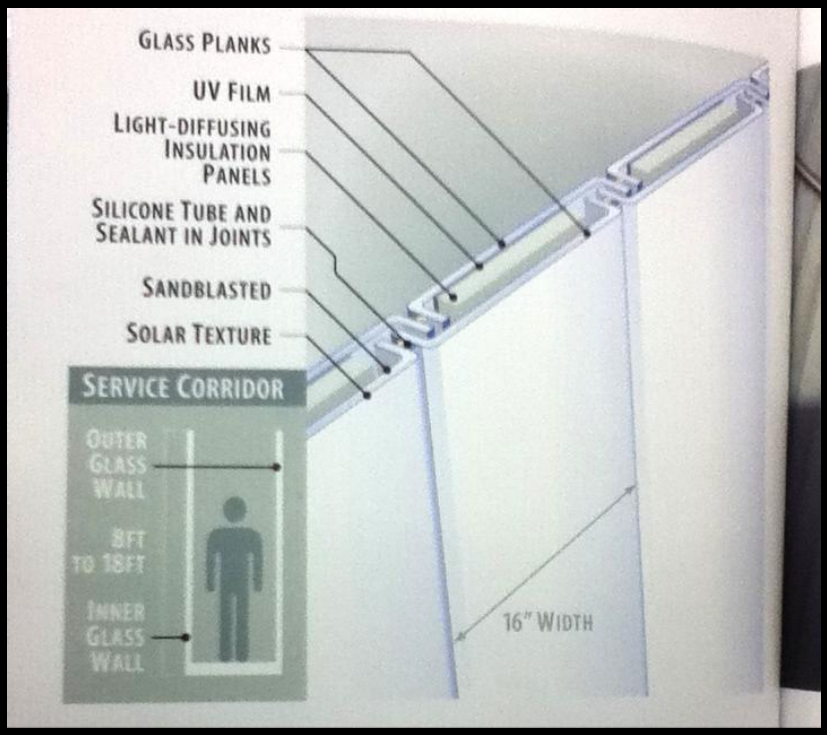
Tectonics

Tectonics

- (n) Geological structural features

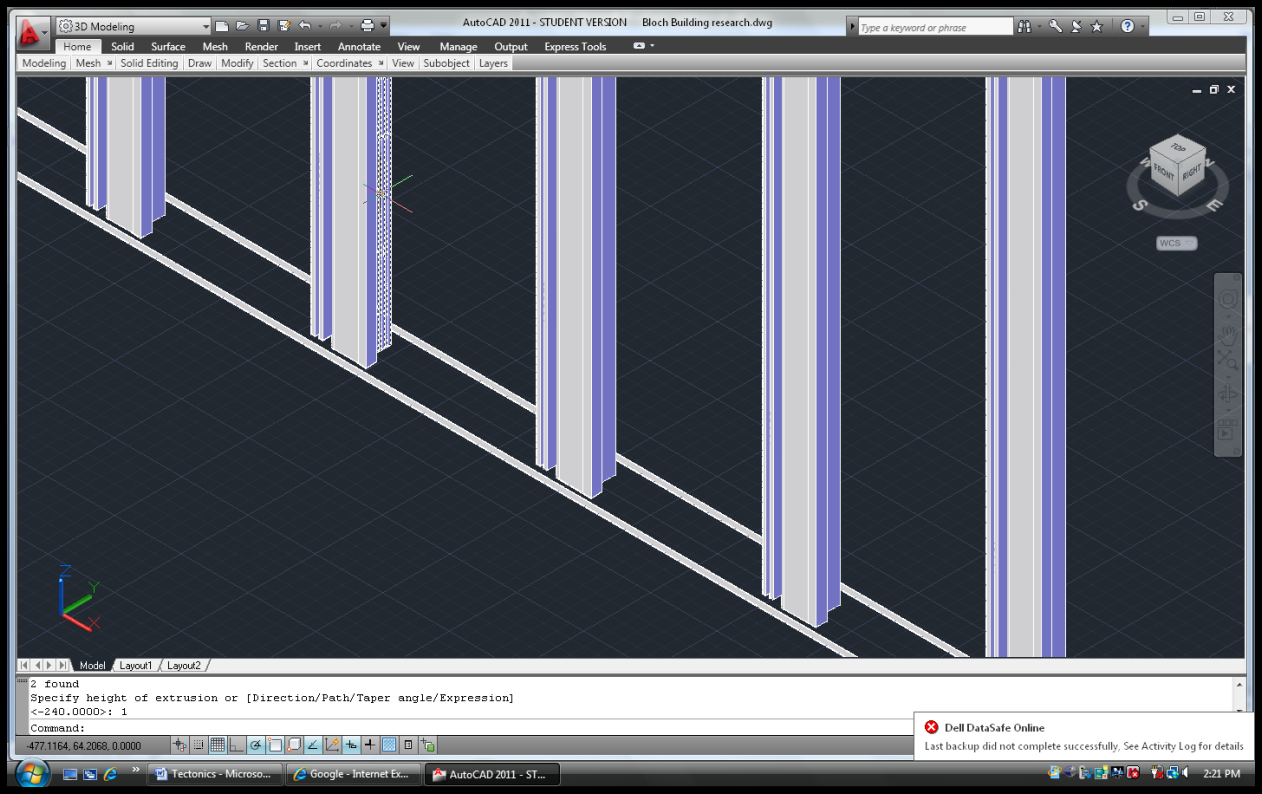
The structural components and their connections make up the very core of architecture. A beautiful design is nothing without the frame that connects the pieces. One must design a structural frame that can withstand the tests of time and its environment. But a beautiful design would be flawed by a frame which does not compliment its other features. In this study I will redesign the connecting elements of the Bloch Building windows.

