

# **PROPOSAL FOR ACCESSIBLE PLAYGROUND DESIGN**

Prepared by  
CJ & Double M, Inc.  
Courtney O'Brien, Julianna Hache, Mike Graham, &  
Mark Wagner (Group #9)

Prepared for  
Dr. Emeka Oguejiofor, P.Eng  
Paul Doiron, P.Eng  
Design Supervisor

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## TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY.....	3
INTRODUCTION.....	3
Literature Review.....	5
Scope of Activities.....	5
Report Format.....	5
FEATURES AND BENEFITS.....	6
Project Specifications.....	6
Criteria/Limitations.....	7
Equipment Required.....	8
Financial Analysis.....	9
Installation Costs.....	9
Equipment Expenses.....	9
CONCLUSION.....	9
REFERENCES.....	11

## LIST OF ILLUSTRATIONS

### FIGURES

Figure 1: Engineering Drawing of the proposed accessible playground layout.....	7
Figure 2: Engineering drawing of the proposed accessible playground component	8

### TABLES

Table 1: Estimated cost of system installation.....	10
Table 2: Tentative Schedule.....	10

## EXECUTIVE SUMMARY

This proposal outlines the features and design of a playground and more specifically a swing component, "Swing Mate", that will be accessible to children with various disabilities. "All abilities welcome" define accessible as "a site, building, and its facilities that can be approached, entered, and used by people, including those with physical, sensory, or cognitive disabilities". The demand from parents, teachers and student aids to have places where their children can play safe and be included is sufficient for the creation of a playground.

The predictable success of the proposed design is based on two important questions:

- Will the communities/schools be able to pay for playground equipment costs?
- Will the overall playground experience be greatly increased for all children?

This proposal answers both questions with an affirmative by describing the benefits of installing new playgrounds in communities and schools; however, the financial support we would need from the City councils/Schools may be exorbitant. The monetary costs may be high, however, the gratification and support in return from parents, teachers and most importantly the students, will be worth the price. The benefits described in this proposal affirm that building new accessible playgrounds will be a great improvement to our schools and communities.

## INTRODUCTION

The purpose of this report is to show the benefits of installing new accessible playgrounds in communities and schools, so as to bring these communities and schools closer together by including "everyBODY". As a background for your reading this report, there is included (1) a brief description of the project, (2) the scope of activities during the study, and (3) an overview of the formal report. This introduction includes a description of the project, outlines the highlights and benefits of building an accessible playground, and explains the scope and format of the proposal.

### Scope of Activities

This project involved seeking information from different communities that have attempted similar projects and some outside research. Specifically, the project scope involved:

- Brainstorming ideas of how to modify current playground equipment to make it more accessible, while designing an entirely accessible playground around it
- Discussing what materials would be the best for the structure itself and for the entire playground and why

- Analyzing the cost of installation and cost of equipment
- Developing conclusions and recommendations that were based on the research completed

<b>TASK</b>	<b>DATE (2015)</b>	<b>NOTES</b>
<b>Group Meeting (1)</b>	Jan. 9 <sup>th</sup>	Discussed ideas for a design project, decided on Accessible Playground
<b>Group Meeting (2)</b>	Jan. 12	Looked up statistics for common disabilities in children
<b>Group Meeting (3)</b>	Jan. 21 <sup>st</sup>	Discussed different types of play equipment that would be suitable in playground
<b>Group Meeting (4)</b>	Jan. 25 <sup>th</sup>	Researched for possible dimensions of our accessible swing, initial sketches were started
<b>Group Meeting (5)</b>	Jan. 26 <sup>th</sup>	Worked on proposal and presentation power point
<b>Group Meeting (6)</b>	Jan. 28 <sup>th</sup>	Worked on proposal, initial CAD drawings were produced
<b>Group Meeting (7)</b>	Jan. 29 <sup>th</sup>	Worked on proposal, called a contractor for an estimate at the cost for some features of the project
<b>Group Meeting (8)</b>	Jan. 31 <sup>st</sup>	Final draft of proposal started, power point presentation finished, practiced presentation
<b>Proposal Presentation</b>	Feb. 2 <sup>nd</sup>	Presented proposal
<b>Group Meeting (9)</b>	Feb.4 <sup>th</sup>	Reviewed final draft of the written proposal
<b>Written Proposal</b>	Feb.4 <sup>th</sup>	Written proposal due
<b>Group Meeting (10)</b>	Feb. 7 <sup>th</sup>	Prepare for progress report
<b>Reading Week</b>	Feb. 23 <sup>rd</sup> – Mar. 2 <sup>nd</sup>	Individually work on design and layout
<b>Group Meeting (11)</b>	Mar.3 <sup>rd</sup>	Share ideas from individual work

