

# University of Alaska Anchorage New School of Engineering Building

2011 Spring CE438 Senior Project



## Staff

**Principle Engineer:** A. Okaza, Ph. D.

**Senior Engineer/Architect:** Thomas Faulkenberry

**Design Teams:**

### Architectural

Benton, Heather

Kidwell, Rachel (Lead)

King, Daniel

Roche, Corey

### Structural

Bare, Charity

Benton, Heather

Kidwell, Rachel

Roche, Corey (Lead)

### Environmental/Permitting/Right of Way

Bare, Charity

Coe, Tim (Lead)

Dilley, Jacob

Ellis, Gary (Lead)

Njfe, Isatou (Lead)

### Cost Estimate

Coe, Tim

Ellis, Gary (Lead)

Njfe, Isatou

### Drainage and Erosion

Dilly, Jacob (Lead)

Ellis, Gary

### Mechanical

Dilley, Jacob (Lead)

### Electrical

King, Daniel (Lead)

### Drainage and Erosion

D.1 Existing Drainage Conditions

Plan/D.2 BMP Placement

D.3 Final Drainage Plan

### Architectural

A.1 Site Plan

A.2 First Floor Interior Layout

A.3 Second Floor Interior Layout

A.4 Third Floor Interior Layout

### Structural

S.1.1 Second Story Floor Plan

S.1.2 Third Story Floor Plan

S.1.3 Roof Floor Plan

S.2 Floor/Slab Detailing

S.3.1 Frame Erection North/South

S.3.2 Frame Erection East/West

S.3.3 Brood Frame Section Types

### Mechanical

M.1 Water and Sewer Connection

M.2 Gas Service Connection

## Drawing Index

Cover Sheet  
Spring 2011

DRAWN BY: C.R  
DATE: 3/17/2011

FILE NAME: CE433.dwg  
SCALE:

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SHEET

Cov. 1

OF 1



SHEET 1 OF A.1

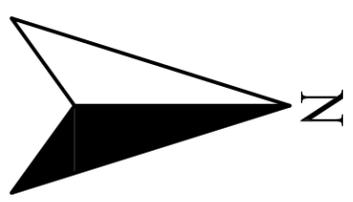
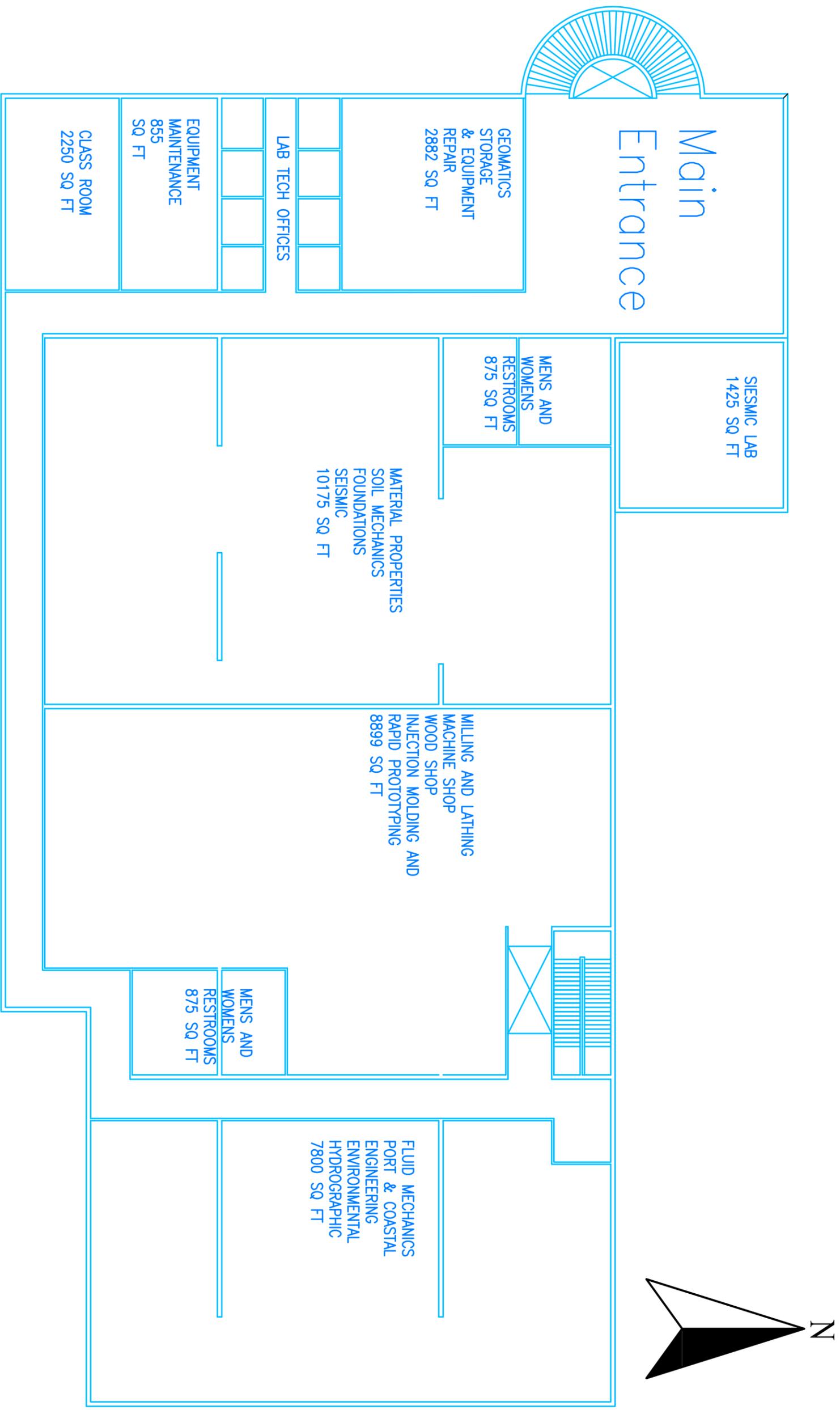
**Architectural Site Plan**  
**Spring 2011**

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A. 1st Floor Interior Layout

SHEET  
1  
OF  
A.2

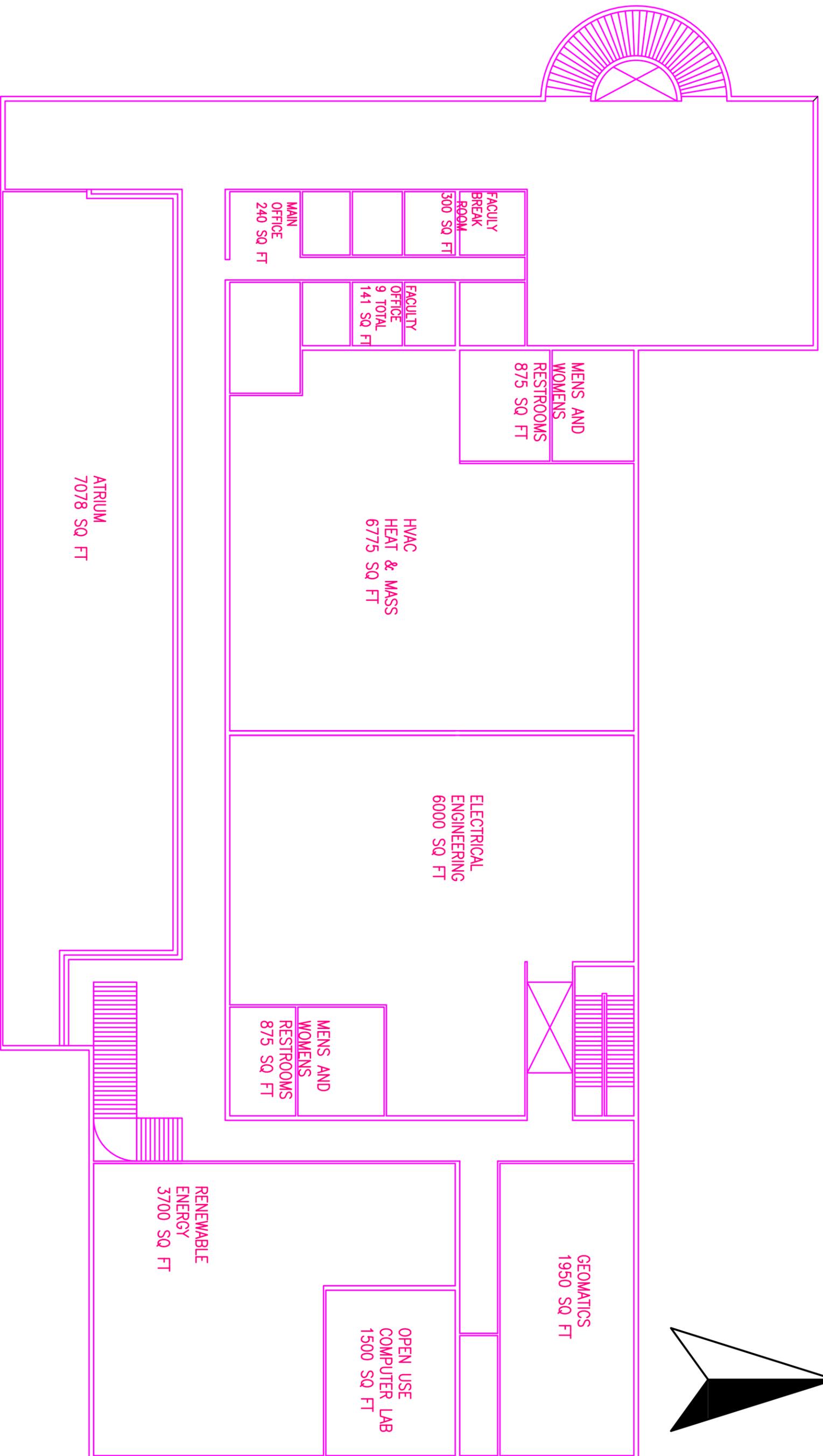
**First Floor Interior Layout  
Spring 2011**

