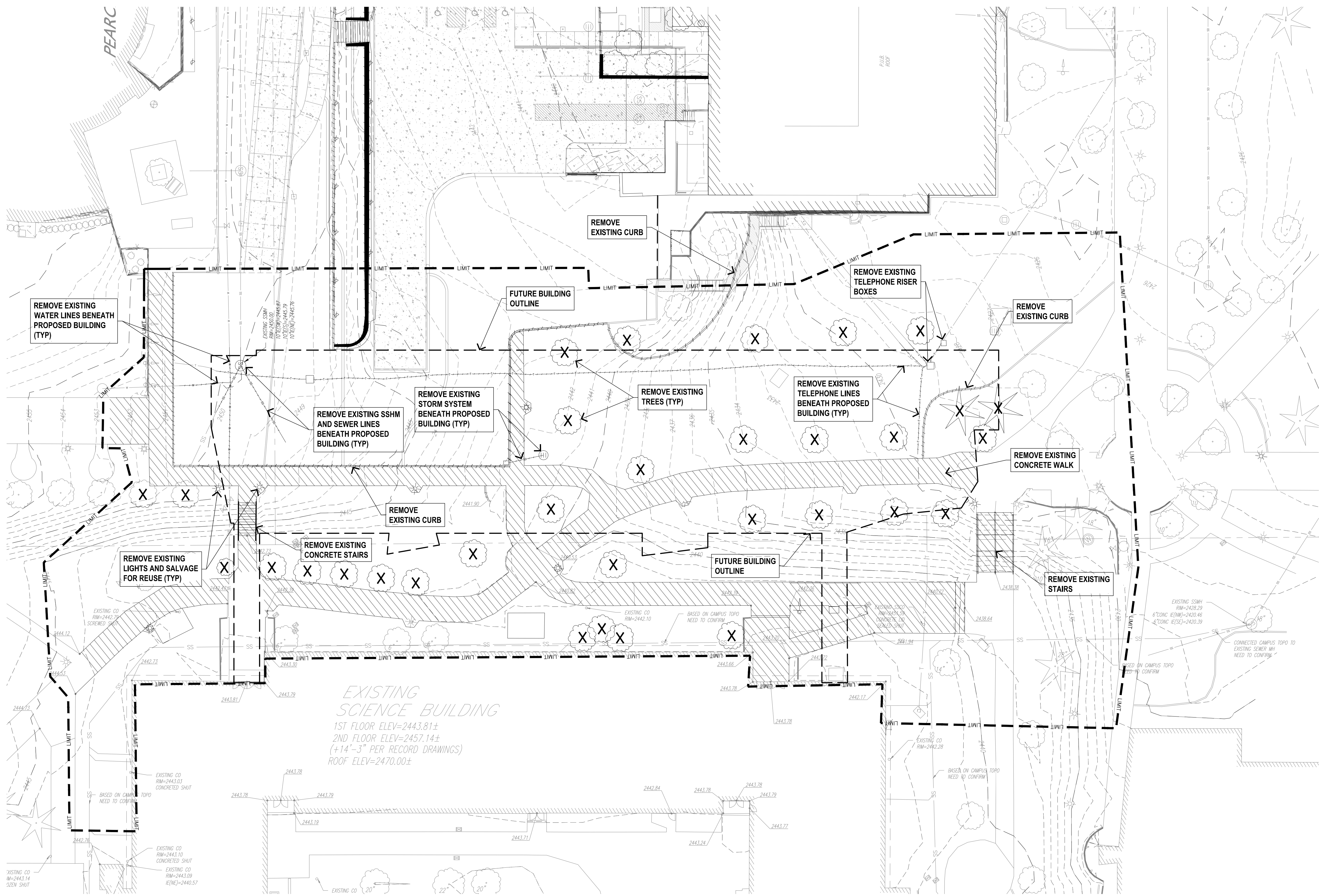
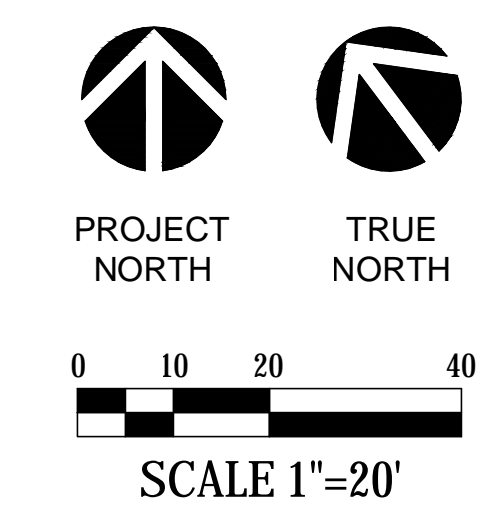




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Sheet List	
Sheet Number	Sheet Name
CIVIL	
C1.00	Site Demo Plan
C2.00	T.E.S.C. Plan
C3.00	Civil Site Plan
LANDSCAPE	
L101	Site Landscape Plan
L102	Level 3 Terrace Landscape Plan
ARCHITECTURE	
A001	Abbreviations and Legends
A003	Renderings
A050	Life Safety Plans
A051	Life Safety Plans
A101	Site Plan
A201	Ground Floor Plan
A202	Level 1 Floor Plan
A203	Level 2 Floor Plan
A204	Level 3 Floor Plan
A205	Roof Plan
A301	Elevations
A302	Elevations
A401	Building Section
A700	Typical Reflected Ceiling Plan
STRUCTURAL	
S201	Ground Floor Plan
S202	Level 1 Floor Plan
S203	Level 2 Floor Plan
S204	Level 3 Floor Plan
S205	Roof Plan
S206	Penthouse Framing
PLUMBING	
P101	Site Plan - Piping
P201	Ground Floor Plan - Piping
P202	Level 1 Floor Plan - Piping
P203	Level 2 Floor Plan - Piping
P204	Level 3 Floor Plan - Piping
P205	Roof Plan - Piping
MECHANICAL	
M201	Ground Floor Plan - HVAC
M202	Level 1 Floor Plan - HVAC
M203	Level 2 Floor Plan - HVAC
M204	Level 3 Floor Plan - HVAC
M205	Roof Plan - HVAC
M301	Ground Floor Plan - Air Classifications
M302	Level 1 Floor Plan - Air Classifications
M303	Level 2 Floor Plan - Air Classifications
M304	Level 3 Floor Plan - Air Classifications
M401	Riser Diagrams - HVAC
ELECTRICAL	
E001	Legends & Abbreviations - Electrical
E101	Site Plan - Electrical
E201	Ground Floor Plan - Power
E202	Level 1 Floor Plan - Power
E203	Level 2 Floor Plan - Power
E204	Level 3 Floor Plan - Power
E205	Roof Plan - Electrical
E301	One-Line Diagram - 480V - Electrical
E302	One-Line Diagram - 208V - Electrical

Sheet List	
Sheet Number	Sheet Name
E303	One-Line Diagram - Generator
TELECOM	
T001	Legends & Abbreviations - Communications
T201	Ground Floor Plan - Communications
T202	Level 1 Floor Plan - Communications
T203	Level 2 Floor Plan - Communications
T204	Level 3 Floor Plan - Communications
T401	Riser Diagrams - Communications
T402	Riser Diagrams - Communications
LAB FURNISHING	
LF101	Lab Furnishings Notes
LF102	Lab Furnishings Plumbing Electrical Notes
LF103	Lab Furnishings Symbols
LF104	Lab Furnishings Schedules
LF105	Lab Furnishings Schedules
LF106	Lab Furnishings Casework Menu
LF107	Lab Furnishings Casework Menu
LF200	Lab Furnishings - Composite Ground Floor
LF201	Lab Furnishings - Partial Ground Floor
LF210	Lab Furnishings - Composite Level 1
LF211	Lab Furnishings - Partial Level 1
LF212	Lab Furnishings - Partial Level 1
LF213	Lab Furnishings - Partial Level 1
LF214	Lab Furnishings - Partial Level 1
LF215	Lab Furnishings - Partial Level 1
LF220	Lab Furnishings - Composite Level 2
LF221	Lab Furnishings - Partial Level 2
LF222	Lab Furnishings - Partial Level 2
LF223	Lab Furnishings - Partial Level 2
LF224	Lab Furnishings - Partial Level 2
LF225	Lab Furnishings - Partial Level 2
LF226	Lab Furnishings - Partial Level 2
LF227	Lab Furnishings - Partial Level 2
LF228	Lab Furnishings - Partial Level 2
LF230	Lab Furnishings - Composite Level 3
LF231	Lab Furnishings - Partial Level 3
LF232	Lab Furnishings - Partial Level 3
LF233	Lab Furnishings - Partial Level 3
LF234	Lab Furnishings - Partial Level 3
LF235	Lab Furnishings - Partial Level 3
LF236	Lab Furnishings - Partial Level 3



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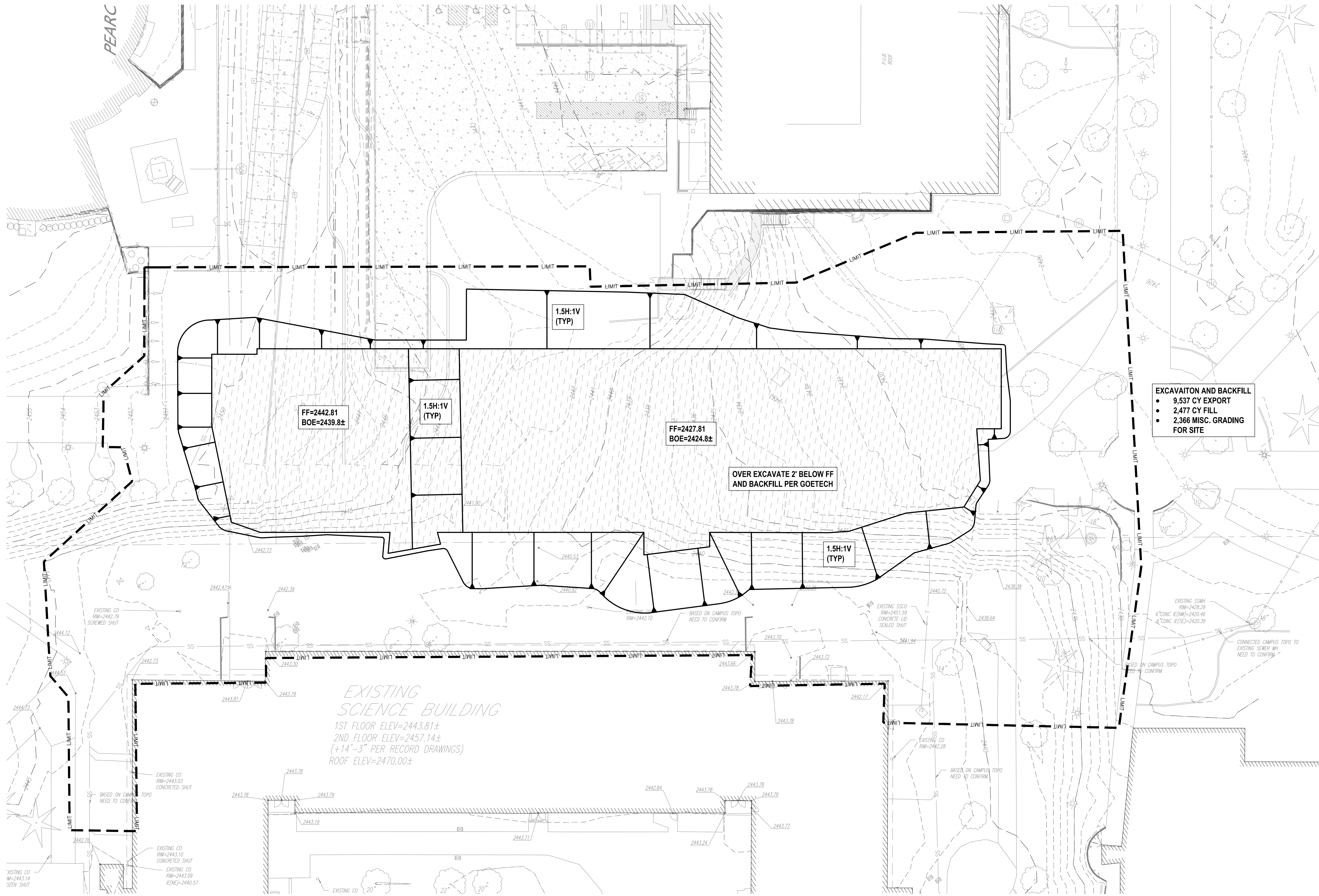
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Progress

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SITE DEMO PLAN

**C1.00**



**EXCAVATION AND BACKFILL**

- 9,537 CY EXPORT
- 2,477 CY FILL
- 2,366 MISC. GRADING FOR SITE

*EXISTING SCIENCE BUILDING*  
 1ST FLOOR ELEV=2443.81±  
 2ND FLOOR ELEV=2457.14±  
 (+14'-3" PER RECORD DRAWINGS)  
 ROOF ELEV=2470.00±

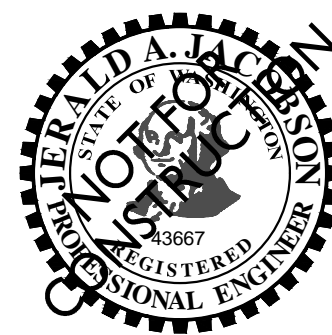
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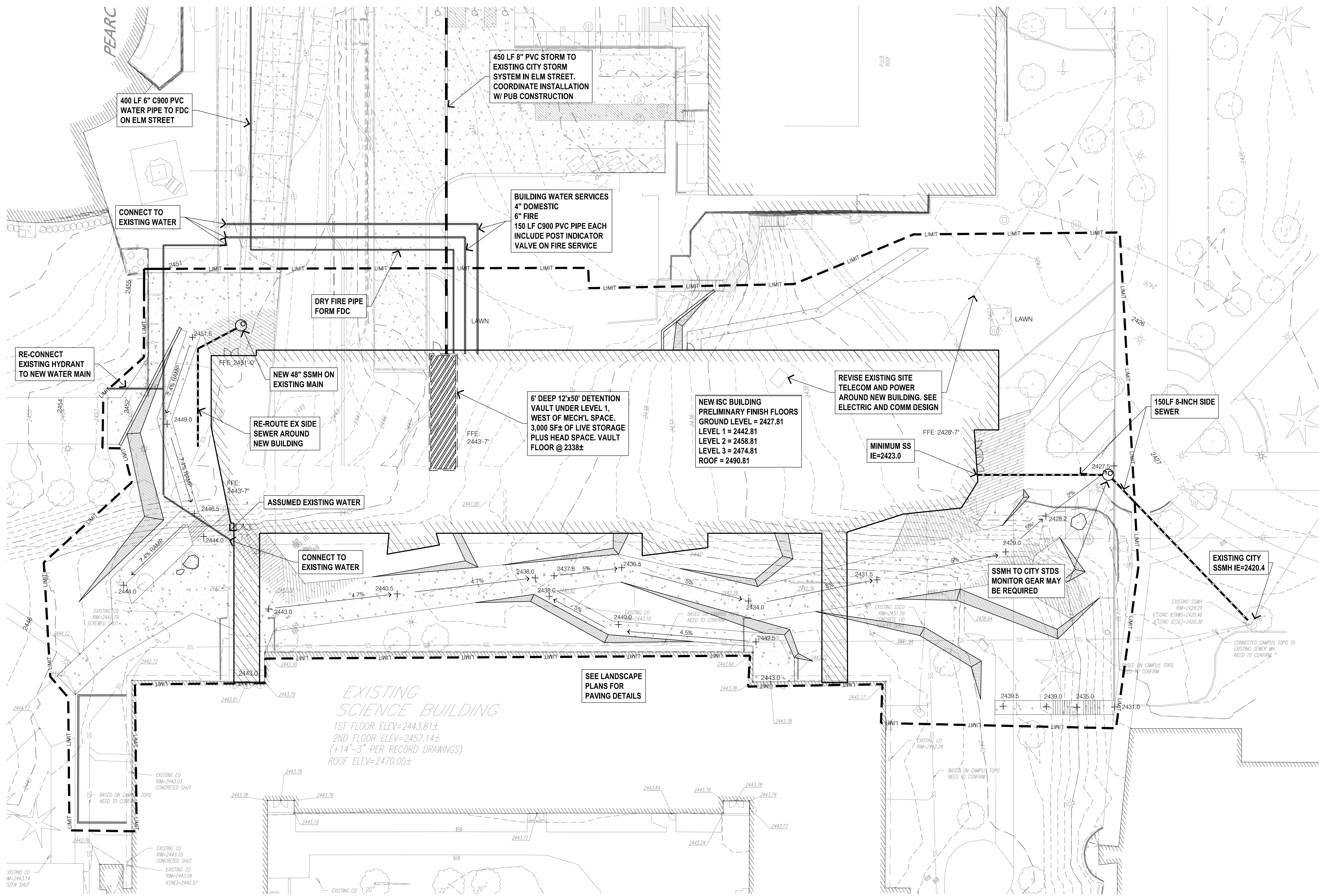
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T.E.S.C. PLAN

**C2.00**

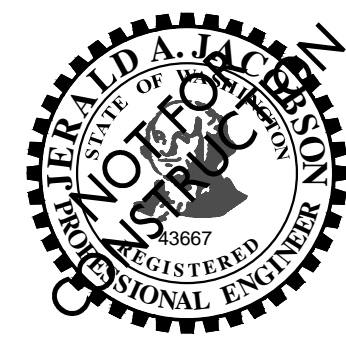


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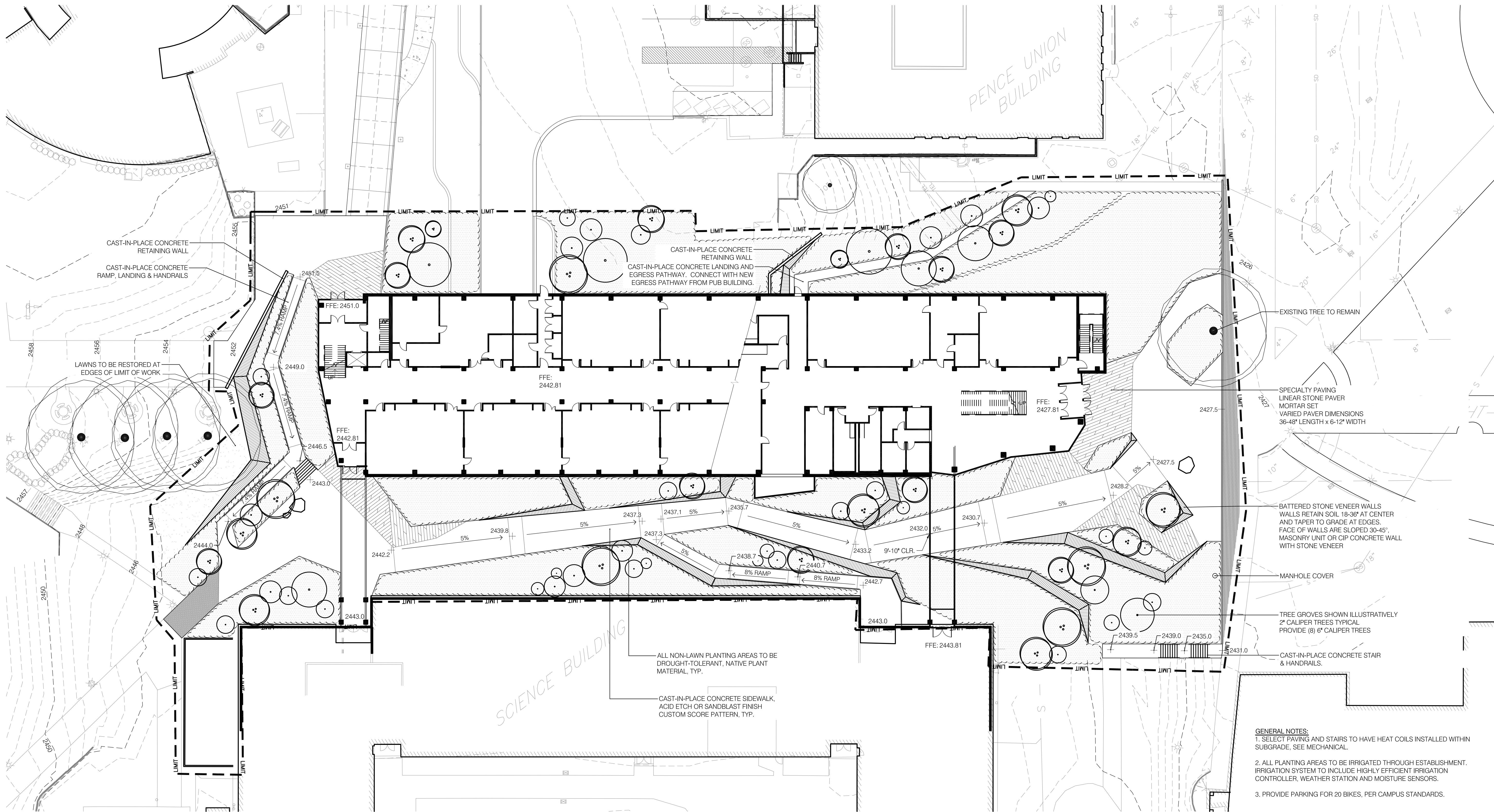
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Sheet Title  
Sheet Number

CIVIL SITE PLAN

**C3.00**



- GENERAL NOTES:**
1. SELECT PAVING AND STAIRS TO HAVE HEAT COILS INSTALLED WITHIN SUBGRADE, SEE MECHANICAL.
  2. ALL PLANTING AREAS TO BE IRRIGATED THROUGH ESTABLISHMENT. IRRIGATION SYSTEM TO INCLUDE HIGHLY EFFICIENT IRRIGATION CONTROLLER, WEATHER STATION AND MOISTURE SENSORS.
  3. PROVIDE PARKING FOR 20 BIKES, PER CAMPUS STANDARDS.

1 Site Landscape Plan  
 L101 1" = 20'-0"

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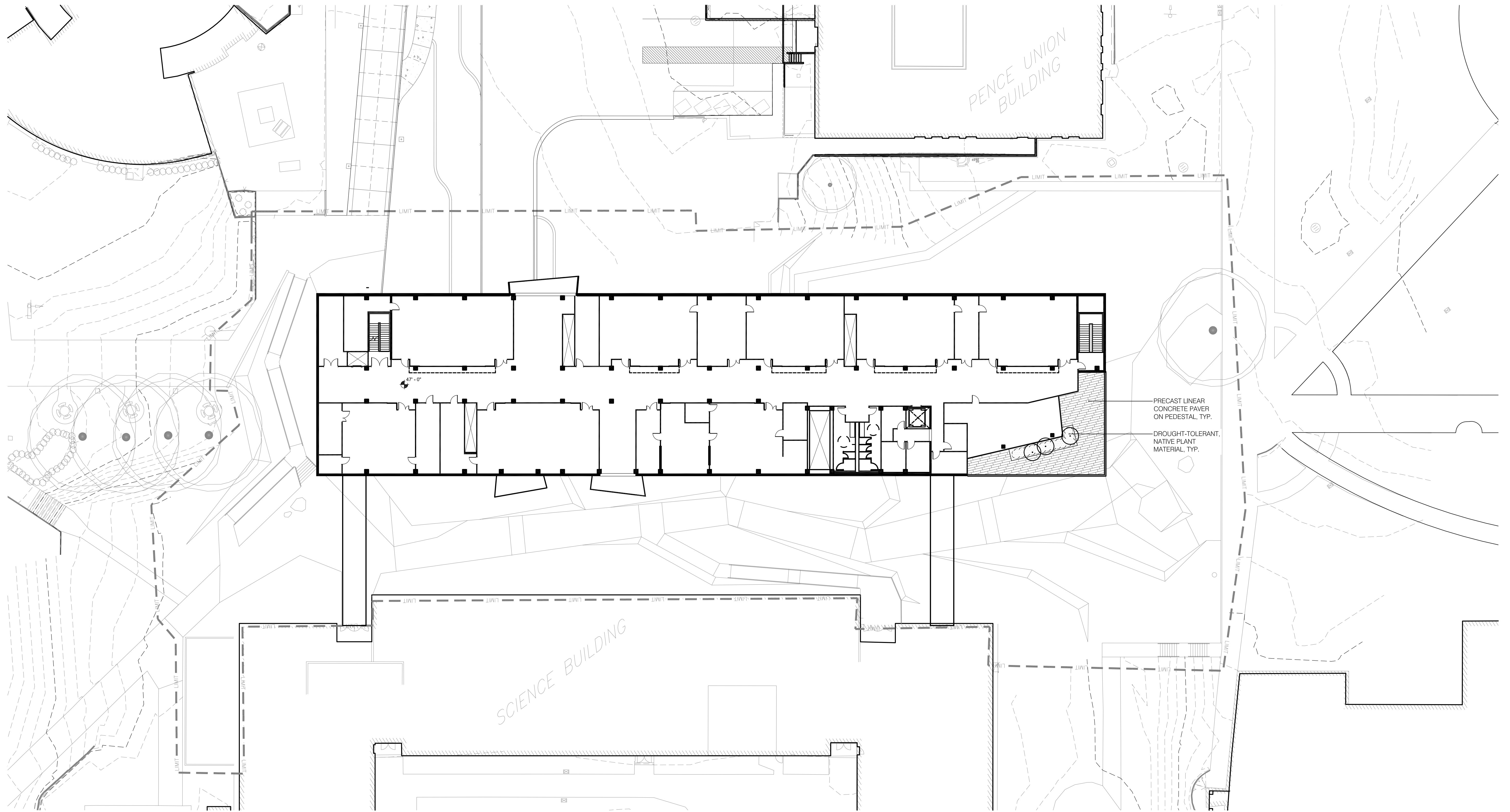
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Schematic Design

Site Landscape Plan

**L101**



1 Level 3 Terrace Landscape Plan  
1" = 20'-0"

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Level 3 Terrace  
Landscape Plan

**L102**

MATERIAL LEGEND

Table with 3 columns: Material Name, Pattern/Color, Material Name. Includes Concrete, Mortar, Brick, CMU, Wood, PLYWOOD, Metal, Ferrous, Metal, Non-Ferrous, Stone, Gypsum Wall Board, Carpet, Acoustical Panels, Earth, Ceramic Tile, Particle Board, Batt Insulation, Rigid Insulation, and Gravel.

ABBREVIATIONS

NOTE: ABBREVIATIONS NOTED IN THE DRAWINGS THAT ARE FOLLOWED BY A MODIFIER, SUCH AS "-1", "-A", ETC., ARE FURTHER DEFINED IN THE SPECIFICATION SECTION ASSOCIATED WITH THE MATERIAL OR SYSTEM ASSEMBLY SO NOTED.

Large table of abbreviations and their corresponding full names. Columns include abbreviations and full names for various building materials and systems.

GRAPHIC SYMBOLS

Table of graphic symbols and their descriptions. Includes dimensions, leader/arrows, window types, louvers, room indicators, partition types, door indicators, ceiling height indicators, north arrows, match line indicators, floor material transition indicators, and alignment symbols.

GENERAL NOTES

- NOTES (TO BE EDITED)
A. GENERAL
1. NOTIFY THE ARCHITECT OF ANY DISCREPANCIES THAT EXIST WITHIN THE DRAWINGS.
2. ALL METHODS, MATERIALS, AND WORKMANSHIP SHALL CONFORM CODE AS ADOPTED AND AMENDED BY THE STATE AND/OR LOCAL JURISDICTION.
3. COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES.
4. UNLESS OTHERWISE NOTED, PLAN DIMENSIONS ARE TO THE BUILDING GRID LINES OR THE FINISH SURFACES.
5. DO NOT SCALE DRAWINGS.
6. VERIFY ALL ROUGH-IN DIMENSIONS FOR EQUIPMENT PROVIDED IN THIS CONTRACT OR BY OTHERS.
7. VERIFY SIZE AND LOCATION OF ALL OPENINGS THROUGH FLOORS AND WALLS, AND PROVIDE APPROPRIATE FIRE PROTECTION.
8. REPETITIVE FEATURES ARE OFTEN DRAWN OR REFERENCED ONLY ONCE AND SHALL BE COMPLETELY PROVIDED AS IF DRAWN IN FULL.
9. ALL DOORS NOT LOCATED BY DIMENSIONS ON PLANS, INTERIOR ELEVATIONS, OR DETAILS SHALL BE 4" FROM FACE OF ADJACENT WALL, STUD TO EDGE OF DOOR OPENING.
10. FINISH FLOOR (FIN. FLR., F.F.) REFERS TO TOP OF CONCRETE OR GYPCRETE.
11. REFER TO INTERIOR ELEVATIONS FOR CABINET, COUNTER LENGTHS, DIMENSIONS, COUNTERTOP MATERIALS, AND DETAIL REFERENCES. FIELD VERIFY ALL DIMENSIONS.
B. SITE ISSUES
1. VERIFY GRADES SHOWN ON DRAWINGS PRIOR TO CONSTRUCTION.
2. CUT SLOPE TO BE 2:1 MAXIMUM, UNLESS NOTED OTHERWISE. FILL SLOPE TO BE 3:1 MAXIMUM, UNLESS NOTED OTHERWISE.
3. ROUGH AND FINAL GRADING TO SLOPE AWAY FROM BUILDINGS AT LEAST 5 FEET @ 2% MINIMUM (4% @ LANDSCAPED AREAS).
4. ALL ROOF DOWNSPOUTS SHOULD BE RUN TO STORM WATER RETENTION VAULT AND OVERFLOW DRAINS TO BE DAYLIGHTED AT CURB FACES - REFER TO CIVIL DRAWINGS.
5. ALL INTERIOR AND ADJOINING EXTERIOR SLAB-ON-GRADE SHOULD BE CONSTRUCTED OVER "NON-EXPANSIVE" FILL MATERIAL PER SOILS REPORT.
6. ALL EXTERIOR FLATWORK SHALL BE PLACED ON A LAYER OF "NON-EXPANSIVE" FILL MATERIAL PER SOILS REPORT.

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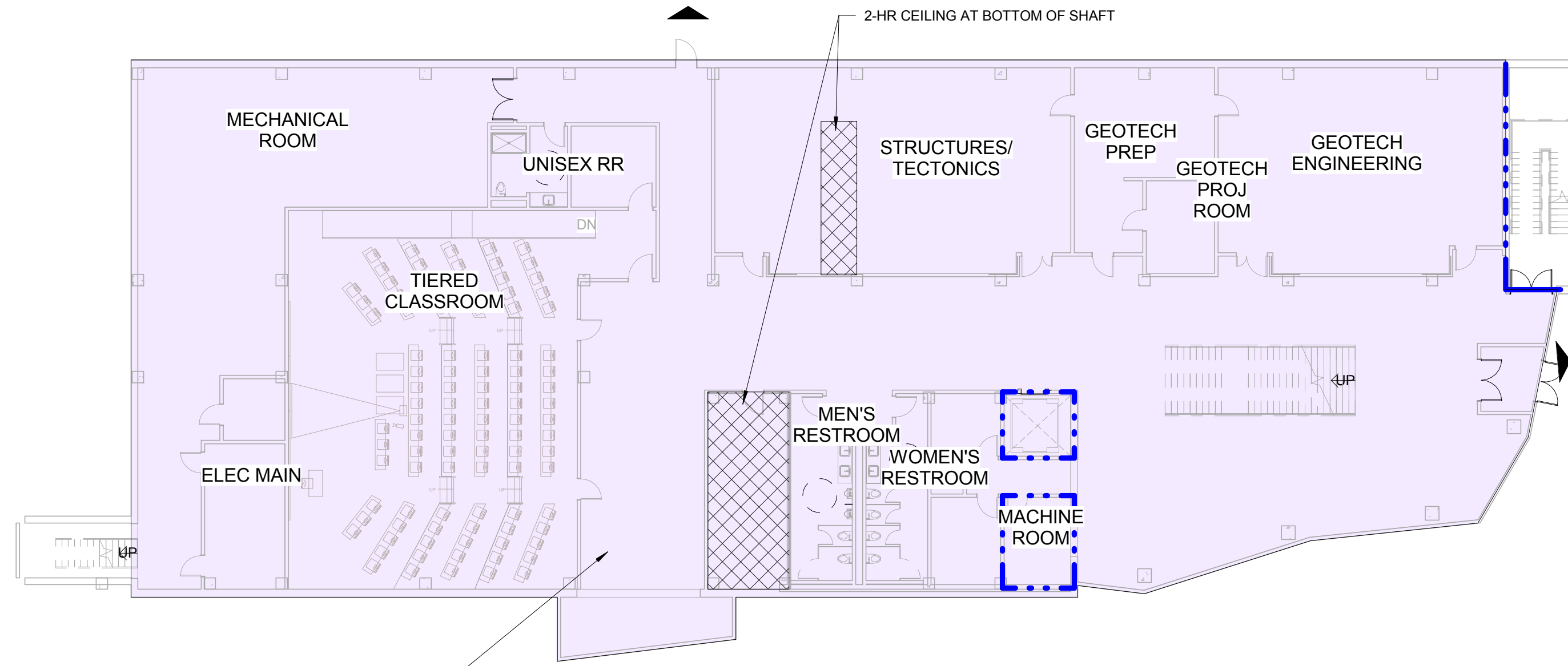
Abbreviations and Legends

A001

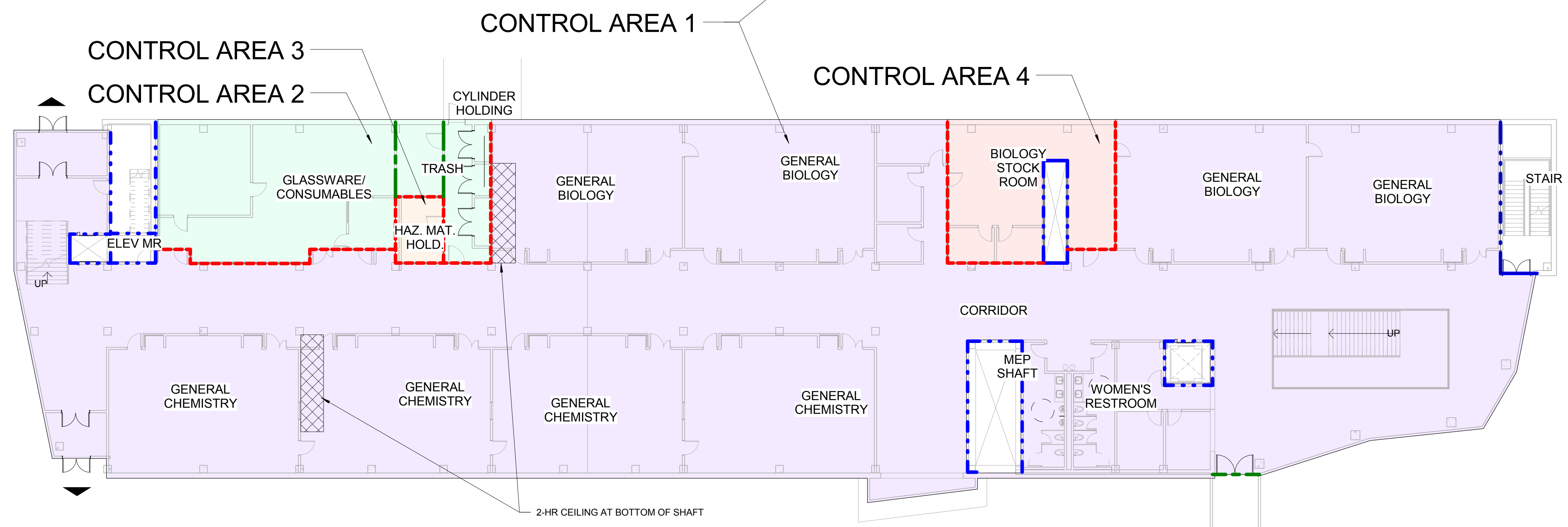


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1 LS - GROUND LEVEL  
A050 1/16" = 1'-0"



2 LS - LEVEL 1  
A050 1/16" = 1'-0"

**FIRE RATED SEPARATION KEY**

- ONE HOUR FIRE RATED REQUIRED SEPARATION
- TWO HOUR FIRE RATED REQUIRED SEPARATION
- RESISTS PASSAGE OF SMOKE

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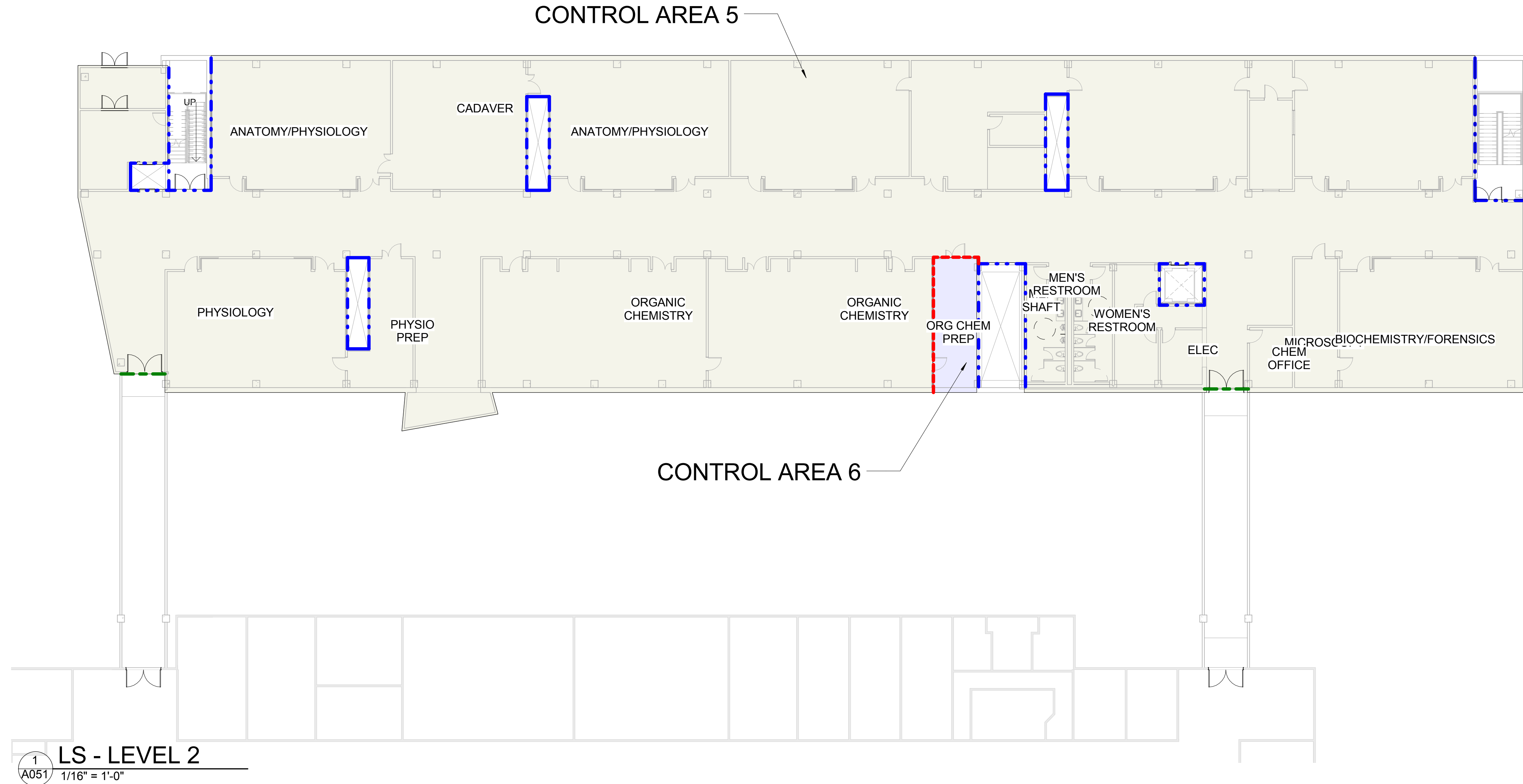
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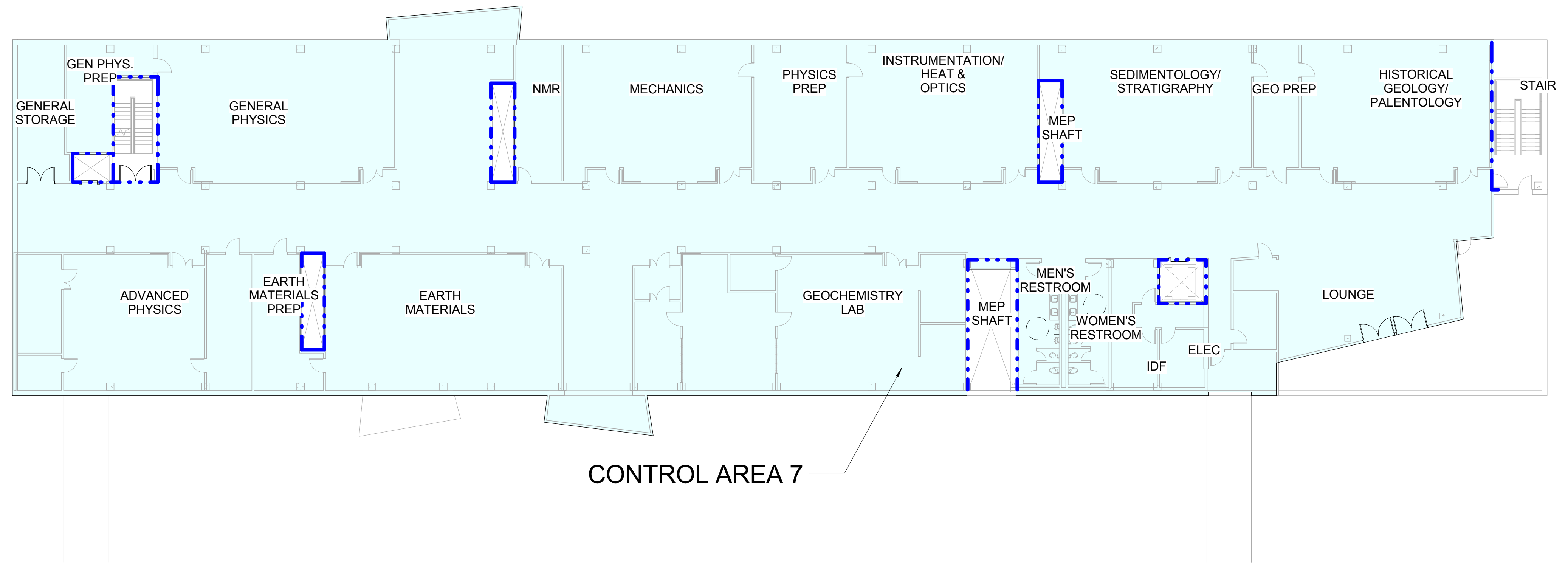
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Life Safety Plans

# A050



1  
A051  
LS - LEVEL 2  
1/16" = 1'-0"



2  
A051  
LS - LEVEL 3  
1/16" = 1'-0"

**FIRE RATED SEPARATION KEY**  
 ——— ONE HOUR FIRE RATED REQUIRED SEPARATION  
 - - - - - TWO HOUR FIRE RATED REQUIRED SEPARATION  
 ——— RESISTS PASSAGE OF SMOKE

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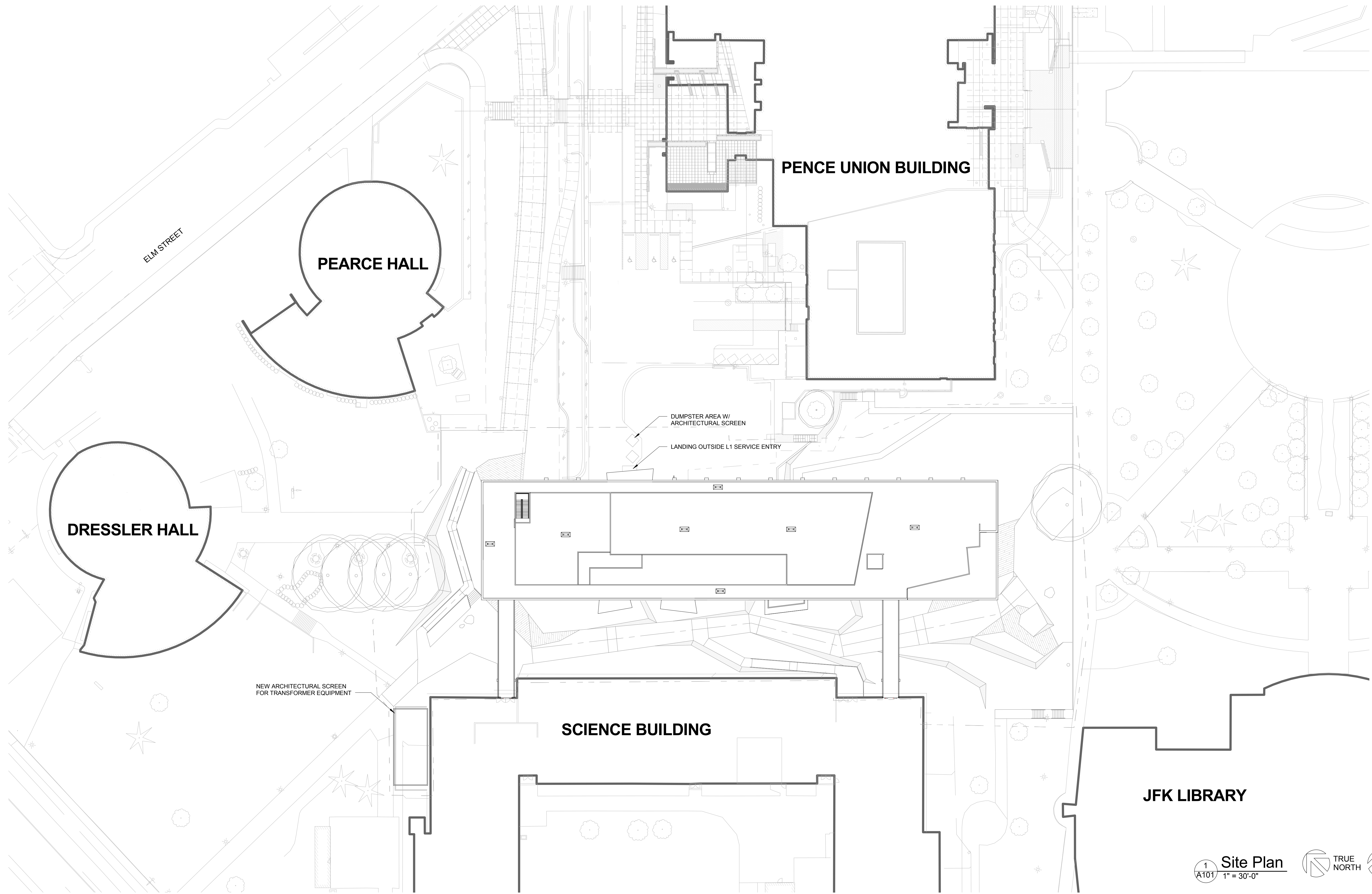
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Sheet Title: Life Safety Plans  
 Sheet Number: A051

**A051**



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1 Site Plan  
A101 1" = 30'-0"

TRUE NORTH PLAN NORTH

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		Site Plan	A101

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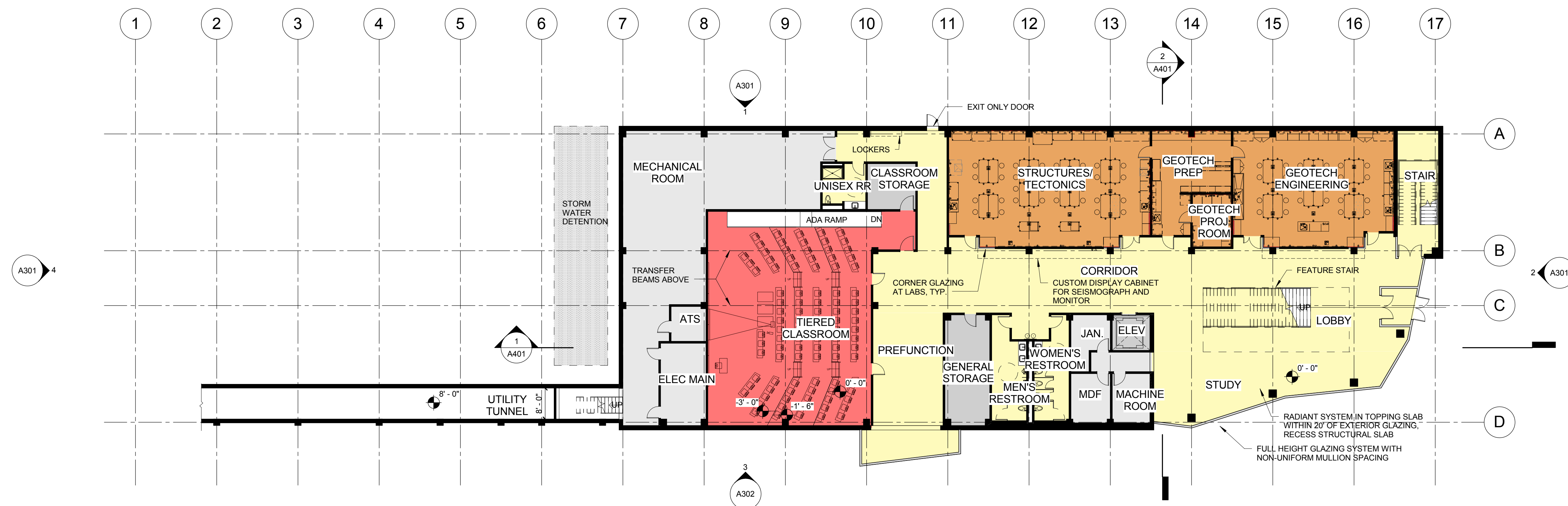
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Site Plan

**A101**



1  
A201 GROUND LEVEL PLAN  
1/16" = 1'-0"

- Category
- 4.0 GEOLOGY
  - 5.0 PUBLIC AREAS
  - 6.0 MEP SERVICES/SHAFTS
  - 7.0 OTHER SERVICES
  - 8.0 SHARED SPACES

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Sheet Title	Sheet Number
Ground Floor Plan	A201



1 LEVEL 1 FLOOR PLAN  
 A202 1/16" = 1'-0"

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Sheet Title

Level 1 Floor Plan

Sheet Number

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# A202



- Category**
- (none)
  - 1.0 CHEMISTRY
  - 2.0 BIOLOGY
  - 5.0 PUBLIC AREAS
  - 6.0 MEP SERVICES/SHAFTS
  - 7.0 OTHER SERVICES
  - 8.0 SHARED SPACES

1 LEVEL 2 FLOOR PLAN  
A203 / 1/16" = 1'-0"

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Level 2 Floor Plan

# A203



1 LEVEL 3 FLOOR PLAN  
 A204 1/16" = 1'-0"

- Category
- (none)
  - 1.0 CHEMISTRY
  - 3.0 PHYSICS
  - 4.0 GEOLOGY
  - 5.0 PUBLIC AREAS
  - 6.0 MEP SERVICES/SHAFTS
  - 7.0 OTHER SERVICES
  - 8.0 SHARED SPACES

