

ARUP

Job Title:	CNY
Job Number:	225121
Calculation Date:	4/9/2014
Engineer:	CGB
Fitting Reference:	ASHRAE Duct Fitting Database
Safety factor	10%

Air Properties	
Temperature (F):	53
Humidity Ratio:	0.0083
Elevation (ft):	0

Revision	Date	Made by	Checked	Description
1	9-Apr-2014	CGB	CS	
2	14-Apr-14	CGB		
3				
4				

**System Description:**

### **External Static Pressure**

# CORNELL NYC TECH

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ARCHITECT: mOrphosis®  
153 W. 27th Street  
Suite 1200, NY  
NY 10001  
T: 424 258 6200  
F: 424 258 6299

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www.morphosis.com

CORNELLNYC TECH  
111 EIGHTH AVENUE, 302  
NEW YORK, NY 10011  
TEL: 212.255.8560

SMEP  
SUSTAINABILITY/ LEED  
LIGHTING  
EXTERIOR ENVELOPE  
AV/ IT/ SECURITY  
ACOUSTICS:

ARUP  
77 WATER STREET  
NEW YORK, NY 10005  
TEL: 212.896.3000

**GEOTECHNICAL:**  
**MUESER RUTLEDGE**  
**225 W. 34TH STREET**  
**NEW YORK, NY 10122**  
**TEL: 917.339.9300**

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

---

**SPECIFICATIONS:**  
CONSTRUCTION SPECIFICATIONS, INC  
22 TENNENT ROAD P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

**WATER PROOFING:**  
**HENSHELL & BUCELLATO**  
**166 PATTERSON AVENUE**  
**SHREWSBURY, NJ 07702**  
**TEL: 732.530.4734**

**KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2E**

NEW YORK, NY 10016  
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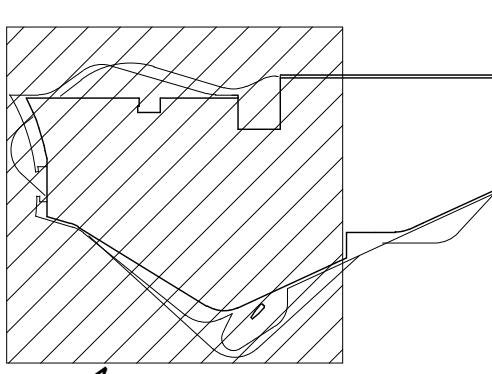
**ISSUES / REVISIONS:**

2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

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For more information about the study, please contact Dr. John Smith at (555) 123-4567 or via email at [john.smith@researchinstitute.org](mailto:john.smith@researchinstitute.org).

## **KEY PLAN:**



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# PROJECT

# CORNELLNYC TECH FIRST ACADEMIC BUILDING

ROOSEVELT ISLAND, NY

04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION

**A1** SCALE 1/8" - 1'-0"

# MECHANICAL CELLAR FLOOR DUCTWORK PLAN (SOUTH)

SEAL & SIGNATURE:	DATE: 01-17-14
	PROJECT No.: 225121
	DRAWING BY:
	CHK BY:
	DWG No.
	<b>M-402.00</b>
	FILE No.: <span style="border-bottom: 1px solid black; width: 150px;"></span>

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TEL: 212.255.6560

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EXTERIOR ENVELOPE  
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COST ESTIMATOR:  
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NEW YORK, NY 10001  
TEL: 212.697.1340

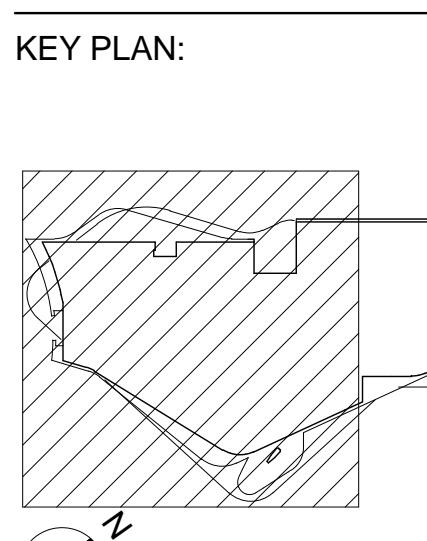
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TEL: 732.530.4734

KITCHEN CONSULTANT:  
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NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD



## PROJECT

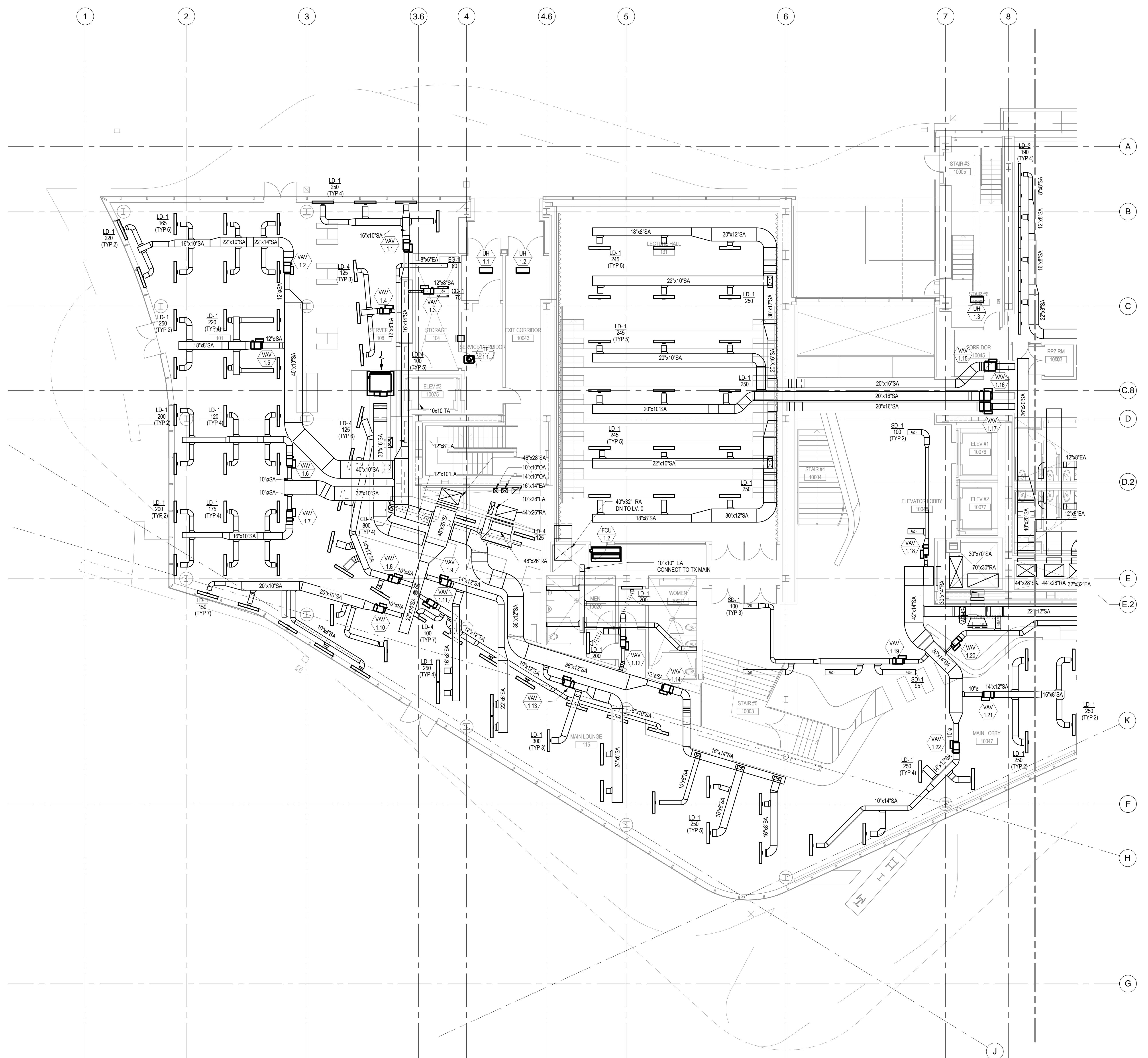
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
GROUND FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-404.00  
FILE No.:  

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A1 SCALE 1/8" = 1'-0"

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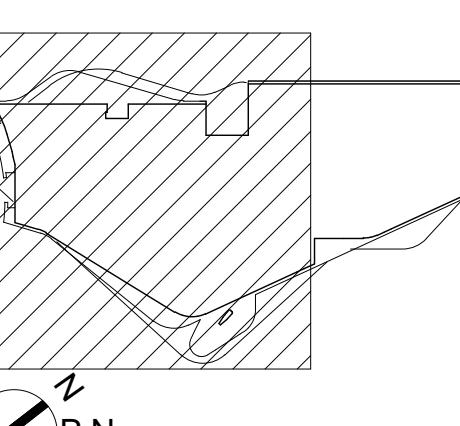
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4	04/21/2014	100% CD

## KEY PLAN:



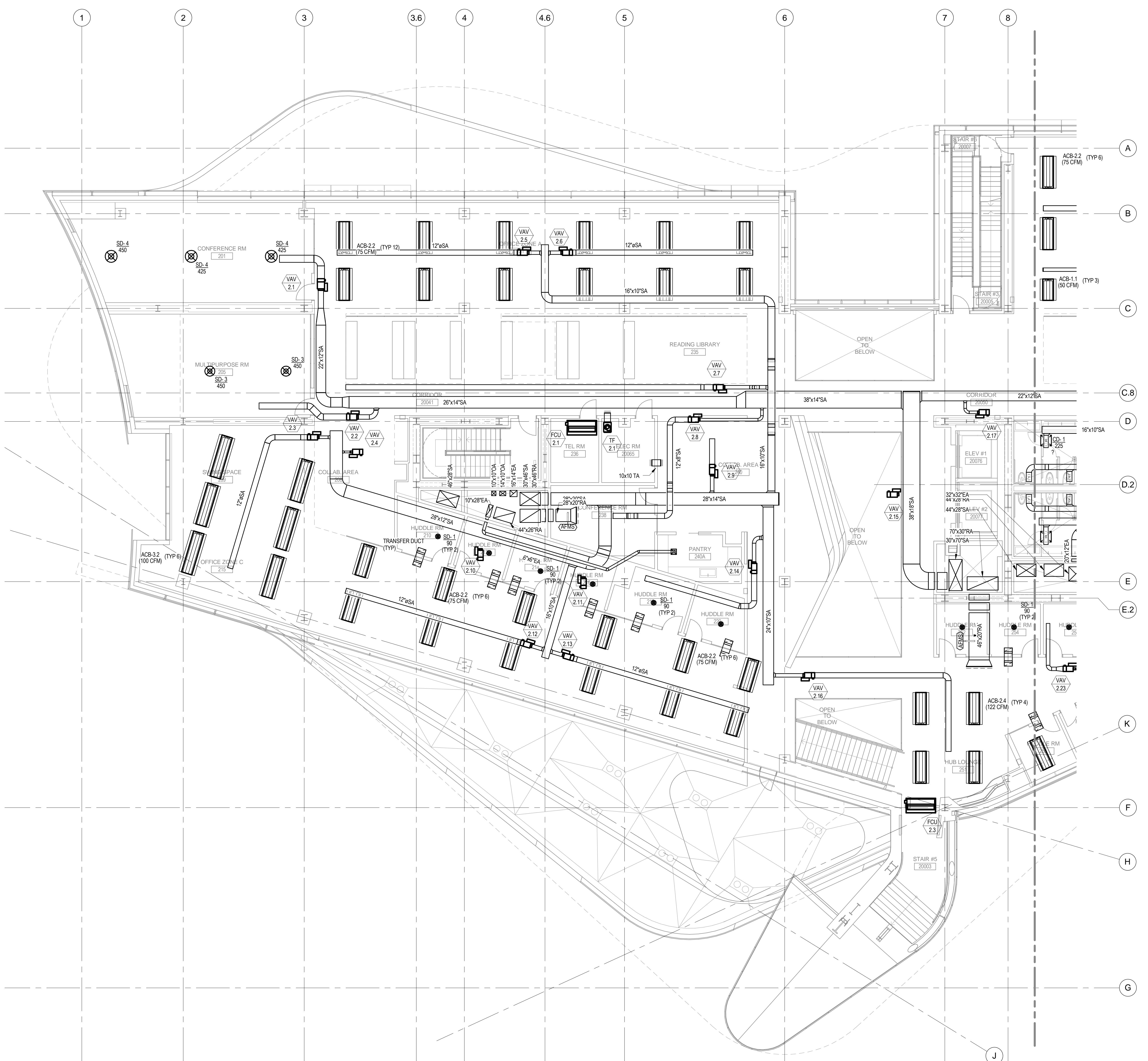
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
SECOND FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
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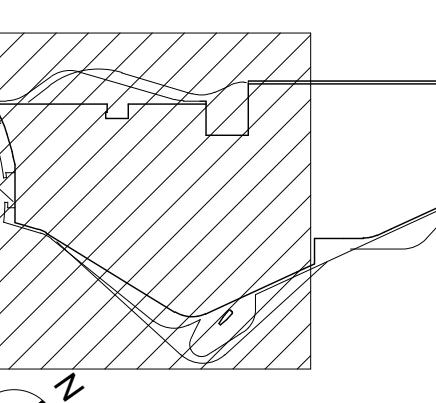
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4	04/21/2014	100% CD

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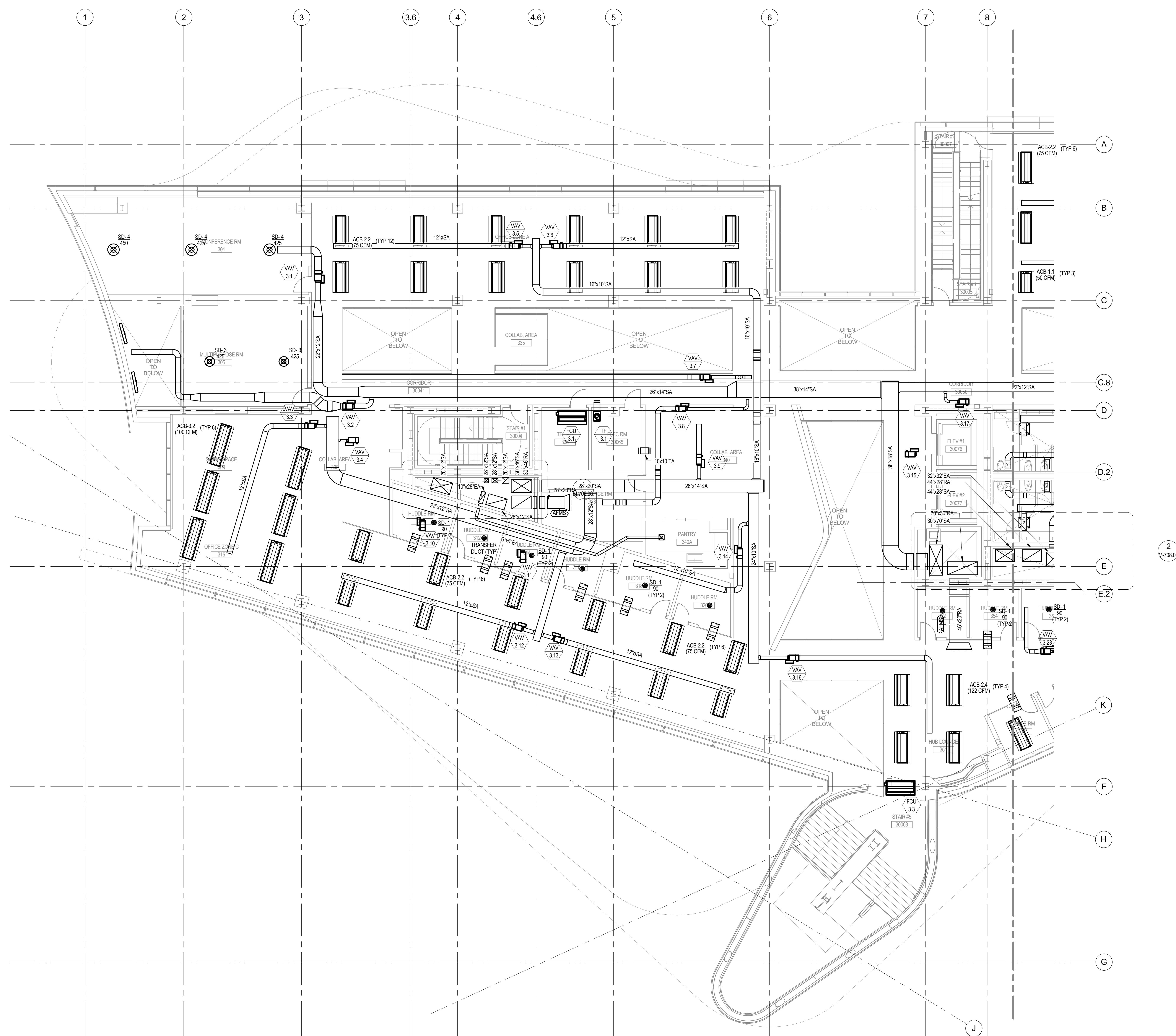
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
THIRD FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
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DWG No.: M-408.00  
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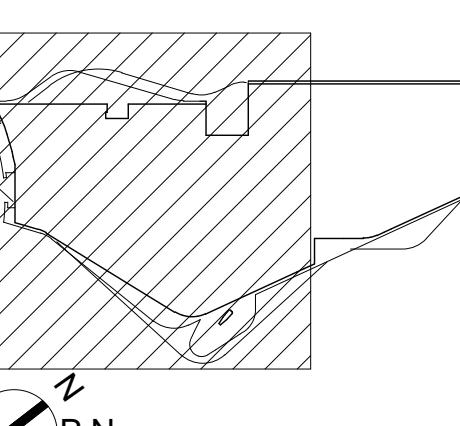
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4	04/21/2014	100% CD

## KEY PLAN:



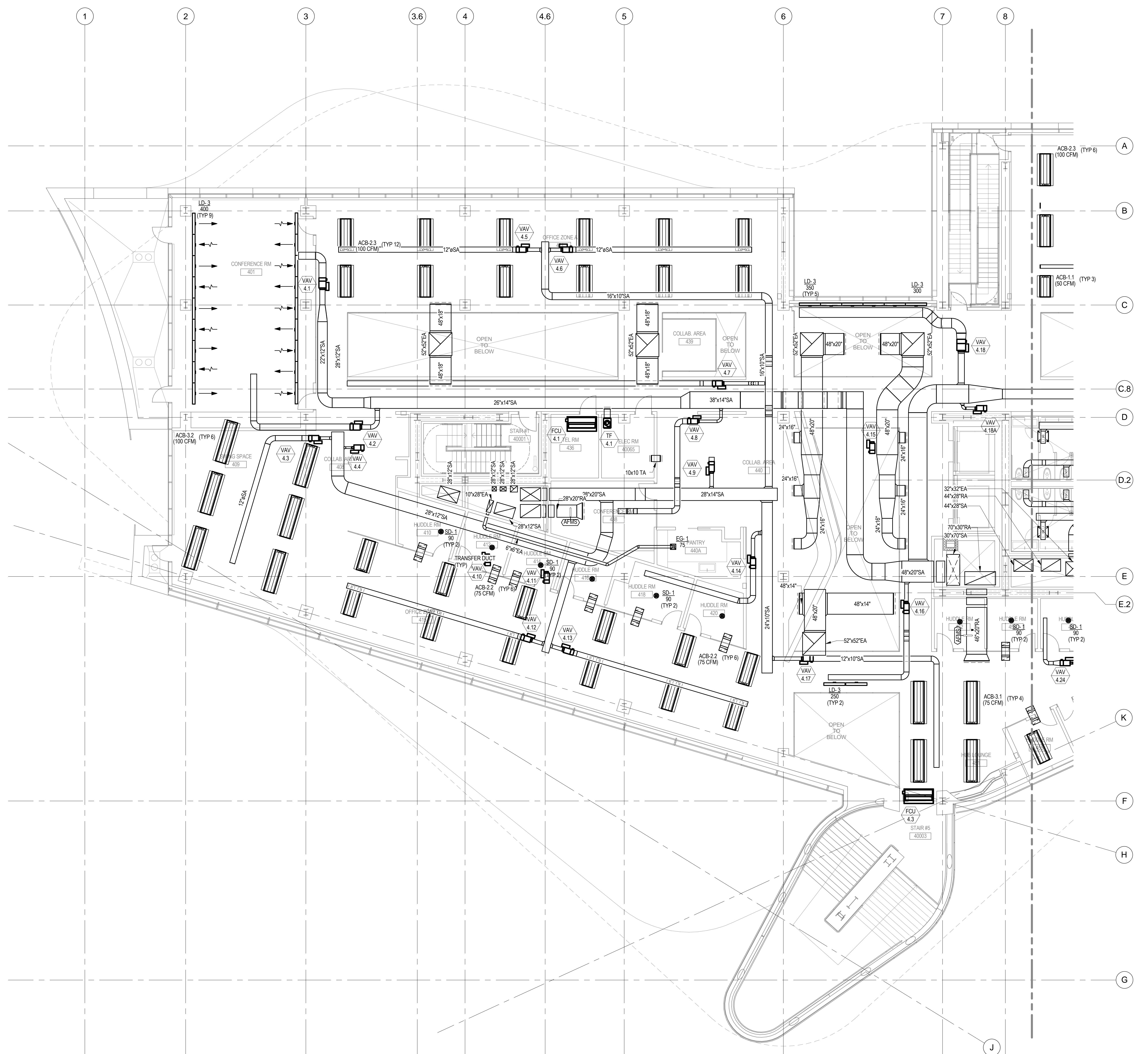
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
FOURTH FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE:	DATE: 01-17-14 PROJECT No.: 225121 DRAWING BY: CHK BY: DWG No.: M-410.00 FILE No.: <span style="border: 1px solid black; padding: 2px;"> </span>
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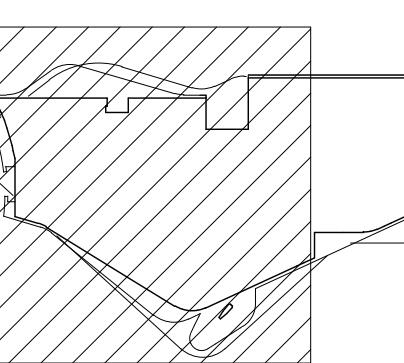
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1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## KEY PLAN:



## PROJECT

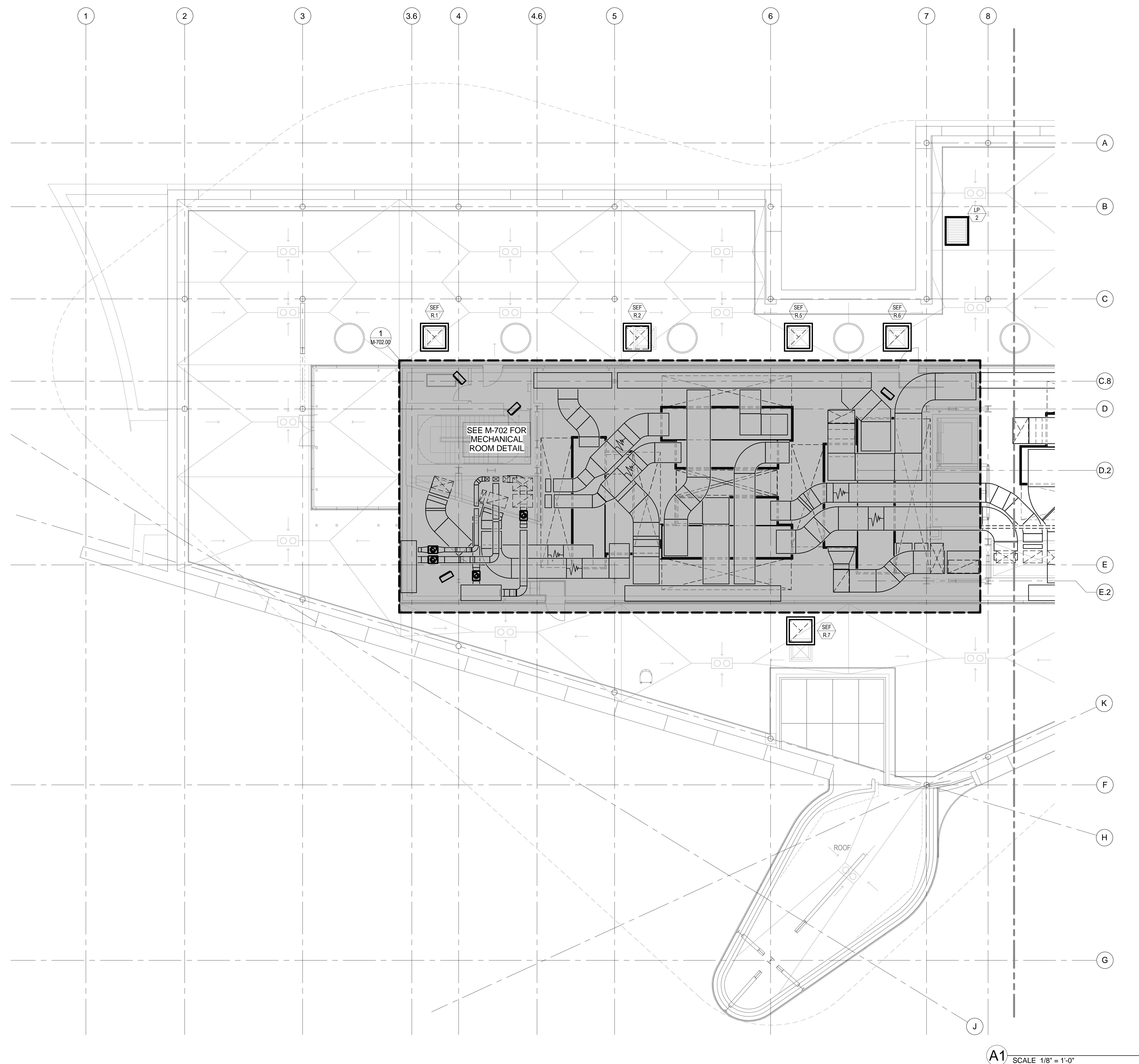
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
MECHANICAL ROOF  
DUCTWORK PLAN  
(SOUTH)

