

This is a very good document.

Group Name?

January 24, 2011

MEC 432 TECHNICAL PROJECT SPECIFICATIONS AND PLAN

Abstract

Airsoft Ammunition Recovery Device – In an effort to reduce environmental waste and costs associated with operating an airsoft gun for sporting purposes, we of JDL Mine Crafts propose a device which enables the recovery, reconditioning, and sorting of spent ammunition in an indoor/range setting.

Objective

well written

For our Technical Project, we will design the aforementioned ammunition recovery device. This device must be capable of accepting bulk collected spherical 6mm Ball Bullet ammunition intended for airsoft guns (henceforth, referred to as BBs), and producing sorted ammunition suitable for reuse in a standard (non-precision) airsoft gun without causing damage or fouling, and retaining favorable accuracy potential.

To meet these goals and maintain practical usability, the ammunition recovery device should possess these attributes:

- remove miscellaneous debris and contaminants, such as dirt, dust, and target remnants from the BBs
- remove severely damaged BBs
- remove or recondition lightly damaged, but potentially damaging BBs
- separate and sort received BBs by mass (which determines ballistic properties)

The device should remain within the following constraints:

- have a final production cost of less than \$200CDN
- receive and output only 6mm BB ammunition, of all commonly produced grades, masses, and materials
- receive collected bulk BBs (no requirement for the device to collect the BBs)
- be largely self contained, with regard to consumables and power required (at most utilizing household 120VAC power, but preferably completely self contained)
- be semi-portable, able to be carried from site to site in an average commuter vehicle (ideally fitting within a 3' x 2' x 2' volume)
- be simple and safe to operate for an untrained end user

Project Plan

The following deliverables will be provided to assess project progress:

Deliverable	Due Date and Time
Letter of Transmittal	10:00 Monday, January 10, 2011
Project Specifications and Plan	12:15 Tuesday, January 25, 2011
Conceptual Design Peer Review	Week of February 14, 2011
Progress Report	12:15 Tuesday, March 8, 2011
Oral Presentations	Tuesday April 5 and Tuesday April 12, 2011
Final Design Report	12:15 Tuesday, April 19, 2011

In order to meet these deadlines, our group will carry out the following activities on this timeline:

Design Activity	Expected Completion Date
Problem Identification	January 26, 2011
Preliminary Ideas	January 28, 2011
Refinement/Analysis	February 12, 2011
Conceptual Prototyping	February 26, 2011
Solution Selection/Progress Report	March 6, 2011
Final Design Report	April 16, 2011

Resources available to assist in completion of this project are as listed:

Personnel

Lynden Vuvan – Project Coordinator
 James Stone – Project Group Member
 Daniel Vu – Project Group Member

Material Assets

- Miscellaneous hand and power tools (household)
- Miscellaneous stock/sample materials (household)
- Airsoft firing range with BB ammunition trap
- Selection of airsoft guns to verify output ammunition quality/characteristics
- Supply of various weights, grades, and materials of BB ammunition

Software

- Autodesk AutoCAD 2010
- Autodesk Inventor 2010
- CIMCO Edit v5.3
- MasterCAM X3
- Microsoft Office Software Suite 2007

Budget

\$100 ceiling

Date?

PROJECT SPECIFICATIONS AND PROJECT PLAN

PROJECT IDENTIFICATION

Name	The Mower/Blower
Description	A device which can be easily attached to a standard lawn mower to convert it to a snow blower.
Sponsor/Initiator	Self-Directed
Project Manager	François Mahé
Project Team	Stacy King, Andrew Reitzel

PROBLEM STATEMENT

Our group will design a prototype Mower/Blower which will combine lawn mower and snow blower components to create a convenient multifunctional design. The prototype will consist of a standard lawn mower and a snow blower attachment which can be easily affixed to enable the ability for snow removal. For this design to appeal to the majority of consumers, we will ensure the design will be able to fit through a standard gate, that the operator will be able to direct the snow either left or right, and the design must be esthetically pleasing. The cost per unit of the final design should not exceed \$500.

PROJECT OBJECTIVES AND ATTRIBUTES

- Design a snow blower attachment to be powered and driven by a standard lawn mower.
- Safety at all stages of operation must be considered from the attachment of the snow blower component to operation of the Mower/Blower.
- The Mower/Blower is to move forward with little or no effort by the operator.
- The Mower/Blower must stop when the operator is not holding the mower controls.
- The final design must be esthetically pleasing.

PROJECT CONSTRAINTS

The final design project will be conducted from January 10, 2011 to April 4, 2011. During this time we will conduct research and analysis of traditional lawn mower and snow blower designs to implement a design which will combine the two components. The final design will fit the following constraints:

- Attach the snow blower component to a traditional lawn mower with little or no tooling.
- The operator must be able to direct the snow from left to right by directional control while the device is in operation.
- Snow removal of a maximum of 6 inches is desired.
- The device must fit the standard 30 inch gate opening.
- The cost per unit should not be more than \$500.

