# Architecture Portfolio

Jacob Hooey

# Table of Contents

# Why Architecture?

My name is Jacob Hooey. I am a graduating honours physics student who is applying to become an architect.  But, why architecture? To me, architecture represents the bridge between the world of art and the scientific world. I already have a very good knowledge of the scientific world and I believe architecture will allow me to use, more creatively, the skills and inspirations I've acquired in physics and apply them to the construction of beautiful energy efficient buildings. I feel like my analytic skill will aid me in solving the most complex architectural problems and provide a base knowledge needed to understanding the engineering side of architecture. Architecture will provide me with the possibility of indulging my artistic cravings while still grounding me in the realm of scientific certainty. My ability to problem solve is very well refined, and I know that I have the determination and perseverance needed to do great things in the field of architecture.

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## OBJECTIVE

To expand my artistic and engineering knowledge to better prepare me for a career in architecture.

## SUMMARY

Highly motivated, creative and versatile university physics student seeking to be accepted in the Architecture program at McGill. Has a talent for analyzing problems, developing and simplifying procedures, and finding innovative solutions. Energetic self-starter with excellent analytical, organizational, and creative skills.

## SKILLS

Physics
- Advanced Mechanics, Thermal and Fluid physics, Quantum Physics
- Experimental Physics, Light and Optics
- Electrical Engineering, Electricity and Magnetism

Mathematics
- Advanced Calculus I & II, Probability and Statistics, Fourier Series
- Linear & Matrix Algebra, Complex Analysis, Differential Equations

Photography
- One university and two high school courses as well as personal darkroom experience.
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Mixed Media
- Bishop's University – Sculpture I
- Heritage College – Web Design
- High School – Collage, computer graphics
- Model building and painting

Bilingual
- English - Reading, writing and speaking.
- French - Reading, writing and speaking.

Computer Skills
- Windows 9x/NT/ME/2000/XP/Vista, Mac OS X and Linux Operating Systems
- MS Office, internet explorer, Apple Life, and Corel Office Suite
- Presentation (PowerPoint/Presentations)
- Spreadsheet (Excel)
- FORTRAN, Java, Java GUI, MIPS, Html and Xml programming languages

## ACCOMPLISHMENTS

Winner of a University Student Research Assistants (USRA) award for the summer of 2008

Winner of the Bishop's Faculty Prize in Physics for being the top ranking student in physics my first year

Member of the Golden Key Society for being in the top 15% in Physics

Graduated Heritage College with Distinction (an average above 80%)

Entered Bishops University with a 2000$ Scholarship and finished the first year and Second year with an above 80% average.

## EXPERIENCE

Bishop's University
2600 College,
Sherbrooke, Quebec J1M 1Z7

### Media Center Helpdesk

During the 2008-2009 school year I was responsible for answering any technical questions regarding computer related problems within the university. I was also responsible for setting up technical equipment on campus. I was in charge of lending out media related equipment (projectors, digital cameras, etc…) to faculty and students, and gave tutorials regarding the proper use of this equipment.

### Research Assistant

During the 2008 summer break I was a research assistant for Dr. Lorne Nelson. I aided with creating computer simulations using the computer FORTRAN language and the maintenance of the J10 physics computer lab.

### Teacher's Assistant (Marker)

During the 2007/2008 school year I was a teacher's assistant who was responsible for marking students assignments. During the fall semester I marked PHY101-Statistical Methods in Experimental Science for Dr. Sylvain Turcotte and marked MAT107-Advanced Calculus 2 during the winter semester for Dr. Brad Willms.

