

# **Construction Types and Building Sizes**

Codes and Materials

DES 383.01

Fall 2022

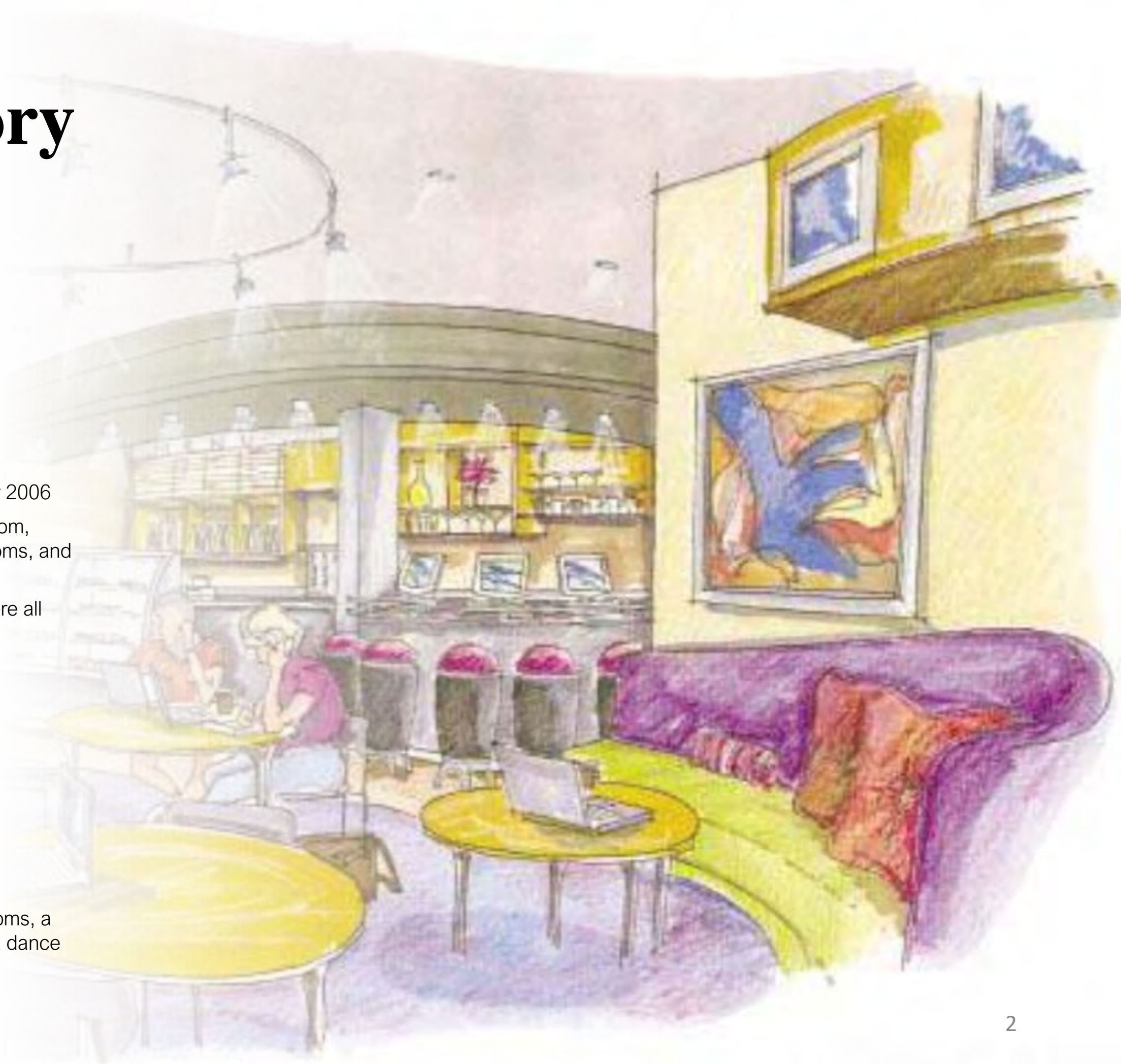
# Building History and Overview

## History:

- Montgomery Student Center was built in 1960
- Renovations took 18 months and \$6.5 million
  - Money was raised in 2003
  - Drawings were made in 2004
  - Construction was completed in February 2006
  - The renovations added a café, fitness room, several new meeting and conference rooms, and chapel
  - The bookstore, mail room, and suites were all updated and enlarged