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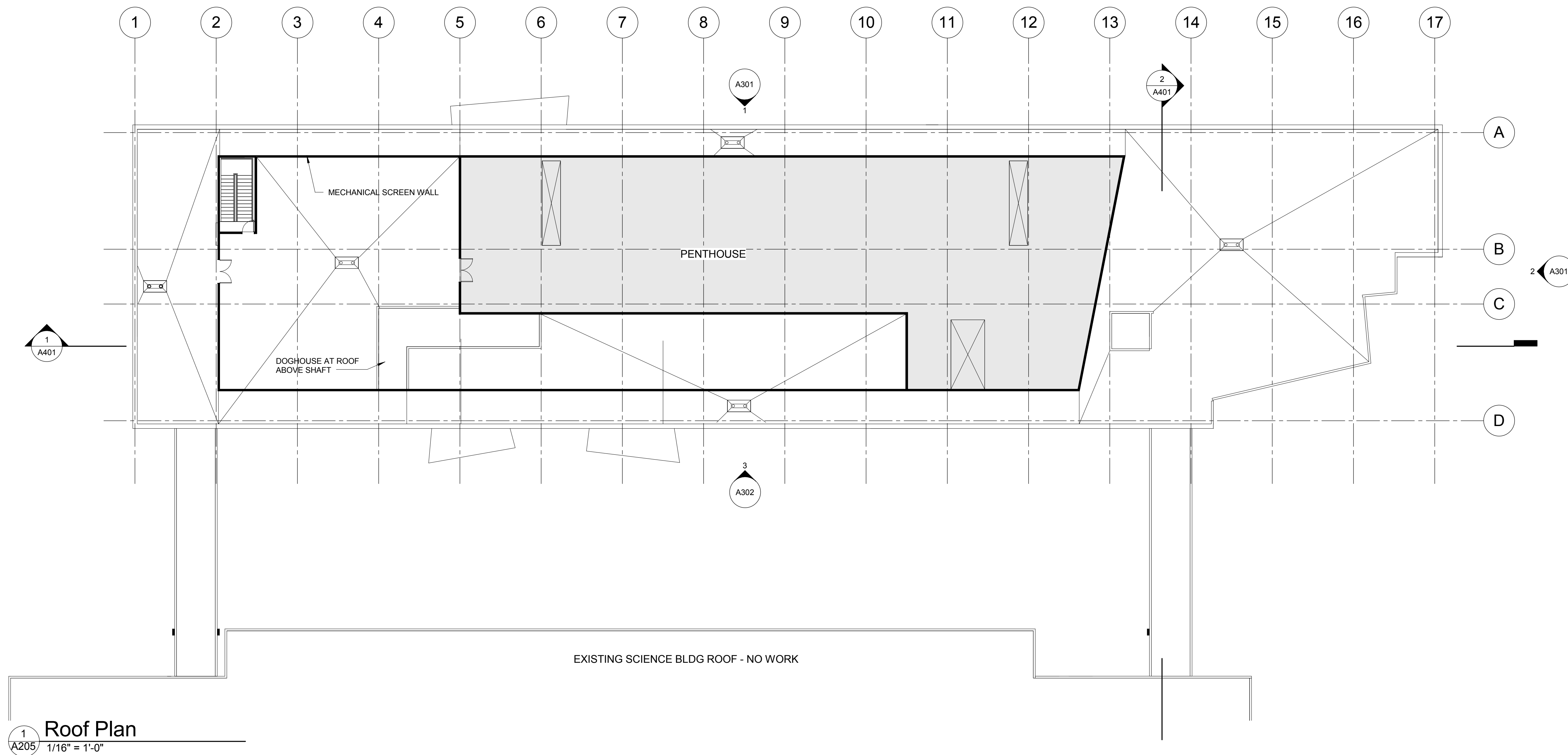
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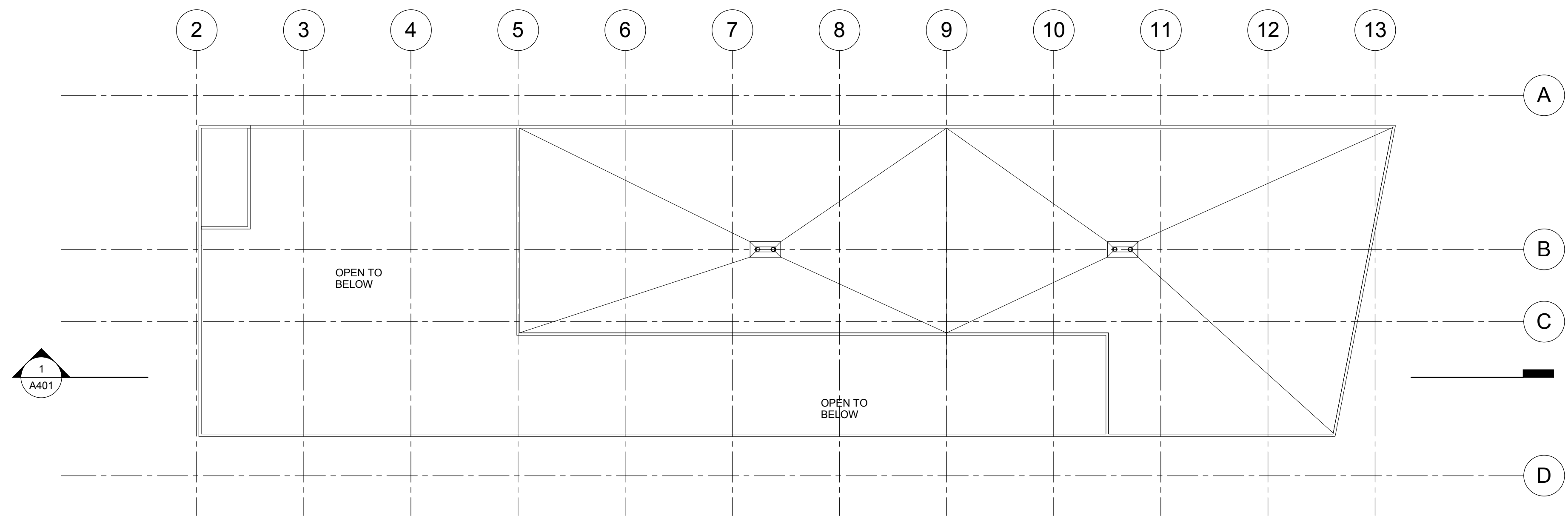
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Level 3 Floor Plan

**A204**



1  
A205  
Roof Plan  
1/16" = 1'-0"



2  
A205  
Penthouse Roof Plan  
1/16" = 1'-0"



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Schematic Design

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Roof Plan

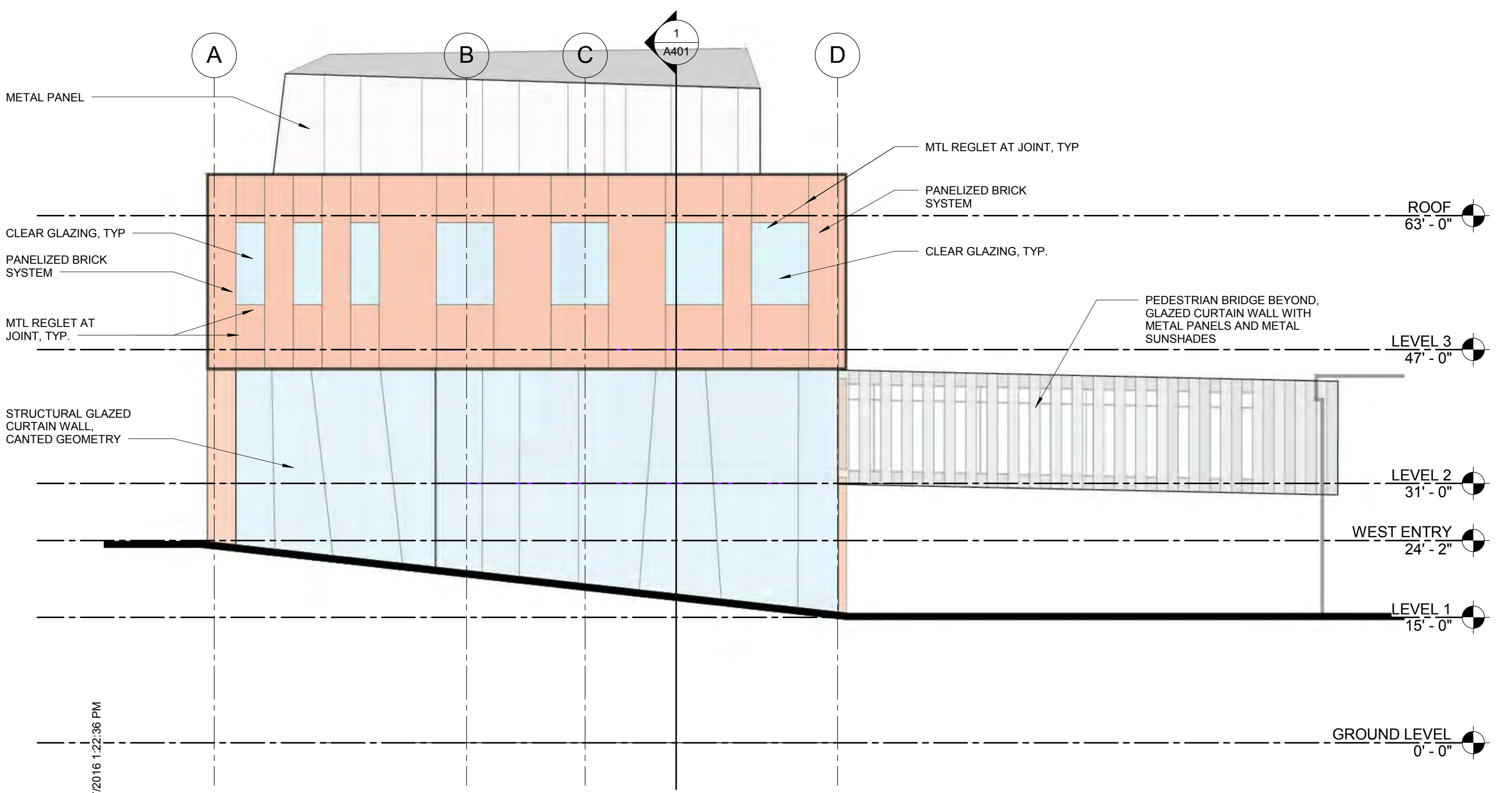
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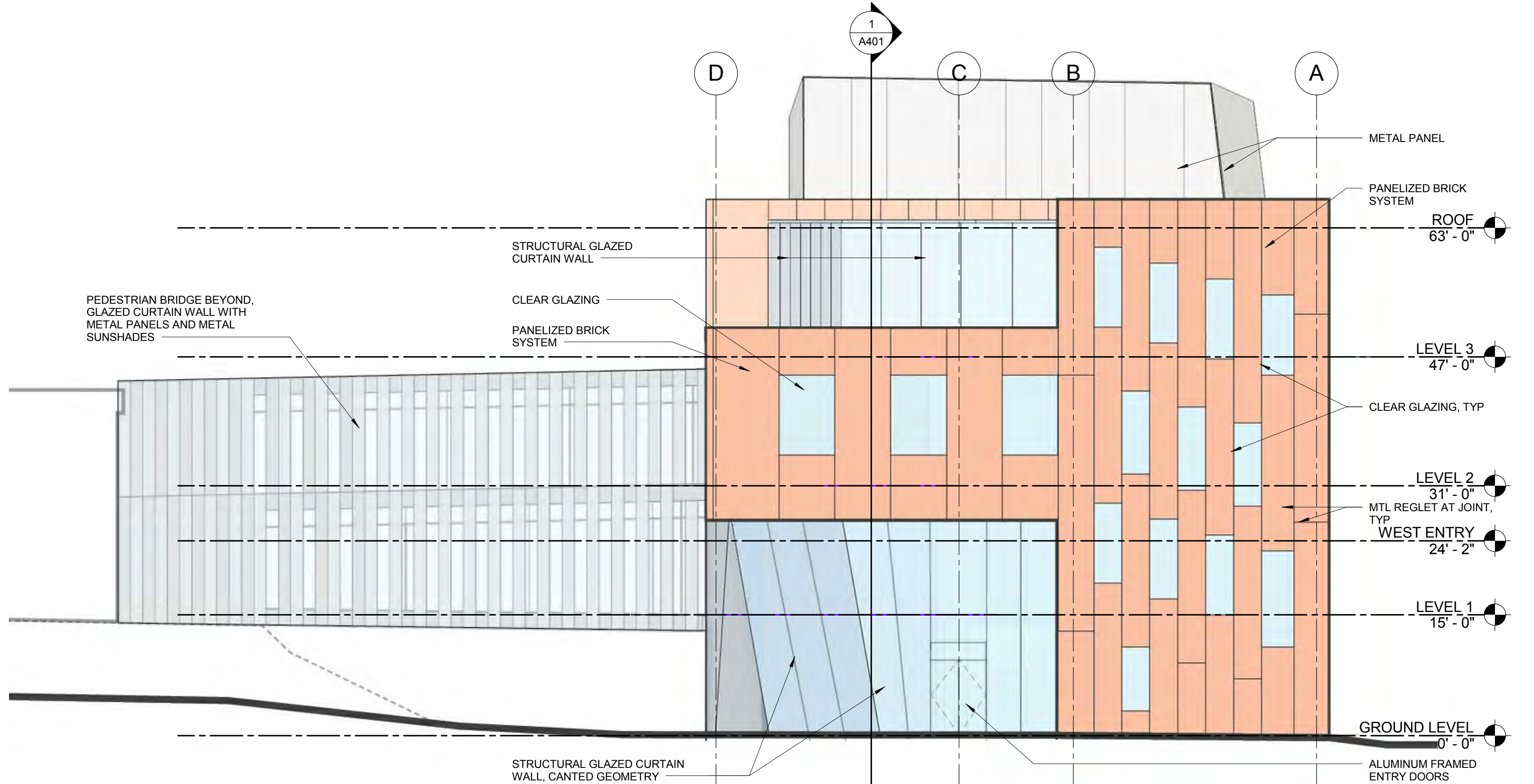
1  
A301  
3/32" = 1'-0"

**EXTERIOR ELEVATION - NORTH**



4  
A301  
3/32" = 1'-0"

**EXTERIOR ELEVATION - WEST**



2  
A301  
3/32" = 1'-0"

**EXTERIOR ELEVATION - EAST**



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Schematic Design

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Elevations

**A301**



3 EXTERIOR ELEVATION SOUTH  
 A302 3/32" = 1'-0"

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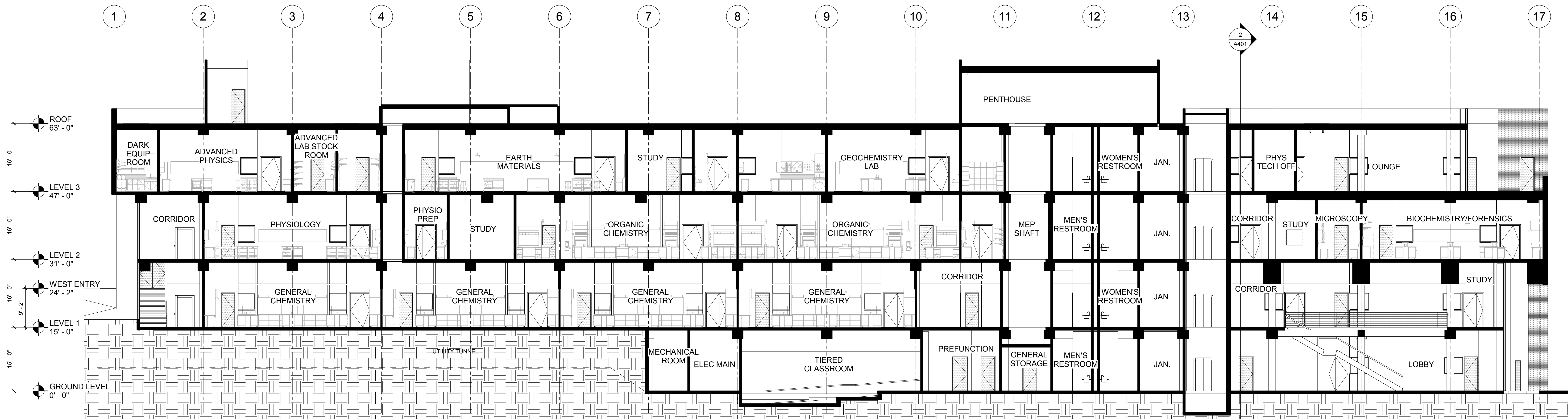
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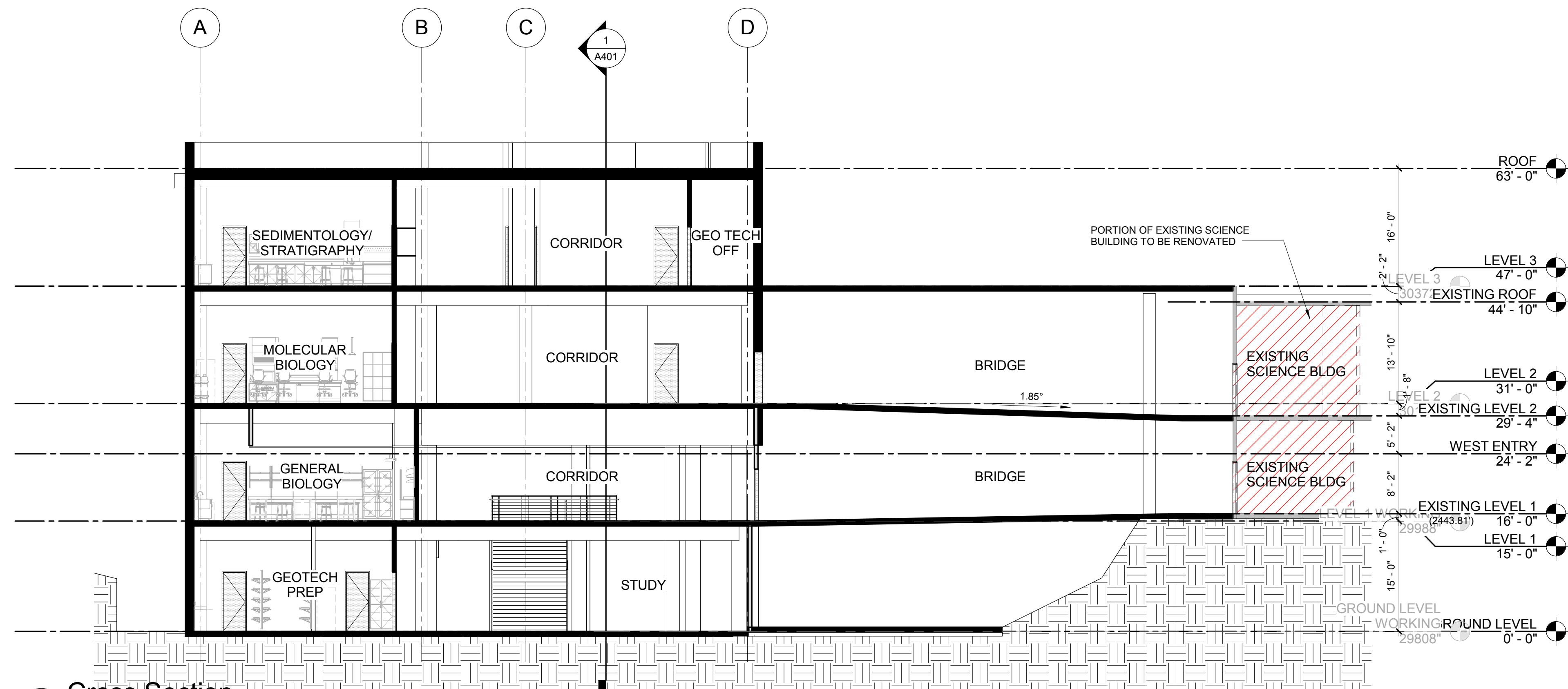
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Elevations

# A302



1 Longitudinal Section  
A401 3/32" = 1'-0"



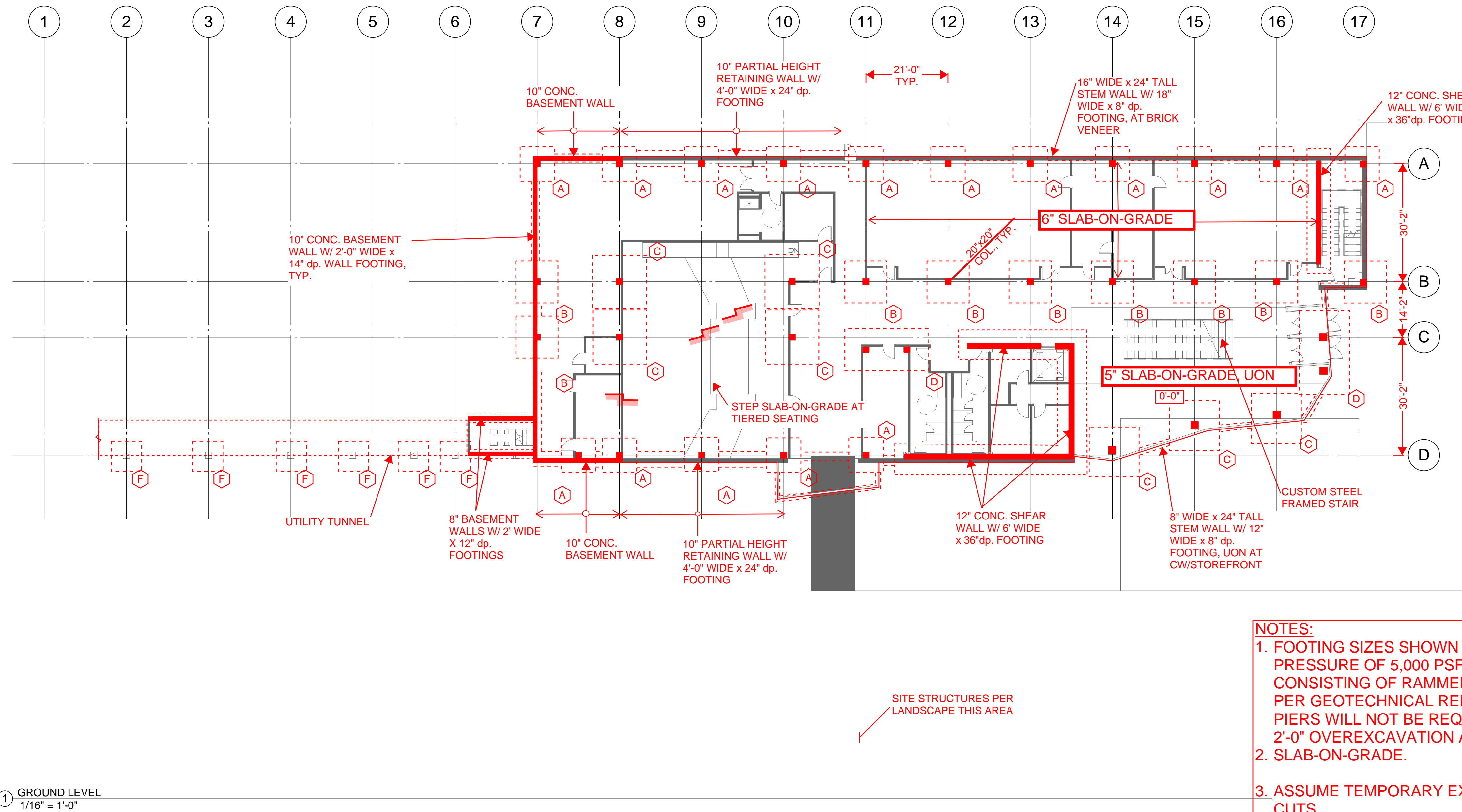
2 Cross Section  
A401 3/32" = 1'-0"

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1 LEVEL 1 RCP  
A700 1/16" = 1'-0"

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- REINFORCING QUANTITY ESTIMATES**
- COLUMNS = 350#/CY
  - 8" SLABS = 3.5#/SF
  - 10" SLABS = 4.0#/SF
  - MILD REINFORCED BEAMS: 350#/CY
  - POST-TENSIONED TRANSFER BEAMS = 250#/CY REBAR AND 35#/LF PT CABLES
  - SHEAR WALLS = 250#/CY
  - SHEAR WALL FOOTINGS = 150#/CY
  - BASEMENT AND RETAINING WALLS = 175#/CY
  - BASEMENT WALL FOOTINGS = 60#/CY
  - AUGER CAST PILES AT BRIDGE = 200#/CY
  - SLAB-ON-GRADE = 6x6 W1.4xW1.4 W.W.M.

- CONCRETE STRENGTH ESTIMATES**
- COLUMNS = 5,000 PSI
  - ELEVATED SLABS AND BEAMS = 5,000 PSI
  - SHEAR WALLS = 5,000 PSI
  - BASEMENT WALLS = 4,000 PSI
  - SLAB-ON-GRADE = 4,000 PSI
  - FOUNDATIONS = 4,000 PSI

- NOTES:**
- FOOTING SIZES SHOWN ARE BASED ON AN ALLOWABLE BEARING PRESSURE OF 5,000 PSF ASSUMING GROUND IMPROVEMENT CONSISTING OF RAMMED AGGREGATE PIERS UNDER THE FOOTINGS PER GEOTECHNICAL REPORT. IT IS ASSUMED THAT AGGREGATE PIERS WILL NOT BE REQUIRED UNDER THE SLAB-ON-GRADE. ASSUME 2'-0" OVEREXCAVATION AND COMPACTED STRUCTURAL FILL UNDER
  - SLAB-ON-GRADE.
  - ASSUME TEMPORARY EXCAVATION WILL BE ACCOMPLISHED BY SLOPE CUTS
- EXTERIOR WALLS WILL CONSIST OF 6"x14ga. METAL STUDS @ 16"oc

**SPREAD FOOTING SCHEDULE**

MARK	SIZE	REINFORCING
A	9'-0" x 9'-0" x 2'-0" dp.	(8)#8 E.W. BOTTOM
B	12'-0" x 12'-0" x 2'-6" dp.	(13)#8 E.W. BOTTOM
C	14'-0" x 14'-0" x 3'-0" dp.	(18)#8 E.W. BOTTOM
D	22'-6" x 12'-0" x 2'-6" dp.	(14)#8 LONG, (27)#8 TRANS. BOTTOM
E	10'-0" x 10'-0" x 2'-6" dp.	(11)#8 E.W. BOTTOM
F	8'-0" x 8'-0" x 2'-0" dp.	(8)#8 E.W. BOTTOM

SEE NOTE 1.

① GROUND LEVEL  
1/16" = 1'-0"

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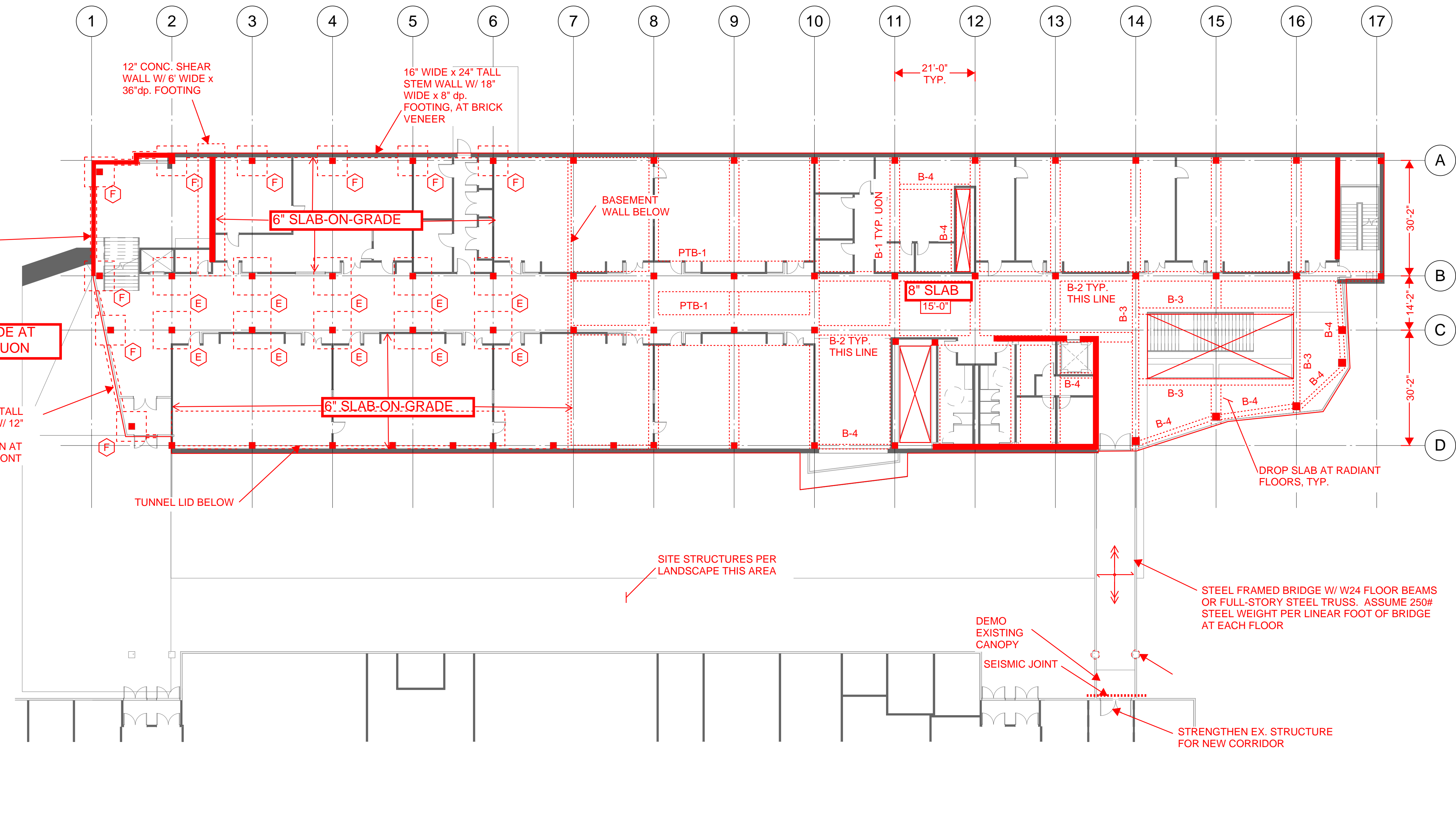
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Date: 5/27/2016

Schematic Design

Sheet Title	Sheet Number
Ground Floor Plan	S201



**SPREAD FOOTING SCHEDULE**

MARK	SIZE	REINFORCING
A	9'-0" x 9'-0" x 2'-0" dp.	(8)#8 E.W. BOTTOM
B	12'-0" x 12'-0" x 2'-6" dp.	(13)#8 E.W. BOTTOM
C	14'-0" x 14'-0" x 3'-0" dp.	(18)#8 E.W. BOTTOM
D	22'-6" x 12'-0" x 2'-6" dp.	(14)#8 LONG. (27)#8 TRANS. BOTTOM
E	10'-0" x 10'-0" x 2'-6" dp.	(11)#8 E.W. BOTTOM
F	8'-0" x 8'-0" x 2'-0" dp.	(8)#8 E.W. BOTTOM

SEE NOTE 1.

**BEAM SCHEDULE**

MARK	WIDTH	DEPTH	COMMENTS
B-1	30"	24"	
B-2	12"	16"	
B-3	20"	36"	
B-4	16"	16"	
PTB-1	84"-96"	54"-60"	ASSUME STAGED STRESSING
PTB-2	36"-48"	48"	ASSUME STAGED STRESSING

NOTE:  
1. BEAM DEPTH INCLUDES SLAB THICKNESS  
2. PTB - POST-TENSIONED BEAM

① Level 1  
1/16" = 1'-0"

**NOTE:**  
1. ADDITIONAL STEEL MEMBERS LIKELY REQUIRED FOR SUPPORT OF EXTERIOR CLADDING.

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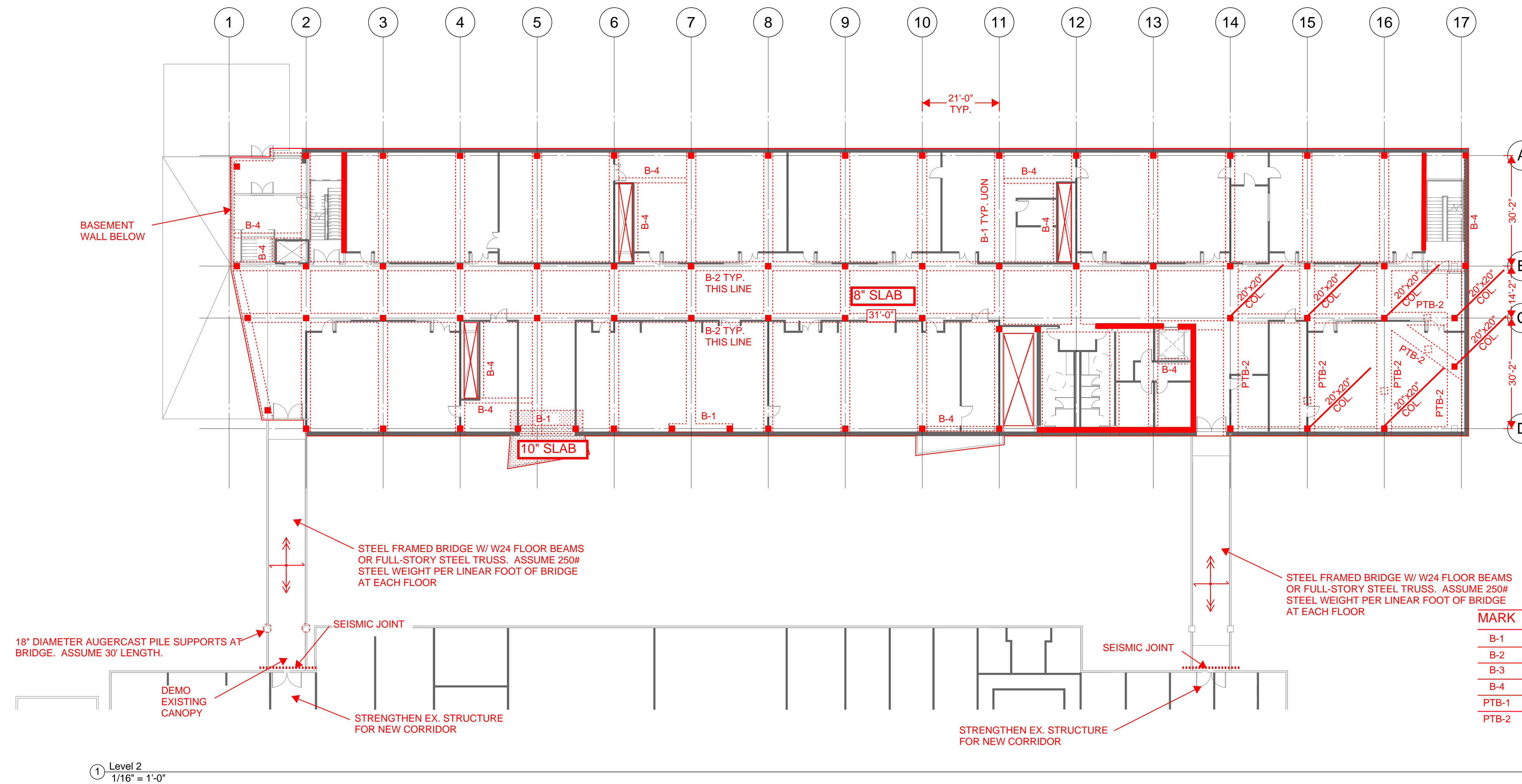
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Schematic Design

Level 1 Floor Plan

**S202**



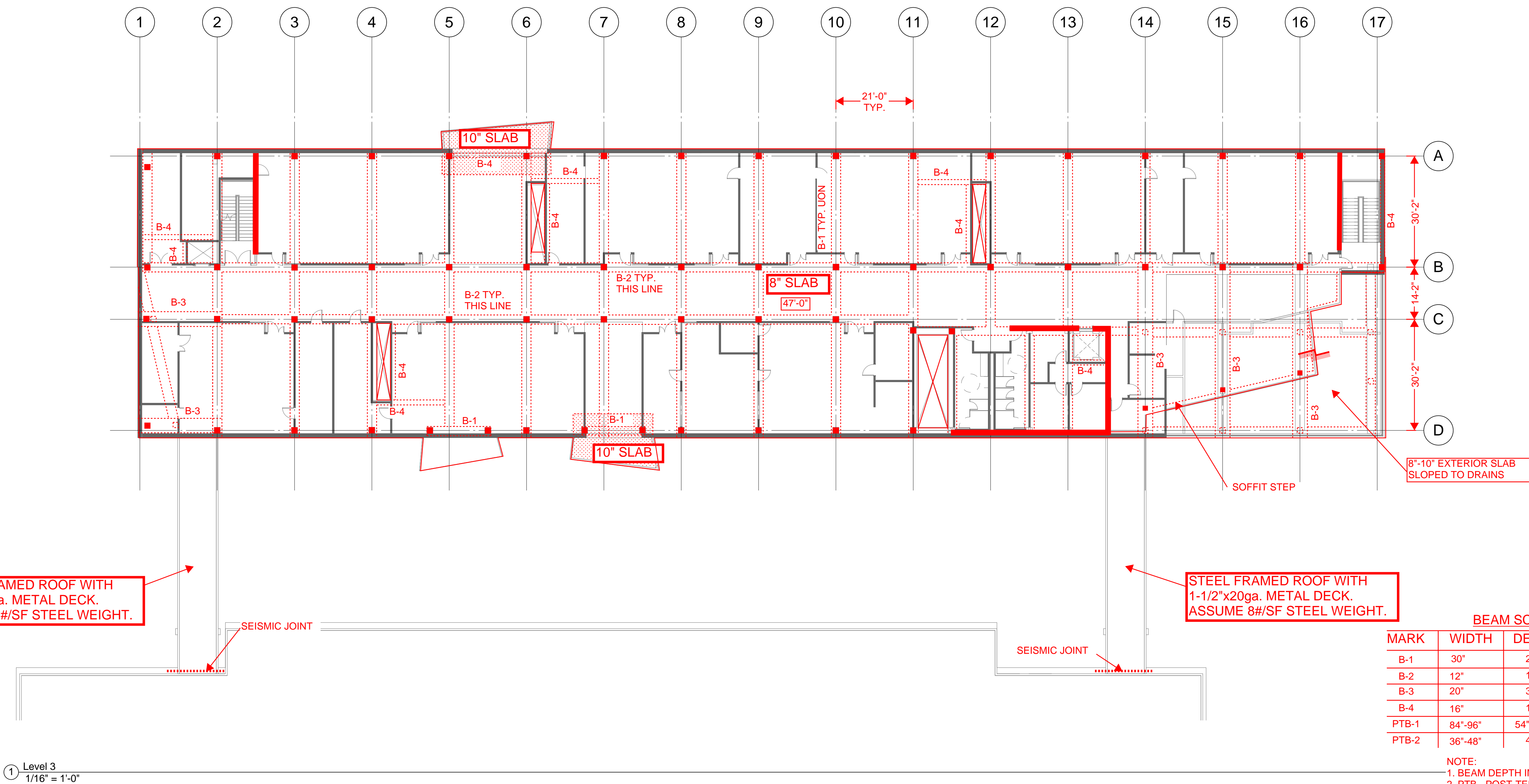
BEAM SCHEDULE			
MARK	WIDTH	DEPTH	COMMENTS
B-1	30"	24"	
B-2	12"	16"	
B-3	20"	36"	
B-4	16"	16"	
PTB-1	84"-96"	54"-60"	ASSUME STAGED STRESSING
PTB-2	36"-48"	48"	ASSUME STAGED STRESSING

NOTE:  
 1. BEAM DEPTH INCLUDES SLAB THICKNESS  
 2. PTB - POST-TENSIONED BEAM

**NOTE:**  
 1. ADDITIONAL STEEL MEMBERS LIKELY REQUIRED FOR SUPPORT OF EXTERIOR CLADDING.

① Level 2  
 1/16" = 1'-0"

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STEEL FRAMED ROOF WITH 1-1/2"x20ga. METAL DECK. ASSUME 8#/SF STEEL WEIGHT.

STEEL FRAMED ROOF WITH 1-1/2"x20ga. METAL DECK. ASSUME 8#/SF STEEL WEIGHT.

BEAM SCHEDULE			
MARK	WIDTH	DEPTH	COMMENTS
B-1	30"	24"	
B-2	12"	16"	
B-3	20"	36"	
B-4	16"	16"	
PTB-1	84"-96"	54"-60"	ASSUME STAGED STRESSING
PTB-2	36"-48"	48"	ASSUME STAGED STRESSING

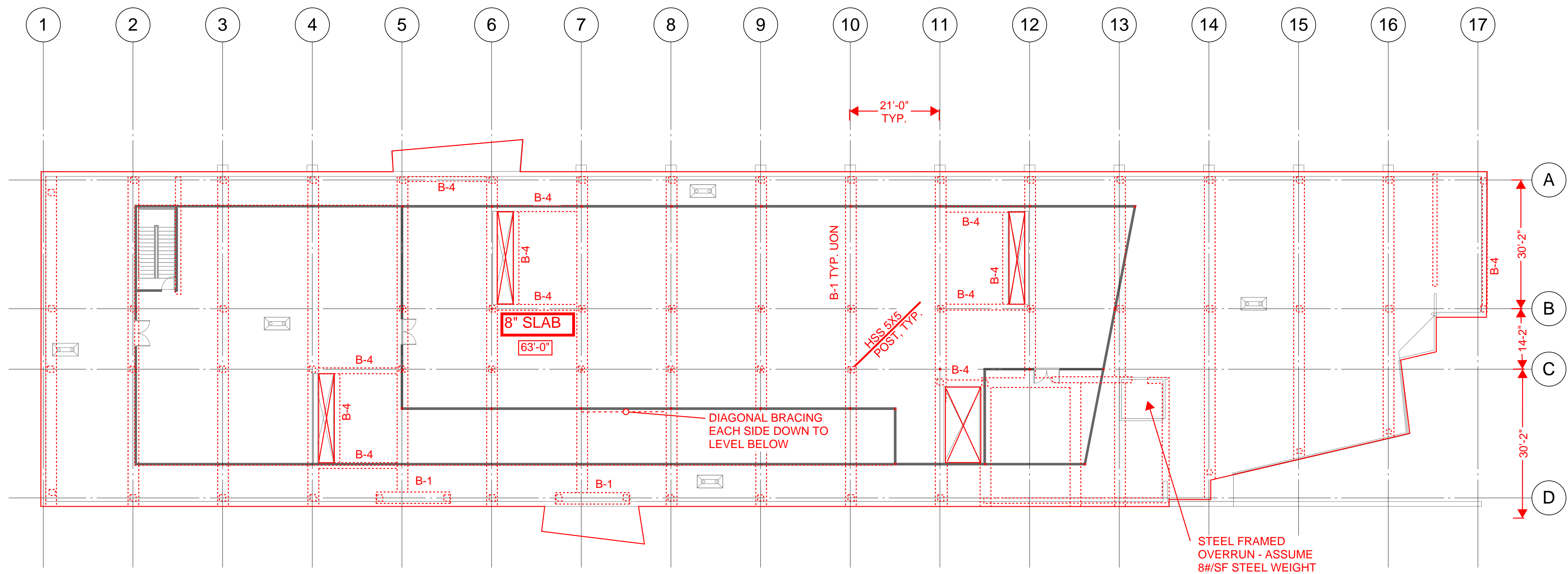
NOTE:  
 1. BEAM DEPTH INCLUDES SLAB THICKNESS  
 2. PTB - POST-TENSIONED BEAM

NOTE:  
 1. ADDITIONAL STEEL MEMBERS LIKELY REQUIRED FOR SUPPORT OF EXTERIOR CLADDING.

① Level 3  
 1/16" = 1'-0"

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**BEAM SCHEDULE**

MARK	WIDTH	DEPTH	COMMENTS
B-1	30"	24"	
B-2	12"	16"	
B-3	20"	36"	
B-4	16"	16"	
PTB-1	84"-96"	54"-60"	ASSUME STAGED STRESSING
PTB-2	36"-48"	48"	ASSUME STAGED STRESSING

NOTE:  
 1. BEAM DEPTH INCLUDES SLAB THICKNESS  
 2. PTB - POST-TENSIONED BEAM

**NOTE:**  
 1. ADDITIONAL STEEL MEMBERS LIKELY REQUIRED FOR SUPPORT OF EXTERIOR CLADDING.

① Roof  
 1/16" = 1'-0"

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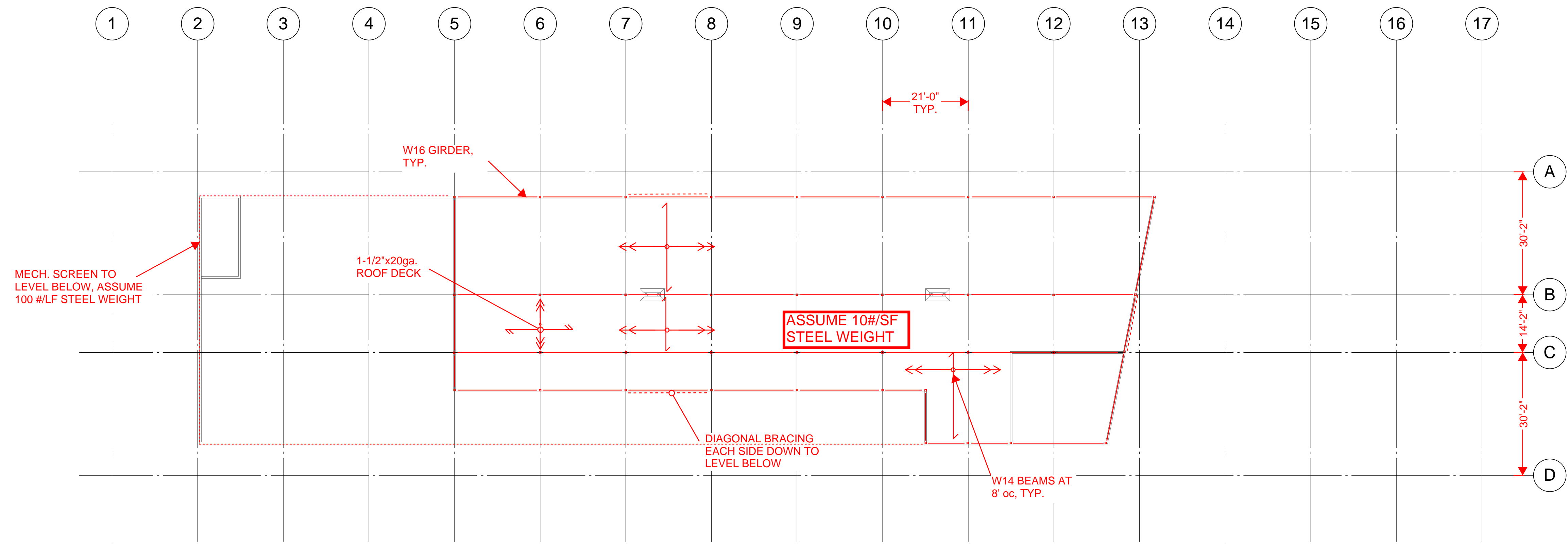
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Schematic Design

Roof Plan

**S205**



**NOTE:**  
 1. ADDITIONAL STEEL MEMBERS LIKELY REQUIRED FOR SUPPORT OF EXTERIOR CLADDING.

① Penthouse  
 1/16" = 1'-0"

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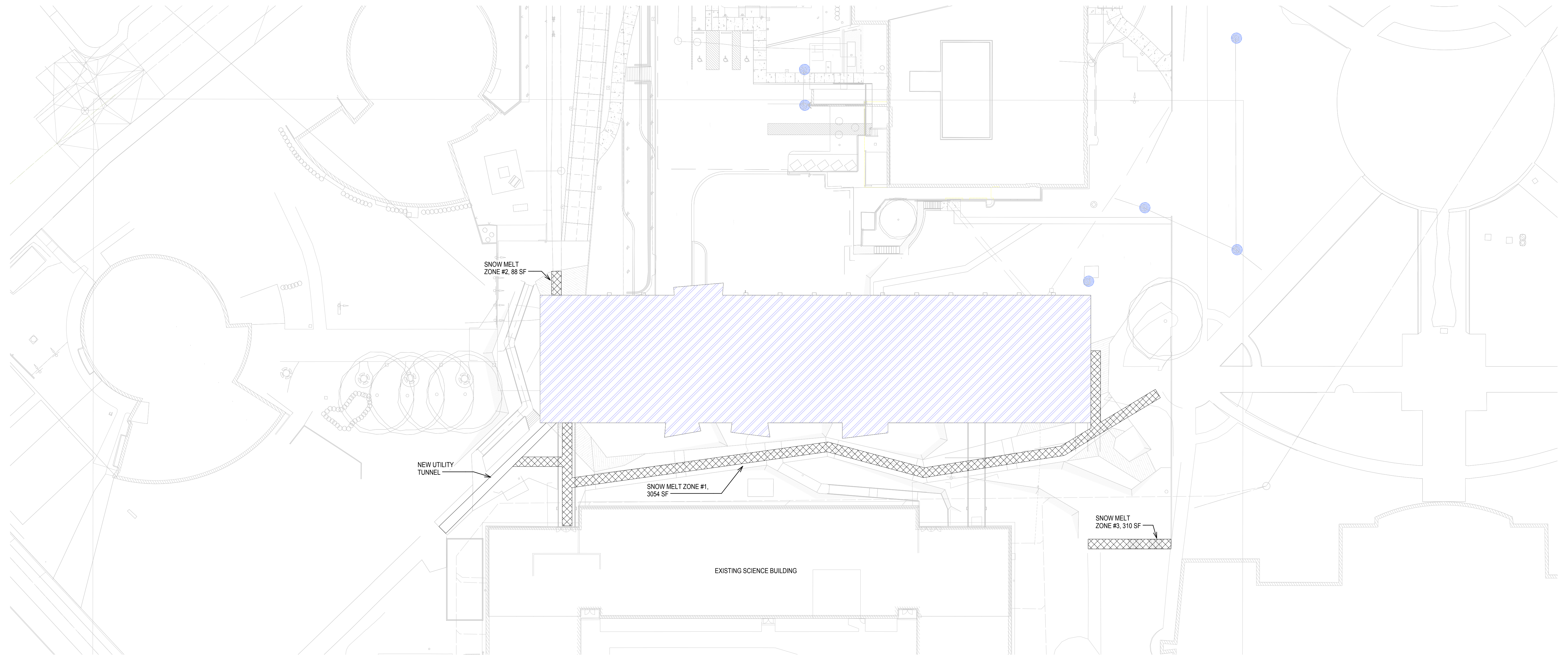
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Penthouse Framing

**S206**



**SITE PLAN - PLUMBING**  
 1" = 30'-0"

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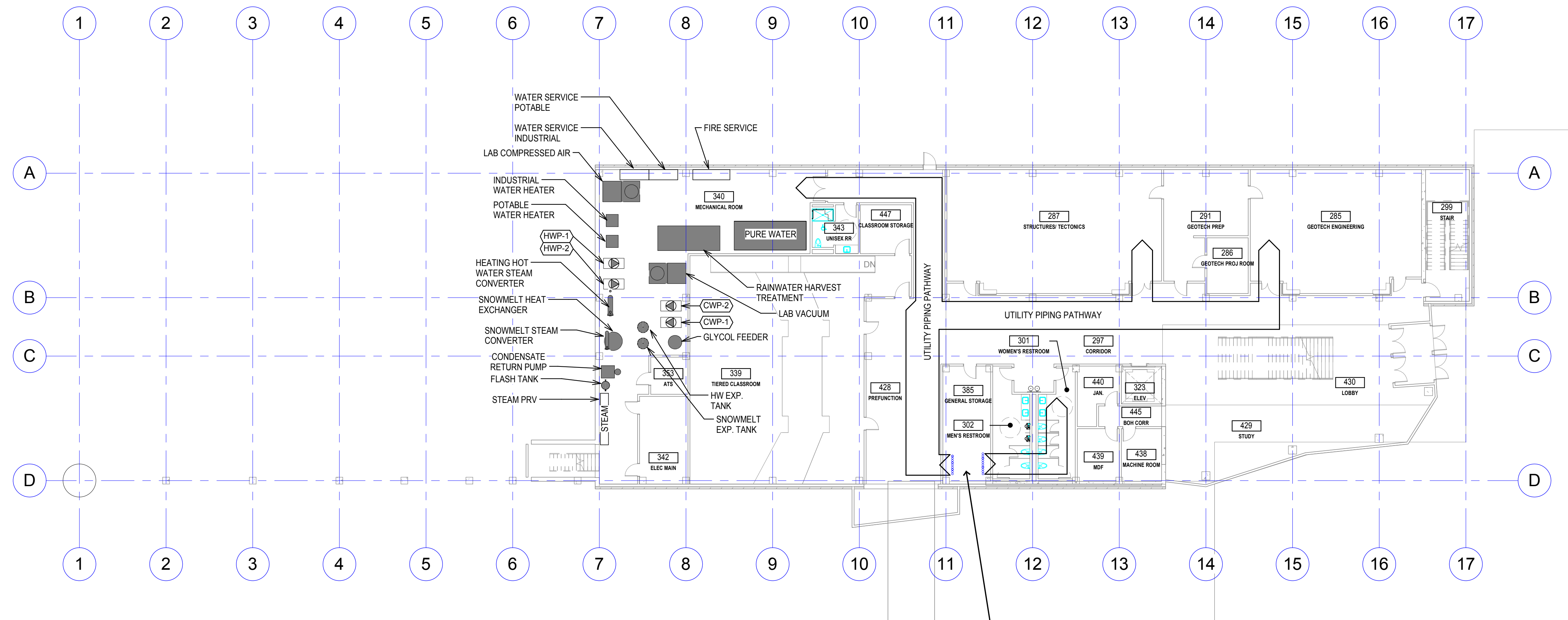
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**SITE PLAN - PIPING**