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DATE: 3/17/2011

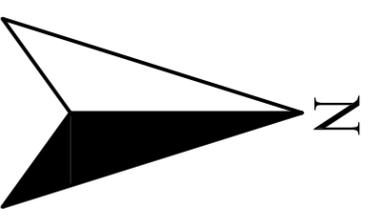
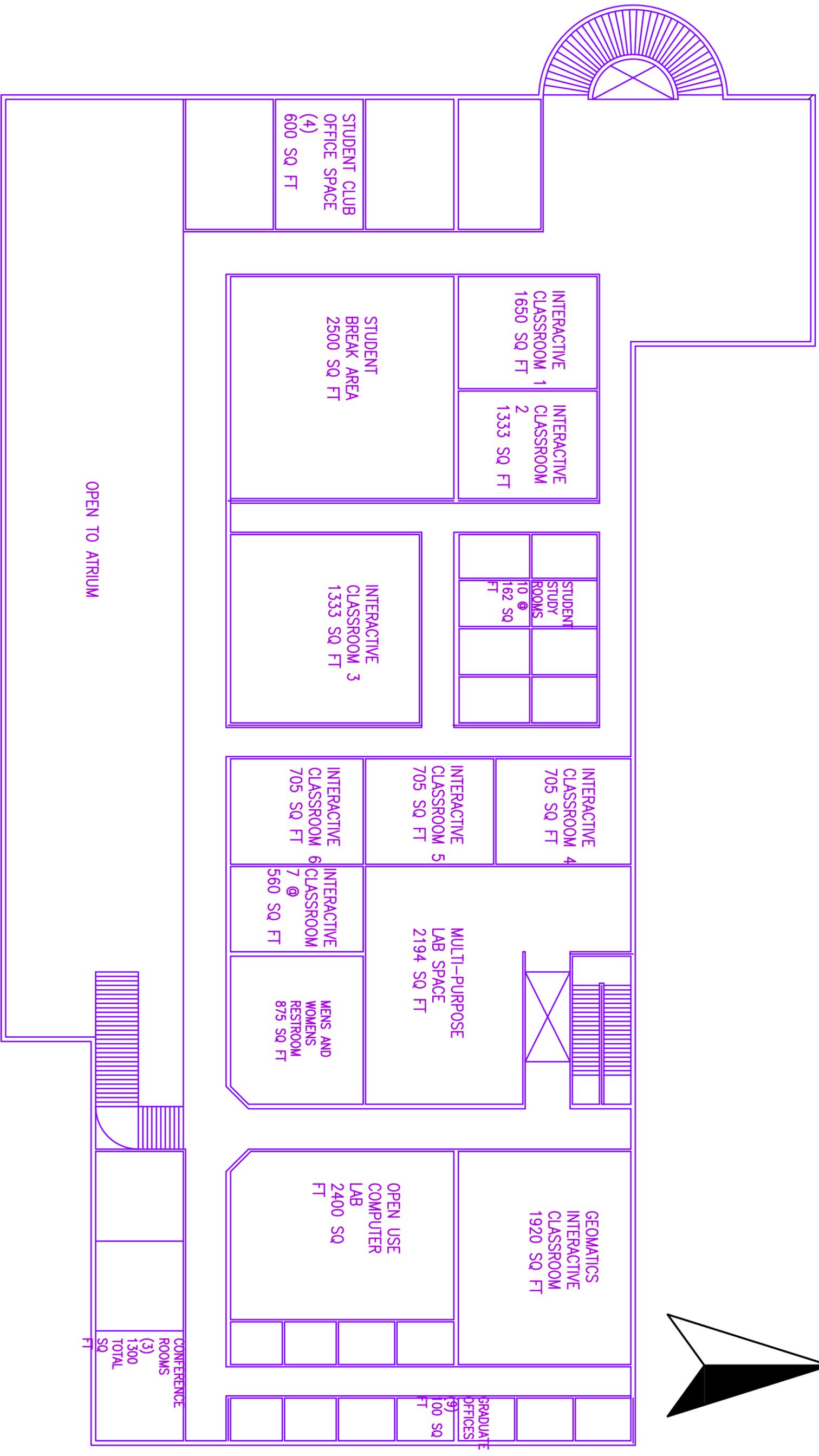
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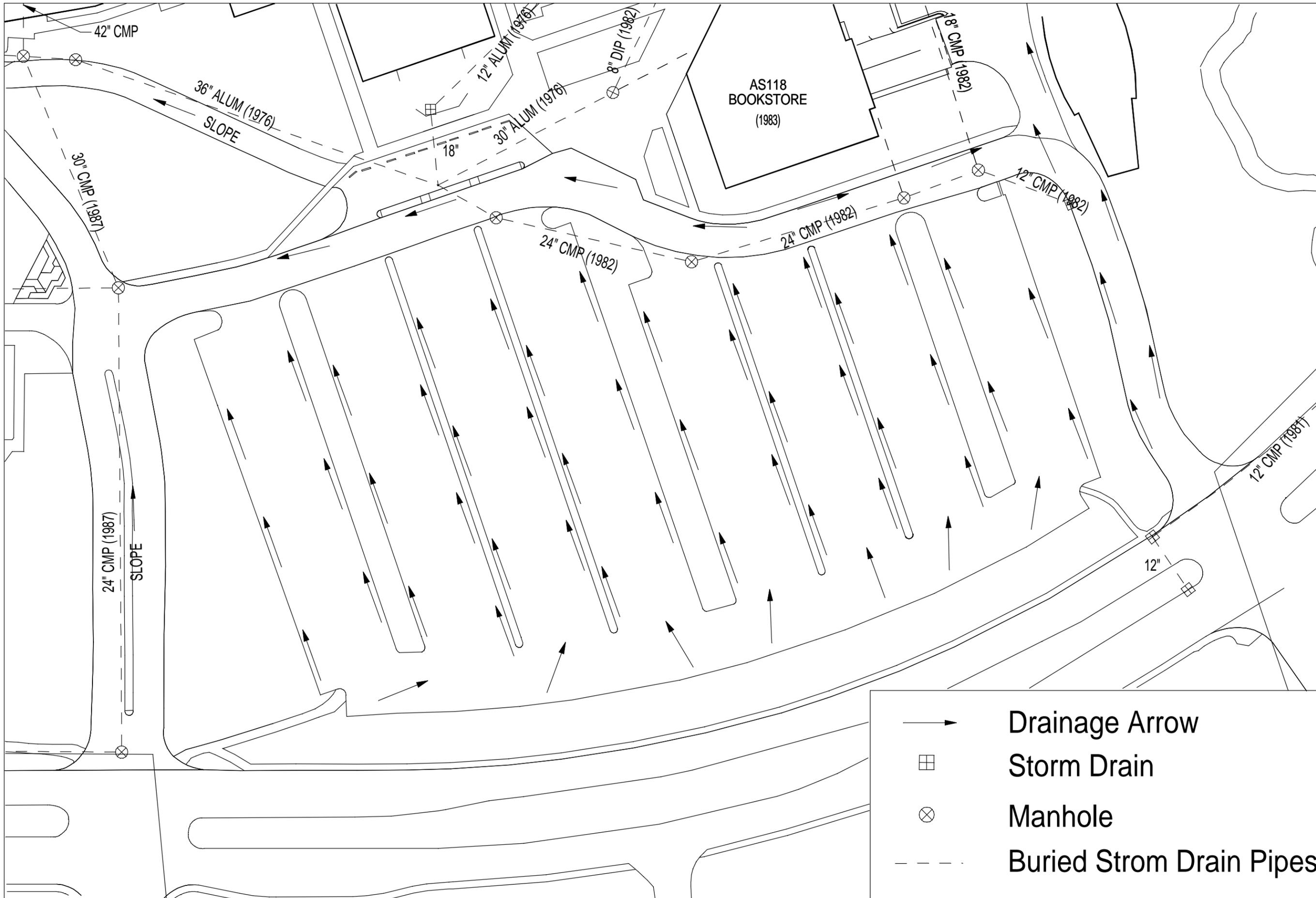
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A. 2nd Floor Interior Layout