## General Architectural Notes:

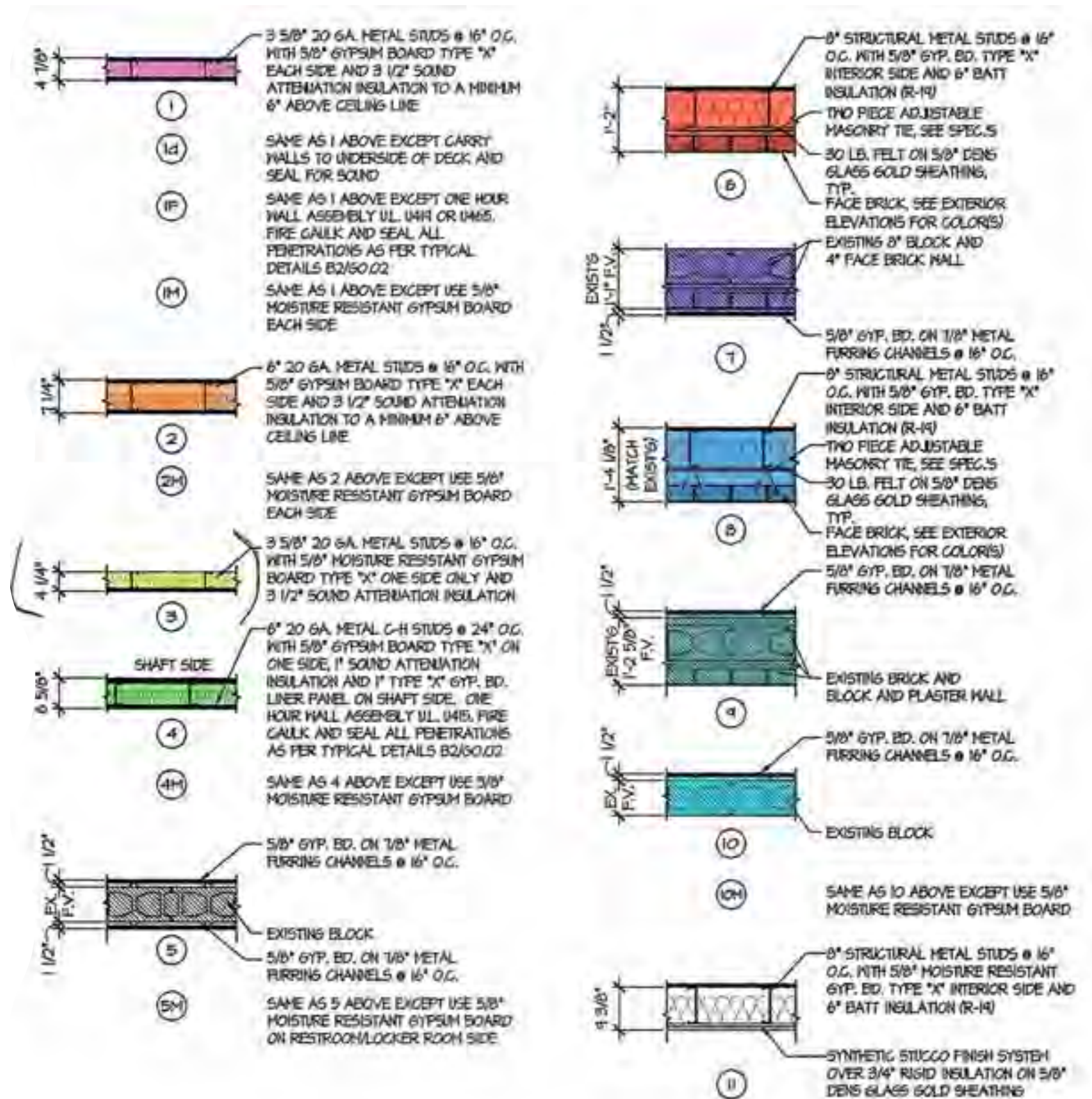
- 23,059 ft<sup>2</sup> Lower Level
- 33,339 ft<sup>2</sup> Upper Level
- Occupancy Classification
  - Mixed Use, Nonseparated
  - A-2, A-3, A-4, B, M
  - It houses several offices and meeting rooms, a restaurant, a bookstore, a pool, a gym, a dance studio, and a chapel.





# Wall Types According to Construction Method

- Several different wall types for different sections of the building
- **Most have no hourly fire rating**
- **Assembly classification:**
  - Mixed Occupancies and accessory Occupancies
- **Allowable Height:**
  - 75 feet tall
  - 3 Stories Maximum Above Grade

