

**WELCOME TO: ARCH 2430,
BUILDING TECHNOLOGY IV**



HIGH LINE 23 BY NEIL M DENARI ARCHITECTS

Prepared by Alexander Aptekar ED, Barbara Mishara © 2012

Class Overview

Week Two: Class 03

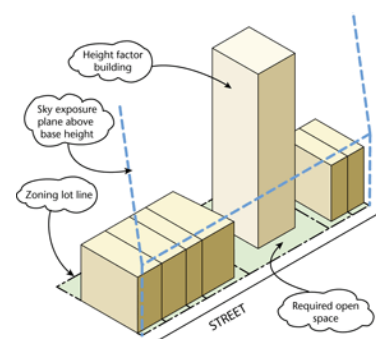
- Zoning Review
 - History
 - Project Concerns
 - Resources
- Site Considerations
- Project Site
- Zoning Check
- Setbacks and massing requirements
- Class Assignment
- Site Plan
 - Maximum Zoning Envelope
 - Individual Massing Studies
- Submittals:
 - Massing studies
 - Concrete research draft



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Site Considerations and Zoning



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http://www.nyc.gov/html/dcp/html/zonehis.html

About Zoning

Zoning shapes the city. Compared with architecture and planning, zoning has a relatively short history as a means of organizing the way land is used. Yet zoning determines the size and use of buildings, where they are located and, in large measure, the density of the city's diverse neighborhoods. Along with the city's power to budget, tax, and condemn property, zoning is a key tool for carrying out planning policy. New York City has been a pioneer in the field of zoning since it enacted the nation's first comprehensive zoning ordinance in 1916.

Department of City Planning

<http://www.nyc.gov/html/dcp/html/zone/zonehis.shtml>

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STRUCTURE OF THE ZONING RESOLUTION

Articles I - VII - Zoning Regulations.

- Article II - Residential Districts
use, bulk, off-street parking and loading; Inclusionary Housing; urban design guidelines; Quality Housing program. (§21-00 to 28-53)
- Article III - Commercial Districts
use, bulk, off-street parking and loading; urban design guidelines. (§31-00 to 37-06)
- Article IV - Manufacturing Districts
use, bulk, off-street parking and loading. (§41-00 to 44-585)



Articles VIII - XII - Special District Regulations

From, "Zoning 101" John Lee & Fanning Assoc. ©2012 May 2008

<http://www.nyc.gov/html/dcp/html/subcats/zoning.shtml>



STRUCTURE OF THE ZONING RESOLUTION



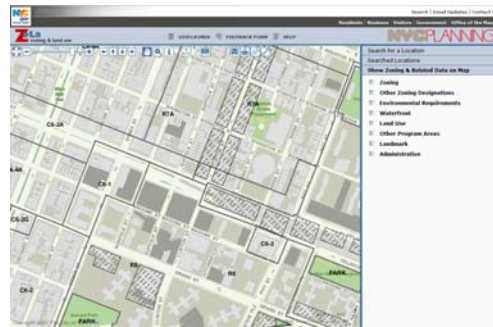
Equitable Life Building 537ft tall (40 story)

- Zoning District
- Use Use Groups
Signs
- Bulk: Floor Area Ratio (FAR)
Maximum Lot Coverage
Yard Regulations
Height & Setback Regulations
Courts
- Parking and Loading
- Other

ZONING

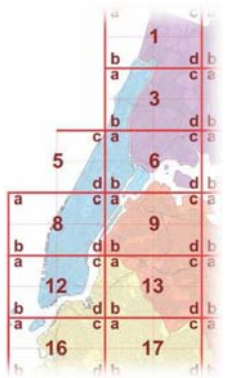
From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

ZONING MAPS



<http://gis.nyc.gov/doitt/nycitymap/template?applicationName=ZOLA>

ZONING MAPS



The 126 City Planning base maps are made up of 35 sections, each identified by a number from 1 to 35.

Zoning maps are further divided into four quarters, each identified by letter: a, b, c or d.

Each zoning section map covers approximately 8,000 feet (N-S) by 12,500 feet (E-W)

http://www.nyc.gov/html/dap/html/zoning/zoning_maps.shtml

From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

ZONING MAPS



• Each zoning district is designated by a letter indicating the general use classification -- **R** for Residence, **C** for Commercial and **M** for Manufacturing -- followed by a number.

• Heavy solid lines indicate the boundaries of zoning districts. Certain districts (such as Special Districts or C1 or C2 districts) are mapped as overlays, modifying-but not totally supplanting-the controls of the underlying district.

• Article VII, Chapter 6 (§76-00 through 76-148) establishes the location of district boundaries. ZONING

From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

ZONING DISTRICTS



In **R** districts, the first number indicates permitted bulk and parking.

Most **C** districts have two numbers in their designation:

- the first number indicates permitted uses
- the second number indicates permitted bulk, required parking or both

All **M** districts have two numbers in their designation:

- the first number indicates permitted uses
- the second number, after a hyphen, indicates permitted bulk, required parking or both ZONING

SPECIAL PURPOSE DISTRICTS

Have superimposed on underlying districts.

