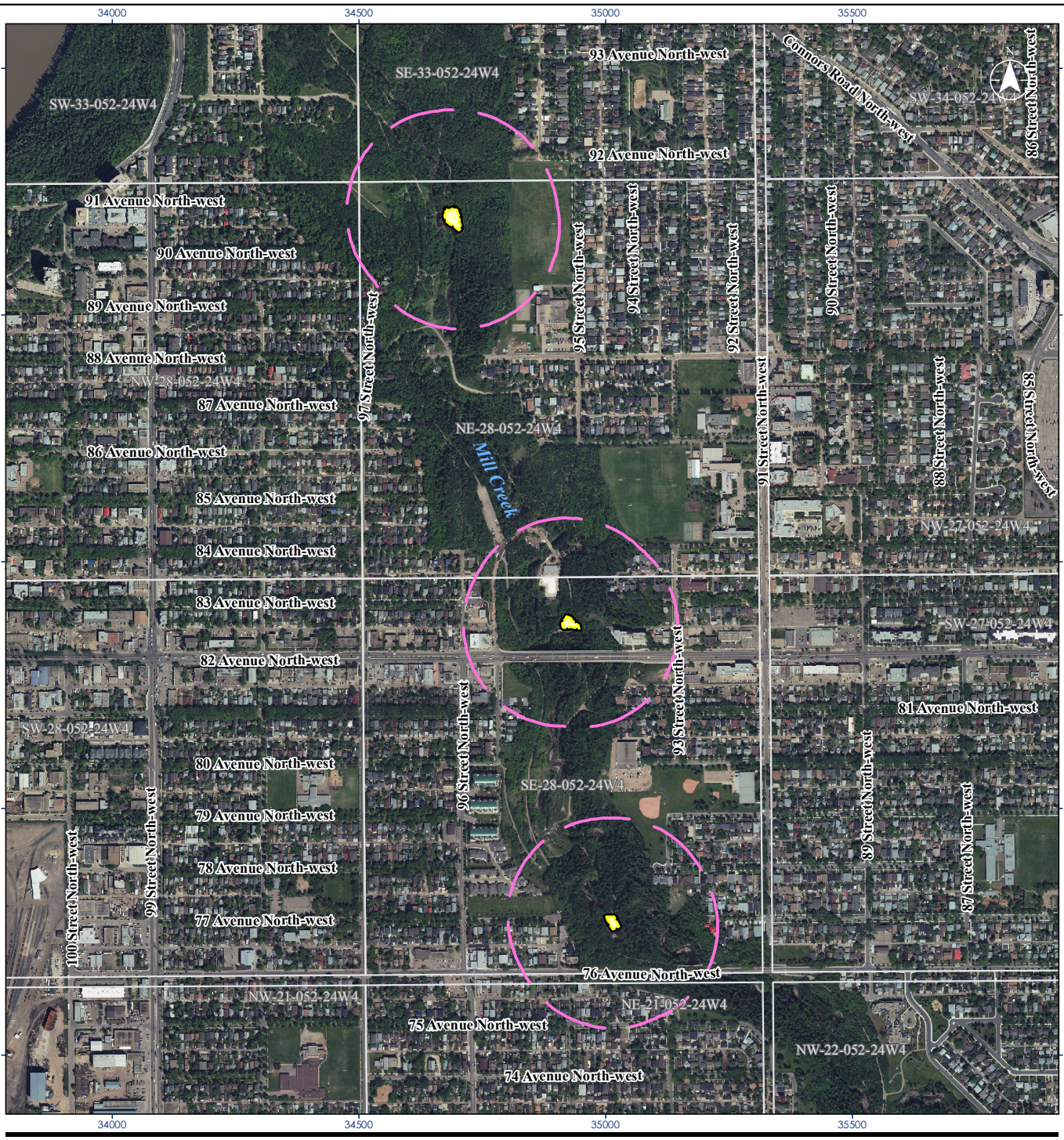
The geographic boundaries used for the analysis presented in this SLS include the Project Disturbance Area (PDA) and the Local Assessment Area (LAA) which is a 200 m buffer extending from the boundaries of the PDA. There are no developed trails east of the existing trail system with the LAAs of any of the Sites.

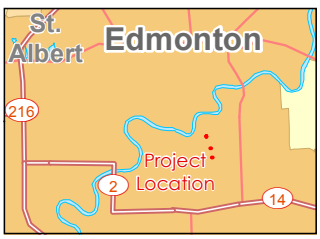
The trail system within the Mill Creek Ravine Park has multiple documented erosion and slope stability issues (Stantec 2018). A slope stability analysis concluded that the LAAs are marginally stable and heavily influenced by creek levels, especially during flood conditions (Stantec 2018). The vegetation composition within the LAAs is dominated by deciduous trees and native and non-native vegetation. A forest-mowed lawn interface is present at Site 2. The ERR provides further details on existing conditions at the Project location and is submitted under separate cover.

1.4 PROJECT DESCRIPTION

The Project is comprised of the development of the proposed trail realignment and/or rehabilitation at three sections of the existing trail system (Figures 2, 3 and 4). Development activities will include offsetting the main trail well away from Mill Creek bank, while maintaining tie-ins to the existing trail system at Site 1 and 2. At Site 3 the trail will be rehabilitated in place and the east bank of Mill Creek will be armored (Appendix A – Drawings). The Project is designed with the intent of ensuring the longevity of the existing trail system for trail users and neighbouring community members.

Construction is anticipated to begin in fall or winter of 2019 with the intent that the trail will be operational by summer 2020.





Project Disturbance Area (PDA)
Local Assessment Area (LAA)
Quarter Section

0 160 320 480 metres

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Stantec

The City of Edmonton

Project Location
Edmonton, AB

1161106255
Prepared by MG on 2018-11-14
Quality Review by DJ on 2019-01-08
Approved by EL on 2019-01-08

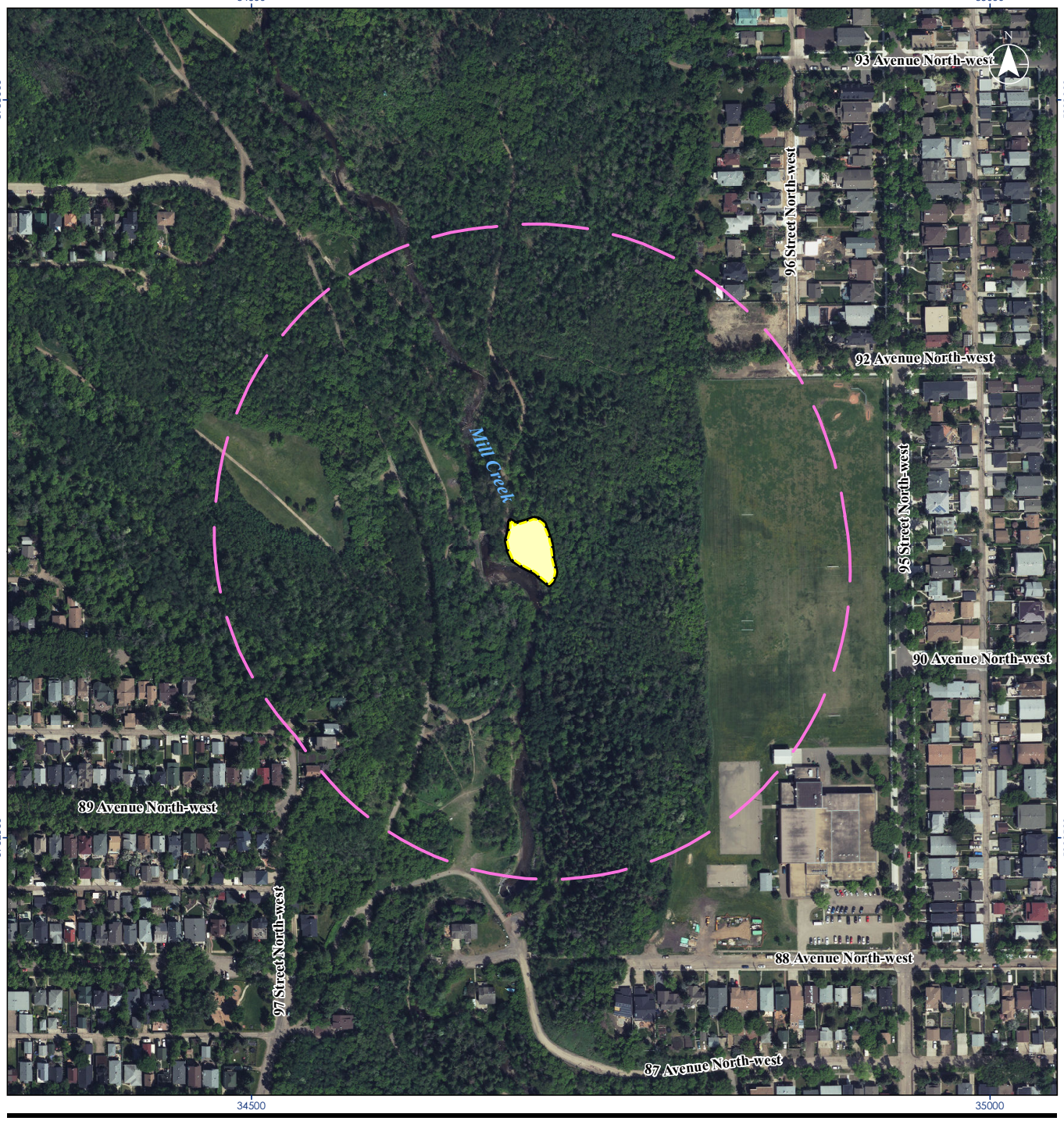
Client/Project
City of Edmonton
Mill Creek Ravine Park Trail Rehabilitation
Site Location Study

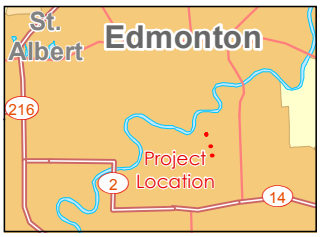
Figure No.
1

Title
Site Location Plan

Notes

1. Coordinate System: NAD 1983 3TM 114
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. magery: City of Edmonton, 2017.





Project Disturbance Area (PDA)
Local Assessment Area (LAA)

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Stantec

The City of Edmonton

Project Location
Edmonton, AB

1161106255
Prepared by MG on 2018-11-14
Quality Review by DJ on 2019-01-08
Approved by EL on 2019-01-08

Client/Project
City of Edmonton
Mill Creek Ravine Park Trail Rehabilitation
Site Location Study (Site 1)

Figure No.
2

Title
Site Location Plan

Notes
1. Coordinate System: NAD 1983 3TM 114
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3. magery: City of Edmonton, 2017.

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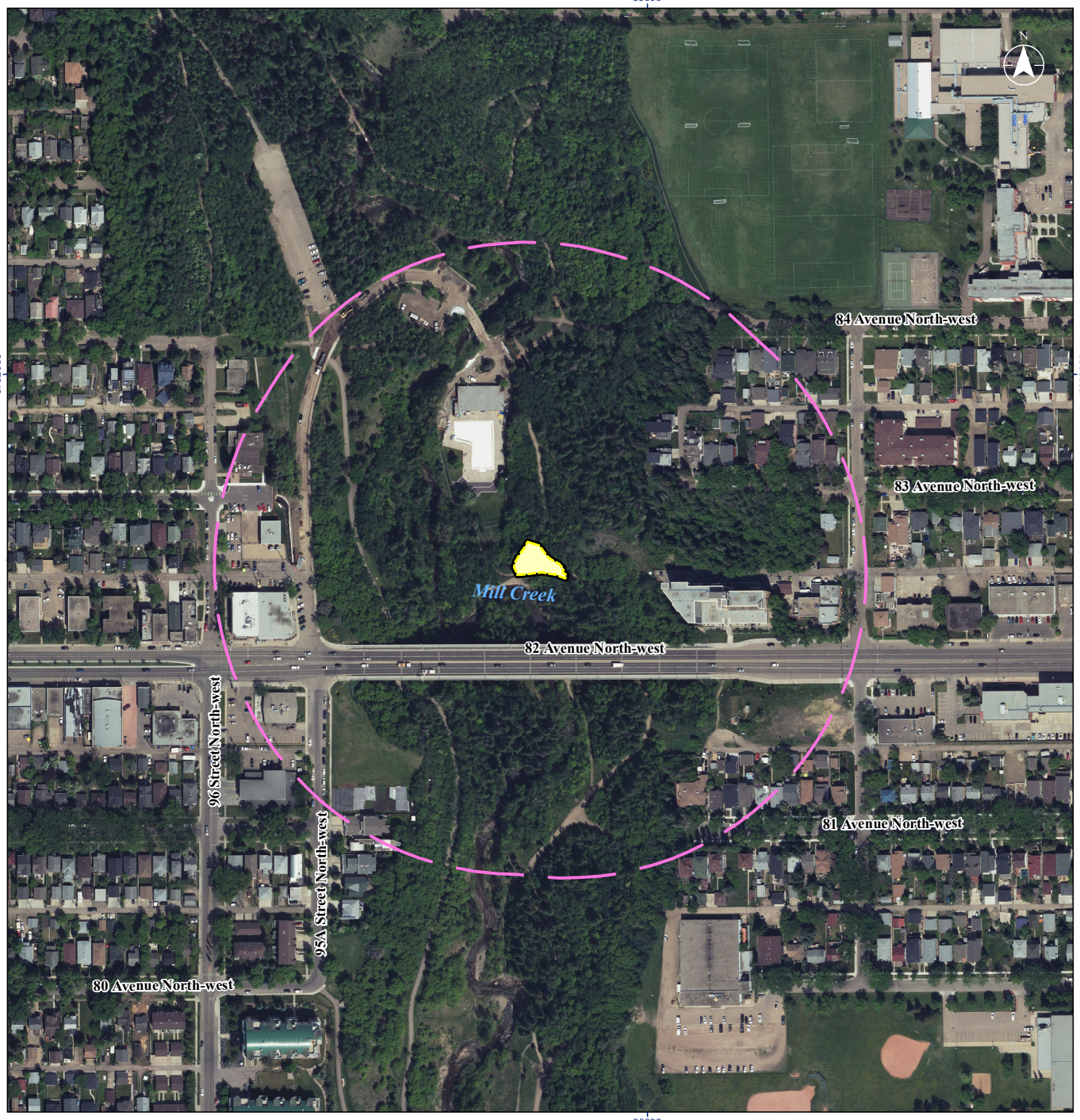

