

Agawam High School Robotics

“FIRST Team 839”



Technology: Building Minds

Rosie Robotics

BUSINESS PLAN

FOR

2016

Business Plan No. 015

Agawam Robotics Club
Student Executive Board
Agawam High School
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1.0 Exhibits

1.1 Team Photo

“FIRST Team 839, Rosie Robotics”



FIRST (For Inspiration of Science and Technology) Team 839, Rosie Robotics, is comprised of students who are guided by parents and mentors in the teachings of *FIRST*. Our team goal and main focus is to get the students of this town and other towns involved in this life changing opportunity. Our team spreads the word of *FIRST*, For Inspiration and Recognition of Science and Technology, to our community so that one day we may be able to make Dean Kamen's dream of changing the culture, a reality. Being a part of Rosie and *FIRST* teaches students Gracious Professionalism so that we may share it with everyone, no matter their background, their race, their gender, or their age. *FIRST* is about showing the world what we can accomplish in the fields of science and technology and also how we work as a team to reach our goals as a team. We do not just build robots, we build students. Through what we do as a *FIRST* team, we are able to spread the love we have for teaching others with interests in the fields of science, technology, engineering, mathematics, and marketing and bringing them to this beneficial program.

2.0 Executive Summary

The Team, Its Goals, and Objectives

The Agawam Robotics Team was founded in 2001 as an extra-curricular academic extension program to Agawam High School by John T. Burns and Dana P. Henry. Since our formation, club membership has increased and we have established a positive and trusted reputation within our local community and surrounding towns.

The Management Team

The team is based on a corporate management structure, including the top two positions, the Chief Executive Officer and the Chief Operations Officer. The other production management positions include the Chief Financial Officer, the Chief Marketing Officer, the Director of Engineering, the Director of Manufacturing, the Director of Risk Management, the Director of Programming, and the Director of Strategy. Each position is held by elected students.

The Business

The Agawam Robotics Team specializes in the production of controlled devices, the design and fabrication of robots for competition, the education of students, and the transfer of high-tech intellectual property.

The Market

Our market differs from that of a typical company, as our goal is not to sell a product but to provide knowledge, service to the community, and train students for college and professional careers.

The Competition

We compete in an annual competition regulated by the *FIRST* organization, for which we design a robot to compete against other teams for recognition in the *FIRST* community and potential sponsor funding.

Opportunities

Our team offers exposure for our sponsors and investors to be integrated among our team along with providing students with an initial step into the workforce, such as internship opportunities.

Financial Data

We have a budget that varies from year to year with an average of \$20,000-\$30,000 in expenses which is used for club expenses, such as registration, transportation, and materials. We make most of our revenue through sponsorships and fundraisers such as our annual Ziti Dinners and Golf Tournaments as well as through selling Butterbraids, Pies, and Bonton coupon booklets.

Conclusion

We believe that our team benefits its members by giving them opportunities to develop skills for future education, innovation, and career opportunities. The contributions of our investors, teachers, and mentors are greatly appreciated.

2.1 Rosie Logo

Corporate Logo

This logo was digitally created using Adobe Photoshop. The slogan “Technology: Building Minds” was added after we had been already using it without the slogan for a year. It was created to meet the need for a logo that printed well onto our shirts and was more professional in appearance.



Fifteenth Year Logo

This logo was created for our tenth year of excellence and will be continually updated. It still maintains the same motivation because each New Year we learn from our past to inspire our future.



3.0 Mission Statement

We are a team of different backgrounds. We all have and share a wide range of abilities, talents, ideas and knowledge to show how gracious professionalism can create unity within our team.

We are all students, teachers, and mentors who respect each other, and teach each other regardless of age, gender, or professional positions; developing camaraderie, tolerance, and new ideas to create a team that both works together and challenges each other to never settle for good enough.

We will challenge ourselves and our team to stretch the boundaries of our imagination and creativity but not restrict ourselves with thoughts that limit us.

We will share our talents and knowledge with other teams and use our best resources to assist all teams regardless of previous opinions and standing.

Lastly, we understand through the connection of previous generations, we as teammates, both mentors and students, will grow within ourselves and our communities in the present and future.

4.0 The Team, Its Goals, and Objectives

4.1 The Team

Agawam Robotics Team was founded in 2001 as an extracurricular academic extension program by John T. Burns and Dana P. Henry. The membership started with eight (8) students, one (1) faculty advisor, nine (9) technical mentors, and five (5) non-engineering mentors (NEM's). This year, the team has grown to twenty-four (24) students, one (1) faculty advisor, seven (7) technical mentors and seven (7) non-engineering mentors. Our registered name is Agawam High School Robotics, however, we are known to the *FIRST* community, as well as our own community, as Rosie Robotics.

4.2 Its Goals

The initial goal of the team was to provide high school students with opportunities to apply their academic training to solve real-life challenges. We have focused not only on science, technology, engineering and mathematics (STEM), but also on other facets integral to a successful business. Some of these other activities include marketing, finance, business, communication, and development of professional brochures and presentations. The end product is to design and build machines for a variety of uses, ranging from road maintenance, to recreation, to direct competition, all in the interest of education.

Our robots are unique because we are one of the few teams with minimal corporate sponsorship, but still make a robust and technical robot that can compete with the rest. We have an advantage in the marketplace because of our dedication and willingness to learn and make our robot as highly capable as possible.

4.3 Objectives

Spreading *FIRST* Goals

- To teach our students about science, technology, engineering, and mathematics through partnerships with mentors
- To inspire students to seek careers in science, technology, engineering, and mathematics when they graduate high school and go on to higher education
- To become an important part of our school through presentations and demonstrations about the purpose of our team and *FIRST*
- To start new *FIRST* teams in the Western Massachusetts area
- To continue to find new ways of spreading our name as well as the *FIRST* message throughout our community

Community Outreach Goals

- To continue to receive and seek media coverage of both our team and *FIRST* through articles and newscasts
- To achieve more year-round team involvement and spread the word of *FIRST* through demonstrations, our annual *FIRST* Lego League (FLL) State Qualifier, new *FIRST* Robotics Competition (FRC) teams, our Ziti Dinners, and Golf Tournaments
- To continue to spread our name and the *FIRST* name throughout our community and others

Technical Goals

- To build a successful competition robot through a combination of both student and mentor contributions
- To increase manufacturing and design capabilities through the use of new technologies, software, machinery, and material
- To enhance engineering design by building on the strengths of our previous years and improving our capabilities through the use of new engineering technologies and strategies
- To create a detailed plan and schedule for the new build season
- To brainstorm successful strategies for our upcoming competitions
- To strive and win a FRC District, FRC District Championship and/or FRC Championship Title

Award Goals

- To make every effort in order to win a Chairman's Award
- To have at least one sophomore/junior receive the *FIRST* Dean's List Award
- To obtain the Kleiner Perkins Caufield and Byers Entrepreneurship Award for the tenth time
- To have a mentor be recognized as the Woodie Flowers Award recipient at a *FIRST* Competition
- To strive for an award based on the excellence in design and engineering of our robot at a *FIRST* District Competition

6.0 The Business

6.1 Past Projects

FIRST Team 839 “Rosie Robotics”

FIRST (For Inspiration and Recognition of Science and Technology) was founded in 1992, and according to their website, *FIRST* currently contains more than 70,000 students from 4,192 teams. This year, 2016, teams will participate in fifty-two (52) Regional Competitions, sixty-four (64) qualifying Competitions, nine (9) qualifying championship, and one (1) World Championships which will be held in St. Louis, Missouri.