From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

USE GROUPS

The uses listed in each use group have common functional or nuisance characteristics.

Use Groups 1 - 2	residential
Use Groups 3 - 4	community facilities
Use Groups 5 - 9	local retail and services
Use Groups 10 - 12	regional shopping centers/amusement
Use Groups 13 - 15	waterfront/recreation uses
Use Group 16	heavy automotive service
Use Groups 17 - 18	manufacturing

The text identifies which use groups are permitted in each zoning district.

Index of Uses in Appendix A of the Zoning Resolution

From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

BULK

The maximum size (or bulk) of a building on a lot is determined by the floor area ratio (FAR) assigned to each zoning district.

DETERMINE AREA OF ZONING LOT


- The FAR expresses the relationship between the amount of usable floor area permitted in a building and the area of the lot on which the building stands.

CALCULATE PERMITTED FLOOR AREA

- A building can contain FAR to the lot area multiplied by FAR of the district in which the lot is located.

BONUSES

- In certain districts, the basic FAR permitted on a lot can be increased if certain public amenities are provided

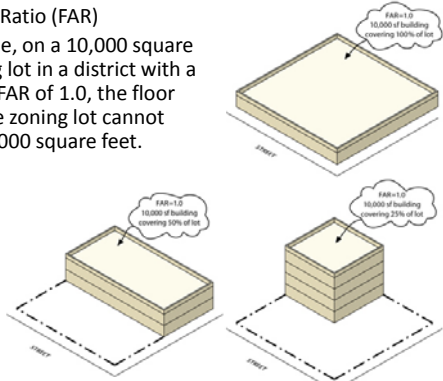


From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

BULK

Floor Area Ratio (FAR)

For example, on a 10,000 square foot zoning lot in a district with a maximum FAR of 1.0, the floor area on the zoning lot cannot exceed 10,000 square feet.




From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

BULK

OPEN SPACE RATIO

- In certain residence districts, residential development must provide open space on the zoning lot (§27-14).
- In some districts, the amount of open space required is determined by the open space ratio (OSR) which expresses the percentage of total floor area of a building that must be provided as open space on a development parcel.
- In other residence districts, open space is determined by yard regulations or by limiting development to a maximum lot coverage.




From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

BULK

MAXIMUM LOT COVERAGE

- Lot coverage is that portion of a zoning lot covered by a building or any part of a building.
- Maximum allowable lot coverage is determined by a combination of yard requirements and any urban design regulations that may be Applicable.

Quality Housing Program is a set of zoning regulations in R6 - R10 Districts and their commercial equivalents



From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

BULK

YARDS (COMMERCIAL DISTRICTS)

Front yards are not required in C Districts (§33-24).

- Some Special Districts require sidewalk widenings which in effect locates the street wall at a specified distance from the lot line.

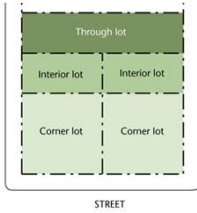
Side yards are not required in C Districts. (§33-25)

- If a side yard is provided, certain dimensional requirements must be met.

Rear yard of minimum 20' depth is required in all C Districts. (§33-26)

- Corner lots are exempted from rear yard requirements
- Shallow lots are permitted reductions in rear yard minimums (§33-27).
- Through lots must provide rear yard equivalents in some C Districts (§33-28)

Permitted obstructions are listed in §33-23



From, <http://www.nyc.gov/html/dcp/html/zoning/glossary.shtml#floor>

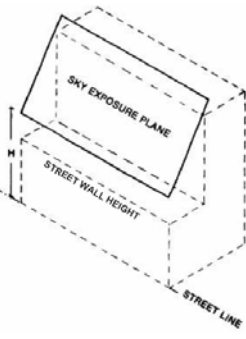
From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

BULK

HEIGHT AND SETBACK

In most medium and higher density districts:

- A building's front wall at the street line is generally limited to a specified height or number of stories -- street wall height -- above which the building face must setback a specified distance.
- Above the street wall height, a building is required to set back behind a theoretical inclined plane -- the sky exposure plane -- which cannot be penetrated by the building.



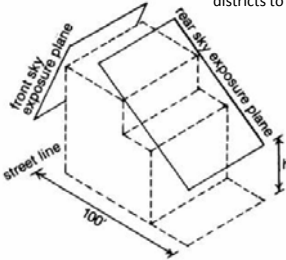
From, "Zoning 101" John Lee & Fatima Amer, DOB 25 May 2006

BULK

HEIGHT AND SETBACK

In most medium and higher density districts:

- A rear sky exposure plane is required in some districts to provide greater light and air.



- Exception: a tower rising without setback which covers only 40% of its lot is permitted to penetrate the sky exposure plane because its compensating slender profile provides more open space at the street level.