Table 2: Tentative Schedule

## Report Format

This proposal focuses on the main advantages that the new accessible playground will provide to schools and communities. These sections follow:

- Children of focus
- Design logistics
- Financial analysis

## Literature Review

In Canada, 4.6% of children have a disability, which is almost 1 in every 20. Most parks and playgrounds are not accessible for children with mental and physical disabilities because of many limiting components installed in playgrounds. While all of their friends play at recess, on evenings and on weekends, children with these disabilities have to sit out and cannot be included.

The limitations that deem playgrounds to be “inaccessible” stem from mainly the type of flooring used, the lack of sensory equipment, the restricted access of high level components without transfer stations or ramps, the lack of braille, and the lack of accessible swings.

One major issue that arises is creating playground equipment that is accessible/usable to children with types of muscular dystrophy and neuromuscular diseases, as well as cerebral palsy. “Muscular dystrophy is a group of inherited diseases that are characterized by weakness and wasting away of muscular tissue, with or without the breakdown of nerve tissue”. Cerebral palsy (CP) is a disorder that affects muscle tone, movement, and motor skills (the ability to move in a coordinated and purposeful way).

This group of diseases are mostly early onset which means it effects children early on in life, when they are most likely to be playing on playgrounds (childhood to early teens). Limitations that arrive from a “normal playground” for these diseases include access limitations, the ability to “hold on” when on a swing, and sensory issues (not enough colors or textures to stimulate play).

There are very stringent guidelines set in place to ensure that the issues stated above will not impose a problem to children with different disabilities, and these guidelines will be further discussed in the “Criteria/Limitations” section.

By eliminating these issues and following the specific guidelines, it was evident that the accessible playground could become a reality by focusing on (1) the design of the playground itself and its components (2) the positive learning environment it would bring to communities and schools, and (3) the estimated cost of playground equipment and their installation.

## FEATURES AND BENEFITS

### Project Specifications

By following the guidelines and restrictions of an accessible playground by the “Canadian Standards Association”, a playground layout design can be created, that will be accessible for all children (and specifically a swing set designed for children with muscular deficiencies including cerebral palsy).

CJ & Double M will design a playground that uses the following modifications:

- Ramps at a certain grades that will replace all stairs to access the main structure of the playground
- Rubber tile flooring that will absorb the forces of falls as well as be a good traction for wheel chair wheels
- A designated amount of low-ground components that will compensate for the amount of high-level components that disabled children may not be able to reach
- Accessible swing sets designed for wheelchairs
- Sensory equipment that will include colors, sounds and different textures to stimulate play

The swing set being designed, “Swing Mate” will include the following:

- Solid, but comfortable seat that would provide support for children with muscle deficiencies
- A “hinged” frame that connects a normal swing seat with the supportive swing seat so that a parent, teacher or aid can swing for the child with a disability
- Child will be able to play with their friend or helper and have the “free motion” feel without being pushed.