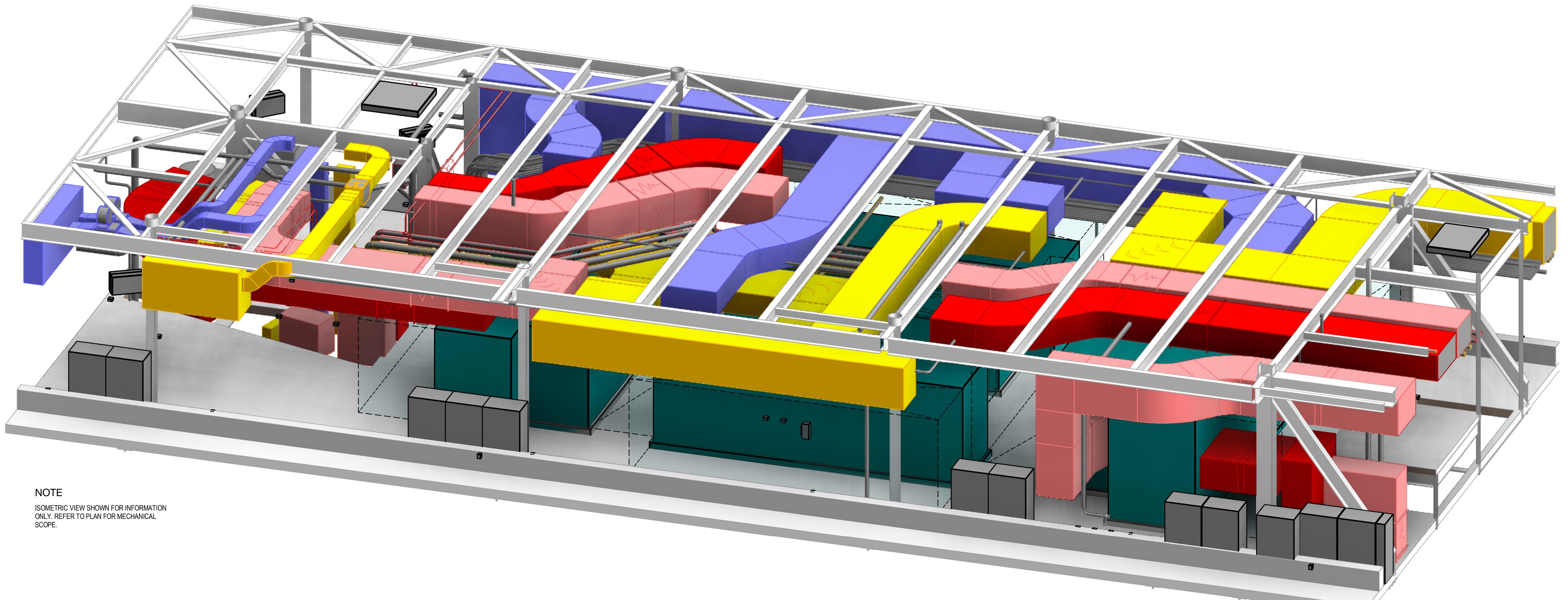
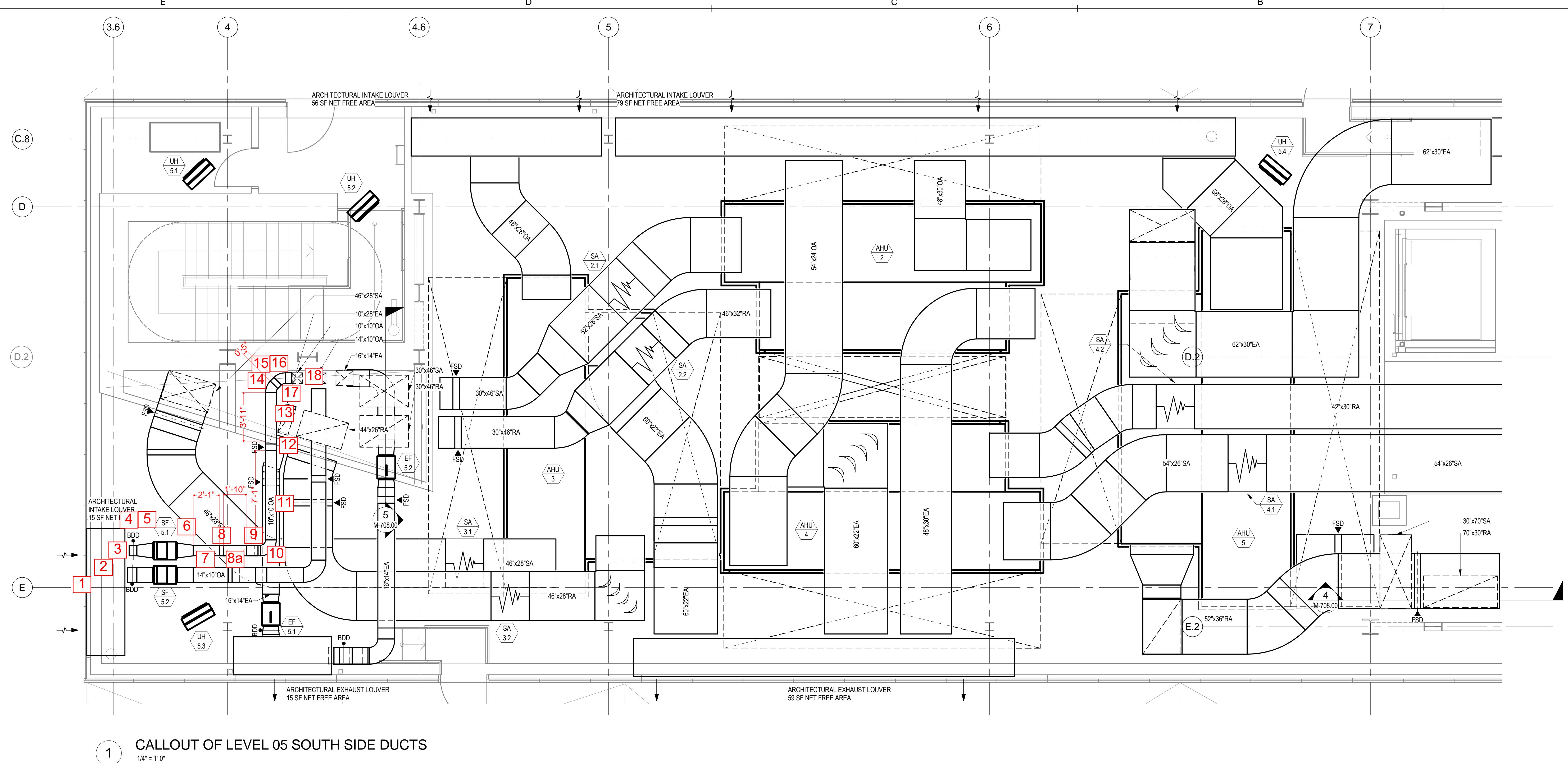
SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
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DWG No.  
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FILE No.:

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ISSUES / REVISIONS:		
NO.	DATE	DESCRIPTION
1	01/17/2014	50% CD
2	05/16/2014	100% CD

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2 LEVEL 05 PENTHOUSE DUCTWORK SOUTH ISOMETRIC VIEW

PROJECT  
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING  
ROOSEVELT ISLAND, NY

MECHANICAL  
PART PLANS AND  
SECTIONS  
SHEET 2

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-702.00  
FILE No.:

ARUP

Job Title:	CNY
Job Number:	225121
Calculation Date:	4/9/2014
Engineer:	CGB
Fitting Reference:	ASHRAE Duct Fitting Database
Safety factor	10%

Air Properties	
Temperature (F):	53
Humidity Ratio:	0.0083
Elevation (ft):	0

Revision	Date	Made by	Checked	Description
1	9-Apr-2014	CGB		
2	14-Apr-14	CGB		
3				
4				

System Description: SF-5.2

External Static Pressure

Section	Description of Section	Known & Constant Loss (in. w.g.)	Duct Material (Steel, Flex, Lined, Concrete)	Rectangular												Duct Pressure Loss/ft (in. w.g.)	Velocity Pressure (in. w.g.)	Straight Losses	Fitting Losses	Total Section Pressure Loss (in. w.g.)	Cumulative Pressure Loss (in. w.g.)	Section % of Total ESP	
				CFM	Length (ft)	Fitting Coefficient	Fitting QTY	Fitting Reference Code	Round Diameter (in.)	Width (in.)	Height (in.)	Equivalent Diameter (in.)	Velocity (fpm)	Duct Material Roughness	Re	f'	f						
Fan SS												0.0	0	#DIV/0!	0	0.0000	0.00000	0.0000	0.000	0.000	0.000	0%	
1	Louver	0.1										0.0	0	#DIV/0!	0	0.0000	0.00000	0.0000	0.000	0.100	0.100	25%	
2	Plenum	0.05										0.0	0	#DIV/0!	0	0.0000	0.00000	0.0000	0.050	0.050	0.150	12%	
3	Plenum Connection	S	700		0.5	1	ER1-3		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.017	0.167	4%	
4	BDD	S	700		0.37	1	CR9-3		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.012	0.012	0.179	3%
5	Transition	S	700		0.11	1	ER4-2		14	14	15.3	514	0.0003	74723	0.0202	0.0202	0.000305	0.0169	0.000	0.002	0.002	0.181	0%
Fan PS												0.0	0	#DIV/0!	0	0.0000	0.00000	0.0000	0.000	0.000	0.000	0.181	0%
6	Transition	S	700		0.11	1	ER4-2		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.004	0.004	0.184	1%
7	Straight	S	700	1	0.14	1	CR3-1		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.001	0.000	0.001	0.185	0%
8	Elbow, 45 Degrees	S	700		0.14	1	CR3-1		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.005	0.005	0.190	1%
9	Straight	S	700	3	0.14	1	CR3-1		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.002	0.000	0.002	0.192	1%
10	Elbow, 45 Degrees	S	700		0.14	1	CR3-1		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.005	0.005	0.196	1%
11	Straight	S	700	3	0.27	1	CR3-1		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.002	0.000	0.002	0.199	1%
12	Elbow, 90 Degrees	S	700		0.27	1	CR3-1		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.009	0.009	0.208	2%
13	Straight	S	700	8.5	0.46	1	CR9-5		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.006	0.000	0.006	0.214	1%
14	FSD	S	700		0.46	1	CR9-5		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.015	0.015	0.229	4%
15	Straight	S	700	5	0.38	1	CR3-14		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.004	0.000	0.004	0.232	1%
16	Elbow, 90 Degrees Mitered	S	700		0.38	1	CR3-14		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.013	0.013	0.245	3%
17	Straight	S	700	72	0.38	1	CR3-14		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.051	0.000	0.051	0.296	12%
18	Elbow, 90 Degrees Mitered	S	700		0.38	1	CR3-14		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.013	0.013	0.308	3%
19	FSD	S	700		0.46	1	CR9-5		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.015	0.015	0.323	4%
20	Straight	S	700	20	0.27	1	CR3-1		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.014	0.000	0.014	0.337	3%
21	Elbow, 90 Degrees	S	700		0.27	1	CR3-1		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.000	0.009	0.009	0.346	2%
22	Straight	S	700	7	1.65	1	CR6-1		14	10	12.9	720	0.0003	88726	0.0198	0.0198	0.000703	0.0332	0.005	0.000	0.005	0.351	1%
23	WMS	S	700											88726	0.0198	0.0198	0.000703	0.0332	0.000	0.055	0.055	0.406	13%
Total Straight Duct Length																	Totals	0.084	0.322	0.406		100%	
																	Total External S.P. + Safety Factor	0.45					

# CORNELL NYC TECH

ARCHITECT:  
mOrphosis®  
153 W. 27th Street  
Suite 1200, NY  
NY 10001  
T: 424.258.6200  
F: 424.258.6299  
www.morphosis.com

OWNER:  
CORNELLNYC TECH  
111 EIGHTH AVENUE, 302  
NEW YORK, NY 10011  
TEL: 212.255.6560

SMEP  
SUSTAINABILITY / LEED  
LIGHTING  
EXTERIOR ENVELOPE  
AV/IT/ SECURITY  
ACOUSTICS.  
ARUP  
77 WATER STREET  
NEW YORK, NY 10005  
TEL: 212.896.3000

GEOTECHNICAL:  
MUESER RUTLEDGE  
225 W. 34TH STREET  
NEW YORK, NY 10122  
TEL: 917.339.9300

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

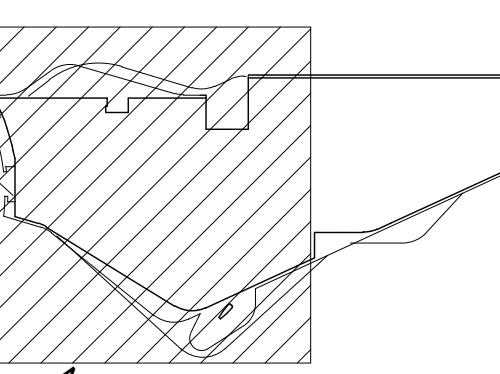
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
2200 ROUTE 1 P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
HENSHELL & BUCCELATO  
166 PATTERSON AVENUE  
SHREWSBURY, NJ 07702  
TEL: 732.530.4734

KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

ISSUES / REVISIONS:	NO.	DATE	DESCRIPTION
	1	01/11/2013	100% SD
	2	08/09/2013	100% DD
	3	01/17/2014	50% CD
	4	04/21/2014	100% CD

## KEY PLAN:



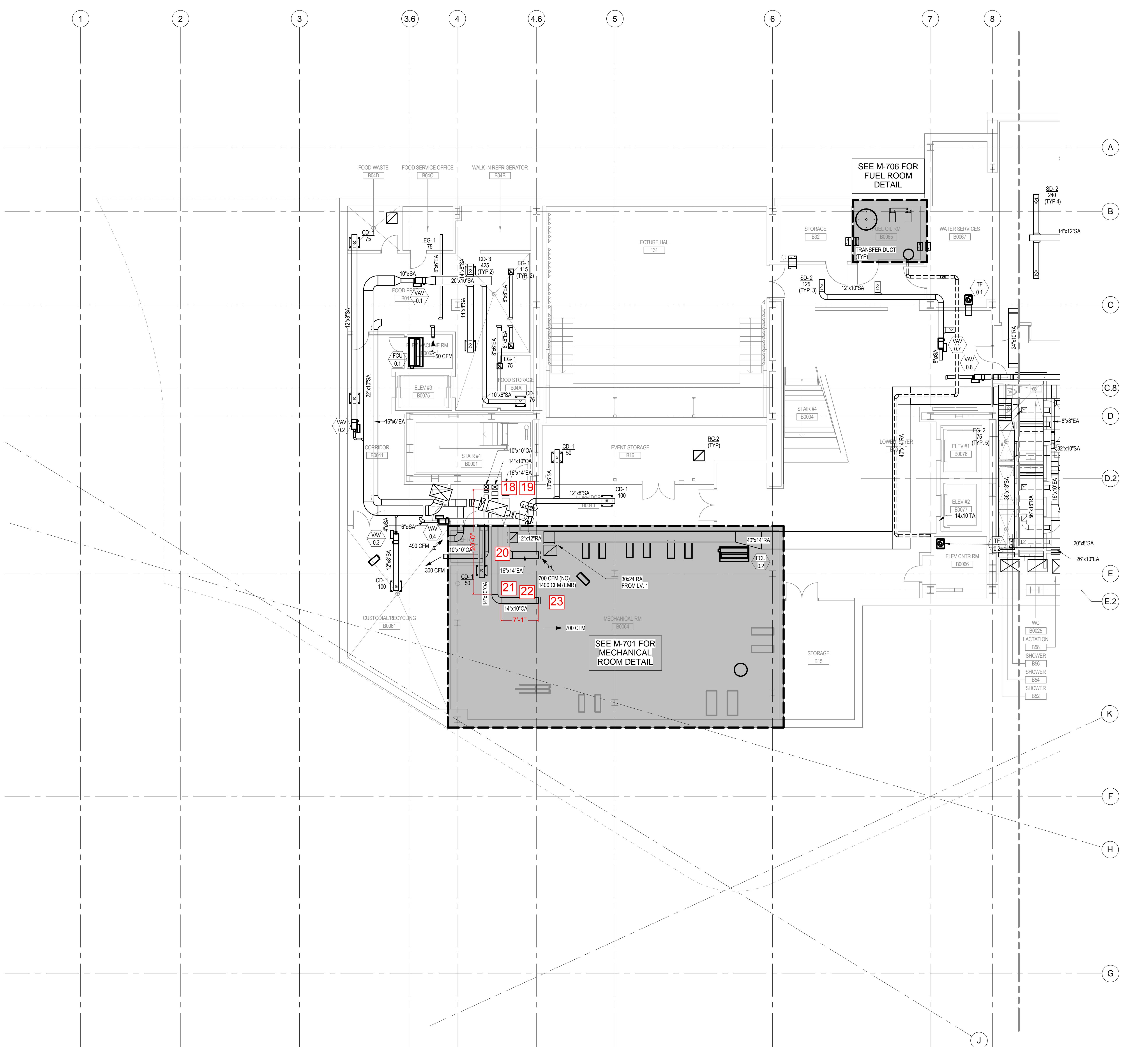
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
CELLAR FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-402.00  
FILE No.:  



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A1 SCALE 1/8" = 1'-0"

# CORNELL NYC TECH

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NY 10001  
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F: 424.258.6299  
www.morphosis.com

OWNER:  
CORNELLNYC TECH  
111 EIGHTH AVENUE, 302  
NEW YORK, NY 10011  
TEL: 212.255.6560

SMEP  
SUSTAINABILITY / LEED  
LIGHTING  
EXTERIOR ENVELOPE  
AV/IT/ SECURITY  
ACOUSTICS.

ARUP  
77 WATER STREET  
NEW YORK, NY 10005  
TEL: 212.896.3000

GEOTECHNICAL:  
MUESER RUTLEDGE  
225 W. 34TH STREET  
NEW YORK, NY 10122  
TEL: 917.339.9300

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

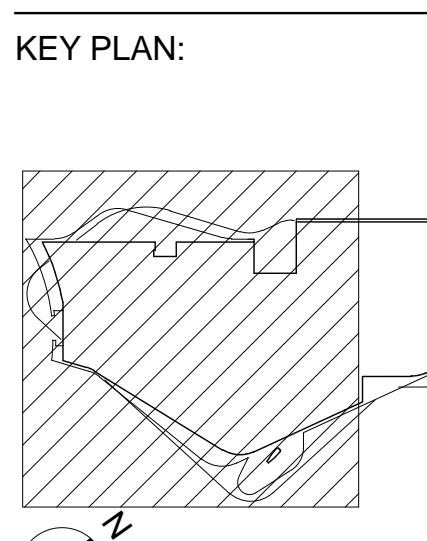
CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
2200 NEW YORK, P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
HENSHELL & BUCCELATO  
166 PATTERSON AVENUE  
SHREWSBURY, NJ 07702  
TEL: 732.530.4734

KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD



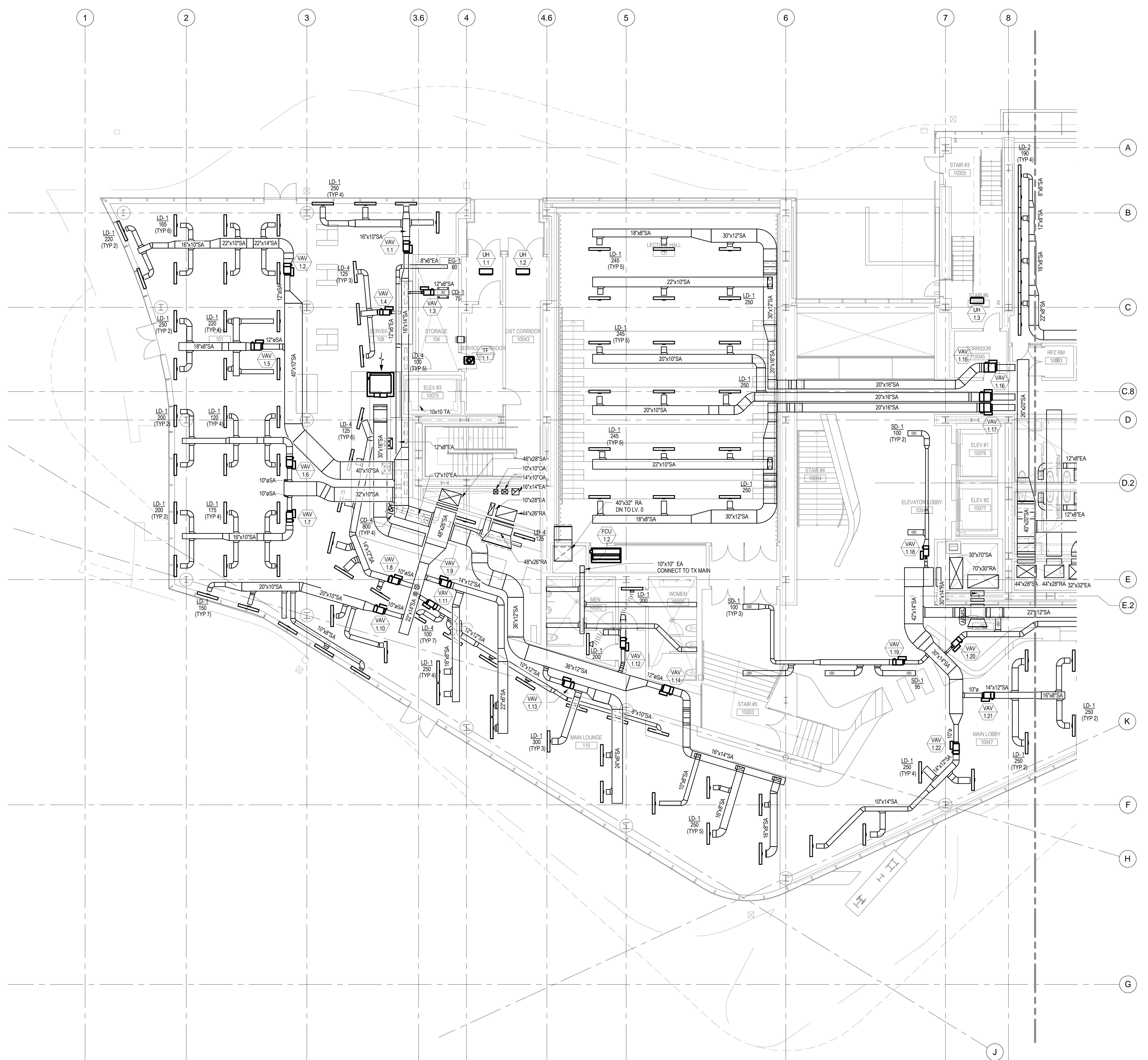
## PROJECT

### CORNELLNYC TECH FIRST ACADEMIC BUILDING

ROOSEVELT ISLAND, NY

### MECHANICAL GROUND FLOOR DUCTWORK PLAN (SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-404.00  
FILE No.:  



A1 SCALE 1/8" = 1'-0"

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# CORNELL NYC TECH

---

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---

**OWNER:**

CORNELLNYC TECH  
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NEW YORK, NY 10011  
TEL: 212.255.8560

**SMEP  
SUSTAINABILITY/ LEED  
LIGHTING  
EXTERIOR ENVELOPE  
AV/ IT/ SECURITY  
ACOUSTICS:**

ARUP  
77 WATER STREET  
NEW YORK, NY 10005  
TEL: 212.896.3000

**GEOTECHNICAL:**  
MUESER RUTLEDGE  
225 W. 34TH STREET  
NEW YORK, NY 10122  
TEL: 917.339.9300

**COST ESTIMATOR:**  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

---

**SPECIFICATIONS:**

**CONSTRUCTION SPECIFICATIONS, INC**  
22 TENNENT ROAD P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

**WATER PROOFING:**  
**HENSHELL & BUCCELLATO**  
**166 PATTERSON AVENUE**  
**SHREWSBURY, NJ 07702**  
**TEL: 732.530.4734**

## KITCHEN CONSULTANT:

JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016

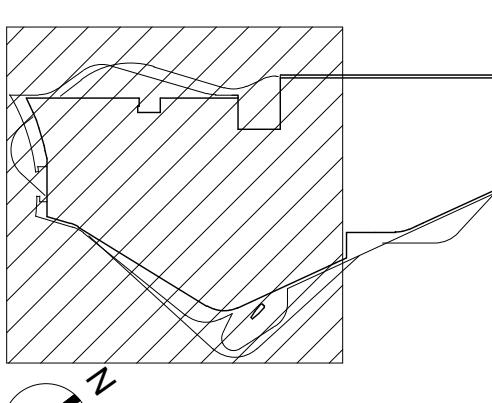
NEW YORK, NY 10010  
TEL: 212.206.0736

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ISSUES / REVISIONS		
NO.	DATE	DESC
1	01/11/2013	100% SD
2	02/02/2013	100% DP

2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## **KEY PLAN:**



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# PROJECT

# CORNELLNYC TECH FIRST ACADEMIC BUILDING

# BUEDING

# 04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION

**A1** SCALE 1/8" - 1'-0"

---

# **MECHANICAL SECOND FLOOR DUCTWORK PLAN (SOUTH)**

SEAL & SIGNATURE:	DATE: 01-17-14
	PROJECT No.: 225121
	DRAWING BY:
	CHK BY:
	DWG No.
	<b>M-406.00</b>
	FILE No.:

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NEW YORK, NY 10011  
TEL: 212.253.6560

SMEP  
SUSTAINABILITY / LEED  
LIGHTING  
EXTERIOR ENVELOPE  
AV/IT/ SECURITY  
ACOUSTICS.