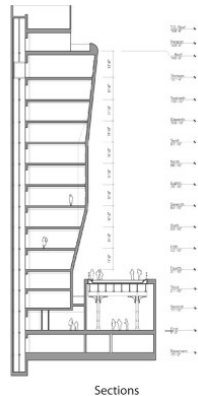
From "Zoning 101" John Lee & Fatma Amer, DOB 25 May 2006

PARKING



- Most new developments require off-street parking.
- Curb cut sizes and locations are regulated
- Off-street loading berths for commercial and manufacturing uses may be required.
- Developments of small sizes may be exempt from parking requirements
- Parking is required for most commercial and community facility uses in all commercial districts except those located in Lower/Mid-Manhattan and Downtown Brooklyn.

From "Zoning 101" John Lee & Fatma Amer, DOB 25 May 2006



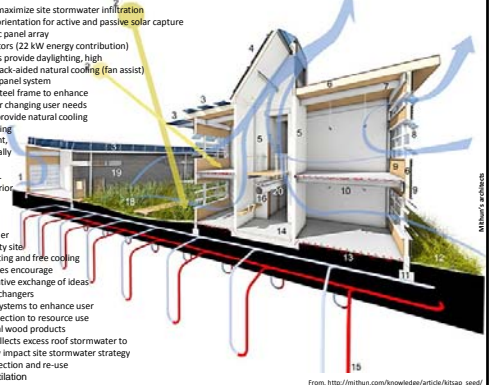
HIGH LINE 23 BY NEIL M DENARI ARCHITECTS

Images: NYU/ www.archdaily.com from Neil Denari Architects

Prepared by Alexander Apollon ES, Nelson & Nelson © 2012

Sustainability and building orientation

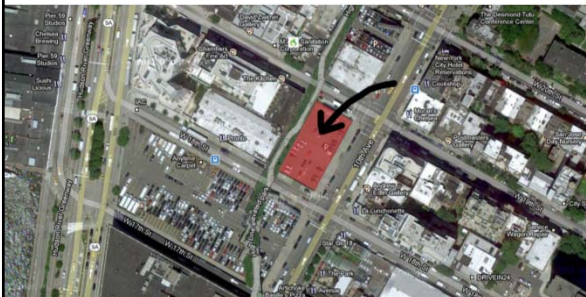
1. Porous concrete to maximize site stormwater infiltration
2. Optimized building orientation for active and passive solar capture
3. 143 kW photovoltaic panel array
4. Solar thermal collectors (22 kW energy contribution)
5. Masonry shear cores provide daylighting, high thermal mass and stack-aided natural cooling (fan assist)
6. Structural insulated panel system
7. Modular structural steel frame to enhance building flexibility for changing user needs
8. Operable windows provide natural cooling and daylight harvesting
9. High recycled content, low VOC and regionally produced materials
10. High efficiency L.E.D. and fluorescent interior and exterior lighting
11. High fly ash content structural concrete
12. Reclamation of former Naval dumping facility site
13. Radiant in-floor heating and free cooling
14. Social gathering nodes encourage interaction and creative exchange of ideas
15. Geothermal heat exchangers
16. Exposed building systems to enhance user awareness and connection to resource use
17. FSC certified regional wood products
18. Bioretention area collects excess roof stormwater to achieve 65/10/0 low impact site stormwater strategy
19. Site stormwater collection and re-use
20. Heat recovery ventilation



From: http://neiln.com/knowledge/articles/itsap_sed/

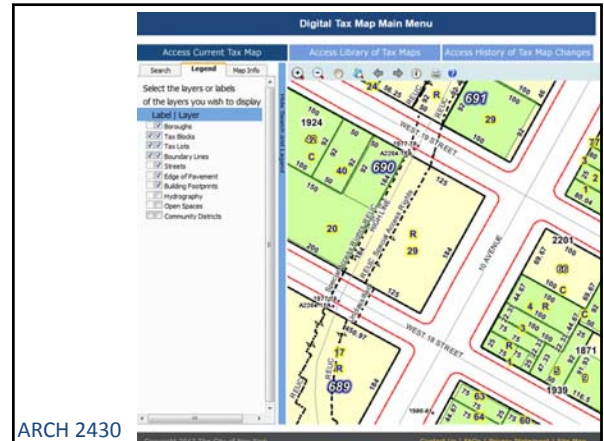
Location:

10th Ave. between 18th and 19th St.