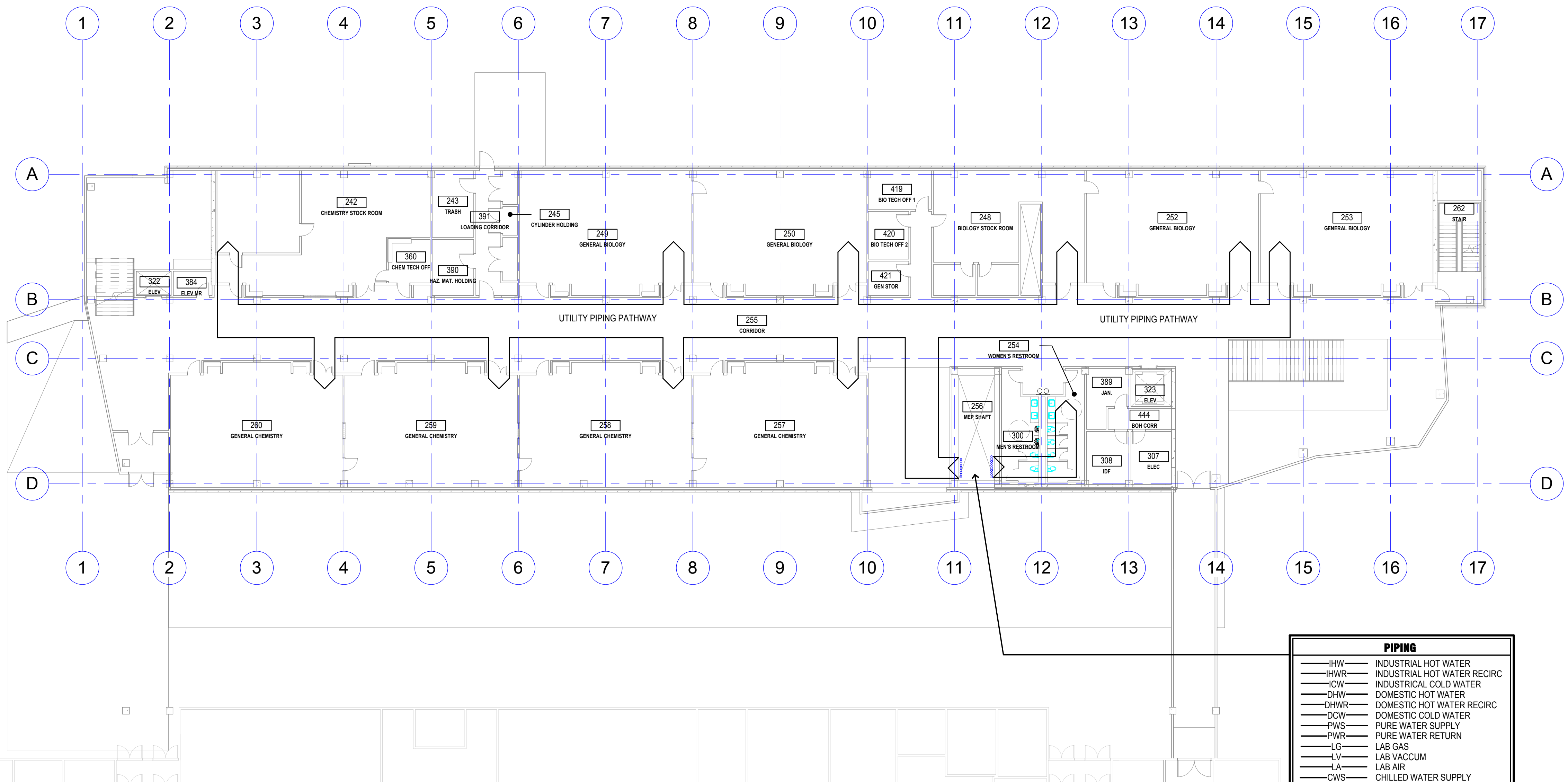
**P101**



**GROUND FLOOR PLAN - PIPING**  
 1/16" = 1'-0"

PIPING	
—IHW—	INDUSTRIAL HOT WATER
—IHW—	INDUSTRIAL HOT WATER RECIRC
—ICW—	INDUSTRIAL COLD WATER
—DHW—	DOMESTIC HOT WATER
—DHW—	DOMESTIC HOT WATER RECIRC
—DCW—	DOMESTIC COLD WATER
—PWS—	PURE WATER SUPPLY
—PWR—	PURE WATER RETURN
—LG—	LAB GAS
—LV—	LAB VACUUM
—LA—	LAB AIR
—CWS—	CHILLED WATER SUPPLY
—CWR—	CHILLED WATER RETURN
—LPS—	LOW PRESSURE STEAM
—LPC—	LOW PRESSURE CONDENSATE
—HWS—	HOT WATER SUPPLY
—HWR—	HOT WATER RETURN
—RW—	RECYCLED WATER

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**LEVEL 1 FLOOR PLAN - PIPING**  
 1/16" = 1'-0"

PIPING	
— IHW —	INDUSTRIAL HOT WATER
— IHWR —	INDUSTRIAL HOT WATER RECIRC
— ICW —	INDUSTRIAL COLD WATER
— DHW —	DOMESTIC HOT WATER
— DHWR —	DOMESTIC HOT WATER RECIRC
— DCW —	DOMESTIC COLD WATER
— PWS —	PURE WATER SUPPLY
— PWR —	PURE WATER RETURN
— LG —	LAB GAS
— LV —	LAB VACCUM
— LA —	LAB AIR
— CWS —	CHILLED WATER SUPPLY
— CWR —	CHILLED WATER RETURN
— LPS —	LOW PRESSURE STEAM
— LPC —	LOW PRESSURE CONDENSATE
— HWS —	HOT WATER SUPPLY
— HWR —	HOT WATER RETURN
— RW —	RECYCLED WATER

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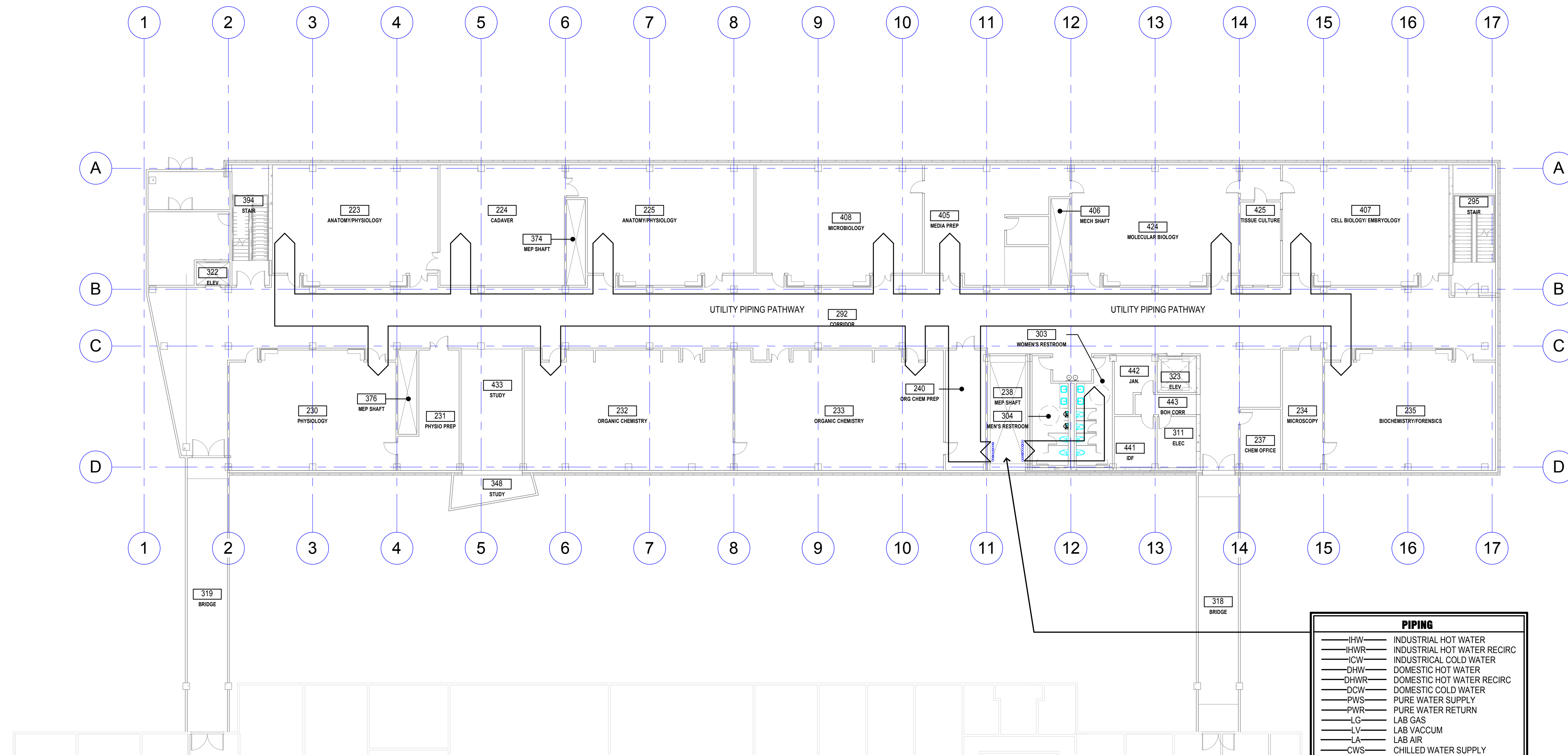
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**LEVEL 1 FLOOR PLAN - PIPING**

**P202**



**LEVEL 2 FLOOR PLAN - PIPING**  
 1/16" = 1'-0"

PIPING	
— IHW —	INDUSTRIAL HOT WATER
— IHWR —	INDUSTRIAL HOT WATER RECIRC
— ICW —	INDUSTRIAL COLD WATER
— DHW —	DOMESTIC HOT WATER
— DHWR —	DOMESTIC HOT WATER RECIRC
— DCW —	DOMESTIC COLD WATER
— PWS —	PURE WATER SUPPLY
— PWR —	PURE WATER RETURN
— LG —	LAB GAS
— LV —	LAB VACCUM
— LA —	LAB AIR
— CWS —	CHILLED WATER SUPPLY
— CWR —	CHILLED WATER RETURN
— LPS —	LOW PRESSURE STEAM
— LPC —	LOW PRESSURE CONDENSATE
— HWS —	HOT WATER SUPPLY
— HWR —	HOT WATER RETURN
— RW —	RECYCLED WATER

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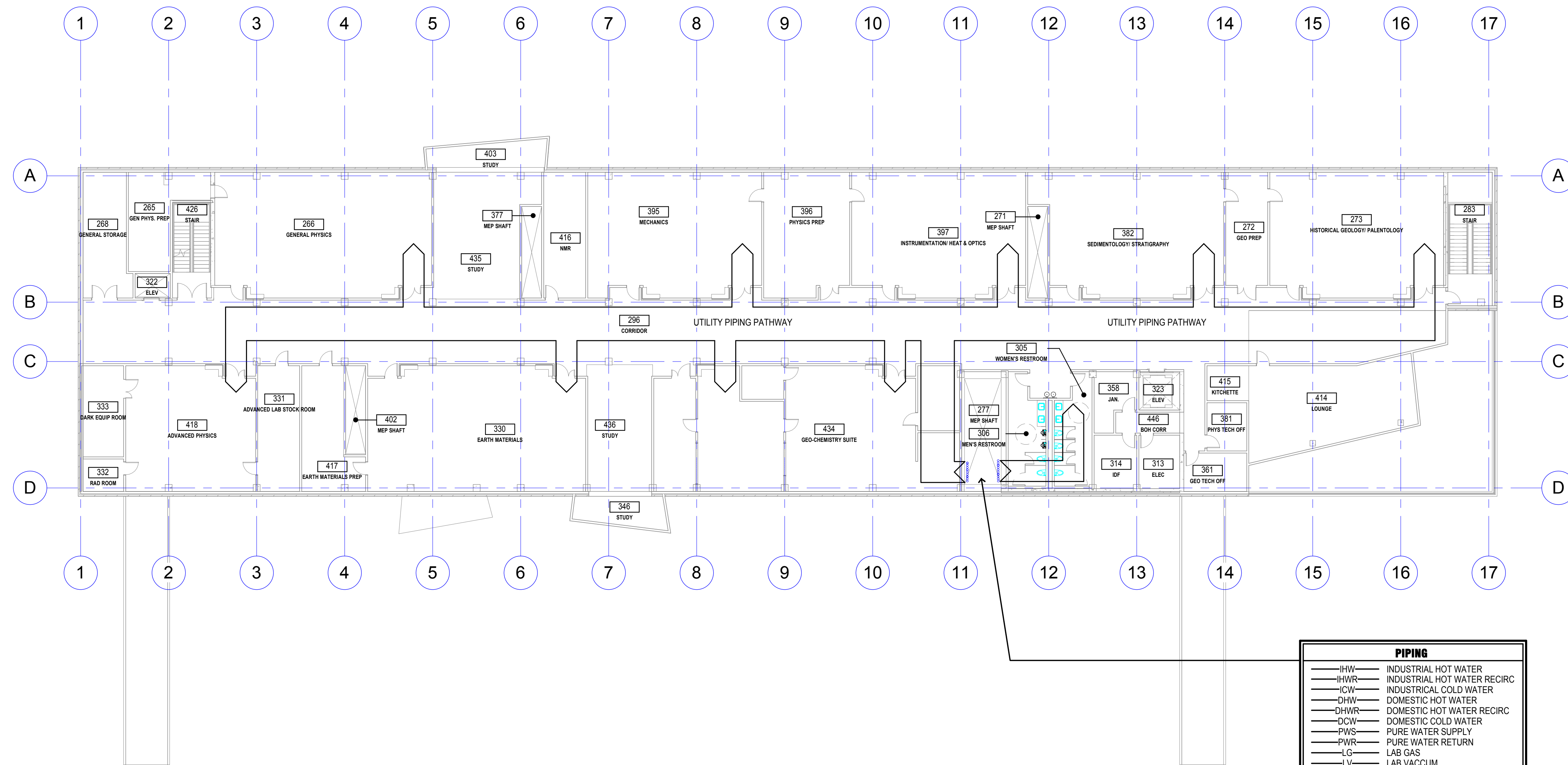
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**LEVEL 2 FLOOR PLAN - PIPING**

**P203**



**LEVEL 3 FLOOR PLAN - PIPING**  
 1/16" = 1'-0"

PIPING	
— IHW —	INDUSTRIAL HOT WATER
— IHW R —	INDUSTRIAL HOT WATER RECIRC
— ICW —	INDUSTRIAL COLD WATER
— DHW —	DOMESTIC HOT WATER
— DHW R —	DOMESTIC HOT WATER RECIRC
— DCW —	DOMESTIC COLD WATER
— PWS —	PURE WATER SUPPLY
— PWR —	PURE WATER RETURN
— LG —	LAB GAS
— LV —	LAB VACCUM
— LA —	LAB AIR
— CWS —	CHILLED WATER SUPPLY
— CWR —	CHILLED WATER RETURN
— LPS —	LOW PRESSURE STEAM
— LPC —	LOW PRESSURE CONDENSATE
— HWS —	HOT WATER SUPPLY
— HWR —	HOT WATER RETURN
— RW —	RECYCLED WATER

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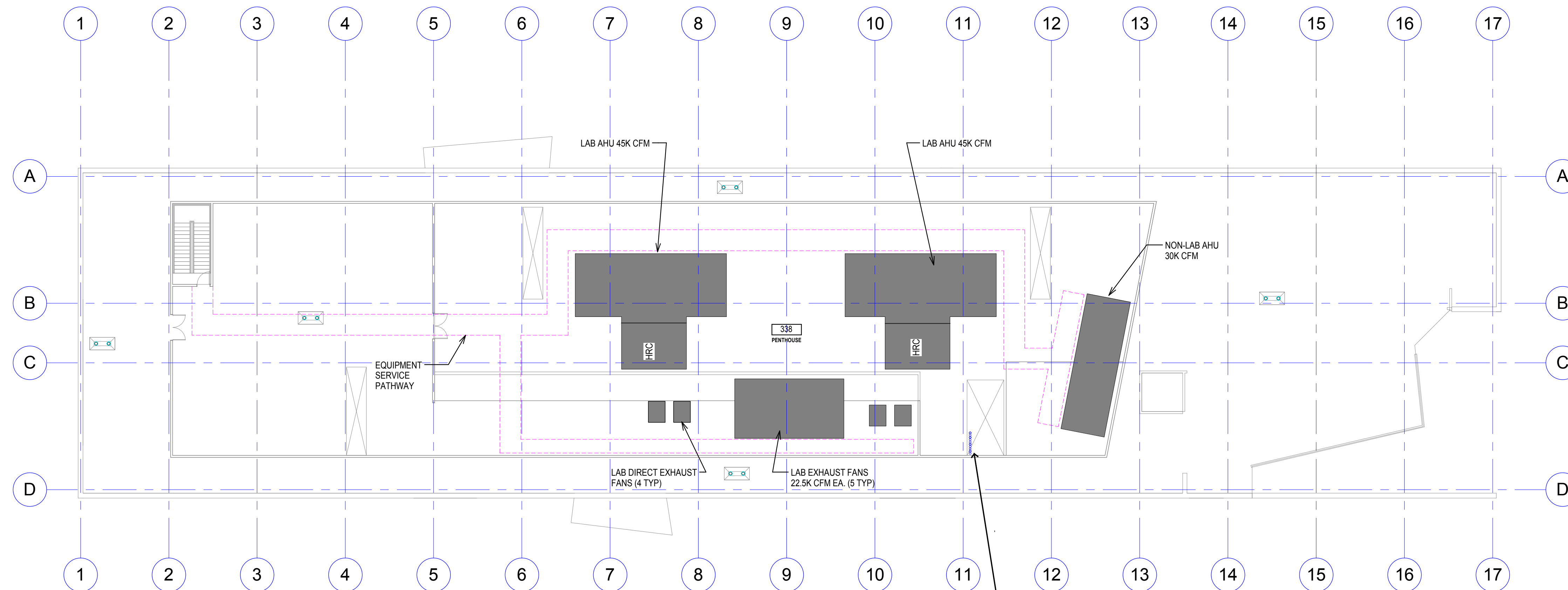
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**LEVEL 3 FLOOR PLAN - PIPING**

**P204**



PIPING	
— PWS —	PURE WATER SUPPLY
— PWR —	PURE WATER RETURN
— LV —	LAB VACUUM
— LA —	LAB AIR
— CWS —	CHILLED WATER SUPPLY
— CWR —	CHILLED WATER RETURN
— LPS —	LOW PRESSURE STEAM
— LPC —	LOW PRESSURE CONDENSATE
— HWS —	HOT WATER SUPPLY
— HWR —	HOT WATER RETURN

**PENTHOUSE/ROOF PLAN - PIPING**  
 1/16" = 1'-0"

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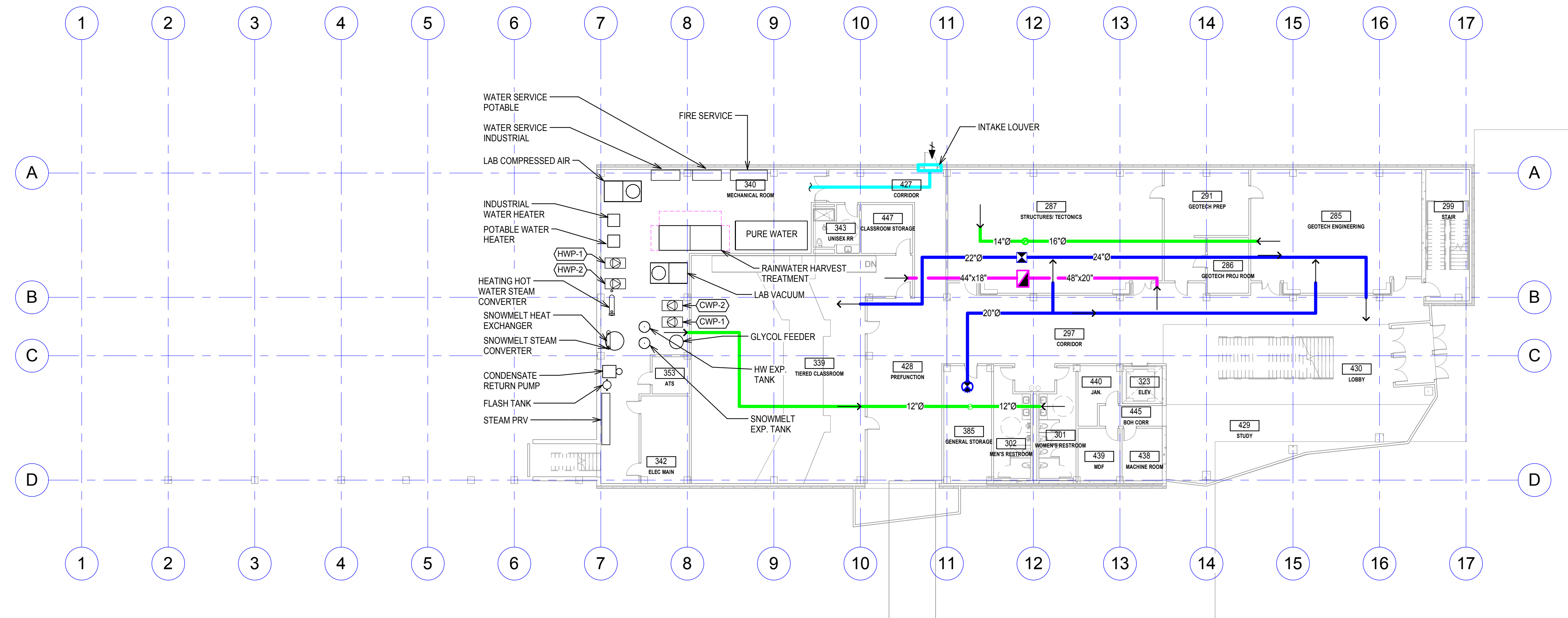
**ROOF PLAN - PIPING**

**P205**



**LEGENDS & ABBREVIATIONS:**

- |  |                                    |     |                    |
|--|------------------------------------|-----|--------------------|
|  | RECTANGULAR SUPPLY DUCT (SECTION)  | EXH | EXHAUST AIR        |
|  | RECTANGULAR RETURN DUCT (SECTION)  | RLF | RELIEF AIR         |
|  | RECTANGULAR EXHAUST DUCT (SECTION) | SA  | SUPPLY AIR         |
|  | ROUND SUPPLY DUCT (SECTION)        | RA  | RETURN AIR         |
|  | ROUND RETURN DUCT (SECTION)        | OSA | OUTSIDE AIR        |
|  | ROUND EXHAUST DUCT (SECTION)       | SF  | SUPPLY FAN         |
|  |                                    | RF  | RETURN FAN         |
|  |                                    | EF  | EXHAUST FAN        |
|  |                                    | HRU | HEAT RECOVERY UNIT |
|  |                                    | AHU | AIR HANDLING UNIT  |



**GROUND FLOOR PLAN - HVAC**  
1/16" = 1'-0"

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Schematic Design

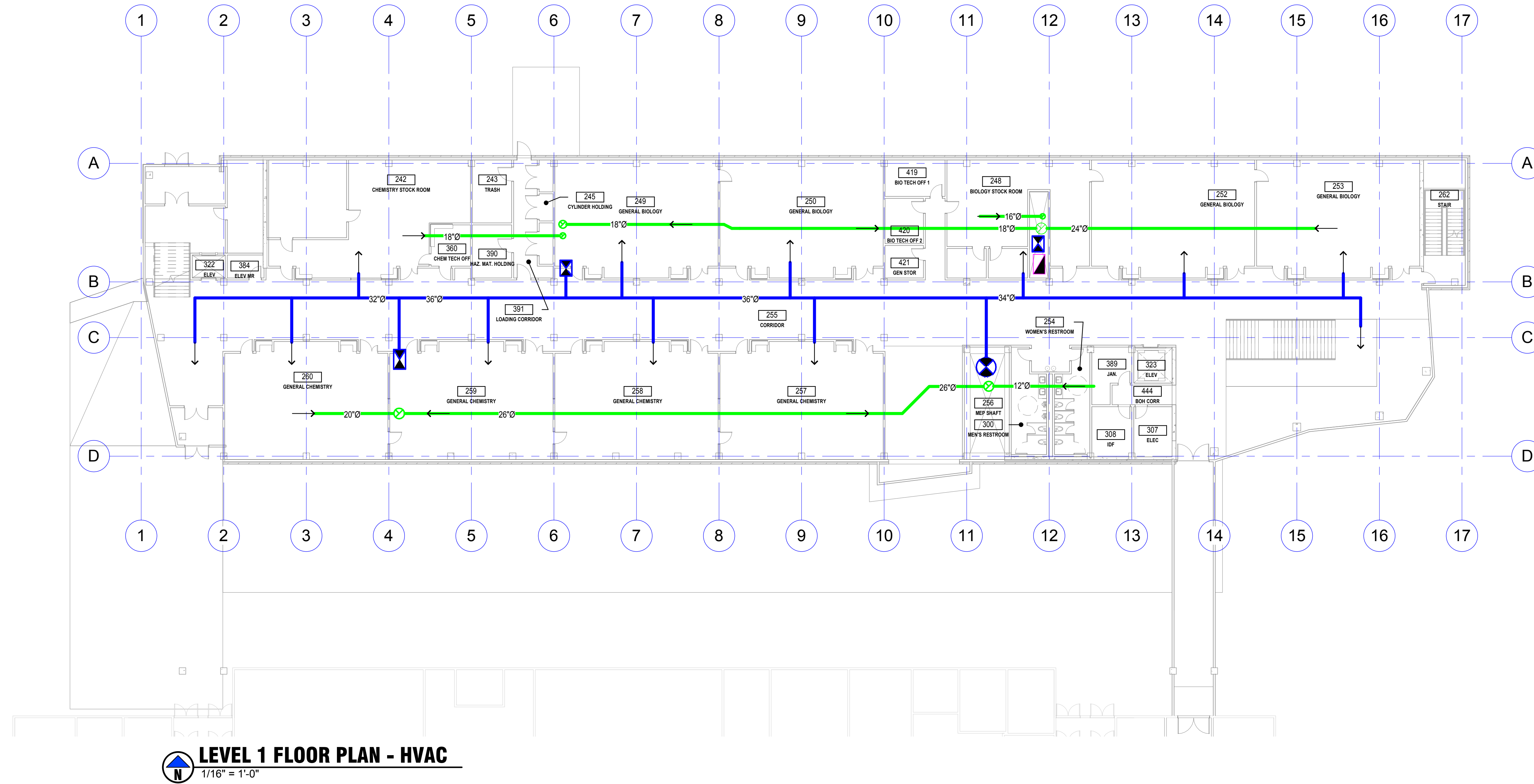
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**GROUND FLOOR PLAN - HVAC**

**M201**

**LEGENDS & ABBREVIATIONS:**

- |  |                                    |     |                    |
|--|------------------------------------|-----|--------------------|
|  | RECTANGULAR SUPPLY DUCT (SECTION)  | EXH | EXHAUST AIR        |
|  | RECTANGULAR RETURN DUCT (SECTION)  | RLF | RELIEF AIR         |
|  | RECTANGULAR EXHAUST DUCT (SECTION) | SA  | SUPPLY AIR         |
|  | ROUND SUPPLY DUCT (SECTION)        | RA  | RETURN AIR         |
|  | ROUND RETURN DUCT (SECTION)        | OSA | OUTSIDE AIR        |
|  | ROUND EXHAUST DUCT (SECTION)       | SF  | SUPPLY FAN         |
|  |                                    | RF  | RETURN FAN         |
|  |                                    | EF  | EXHAUST FAN        |
|  |                                    | HRU | HEAT RECOVERY UNIT |
|  |                                    | AHU | AIR HANDLING UNIT  |



**LEVEL 1 FLOOR PLAN - HVAC**  
1/16" = 1'-0"

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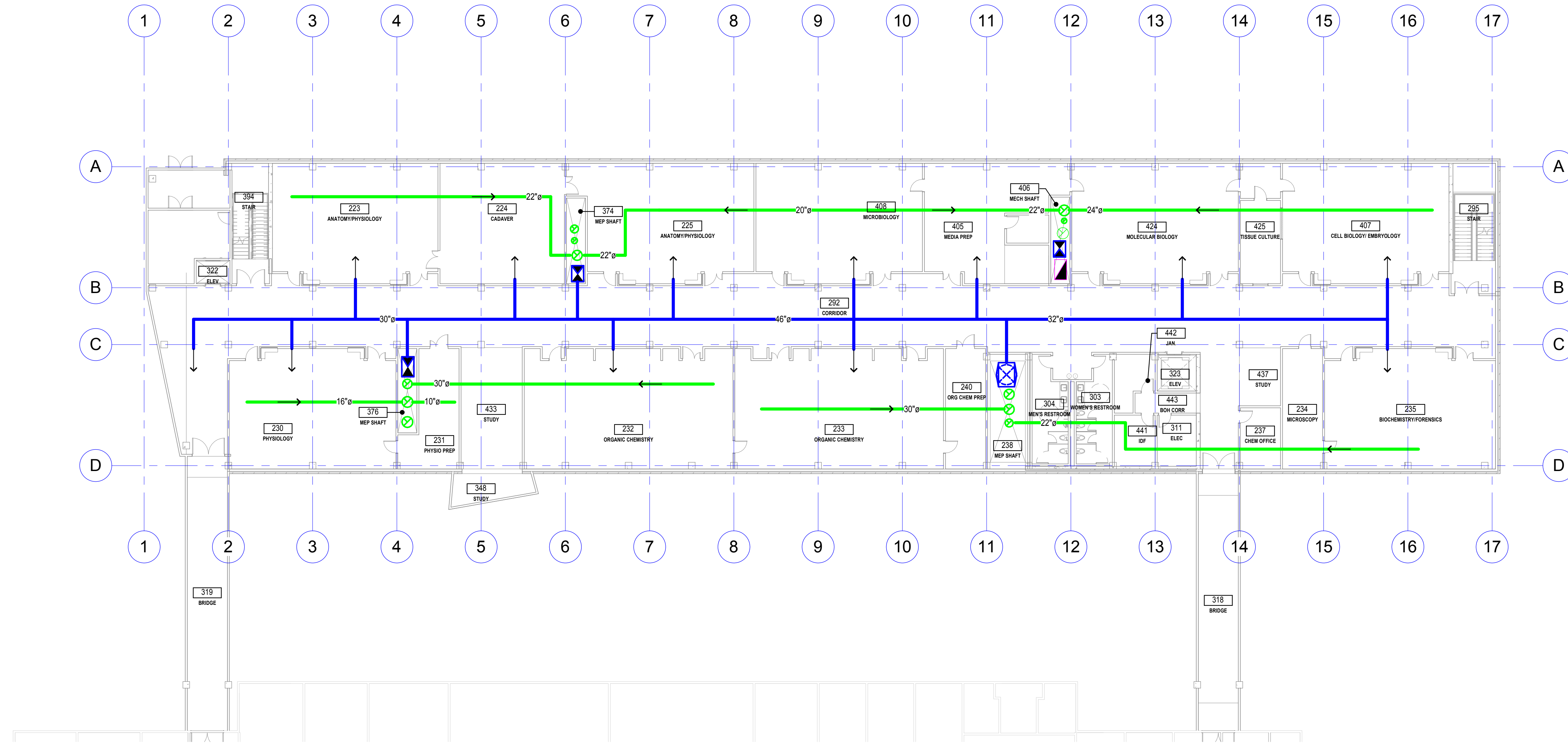
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**LEVEL 1 FLOOR PLAN - HVAC**

**M202**

**LEGENDS & ABBREVIATIONS:**

- |  |                                    |     |                    |
|--|------------------------------------|-----|--------------------|
|  | RECTANGULAR SUPPLY DUCT (SECTION)  | EXH | EXHAUST AIR        |
|  | RECTANGULAR RETURN DUCT (SECTION)  | RLF | RELIEF AIR         |
|  | RECTANGULAR EXHAUST DUCT (SECTION) | SA  | SUPPLY AIR         |
|  | ROUND SUPPLY DUCT (SECTION)        | RA  | RETURN AIR         |
|  | ROUND RETURN DUCT (SECTION)        | OSA | OUTSIDE AIR        |
|  | ROUND EXHAUST DUCT (SECTION)       | SF  | SUPPLY FAN         |
|  |                                    | RF  | RETURN FAN         |
|  |                                    | EF  | EXHAUST FAN        |
|  |                                    | HRU | HEAT RECOVERY UNIT |
|  |                                    | AHU | AIR HANDLING UNIT  |



**LEVEL 2 FLOOR PLAN - HVAC**  
1/16" = 1'-0"

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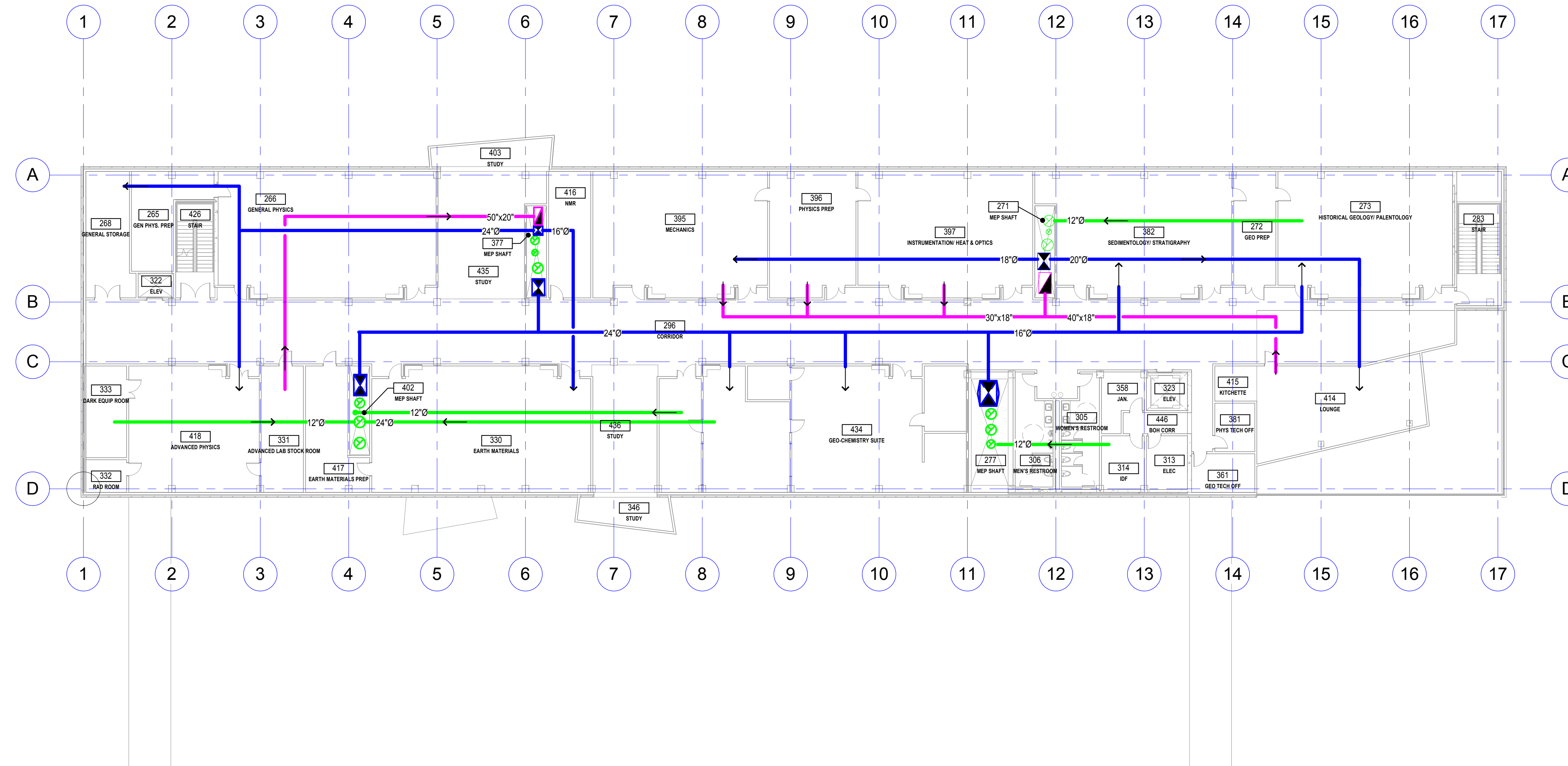
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**LEVEL 2 FLOOR PLAN - HVAC**

**M203**

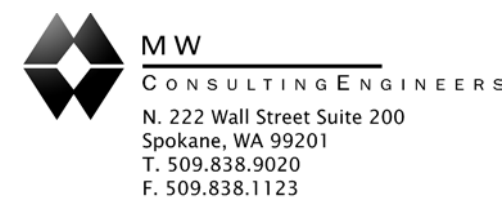
**LEGENDS & ABBREVIATIONS:**

- |  |                                    |     |                    |
|--|------------------------------------|-----|--------------------|
|  | RECTANGULAR SUPPLY DUCT (SECTION)  | EXH | EXHAUST AIR        |
|  | RECTANGULAR RETURN DUCT (SECTION)  | RLF | RELIEF AIR         |
|  | RECTANGULAR EXHAUST DUCT (SECTION) | SA  | SUPPLY AIR         |
|  | ROUND SUPPLY DUCT (SECTION)        | RA  | RETURN AIR         |
|  | ROUND RETURN DUCT (SECTION)        | OSA | OUTSIDE AIR        |
|  | ROUND EXHAUST DUCT (SECTION)       | SF  | SUPPLY FAN         |
|  |                                    | RF  | RETURN FAN         |
|  |                                    | EF  | EXHAUST FAN        |
|  |                                    | HRU | HEAT RECOVERY UNIT |
|  |                                    | AHU | AIR HANDLING UNIT  |



**LEVEL 3 FLOOR PLAN - HVAC**  
1/16" = 1'-0"

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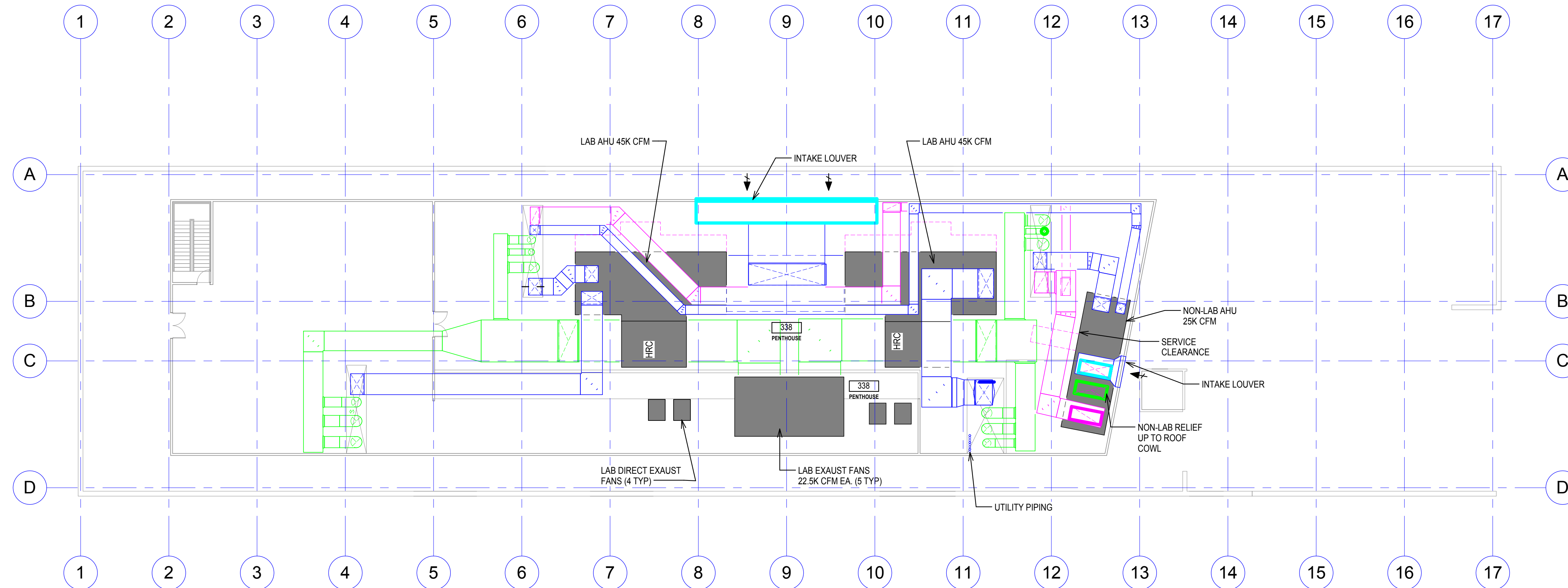
Schematic Design

**LEVEL 3 FLOOR PLAN - HVAC**

**M204**

**LEGENDS & ABBREVIATIONS:**

- |  |                                    |     |                    |
|--|------------------------------------|-----|--------------------|
|  | RECTANGULAR SUPPLY DUCT (SECTION)  | EXH | EXHAUST AIR        |
|  | RECTANGULAR RETURN DUCT (SECTION)  | RLF | RELIEF AIR         |
|  | RECTANGULAR EXHAUST DUCT (SECTION) | SA  | SUPPLY AIR         |
|  | ROUND SUPPLY DUCT (SECTION)        | RA  | RETURN AIR         |
|  | ROUND RETURN DUCT (SECTION)        | OSA | OUTSIDE AIR        |
|  | ROUND EXHAUST DUCT (SECTION)       | SF  | SUPPLY FAN         |
|  |                                    | RF  | RETURN FAN         |
|  |                                    | EF  | EXHAUST FAN        |
|  |                                    | HRU | HEAT RECOVERY UNIT |
|  |                                    | AHU | AIR HANDLING UNIT  |



**ROOF/PENTHOUSE PLAN - HVAC**  
 1/16" = 1'-0"

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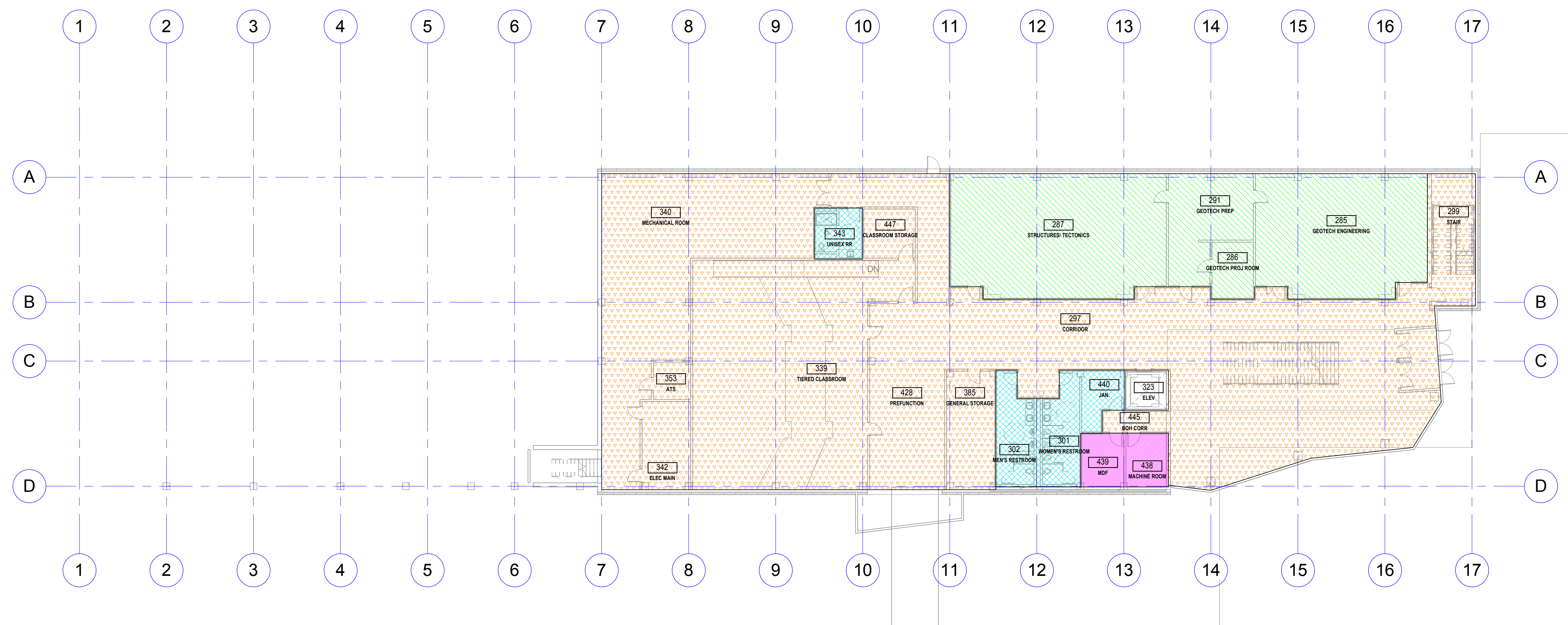
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**ROOF PLAN - HVAC**

**M205**

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LEGEND:	
	TELECOM/ELEVATOR 24 HR COOLING
	OCCUPIED EXHAUST
	OCCUPIED EXHAUST 12ACH
	RECIRCULATION ALLOWED
	24 HR EXHAUST/MAKEUP AIR



**GROUND FLOOR PLAN - AIR CLASSIFICATIONS**  
1/16" = 1'-0"

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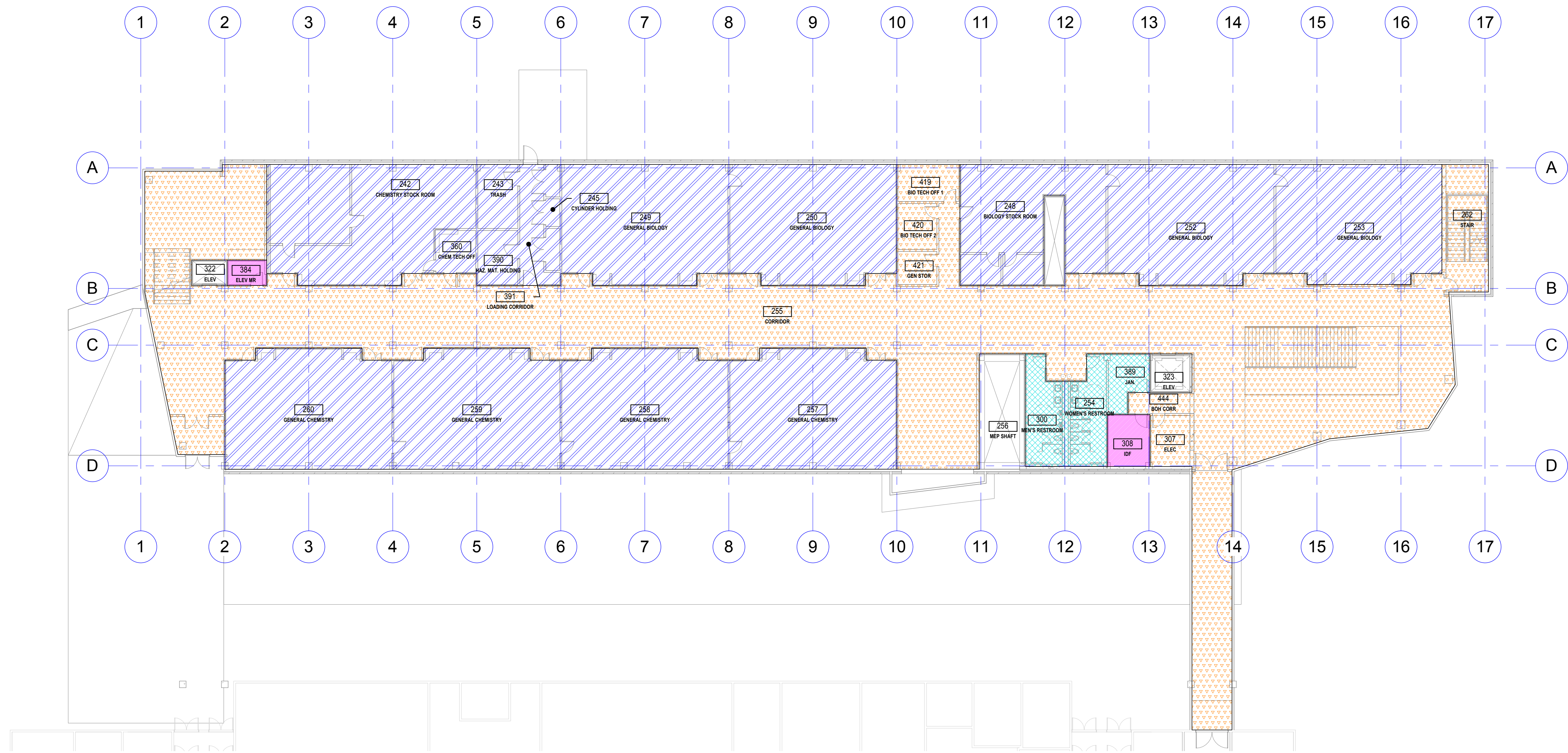
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**GROUND FLOOR  
PLAN - AIR  
CLASSIFICATIONS**

Sheet  
Number

**M301**

LEGEND:	
	TELECOM/ELEVATOR 24 HR COOLING
	OCCUPIED EXHAUST
	OCCUPIED EXHAUST 12ACH
	RECIRCULATION ALLOWED
	24 HR EXHAUST/MAKEUP AIR