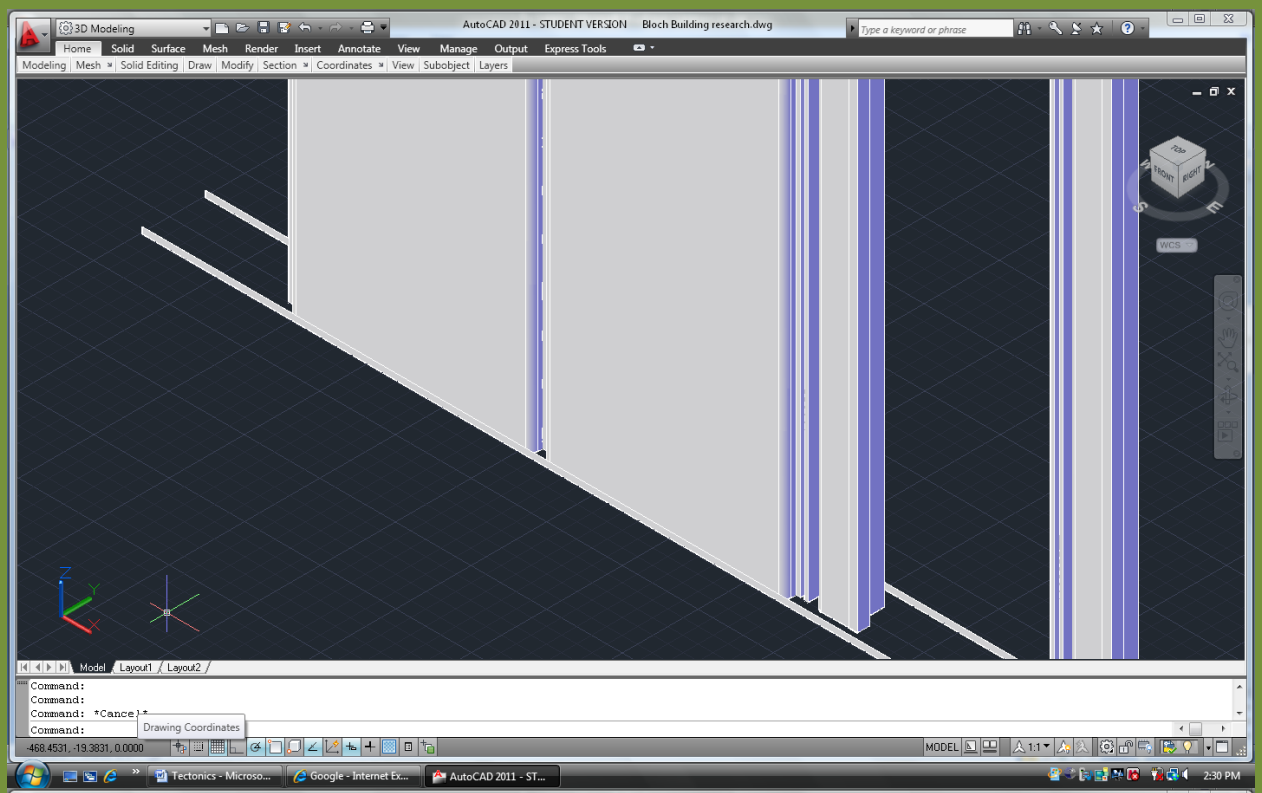
My inspiration for this project was relatively simple. The Bloch Building is an addition to the 1930's built Nelson-Atkins Museum of Art. To design a connection between this classic building and its contemporary companion must have been a tremendous feat.



I found this in a booklet about the Bloch Building and after examination I decided this would be an interesting applicable project. Being an aspiring architect this will be a useful problem solving exercise relating to architecture.

In my design the connection between the panels will actually be the supporting frame. I have portrayed that stud/ connection support wall in this picture.

