**5.x Input Specifications for Weather Drivers Tests**

**5.x.1 Case WD100: Base Case.** Begin with Case WD100. Case WD100 shall be modeled as specified in this section and its subsections.

**5.x.1.1 Weather and Site Data**
**5.x.1.1.1 Weather Data.** The WD100.tmy3 weather data provided with the electronic files accompanying this standard shall be used for Case WD100. These data are described in Normative Annex A1, Section A1.1.1.

*Informative Note:* The time convention for the weather file is standard time.  No shift for daylight savings time is included.

**5.x.1.1.2 Site Data.** The site latitude, longitude, altitude, and time zone provided in Table 1 shall be used.

*Table 1: Site Data for Weather File WD100.tmy3*

| Latitude | 39.833° north |
|----------|---------------|
| Longitude | 104.65° west |
| Altitude | 1650 m |
| Time Zone | -7 |

**5.x.1.2 Ground Reflectance**. The ground reflectance shall be 0 (i.e. no ground reflected solar radiation).

**5.x.1.3 Output Requirements.** Output shall be provided in accordance with Section 6.x.1.

**5.x.1.4 Incident Radiation Surfaces.** For programs that are not able to directly specify surfaces for calculating incident solar radiation, skip the remainder of this section and model the surfaces by applying the alternative building surfaces specified in Section 5.x.1.5.

The incident solar radiation on the surfaces with the azimuths and slopes listed in Table 2 shall be calculated.

*Table 2: Azimuth and Slope for Surfaces*

| Azimuth | Slope |
|---------|-------|
| Horizontal | 0° from horizontal |
| South | 90° from horizontal |
| East | 90° from horizontal |
| North | 90° from horizontal |
| West | 90° from horizontal |
| 45° East of South | 90° from horizontal |
| 45° West of South | 90° from horizontal |
| East | 30° from horizontal |
| South | 30° from horizontal |
| West | 30° from horizontal |