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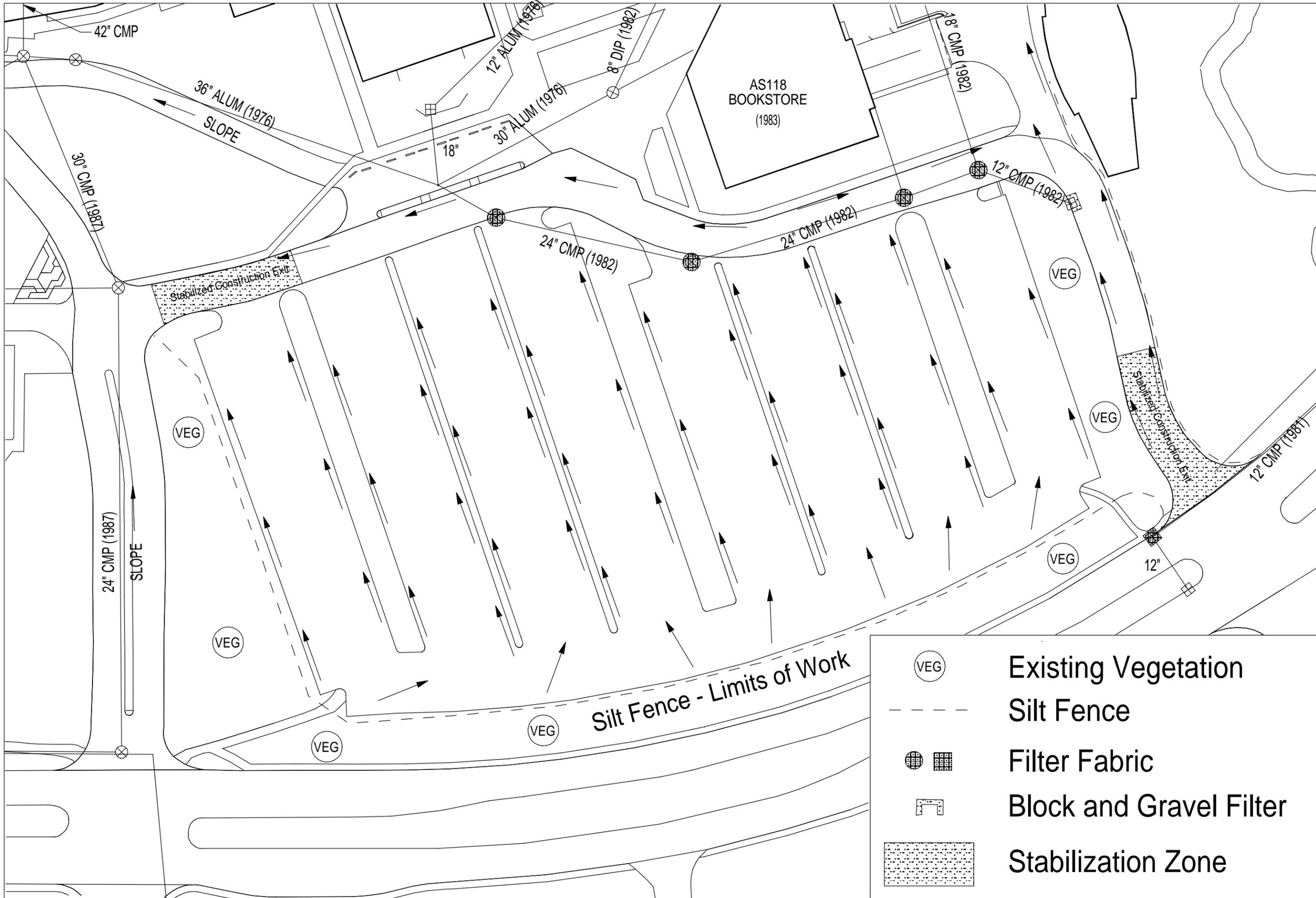
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Existing Drainage Conditions

DRAWN BY: J.D.	FILE NAME:	REVISION:
DATE: 4/8/11	SCALE: NTS	

SHEET  
 1  
 OF  
 D.1

	Drainage Arrow
	Storm Drain
	Manhole
	Buried Storm Drain Pipes



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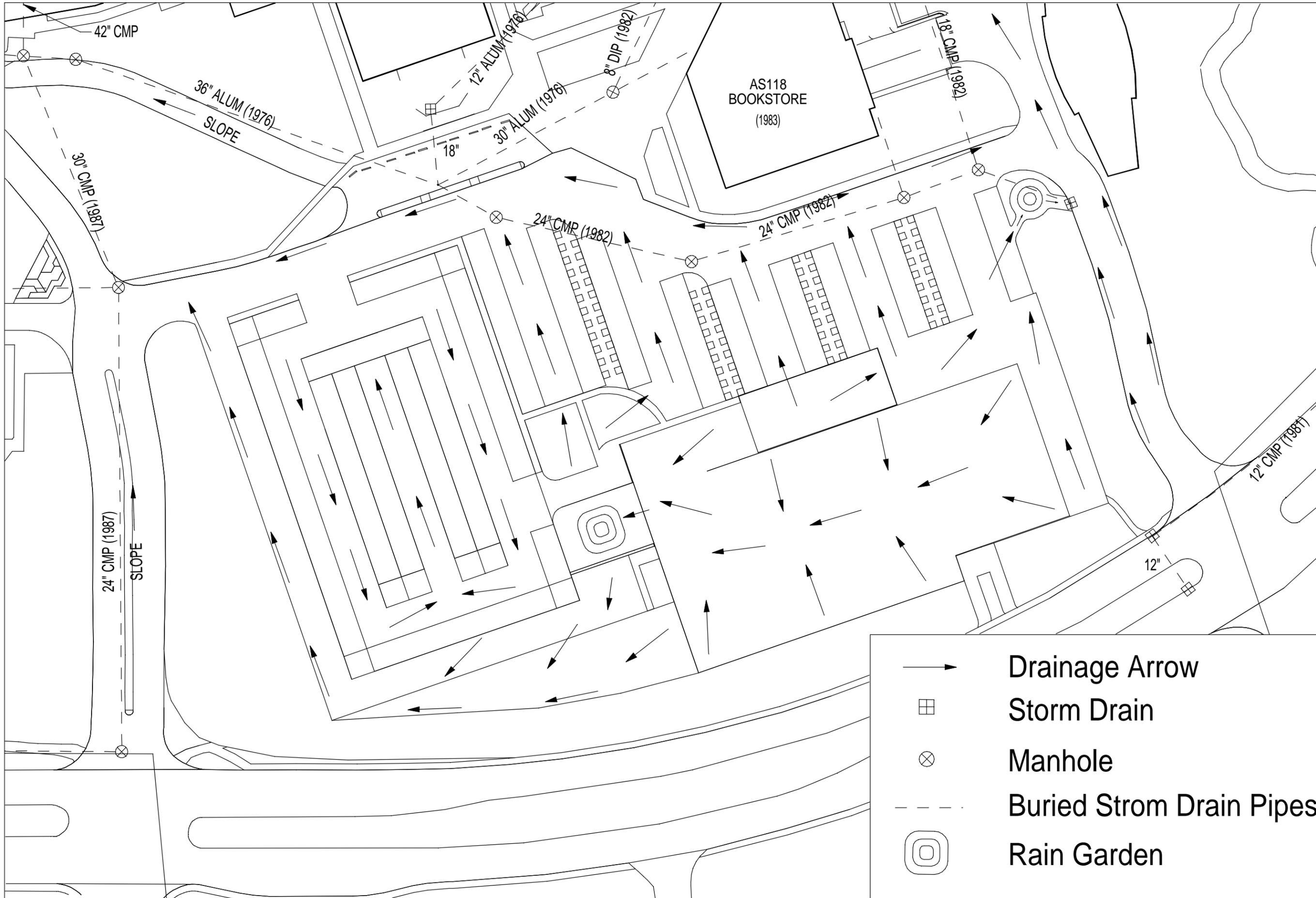
CE 438  
 Design of  
 Civil Engineering  
 Systems

**BMP Placement**

REVISION: \_\_\_\_\_  
 FILE NAME: \_\_\_\_\_  
 SCALE: NTS  
 DRAWN BY: J.D.  
 DATE: 4/8/11

SHEET  
 1  
 OF  
 D.2

-  Existing Vegetation
-  Silt Fence
-  Filter Fabric
-  Block and Gravel Filter
-  Stabilization Zone



