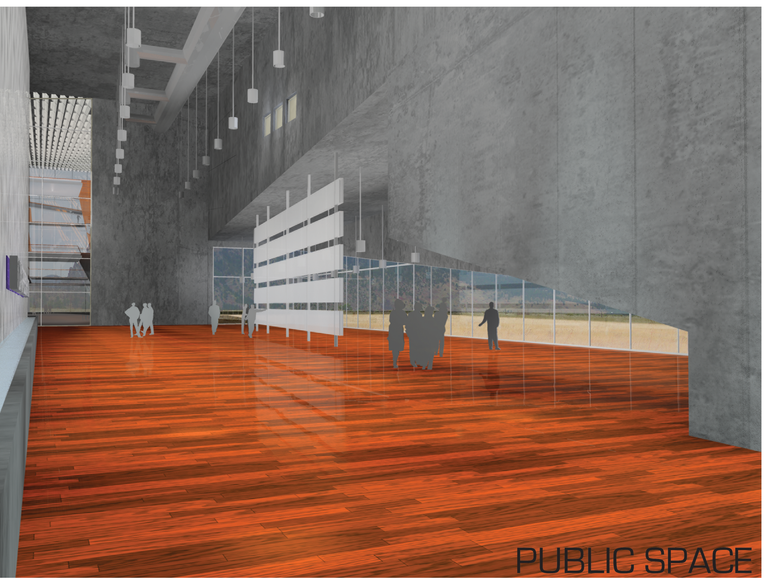
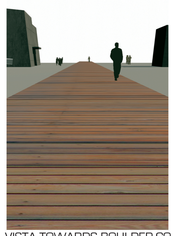
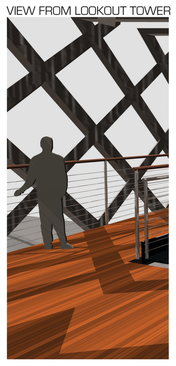


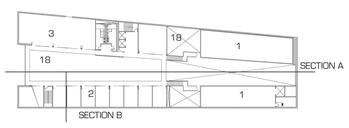
WATER WALL



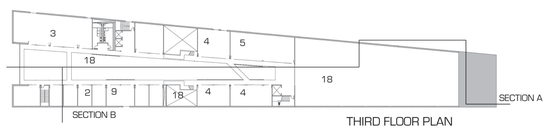
VISTA TOWARDS BOULDER,CO

VIEW FROM LOOKOUT TOWER

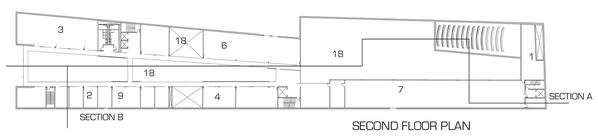




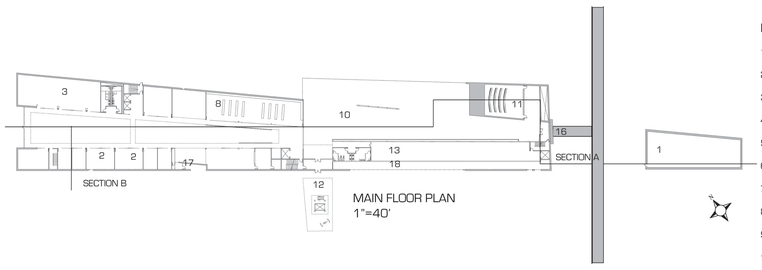
FOURTH FLOOR PLAN
1"=40'



THIRD FLOOR PLAN
1"=40'



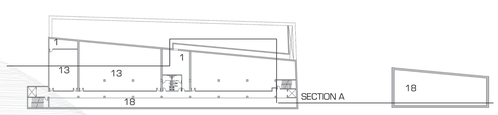
SECOND FLOOR PLAN
1"=40'



MAIN FLOOR PLAN
1"=40'

FLOOR PLAN

1. MECHANICAL ROOM
2. RESEARCHER OFFICES
3. SUPPORT STAFF
4. COMPUTER LABS
5. STORAGE
6. ARCHIVE
7. GROWTH CHAMBER
8. LIBRARY
9. CONFERENCE ROOM
10. EXIBITION/PUBLIC SPACE
11. SMALL AUDITORIUM
12. WIND TURBINE/LOOKOUT TOWER
13. RESEARCH LABS
14. WIND TUNNEL
15. BURN CHAMBER
16. MAIN PUBLIC ENTRANCE
17. EMPLOYEE ENTRANCE
18. OPEN TO BELOW



