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Kickoff Event at International School 9/12/09

Always adjust the robot

Some websites that might be helpful:

- www.firstWA.org
- chiefdelphi.com

Email: estokely@gmail.com

Disqualifications

- Taking balls out of high goal
- Pinning another robot
- Letting the bonus ball out too early
- Shooting on the outside goals early
- Touching the lower bar during the end game or atonomaus period
- Blocking a ball from a goal
- Using a blocking mechacnism ie: sail
- Coach or drivers handling the game pieces

Possible Designs:

- Surgical Tubing
- Piston to push balls out (only legoes)
- Pinwheel
- Water mill design
- It needs to be 17 to 17 1/2 inches not 18 inches to be safe

Engineering Notebook Notes:

- Needs to include:
  - What you did and why
  - Tables and graphs
  - Has to be a print out
  - Discussions with group
  - Group biographies

Team Management Notes:

- 1-10 students per team
  - small team concept works well
- 1-4 students is equal to one mentor
  - recommend 2 to 3 mentors per team
- Competition is the 13th of December
- Mentors:
  - Keep aware of deadlines
  - take pictures of events
  - Team building exercises

- Group of students does not constitute a team

Facilitate a collaborative and supporting learning environment (make it fun)
Teach problem solving
Keep it sweet and simple (KISS formula)
Help ensure it stays fun

- meet and eat
- Social events to do together

Assigned a number
Spend time on designing a logo

- Include:
  - A motto
  - “tag line”
  - Building exercise

Conduct mentor/leader meeting
Hold team kickoff meeting
Establish roles and responsibilities:

- Building/design
- Schedule
- rules/strategy
- operators
- coach
- Project manager
- Hardware and tools
- Videos and pictures
- Engineering notebook
- fundraiser/team spirit

Establish design tools and libraries

- CADD
- Software development
- Parts and code libraries
- Collaborative workspace environment

Build a schedule (or plan)

- Microsoft project
- Schedule is a living document it will change
- If schedule keeps moving to the right you are in trouble

Time management:

- 12 weeks until competition
- 2-3 hour meetings
- meet a couple times a week

keep a collaborative environment

- Microsoft Office Live

www.ptc.com/go/first/workshops
software version control

- Archive current version of software code
- Everybody must have acsess to software

Strategy and design
Hardware design and development
Build a reliable robot

Understand points
Brainstorm many ideas
Don’t get focused on one thing
Keep it simple

Testing:
- Build a little, test a little
- Focus on tele-operated
- Time/scoring
- Build a Feild

No loose leaf binders
- hard bound form

Chec rules for electronic manual
Don’t wait to finish it
- Thoughts
- Simple information
- Short summary
- Diagrams
- 5-10 journal entries marked
- Neat and organized
- Topic, meeting date, who’s there, title

Electronic design
USB drive
Laptops with latest version

Event Day Notes:

State Championship
- December 13th in Bellevue Highschool
- 8 a.m to 6 p.m.
- Some judging December 12th

Morning will include:
- Robot inspection
- Practice rounds
- Judging

8 am to 11 am

Judging will include:
- Interview with judge panel
- Engineering notebook check (critical)

Engineering Notebooks:
- Highlight things
- Check handbook for details
- No unneccasary

Give something to them to remember you by
- Good logo
- T-shirts
- Buttons
- Trinkets
- Stand out

Two fields running at the same time
Bring laptop and controller to practice with
Do not reschedule if you are not there
Contest format:
    Qualification matches
    Alliance selection
    Elimination rounds
Gather information about other teams
    Exchange information so they get to know you
Awards :
    Check handout for details

Strategy and Design 9/14/09

Attendance:

- Edwin
- Christian
- Julia
- Andrew
- Amelia
- Kenneth
- William
- Brian

Tasks:

- General design and mechanism for shooting in the different goals
- Figure out the schedule for the robot
- Mechanism v.s. software aspects
- Important Dates

Important dates:

- Competition is December 14
- Robot complete by October 29th

Scoring:

- Low goal - 1 point
- High goal - 5 points
- Outside goals - 10 points
- Releasing a far ball drop - 10 points
- Releasing a close ball drop - 5 points
- Yellow ball - doubles the score of every ball in the goal

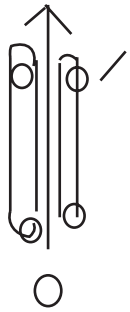
Strategy:

- Atonomous mode target: low goal and high goal (issues with high goal because of spinning)
- Tele - operate target: low goal and high goal
- End game target: Outside goals with the yellow ball