ARUP  
77 WATER STREET  
NEW YORK, NY 10005  
TEL: 212.896.3000

GEOTECHNICAL:  
MUESER RUTLEDGE  
225 W. 34TH STREET  
NEW YORK, NY 10122  
TEL: 917.339.9300

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

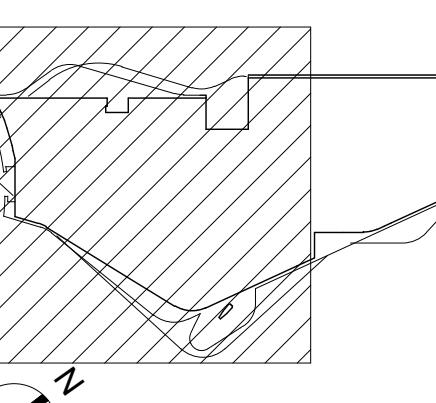
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC.  
225 W. 34TH STREET, P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
HENSHELL & BUCCELATO  
166 PATTERSON AVENUE  
SHREWSBURY, NJ 07702  
TEL: 732.530.4734

KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## KEY PLAN:



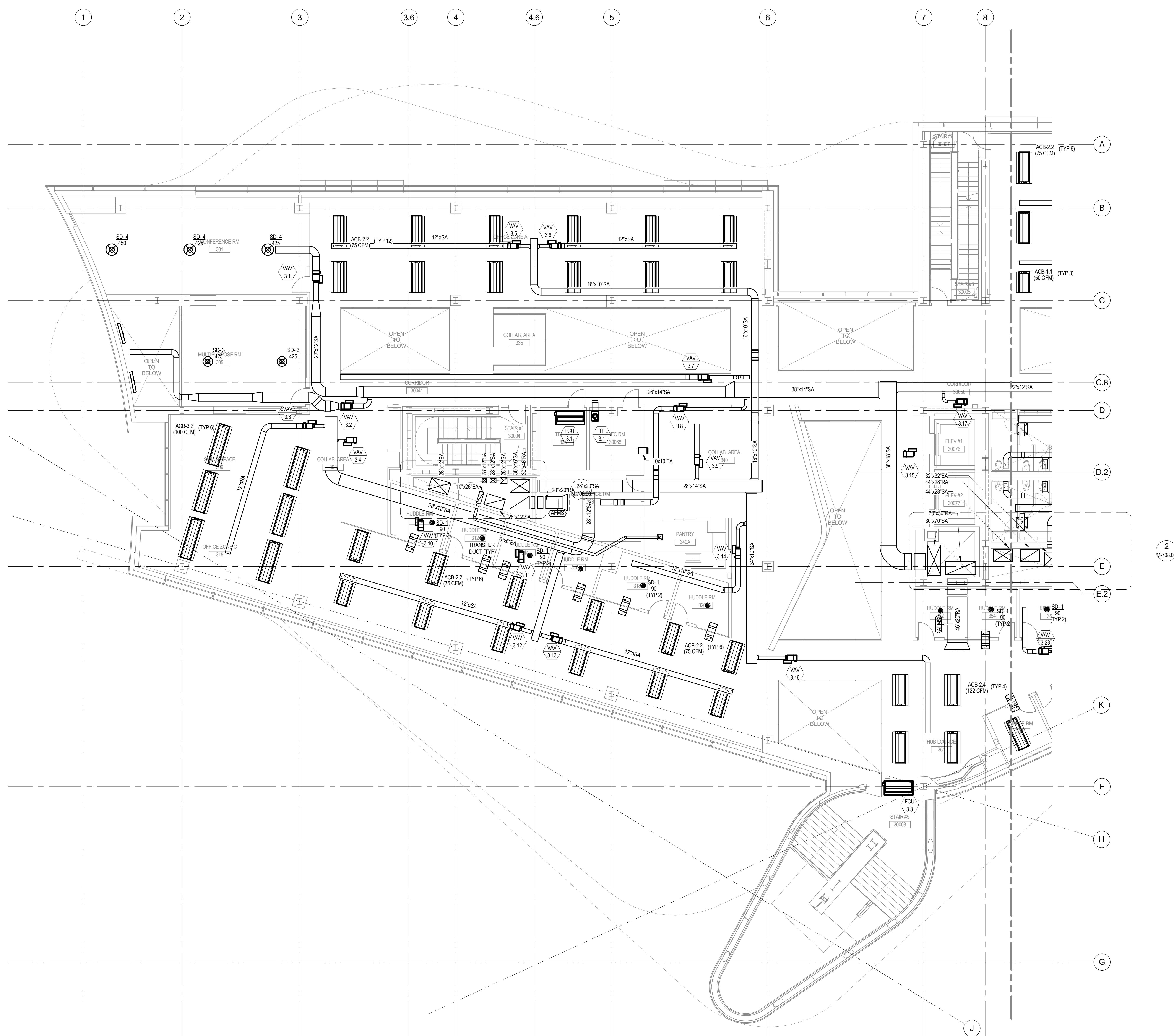
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
THIRD FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-408.00  
FILE No.:  



A1 SCALE 1/8" = 1'-0"

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F: 424.258.6299

[www.morphosis.com](http://www.morphosis.com)

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NEW YORK, NY 10011  
TEL: 212.255.6560

SMEP  
SUSTAINABILITY / LEED  
LIGHTING  
EXTERIOR ENVELOPE  
AV / IT / SECURITY  
ACOUSTICS.

ARUP  
77 WATER STREET  
NEW YORK, NY 10005  
TEL: 212.896.3000

GEOTECHNICAL:  
MUESER RUTLEDGE  
225 W. 34TH STREET  
NEW YORK, NY 10122  
TEL: 917.339.9300

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.0596

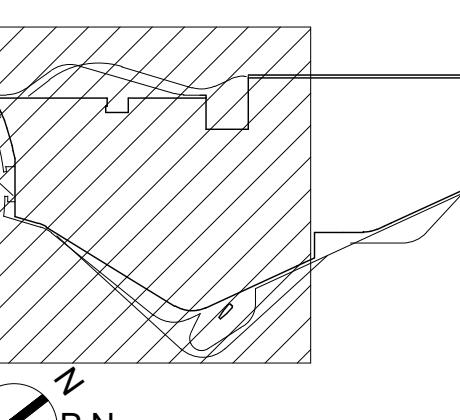
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
225 W. 34TH STREET, P.O. BOX 488  
MORRISONVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
HENSHELL & BUCCELATO  
166 PATTERSON AVENUE  
SHREWSBURY, NJ 07702  
TEL: 732.530.4734

KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## KEY PLAN:



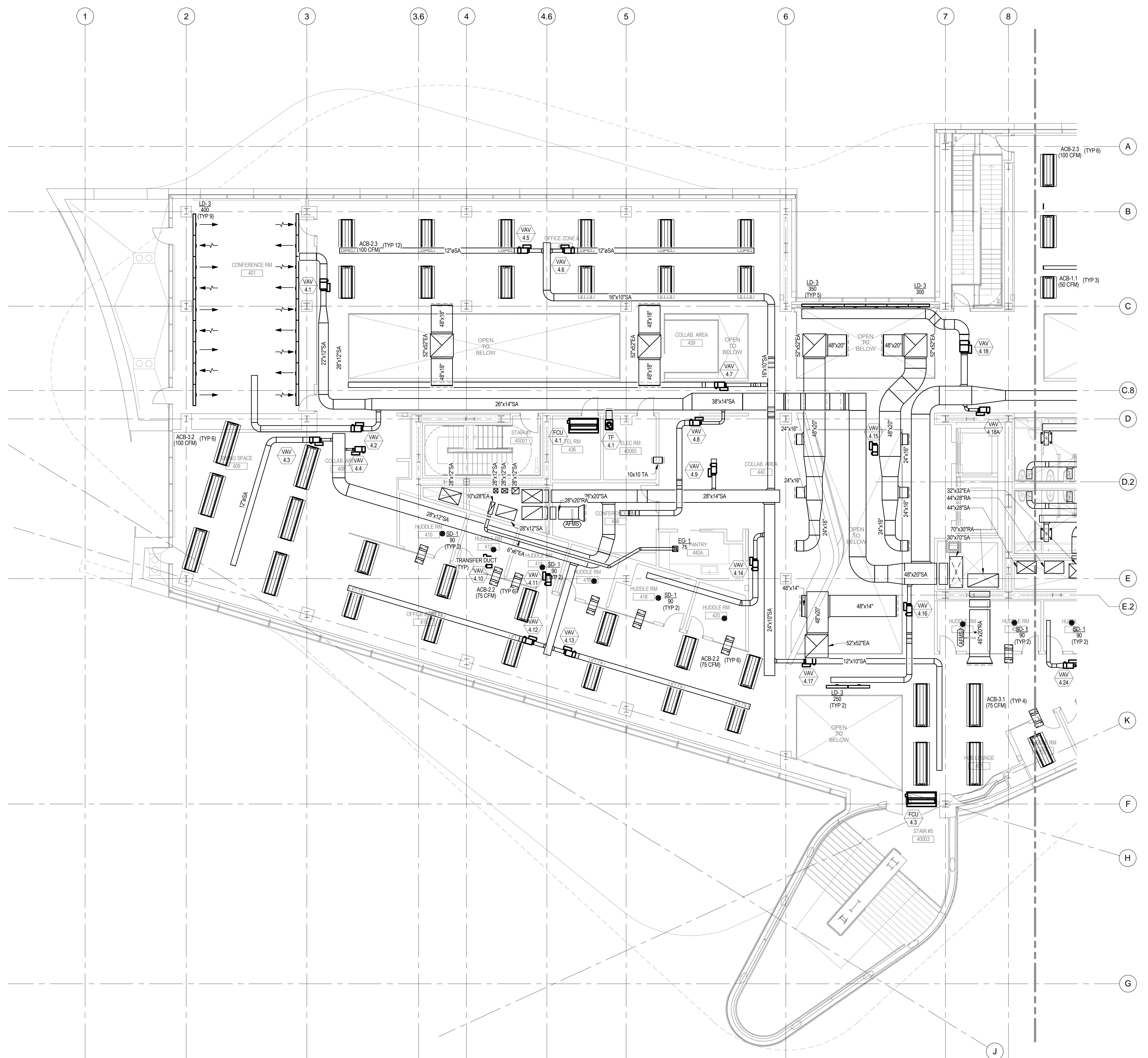
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
FOURTH FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-410.00  
FILE No.:  



# CORNELL NYC TECH

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F: 424.258.6299  
www.morphosis.com

OWNER:  
CORNELLNYC TECH  
111 EIGHTH AVENUE, 302  
NEW YORK, NY 10011  
TEL: 212.255.6560

SMEP  
SUSTAINABILITY / LEED  
LIGHTING  
EXTERIOR ENVELOPE  
AV/IT/ SECURITY  
ACOUSTICS.

ARUP  
77 WATER STREET  
NEW YORK, NY 10005  
TEL: 212.896.3000

GEOTECHNICAL:  
MUESER RUTLEDGE  
225 W. 34TH STREET  
NEW YORK, NY 10122  
TEL: 917.339.9300

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.0596

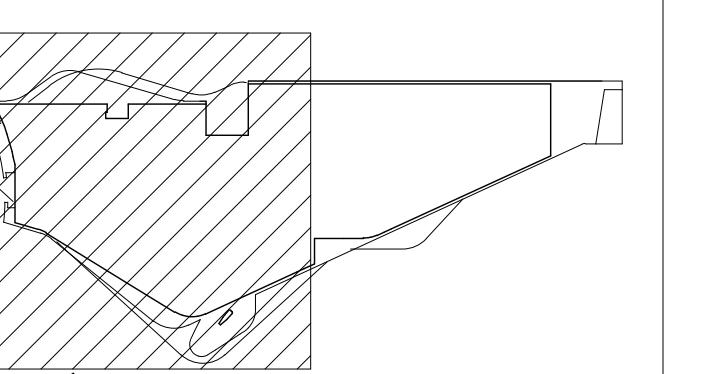
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
2200 NEW YORK, P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
HENSHELL & BUCELLATO  
166 PATTERSON AVENUE  
SHREWSBURY, NJ 07702  
TEL: 732.530.4734

KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## KEY PLAN:



## PROJECT

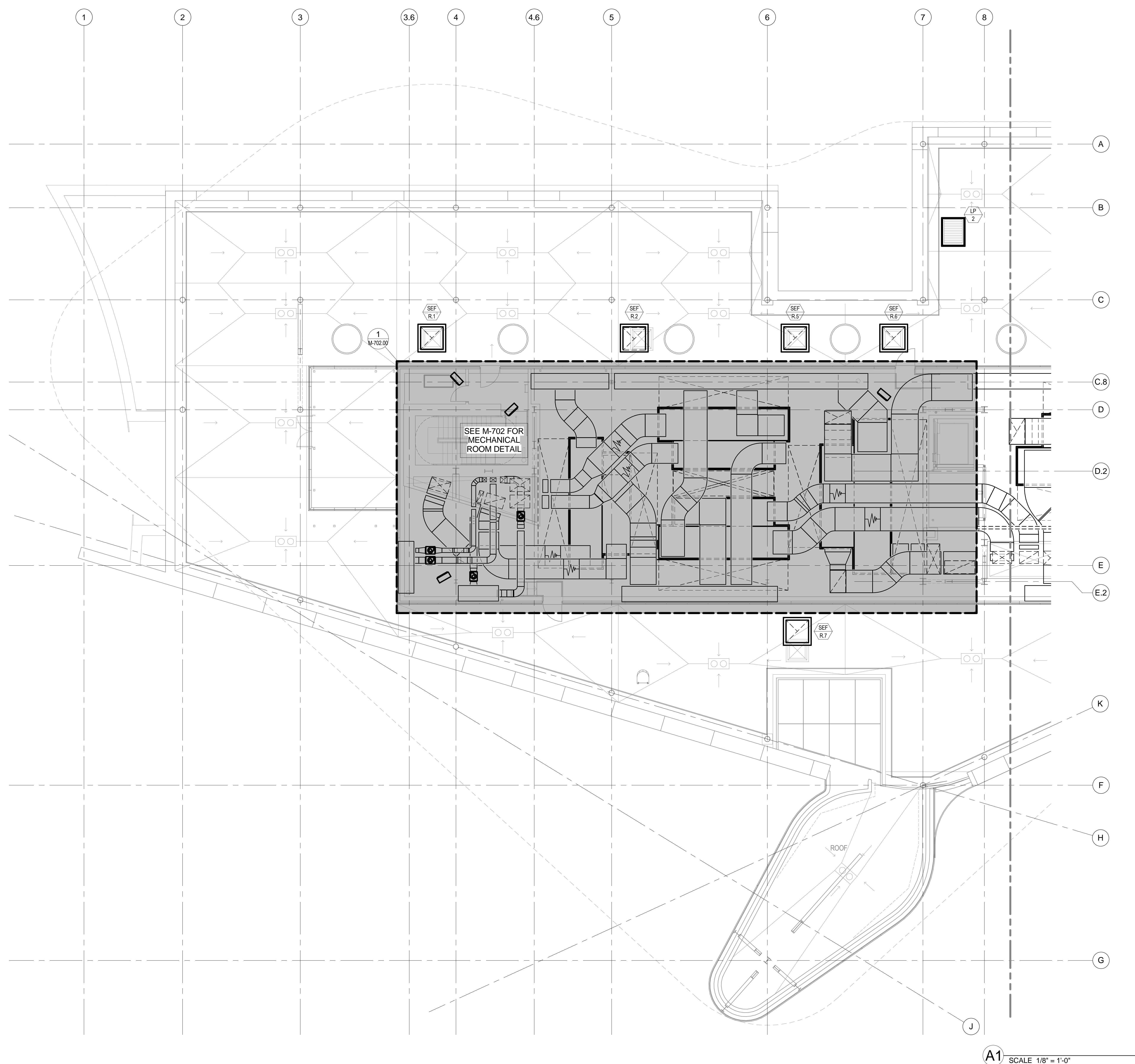
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
MECHANICAL ROOF  
DUCTWORK PLAN  
(SOUTH)

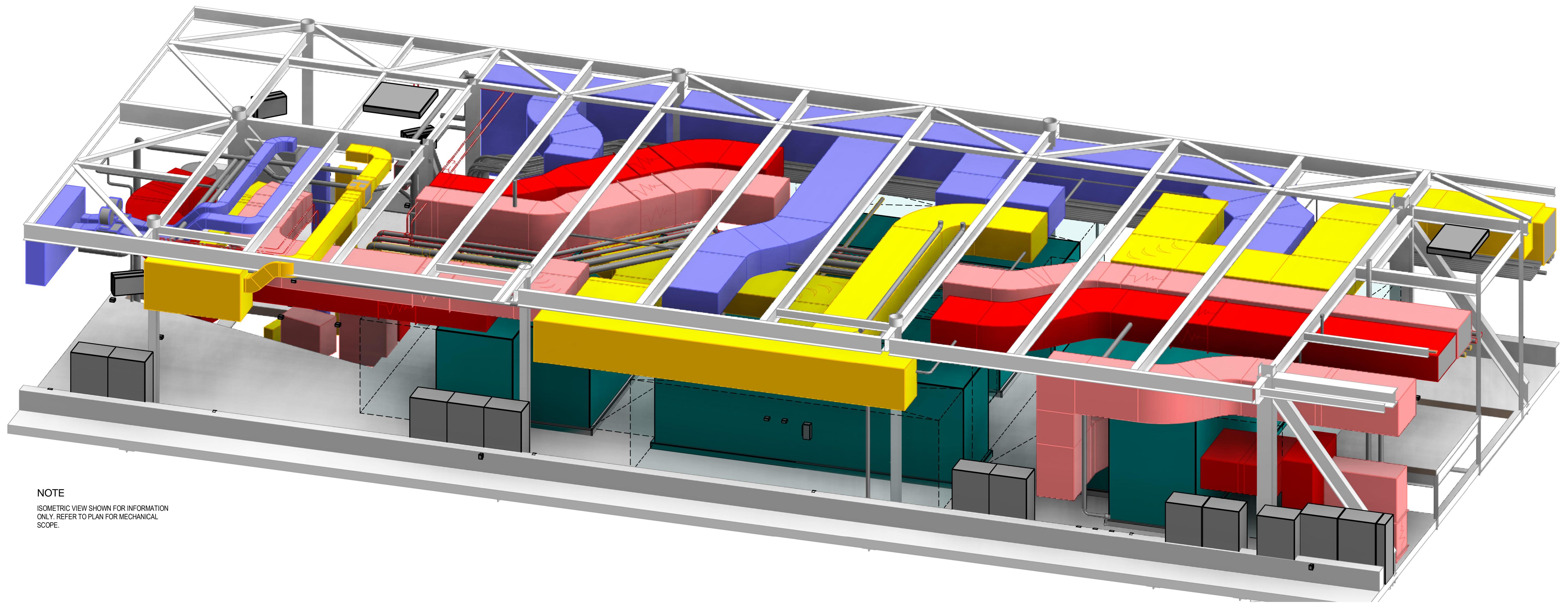
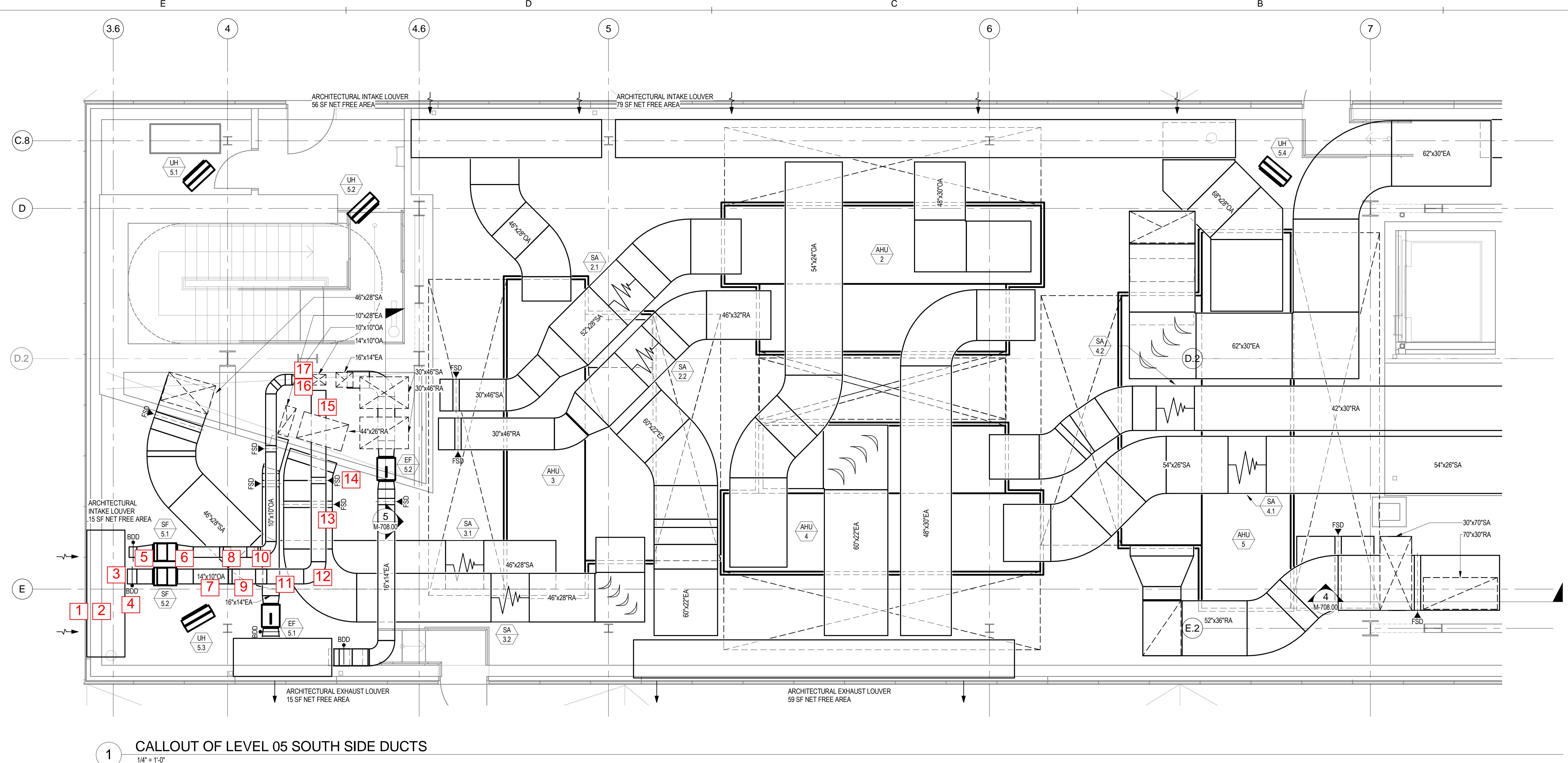
SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.  
**M-412.00**  
FILE No.:

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ISSUES / REVISIONS:		
NO.	DATE	DESCRIPTION
1	01/17/2014	50% CD
2	05/16/2014	100% CD

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2 LEVEL 05 PENTHOUSE DUCTWORK SOUTH ISOMETRIC VIEW

PROJECT  
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING  
ROOSEVELT ISLAND, NY

MECHANICAL  
PART PLANS AND  
SECTIONS  
SHEET 2

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-702.00  
FILE No.:

Job Title:	CNY
Job Number:	225121
Calculation Date:	4/8/2014
Engineer:	CGB
Fitting Reference:	ASHRAE Duct Fitting Database
Safety factor	10%

Air Properties	
Temperature (F):	53
Humidity Ratio:	0.0083
Elevation (ft):	0

Revision	Date	Made by	Checked	Description
1	8-Apr-2014	CGB	CS	
2	14-Apr-14	CGB		
3				
4				

**System Description:** EF-5.1**External Static Pressure**

Section	Description of Section	Known & Constant Loss (in. w.g.)	Duct Material (Steel, Flex, Lined, Concrete)	CFM	Length (ft)	Fitting Coefficient	Fitting QTY	Fitting Reference Code	Round Diameter (in.)	Height (in.)	Equivalent Diameter (in.)	Velocity (fpm)	Duct Material Roughness	Re	f'	f	Rectangular			Duct Pressure Loss/ft (in. w.g.)	Velocity Pressure (in. w.g.)	Straight Losses	Fitting Losses	Total Section Pressure Loss (in. w.g.)	Cumulative Pressure Loss (in. w.g.)	Section % of Total ESP	
																	Width (in.)	Height (in.)	Rectangular								
Fan PS											0.0	0	#DIV/0!	0	0.0000	0.0000	0.000000	0.0000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0%	
1	Louver	0.1									0.0	0	#DIV/0!	0	0.0000	0.0000	0.000000	0.0000	0.000	0.100	0.100	0.100	0.100	0.100	0.100	8%	
2	Plenum	0.05									0.0	0	#DIV/0!	0	0.0000	0.0000	0.000000	0.0000	0.000	0.050	0.050	0.050	0.050	0.050	0.050	4%	
3	Plenum Connection	S	2,795		1	1	SR2-1		16	14	16.4	1797	0.0003	279245	0.0161	0.0165	0.002849	0.2065	0.000	0.207	0.207	0.357	0.357	16%			
4	BDD	S	2,795		0.37	1	CR9-3		16	14	16.4	1797	0.0003	279245	0.0161	0.0165	0.002849	0.2065	0.000	0.076	0.076	0.433	0.433	6%			
Fan SS																											
6	Straight	S	2,795	10					16	14	16.4	1797	0.0003	279245	0.0161	0.0165	0.002849	0.2065	0.028	0.000	0.028	0.461	0.461	2%			
7	FSD	S	2,795		0.46	1	CR9-5		16	14	16.4	1797	0.0003	279245	0.0161	0.0165	0.002849	0.2065	0.000	0.095	0.095	0.556	0.556	7%			
8	Elbow, 30 Degrees	S	2,795		0.14	1	CR3-1		16	14	16.4	1797	0.0003	279245	0.0161	0.0165	0.002849	0.2065	0.000	0.029	0.029	0.585	0.585	2%			
9	Straight	S	2,795	3.5					16	14	16.4	1797	0.0003	279245	0.0161	0.0165	0.002849	0.2065	0.010	0.000	0.010	0.595	0.595	1%			
10	Elbow, 90 Degrees	S	2,795		0.27	1	CR3-1		16	14	16.4	1797	0.0003	279245	0.0161	0.0165	0.002849	0.2065	0.000	0.056	0.056	0.651	0.651	4%			
11	Straight	S	2,795	15					10	28	17.7	1437	0.0003	257681	0.0162	0.0165	0.001909	0.1322	0.029	0.000	0.029	0.680	0.680	2%			
12	Tap, Main	S	2,720		0.03	1	ER5-3		10	28	17.7	1399	0.0003	250766	0.0162	0.0166	0.001814	0.1252	0.000	0.004	0.004	0.683	0.683	0%			
13	Straight	S	2,720	14					10	28	17.7	1399	0.0003	250766	0.0162	0.0166	0.001814	0.1252	0.025	0.000	0.025	0.709	0.709	2%			
14	Tap, Main	S	2,645		0.03	1	ER5-3		10	28	17.7	1360	0.0003	243852	0.0163	0.0167	0.001721	0.1184	0.000	0.004	0.004	0.712	0.712	0%			
15	Straight	S	2,645	14					10	28	17.7	1360	0.0003	243852	0.0163	0.0167	0.001721	0.1184	0.024	0.000	0.024	0.737	0.737	2%			
16	Tap, Main	S	2,570		0.03	1	ER5-3		10	28	17.7	1322	0.0003	236937	0.0164	0.0167	0.001630	0.1118	0.000	0.003	0.003	0.740	0.740	0%			
17	Straight	S	2,570	14					10	28	17.7	1322	0.0003	236937	0.0164	0.0167	0.001630	0.1118	0.023	0.000	0.023	0.763	0.763	2%			
18	Tap, Main	S	1,770		0.82	1	ER5-3		10	28	17.7	910	0.0003	163182	0.0174	0.0176	0.000812	0.0530	0.000	0.043	0.043	0.806	0.806	3%			
19	Straight	S	1,770	14.5					10	28	17.7	910	0.0003	163182	0.0174	0.0176	0.000812	0.0530	0.012	0.000	0.012	0.818	0.818	1%			
20	Transition	S	1,770		0.25	1	ER4-2		22	10	15.9	1159	0.0003	181750	0.0172	0.0174	0.001383	0.0859	0.000	0.021	0.021	0.839	0.839	2%			
20a	Elbow, 90 Degrees	S	1,770		0.27	1	CR3-1		22	10	15.9	1159	0.0003	181750	0.0172	0.0174	0.001383	0.0859	0.000	0.023	0.023	0.863	0.863	2%			
21	Straight	S	1,770	1					22	10	15.9	1159	0.0003	181750	0.0172	0.0174	0.001383	0.0859	0.001	0.000	0.001	0.864	0.864	0%			
22	Elbow, 30 Degrees	S	1,770		0.14	1	CR3-1		22	10	15.9	1159	0.0003	181750	0.0172	0.0174	0.001383	0.0859	0.000	0.012	0.012	0.876	0.876	1%			
23	Straight	S	1,770	1					22	10	15.9	1159	0.0003	181750</td													