**5.x.1.5 Alternative Surface Specification**. If the program being tested was able to model the solar radiation incident on the surfaces as specified in Section 5.x.1 skip this section.  The building surfaces are used to test the incident solar radiation on the different slopes and azimuths.  Building geometry for a single story building with the same surfaces as listed in Table 2 is given in Figure 1 and Figure 2.  Any external shading or building self-shading shall be ignored.
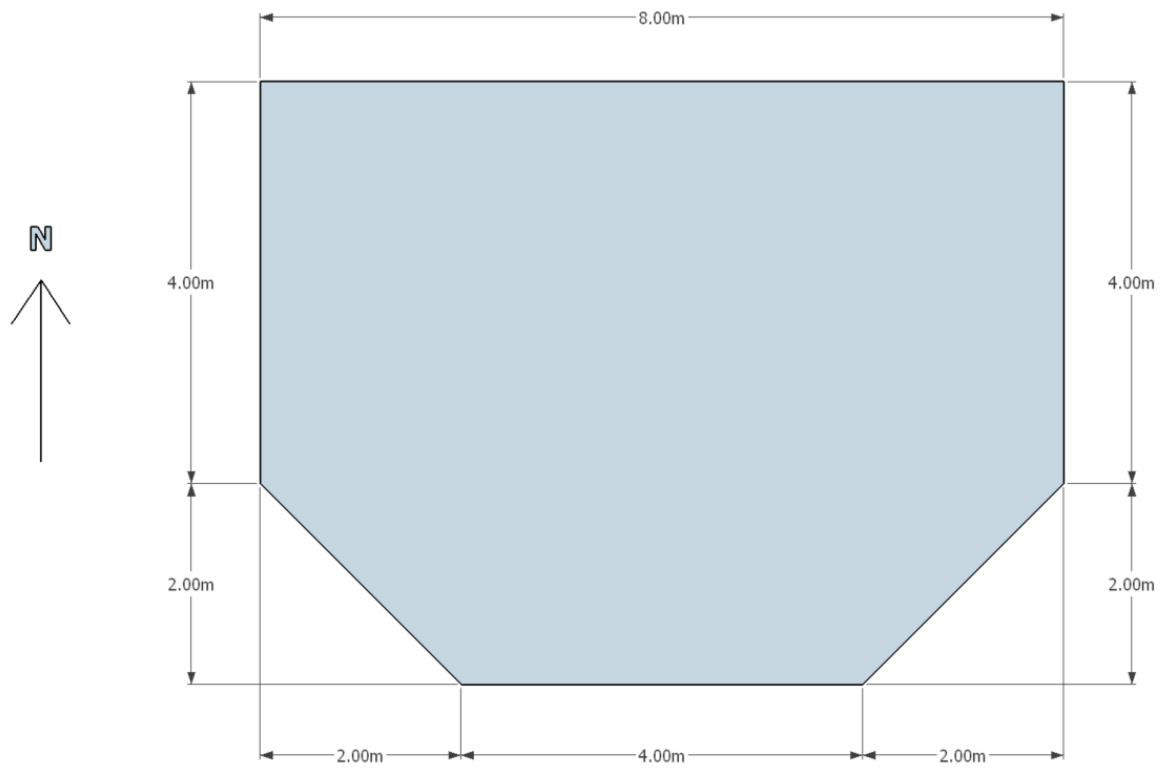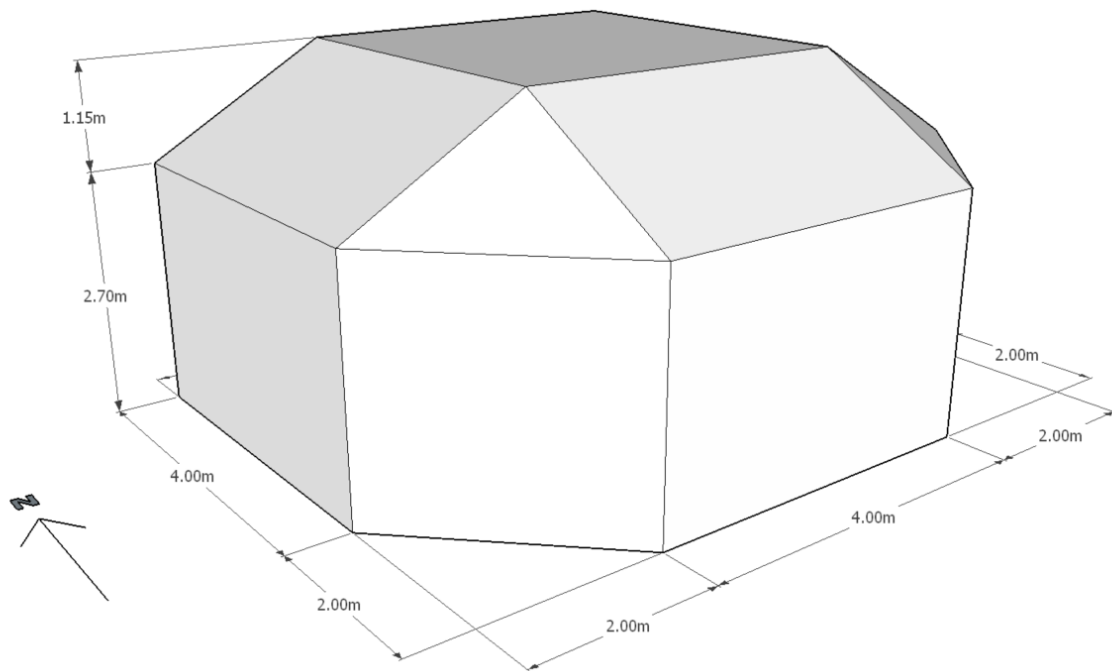
*Figure 1 Floor Plan for Building Geometry*



*Figure 2 Dimensions for Building Geometry*

*Informative Note:* Since the building is only used to determine the surfaces for the incident solar radiation, the actual construction materials have no influence on the results. Thus, any material properties can be used for the building model.

**5.x.2 Case WD200: Low Elevation, Hot and Humid Case.** Case WD200 shall be modeled exactly the same as Case WD100 except for the changes noted in the subsections below.

**5.x.2.1 Weather and Site Data**
**5.x.2.1.1 Weather Data.** The WD200.tmy3 weather data provided with the electronic files accompanying this standard shall be used for Case WD200.
**5.x.2.1.2 Site Data.** The site latitude, longitude, altitude, and time zone provided in Table 3 shall be used.

*Table 3: Site Data for Weather File WD200.tmy3*

| Latitude | 33.633° north |
|----------|---------------|
| Longitude | 84.433° west |
| Altitude | 308 m |
| Time Zone | -5 |

**5.x.2.2 Output Requirements.** Output shall be provided in accordance with Section 6.x.1.

**5.x.3 Case WD300: Southern Hemisphere Case.** Case WD300 shall be modeled exactly the same as Case WD100 except for the changes noted in the subsections below.