The *FIRST* Robotics Competition consists of a six-week build season to accomplish conceptualization, design, fabrication, and testing of a 120-pound robot that accomplishes a series of competitive sports-like tasks for points. The robot is operated both autonomously through its internal programming and by radio control.

Rosie was developed in the high school machine shop, and was designed and fabricated by students with the guidance of teachers, sponsors and parent mentors. Rosie has utilized electric motors, pneumatic systems, and programming with LabVIEW and Java. Over the past fifteen (15) years, Rosie has won several awards within the FRC program which include:

- The Regional Chairman’s Award at the WPI Regional (2012)
- The Regional Chairman’s Award at the Boston Regional (2008)
- The Woodie Flower’s Award at the WPI Regional (2012)
- The Dave Leenhouts Award (2013)
- The Engineering Excellence Award at the WPI Regional (2012)
- The Kleiner, Perkins, Caufield, and Byers Entrepreneurship Award (2004, 2005, 2006, 2007, 2010, 2011, 2013, 2014, 2015)
- The Website Excellence Award (2012)
- The Daimler Chrysler Spirit Award (2003 and 2015)
- The Top Rookie Seed (2002)
- The Rookie All Star (2002)
- The Gracious Professionalism Award at Bash at the Beach (2013)
- The Most Crowd Stirring at Bash at the Beach (2008)
- The Most Photogenic at Bash at the Beach (2010)
- The Championship Alliance at Bash the Beach (2010)
- The Finalist Award at Bash at the Beach (2011)
- The Teacher’s Pet Award at Bash at the Beach (2011)
- The Mentor Champion Award at Beantown Blitz (2013)
- The Purple Heart Award, Battlecry at Worcester Polytechnic Institute (WPI) (2009)
- The Judges’ Award Gracious Professionalism at Worcester Polytechnic Institute (WPI) (2010)
- The Wicked Mini-bot Award, Beantown Blitz at Northeastern University (2011)
- The Underwriters Laboratory Safety Award (2012, 2014, 2015)
- The Championship Award, Tech Valley at Balston Spa High School (2014)
- Years of service at battlecry, (2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016)

Within the *FIRST* Tech Challenge, our smaller robot “Rosie’s Li’l Sis” has won awards including:

- The Connect Award, (for our ‘connection to the community’)
- The Gracious Professionalism Award, Motivate and Finalists (twice) in the Connecticut *FIRST* Tech Challenge (FTC) Championships.

Road Iron

Agawam Robotics Club was granted \$10,000 in 2003 to design and build a pothole prevention machine from the Lemelson-MIT InvenTeam Program. The machine uses Ground Penetrating Radar (GPR) to find potential potholes in the road surface, and a custom-built drilling and filling apparatus to inject a polymer for prevention of a future pothole.

R-Cannon

Not anywhere near as destructive as it sounds, the R-Cannon is a pneumatic shirt launching device for use during sporting events. Operated by two or three team members, supplied T-shirts can be launched into the stands.

R-Way

The Segway concept was designed as a personal transportation system and recreational vehicle, originally designed by Dean Kamen, the founder of *FIRST* robotics. In our own adaptation of his design, we created a vehicle for team members. It utilizes three points of contact and two battery operated drive wheels to propel the driver.

Handicap Accessibility for Lions Club Eye Mobile

Through a Purdue University grant for the EPICS (Engineering Projects in Community Service) program. We are responsible for the design and production of the handicap accessibility of all entrances of the Eye Mobile.

Providing Project Management Services

In conjunction with the Agawam Recycling Initiative and Westfield Watershed Protective Association, Rosie provided man-hours to tag all of the street drains in the Town of Agawam in hopes of educating the citizens about the effects of pollution.

Walker Bot

As a summer project the students of Rosie were inspired to create a new form of drive train. Their ideas evolved into what we called the "Walker Bot". This robot is a representation of a four-wheel drive system. However instead of wheels, each wheel is replaced by three alternating "feet". Each "foot" is offset to give the Walker Bot a crawling motion which has proven to be innovative and effective.

OMG Project

After the 2012 FRC season, Rosie was approached by the owners of OMG, a local company in Agawam, to help design a prototype robot. This gave Rosie the opportunity to work cohesively with a company which allowed them experience in a real world engineering situation. The project requested a proof-of-concept robot that could effectively traverse a roof-like setting while detecting and marking galvalume plates.

6.2 New and Ensuing Products

Rosie 15.0

The robotics team has completed its design and build phase for the *FIRST* competition. We have ended our building season and now in our competition season. Every year is a special year due to the fact that each game design is unique and requires distinctive innovations of the students to be smoothly integrated into a fully functioning robot.

6.3 Past and Present Services

Alternatively, we have provided the following services:

Teach the students through cooperative learning. We implement learning through the use of hands on engineering, designing and manufacturing by both manual and robotic devices.

The students host an annual Golf Tournament as well as a Ziti Dinner fundraiser which is open to the general public. This allows the students to establish communications with local area businesses and further their business management skills.

The team presents at educational events, such as conferences and meetings, and at various locations, such as museums, libraries and schools.

We share our experiences and “lessons learned” by mentoring other teams.

We have a tradition of demonstrating our robot for the Winter Arts Festival in the Agawam High School rotunda.

We have had many students be guest speakers for several occasions. For example, we hosted the Engineering Society of Western Massachusetts, where we presented at our shop in the high school, and also made a presentation at a dinner at the Eastern States Exposition Center. We were asked to present at EASTEC, the leading manufacturing trade show in the country, and at the *FIRST* Kick Off, a workshop for veteran teams.