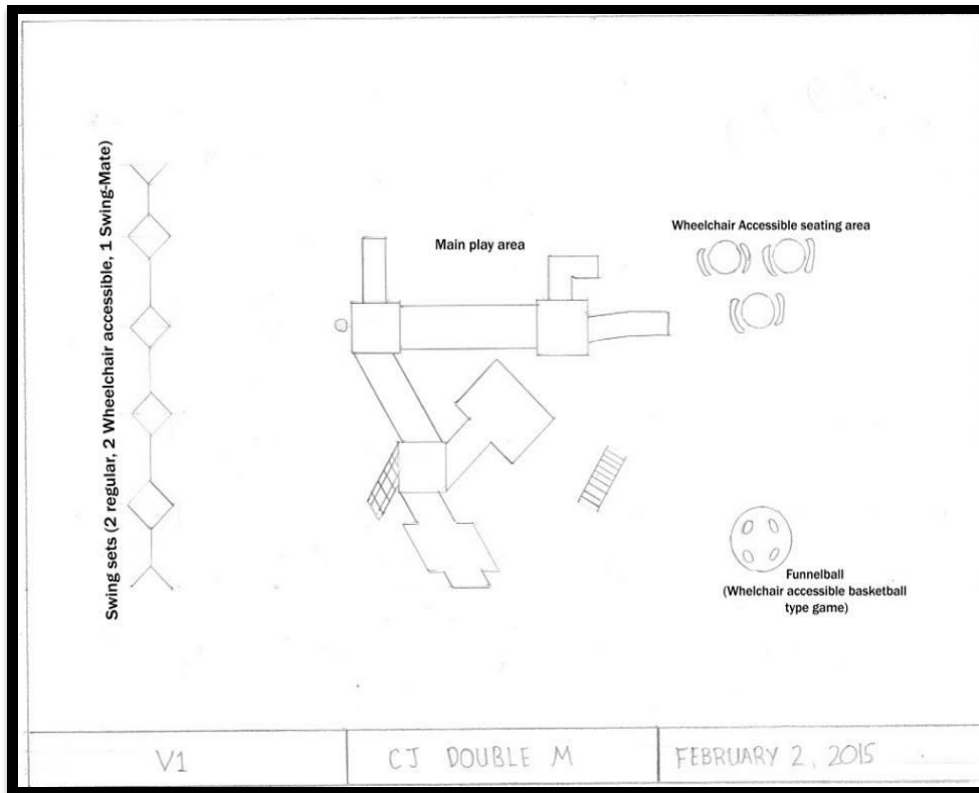


Figure 1: Engineering Drawing of the proposed accessible playground layout

### Criteria/Limitations

There are an extensive number of guidelines that must be followed for the playground to even be considered an “accessible playground”. Any limitations would derive from these guidelines, and the financial commitment that would follow.

According to the “Canadian Standards Association”, an accessible playground must include:

- At least one of each type of play component provided at ground level in a play area must be on an accessible route (different “types” of play components are based on the general experience provided by the play component)
- The number and variety of ground level play components required to be on an accessible route is also determined by the number of elevated components provided in the playspace
- At least 50 percent of the elevated play components must be on an accessible route
- Playspaces with less than 20 elevated play components may use a transfer system instead of ramps to connect at least 50 percent of the elevated components

- A ground level accessible route: 1524mm (60.0 in) minimum clear width (enables 2 wheelchairs to pass each other or change direction) & 1:16 maximum slope (an allowable 1:12 slope is utilized for the transition at the boundary of the playspace)
- Accessible surfaces can include impact-attenuating tiles made of recycled rubber and engineered wood fiber that meet the ASTM requirements
- Handrails shall be between 24 and 40 mm (0.94 and 1.57 in) in diameter & top of the handrail gripping surfaces shall be between 508 and 711.2 mm (20.0 & 28.0 in) above the ramp surface
- Transfer platform must be 279.4 to 457.2 mm (11.0 to 18.0 in) above the ground, Minimum 609.6 mm (24 in), Minimum 355.6 mm (14.0 in) deep (see picture)
- Clear floor space: 762 mm (30 in) by 1219.2 mm (48 in), may overlap accessible routes and maneuvering spaces, slope not steeper than 1:50 in all directions
- Reach ranges: 457.2 to 1117.6 mm (18.0 to 44.0 in) for 5-12 year olds

## Equipment Required

### Swing-Mate

The installation of a playground involves many different components that must be taken into consideration. A rough estimate of materials required for Swing-Mate is listed below under the Installation Costs.