3 mechanisms

- Pick up balls
- Bring balls to shooter/ storage
- Shoot balls

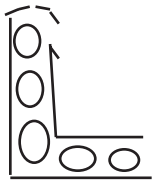
Possible disign for shooting balls:



Shooting the ball using two fast spinning conveyor belts

Kiss - keep it short and simple - very easy to build something complex but it is hard to build something simple that does something complex

Specialize in one task specifically and get that done with good reliability
You are allowed to have a 3 inch PVC
Serpentile design:



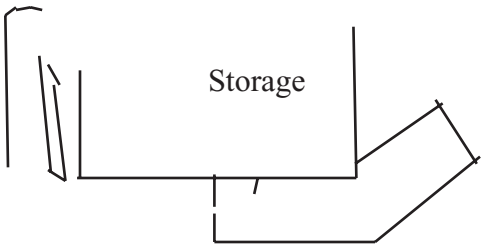
Compact balls into one serpentile tube

Non-stick pad for creating a conveyor
Surgical tubing 24 inch long

Omni Wheels could be a possibility
- They would help follow the goal
- You would lose traction
- Use two wheels that can pivot

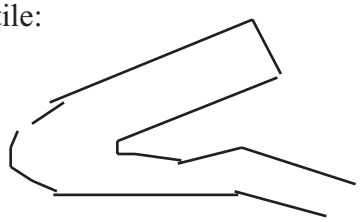
Possible designs:

Basket idea:



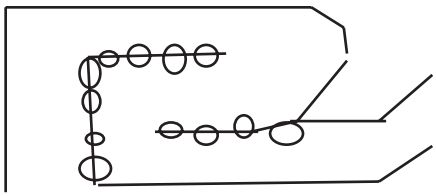
Takes up a lot of space
Might jam

Serpentile:



Does not take up much space because all one system
Not easy to control

Conveyer:



Combines both the serpentile and the basket idea
May take up to much space

Game Rules and Design 9/19/09

Attendance:

- Edwin
- Christian
- Andrew
- William
- Amelia
- Julia
- Brian
- Kenneth

Tasks:

- We need to start thinking about what specifiacally the mechanisms need to achieve
- We need to think about the strategy a little bit more
- Focus on brainstorming and designing some of the mechanisms

Atonomous period:

- We need to program 4 different routes
- One mechanism to release balls
- One mechanism to drop balls

Tele-operated:

- One mechanism to suck in balls
- One mechanism to shoot the balls
- One mechanism to dump balls into the lower goal
- By the end we want to start moving to the ball tube to recieve yellow ball in the endgame

End-game:

- All the things you can do in tele-operated
- Shoot into the outside goals
- Get yellow balls
- Stil legal to suck up balls

Three mechanisms (possibly two)

- Suck up balls
- Shoot balls
- Dump balls

> Three mechanisms

- Reversing the suck to release balls
- Slow the speed of the shooter so the ball dribbles out (possibility of bouncing into the adjacent goal

- Release ball shoot
- Side strage specifically for yellow ball is a possibility

- If you pick up the yellow ball you want it to be the first thing you shoot

- Funnel ramp
- Conveyor belt (slight squezze)
- Wheel with paddles
- Material that is a little spongey

Sensors:

- Ir sensors n the high goal
- Light
- Sonar
- Touch
- Sound

Design Brainstorming

Collecting balls:

- Herding the ball underneath the robot
- Blades for picking up the balls off the floor
- A conveyor belt that squzzes the ball in
- Lift up and toss the balls (arm)
- Vaccum
- Rotating brush to herd balls into the hopper

Storage:

- Low basket
- Open front into a container
- Funnel
- Serpentile design
- Track
- Shelf (trap door for releasing the low goal balls)
- Ball tube
- Spiral cylinder track
- Color sensor seperates the yellow ball our (maybe too complex)

Dumping:

- Passive
- Conveyor belt (reversed)
- Reverse brush
- Basket base conveyor belt reversing
- Gravity feed
- Trap door for spiral or conveyor belt
- Ramp for picking up balls to shelf so higher up use a mechanism for dumping
- Trap door for the basket

Programming and Mechanisms 9/24/09

Attendance:

Edwin
William
Brian
Andrew
Kenneth
Amelia
Julia
Anthony (new member)
Christian

GDC - Game Design Commitee

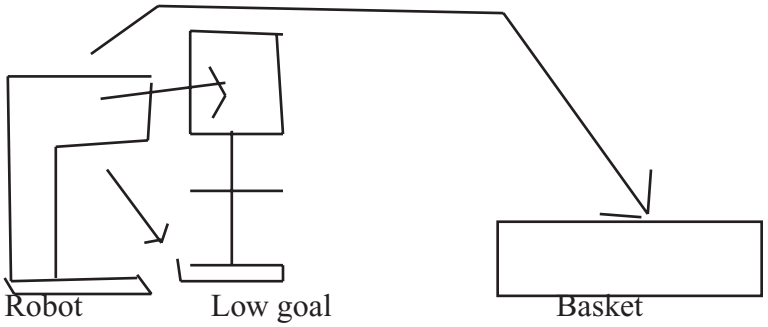
-Low goals run the risk of being removed and they are only worth one point each (may not make much of a difference to the overall score)
-Side goals risk the time limit with the fact that you can only shoot on them for the end game (30 seconds)
-High goals run the risk that the bar spins and you might not make your shot. This could be potentially harmful although you would not lose points you would lower the oppurtunity for a larger score

Defence:

Block/inhibit
Not many points
Crash into other robots

Offensive:

Possibly fragile (cannot attack)
Usually shoot
Gain points



One in the low goal is a defensive shot you are not really trying to go for the points but you have your 8 pre loaded balls to get rid of
The shots into the high goal and the basket are offensive shots because you are trying to earn as much points as possible.

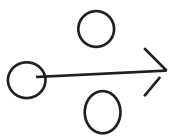
Programming:

Do not want sound
Cannoat have camera tracking (too complex and does not come in the kit)
Possibly use color tracking

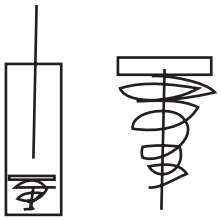
A passive sensor is one that you control yourself
An active targeting sensor is one that tells you when it reeives the IR signal

Mechanisms:

Pressure in the form of conveyor belt shooter
Frictional shooter



Roller
Belt
Spring loaded shooter



The Cytoskeleton Story

Microtubules
- Actin
- Myosin
- Kinesin
- Dynein

Actin
- Myosin
- Role of proteins
- Proteins that bind to actin and microfilaments
- Role in cell movement

Microtubules and Intermediate

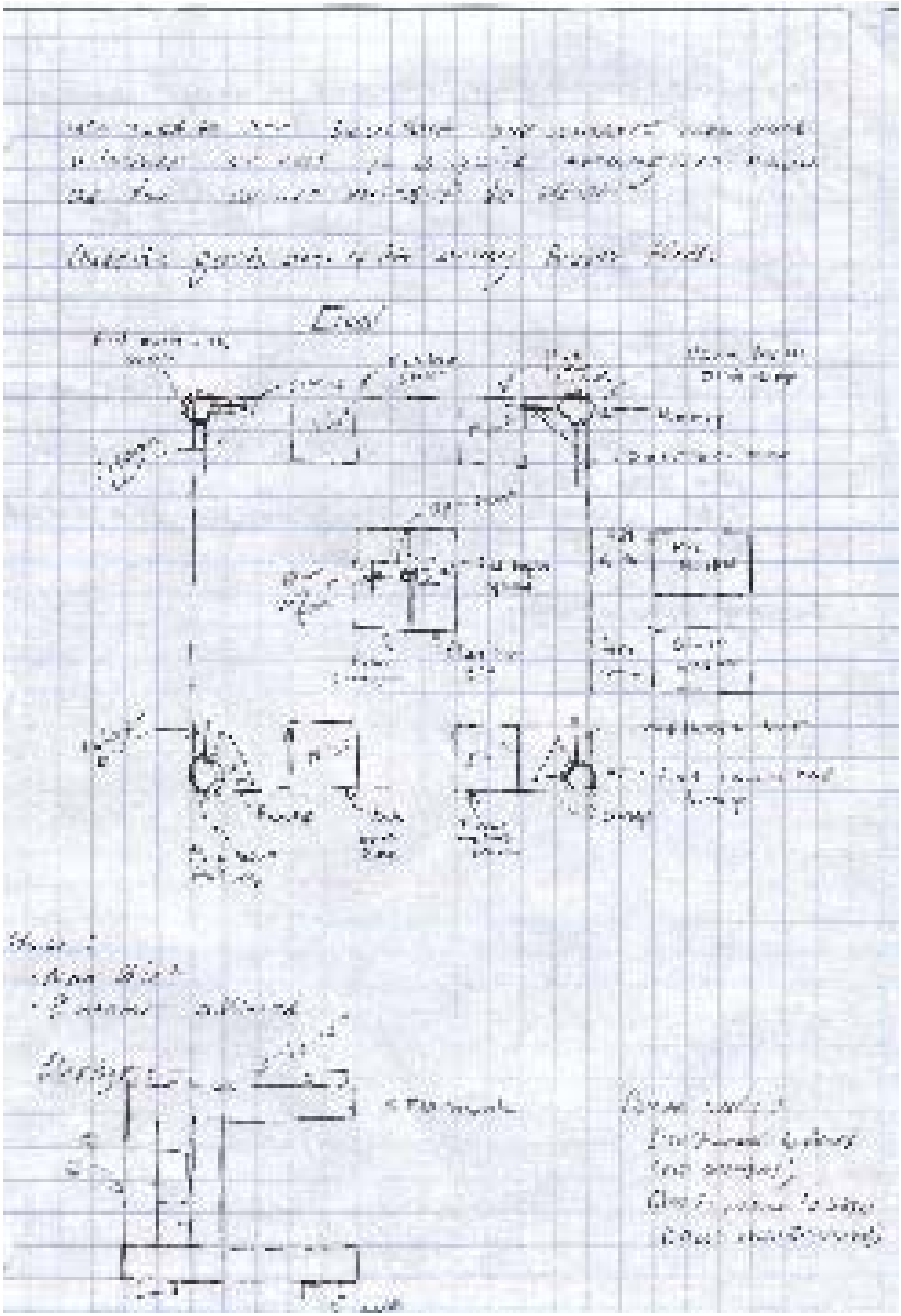
- Structure, role, and function of the cytoskeleton
- Cilia and flagella
- Centrioles, basal bodies, and motor proteins