# CORNELL NYC TECH

---

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225 W. 34TH STREET  
NEW YORK, NY 10122  
TEL: 917.339.9300

**COST ESTIMATOR:**  
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TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

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TEL: 732.970.0700

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**SHREWSBURY, NJ 07702**  
**TEL : 732 530 4734**

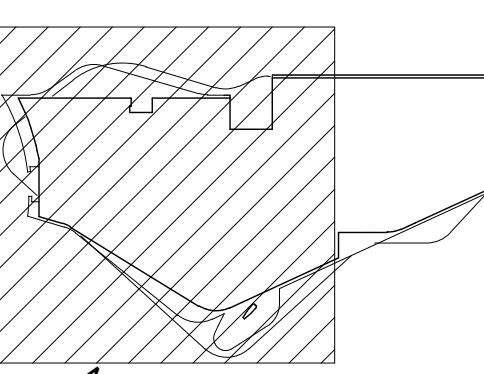
## KITCHEN CONSULTANT: JACOB POLAND BEER

116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

ISSUES / REVISIONS:		
NO.	DATE	DESC

2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

#### **KEY PLAN:**



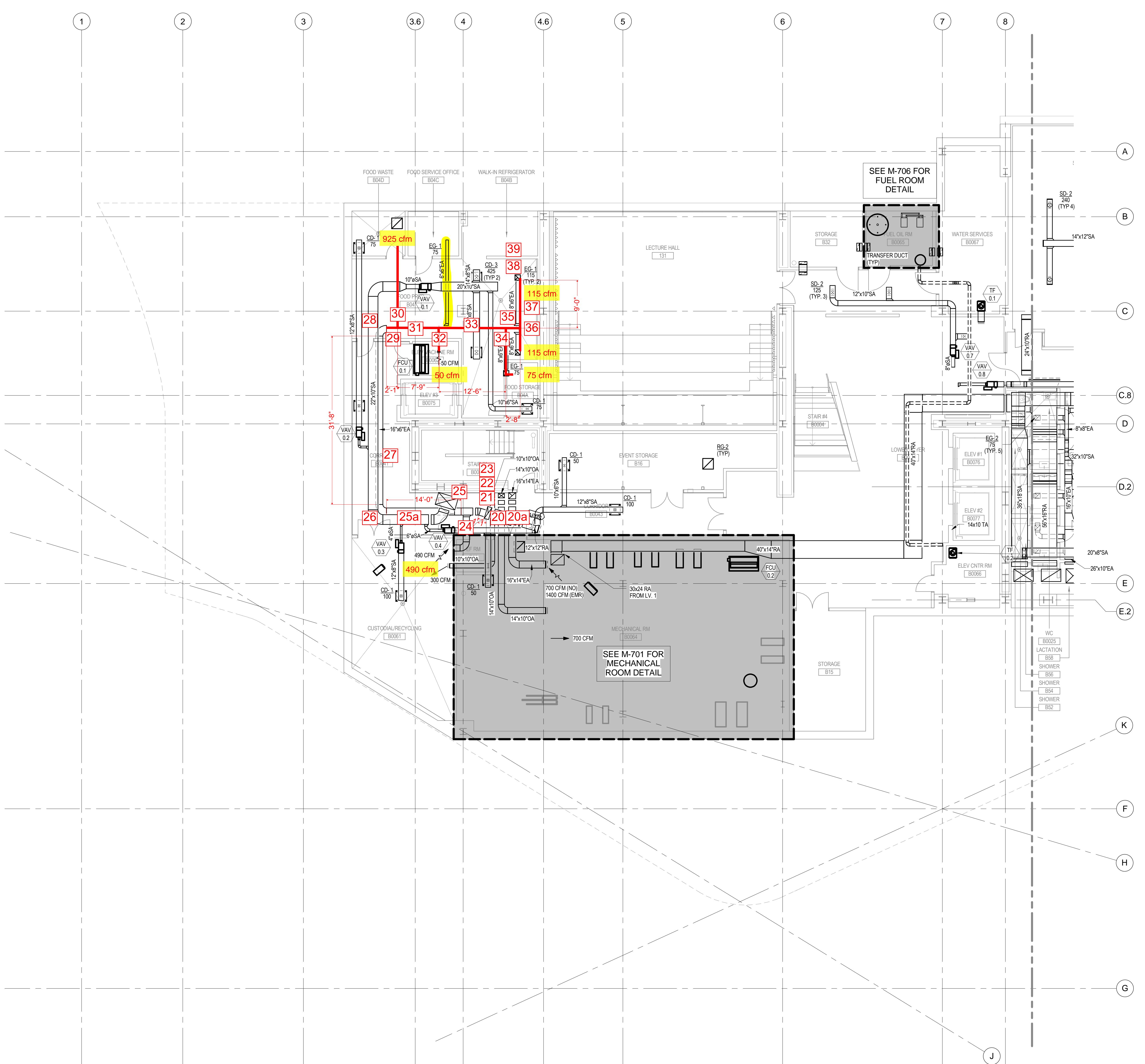
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# PROJECT

# CORNELLNYC TECH FIRST ACADEMIC BUILDING

ROOSEVELT ISLAND, NY

04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION



**A1** SCALE 1/8" - 1'-0"

# MECHANICAL CELLAR FLOOR DUCTWORK PLAN (SOUTH)

SEAL & SIGNATURE:	DATE: 01-17-14
	PROJECT No.: 225121
	DRAWING BY:
	CHK BY:
	DWG No.
	<b>M-402.00</b>
	FILE No.: <span style="border-bottom: 1px solid black; width: 150px;"></span>

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F: 424.258.6299  
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NEW YORK, NY 10011  
TEL: 212.255.6560

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TEL: 212.896.3000

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225 W. 34TH STREET  
NEW YORK, NY 10122  
TEL: 917.339.9300

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

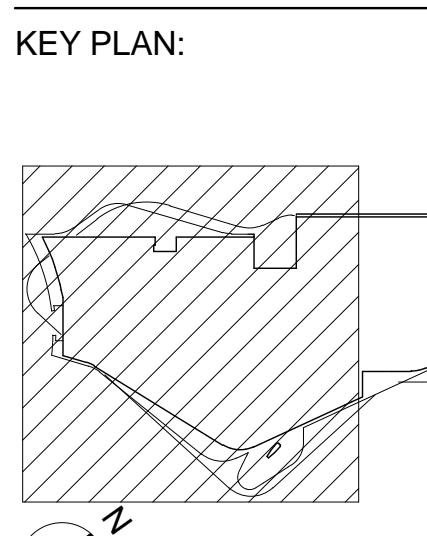
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215 W. 40TH STREET, 15F  
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KITCHEN CONSULTANT:  
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NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD



## PROJECT

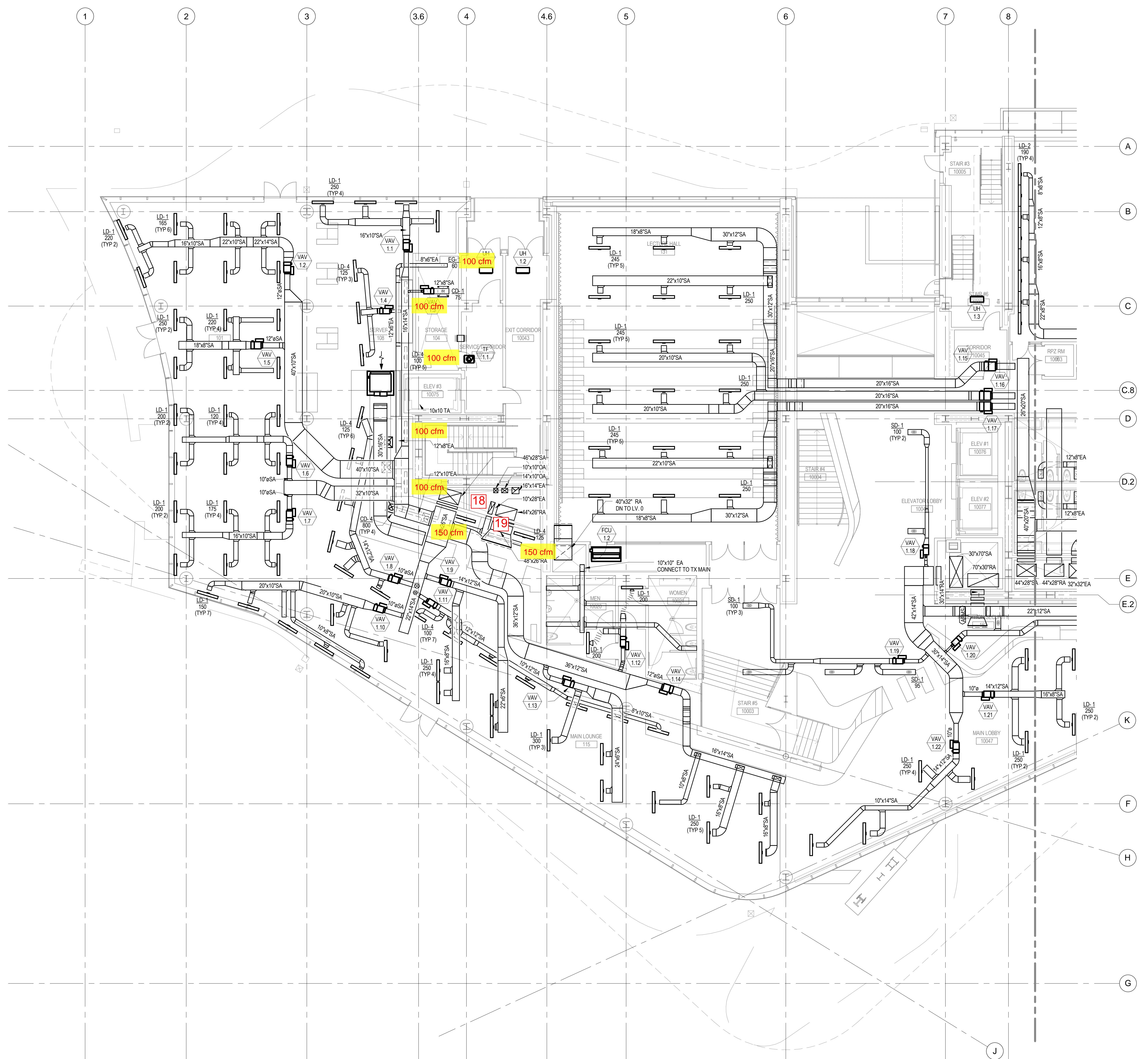
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
GROUND FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
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DWG No.: M-404.00  
FILE No.:  

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NEW YORK, NY 10122  
TEL: 917.339.9300

COST ESTIMATOR:  
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31 W. 27TH STREET, 12F  
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TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

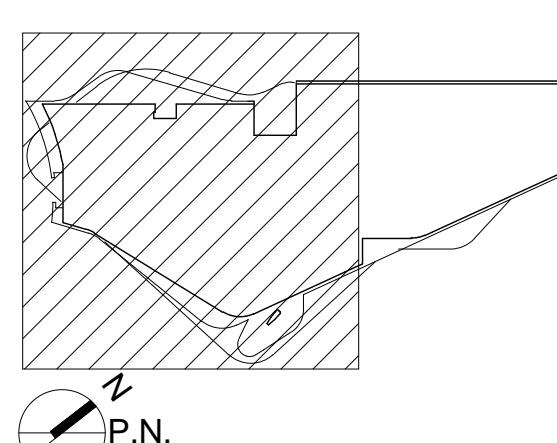
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CONSTRUCTION SPECIFICATIONS, INC  
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MORGANVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
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KITCHEN CONSULTANT:  
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NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## KEY PLAN:



## PROJECT

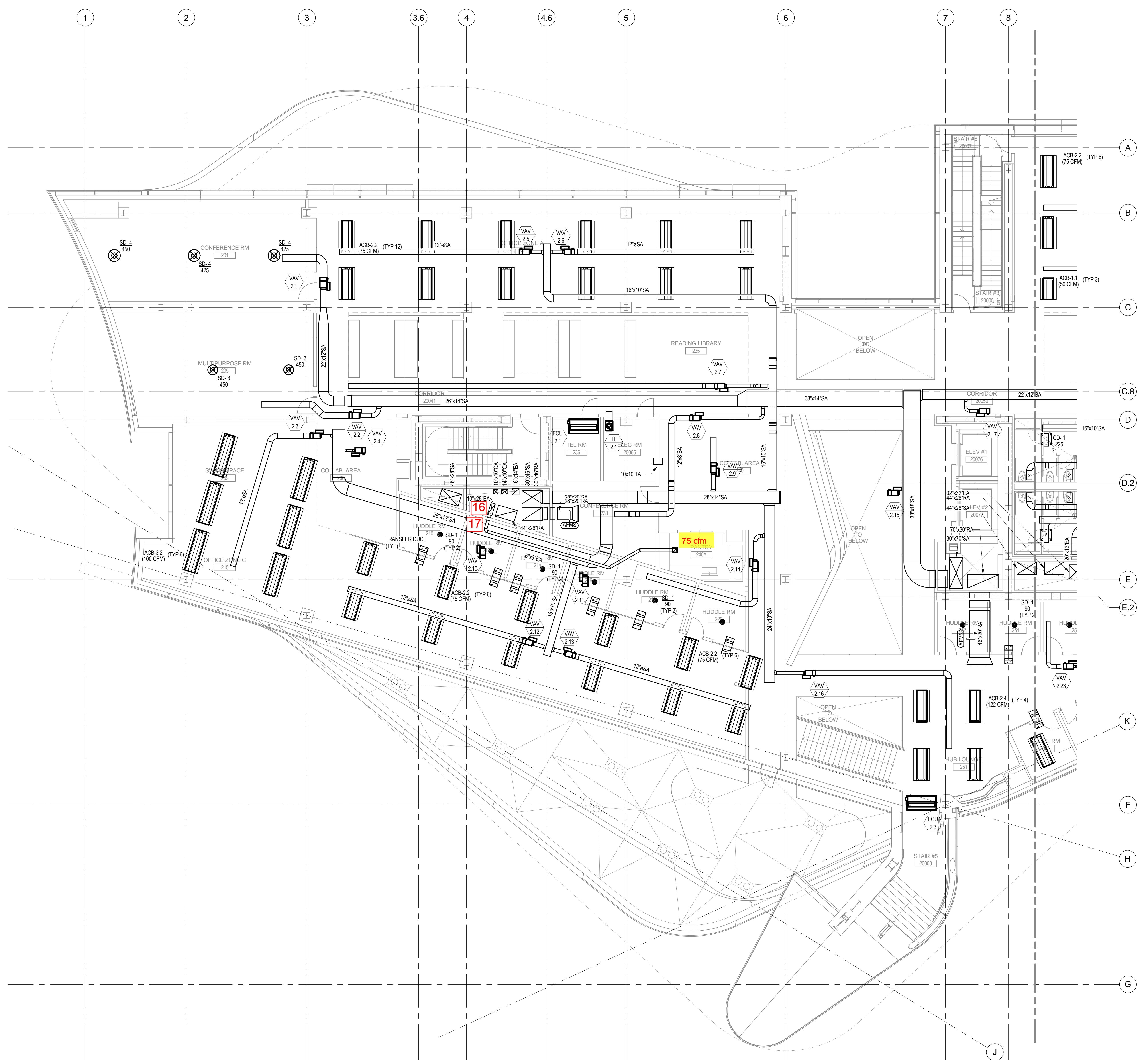
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
SECOND FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE:	DATE: 01-17-14 PROJECT No.: 225121 DRAWING BY: CHK BY: DWG No. <b>M-406.00</b>
FILE No.:	

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COST ESTIMATOR:  
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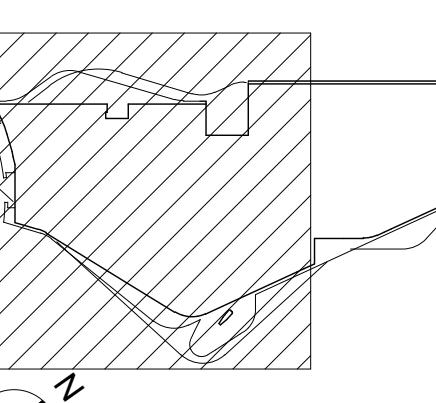
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2	08/09/2013	100% DD	
3	01/17/2014	50% CD	
4	04/21/2014	100% CD	

## KEY PLAN:



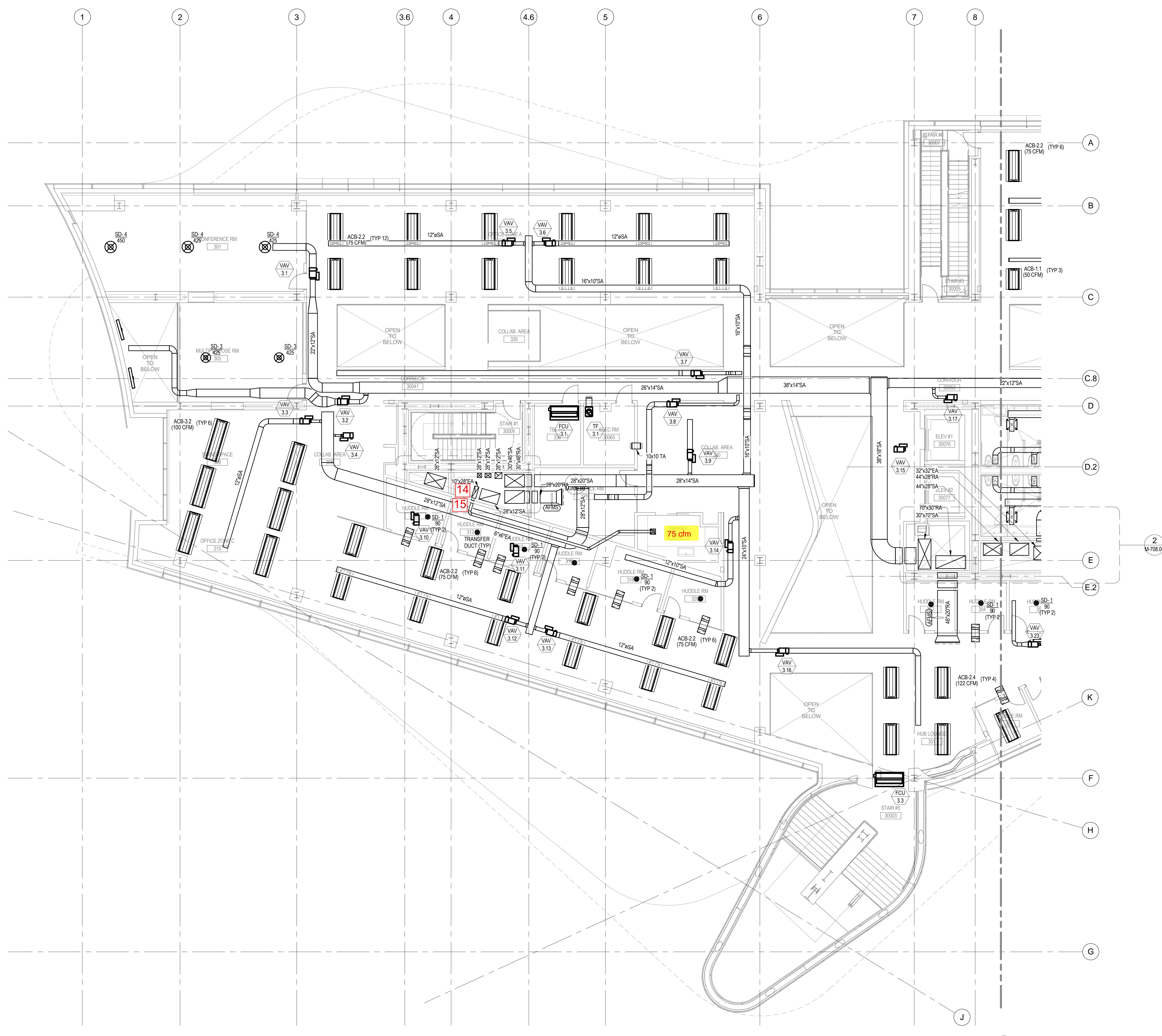
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
THIRD FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-408.00  
FILE No.:  



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ACOUSTICS.

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TEL: 917.339.9300

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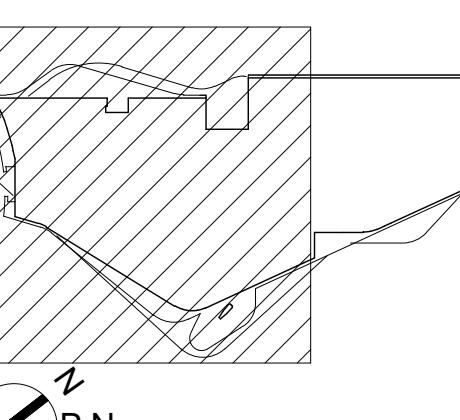
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KITCHEN CONSULTANT:  
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NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## KEY PLAN:



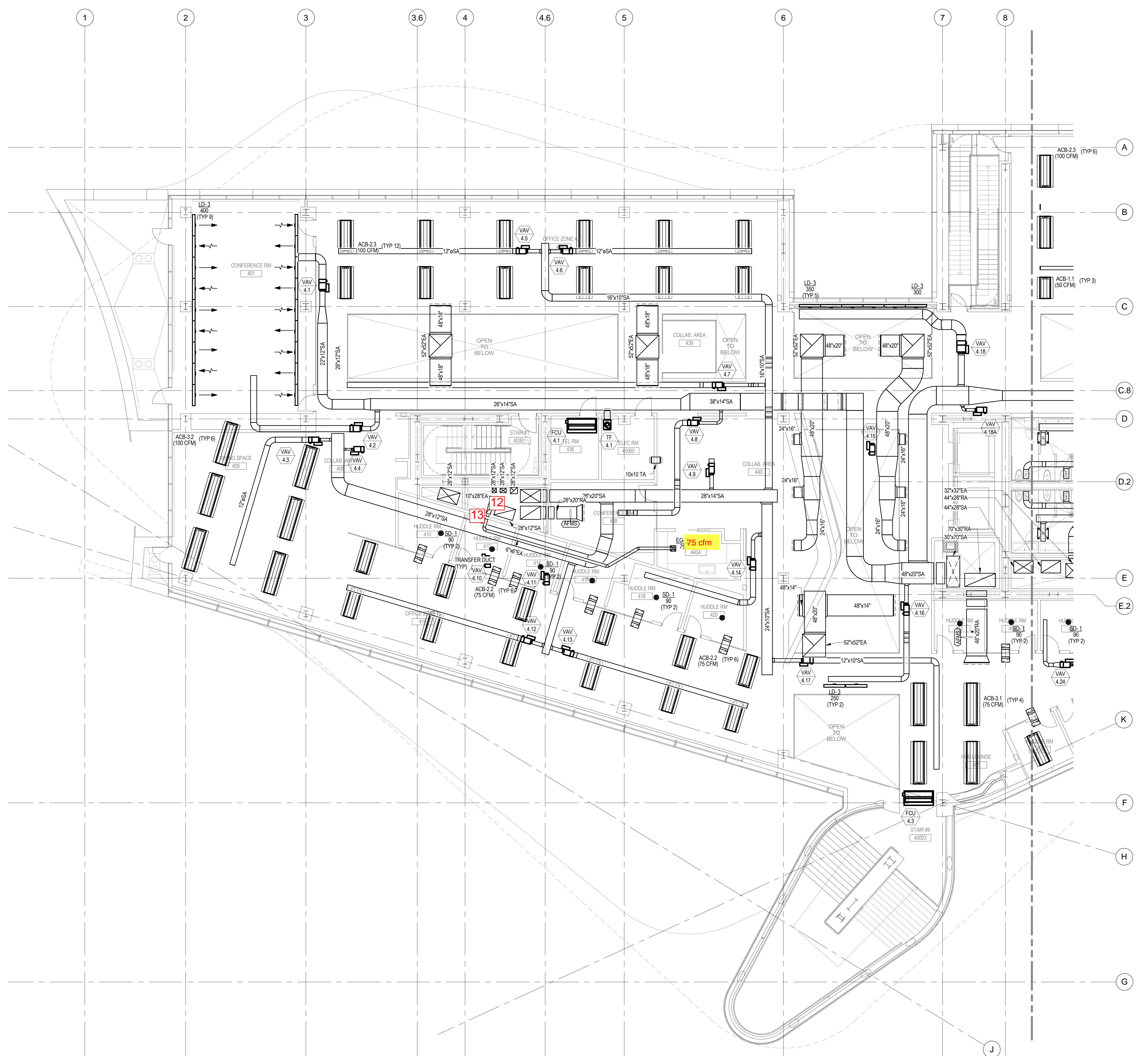
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
FOURTH FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-410.00  
FILE No.:  