	Drainage Arrow
	Storm Drain
	Manhole
	Buried Storm Drain Pipes
	Rain Garden

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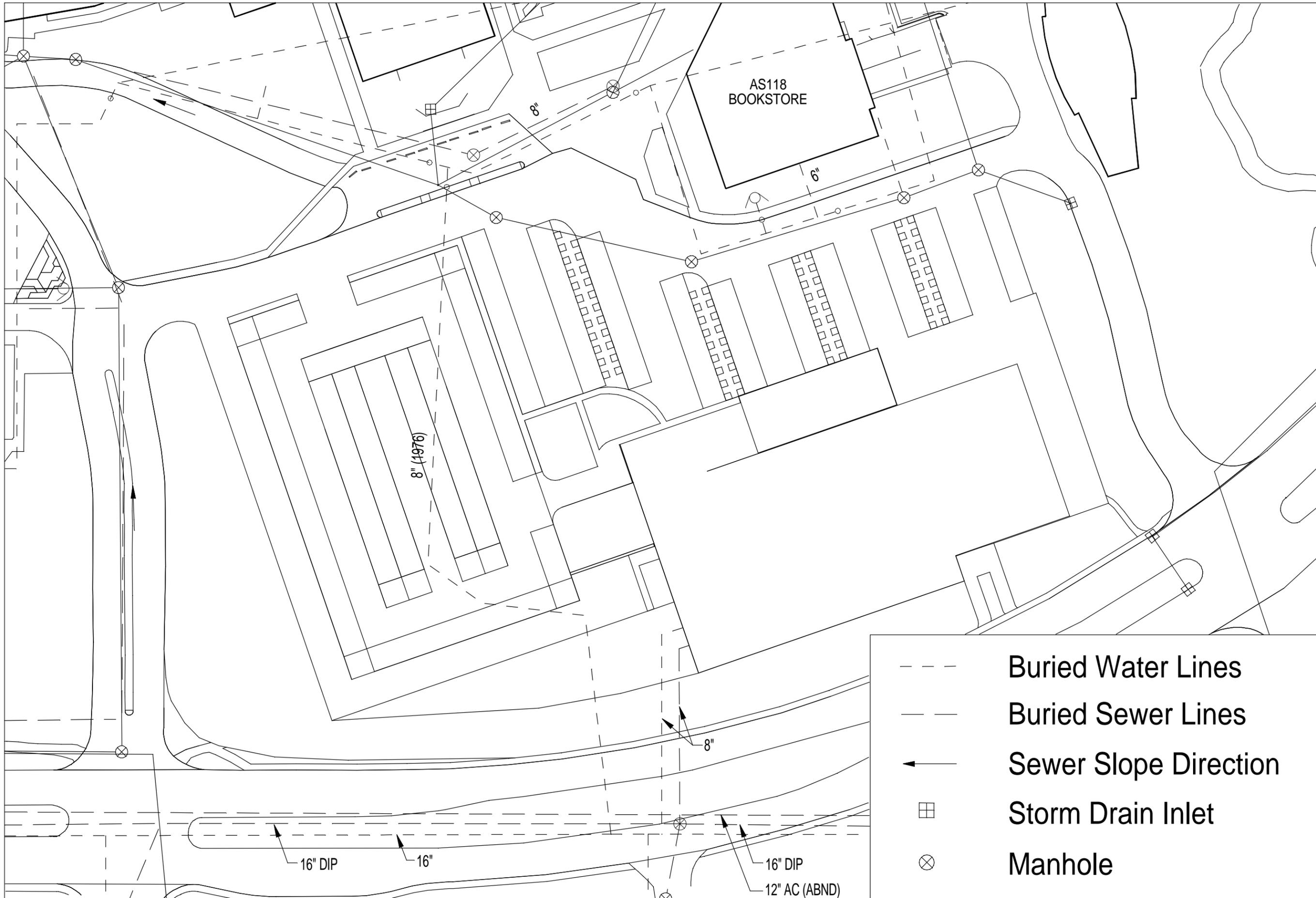
Final Drainage Plan

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 DATE: 4/8/11

FILE NAME: \_\_\_\_\_  
 SCALE: NTS

REVISION: \_\_\_\_\_

SHEET  
 1  
 OF  
 D.3



---	Buried Water Lines
- - -	Buried Sewer Lines
←	Sewer Slope Direction
⊞	Storm Drain Inlet
⊗	Manhole

**Water and Sewer Service  
Connection Plan**

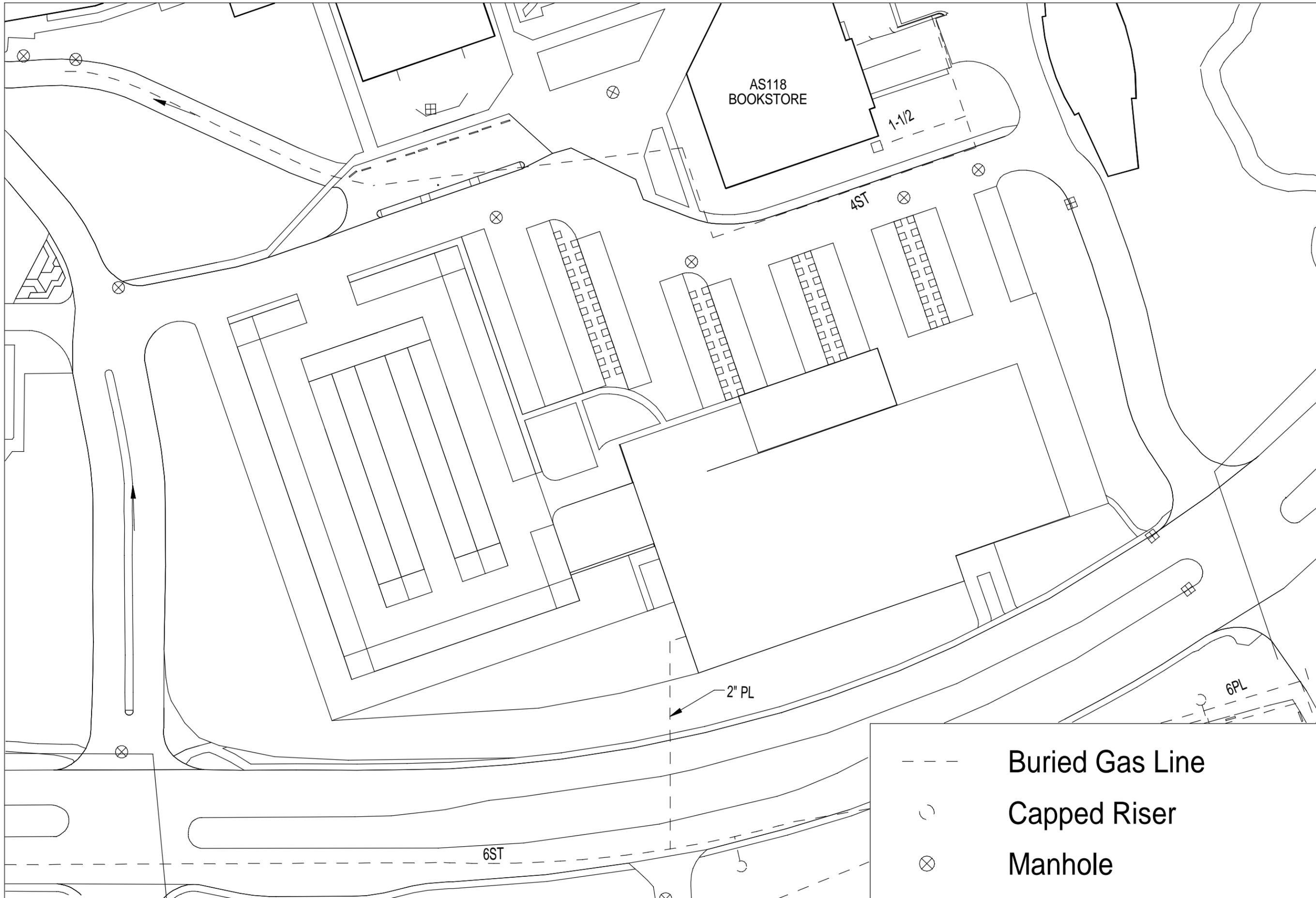
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Systems**

