THE FOLLOWING PAGES ARE PRESENTED BY CHESTERFIELD, HENRICO AND HANOVER COUNTIES FOR THE PURPOSE OF EXPLAINING HOW THE COUNTIES WILL INTERPRET AND INSPECT FOR BRACED WALL PANEL COMPLIANCE WITH IRC SECTION 602.10.3.

AS A TUTORIAL ON BRACED WALL PANELS, WE HAVE DEVELOPED A FOUR STEP APPROACH WHICH WILL EXPLAIN THE GENERAL PRINCIPLES:

STEP 1: WHAT METODS ARE AVAILABLE?
STEP 2: HOW MANY OF LINEAR FEET OF BWPs IS REQUIRED?
STEP 3: WHAT IS THE MINIMUM BWP WIDTH THAT CONTRIBUTE TOWARD THE TOTAL LINEAR FEET OF BWP REQUIRED?
STEP 4: WHAT ARE THE REQUIREMENTS FOR POSITIONING THE BWPs IN ORDER FOR THEM TO CONTRIBUTE?

STEP 1: WHAT METHODS ARE AVAILABLE?

IRC SECTION 602 REQUIRES ALL RESIDENTIAL WOOD CONSTRUCTION, INCLUDING DETACHED STRUCTURES, WITH OR WITHOUT HABITABLE SPACE, TO HAVE BRACED WALL PANELS (BWP) TO RESIST LATERAL WIND LOADS ALONG EACH BRACED WALL LINE (BWL). THE PROJECT COORDINATOR SHOULD CONSULT THE IRC AND CONSIDER ALL OF THE OPTIONS.

IRC SECTION 602.10.3 METHODS:

METHOD 1: 1x4 DIAGONAL LET IN BRACING
METHOD 2: 5/8" DIAGONAL WOOD BOARDS
METHOD 3: WOOD STRUCTURAL PANEL SHEATHING (OSB OR PLYWOOD)
3A: 48" PANELS
3B: CONTINUOUS SHEATHING - WITH REDUCTION FACTORS
METHOD 4: MIN 1/2" STRUCTURAL FIBERBOARD SHEATHING (STURDIBOARD)
METHOD 5: 1/2" GYPSUM BOARD
METHOD 6: PARTICLE BOARD SHEATHING
METHOD 7: PORTLAND CEMENT PLASTER
METHOD 8: HARDBOARD PANEL SIDING
METHOD 9: ALTERNATIVE METHOD

IN THIS PART OF THE COUNTRY, METHOD 3 AND 4 ARE THE MOST COMMON.

ALTERNATIVE METHODS NOT LISTED IN IRC:

METHOD 10: ENGINEERED WALL DESIGN "SEALED" BY A REGISTERED DESIGN PROFESSIONAL
METHOD 11: SPECIALIZED PRODUCTS WHICH HAVE BEEN TESTED BY A NATIONAL TESTING AGENCY (EXAMPLE - SIMPSON STRONG WALL)
METHOD 12: SPECIALIZED DESIGNS BY MANUFACTURING AGENCIES (EXAMPLE - APA)

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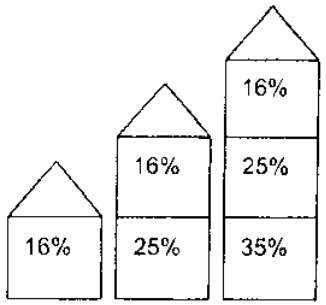
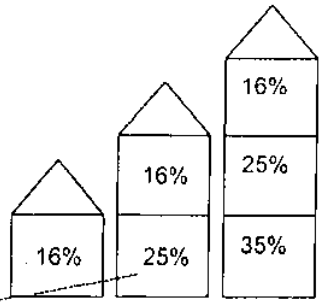
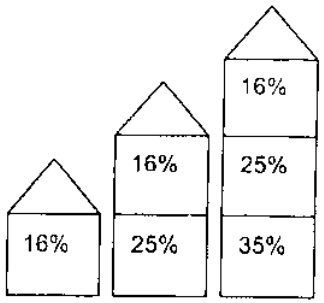
STEP 2: HOW MANY LINEAR FEET OF BWPs IS REQUIRED?