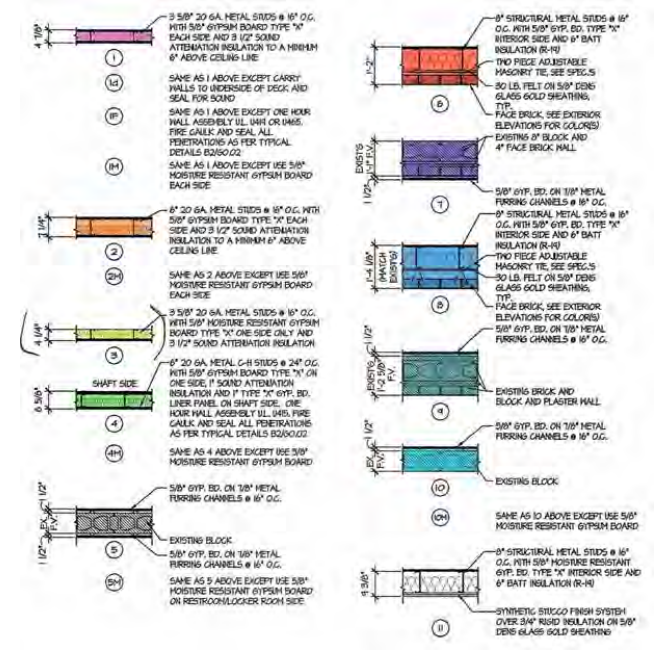


See the next slide for floorplan

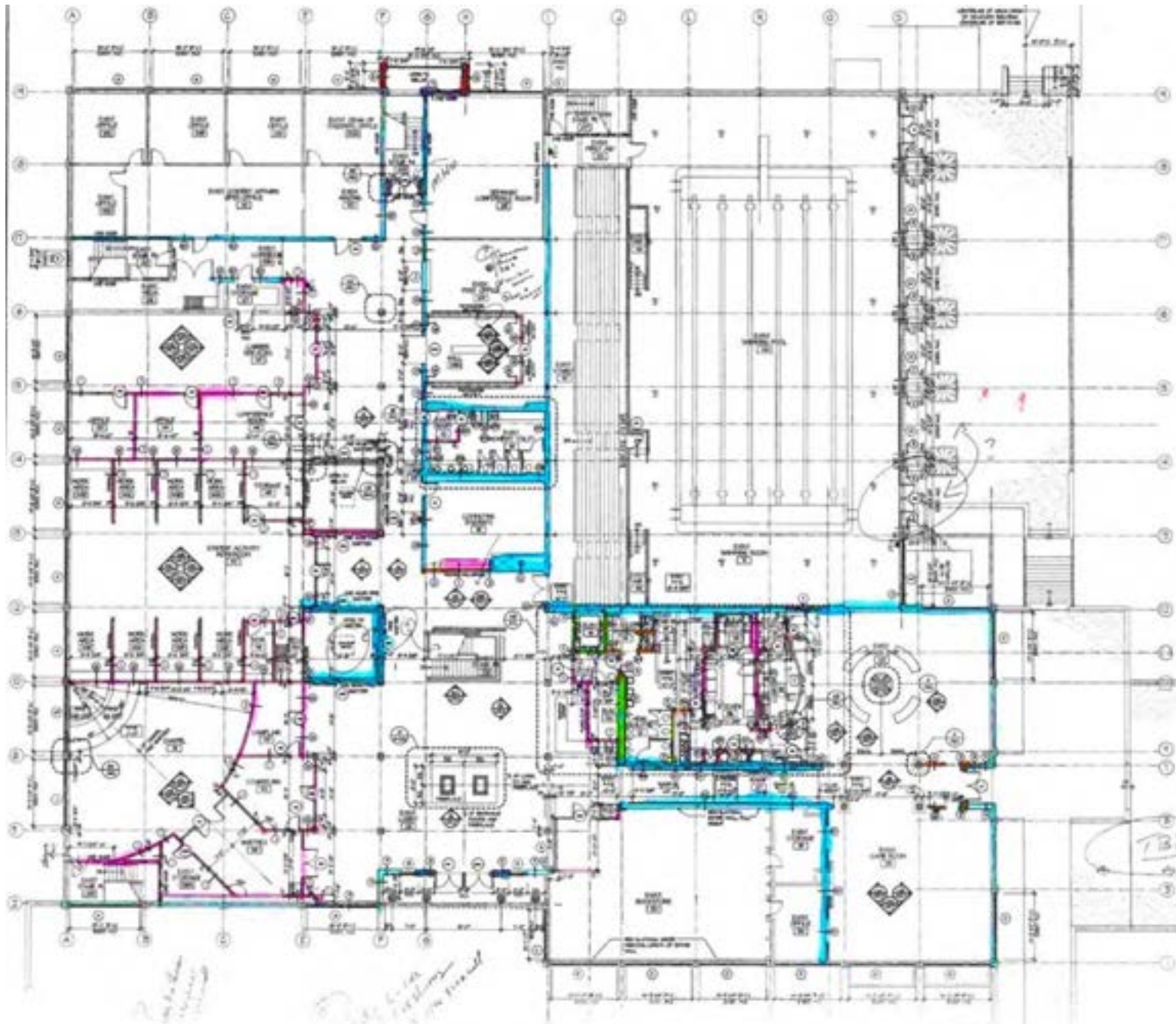