ISSUES / REVISIONS:		
NO.	DATE	DESCRIPTION
1	01/17/2014	50% CD
2	05/16/2014	100% CD

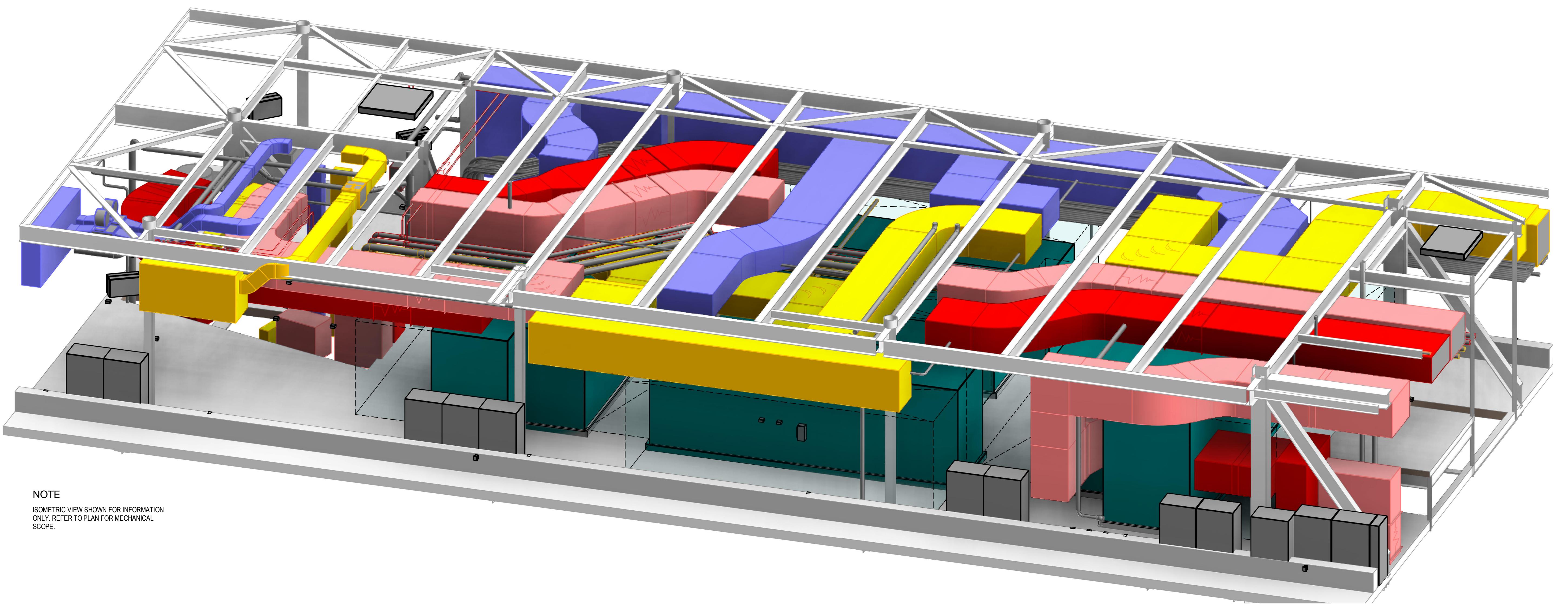
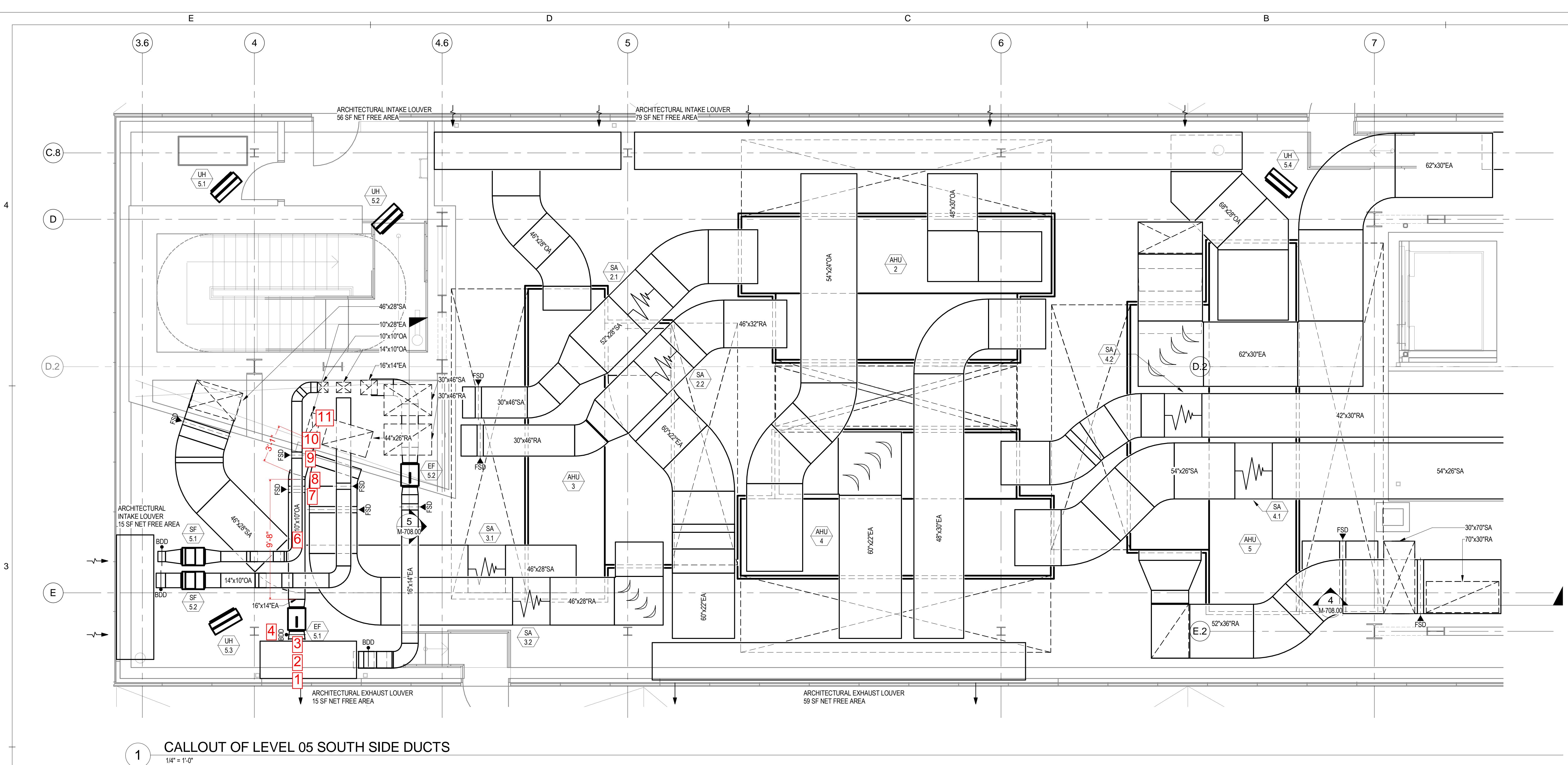
KEY PLAN:

PROJECT  
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING  
ROOSEVELT ISLAND, NY

MECHANICAL  
PART PLANS AND  
SECTIONS  
SHEET 2

DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-702.00  
FILE No.:  

05-16-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION



2 LEVEL 05 PENTHOUSE DUCTWORK SOUTH ISOMETRIC VIEW

Job Title:	CNY
Jon Number:	225121
Calculation Date:	4/9/2014
Engineer:	CGB
Fitting Reference:	ASHRAE Duct Fitting Database
Safety factor	10%

Air Properties	
Temperature (F):	53
Humidity Ratio:	0.0083
Elevation (ft):	0

Revision	Date	Made by	Checked	Description
1	9-Apr-2014	CGB	CS	
2				
3				
4				

System Description: EF-5.2

## External Static Pressure

Section	Description of Section	Known & Constant Loss (in. w.g.)	Duct Material (Steel, Flex, Lined, Concrete)	CFM	Length (ft)	Fitting Coefficient	Fitting QTY	Fitting Reference Code	Round Diameter (in.)	Height (in.)	Width (in.)	Equivalent Diameter (in.)	Velocity (fpm)	Duct Material Roughness	Re	f'	f	Rectangular			Duct Pressure Loss/ft (in. w.g.)	Velocity Pressure (in. w.g.)	Straight Losses	Fitting Losses	Total Section Pressure Loss (in. w.g.)	Cumulative Pressure Loss (in. w.g.)	Section % of Total ESP				
																		Rectangular	CFM	Length (ft)	Fitting Coefficient	Fitting QTY	Fitting Reference Code	Round Diameter (in.)	Height (in.)	Width (in.)	Equivalent Diameter (in.)	Velocity (fpm)	Duct Material Roughness	Re	f'
Fan PS																															
1	Louver	0.1																													
2	Plenum	0.05																													
3	Plenum Connection		S	1,400		1	1	SR2-1		16	14	16.4	900	0.0003	139872	0.0179	0.0180		0.000781		0.0518	0.000	0.052	0.052	0.202	6%					
4	Elbow, 90 Degrees		S	1,400		0.27	1	CR3-1		16	14	16.4	900	0.0003	139872	0.0179	0.0180		0.000781		0.0518	0.000	0.014	0.014	0.216	2%					
5	Straight		S	1,400	1.5					16	14	16.4	900	0.0003	139872	0.0179	0.0180		0.000781		0.0518	0.001	0.000	0.001	0.217	0%					
6	BDD		S	1,400		0.37	1	CR9-3		16	14	16.4	900	0.0003	139872	0.0179	0.0180		0.000781		0.0518	0.000	0.019	0.019	0.236	2%					
7	Elbow, 90 Degrees		S	1,400		0.27	1	CR3-1		16	14	16.4	900	0.0003	139872	0.0179	0.0180		0.000781		0.0518	0.000	0.014	0.014	0.250	2%					
8	Elbow, 90 Degrees		S	1,400		0.27	1	CR3-1		16	14	16.4	900	0.0003	139872	0.0179	0.0180		0.000781		0.0518	0.000	0.014	0.014	0.264	2%					
9	Straight		S	1,400	12					16	14	16.4	900	0.0003	139872	0.0179	0.0180		0.000781		0.0518	0.009	0.000	0.009	0.274	1%					
10	FSD		S	1,400		0.46	1	CR9-5		16	14	16.4	900	0.0003	139872	0.0179	0.0180		0.000781		0.0518	0.000	0.024	0.024	0.297	3%					
11	Transition		S	1,400		0.03	1	ER4-2		14	14	15.3	1029	0.0003	149446	0.0178	0.0180		0.001082		0.0677	0.000	0.002	0.002	0.299	0%					
Fan SS																															
12	Transition		S	1,400		0.03	1	ER4-2		16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.000	0.003	0.003	0.302	0%					
13	Straight		S	1,400	3.5					16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.006	0.000	0.006	0.309	1%					
14	Elbow, 90 Degrees		S	1,400		0.27	1	CR3-1		16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.000	0.027	0.027	0.336	3%					
15	Straight		S	1,400	2					16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.004	0.000	0.004	0.340	0%					
16	Elbow, 90 Degrees Mitered		S	1,400		0.38	1	CR3-14		16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.000	0.039	0.039	0.379	5%					
17	Straight		S	1,400	72					16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.133	0.000	0.133	0.512	16%					
18	Elbow, 90 Degrees Mitered		S	1,400		0.38	1	CR3-1		16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.000	0.039	0.039	0.550	5%					
19	FSD		S	1,400		0.46	1	CR9-5		16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.000	0.047	0.047	0.597	6%					
20	Straight		S	1,400	12					16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.022	0.000	0.022	0.619	3%					
21	Elbow, 90 Degrees		S	1,400		0.27	1	CR3-1		16	10	13.7	1260	0.0003	166542	0.0177	0.0178		0.001848		0.1016	0.000	0.027</td								

# CORNELL NYC TECH

ARCHITECT:  
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NEW YORK, NY 10122  
TEL: 917.339.9300

COST ESTIMATOR:  
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TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
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TEL: 212.216.9596

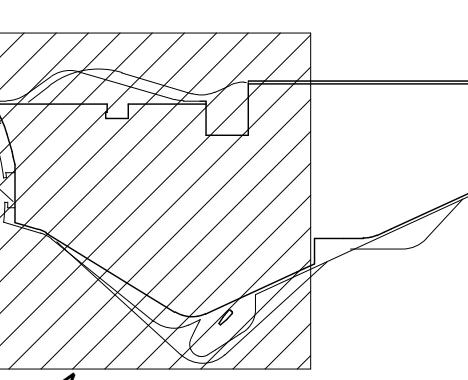
SPECIFICATIONS:  
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2200 NEW YORK, P.O. BOX 488  
MORGANVILLE, NJ 07751  
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TEL: 732.530.4734

KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## KEY PLAN:



## PROJECT

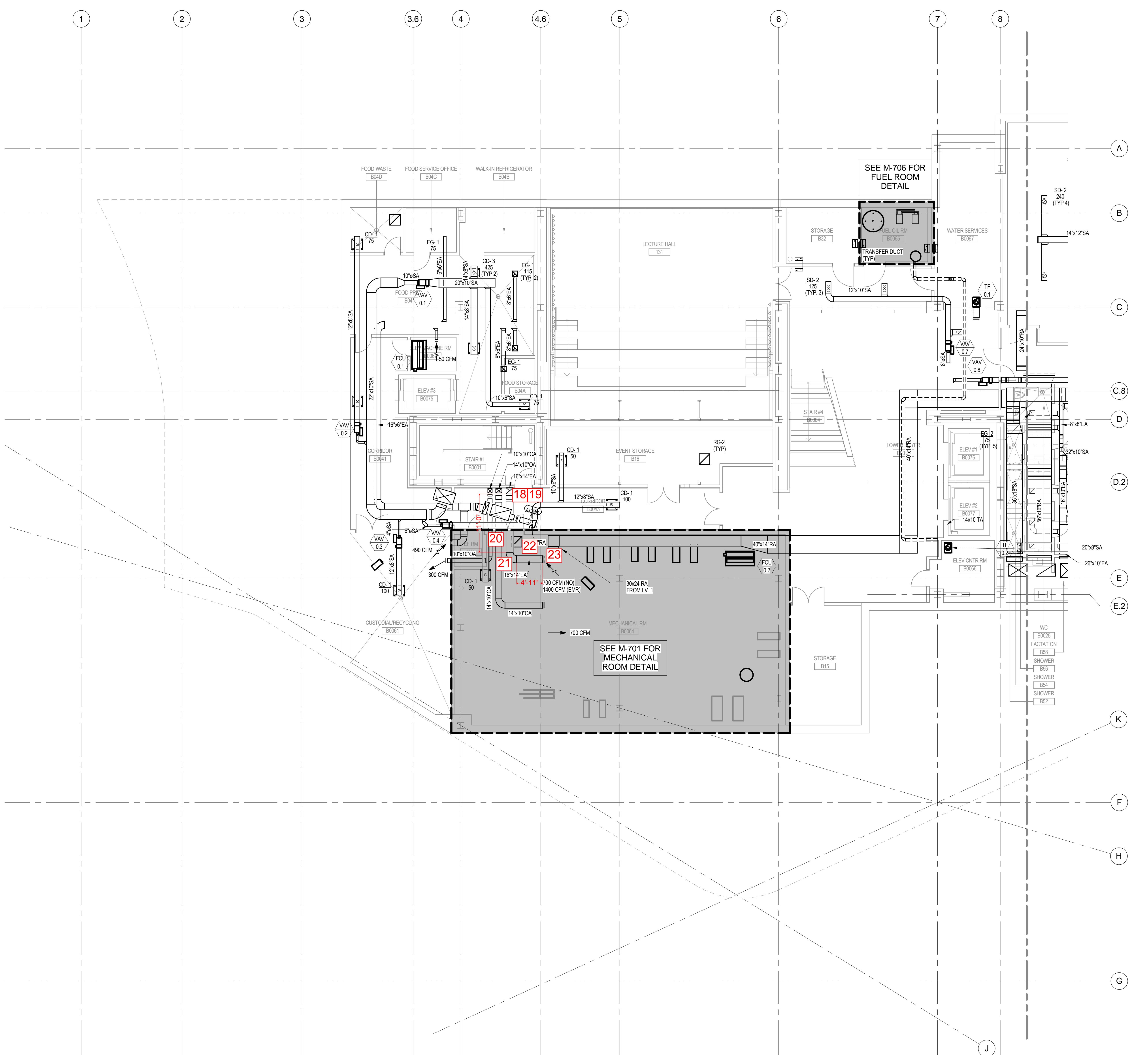
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
CELLAR FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-402.00  
FILE No.:  

04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION



A1 SCALE 1/8" = 1'-0"

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SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
22 TENNENT ROAD P.O. BOX 488  
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TEL: 732.970.0700

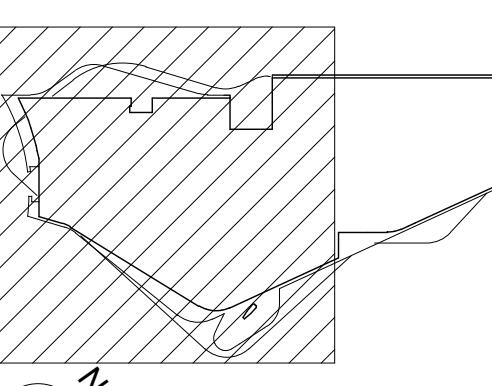
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TEL: 212.206.0736

ISSUES / REVISIONS:		
NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

#### **KEY PLAN:**



---

# PROJECT

# CORNELLNYC TECH FIRST ACADEMIC BUILDING

**BOEING**  
ROOSEVELT ISLAND, NY

04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION

**A1** SCALE 1/8" - 1'-0"

# MECHANICAL GROUND FLOOR DUCTWORK PLAN (SOLID)

(500TH)	
SEAL & SIGNATURE:	DATE: 01-17-14
	PROJECT No.: 225121
	DRAWING BY:
	CHK BY:
DWG No.	
<b>M-404.00</b>	
FILE No.:	

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NEW YORK, NY 10122  
TEL: 917.339.9302

COST ESTIMATOR:  
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TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.0596

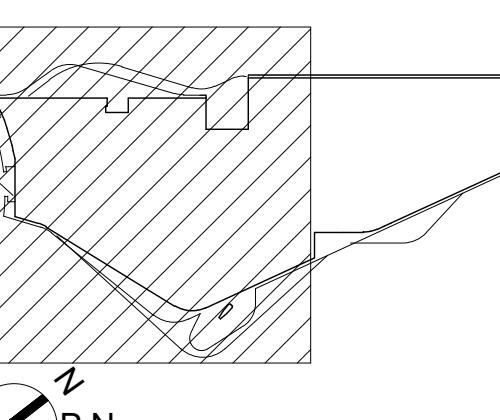
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
2200 NEW YORK, P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
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TEL: 732.530.4734

KITCHEN CONSULTANT:  
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NO.	DATE	DESCRIPTION
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## KEY PLAN:



## PROJECT

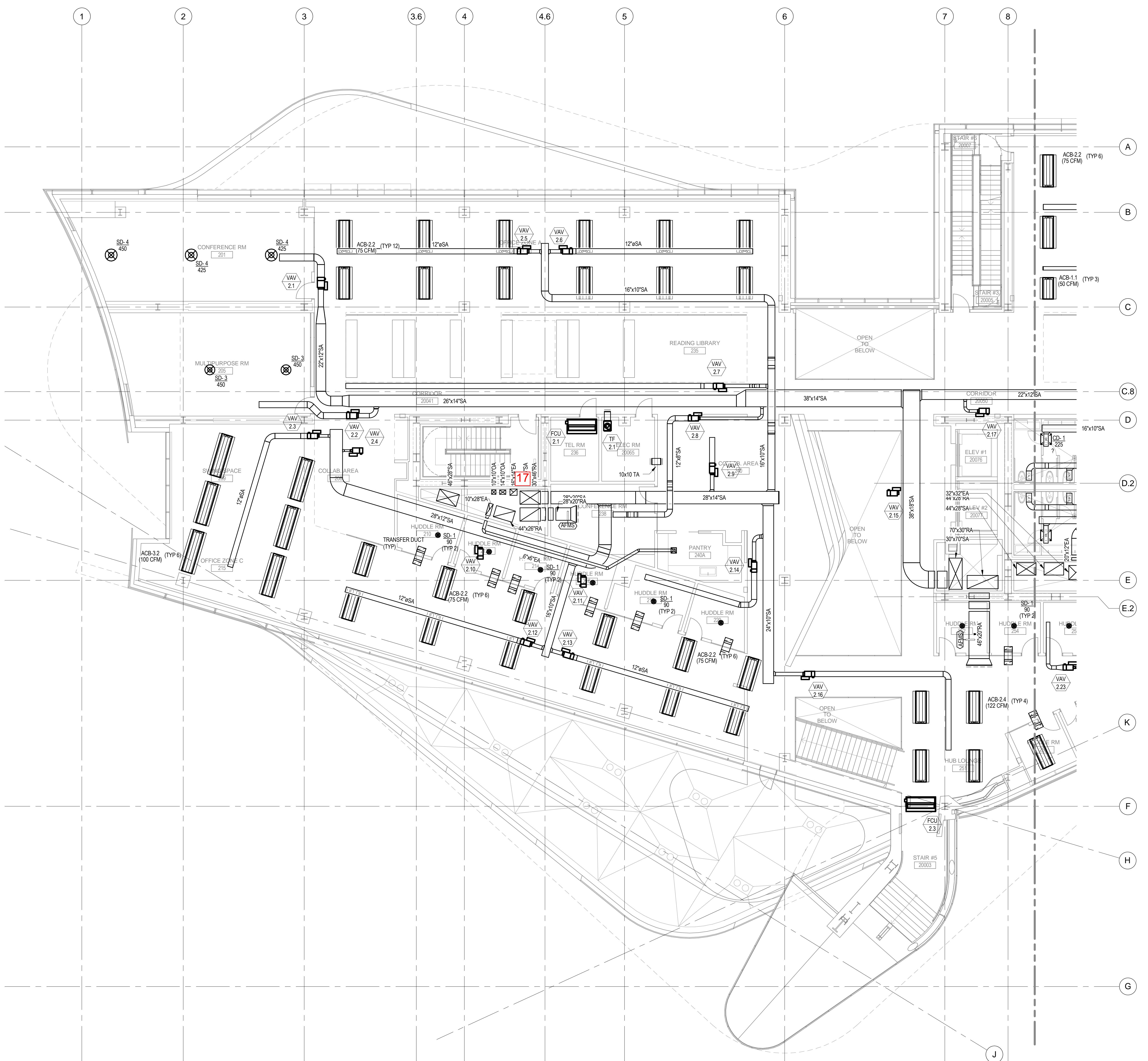
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
SECOND FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-406.00  
FILE No.:  

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TEL: 917.339.9300

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CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
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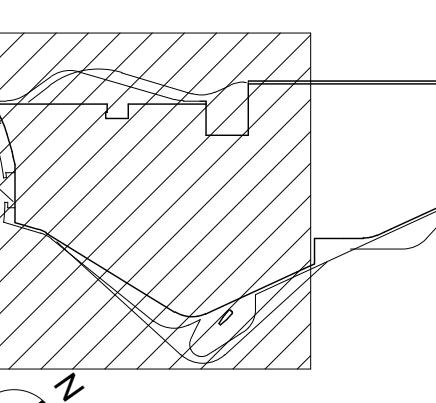
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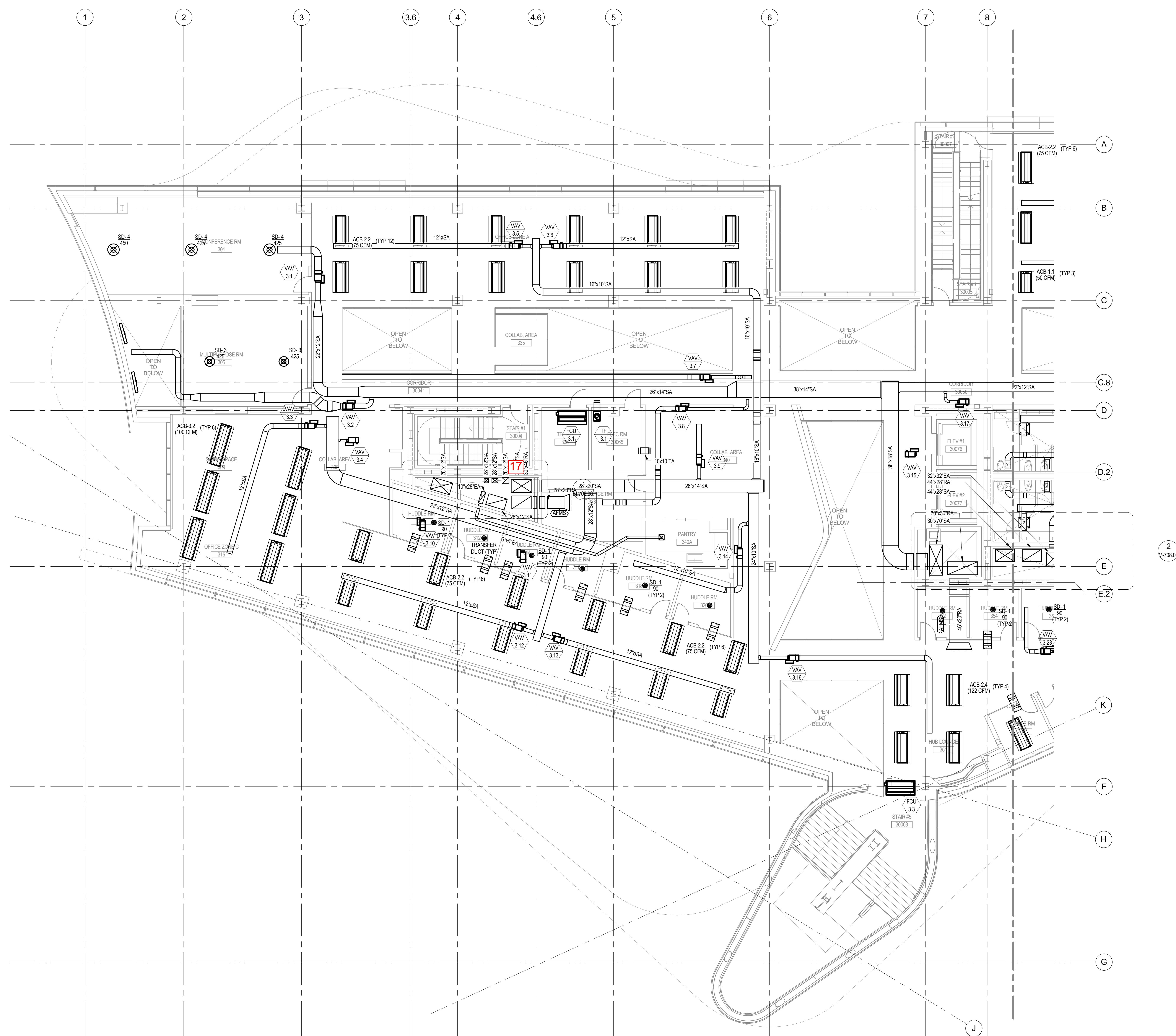
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
THIRD FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
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DWG No.: M-408.00  
FILE No.:  



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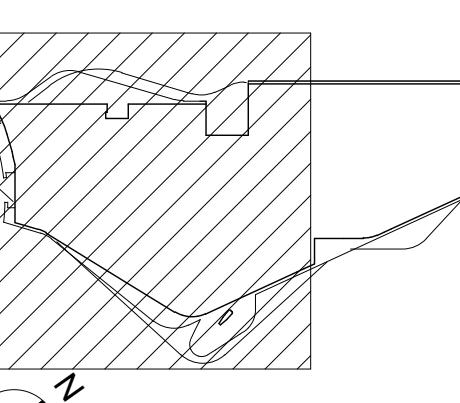
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3	01/17/2014	50% CD
4	04/21/2014	100% CD