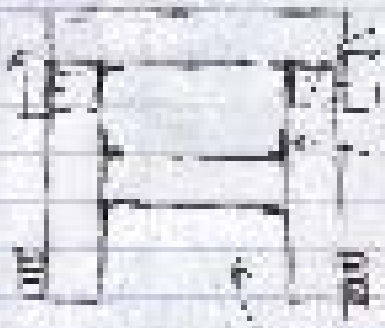
Review

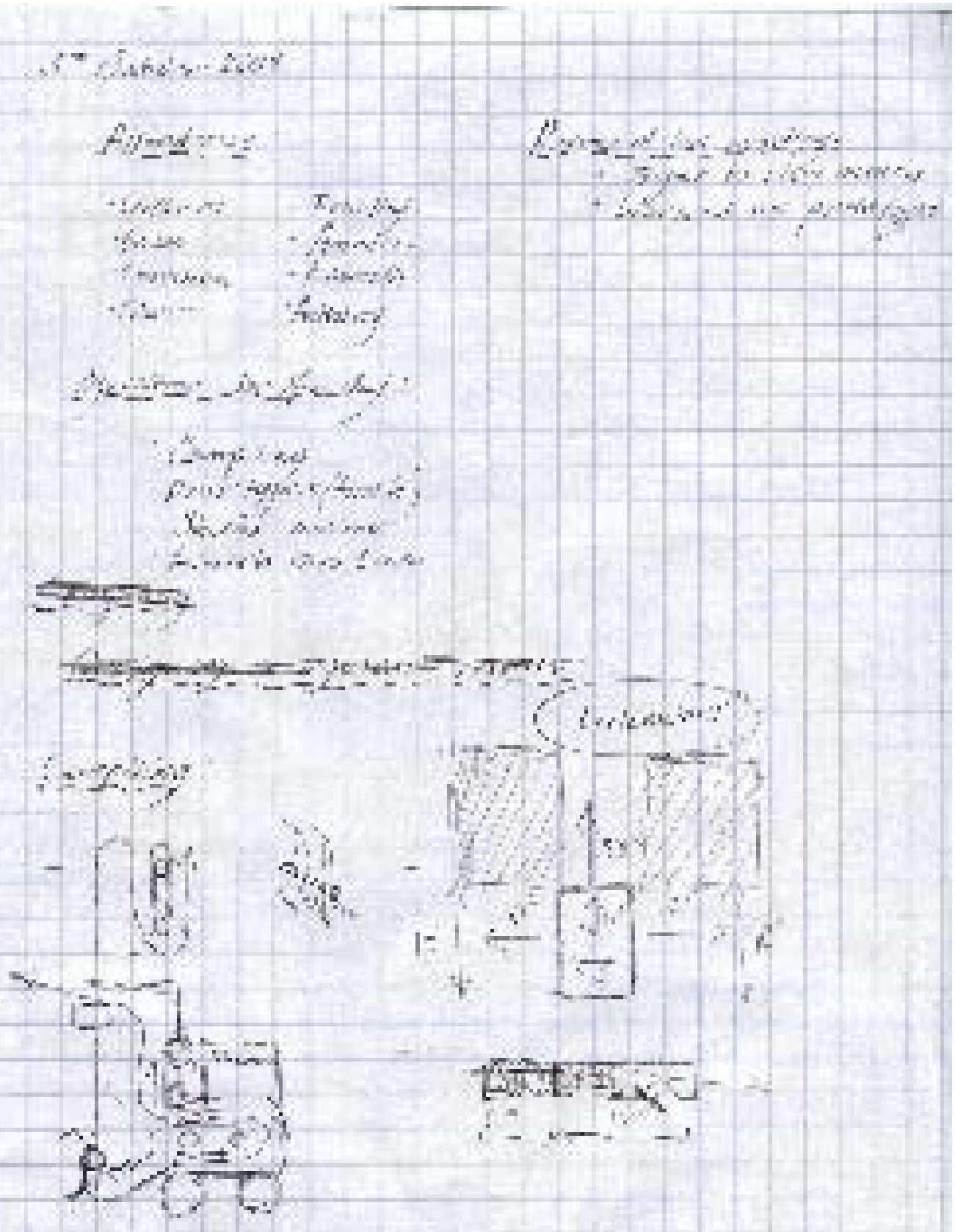
- Role of cytoskeleton in maintaining cell shape
- Role of microtubules in cell division
- Role of microfilaments in muscle contraction