**LEVEL 1 FLOOR PLAN - AIR CLASSIFICATIONS**  
 1/16" = 1'-0"

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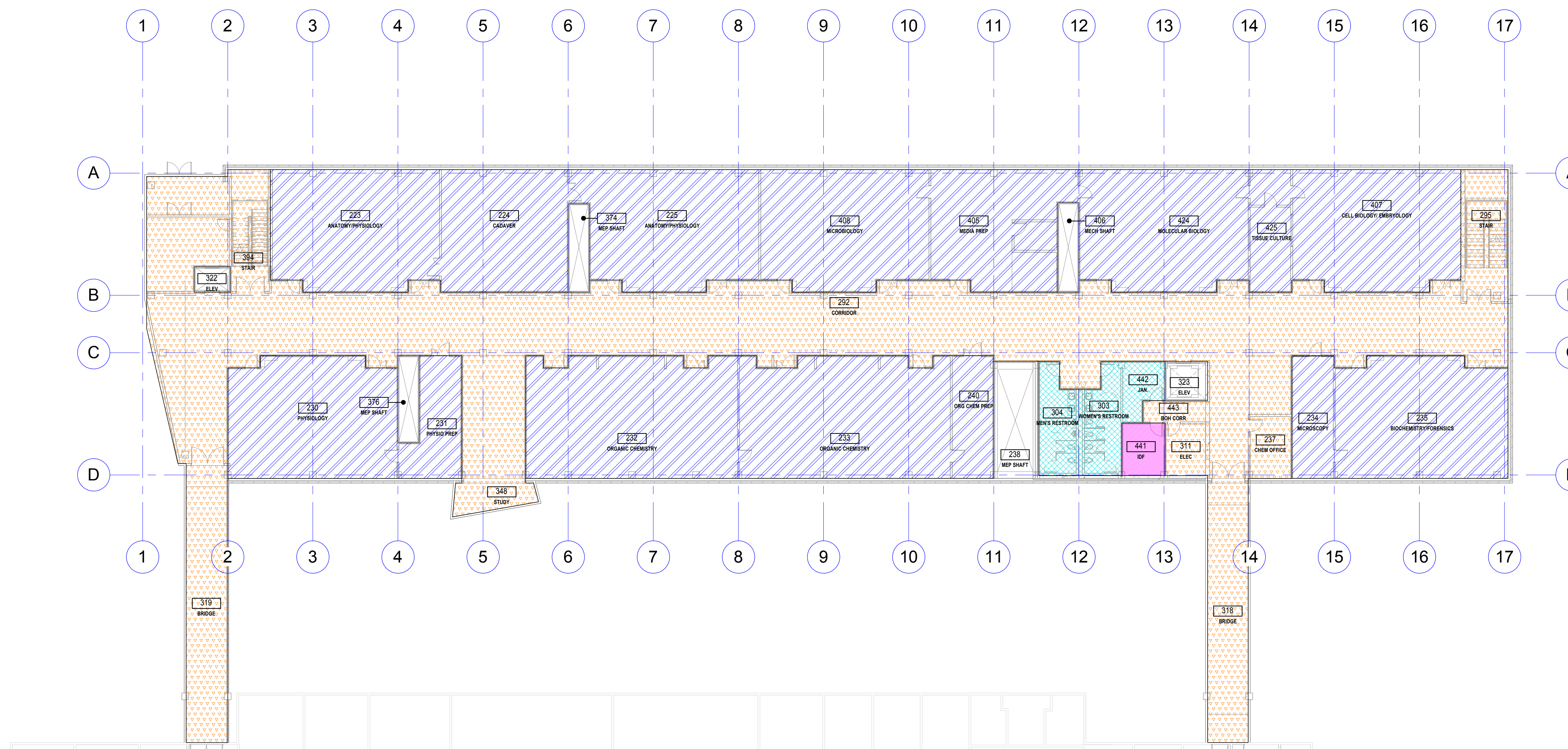
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**LEVEL 1 FLOOR PLAN - AIR CLASSIFICATIONS**

**M302**

LEGEND:	
	TELECOM/ELEVATOR 24 HR COOLING
	OCCUPIED EXHAUST
	OCCUPIED EXHAUST 12ACH
	RECIRCULATION ALLOWED
	24 HR EXHAUST/MAKEUP AIR



**LEVEL 2 FLOOR PLAN - AIR CLASSIFICATIONS**  
 1/16" = 1'-0"

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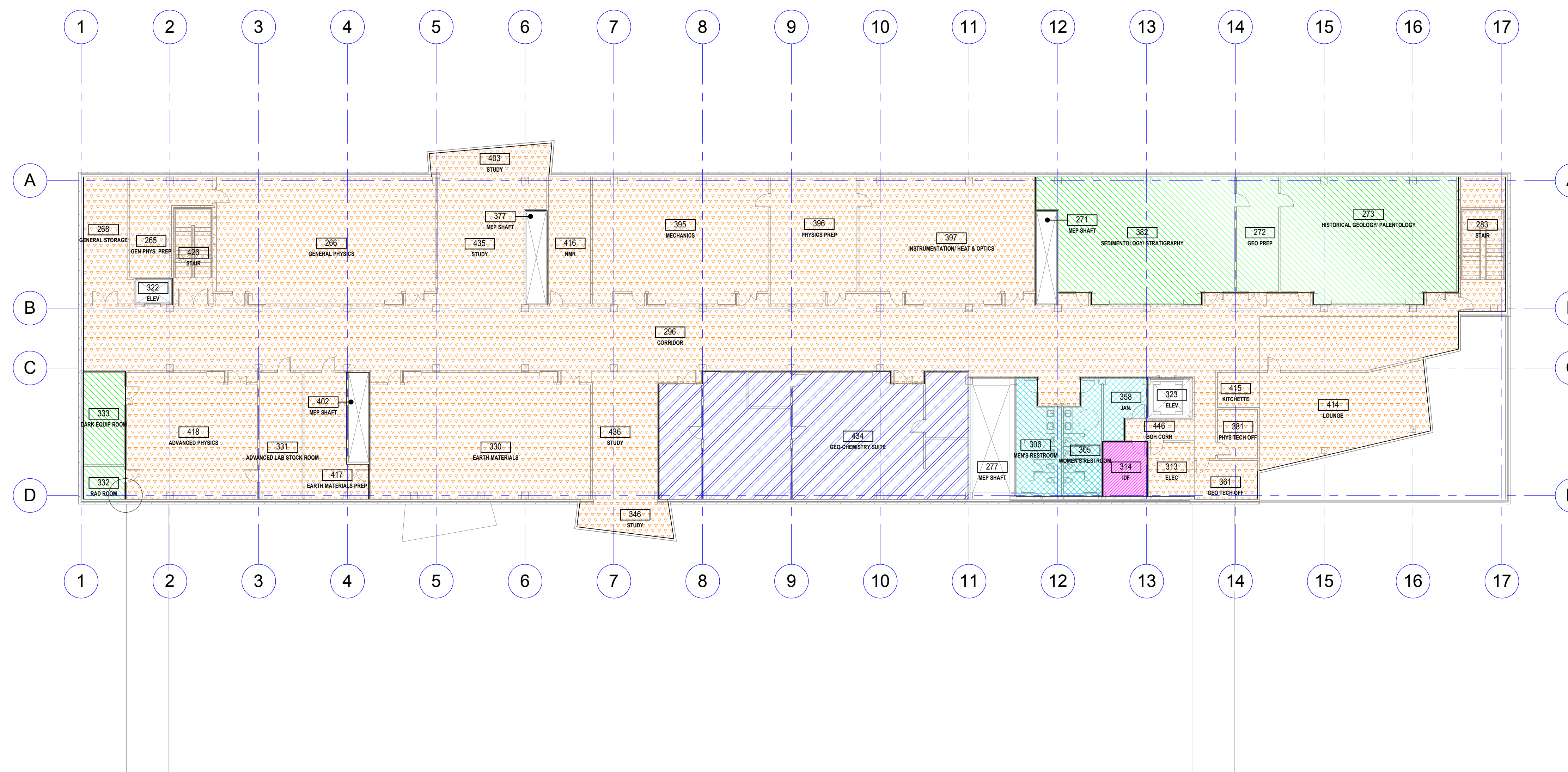
**LEVEL 2 FLOOR  
 PLAN - AIR  
 CLASSIFICATIONS**

**M303**



LEGEND:

-  TELECOM/ELEVATOR 24 HR COOLING
-  OCCUPIED EXHAUST
-  OCCUPIED EXHAUST 12ACH
-  RECIRCULATION ALLOWED
-  24 HR EXHAUST/MAKEUP AIR



 **LEVEL 3 FLOOR PLAN - AIR CLASSIFICATIONS**  
1/16" = 1'-0"

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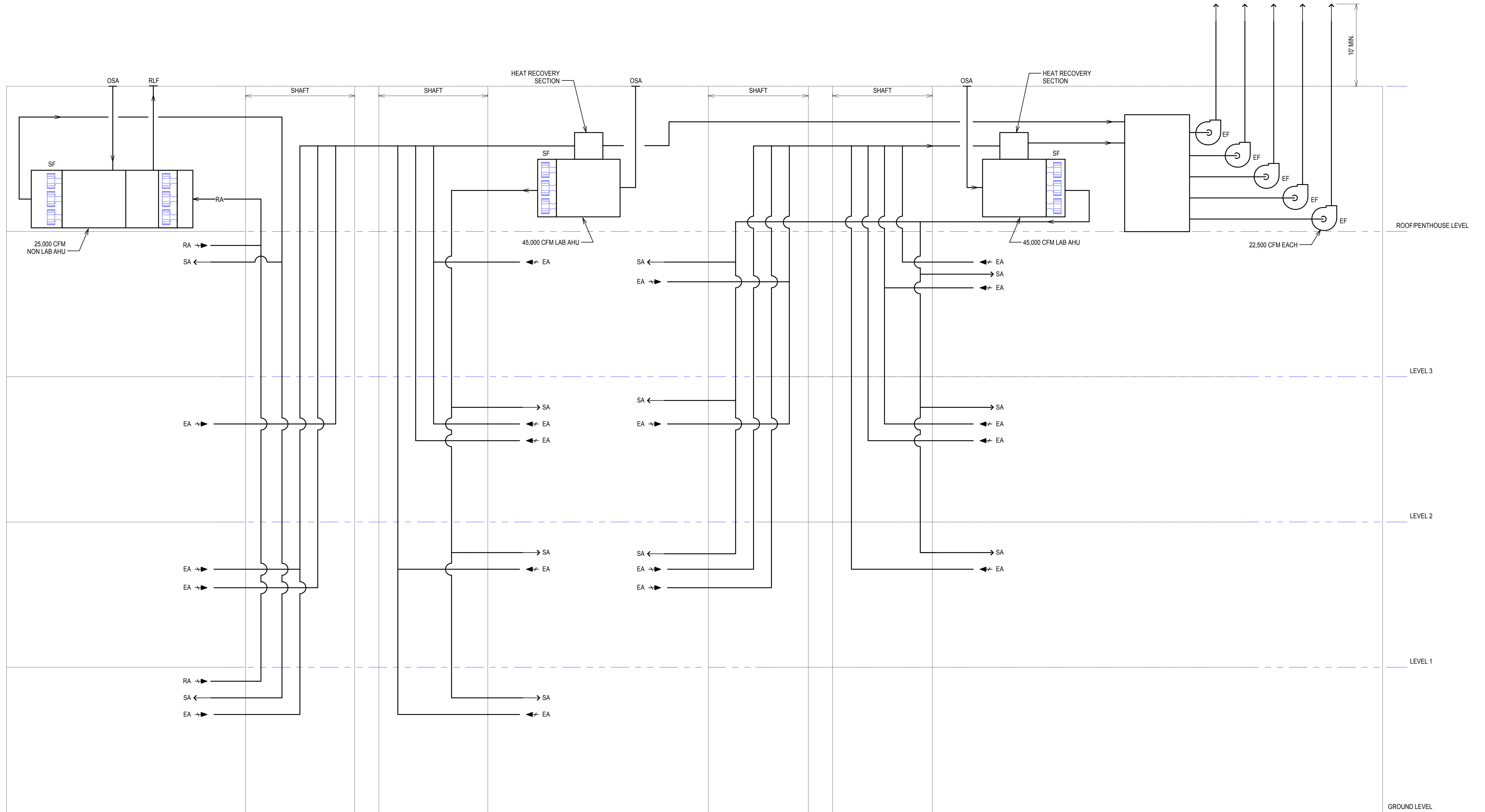
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**LEVEL 3 FLOOR  
PLAN - AIR  
CLASSIFICATIONS**

**M304**



**AIR RISERS**  
12" = 1'-0"

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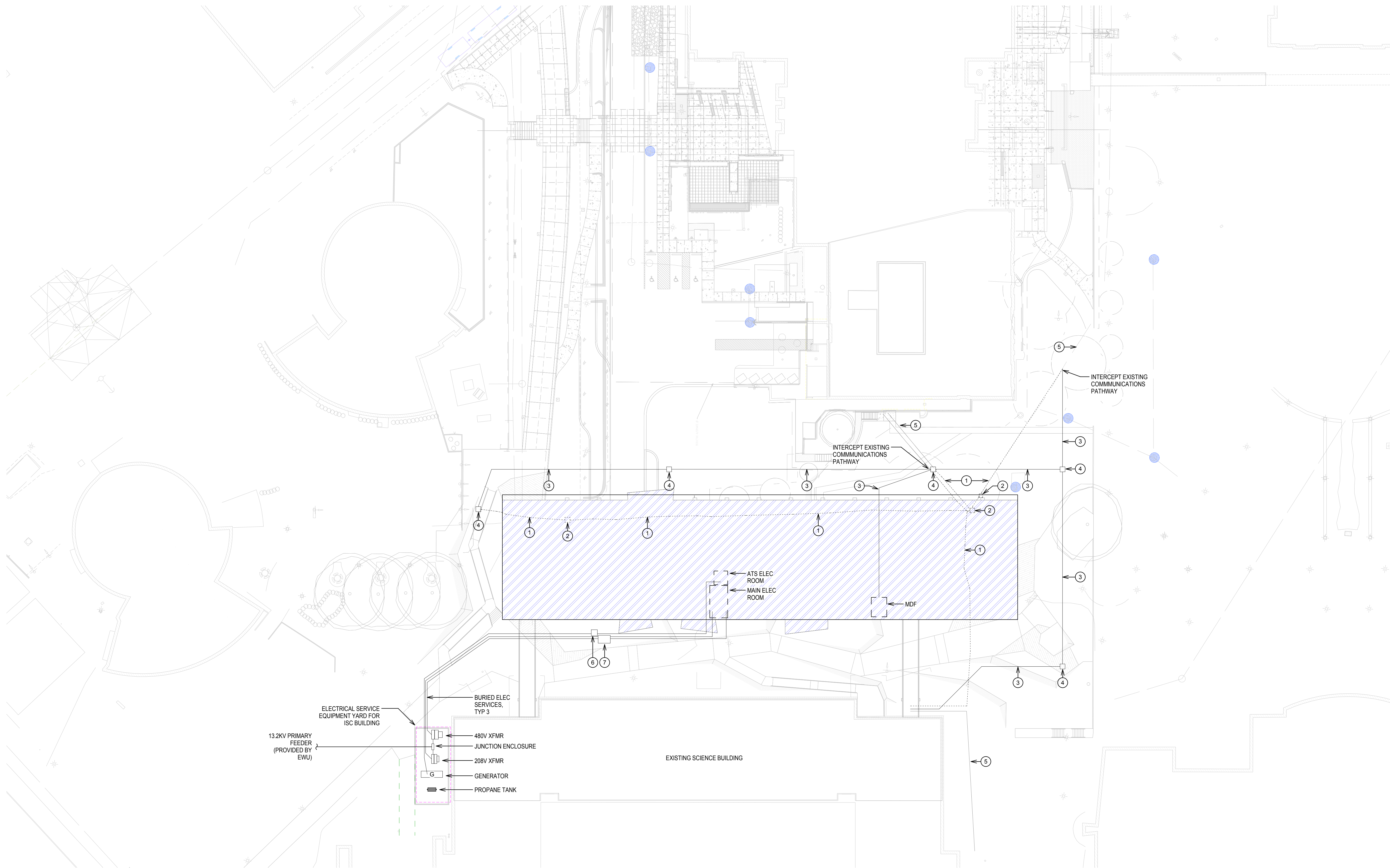
Schematic Design

**RISER DIAGRAMS**  
- HVAC

**M401**



- # KEY NOTES:
1. EXISTING COMMUNICATIONS PATHWAY TO BE DEMOLISHED.
  2. EXISTING COMMUNICATIONS VAULT TO BE DEMOLISHED.
  3. (4" x 4" COMMUNICATIONS PATHWAY.
  4. 4" SQUARE COMMUNICATIONS VAULT.
  5. EXISTING COMMUNICATIONS PATHWAY TO REMAIN.
  6. 4" SQUARE ELECTRICAL VAULT.
  7. 6" x 8" ELECTRICAL VAULT.



**SITE PLAN - ELECTRICAL**  
1" = 30'-0"

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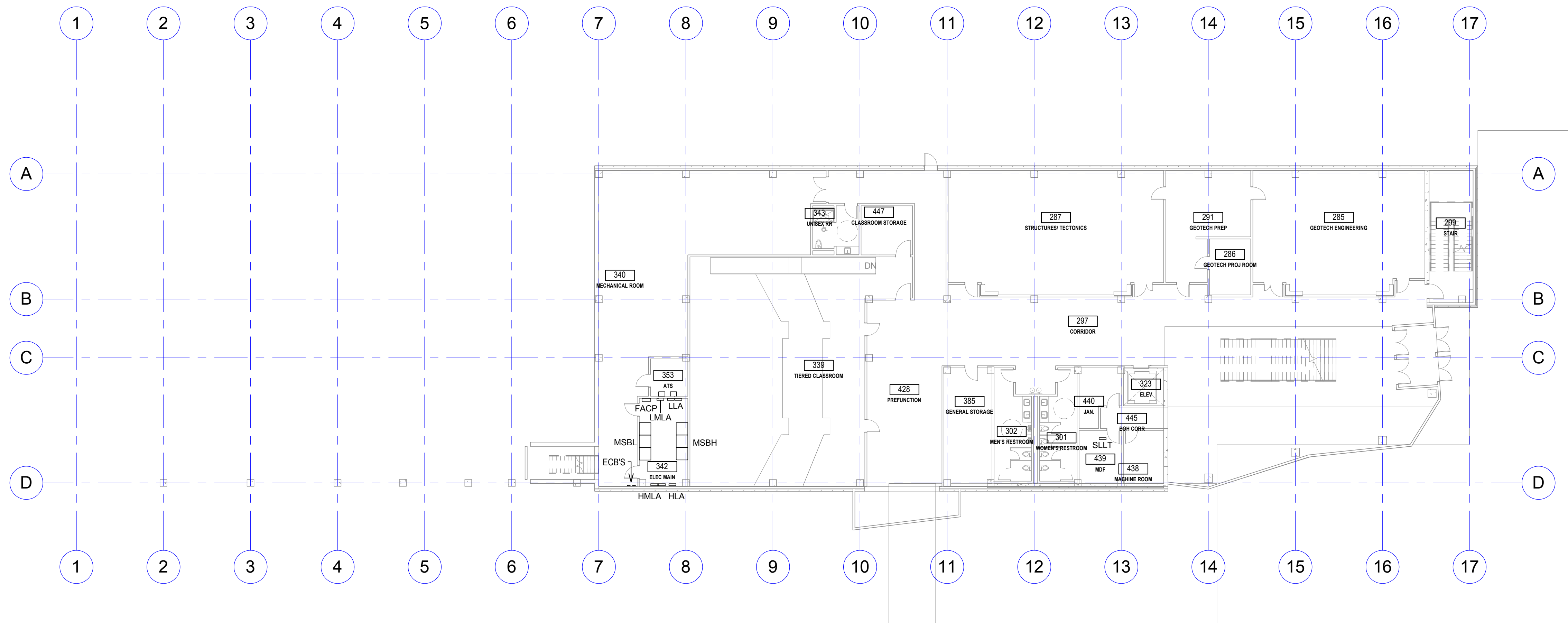
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**SITE PLAN - ELECTRICAL**

**E101**



**GROUND FLOOR PLAN - POWER**  
 1/16" = 1'-0"

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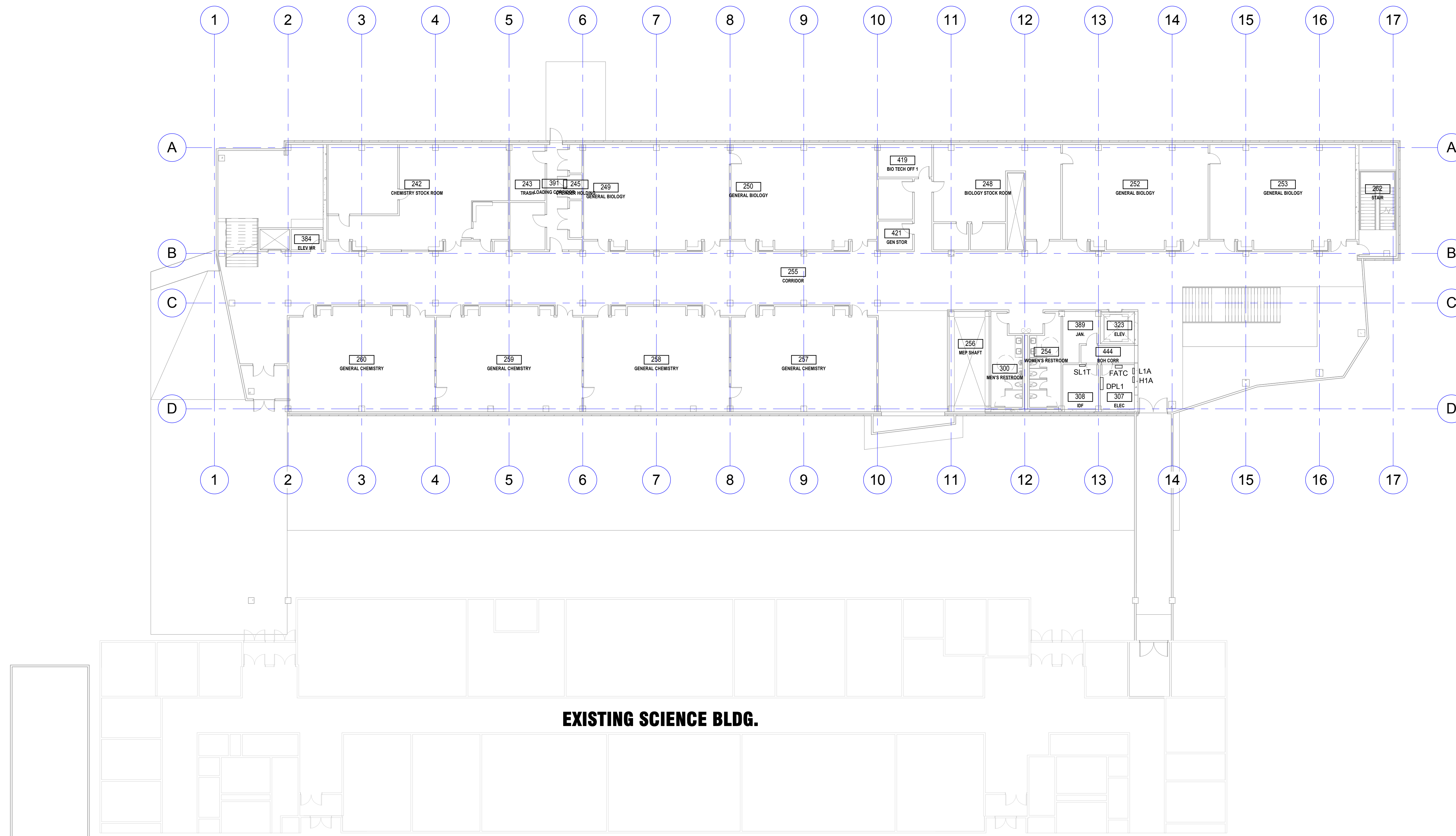
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**GROUND FLOOR  
 PLAN - POWER**

**E201**



**LEVEL 1 FLOOR PLAN - POWER**  
 1/16" = 1'-0"

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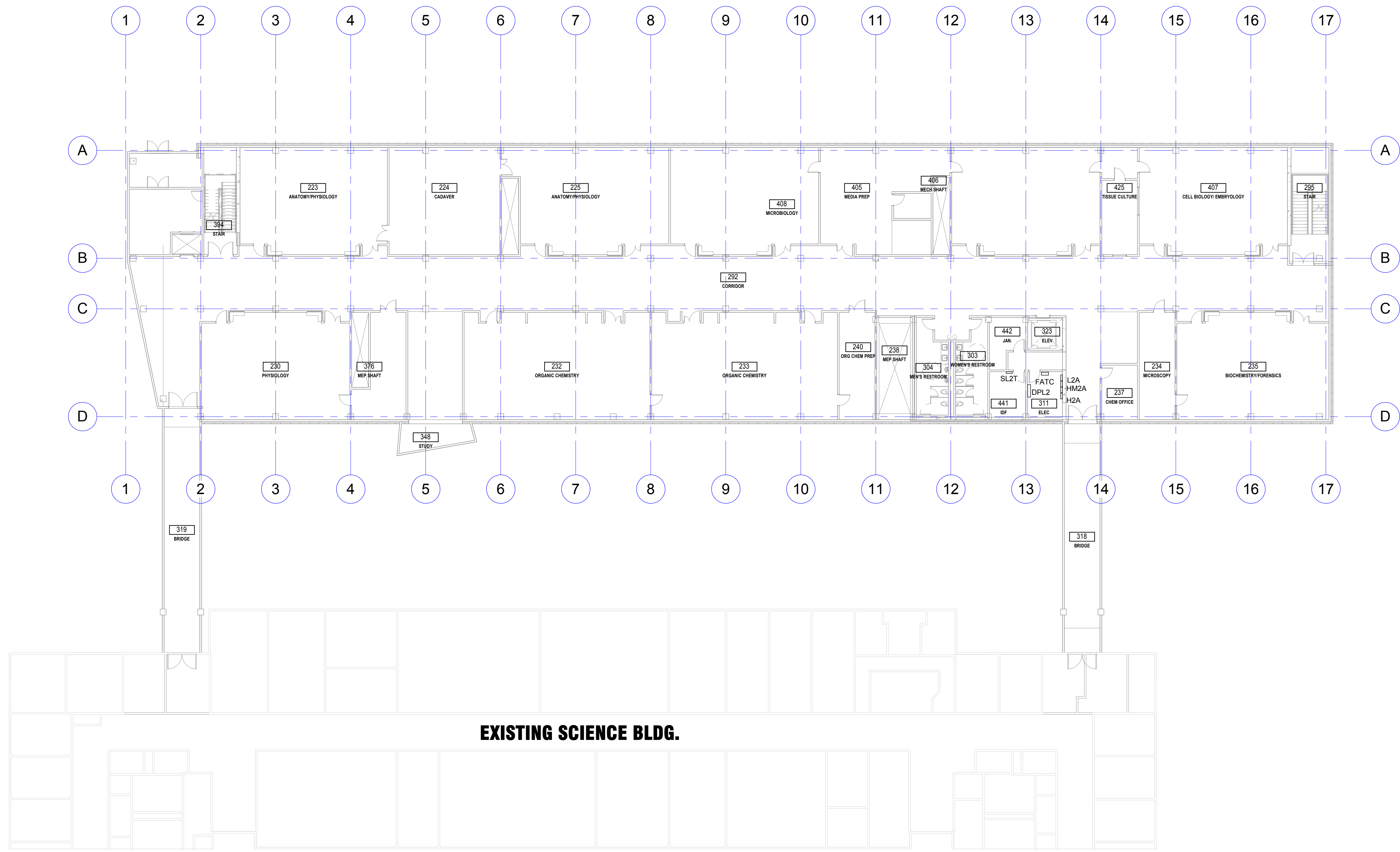
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**LEVEL 1 FLOOR PLAN - POWER**

**E202**



**LEVEL 2 FLOOR PLAN - POWER**  
 1/16" = 1'-0"

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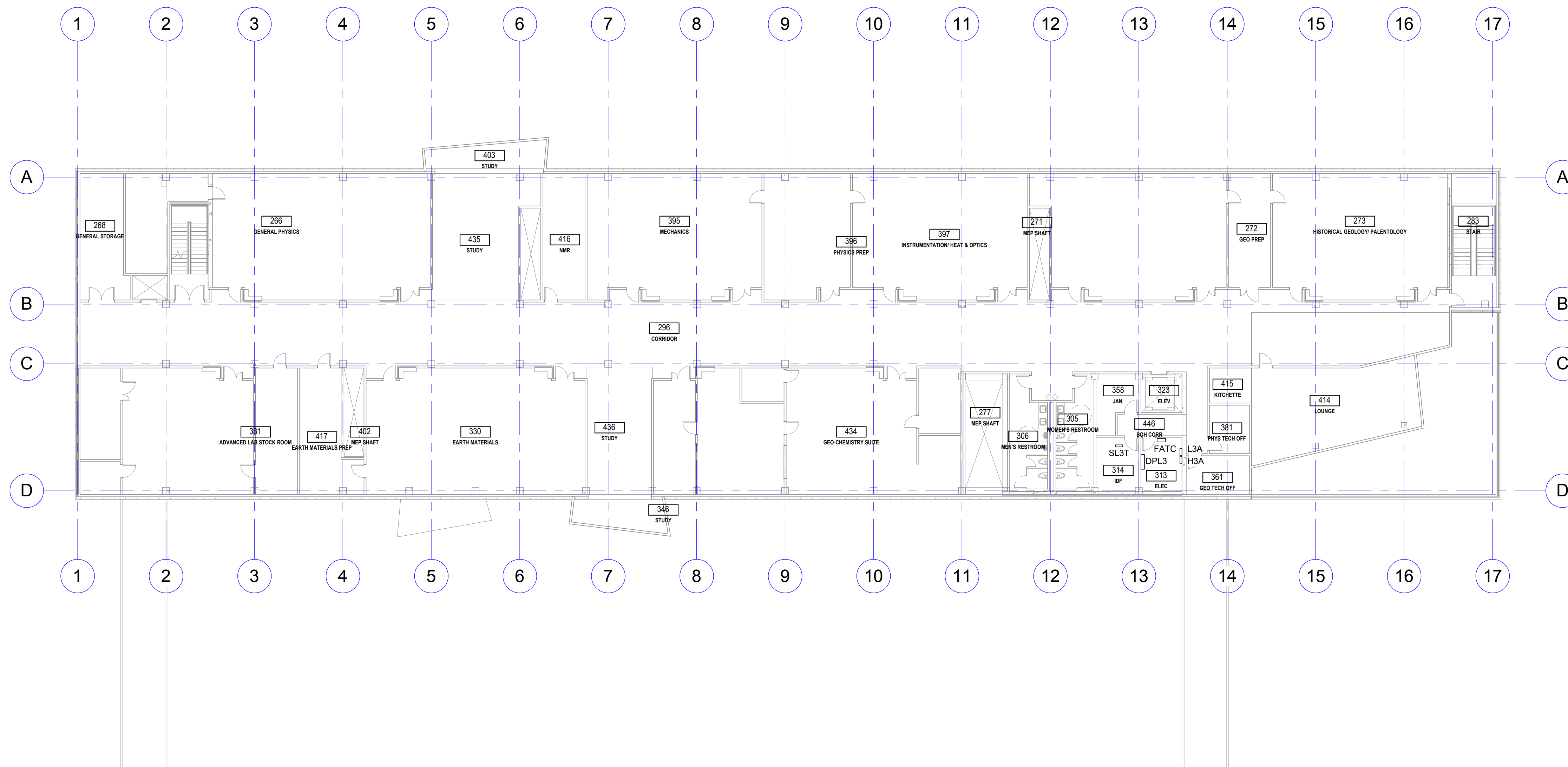
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**LEVEL 2 FLOOR PLAN - POWER**

**E203**



**LEVEL 3 FLOOR PLAN - POWER**  
 1/16" = 1'-0"

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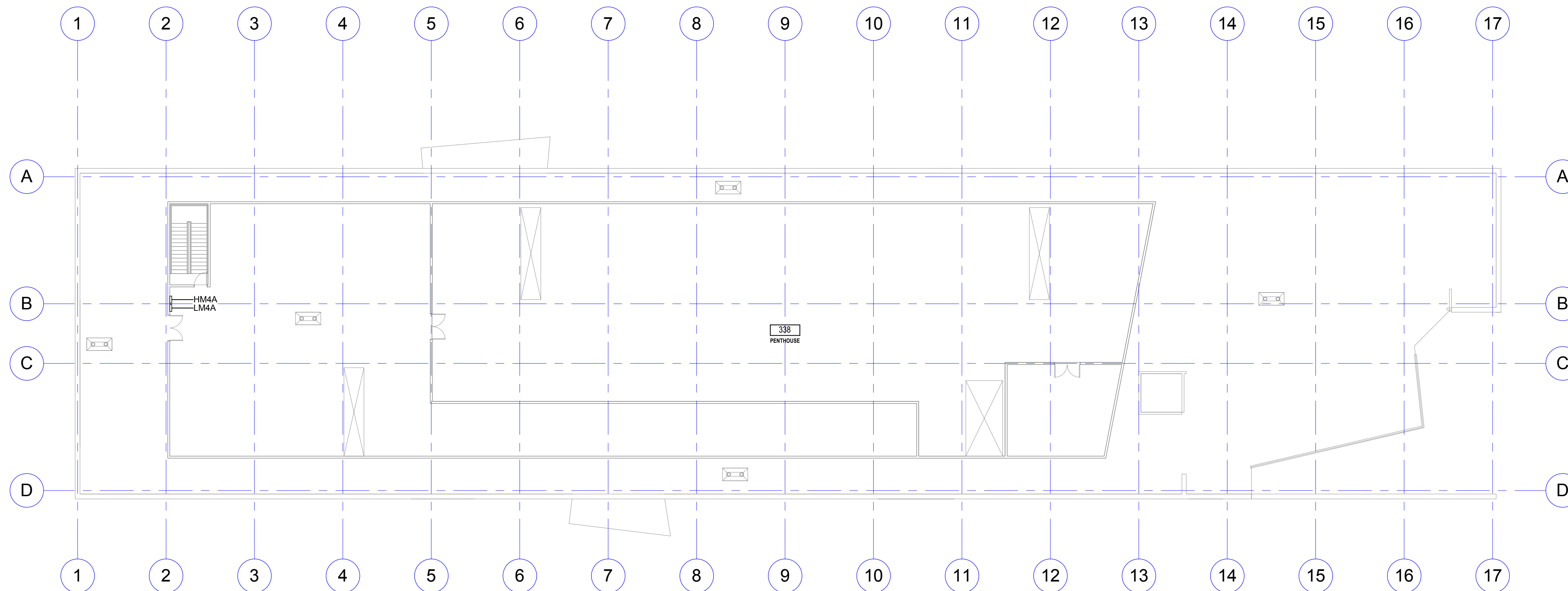
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**LEVEL 3 FLOOR PLAN - POWER**

**E204**





**ROOF PLAN - POWER**  
 1/16" = 1'-0"

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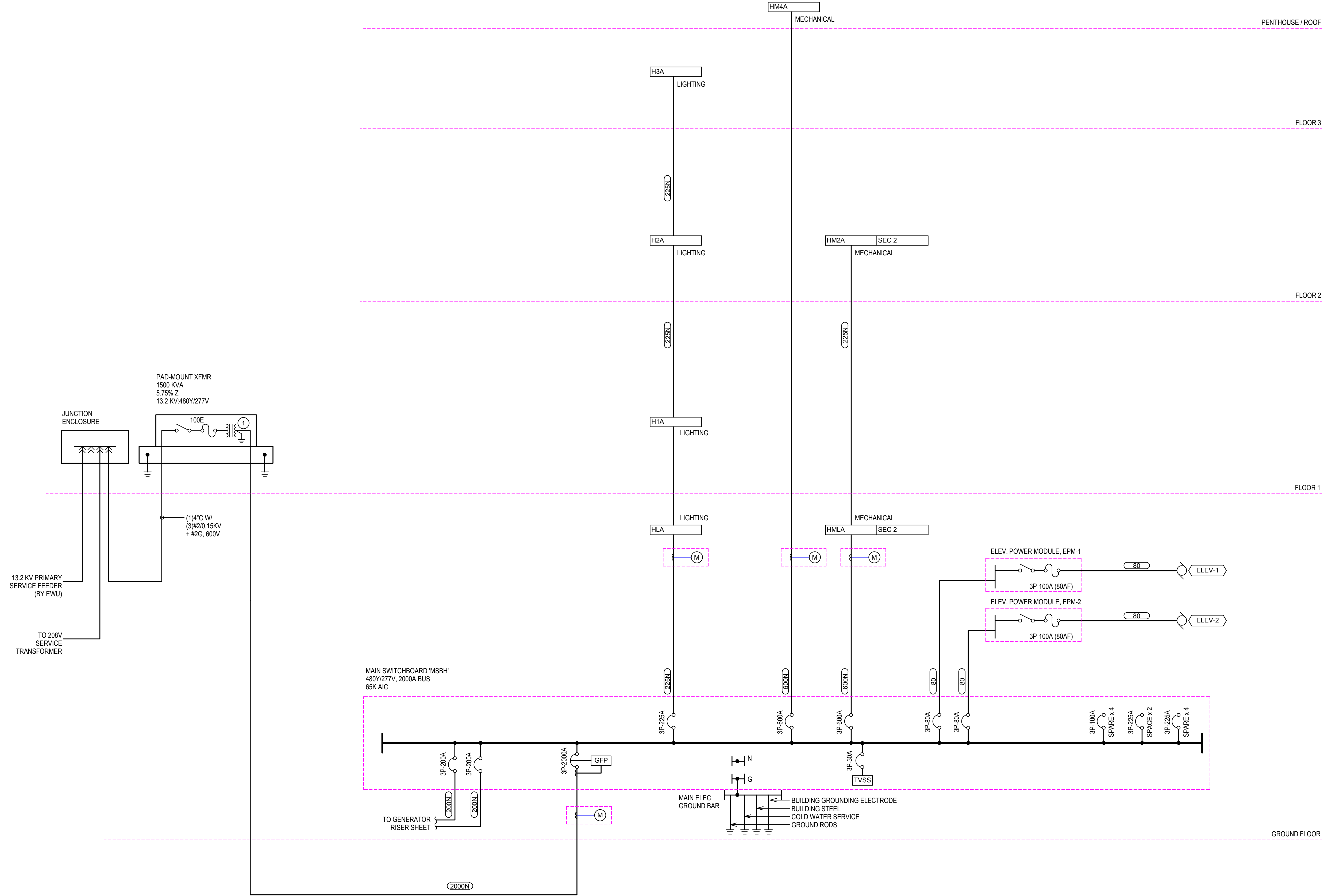
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**ROOF PLAN - ELECTRICAL**

Sheet Number

**E205**



# KEYNOTES:  
 1. BOND AT SERVICE PER NEC 250.30.

**1 BUILDING RISER DIAGRAM - 480V - ELECTRICAL**  
 N.T.S.

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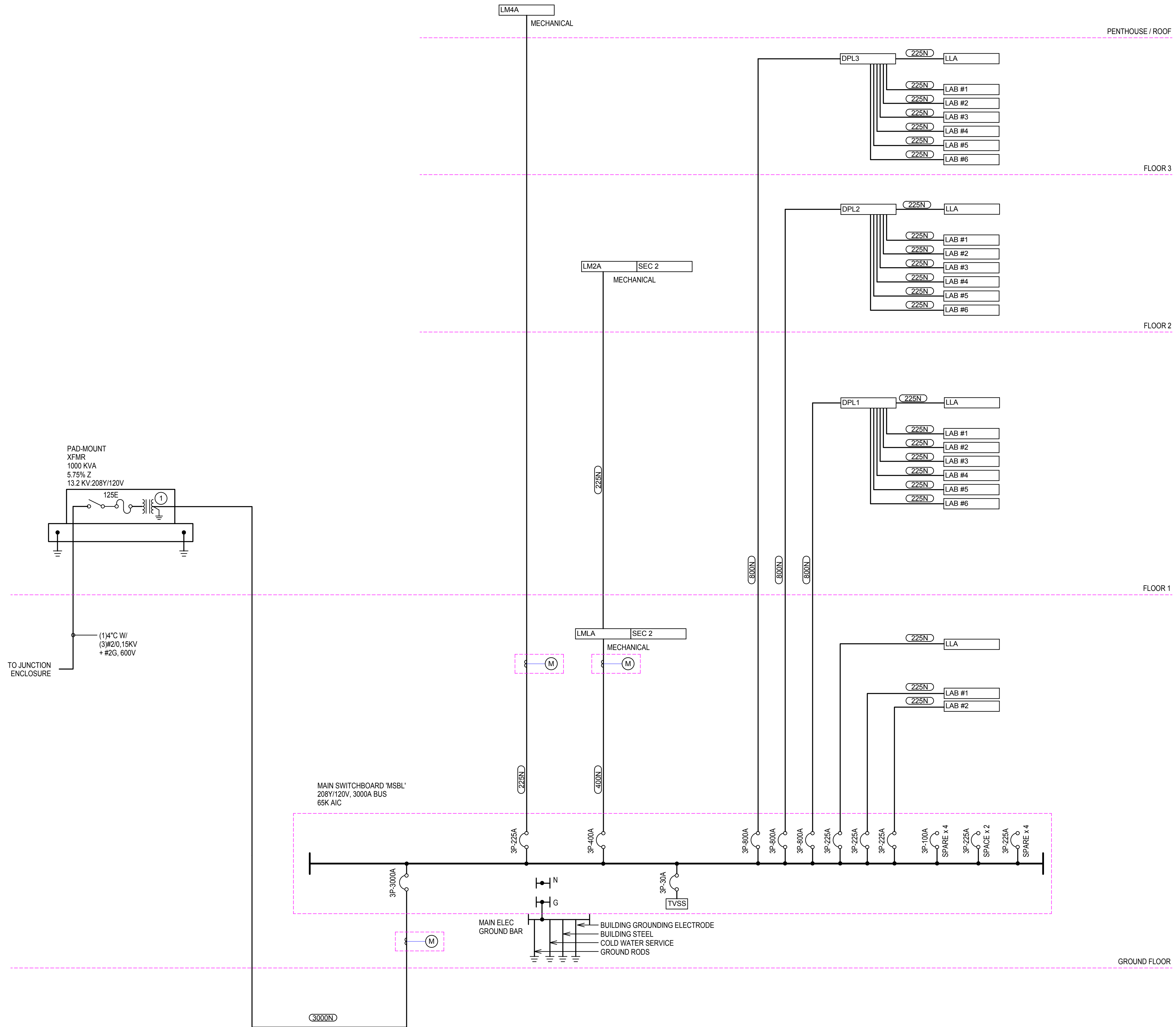
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**ONE-LINE  
 DIAGRAM - 480V -  
 ELECTRICAL**

**E301**



- # KEYNOTES:  
 1. BOND AT SERVICE PER NEC 250.30.

**1 BUILDING RISER DIAGRAM - 208V - ELECTRICAL**  
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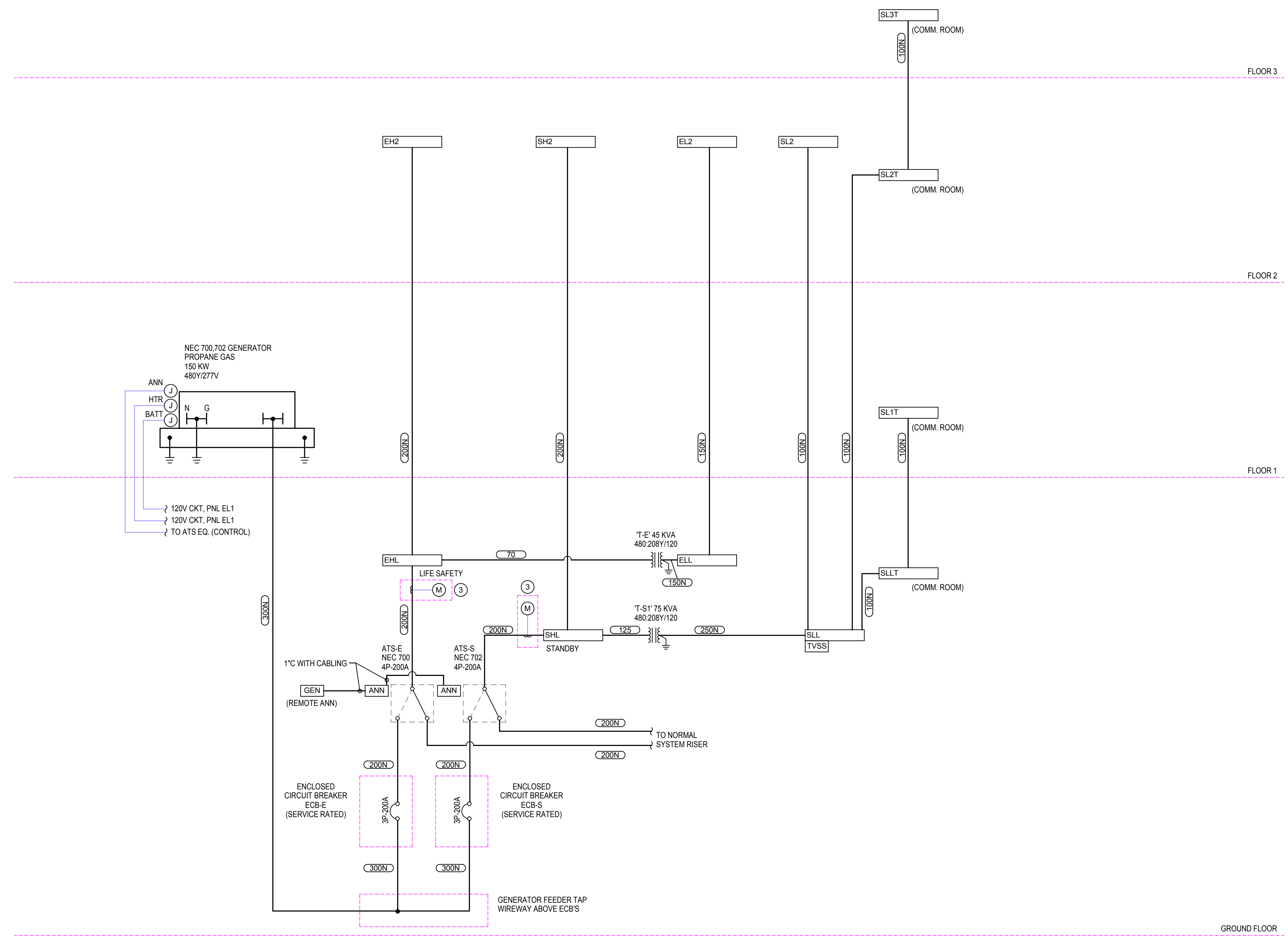
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ONE-LINE  
 DIAGRAM - 208V -  
 ELECTRICAL

Sheet  
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**E302**



**1 GENERATOR RISER DIAGRAM - ELECTRICAL**  
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Sheet Title

ONE-LINE  
DIAGRAM -  
GENERATOR

Sheet Number



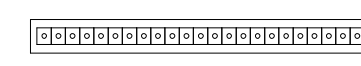

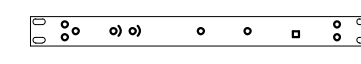

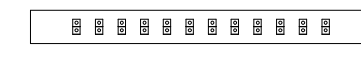

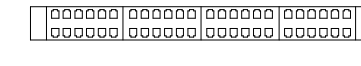
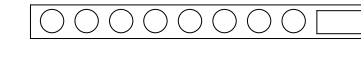
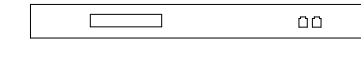

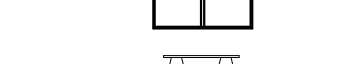




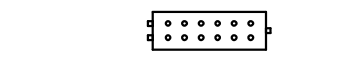

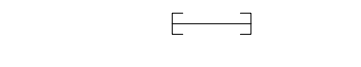


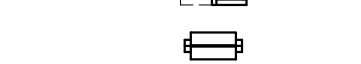

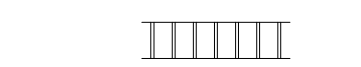










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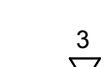

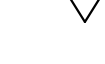
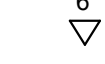
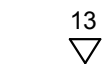
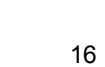


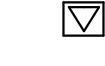
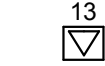

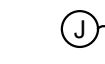
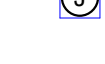
**COMMUNICATIONS ABBREVIATIONS**

AFF	ABOVE FINISHED FLOOR	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
AWG	AMERICAN WIRE GAUGE	NIC	NOT IN CONTRACT
BB	BACKBONE	OSP	OUTSIDE PLANT
BIX	BIX BLOCK	P/C	PATCH CORD
C	CONDUIT	P/P	PATCH PANEL
CAT 3	CATEGORY 3	PB	PULL BOX
CAT 5	CATEGORY 5	PBX	PRIVATE BRANCH EXCHANGE
CAT 5E	CATEGORY 5, ENHANCED	PC	PERSONAL COMPUTER
CAT 6	CATEGORY 6	PR	PAIR
CONN	CONNECTOR	PVC	POLYVINYL CHLORIDE
CR	COMMUNICATIONS ROOM	RM	ROOM
EIA	ELECTRONIC INDUSTRIES ALLIANCE	RMU	RACK MOUNT UNIT
EMI	ELECTROMAGNETIC INTERFERENCE	SM	SINGLEMODE
EMT	ELECTRICAL METALLIC TUBING	SPKR	SPEAKER
FF	FINISHED FLOOR	STR	STRAND
FO	FIBER OPTIC	SWTH	SWITCH TAIL
FOC	FIBER OPTIC CABLE	TBB	TELECOMMUNICATION BONDING BACKBONE
GE	GROUNDING EQUALIZER	TER	TELEPHONE EQUIPMENT ROOM
HH	HAND HOLE	TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
ISP	INSIDE PLANT	TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
JBOX	JUNCTION BOX	TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
LAN	LOCAL AREA NETWORK	TSEF	TELECOMMUNICATIONS SERVICE ENTRANCE FACILITY
LEC	LOCAL EXCHANGE CARRIER	TYP	TYPICAL
LSP	LOCAL SERVICE PROVIDER	UG	UNDERGROUND CONDUIT
MDF	MAIN DISTRIBUTION FRAME	UL	UNDERWRITERS LABORATORIES
MH	MAINTENANCE HOLE	um	MICRON OR MICROMETER
MHz	MEGAHERTZ	UPS	UNINTERRUPTIBLE POWER SUPPLY
MIC	MICROPHONE	UTP	UNSHIELDED TWISTED-PAIR
MIC	MICROPHONE	WA	WORK AREA
MM	MULTIMODE	WM	WALL MOUNTED
mm	MILLIMETER	WS	WORKSTATION
MTS	MAIN TERMINAL SPACE		

**COMMUNICATIONS SYMBOLS**

	AUDIO AMPLIFIER		AUDIO MATRIX SWITCHER
	CLIENT SWITCH		COAXIAL SPLITTER
	COAXIAL DISTRIBUTION AMPLIFIER		ETHERNET SWITCH
	FIBER OPTIC PATCH PANEL		FIBER OPTIC SWITCH
	PATCH PANEL (CAT6)		POWER STRIP
	SMART UPS		WIRE MANAGER
	6" VERTICAL CABLE MANAGEMENT CHANNEL		10" TELECOMMUNICATIONS GROUNDING BUS BAR
	20" TELECOMMUNICATIONS GROUNDING BUS BAR		110 BLOCK
	BUILDING ENTRANCE PROTECTOR		BIX MOUNT
	COAXIAL PROTECTOR BLOCK		COAXIAL SPLITTER
	D-RING		PROTECTOR UNIT
	4" SLEEVE, UNLESS NOTED OTHERWISE, WITH BUSHING AND FIRESTOPPED WITH PUTTY AFTER INSTALLATION		VERTICAL SLEEVE OR CONDUIT, SIZE AS NOTED, WITH BUSHINGS AND FIRESTOPPED WITH PUTTY AFTER INSTALLATION
	EQUIPMENT CABINET		EQUIPMENT WALL MOUNTED CABINET
	EQUIPMENT RACK		J-HOOKS
	4" DEEP WIRE BASKET CABLE TRAY, WIDTH AS INDICATED		LADDER TYPE CABLE RUNWAY, WIDTH AS INDICATED
	3/4" MDO PLYWOOD		METALLIC RACEWAY, 4"x2"
	CONDUIT UNDER-SLAB, SIZE AS NOTED		CONDUIT ABOVE CEILING, SIZE AS NOTED
	CONDUIT IN-SLAB, SIZE AS NOTED		

**COMMUNICATIONS SYMBOLS**

	EWU STANDARD TYPE 6 CEILING OUTLET, (1) 2-PORT FACEPLATE WITH (2) 8-POSITION CAT6 RJ-45 JACKS (CAMPUS NETWORK ONLY), CEILING MOUNTED IN ACCESSIBLE CEILING SPACE, UNLESS NOTED OTHERWISE. REFER TO SHEET EC50-01 DETAIL 1 FOR OUTLET DETAIL.
	EWU STANDARD TYPE 3 COMMUNICATIONS OUTLET, (1) 1-PORT FACEPLATE WITH (1) 8-POSITION CAT6 RJ-45 JACK (ONE CAMPUS NETWORK), WALL FLUSH MOUNTED 18" AFF, UNLESS NOTED OTHERWISE. REFER TO SHEET EC50-01 DETAIL 7 FOR OUTLET DETAIL.
	EWU STANDARD TYPE 7 COMMUNICATIONS OUTLET, (1) 3-PORT FACEPLATE WITH (3) 8-POSITION CAT6 RJ-45 JACKS (THREE CAMPUS NETWORK), WALL FLUSH MOUNTED 18" AFF, UNLESS NOTED OTHERWISE. REFER TO SHEET EC50-01 DETAIL 2 FOR OUTLET DETAIL.
	EWU STANDARD TYPE 6 COMMUNICATIONS OUTLET, (1) 2-PORT FACEPLATE WITH (2) 8-POSITION CAT6 RJ-45 JACKS (TWO CAMPUS NETWORK), WALL FLUSH MOUNTED 18" AFF, UNLESS NOTED OTHERWISE. REFER TO SHEET EC50-01 DETAIL 3 FOR OUTLET DETAIL.
	EWU STANDARD TYPE 13 COMMUNICATIONS OUTLET, (1) 6-PORT FACEPLATE WITH (6) 8-POSITION CAT6 RJ-45 JACKS (SIX CAMPUS NETWORK), WALL FLUSH MOUNTED 18" AFF, UNLESS NOTED OTHERWISE. REFER TO SHEET EC50-01 DETAIL 4 FOR OUTLET DETAIL.
	EWU STANDARD TYPE 16 COMMUNICATIONS OUTLET, (1) 8-PORT FACEPLATE WITH (8) 8-POSITION CAT6 RJ-45 JACKS (EIGHT CAMPUS NETWORK), WALL FLUSH MOUNTED 18" AFF, UNLESS NOTED OTHERWISE. REFER TO SHEET EC50-01 DETAIL 5 FOR OUTLET DETAIL.
	EWU STANDARD TYPE 2W COMMUNICATIONS OUTLET, (1) 1-PORT FACEPLATE WITH (1) 8-POSITION CAT6 RJ-45 JACKS (ONE VOICE), WALL FLUSH MOUNTED 54" AFF, UNLESS NOTED OTHERWISE. REFER TO SHEET EC50-01 DETAIL 6 FOR OUTLET DETAIL.
	EWU STANDARD TYPE 7 FLOORBOX OUTLET, (1) 3-PORT FACEPLATE WITH (3) 8-POSITION CAT6 RJ-45 JACKS (THREE CAMPUS NETWORK), MOUNTED IN FLOOR BOX. REFER TO SHEET EC50-02 DETAILS 1, 2 AND 3 FOR OUTLET DETAILS. FB# REFERS SPECIFIC FLOOR BOX TYPE AT EACH LOCATION, REFER TO FLOOR PLANS.
	EWU STANDARD TYPE 13 FLOORBOX OUTLET, (1) 6-PORT FACEPLATE WITH (6) 8-POSITION CAT6 RJ-45 JACKS (SIX CAMPUS NETWORK), MOUNTED IN FLOOR BOX. REFER TO SHEET EC50-02 DETAILS 1, 2 AND 3 FOR OUTLET DETAILS. FB# REFERS SPECIFIC FLOOR BOX TYPE AT EACH LOCATION, REFER TO FLOOR PLANS.
	ROOM SCHEDULER. REFER TO FLOOR PLANS FOR MOUNTING DETAILS.
	JUNCTION BOX FURNITURE FEED. SEE DETAIL 2 SHEET E50-02
	FLOOR BOX FURNITURE FEED. SEE DETAIL 3 SHEET E50-02. FB# REFERS TO SPECIFIC FLOOR BOX TYPE AT EACH LOCATION, REFER TO FLOOR PLANS.
	PROJECTOR.
	BONDING STRAP

**COMMUNICATIONS NOTES**

1. ALL CONDUIT SHALL BE MINIMUM SIZE OF 3/4", UNLESS NOTED OTHERWISE.
2. OPEN CABLING IS NOT PERMITTED IN FINISHED SPACES WITH NO CEILING.

