



*City of Belvidere*  
**BUILDING DEPARTMENT**  
401 Whitney Blvd. Suite 300 Belvidere, IL 61008 (815)-547-7177

## **Windows and Exterior Doors**

These are some helpful tips for the process of replacing windows or exterior doors. This is not the entire code book and not all of the code sections are covered. These are some of the more important points. Please feel free to contact the City of Belvidere Building Department at 815-547-7177 if you have any questions.

## **Requirements for Window and Exterior Door permits**

1. Documentation or drawings detailing the following:
  - Dimensions of proposed window(s) or door(s)
  - If proposed window(s) or door(s) are changing size
  - Locations of proposed window(s) or door(s), bedroom, kitchen, etc.
  - U-factor of any window or door with glazing
2. Owner's Name, Address, and Phone Number
3. Contractor(s) Name, Address, contractor licenses, and Phone Number
4. Value of Construction

## **Minimum Requirements**

All construction must comply with the adopted building codes which are as follows:  
2015 International Residential Code for one and two family dwellings  
2015 International Energy Conservation Code  
2015 Northwest Illinois Regional Building Code

## **Special Considerations**

Properties located in historical, landmark, or overlay districts are subject to review by either the city Planning Department or the Belvidere Historic Preservation Commission prior to permit issuance. If you are unsure if your property is located in one of the districts listed above, please contact the Department of Community Development at (815) 547-7177



# Energy Efficiency

The 2015 International Energy Conservation Code is an Illinois State wide adopted code.

There are two key numbers in regards to the efficiency of windows or glazing in exterior doors.

The first is U-factor. U-Factor represents the overall heat transfer coefficient of the window. Simply put, U-Factor measures the amount of heat loss through a window.

A lower U-Factor means less heat will escape through a window and the product is better insulated. U-Factor is especially important during the winter months and can make a big difference in heating costs. The current energy code 2015 IECC requires a U-factor of .32 or less for any windows or doors with glazing.

The next key number is solar heat gain coefficient (SHGC). This is a number between 0 and 1, and it compares amount of solar heat that reaches the window with the amount that gets through to the inside. In a hot climate, or in a cold climate on west-facing windows with rooms that tend to overheat in low-angle afternoon sun, less solar heat gain is generally good, and this number should be low.


In cold climates on south-facing walls, a higher solar-heat-gain number is better--this supports "passive solar" heating. In this situation, an SHGC value of 0.42 to 0.63 is desirable, and higher is better.

Unfortunately, due to the different low-e coatings used, higher SHGC values generally also come with somewhat higher U-factors. In other words, to get more solar heat gain you have to give up some insulation value. That's okay, but usually is only worth doing on south-facing walls. On north-facing walls, you want the lowest U-factor possible.

## Examples of Window Energy Tags

 <b>JELD-WEN</b> WINDOWS & DOORS Premium Vinyl Slider	
<b>ENERGY PERFORMANCE RATINGS</b> U-FACTOR (U.S./I-P)      SOLAR HEAT GAIN COEFFICIENT <b>0.30</b> <b>0.23</b>	
<b>ADDITIONAL PERFORMANCE RATINGS</b> VISIBLE TRANSMITTANCE <b>0.47</b>	

 <b>World's Best Window Co.</b> Millennium 2000+ Vinyl-Clad Wood Frame Double Glazing • Argon Fill • Low E Product Type: Vertical Slider	
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)      Solar Heat Gain Coefficient <b>0.30</b> <b>0.30</b>	
<b>ADDITIONAL PERFORMANCE RATINGS</b> Visible Transmittance      Air Leakage (U.S./I-P) <b>0.51</b> <b>0.2</b>	

 <b>Crystal Pacific Window &amp; Door System, Inc.</b> Vista PLUS Fixed Window Vinyl Frame Double Glazing (DS-D5) • Argon-LoE <sup>3</sup> -366™ Grids CPW-M-1-00028-00004	
<b>ENERGY PERFORMANCE RATINGS</b> U-Factor (U.S./I-P)      Solar Heat Gain Coefficient <b>0.29</b> <b>0.20</b>	
<b>ADDITIONAL PERFORMANCE RATINGS</b> VISIBLE TRANSMITTANCE <b>0.46</b>	