- Motor proteins and their role
- Structure and function of cilia and flagella
- Role of centrioles in cell division
- Role of basal bodies in cilia and flagella movement

Spring Term Week 3:







2 [illegible]

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[illegible]:

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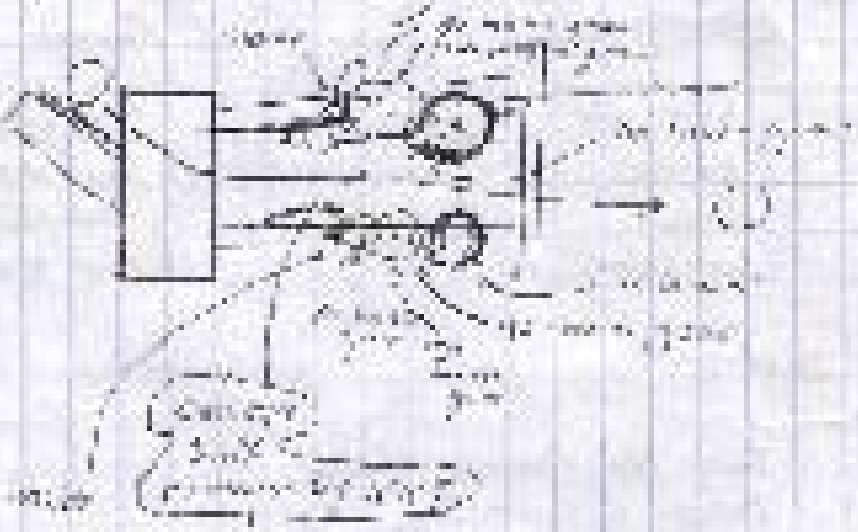
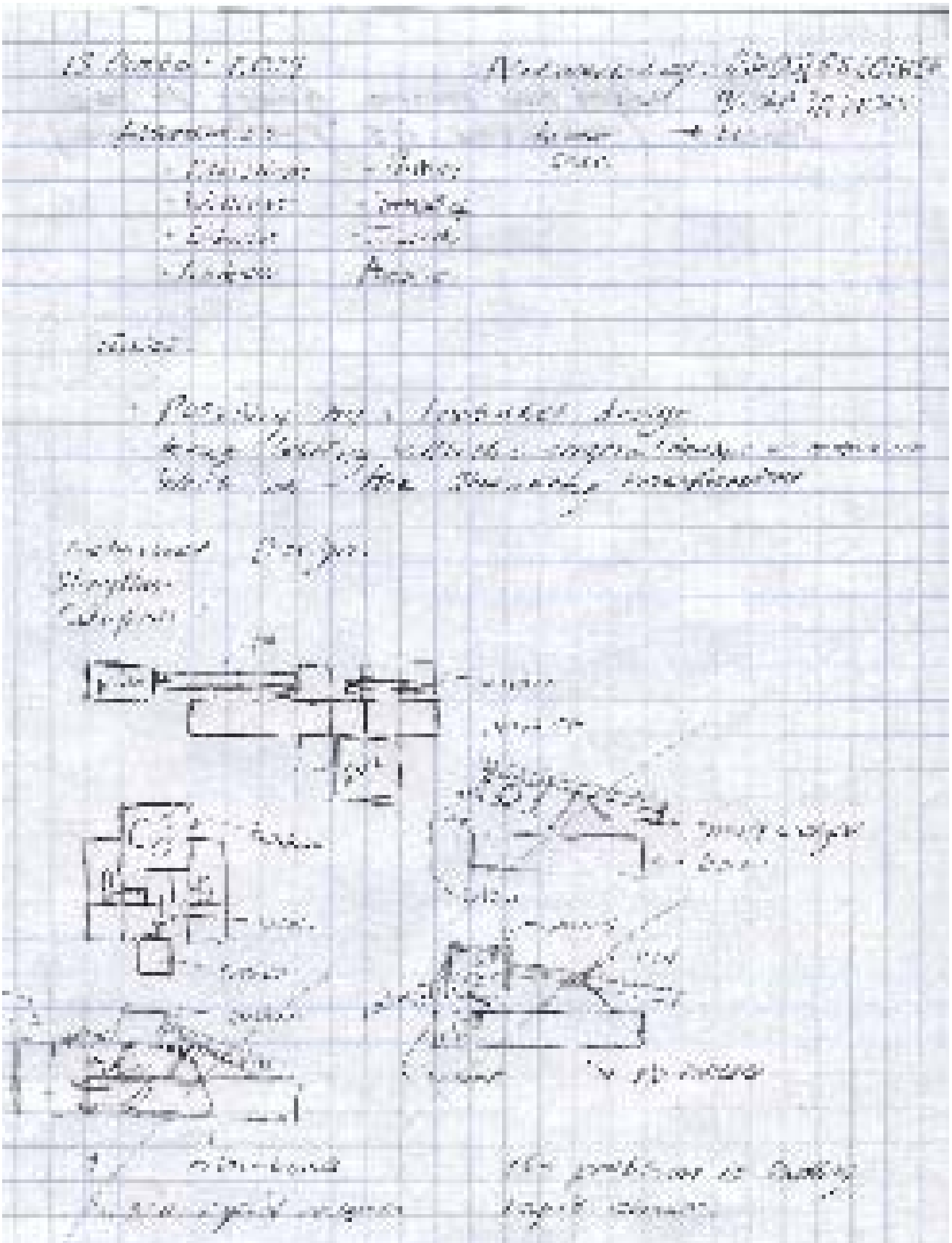