**5.x.3.1 Weather and Site Data**
**5.x.3.1.1 Weather Data.** The WD300.tmy3 weather data provided with the electronic files accompanying this standard shall be used for Case WD300.
**5.x.3.1.2 Site Data.** The site latitude, longitude, altitude, and time zone provided in Table 4 shall be used.

*Table 4: Site Data for Weather File WD300.tmy3*

| Latitude | 33.393° south |
|----------|---------------|
| Longitude | 70.786° west |
| Altitude | 474 m |
| Time Zone | -4 |

**5.x.3.2 Output Requirements.** Output shall be provided in accordance with Section 6.x.1.

**5.x.3.3 Incident Radiation Surfaces.** The north and south directions shall be reversed from those in WD100.

**5.x.4 Case WD400: High Latitude Case.** Case WD400 shall be modeled exactly the same as Case WD100 except for the changes noted in the subsections below.

**5.x.4.1 Weather and Site Data**
**5.x.4.1.1 Weather Data.** The WD400.tmy3 weather data provided with the electronic files accompanying this standard shall be used for Case WD400.
**5.x.4.1.2 Site Data.** The site latitude, longitude, altitude, and time zone provided in Table 5 shall be used.

*Table 5: Site Data for Weather File WD400.tmy3*

| Latitude | 71.286° north |
|----------|---------------|
| Longitude | 156.767° west |
| Altitude | 10 m |

| Time Zone | -9 |
|-----------|-----|

**5.x.4.2 Output Requirements.** Output shall be provided in accordance with Section 6.x.1.

**5.x.5 Case WD500: Time Zone Case.** Case WD500 shall be modeled exactly the same as Case WD100 except for the changes noted in the subsections below.

**5.x.5.1 Weather and Site Data**
**5.x.5.1.1 Weather Data.** The WD500.tmy3 weather data provided with the electronic files accompanying this standard shall be used for Case WD500.
**5.x.5.1.2 Site Data.** The site latitude, longitude, altitude, and time zone provided in Table 6 shall be used.

*Table 6: Site Data for Weather File WD500.tmy3*

| Latitude | 28.567° north |
|----------|---------------|
| Longitude | 77.103° east |
| Altitude | 236.8 m |
| Time Zone | 5.5 |

**5.x.5.2 Output Requirements.** Output shall be provided in accordance with Section 6.x.1.

**5.x.6 Case WD600: Ground Reflectance.** Case WD600 shall be modeled exactly the same as Case WD100 except for the changes noted in the subsections below.

**5.x.6.1 Weather and Site Data**
**5.x.6.1.1 Weather Data.** The WD600.tmy3 weather data provided with the electronic files accompanying this standard shall be used for Case WD600.
**5.x.6.1.2 Site Data.** The site latitude, longitude, altitude, and time zone provided in Table 1 shall be used.

**5.x.6.1 Ground Reflectance**. The ground reflectance shall be 0.2.

**5.x.6.2 Output Requirements.** Output shall be provided in accordance with Section 6.x.1.

**6.x.1 Weather Driver Test Outputs**

The following outputs shall be provided at each timestep for the annual simulation (Midnight January 1st to Midnight December 31st):

- Dry bulb temperature (C)
- Relative humidity (%)
- Dewpoint temperature (C)
- Humidity ratio (kg moisture/kg dry air)
- Wet bulb temperature (C)
- Windspeed (m/s)
- Wind direction (degrees from north)
- Station pressure (mbar)
- Total cloud cover (tenths of sky)
- Opaque cloud cover (tenths of sky)
- Sky temperature (C)
- Total, beam, and diffuse solar radiation incident on each surface (Wh/m2)

For each value, provide the time for the value.  If the output value is an instantaneous value at a specific time, report the time for the value at the specific time (for example, if the dry bulb temperature is 15 C at the end of the hour from 6 to 7 the output value is 15 C at 7). If the output value is an average value over a specific time period, report the time for the value at the midpoint of the time period (for example, if the dry bulb temperature is an average of 12 C over the hour from 6 to 7 the output value is 12 C at 6.5).

*Informative Note:* A specific timestep for the sub-hourly outputs is not specified. The choice of timestep is left up to the person running the tests, but a typical sub-hourly timestep for the software being tested is a good choice.