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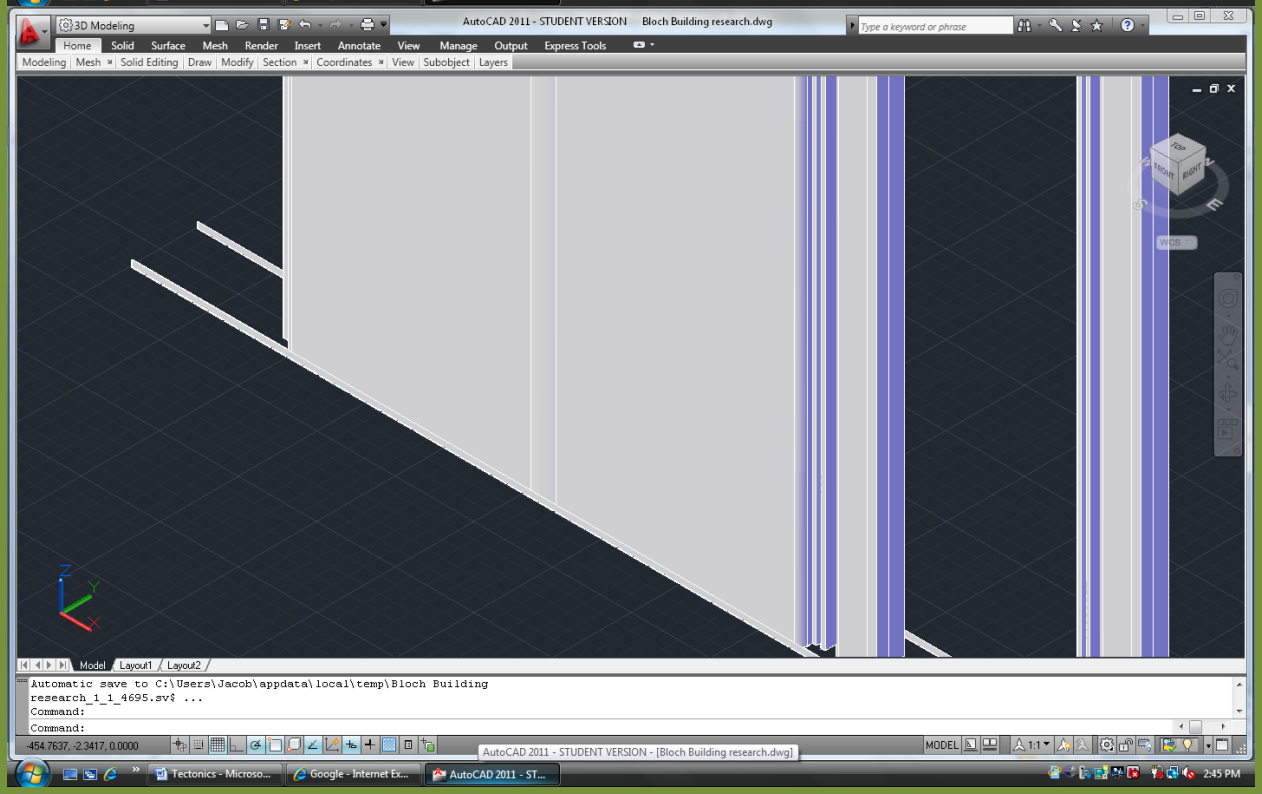
AutoCAD 2011 - STUDENT VERSION Bloch Building research.dwg
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