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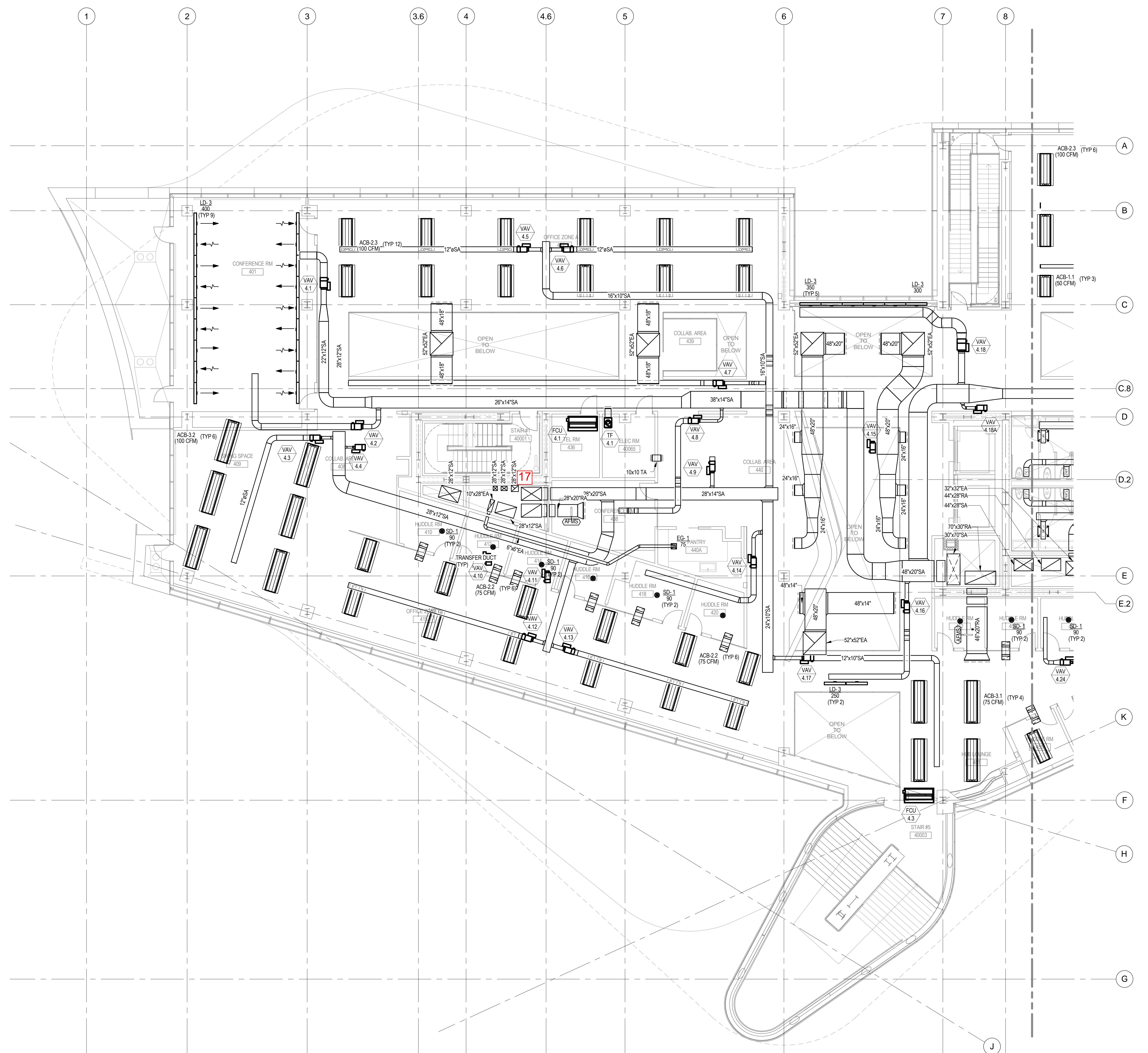
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
FOURTH FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE:	DATE: 01-17-14 PROJECT No.: 225121 DRAWING BY: CHK BY: DWG No.: M-410.00 FILE No.: <span style="border: 1px solid black; padding: 2px;"> </span>
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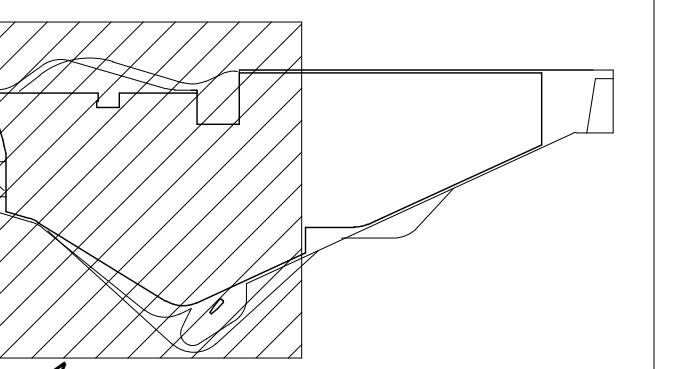
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NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
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## KEY PLAN:

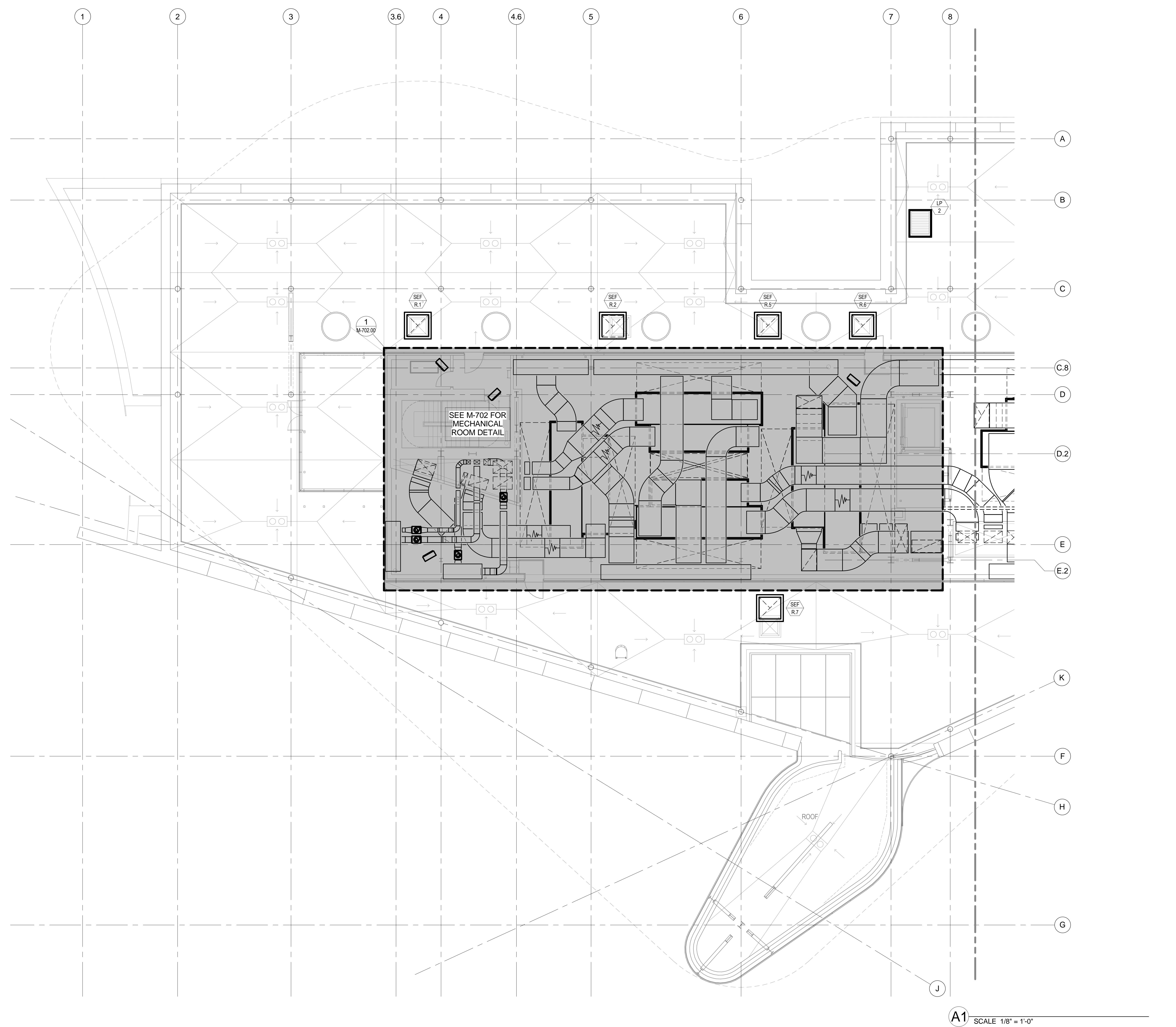


PROJECT  
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING  
ROOSEVELT ISLAND, NY

MECHANICAL  
MECHANICAL ROOF  
DUCTWORK PLAN  
(SOUTH)

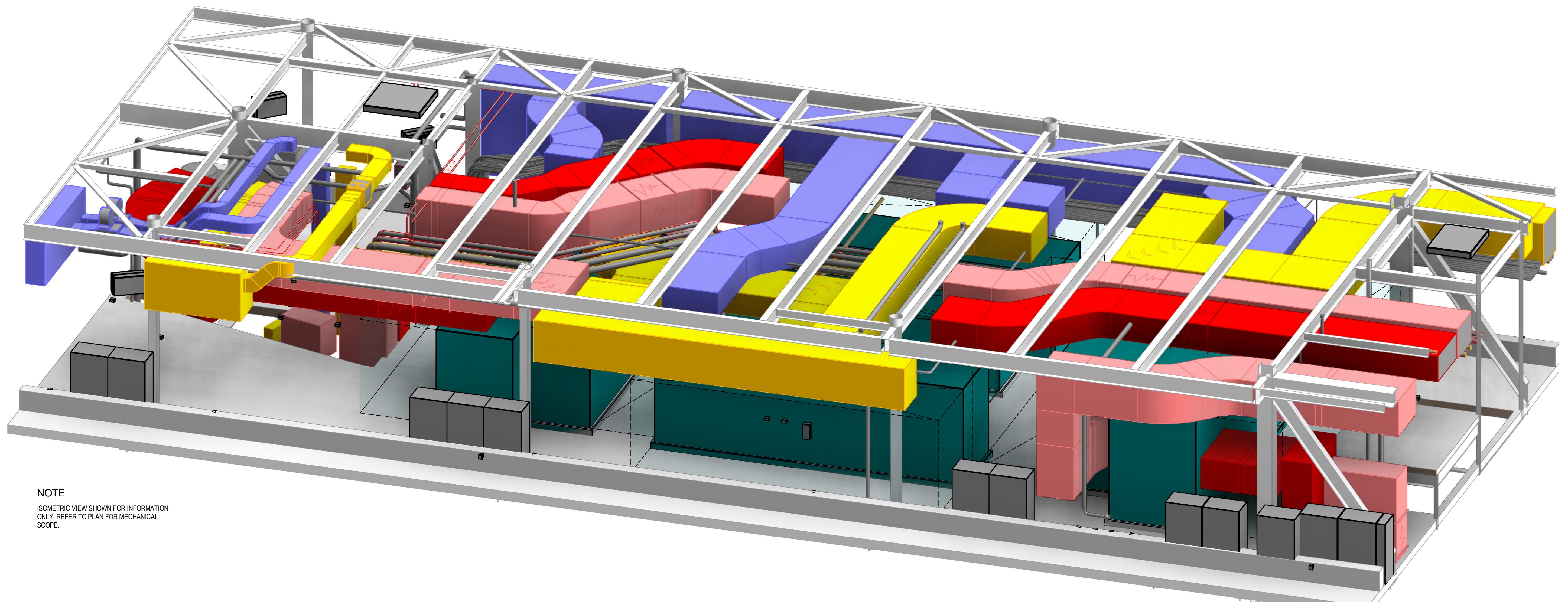
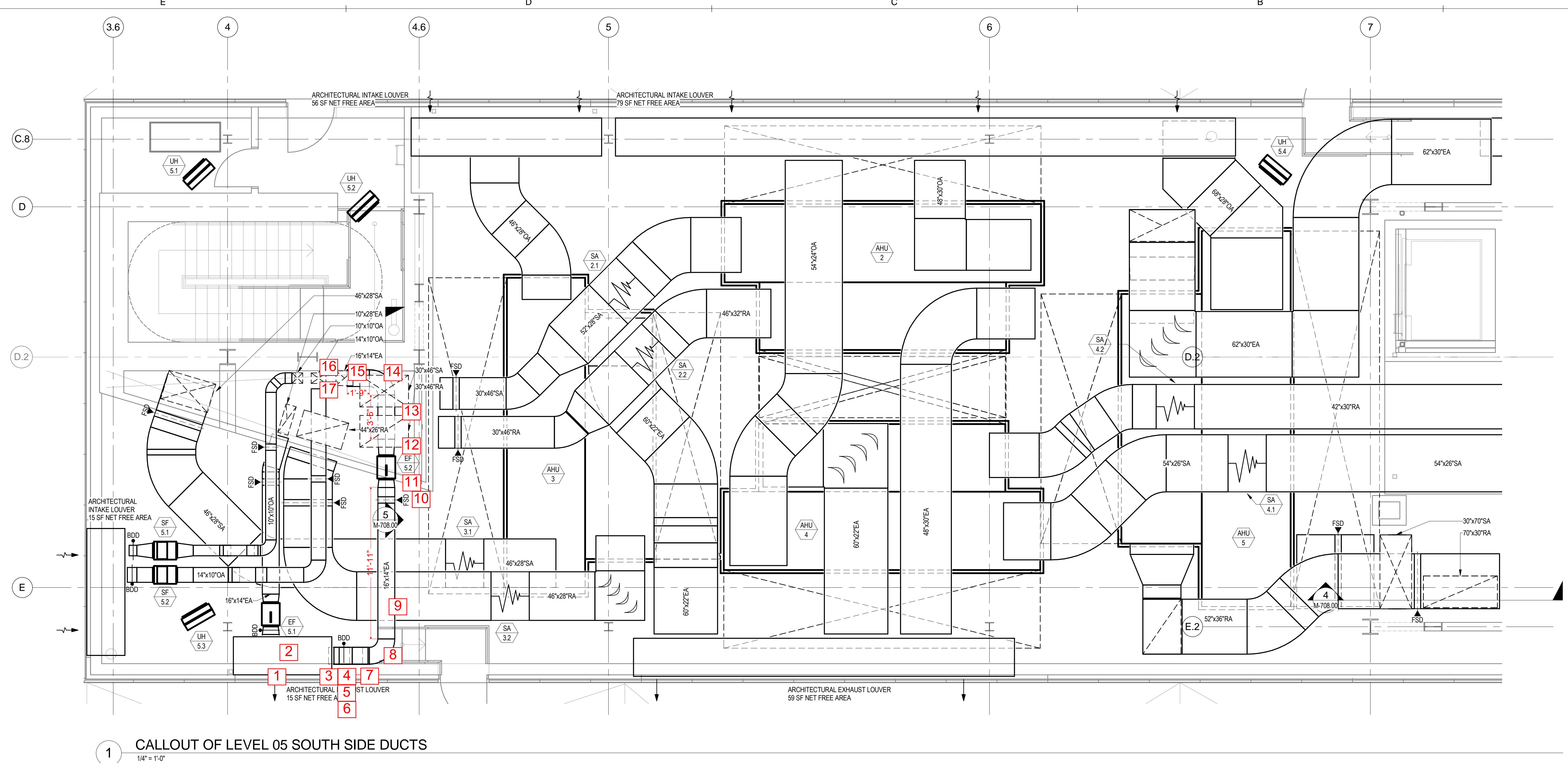
SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
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DWG No.: M-412.00  
FILE No.:  

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ISSUES / REVISIONS:		
NO.	DATE	DESCRIPTION
1	01/17/2014	50% CD
2	05/16/2014	100% CD

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NOTE  
ISOMETRIC VIEW SHOWN FOR INFORMATION  
ONLY. REFER TO PLAN FOR MECHANICAL  
SCOPE.

2 LEVEL 05 PENTHOUSE DUCTWORK SOUTH ISOMETRIC VIEW

PROJECT  
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING  
ROOSEVELT ISLAND, NY

MECHANICAL  
PART PLANS AND  
SECTIONS  
SHEET 2

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-702.00  
FILE No.:

Job Title:	CNY
Jon Number:	225121
Calculation Date:	4/9/2014
Engineer:	CGB
Fitting Reference:	ASHRAE Duct Fitting Database
Safety factor	10%

Air Properties	
Temperature (F):	53
Humidity Ratio:	0.0083
Elevation (ft):	0

Revision	Date	Made by	Checked	Description
1	9-Apr-2014	CGB	CS	
2	14-Apr-14	CGB		
3				
4				

**System Description:** TX-5.1**External Static Pressure**

Section	Description of Section	Known & Constant Loss (in. w.g.)	Duct Material (Steel, Flex, Lined, Concrete)	Rectangular										Duct Pressure Loss/ft (in. w.g.)	Velocity Pressure (in. w.g.)	Straight Losses	Fitting Losses	Total Section Pressure Loss (in. w.g.)	Cumulative Pressure Loss (in. w.g.)	Section % of Total ESP			
				CFM	Length (ft)	Fitting Coefficient	Fitting QTY	Fitting Reference Code	Round Diameter (in.)	Width (in.)	Height (in.)	Equivalent Diameter (in.)	Velocity (fpm)	Duct Material Roughness									
Fan PS									0.0	0	#DIV/0!	0	0.0000	0.00000	0.00000	0.0000	0.000	0.000	0.000	0.000	0%		
1	Louver	0.1							0.0	0	#DIV/0!	0	0.0000	0.00000	0.00000	0.0000	0.100	0.100	0.100	0.100	14%		
2	Plenum	0.05							0.0	0	#DIV/0!	0	0.0000	0.00000	0.00000	0.0000	0.050	0.050	0.050	0.150	7%		
3	Plenum Connection	S	7,500		1	1	SR2-1		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.096	0.096	0.246	13%
4	BDD	S	7,500		0.37	1	CR9-3		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.036	0.036	0.282	5%
5	Transition	S	7,500		0.18	1	ER4-2		35	35	38.3	882	0.0003	320242	0.0146	0.0152	0.000269	0.0497	0.000	0.009	0.009	0.291	1%
Fan SS																							
6	Transition	S	7,500		0.12	1	ER4-2		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.012	0.012	0.303	2%
7	Straight	S	7,500	3					44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.002	0.000	0.002	0.305	0%
8	Elbow, 90 Degrees	S	7,500		0.27	1	CR3-1		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.026	0.026	0.331	4%
9	Straight	S	7,500	6.5					44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.004	0.000	0.004	0.335	1%
10	Elbow, 90 Degrees	S	7,500		0.27	1	CR3-1		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.026	0.026	0.361	4%
11	Straight	S	7,500	8.5					44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.006	0.000	0.006	0.367	1%
12	Elbow, 45 Degrees	S	7,500		0.14	1	CR3-1		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.013	0.013	0.380	2%
13	Straight	S	7,500	1					44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.001	0.000	0.001	0.381	0%
14	Elbow, 45 Degrees	S	7,500		0.14	1	CR3-1		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.013	0.013	0.394	2%
15	Elbow, 90 Degrees	S	7,500		0.27	1	CR3-1		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.026	0.026	0.420	4%
16	Straight	S	7,500	1					44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.001	0.000	0.001	0.421	0%
17	FSD	S	7,500		0.46	1	CR9-5		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.044	0.044	0.465	6%
18	Elbow, 90 Degrees	S	7,500		0.27	1	CR3-1		44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.000	0.026	0.026	0.491	4%
19	Straight	S	7,500	1.5					44	20	31.8	1227	0.0003	385063	0.0144	0.0150	0.000667	0.0964	0.001	0.000	0.001	0.492	0%
20	Transition	S	7,500		0.03	1	ER4-2		32	32	35.0	1055	0.0003	350265	0.0144	0.0151	0.000418	0.0712	0.000	0.002	0.002	0.494	0%
21	Straight	S	7,500	15					32	32	35.0	1055	0.0003	350265	0.0144	0.0151	0.000418	0.0712	0.006	0.000	0.006	0.501	1%
22	Tap, Main	S	6,075		0.35	1	ER5-3		32	32	35.0	854	0.0003	283714	0.0150	0.0155	0.000282	0.0467	0.000	0.016	0.016	0.517	2%
23	Straight	S	6,075	14					32	32	35.0	854	0.0003	283714	0.0150	0.0155	0.000282	0.0467	0.004	0.000	0.004	0.521	1%
24	Tap, Main	S	4,650		0.51	1	ER5-3		32	32	35.0	654	0.0003	217164	0.0157	0.0162	0.000172	0.0274	0.000	0.014	0.014	0.535	2%
25	Straight	S	4,650	14					32	32	35.0	654	0.0003	217164	0.0157	0.0162	0.000172	0.0274	0.002	0.000	0.002	0.537	0%
26	Tap, Main	S	3,225		0.8	1	ER5-3		32	32	35.0	454	0.00										

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---

**SPECIFICATIONS:**

**CONSTRUCTION SPECIFICATIONS, INC**  
22 TENNENT ROAD P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

**WATER PROOFING:**  
**HENSHELL & BUCCELLATO**  
**166 PATTERSON AVENUE**  
**SHREWSBURY, NJ 07702**  
**TEL: 732.530.4734**

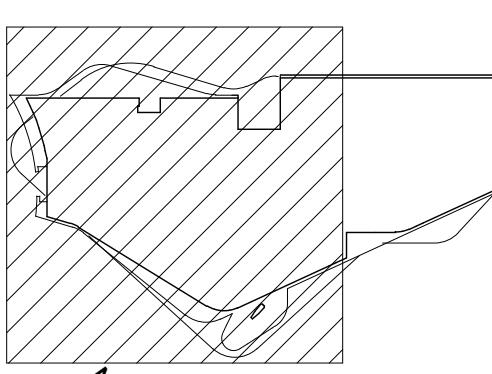
## KITCHEN CONSULTANT:

JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK NY 10016

## **ISSUES / REVISIONS:**

NO.	DATE	DESC
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD

## KEY PLAN:



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# PROJECT

# CORNELLNYC TECH FIRST ACADEMIC BUILDING

ROOSEVELT ISLAND, NY

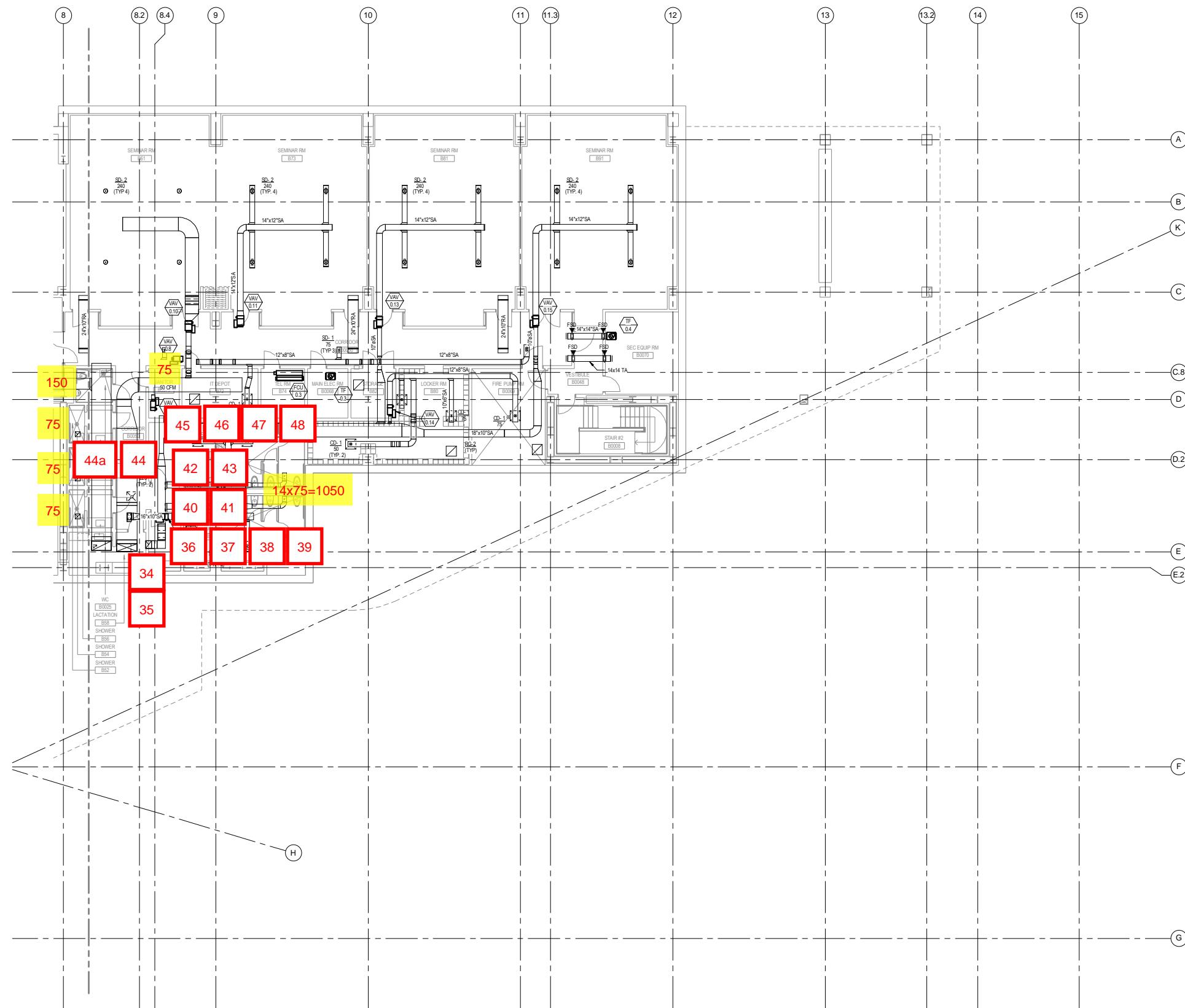
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A1 SCALE 1/8" - 1'-0"

---

# MECHANICAL CELLAR FLOOR DUCTWORK PLAN (SOUTH)

---



# CORNELL NYC TECH

ARCHITECT:  
mOmorphosis  
153 W. 27th Street  
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NY 10001  
T: 424.258.6200  
F: 424.258.6299  
www.morphosis.com

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CORNELLNYC TECH  
111 EIGHTH AVENUE, 302  
NEW YORK, NY 10011  
TEL: 212.255.6560

SMEP  
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LIGHTING  
EXTERIOR ENVELOPE  
AV/IT/ SECURITY  
ACOUSTICS.