We speak at and attend many events to promote our organization and spread knowledge of the importance of Science, Technology, Engineering, and Mathematics. On June 9, 2008, Rosie Robotics attended a joint meeting for the Department of Homeland Security with the members of the National Tooling and Machining Association. In Boston, we attended a Conference for Frontiers of Innovation at the World Trade Center. At our school accreditation, we were representatives for non-athletic extra-curricular education.

We continue to host Career Choice and bring in area companies to showcase talents to students.

G&L Tool Corp, one of our major sponsors, hosted a demonstration of our robot at the Showcase of National Tooling and Machining Association of the Western Massachusetts Chapter at their September monthly meeting. In 2012, we did another demonstration for the NTMA at their April monthly meeting.

Rosie's L'il Sis (FTC 839) participated in a pre-season invitational shakedown of the new FTC field management system at *FIRST* HQ for the past several years.

In 2009, we demonstrated our robot at Symphony Hall in Springfield during the Springfield Public Forums, while Dr. James McLurkin spoke about *FIRST* and his invention of the swarmbots. In 2010 we demonstrated our robot at Symphony Hall again while Dr. Steven Squyres lectured about the Mars Rover Project, to which he was the lead scientist.

We have also participated in the Eastern States Exposition's Agawam Day Parade by demonstrating the robot and advertising *FIRST* since 2001.

FIRST Team 839 and the Agawam Robotics Education Association, Inc. sponsor a *FIRST* sanctioned team at every school and every grade in Agawam since 2009. We host a Jr. FLL and FLL state sanctioned qualifying tournament in December starting with the first one in 2008 and happening every year since, along with showcasing *FIRST*.

Rosie partnered with Mass Live and the Agawam High School Career Center to put on a combination dissemination job fair with the Regional Technology Corporation as part of an EPICS program.

Rosie, in conjunction with the AHS Leos Club and EPICS, mark storm drains with caution signs.

At Western New England University, Rosie students demonstrated the robot at its freshman club night to invite the college students to join the world of STEM and the engineering education.

Periodically, we volunteer our time to the Melha Shriners at their pasta dinners and serve food to their supporters. We also volunteer at the Lions Club dinners.

2009 was the first year in which *FIRST* Team 839 held an annual school-wide food drive for the Rock 102 Mayflower Marathon. Last year we expanded our efforts to a town-wide food drive in and donated a total of \$1,238. As it still continues to grow every year as this year we collected \$1100 from both our school and town.

We provide machining, manufacturing, programming, technical and nontechnical services to Western MA and Northern Connecticut rookie and veteran FRC and FTC teams.

In 2011, we demonstrated our robot to our School Committee Board to show them not only our progress but also to spread our name and the *FIRST* message to influential people within our community.

2009, 2010, and 2011 on Earth Day, our students set-up a demonstration for our community at our local park where children were able to come and watch us operate Rosie 10.0 while also being able to use our Vex bots. We also had the chance to spread our green initiative to the crowd.

In August of 2011, our team was invited to go to Boston Greenfest with two other FRC teams where we demonstrated and presented the design and functions of our robot.

During the Harvest Fall Festival, in October, our team was able to exhibit our robot for the past several years. The event was held in our town and we were able to allow the public to actively interact with the robot while also spreading the message of *FIRST*.

In the summer of 2011, our students set up an annual bottle and can drive in the front of our school where our fellow townspeople were able to drop off their recyclable cans and bottles. We also had this opportunity to spread our name to our community.

In 2012, we demonstrated Rosie 10.0 at Springfield High School of Science and Technology, home of *FIRST* Team 3273, the Cyber Cats, at an Engineering Open House event where we taught interested robotics enthusiasts about our team and about the *FIRST* community.

In March of 2012, as a part of our education to inspire our students to become more proactive in what happens within this country Rosie set-up a USO donation fund in which we have collected money as well as food donations to send to troops on active duty. It's Rosie's way of showing our support for our men and women in the armed services.

As a way to get younger children excited about STEM, we demonstrated our robot to the children of town at our local library during February break over the past several years. The kids were able to get a close up view of what our team does while learning about the functions of a *FIRST* Robotics Competition Robot in addition to the things they can be doing in the *FIRST* Lego League or Jr. *FIRST* Lego League.

The past three (3) years the Rosie students participated in Bring Your Child to Work Day at UTC Aerospace Systems where they demonstrated the Rosie family's newest member from that year to the employees and their children. We were also able to provide a demonstration for the Vice President of Technology, Peter Smith. We were able to encourage the children to pursue future careers in the field of technology and also to spread the message of *FIRST*.

FIRST Team 839, Rosie Robotics hosted their 8th annual FLL Tournament at the Agawam Jr. High, this being their first live broadcast of the event to *FIRST* teams across the US.

In 2015, we did a demonstration at the Great New England Airshow to over ten thousand people from all over New England. We advertised our team and *FIRST* through the presentation of our 2013, 2014, and 2015 robots.

We were invited to the Mass STEM summit in November of 2015 to present to educators and companies from across Massachusetts about *FIRST* and Rosie. We were there with three other FRC teams.

In November of 2015 we were invited to Business West to demonstrate Rosie and *FIRST* through our 2012, and 2015 robots. We talked about *FIRST* and Rosie to dozens of businesses from across New England.

6.4 Use of Technology

From our foundation, the team has been devoted to the teaching and use of technology. We have promoted the use of invention and innovation. The team's mentors bring in the latest and advanced technology from their fields, which provide us with a wide basis of experience from which to learn.

The team has used technology to the best of their ability to promote our sponsors, team, and *FIRST*. We have internet access along with our own website and social media that is kept up to date on current events.

We have also published our work and accomplishments through a variety of media sources. We have been on many websites, been feature articles with news organizations such as AP and CNN, and have been interviewed for several television news reports and local newspaper stories.

Generously donated from G&L Tool Corp., the team now has a CNC milling machine at our shop at Agawam High School.

In November of 2007, Rosie Robotics had been invited by the Massachusetts Regional Director to participate in a trip to Parametric Technology Corporation, the makers of Windchill, CREO, and Math Cad software. We were the first *FIRST* team to present the program to the employees of PTC.

In October of 2008 and 2009, Rosie Robotics, one of twelve teams, had been invited to *FIRST* headquarters to participate in the beta testing of the new wireless controllers for FTC.

In our 2010/2011 season we came up with an effective and reliable mini-bot design, Elroy 3.0 that had an efficiency rating of 100%. Due to its great design concept and our Open Source Policy we lent our mini-bot out to *FIRST* Team 173, Rage, who was in need of help. They were able to achieve high standings at their competition because of Elroy's remarkable speed and easy deployment.