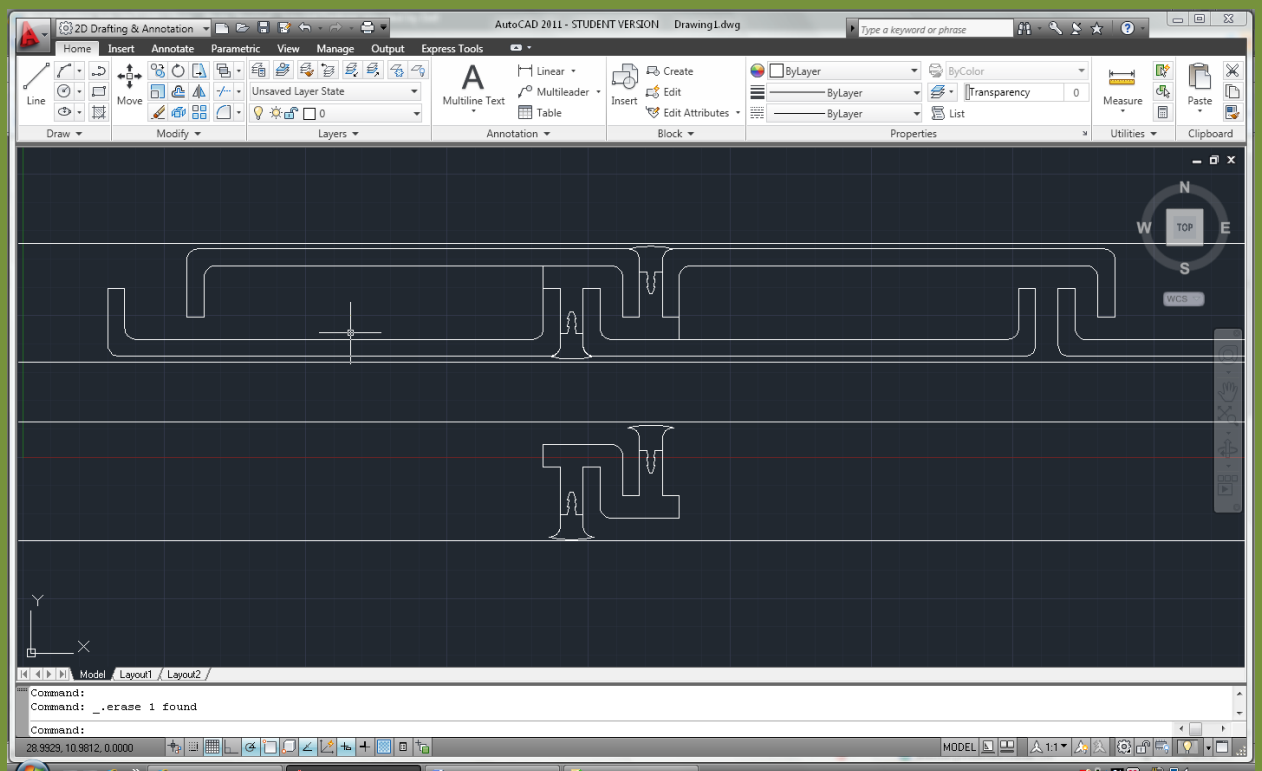
AutoCAD 2011 - STUDENT VERSION DrawingL.dwg
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Bloch Building, July ... AutoCAD 2011 - ST... Tectonics - Microso... Desktop