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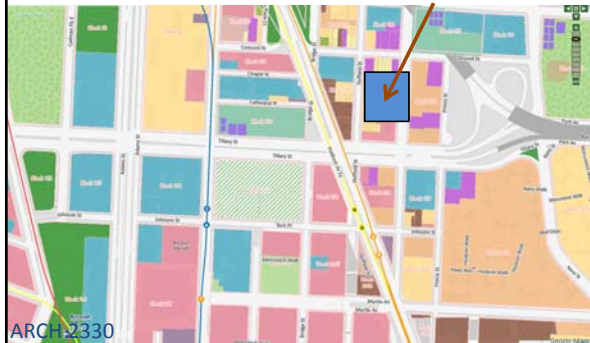
Google Maps



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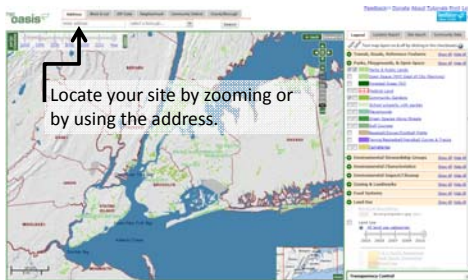
Course project and development process

Location: 285 Jay Street, Brooklyn
(between Tillary Street and Tech Place)



Site boundaries

Tax lots provide a good source of site boundaries. You can use the OASIS website to access to maps and contextual information.



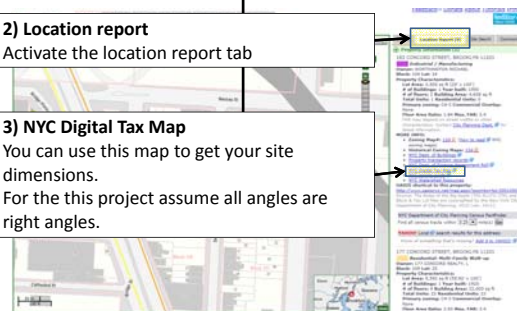
<http://www.oasisnyc.net>

Site boundaries

1) Find and select the lots used in the project to access more information on them.

2) **Location report**
Activate the location report tab

3) **NYC Digital Tax Map**
You can use this map to get your site dimensions. For this project assume all angles are right angles.



<http://www.oasisnyc.net>



Class assignment

Your team as a whole should evaluate your zoning documentation. Double check its accuracy and ensure that you have all the required information to create detailed zoning sheets. You should create a zoning file in a Word document that contains notes and information on your zoning requirements and largest possible building envelope. This documentation should quote the sections of the zoning texts in which you get the data from.

Be sure to use as reference the New York City zoning diagram [<http://www.nyc.gov/html/dob/downloads/pdf/zd1.pdf>] and the zoning diagram guide [http://www.nyc.gov/html/dob/downloads/pdf/zd1_guide.pdf].

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Class assignment

Each student will need to develop their own maximum building envelope area. This diagram will show how far the building is allowed to extend and rise according to the sites zoning requirements. This massing diagram should be completed as a massing family and Revit

Each student will develop a massing diagram showing the extents of the building as designed. The student team member each need interpret the project files to develop there on version of the massing of their project. Once these design massing's diagrams are completed they can be compared to the maximum allowable envelope.

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Class assignment

Each team member must then propose at least two different massing design options. These options must be based on the project design and must fit within the zoning boundary and maximize the usable FAR.

Please note: that next class developing parametric massing models to ensure a variety of massing options that maximize the buildings size in relationship to its FAR and massing.

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Zoning Analysis

Your client is a University and they are requesting a building with a footprint of extending out to the property lines.

Keep your zoning calculations you will need them for your project documentation in a Word document.

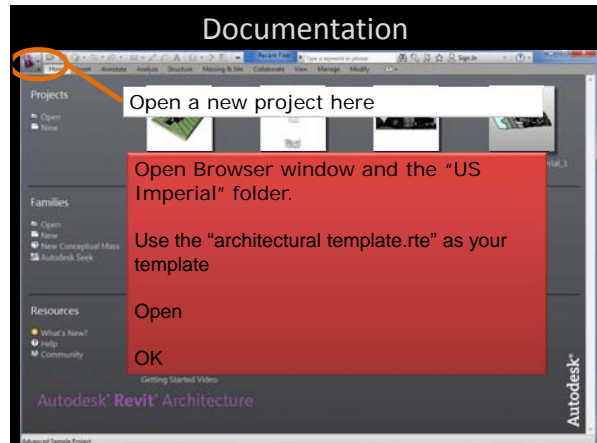
You will also use your results to your site plans.