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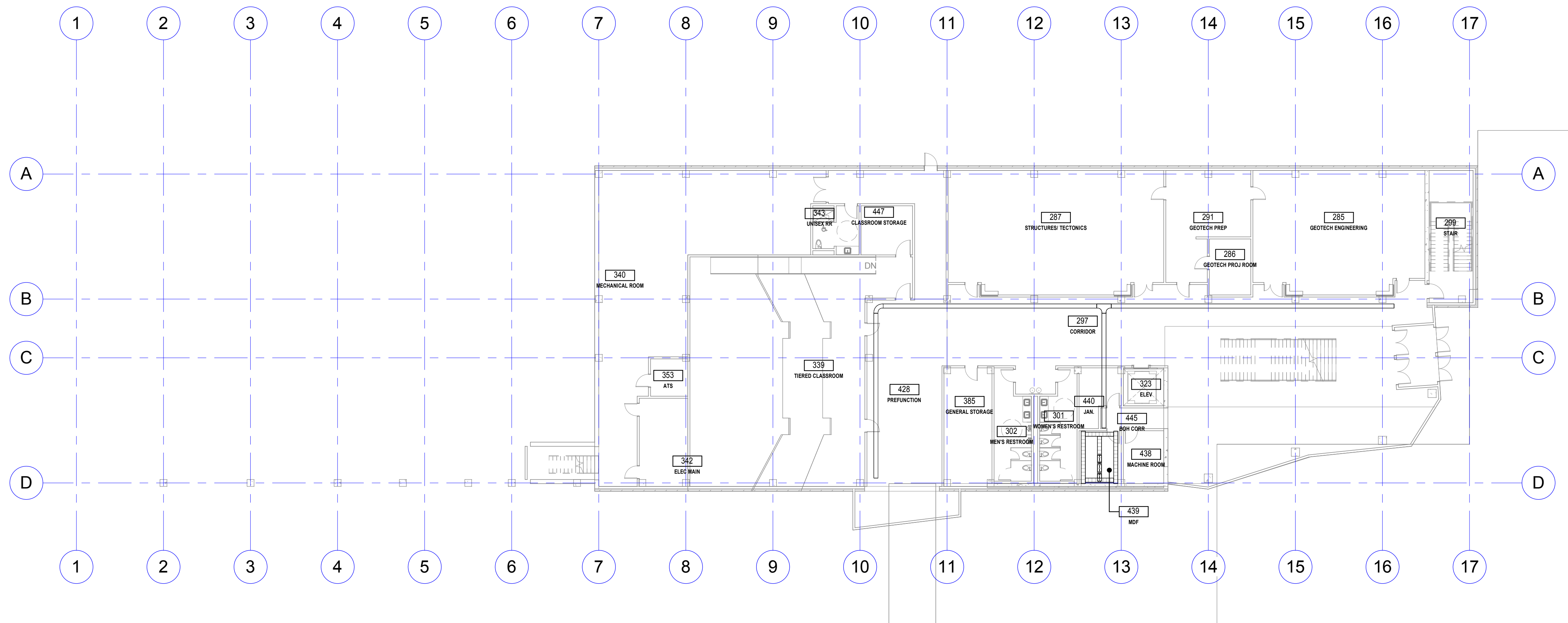
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Date	5/27/2016

**LEGENDS & ABBREVIATIONS - COMMUNICATIONS**

**T001**

Schematic Design



 **GROUND FLOOR PLAN - TELECOMMUNICATIONS**  
1/16" = 1'-0"

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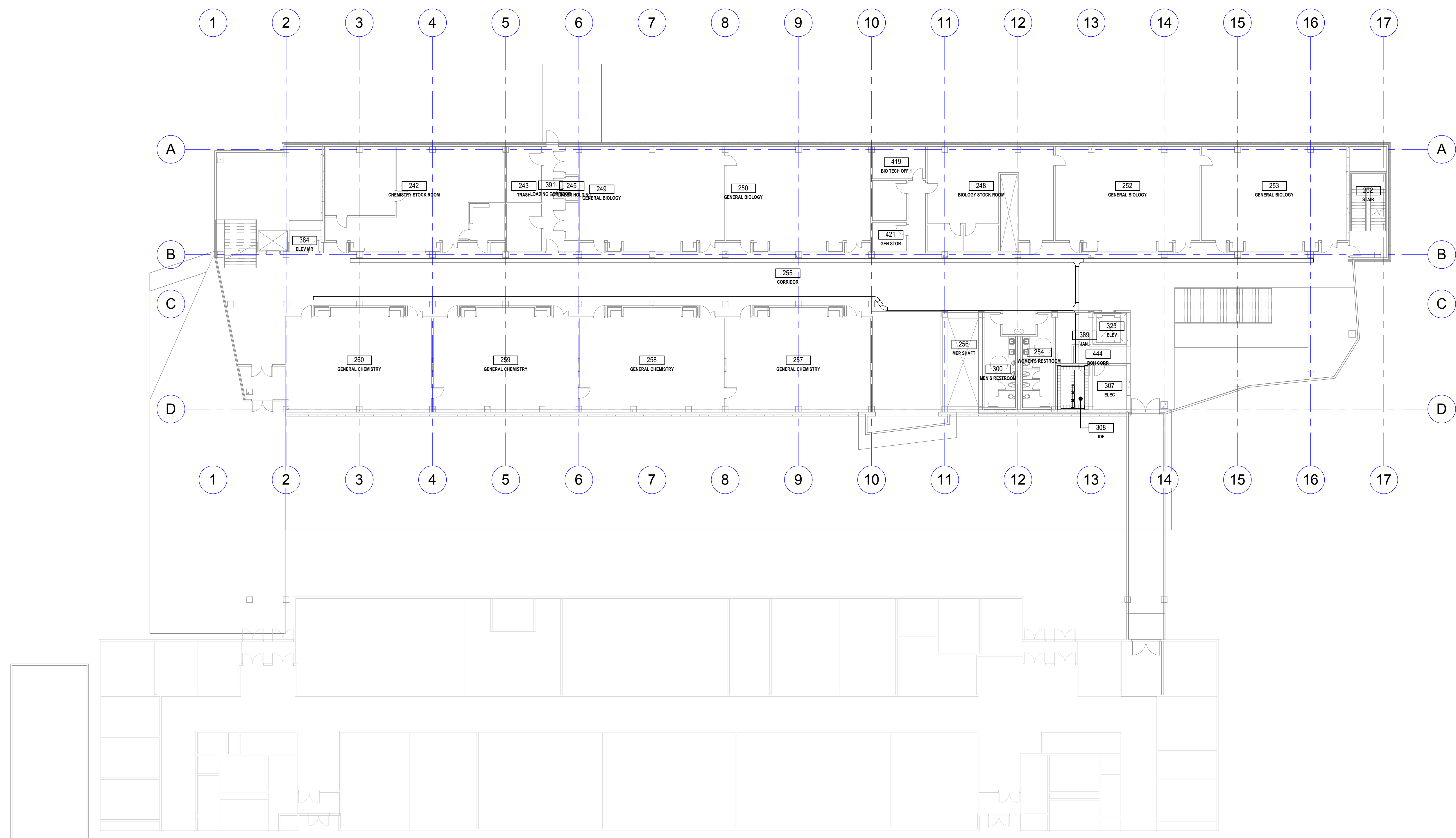
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Schematic Design

**GROUND FLOOR  
PLAN -  
COMMUNICATIONS**

**T201**



**LEVEL 1 FLOOR PLAN - TELECOMMUNICATIONS**  
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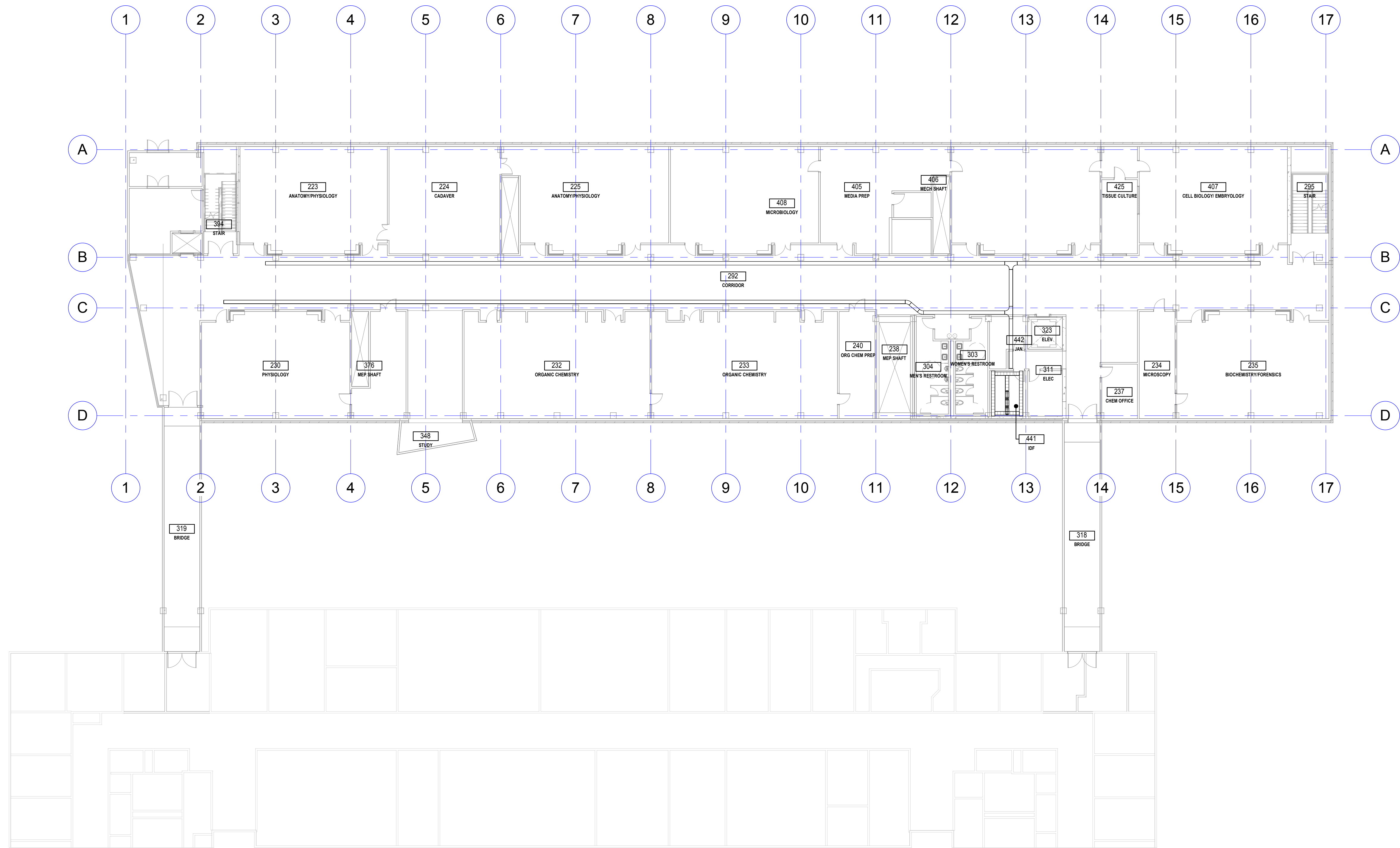
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**LEVEL 1 FLOOR  
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**LEVEL 2 FLOOR PLAN - TELECOMMUNICATIONS**  
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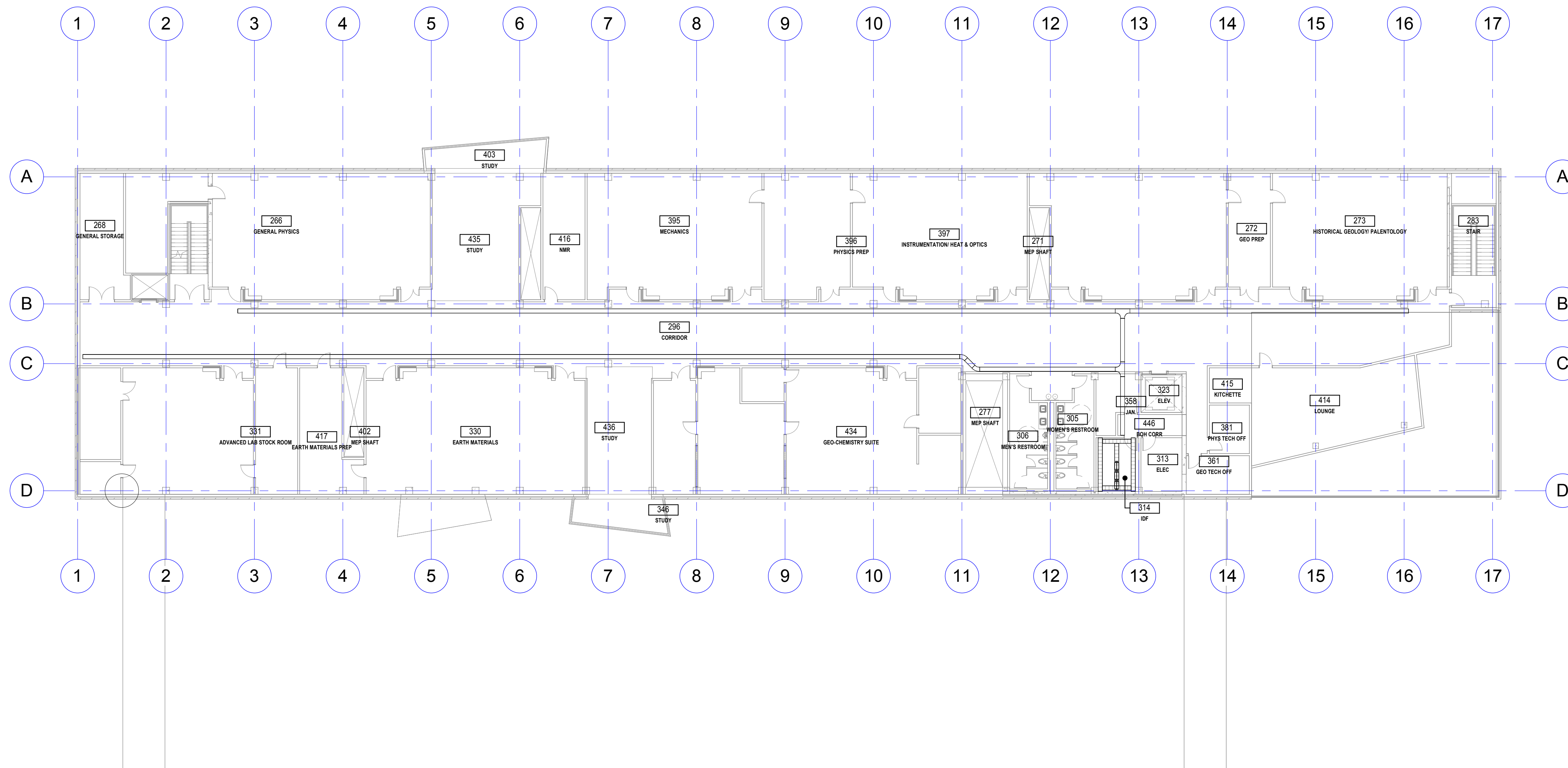
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**LEVEL 2 FLOOR  
 PLAN -  
 COMMUNICATIONS**

**T203**





**LEVEL 3 FLOOR PLAN - TELECOMMUNICATIONS**  
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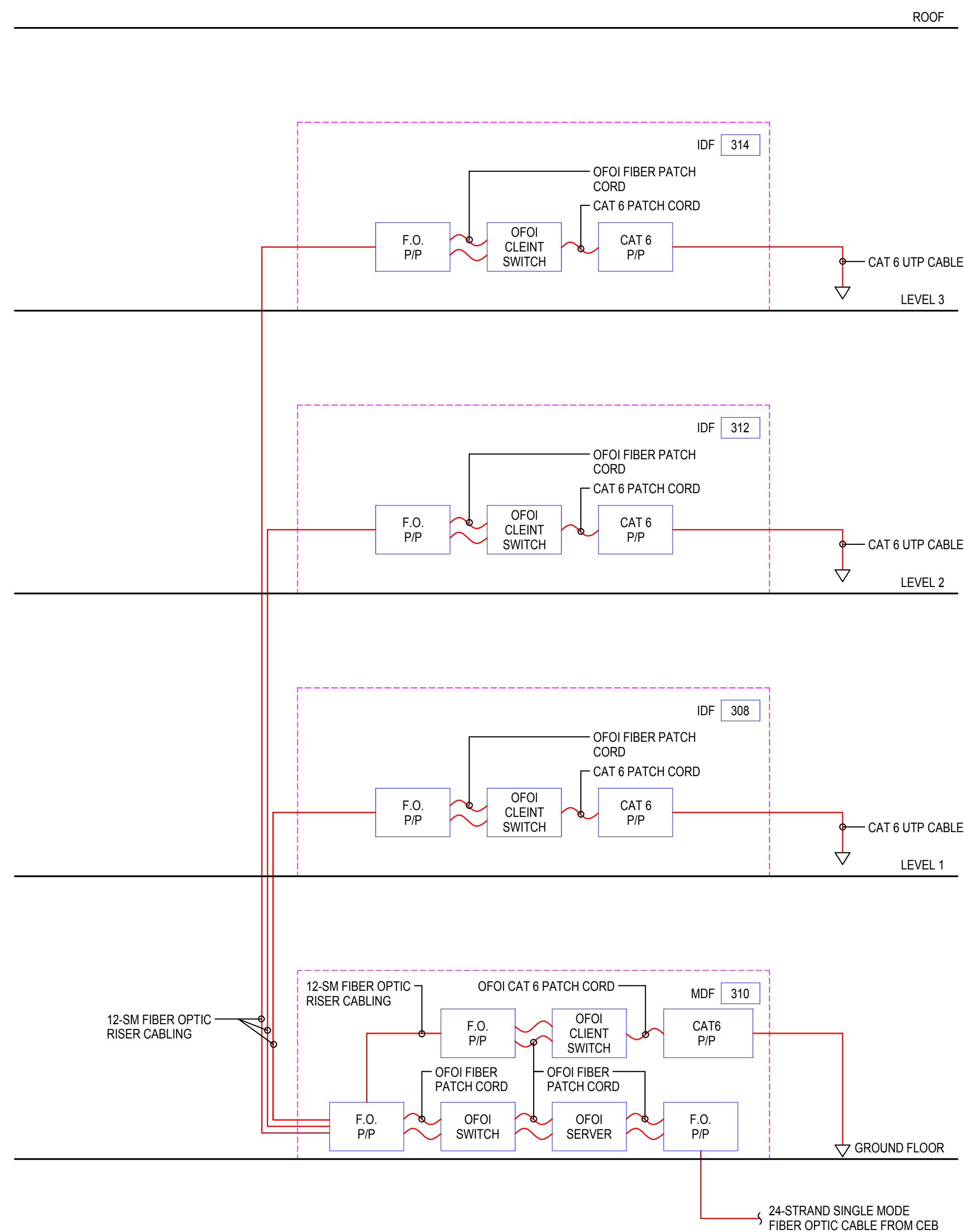
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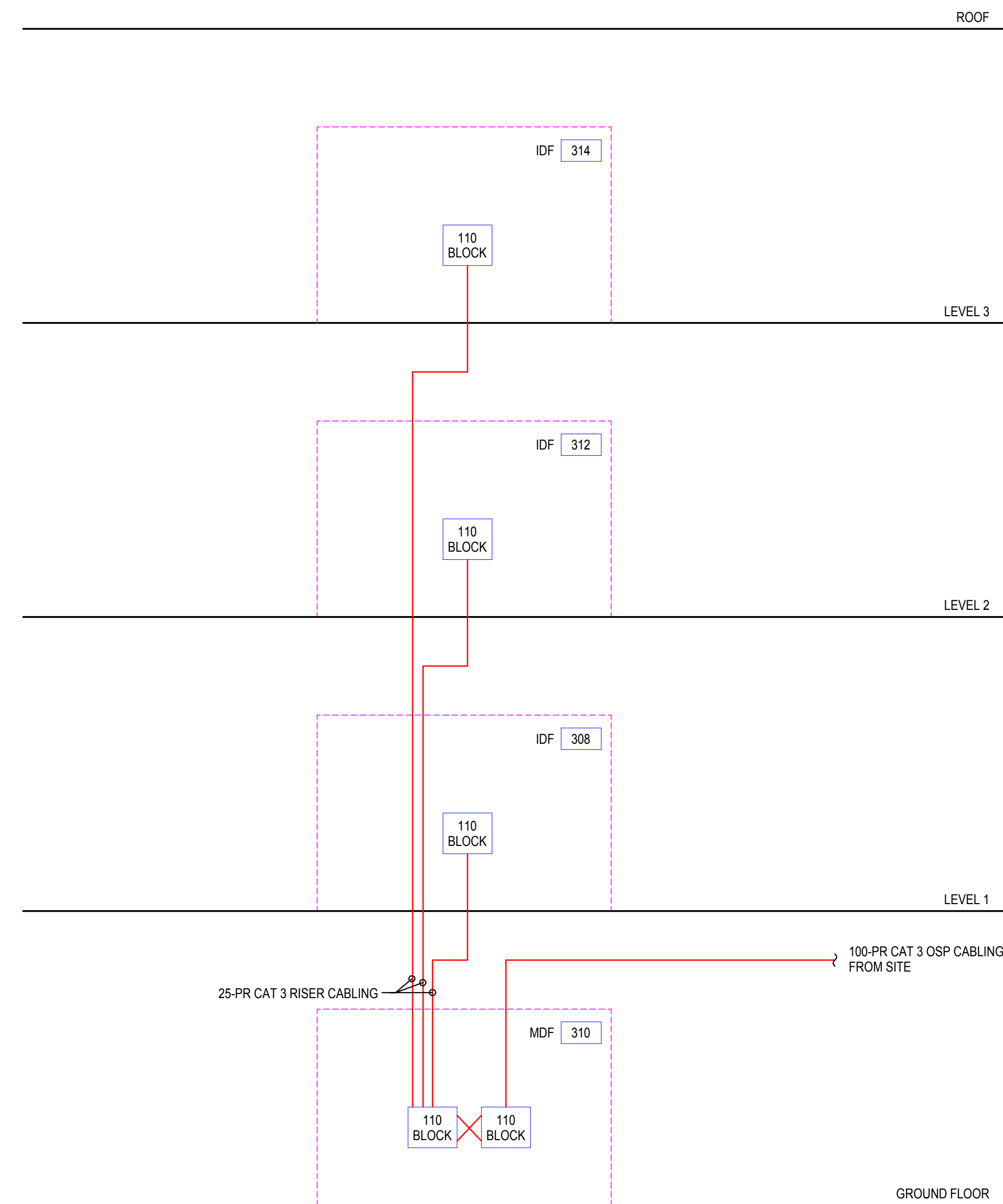
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**LEVEL 3 FLOOR PLAN - COMMUNICATIONS**

**T204**

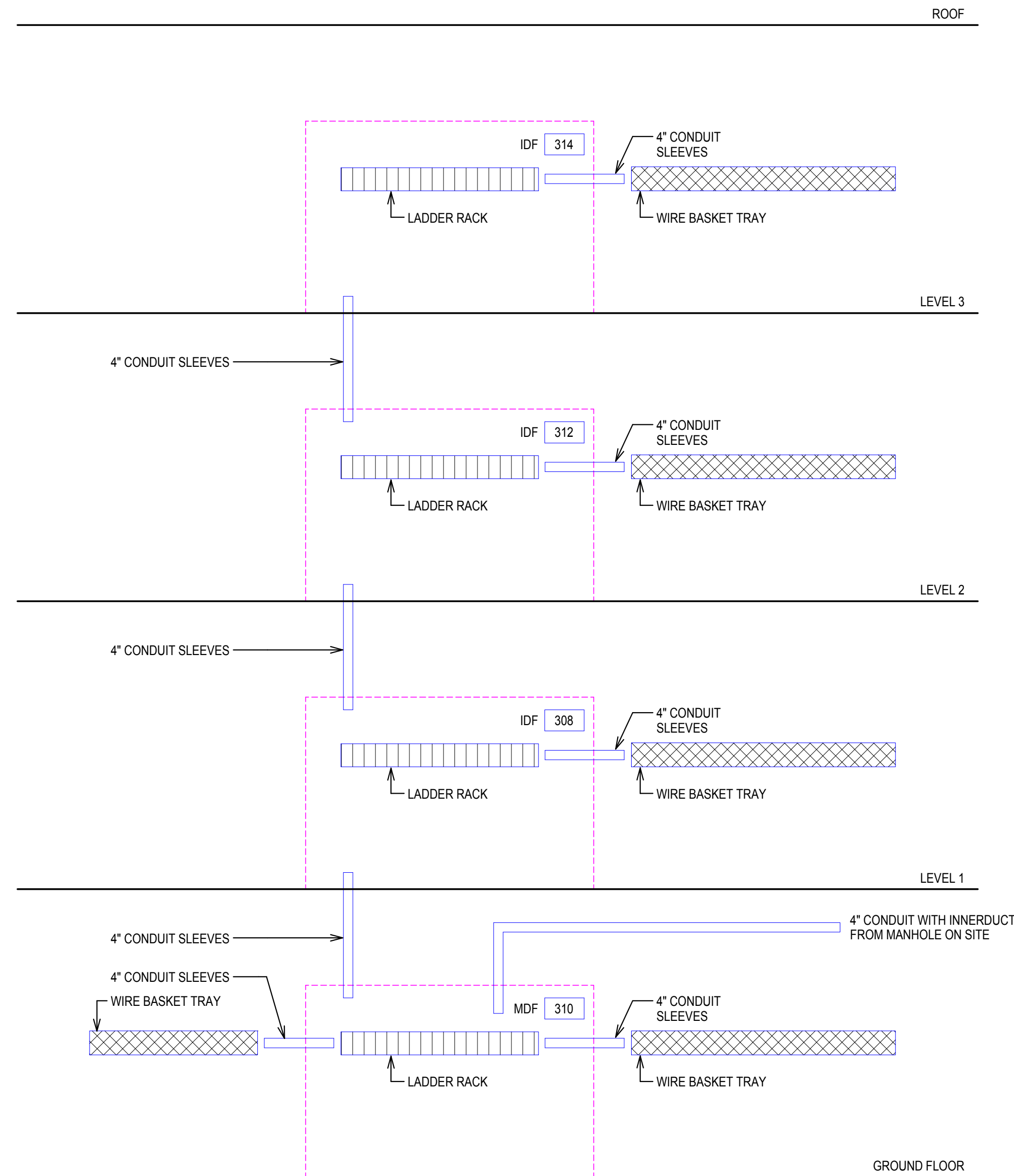


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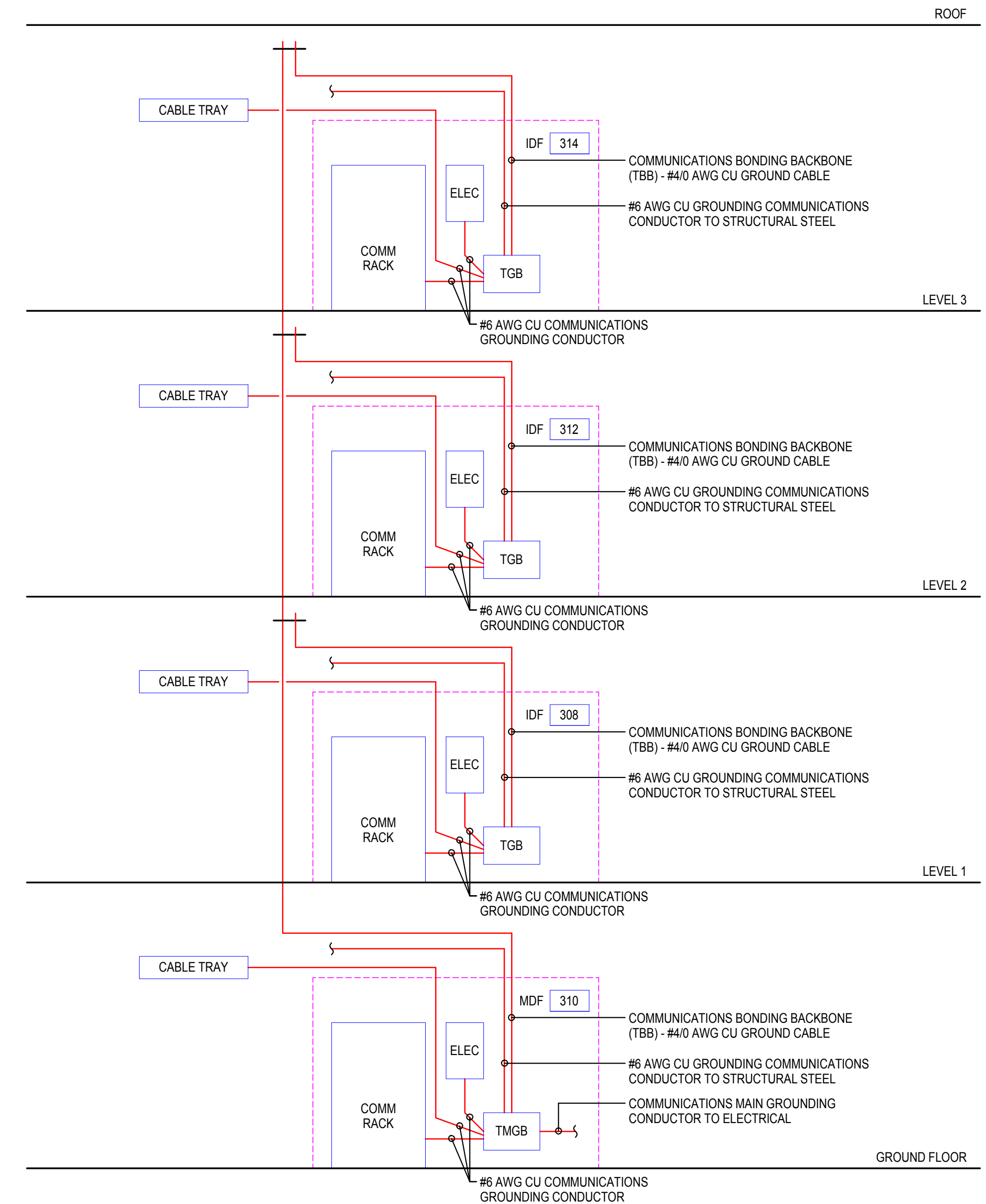


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**2 PATHWAYS RISER DIAGRAM - COMMUNICATIONS**  
N.T.S.



**1 GROUNDING RISER DIAGRAM - COMMUNICATIONS**  
N.T.S.

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RISER DIAGRAMS  
-  
COMMUNICATIONS

**T402**

## GENERAL NOTES

- ALL WALL BENCHTOPS AND MOVABLE TABLES SHALL BE 30" DEEP INCLUDING WALL BENCH BACK SPLASH (UNLESS OTHERWISE NOTED).
- ALL ISLAND/PENINSULA BENCHTOPS SHALL BE 60" DEEP (UNLESS OTHERWISE NOTED).
- ALL BENCHES AND TABLES SHALL BE 36" HIGH (UNLESS OTHERWISE NOTED).
- ALL BENCH/TABLE TOPS TO BE 1" THICK EPOXY RESIN (UNLESS OTHERWISE NOTED).
- ALL BACK AND SIDE SPLASHES TO BE 3/4" THICK AND 4" HIGH, PIPEDROP CURBS TO BE 3/4" THICK AND 5" HIGH (UNLESS OTHERWISE NOTED).
- PROVIDE SIDESPLASHES AT ALL BENCH TOPS AGAINST FUME HOODS AND/OR ADJACENT WALLS.
- OVERALL LENGTH OF BENCHTOPS SHALL BE DETERMINED BY CASEWORK SIZES AND DIMENSIONS AS INDICATED ON PLANS. TOPS SHALL OVERHANG 1/2" AT EACH END AND 1" FROM FRONT OF BASE CABINETS AND TABLES. WHEN OVERALL DIMENSIONS ARE GIVEN, 1/2" OVERHANG IS NOT INCLUDED.
- ALL CASEWORK, FUME HOODS AND ANY OTHER FURNISHINGS WITH EXPOSED-TO-VIEW BACKS AND SIDES SHALL BE FINISHED.
- INSTALL CLOSURE PANELS BETWEEN BACK OF HOODS AND WALLS AT EXPOSED ENDS AND BETWEEN BASE CABINETS AND/OR HOODS THAT ARE SET BACK TO BACK. FOR BASE CABINETS, PROVIDE EXTENDED ENDS AT THESE LOCATIONS.
- ALL PENETRATIONS THROUGH BENCHTOP SHALL BE SEALED WITH SEALANT.
- BACKS OF COUNTERTOPS AND SPLASHES AGAINST WALLS SHALL BE SEALED TO THE WALL WITH SEALANT.
- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
- OWNER'S REPRESENTATIVE WILL SELECT COLORS FOR ALL COMPONENTS OF PROJECT INDICATED ON THESE DRAWINGS. COLOR SELECTION WILL BE FROM THE CASEWORK MANUFACTURER'S STANDARD COLOR LINE.
- FREE STANDING SHELVING AND CASEWORK LESS THAN 18" DEEP SHALL BE SECURED TO PREVENT TIPPING. SUBMIT SHOP DRAWINGS OF ATTACHMENT PRIOR TO INSTALLATION.
- SAFETY SHOWER/EYEWASH UNITS SHALL COMPLY WITH ANSI STANDARDS FOR USABILITY BY THE PHYSICALLY DISABLED. SAFETY SHOWER/EYEWASH UNITS SHALL BE FURNISHED UNDER DIVISION 11 FOR INSTALLATION UNDER DIVISION 22.
- FOR LABORATORY SERVICE FITTING TYPES, LOCATIONS AND ORDER, SEE LABORATORY FURNISHINGS PLANS. THESE FITTINGS SHALL BE PROVIDED UNDER DIVISION 11, FOR INSTALLATION UNDER DIVISION 22 U.O.N.
- AT ALL TALL FREESTANDING VENTED, CORROSIVE, OR SOLVENT STORAGE CABINETS, VENT PIPING WILL BE PROVIDED AND INSTALLED FROM THE CABINET POINT OF CONNECTION TO THE EXHAUST DUCT SYSTEM PER DIVISION 23.
- WHERE NO FUME HOOD OCCURS ADJACENT TO CORROSIVE STORAGE OR SOLVENT STORAGE CABINETS, ROUTE VENT PIPE (IN PIPE CHASE) UP NEAREST PIPE DROP ENCLOSURE TO EXHAUST DUCT SYSTEM FOR CONNECTION UNDER DIVISION 23.
- WHERE FUME HOOD OCCURS ADJACENT TO CORROSIVE STORAGE CABINETS, ROUTE VENT PIPE (IN PIPE CHASE) TO FUME HOOD AND EXTEND 4" ABOVE FUME HOOD WORK SURFACE BEHIND BAFFLE.
- SNORKEL EXHAUST EQUIPMENT SHOWN ON THESE DRAWINGS SHALL BE PROVIDED UNDER DIVISION 11. DIVISION 23 SHALL PROVIDE DUCTWORK ROUTING AND MAKE FINAL CONNECTION TO SNORKEL EQUIPMENT.
- LOCATION OF EQUIPMENT, SUCH AS FUME HOODS, OVERHEAD SERVICE CARRIERS, BRACES OR ANY OTHER ITEMS THAT MAY INTERFERE WITH LIGHTING, STRUCTURAL OR MECHANICAL SYSTEMS, SHALL BE CAREFULLY COORDINATED. NOTIFY OWNER'S REPRESENTATIVE OF DISCREPANCIES PRIOR TO PROCEEDING WITH WORK.
- UNLESS OTHERWISE NOTED, ALL MISCELLANEOUS CHANNELS, BRACKETS AND FITTINGS INDICATED ON ALL LABORATORY FURNISHINGS DRAWINGS SHALL BE SUPPLIED, INSTALLED AND PAINTED UNDER DIVISION 11.
- CONTRACTOR SHALL EXAMINE ALL LABORATORY FURNISHINGS PLANS AND COORDINATE WITH REFLECTED CEILING PLANS FOR PROPER CEILING HEIGHTS & PIPE DROP ENCLOSURE HEIGHTS AND LOCATIONS.
- OVERHEAD SERVICE CARRIERS, HEAVY DUTY UNISTRUT AND OTHER STRUCTURALLY ANCHORED AND SUSPENDED DEVICES WHICH REQUIRE COORDINATION WITH OTHER TRADES SHALL BE THE RESPONSIBILITY OF THIS DIVISION (UNLESS OTHERWISE NOTED). ADDITIONAL FRAMING MAY BE REQUIRED TO ACCOMMODATE ANCHORAGE AROUND DUCTWORK OR OTHER OBSTRUCTIONS.
- ALL BULLETIN BOARDS, MARKER BOARDS, CHALKBOARDS, PROJECTION SCREENS, COAT RACKS AND FIRE EXTINGUISHERS ARE INDICATED ON THE "LF" DRAWINGS FOR COORDINATION ONLY.
- SERVICE FITTINGS SHOWN ON THE "LF" PLAN DRAWINGS ARE FOR LOCATION ONLY. REFER TO DETAILS AND SPECIFICATIONS FOR ACTUAL FITTINGS.
- ELECTRICAL DEVICES SHALL BE PROVIDED UNDER DIVISION 26. ELECTRICAL DEVICES SHOWN ON THE "LF" DRAWINGS ARE FOR THE LOCATION OF CASEWORK CUTOUPS. DEVICES SHOWN AT CONTROLLED ENVIRONMENTAL ROOMS, FUME HOODS AND LAMINAR FLOW HOODS SHALL BE PROVIDED BY THE EQUIPMENT SUPPLIER.
- ALL WALL MOUNTED RACEWAYS SHALL BE MOUNTED 43" A.F.F. TO THE BOTTOM OF THE RACEWAY U.O.N.
- ALL CASEWORK, SINKS, SHELVING AND SUPPORTS INSIDE CONTROLLED ENVIRONMENTAL ROOMS SHALL BE STAINLESS STEEL CONSTRUCTION (UNLESS OTHERWISE NOTED)

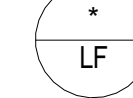
## LABORATORY BENCHTOP SCHEDULE

- |                                    |                                   |   |
|------------------------------------|-----------------------------------|---|
| <b>E</b> EPOXY RESIN BENCHTOP      | <b>S</b> STAINLESS STEEL BENCHTOP | <b>D</b> STATIC DISSIPATING PLASTIC LAMINATE BENCHTOP |
| <b>P</b> PLASTIC LAMINATE BENCHTOP | <b>W</b> WOOD BENCHTOP            |   |

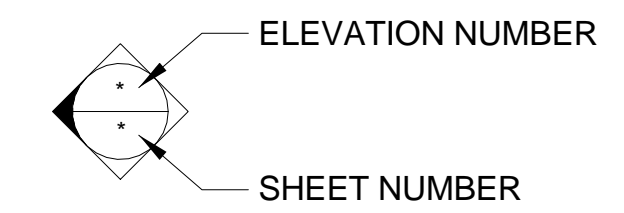
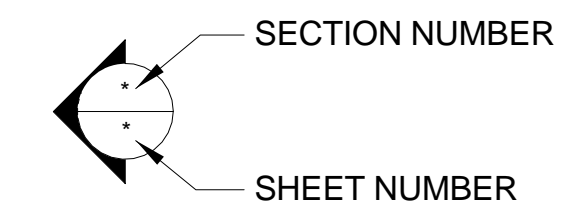
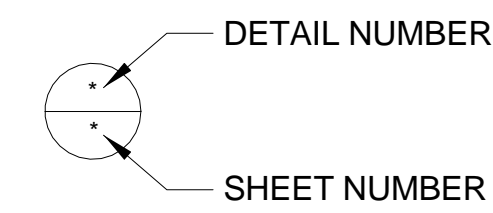
+30", +34", +36" INDICATES BENCHTOP HEIGHT ABOVE FINISHED FLOOR

NOTE:

FOR BENCHTOP TRANSITION HEIGHT REFER TO DETAILS: 

FOR CANTILEVERED BENCHTOP REFER TO DETAIL: 

## DETAIL SYMBOLS LEGEND



## TYPICAL ABBREVIATIONS

(NOTE: NOT ALL ABBREVIATIONS SHOWN ARE USED. REFER TO FLOOR PLANS FOR ACTUAL ABBREVIATION TYPES.)

ADA	AMERICAN DISABILITIES ACT
A.F.F.	ABOVE FINISHED FLOOR
ARCH	ARCHITECTURAL DOCUMENTS
CFM	CUBIC FEET/MINUTE
CENT	CENTRIFUGE
CLG.	CEILING
CLR.	CLEARANCE
DIA	DIAMETER
DIV.	DIVISION
EQUIP	EQUIPMENT
FZR	FREEZER
GA.	GAUGE
G.C.	GENERAL CONTRACTOR
H.D.	HEAVY DUTY
INC	INCUBATOR
MAX.	MAXIMUM
MIN.	MINIMUM
MTD.	MOUNTED
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OFOI	OWNER FURNISHED, OWNER INSTALLED
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
O.H.	OVERHEAD
OHSC	OVERHEAD SERVICE CARRIER
PH	PHASE
REF	REFRIGERATOR
SIM.	SIMILAR
SPEC	SPECIFICATIONS
ST.STL.	STAINLESS STEEL
TEMP	TEMPERATURE
TYP.	TYPICAL
UC	UNDER COUNTER
U.O.N.	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF

## LABORATORY SERVICE ABBREVIATIONS

A	COMPRESSED LAB AIR (100 PSIG)
Ar	ARGON
CA	COMPRESSED LAB AIR (100 PSIG)
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CO2	CARBON DIOXIDE
CW	POTABLE COLD WATER
CWA	COLD WATER WITH ASPIRATOR
DI	DEIONIZED WATER
DH	DRENCH HOSE
DIS	DISTILLED WATER
EW	EYEWASH
He	HELIUM
He(R)	HELIUM RETURN
HW	POTABLE HOT WATER
ICW	INDUSTRIAL COLD WATER
IHW	INDUSTRIAL HOT WATER
LA	LABORATORY AIR (15 PSIG)
LG	LABORATORY GAS
LV	LABORATORY VACUUM
LN	LIQUID NITROGEN
LPS	LOW PRESSURE STEAM
MPS	MEDIUM PRESSURE STEAM
N2	NITROGEN GAS
PCWS	PROCESS COOLING WATER SUPPLY
PCWR	PROCESS COOLING WATER RETURN
PW	PURIFIED WATER
RO	REVERSE OSMOSIS WATER
SG	SPECIAL GAS
SS	SAFETY SHOWER
(HB)	HOSE BIBB
(IR)	INFRA-RED
_(V)	SERVICE VALVE - PROVIDED UNDER DIV. 22

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LAB  
FURNISHINGS  
NOTES

**LF101**

## LABORATORY ELECTRICAL GENERAL NOTES

- NOTES AND SYMBOLS SHOWN ON THESE DRAWINGS INDICATING LIGHTING EQUIPMENT AND REQUIREMENTS FOR LABS AND LAB SUPPORT AREAS, INCLUDING DARK ROOM SAFELIGHTS, 'IN-USE' WARNING LIGHTS, DIMMABLE LIGHTING, TASK LIGHTING AND ALL SPECIAL LIGHTING REQUIREMENTS ARE INTENDED TO PROVIDE COORDINATION INFORMATION FOR USE BY THE ARCHITECT AND BUILDING ELECTRICAL ENGINEER, TO BE IMPLEMENTED INTO THE RESPECTIVE DISCIPLINE'S DESIGN DOCUMENTS. THIS INFORMATION WILL NOT APPEAR IN THE LABORATORY FURNISHING CONSTRUCTION DOCUMENTS. ALL LIGHTING (EXCEPT LIGHTING FIXTURES IN FUME HOODS AND ENVIRONMENTAL ROOMS) SHALL APPEAR ON THE BUILDING ELECTRICAL DRAWINGS AND SPECIFICATIONS.
- ALL FUME HOOD INTERNAL LIGHTING FIXTURES, ELECTRICAL DEVICES, SWITCHES, RECEPTACLES AND OTHER COMPONENTS SHALL BE PROVIDED, INSTALLED AND FACTORY PRE-WIRED TO A JUNCTION BOX AT AN ACCESSIBLE LOCATION AT THE TOP OF THE HOOD ASSEMBLY, BY THE FUME HOOD MANUFACTURER, FOR A SINGLE POINT OF CONNECTION TO BUILDING POWER.
- EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE, LAB AND LAB SUPPORT BRANCH CIRCUIT PANELS SHOULD BE A MINIMUM BUS RATING OF 225 AMPS, 42 POLES, AND SHALL INCLUDE A MAIN CIRCUIT BREAKER OF MIN. 150 AMP RATING. PANEL FEEDER CONDUIT SHALL BE SIZED FOR 225 AMP CONDUCTORS. PANEL FEEDER CONDUCTORS SHALL BE MIN. 150 AMP RATING (225 AMP PREFERRED).
- STANDBY POWER (SB) INDICATED ON THE LAB DRAWINGS IS OPTIONAL STANDBY POWER (N.E.C. ART. 702), AND IS NOT INTENDED NOR PROVIDED AS A PART OF THE LIFE-SAFETY OR LEGALLY REQUIRED EMERGENCY POWER SYSTEM (N.E.C. ART. 700, 701). IT IS RECOMMENDED THAT STANDBY POWER BE SERVED FROM A SEPARATE STANDBY DISTRIBUTION SYSTEM, INCLUDING SEPARATE AUTOMATIC TRANSFER SWITCH(ES).
- AT TELEPHONE AND DATA OUTLET LOCATIONS INDICATED ON THE LAB DRAWINGS, DIVISION 26 SHALL PROVIDE ALL SURFACE MOUNTED RACEWAYS, OUTLET BOXES AND CONDUITS WITH PULL-WIRES TO THE NEAREST CABLE TRAY (USUALLY IN ACCESSIBLE CEILING CORRIDOR AREA), OR DIRECTLY TO THE NEAREST TEL/DATA EQUIPMENT ROOM. EXACT CONDUIT QUANTITIES, SIZES AND ROUTING TO BE DETERMINED BY TEL/DATA SYSTEM DESIGNER.
- AT ALL CHEMICAL FUME HOODS PROVIDE A FLUSH MOUNTED WALL OUTLET CONNECTION BOX AT +96".
- BIOLOGICAL SAFETY CABINETS AND LAMINAR FLOW HOODS SHALL BE FACTORY PROVIDED WITH 120 VOLT CORD AND PLUG ASSEMBLY. PROVIDE 120 VOLT RECEPTACLE AT LOCATION COORDINATED WITH EQUIPMENT REQUIREMENTS.
- AT ALL CONTROLLED TEMPERATURE ROOMS (COLD ROOMS), DIVISION 26 SHALL MAKE POWER SERVICE CONNECTION TO THE CONDENSING UNIT AND THE ROOM CONTROL CABINET, PROVIDE WIRING AND CONDUIT TO THESE TWO POINTS ONLY AND PROVIDE A FUSED DISCONNECT FOR EACH CONDENSING UNIT. ALL ELECTRICAL RECEPTACLES, LIGHT FIXTURES AND ALL OTHER WIRING REQUIRED SHALL BE PROVIDED BY CONTROL TEMPERATURE MANUFACTURER.
- BENCHTOP ELECTRICAL PEDESTALS SHALL BE RAISED 1" TO 2" TO ACCOMMODATE AC ADAPTERS AT BOTTOM PLUG.
- SAFETY/SHOWER/EYEWASH UNIT SHALL BE PROVIDED WITH ALARM HORNS ( UNDER DIVISION 11). DIVISION 26 SHALL PROVIDE J-BOX/120V POWER SERVICE CONNECTION.