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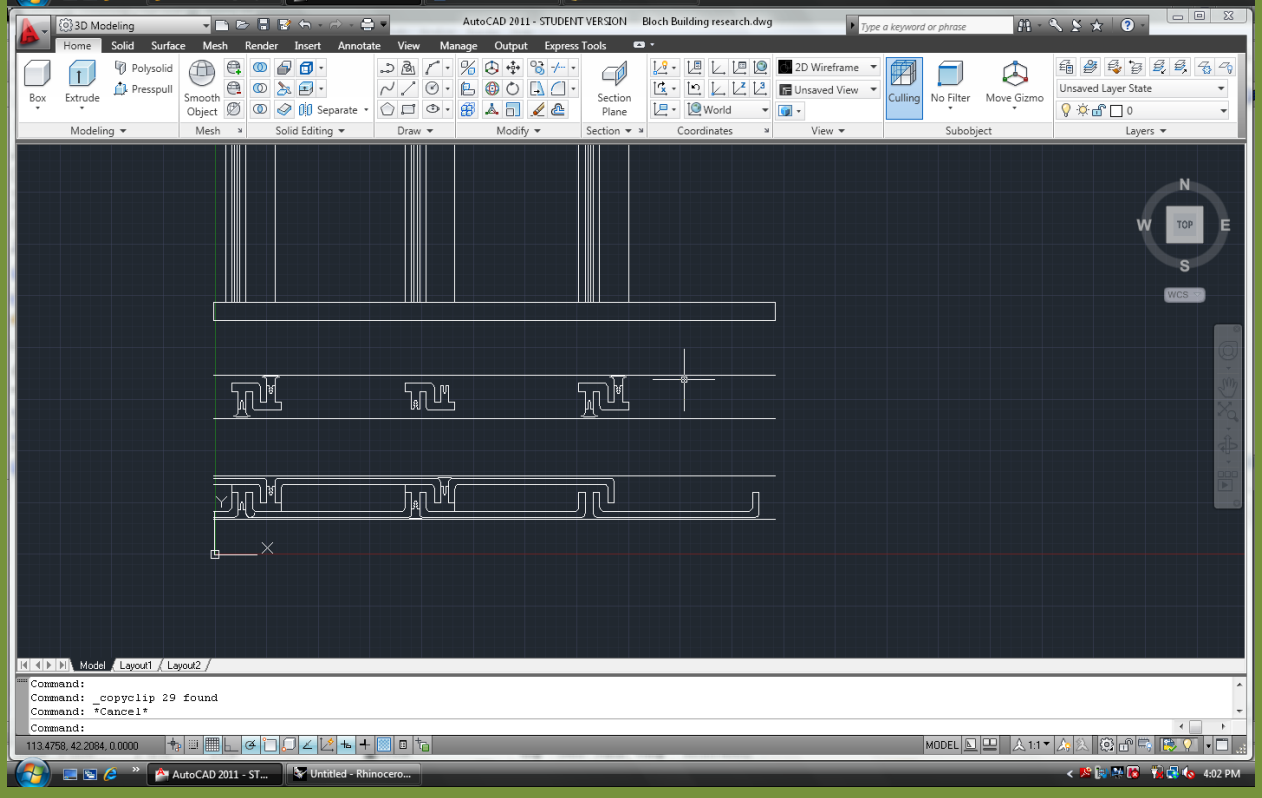
AutoCAD 2011 - STUDENT VERSION Bloch Building research.dwg
3D Modeling