BELOW GRADE
LEVEL 1 & 2
1"=40'

BELOW GRADE
LEVEL 3
1"=40'

SITE

The project is located just south of Boulder, CO. The site is nestled on the foothills of the Rocky Mountains. The state of Colorado has a substantial fire season every year, which makes it a great place for fire research

To be a successful research facility for the future, the research spaces needed to be as flexible as possible. The field of research is constantly changing requiring flexibility and independence. I addressed this issue by creating multiple mechanicsl spaces. Each research lab space has its own mechanical space attached to it. By allocating individual mechanical spaces, each lab can be performing different research and be able to change the type of research without effecting other labs in the building.

FORMED BY CONTEXT SCULPTED BY FUNCTION.

Large stone masses rising to the sky around the site heavily influence the design of the building. To place the building within the site I used the same idea, raising the building out of the ground in correlation with the mountain range. I also pushed the back end of the building into the ground, accentuating the idea of the building rising out of the ground. Burying the back end of the building was very functional as well, the ground has a very stable temperature throughout the year, making it easier for the research labs to be environmentally controlled. This was also a perfect solution for the burn chamber; put it underground and pull it away form the main part of the building reducing the risk of fire spreading on site and to other parts of the building.

Wild Land fire Research

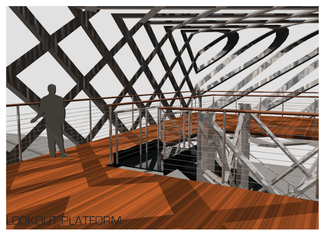
This facility will utilize both laboratory and field experiments to do the studies. These experiments include actual fires, chemical studies of fuels and fuel structure, computer analysis and many studies revolving around the effects of fire flora and fauna.

The creation of space and form was based on my experience as a wild land fire fighter. I took my knowledge of fire fighting techniques and applied little nuances to the building. I used the idea of 'fire lines' as a design direction for this project. When you look at the exterior of the building you should notice small horizontal reveals, these reveals are like 'scratch' lines that are created by fire fighters when they first appear on site trying to contain the fire. The windows are like 'hand' lines. The hand lines are usually created by twenty person crews, and are much like the hand lines the windows are more noticeable. The creating of different lines was also carried through to the interior. The vertical pieces that you see in the section and the perspective are for visual privacy or light control. These would include the conference rooms, library and computer labs. I then used horizontal wood members to define space around the interior office spaces, such as the railing systems. For the 'floater' effect, I pulled the spacial functions apart leaving a large open common area.

S T R U C T U R E

When considering the construction method of this project I had a few criteria that needed to be addressed. First, the building needed to withstand the high temperatures of fire, both internally and externally. I also needed the structure to be flexible enough to allow for large openings in the building facade. Choosing a concrete/steel composite structure, I was able to frame the window openings with the steel structure and then protect the building from fire with the concrete exterior. The same system was used on the interior; the floor slabs and beams are thinner, due to the structural qualities of steel.

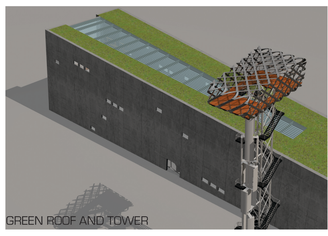
EXISTING SITE



LOOKOUT PLATFORM

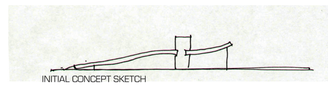
S U S T A I N A B I L I T Y

The goal for this facility is the study of sustainable design principals and burning practice that will allow for the deterrence of major fire catastrophes. The expansion of cities and the built environment into the once backcountry has altered the way forest grow, fires burn and methods for fire control. For the safety of humans and the environment, there needs to be a balance between destruction and protection. The research facility would be leading the way in developing sustainable forest management procedures and forest health. In combination with developing sustainable principles, the facility would utilize various fundamental techniques and apply a modern element to create active susceptibility. Ubilizing the height of the lookout tower, I added vertical axis wind turbines to create electricity. These turbines require a low wind velocity to start producing electricity and are not affected by wind direction or velocity. The atrium glazing is photovoltaic glass that creates energy once light passes through the window pane. Below the atrium window pane, there are operable louvers that control the amount of direct light that enters the space. During the summer months, the louvers are closed creating diffused light and open during the winter allowing solar hear gain for the space. To keep the building as energy efficient as possible I added two more elements, a green roof and rigid insulation inserted in the concrete. The rigid insulation withholds heat during the winter months and keeps the summer heat out. The green roof acts as insulation for the roof and slows down water run off. The water that is collected during a rain storm runs down a water wall in the public space. The wall is demonstration in water collection and filtration.