17 October 2009

Attendance: Reflection of last week:

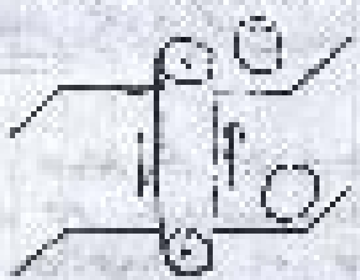
- [illegible] [illegible]
- [illegible] [illegible]
- [illegible] Attorney [illegible]
- [illegible] [illegible]
- [illegible]

Thrust for today:

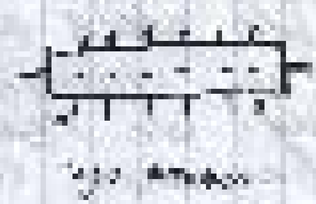
- Magnet [illegible] base (motor [illegible])
- Conveying system
- Moving [illegible] to the [illegible] ([illegible])
- Compiling

Compiling:

Transfer idea from [illegible] to [illegible]



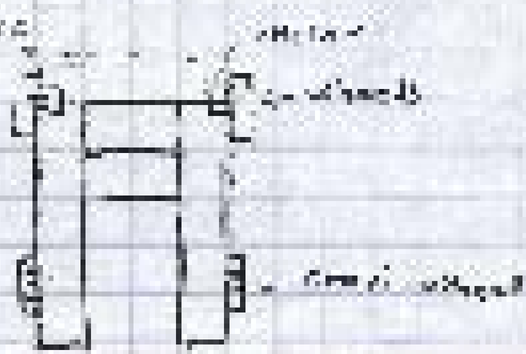
Collecting idea



Our shooting mechanism is [illegible] 12 inches.

