

**Design conditions for CHARLESTON, SC, USA**

**Station Information**

| Station name      | WMO#          | Lat           | Long          | Elev      | StdP          | Hours +/- UTC | Time zone code | Period      |
|-------------------|---------------|---------------|---------------|-----------|---------------|---------------|----------------|-------------|
| 1a                | 1b            | 1c            | 1d            | 1e        | 1f            | 1g            | 1h             | 1i          |
| <b>CHARLESTON</b> | <b>722080</b> | <b>32.90N</b> | <b>80.02W</b> | <b>12</b> | <b>101.18</b> | <b>-5.00</b>  | <b>NAE</b>     | <b>7201</b> |

**Annual Heating and Humidification Design Conditions**

| Coldest month | Heating DB  |             | Humidification DP/MCDB and HR |            |            |              |            |            | Coldest month WS/MCDB |             |             |             | MCWS/PCWD to 99.6% DB |          |
|---------------|-------------|-------------|-------------------------------|------------|------------|--------------|------------|------------|-----------------------|-------------|-------------|-------------|-----------------------|----------|
|               | 99.6%       | 99%         | 99.6%                         |            |            | 99%          |            |            | 0.4%                  |             | 1%          |             | MCWS                  | PCWD     |
|               |             |             | DP                            | HR         | MCDB       | DP           | HR         | MCDB       | WS                    | MCDB        | WS          | MCDB        |                       |          |
| 2             | 3a          | 3b          | 4a                            | 4b         | 4c         | 4d           | 4e         | 4f         | 5a                    | 5b          | 5c          | 5d          | 6a                    | 6b       |
| <b>1</b>      | <b>-3.7</b> | <b>-1.6</b> | <b>-13.5</b>                  | <b>1.2</b> | <b>1.1</b> | <b>-11.0</b> | <b>1.5</b> | <b>2.5</b> | <b>11.4</b>           | <b>14.0</b> | <b>10.4</b> | <b>12.2</b> | <b>3.2</b>            | <b>0</b> |

**Annual Cooling, Dehumidification, and Enthalpy Design Conditions**

| Hottest month | Hottest month DB range | Cooling DB/MCWB |             |             |             |             |             | Evaporation WB/MCDB |             |             |             |             |             | MCWS/PCWD to 0.4% DB |            |
|---------------|------------------------|-----------------|-------------|-------------|-------------|-------------|-------------|---------------------|-------------|-------------|-------------|-------------|-------------|----------------------|------------|
|               |                        | 0.4%            |             | 1%          |             | 2%          |             | 0.4%                |             | 1%          |             | 2%          |             | MCWS                 | PCWD       |
|               |                        | DB              | MCWB        | DB          | MCWB        | DB          | MCWB        | WB                  | MCDB        | WB          | MCDB        | WB          | MCDB        |                      |            |
| 7             | 8                      | 9a              | 9b          | 9c          | 9d          | 9e          | 9f          | 10a                 | 10b         | 10c         | 10d         | 10e         | 10f         | 11a                  | 11b        |
| <b>7</b>      | <b>9.0</b>             | <b>34.6</b>     | <b>25.7</b> | <b>33.4</b> | <b>25.4</b> | <b>32.3</b> | <b>25.0</b> | <b>26.9</b>         | <b>31.8</b> | <b>26.4</b> | <b>31.1</b> | <b>25.8</b> | <b>30.2</b> | <b>4.5</b>           | <b>240</b> |

  

| Dehumidification DP/MCDB and HR |             |             |             |             |             |             |             |             | Enthalpy/MCDB |             |             |             |             |             |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|-------------|-------------|
| DP                              | HR          | MCDB        | 1%          |             |             | 2%          |             |             | 0.4%          |             | 1%          |             | 2%          |             |
|                                 |             |             | DP          | HR          | MCDB        | DP          | HR          | MCDB        | Enth          | MCDB        | Enth        | MCDB        | Enth        | MCDB        |
| 12a                             | 12b         | 12c         | 12d         | 12e         | 12f         | 12g         | 12h         | 12i         | 13a           | 13b         | 13c         | 13d         | 13e         | 13f         |
| <b>25.8</b>                     | <b>21.1</b> | <b>29.1</b> | <b>25.2</b> | <b>20.3</b> | <b>28.6</b> | <b>24.6</b> | <b>19.6</b> | <b>28.2</b> | <b>84.5</b>   | <b>31.8</b> | <b>81.9</b> | <b>30.9</b> | <b>79.6</b> | <b>30.6</b> |