# Window Replacement

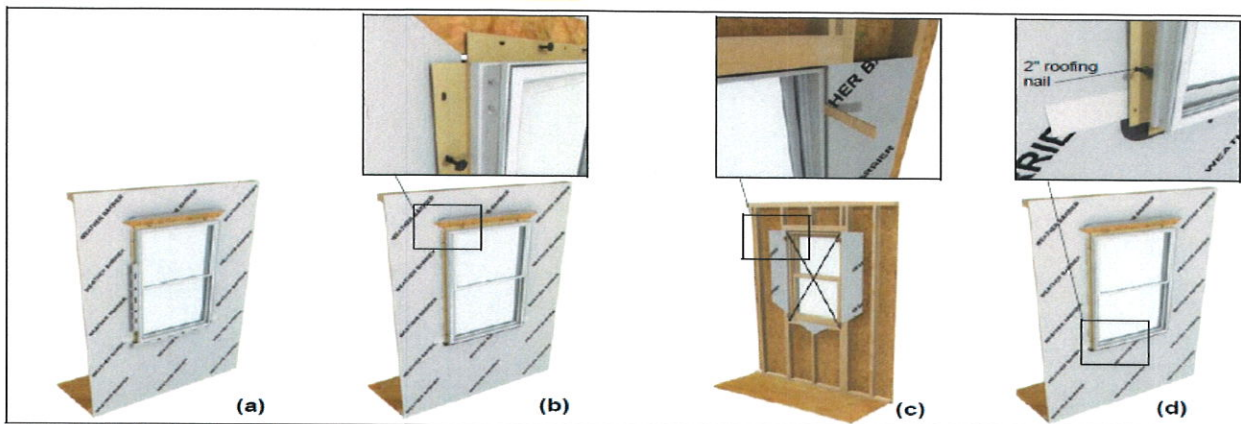
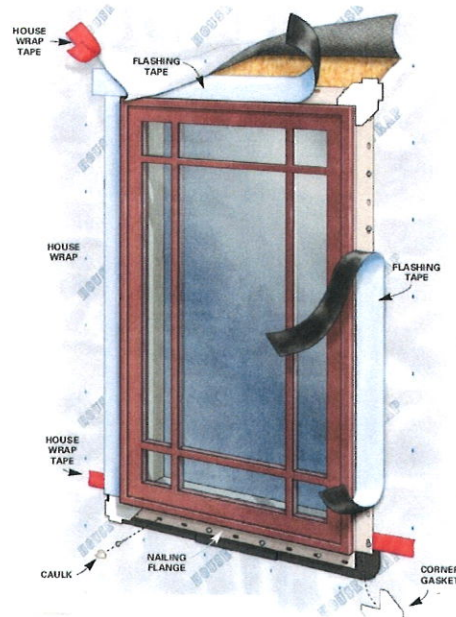
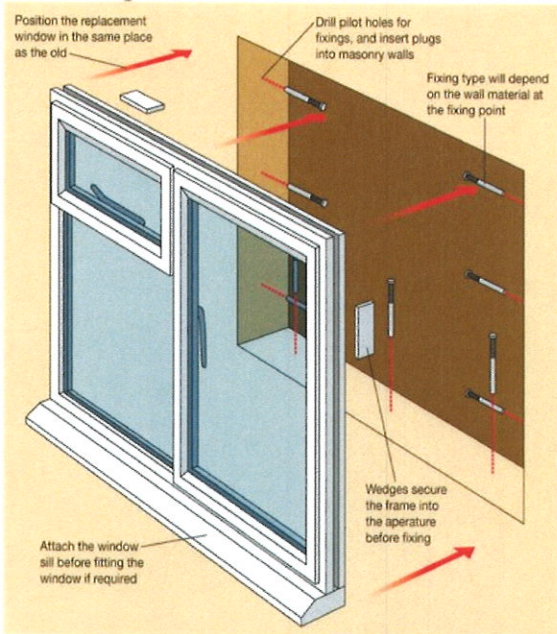
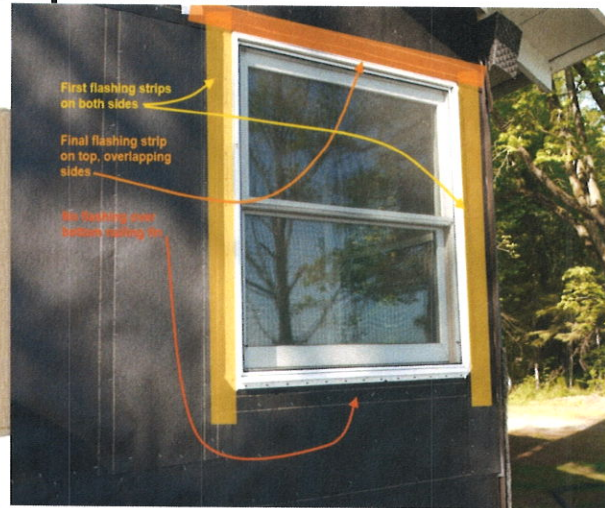
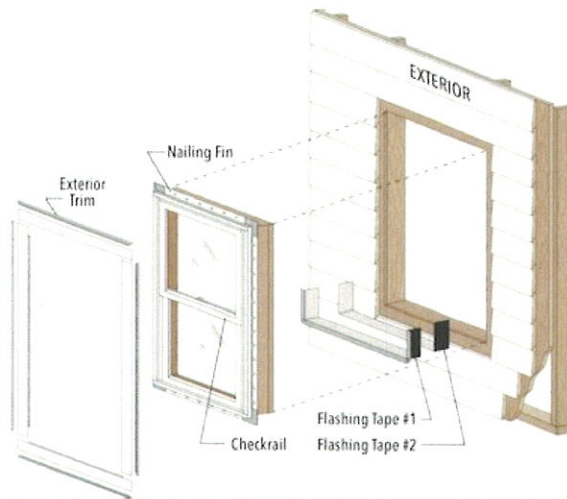