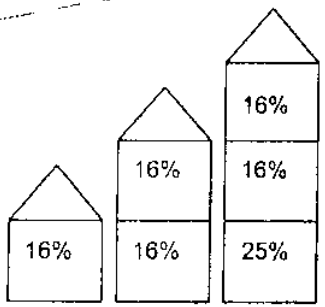
METHODS 2,4,5,6,7,8



METHODS 2,4,5,6,7,8

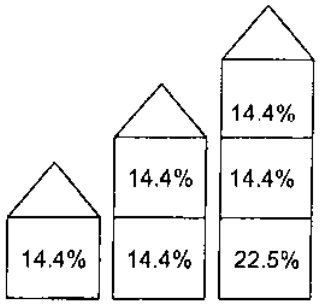


METHODS 2,4,5,6,7,8



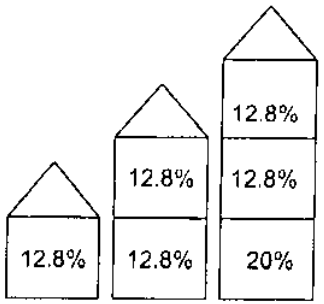
METHOD 3

WITH ANY
FULL HEIGHT
OPENINGS



METHOD 3 CONTINUOUS

WITH OPENINGS
MAX HEIGHT 6'-8"



METHOD 3 CONTINUOUS

WITH OPENINGS
MAX HEIGHT 5'

THE MINIMUM REQUIRED LINEAR FEET OF BWPs IS A FUNCTION OF:

1. THE TOTAL LENGTH OF THE BRACED WALL LINE (BWL) - INCLUDES WALLS +/- 4'-0" OF BWL
2. THE CONSTRUCTION METHOD,
3. THE FLOOR OF THE STRUCTURE (1ST, 2ND OR 3RD FLOORS),
4. THE HEIGHT OF OPENINGS ALONG THE BWL.

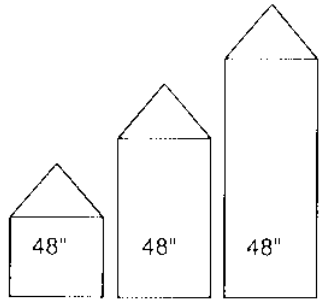
EXAMPLE

DETERMINE HOW MANY LINEAR FEET OF BWPs ARE REQUIRED FOR THE FOLLOWING STRUCTURE:

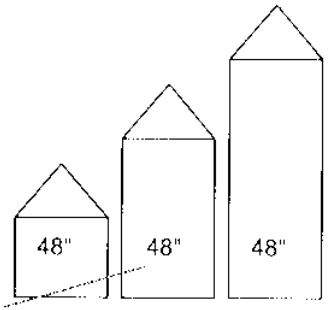
1. BWL: 40' LONG
2. METHOD: STURDIBOARD SHEATHING (METHOD 4)
3. FLOOR OF STRUCTURE: FIRST FLOOR OF TWO STORY HOUSE
4. OPENINGS ALONG THE BWL: 6'-8" DOOR AND (2) 4' WINDOWS

ANSWER: THE MINIMUM REQUIRED LINEAR FEET OF BWPs = 25 % x 40' = 10'

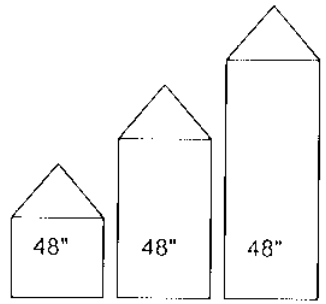
STEP 3: WHAT IS THE MININIMUM ALLOWABLE BWP WIDTH THAT CAN 'COUNT' TOWARD THE TOTAL REQUIRED LINEAR FEET OF BWPs?



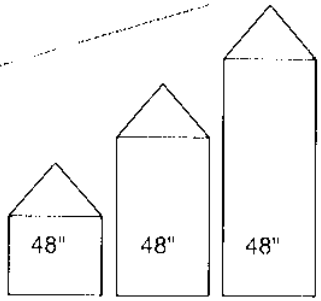
METHODS 2,4,6,7,8 5 (96")



METHODS 2,4,6,7,8 5 (96")

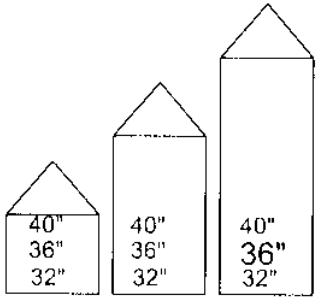


METHODS 2,4,6,7,8 5 (96")