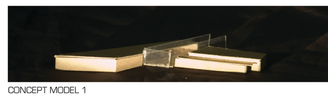


GREEN ROOF AND TOWER

TOWER BASE

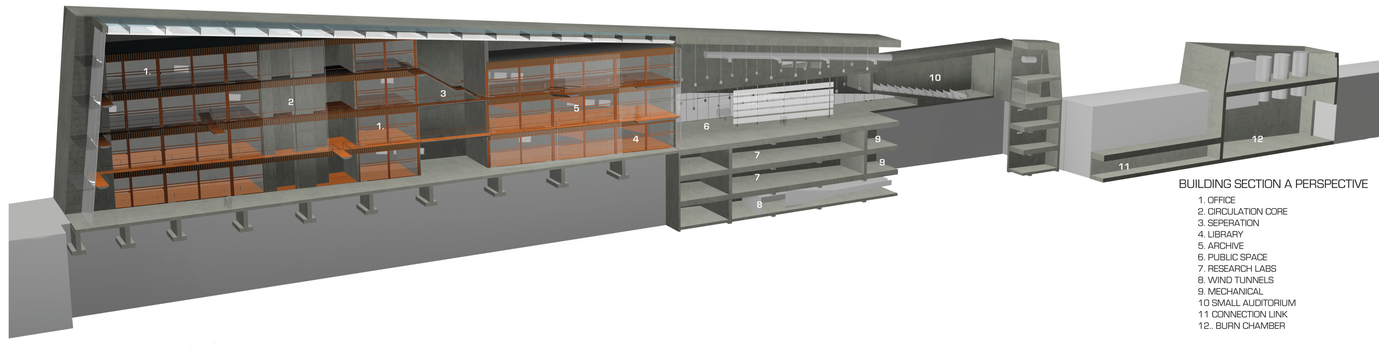


INITIAL CONCEPT SKETCH



CONCEPT MODEL 1

CONCEPT MODEL 2



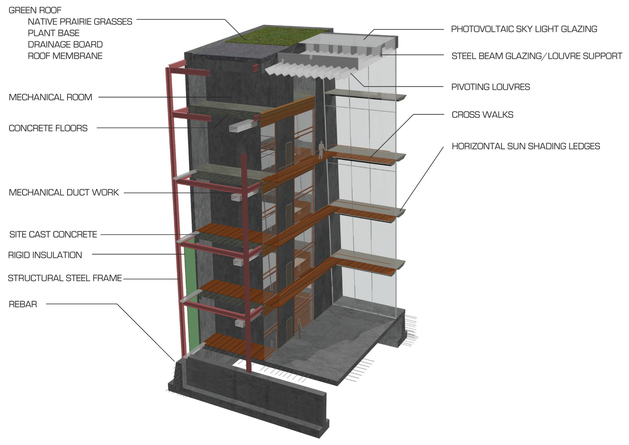
BUILDING SECTION A PERSPECTIVE

1. OFFICE
2. CIRCULATION CORE
3. SEPERATION
4. LIBRARY
5. ARCHIVE
6. PUBLIC SPACE
7. RESEARCH LABS
8. WIND TUNNELS
9. MECHANICAL
10 SMALL AUDITORIUM
11 CONNECTION LINK
12. BURN CHAMBER

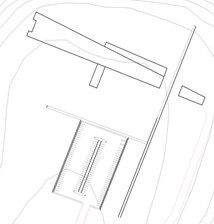
WILD LAND FIRE RESEARCH INSTITUTE

CODY WEAVER

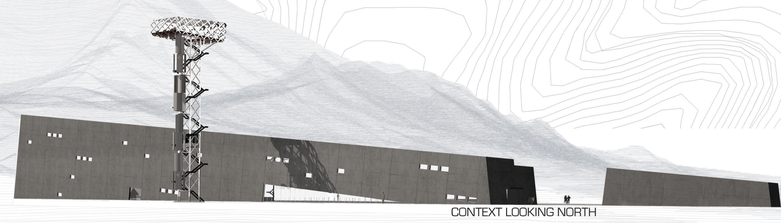
CONSTRUCTION AXON
COMPOSITE CONSTRUCTION
SECTION B



ATRIUM VIEW TOWARDS MOUNTAINS



SITE PLAN
1"=150'



CONTEXT LOOKING NORTH