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M.1

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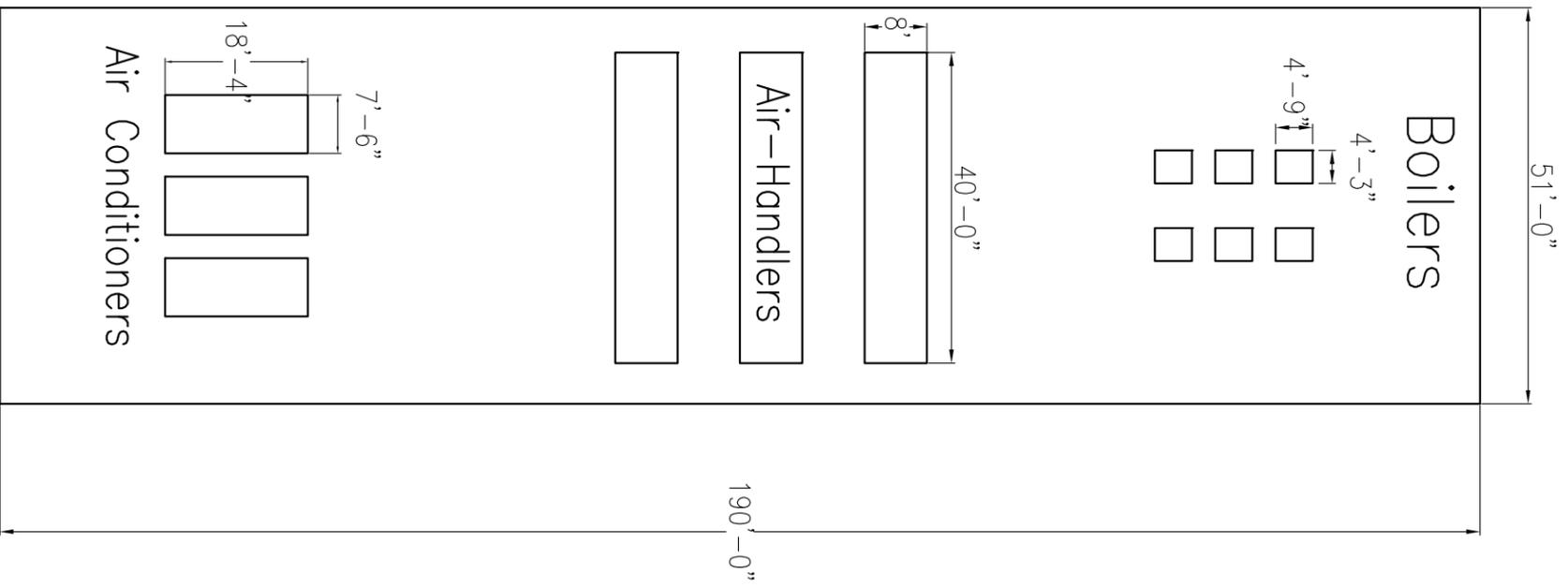
CE 438  
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Systems

**Gas Service Line Connection Plan**

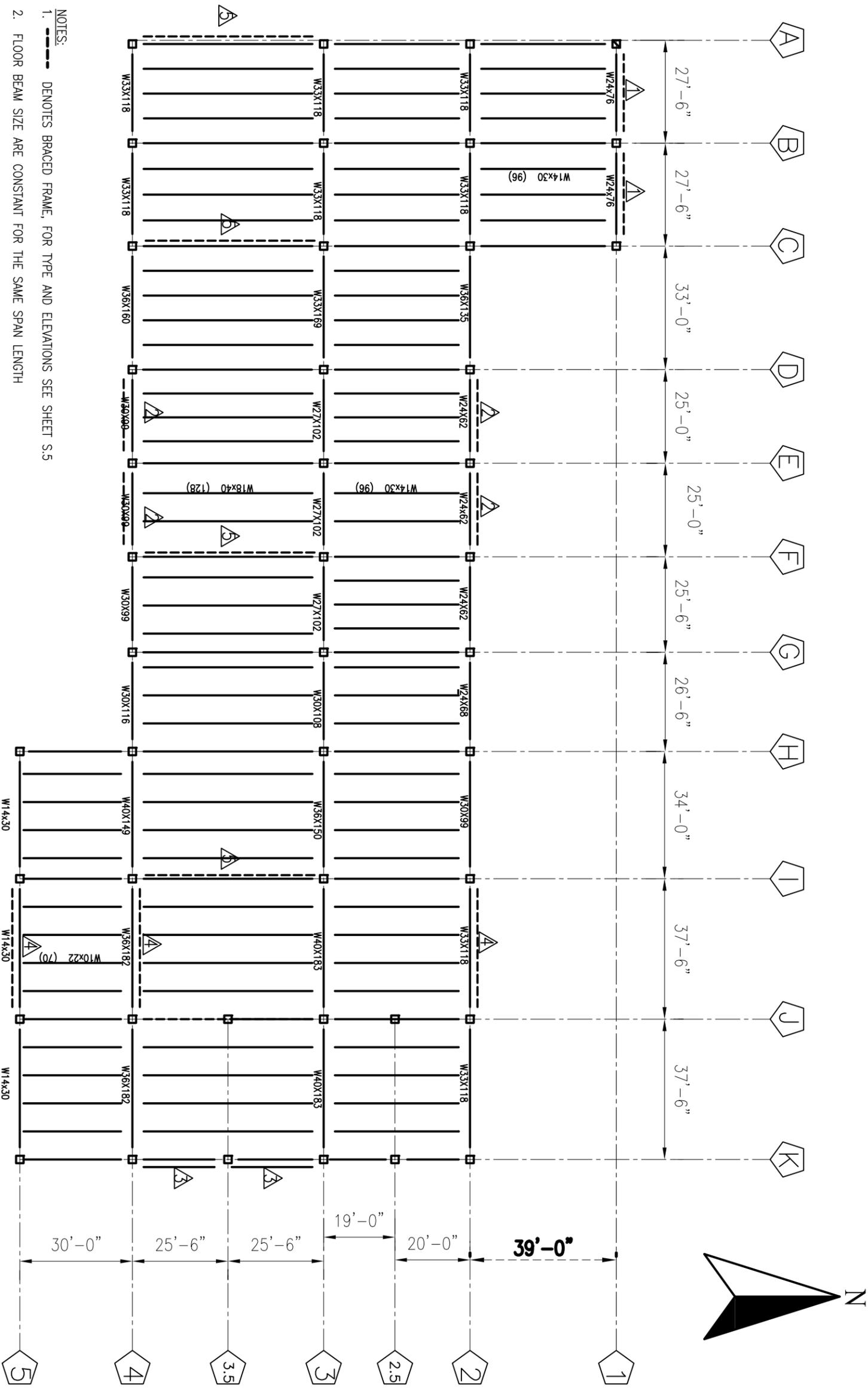
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SCALE: INTS DATE: 4/8/11