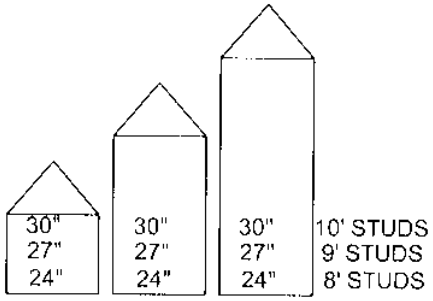
METHOD 3

WITH ANY SIZE
OPENINGS AND
8'-9'-10' STUD HT



METHOD 3 CONTINUOUS

WITH OPENINGS
MAX 6'-8" HEIGHT
AND 8'-9'-10' STUDS



METHOD 3 CONTINUOUS

WITH OPENINGS
MAX 5' HEIGHT
AND 8'-9'-10' STUD HT

THE MINIMUM ALLOWABLE BWP WIDTH IS A FUNCTION OF:

1. THE CONSTRUCTION METHOD,
2. THE DOOR AND WINDOW OPENING HEIGHTS ALONG THE BWL,
3. STUD HEIGHT (8', 9' OR 10')

WALLS WHICH ARE NARROWER THAN THIS DO NOT 'COUNT' TOWARDS THE TOTAL REQUIRED LINEAR FOOT OF BWPs

CONTINUING THE EXAMPLE FROM STEP 2: 10' LINEAR FEET OF BWP IS REQUIRED.
HOW WIDE DO THE BWPs HAVE TO BE TO 'COUNT' TOWARD THE 10' REQUIRED?

1. METHOD: STURDIBOARD SHEATHING (METHOD 4)
2. OPENINGS: 6'-8" DOOR AND (2) 4'-0" WINDOWS
3. STUD HEIGHT: 9' STUDS

ANSWER: THE DOOR HEIGHT CONTROLS THE SITUATION - BWPs MUST BE 48" WIDE (OR WIDER) PANELS CONTRIBUTE

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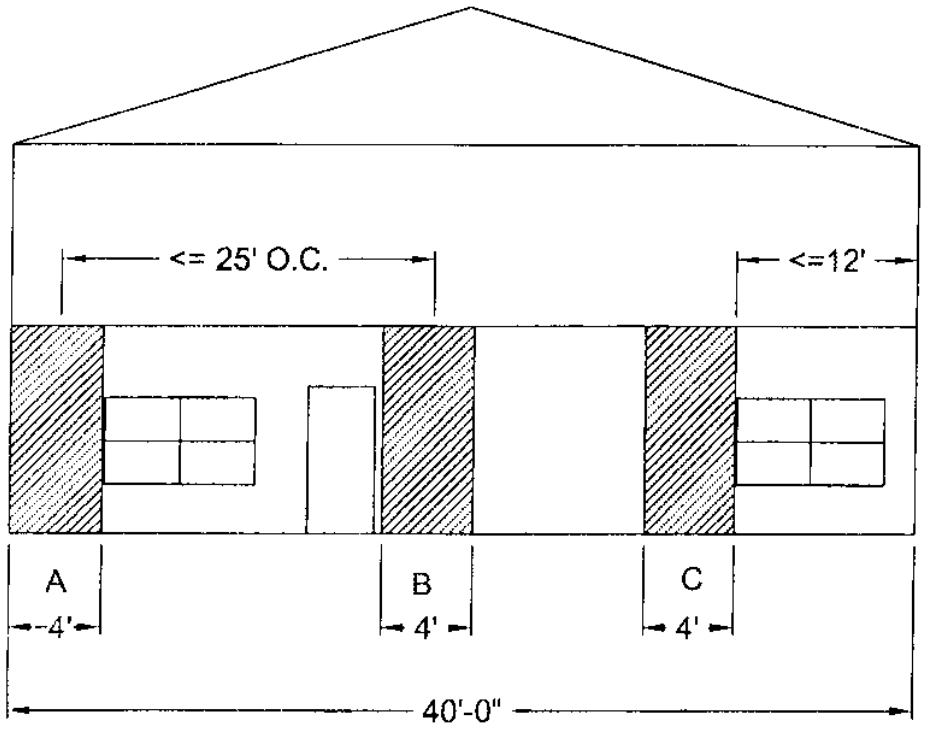
3

STEP 4: WHAT ARE THE REQUIREMENTS FOR POSITIONING THE BWPs IN ORDER FOR THEM TO 'COUNT'?