## EDUCATION

### Bishops University

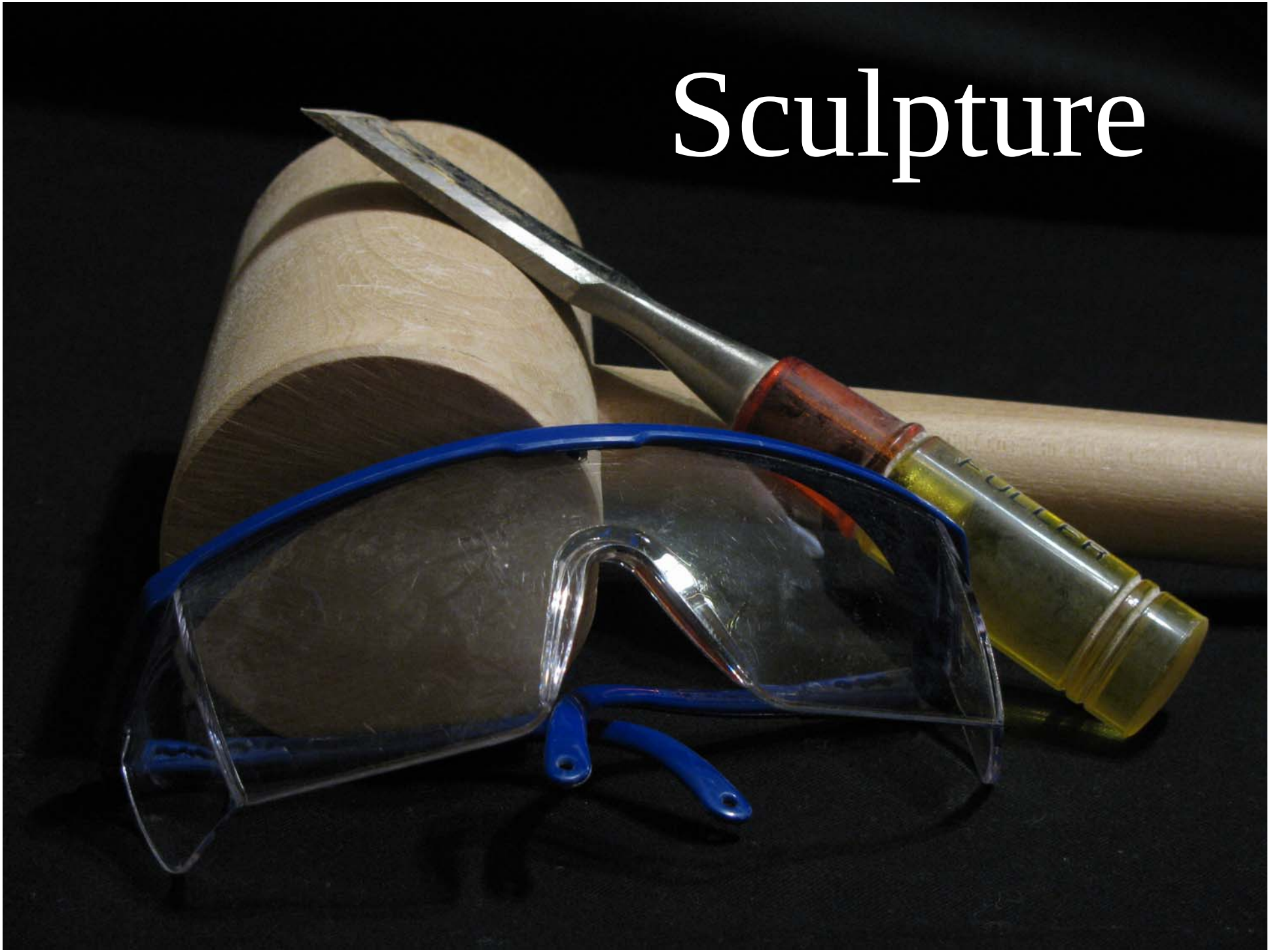
2006 - Present
Physics Honours with a Minor in Mathematics
Will graduate in 2009

### Heritage College

2004 -2006
Graduated with Distinction (80% average)
Pure and Applied Science Diploma

### Philemon Wright High School

2001-2004
Graduated with Honours (average above 80% every semester)


Sculpture

# Caverns and Crevices


**Materials**: Clay, Plaster, Tuff Stone

**Tools**: Spoon, Hammer, Chisel, Sand Paper and shoe polish

**Dimensions** (H-W-L): (11 – 17 – 15) cm

This piece was an exercise in addition. I started by forming the sculpture using pieces of clay. Forming and molding the shapes I saw emerge as I added more clay. All the shapes were then smoothed. Once the sculpture was completed a plaster mold was created by pouring large amounts of plaster all over the clay model. Once the plaster had hardened the clay was removed carefully. Tuff stone was then poured into the mold. Once hardened, the plaster mold was removed using the hammer and chisel. The final sculpture was then sanded and coloured using shoe polish. I chose a lighter brown shoe polish for the whole sculpture, and I used a darker brown under all the crevices to create shadows, even when light doesn't create them.

# Spirals


**Materials**: Plaster

**Tools**: Hammer, Chisel and Sand Paper

**Dimensions** (H-W-L): (18 – 21 – 30)cm

This piece was an exercise in subtraction. I started by pouring a random amount of plaster into a plastic garbage and let it harden in my lap. This gave the starting object an already abstract look. From there I dug out all the lines that made my eyes flow through the piece. Over time the piece started to form a spiral shape. At that point I directed my efforts to emphasize that spiral nature of the object. Then I carved a hole right through the piece to give an impression of an endless spiral down through the piece. The chisel was used for most of the carving, the hammer to eliminate large chunks. Then to give the sculpture its smooth finish I used sand paper.