# Wall Types According to Construction Method

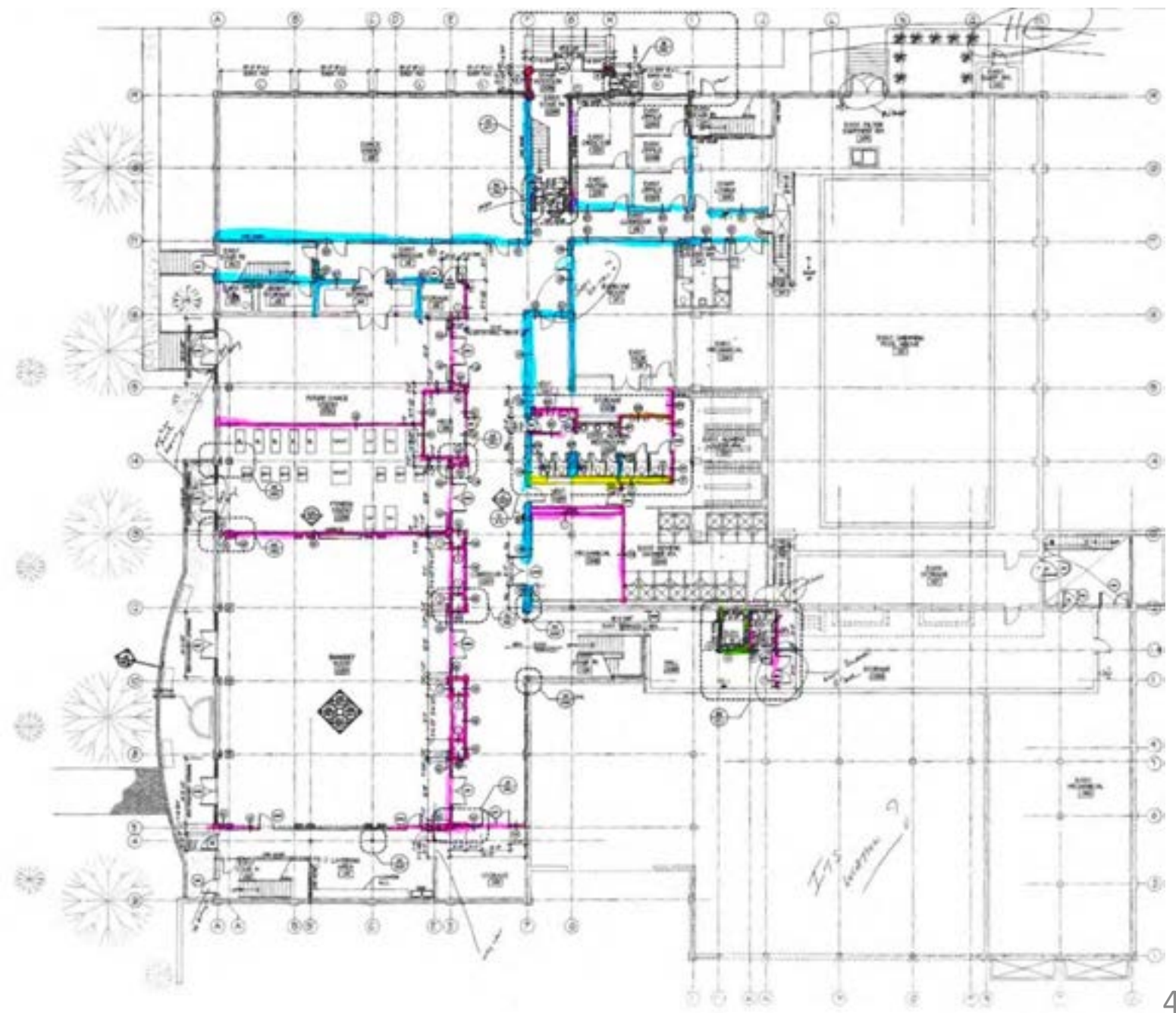
All walls that were labeled are color-coded according to the key