REQUIREMENTS:

1. AT LEAST ONE BWP IS REQUIRED TO BE WITHIN 12' OF EACH OF THE BWL CORNERS
2. BWPs CANNOT BE MORE THAN 25'-0" O.C.
3. THE BWP MUST BE FASTENED TO THE STUDS IN ACCORDANCE WITH IRC TABLE R602.3(1)
4. GABLE END WALLS DO NOT NEED TO BE BRACED ABOVE THE TOP PLATE,
5. IF USING 'METHOD 3-CONTINUOUS', OVERLAP SHEATHING AT CORNERS PER SHEET 7

CONTINUING OUR EXAMPLE FROM STEP 3:



THIS DESIGN MEETS THE BWP REQUIREMENTS:

1. BWPs ARE WITHIN 12' OF EACH CORNER OF THE BWL
2. BWPs ARE NOT MORE THAN 25' O.C.
3. THE TOTAL LENGTH OF THE BWPs (A+B+C) MEETS THE 10' REQUIRED LENGTH

EXAMPLE 2:

TWO STORY HOUSE - 30' WIDE

8' STUDS SECOND FLOOR, 9' STUDS ON FIRST FLOOR

STEP 1: METHOD 4 - STURDIBOARD

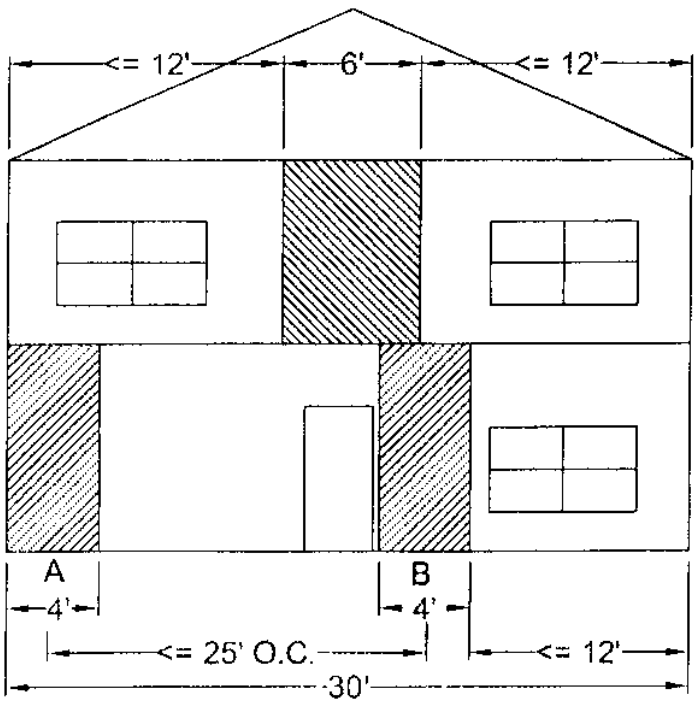
STEP 2: REQUIRED LENGTH - FIRST FLOOR 25 % x 30' = 7.5'

REQUIRED LENGTH - SECOND FLOOR 16 % x 30' = 4.8'

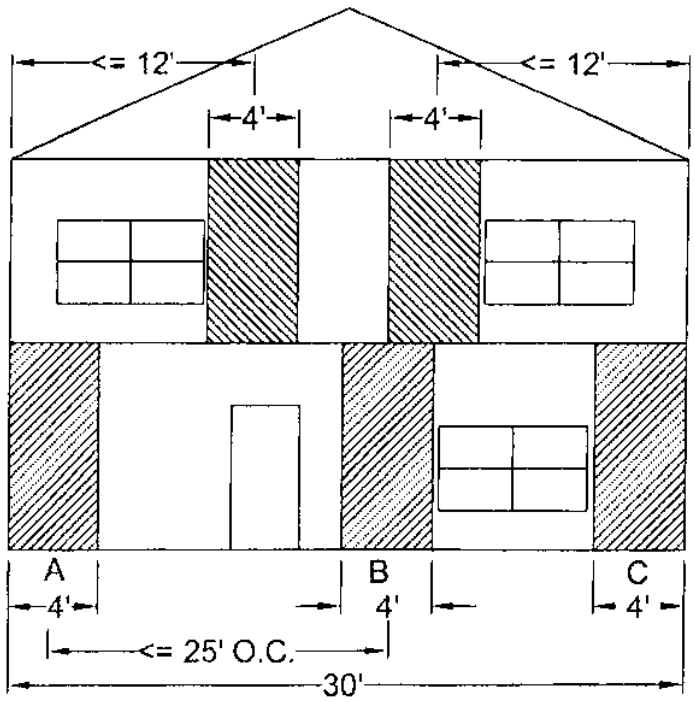
STEP 3: MINIMUM BWP THAT 'COUNT' = 48"

STEP 4: BWP MUST BE WITHIN 12' OF CORNERS

BWP MUST BE WITHIN 25' O.C.