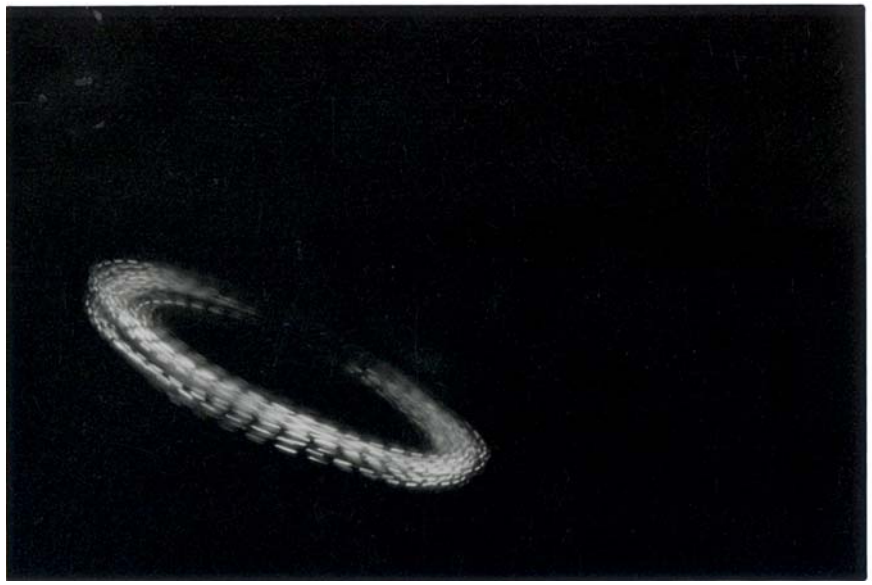
# Photography

# Black and White Photography

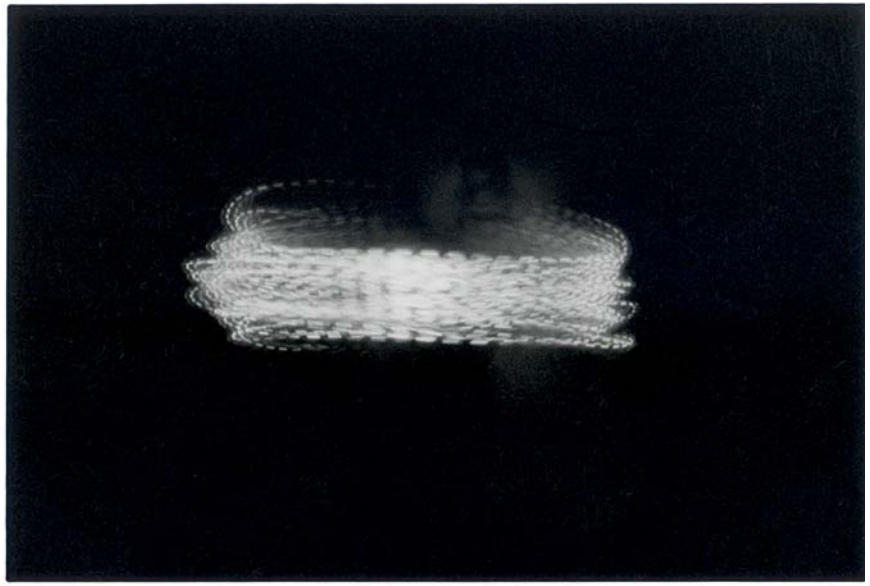
The following three photographs were chosen because they represent all the techniques I have learned through the years. I used the rule of thirds to frame each of the images properly so that your eye can flows across the image instead of resting on a single point. I implemented a fast shutter speed to freeze the action of the “Boy on the Pogo Stick” and I implemented a small aperture to capture a deeper depth of field in the image of the “Winding Path”. In the darkroom I used red filters to increase the contrast and to strengthen the impact of the black and white areas in the “Market Place” photograph. I developed both the film and the photographs in the dark room at Bishop’s University.

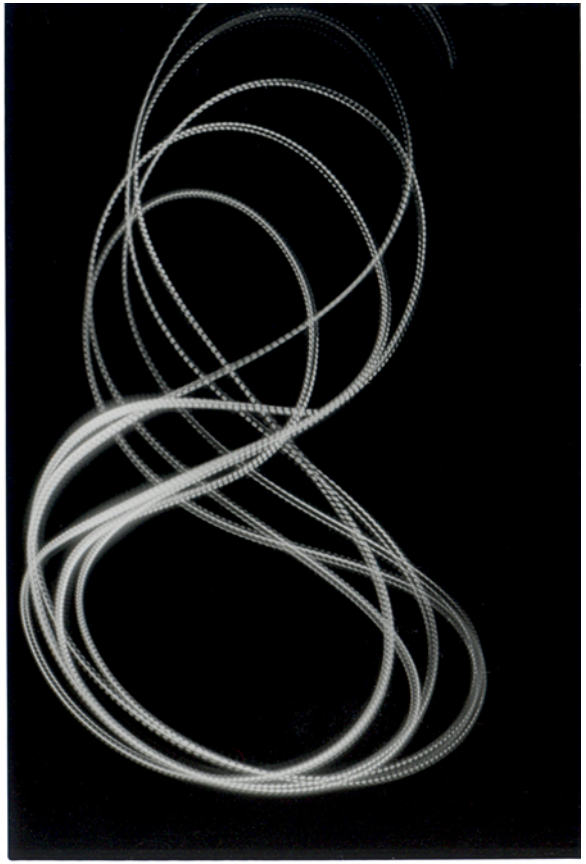

CHOUX-FLEURS
PRODUIT DU QUÉBEC
FREIGHTLINER

# LED Experiment



These photo’s were taken by holding the shutter open for 30 seconds while moving a single LED through the frame. The only difficulty was to create a light free environment, so that the only visible light was the LED light. All three shots were developed using the Bishop’s University dark room equipment.