SHEET  
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M.2

---	Buried Gas Line
○	Capped Riser
⊗	Manhole

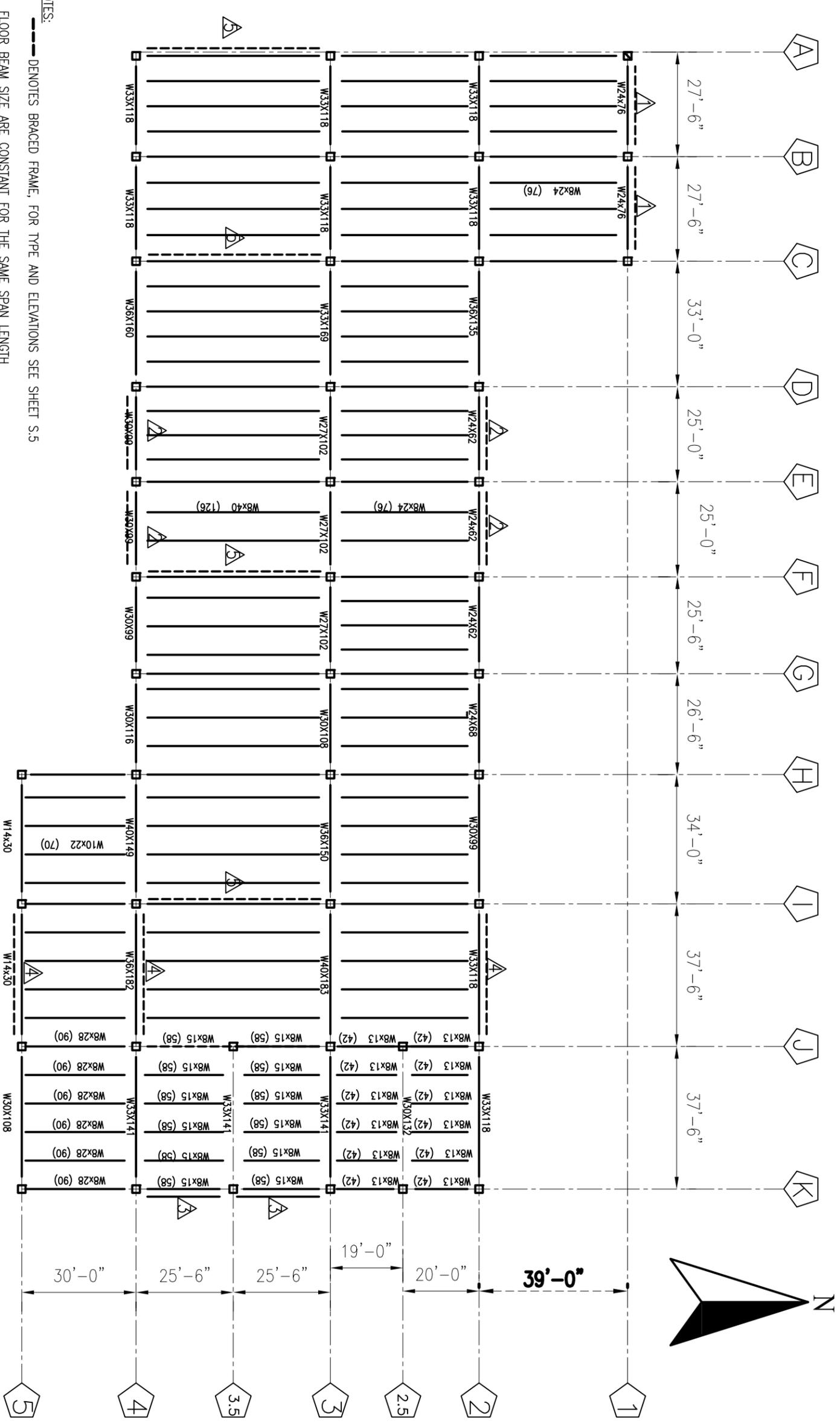






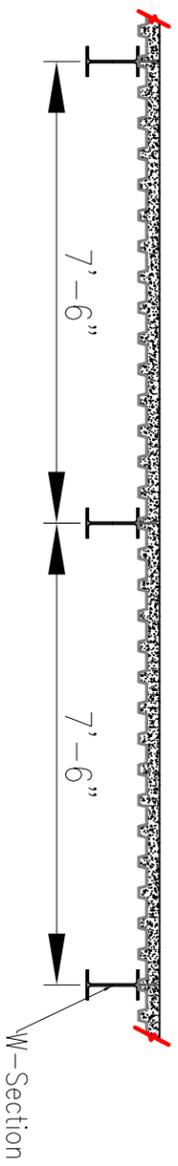
- NOTES:
1. DENOTES BRACED FRAME, FOR TYPE AND ELEVATIONS SEE SHEET S.5
  2. FLOOR BEAM SIZE ARE CONSTANT FOR THE SAME SPAN LENGTH
  3. (#) INDICATION NUMBER OF WELDED  $\frac{1}{2}$ " X 3  $\frac{3}{8}$ " SHEAR STUDS SPACED EQUALLY ALONG LENGTH OF FLOOR BEAMS AN GIRDERS
  4. ALL COLUMNS ARE HSS 14"x14"x $\frac{1}{2}$ " WITH CONSTANT CROSS SECTION THROUGHOUT ELEVATION
  5. INDICATION OF BRACED FRAME TYPE, SEE SHEET S.5

SHEET <b>1</b> OF <b>S.1.2</b>	<b>Third Story Floor Plan Spring 2011</b>		<b>CE 438 Design of Civil Engineering Systems</b>	<i>Seawolf Civil Engineering</i>
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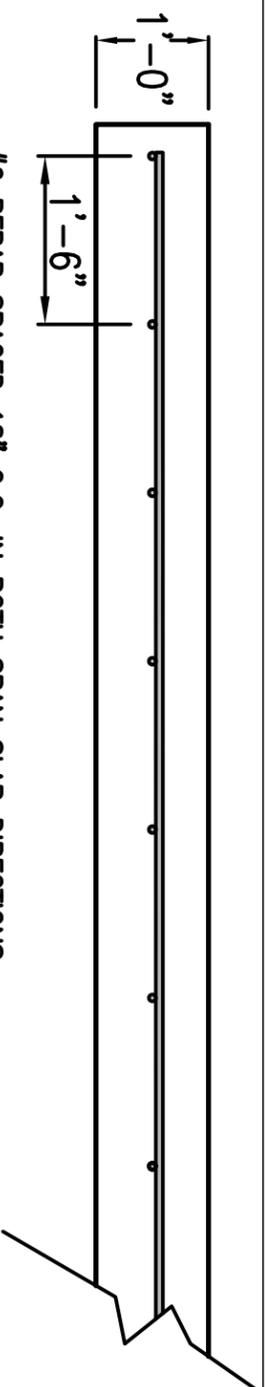
- NOTES:
1. --- DENOTES BRACED FRAME; FOR TYPE AND ELEVATIONS SEE SHEET S.5
  2. FLOOR BEAM SIZE ARE CONSTANT FOR THE SAME SPAN LENGTH
  3. (#) INDICATION NUMBER OF WELDED  $\frac{1}{2}$ " x  $3\frac{1}{2}$ " SHEAR STUDS SPACED EQUALLY ALONG LENGTH OF FLOOR BEAMS AN GIRDERS
  4. ALL COLUMNS ARE HSS 14"x14"x $\frac{1}{2}$ " WITH CONSTANT CROSS SECTION THROUGHOUT ELEVATION
  5. INDICATION OF BRACED FRAME TYPE, SEE SHEET S.5
  6. DENOTES FOOTPRINT OF PENTHOUSE MECHANICAL ROOM, SEE SHEET M.3

SHEET <b>1</b> OF <b>S.1.3</b>	<b>Roof Floor Plan</b> <b>Spring 2011</b>		<b>CE 438</b> <b>Design of</b> <b>Civil Engineering</b> <b>Systems</b>	<i>Seawolf Civil Engineering</i> <b>UAA CIVIL ENGINEERING</b> 3211 PROVIDENCE DRIVE ANCHORAGE, ALASKA, 99508 (907) 786-1900
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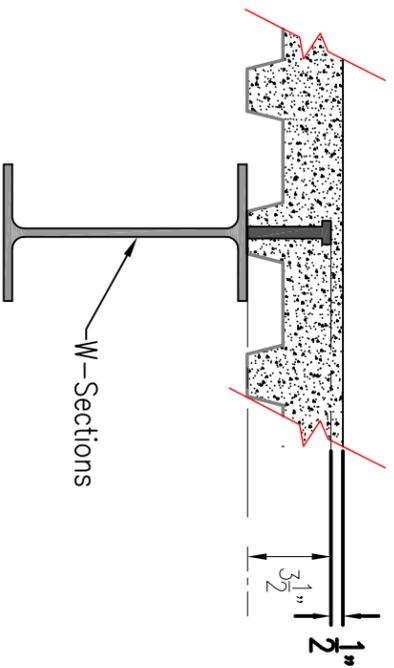
(A)  
S.2

Typical Composite Slab Section View  
Drawing Not To Scale



(B)  
S.2

Reinforced Concrete Slab on grade (1st Floor)  
Drawing Not To Scale



(B)  
S.2

Typical Composite beam Section Detail  
Drawing Not To Scale

**NOTES:**

1.  $f'_c = 3000$  PSI FOR ALL CONCRETE, NORMAL WEIGHT
2. SHEAR STUD  $f_y = 65$  ksi
3. STEEL DECK IS VERCO MANUFACTURING PLB 20 GAUGE, 4" Total Depth
4. SHEAR STUDS ARE TO BE WELDED THROUGH DECKING INTO FLOOR BEAMS AND GIRDERS
5. DECKING SECTIONS CONNECTED USING VERCO PUNCHLOK SYSTEM