In our 2011/2012 season we designed the variable-position shooter hood. It changed the exit angle of the ball to allow shots from anywhere on the field. We combined a servo with a custom manufactured Ceram P actuation cam to position the hood for the most effective shot. Ceram P has the same friction coefficient as Teflon but is much more rigid. Because of this feature we were able to make a three point shot from the Coopetition Bridge at Championships in St. Louis.

In our 2012/2013 season we designed a PTO (Power take off) shifter for our drive train. It changed between climb mode and drive mode, which allowed us to quickly start climbing right away. We used a servo that shifted a clutch which changed the interface of the gear with is interfaced with the axel. Using the shifter minimized the amount of CIMs required on our robot.

6.5 Strategic Alliances

"All sponsors are treated as investors"

Agawam High School

The school not only provides us with space, machines, computer and internet access, but with access to over 1,400 students with varying interests and specialties. They have been a financial contributor for the past 15 years

G&L Tool Corporation

As a major sponsor to Rosie, they have benefited our team in many different ways. They have let the team use their machine shop and their machines to help us fabricate our parts. Also, we have acquired one new mentor from the company and a Milltronics CNC machine and a milling machine. They have helped our team prosper by not only generously donating their time and raw materials, but also in funds to help the team travel and expand our education.

UTC Aerospace Systems

One of the driving forces of Rosie hails from UTC Aerospace Systems, a Division of United Technologies Corporation. This major supplier to the aerospace industry and NASA have provided us with engineering, manufacturing and financial support from Rosie's inception in 2002.

Hartford Steam Boiler Inspection and Insurance Company

HSB, a world leader in pressure vessel inspection and insurance products for the nuclear and commercial industries is a long term and important financial contributor and has provided us with engineering support.

PTC, Inc.

This software corporation provides cash donations and software for FRC and FTC. In 2007, a group of students was sent to PTC headquarters to introduce them to *FIRST* robotics. Since then they have become one of *FIRST*'s top sponsors. The software provided includes business solutions software, such as CREO, MathCAD, and Windchill. They also provided Agawam High School with upgraded software to supply a more up-to-date learning environment, along with direct financial support.

Local Community Leaders

Our Local Community leaders span from a wide variety from our town elected politicians and our state representative, to our School Committee and Superintendent. Rosie has an overwhelming support from our school committee members, a city councilor as a member of the Board of Directors for the Agawam Robotics Education Association, several city councilors and our State Rep as strong supporters financially and politically.

Agawam Lions Club

Rosie's relation with the Agawam Lions Club has grown, from a small annual donation to participation in our FLL Tournament. We have provided them manpower in some of their activities and they have for us.

Agawam Rotary Club

The Agawam Rotary Club, recognizes the importance of FIRST in the community, bestowing Rosie's co-founder with a Paul Harris Fellow award and providing financial support every year.

Kamen Industrial Technologies

Joining Rosie last year is Kamen Industrial Tech, providing various hardware, bearings and specialized bushings for the robot.

Valley Plating Company

This plating company provides anodizing and specialty coatings for our robot, for wear and corrosion resistance and to make it look professional.

Michael J. Calabrese DMD, MAGD

Dr. Calabrese, a local dentist and real estate developer, provides funding and an office space in one of his office buildings in which several FLL and FTC teams build.

TW Metals Inc.

TW Metals, a local metal shop donated hundreds of feet of aluminum stock for us to use on our robot.

Agawam Robotics Education Association (AREA), Inc.

This originally was the Rosie Booster Club made up of parents of students and mentors, but in 2009, became a 501-C-3 and a not-for-profit corporation. AREA, Inc. role is to provide a conduit for all 19 FIRST teams in Agawam for central funding and organizational strategies.

Various *FIRST* teams

Our relationship with other *FIRST* teams has developed through the competitions. As a community, we often work as a larger team to help succeed. Some teams are generous with tools and manpower. *FIRST* provides inspiration to do just about anything.

6.6 Education

In 2004, *FIRST* Team 839, along with *FIRST* Team 176, through FRC and FTC demonstrations encouraged elementary age children to read over the summer. This was done by implementing the story of "Rosie and Pokey" at a local elementary school.

We have brought our FTC and FRC robots to Hartford Steam Boiler Inspection and Insurance Company and UTC Aerospace Systems for their "Bring Your Children to Work Day" and demonstrated the functions of our robot for that year.

Our town Mayor and State Representative came down to our shop at our high school to make an Engineering-Week proclamation.

We educate the public through exhibits at the Springfield Science Museum and through public statements of support by School Committee members and Administration.

We have added three engineering courses to the existing Robotics class.

Through EASTEC (largest manufacturing & tooling supplier show in the eastern seaboard) we are spreading the word of *FIRST*, and through EASTEC's Student Summit the students are educated about manufacturing and different tools.

We have nominations to the Springfield Republican's "High Achievers in Mathematics, Science, and Technology" published in March each year.

Starting in September 2008, the Rosie students mentor FLL Jr., FLL, and FTC students in all grade levels in Agawam.

During the summer of 2009, *FIRST* Team 839 hosted the third annual summer camp for students entering grades six through nine. The camp was very successful in spreading science, technology, engineering and mathematics through the community.

In February 2010, Rosie achieved a new record of recruiting fifteen freshman, totaling 50% of the student members of the team. This group was the first wave of students to experience FLL in Agawam. Each year after that we have proceeded to gain at least ten new members.

Starting off our 2011/2012 season we brought in a total of 32 students which is the largest number of students Rosie has had to date. We also demonstrated for a number of events including Earth Day in our town, spreading not only our green initiative, but *FIRST* as well to our community. Then in October at our town's annual Harvest Festival the people of our town came out to see us demonstrate our robot and hear us discuss the principles of our program and *FIRST*. In December we hosted our 4th annual FLL State Qualifier Tournament where 24 FLL teams came to participate in the event.

Our 2012/2013 season became yet another record high in attendance now at 35 students. The large increases in the past two years are most likely in part due to our demonstration at the Freshman Orientation for the high school which we began to do annually starting the 2011/2012 school year. The Freshman Orientation helps us get the incoming freshmen interested early in joining Rosie, taking our usual annual registration to a much more significant increase.

In our 2013/2014, season more students were involved in FLL teams all around our community. In order to maintain an active relationship with the younger generation, five more Rosie students became mentors for other FLL teams in addition to the four students already involved. Furthermore, another Rosie student talked to the Boy Scouts during Scout Summer Camp at the Horace A. Moses Scout Reservation, where he demonstrated everything there was to know about FIRST. He taught robotics to Scout attending the camp to earn the Robotics Merit Badge.

In our 2014/2015 season, Rosie became an accredited class in our High school. We brought FIRST to educators from across Massachusetts at the Mass STEM Summit. We assisted at several science fun nights at our elementary schools.