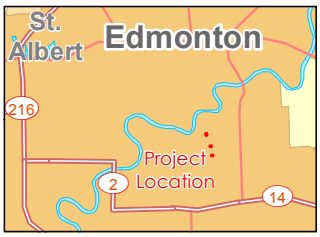

Project Disturbance Area (PDA)
Local Assessment Area (LAA)

0 50 100 150 metres
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Approved by EL on 2019-01-08

Client/Project
City of Edmonton
Mill Creek Ravine Park Trail Rehabilitation
Site Location Study (Site 2)

Figure No.
3

Title
Site Location Plan

Notes
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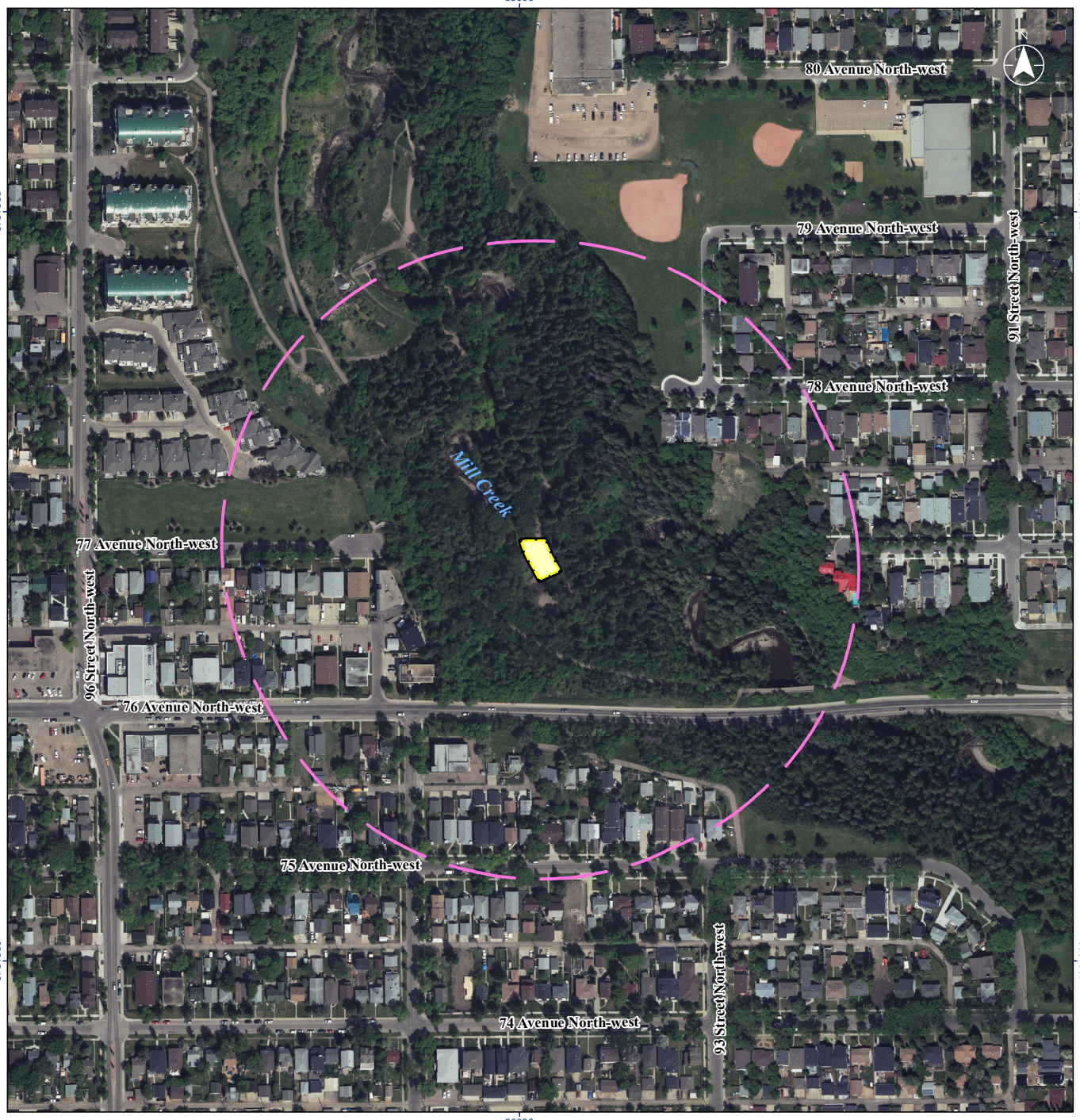

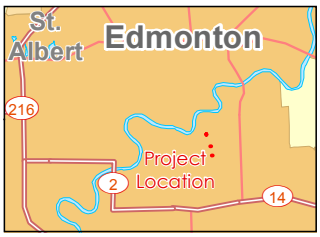

Project Disturbance Area (PDA)
Local Assessment Area (LAA)

0 50 100 150 metres
1:4,000 (at original document size of 8.5x11)

Stantec

Project Location
Edmonton, AB

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Prepared by MG on 2018-11-14
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Client/Project
City of Edmonton
Mill Creek Ravine Park Trail Rehabilitation
Site Location Study (Site 3)

Figure No.
4

Title
Site Location Plan

Notes
1. Coordinate System: NAD 1983 3TM 114
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. magery: City of Edmonton, 2017.

1.4.1 Siting Options

In accordance with Bylaw 7188, siting options for the proposed Project within the NSRVARP are described below. Due to the nature and function of the existing trail system's reliance on connectivity and accessibility, rehabilitation activities which would involve extending the trail outside of the NSRVARP were not considered. East of the Sites, the NSRVARP boundary extends to the edge of the residential neighbourhoods of Bonnie Doon and King Edward Park. As such, an option that extends the proposed rehabilitation sections of the trail outside of the immediate area of the existing trail system has not been presented.

The following options were considered in the NSRV location analysis of the Project:

1.4.1.1 Option 1 – The Project

The first alternative considered was the Project as outlined in Section 1.4 and referred to throughout this report and described in more detail in the ERR.

1.4.1.2 Option 2 – Status Quo

The second alternative considered was to construct no new infrastructure. In this alternative, the existing trail would operate as usual, with no upgrade or improvement to the usability or safety of the existing trail system. In this scenario, it is likely that the existing trail would continue to deteriorate and eventually need to be closed, rendering the rest of the trail system inaccessible. Further, it is likely that if the trails are not relocated or rehabilitated, the public will continue to use the NSRV for recreation purposes, eventually damaging the area creating informal trails and causing further damage to the ecology of the NSRV.

2.0 OPPORTUNITIES AND CONSTRAINTS ANALYSIS

This section contains an opportunities and constraints analysis on the selected locations for each Site. An analysis of the Options is discussed below. This discussion covers the financial, social and environmental opportunities and constraints associated with locating the Project within the NSRV and compares them to not developing within the NSRV. Institutional policies and legislation will also be discussed in relation to how they apply to the Project. The constraints and opportunities provided here form the basis for the conclusions presented in Section 3.0.

2.1 FINANCIAL OPPORTUNITIES AND CONSTRAINTS

If the Project is constructed as outlined in this report (Option 1), the financial constraints would include all those associated with the Project activities as proposed (see Appendix A – Drawings).

The financial constraints of Option 2 would result in minimal financial cost, as no new infrastructure would be constructed. However, there may be some small costs accumulated in the future associated with the potential permanent closure of the existing trail, such as costs for information signage, or the costs to remediate any damage caused by unmanaged use of the area such as that caused by informal trails.

Overall, it is difficult to quantify financial opportunities and constraints amongst the two Options because a full financial cost assessment was not completed or analyzed. However, it may be assumed that Option 1 presents financial constraints (most financial cost) and Option 2 presents financial opportunity (least financial cost) in the short-term but would present financial constraints in the long-term.

2.2 SOCIAL OPPORTUNITIES AND CONSTRAINTS

The social opportunities and constraints were analyzed mainly by considering the perspective of the trail users. However, the constraints and opportunities considered may be applied to residents as well.

Social constraints associated with Option 1 include the temporary increase in noise level and temporary trail closures which may occur during construction. The effect of construction noise is anticipated to be minimal for trail users, as they will not be in the surrounding area during construction due to the trail closure. Residents within the LAA may be affected by construction noise. The effect of noise level will be controlled as all construction activity will be restricted to the guidelines outlined in the Community Standards Bylaw (Bylaw 14600; COE 2018). In contrast, a social opportunity associated with Option 2 is that there will be no temporary noise or temporary trail closures but would result in a future permanent closure.

By implementing Option 1, there exists the social opportunity of continued use of the trail system within the Mill Creek Ravine Park for recreational purposes. Option 2 does not provide this opportunity, and if left to deteriorate, the Sites proposed for rehabilitation along the existing trail system are likely to become safety hazards and will have to be closed permanently.

Option 1 presents the social opportunity of maintaining a familiar experience for trail users. The Project has been designed to facilitate the recreational activities already occurring in the area. This has been done by taking into

consideration the metrics of the trail (width and length) as well as building materials, tie-in locations, sightlines and grading. However, Option 2 does not provide this opportunity. Adopting the 'Status Quo' Option would result in a significant change in the trail users' experience. The Mill Creek trail system in the area of the proposed Project would be fragmented. The remaining sections of the trail system is likely to not be used to the degree it is currently as they will not provide any sort of connectivity to the rest of the trail system.

Overall, Option 1 presents social opportunities for continued use of the Mill Creek Ravine Park trail system for recreation in a fashion similar to how the trail is currently being used and includes only temporary social constraints caused by the construction period. Option 2 avoids the temporary social constraints associated with the construction period but includes permanent constraints such as the overall deterioration of the existing trail system within Mill Creek Ravine Park and the NSRV, as well as the decreased (or discontinued) recreational use of the NSRV due to unsafe conditions.

2.3 ENVIRONMENTAL OPPORTUNITIES AND CONSTRAINTS

Option 1 presents the environmental constraints of vegetation removal, and soil and fish and wildlife disturbance. The Project will require tree clearing (at Site 1 and 2) and in-stream works (at Site 3). The vegetation, soil and fish and wildlife disturbances will be temporary, only lasting though the construction period. Disturbances to wildlife may include changes to wildlife movement patterns and habitat, which are likely to be offset through abandonment of the existing trail. The existing trail, once abandoned, may present different feeding, habitat and movement opportunities for wildlife in the area, without eliminating them. Option 1 also presents the long-term environmental opportunity of preserving the ecology of the NSRV. Maintaining the trail system provides the public with opportunity to use the area without causing damage to the natural vegetation in the area; damage which would likely lead to soil erosion, lower water quality and decrease wildlife habitat.

In contrast, Option 2 presents the environmental constraints that if the trail system is not maintained in some way, either through relocation or rehabilitation, trail users are likely to continue using the area, creating informal trails through the natural vegetation causing ecological damage to the NSRV. Option 2 also presents the environmental opportunity of no disturbance to vegetation, soil or wildlife and no need for in-stream works. Of note is that the in-stream works proposed in Option 1 are not within a designated Class A waterbody.

Overall, Option 1 and 2 present environmental opportunities and constraints (environmental disturbance). However, Option 1 presents more long-term environmental opportunities with short-term constraints, while Option 2 provides more short-term environmental opportunities with long-term constraints.

2.4 INSTITUTIONAL OPPORTUNITIES AND CONSTRAINTS

The COE has policies and bylaws that regulate and guide the construction of new facilities within the NSRVARP area. These policies are in place to protect Edmonton's natural features from increasing development pressures. Applicable bylaws, policies and guidelines are discussed below in the context of their relationship to construction of the Project. This section will examine the Project for conformance to the City's policies and bylaws.

2.4.1 Bylaw 7188: North Saskatchewan River Valley and Area Redevelopment Plan

The NSRVARP (COE 1985) was developed to protect the NSRV and Ravine System as part of the COE's open space heritage. The NSRVARP envisions a major portion of the River Valley and Ravine System used as an environmental protection area. The major goal of the NSRVARP is to ensure preservation of the natural character and environment of the NSRV and Ravine System.

The Parkland Development Objective that applies to the Project is:

2.3.1 To provide park, open space, and a variety of recreational, educational and cultural uses.

The Environmental Protection Objective that applies to the Project is:

2.4.2 To consider environmental factors when planning for use in the River Valley.

The Policies of the NSRVARP that apply to the Project are:

3.2.2 Intensity Range of Recreational Uses

It is a policy of this Plan that a low to high intensity range of recreational activities will be developed and managed within the River Valley.

3.2.3 Location of Recreational Facilities

It is the policy of this Plan to locate the higher intensity recreational and cultural facilities in close proximity to major roadways, public transit routes and direct River crossings, except in the Central area.

3.2.10 Trail System

It is the policy of this Plan to establish pedestrian and other non-motorized vehicular movement systems; which includes bicycles, cross-country skitrail developments and equestrian trails in selected areas; as the primary modes of movement along and through the River Valley.

3.2.17 Urban Design and Architectural Guidelines

It is the policy of this Plan that all public development will conform to Council approved environmental, urban, and architectural design guidelines to be developed in future studies and park development plans.

3.3.5 Development on Hazardous Lands - Unstable Slopes

It is the policy of this Plan that development will avoid areas with unstable slope conditions. Where development in such locations is deemed to be essential or is permitted by existing regulation, the Development Officer may require, from a registered Professional Engineer, detailed construction techniques to ensure stability of land and buildings.