ARUP  
77 WATER STREET  
NEW YORK, NY 10005  
TEL: 212.896.3000

GEOTECHNICAL:  
MUESER RUTLEDGE  
225 W. 34TH STREET  
NEW YORK, NY 10122  
TEL: 917.339.9300

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

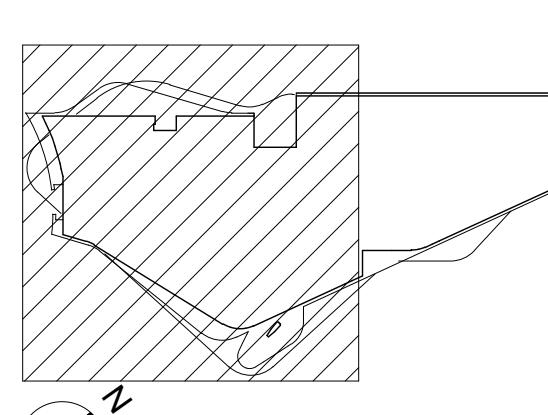
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
2200 NEW YORK, P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
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KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

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2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## KEY PLAN:



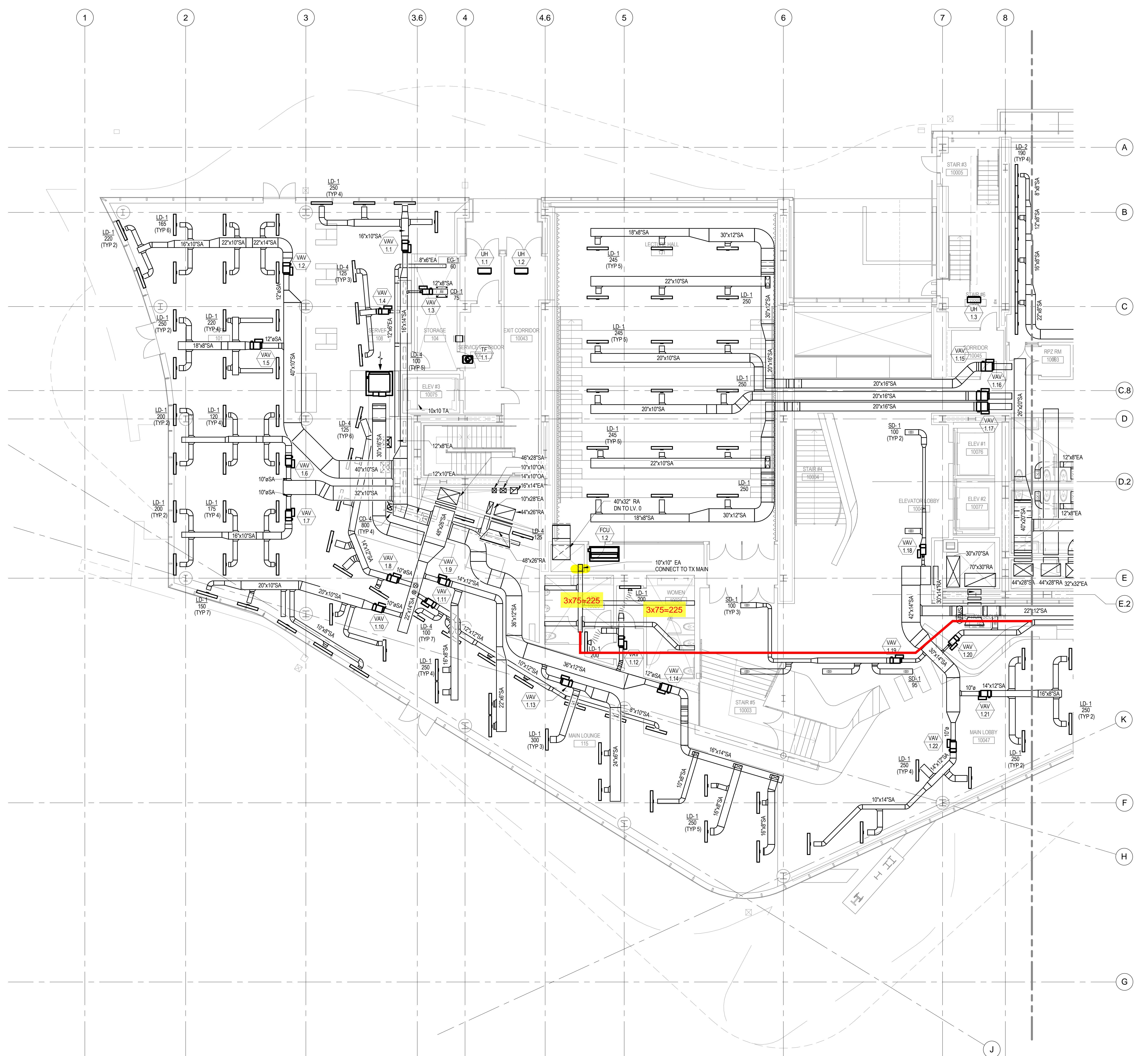
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
GROUND FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-404.00  
FILE No.:  



A1 SCALE 1/8" = 1'-0"

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EXTERIOR ENVELOPE  
AV/IT/ SECURITY  
ACOUSTICS.

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TEL: 212.896.3000

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NEW YORK, NY 10122  
TEL: 917.339.9302

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

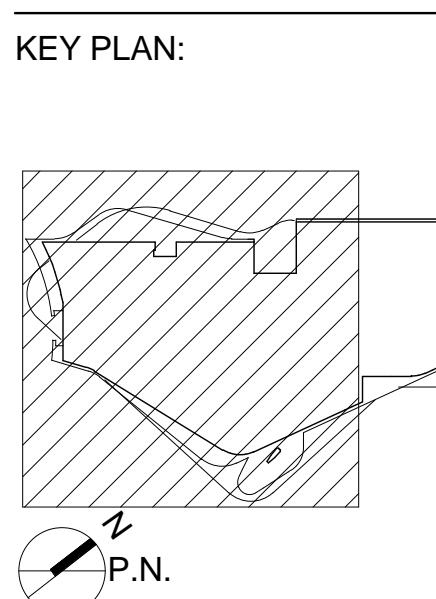
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215 W. 40TH STREET, 15F  
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TEL: 212.216.9596

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CONSTRUCTION SPECIFICATIONS, INC.  
215 W. 40TH STREET, P.O. BOX 488  
MORRISONVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
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TEL: 732.530.4734

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111 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
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NO.	DATE	DESCRIPTION
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PROJECT

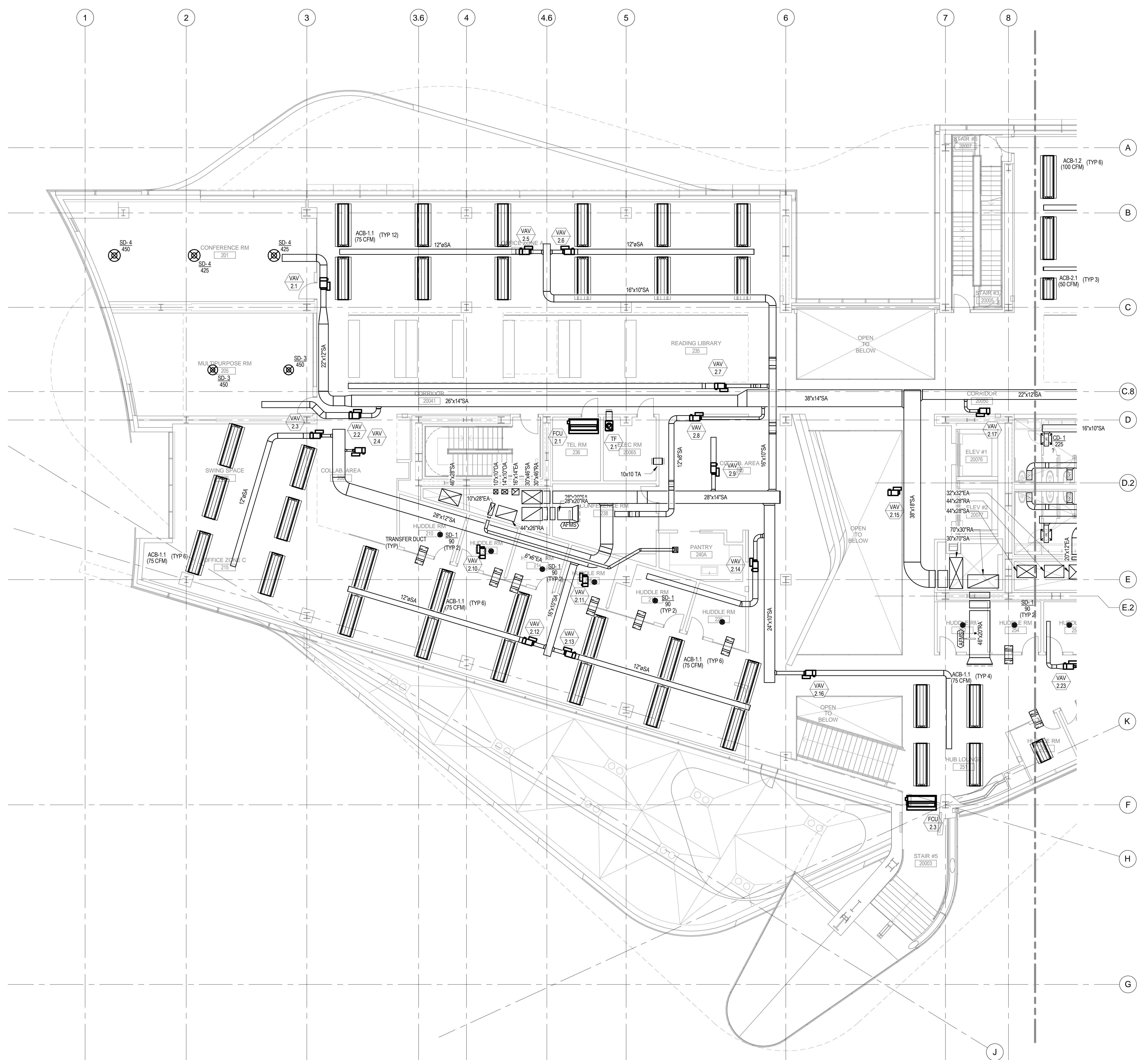
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
SECOND FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-406.00  
FILE No.:  

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EXTERIOR ENVELOPE  
AV / IT / SECURITY  
ACOUSTICS.

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215 W. 40TH STREET, 15F  
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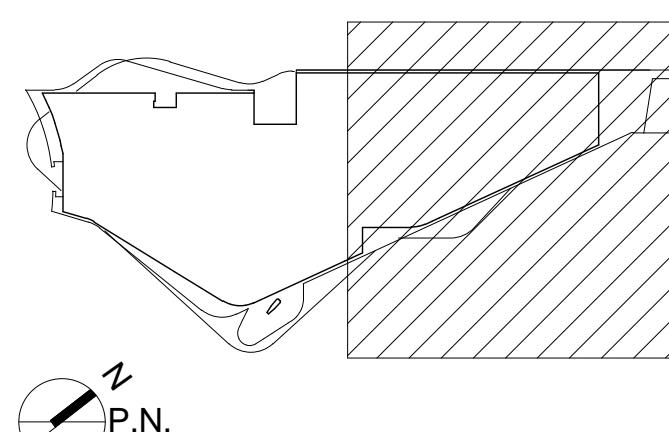
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4	04/21/2014	100% CD	

## KEY PLAN:



## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
SECOND FLOOR  
DUCTWORK PLAN  
(NORTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-407.00  
FILE No.:  



A1 SCALE 1/8" = 1'-0"

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ACOUSTICS.

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NEW YORK, NY 10122  
TEL: 917.339.9300

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NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

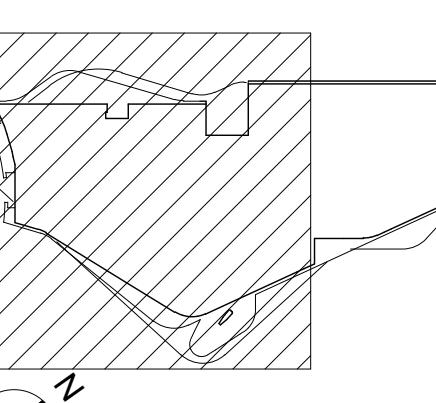
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## KEY PLAN:



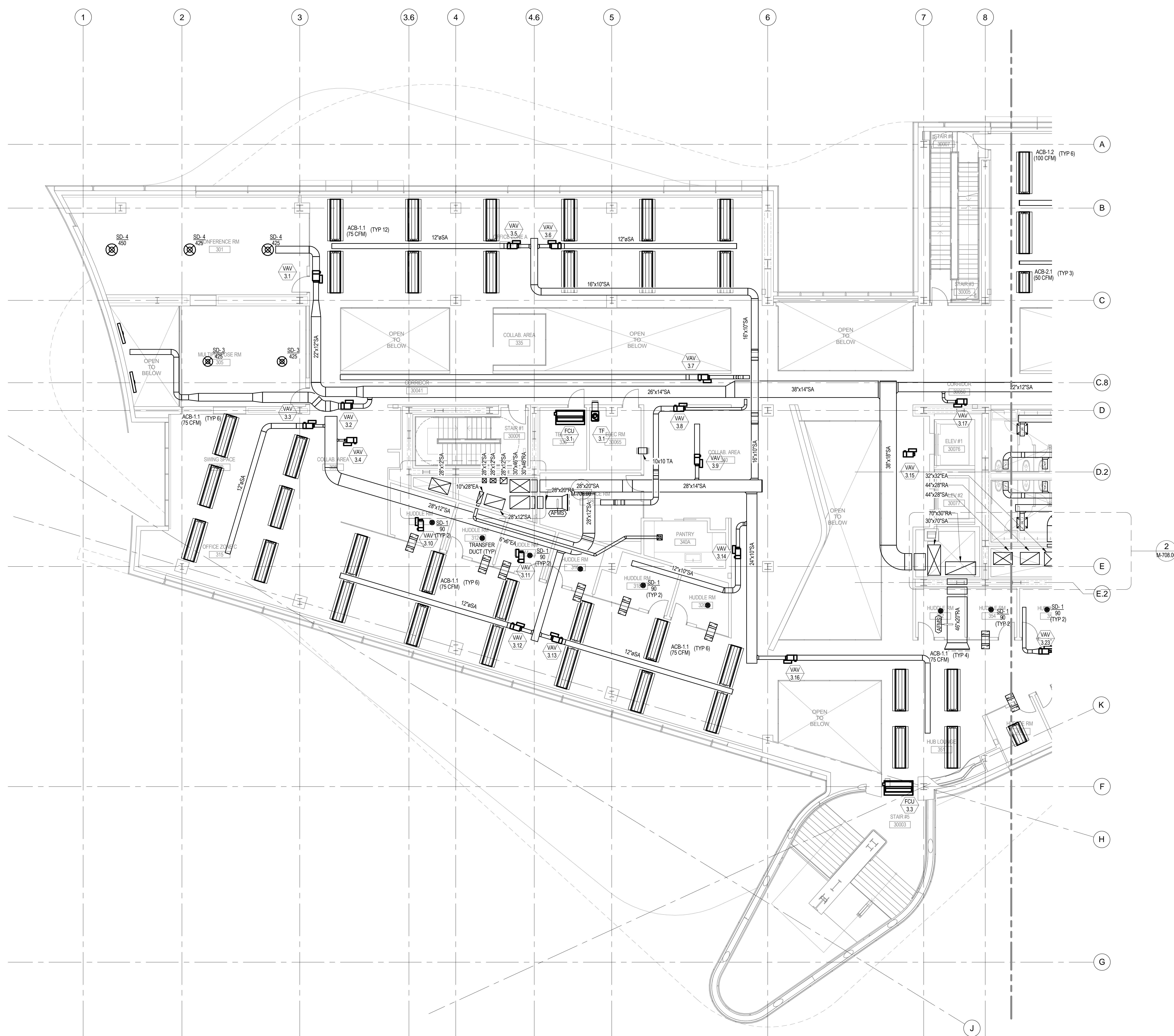
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
THIRD FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-408.00  
FILE No.:  



A1 SCALE 1/8" = 1'-0"

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EXTERIOR ENVELOPE  
AV / IT / SECURITY  
ACOUSTICS.

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77 WATER STREET  
NEW YORK, NY 10005  
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TEL: 917.339.9300

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.9596

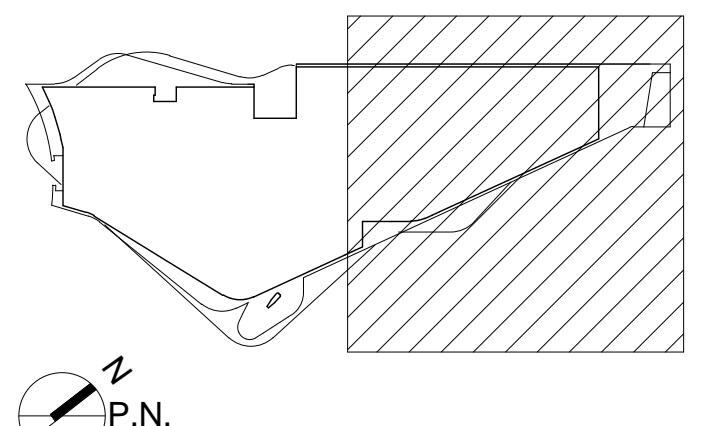
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
220 EAST 40TH STREET, P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
HENSHELL & BUCCELATO  
166 PATTERSON AVENUE  
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TEL: 732.530.4734

KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

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4	04/21/2014	100% CD	

## KEY PLAN:



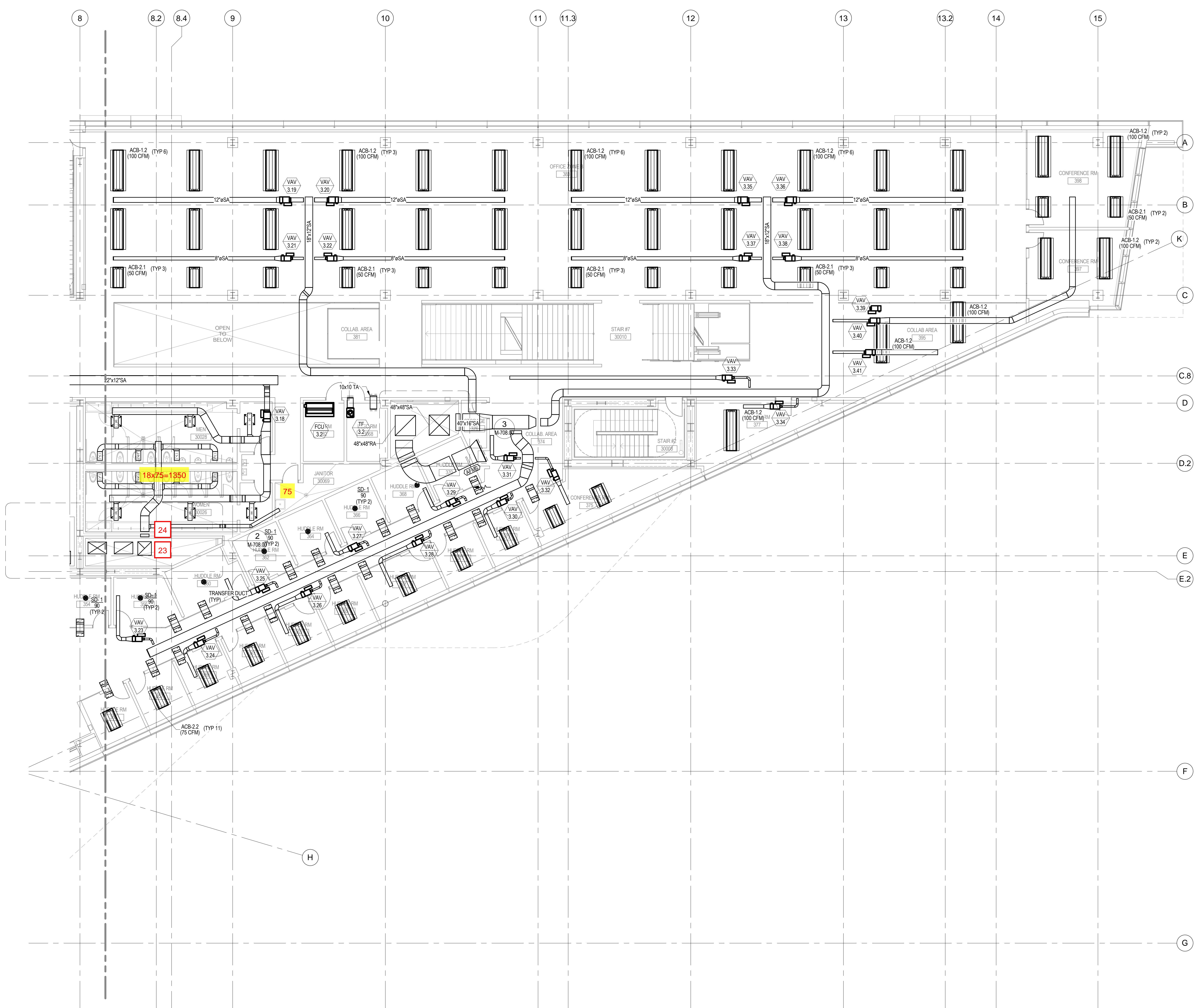
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
THIRD FLOOR  
DUCTWORK PLAN  
(NORTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-409.00  
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A1 SCALE 1/8" = 1'-0"

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AV/IT/ SECURITY  
ACOUSTICS.

ARUP  
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NEW YORK, NY 10005  
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TEL: 917.339.9300

COST ESTIMATOR:  
DAVIS LANGDON  
31 W. 27TH STREET, 12F  
NEW YORK, NY 10001  
TEL: 212.697.1340

CODE:  
CCI  
215 W. 40TH STREET, 15F  
NEW YORK, NY 10018  
TEL: 212.216.8596

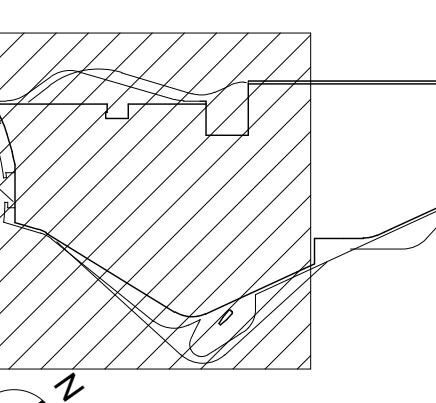
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
225 W. 34TH STREET, P.O. BOX 488  
MORRISONVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
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KITCHEN CONSULTANT:  
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116 E. 27TH STREET, 2FL  
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NO.	DATE	DESCRIPTION
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4	04/21/2014	100% CD

## KEY PLAN:



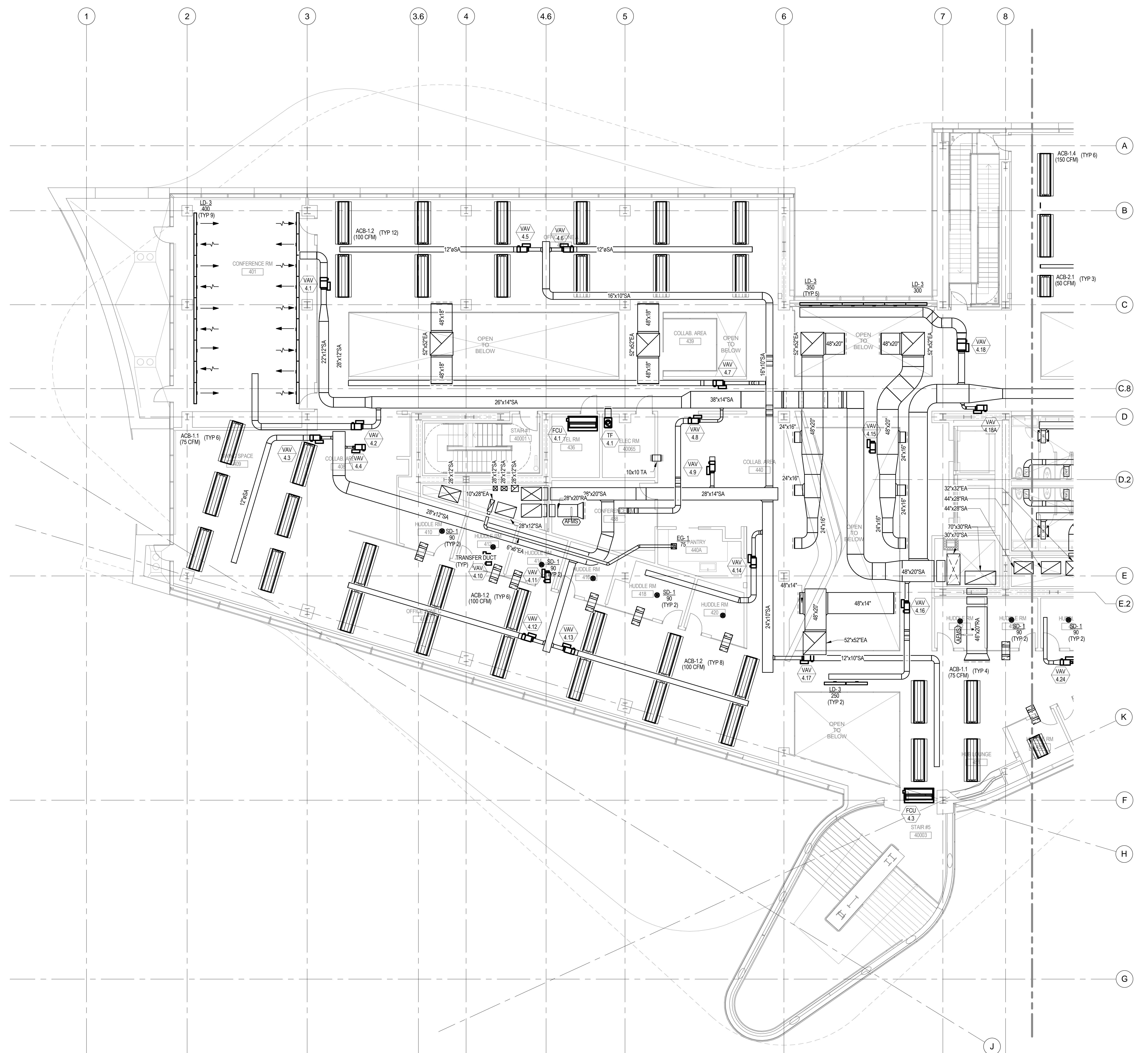
## PROJECT

CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
FOURTH FLOOR  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-410.00  
FILE No.:  



A1 SCALE 1/8" = 1'-0"