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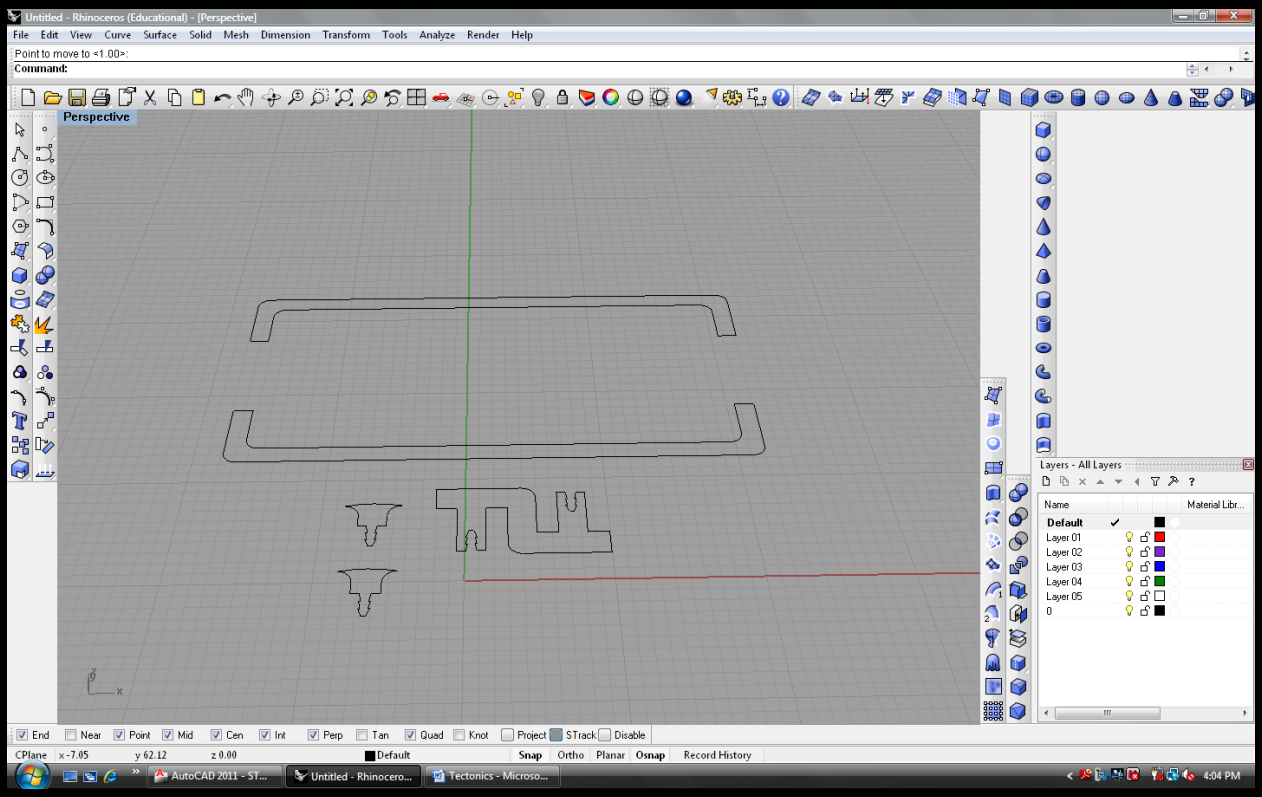
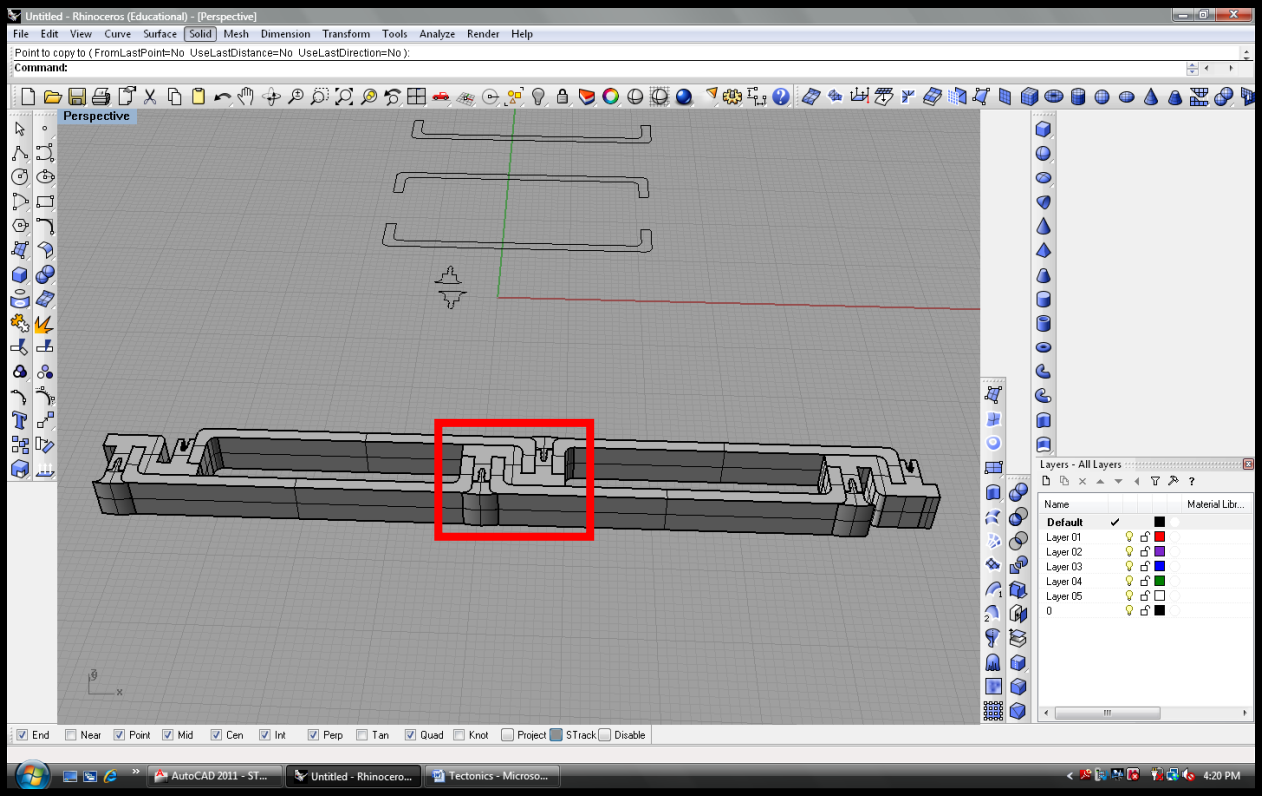
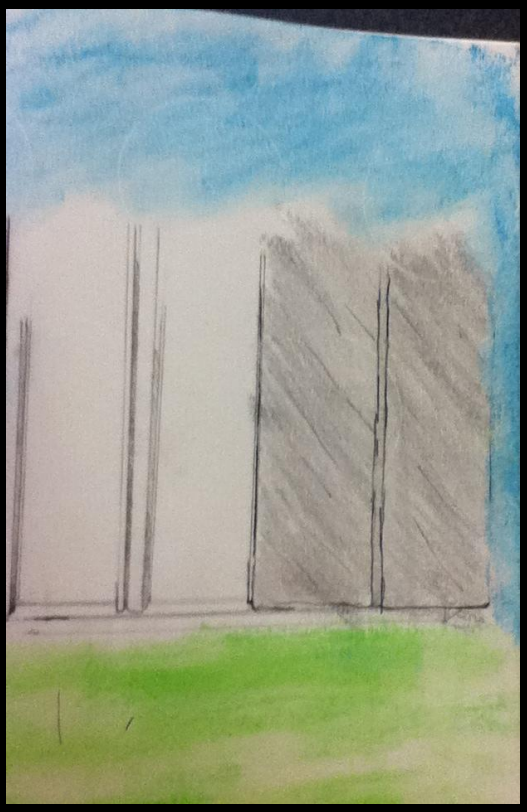
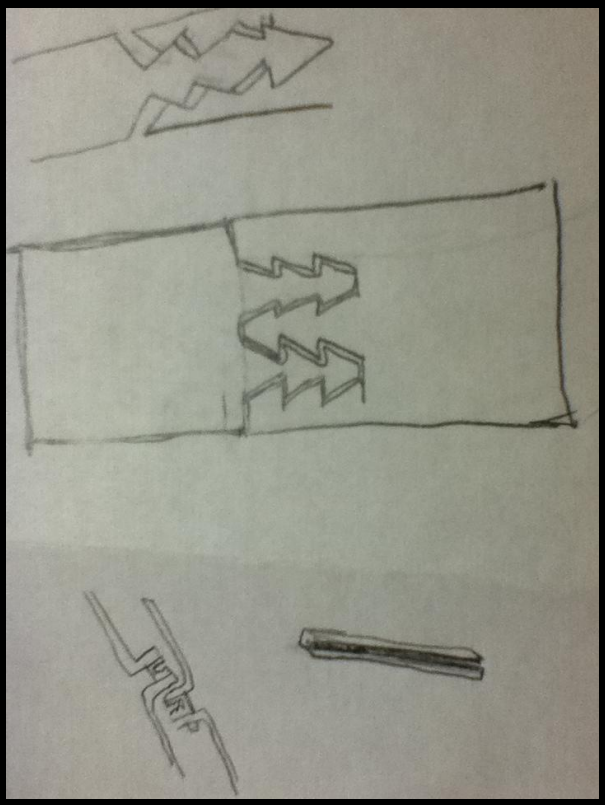