First Floor Plan



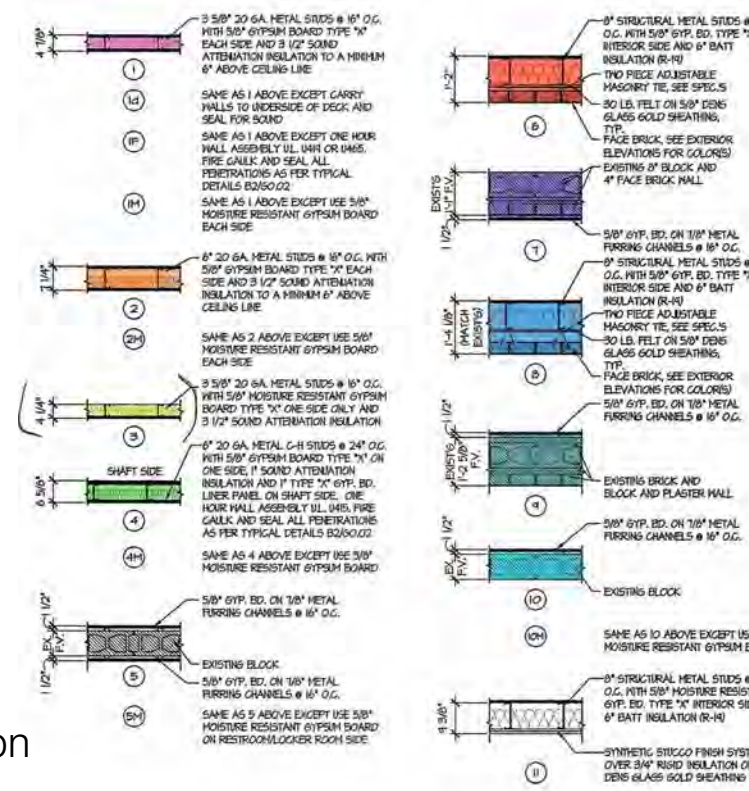
Ground Floor Plan





# Materials and Building Type

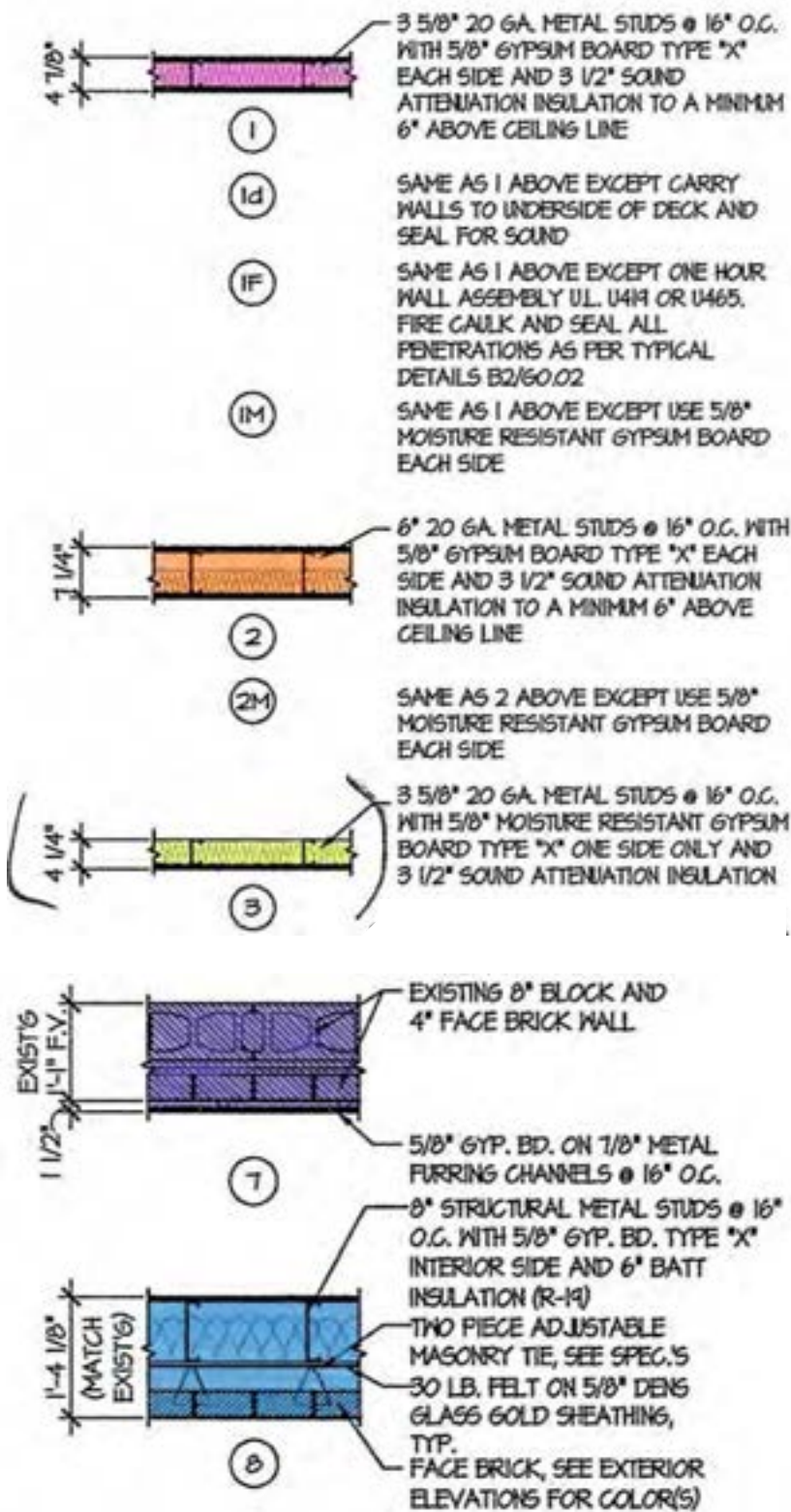
- **Type II Construction:** Uses noncombustible materials
  - **B:** Requires no hourly fire rating for primary structural frame, bearing walls, exterior walls, interior walls, nonbearing walls and partitions, or floor construction
  - The building is Unprotected Sprinkled
- **Construction Materials:**
  - **Metals:**
    - 3-5/8" 20 GA Metal Studs (Wall Types 1,3)
    - 6" 20 GA Metal Studs (Wall Types 2, 4)
    - 8" Structural Metal Studs (Wall Types 6, 8, 11)
    - 7/8" Metal Furring Channels (Wall Types 5, 7, 9, 10)
  - **Gypsum Wall Board:**
    - 5/8" Gypsum Wall Board (Wall Types 5, 7, 9, 10)
    - 5/8" Moisture Resistance Gypsum Wall Board (Wall Types 1M, 2M, 3, 4M, 5M, 10M)
    - Type "X" Gypsum Wall Board (Wall Types 1, 2, 3, 4, 6, 8)
      - <https://youtu.be/g1a0X7jeAVU>
  - **Masonry/Brick:**
    - 4" Face Brick/Existing Brick (Wall Types 6, 7, 8, 9)
    - 8" Block/Existing Block (Wall Types 5, 7, 9, 10)
  - **Insulation:**
    - 6" Batt Insulation R-19 (Wall Types 6, 8, 11)