ACCEPTABLE DESIGN



ACCEPTABLE DESIGN

BRACED WALL PANEL TUTORIAL

EXAMPLE 3:

TWO STORY HOUSE - 36' WIDE, WITH DUTCH DORMER

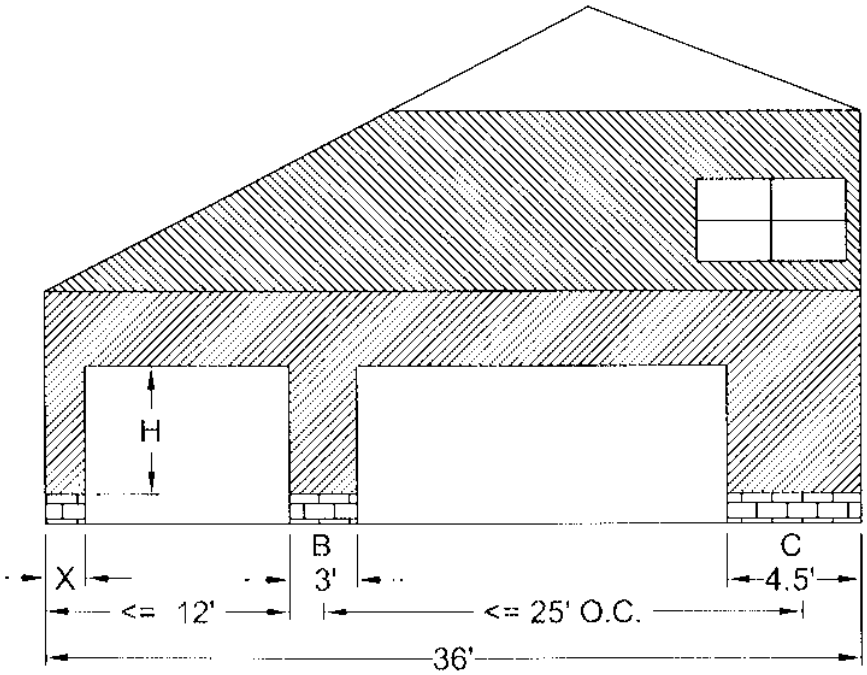
8' STUDS SECOND FLOOR. 9' STUDS ON FIRST FLOOR, 7'x16' AND 7'x9' GARAGE DOORS AND STUDS ON 2 COURSES OF MASONRY

STEP 1: TEST TO SEE IF METHOD 4 WORKS - NO BECAUSE GARAGE DOOR DOES'T ALLOW 4' PANEL
THEREFORE TRY METHOD 3 WITH CONTINUOUS OSB OVER THE ENTIRE HOUSE

STEP 2: REQUIRED LINEAR FEET OF BWPs - FIRST FLOOR 14.4 % x 36' = 5.2'
REQUIRED LINEAR FEET OF BWPs - SECOND FLOOR 14.4 % x 36' = 5.2'

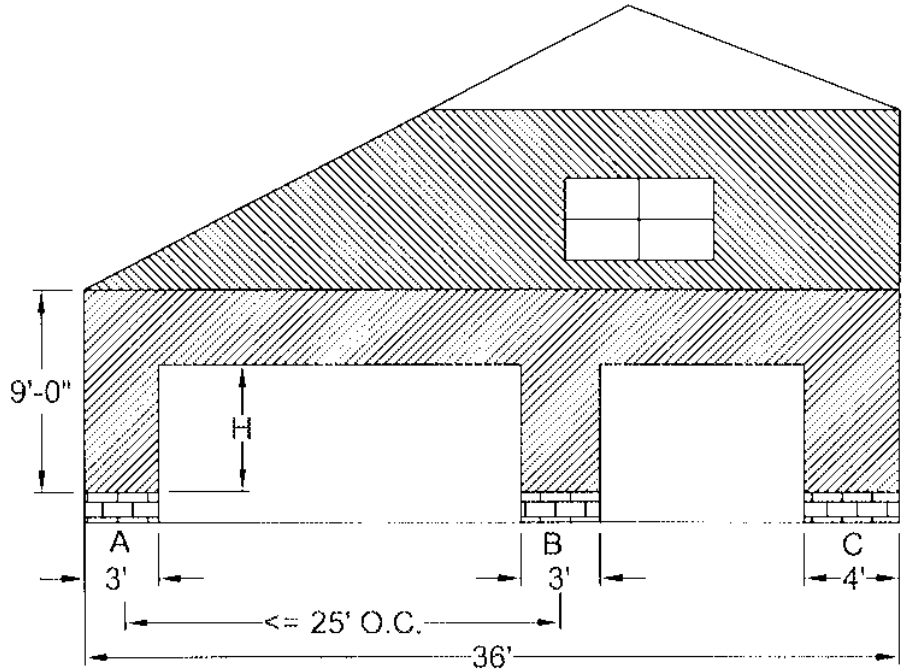
STEP 3: MINIMUM BWP WIDTH THAT CONTRIBUTE TO FIRST FLOOR WITH 9' STUDS AND 6'-8" OPENING = 36"
MINIMUM BWP WIDTH THAT CONTRIBUTE TO SECOND FLOOR WITH 8' STUDS AND 5' WINDOWS = 24"