KEY PROJECT DELIVERABLES

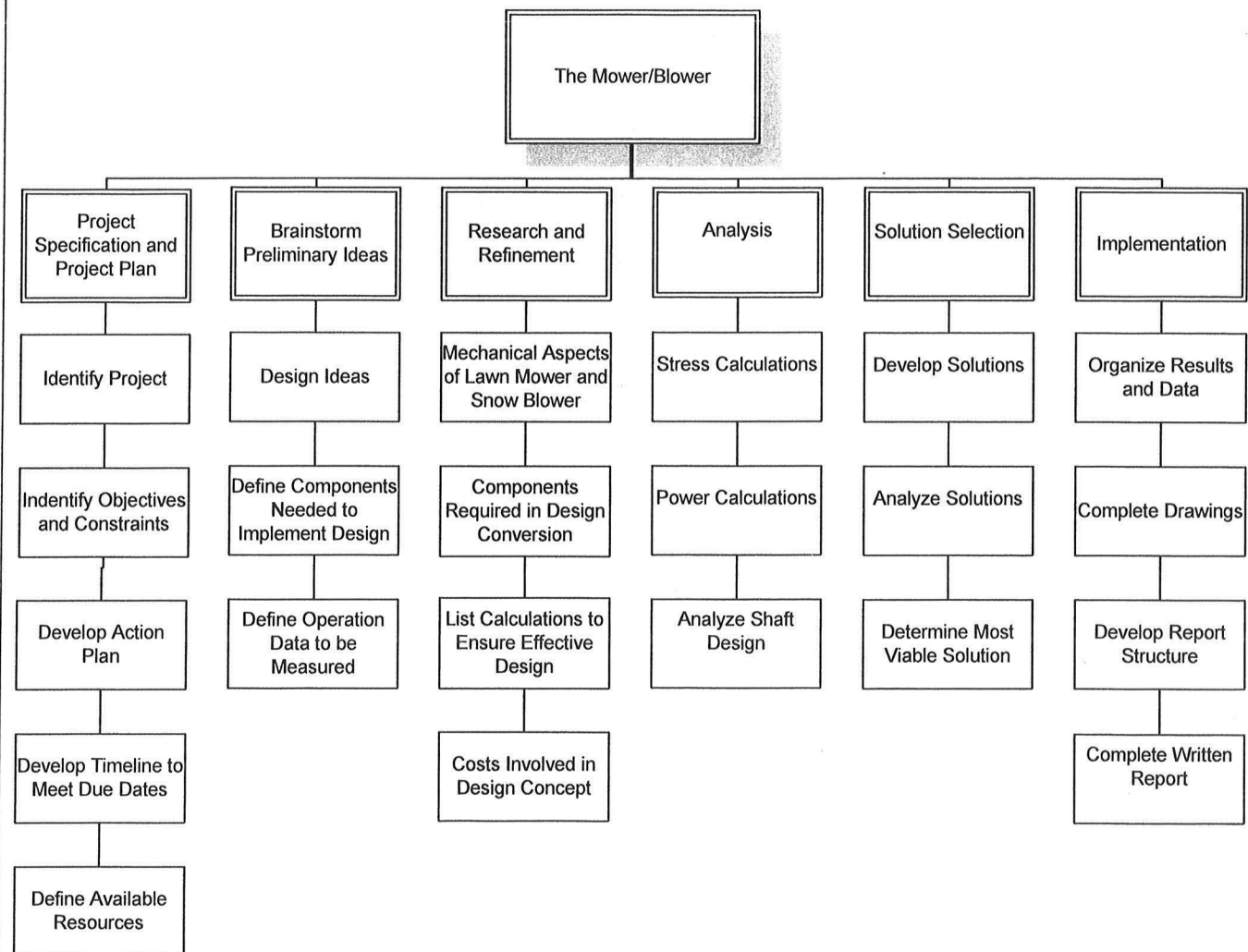
Name	Description
Project Specifications and Project Plan	Give an overview and define the scope of our project.
Progress Report	Demonstrate research and work completed to date.
Final Design Report	Clearly report design concepts and design implementation through a well communicated report.

PROJECT ORGANIZATION

Name	Area of Expertise	Roles and Responsibilities
François Mahé	Design Concept and Drawings	Clearly define design concepts and communicate implementation through accurate drawing representations.
Stacy King	Time Management and Report Writing	Ensure tasks are completed efficiently and on-time. Compile all design information into a clearly communicated report.
Andrew Reitzel	Design Calculations and Data Analysis	Oversee the compilation and analysis of technical information.

WORK BREAKDOWN STRUCTURE

wow! nice...



MILESTONE DATES

Item	Major Events / Milestones	Dates
1.	Submit Letter of Transmittal	Monday, January 10, 2011
2.	Submit Project Specifications and Project Plan	Tuesday, January 25, 2011
3.	Conceptual Design Peer Review	Week of February 15, 2011
4.	Progress Report	Tuesday, March 8, 2011
5.	Oral Presentations	Tuesday April 5, 2011 and Tuesday April 12, 2011
6.	Submit Final Design Report	Tuesday, April 19, 2011

PROJECT RESOURCES

Type	Description
Manuals	<ul style="list-style-type: none">• Yard Machines by MTD – Lawn Mower Owner's Manual• Briggs & Stratton – Lawn Mower Motor Manual
People/Organizations	<ul style="list-style-type: none">• Lawn Mower Hospital – Edmonton based company which focuses on the sales and service of outdoor recreational and industrial power equipment.• NAIT Project Factory
Testing	<ul style="list-style-type: none">• Photoelectric Tachometer – Used to measure output RPM on the lawn mower and snow blower.
Computer Resources	<ul style="list-style-type: none">• Microsoft Word• Microsoft Excel• Internet Explorer• Autodesk Inventor 2010
Internet Websites	<ul style="list-style-type: none">• Sunray, Inc. - http://www.sunray-inc.com/• SDP/SI - http://www.sdp-si.com/• Trew Industrial Wheels, Inc. - http://www.trew-wheels.com/• Toro - www.toro.ca/
Textbooks	<ul style="list-style-type: none">• Applied Strength of Materials, Mott, 2008• Materials Handling Systems, NAIT Coursepack #1597, 2010• Machine Elements in Mechanical Design, Mott, 2004• Applied Mechanics for Engineering Technology, Walker, 2007• Engineering Drawings and Design, Jensen, 2007

François Mahé : *George 9901*
Stacy King : *Stacy King*
Andrew Reitzel: *Andrew Reitzel*