04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION

# CORNELL NYC TECH

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#### **WATER PROOFING:**

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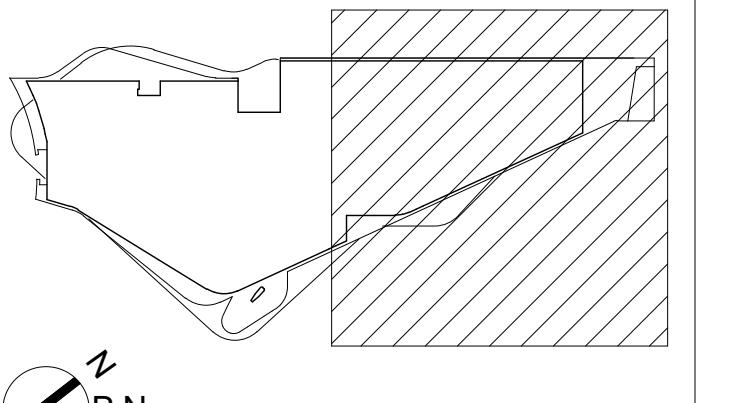
JACOB POLAND BEER

1116 E. 27TH STREET, 2FL  
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NO.	DATE	DESCRIPTION
1	01/11/2013	100% SD
2	08/09/2013	100% DD
3	01/17/2014	50% CD
4	04/21/2014	100% CD

## KEY PLAN:



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# PROJECT

# CORNELLNYC TECH FIRST ACADEMIC BUILDING

# BUEDING

# 04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION

A1 SCALE 1/8" - 1'-0"

---

# MECHANICAL

# FOURTH FLOOR

# DUCTWORK PLAN

## (NORTH)

---

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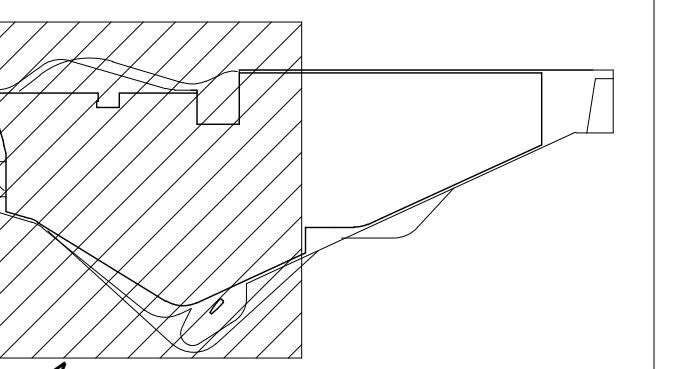
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
2200 NEW YORK, P.O. BOX 488  
MORGANVILLE, NJ 07751  
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NO.	DATE	DESCRIPTION
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## KEY PLAN:

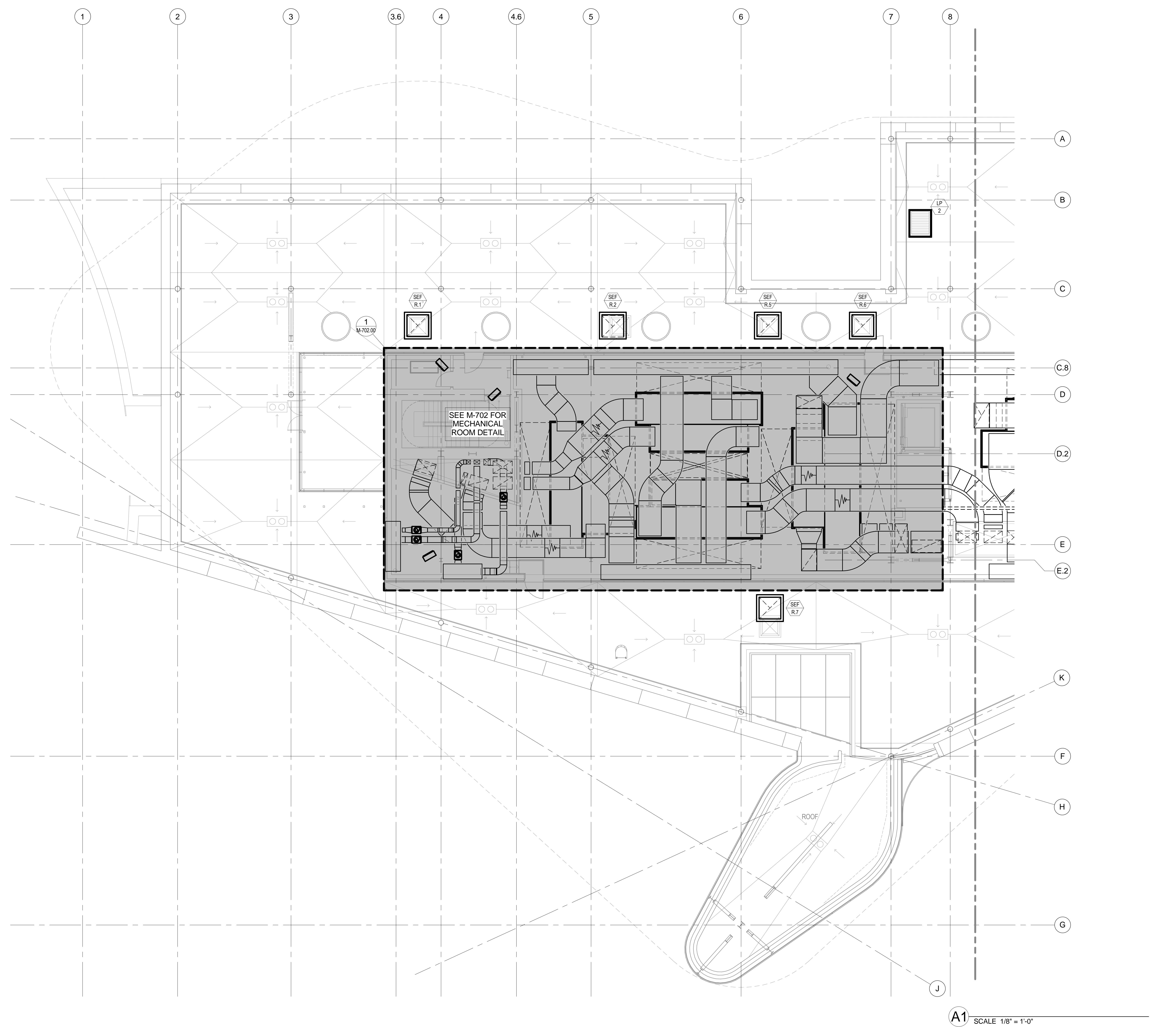


PROJECT  
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING  
ROOSEVELT ISLAND, NY

MECHANICAL  
MECHANICAL ROOF  
DUCTWORK PLAN  
(SOUTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
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DWG No.: M-412.00  
FILE No.:  

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NEW YORK, NY 10018  
TEL: 212.216.8596

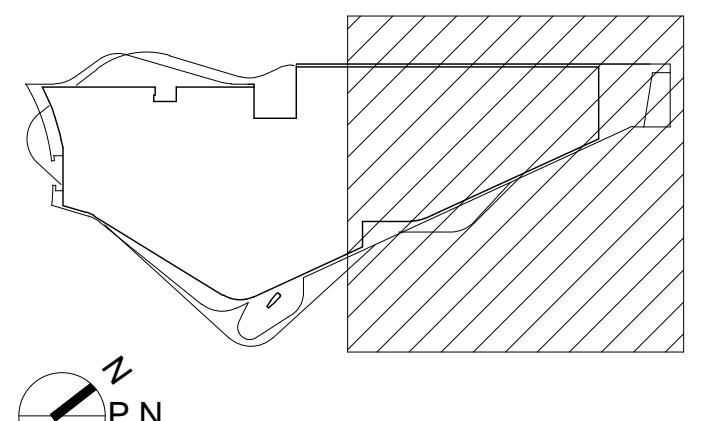
SPECIFICATIONS:  
CONSTRUCTION SPECIFICATIONS, INC  
220 EAST 34TH STREET, P.O. BOX 488  
MORGANVILLE, NJ 07751  
TEL: 732.970.0700

WATER PROOFING:  
HENSHILL & BUCCELATO  
166 PATTERSON AVENUE  
SHREWSBURY, NJ 07702  
TEL: 732.530.4734

KITCHEN CONSULTANT:  
JACOB DOLAND BEER  
116 E. 27TH STREET, 2FL  
NEW YORK, NY 10016  
TEL: 212.206.0736

ISSUES / REVISIONS:	NO.	DATE	DESCRIPTION
	1	01/11/2013	100% SD
	2	08/09/2013	100% DD
	3	01/17/2014	50% CD
	4	04/21/2014	100% CD

## KEY PLAN:



## PROJECT

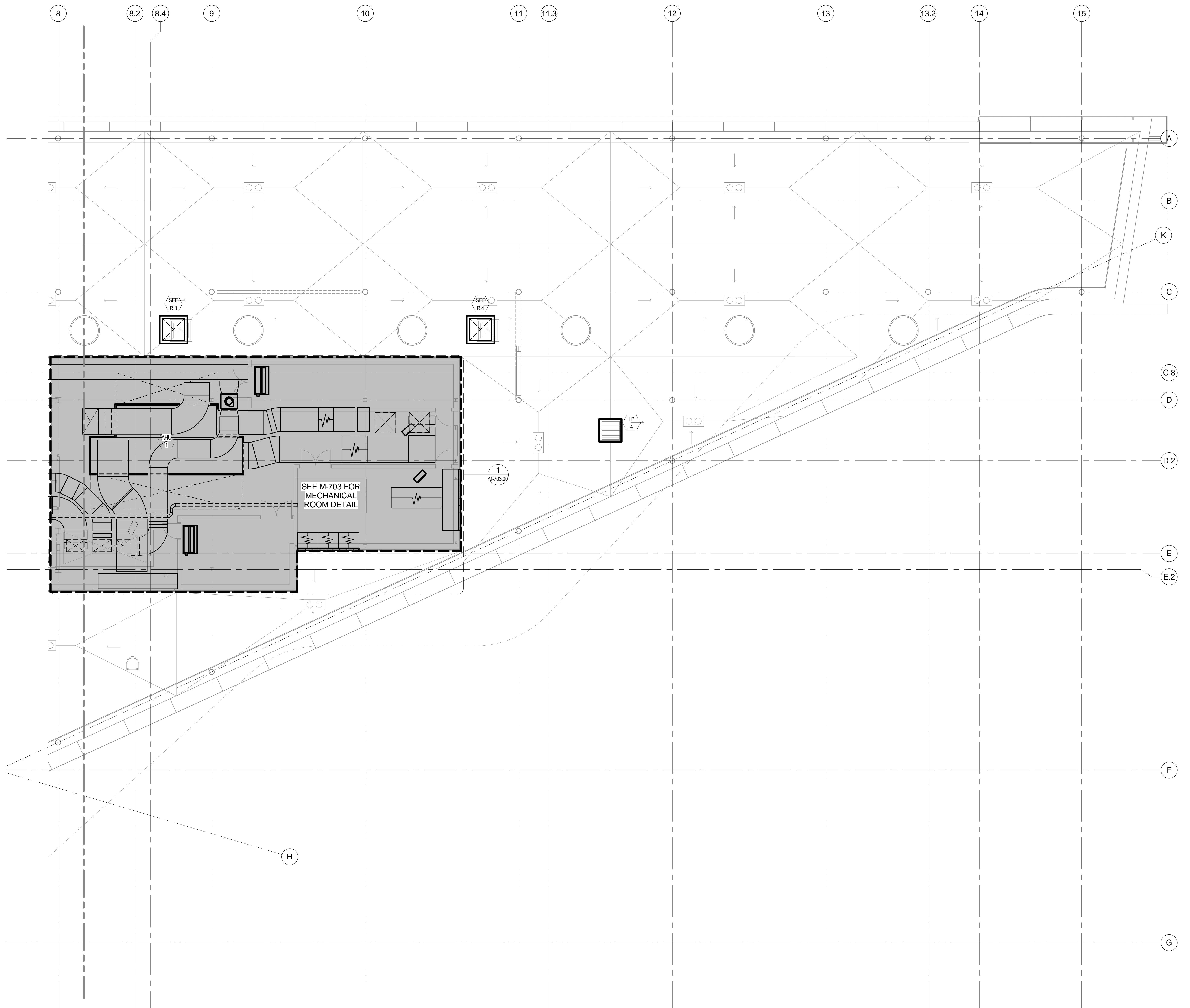
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING

ROOSEVELT ISLAND, NY

MECHANICAL  
MECHANICAL ROOF  
DUCTWORK PLAN  
(NORTH)

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.  
**M-413.00**  
FILE No.:

04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION



A1 SCALE 1/8" = 1'-0"

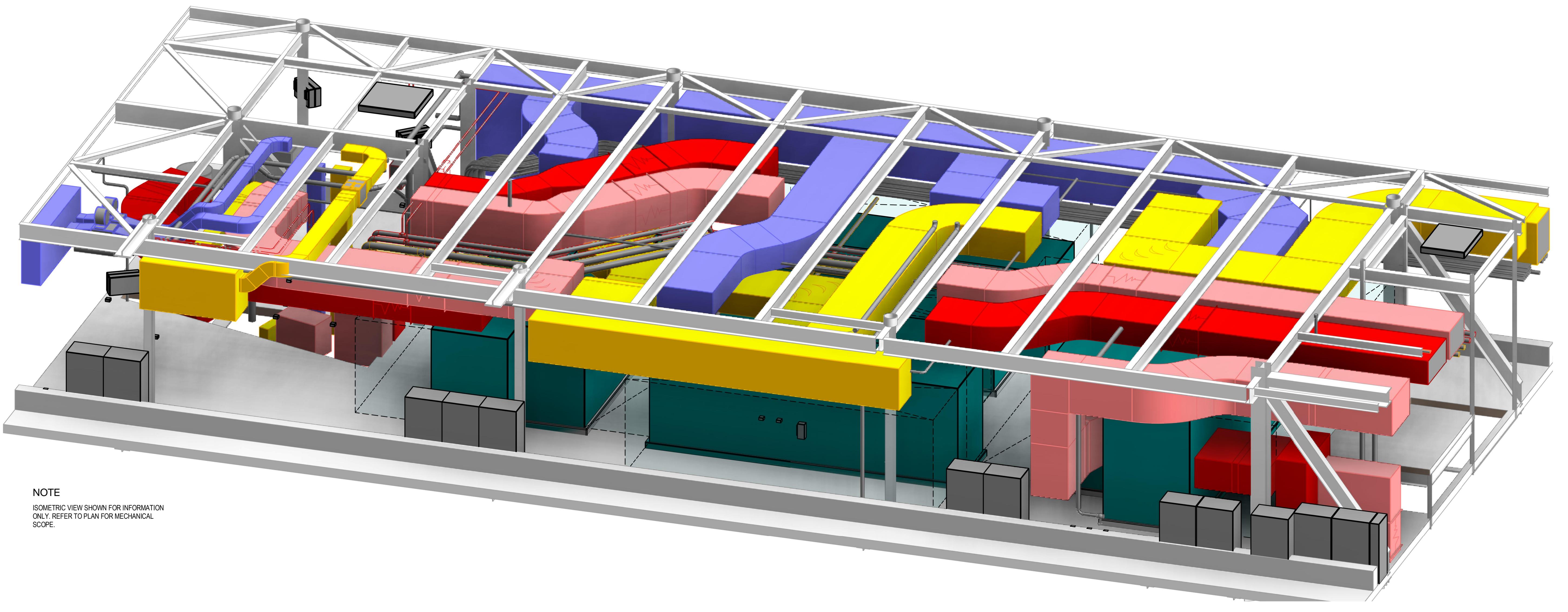
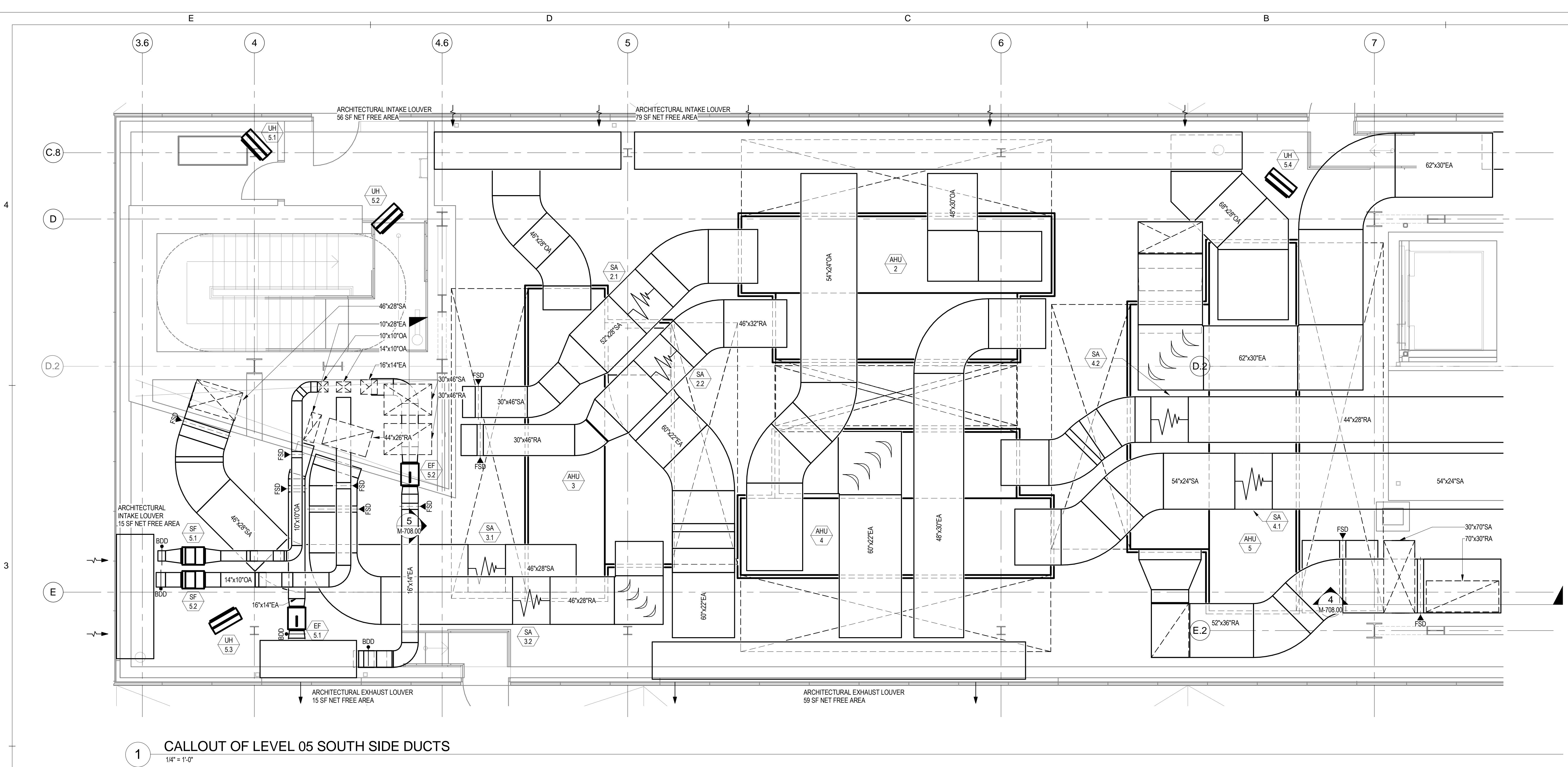
KEY PLAN:

PROJECT  
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING  
ROOSEVELT ISLAND, NY

MECHANICAL  
PART PLANS AND  
SECTIONS  
SHEET 2

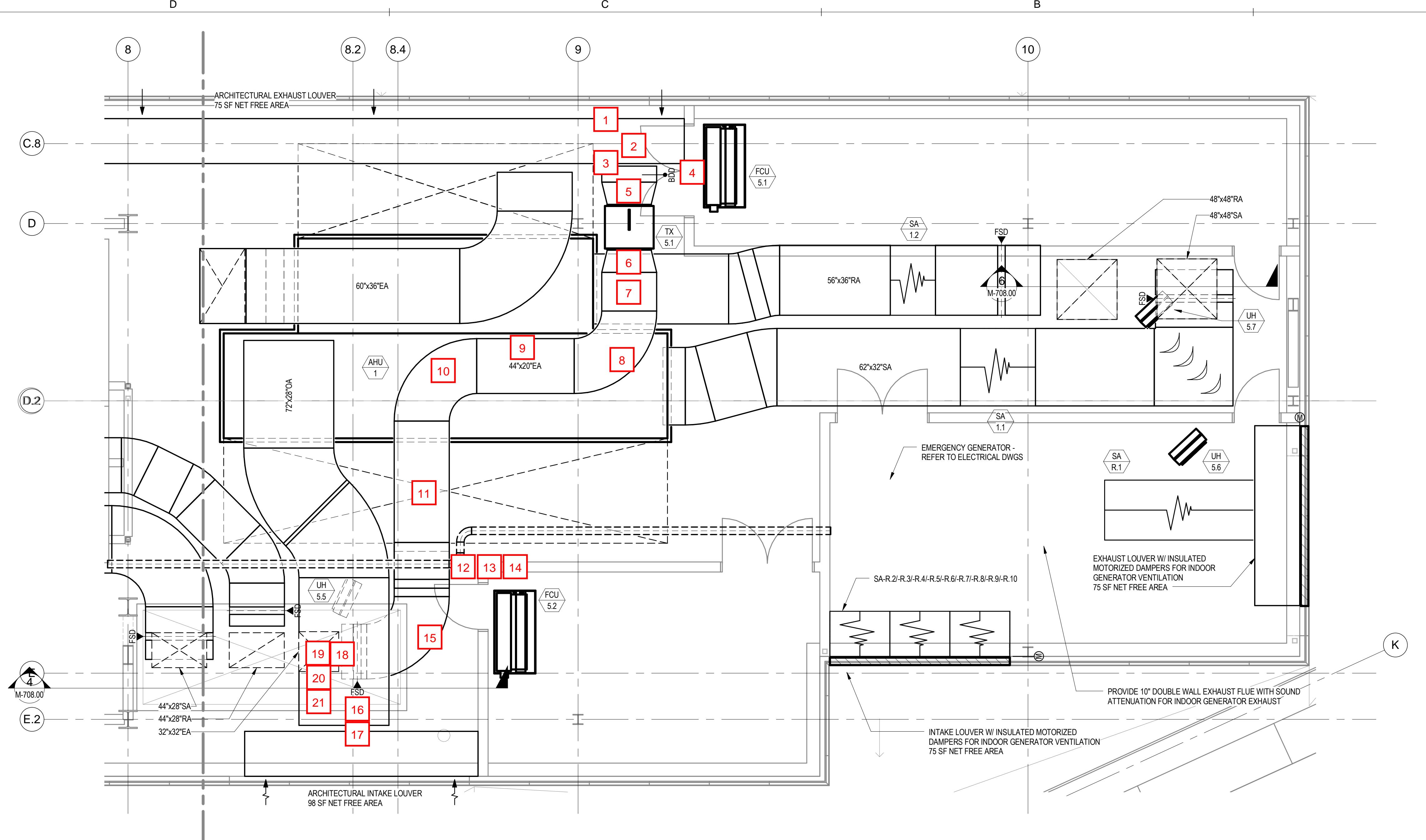
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PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-702.00  
FILE No.:  

04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION



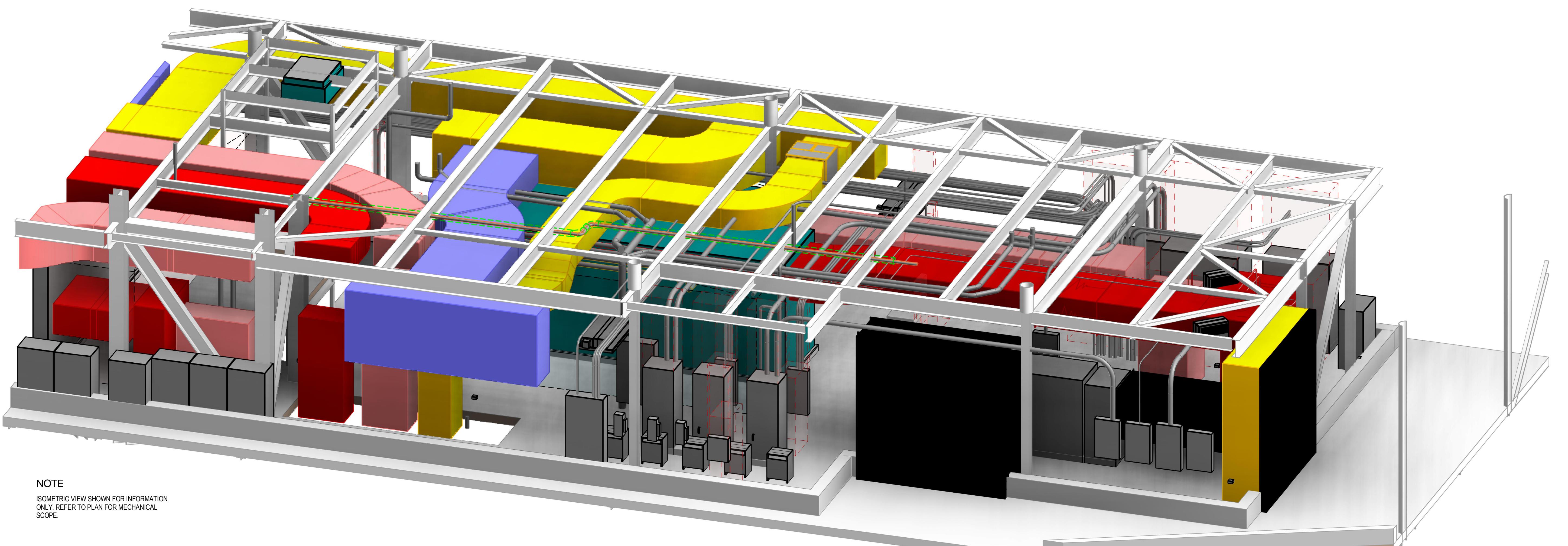
2 LEVEL 05 PENTHOUSE DUCTWORK SOUTH ISOMETRIC VIEW

04-21-2014 100% CONSTRUCTION DOCUMENT - NOT FOR CONSTRUCTION



1 CALLOUT OF LEVEL 05 NORTH SIDE DUCTS

1/4" = 1'-0"



NOTE  
ISOMETRIC VIEW SHOWN FOR INFORMATION  
ONLY. REFER TO PLAN FOR MECHANICAL  
SCOPE.

2 LEVEL 05 PENTHOUSE DUCTWORK NORTH ISOMETRIC VIEW

PROJECT  
CORNELLNYC TECH  
FIRST ACADEMIC  
BUILDING  
ROOSEVELT ISLAND, NY

MECHANICAL  
PART PLANS AND  
SECTIONS  
SHEET 3

SEAL & SIGNATURE: DATE: 01-17-14  
PROJECT No.: 225121  
DRAWING BY:  
CHK BY:  
DWG No.: M-703.00  
FILE No.: