



Municipality of Anchorage, Alaska  
**Parks & Recreation Department**

632 W. 6<sup>th</sup> Avenue, Suite 630  
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**URL** [www.muni.org/departments/parks](http://www.muni.org/departments/parks)



## MEMORANDUM

**Date:** October 5, 2016

**To:** Parks & Recreation Commission

**Cc:** Josh Durand, Parks Superintendent; Taylor Keegan, Park Planner

**From:** MOA Watershed Management and Project Partners

**Project:** PRC 16-28 MOA Cuddy Family Midtown Park Rain Garden

### INTRODUCTION

The Parks and Recreation Commission is asked to approve a proposed plan to install a Rain Garden at Cuddy Family Midtown Park to address excessive sheet flow and concentrated flow of stormwater from the Ice Oval and Great Lawn areas within the park that is contributing to water quality concerns in Cuddy Pond.

Cuddy Family Midtown Park is classified as a Community Use park located immediately adjacent to Loussac Library and accessed from 40<sup>th</sup> Avenue between A Street and Denali Street in Midtown Anchorage. The Park is nearly 5 acres in size with the proposed project area encompassing roughly 4,500 square feet located near the center of the park just south of the existing Pond. Improvements outlined in this packet identify the need, intent and design of the Rain Garden.

### BACKGROUND + NEED

Part of the 2008 park improvements at Cuddy Park included daylighting a section of Fish Creek, creating Cuddy Pond, and the creation of the "Great Lawn". To some degree, these components had the unintended effect of proving to be very attractive to local waterfowl. At certain times of year, particularly during the winter, very large numbers of ducks and geese have gathered at the pond. A perhaps potentially minor concern was massively amplified by the public feeding waterfowl. The impacts of this intense use were obvious in terms of shoreline erosion and loss of vegetation. Past water samples from Cuddy Park have exhibited high levels of Coliform bacteria.

During this past summer, the Parks and Recreation Department took major steps in improving the situation by revegetating the shoreline, installing temporary fencing to allow the plantings to become established, installation of interpretive signs, and participating in a public outreach campaign explaining the impacts of feeding waterfowl. The proposed project is intended to complement those efforts by increasing the quality of runoff flowing to the pond, and reducing the amount of erosion in areas adjacent to the pond.

The area of the skating oval drains via a piped system to the lower portion of the Great Lawn, both these flows and runoff from the lawn itself flow overland to the pond. At times, the water draining from these areas can be quite large. An eroded channel has developed below the outfall of the skating oval culvert and the edge of the trail has eroded in a couple of spots adjacent to the pond from uncontrolled runoff. The intent of this project is to construct a Rain Garden to capture, treat, and detain stormwater runoff before it enters the pond.

## INTENT

Rain Gardens are a Green Infrastructure/Low Impact Development (LID) technique that uses bio-filtration in the form of plants and soil to treat stormwater runoff. The Municipality of Anchorage's Stormwater Permit with the US EPA and Alaska Department of Conservation directs the Municipality to incorporate the use of Green Infrastructure/LID in managing stormwater. In addition to the direct problems being mitigated at this location, a secondary goal of the project is to provide a prominent example to demonstrate Green Infrastructure techniques for stormwater management in a public space; visible to a broad population of park users to serve as an outreach and education tool, and accessible for technical staff to evaluate and monitor for further development of stormwater management standards and project implementations.

The intent of the Rain Garden is to interrupt, briefly detain, and infiltrate stormwater runoff from the Great Lawn and Ice Oval areas in the park. By temporarily capturing stormwater, the project will function with the purpose of reducing fecal coliform contamination of Fish Creek from avian and pet detritus and further limit polluting the Pond with stormwater runoff. Additionally, the detention and interruption of concentrated flows in the project area will greatly reduce, and likely eliminate, ongoing trail degradation on the south edge of the existing Pond. Currently, stormwater runoff travels along and over the existing asphalt pedestrian trail carrying sediment that settles on the trail and eroding the subgrade and asphalt pavement on both the upstream and leeward edges of the path.