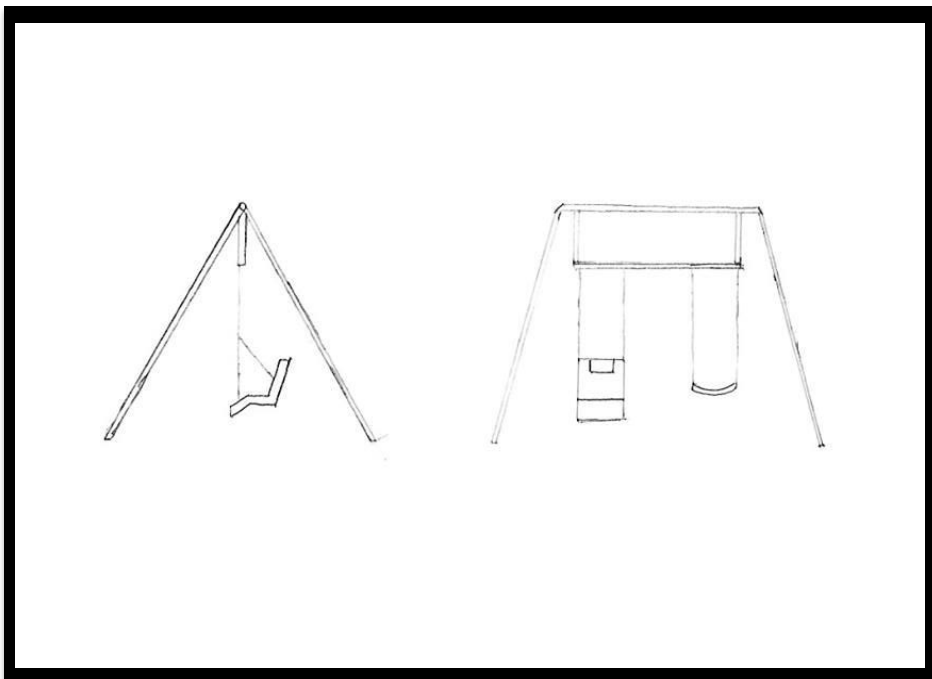




Figure 2: Engineering drawing of the proposed playground component

## Financial Analysis

### Installation Costs:

The total estimated cost of the installation of the system is \$83,090, excluding the cost of additional playground equipment. This cost includes the features, services, and equipment outlined in Table 1 below:

Table 1: Cost of system installation.

<b>Component</b>	<b>Estimated Cost</b>
Rubberized Flooring	\$58000 (\$12.04/sq. ft.)
Laborers and Machine on site	\$20000
Concrete set for approx. 50-60 legs	\$4000
Accessible Chair for Swing-Mate	\$500
6 Chains for Swing-Mate	\$120
Regular Rubber Swing (Swing-Mate)	\$30
2 Hinges (Swing-Mate)	\$40
Galvanized Steel Pipes (Swing-Mate)	\$400
Additional Playground Equipment*	Too early for approximate cost

\*Additional equipment required to carry out this project will include other swings, components for the Jungle Jim, slides, ramps, etc.

## CONCLUSION AND RECOMMENDATIONS

Why should an “All-Play” accessible playground be considered by communities and schools to allow access to play for children with disabilities? The design will satisfy two common criteria required to build an accessible playground: the design will be as cost efficient as possible while still giving ALL children and overall great playground experience. This design is not only feasible, it is also necessary if communities all over Canada want to become more accessible and including when it comes to the growth and learning of our disabled children. The design’s ability to meet these criteria will lead to its success, along with the incorporation of the following features and benefits:

1. The design is safe and will allow parents, teachers and aids to comfortably allow all children to play without the fear of harm.
2. The design will be accessible to as wide a range of disabilities as possible.

3. The design will not diminish the “great playground experience” for children who do not have any form of disability.

The recommendation is for communities or schools to join forces in raising the funds needed to install our design of the “ALL-Play” accessible playground in their community. The learning and growth of disabled children in the area will flourish, and in turn will enhance growing and learning in the community.

## REFERENCES

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