## ELECTRICAL SYMBOLS

	120V, 1PH, 20A SINGLE RECEPTACLE		CEILING MTD. DUPLEX RECEPTACLE		PLUG-IN BUS DUCT
	120V, 1PH, 20A DUPLEX RECEPTACLE		CEILING MTD. DATA BOX		WP WEATHERPROOF OUTLET
	208V, 1PH, 30A RECEPTACLE U.O.N.		CEILING MTD. TELEPHONE/DATA BOX		SB STANDBY POWER
	208V, 3PH, 30A RECEPTACLE U.O.N.		DATA OUTLET (#=QTY OF JACKS @ DEVICE. IF NO # THEN 1 JACK)		LIGHT FIXTURE
	SPECIAL POWER RECEPTACLE		TELEPHONE/DATA OUTLET		WARNING LIGHT
	DOUBLE DUPLEX RECEPTACLE		TELEPHONE OUTLET		SAFE LIGHT
	PEDESTAL BOX		EXTERNAL DISCONNECT		XFMR TRANSFORMER
	SURFACE RACEWAY		JUNCTION BOX		EP EXPLOSION PROOF OUTLET
	FLOOR RECESSED DUPLEX RECEPTACLE		ELECTRICAL PANEL		TL TWIST LOCK
	FLOOR RECESSED DATA BOX		SINGLE POLE SWITCH		D DEDICATED CIRCUIT
	FLOOR RECESSED TELEPHONE/DATA BOX		INSTRUMENT GROUND		EMERGENCY BUTTON

## LABORATORY PLUMBING & MECHANICAL GENERAL NOTES

- ALL LABORATORY SERVICE FITTINGS AND SINKS INCLUDING TAILPIECES SHALL BE PROVIDED UNDER DIVISION 11 FOR INSTALLATION AND CONNECTION UNDER DIVISION 22. SINK TRAPS ARE PROVIDED UNDER DIVISION 22.
  - ALL SERVICE FITTINGS AT FUME HOODS SHALL BE PRE-PIPED TO 6" ABOVE THE FUME HOOD UNDER DIVISION 11. 'P' TRAP AND WASTE PIPING FOR CUPSINKS AT FUME HOODS SHALL BE PROVIDED UNDER DIVISION 22.
  - AT CONTROLLED TEMPERATURE ROOM COMPRESSORS DIVISION 22 SHALL PROVIDE CHILLED WATER AND CONNECTION TO COMPRESSOR. ALL OTHER PIPING REQUIRED SHALL BE PROVIDED UNDER DIVISION 22. (WATER COOLING UNITS ONLY)
  - AT FUME HOODS REQUIRING VAV CONTROLS, BLOCKOUTS WILL BE FACTORY PREPARED BY THE MANUFACTURER FOR CONTROLS AND ALARMS PROVIDED UNDER DIVISION 23.
  - ALL SNORKEL EXHAUST SHOWN ON THESE DRAWINGS SHALL BE EXTENDED THROUGH THE CEILING AND CAPPED FOR FUTURE INSTALLATION OF SNORKELS UNDER OWNER. (FUTURE SNORKELS ONLY)
  - AT ALL VENTED TALL FLAMMABLE STORAGE CABINETS SHOWN ON THESE DRAWINGS DIVISION 23 SHALL PROVIDE ALL VENT PIPING, OF SIZE INDICATED ON THE LABORATORY FURNISHINGS DRAWINGS, FROM THE CABINET TO THE FUME EXHAUST DUCT SYSTEM ABOVE THE CEILING. (VENTED FS CABINETS ONLY)
  - AT ALL SOLVENT STORAGE CABINETS BELOW BENCHTOPS AND/OR FUME HOODS VENT PIPING WILL BE PROVIDED TO 6" ABOVE THE PIPE DROP ENCLOSURE AND/OR FUME HOOD BY DIVISION 11 FOR CONTINUATION AND HARD CONNECTION TO THE EXHAUST DUCT SYSTEM ABOVE THE CEILING UNDER DIVISION 23.
  - DETAILS FOR MANIFOLDING OF GAS CYLINDERS SHALL BE SHOWN ON THE LABORATORY PLUMBING CONSTRUCTION DRAWINGS. SPECIFICATION FOR SPECIAL GASES (AND MANIFOLDING) SHALL BE PROVIDED BY RFD FOR INCLUSION IN THE DIVISION 22 SPECIFICATIONS.
  - FLOOR DRAINS AND FLOOR SINKS SHOWN ON THESE DRAWINGS ARE REQUIRED FOR LABORATORY EQUIPMENT ONLY AND ARE SHOWN TO PROVIDE COORDINATION INFORMATION FOR THE MECHANICAL ENGINEER. FLOOR DRAINS AND FLOOR SINKS WILL NOT APPEAR ON THE LABORATORY FURNISHING CONSTRUCTION DRAWINGS, THESE SHALL BE PROVIDED UNDER DIVISION 22.
  - SAFETY SHOWER/EYEWASH UNITS AND DRENCH HOSES SHOWN ON THESE DRAWINGS WILL BE PROVIDED UNDER DIVISION 11. POTABLE WATER, PIPING, AND CONNECTION TO THESE UNITS SHALL BE UNDER DIVISION 22.
11. SAFETY SHOWER/EYEWASH UNITS WILL NOT BE PROVIDED WITH FLOOR DRAINS.

11. SAFETY SHOWER/EYEWASH UNITS SHALL BE PROVIDED WITH FLOOR DRAINS UNDER DIVISION 22. SELECT, DATE CONFIRMED: \_\_\_\_\_
- SAFETY SHOWER/EYEWASH UNITS SHALL BE CONNECTED TO THE LABORATORY WASTE SYSTEM UNDER DIVISION 22.
  - EMERGENCY GAS SHUT-OFF VALVES SHALL BE LOCATED INSIDE THE LABORATORY UNDER DIVISION 22. COORDINATE LOCATION WITH OTHER TRADES.

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Number

**LF102**

LABORATORY SYMBOLS LEGEND			LABORATORY SYMBOLS LEGEND		
	SYMBOL LEGEND	DESCRIPTION		SYMBOL LEGEND	DESCRIPTION
1		PIPE DROP ENCLOSURE	24		HEAVY DUTY ADJUSTABLE SHELVES (5 TIER U.O.N.)
2		A = STAINLESS STEEL DRYING RACK B = ACRYLIC DRYING RACK	25		HEAVY DUTY ADJUSTABLE SHELVES (5 TIER U.O.N.)
3		ADJUSTABLE WALL SHELVES (2 TIER U.O.N.)	26		PROCEDURE LIGHT: WALL MOUNTED
4		ADJUSTABLE ISLAND BENCH SHELVING (2 TIER U.O.N.)	27		PROCEDURE LIGHT: CEILING TRACK MOUNTED
5		CYLINDER RESTRAINT	28		LOW SLOT EXHAUST
6		CYLINDER RACK ASSEMBLY	29		FIXED REAGENT SHELVES - (1 TIER U.O.N.)
7		BENCHTOP SLEEVE/GROMMET			WALL & TALL STORAGE CABINET - SEE CASEWORK MENU
8		SNORKEL FUME EXHAUST - SEE EXHAUST SCHEDULE			MOVABLE TABLE - SEE CASEWORK MENU
9		OVERHEAD SERVICE CARRIER			LEG POST UNDER BENCH/TABLE TOP
10		SAFETY SHOWER WITH EYEWASH UNIT			CHEMICAL FUME HOOD - SEE EXHAUST SCHEDULE
11		OPEN INDUSTRIAL SHELVING UNIT			ADA CHEMICAL FUME HOOD - SEE EXHAUST SCHEDULE
12		WIRE SHELVING UNIT			FULL-VIEW CHEMICAL FUME HOOD - SEE EXHAUST SCHEDULE
13		OVERHEAD SUPPORT GRID			ADA FULL-VIEW CHEMICAL FUME HOOD-SEE EXHAUST SCHEDULE
14		BLACKOUT CURTAINS			BIOLOGICAL SAFETY CABINET
15		EQUIPMENT CEILING EXHAUST			OWNER FURNISHED, OWNER INSTALLED EQUIPMENT
16		WATER PURIFIER - OWNER FURNISHED, OWNER INSTALLED			ADA COMPLIANT AREA
17		LATTICE ROD ASSEMBLY (FUME HOOD)			EPOXY RESIN SINK - SEE SINK SCHEDULE
18		DISTILLATION RACK ASSEMBLY			STAINLESS STEEL SINK - SEE SINK SCHEDULE
19		SHORT THROW PROJECTOR (SHOWN FOR COORDINATION ONLY)			CUP SINK - SEE SINK SCHEDULE
20		MARKER BOARD (SEE ARCHITECTURAL DOCUMENTS, SHOWN FOR COORDINATION ONLY)			STAINLESS STEEL SCULLERY SINK
21		COAT HOOKS - (SEE ARCHITECTURAL DRAWINGS - SHOWN FOR COORDINATION ONLY)			SEDIMENT TRAP - (BY DIV. 22, SHOWN FOR COORDINATION ONLY)
22		TACK BOARD (SEE ARCHITECTURAL DOCUMENTS, SHOWN FOR COORDINATION ONLY)			FLOOR DRAIN (SHOWN FOR COORDINATION ONLY)
23		FLAT PANEL MONITOR (SEE ARCHITECTURAL DOCUMENTS, SHOWN FOR COORDINATION ONLY)			FLOOR SINK (SHOWN FOR COORDINATION ONLY)

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LAB FURNISHINGS SYMBOLS

# LF103

# EXHAUST EQUIPMENT SCHEDULES

## CHEMICAL FUME HOODS

DRAWING REFERENCE	HOOD SIZE AND TYPE	TYPE OF SASH	TYPE OF SILL	NUMBER OF VERTICAL SASHES	NOMINAL VERTICAL SASH HEIGHT	HORIZONTAL SASH CONFIGURATION		DESIGN OPERATING CONDITIONS			MAXIMUM OPERATING CONDITIONS			MINIMUM VAV AIR FLOW (NOTE 1)	MAX HOOD STATIC PRESSURE DROP	EXHAUST CONNECTION BY MECHANICAL (NOTE 2)	REMARKS
						INCH	NUMBER OF SASHES	NUMBER OF TRACKS	SASH OPENING	FACE VELOCITY	AIRFLOW	SASH OPENING	FACE VELOCITY				
					INCH	NUMBER OF SASHES	NUMBER OF TRACKS	INCH	FPM	CFM	INCH	FPM	CFM	CFM	INCH OF WATER	INCH DIAMETER	
4' CFH	4' CHEMICAL FUME HOOD	VERTICAL	AIRFOIL	1	30	-	-	18	100	500	28.5	100	800	200	0.25	8	
4' ACFH	4' ADA CHEMICAL FUME HOOD	VERTICAL	AIRFOIL	1	30	-	-	18	100	500	28.5	100	800	200	0.25	8	
6' CFH	6' CHEMICAL FUME HOOD	VERTICAL	AIRFOIL	1	30	-	-	18	100	800	28.5	100	1,300	300	0.25	12	
6' ACFH	6' ADA CHEMICAL FUME HOOD	VERTICAL	AIRFOIL	1	30	-	-	18	100	800	28.5	100	1,300	300	0.25	12	
6' FVH	6' FULL VIEW CHEMICAL FUME HOOD	VERTICAL	AIRFOIL	1	34	-	-	18	100	850	34	100	1,600	300	0.50	12	PROVIDE DEDICATED SEPARATED EXHAUST DESIGN FOR EACH HOOD FOR BACK-TO-BACK WORKSTATIONS.
8' CFH	8' CHEMICAL FUME HOOD	VERTICAL	AIRFOIL	1	30	-	-	18	100	1,100	28.5	100	1,750	400	0.25	12 (QTY/2)	

**NOTES:**

1. MINIMUM VARIABLE AIR VOLUME (VAV) EXHAUST AIRFLOW CORRESPONDS TO 25" DEEP WORK SURFACE. FOR EXTENDED DEPTHS, APPLY AIRFLOW CORRECTION PER MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE EXHAUST DUCT TRANSITION PIECE TO TRANSITION FROM FUME HOOD COLLAR SIZE TO SCHEDULED EXHAUST CONNECTION SIZE.

## OTHER EXHAUST EQUIPMENT

DRAWING REFERENCE	EQUIPMENT	EXHAUST AIR FLOW	STATIC PRESSURE	EXHAUST DUCT CONNECTION SIZE	REMARKS
		CFM	INCH OF WATER	INCH	
8	SNORKEL EXHAUST	60	0.8	4	BASED ON MOVEX MODEL TERFU MT-1500-75 SNORKEL.
#	SNORKEL EXHAUST - ATOMIC ABSORPTION	200	0.5	5	BASED ON MOVEX MODEL MEX-AA 316L STAINLESS STEEL SNORKEL WITH 10" HOOD.
15A	EQUIPMENT CEILING EXHAUST	25	0.5	2	TERMINATE EXHAUST DUCT 6-INCH BELOW CEILING WITH TRIM COLLAR. PROVIDE MANUAL VOLUME DAMPER ABOVE CEILING.
15B	EQUIPMENT CEILING EXHAUST	100	0.5	4	TERMINATE EXHAUST DUCT 6-INCH BELOW CEILING WITH TRIM COLLAR. PROVIDE MANUAL VOLUME DAMPER ABOVE CEILING.
15C	EQUIPMENT CEILING EXHAUST	200	0.5	6	TERMINATE EXHAUST DUCT 6-INCH BELOW CEILING WITH TRIM COLLAR. PROVIDE MANUAL VOLUME DAMPER ABOVE CEILING.
TCS	CORROSIVE STORAGE CABINET	UNREGULATED	-	2	PROVIDE SCHEDULE 80 PVC/CPVC PIPE FOR EXHAUST DUCT PIPE.
TSS	FLAMMABLE STORAGE CABINET	UNREGULATED	-	2	PROVIDE 2"Ø MAKEUP AIR PIPE CONNECTION FROM ROOM SUPPLY AIR SYSTEM. PROVIDE BLACK IRON PIPE FOR SUPPLY & EXHAUST DUCT.
#	GAS REGULATOR/MANIFOLD RELIEF VALVE EXHAUST CONNECTION	-	-	1/2	RELIEF VALVE PIPING CONNECTION FROM REGULATOR/MANIFOLD RELIEF VALVE TO ROOM EXHAUST DUCT SYSTEM.
#	GLASSWARE WASHER	60	0.5	3	BASED ON STERIS RELIANCE 500XLS GLASSWASHER.
VP	VACUUM PUMP CABINET	100	0.2	6	DEDICATED CABINET EXHAUST DUCT VENT TO ROOM EXHAUST SYSTEM.
#	CANOPY EXHAUST	TBD	0.2	TBD	BASED ON 75 CFM/LINEAR FOOT OF EXPOSED PERIMETER OF CANOPY.
28	LOW SLOT EXHAUST	100 / LINEAR FOOT	0.2	LENGTH x 3	100 CFM PER LINEAR FOOT. BASED ON BOTTOM OPENING OF L x 2-1/4".

## CONTROLLED ENVIRONMENTAL ROOM SCHEDULE

ROOM NUMBER	DIMENSIONS (FT-IN)				OPERATING TEMP RANGE (°C)	TEMP TOLERANCE (±°C)	RELATIVE HUMIDITY RANGE (% RH)	RELATIVE HUMIDITY TOLERANCE (±% RH)	SUPPLY AND EXHAUST AIR (CFM)	ELECTRICAL REQUIREMENTS (AMPS)		CONDENSING UNIT						RAMP REQUIRED (Y/N)	STANDBY POWER REQUIRED (Y/N)	NOTES
	EXTERNAL LENGTH	EXTERNAL WIDTH	EXTERNAL HEIGHT	INTERNAL CEILING HEIGHT						4 WIRE	3 WIRE	GENERAL INFORMATION			COOLING WATER REQUIREMENTS					
												CONTROL PANEL	CONDENSING UNIT	TYPE	LOCATION	APPROX. DIMENSIONS (FT)	MAX SUPPLY TEMP (°F)			
xxx	13'-1"	9'-10 1/2"	10'-0"	8'-0"	4°C	1°	N/A	N/A	25	20	20	WATER COOLED	TOP OF ROOM	3.5 x 2.5 x 3H	85	5	N	Y		

- NOTES:**
1. PROVIDE DEHUMIDIFICATION USING ROOM REFRIGERATION SYSTEM TO AVOID CONDENSATION ON INTERIOR SURFACES.
  2. CONNECTION OF SUPPLY AIR INLET TO LABORATORY VENTILATION SYSTEM UPSTREAM OF ZONE REHEAT COIL UNDER DIVISION 23. CONNECTION OF EXHAUST AIR OUTLET TO LABORATORY EXHAUST SYSTEM UNDER DIVISION 23.

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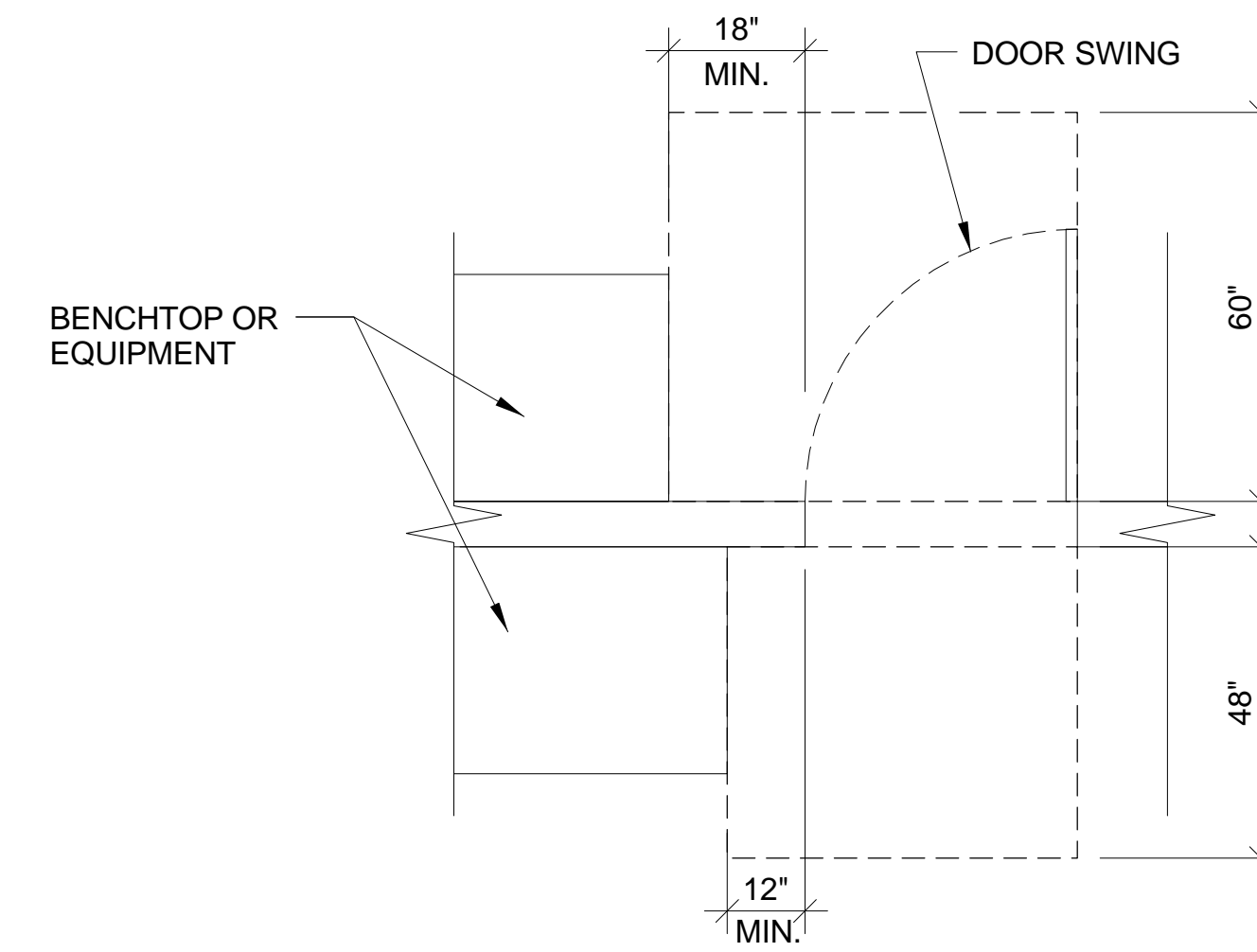
LAB FURNISHINGS SCHEDULES

# LF104

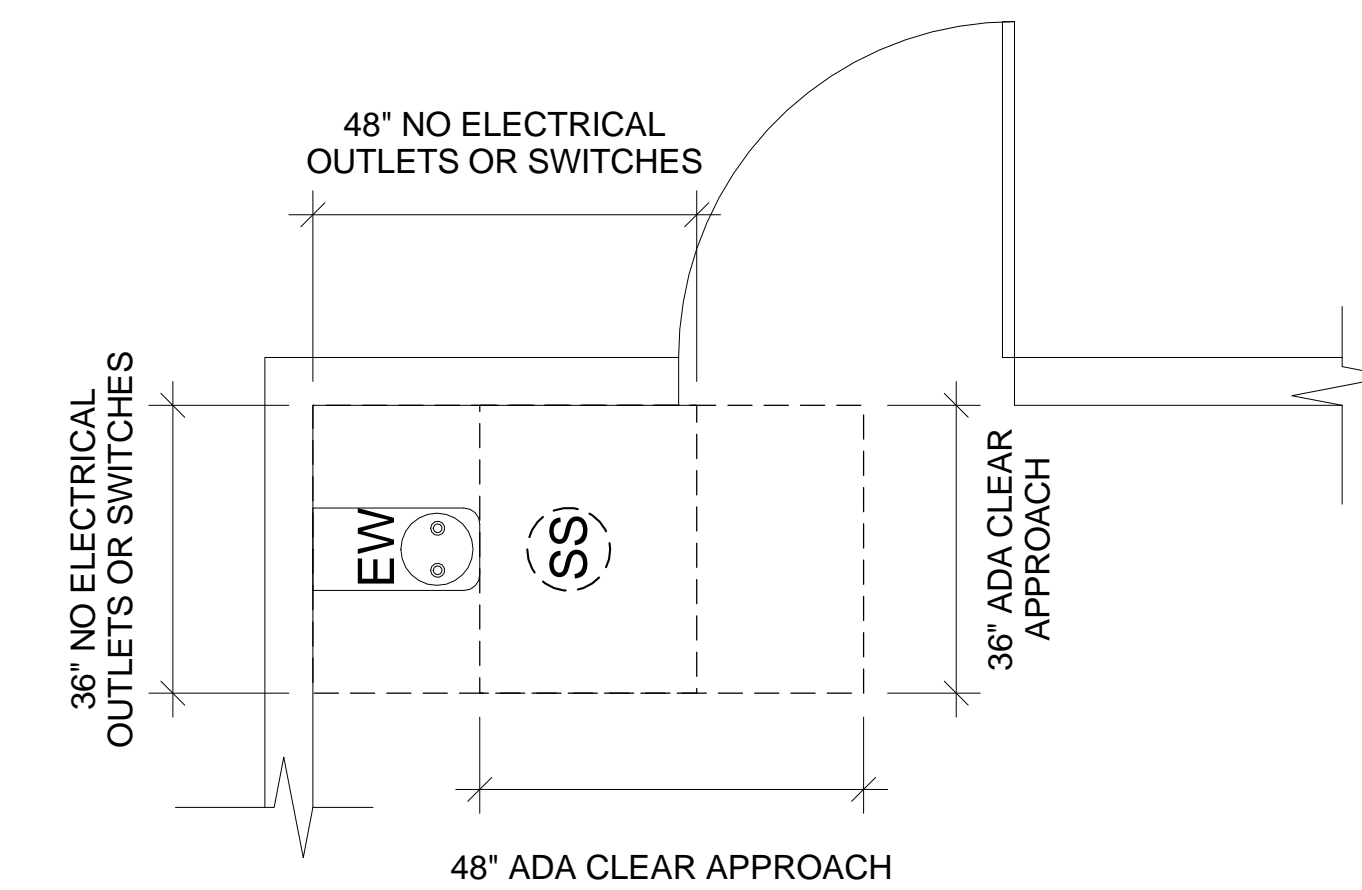
# LABORATORY SINK SCHEDULE

SINK NUMBER	DESCRIPTION	OUTLET	WIDTH x DEPTH x HEIGHT (INSIDE DIMENSIONS)	REMARKS
SK1	EPOXY RESIN	SIDE	21" x 17" x 10"	DROP-IN
SK2	EPOXY RESIN	SIDE	28" x 15" x 12"	DROP-IN
SK3	EPOXY RESIN	CORNER	18" x 15" x 5"	REQUIRES ADA FITTINGS
SK3S	STAINLESS STEEL	CENTER	28" x 15" x 5"	REQUIRES ADA FITTINGS
SK4	STAINLESS STEEL	CENTER	22" x 16" x 10"	INTEGRAL WITH TOP
SK5	EPOXY RESIN	CORNER	(2) 21" x 17" x 10"	DROP-IN
SK6	EPOXY RESIN	CORNER	30" x 16" x 18"	DROP-IN
SK7	STAINLESS STEEL	CENTER	(2) 24" x 24" x 12" BOWLS	@ SCULLERY SINK
SK8	STAINLESS STEEL	CENTER	(1) 48" x 24" x 12" BOWL	@ SCULLERY SINK
SK9	EPOXY RESIN	CENTER	12" x 12" x 12"	DROP-IN
CS1	EPOXY RESIN	CENTER	3" x 6"	OVAL, TYPICAL @ FUME HOOD W/ RAISED LIP
CS2	EPOXY RESIN	CENTER	6" x 14"	RECTANGULAR

## INTERIOR DOOR CLEARANCES (ADA COMPLIANT)



## ELECTRICAL AND ADA APPROACH CLEARANCES AT SS/EW

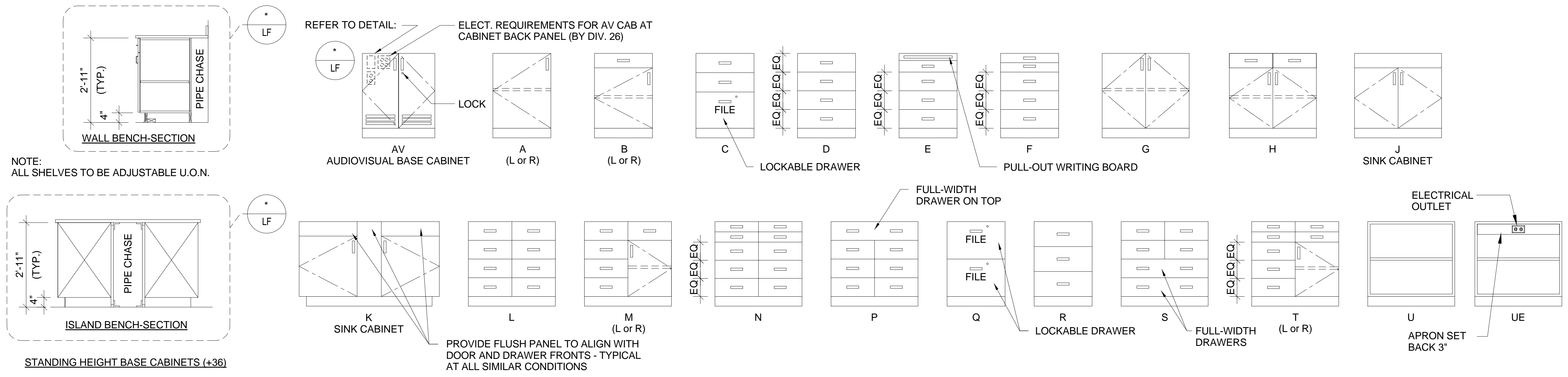


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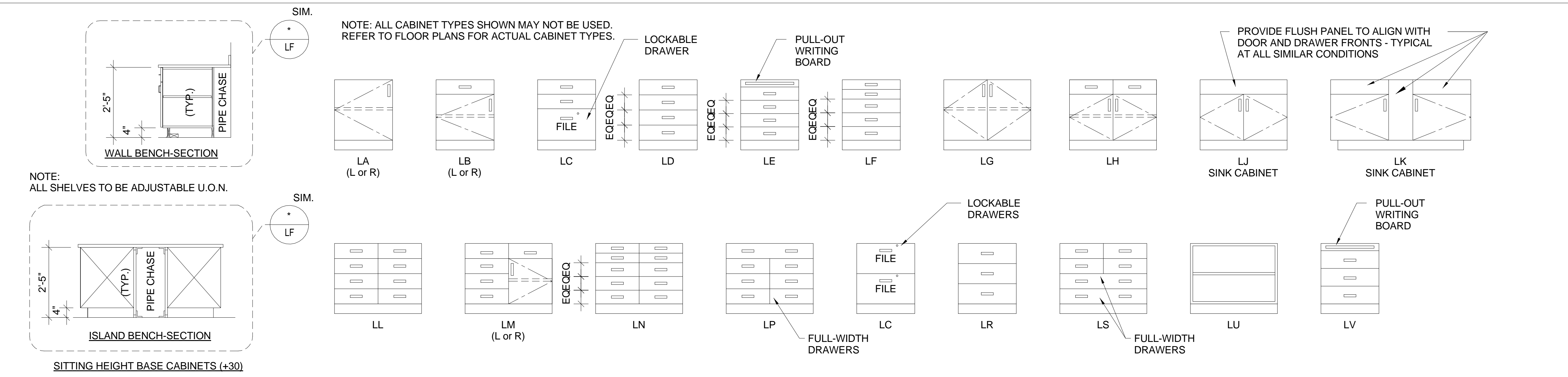


- D24 BASE CABINET TYPE WIDTH (INCHES - TYPICAL)
- A24L BASE CABINET TYPE WIDTH DOOR HINGE ON LEFT SIDE
- A24R BASE CABINET TYPE WIDTH DOOR HINGE ON RIGHT SIDE
- LD24 SITTING HEIGHT AT BASE CABINET & KO BASE CABINET TYPE WIDTH
- KO24 KNEE OPENING WIDTH
- KOX24 KNEE OPENING KNEE OPENING TYPE (SEE KNEE OPENINGS SECTION) WIDTH (X = A, D, OR E)
- MT60X MOVABLE TABLE WIDTH (NOTE: 30" DEPTH ASSUMED PER GENERAL NOTES)
- MT6024 MOVABLE TABLE TYPE (C) ON CASTERS & (D) W/ DRAWER (X = C AND/OR D)
- WA36 WALL-HUNG CABINET WALL CABINET DOOR TYPE WIDTH
- TD48 TALL STORAGE CABINET TALL CABINET DOOR TYPE WIDTH
- TAV48 DESIGNATES VENTED CABINET WITH 2" DIA CONNECTION
- FP FILLER PANEL
- \* DESIGNATES KEY LOCKABLE CASEWORK
- \*\* DESIGNATES PADLOCK HASP

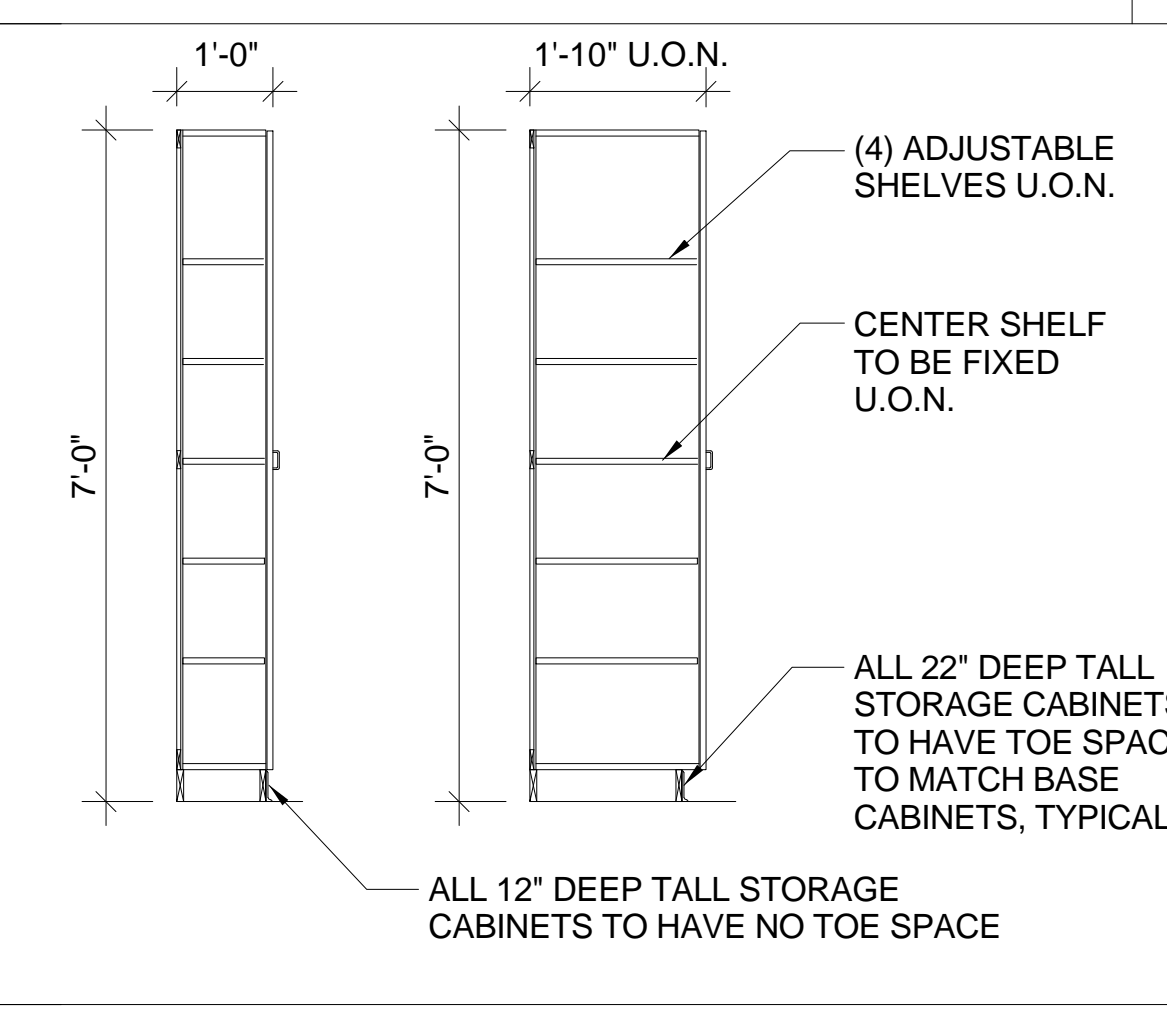
- NOTES:**
1. FOR CABINET BACKING HEIGHTS REFER TO:
  2. FOR SHELVING AND CYLINDER RESTRAINT BACKING HEIGHTS REFER TO:



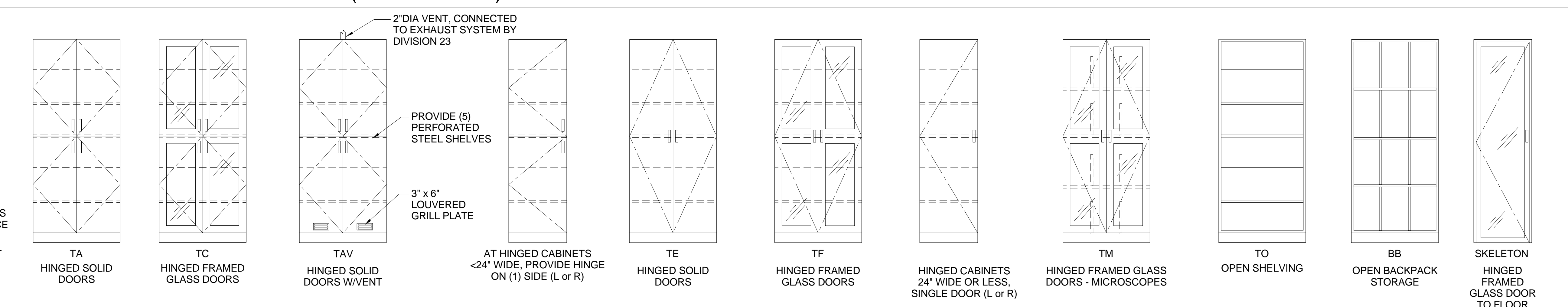
**STANDING HEIGHT BASE CABINETS (WOOD - U.O.N.)**



**CASEWORK LEGEND & NOTES**



**SITTING HEIGHT BASE CABINETS (WOOD - U.O.N.)**



**TALL STORAGE CABINETS (WOOD - U.O.N.)**

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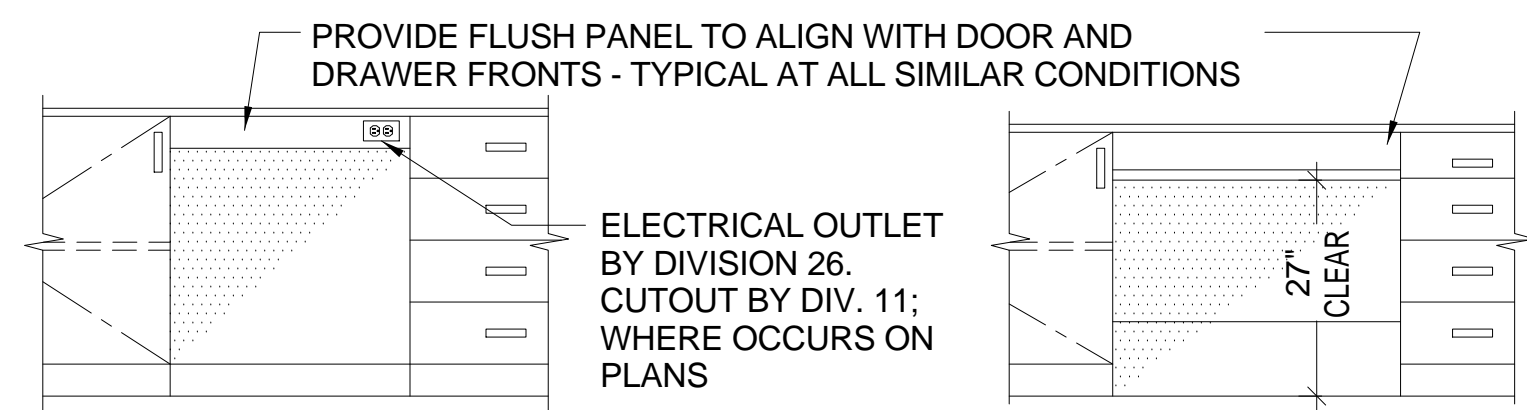
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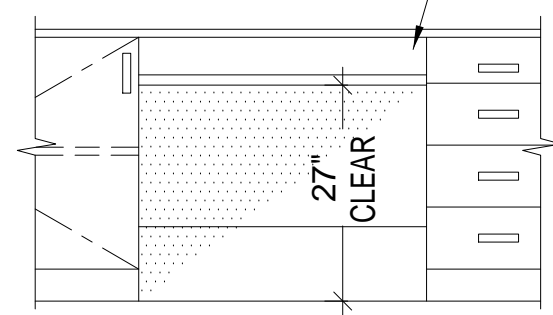
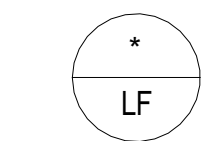
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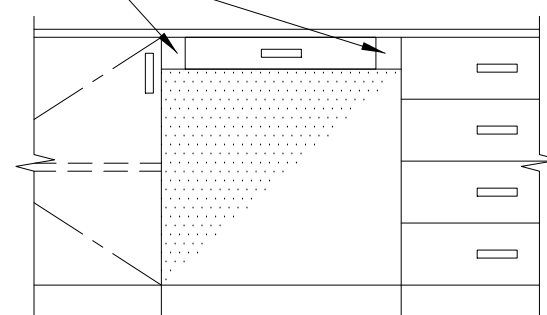
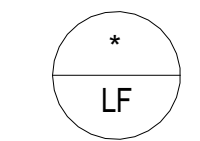
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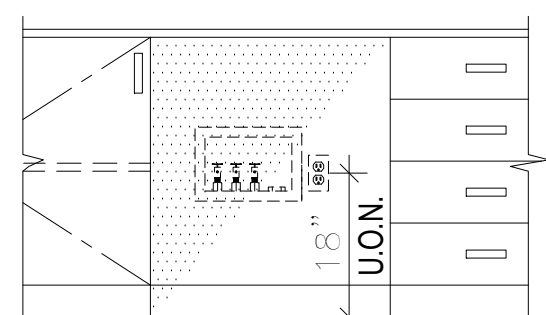
**KO**  
KNEE OPENING  
-4" APRON AT 36" HIGH TOPS  
-4" APRON AT 34" HIGH TOPS  
-2" APRON AT 30" HIGH TOPS  
-REMOVABLE BACK PANEL SET  
-BACK 22" DEEP REFER TO DETAIL:



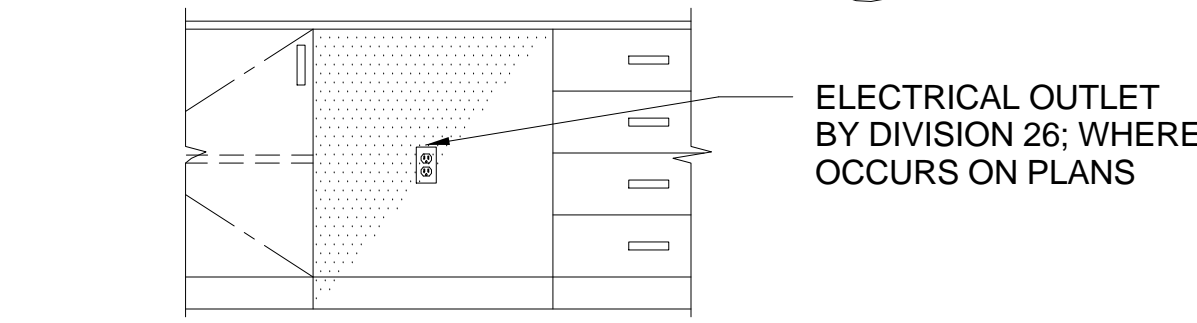
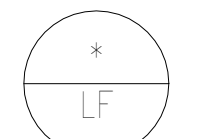
**KOA**  
KNEE OPENING AT ADA SINK  
-4" APRON  
-REMOVABLE PANEL TO CONCEAL PIPING - REFER TO DETAIL:



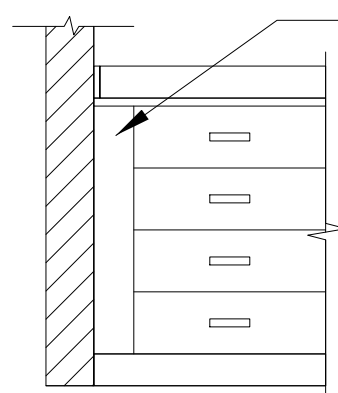
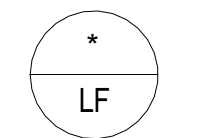
**KOD**  
KNEE OPENING W/DRAWER  
• DRAWER WIDTH TO BE A MINIMUM OF 24" WIDE  
• KNEE OPENINGS LARGER THAN 36" REQUIRES TWO DRAWER UNITS



**OPEN**  
• NO BACK PANEL, OPEN TO WALL.  
• ADJACENT CABINETS TO HAVE END FILLER PANELS TO WALLS  
• NO APRON  
• OUTLETS (WHERE NOTED ON LF FLOOR PLANS) MOUNTED AT WALL UNDER DIVISION 26,  
• SERVICES (WHERE NOTED ON LF FLOOR PLANS) MOUNTED AT WALL UNDER DIVISION 22



**KOE**  
KNEE OPENING FOR EQUIPMENT  
-NO APRON  
-ELECTRICAL OUTLET MOUNTED ON REAR PANEL BY DIV.26  
-CUTOUT BY DIV. 12  
-REMOVABLE BACK PANEL SET  
-BACK 24" DEEP REFER TO DETAIL:



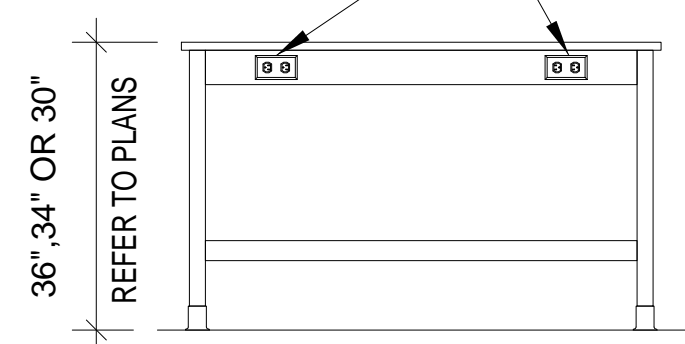
**FP**  
FILLER PANEL

PROVIDE FLUSH PANEL TO ALIGN WITH DOOR AND DRAWER FRONTS - TYPICAL AT ALL SIMILAR CONDITIONS

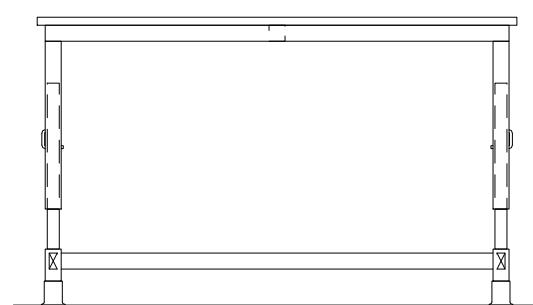
**NOTE:**  
AT LOCATIONS WHERE KNEE OPENINGS WIDTHS ARE NOT GIVEN ON PLANS, FIELD VERIFY WALL TO WALL DIMENSIONS.