3.5.3 Site Location Study and Environmental Impact Screening Assessment

> *It is a policy of this Plan that all proposals for the development of a major facility that is publicly owned or is developed on public lands shall be subject to an environmental impact screening assessment as outlined in Schedule D, and a detailed site location study detailing costs, and social, environmental, and institutional constraints which make a River Valley location essential must be prepared for Council approval.*

The requirements of this bylaw are addressed in the following ways:

- The Project meets the Parkland Development Objectives of *2.3.1* by providing park and recreational use space as well as metropolitan recreation area.
- The Project meets the Environmental Protection Objective of *2.4.2* as environmental factors were considered during the design and planning phases. The environment was a key consideration in choosing the materials and the final footprint of the proposed trail. Details on the environmental effects and mitigation measures are described in the ERR.
- The Project meets the requirements of policies *3.2.2* and *3.2.3* by providing opportunity for a range of low intensity recreational activities. The LAA is in a forested park area that can support activities such as biking and hiking.
- The Project meets the requirements of policies *3.2.10* by the establishing pedestrian and non-motorized vehicular movement system in the way of pedestrian and bicycle trail development.
- The Project conforms to all design guidelines provided by the City where applicable to meet policy requirement *3.2.17*.
- The NSRV is known for its unstable slopes. To meet the requirements of policy *3.3.5*, a registered Professional Engineer has developed detailed construction techniques to ensure stability of lands have been incorporated into the Project (i.e, retaining walls and swales at Site 1 and 2). Retaining walls and swales will be installed along the trail to ensure surficial land stability and mitigate erosional concerns.
- To meet the requirements of policy *3.5.3* this SLS and an ERR have been prepared for the Project.

2.4.2 Bylaw 15100: The Way We Grow

The Way We Grow (COE 2010a) is the COE's Municipal Development Plan, designed to guide the City's growth and development until 2020. This bylaw includes the following policies that are relevant to the proposed Project:

7.3.1 Protect, preserve and enhance the North Saskatchewan River Valley and Ravine System as Edmonton's greatest natural asset.

> *7.3.1.1 The City will work in partnership with local, regional and provincial organizations to conserve, protect, restore and enhance the North Saskatchewan River Valley and Ravine System for its ecological, recreational, aesthetic, educational and natural resource value.*

7.3.2 Protect, preserve, promote and improve the North Saskatchewan River Valley and Ravine System as an accessible year-round place for recreation and activity for people of all ages.

7.3.2.1 Ensure that the North Saskatchewan River Valley and Ravine System remains primarily an area of unstructured, low-intensity and passive recreation, while accommodating appropriate balance of recreation activity within park nodes as described in the Urban Parks Management Plan and the Ribbon of Green.

7.3.2.2 Ensure that the North Saskatchewan River Valley and Ravine System remains integrated and connected with other natural areas across the city.

7.3.2.5 Provide pedestrian and bicycle connections to increase movement and accessibility.

7.3.2.6 Provide and maintain space for multi-seasonal uses.

7.3.3 Mitigate the impact of development upon the natural functions and character of the North Saskatchewan River Valley and Ravine System.

7.3.3.1 New development within the North Saskatchewan River Valley and Ravine System will be planned according to, and will demonstrate that it embodies, the following priorities:

- *Conservation and protection of natural areas and the connections that link them to, from and within the North Saskatchewan River Valley and Ravine System.*
- *Public utilities installations, services and facilities.*

7.5.1 Mitigate impacts on Edmonton's water resources by ensuring that new developments in Edmonton embody an exemplary standard of ecological design.

7.5.2 Protect, maintain and continually enhance the water quality of the North Saskatchewan Watershed.

7.5.2.2 Adopt and enforce regulations and guidelines that will enhance the quality of Edmonton's watershed.

7.5.3 Water resources are conserved and used efficiently by the public, industry and the City of Edmonton.

7.5.3.2 Ecological design best-practices will be used in the operation and design of City owned and/or managed facilities and infrastructure.

7.5.3.5 Design, arrange and located new infrastructure and buildings to mitigate impacts on the water system.

The proposed Project meets the requirements of this bylaw in the following ways:

- The Project meets the requirements of policies 7.3.1 and 7.3.1.1 through its design. The Project has been designed to have minimal environmental effects on the NSRV and the Ravine System. Details on the Project design options considered, and rationale on the chosen design, are included in the ERR. Following construction of the Project, the trail system will continue to provide the ecological, recreational, aesthetic, educational and natural resource value for Edmontonians.

- The Project meets the requirements of policies 7.3.2, as it is designed to continue supporting the activities that are currently being carried out within the NSRV. Following construction of the Project, the trail system will continue to be an area of unstructured, low-intensity and passive recreation; ensure connectivity of the NSRV and the Ravine System; provide pedestrian and bicycle connections to increase movement and accessibility; and provide and maintain space for multi-seasonal uses.
- The Project mitigates the effects of development upon the natural functions and character of the NSRV and Ravine System, as required by policy 7.3.3, through the Project design. The Project has been designed to conserve and protect the ecological connectivity which already exists within the Project area.
- As required by policy 7.5.1, the Project has been designed incorporating best design and construction practices meant to minimize and mitigate the effects of development on Edmonton's water resources. To meet the requirements of policies 7.5.2 and 7.5.3, the Project has been designed such that only Site 3 will incorporate in-stream works; thereby avoiding in-stream works at Site 1 and 2 and reducing the potential for negative effects within the watershed.

2.4.3 The Way We Green

The Way We Green: the COE's Environmental Strategic Plan (COE 2011), outlines the principles, goals, objectives and strategic actions and approaches for Edmonton to live in balance with nature. The focus of the plan is to address the sustainability and resilience challenges related to the ecosystem (land, water and air), energy/climate change, food and solid waste.

The main objectives of this plan that are relevant to the proposed Project are identified in The Way We Grow and included in Section 2.4.2.

2.4.4 The Way We Live

The Way We Live: Edmonton's People Plan (COE 2010b) is designed to outline how to improve the quality of life of Edmontonians in a socially, environmentally and financially sustainable way and puts a focus on relationships between people, their neighborhoods, local government and the world.

The goals within this plan that apply to the Project include:

1.1 The City of Edmonton provides opportunities in neighbourhood, community and public spaces to connect people and build vibrant communities.

1.1.3 Partners and provides opportunities for local and city-wide social, recreational, cultural and spiritual interaction.

2.1 The City of Edmonton celebrates and promotes healthy living.

2.1.3 Provides infrastructure and public spaces to promote and encourage healthy and active living.

2.2 The City of Edmonton provides for the well-being of its citizens through outstanding parks, natural, green and public spaces.

2.2.3 Builds and maintains a connected system of shared use trails, green and natural spaces.

6.2 The City of Edmonton is an environmentally sustainable society.

6.2.2 Protects, maintains, conserves, and restores the biodiversity of Edmonton's natural environment.

6.2.6 Maintains and conserves natural spaces and ecological connectivity in the North Saskatchewan River Valley.

The requirements of this policy are addressed in the following ways:

- The Project meets the requirements of goal *1.1* by providing opportunities locally for social, recreational, cultural and spiritual interaction.
- The Project meets the requirements of goal *2.1* by providing a public space that promotes healthy and active living.
- The Project meets the requirements of goal *2.2* because the proposed trail will maintain the existing connected system of shared use trails within Mill Creek Ravine Park.
- The Project is designed to meet requirements of policy *6.2* by protecting, maintaining and conserving the biodiversity of Edmonton's natural environment and maintaining and conserving natural spaces and ecological connectivity in the NSRV. For example, the Project includes planting plans along the proposed trails and adding plantings to revegetate the existing trails upon abandonment. Project details on how these objectives are met are described in detail in the accompanying ERR.

2.4.5 The Way We Move

The Way We Move (COE 2009), the COE's Transportation Master Plan, establishes the framework for how the COE will address its future transportation needs. This document is aligned with The Way We Grow (COE 2010a) and focuses on essential infrastructure that is a primary determinant of the City's environmental, financial, and social sustainability.

The objectives of this plan that apply to the Project are: sustainability, health and safety and well-maintained infrastructure.

6.1 The City will create an integrated network of multi-use trail facilities.

a. Developing a coordinated network of multi-use trails throughout the city, including integration with Edmonton's river valley, parkland and utility corridors, as well as regional connections.

The requirements of this policy are addressed in the following way:

- The Project meets the requirements of policy *6.1* by maintaining a coordinated network of multi-use trail facilities within Mill Creek Ravine Park.

2.4.6 City Policy C456A: Corporate Tree Management

The Corporate Tree Management Policy (COE 2010c) is to ensure that all trees on COE owned property are adequately protected from destruction, loss, or damage. Where damage to or loss of COE trees occurs, as a result of not complying with the City Guidelines, equitable compensation for that loss will be recovered from the civic or private entity causing the damage or loss and applied to future tree replacements.

The requirements of this policy are addressed in the following way:

- The proposed trail alignment was chosen to reduce tree clearing to the extent possible. The proposed trail has been field fit to avoid tree clearing where possible. Mitigation measures related to trees in the area have been identified in the ERR. The vegetation and tree removal will be limited to the footprint required for the proposed trails.

2.4.7 City Policy C531: Natural Area Systems

The Natural Area Systems Policy (COE 2007) was developed to help conserve, protect, and restore the natural wetlands, uplands, water bodies, and riparian areas within the COE to safeguard the City's natural capital and associated ecological services. As per this policy, the COE will balance ecological and environmental considerations with economic and social considerations in its decision making and demonstrate that it has done so.

The main purposes of this policy that are relevant to the Project include:

- Conserve, protect, and restore natural area systems through the physical planning and development process; according to the provisions of municipal, provincial, and federal policy and legislation.
- Ensure consistent, uniform, and equitable conservation practices that are based on the best available science.
- Direct Administration to plan our city so that our ecological systems will function effectively at neighborhood, city, and regional scales.
- Conserve, protect, and restore natural area systems through the physical planning and development process according to the provisions of municipal, provincial, and federal policy and legislation.

The requirements of this policy are addressed in the following way:

- Conservation and protection of the natural areas within and surrounding the LAA informed the planning and designing of the Project. Best management and conservation practices have been incorporated into the design of the proposed trail realignment. Details of changes to the LAA, along with a complete effects assessment and mitigation measures are outlines in the ERR.

2.4.8 Bylaw 14600: Community Standards Bylaw

The purpose of the Community Standards Bylaw (COE 2018) is to regulate the conduct and activities of people on privately owned property and immediately adjacent areas in order to promote the safe, enjoyable and reasonable use of such property for the benefit of all citizens of the City.

6(1) A person shall not cause or permit a nuisance to exist on land they own or occupy.

6(2) For the purpose of greater certainty a nuisance, in respect of land, means land, or any portion thereof, that shows signs of a serious disregard for general maintenance and upkeep, whether or not it is detrimental to the surrounding area, some examples of which include:

(a.2) any loose building or construction materials, any accumulation of construction-related garbage or refuse, or any untidy work or storage areas on the land;

(g) any tree, shrub, other type of vegetation or any structure:

(i) that obstructs any sidewalk adjacent to the land;

16 A person shall not cause or permit any construction activity on property they own or occupy.

(a) before 7 a.m. or after 9 p.m. on any day other than Sunday or a holiday;

(b) before 9 a.m. or after 7 p.m. on any Sunday or holiday; or

(c) at any time contrary to a written notice issued by the City Manager pursuant to section 16.1.

The requirements of this policy are addressed in the following way:

The Project in its operational phase will not contribute to an increase in overall noise levels or produce a nuisance for the neighborhood above and beyond the levels that are already being generated.

As noted above, adverse noise levels are not anticipated to be a concern over the long term. Construction noise will remain within noise limits based on zoning and will be confirmed with the COE.

3.0 CONCLUSIONS

This SLS was conducted pursuant to the NSRVARP (Bylaw No. 7188) to evaluate the proposed construction of three sections of the existing trail system in Mill Creek Ravine Park, within NE and SE 28-052-24 W4M, Edmonton, Alberta.

An analysis of the financial opportunities and constraints revealed that not constructing the Project would result in the lowest short-term financial costs and result in the least operational efficiency due the defragmentation of the trail system within Mill Creek Ravine Park. Although construction the proposed Project is the costliest option, it remains the preferred option because it is essential for the trail system to remain connected in order to meet the requirements and the objectives of the applicable policies and guidelines.

Socially, the construction phase of the Project has the potential to cause temporary inconvenience for trail users, including temporary trail closures and increased noise levels. However, following that time, the permanent social opportunities are anticipated to increase, and in this analysis outweigh the temporary constraints, because the deteriorating state of the trail system will have been addressed and the connectivity of the trails maintained.

Environmentally, the proposed Project requires tree clearing, earthworks and in-stream works. Both Options provide environmental opportunities and constraints, with Option 1 providing more long-term environmental opportunities with short-term constraints, and Option 2 provides more short-term environmental opportunities with long-term constraints. Option 2 is not recommended as the most pragmatic solution for the trail system within the Mill Creek Ravine Park; Option1 is recommended because the long-term environmental opportunities outweigh the short-term environmental constraints. Site 2 and 3 are currently located in close proximity (50 to 90 m) to major roadways; 82 Avenue NW and 76 Avenue NW, respectively. Site 1 is approximately 100 m west of a green area housing a baseball diamond, and soccer fields, and approximately 175 m northwest of Ecole Maurice-Lavallee. Therefore, wildlife in the area is assumed to be acclimatized to noise and human presence, particularly the trail users.

Analysis of the institutional opportunities and constraints did not identify any contraventions that would prevent the Project (Option 1) from proceeding.

Therefore, it is the recommendation of this SLS that the proposed location for the Project within the NSRVARP area be accepted as the preferred option in the COE's consideration of whether the Project location is essential under Bylaw 7188.