Beyond directing and detaining runoff, the strategies employed in this design are intended to include an aesthetic and functional combination of durable materials, landscape plantings, and engineered soils to produce a desired outcome in a beautiful and impactful way.

Key considerations made during the design process included ensuring a safe and effective solution that considers trail user views, existing utility crossings, existing topography, limiting areas of impact, and easy fabrication and installation of construction components.

## DESIGN

As with other Green Infrastructure and LID practices, there are numerous benefits to using Rain Gardens as a stormwater management tool. Rain Gardens treat stormwater through though infiltration, evaporation, and transpiration (via plants in the garden). They also slow and attenuate stormwater runoff flows, reducing peak flow rates and the potential for erosion. Treatment rate is a function of surface storage (ponding) and subsurface storage (soil pore space) for stormwater runoff. Beyond the physical benefits, a rain garden provides aesthetic benefits that are usually absent in a traditional ditch or pipe drainage design.

This Rain Garden is intended to treat runoff from roughly 120,000 square feet of grass and pavement. The project is designed in such a manner that it is sized to infiltrate and treat runoff from smaller, more frequent rain events. Design elements are also included to promote controlled, orderly drainage during large flows or during times when rain falls on frozen ground. The total cost of improvements is expected to be \$20,000 and will be funded by the MOA Watershed Management Department.

The exiting trail culvert will be extended back up into the garden. This will be connected to a perforated riser pipe and field inlet. The elevation of the inlet will be set slightly above the surface of the garden to allow for some ponding to increase storage volume. Any ponding that exceeds that depth will enter the field inlet and flow directly to the pond. Stormwater pollutants are largely mobilized during the first part of large events. This "first flush" will be captured and treated during the Rain Garden during the initial part of the storm. Thus even in larger events, that exceed the capacity of the garden, treatment is provided.

The Rain Garden layout and design is broken into terraced segments to reduce visual impact and take advantage of existing topography with detention basins set in the existing swale. Usable excavation will be placed so as to direct and capture sheet flow runoff in the design basins. Modular and contemporary

bent steel plate retaining walls have been carefully designed and coordinated to form a simple linear wall system that is cost effective, easy to install, and matches the existing and recognizable steel columns set nearby at the pedestrian bridge and amphitheater areas.

Careful consideration for the layout of the walls and placement of vegetation has been taken to maintain sight lines while limiting concealed and comfortable areas to minimize negative activity. Readily available and durable plate steel material has been used to eliminate potential damage associated with vandalism. The bent steel walls include articulating, folded faces and will naturally patina providing a difficult surface for tagging and graffiti. In the event tagging and graffiti become problematic prior to the forming of the patina, a thorough sanding of the surface and application of graffiti-resistant clear coat finish can be provided as is typical on concrete and other surfaces in area parks.

## **EDUCATIONAL USES AND RESOURCES**

The park is currently being accessed by a broad array of user groups including families, cyclists, walkers, and event-goers. The location and visibility of the Rain Garden will offer the opportunity for interpretive and educational discussions about LID techniques for stormwater management for public consumption. Project success will be measured by the function of stormwater management but also by exposing the public to a functional and attractive option that maintains and improves the health of the Fish Creek watershed and points beyond.

It is the goal of a variety of state and federal agencies to increase the use of Green Infrastructure and LID as a stormwater management tool in urban environments across the U.S. Funding for this project is largely supported by a grant from the US Fish and Wildlife Service to facilitate the use of alternate stormwater management practices in Anchorage. As part of the outreach and communication about the success of the project, Watershed Management Services will be creating a number of post-project products. We will be instrumenting the outflow pipe from the Rain Garden in order to monitor how often overflows from the garden occur. Watershed Management Services will be creating a budget comparison between this project and a more conventional approach to solving this water quality and drainage concern. These resources will added to Watershed's existing resources available, not only to the public, but to design professionals that are considering the use of alternate stormwater practices in their projects.

## **STAFF RECOMMENDATION**

The Parks and Recreation Department recommends that the Parks and Recreation Commission adopt the attached resolution of support for the MOA Cuddy Family Midtown Park Rain Garden project.