**KNEE OPENINGS (WOOD - U.O.N.)**

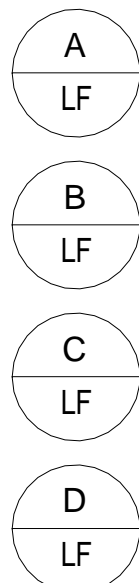
ELECTRICAL OUTLETS WHERE OCCURS ON PLANS



**MT**  
MOVABLE TABLE  
-MTxx: MOVABLE TABLE  
-MTxxC: MOVABLE TABLE w/ LOCKING CASTERS  
-MTxxD: MOVABLE TABLE w/ DRAWER  
-MTxxCD: MOVABLE TABLE w/ LOCKING CASTERS & DRAWER



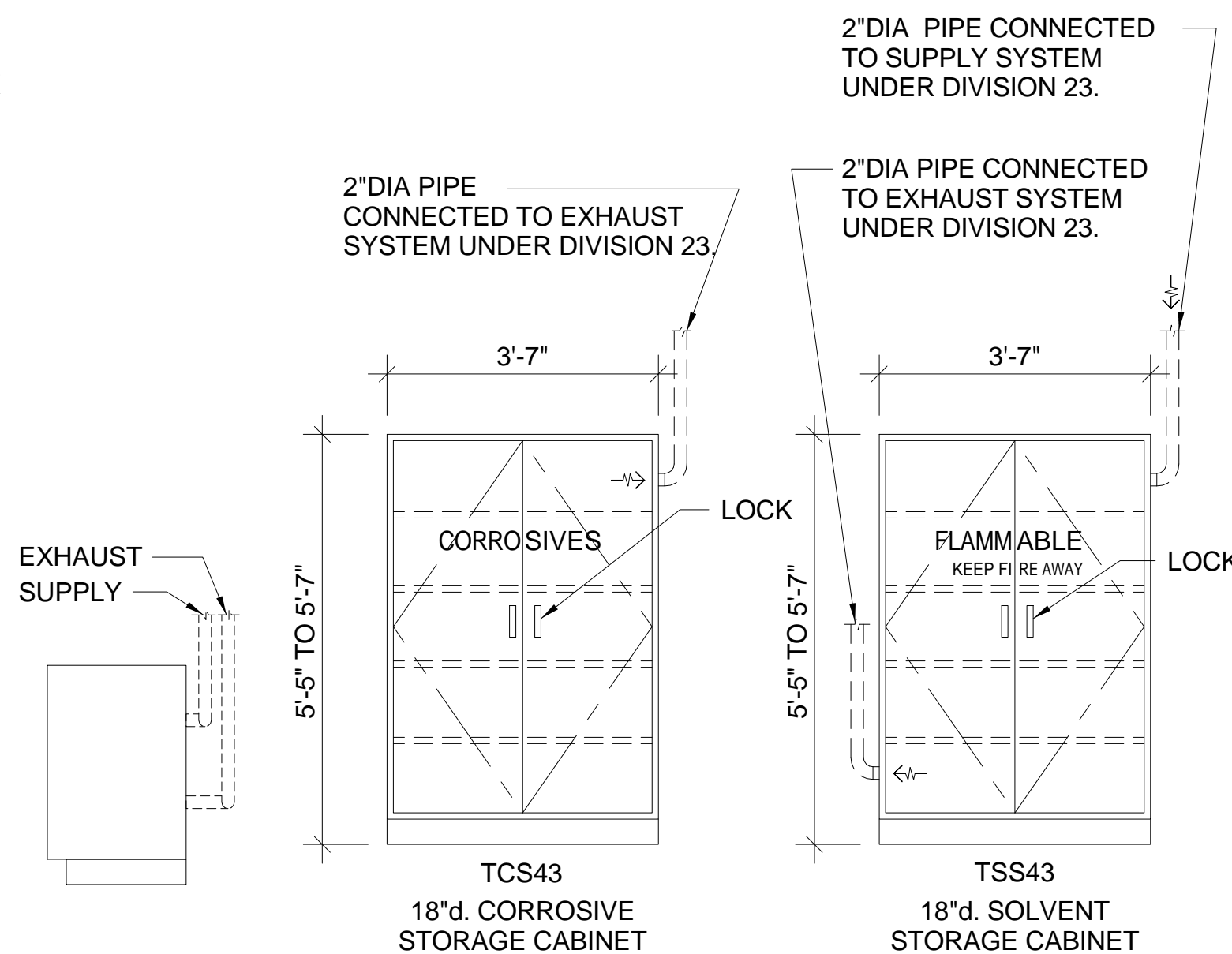
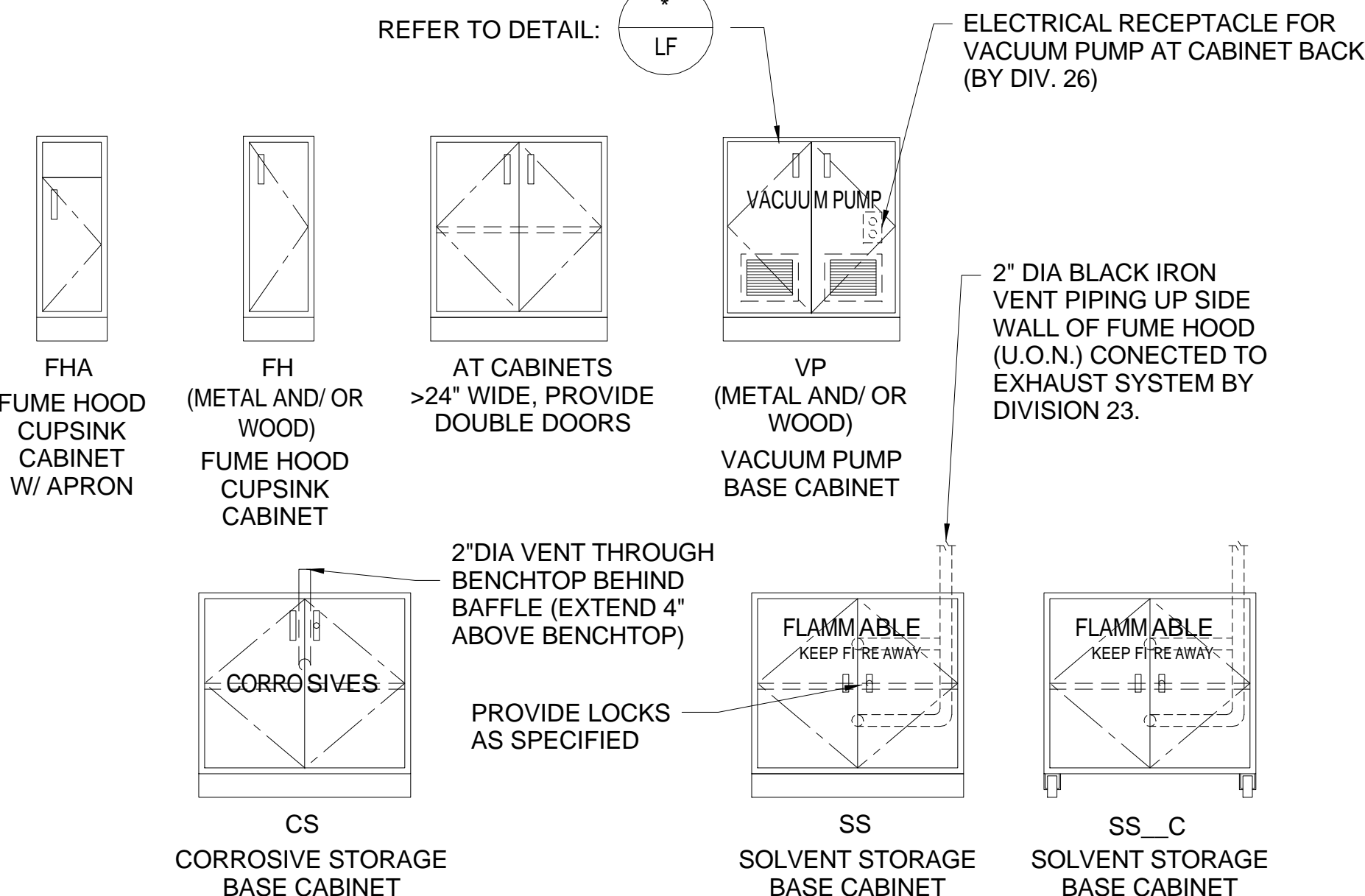
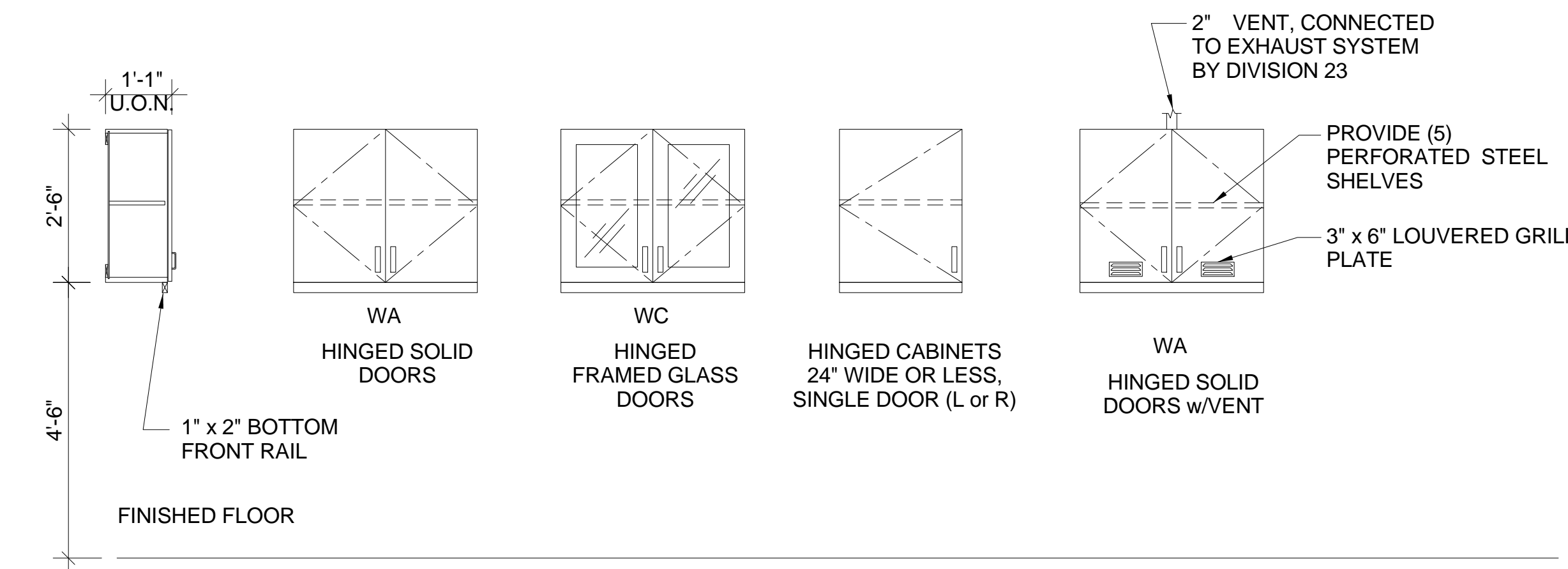
**MTxxA**  
MOVABLE TABLE w/  
ADJUSTABLE HEIGHT LEGS



**NOTE:**  
REFER TO FLOOR PLANS FOR MOVABLE TABLE:  
-HEIGHTS  
-TYPES &  
-ADA DESIGNATION

**MOVABLE TABLES (WOOD - U.O.N.)**

**WALL CABINETS (WOOD - U.O.N.)**



**SPECIAL CABINETS (METAL - U.O.N.)**

CONFIRM VENTING REQUIRED AT FLAMMABLE STORAGE CABINETS.  REQUIRED  NOT REQUIRED DATE CONFIRMED: \_\_\_\_\_

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Drawn: \_\_\_\_\_  
Checked: \_\_\_\_\_  
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Date: \_\_\_\_\_

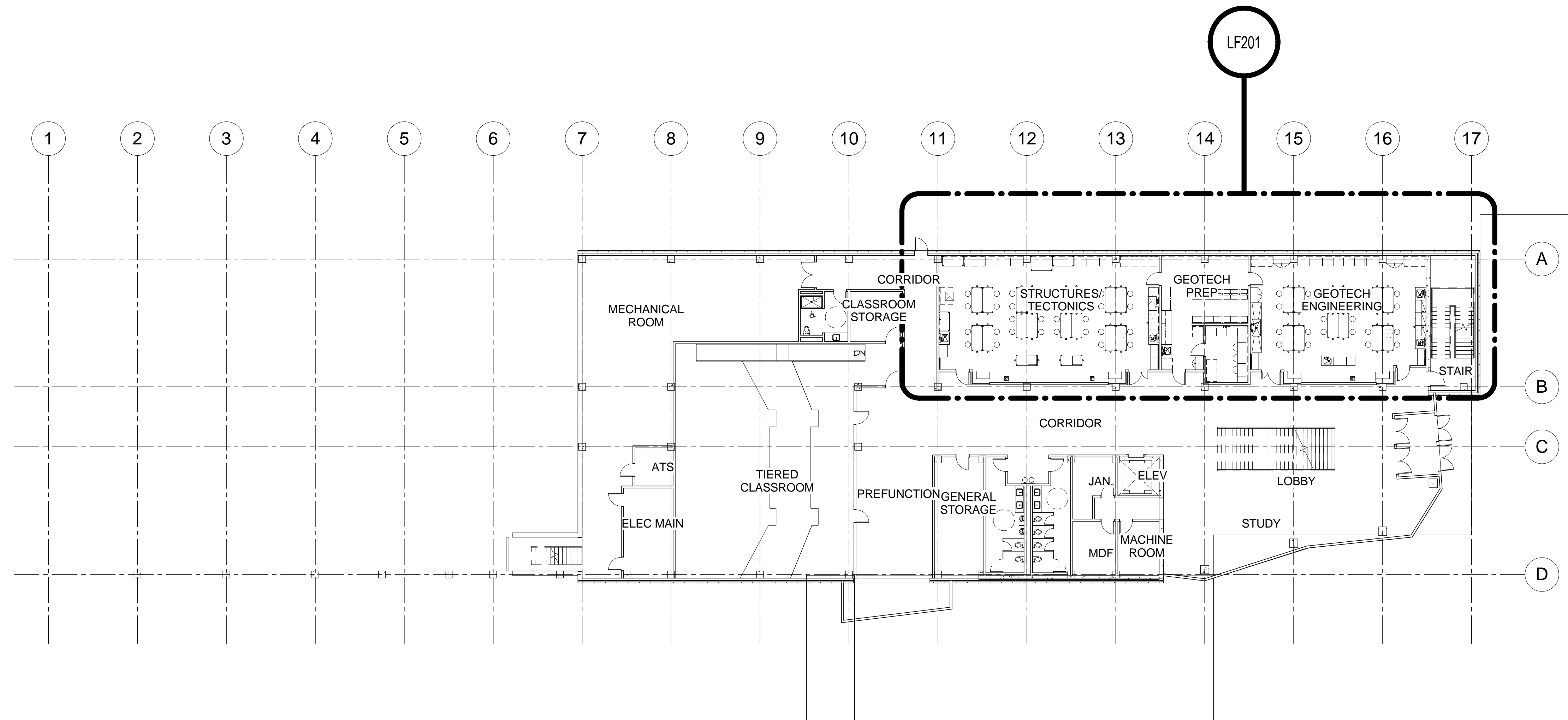
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Checker: \_\_\_\_\_  
Project Number: \_\_\_\_\_  
05/27/2016

Sheet Title

LAB FURNISHINGS CASEWORK MENU

Sheet Number

**LF107**



① Ground Level Composite 1/16"  
1/16" = 1'-0"

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Schematic Design  
Set

Drawn	Author
Checked	Checker
LMN Proj No	Project Number
Date	05/27/2016

Sheet  
Title

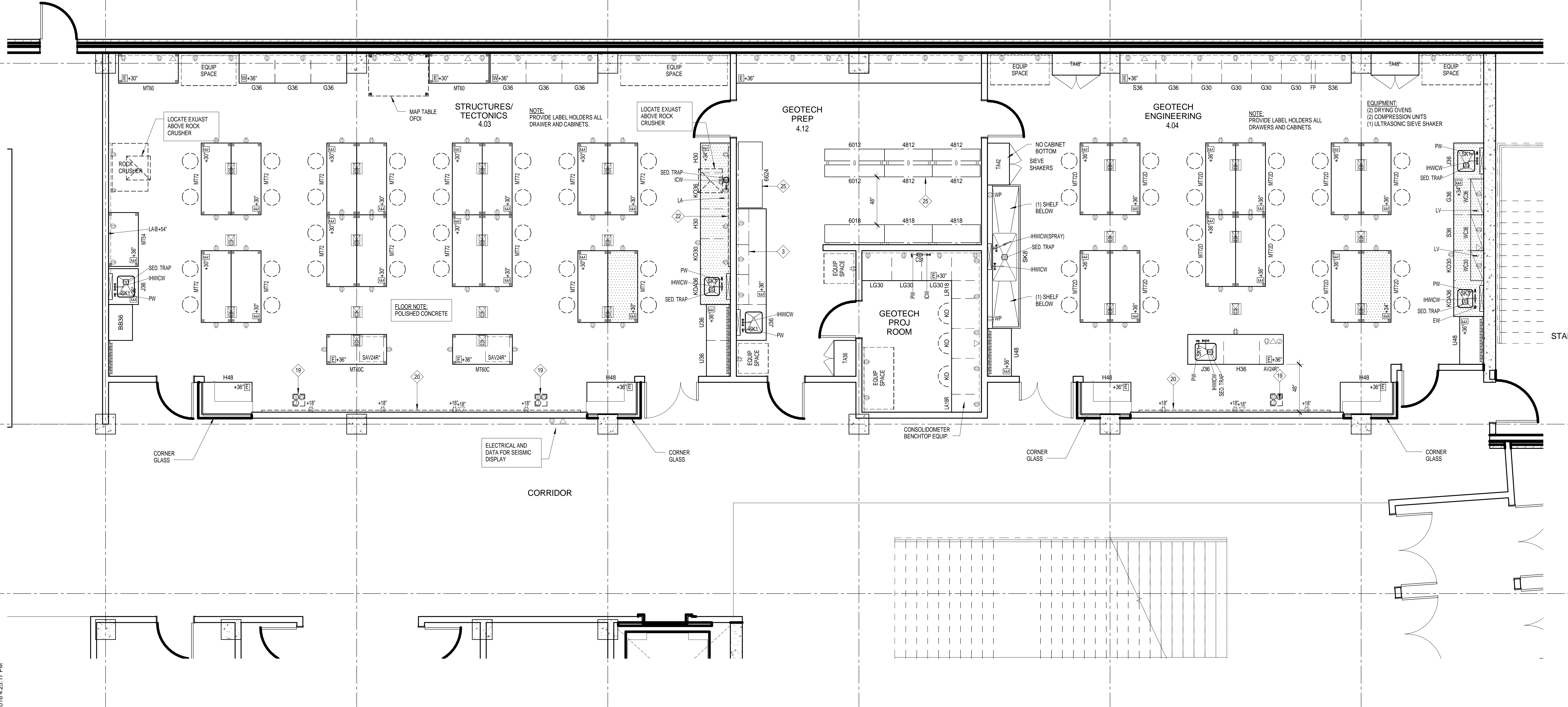
LAB  
FURNISHINGS -  
COMPOSITE  
GROUND FLOOR

Sheet  
Number

**LF200**

11 12 13 14 15 16

A  
B  
C



1 Ground Level Partial 1  
1/4" = 1'-0"

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Revisions	No.	Date	By	Description

Sheet Title

Sheet Number

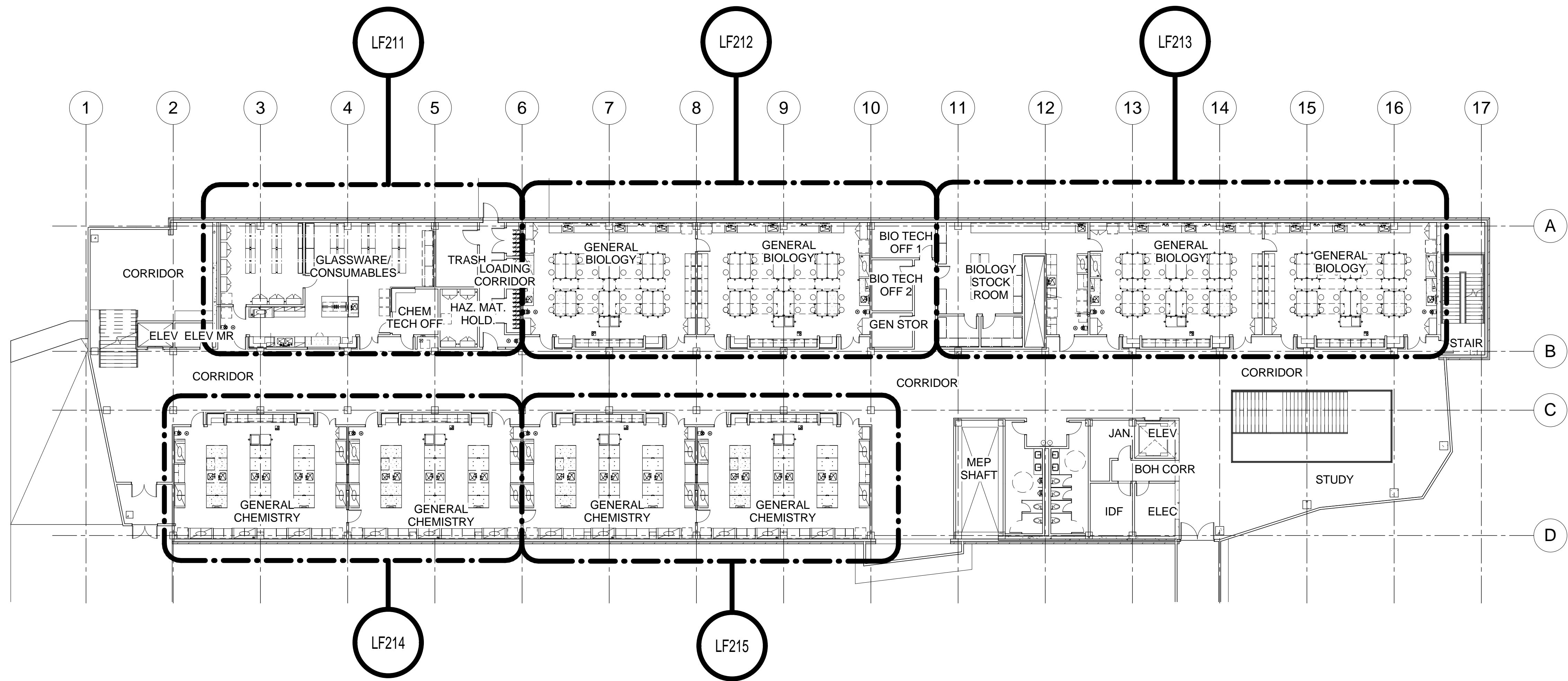
Schematic Design Set

Drawn: LMN Proj No  
Checked: LMN Proj No  
Date: 05/27/2016

Author: LMN Proj No  
Checked: LMN Proj No  
Project Number: LMN Proj No

LAB FURNISHINGS - PARTIAL GROUND FLOOR

# LF201



1 Level 1 Composite 1/16"  
1/16" = 1'-0"

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Revisions			
No.	Date	By	Description

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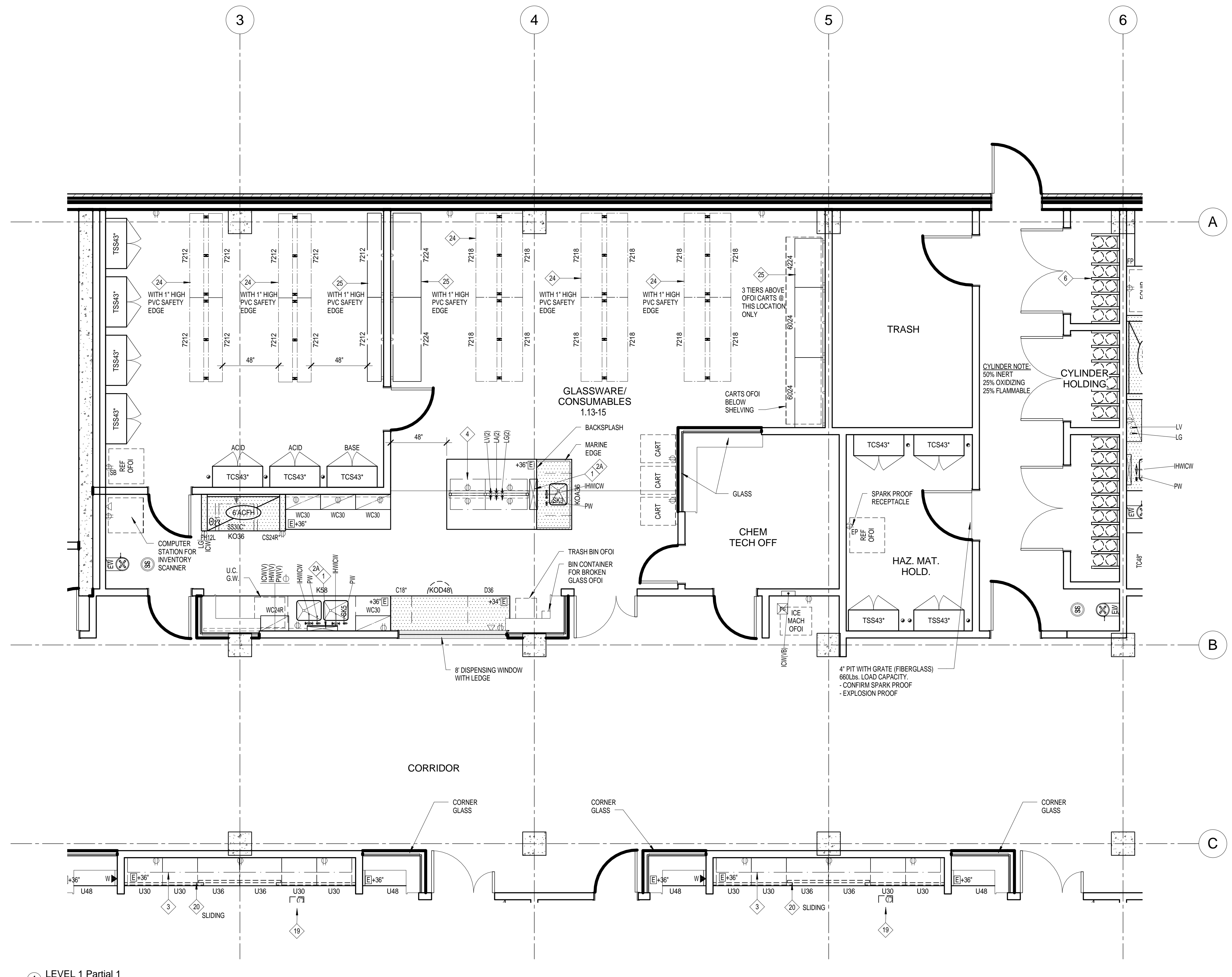
Sheet Number

Schematic Design Set

Drawn Author  
Checked Checker  
LMN Proj No Project Number  
Date 05/27/2016

LAB FURNISHINGS - COMPOSITE LEVEL 1

**LF210**



1 LEVEL 1 Partial 1  
1/4" = 1'-0"

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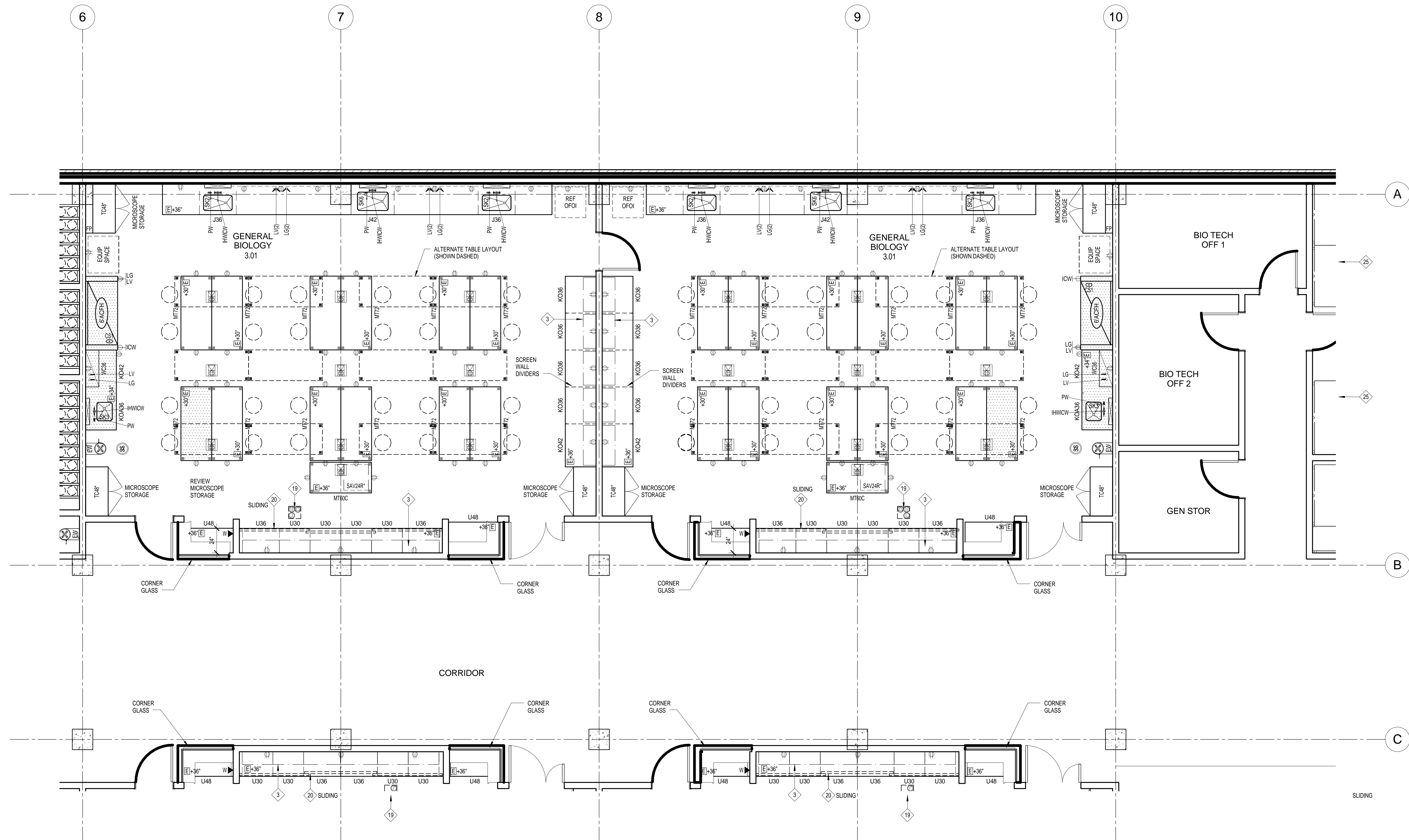
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Set

Drawn  
Checked  
LMN Proj No  
Date

Author  
Checker  
Project Number  
05/27/2016

LAB  
FURNISHINGS -  
PARTIAL LEVEL 1

**LF211**



1 LEVEL 1 Partial 2  
1/4" = 1'-0"

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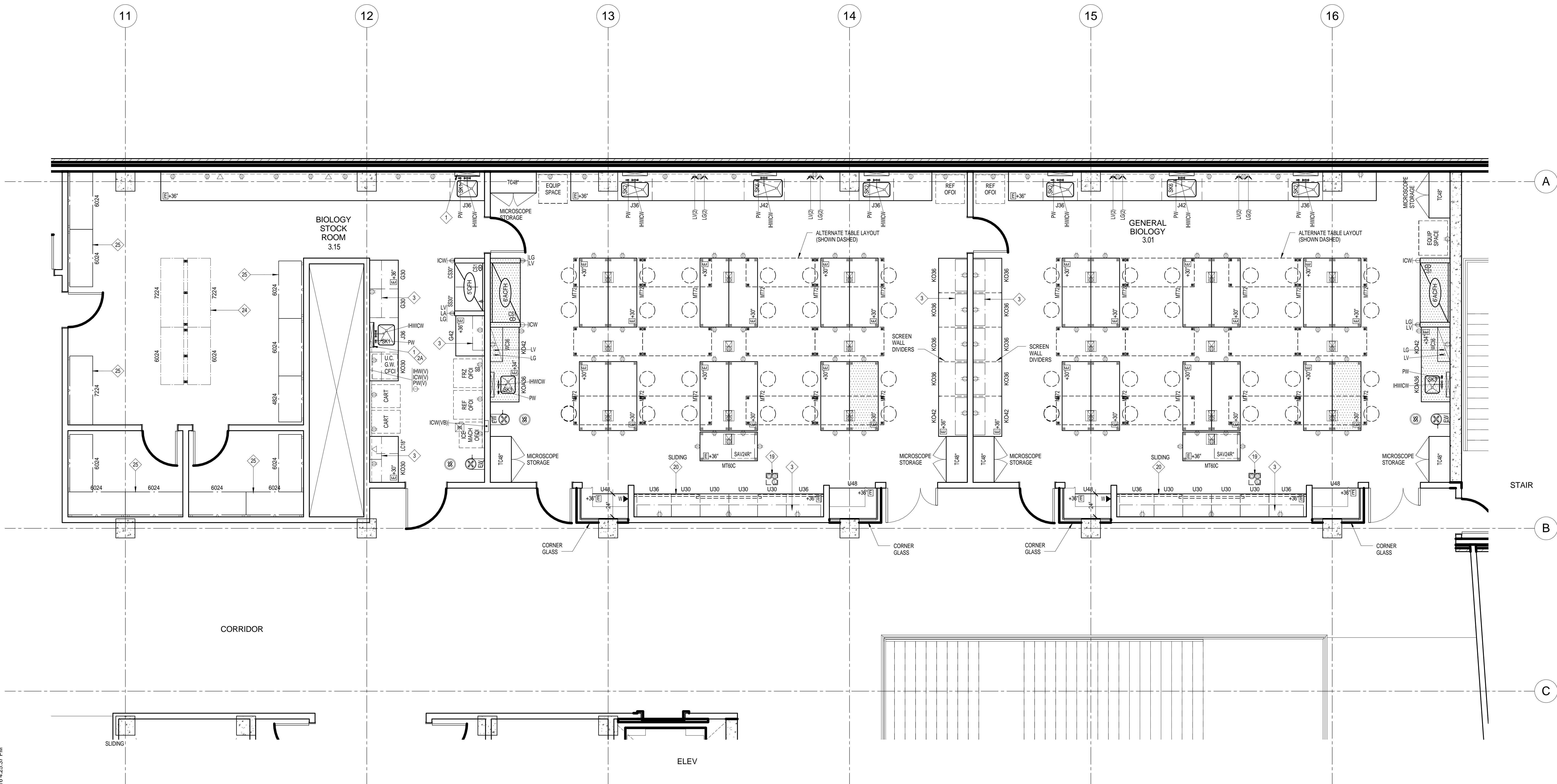
Sheet Number

### Schematic Design Set

Drawn J. Fazio  
Checked R. Cate  
LMN Proj No Project Number  
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### LAB FURNISHINGS - PARTIAL LEVEL 1

# LF212



LEVEL 1 Partial 3  
1/4" = 1'-0"

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Schematic Design Set

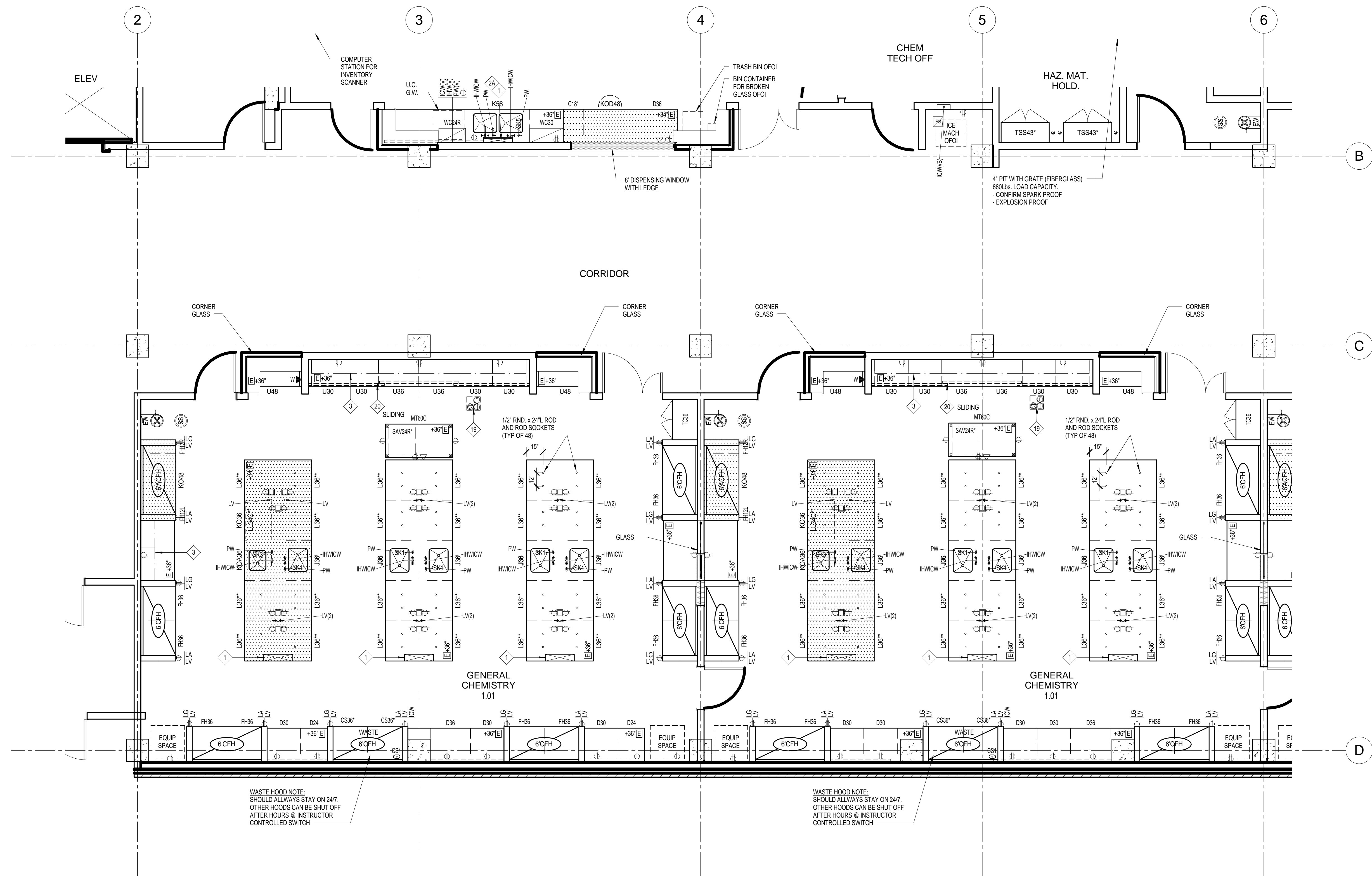
Drawn  
Checked  
LMN Proj No  
Date

Author  
Checker  
Project Number  
05/27/2016

LAB FURNISHINGS - PARTIAL LEVEL 1

**LF213**





1 LEVEL 1 Partial 4  
1/4" = 1'-0"

WASTE HOOD NOTE:  
SHOULD ALWAYS STAY ON 247.  
OTHER HOODS CAN BE SHUT OFF  
AFTER HOURS @ INSTRUCTOR  
CONTROLLED SWITCH

WASTE HOOD NOTE:  
SHOULD ALWAYS STAY ON 247.  
OTHER HOODS CAN BE SHUT OFF  
AFTER HOURS @ INSTRUCTOR  
CONTROLLED SWITCH

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Schematic Design  
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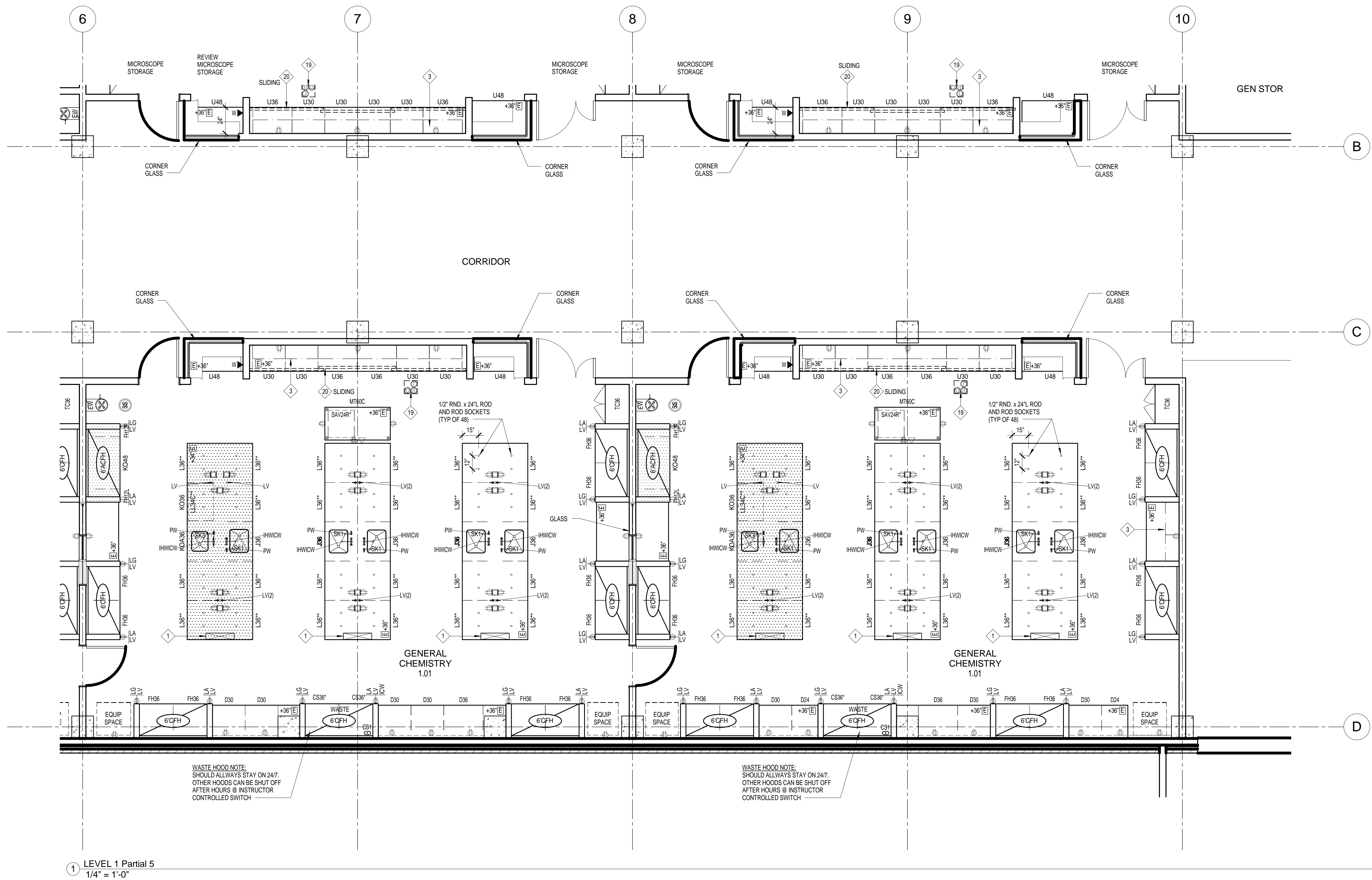
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Date

Author  
Checker  
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Sheet Title  
Sheet Number

LAB  
FURNISHINGS -  
PARTIAL LEVEL 1

**LF214**



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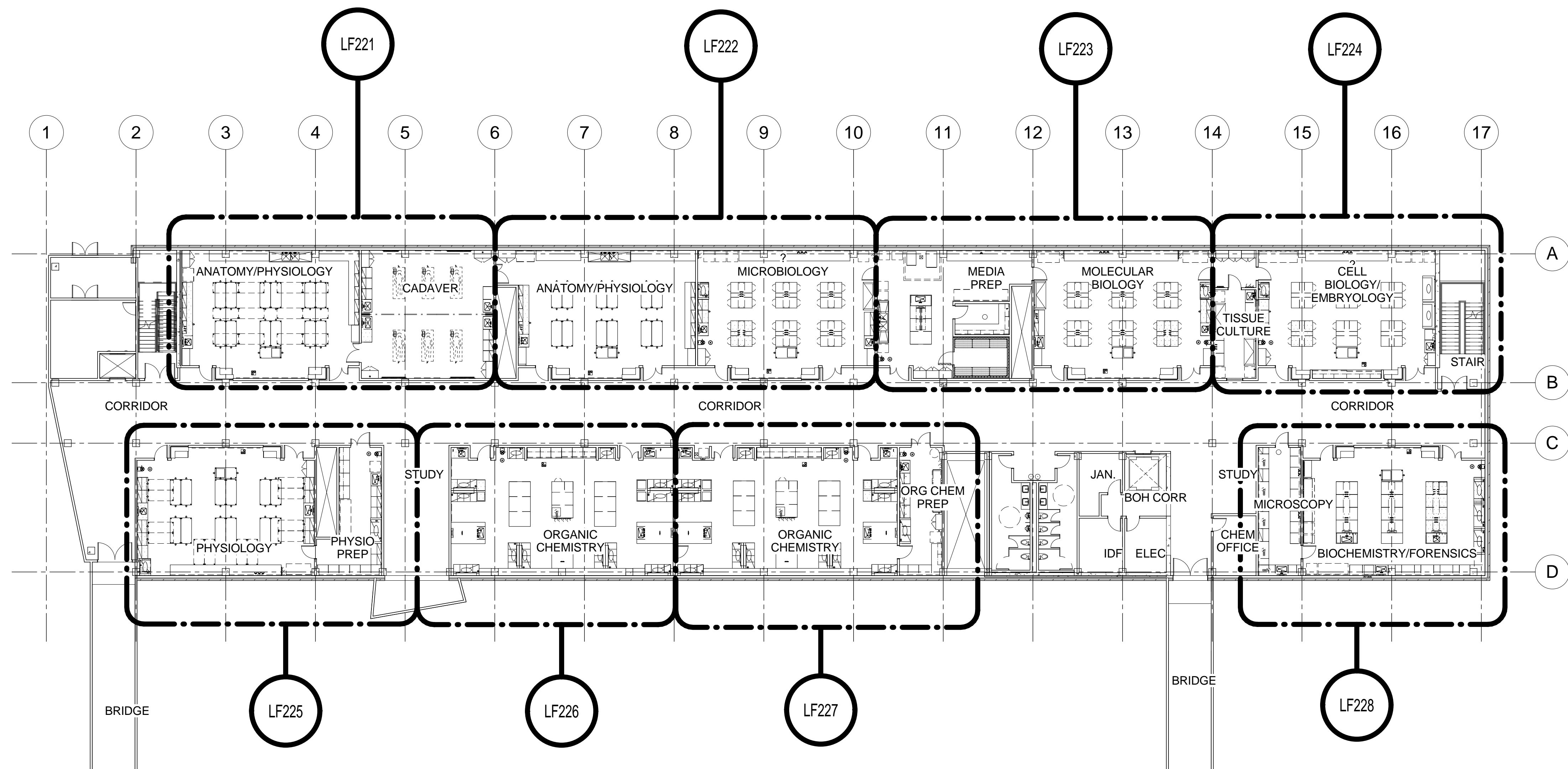
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Drawn  
Checked  
LMN Proj No  
Date

Author  
Checker  
Project Number  
05/27/2016

LAB  
FURNISHINGS -  
PARTIAL LEVEL 1

**LF215**



① Level 2 Composite 1/16"  
1/16" = 1'-0"

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Schematic Design  
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Revisions  
No. Date By Description

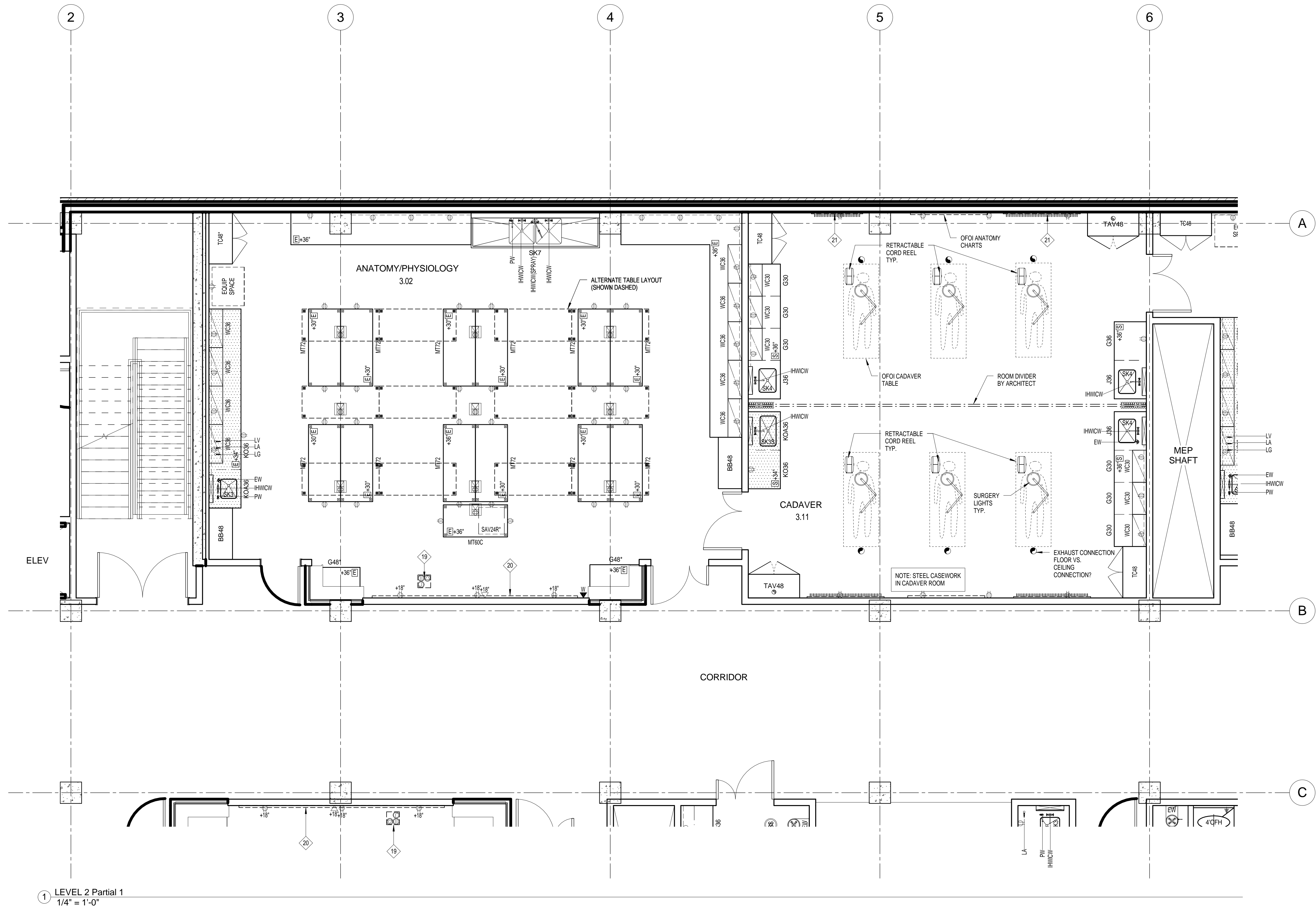
Sheet  
Title

Sheet  
Number

Drawn Author  
Checked Checker  
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Date 05/27/2016

LAB  
FURNISHINGS -  
COMPOSITE  
LEVEL 2

**LF220**



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No. Date By Description

Schematic Design  
Set

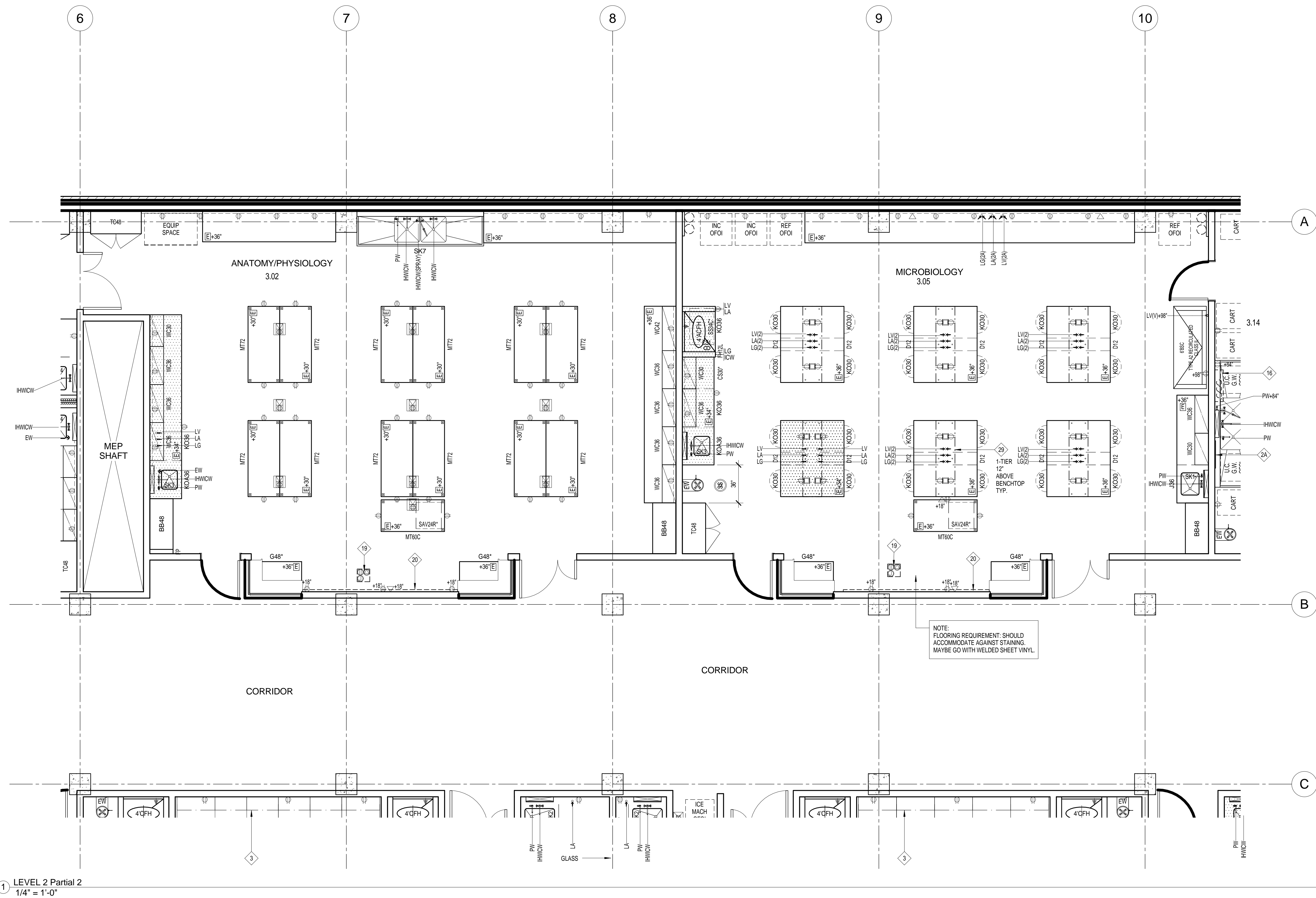
Sheet  
Title

Sheet  
Number

Drawn Author  
Checked Checker  
LMN Proj No Project Number  
Date 05/27/2016

LAB  
FURNISHINGS -  
PARTIAL LEVEL 2

**LF221**



1 LEVEL 2 Partial 2  
1/4" = 1'-0"

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Sheet Number

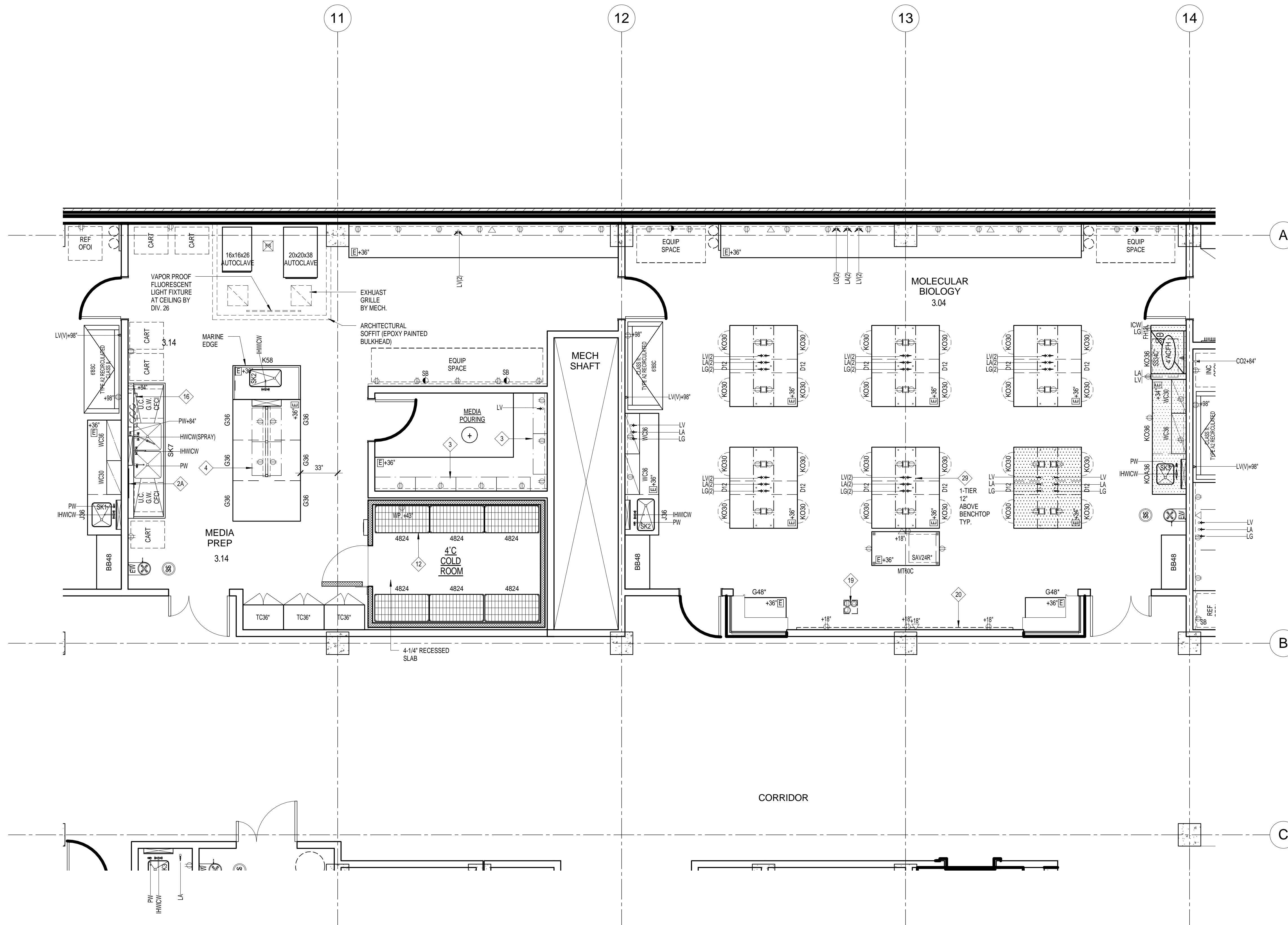
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Drawn  
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LMN Proj No  
Date

