In Class 3:

Analyze alternative envelope strategies

Organization

Break into your groups
Do, and report on the in-class problem
Turn in materials produced, with names of participants, for credit

Background Information

780 CMR 1304.1.2, Moisture Control, begins by saying: "The design of buildings for energy conservation shall not create conditions of accelerated deterioration from moisture

It then goes on to say: "A vapor retarder shall be installed on the winter warm side of walls, ceilings and floors enclosing a conditioned space."

Then it lists "exceptions" to its statement requiring a vapor retarder.

Joseph Lstiburek, of the Building Science Corporation, states in his paper "Understanding Vapor Barriers" that "Incorrect use of vapor barriers is leading to an increase in moisture related problems. Vapor barriers were originally intended to prevent assemblies from getting wet. However, they often prevent assemblies from drying."

Mr. Lstiburek goes on to say: "The fundamental principle of control of water in the vapor form is to keep it out and to let it out if it gets in. Simple right? No chance. It gets complicated because sometimes the best strategies to keep water vapor out also trap water vapor in. This can be a real problem if the assemblies start out wet because of rain or the use of wet materials.

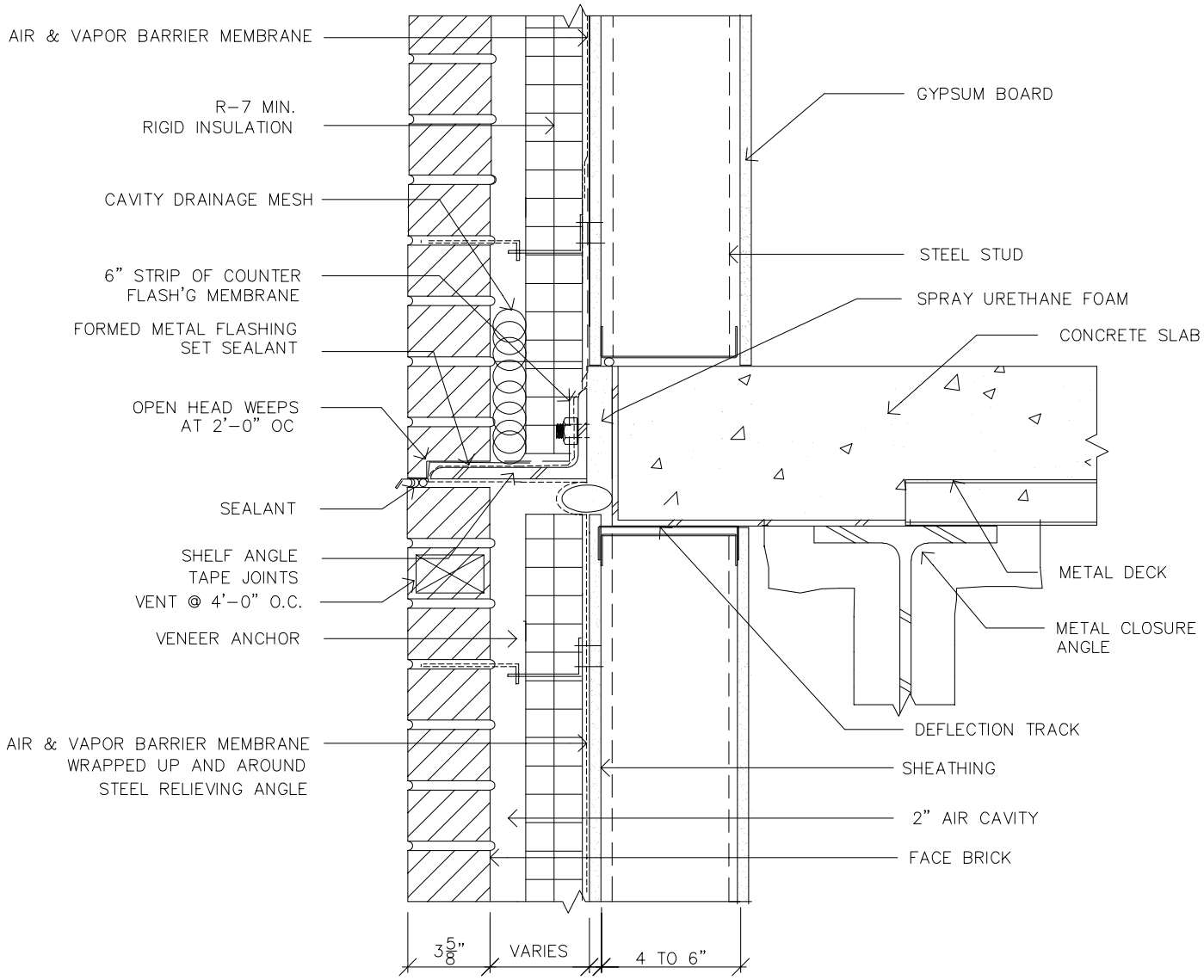
It gets even more complicated because of climate. In general water vapor moves from the warm side of building assemblies to the cold side of building assemblies. This is simple to understand except we have trouble deciding what side of a wall is the cold or warm side. Logically, this means we need different strategies for different climate We also have to take into account differences between summer and winter."