APPENDIX A: site IMAGES



*Aerial showing Cuddy Family Midtown Park and proposed Rain Garden location*



*Enlarged aerial showing Cuddy Family Midtown Park proposed Rain Garden location*



*View of existing swale and sediment accumulation on pedestrian path due to stormwater runoff*



*View looking downslope at existing swale from Great Lawn to the Pond with culvert under existing path*

## APPENDIX B: PRECEDENT



*(LEFT) Existing steel columns at pedestrian bridge viewed from Ice Oval  
(RIGHT) Rain Garden example @ Senior Center with Iris & Daylily perennial plantings*



*(RIGHT) Rain Garden example @ Boys & Girls Club with Red-Twig Dogwood plantings*



*Example of plate steel wall describing similar articulation (<http://landarchs.com/wp-content/uploads/2015/02/Metamorphous81.jpg>)*



*Example of plate steel wall describing similar scale (<https://s-media-cache-ak0.pinimg.com/originals/8a/c2/ae/8ac2ae37910fd46d0e2daaaa2748dd82.jpg>)*



**Municipality of Anchorage, Alaska**  
**Parks & Recreation Commission**

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P.O. Box 196650  
Anchorage, AK 99519



**Resolution No. 2016-22**

**Cuddy Family Midtown Park Rain Garden**

WHEREAS, the Anchorage Parks and Recreation Commission serves in an advisory capacity to both the Mayor and the Assembly; and

WHEREAS, the Anchorage Parks and Recreation Commission has the responsibility and duty to provide for the long term vision of our park system by ensuring that a balance of parks, natural resources, and recreation facilities provides for the health, welfare, and safety of all residents of the Anchorage Bowl; and

WHEREAS, the Municipality of Anchorage's Stormwater Permit with the US EPA and Alaska Department of Conservation directs the Municipality to incorporate the use of Green Infrastructure/LID in managing stormwater; and

WHEREAS, the installation of a Rain Garden at Cuddy Family Midtown Park is intended to address excessive sheet flow and concentrated flow of stormwater from the Ice Oval and Great Lawn areas within the park that is contributing to water quality concerns in Cuddy Pond; and

WHEREAS, The location and visibility of the Rain Garden will offer the opportunity for interpretive and educational discussions about LID techniques for stormwater management for public consumption; and

BE IT RESOLVED, that the Anchorage Parks and Recreation Commission supports the proposed plan to install a Rain Garden at Cuddy Family Midtown Park.

PASSED AND APPROVED by the Anchorage Parks and Recreation Commission this 13th day of October 2016.

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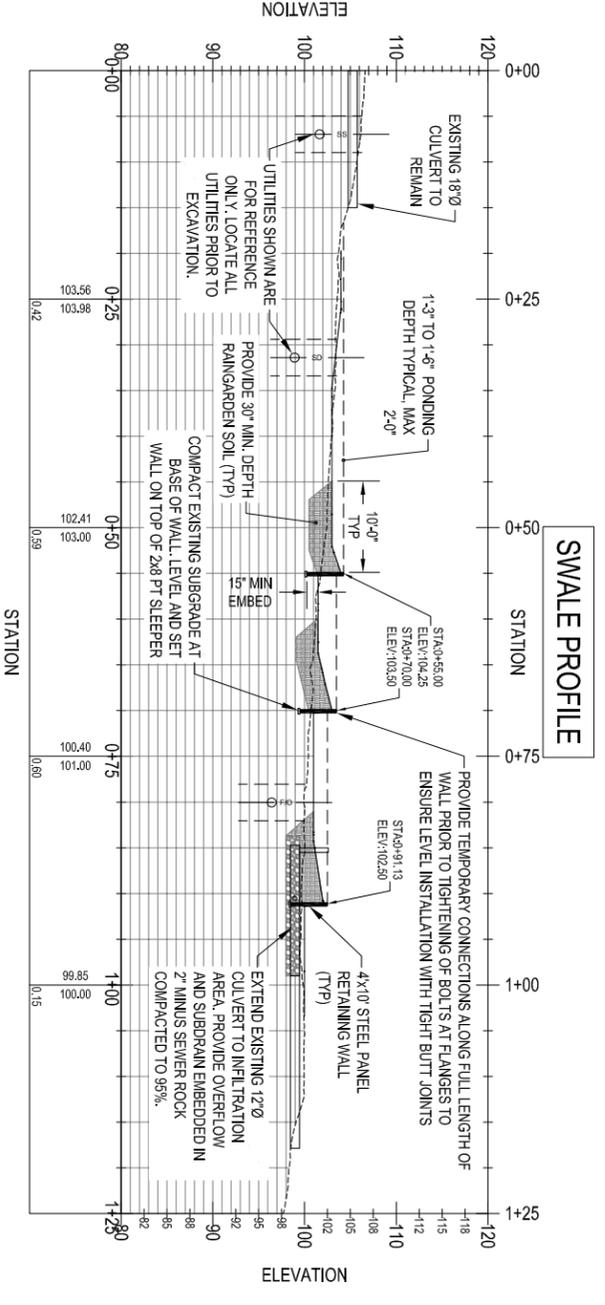
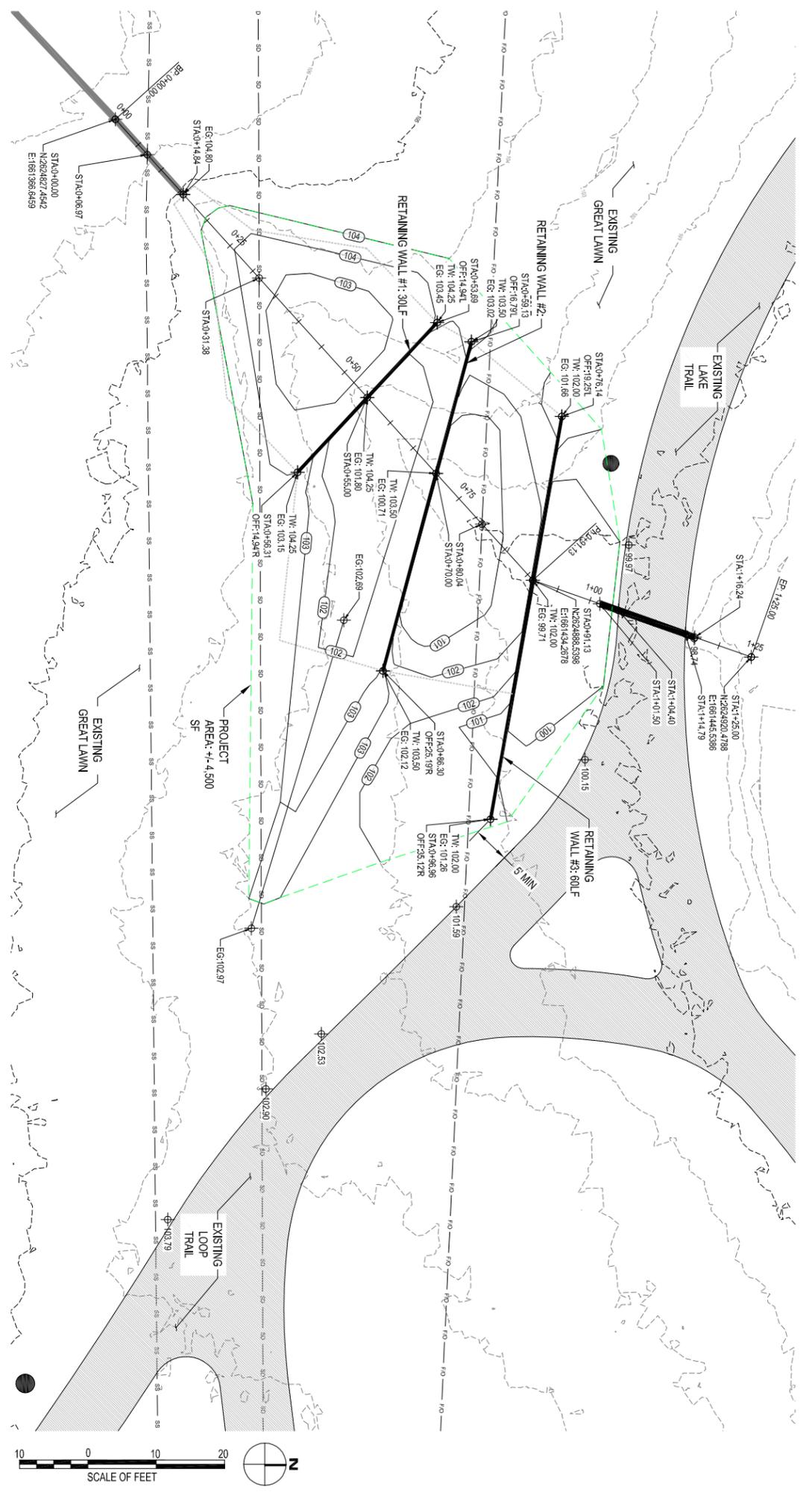
Chair  
Parks and Recreation Commission