# Sunken Row Boat

**Size**: Actual Size
**Film**: 35mm, 400iso, Kodak colour
**Developer**: Loblaws photolab

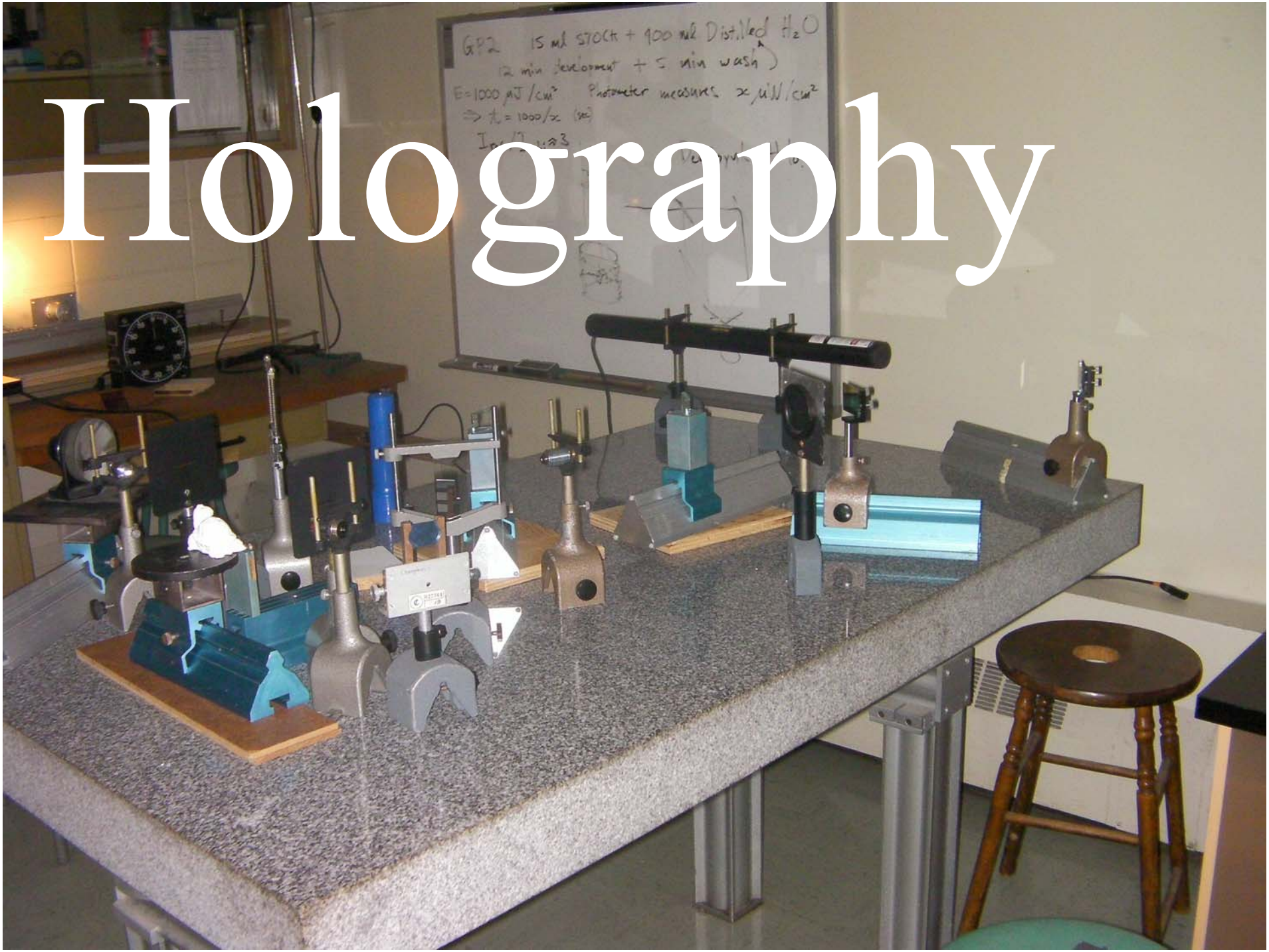
This rowboat, abandoned and useless, caught my eye and inspired me to capture this ironic scene. The scene of a boat that was specifically designed to conquer the lake, has now succumb to becoming part of it. I framed the shot to exclude the prow, because it was above water level and took away from the impact of the scene. The oars are positioned to move our eyes into the water and they emphasize that sunken look.