Test bot design:

Base



Conveyor system

Probably lego motor
Use treads for belt

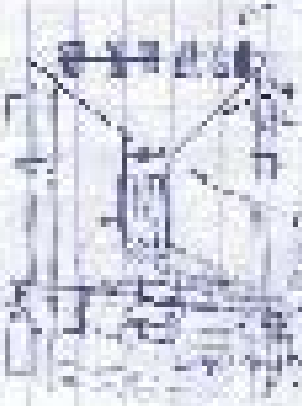
Problems –
· Cannot get treads low enough to engage the [illegible] [illegible]

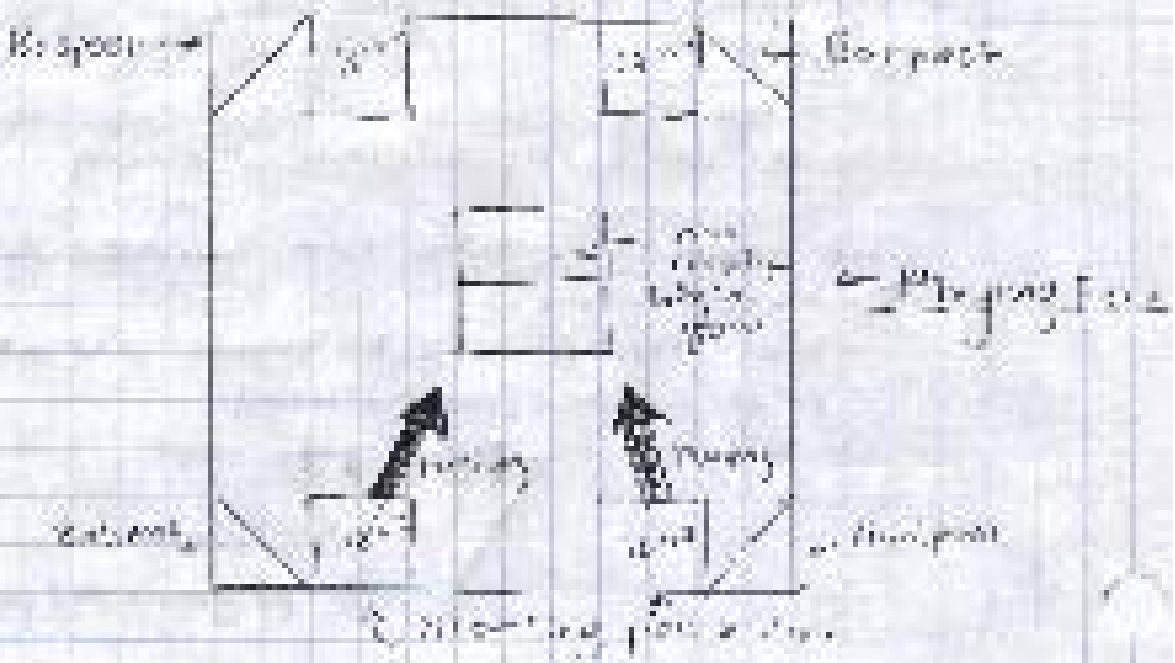
– A possible solution is lowering the mounting area for the conveyor belt.

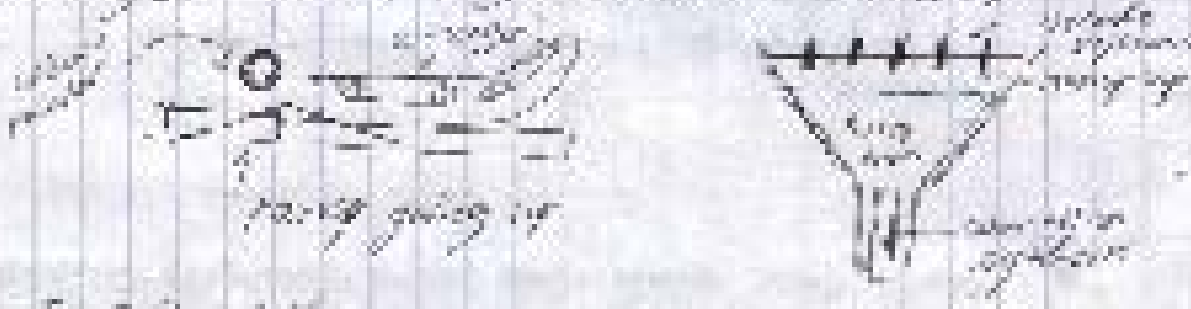
Can you modify a modular?
– You are now and your will help out with mounting the conveyor belt.