4.0 LIMITATIONS AND QUALIFICATIONS

In conducting the investigation and rendering our conclusions, Stantec gives the benefit of its best judgment based on its experience and in accordance with generally accepted professional standards for this type of investigation. This report is submitted with the best information to date and on the information provided. The conclusions made within this report are a professional opinion, not a certification of the site's environmental condition, or analysis of the environmental impacts of the Project, no other warranty, expressed or implied is made. This report has been prepared for the exclusive use of the City of Edmonton for the purposes of assessing the suitability of the proposed Project at the proposed location. Any use which any third party makes of this report, or any reliance on or decisions to be made on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any other third party as a result of decisions made or actions based on this report. Our conclusions are limited by the following:

- The information contained within this report is based on the information provided to date by various agencies and the design figures available at the time of report preparation. Should the figures be amended in the future, revisions to the report may be required.
- The investigation was limited to those parameters specifically outlined in this report.
- The findings of this report were based off a desktop review of current information. No fieldwork was conducted.

5.0 REFERENCES

City of Edmonton (COE). 1985. (Consolidated September 2014) *North Saskatchewan River Valley Redevelopment Plan*. Bylaw 7188. Consolidation September 2014. Edmonton.

COE. 2007. *Natural Area Systems. Policy C531.* Edmonton.

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COE. 2010c. *Corporate Tree Management; Policy C456A*. Edmonton.

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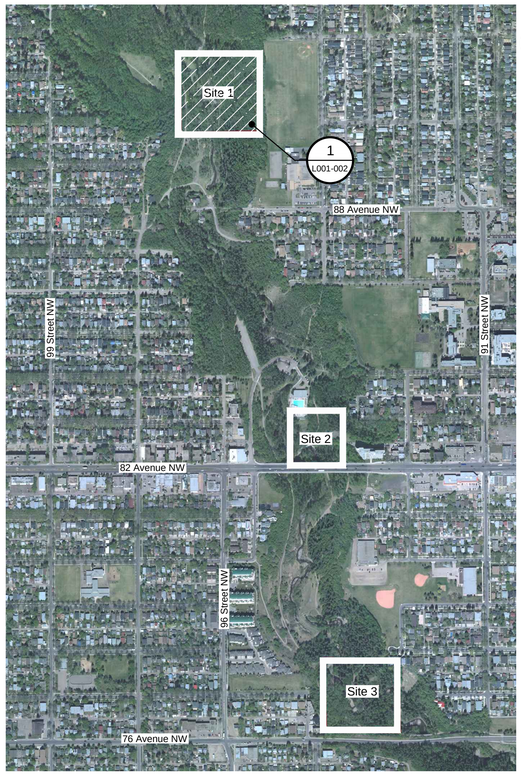
COE. 2017. Edmonton Maps. Accessed October 2018 at https://maps.edmonton.ca/map.aspx?lookingFor=Zoning

COE. 2018. (Consolidated March 2018) *Community Standards Bylaw, Bylaw 14600*. Edmonton.

Stantec Consulting Ltd. (Stantec). 2018. Mill Creek Ravine Trail Rehabilitation; Geotechnical Report.

APPENDIX A

Preliminary Drawing



KEY PLAN
SCALE: N.T.S.

1 SITE #1 OVERALL PLAN
SCALE: 1:1000

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Legend

DETAIL REFERENCE SYMBOL
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EXISTING GRANULAR TRAIL
LIMIT OF CONSTRUCTION

Notes

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Development Engineer, Sustainable Development			YY.MM.DD
Approvals			
Revision	By	Appd.	YY.MM.DD
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File Name: LA_MillCreek.dwg	DW Dwn.	CB Chkd.	NGS Dsgn.	18.03.13 YY.MM.DD

Permit-Seal

The Alberta Association of Landscape Architects
Natalie Goulet-Sorenson

Client/Project
CITY OF EDMONTON

MILL CREEK RAVINE PARK
TRAIL REHABILITATION
Edmonton, Alberta

Title
SITE #1 OVERALL PLAN

Project No. 1161106255
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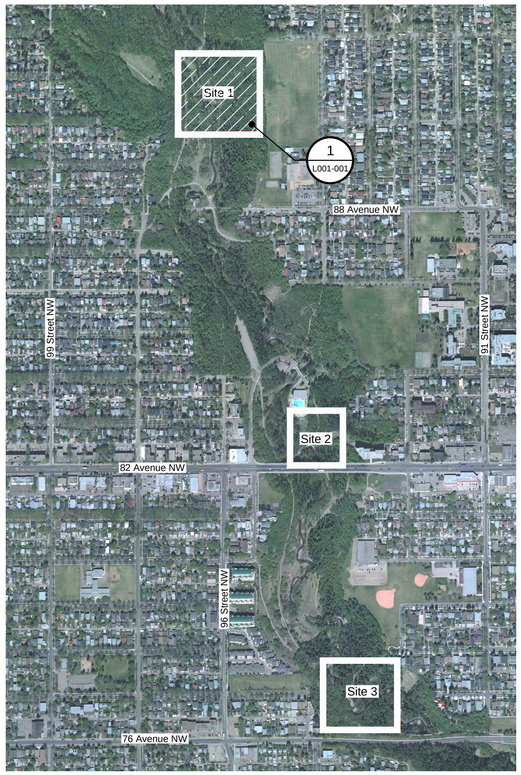
2018-12-05 3:32pm BY: DWIGGLESWORTH

Drawing No. L001-001



KEY PLAN
SCALE: N.T.S.

LAYOUT AND GRADING NOTES:

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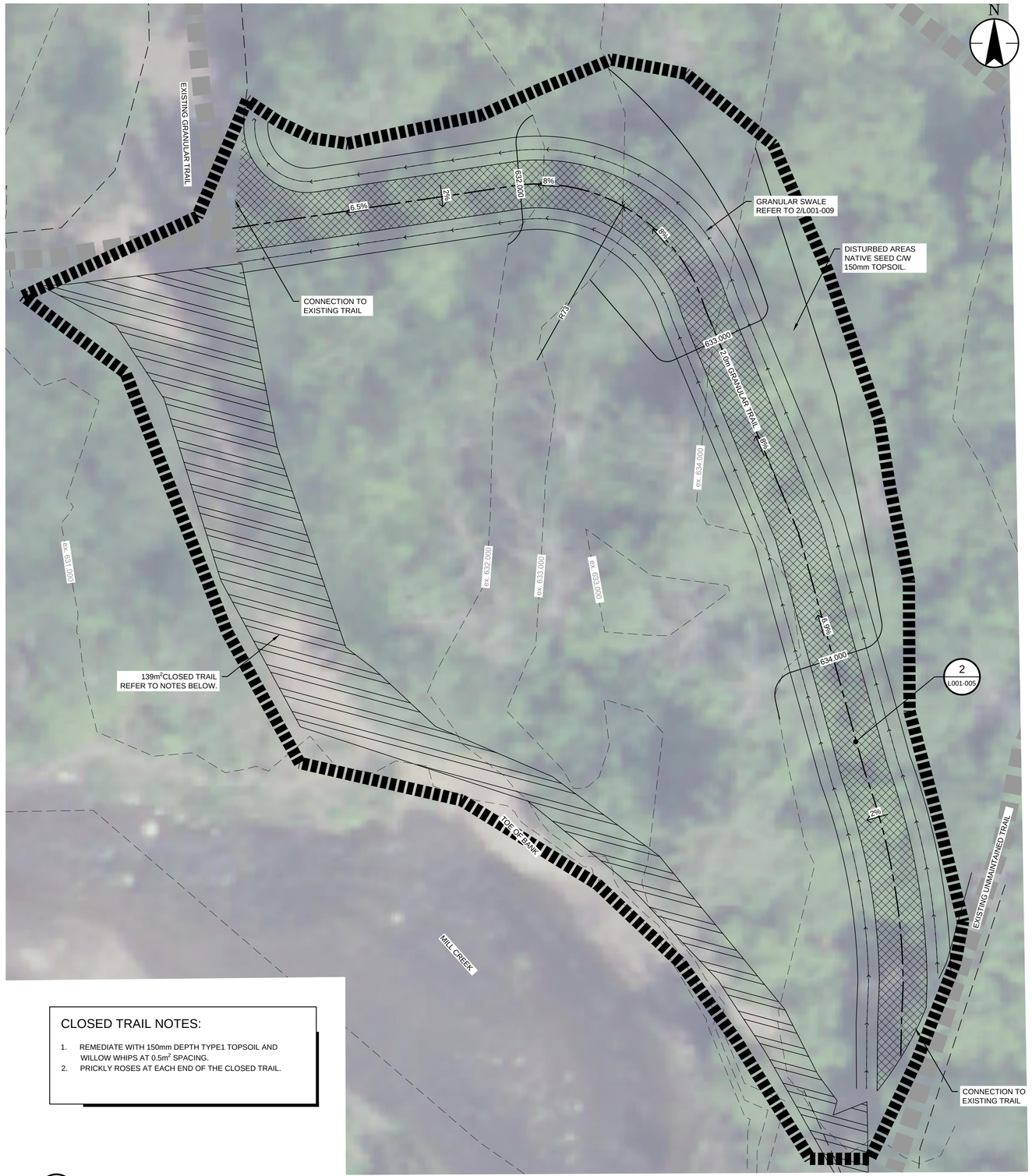

CLOSED TRAIL NOTES:

1. REMEDIATE WITH 150mm DEPTH TYPE1 TOPSOIL AND WILLOW WHIPS AT 0.5m² SPACING.
2. PRICKLY ROSES AT EACH END OF THE CLOSED TRAIL.

1 SITE #1 LAYOUT AND GRADING
SCALE: 1:100

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Legend

EXISTING GRANULAR TRAIL
PROPOSED CONTOUR
EXISTING CONTOUR (MAJOR)
EXISTING CONTOUR (MINOR)
LIMIT OF CONSTRUCTION

DETAIL REFERENCE SYMBOL
1 / L001-001
DETAIL NUMBER
SHEET NUMBER

Notes

UTILITY SETBACKS

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Development Engineer, Sustainable Development			YY.MM.DD
Approvals			
Revision	By	Appd.	YY.MM.DD
1. FIRST SUBMISSION (60%)	DW	NGS	18.05
Issued	By	Appd.	YY.MM
File Name: LA_MICreek.dwg	DW Dwn.	CB Chkd.	NGS Dsgn.	18.03.13 YY.MM.DD

Permit-Seal

The Alberta Association of Landscape Architects

Natalie Goulet-Sorenson

Client/Project
CITY OF EDMONTON

MILL CREEK RAVINE PARK
TRAIL REHABILITATION
Edmonton, Alberta

Title
SITE #1 LAYOUT AND GRADING

Project No. 1161106255

Scale 1:100 (0 1 2 3 4 5)

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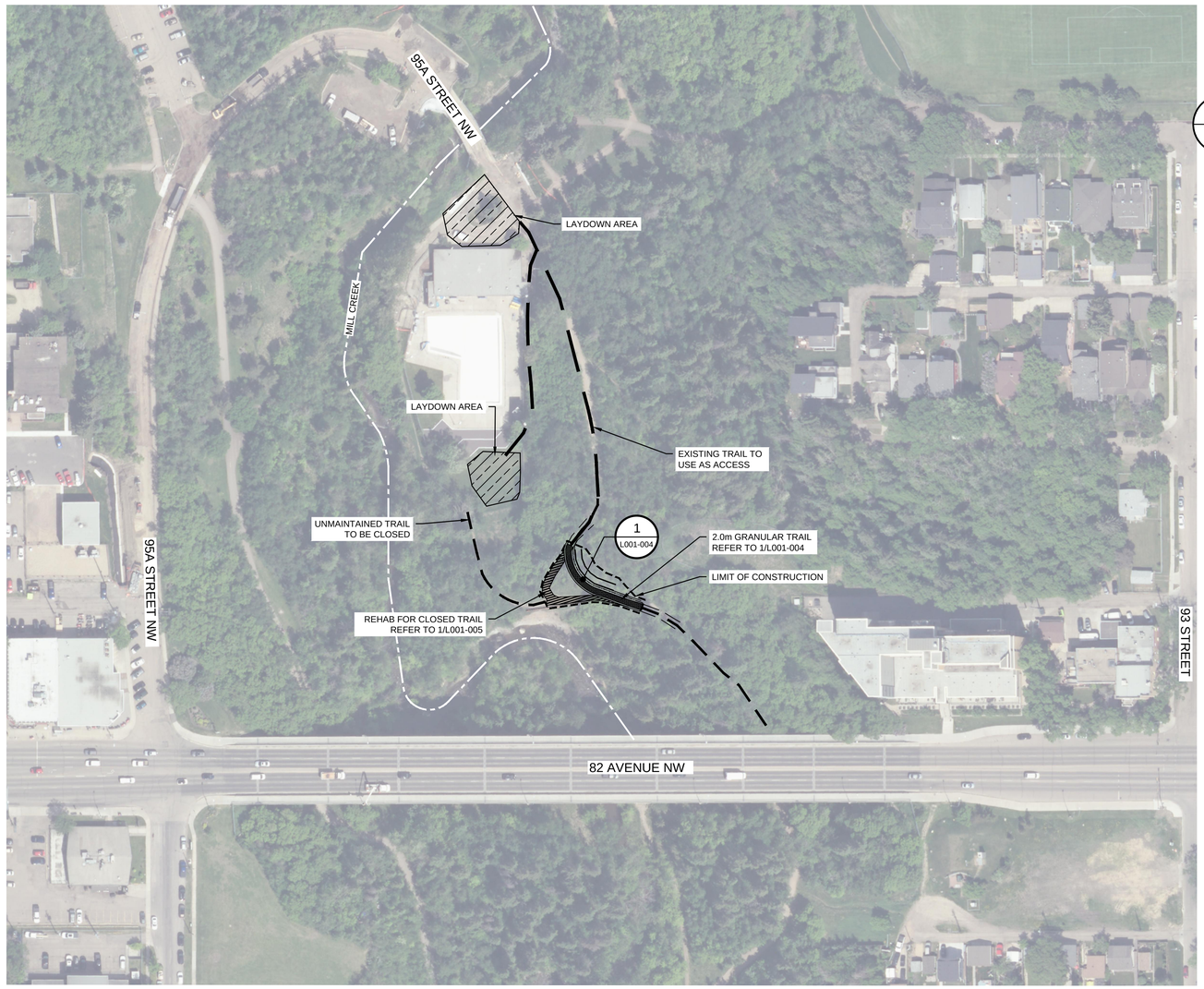
2018-12-05 3:32pm BY: DWIGGLESWORTH

Drawing No. L001-002

KEY PLAN
SCALE: N.T.S.