Finish description:	Time, min.
Gypsum wallboard 3/8 in. (10 mm)	10
1/2 in. (13 mm)	15
5/8 in. (16 mm)	20
Two layers of 3/8 in. (10 mm)	25
One layer 3/8 in. (10 mm) and one layer 1/2 in. (13 mm)	35
Two layers of 1/2 in. (13 mm)	40
Type "X" gypsum wallboard 1/2 in. (13 mm)	25
5/8 in. (16 mm)	40
Direct-applied portland cement-sand plaster	^
Portland cement-sand plaster on metal lath 3/4 in. (19 mm)	20
7/8 in. (22 mm)	25
1 in. (25 mm)	30
Gypsum-sand plaster on 3/8 in. (10 mm) gypsum lath 1/2 in. (13 mm)	35
5/8 in. (16 mm)	40
3/4 in. (19 mm)	50
Gypsum-sand plaster on metal lath 3/4 in. (19 mm)	50
7/8 in. (22 mm)	60
1 in. (25 mm)	80
^ For the purposes of determining the contribution of portland cement-sand plaster to the equivalent thickness of concrete masonry for use in Table 1, use either the actual plaster thickness or 5/8 in. (16 mm), whichever is smaller.	



# Elevations with Wall Types



McMillan Smith & Partners  
Architects, PLLC

RENOVATIONS TO  
MONTGOMERY STUDENT  
ACTIVITY BUILDING  
Converse College  
Spartanburg, SC


CONSTRUCTION DOCUMENTS  
DATE: 08/14/18  
PROJECT NO: 109.2  
SHEET NO: 0102  
INTERIOR ELEVATIONS (PAINT)




# Walls

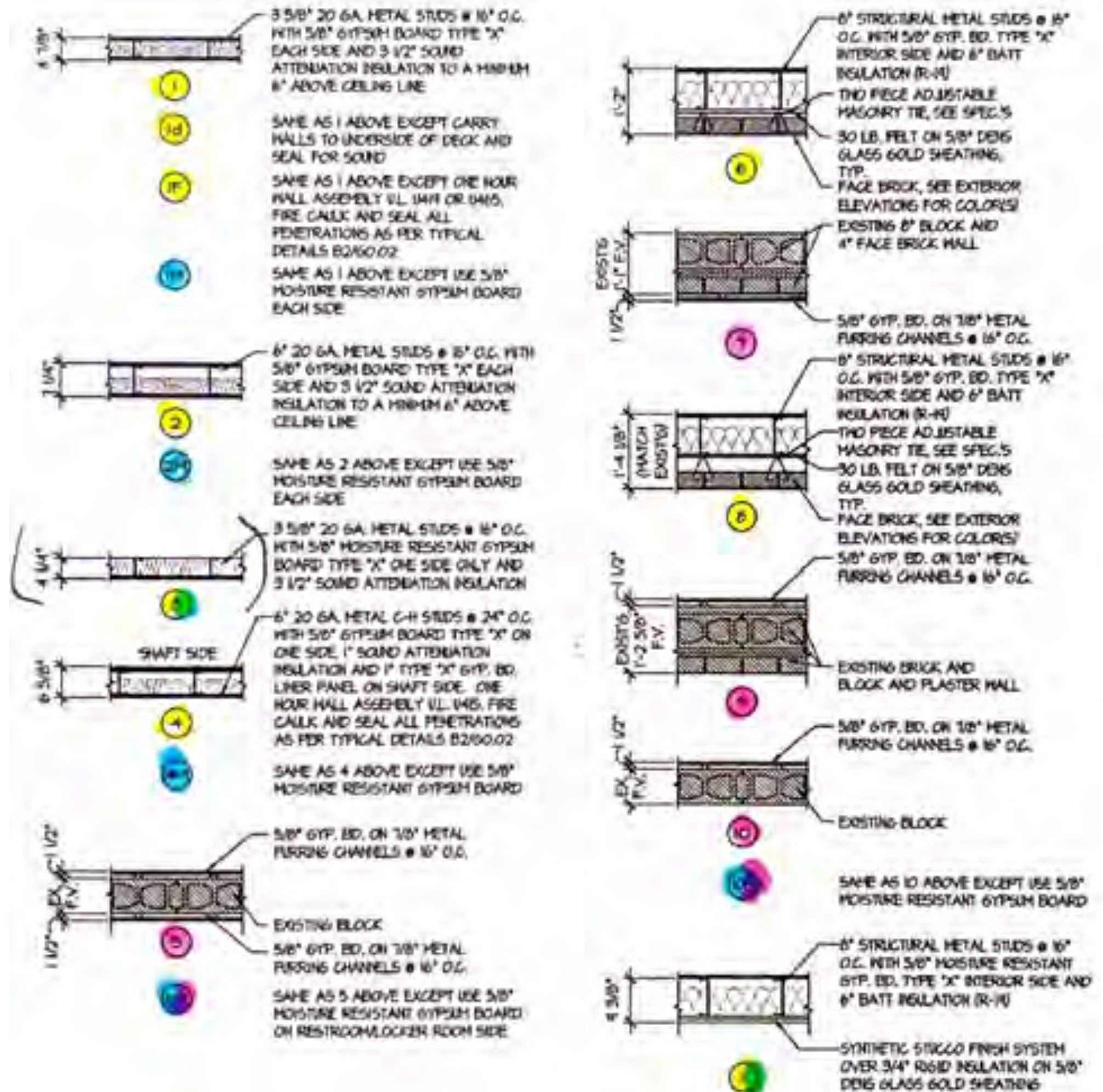
## According to Features / Resistance Ratings