# Downward Stairs

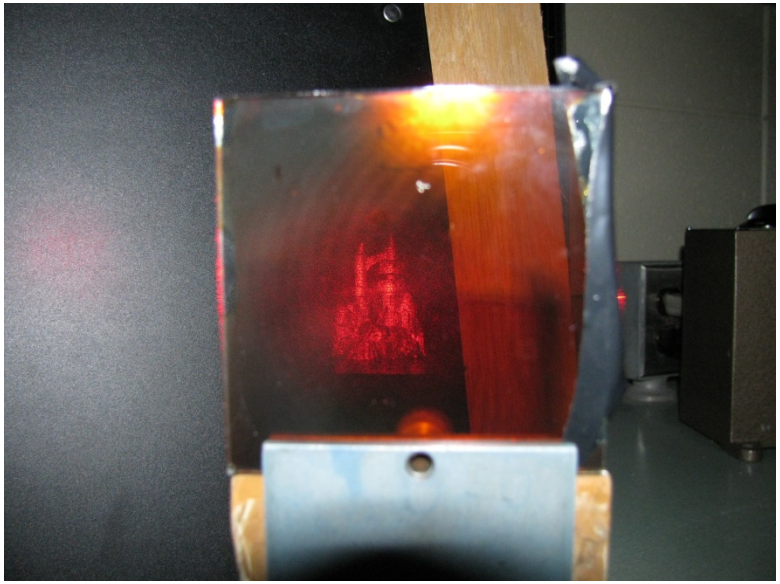
**Size**: Actual Size
**Film**: 35mm, 400iso, Kodak colour
**Developer**: Loblaws photolab

I positioned the angle of this shot to emphasize the downward motion created by the stairs. The railings frame the image but also to guide our eyes through the entire picture. The barren trees emphasized the rusting staircase.

# Holography


GP2 15 ml STOCK + 900 ml Distilled $H_2O$
12 min development + 5 min wash
E=1000 mJ/cm²
Photometer measures x μW/cm²
⇒ t = 1000/x (sec)

# Castle Hologram



**Film Height**:

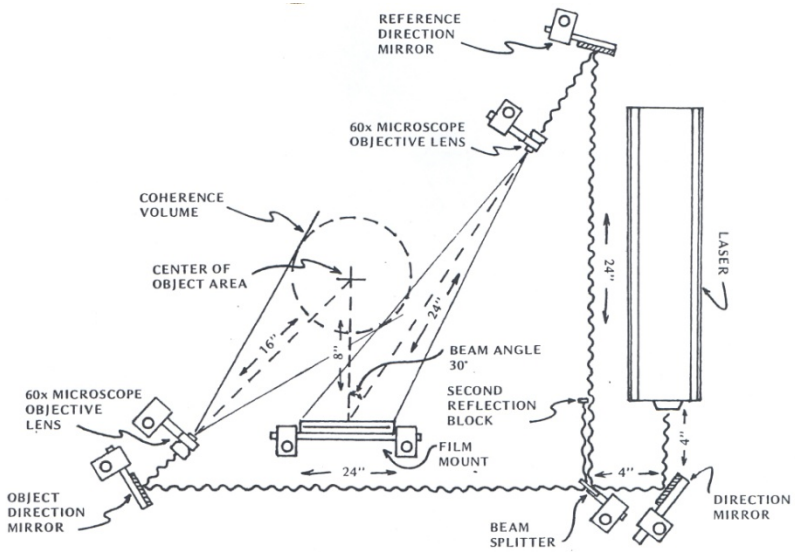
**Film Width**:

**Laser Type**: 12mW Red Laser

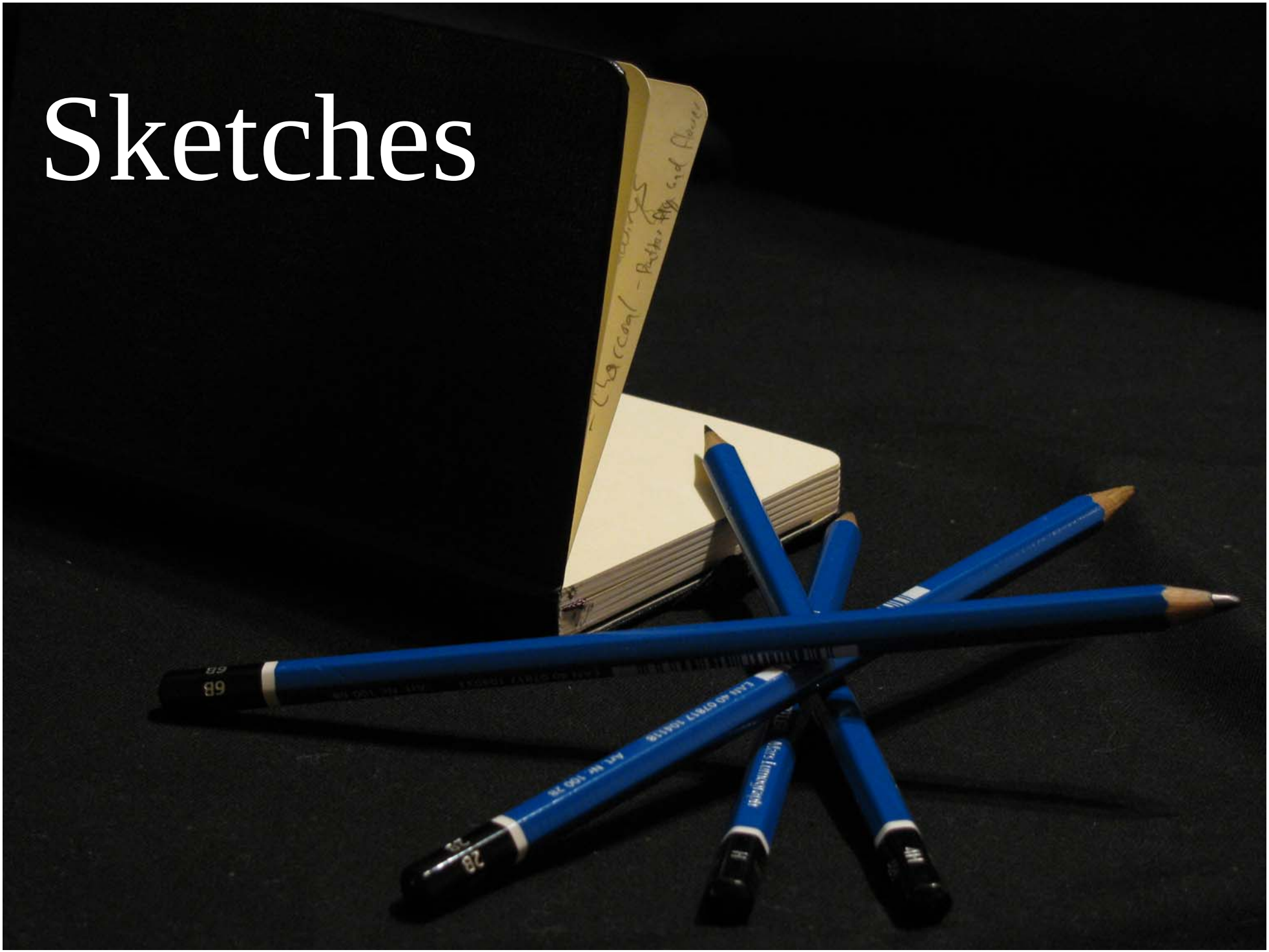
**Exposure Time**: 165 seconds (2:45mins)