1 SITE #2 OVERALL PLAN
SCALE: 1:1000

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DETAIL REFERENCE SYMBOL
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EXISTING GRANULAR TRAIL
LIMIT OF CONSTRUCTION

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Development Engineer, Sustainable Development			YY.MM.DD
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Title
SITE #2 OVERALL PLAN

Project No. 1161106255

Scale 1:1000 (0 10 20 30 40 50)

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2018-12-05 3:32pm BY: DWIGGLESWORTH

Drawing No. L001-003

KEY PLAN
SCALE: N.T.S.

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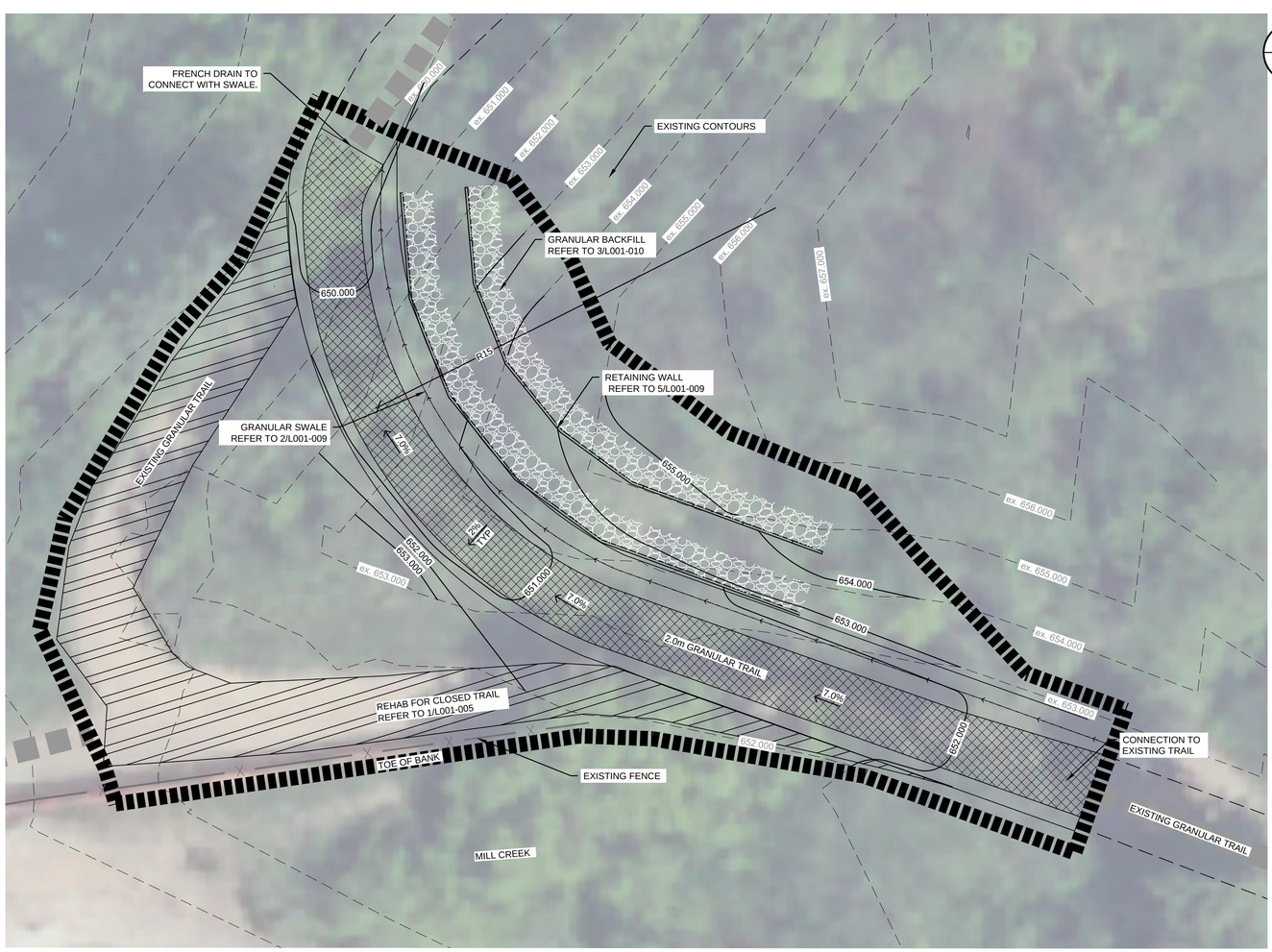

1 SITE #2 GRADING AND LAYOUT
SCALE: 1:100

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Legend

EXISTING GRANULAR TRAIL
PROPOSED CONTOUR
EXISTING CONTOUR (MAJOR)
LIMIT OF CONSTRUCTION

DETAIL REFERENCE SYMBOL
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Approvals			YY.MM.DD
Development Engineer, Sustainable Development			

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1. FIRST SUBMISSION (60%)	DW	NGS	18.05

Issued	By	Appd.	YY.MM
File Name: LA_MillCreek.dwg	DW Dwn.	CB Chkd.	NGS Dsgn.	18.03.13 YY.MM.DD

Permit-Seal

The Alberta Association of Landscape Architects
Natalie Goulet-Sorenson

Client/Project
CITY OF EDMONTON

MILL CREEK RAVINE PARK
TRAIL REHABILITATION
Edmonton, Alberta

Title
SITE #2 LAYOUT AND GRADING

Project No. 1161106255
Scale 1:100 (0 1 2 3 4 5)
Drawing No. L001-004

V:\1161\Active\1161106255\drawing_Landscape\LA_MillCreek.dwg
2018-12-05 3:32pm BY: DWIGGLESWORTH
4 of 10

KEY PLAN
SCALE: N.T.S.

NATIVE SEED MIX

CERTIFIED CANADA NO. 1 MIXTURE, MINIMUM GERMINATION OF 75%, MINIMUM PURITY OF 97%. ALL SEED MUST BE FROM A RECOGNIZED SEED FARM, MEETING THE REQUIREMENTS FOR THE SEEDS ACT FOR CANADA NO. 1 SEED. SEED SHALL BE CERTIFIED NO. 1 GRADE. A GERMINATION TEST MAY BE REQUESTED AND ALL LAWN SEED MUST COMPLY WITH FEDERAL AND PROVINCIAL SEED LAWS.

FOR NON-MAINTAINED NATIVE LANDSCAPING:

15%	AWNED WHEATGRASS (AGROPYRON TRACHYCAULUM VAR. UNILATERALE)
15%	SLENDER WHEATGRASS (AGROPYRON TRACHYCAULUM VAR. TRACHYCAULUM)
15%	WESTERN WHEAT (AGROPYRON SMITHII)
5%	SLOUGHGRASS (BECKMANNIA SYZIGACHNE)
5%	IDAHO FESCUE (FESTUCA IDAHOENSIS)
5%	ALKALI BLUEGRASS (POA SECUNDA SSP. JUNCIFOLIA)
5%	JUNEGRASS (KOELERIA MACRANTHA)
5%	SANDBERG BLUEGRASS (POA SECUNDA)
20%	GREEN NEEDLEGRASS (STRIPA VIRIDULA)
10%	ROCKY MOUNTAIN FESCUE (FESTUCA SAXIMONTANA)

SEED RATE: 250KG PER HECTARE

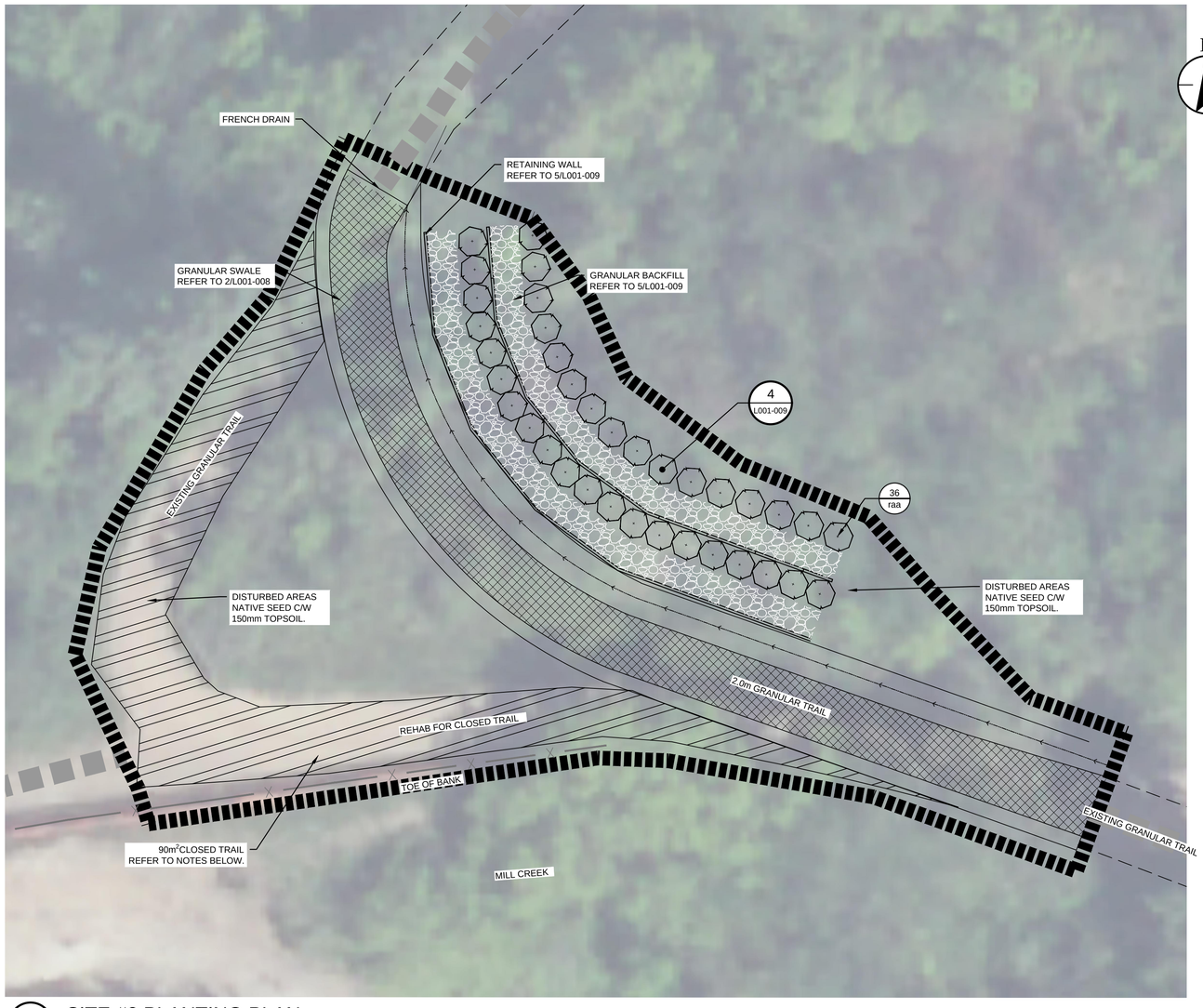
PLANTING NOTES:

1. CONTRACTOR TO CALL ALBERTA ONE CALL AT 1-800- 242-3447 TO HAVE EXISTING UTILITIES LOCATED PRIOR TO START OF ANY CONSTRUCTION.
2. CONTRACTOR TO ENSURE THAT ALL NECESSARY ARRANGEMENTS ARE MADE WITH THE PIPELINE COMPANIES CONCERNING THE MOVEMENT OF MATERIALS AND EQUIPMENT NEAR ANY PIPELINE RIGHTS OF WAY.
3. CONTRACTOR IS RESPONSIBLE FOR THE HOARDING OF ALL TREES WITHIN OR ADJACENT TO CONSTRUCTION AREAS.
4. CONTRACTOR IS RESPONSIBLE FOR THE ADJUSTMENT OF ALL EXISTING CATCHBASINS, CATCHBASIN MANHOLES, MANHOLES, WATER VALVES, HYDRANTS, ETC. TO MATCH PROPOSED GRADES.
5. CONTRACTOR TO SUPPLY AND INSTALL 12mm FIBRE MASTIC JOINT WHENEVER MATCHING TO OR ABUTTING TO ANY CONCRETE OR BLDG.
6. CONTRACTOR IS RESPONSIBLE FOR HAULING OF ALL EXCESS MATERIALS OFF THE SITE.
7. CONTRACTOR IS RESPONSIBLE FOR GENERAL SITE CLEAN UP.
8. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO LANDSCAPED AREAS AND MUST MAKE ALL NECESSARY RESTORATIONS AND REPAIRS.
9. ALL ANCILLARY WORK NORMALLY ASSOCIATED WITH THIS TYPE OF CONSTRUCTION SHALL BE DEEMED TO BE PART OF THE CONTRACT.
10. CONTRACTOR TO VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT.
11. LAYOUT TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION STARTING.
12. ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE NOTED.
13. CONTRACTOR TO OBTAIN APPROVAL FOR PLANT MATERIAL LAYOUT.
14. ALL PLANT MATERIAL TO BE NURSERY GROWN STOCK AND SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE CANADIAN NURSERY TRADES ASSOC. FOR SIZE, HEIGHT, SPREAD, GRADING, QUALITY, AND METHOD OF CULTIVATION.
15. NO SUBSTITUTIONS OF MATERIALS, PRODUCTS OR QUANTITIES WITHOUT PRIOR CONSENT OF LANDSCAPE ARCHITECT.
16. ALL PLANT MATERIAL AND WORKMANSHIP TO CONFORM TO THE REQUIREMENTS OF THE CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS IN ITS MOST RECENT EDITION.
17. CONTRACTOR TO CONTACT A CITY OF EDMONTON FORESTRY REPRESENTATIVE A MINIMUM OF FIVE (5) DAYS PRIOR TO THE CONSTRUCTION OF THE CORED BOULEVARDS.

