

## Envelope Air Infiltration Report on James Street Duplexes, Apex, NC

Test date: Units 1204,1206,1208,1216 8/11/2011; Unit 1214 8/18/2011  
 Report date: 8/19/201

Report Submitted to:

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Submitted by:

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**Field Testing Performed by:** Scott Hoover

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RESNET Rater Number: 6435532

### Summary

Unit	Volume cf	Flow CFM <sub>50</sub>	Flow ACH <sub>50</sub>	Weather Barrier	Sealing of Sheetrock
1204	11958	830	4.2	EnviroDri	None
1206	11958	735	3.7	EnviroDri	Caulk
1208	11958	690	3.5	EnviroDri	Sill Seal
1214	12076	1221	6.1	House Wrap	None
1216	12076	1130	5.6	House Wrap	None

### Testing Details

Depressurization Blower Door tests were performed on the five units to determine infiltration levels. Testing was performed to the RESNET standard. The houses were set up per the standard with all interior doors open and all exterior windows and doors closed. Pat was asked to set up unit 1216 as it was occupied. Thermostats were turned off. Baseline adjustment was made using the DG700 monometer prior to testing. A second house pressure hose was used out the rear door of the units to further account for affects of wind. Wind speeds were about 4 to 7 MPH on 8/11 and about 1 to 3 MPH on 8/18 at the time of testing based on observation. Temperature outside on both days was 90 degrees. Temperatures inside units 1204,1206, and 1208 ranged from 80 degrees (Unit 1204 which is the model home and had the cooling on prior to testing) to 90 degrees (noted on the second floor of

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unit 1208). Temperature in Unit 1216 was not noted, and Temperature in unit 1214 was 74 degrees. Ring B was used for testing of units 1204, 1206, and 1208. Ring A had to be used for units 1214 and 1216.

## House Characterization

Units 1204, 1206, and 1208 are single units of new construction duplexes on vented crawl space. Tremco EnviroDri WRB was used on the homes. Unit 1204 did not have any sealing applied between the top plate and the sheetrock on the second floor. On Unit 1206, caulk was applied to the top plate and allowed to dry before hanging sheetrock. The caulk was described as pliable at the time the sheetrock was hung. On unit 1208, sill seal gasket was applied to the top plate before hanging sheetrock.

Units 1214 and 1216 are existing construction duplex about 2 years old on crawl space. Both homes were lived in at the time of testing. House wrap was used as weather resistant barrier on this home. The sheetrock to top plate connection was unsealed in this home.

## Leakage areas

Methods used to detect leakage areas included closing bedroom doors to observe pressure differences and feeling for leaks with the back of the hand. Units 1214 and 1216 were not investigated for leakage as to minimize the disturbance to the homeowners. General leakage was observed in units 1204, 1206, and 1208 around penetrations such as outlets and plumbing. Though it seemed that unit 1204 was leakier on the second floor than the other units. Unit 1208 was observed to have a leaky attic access panel.

## Field Inspector Comments

Sealing sheetrock to top plates appears to provide some reduction in leakage rates among the three similar units. However, there seems to be little difference between methods of sealing: caulk or sill seal. Although the units with the house wrap are two years older, these units offer a good comparison of the effectiveness of the EnviroDri product: similar size duplexes of the same construction type and configuration built by the same builder.

## Report Legend

cf: cubic feet

CFM<sub>50</sub>: Cubic Feet per Minute at a pressure differential of 50 Pascal

ACH<sub>50</sub>: Air Changes per Hour at a pressure differential of 50 Pascal

SEM: Southern Energy Management

WRB: Weather Resistant Barrier

CBE: Conditioned Building Envelope

## Pictures



Figure 1 Front Elevation Unit 1216



Figure 2 Front Elevation Unit 1206 (l) and 1208 (r)

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Figure 3 Monometer set up for unit 1204



Figure 4 Blower Door set up unit 1204

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