**Object Dimensions** (H-W): (6.5-6.5)cm

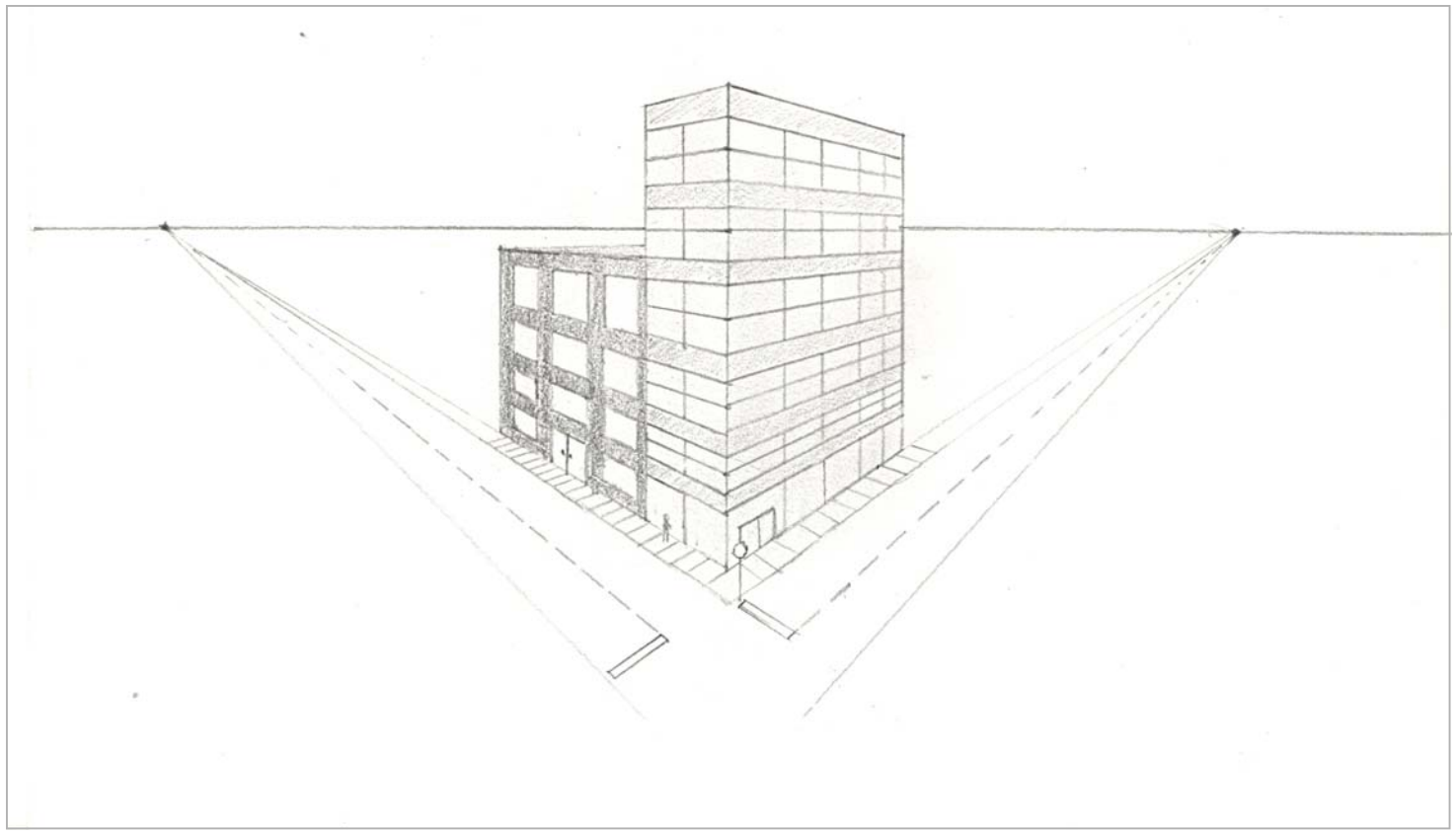
This piece was created as a project for my physics laboratory class. The purpose was to be able to manipulate laser beams to create three dimensional images of objects. The method used to create this piece is called the **Split Beam Transmission** method. A transmission hologram is a hologram that can only be viewed by passing a laser beam through the finished film. The transmission hologram is created by splitting the laser beam into two beams, one that bounces off the object and then through the film, and the second, reference beam, just passes through the film undisturbed, on the same side that the object beam passed through (setup shown in image below).