PLANT MATERIAL LIST: (THIS SHEET ONLY)

QTY./SYM.	BOTANICAL/COMMON NAME	SIZE	CONDITION
DECIDUOUS SHRUBS			
36 raa	*Rosa acicularis* PRICKLY ROSE	450 mm HT. MIN. #5 CONTAINER	CONTAINER GROWN, OR BALLED & BURLAPPED 4 CANES OR MORE 400mm HT. WITH MIN ROOT SPREAD 250mm.

NOTE: ALL TREES TO BE HIGH HEADED AND EXHIBIT A FULL AND UNIFORM CROWN, WITH A SINGLE, DOMINANT, WELL DEVELOPED LEADER; TREES WITH BROKEN OR DAMAGED OR MISSING LEADERS WILL NOT BE ACCEPTED. ALL PLANT MATERIAL MUST CONFORM TO THE CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS.



1 SITE #2 PLANTING PLAN
SCALE: 1;100

CLOSED TRAIL NOTES:

1. REMEDIATE WITH 150mm DEPTH TYPE1 TOPSOIL AND WILLOW WHIPS AT 0.5m² SPACING.
2. PRICKLY ROSES AT EACH END OF THE CLOSED TRAIL.

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Edmonton AB Canada
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Legend

PLANT REFERENCE SYMBOL
5 UAB — QUANTITY / PLANT SYMBOL
DETAIL REFERENCE SYMBOL
1 / L001-001 — DETAIL NUMBER / SHEET NUMBER
EXISTING GRANULAR TRAIL
LIMIT OF CONSTRUCTION

Notes

UTILITY SETBACKS

LANDSCAPE CONTRACTOR TO CALL 'ALBERTA ONE-CALL' AT 1-800-242-3447 TO HAVE ALL EXISTING SITE UTILITIES LOCATED PRIOR TO CONSTRUCTION AND PLANT NO CLOSER THAN THE FOLLOWING DIMENSIONS FROM THE SERVICES:

1. 1.0 m FROM POWER LINES
2. 3.5 m FROM ALL POWER HARDWARE
3. 1.8 m FROM WATER MAINS, WATER VALVES, MANUAL AIRVENTS, AND SERVICES
4. 2.0 m FROM SEWER MAINS, AND MANHOLES
5. 1.8 m FROM SEWER SERVICES
6. 1.5 m FROM GAS (NO TREES WITHIN EASEMENT)
7. 7.5 m FROM STREET CORNERS.
8. 3.5 m FROM FIRE HYDRANTS.
9. 1.5 m FROM DRIVEWAYS
10. 1.5 m FROM ALLEY ACCESSES
11. 1.0 m FROM SIDEWALKS OR AS PER APPROVED ENG. CROSS SECTIONS
12. 3.5 m FROM TRANSIT ZONES
13. 3.0 m FROM PRIVATE PROPERTY BOUNDARY
14. 1.25 m FROM COLLECTOR ROAD CURB FACE
15. 1.25 m FROM LOCAL ROAD CURB FACE
16. 2.0 m FROM ARTERIAL ROAD CURB FACE
17. 3.5 m FROM YIELD AND STOP SIGNS
18. 3.5 m FROM BUS STOP SIGNS
19. 2.0 m FROM ALL OTHER SIGNS
20. 1.0 m FROM OTHER UNDERGROUND UTILITIES
21. 3.5 m FROM TELUS PEDESTALS
22. 2.0 m FROM TELUS DUCT STRUCTURE
23. 1.0 m FROM TELUS CABLE FACILITIES

LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR DAMAGES AND LIABILITIES INCURRED BY DAMAGES TO SITE UTILITIES.

Development Engineer, Sustainable Development

Approvals — YY.MM.DD

Revision — By — Appd. — YY.MM.DD

1. FIRST SUBMISSION (60%) — DW — NGS — 18.05

Issued — By — Appd. — YY.MM

File Name: LA_MillCreek.dwg — Dwn. DW — Chkd. CB — Dsgn. NGS — YY.MM.DD 18.03.13

Permit-Seal

The Alberta Association of Landscape Architects

Natalie Goulet-Sorenson

Client/Project
CITY OF EDMONTON

MILL CREEK RAVINE PARK
TRAIL REHABILITATION
Edmonton, Alberta

Title
SITE #2 PLANTING PLAN

Project No. 1161106255

Scale 1:100 (0 1 2 3 4 5)

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2018-12-05 3:32pm BY: DWIGGLESWORTH

Drawing No. L001-005

KEY PLAN
SCALE: N.T.S.

1 SITE #3 OVERALL PLAN
SCALE: 1:1000

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www.stantec.com

Legend

DETAIL REFERENCE SYMBOL
1 / L001-001 — DETAIL NUMBER / SHEET NUMBER

EXISTING GRANULAR TRAIL
LIMIT OF CONSTRUCTION

Notes

UTILITY SETBACKS

LANDSCAPE CONTRACTOR TO CALL 'ALBERTA ONE-CALL' AT 1-800-242-3447 TO HAVE ALL EXISTING SITE UTILITIES LOCATED PRIOR TO CONSTRUCTION AND PLANT NO CLOSER THAN THE FOLLOWING DIMENSIONS FROM THE SERVICES:

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5. 1.8 m FROM SEWER SERVICES
6. 1.5 m FROM GAS (NO TREES WITHIN EASEMENT)
7. 7.5 m FROM STREET CORNERS.
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13. 3.0 m FROM PRIVATE PROPERTY BOUNDARY
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20. 1.0 m FROM OTHER UNDERGROUND UTILITIES
21. 3.5 m FROM TELUS PEDESTALS
22. 2.0 m FROM TELUS DUCT STRUCTURE
23. 1.0 m FROM TELUS CABLE FACILITIES

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Development Engineer, Sustainable Development

Approvals — YY.MM.DD

Revision — By — Appd. — YY.MM.DD

1. FIRST SUBMISSION (60%) — DW — NGS — 18.05

Issued — By — Appd. — YY.MM

File Name: LA_MillCreek.dwg — DW Dwn. — CB Chkd. — NGS Dsgn. — 18.03.13 YY.MM.DD

Permit-Seal

The Alberta Association of Landscape Architects

Natalie Goulet-Sorenson

Client/Project

CITY OF EDMONTON

MILL CREEK RAVINE PARK
TRAIL REHABILITATION

Edmonton, Alberta

Title

SITE #3 OVERALL PLAN

Project No. 1161106255

Scale 1:1000 (0 10 20 30 40 50)

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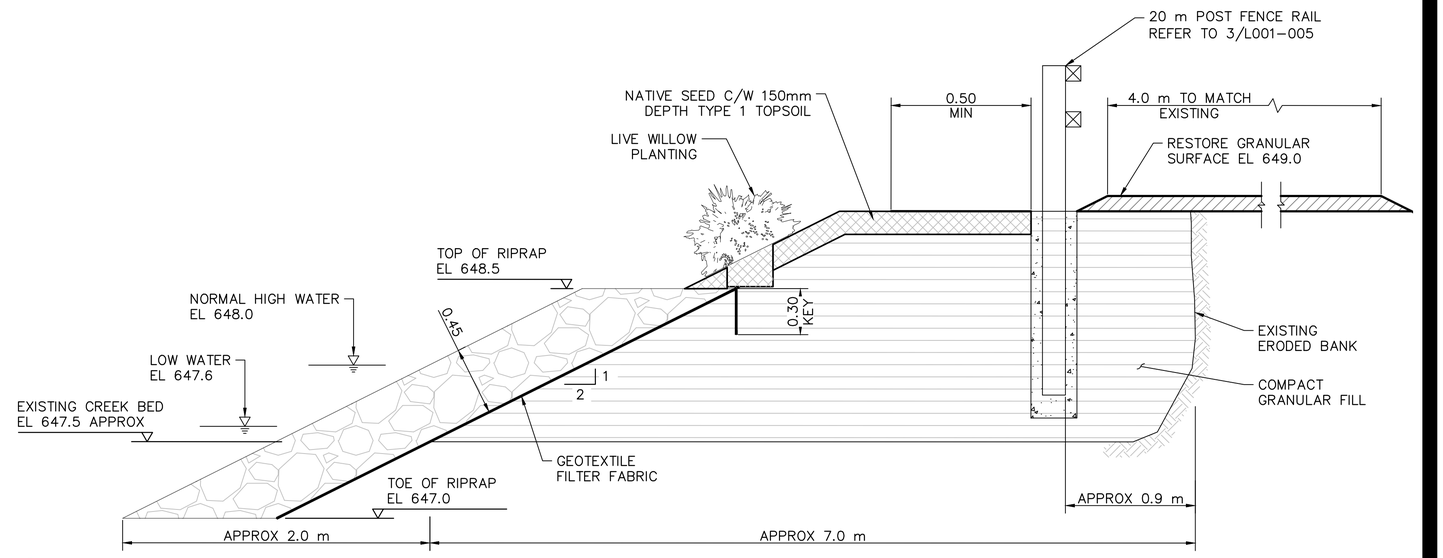
2018-12-05 3:32pm BY: DWIGGLESWORTH

Drawing No. L001-006

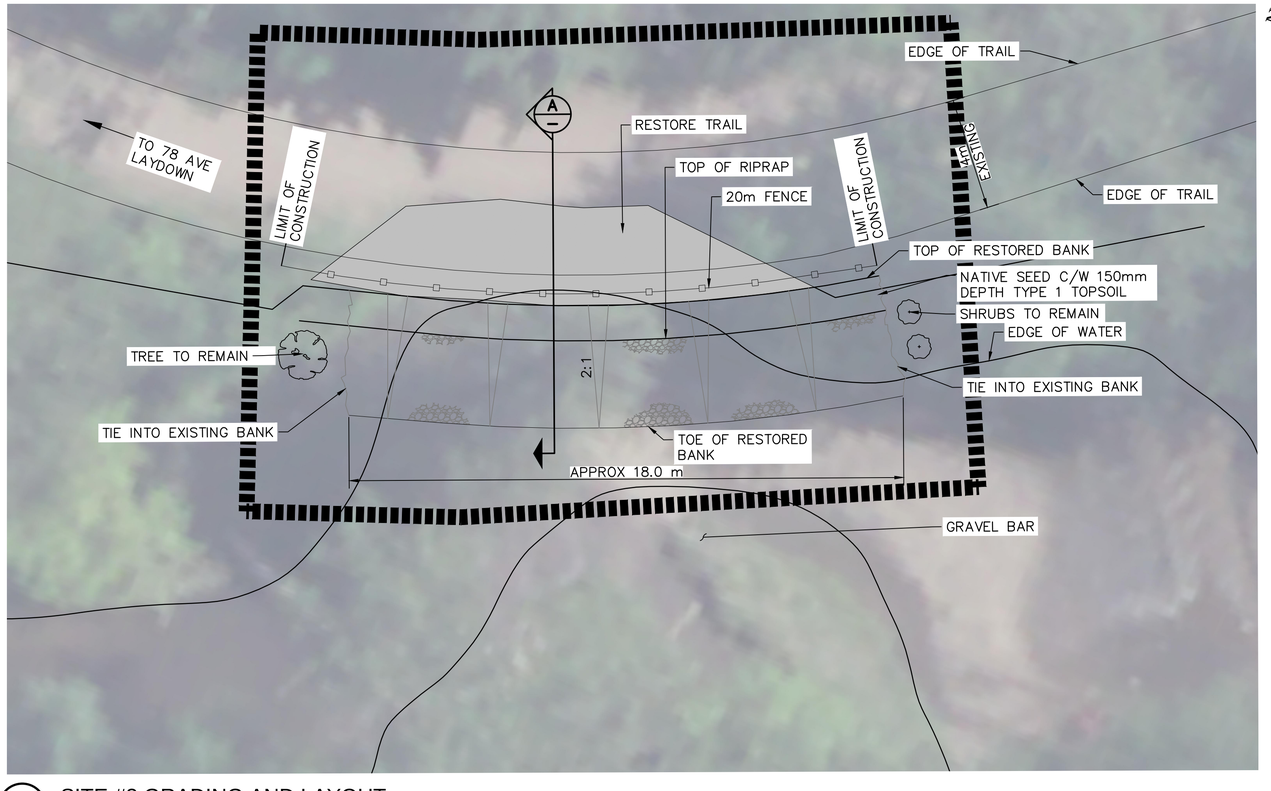
KEY PLAN
SCALE: N.T.S.