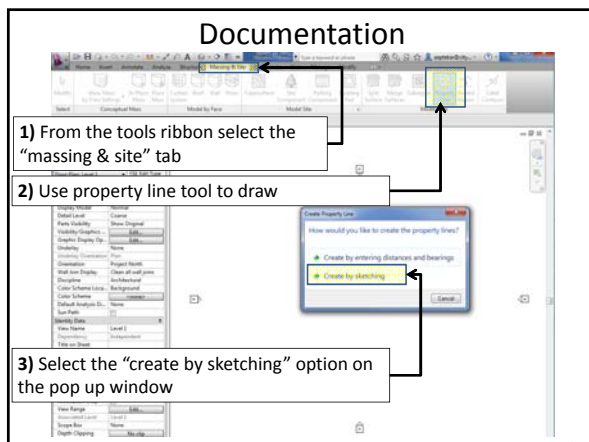
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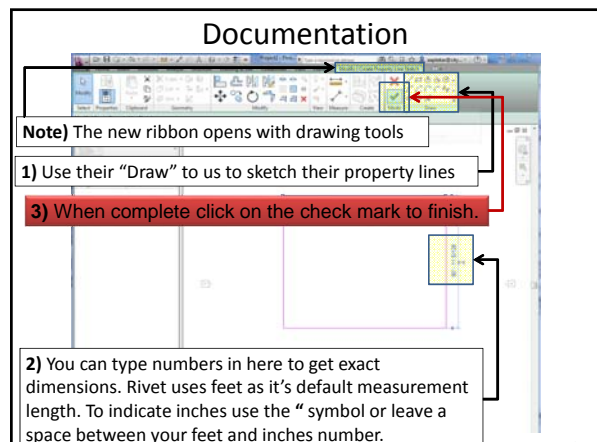
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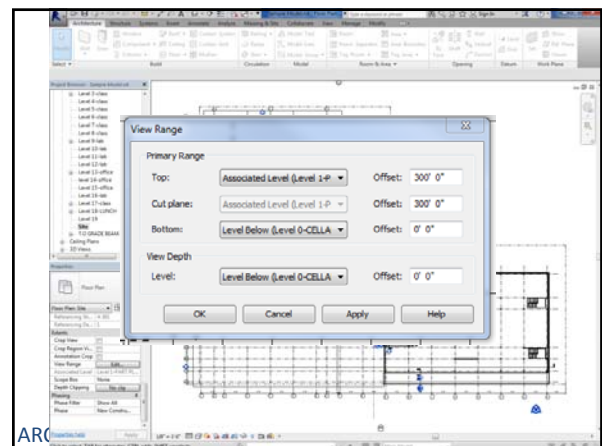
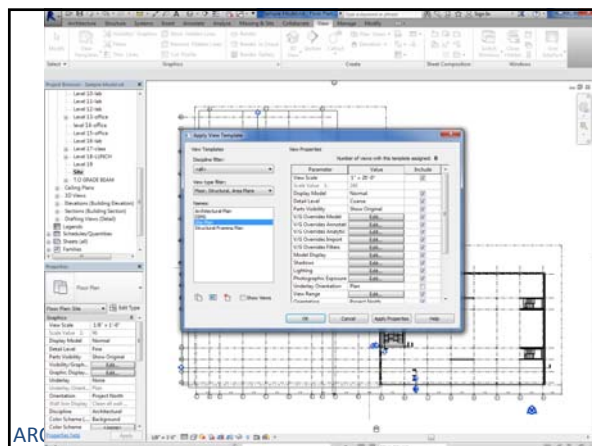
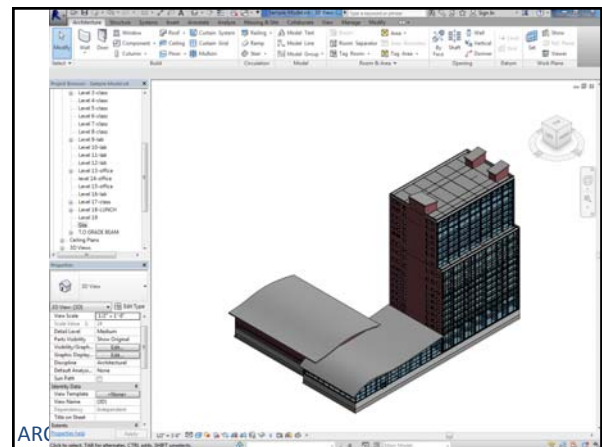
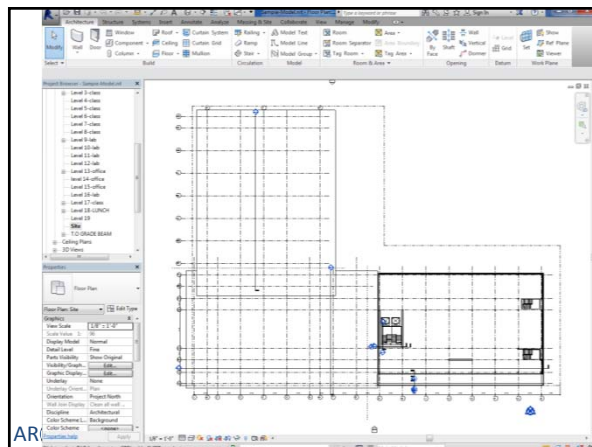
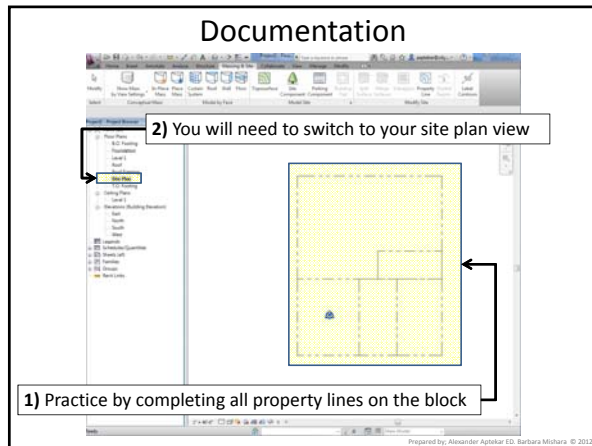