STEP 4: BWP MUST BE WITHIN 12' OF CORNERS
BWP MUST BE WITHIN 25' O.C.



ACCEPTABLE DESIGN

NOTE
1. PANEL 'X' CAN BE ANY WIDTH BECAUSE IT IS NON-CONTRIBUTING
2. FOR PANELS 'B' & 'C' OPENING 'H' IS MEASURED FROM THE TOE PLATE - NOT THE WHOLE DOOR OPENING. IF 'H' IS 5' OR LESS, 27" PANELS ARE ALLOWED WITH 9' STUDS, BUT IF 'H' IS BETWEEN 5' AND 7', PANELS MUST BE 36" WIDE.
3. THE OSB MUST BE OVERLAPPED AT THE CORNERS PER SHEET 7



ACCEPTABLE DESIGN

NOTE
1. BY REVERSING THE GARAGE DOORS, PANEL 'A' BECOMES A CONTRIBUTING PANEL
2. OPENING 'H' IS MEASURED FROM THE TOE PLATE - NOT THE WHOLE DOOR OPENING. IF 'H' IS 5' OR LESS, 27" PANELS ARE ALLOWED WITH 9' STUDS, BUT IF 'H' IS BETWEEN 5' AND 7', PANELS MUST BE 36" WIDE.
3. THE OSB MUST BE OVERLAPPED AT THE CORNERS PER SHEET 7

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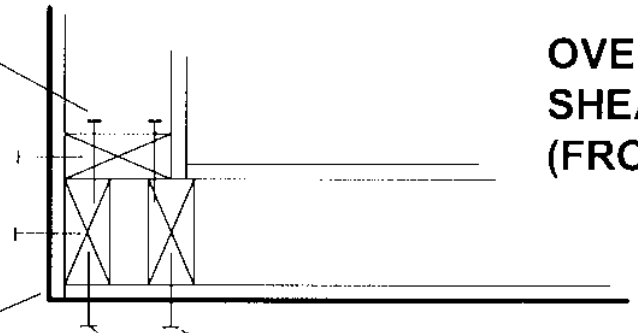
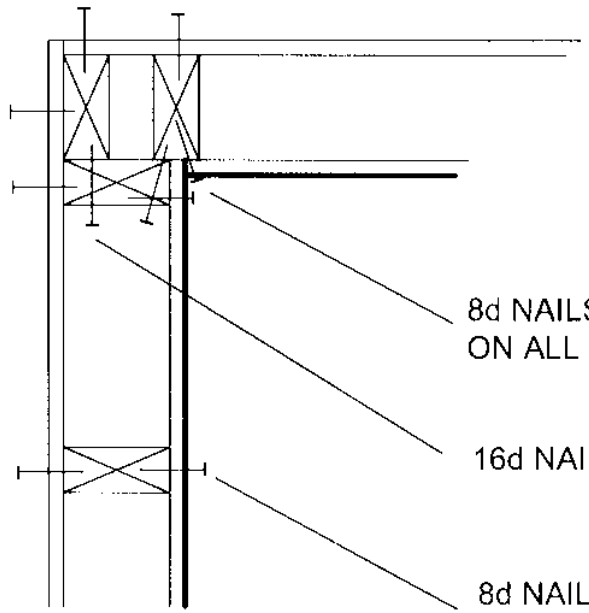
METHOD 3 - CONTINUOUS

OVERLAP OSB OR PLYWOOD SHEATHING AT CORNERS (FROM IRC FIGURE 602.10.5)

OUTSIDE CORNER



INSIDE CORNER