This is an issue with glass panels. The support / connection will not be translucent. This type of connection would be better for aluminum wrapped insulated panel.

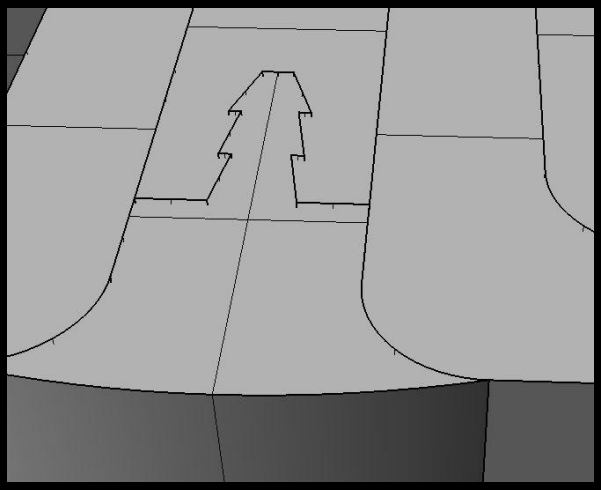




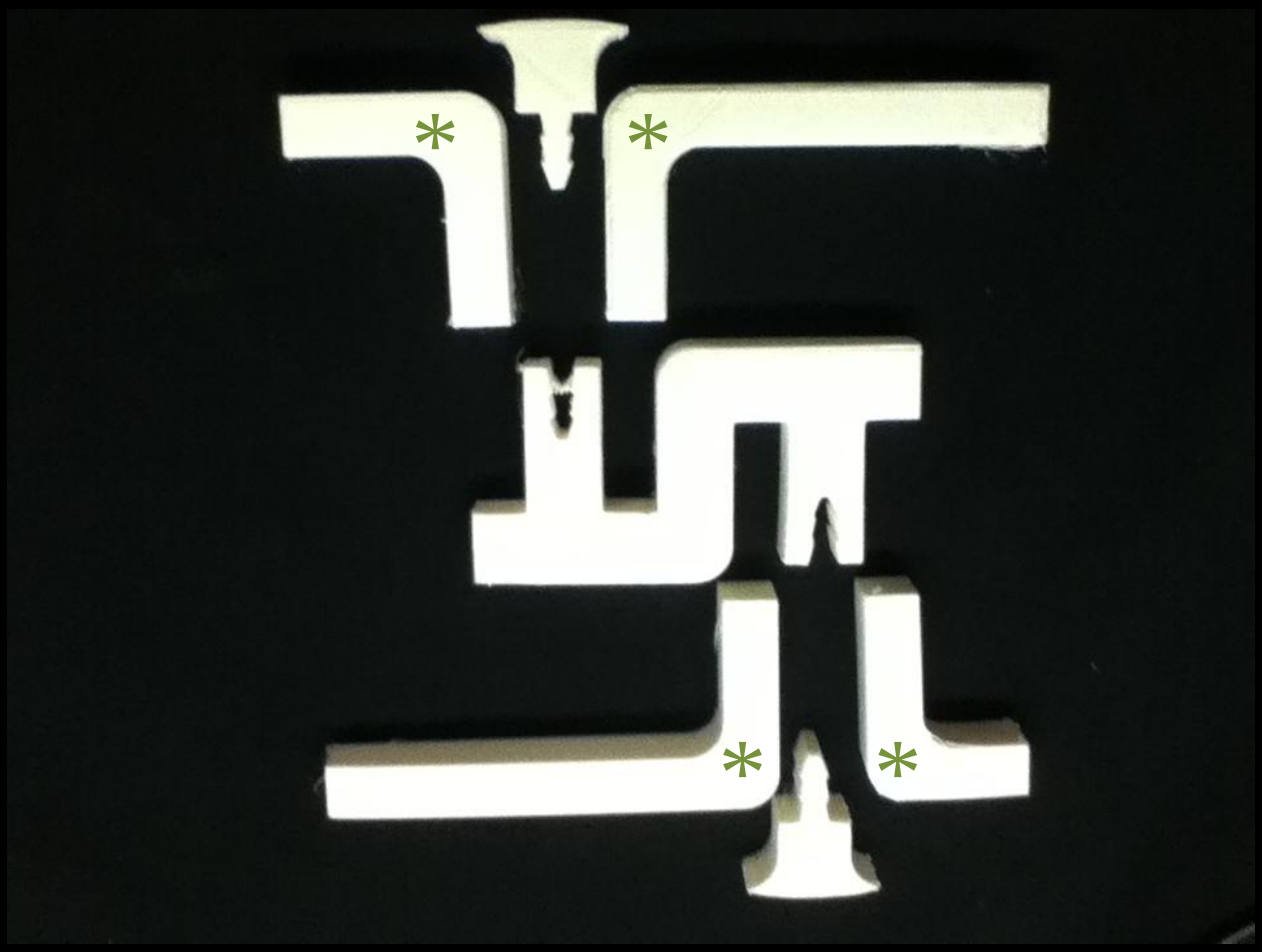
I did some initial drawings to get an idea of how aluminum panels would look in the environment and to get an idea of how my connection would work.

3D Printer Troubleshooting Discoveries

I had some interesting discoveries while trying while trying to print my connection. One important part of printing a connection is to determine the tolerance needed to make the pieces fit together. Originally I printed all of my pieces on the BFB 3000. I printed them with no tolerance (shown here).