"The BSA Building Envelope Committee was approached by the Board of Building Regulations and Standards to develop building envelope details demonstrating compliance with the new energy code. ….. The task force developed the details ...., which were then reviewed by the building envelope committee members."

Three of the BSA Envelope committee details are included with this in-class assignment.

Discussion / Writing (use the overhead projector transparencies)

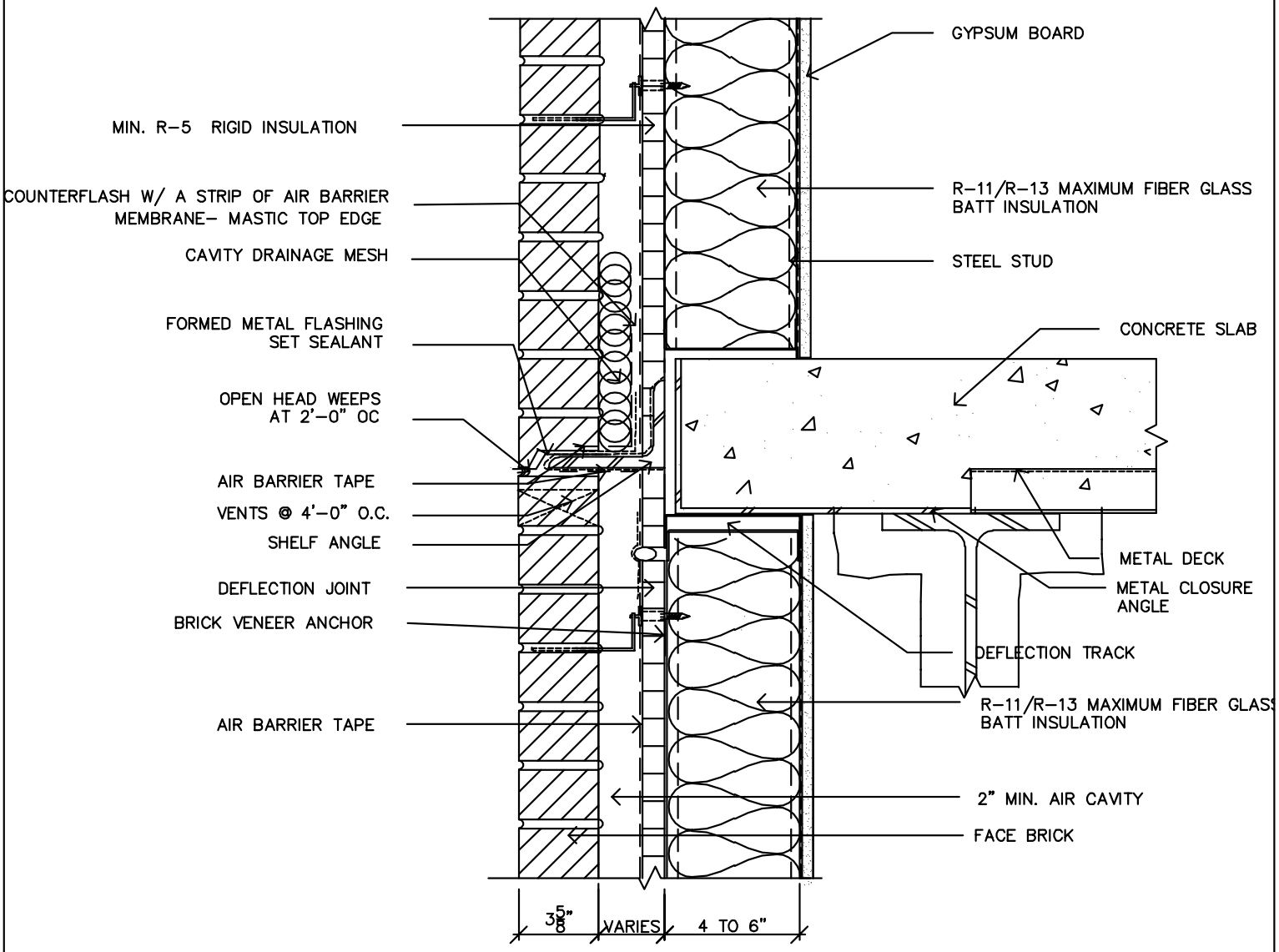
1. Look at each of the three designs to see if they comply with 1304.1.2's requirement for a vapor retarder on the winter warm side, or if they make use of the option to have an 'exception.'
2. Describe how you think water vapor moves through each of the designs, and how the designs mitigate its potential negative effects
3. Discuss and decide if any of these three designs is better suited to being used in other climates, such as that of Mobile, Alabama and Albuquerque, NM
4. Write your results on the overhead projector slides provided.