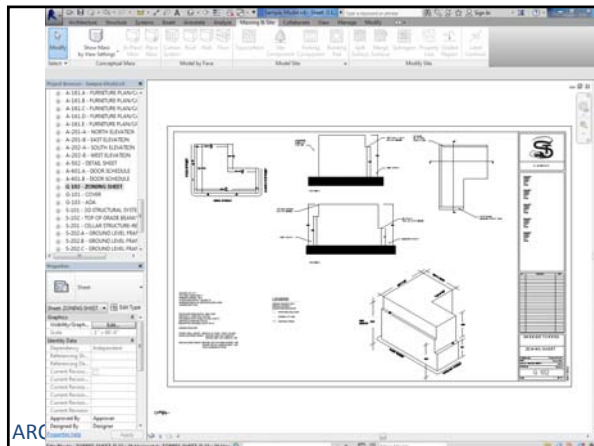
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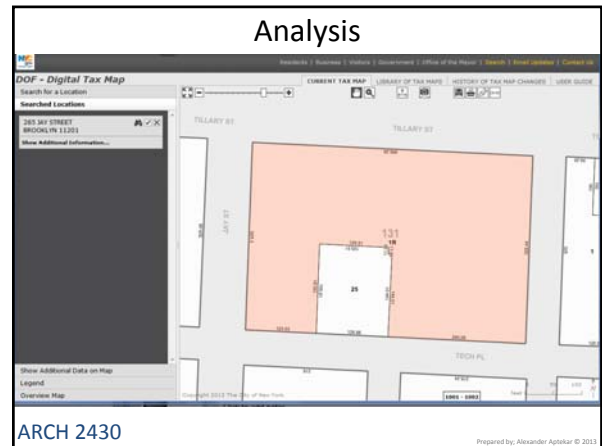
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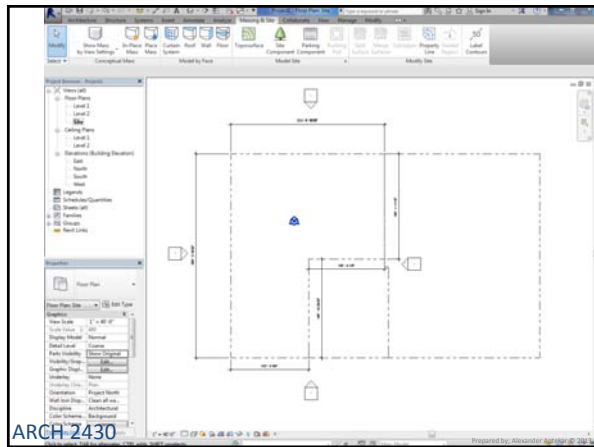




