

## ND WxTech Committee

WxTech Mission Statement. "Formulate input to the state and weatherization advisory committee regarding technical matters, and strive towards quality and consistency in the weatherization program."

### R-Values for WXEOR 2002

R-Values were taken from Manual J and ASHRAE Handbook of Fundamentals

#### Walls:

**Pre R-Value:** Add R-Value of 3.8 to existing insulation R-Value (R 3 per inch)

**Post R-Value:** Cellulose: R 3.8 per inch + 1.8\*  
\*Blown to a Density of 3.5 per Cubic Ft.  
Example – 2x4 wall would be R-15.1  
Fiberglass: R 4.0 per inch + 1.8\*  
\*Blown to a Density of 1.6 per Cubic Ft.  
Example – 2x4 wall would be R-15.8

Use Weatherization Spreadsheet for best accuracy

#### Attics:

**Pre R-Value:** Add R-Value of 1.8 to existing insulation R-Value (R 3 per inch)  
**Post R-Value:** Use manufacturer's label for per inch R-Value  
All heat sources except electric should be R-50  
Electric heat should be R-60

#### Floors:

**Pre R-Value:** Add R-Value of 3.93 to existing insulation R-Value (R 3 per inch)  
Example – Floor with 3 inches existing insulation would be R-12.93  
**Post R-Value:** Use manufacturer's label on fiberglass batts (R-11 or R-19) + 1.8  
Fiberglass: R 4.0 per inch + 1.8\*  
\*Blown to a Density of 1.6 per Cubic Ft.  
Example – 2x6 joists would be R-23.8

#### Rim Joists:

**Pre R-Value:** 4.0\*  
\*Add for additional installed materials

**Post R-Value:** Fiberglass: Add R 2.5 Per Inch  
2 Part Foam: Add R 5.0 Per Inch

## Doors:

**Pre R-Value: .85\***

**\*Can use Pre R-Value below .85 if documented with picture**

**\*Add R-Value of 1.0 for a good existing storm door**

**Post R-Value: Wood Solid Core: 2.2\***

**Steel Slab or Small Lite: 7.0\***

**Steel with Large Lite: 5.4\***

**Mobile Home Door: 5.0\***

**\*Add R-Value of 1.0 for a good existing storm door**

## Windows:

**Pre R-Value: Single glass - .85 Double pane or Single glass with storm – 2.0\***

**\*Can use Pre R-Value below .85 if documented with picture**

**Post R-Value: Double pane or Single glass with storm – 2.0\***

**\*Any R-Value above 2.0, Must be Documented by Manufacturer**

## Storm Windows

**Pre R-Value: Single glass - .85 Double pane or Single glass with storm – 2.0**

**Post R-Value: Single glass with storm – 2.0 Double pane with storm – 2.9**

## Basement Walls and Non-Exposed Crawl Spaces:

**Pre R-Value: Use R-Value Chart Below**

Approximate R-Values below grade	R0	R4	R7	R11	R19
1 ft below grade	1.19	5.72	8.85	12.96	21.52
2 ft below grade	2.06	7.27	10.70	15.16	24.69
3 ft below grade	2.83	8.61	12.36	17.25	27.74
4 ft below grade	3.51	9.71	13.78	19.00	30.27
5 ft below grade	4.10	10.58	14.81	20.26	32.01
6 ft below grade	4.69	11.32	15.70	21.34	33.44
7 ft below grade	5.22	12.05	16.59	22.48	35.62

All R-values listed above include losses from the floor  
Use for both pre and post R-values in Wxeor

Example - A block wall with no existing insulation 6 ft. below grade would have a pre R-value of 4.69  
If you are adding R-11 to that wall the post R-value would be 21.34

## **Foundation Perimeter:**

**Pre R-Value: 1.0\***

**\*Add for additional installed materials**

**Post R-Value: Add R 5.0 per inch of Polystyrene**

## **Mobile Homes:**

### **Walls:**

**Pre R-Value: Add R-Value of 3.8 to existing insulation R-Value (R 3 per inch)  
Downgrade existing R-Value by 25% if cavity is not full**

**Post R-Value: Fiberglass: R 4.0 per inch\* + 1.8  
\*Blown to a Density of 1.6 per Cubic Ft.  
Example – 2x4 wall would be R-14**

**Use Weatherization Spreadsheet for best accuracy**

### **Ceilings:**

**Pre R-Value: Add R-Value of 1.8 to existing insulation R-Value (R 3 per inch)**

**Post R-Value: Fiberglass: R 4.0 per inch of edge height + R 2.0 per inch x (center  
height – edge height) \*  
\*Blown to a Density of 1.6 per Cubic Ft.**

**Use Weatherization Spreadsheet for best accuracy**

### **Floors:**

**Pre R-Value: Add R-Value of 3.93 to existing insulation R-Value (R 3 per inch)**

**Post R-Value: Use manufacturer's label when using fiberglass batts (R-11 or R-19)  
Use 4.0 per inch installed when blowing fiberglass  
Example – 2 x 6 joists would be R-22**

**Use Weatherization Spreadsheet for best accuracy**