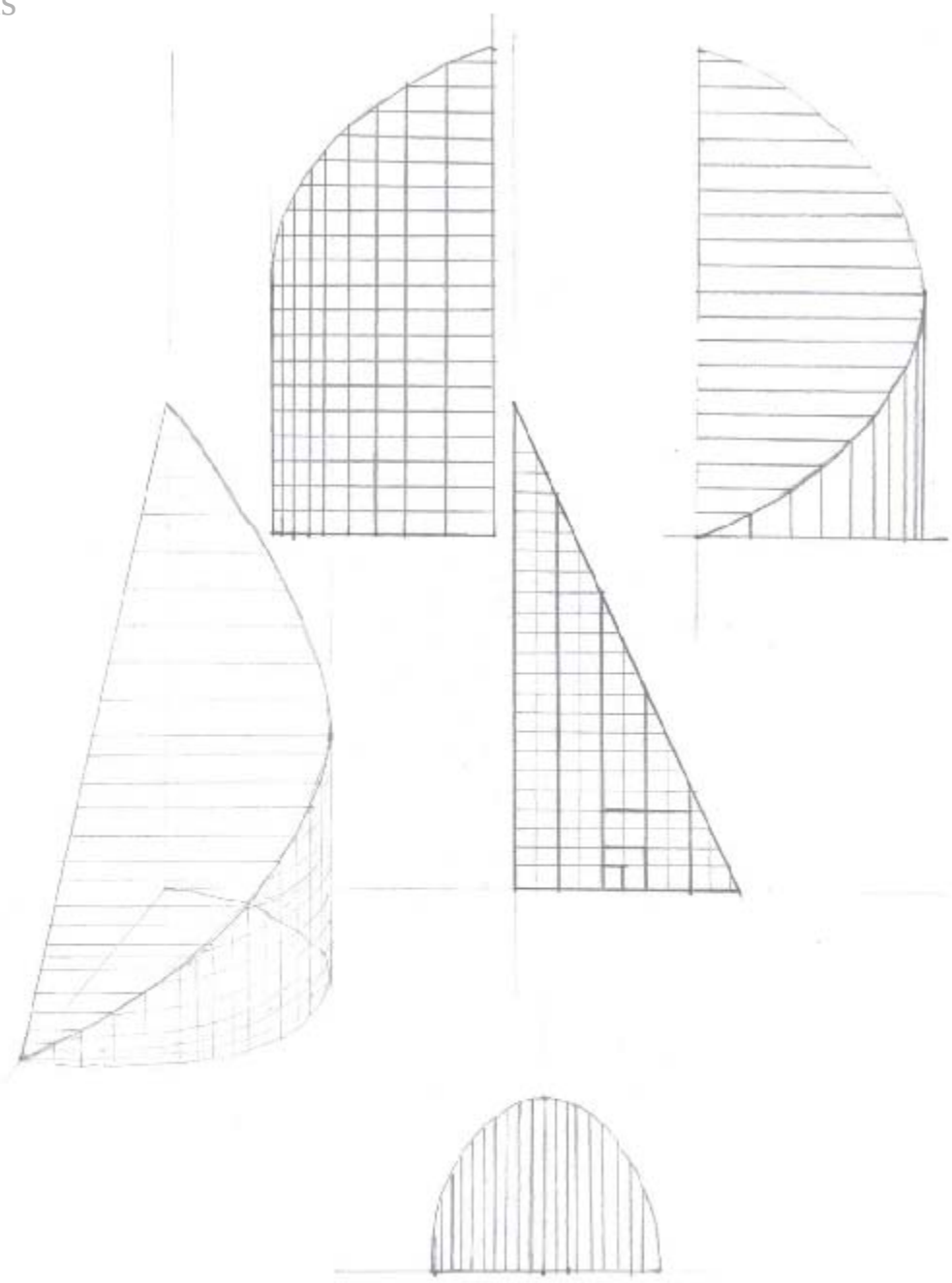

# Sketches



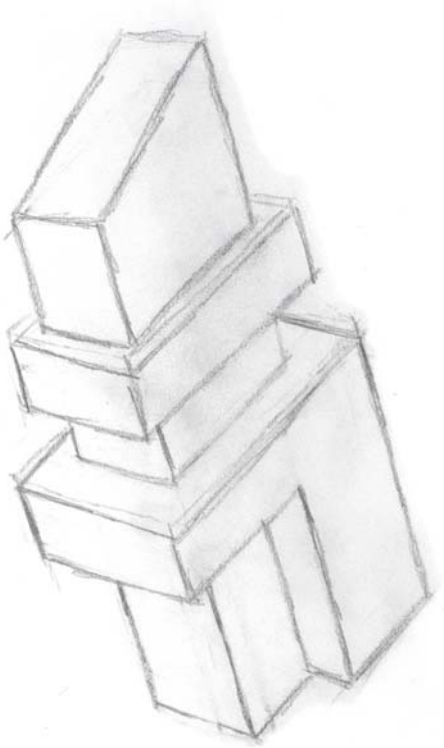
Street Corner



Sections



Skyscraper



# Pencil Sketches (In order of appearance)

## Street Corner

This sketch was an experiment in perspective drawing. I started with the concept of an office building with shop windows on the first floor. From there I expanded my drawing to include sidewalks and then the streets. At this point I added another building to increase the contrast and depth of the sketch. Then to give the buildings a sense of size I included the solitary figure walking along the sidewalk.

## Sections

This is a building I created from the three dimensional graph of a mathematical formula I was working with in calculus class. I started by sketching the three dimensional image. Then I imagined the building from every angle, one side at a time. I then represented the curvature walls by playing with the vertical line spacing.

## Skyscraper

This sketch is a result of experimenting with shapes and how they overlap. Since this is an overhead side view, I drew it to keep parts of the building hidden from the observer. I smudged one side of the drawing to create shadows.

# Watercolours

Colour was the main purpose of these paintings. I used different colour combinations, to see what king of affect they could bring to an image. I started by creating a sunset. Then I moved on to create the window. This was as a guide to better understand the relationships of specific colour combinations. Finally I expressed what I learned about colour in Faces. Faces is the abstract image of these two faces mixing their beautifully colored strands of hair.

## Sunset

## Window

## Faces

# Dimensional Analysis

| **Art Piece** | Height (cm) | Width (cm) | Length (cm) |
|---|---|---|---|
| **Caverns and Crevices** | 11 | 17 | 15 |
| **Spirals** | 18 | 21 | 30 |
| **Boy on a Pogo Stick** | 24 | 16.3 | |
| **Winding Path** | 15.4 | 22.6 | |
| **Market Place** | 18.5 | 24 | |
| **LED Experiment (all three)** | 7.3 | 10.9 | |
| **Sunken Row Boat** | 10.1 | 15.1 | |
| **Stairs** | 10.1 | 15.1 | |
| **Castle** | 6.5 | 6.5 | |
| **Street Corner** | 12.5 | 21.5 | |
| **Sections** | 27.9 | 21.5 | |
| **Skyscraper** | 13 | 7 | |
| **Sunset** | 3.5 | 9 | |
| **Window** | 9 | 6 | |
| **Faces** | 11 | 4 | |