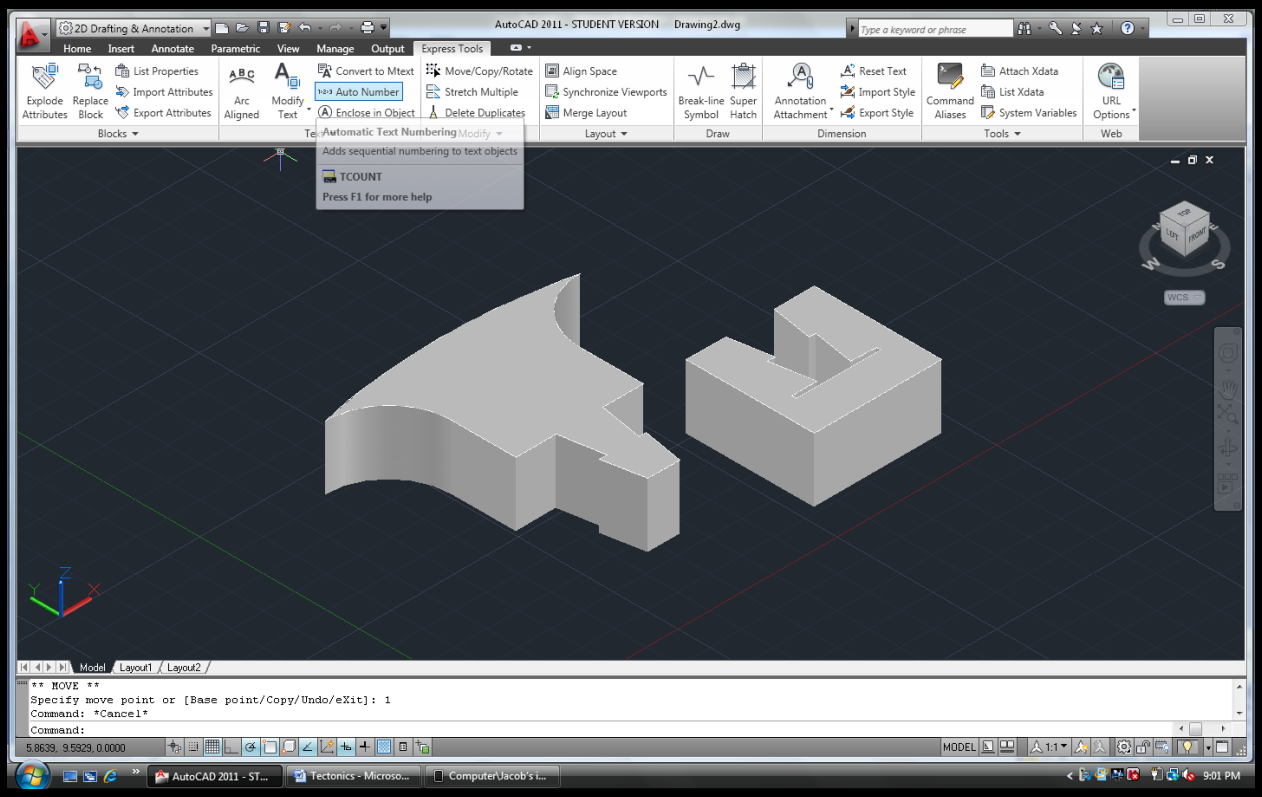


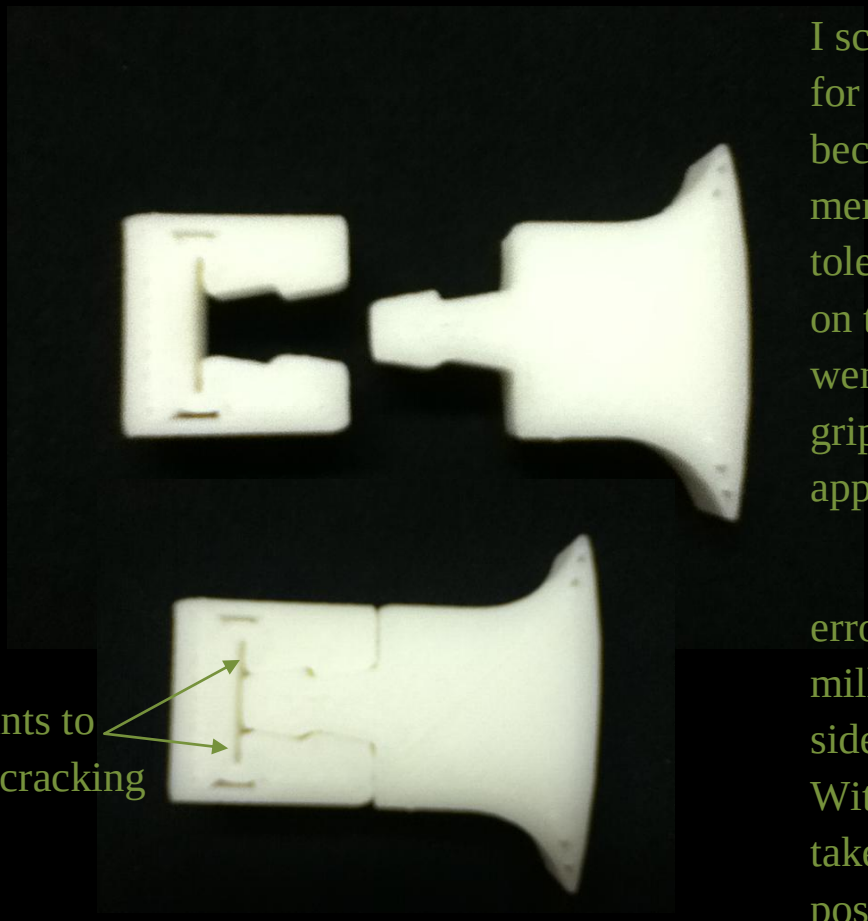
Once the pieces were printed I discovered I needed a tolerance, or at least on the BFB 3000. I also noticed that due to possible temperature factors the print was warping.



* Insulated aluminum wrapped modular panels.

I decided on this next print to use the RapMan 3.1 printer because of some noticeably more accurate prints. On the BFB 3000 I felt as though the tolerance would have be much higher because my pieces were far from fitting together. I also decided to switch it up and learn how to use AutoCAD 3D.





Flex points to prevent cracking

I scaled the project down for shorter print times and because my focus was merely to define a perfect tolerance for connections on the RapMan 3.1. I also went with a single gripping element for this application.

Though trial and error I found that a 1/8 millimeter tolerance on all sides was almost perfect. With more time I would take that even further to possible 1/16 of a millimeter.