ATTEST:

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John H. Rodda, Director  
Parks & Recreation Department

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 WWW.LCCALASKA.COM



PROJECT NO:	16-XXX	
DATE:	October 5, 2016	
DRAWN BY:	JH	
CHECKED BY:	MK	
Symbol	Description	Date

CONSULTANT:  
**CUDDY PARK RAINGARDEN**  
 ANCHORAGE, ALASKA  
 MOA WATERSHED MANAGEMENT

**CONCEPT DESIGN**

**BETTISWORTH NORTH**  
 ARCHITECTS AND PLANNERS

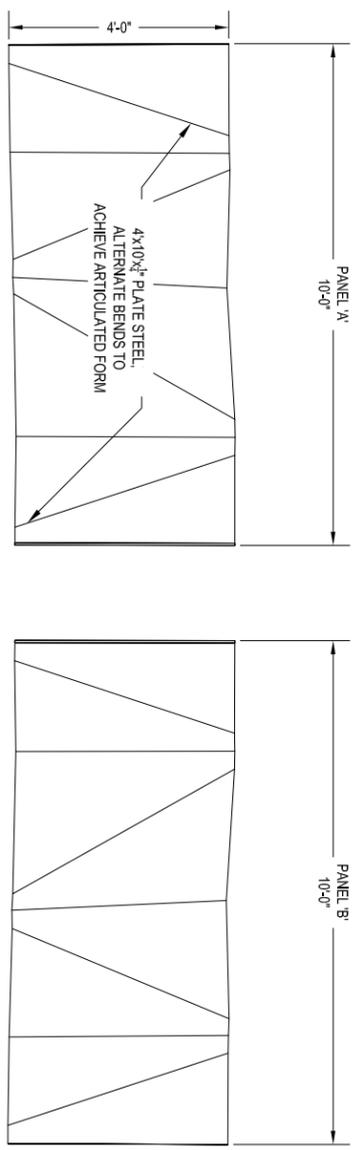
2600 DENALI STREET SUITE 710 ANCHORAGE, ALASKA 99503 907 561-5780  
 212 FRONT STREET FAIRBANKS, ALASKA 99701 907 456-5780  
 WWW.BETTISWORTHNORTH.COM