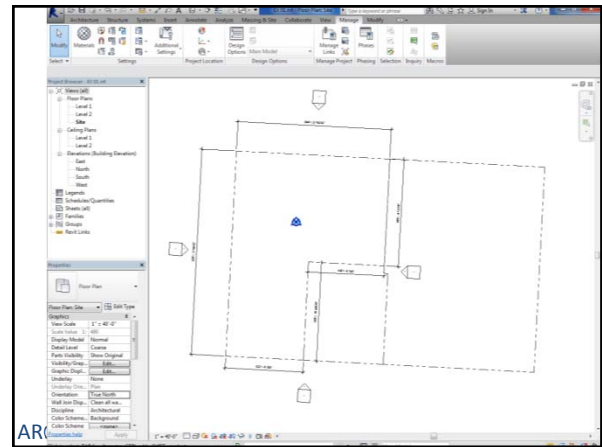
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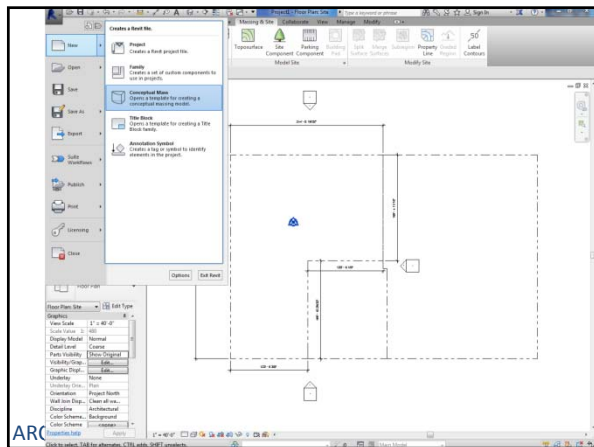
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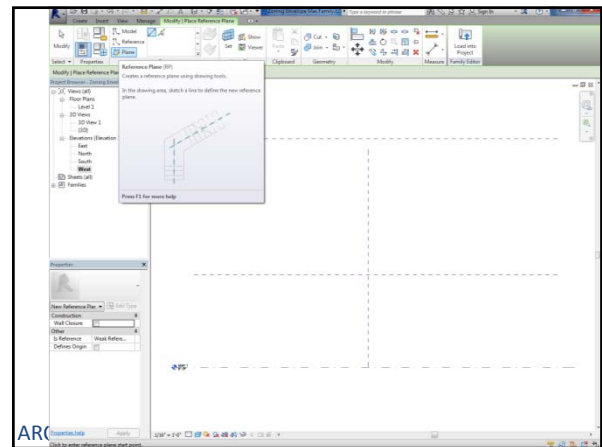
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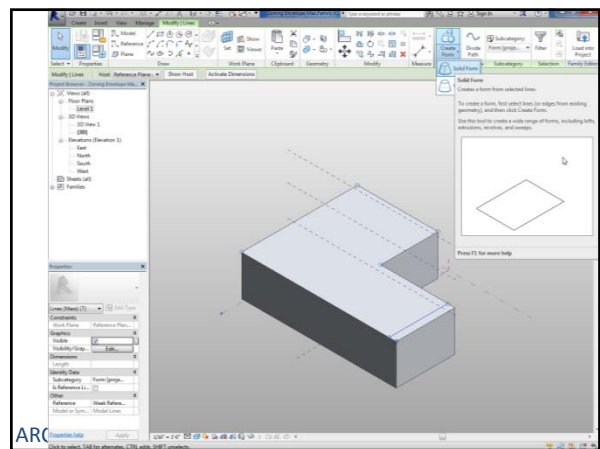
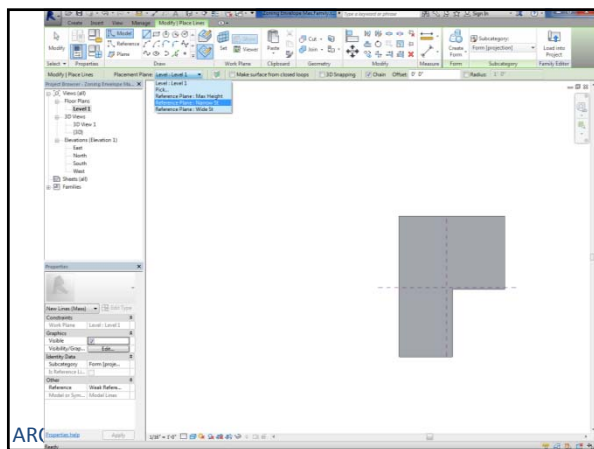
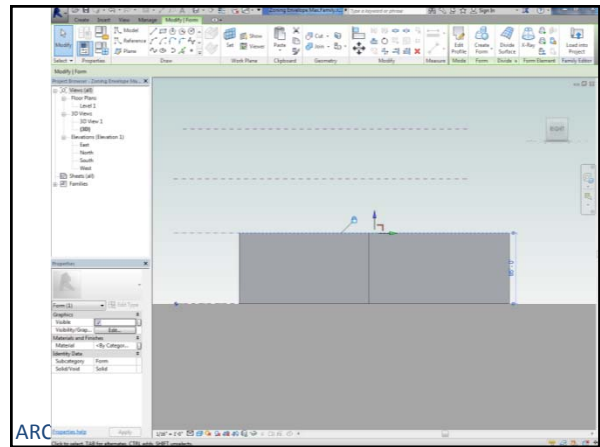
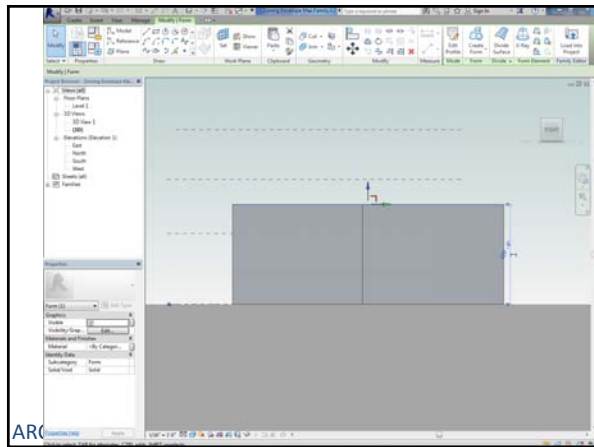
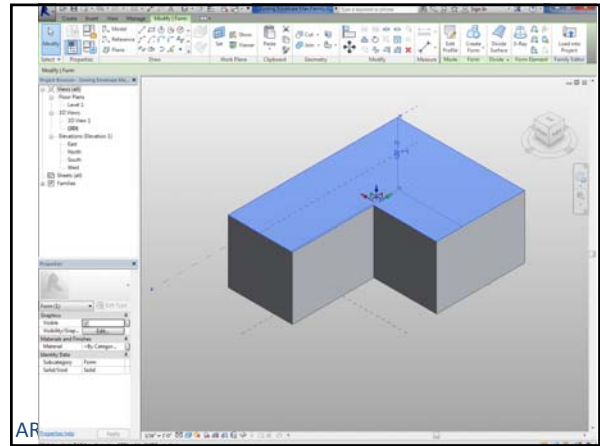
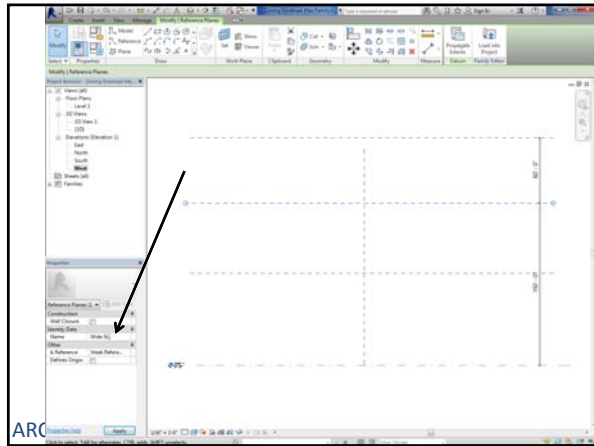
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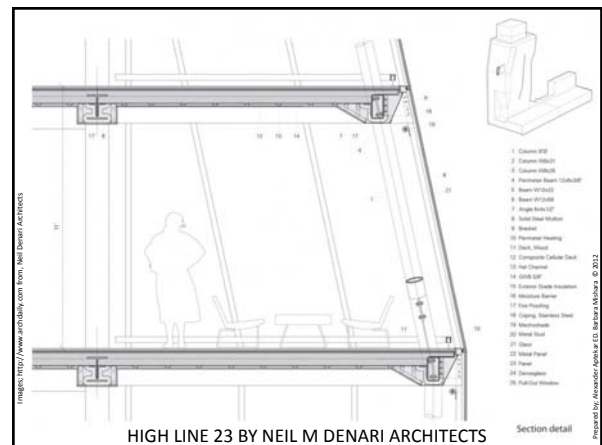