In our current 2015/2016 season, we presented at a Springfield falcons hockey game bringing the results of FIRST and STEM education to thousands of people.

To stay active with the younger generation, we had some of our students mentor lower levels of *FIRST* such as FLL and FTC. Four of our students became coaches for a FLL team called the No Name Ninjas who moved on to State Championships. They were recognized there for their inspirational guidance and received the Outstanding Mentor/Coach Award.

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Each year since 2005, we have orchestrated an elementary science night at one of our town's elementary schools. Starting our team's future foundation early and then following up every year with involvement in FLL Jr, FLL and FTC mentoring.

7.0 The Market

7.1 Contact Method

Those in the *FIRST* arena view our robot at pre-season, district, and post-season events. Aside from viewing the robot itself, there are other media types from which to gain insight into the team and its processes including our Chairman's Award submission, various pamphlets, brochures, and picture slideshows.

Students in the local area are always welcome and are encouraged to visit us and see what we do at our meetings, both those directly after school and nightly meetings.

All those with an internet connection may view our website at <http://rosie.agawamrobotics.org> to find out more information about the team and contact us either via email submission or by joining our online forum group.

7.2 Marketing to Customers

We define our markets as:

FIRST Competitions
Educational and Social Experiences

We define our customers as:

Students interested in the overall learning experience, the opportunity to gain a new sociological perspective, and those parents and other relations who wish to support the team.

We offer a publication as part of the Annual Tournament of Rosie Golf Scramble to all sponsors to our team:

Friends of Rosie	Name Listed in Book	\$10.00
Business Card		\$25.00
1/2 Page		\$50.00
Full Page		\$100.00
Hole Sponsor	Includes Business Card Ad & Sign on Tee	\$150.00
Gold Title Sponsor		\$1000.00

(Includes a free foursome, tee signs and Company designation as co-sponsor)

We present and interview on newscasts and in conference halls and museums worldwide. We produce brochures and write papers and produce video presentations. We participate in parades and other civic events such as our local demonstrations. We also, place articles in local newspapers and encourage the community and our teams to visit our website.

Most importantly, we do not underestimate the value of our community as well as networking. As a small team, we meet many people and make many business and personal contacts. Creating relations with our community is as simple as saying "Hello!"

8.0 The Marketing Plan

8.1 Executive Summary

Goals:

- To increase the community's awareness of *FIRST*
- Make our presence known through volunteer efforts.

Success:

- Obtain support - monetary, moral, new members, and community outreach to area businesses.

8.2 Business Overview

Marketing:

- Publicizing *FIRST* and Rosie Robotics.
- Writing frequent articles in local newspapers, television interviews, and invitations to local politicians, fundraisers, volunteering, and organizing displays.
- Submitting articles to newspapers to keep our community informed on what our team is working on and notifying them about upcoming events.
- Advertising our frequently updated website to reach a much broader audience of the World Wide Web.
- Inviting newscasters to come to the shop to film interviews about our engineering process and what our team does.
- Inviting state and local politicians to drop in at our shop anytime and/ or show their support at competitions.
- Spreading awareness of *FIRST* in the community.
- Updating the Rosie Robotics display case in the main hallway of our school.
- Designing displays at our competitions such as our Brag Boards, and the Banner Frame.

Fundraisers:

- Increase community awareness: from our annual golf tournaments to our World Famous Ziti Dinners, and Golf Tournament from selling chocolate roses to Butter Braid/ Pie sales or even our Tastefully Simple sale. These are all wonderful fundraisers we are doing this year.

Community Outreach:

- Rosie makes its presence well-known by volunteering for various activities: volunteering for the Lion's Club, Prom Committee, Shriners' Circus, and NHS (National Honors Society).

Strengths:

- We are a diverse group of individuals who come together to create and collaborate.
- We have experience in Computer Aided Design, machining, programming, and website creation.
- We strive to provide opportunities to improve our future.
- We implement learning through the use of hands on engineering, designing, and manufacturing with mentors there to guide us.

8.3 Target Market

Our outreach is Agawam High School, the surrounding communities, general public, state and local government, and the judges at the events.

8.4 Goals

The goals of the marketing sub-team are to promote *FIRST* and Rosie to the schools of our town. We also reach out to the community and other cities and towns in the surrounding area.

Our goals:

- An increase in members every year
- 15% increase in funds raised
- Carry-out Dean's homework assignment
- Obtain support from more local businesses
- To teach everyone about *FIRST* and what it can do for the students and the community.

8.5 Marketing Strategies

The marketing strategies are brainstormed before build season. At this time our plans are outlined by the to-do list, which keeps a prioritized record of what has been done and what still needs to be accomplished. These tasks will be completed to the best of our ability to ensure that deadlines are met.

8.6 Evaluation of Results

The success of the marketing sub-team is determined by the amount of support we obtain from the school and community. Our strategies worked out well this year. We have already begun to consider more opportunities.

9.0 The Competition

FIRST Robotics Competition has fifty-two (52) Regional Competitions, sixty-four (64) qualifying Competitions, nine (9) qualifying championship, and one (1) World Championships in St. Louis. The philosophy of the organization is to promote STEM (Science, Technology, Engineering, and Math) education and practice Gracious Professionalism.

During the competitions, you always want to be gracious and professional toward your opponents because you may end up just being alliance partners the next match.

Indirectly our sponsors interact with other teams, including potential investors, partners, future employees, and suppliers. While it's possible to gain the "*FIRST* experience" through other associated teams, we feel it is beneficial to look into our team. We believe we provide an exceptional opportunity and take *FIRST* ideals to new levels and encourage our members to reach beyond *FIRST*.

This year's game is called *First Stronghold* and is played by two competing alliances on a 25 by 54 foot field. The two alliances, the blue alliance and the red alliance, consist of three robots each. The match begins with a 10-second Autonomous Period in which robots operate independently by a pre-programmed code made by each team. Each robot starts off the Auto Period in the neutral zone, and may also start the match with a BOULDER. At the start of the game, the robots are programmed to do many tasks, from driving forward to going over an outer work and getting a ball into a high or low goal.

At the end of the Autonomous period, drivers take control over operations of their robots. They then start to move about the arena doing many important tasks that are key to this year's game. Some of these tasks include, like in autonomous, going over the Outer Works, shooting in to the High Goal, or Low Goal. Except this time around with very different goals in mind. For each goal shot into the Tower it weakens the castle so at the end you can conquer your prize. And if the Outer Works are breached twice, there is a special point given for completing this task and another point is also given for conquering the opposing alliances *STRONGHOLD*.

10.0 Opportunities

The opportunities available to the members of this team are significant and numerous. We have a potential to become effective contributors of the continually advancing technological community.