Figure 8 Positioning the window in the opening.



# Exterior Door Replacement

## EXTERIOR DOORS: ROUGH OPENINGS SIZE CHART

### DOOR WIDTHS

2/6 = 30"  
2/8 = 32"  
3/0 = 36"

### DOOR HEIGHTS

6/6 = 78"  
6/8 = 80"  
Custom sizes available



### ROUGH OPENING

#### SINGLE DOOR UNIT

2/6 x 6/8 32-1/2" x 82-1/4"  
2/8 x 6/8 34-1/2" x 82-1/4"  
3/0 x 6/8 38-1/2" x 82-1/4"

#### DOUBLE DOOR UNIT

5/0 x 6/8 w/astragal 63" x 82-1/4"  
5/4 x 6/8 w/astragal 67" x 82-1/4"  
6/0 x 6/8 w/astragal 75" x 82-1/4"

### SIDELITE PANEL WIDTH 12"

#### ROUGH OPENING: Wood/Continuous

Head & Sill  
(12" Sidelites)  
One 3/0 Door + One Sidelite 52-1/2" x 82-1/4"  
One 3/0 Door + 2 Sidelites 65-1/2" x 82-1/4"

#### ROUGH OPENING: Composite Frame

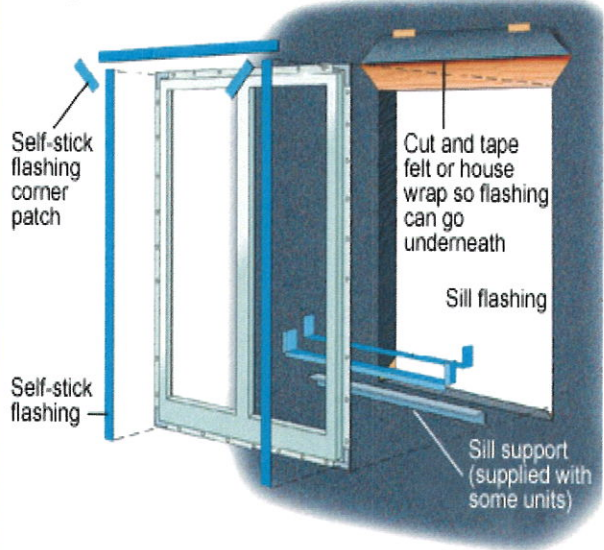
(12" Sidelites)  
One 3/0 Door + One Sidelite 51-1/2" x 82-1/4"  
One 3/0 Door + 2 Sidelites 64-1/2" x 82-1/4"