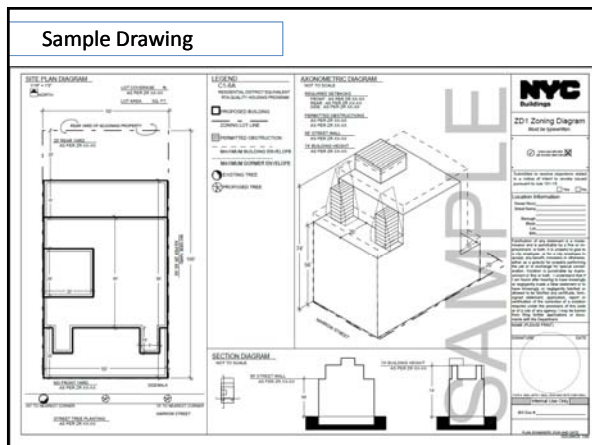
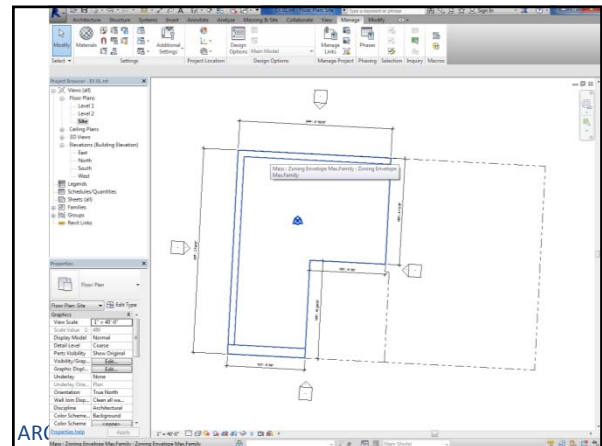
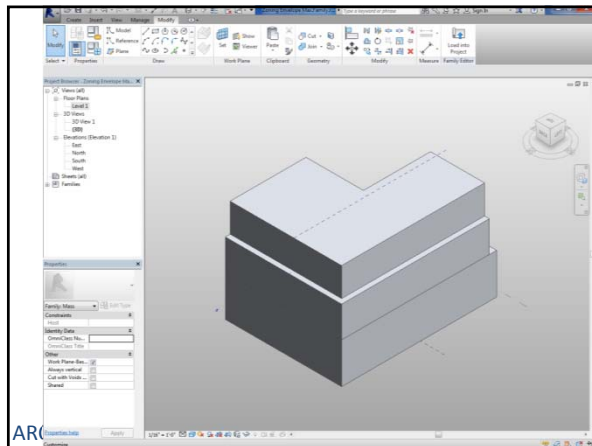


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Be sure to bring into next class:

1. A rough draft of your concrete research to date
2. A minimum of two Revit massing families that show different massing solutions. They should be based on:
 - i. Your selected team project interior plans
 - ii. In design that creates three component building
 - iii. With areas that roughly match the zoning thFAR

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