**Extreme Annual Design Conditions**

| Extreme Annual WS |            |            | Extreme Max WB | Extreme Annual DB |             |                    |            | n-Year Return Period Values of Extreme DB |             |             |              |             |              |             |              |
|-------------------|------------|------------|----------------|-------------------|-------------|--------------------|------------|---|-------------|-------------|--------------|-------------|--------------|-------------|--------------|
| 1%                | 2.5%       | 5%         |                | Mean              |             | Standard deviation |            | n=5 years                                 |             | n=10 years  |              | n=20 years  |              | n=50 years  |              |
| Max               | Min        | Max        |                | Min               | Max         | Min                | Max        | Min                                       | Max         | Min         | Max          | Min         | Max          | Min         | Max          |
| 14a               | 14b        | 14c        | 15             | 16a               | 16b         | 16c                | 16d        | 17a                                       | 17b         | 17c         | 17d          | 17e         | 17f          | 17g         | 17h          |
| <b>9.1</b>        | <b>8.2</b> | <b>7.4</b> | <b>29.3</b>    | <b>36.9</b>       | <b>-7.3</b> | <b>1.3</b>         | <b>2.9</b> | <b>37.8</b>                               | <b>-9.4</b> | <b>38.6</b> | <b>-11.1</b> | <b>39.3</b> | <b>-12.7</b> | <b>40.3</b> | <b>-14.8</b> |

**Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures**

| %    | Jan         |             | Feb         |             | Mar         |             | Apr         |             | May         |             | Jun         |             |
|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|      | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        |
|      | 18a         | 18b         | 18c         | 18d         | 18e         | 18f         | 18g         | 18h         | 18i         | 18j         | 18k         | 18l         |
| 0.4% | <b>24.2</b> | <b>18.5</b> | <b>25.8</b> | <b>18.5</b> | <b>28.4</b> | <b>18.9</b> | <b>31.2</b> | <b>20.2</b> | <b>33.4</b> | <b>23.3</b> | <b>35.7</b> | <b>25.3</b> |
| 1%   | <b>22.9</b> | <b>17.9</b> | <b>24.5</b> | <b>17.8</b> | <b>27.2</b> | <b>18.4</b> | <b>30.1</b> | <b>19.9</b> | <b>32.4</b> | <b>22.8</b> | <b>34.8</b> | <b>25.1</b> |
| 2%   | <b>21.6</b> | <b>17.0</b> | <b>23.3</b> | <b>17.0</b> | <b>26.0</b> | <b>18.4</b> | <b>28.9</b> | <b>19.7</b> | <b>31.3</b> | <b>22.5</b> | <b>33.7</b> | <b>24.9</b> |

  

| %    | Jul         |             | Aug         |             | Sep         |             | Oct         |             | Nov         |             | Dec         |             |
|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|      | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        | DB          | MCWB        |
|      | 18m         | 18n         | 18o         | 18p         | 18q         | 18r         | 18s         | 18t         | 18u         | 18v         | 18w         | 18x         |
| 0.4% | <b>36.4</b> | <b>25.9</b> | <b>35.3</b> | <b>26.1</b> | <b>33.6</b> | <b>25.1</b> | <b>30.7</b> | <b>22.6</b> | <b>27.3</b> | <b>20.9</b> | <b>25.2</b> | <b>19.8</b> |
| 1%   | <b>35.6</b> | <b>26.1</b> | <b>34.5</b> | <b>25.9</b> | <b>32.9</b> | <b>24.9</b> | <b>29.5</b> | <b>22.4</b> | <b>26.4</b> | <b>20.5</b> | <b>24.2</b> | <b>19.2</b> |
| 2%   | <b>34.8</b> | <b>26.1</b> | <b>33.8</b> | <b>25.8</b> | <b>32.0</b> | <b>24.6</b> | <b>28.4</b> | <b>21.9</b> | <b>25.7</b> | <b>20.0</b> | <b>23.1</b> | <b>18.5</b> |

**Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures**

| %    | Jan         |             | Feb         |             | Mar         |             | Apr         |             | May         |             | Jun         |             |
|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|      | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        |
|      | 19a         | 19b         | 19c         | 19d         | 19e         | 19f         | 19g         | 19h         | 19i         | 19j         | 19k         | 19l         |
| 0.4% | <b>19.8</b> | <b>22.4</b> | <b>20.3</b> | <b>24.0</b> | <b>21.0</b> | <b>25.1</b> | <b>22.7</b> | <b>27.6</b> | <b>25.3</b> | <b>30.2</b> | <b>26.9</b> | <b>32.5</b> |
| 1%   | <b>19.1</b> | <b>21.4</b> | <b>19.5</b> | <b>22.8</b> | <b>20.5</b> | <b>24.5</b> | <b>21.9</b> | <b>26.2</b> | <b>24.7</b> | <b>29.3</b> | <b>26.5</b> | <b>31.9</b> |
| 2%   | <b>18.4</b> | <b>20.5</b> | <b>18.7</b> | <b>21.4</b> | <b>19.9</b> | <b>23.8</b> | <b>21.3</b> | <b>25.6</b> | <b>24.2</b> | <b>28.6</b> | <b>26.0</b> | <b>31.1</b> |

  

| %    | Jul         |             | Aug         |             | Sep         |             | Oct         |             | Nov         |             | Dec         |             |
|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|      | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        | WB          | MCDB        |
|      | 19m         | 19n         | 19o         | 19p         | 19q         | 19r         | 19s         | 19t         | 19u         | 19v         | 19w         | 19x         |
| 0.4% | <b>28.1</b> | <b>33.2</b> | <b>27.6</b> | <b>32.5</b> | <b>26.4</b> | <b>30.2</b> | <b>24.8</b> | <b>27.7</b> | <b>22.5</b> | <b>25.0</b> | <b>21.2</b> | <b>23.5</b> |
| 1%   | <b>27.7</b> | <b>32.8</b> | <b>27.1</b> | <b>32.0</b> | <b>26.0</b> | <b>29.8</b> | <b>24.3</b> | <b>27.2</b> | <b>21.9</b> | <b>24.2</b> | <b>20.5</b> | <b>22.7</b> |
| 2%   | <b>27.2</b> | <b>32.2</b> | <b>26.8</b> | <b>31.6</b> | <b>25.6</b> | <b>29.5</b> | <b>23.8</b> | <b>26.6</b> | <b>21.5</b> | <b>23.9</b> | <b>19.7</b> | <b>21.7</b> |

**Monthly Mean Daily Temperature Range**

| Jan         | Feb         | Mar         | Apr         | May         | Jun        | Jul        | Aug        | Sep        | Oct         | Nov         | Dec         |
|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|-------------|-------------|-------------|
| 20a         | 20b         | 20c         | 20d         | 20e         | 20f        | 20g        | 20h        | 20i        | 20j         | 20k         | 20l         |
| <b>10.6</b> | <b>11.2</b> | <b>11.3</b> | <b>11.8</b> | <b>10.6</b> | <b>9.4</b> | <b>9.0</b> | <b>8.7</b> | <b>8.7</b> | <b>10.8</b> | <b>11.3</b> | <b>10.9</b> |

WMO# World Meteorological Organization number Lat Latitude, ° Long Longitude, °  
 Elev Elevation, m StdP Standard pressure at station elevation, kPa  
 DB Dry bulb temperature, °C DP Dew point temperature, °C WB Wet bulb temperature, °C  
 WS Wind speed, m/s Enth Enthalpy, kJ/kg HR Humidity ratio, grams of moisture per kilogram of dry air  
 MCDB Mean coincident dry bulb temperature, °C MCWB Mean coincident wet bulb temperature, °C MCWS Mean coincident wind speed, m/s  
 PCWD Prevailing coincident wind direction, °, 0 = North, 90 = East