DETAIL AT FLOOR SLAB

REFERENCE DETAIL: REGISTERED PROFESSIONAL TO REVIEW PRIOR TO USE

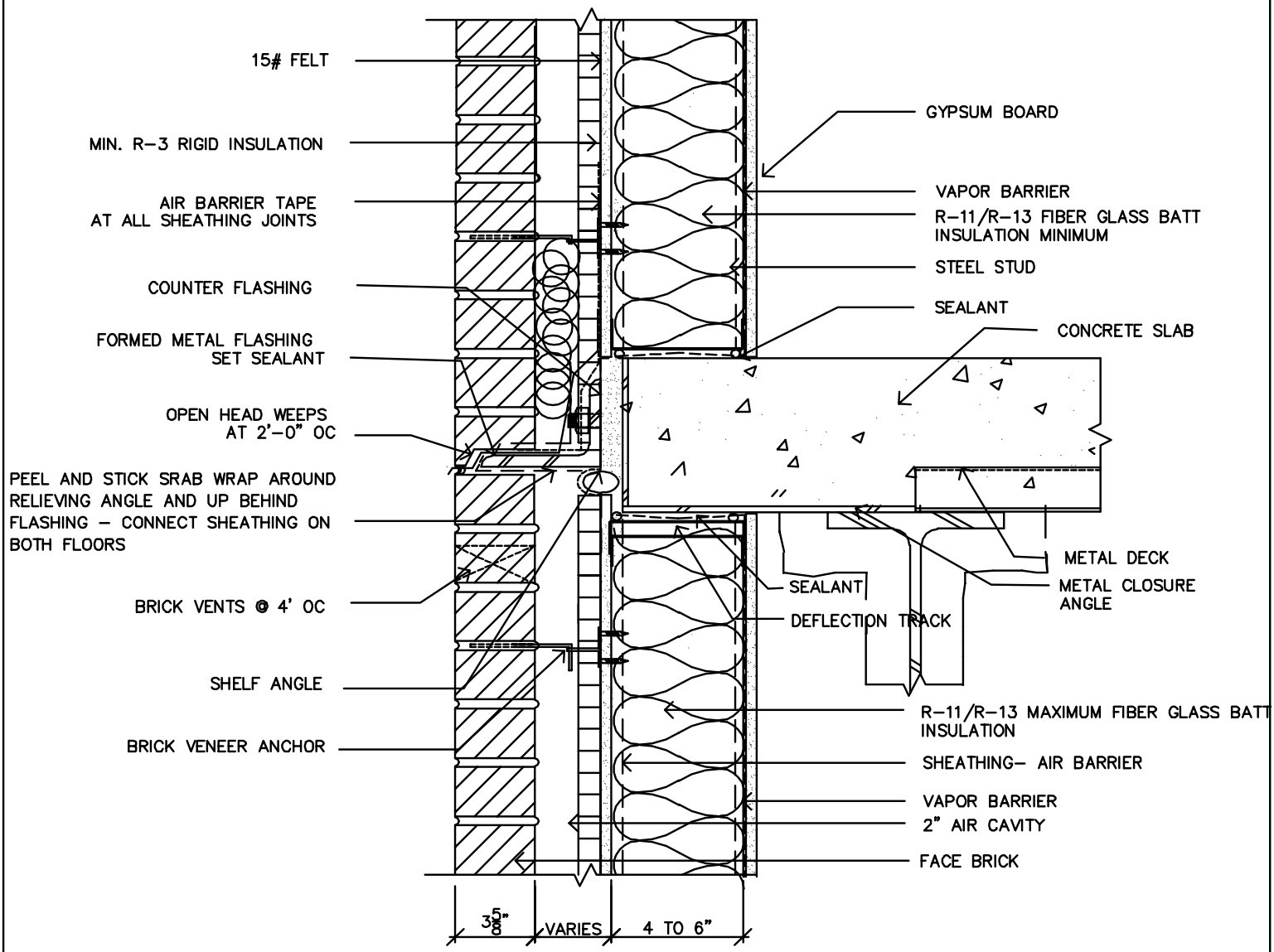
DETAIL	TITLE: WALL: BRICK VENEER DESIGN A	SKETCH NUMBER
ENERGY CODE: CONCEPTUAL DETAILS FOR EDUCATIONAL PURPOSES ONLY	Date: 10/10/2001 Scale: 3"=1'-0" Drawn: SAR	SK-A3



DETAIL AT FLOOR SLAB

REFERENCE DETAIL: REGISTERED PROFESSIONAL TO REVIEW PRIOR TO USE

DETAIL	TITLE: WALL: BRICK VENEER DESIGN B	SKETCH NUMBER
ENERGY CODE: CONCEPTUAL DETAILS FOR EDUCATIONAL PURPOSES ONLY	Date: 10/10/2001 Scale: 1-1/2"=1'-0" Drawn: ---	SK-B3 4 OF 8



DETAIL AT FLOOR SLAB

REFERENCE DETAIL: REGISTERED PROFESSIONAL TO REVIEW PRIOR TO USE

DETAIL	TITLE: WALL: BRICK VENEER DESIGN C	SKETCH NUMBER SK–C3
ENERGY CODE: CONCEPTUAL DETAILS FOR EDUCATIONAL PURPOSES ONLY	**Date:** 10/10/2001 **Scale:** 1–1/2"=1'–0" **Drawn:** ---	4 OF 9