 = **Yellow:** Has some fire resistance

 = **Blue:** Has some moisture/water resistance

 = **Pink:** Existing walls from the original construction

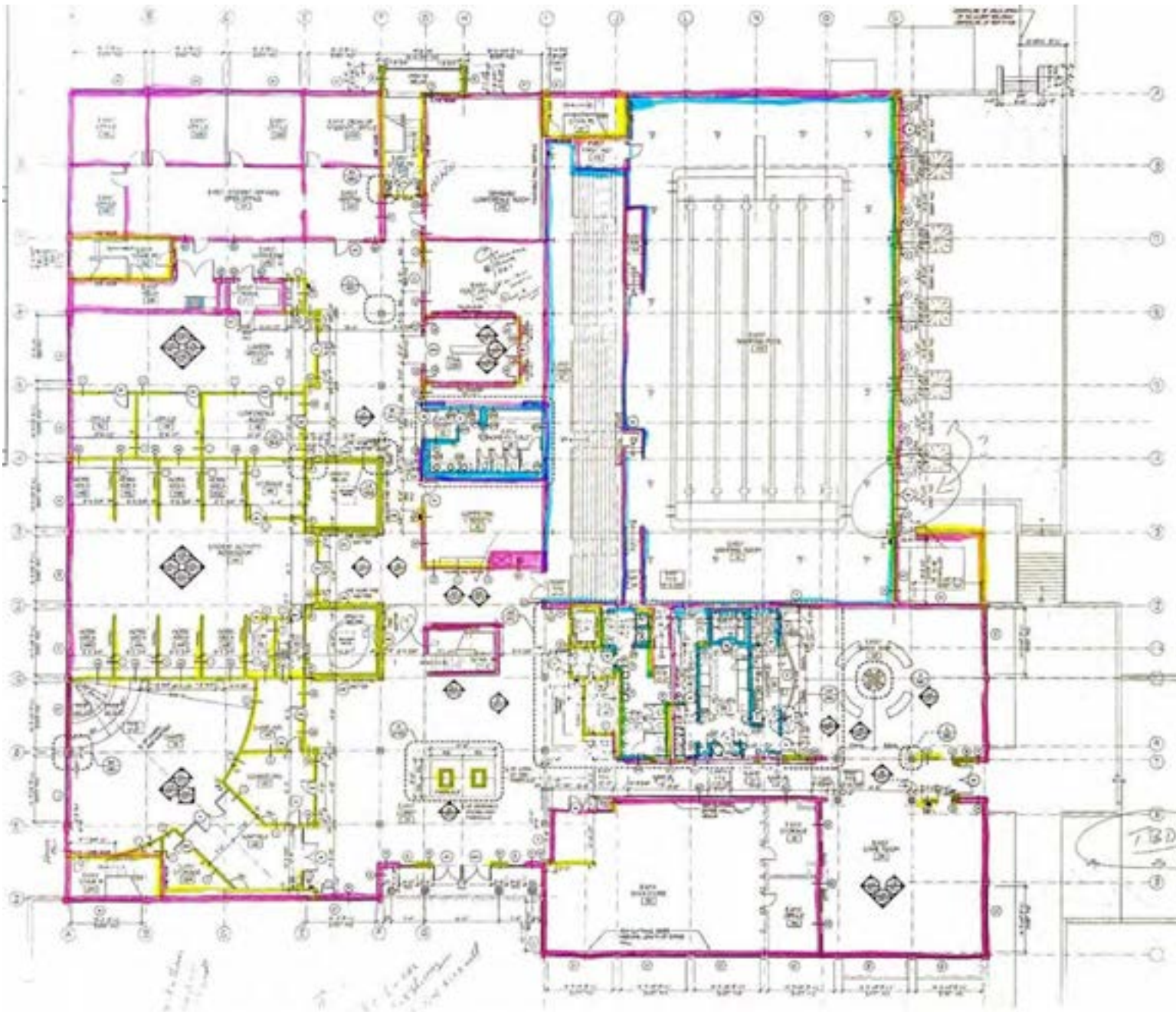
See the next slide for floorplan



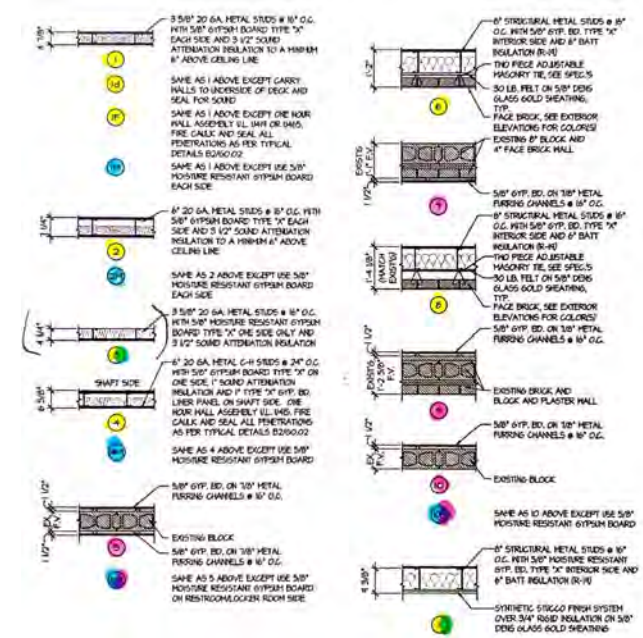
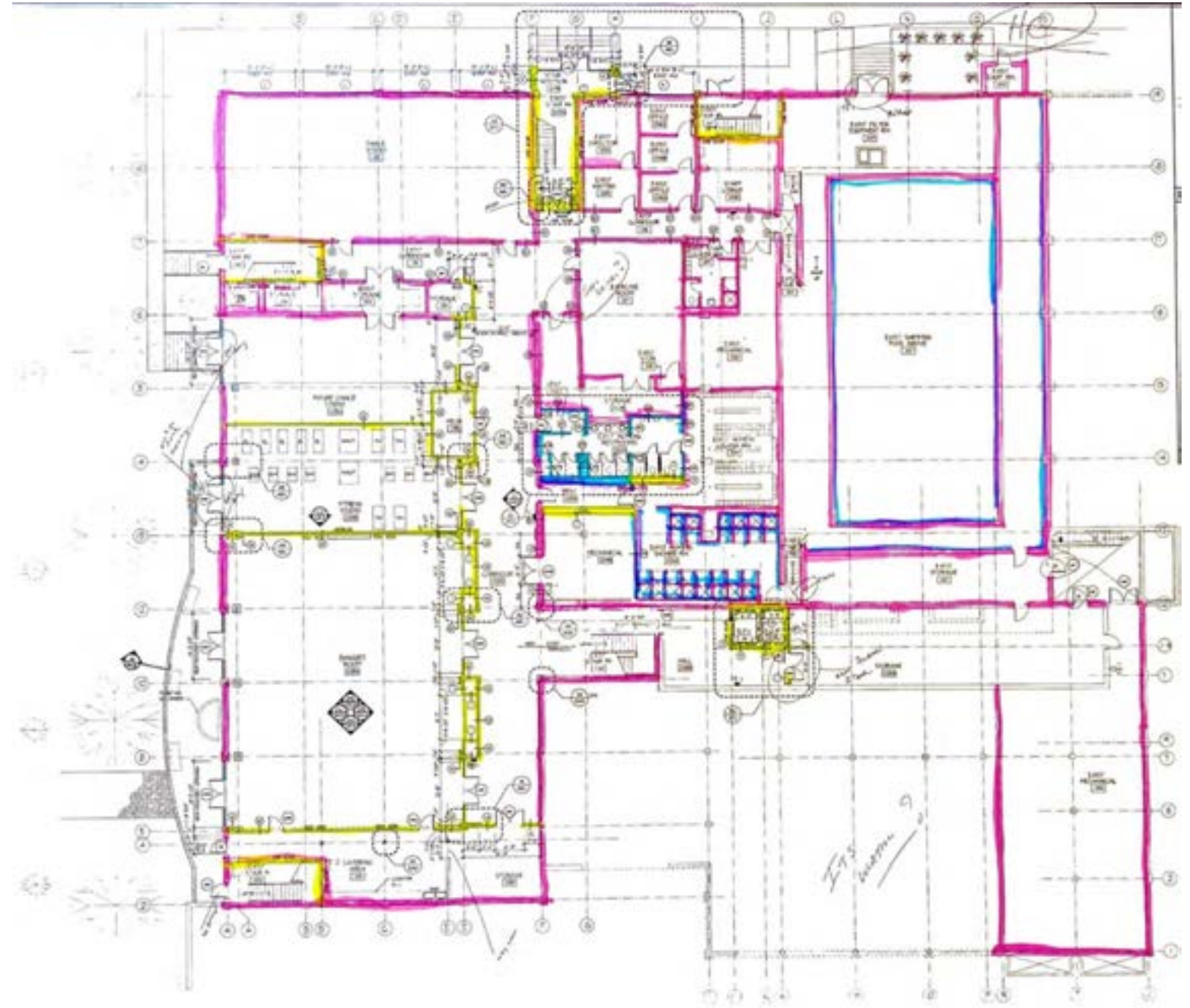