[illegible] with conveyor

We added attachments to the bottom of the steering mechanism to angle it up. We performed a couple [illegible] because things [illegible] are [illegible]







28 November 2008

Attendance:
- Christina [illegible]
- Andrew [illegible]
- Edwin [illegible]
- William

* Update: We have a new [illegible] [illegible] [illegible]

Problem List

✓ - Finished [illegible] 2009

- ✓ * - [illegible]
- * - [illegible]
- ✓ * - Misaligned [illegible] ([illegible])
- * - [illegible]
- ✓ * - Front rollers [illegible] with the frame
- ✓ * - Whiffle balls getting below steering [illegible]
- * - Air bag system

Solutions

- [illegible]
- For the [illegible] [illegible] with the frame [illegible] decided [illegible] [illegible]
- For the whiffle balls [illegible] decided to put a [illegible] [illegible] [illegible]

[illegible]

There is a problem with [illegible] [illegible] [illegible] [illegible] [illegible]

A solution to the problem [illegible] to use [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

- This [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

- [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

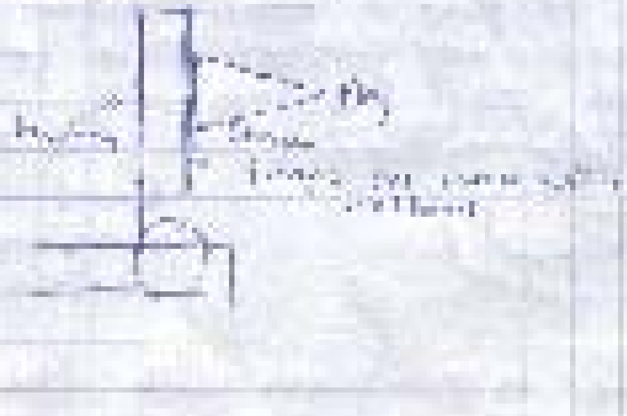
Conclusion:

Today we completed [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. We [illegible] [illegible] [illegible] [illegible] and the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. We [illegible] to [illegible] [illegible] [illegible] and [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. Overall it was a productive [illegible].

Flag is [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

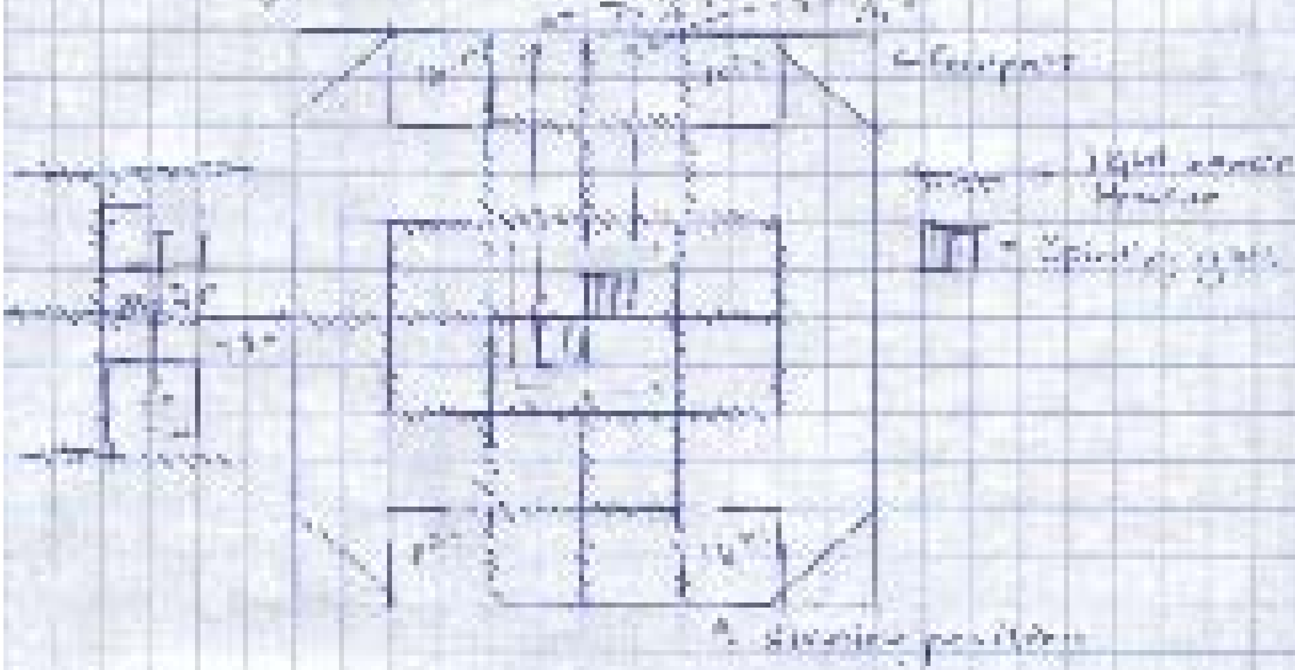
[illegible] Flag = 1? high and ? long
Diagram shown

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].



Lighting overview + plan.

[illegible] The [illegible]



5 November 2001

Attendance:
- [illegible]
- [illegible]
- [illegible]
- [illegible]
-

Topics:
- [illegible]
- [illegible]

* We met at Wilson's house today to [illegible]