### PRIVACY RATING

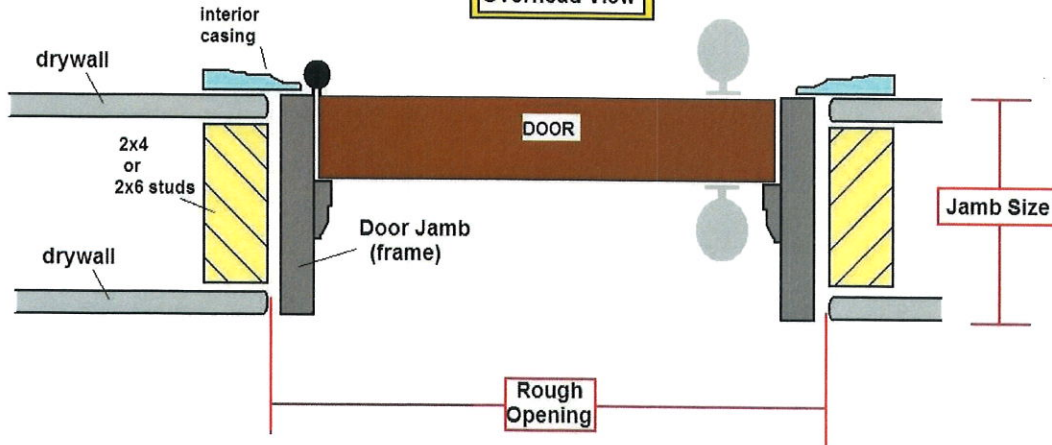
#### Decorative Glass Doors

Visibility scale: 1 = clear  
10 = private

### Sealing a Patio Door



### Overhead View

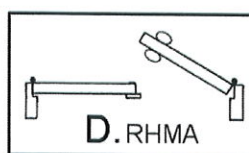
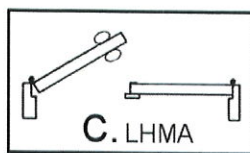
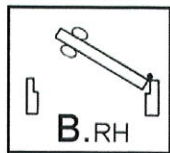
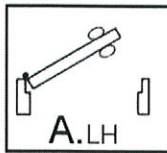


### To measure for "rough opening"

a. remove all interior casing with a pry bar, measure from stud to stud: left to right, Subtract 2" to get the maximum door width available for this opening.