The opportunity for advertisement within this program is substantial. As we advance through the levels of the competition (local, regional, district, national, international) your visibility will also increase. Company names/logos are displayed on our robot, team shirts, website, and brochure where they are all seen during our competitions.

Even if we are not as successful as we would like to be in the arena, all team members will still have learned important skills and learned important life lessons. The opportunities before the members of this team are significant and varied. We have a potential to become effective contributors of the technological community.

Members gain experience in real-world teamwork, project timelines, construction, engineering, management, mathematics, and many other useful skills for years to come. In addition, members are exposed to dedicated mentors, deadlines, corporate structure, legal burdens, and economical demands.

There is an amazing opportunity for advertisement within our program. There are many benefits associated with sponsorship including:

- Better company visibility within the community.
- The establishment of a strong relationship with the student body for services and/or potential employees.
- Accessibility to internship programs through some of our many sponsors.

11.0 Financial Data

11.1 Revenue Sources and Expenses:

Our projected budget for this year is about \$30,000 and for the upcoming season as well.

Our revenue last year was split by the School Committee providing initial fees, an annual golf tournament, sponsors, and fundraising such as our World Famous Ziti dinners, *FIRST* LED Light Bulbs, Bon-Ton coupon booklets, quarter auction, and Butter Braid fundraisers which are used cover the expenses of the team's spending. We also held a bottle and can drive with the tabs going to the Shriner's Children Hospital.

Our golf tournament provided us with almost half of the expenses for our fiscal year. Our fundraisers provided us with a quarter of our expenses. Sponsors replied with almost 20 percent of our expenses. Our balance from the previous year provided us left us with almost 5 percent of our expenses.

Another form of payment, beginning in January of 2010, is an incentive program for jobs well done and good engineering notebooks are given out to sub-teams, not individuals, when they accomplish a task. Whether a minor goal, such as receiving a 90% on their engineering notebook, or a major goal, such as completing the robot, rewards such as candies or small prizes are awarded to the members by the CEO. The executive board, along with the mentors, deem which accomplishments deserve which rewards.

An initial fee of \$5,000 is needed for our *FIRST* robotics competition. Each regional competition the team travels to be an additional \$4,000. Our projected budget for this year is about \$17,500. Our revenue is split between the School Committee providing initial fees and corporate sponsorships totaling \$9,000, not including in-kind donations and materials and services. Team fundraisers, such as our World Famous Ziti dinners, Bon ton coupon booklets, quarter auction, and Butter Braid sales are used to cover about a quarter of the teams expenses. Our annual golf Tournament of Rosie is one of our largest fundraisers. Sponsors replied with almost 50% of our expenses. About 75% of our revenue goes to paying for district registration and travel. Our hardware costs are only 3% of our total expense. For the competitions beyond the regional competitions, it is about 10% of our expense with the A.R.E.A. account. Additional funds are used to defray the cost of food and uniforms for students and mentors.

Since all of our labor is donated, all research and development costs are material related. Our final products are predominately constructed out of aluminum and steel. In prototyping and mock up stages we use Delrin™ and high-density polyethylene (HDPE), but we use no hazardous materials.

11.2 Assets and Liabilities:

The Agawam Robotics Team uses Bridgeport®, Milltronics CNC, an Enco®, and Grizzly® milling machines, three metal lathes and two wood lathes, a drill press, two belt sanders, a MIG and TIG welder, and a number of hand power and non-power tools including taps, dies, and drills. The team still owns some raw material used for the production of our products.

The programs we use are CREO 3.0, Windchill, and MathCAD Prime. We hold a provisional patent for the Road Iron project. Also, a member of the club owns a copyright on a logo representing "Rosie" which we have used in both electronic and print publication. We have the robots from the previous years, including four of them that are still fully intact. Our mentors' contributions to the team and its members are assets to the club.

In 2008, the Agawam Robotics Education Association, Inc. purchased a trailer to transport our robot, tools, and promotional materials. We also provide this service to other local teams and clubs within AHS in need of transportation.

Every club has liabilities. Even though we have never had an incident, we do run the risk of accidental injury. We promote a safe workplace and have training sessions in order to use each tool properly. At the start of each school year, students are required to sign a Safety Contract. Along with that, we have all students work with another student and most of the time with a mentor to keep a watch on the process.

12.0 Conclusion

Based on our projections, we feel an investment in the Agawam Robotics Team is a sound investment in the future by insuring this experience to future Agawam High School generations. We have given a great foundation for many students and are proceeding to keep that tradition for years to come. In order to proceed, we are asking a donation of any monetary amount and mentoring from any industry.

Appendix A

12.1 Charter

“Agawam High School Robotics”

1) Name

The team will be called “Rosie Robotics” and will be affiliated with the *FIRST* Robotics Competition and its subordinate programs, including FLL Jr, FLL, and FTC, and also the Agawam Robotics Education Association.

2) Aims and objectives

The aims and objectives of the team will be:

- To offer coaching and competitive opportunities in Robotics competition.
- To promote the team within the local community.
- To manage the workshop area in an efficient and effective manner.
- To ensure that all present and future members receive fair and equal treatment.
- To provide a wide range of activities open to all.
- To develop skills for use in future experiences.

3) Mission Statement

We are a team of different backgrounds. We all have and share a wide range of abilities, talents, ideas and knowledge to show how gracious professionalism can create unity within our team.

We are all students, teachers, and mentors who respect each other, and teach each other regardless of age, gender, or professional positions; developing camaraderie, tolerance, and new ideas to create a team that both works together and challenges each other to never settle for good enough.

We will challenge ourselves and our team to stretch the boundaries of our imagination and creativity but not restrict ourselves with thoughts that limit us.

We will share our talents and knowledge with other teams and use our best resources to assist all teams regardless of previous opinions and standing.

Lastly, we understand through the connection of previous generations, we as teammates, both mentors and students, will grow within ourselves and our communities in the present and future.

4) Membership

Membership should consist of all the students and mentors involved in the team. All members will be subject to the regulations of the charter and school rules, and by joining the team will be deemed accepting of these regulations and codes of conduct.

5) Code of Conduct

All students and mentors have to abide by and follow all rules in the Code of Conduct and Rules of Etiquette each year. They have to be ratified by the Executive Committee and mentors in order for them to take action. Once given, the Chief Executive Officer sets a certain deadline for both the Codes of Conduct and Rule of Etiquette to be passed in. Both sheets must be signed by the student and their parent/guardian and then turned in in order to be allowed in the shop. If the sheets are not both signed *and* turned in, the student will not be allowed in the shop.