# Walls According to Features / Resistance Ratings

First Floor Plan



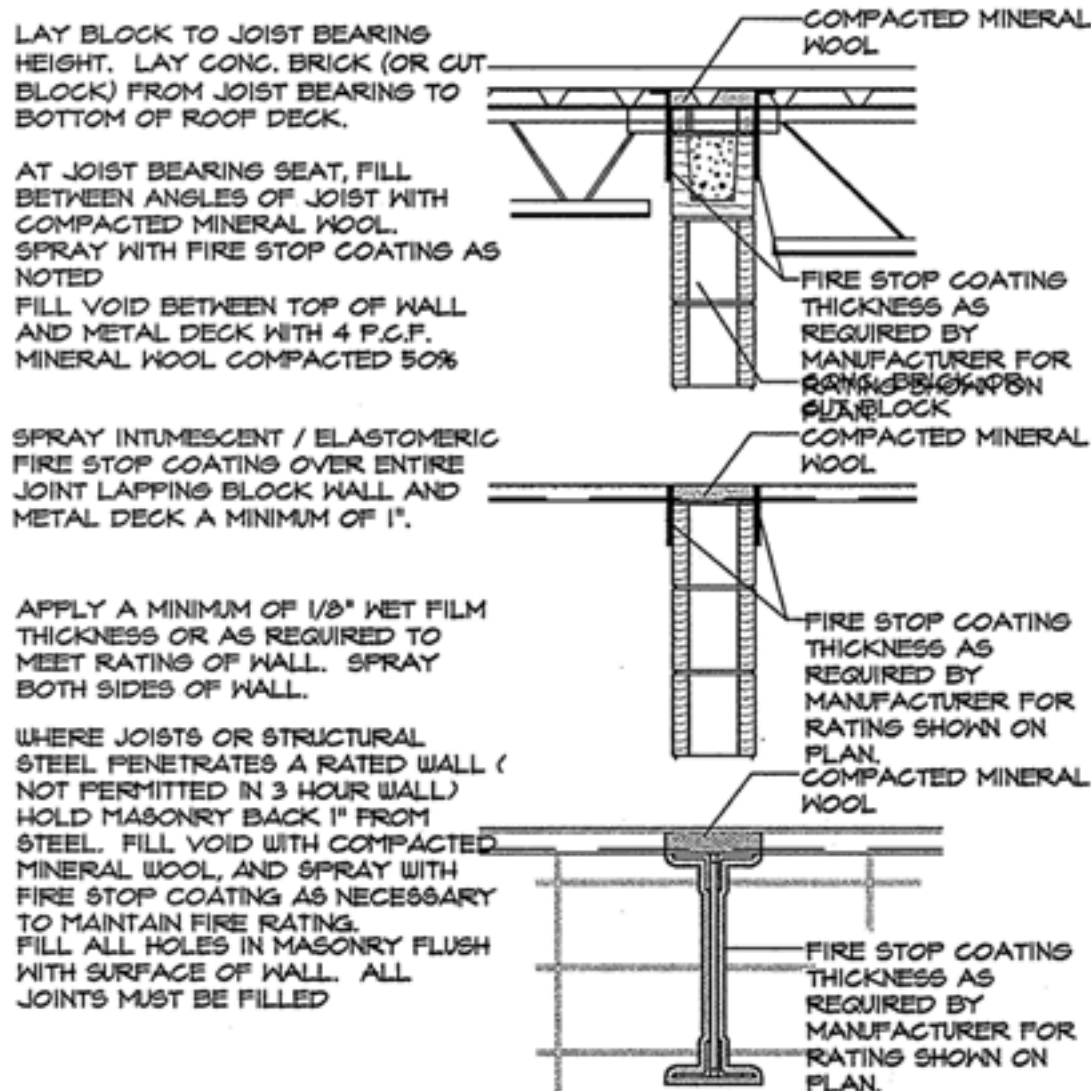
Ground Floor Plan





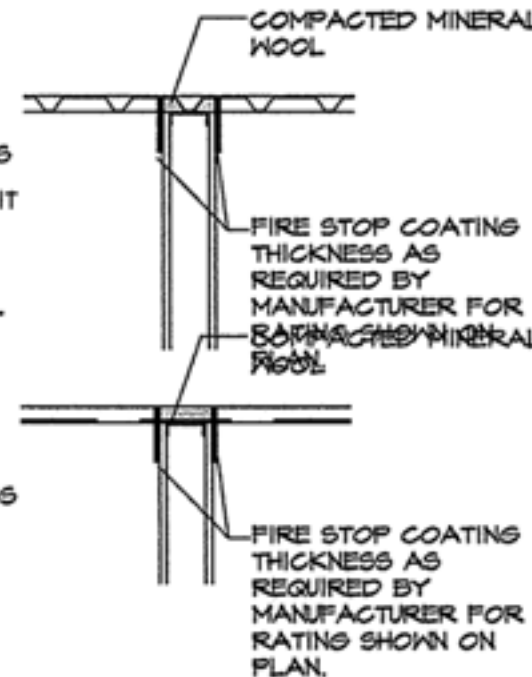
# Fire Resistant Walls

- Only exit corridors, areas of refuge, and elevator shafts have a fire rating:
  - Walls with fire protection use Type "X" Gypsum Wall Board on one or both sides
- No fire rating on exterior walls
- Main area/office spaces are not protected according to an hourly rating
- Interior Partitions are noncombustible



AT FIRE RATED GYPSUM BOARD / METAL STUD WALLS, CONSTRUCT WALL TO BOTTOM OF ROOF OR FLOOR DECK. FILL VOID WITH COMPACTED MINERAL WOOL, AND SPRAY WITH FIRE STOP COATINGS AS NOTED FOR MASONRY WALLS. GENERAL CONTRACTOR MUST SUBMIT MANUFACTURERS DATA AND UL ASSEMBLIES FOR THE FIRE STOP COATING FOR APPROVAL BY ARCHITECT AND OFFICE OF SCHOOL FACILITIES (O.S.F.)

FIRE CAULK AROUND ALL ELECTRICAL CONDUIT PASSING THROUGH WALLS. SEE MECHANICAL AND PLUMBING DRAWINGS FOR SPECIAL DETAILS WHERE DUCTWORK AND PIPING PASS THRU FIRE WALLS.



- ONE HOUR FIRE WALL  
PROTECT ALL OPENINGS
- TWO HOUR FIRE WALL  
PROTECT ALL OPENINGS
- THREE HOUR FIRE WALL  
PROTECT ALL OPENINGS

STENCIL THE ABOVE SIGNS ON ALL FIRE WALLS BOTH SIDES. LOCATE SIGNS ON 30 FT. CENTERS CONNECTED BY A CONTINUOUS 1 IN. WIDE RED LINE. IN LIEU OF THE CONNECTING LINE, STENCIL SIGNS ON 15 FT. CENTERS. LETTERS TO BE 2" HIGH.

THESE DETAILS ARE TO BE USED AT ALL RATED WALLS AS SHOWN ON PLANS

CODE ITEM	CODE REFERENCE	AREA 1
Occupancy Classification	Chapter 3	MIXED USE, NONSEPERATED (A-2, A-3, A-4, B, M)
Construction Classification	Chapter 6	IIB, Unprotected, Sprinklered
Height in lin. ft.	Table 503	55' ALLOWED
Height with increase Allowed	Chapter 5	NA
Height in lin. ft.		42'-0" Actual
Area in sq. ft.	Table 503	9,500 sf Allowed
Area increase allowed	Chapter 5	26,125 sf (see C2/A1.0)
Total area allowed with increases	Chapter 5	35,625 sf
Area in sq. ft.		23,059 SF (lower) 33,339 SF (upper)
STRUCTURAL MEMBERS	(insert appropriate hourly ratings and/or test numbers)	
Exterior Bearing Walls	Table 601	0
Exterior Nonbearing Walls	Table 601	0
Interior Bearing Walls	Table 601	0
Columns	Table 601	0
Beams, Girders	Table 601	0
Floor Construction	Table 601	0
Roof Construction	Table 601	0
SEPARATION WALLS	(insert appropriate hourly ratings and/or test numbers)	
Fire Walls	Table 705.4	NA
Occupancy Separation Walls	Table 302.3.3	NA, NONSEPERATED USE
Exit Stair	Sect. 707.4	ONE HOUR
Horizontal Exit	Sect. 1005.3.5.1	NA
Exit Discharge	Sect. 1006.1	0
Exit Access Corridors Walls	Table 1004.3.2.1	0
Elevator Shaft Walls	Sect. 707.4	ONE HOUR
Interior Partitions	Section 602	Noncomb.



# Fire Rated Corridors

- **Yellow:** 1 Hour Fire Rated Area
  - All Elevator Shafts and Stairways that lead to the Exterior
- **White:** No Hourly Fire Rating
  - Offices, Café, Bookstore, Suites, Pool, Chapel, Common Areas, Conference Rooms, Mail Room, etc.