PROPOSED SITE PLAN & SECTION  
**L101**

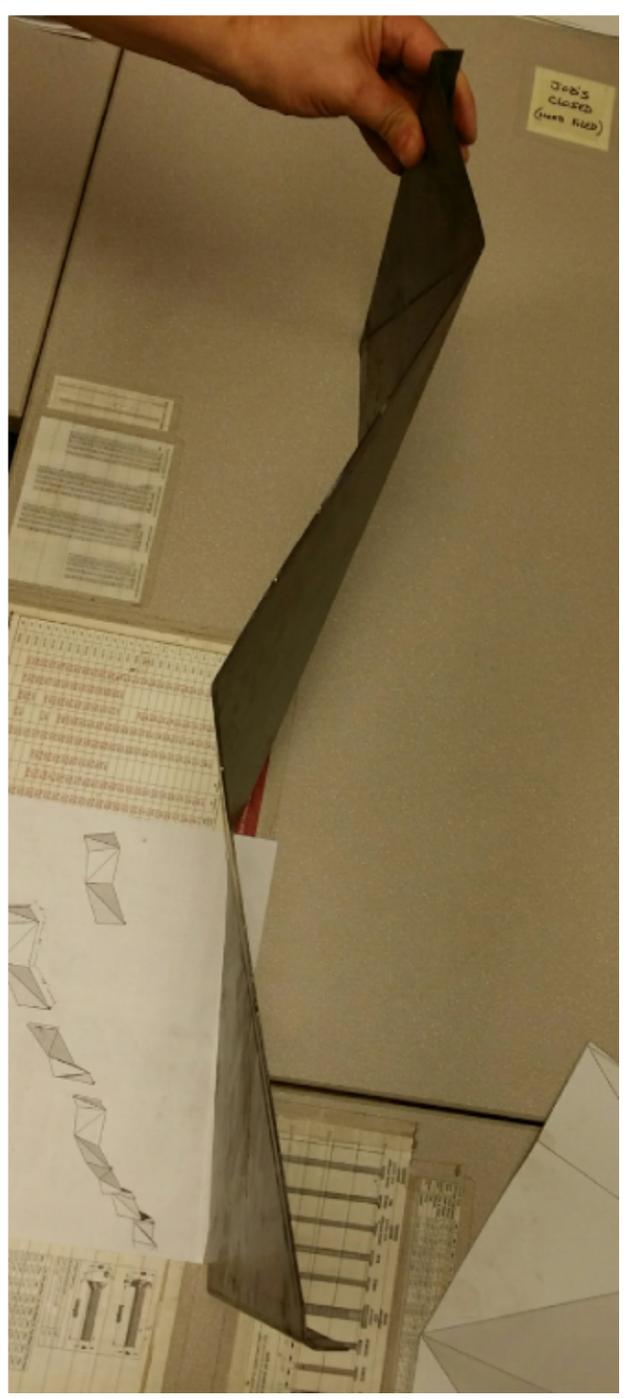




1  
L501  
NTS  
RETAINING WALL - PROTOTYPE VIEW #1 (ELEVATION)



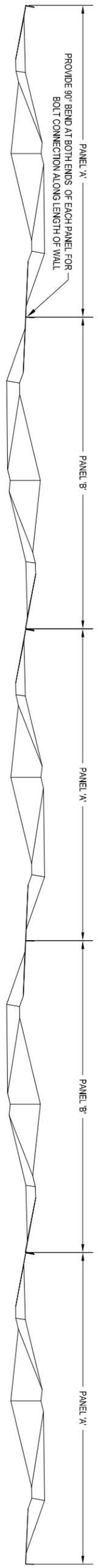
2  
L501  
NTS  
RETAINING WALL - PANELS (FRONT)



4  
L501  
NTS  
RETAINING WALL - PROTOTYPE VIEW #2 (TOP)



4  
L501  
NTS  
RETAINING WALL - PROTOTYPE VIEW #3 (BEND DETAIL)



3  
L501  
NTS  
RETAINING WALL - ASSEMBLY (TOP)

PROJECT NO:	16-XXX	
DATE:	October 5, 2016	
DRAWN BY:	JH	
CHECKED BY:	MK	
Symbol	Description	Date

1  
L502  
NTS  
RETAINING WALL - SKETCH



PROJECT NO:	16-XXX	
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Symbol	Description	Date

CONSULTANT:

**CUDDY PARK  
RAINGARDEN**  
ANCHORAGE, ALASKA  
MOA WATERSHED MANAGEMENT

CONCEPT DESIGN

**BETTISWORTH** NORTH  
ARCHITECTS AND PLANNERS

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LANDSCAPE DETAIL  
RETAINING WALL

**L502**