**A. Slab Specifications and Floor Details**

**Slab Specification and Floor Details  
Spring 2011**

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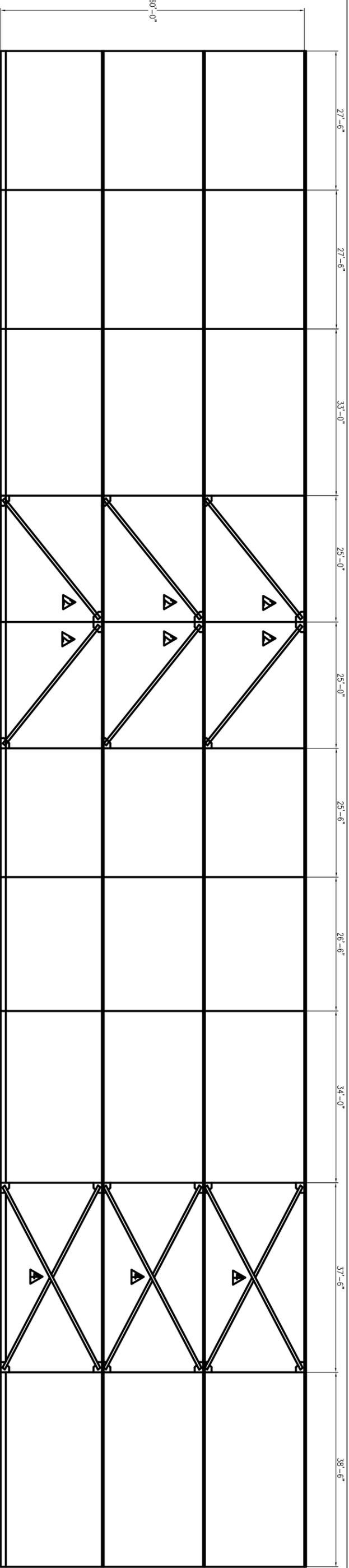
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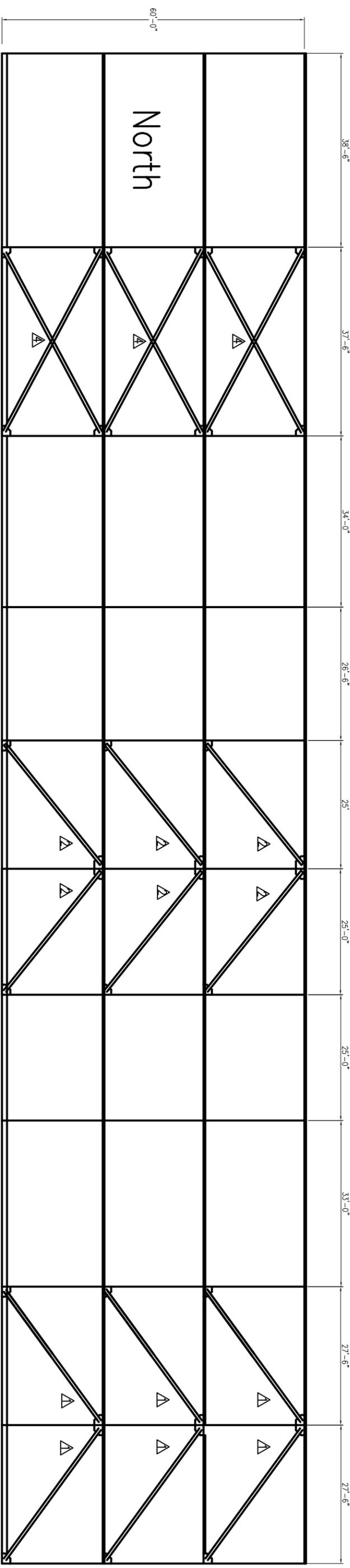
SHEET

1

OF  
S.2



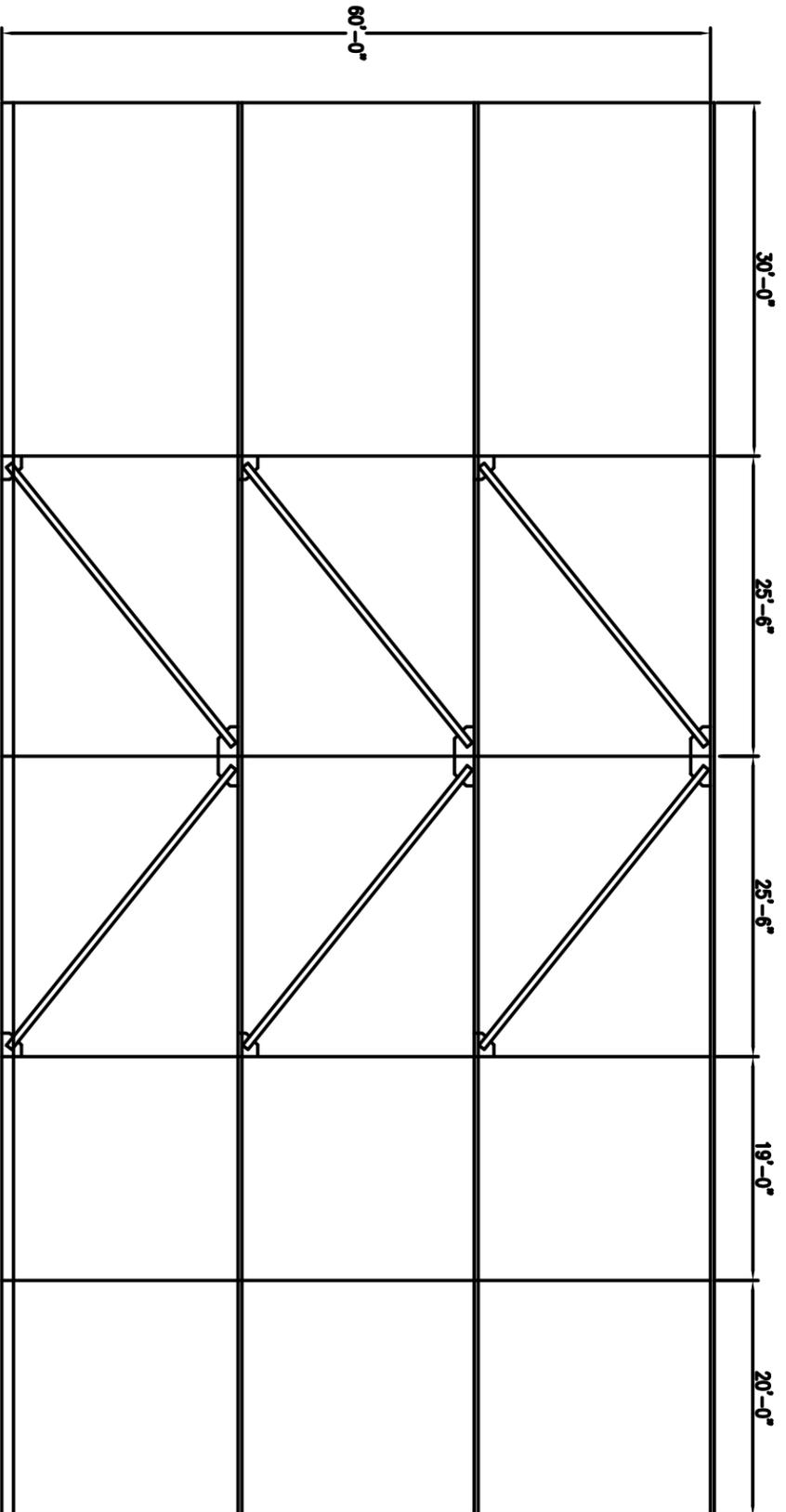
**South Face Elevation**  
DRAWING NOT TO SCALE



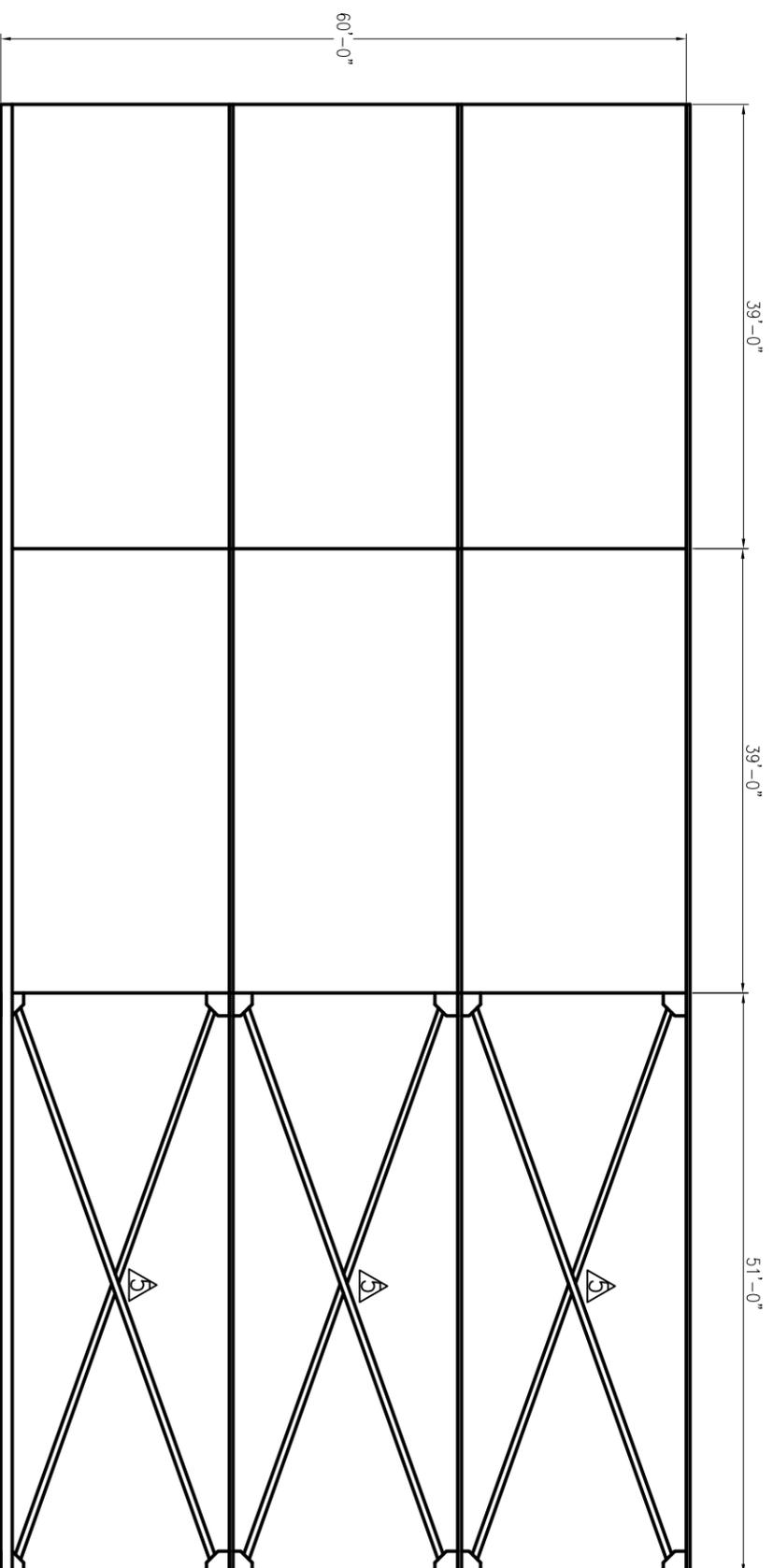
**North Face Elevation**  
DRAWING NOT TO SCALE