6) Officers of the club

The officers of the club will be:

- Chief Executive Officer (CEO)
- Chief Operations Officer (COO)
- Chief Financial Officer (CFO)
- Chief Marketing Officer (CMO)
- Director Of Engineering (DOE)
- Director Of Manufacturing (DOM)
- Director Of Risk Management (DORM)
- Director Of Programming (DOP)
- Director Of Strategy (DOS)

Chief Executive Officer

The job of the CEO is to manage all internal and external processes and to set strategy and vision for Rosie or sub-teams bearing the Rosie name or any Rosie subsidiaries. This will be done either in person or vicariously through appointed officials. The CEO must resolve differences between senior team members, and keep them working together in a common direction. The Chief Executive Officer sets direction by communicating the strategy and vision of where the team is going. The CEO is ultimately responsible for any success or failures of the teams. This officer is responsible for the preparation and presentation of the Chairman's Award and any other related awards. This officer, along with the COO, can appoint members of the team to handle sub-teams, remove members as heads of programs for failure to adequately handle those projects, and function temporarily as a replacement for removed or resigned officials. The Chief Executive Officer reserves the right to delegate tasks to parties that s/he deems responsible. Being ultimately responsible for the team's successes and failures, the CEO has final jurisdiction over any and all Rosie processes unless otherwise indicated by the Team Coordinator. The Chief Executive Officer's signature is binding and should be sought when receiving permission for a project. CEO answers to Executive Board, Team Coordinator and the adult mentor selected by the CEO.

Chief Operations Officer

The job of the COO is to oversee the day-to-day operations of the team, or sub-teams bearing the Rosie name or any Rosie subsidiaries and oversees all objectives established by the Chief Executive Officer. The Chief Operations Officer maintains the team's position within the *FIRST* league, and *FIRST* competitions. The COO takes the full responsibility for the competition and strategies for the robot and other projects led by sub-committees under his or her jurisdiction. This officer, along with the CEO, can appoint members of the team to handle sub-teams, remove members as heads of programs for failure to adequately handle those projects, and function temporarily as a replacement for removed or resigned officials. The COO answers to the CEO, the Executive Board, Team Coordinator and the adult mentor selected by the COO.

Chief Financial Officer

The job of the CFO is to oversee all the financial processes of the team, or sub-teams bearing the Rosie name or any Rosie subsidiaries. Financial processes include fundraising, preparing budgets, and the Bill of Materials. The CFO must raise enough money for the wishes of the team. The CFO answers to the CEO, the Executive Board, the Team Coordinator and the adult mentor selected by the CFO, and works in conjunction with the treasurer of the booster club to manage club funds.

Chief Marketing Officer

The job of CMO is to oversee the internal and external communication processes of the team, or sub-teams bearing the Rosie name or any Rosie subsidiaries. Communicative processes including the website, newsletters, digital media, mailing, posters, business letters, etc. The CMO answers to the CEO, the Executive Board, Team Coordinator and the adult mentor selected by the CMO.

Director of Engineering

The job of DOE is to oversee all the engineering processes of the team, or sub-teams bearing the Rosie name or any Rosie subsidiaries. The DOE answers to the CEO, the Executive Board, the Team Coordinator and the adult mentor selected by the DOE.

Director of Manufacturing

The job of the DOM is to oversee all manufacturing processes of the team, or sub-teams bearing Rosie name or any Rosie subsidiaries. The DOM is responsible for the machines used in the shop, in terms of maintenance not handled by the school, cleanliness, and operator safety. The DOM oversees machine assignments. The DOM answers to the CEO, the Executive board, the Team Coordinator and the adult mentor selected by the DOM.

Director of Risk Management

The job of the DORM is to oversee that all safety rules from the *FIRST* safety manual are followed in the shop, on the road, and at all competitions. He/she is also responsible for ensuring crucial systems are in place for all robot functions, all tools are properly stored away and safety training to team members (i.e. lifting with legs not back). The DORM answers to the CEO, the Executive Board, the Team Coordinator and the adult mentor selected by the DORM.

Director of Programming

The job of DOP is to oversee all the programming processes of the team, or sub-teams bearing the Rosie name or any Rosie subsidiaries. The DOP answers to the CEO, the Executive Board, the Team Coordinator and the adult mentor selected by the DOP.

Director of Strategy

The job of Director of Strategy (DOS) is to oversee that the team establishes and maintains an effective strategy for the current year's game. This includes making sure the design and function of the robot complies with all rules set by FIRST. The DOS researches other teams during the build season and keeps the team informed of developing strategies and designs within the FIRST community. The DOS has the responsibility to establish the scouting plan for competitions and to lead the scouting team. The DOS oversees the compiling of scouting data to allow for effective alliance selection in the elimination rounds of competition.

The top two (2) officer applicants; CEO and COO will be required to submit a résumé and cover letter to the Team Coordinator. The Team Coordinator and mentors will appoint the qualified officers. The other seven (7) officers; CFO, CMO, DOE, DOM, DORM, DOP, and DOS will be required to pass a Rosie education test. If not enough persons pass the executives that passed will appoint executives to fill the missing positions. All officers will retire from their positions at the end of each school year, but will be eligible for re-election. All officers are expected to be productive and display leadership skills at all times. Officers are encouraged to select an adult mentor to aid them in decision making, but it is not required. They are expected to accomplish all tasks asked of them by superiors within a reasonable time period. Creation of sub-teams is encouraged to increase participation. Lack of nominations/applications for a specific position will result in that position becoming an appointed position. A person shall be appointed by a majority vote of the Executive Committee.

7) Executive Committee

The club will be managed through the Executive Committee consisting of CEO, COO, CFO, CMO, DOE, DOM, DORM, DOP, and DOS. Only these posts will have the right to vote at meetings of the Executive Committee. The Executive Committee will be convened by the CEO of the club and hold a meeting no less than once per month. The quorum required for business to be agreed upon at Executive Committee meetings will be a 2/3 majority. The Executive Committee will be responsible for adopting new policies, codes of conduct and rules that affect the organization of the club. The Executive Committee will have powers to appoint sub-committees as necessary and appoint advisers to the Executive Committee as necessary to fulfill its business. Upon taking these jobs, these officers commit themselves. Failure to do so can result in their replacement. The demanded resignation of an executive requires 2/3 majority of the executives. The Executive Committee answers to the Team Coordinator, and all decisions made by the committee must be approved by the Team Coordinator. Any Executive Committee member whom fails to attend three total unexcused executive meetings may be subject to mandatory resignation.