A STIE #3 SECTION
SCALE: 1:20

LAYOUT AND GRADING NOTES:

1. CONTRACTOR TO CALL ALBERTA ONE CALL AT 1-800-242-3447 TO HAVE EXISTING UTILITIES LOCATED PRIOR TO START OF ANY CONSTRUCTION.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE WRITTEN SPECIFICATIONS, DRAWINGS, AND DETAILS FOR THE PROJECT.
3. CONTRACTOR TO ENSURE THAT ALL NECESSARY ARRANGEMENTS ARE MADE WITH THE PIPELINE COMPANIES CONCERNING THE MOVEMENT OF MATERIALS AND EQUIPMENT NEAR ANY PIPELINE RIGHTS OF WAY.
4. CONTRACTOR IS RESPONSIBLE FOR THE HOARDING OF ALL TREES WITHIN OR ADJACENT TO CONSTRUCTION AREAS.
5. CONTRACTOR IS RESPONSIBLE FOR THE ADJUSTMENT OF ALL EXISTING CATCHBASINS, CATCHBASIN MANHOLES, MANHOLES, WATER VALVES, HYDRANTS, ETC. TO MATCH PROPOSED GRADES.
6. ENSURE POSITIVE DRAINAGE IN ALL SWALES AS SHOWN ON PLAN. DO NOT PERMIT POOLING OF WATER IN DRAINAGE SWALE.
7. CONTRACTOR IS RESPONSIBLE FOR HAULING OF ALL EXCESS MATERIALS OFF THE SITE.
8. CONTRACTOR IS RESPONSIBLE FOR GENERAL SITE CLEAN UP.
9. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO LANDSCAPED AREAS AND MUST MAKE ALL NECESSARY RESTORATIONS AND REPAIRS.
10. ALL ANCILLARY WORK NORMALLY ASSOCIATED WITH THIS TYPE OF CONSTRUCTION SHALL BE DEEMED TO BE PART OF THE CONTRACT.
11. ALL QUANTITIES ARE APPROXIMATE ONLY.
12. GRADES TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION STARTING.
13. CONTRACTOR TO HOLD ROUGH GRADES 450mm BELOW FINISHED GRADE FOR PLANT BEDS, 150mm FOR SEEDED AREAS, 200mm FOR WALKS, 100mm FOR SODDED AREAS.
14. STANDARD CONTOUR INTERVAL IS 500mm. SPOT ELEVATIONS AS SHOWN. ALL SPOT ELEVATIONS IN METERS. BERMS AND SLOPES TO BE GRADED SMOOTHLY. ELIMINATE ROUGH SPOTS AND LOW AREAS TO ENSURE POSITIVE DRAINAGE PRIOR TO SEEDING.
15. ALL PROPOSED GRADES TO MEET EXISTING GRADES AT PROPERTY LINE WITH A SMOOTH TRANSITION. LIMIT OF GRADING NOT TO EXTEND BEYOND PROPERTY LINE. GRADES TO MEET CURB OR WALK SMOOTHLY. LANDSCAPE ARCHITECT TO APPROVE ROUGH AND FINISHED GRADES.
16. MAXIMUM SLOPE OF ANY LANDSCAPED AREA NOT TO EXCEED 33%.
17. CONTRACTOR TO TAKE NECESSARY PRECAUTIONS TO PROTECT ALL SITE FEATURES EXISTING AT THE TIME OF CONSTRUCTION UNLESS SPECIFIED FOR DEMOLITION ON THE DRAWING. THIS INCLUDES ALL SURVEY BARS, STAKES OR MONUMENTS. MAKE GOOD ANY DAMAGE.
18. ANY AMBIGUITY IN THIS DRAWING OR ACCOMPANYING DETAILS IS TO BE REPORTED TO THE LANDSCAPE ARCHITECT FOR DIRECTION. CONTRACTOR NOT TO PROCEED IN UNCERTAINTY.
19. LIMITS OF WORK TO BE CLEARLY UNDERSTOOD BY THE CONTRACTOR PRIOR TO ANY WORK TAKING PLACE ON SITE. CONTRACTOR TO CONTACT LANDSCAPE ARCHITECT FOR CLARIFICATION IF REQUIRED.
20. CONTRACTOR TO VISIT SITE TO CONFIRM ALL SITE CONDITIONS PRIOR TO SUBMITTING BIDS. DISCREPANCIES TO BE REPORTED TO LANDSCAPE ARCHITECT FOR CLARIFICATION.
21. CONTRACTOR TO VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT.
22. LAYOUT TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION STARTING.
23. ALL MEASUREMENTS ARE IN METERS UNLESS OTHERWISE NOTED.
24. CONTRACTOR SHALL SUPPLY ALL MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE WORK SHOWN ON THESE DRAWINGS. ANY DISCREPANCIES SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT FOR DIRECTION.
25. NO SUBSTITUTIONS OF MATERIALS, PRODUCTS OR QUANTITIES WITHOUT PRIOR CONSENT OF LANDSCAPE ARCHITECT.



1 SITE #3 GRADING AND LAYOUT
SCALE: 1:100

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Legend

- POST AND RAIL FENCING
- EXISTING GRANULAR TRAIL
- PROPOSED CONTOUR
- EXISTING CONTOUR (MAJOR)
- EXISTING CONTOUR (MINOR)
- LIMIT OF CONSTRUCTION

DETAIL REFERENCE SYMBOL: 1 / L001-001 — DETAIL NUMBER / SHEET NUMBER

Notes

UTILITY SETBACKS

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Development Engineer, Sustainable Development

Approvals

			YY.MM.DD

Revision

	By	Appd.	YY.MM.DD
1. FIRST SUBMISSION (60%)	DW	NGS	18.05

Issued

File Name: LA_MillCreek.dwg	By	Appd.	YY.MM
	DW	NGS	18.03.13
	Dwn.	Dsgn.	YY.MM.DD
	CB		
	Chkd.		

Permit-Seal

The Alberta Association of Landscape Architects
Natalie Goulet-Sorenson

Client/Project
CITY OF EDMONTON

MILL CREEK RAVINE PARK
TRAIL REHABILITATION
Edmonton, Alberta

Title
SITE #3 GRADING AND LAYOUT

Project No. 1161106255

Scale 1:100 (0 1 2 3 4 5)

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2018-12-05 3:32pm BY: DWIGGLESWORTH

Drawing No. L001-007

KEY PLAN
SCALE: N.T.S.

PLANT MATERIAL LIST: (THIS SHEET ONLY)

QTY./SYM.	BOTANICAL/COMMON NAME	SIZE	CONDITION
DECIDUOUS SHRUBS			
17 sb	*Salix brachycarpa 'Blue fox'* BLUE FOX WILLOW	450 mm HT. MIN. #5 CONTAINER	CONTAINER GROWN, OR BALLED & BURLAPPED 4 CANES OR MORE 400mm HT. WITH MIN ROOT SPREAD 250mm.

NOTE: ALL TREES TO BE HIGH HEADED AND EXHIBIT A FULL AND UNIFORM CROWN, WITH A SINGLE, DOMINANT, WELL DEVELOPED LEADER; TREES WITH BROKEN OR DAMAGED OR MISSING LEADERS WILL NOT BE ACCEPTED. ALL PLANT MATERIAL MUST CONFORM TO THE CITY OF EDMONTON DESIGN AND CONSTRUCTION STANDARDS.

NATIVE SEED MIX

CERTIFIED CANADA NO. 1 MIXTURE, MINIMUM GERMINATION OF 75%, MINIMUM PURITY OF 97%. ALL SEED MUST BE FROM A RECOGNIZED SEED FARM, MEETING THE REQUIREMENTS FOR THE SEEDS ACT FOR CANADA NO. 1 SEED. SEED SHALL BE CERTIFIED NO. 1 GRADE. A GERMINATION TEST MAY BE REQUESTED AND ALL LAWN SEED MUST COMPLY WITH FEDERAL AND PROVINCIAL SEED LAWS.

FOR NON-MAINTAINED NATIVE LANDSCAPING:

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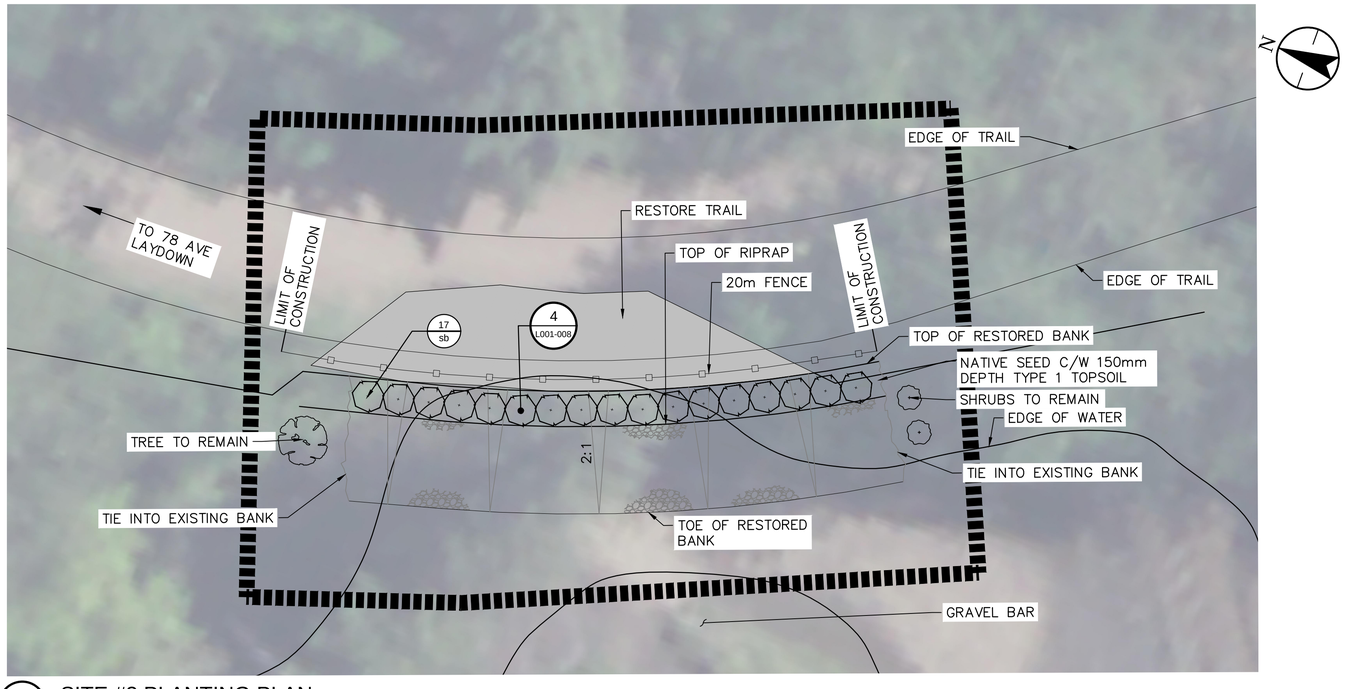
15%	WESTERN WHEAT (AGROPYRON SMITHII)
5%	SLOUGHGRASS (BECKMANNIA SYZIGACHNE)
5%	IDAHO FESCUE (FESTUCA IDAHOENSIS)
5%	ALKALI BLUEGRASS (POA SECUNDA SSP. JUNCIFOLIA)
5%	JUNEGRASS (KOELERIA MACRANTHA)
5%	SANDBERG BLUEGRASS (POA SECUNDA)
20%	GREEN NEEDLEGRASS (STRIPA VIRIDULA)
10%	ROCKY MOUNTAIN FESCUE (FESTUCA SAXIMONTANA)

SEED RATE: 250KG PER HECTARE



1 SITE #3 PLANTING PLAN
SCALE: 1:100

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Legend

- POST AND RAIL FENCING
- EXISTING GRANULAR TRAIL
- PROPOSED CONTOUR
- EXISTING CONTOUR (MAJOR)
- EXISTING CONTOUR (MINOR)
- LIMIT OF CONSTRUCTION

DETAIL REFERENCE SYMBOL: 1 / L001-001 — DETAIL NUMBER / SHEET NUMBER

Notes

UTILITY SETBACKS

LANDSCAPE CONTRACTOR TO CALL 'ALBERTA ONE-CALL' AT 1-800-242-3447 TO HAVE ALL EXISTING SITE UTILITIES LOCATED PRIOR TO CONSTRUCTION AND PLANT NO CLOSER THAN THE FOLLOWING DIMENSIONS FROM THE SERVICES:

1. 1.0 m FROM POWER LINES
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Development Engineer, Sustainable Development

Approvals

			YY.MM.DD

Revision

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Client/Project
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Edmonton, Alberta

Title
SITE #3 PLANTING PLAN

Project No. 1161106255
Scale 1:100 (0 1 2 3 4 5)

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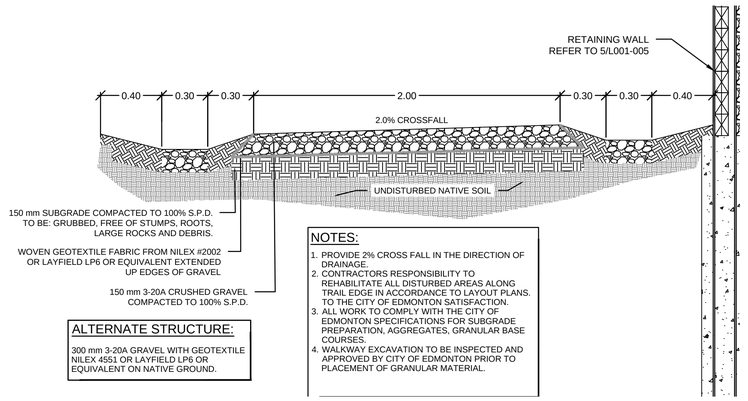
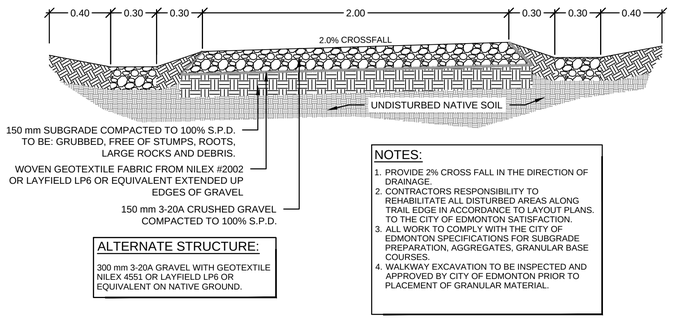
2018-12-05 3:32pm BY: DWIGGLESWORTH