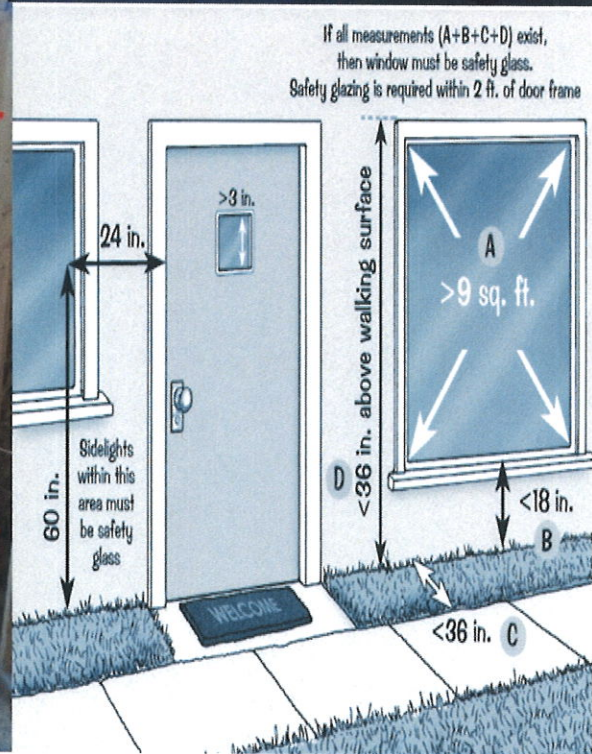
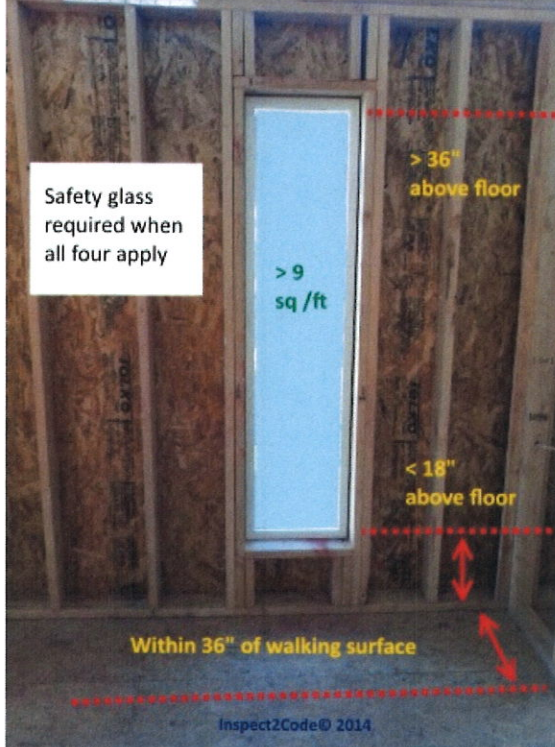
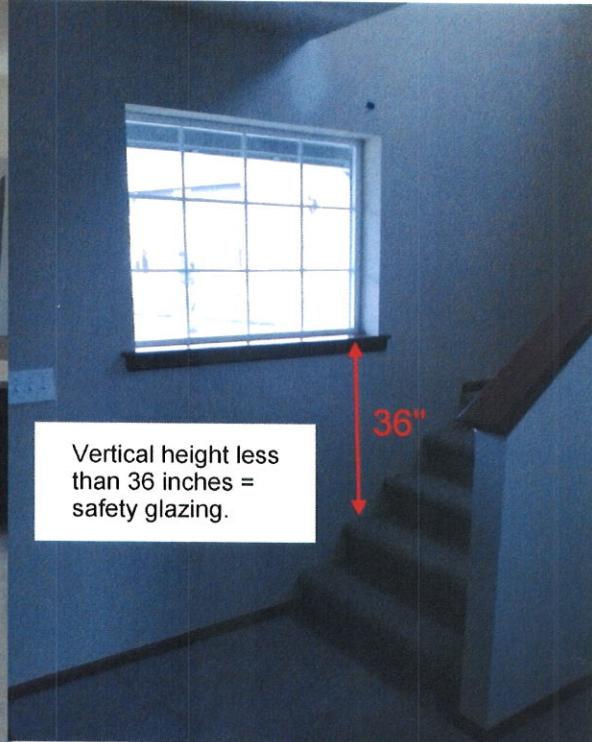
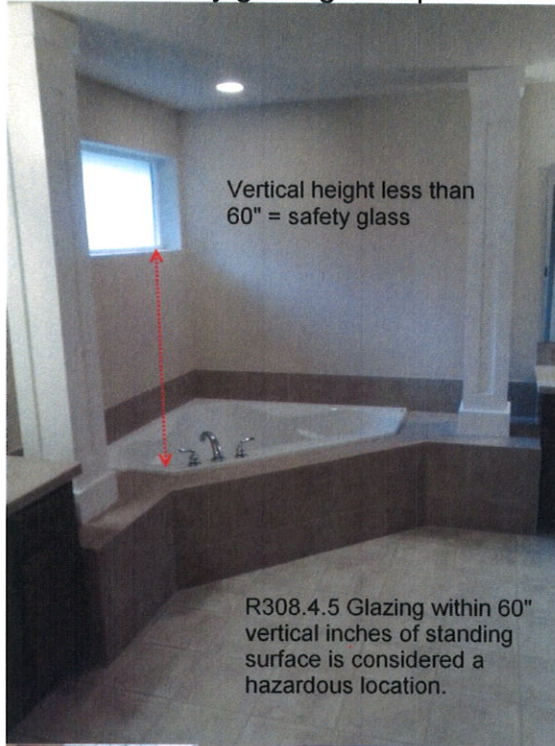
### To measure for "Jamb Size"

a. measure the wall's finished thickness (drywall to drywall) or the existing jamb. standard jamb thickness is 4 9/16", but may vary upon other factors.



# Safety Glazing

Safety glazing is required in any of the situations below



# Emergency Egress Window

Basements, habitable attics, and every sleeping room shall require an operable emergency escape/ rescue opening with a minimum opening size of 5.7 square feet. The minimum opening height is 24 inches and minimum opening width 20 inches. Window wells with a vertical depth over 44 inches require a ladder.

## Egress Code: Minimum Size Requirements