- NOTES:**
1. ALL COLUMNS ARE HSS14"x14"x $\frac{1}{2}$ "
  2. ALL BRACING MEMBERS ARE HSS7"x7"x $\frac{1}{8}$ "
  3. GUSSET GEOMETRY AND SIZING NOT DETERMINED

SHEET <b>1</b>	<h2 style="color: magenta;">North - South Face Frame Elevations</h2> <h3 style="color: magenta;">Spring 2011</h3>	<b>CE 438</b> Design of <b>Civil Engineering</b>	<i>Seawolf Civil Engineering</i> <b>UAA CIVIL ENGINEERING</b> <small>3211 PROVIDENCE DRIVE          ANCHORAGE, ALASKA, 99508          (907) 786-1900</small>
OF <h2 style="color: green;">S.3.1</h2>	DRAWN BY: <u>Corey Roche</u> DATE: <u>3/17/2011</u>	FILE NAME: <u>CE433.dwg</u> SCALE: _____	



- NOTES:
1. ALL COLUMNS ARE HSS14"x14"x4"
  2. ALL BRACING MEMBERS ARE HSS7"x7"x4"
  3. GUSSET GEOMETRY AND SIZING NOT DETERMINED

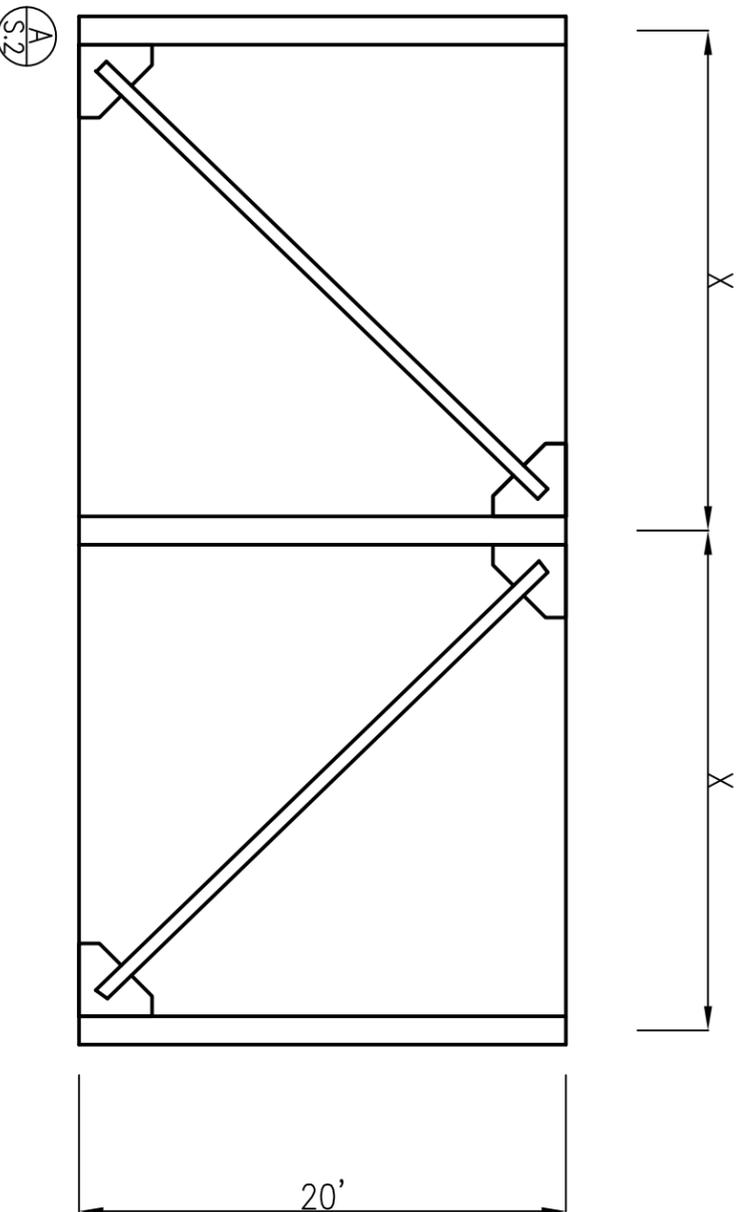


**S.3.2**  
South Face Elevation  
DRAWING NOT TO SCALE

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<b>East-West Face Frame Elevations Spring 2011</b>	
DRAWN BY: <u>Corey Roche</u> DATE: <u>3/17/2011</u>	FILE NAME: <u>CE433.dwg</u> SCALE: _____

SHEET <b>1</b>	OF <b>S.3.2</b>
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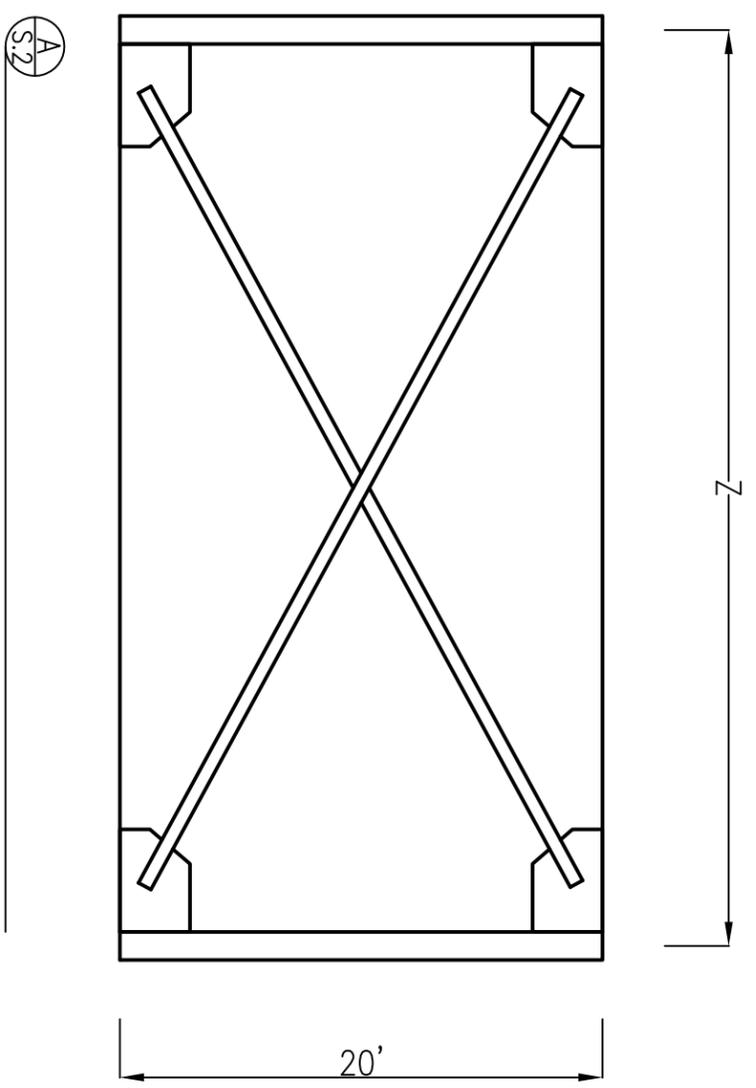


FOR BRACED FRAME TYPE  X = 27' 6"

FOR BRACED FRAME TYPE  X = 25'

FOR BRACED FRAME TYPE  X = 26' 6"

- NOTES:**
1. ALL BRACE MEMBERS ARE STEEL HSS 7"x7"x $\frac{7}{8}$ "
  2. ALL COLUMNS MEMBERS ARE STEEL HSS 14"x14"x $\frac{1}{2}$ "
  3. BRACED SECTION ARE NOT DRAWN TO SCALE
  4. COLUMNS AND BEAMS ARE DEPENDING ON LOCATION SEE FLOOR PLAN SHEETS



FOR BRACED FRAME TYPE  Z = 37' 6"

FOR BRACED FRAME TYPE  Z = 51'