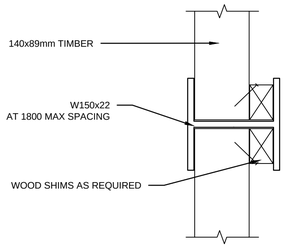
Drawing No. L001-008



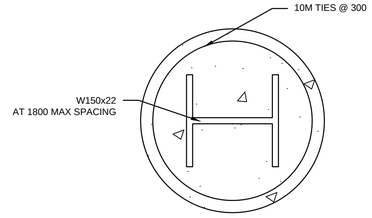
1 GRANULAR TRAIL WITH RETAINING WALL
SCALE: 1:20



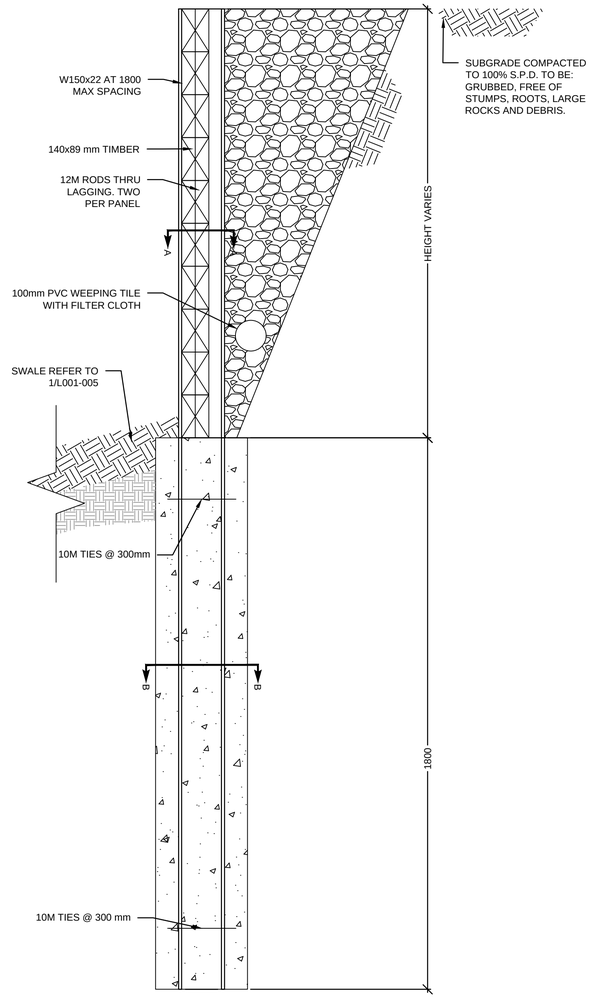
2 GRANULAR TRAIL WITH SWALES
SCALE: 1:20



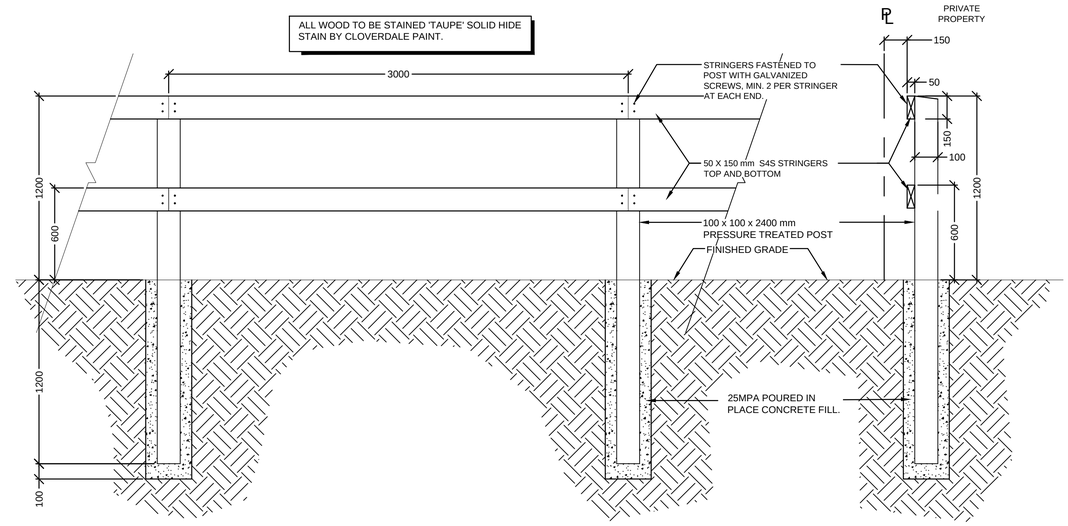
A-A RETAINING WALL SECTION
SCALE: 1:5



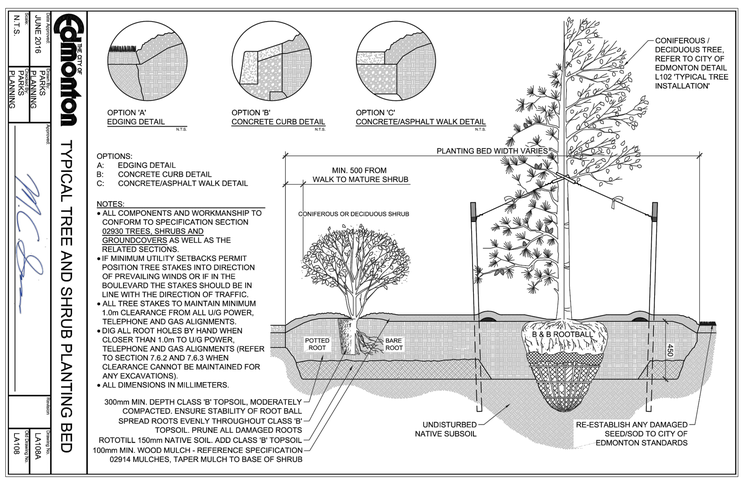
B-B RETAINING WALL SECTION
SCALE: 1:5



5 RETAINING WALL ELEVATION
SCALE: 1:20



3 1.2m POST AND RAIL FENCE
SCALE: 1:20



4 TYPICAL TREE AND SHRUB PLANTING BED
SCALE: N.T.S.

RETAINING WALL NOTES:

1. WEEPING TILE TO BE 100 mm DIA. PERFORATED POLYVINYL-CHLORIDE PIPE, C/W SOLVENT SEAL COUPLINGS, TEES, ELBOWS, FITTINGS, ETC. FILTER CLOTH TO BE NON-WOVEN POLYESTER SLEEVE EQUAL TO "TREVIRA SPUNBOND NO.1114" AS SUPPLIED BY ARMTEC CONSTRUCTION PRODUCTS. PLACE FILTER CLOTH AROUND PIPE THE BACKFILL WITH GRANULAR FILL. PITCH PIPE $\frac{1}{300}$ TO LOW END OF WALL AND DAYLIGHT.
2. BACKFILL TO BE FREE DRAINING PEA GRAVEL LIGHTLY COMPACTED.
3. DO NOT PROCEED WITH BACKFILLING OPERATIONS UNTIL ENGINEER HAS INSPECTED AND APPROVED INSTALLATIONS.
4. DO CONCRETE FORMWORK, REINFORCEMENT AND CAST-IN-PLACE CONCRETE IN ACCORDANCE WITH CSA A23.1 EXCEPT WHERE SPECIFIED ELSEWHERE.
5. REINFORCED BARS: BILLET STEEL, GRADE 400, DEFORMED BARS TO CAS G30.18-09 EXCEPT BEAM AND COLUMN TIES WHICH SHALL BE GRADE 300.
6. IMMEDIATELY FOLLOWING DRILLING OF THE PILE SHAFTS, AND CLEANING INSTALL WIDE FLANGE POST, REINFORCING STEEL AND PLACE CONCRETE.
7. PROPORTION NORMAL DENSITY CONCRETE TO CSA A23.1 FOR ALL CONCRETE TO GIVE 25 MPa IN 28 DAYS USING TYPE HS CEMENT, 20 mm COARSE AGGREGATE, 75 mm SLUMP, 5 TO 7% ENTRAINED AIR AND A WATER CEMENTING MATERIAL RATIO OF 0.5.
8. STRUCTURAL STEEL TO BE HOT ROLLED SECTIONS TO CAN3 G40.21, 350W.
9. SHOP PAINT PRIMER TO CISC/CPMA 1-73Aa. SHOP PRIME TO CAN/CSA-S16-01 ALL STEEL MEMBERS EXCEPTING SURFACES IN CONTACT WITH CAST AREAS TO RECEIVE WELDING WORK.
10. ALL LUMBER TO BE PRESSURE TREATED SPF N0. 1 & 2, OR BETTER.
11. BOLTS, NUTS, WASHERS, LAGS, PINS, AND SCREWS TO BE HOT DIP GALVANIZED TO CSA G164.
12. WOOD PRESERVATIVE TO BE PENTACHLOROPHENOL BASE WATER REPELLENT WOOD PRESERVATIVE. TREAT CUT ENDS WITH END CUT PRESERVATIVE.

Stantec

Stantec Consulting Ltd.
10160 - 112 Street
Edmonton AB Canada
Tel. 780.917.7000
www.stantec.com

Legend

Notes

UTILITY SETBACKS

LANDSCAPE CONTRACTOR TO CALL 'ALBERTA ONE-CALL' AT 1-800-242-3447 TO HAVE ALL EXISTING SITE UTILITIES LOCATED PRIOR TO CONSTRUCTION AND PLANT NO CLOSER THAN THE FOLLOWING DIMENSIONS FROM THE SERVICES:

1. 1.0 m FROM POWER LINES
2. 3.5 m FROM ALL POWER HARDWARE
3. 1.8 m FROM WATER MAINS, WATER VALVES, MANUAL AIRVENTS, AND SERVICES
4. 2.0 m FROM SEWER MAINS, AND MANHOLES
5. 1.8 m FROM SEWER SERVICES
6. 1.5 m FROM GAS (NO TREES WITHIN EASEMENT)
7. 7.5 m FROM STREET CORNERS.
8. 3.5 m FROM FIRE HYDRANTS.
9. 1.5 m FROM DRIVEWAYS
10. 1.5 m FROM ALLEY ACCESSES
11. 1.0 m FROM SIDEWALKS OR AS PER APPROVED ENG. CROSS SECTIONS
12. 3.5 m FROM TRANSIT ZONES
13. 3.0 m FROM PRIVATE PROPERTY BOUNDARY
14. 1.25 m FROM COLLECTOR ROAD CURB FACE
15. 1.25 m FROM LOCAL ROAD CURB FACE
16. 2.0 m FROM ARTERIAL ROAD CURB FACE
17. 3.5 m FROM YIELD AND STOP SIGNS
18. 3.5 m FROM BUS STOP SIGNS
19. 2.0 m FROM ALL OTHER SIGNS
20. 1.0 m FROM OTHER UNDERGROUND UTILITIES
21. 3.5 m FROM TELUS PEDESTALS
22. 2.0 m FROM TELUS DUCT STRUCTURE
23. 1.0 m FROM TELUS CABLE FACILITIES

LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR DAMAGES AND LIABILITIES INCURRED BY DAMAGES TO SITE UTILITIES.

Development Engineer, Sustainable Development

Approvals — YY.MM.DD

Revision — By — Appd. — YY.MM.DD

1. FIRST SUBMISSION (60%) — DW — NGS — 18.05

Issued — By — Appd. — YY.MM.

File Name: LA_MillCreek.dwg — DW Dwn. — CB Chkd. — NGS Dsgn. — 18.03.13 YY.MM.DD

Permit-Seal

The Alberta Association of Landscape Architects

Natalie Goulet-Sorenson

Client/Project

CITY OF EDMONTON

MILL CREEK RAVINE PARK
TRAIL REHABILITATION

Edmonton, Alberta

Title

DETAILS

Project No. 1161106255

Scale AS SHOWN

Drawing No. L001-009

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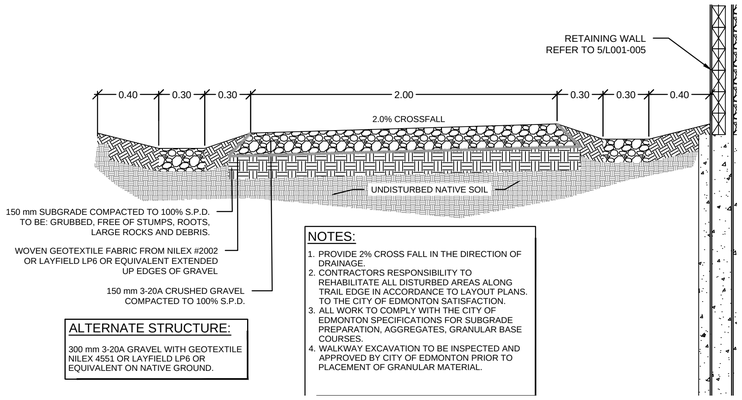
2018-12-05 3:32pm BY: DWIGGLESWORTH



ALTERNATE STRUCTURE:

300 mm 3-20A GRAVEL WITH GEOTEXTILE NILEX 4551 OR LAYFIELD LP6 OR EQUIVALENT ON NATIVE GROUND.

NOTES:

1. PROVIDE 2% CROSS FALL IN THE DIRECTION OF DRAINAGE.
2. CONTRACTORS RESPONSIBILITY TO REHABILITATE ALL DISTURBED AREAS ALONG TRAIL EDGE IN ACCORDANCE TO LAYOUT PLANS. TO THE CITY OF EDMONTON SATISFACTION.
3. ALL WORK TO COMPLY WITH THE CITY OF EDMONTON SPECIFICATIONS FOR SUBGRADE PREPARATION, AGGREGATES, GRANULAR BASE COURSES.
4. WALKWAY EXCAVATION TO BE INSPECTED AND APPROVED BY CITY OF EDMONTON PRIOR TO PLACEMENT OF GRANULAR MATERIAL.

1 GRANULAR TRAIL WITH RETAINING WALL
SCALE: 1:20

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2018-12-05 3:32pm BY: DWIGGLESWORTH

Drawing No.
L001-010