8) Mentor Responsibilities

All mentors are expected to follow the mentoring guidelines set forth by *FIRST*. All mentors who accompany students on trips must meet all the criteria established by the High School, the Superintendent, and the City of Agawam. The mentors should meet no less than twice a year regarding review and revisions to the mentor guidelines. All mentors are reminded that they are influencing the students with whom they spend their time with.

9) Finance

All club monies will be banked in an account held in the name of the club. The Chief Financial Officer will be responsible for the finances of the club. All club monies are derived from two (2) primary sources, Agawam High School Activity Accounts and the Agawam Robotics Education Association, Inc. All students are advised to participate in as many fundraisers as possible. Any checks drawn against club funds should hold the signatures of the Parent Treasurer.

10) Qualifying Test

In order for a Rosie member to be nominated for an officer position, run for a position, or be appointed a position, as in application submission, the student must receive a certain grade on a qualifying test. The test must meet certain criteria. The test must be about the officer positions (e.g. abbreviations, jobs of each position, how to be elected/appointed, etc.). It must be at least thirty (30) questions, with a mix of multiple choice, matching, short answer, and open response. Each multiple choice question is worth two (2) points, each matching worth one (1) point, each short answer worth five (5) points, and each open response worth ten (10) points. The grade is calculated by making a fraction with total earned points over total possible points. Ex: If the student earned 45 points out of 90 points, the fraction would be $(45/90)$ which equals 50%. In order to be nominated and run he/she must earn a passing grade determined by the creator/s.

11) Team Coordinator

The job of the team coordinator requires strong leadership skills that make sure the plans and goals set forth by a business team are moving in the right direction. He or she is responsible for setting up meetings to discuss issues and keeping up communications. He or she is also responsible for maintaining a close working relationship between all members. The duties of a team coordinator are broad, with some specific expectations. He or she must understand the business plan, but also make sure it is clear to all members. He or she is responsible for seeking outside conferences, to monitor the progression of other team members, and assist them if they are having trouble with a task or on the team.

The team coordinator is responsible for the coordination of all function set forth for the team and has the power to delegate any responsibilities to those that he or she sees fit to carry out the task. He or she is in charge of the performance levels, and it is necessary for team unity to be constructive but respectful towards all members. He or she needs to set achievable goals, analyze each member's capabilities, and keep everyone on the same page. The team coordinator must fulfill the role of an information coordinator, or else delegate this job to any person he or she sees fit. He or she needs to compile a database of necessary information and create an e-mail or other form of network communication group where all members are kept adequately informed. Keeping news and contacts up to date, and seeking new ways of making the database more accessible. Dealing with personal issues also falls under a team coordinator's responsibilities. People management and keeping emotions in check in and out of meetings is important to reduce stress and tension amongst the team. If some things are not working out, he or she is asked by the administrators to suggest the necessary changes of personnel.

(Paraphrased from <http://www.wisegeek.com/what-is-a-team-coordinator.htm>)

The Rosie Robotics team coordinator shall be appointed by the President of the Agawam Robotics Education Association, and until such time that one is officially appointed the President shall be the acting Team Coordinator. The Team Coordinator reserves the right to revoke member rights, or terminate membership.

12) FRC Drive Team Exam

In order for a Rosie member to earn the privilege being a member of the FRC Drive Team and/or driving the FRC robot, they have to pass the FRC Drive Team Exam. The test will be comprised of two portions, an essay and a short answer portion in which you must show your knowledge of the robot and FRC game rules, and a simulation portion in which potential drivers must show competence in driving the robot and human players must show their ability to complete the task at hand on a field-like setting. The test will be created by an Executive Officer (who will automatically be exempt from taking the test.). All students wishing to be any part of the drive team, i.e. driver, accessory, or human player, must take and pass this test. The passing grade will be determined by the creator(s) of the test.

13) Application Submissions

Any student wishing to apply for one of the top two (2) positions; Chief Executive Officer or Chief Operations Officer on Rosie must qualify and fit the following criteria. The student must submit a résumé with a cover letter attached. The cover letter must specify what position the student is applying for and what makes him/her qualified for it. The résumé and cover letter must be attached to each other and given to the Team Coordinator. The Team Coordinator, in conjunction with the mentors, decides who is to be appointed to each position. Their final decision will be announced before the election meeting. Therefore, the CEO and COO will be able to run the election meeting.

14) Election Meeting

Notice of an Election Meeting will be given to all members within a reasonable time frame. Nominations for the seven (7) remaining officer positions; Chief Financial Officer, Chief Marketing Officer, Director of Engineering, Director of Manufacturing, Director of Risk Management, Director of Programming, and Director of Strategy of the Executive Committee will be submitted to the Team Coordinator by a designated date. A student can only be nominated if they have earned the specified grade as said in section ten (10) of the charter. Election of officers is to take place at the Election Meeting, and every student present on the team can vote at the meeting. In the event of a resignation of a member of the Executive Committee an Election Meeting will be held to fill the position. All rules applying the regular Election Meetings will be adhered to.

15) Business and Production Meetings

Business Meetings take place once a week beginning at the start of build season until the end of the year, run by the CEO and COO. At the start of each meeting, attendance of both students and mentors will be taken. An agenda must be created regarding the topics being discussed for the night. Topics at the business meeting can represent any information that the team needs to be informed or reminded of. Any topics that require a team forum, discussion, or input must also be discussed. Sub-team updates are made by each sub-team captain, who will make short speech regarding the team's progress, accomplishments, and future endeavors. Lastly, the meeting is open up to mentor, student, and parent discussion about the topics discussed or any new topics.

Production Meetings are held every Saturday afternoon, during lunch. Every evening, thirty minutes before closing, the CEO and COO walk around the shop, asking each sub-team captain various questions, such as their accomplishments, issues, goals for tomorrow, etc. Once each sub-team is accounted for, the shop is cleaned up, and all students and mentors are ready, the meeting will take place, run by the CEO and COO. This time is only for the CEO and COO to talk, and no interruptions will be acknowledged. They present all the information that was just presented to them. At the end, the meeting is open for discussion and questions. The Production

Meeting increases communication between sub-teams and allows each member to understand where the robot is within its scheduled build.

16) Discipline and Appeals

All complaints regarding the behavior of members should be discussed with the Team Coordinator. All the regulations in the student handbook and regulations made by the school committee will be enforced. The Team Coordinator will handle each situation as he/she sees fit. Only the Team Coordinator reserves the right to revoke membership rights, or terminate membership.

17) Dissolution

In the event of dissolution, any assets of the club that remain will become the property of the City of Agawam.

18) Amendments to the Charter

The charter will only be changed through agreement by 2/3 majority vote at an Executive meeting.

19) Declaration

Rosie Robotics hereby adopts and accepts the constitution as a current operating guide regulating the actions of members.