Author  
Checker  
Project Number  
05/27/2016

LAB FURNISHINGS - PARTIAL LEVEL 2

# LF222



1 LEVEL 2 Partial 3  
1/4" = 1'-0"

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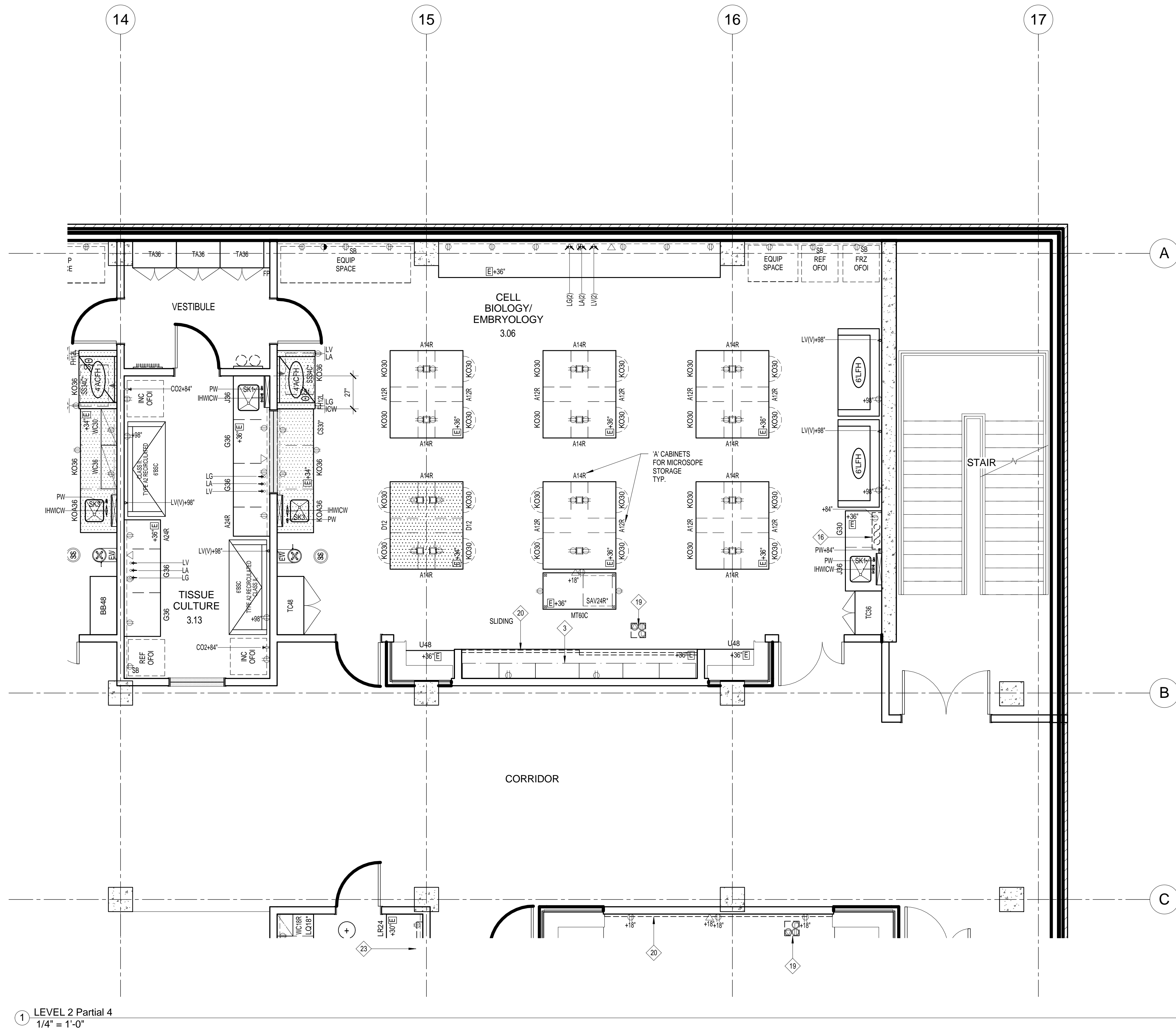
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Checked	Checker
LMN Proj No	Project Number
Date	05/27/2016

Sheet  
Title

LAB  
FURNISHINGS -  
PARTIAL LEVEL 2

Sheet  
Number

**LF223**



1 LEVEL 2 Partial 4  
1/4" = 1'-0"

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Set

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Date

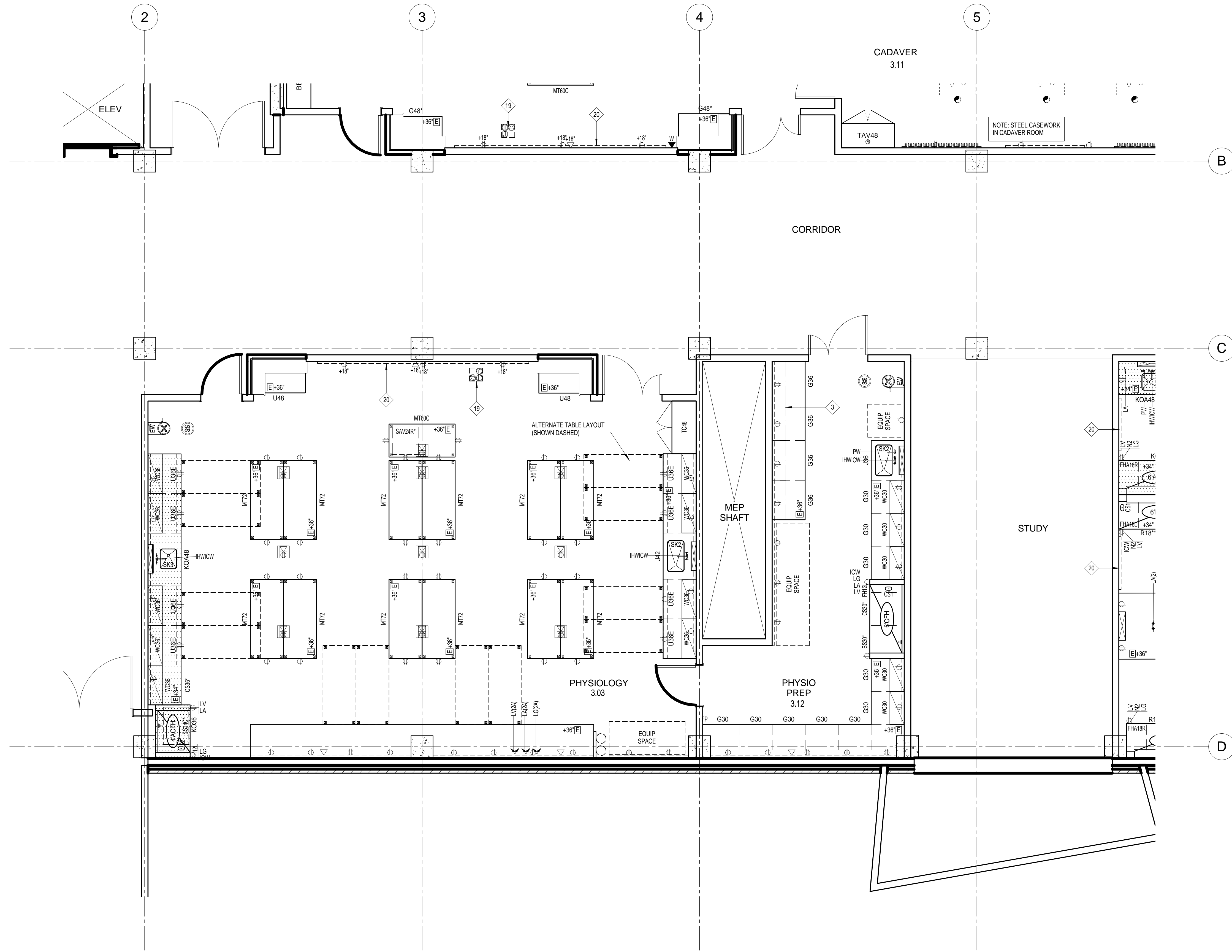
Author  
Checker  
Project Number  
05/27/2016

Sheet  
Title

LAB  
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PARTIAL LEVEL 2

Sheet  
Number

**LF224**



1 LEVEL 2 Partial 5  
1/4" = 1'-0"

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Schematic Design  
Set

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Date	05/27/2016

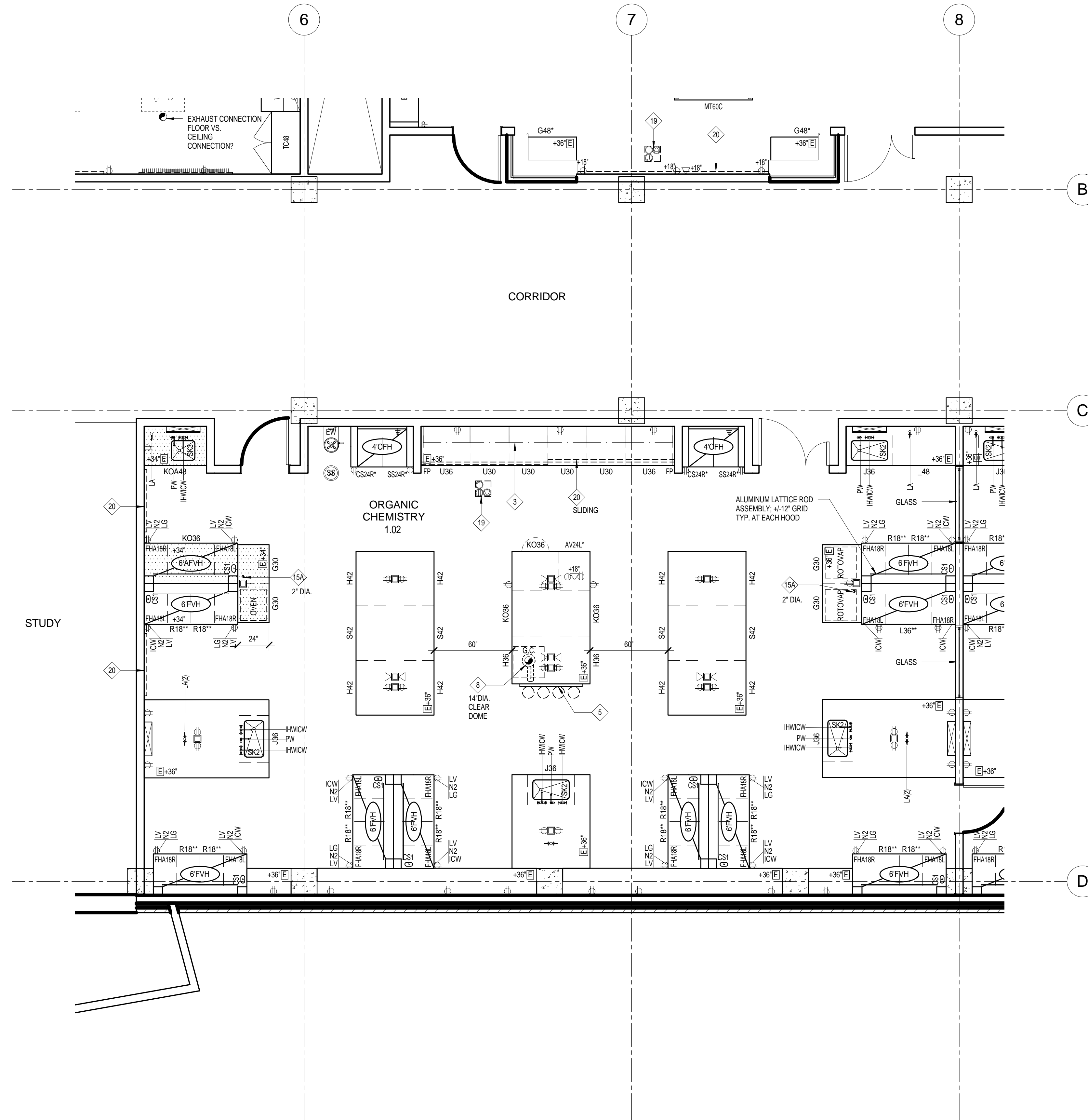
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LAB  
FURNISHINGS -  
PARTIAL LEVEL 2

Sheet Number

**LF225**





1 LEVEL 2 Partial 6  
1/4" = 1'-0"

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Schematic Design  
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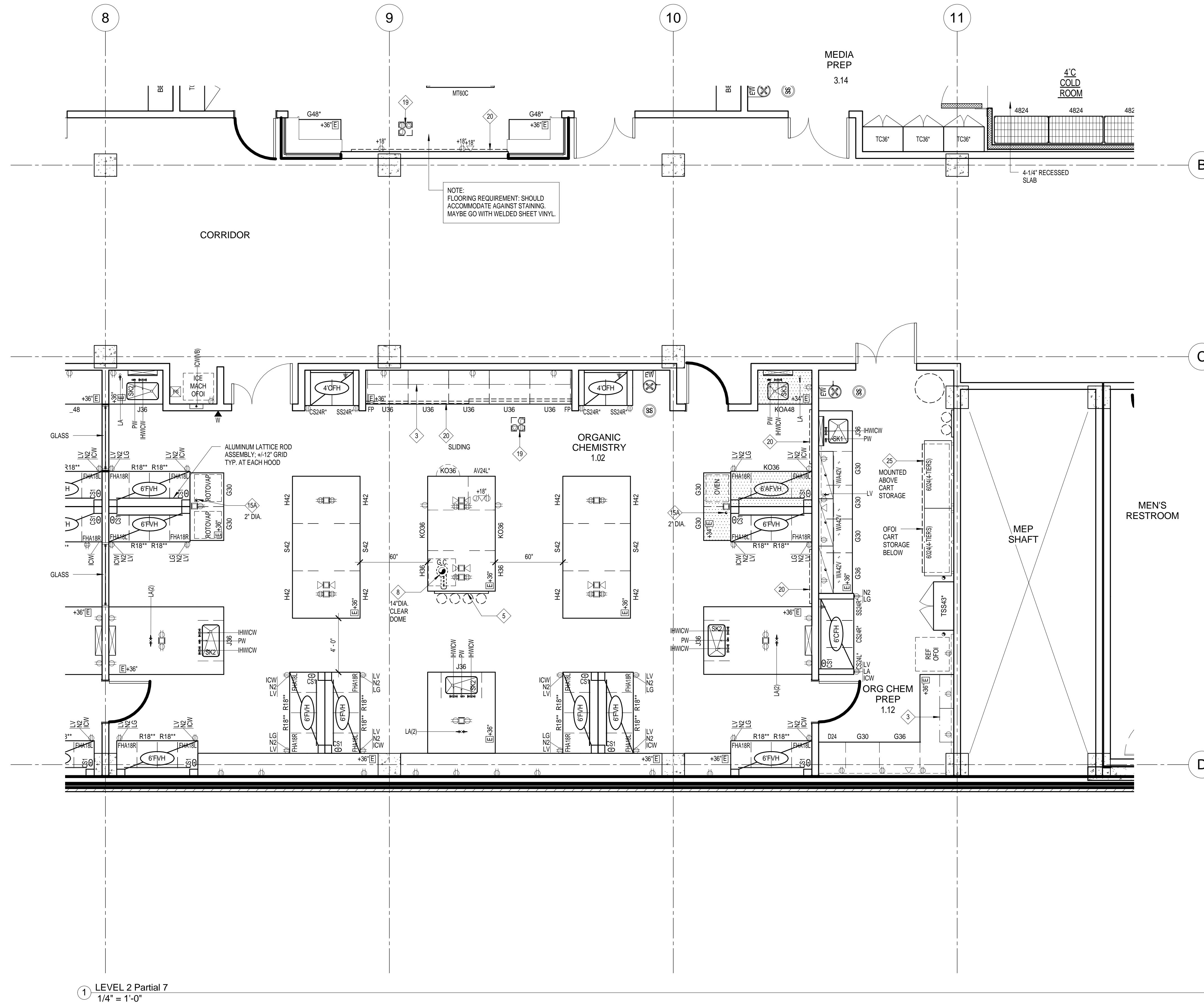
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Checked Checker  
LMN Proj No Project Number  
Date 05/27/2016

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Title

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Number

**LF226**



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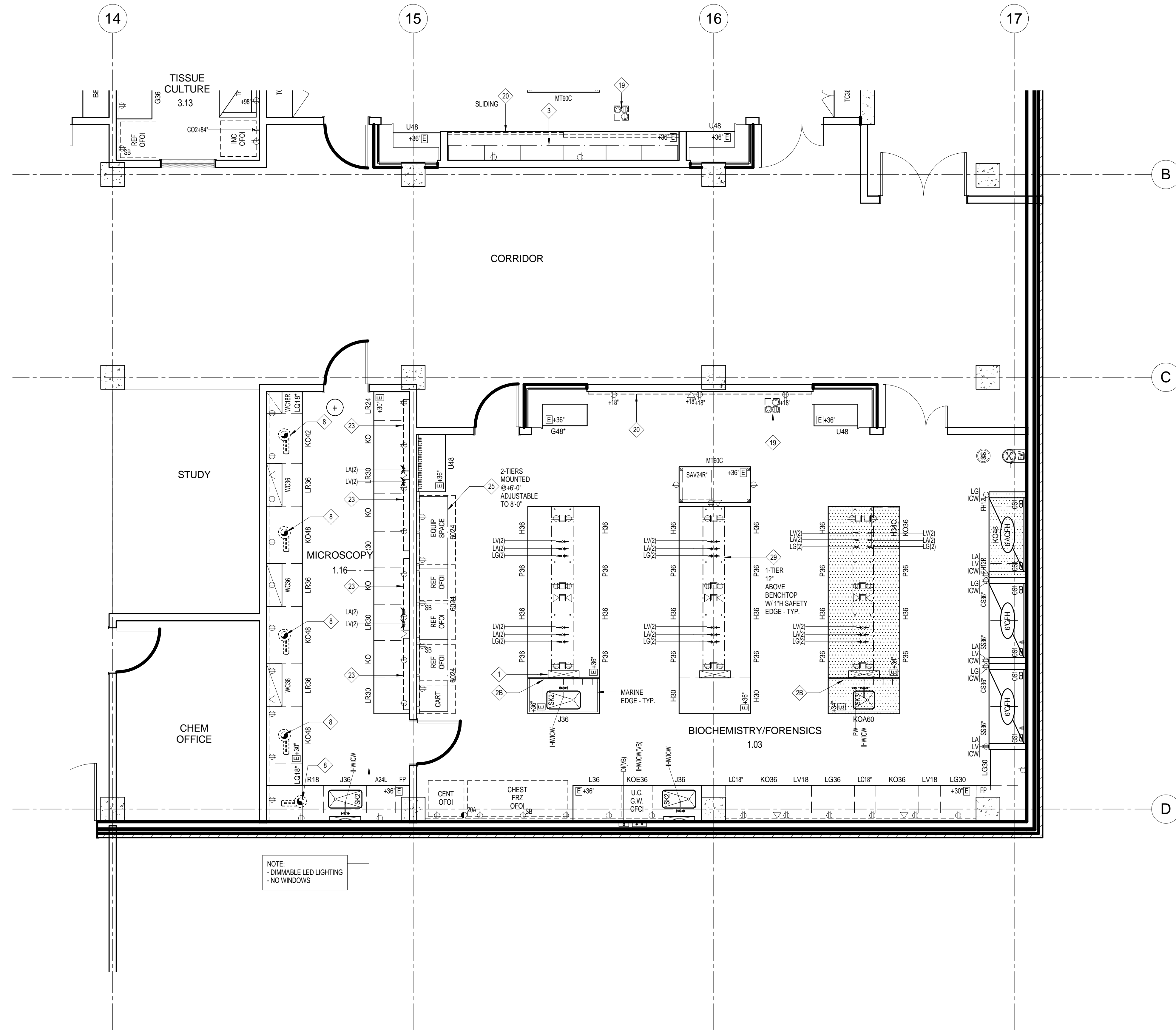
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Checked	Checker
LMN Proj No	Project Number
Date	05/27/2016

Sheet  
Title

LAB  
FURNISHINGS -  
PARTIAL LEVEL 2

Sheet  
Number

**LF227**



1 LEVEL 2 Partial 8  
1/4" = 1'-0"

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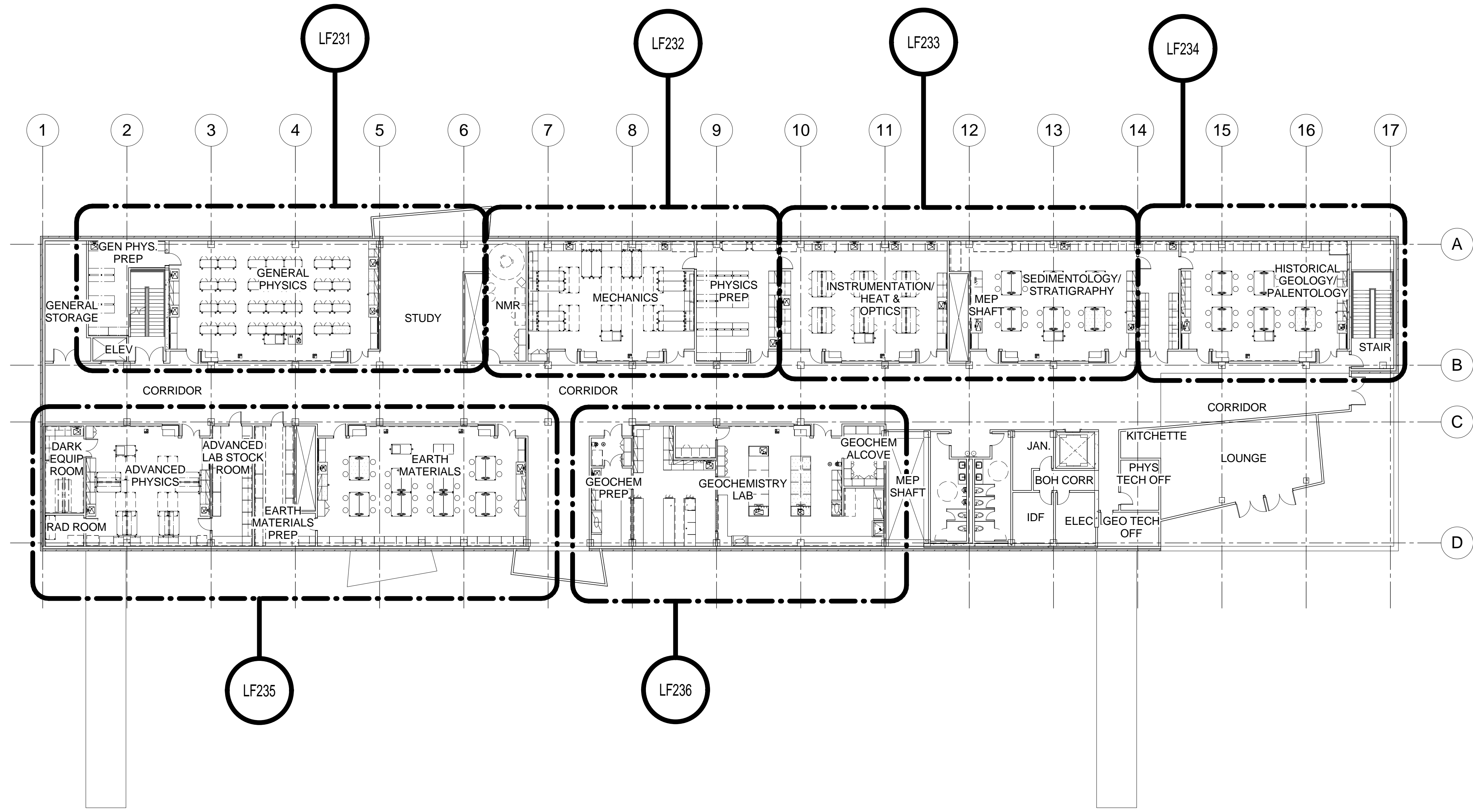
Drawn Author  
Checked Checker  
LMN Proj No Project Number  
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Sheet Title

LAB FURNISHINGS - PARTIAL LEVEL 2

Sheet Number

# LF228



① Level 3 Composite 1/16"  
1/16" = 1'-0"

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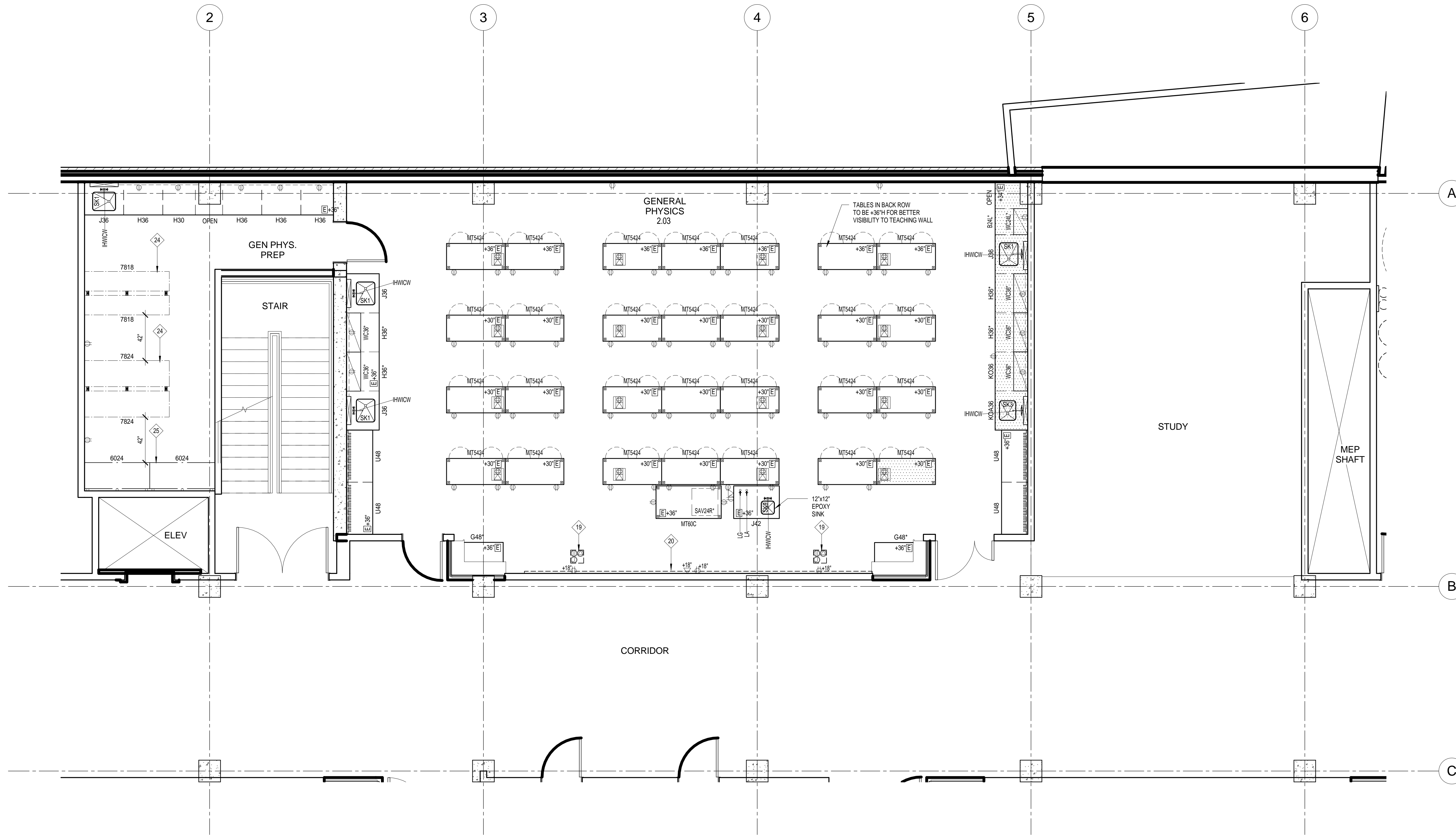
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LAB FURNISHINGS -  
COMPOSITE  
LEVEL 3

Sheet Number

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Checked Checker  
LMN Proj No Project Number  
Date 05/27/2016

**LF230**



① LEVEL 3 Partial 1  
1/4" = 1'-0"

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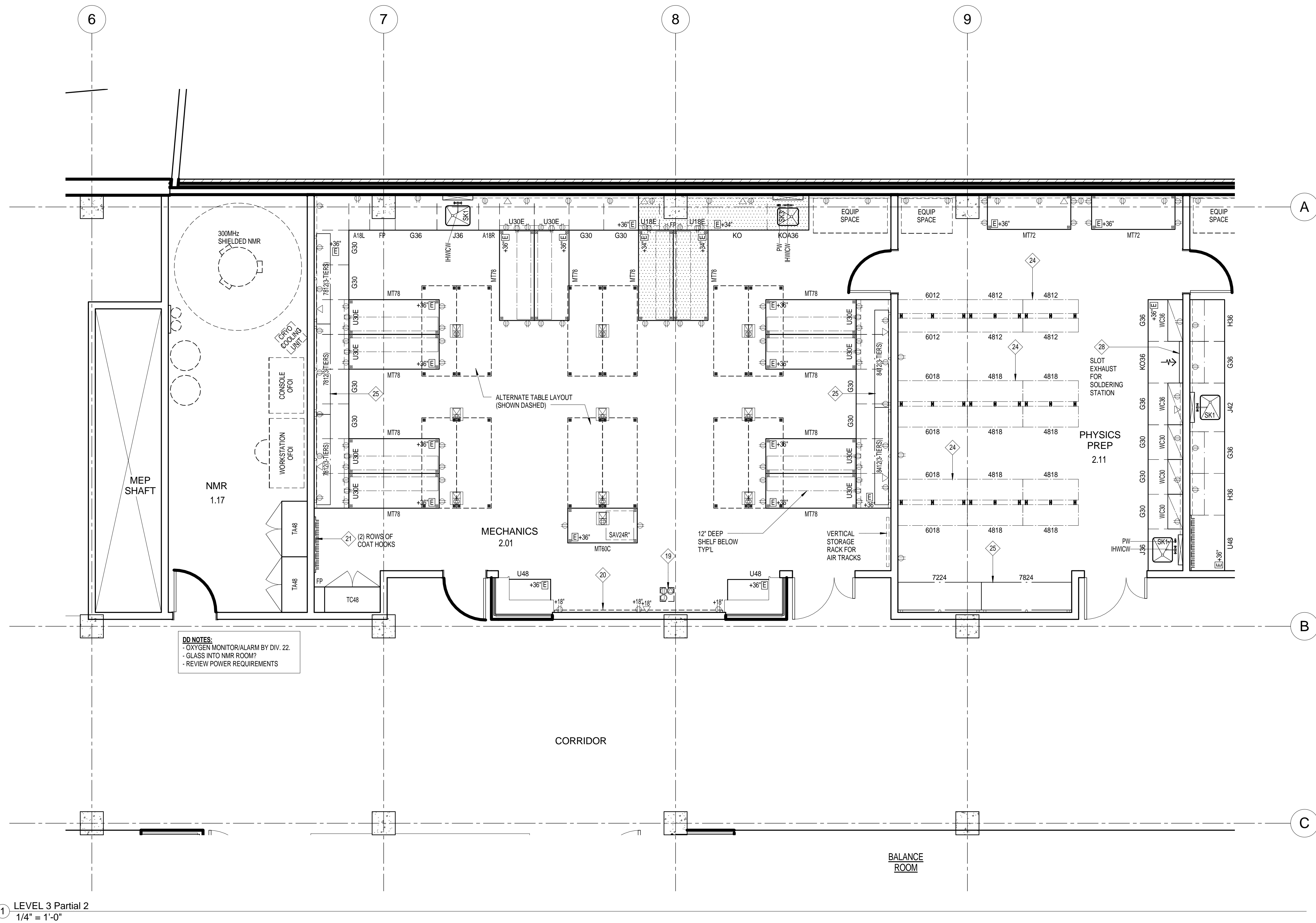
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Date

Author  
Checker  
Project Number  
05/27/2016

LAB  
FURNISHINGS -  
PARTIAL LEVEL 3

**LF231**



**DD NOTES:**  
 - OXYGEN MONITOR/ALARM BY DIV. 22  
 - GLASS INTO NMR ROOM?   
 - REVIEW POWER REQUIREMENTS

1 LEVEL 3 Partial 2  
 1/4" = 1'-0"

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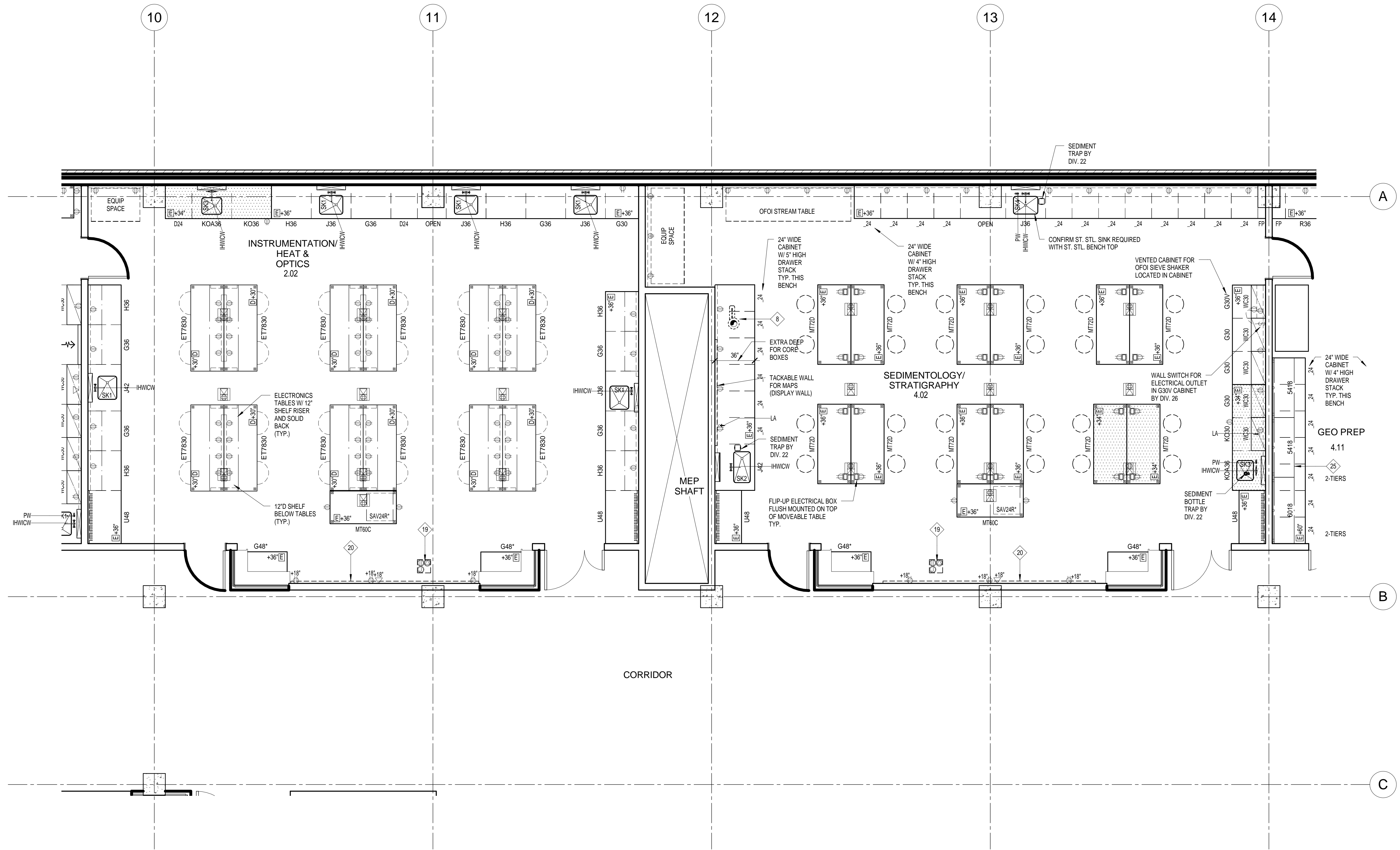
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 LMN Proj No  
 Date

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 PARTIAL LEVEL 3

**LF232**



1 LEVEL 3 Partial 3  
1/4" = 1'-0"

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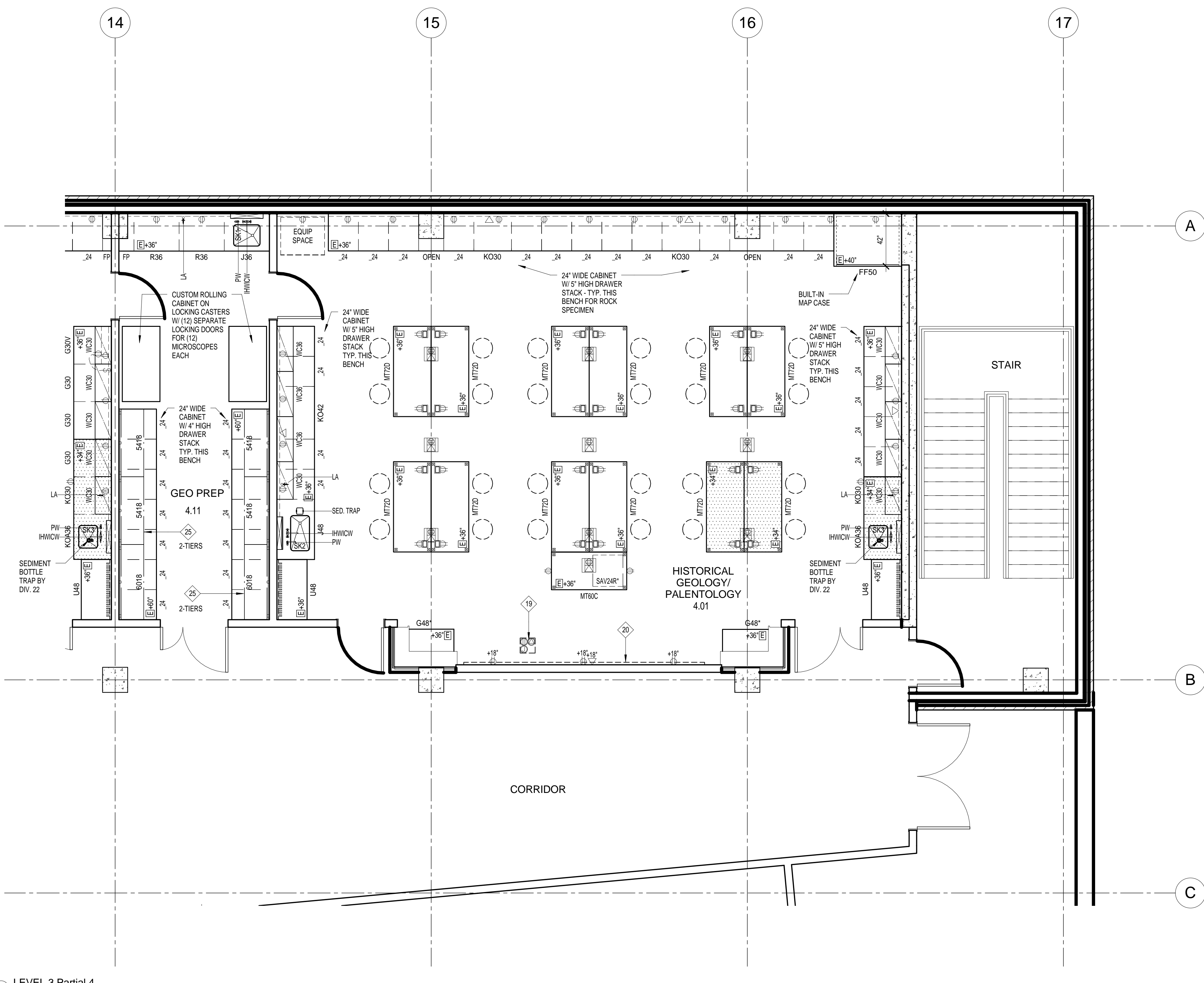
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LAB FURNISHINGS - PARTIAL LEVEL 3

Sheet Number

LF233



① LEVEL 3 Partial 4  
1/4" = 1'-0"

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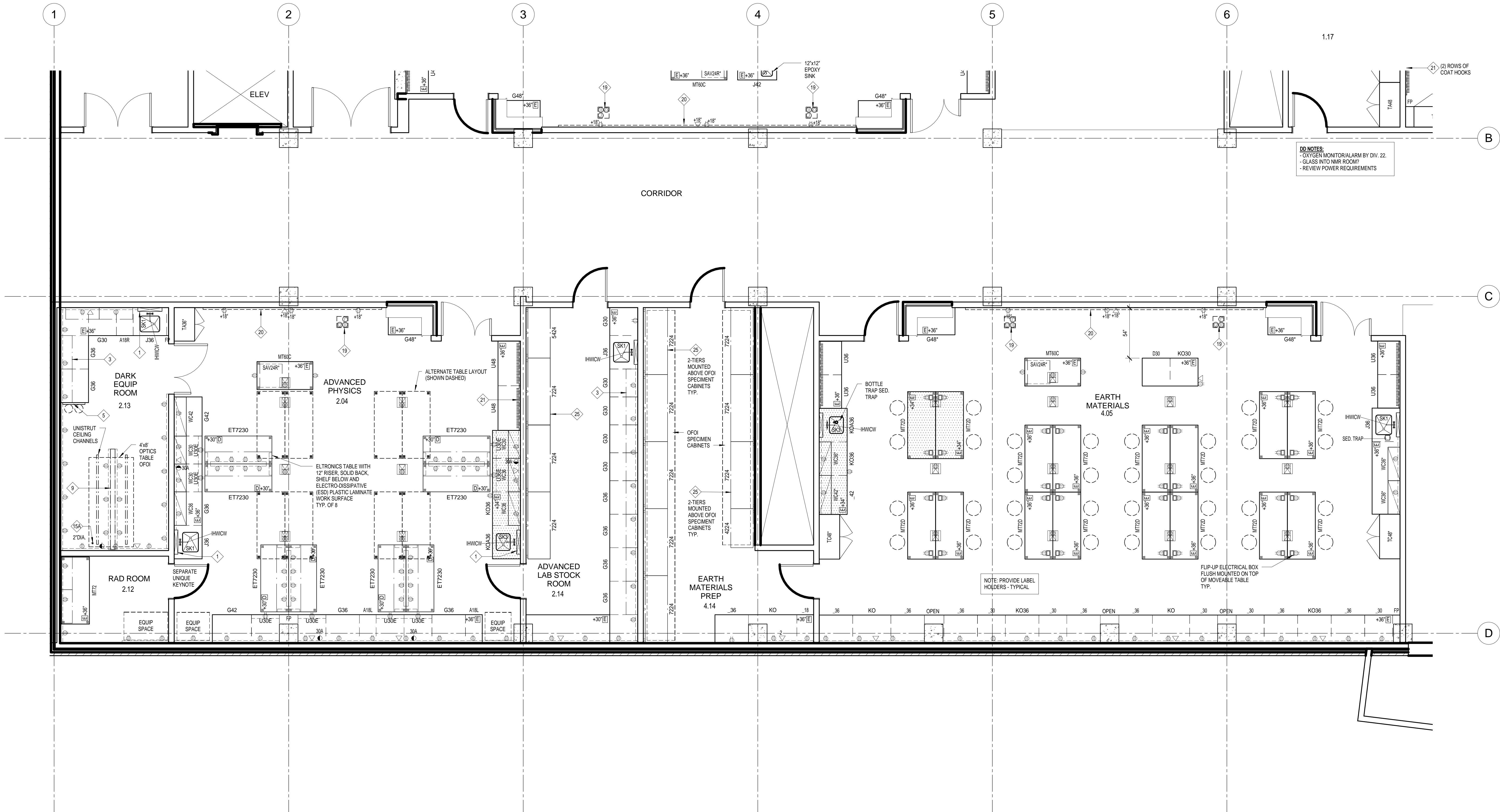
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Date: 05/27/2016

Author: LMN Proj No  
Checked: LMN Proj No  
Project Number: LMN Proj No

LAB FURNISHINGS - PARTIAL LEVEL 3

# LF234





DD NOTES:  
 - OXYGEN MONITOR/ALARM BY DIV. 22.  
 - GLASS INTO NMR ROOM?  
 - REVIEW POWER REQUIREMENTS

NOTE: PROVIDE LABEL HOLDERS - TYPICAL

FLIP-UP ELECTRICAL BOX FLUSH MOUNTED ON TOP OF MOVEABLE TABLE TYP.

1 LEVEL 3 Partial 5  
 1/4" = 1'-0"

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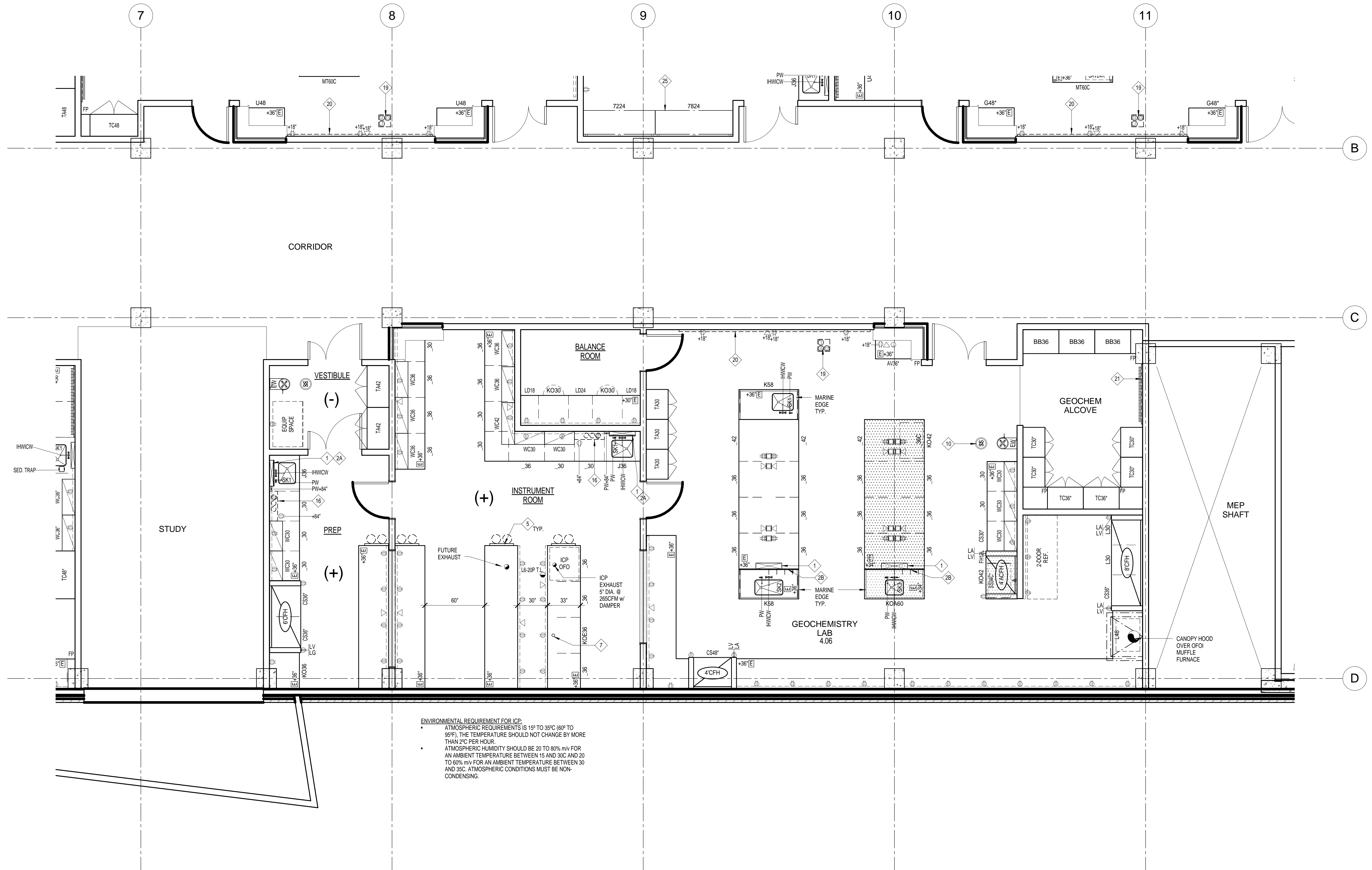
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 05/27/2016

LAB FURNISHINGS - PARTIAL LEVEL 3

**LF235**



ENVIRONMENTAL REQUIREMENT FOR ICP:  
 • ATMOSPHERIC REQUIREMENTS IS 15° TO 35°C (60° TO 95°F). THE TEMPERATURE SHOULD NOT CHANGE BY MORE THAN 2°C PER HOUR.  
 • ATMOSPHERIC HUMIDITY SHOULD BE 20 TO 80% RH FOR AN AMBIENT TEMPERATURE BETWEEN 15 AND 30C AND 20 TO 60% RH FOR AN AMBIENT TEMPERATURE BETWEEN 30 AND 35C. ATMOSPHERIC CONDITIONS MUST BE NON-CONDENSING.

1 LEVEL 3 Partial 6  
 1/4" = 1'-0"

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Drawn Author  
 Checked Checker  
 LMN Proj No Project Number  
 Date 05/27/2016

LAB  
 FURNISHINGS -  
 PARTIAL LEVEL 3

**LF236**