

## **SnapNrack Series 200 Ground Mount System**

### **COVER LETTER**

The loading criteria used in this report is from ASCE 7-10. For codes that reference ASCE 7-05, Appendix A is provided to convert the wind speeds in ASCE 7-05 to the wind speeds used in this report. Instructions for this conversion are provided in Appendix A. This report covers wind speeds ( $V_{ult}$ ) to 170 MPH and ground snow to 120 PSF.

#### **The following codes are covered in this report:**

- IBC 2015
- IBC 2012
- IBC 2009
- IBC 2006

The mounting system structural submittal package shall consist of the following:

- Pages 1 – 18 of the report (this includes this cover letter).
- Only the applicable configuration table from pages 19 – 96.
- Pages C1 – C29.
- Appendix A (if applicable).
- The applicable installation details.

This report provides structural engineering calculations and installation criteria for the mounting system only. It does not certify the capacity of the supporting soil. The soil criteria are based on soil class 4 (IBC Chapter 18). This is the generally accepted code minimum. The capacity of the supporting soil is to be approved by the Authority Having Jurisdiction (AHJ). For unusual soil conditions or where required by the AHJ, a geotechnical investigation shall be performed.

Please contact SnapNrack at (877) 732-2860, or [Contact@snapnrack.com](mailto:Contact@snapnrack.com), for questions regarding this report.

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Fellow SEAOC  
LEED AP BD+C, LEED AP HOMES  
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# **Structural Report and Calculations**

## **Series 200 Ground Mount**

For

SnapNrack  
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Prepared By

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July 6, 2016

# Series 200

## Structural Report and Calculations



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### **Introduction**

This summary letter is referencing the Structural Calculation Packet for the SnapNrack Series 200 Mounting System. We performed the calculations in accordance with the International Building Code (IBC) and the ASCE 7-10. The racking system has been designed to withstand code-prescribed forces due to the racking system's own weight, the weight of the solar panels, the snow loads, and both the wind and seismic forces. The limits of the structural design are as listed below.

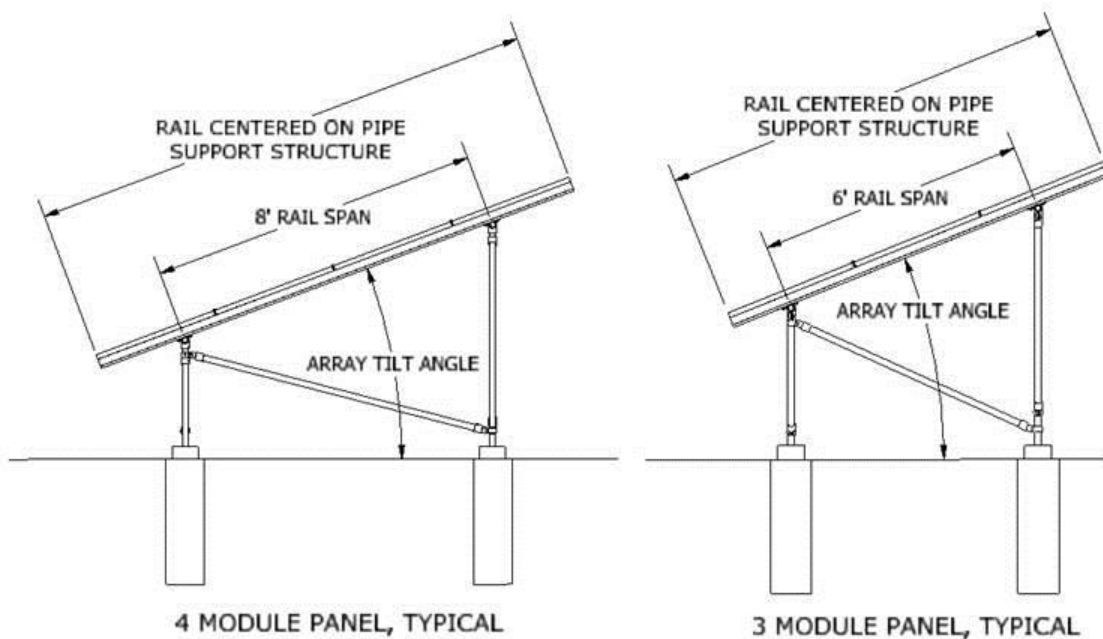
- Wind Speed from 100 mph to 170 mph (Page C3 of calculations)
- Seismic Design Category D (Page C4 of calculations)
- Ground Snow Loads from 0 to 120 psf (Page C5 of calculations)

In our opinion, the racking system, outlined in the SnapNrack Series 200 PV Mounting System Code Compliant Installation Manual, is acceptable and meets the loading requirements stated above.

It should also be noted that the provided summary charts assume the site has a slope less than 15:1 or 15%. For sites with slopes greater than 15%, the listed foundation depths will be required to be increased as per the soils engineer or, if the project does not involve a soils engineer, SnapNrack's drawing S200-D06.

### Aluminum Ground Rail Spans

The aluminum ground rails used to connect the PV panels to the racking system should be installed per the dimensions on the following detail for all tilt angles. With these lengths being constant the horizontal span between the footings will be different for every tilt angle. See detail and chart on page C2 for dimensions. The standard installation of the aluminum rail is two rails per row of PV panels. See chart located on page C14 for conditions where three rails per row of PV panels are required. The rails are to be connected to horizontal pipes with SnapNrack pipe clamps on the bottom of the rail and module clamps on the top in order to secure the PV panels.



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### **Pipe Rails, Braces, and Vertical Post**

The racking system is composed of either a schedule 40 or a schedule 80 pipe, both of which are 1 1/2" in diameter and have a minimum yield strength of 35 ksi. See following details for labels for individual pieces. The 50 ksi Flo-Coat Tube may be used as an alternative for the typical schedule 40 and 80 pipe as listed in these calculations. See manufacturer's specifications for this pipe.

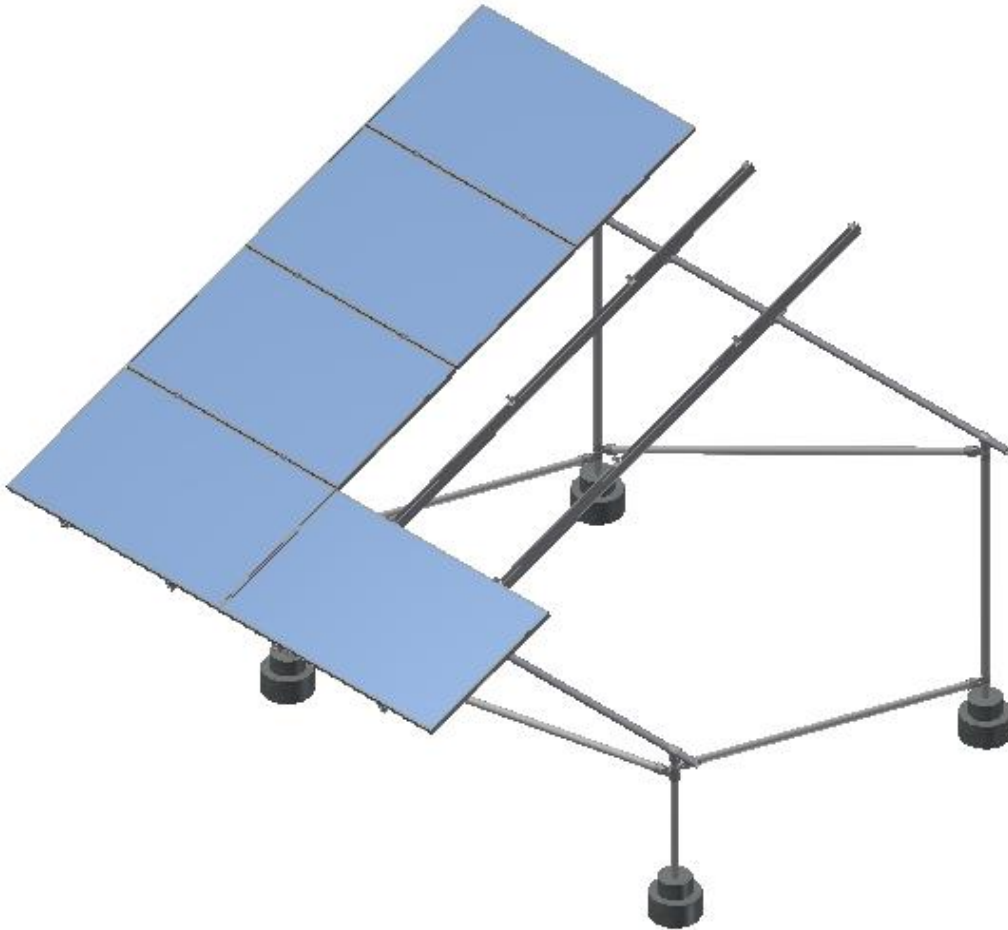
There are two different kinds on installations: standard and braced. Each option comes with a 4 module panel or a 3 module panel choice. Using 2 rails is standard at the more common lower loads, but higher wind and snow loads will require 3 rails per panel. This makes for a total of 8 possible installation configurations.

Each configuration has unique load capabilities for the wind and snow loads specific to each project. Pages C6-C13 illustrate the minimum number of rails required for every snow and wind load combination as well as for every tilt angle. Pages 7 through 14 show each of the 8 possible system configurations.

## Series 200

### Structural Report and Calculations

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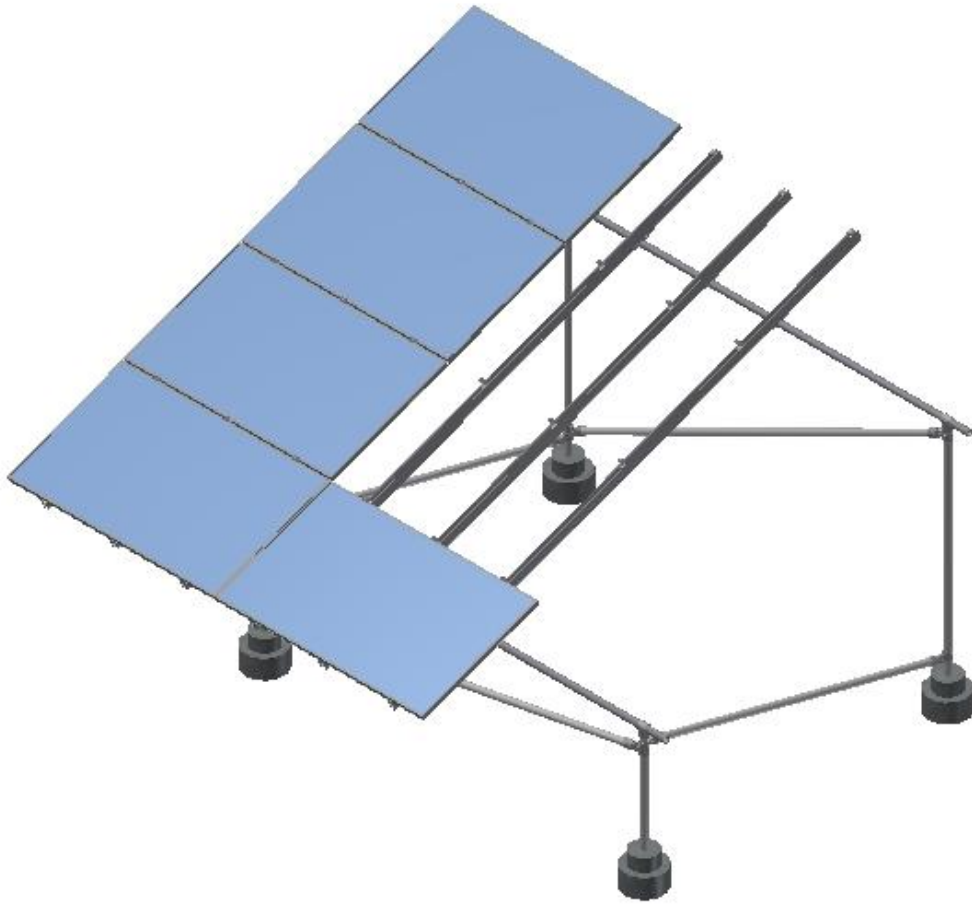


Standard Installation (4 Module Panels and 2 Rails per Panel)

## Series 200

### Structural Report and Calculations

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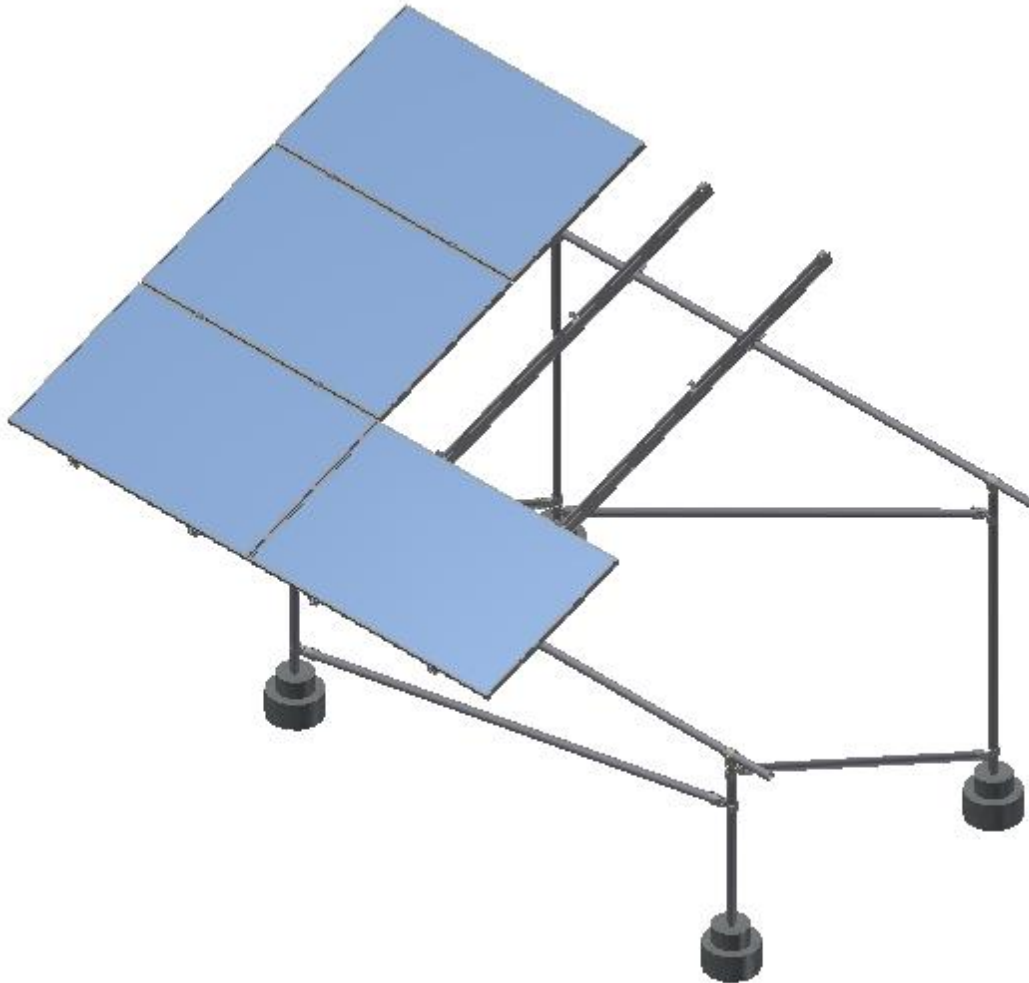


Standard Installation (4 Module Panels and 3 Rails per Panel)

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### Structural Report and Calculations

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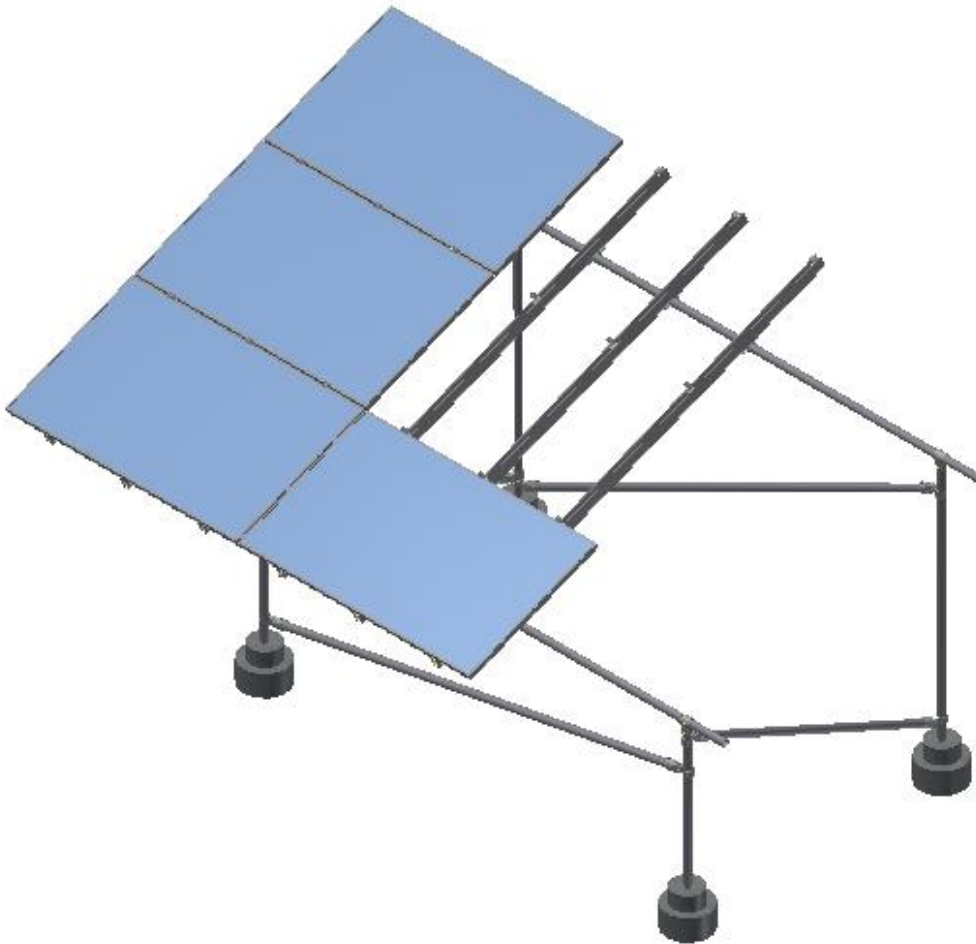


Standard Installation (3 Module Panels and 2 Rails per Panel)

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### Structural Report and Calculations

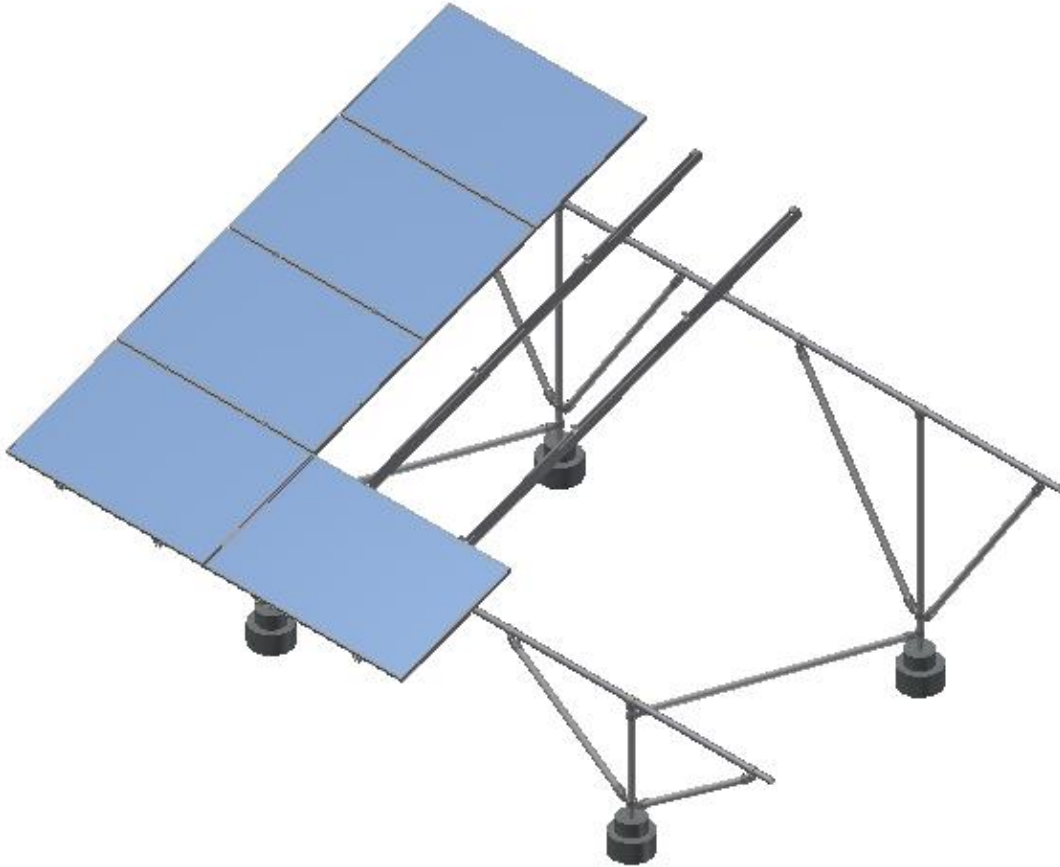
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Standard Installation (3 Module Panels and 3 Rails per Panel)

## Series 200

### Structural Report and Calculations

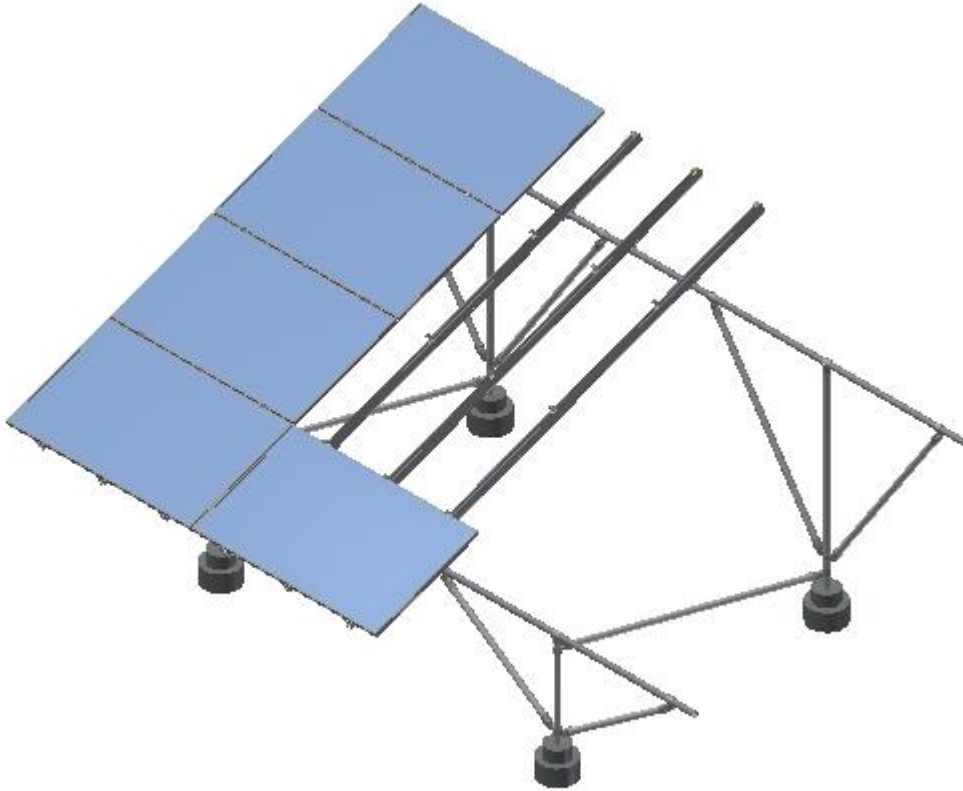


Braced Installation (4 Module Panels and 2 Rails per Panel)

## Series 200

### Structural Report and Calculations

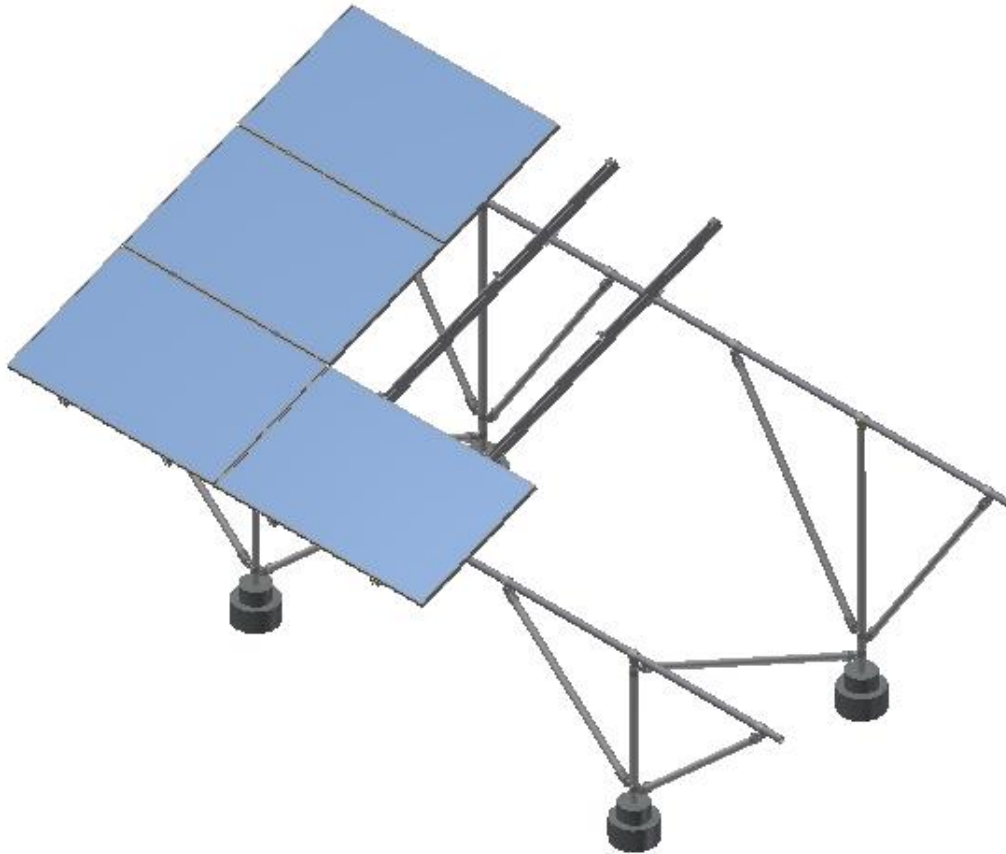
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Braced Installation (4 Module Panels and 3 Rails per Panel)

## Series 200

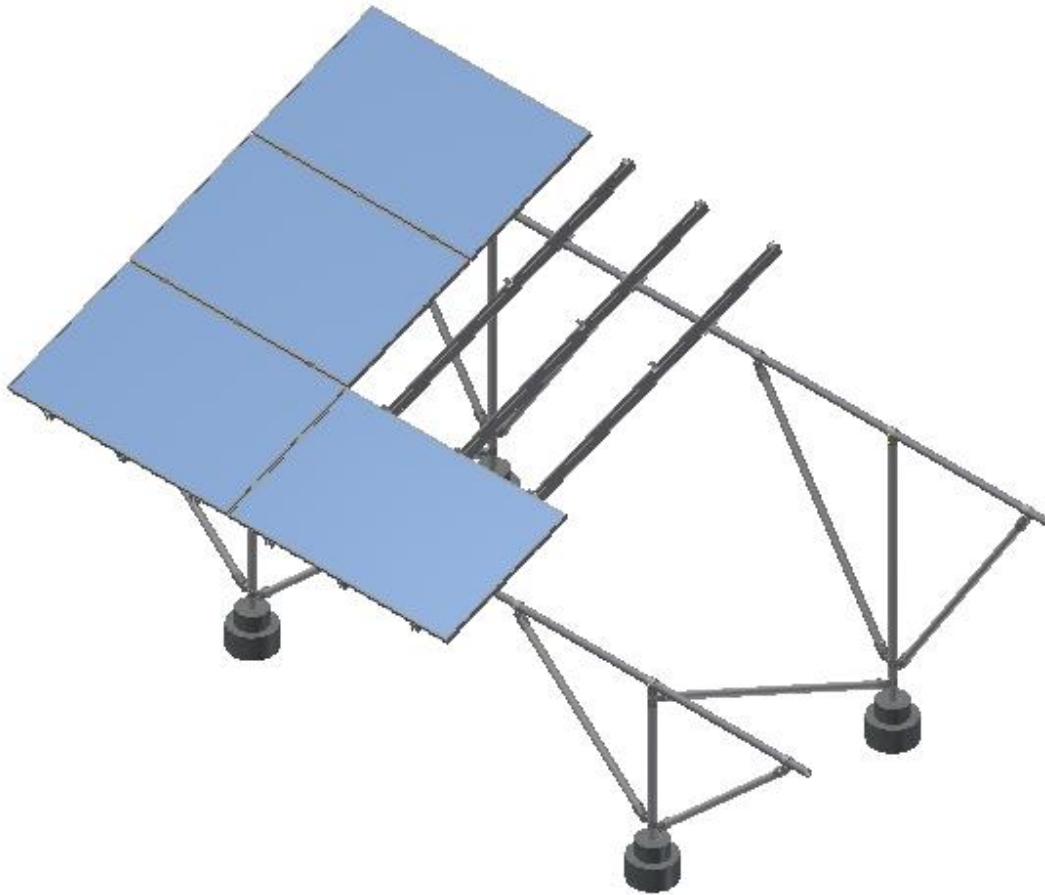
### Structural Report and Calculations



Braced Installation (3 Module Panels and 2 Rails per Panel)

## Series 200

### Structural Report and Calculations



Braced Installation (3 Module Panels and 3 Rails per Panel)

# Series 200

## Structural Report and Calculations



### Configuration Tables

See pages 19 thru 96 for installation of racking system per wind and snow load requirements. See example below for instructions on how to read tables. All dimensions are in inches.

| 100 mph Wind Load 0 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |           |
|------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$          | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     | Number of Rails Required Per Panel |           |
|                              | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     | Module Size                        |           |
|                              | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   | 39" x 65"                          | 39" x 78" |
| $\theta = 0$                 | 135                   | 154    | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 30           | 30   | Yes             | Yes | Yes | 2                                  | 2         |
| $0 > \theta < 7.5$           | 114                   | 130    | 30           | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 30           | 31   | Yes             | Yes | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$          | 107                   | 122    | 30           | 33   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 30           | 40   | Yes             | Yes | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$         | 101                   | 115    | 30           | 38   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 30           | 47   | Yes             | Yes | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$         | 96                    | 110    | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 30           | 50   | Yes             | Yes | Yes | 2                                  | 2         |
| $30 > \theta < 37.5$         | 98                    | 112    | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 30           | 63   | Yes             | Yes | Yes | 2                                  | 2         |
| $37.5 > \theta < 45$         | 101                   | 115    | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 30           | 63   | Yes             | Yes | Yes | 2                                  | 2         |

### Standard Installation

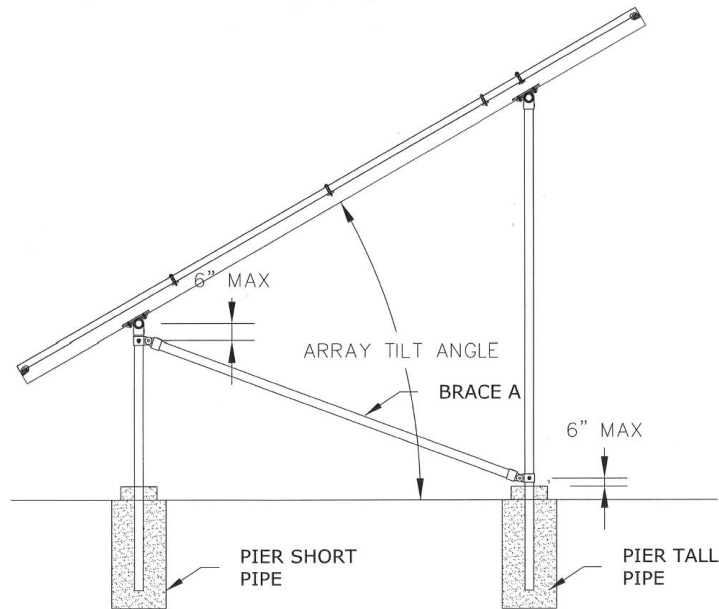
| Tilt Angle $\theta$  | Standard Installation |        |              |      |                 |               |               |
|----------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|
|                      | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               |
|                      | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             |
| $\theta = 0$         | 135                   | 154    | 30           | 30   | No              | Every 3rd Bay | No            |
| $0 > \theta < 7.5$   | 114                   | 130    | 30           | 30   | Yes             | Every 3rd Bay | No            |
| $7.5 > \theta < 15$  | 107                   | 122    | 30           | 33   | Yes             | Every 3rd Bay | No            |
| $15 > \theta < 22.5$ | 101                   | 115    | 30           | 38   | Yes             | Every 3rd Bay | Every 3rd Bay |
| $22.5 > \theta < 30$ | 96                    | 110    | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay |
| $30 > \theta < 37.5$ | 98                    | 112    | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay |
| $37.5 > \theta < 45$ | 101                   | 115    | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay |

### Braced Installation

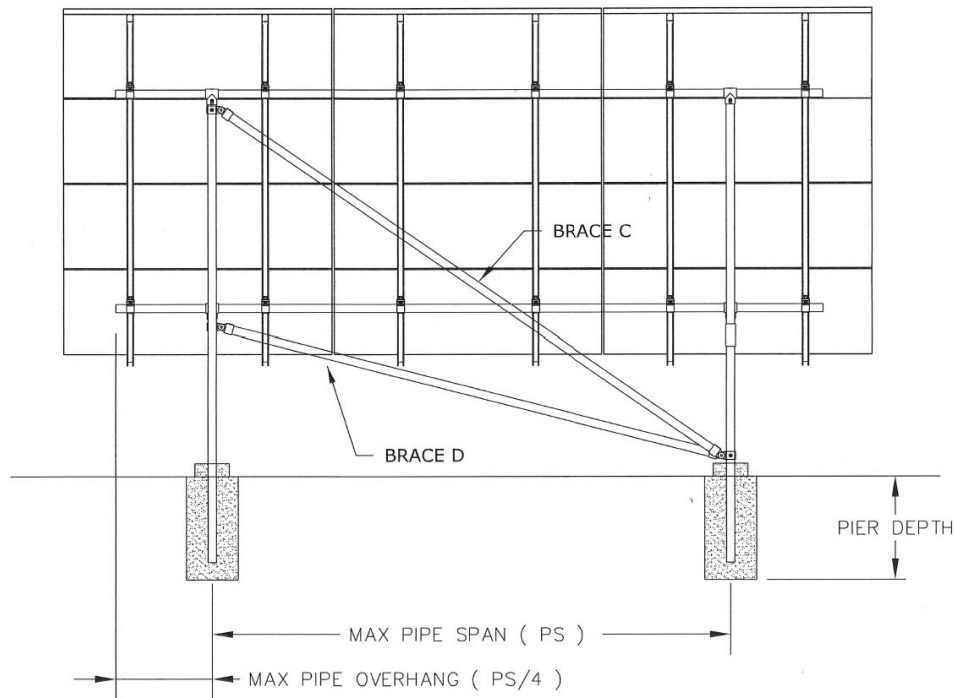
|  | Braced Installation |        |              |      |                 |     |     |
|--|---------------------|--------|--------------|------|-----------------|-----|-----|
|  | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |
|  | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   |
|  | 180                 | 180    | 30           | 30   | Yes             | Yes | Yes |
|  | 180                 | 180    | 30           | 31   | Yes             | Yes | Yes |
|  | 180                 | 180    | 30           | 40   | Yes             | Yes | Yes |
|  | 180                 | 180    | 30           | 47   | Yes             | Yes | Yes |
|  | 180                 | 180    | 30           | 50   | Yes             | Yes | Yes |
|  | 180                 | 180    | 30           | 63   | Yes             | Yes | Yes |
|  | 180                 | 180    | 30           | 63   | Yes             | Yes | Yes |

Number of aluminum ground rails required for either the standard or braced options per panel size. See pages C6 through C13 for 2 or 3 rail configurations.

| Number of Rails Required Per Panel |           |
|------------------------------------|-----------|
| Module Size                        |           |
| 39" x 65"                          | 39" x 78" |
| 2                                  | 2         |
| 2                                  | 2         |
| 2                                  | 2         |
| 2                                  | 2         |
| 2                                  | 2         |
| 2                                  | 2         |



### Frame Section



### Standard Installation Rear View Bracing

### Foundation Options

- Pier foundations: piers will be 12" in diameter and be at the depth required in the following charts based on wind speed, panel tilt, and snow load. The minimum depth of the footings is set to 30 inches and the concrete will be 2500 psi minimum.
- Grade beam option: a grade beam may be used in place of the pier foundations See SnapNrack's drawing S200 D07 for grade beam configuration. Grade beams will be a minimum of 12" wide x 12" deep and will run a minimum of 12'-0" centered under the posts. Two #4 Bars will be used at the top and the bottom of the grade beam, one on each side for the vertical pipe. These must have a minimum of 3" clear concrete cover and shall be Grade 40 minimum. See table on page C16 for grade beam sizes.

### **SOIL BEARING CAPACITY ALLOWABLE FOUNDATION AND LATERAL PRESSURE**

| Class of Materials                                                                           | Allowable Foundation Pressure (psf) <sup>d</sup> | Lateral Bearing (psf/f below natural grade) <sup>d</sup> | Lateral Sliding         |                               |
|----------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------|-------------------------|-------------------------------|
|                                                                                              |                                                  |                                                          | Coefficient of friction | Resistance (psf) <sup>b</sup> |
| 1. Crystalline bedrock                                                                       | 12,000                                           | 1,200                                                    | 0.70                    | —                             |
| 2. Sedimentary and foliated rock                                                             | 4,000                                            | 400                                                      | 0.35                    | —                             |
| 3. Sandy gravel and/or gravel (GW and GP)                                                    | 3,000                                            | 200                                                      | 0.35                    | —                             |
| 4. Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC) | 2,000                                            | 150                                                      | 0.25                    | —                             |
| 5. Clay, sandy clay, silty clay, clayey silt, silt and sand silt (CL, ML, MH and CH)         | 1,500 <sup>c</sup>                               | 100                                                      | —                       | 130                           |

Referring to page C15, this report uses 1500 pcf foundation pressure into the calculations, In addition, it uses a footing diameter of 1 ft., making the foundation pressure 1500 psf. From these calculations, which are in terms of the worst-possible conditions, any of the choices for the Class of Materials listed above in the table would work for the ground-mount solar panels.

### **Site – Specific Analysis**

A site-specific analysis will be required if the location of the solar panel installation corresponds to any of the following criteria:

- The pitch of the solar panel is greater than 45 degrees above the horizontal.
- A topographic factor applies to the location. Topographic factors apply, for general purposes, when the structure is on a hill, mesa or bluff, or is adjacent to a large body of water. For complete descriptions of topographic, factors please refer to ASCE 7-10 section 26.8
- A combination of loads and/or site conditions applies when not addressed in the attached charts.

If one or more of these factors applies to the project location, please contact NSSE, and we will analyze the site conditions and recommend post spacing for each specific site.

### **Topographic Factors and Limits**

It must be noted for any site location where the topographic factor is applied (e.g. hills, mesas, and seashore) the configurations listed in this packet may not be adequate for the given site. A registered structural engineer should evaluate the exact topographic conditions for this specific site prior to construction.

Please note all sizes, material specifications, and weights have been provided by SnapNrack. Please see SnapNrack's plans for limits on the bolt parameters. Torque all 5/16" diameter hardware as specified in SnapNrack's plans (10-16 ft-lbs for Silver Stainless Steel and 7-9 ft-lbs for black Stainless Steel). SnapNrack has also provided estimated soil values, referenced on page 17, used to calculate the optimized size and depths of the footings. It is the responsibility of SnapNrack's customer, otherwise known as the contractor or professional solar installer, to verify, that the site specific soil conditions match or exceed the estimated values given within this report. Installation of Series 200 is to be conducted in accordance with SnapNrack's drawings S200 D01 thru D09 (all drawings are REV G).

Please feel free to contact me with any questions or concerns, Thank you.

Sincerely,

Norman Scheel PE, SE  
LEED-AP BD+C, LEED-AP Homes  
Fellow SEAOC  
Fellow A.S.C.E.

# Series 200

## Configuration Tables for Ground Mount System 0 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 0 psf Snow |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
|------------------------------|-----------------------|-----|--------------|------|----|-----------------|---------------------|----------|--------|--------------|------|-----|------------------------------------|
| Tilt Angle θ                 | Standard Installation |     |              |      |    |                 | Braced Installation |          |        |              |      |     |                                    |
|                              | Max (PS)              |     | 12" Dia Pier |      |    | Required Braces |                     | Max (PS) |        | 12" Dia Pier |      |     | Number of Rails Required Per Panel |
|                              | Sch 40                | 119 | Short        | Tall | A  | C               | D                   | Sch 40   | Sch 80 | Short        | Tall | A   |                                    |
|                              | 136                   | 102 | 30           | 30   | No | Every 3rd Bay   | No                  | 180      | 180    | 30           | 30   | Yes |                                    |
| θ = 0                        |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 0 > θ < 7.5                  |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 7.5 > θ < 15                 |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 15 > θ < 22.5                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 22.5 > θ < 30                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 30 > θ < 37.5                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 37.5 > θ < 45                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |

| 110 mph Wind Load 0 psf Snow |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
|------------------------------|-----------------------|-----|--------------|------|----|-----------------|---------------------|----------|--------|--------------|------|-----|------------------------------------|
| Tilt Angle θ                 | Standard Installation |     |              |      |    |                 | Braced Installation |          |        |              |      |     |                                    |
|                              | Max (PS)              |     | 12" Dia Pier |      |    | Required Braces |                     | Max (PS) |        | 12" Dia Pier |      |     | Number of Rails Required Per Panel |
|                              | Sch 40                | 115 | Short        | Tall | A  | C               | D                   | Sch 40   | Sch 80 | Short        | Tall | A   |                                    |
|                              | 132                   | 98  | 30           | 30   | No | Every 3rd Bay   | No                  | 180      | 180    | 30           | 30   | Yes |                                    |
| θ = 0                        |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 0 > θ < 7.5                  |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 7.5 > θ < 15                 |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 15 > θ < 22.5                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 22.5 > θ < 30                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 30 > θ < 37.5                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 37.5 > θ < 45                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |

| 120 mph Wind Load 0 psf Snow |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
|------------------------------|-----------------------|-----|--------------|------|----|-----------------|---------------------|----------|--------|--------------|------|-----|------------------------------------|
| Tilt Angle θ                 | Standard Installation |     |              |      |    |                 | Braced Installation |          |        |              |      |     |                                    |
|                              | Max (PS)              |     | 12" Dia Pier |      |    | Required Braces |                     | Max (PS) |        | 12" Dia Pier |      |     | Number of Rails Required Per Panel |
|                              | Sch 40                | 112 | Short        | Tall | A  | C               | D                   | Sch 40   | Sch 80 | Short        | Tall | A   |                                    |
|                              | 128                   | 95  | 30           | 31   | No | Every 3rd Bay   | No                  | 180      | 180    | 30           | 30   | Yes |                                    |
| θ = 0                        |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 0 > θ < 7.5                  |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 7.5 > θ < 15                 |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 15 > θ < 22.5                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 22.5 > θ < 30                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 30 > θ < 37.5                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |
| 37.5 > θ < 45                |                       |     |              |      |    |                 |                     |          |        |              |      |     |                                    |

# Series 200

## Configuration Tables for Ground Mount System 0 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 0 psf Snow |                       |        |              |      |     |                 |               |                     |        |              |      |     |                 |     |                                    |           |
|------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------|---------------------|--------|--------------|------|-----|-----------------|-----|------------------------------------|-----------|
| Tilt Angle $\theta$          | Standard Installation |        |              |      |     |                 |               | Braced Installation |        |              |      |     |                 |     | Number of Rails Required Per Panel |           |
|                              | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      |     | Required Braces |     |                                    |           |
|                              | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D             | Sch 40              | Sch 80 | Short        | Tall | A   | E               | F   | 40" x 66"                          | 40" x 78" |
| $\theta = 0$                 | 108                   | 124    | 30           | 30   | No  | Every 3rd Bay   | No            | 180                 | 180    | 30           | 30   | Yes | Yes             | Yes | 2                                  | 2         |
| $0 > \theta < 7.5$           | 91                    | 104    | 30           | 33   | Yes | Every 3rd Bay   | No            | 180                 | 180    | 30           | 44   | Yes | Yes             | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$          | 86                    | 98     | 30           | 41   | Yes | Every 3rd Bay   | No            | 180                 | 180    | 30           | 56   | Yes | Yes             | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$         | 81                    | 93     | 30           | 48   | Yes | Every 3rd Bay   | Every 3rd Bay | 178                 | 180    | 30           | 65   | Yes | Yes             | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$         | 77                    | 88     | 30           | 52   | Yes | Every 3rd Bay   | Every 3rd Bay | 147                 | 168    | 30           | 67   | Yes | Yes             | Yes | 2                                  | 2         |
| $30 > \theta < 37.5$         | 80                    | 91     | 30           | 55   | Yes | Every 3rd Bay   | Every 3rd Bay | 138                 | 157    | 30           | 68   | Yes | Yes             | Yes | 2                                  | 2         |
| $37.5 > \theta < 45$         | 82                    | 93     | 30           | 58   | Yes | Every 3rd Bay   | Every 3rd Bay | 129                 | 148    | 30           | 68   | Yes | Yes             | Yes | 2                                  | 2         |

| 140 mph Wind Load 0 psf Snow |                       |        |              |      |     |                 |               |                     |        |              |      |     |                 |     |                                    |           |
|------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------|---------------------|--------|--------------|------|-----|-----------------|-----|------------------------------------|-----------|
| Tilt Angle $\theta$          | Standard Installation |        |              |      |     |                 |               | Braced Installation |        |              |      |     |                 |     | Number of Rails Required Per Panel |           |
|                              | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      |     | Required Braces |     |                                    |           |
|                              | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D             | Sch 40              | Sch 80 | Short        | Tall | A   | E               | F   | 40" x 66"                          | 40" x 78" |
| $\theta = 0$                 | 105                   | 120    | 30           | 30   | No  | Every 3rd Bay   | No            | 180                 | 180    | 32           | 32   | Yes | Yes             | Yes | 2                                  | 2         |
| $0 > \theta < 7.5$           | 88                    | 101    | 30           | 35   | Yes | Every 3rd Bay   | No            | 180                 | 180    | 32           | 47   | Yes | Yes             | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$          | 83                    | 94     | 30           | 44   | Yes | Every 3rd Bay   | No            | 180                 | 180    | 32           | 61   | Yes | Yes             | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$         | 78                    | 89     | 30           | 51   | Yes | Every 3rd Bay   | Every 3rd Bay | 166                 | 180    | 32           | 67   | Yes | Yes             | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$         | 75                    | 85     | 30           | 55   | Yes | Every 3rd Bay   | Every 3rd Bay | 137                 | 156    | 32           | 69   | Yes | Yes             | Yes | 2                                  | 3         |
| $30 > \theta < 37.5$         | 77                    | 88     | 30           | 59   | Yes | Every 3rd Bay   | Every 3rd Bay | 128                 | 146    | 32           | 71   | Yes | Yes             | Yes | 2                                  | 3         |
| $37.5 > \theta < 45$         | 79                    | 90     | 30           | 62   | Yes | Every 3rd Bay   | Every 3rd Bay | 120                 | 137    | 32           | 74   | Yes | Yes             | Yes | 2                                  | 3         |

| 150 mph Wind Load 0 psf Snow |                       |           |              |      |     |                 |               |                     |        |              |      |     |                 |     |                                    |   |
|------------------------------|-----------------------|-----------|--------------|------|-----|-----------------|---------------|---------------------|--------|--------------|------|-----|-----------------|-----|------------------------------------|---|
| Tilt Angle $\theta$          | Standard Installation |           |              |      |     |                 |               | Braced Installation |        |              |      |     |                 |     | Number of Rails Required Per Panel |   |
|                              | Max (PS)              |           | 12" Dia Pier |      |     | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      |     | Required Braces |     |                                    |   |
|                              | Sch 40                | Sch 80    | Short        | Tall | A   | C               | D             | Sch 40              | Sch 80 | Short        | Tall | A   | E               | F   |                                    |   |
|                              | 40" x 66"             | 40" x 78" |              |      |     |                 |               |                     |        |              |      |     |                 |     |                                    |   |
| $\theta = 0$                 | 102                   | 117       | 30           | 30   | No  | Every 3rd Bay   | No            | 180                 | 180    | 35           | 35   | Yes | Yes             | Yes | 2                                  | 2 |
| $0 > \theta < 7.5$           | 85                    | 97        | 30           | 37   | Yes | Every 3rd Bay   | No            | 180                 | 180    | 35           | 51   | Yes | Yes             | Yes | 2                                  | 2 |
| $7.5 > \theta < 15$          | 80                    | 91        | 30           | 46   | Yes | Every 3rd Bay   | No            | 180                 | 180    | 35           | 65   | Yes | Yes             | Yes | 2                                  | 2 |
| $15 > \theta < 22.5$         | 76                    | 86        | 30           | 54   | Yes | Every 3rd Bay   | Every 3rd Bay | 155                 | 176    | 35           | 70   | Yes | Yes             | Yes | 2                                  | 3 |
| $22.5 > \theta < 30$         | 72                    | 82        | 30           | 58   | Yes | Every 3rd Bay   | Every 3rd Bay | 128                 | 146    | 35           | 72   | Yes | Yes             | Yes | 2                                  | 3 |
| $30 > \theta < 37.5$         | 74                    | 85        | 30           | 59   | Yes | Every 3rd Bay   | Every 3rd Bay | 119                 | 136    | 35           | 72   | Yes | Yes             | Yes | 3                                  | 3 |
| $37.5 > \theta < 45$         | 76                    | 86        | 30           | 62   | Yes | Every 3rd Bay   | Every 3rd Bay | 118                 | 135    | 35           | 75   | Yes | Yes             | Yes | 3                                  | 3 |

# Series 200

## Configuration Tables for Ground Mount System 0 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 0 psf Snow |                       |        |              |                 |               |               |                     |        |              |                 |     |     |                                    |           |
|------------------------------|-----------------------|--------|--------------|-----------------|---------------|---------------|---------------------|--------|--------------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$          | Standard Installation |        |              |                 |               |               | Braced Installation |        |              |                 |     |     | Number of Rails Required Per Panel |           |
|                              | Max (PS)              |        |              | Required Braces |               |               | Max (PS)            |        |              | Required Braces |     |     |                                    |           |
|                              | Sch 40                | Sch 80 | 12" Dia Pier | A               | C             | D             | Sch 40              | Sch 80 | 12" Dia Pier | A               | E   | F   | 40" x 66"                          | 40" x 78" |
| $\theta = 0$                 | 99                    | 113    | 30           | No              | Every 3rd Bay | No            | 180                 | 180    | 37           | 37              | Yes | Yes | 2                                  | 2         |
| $0 > \theta < 7.5$           | 83                    | 94     | 30           | Yes             | Every 3rd Bay | No            | 180                 | 180    | 37           | 55              | Yes | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$          | 77                    | 88     | 30           | Yes             | Every 3rd Bay | No            | 180                 | 180    | 37           | 68              | Yes | Yes | 2                                  | 3         |
| $15 > \theta < 22.5$         | 73                    | 83     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 145                 | 165    | 37           | 73              | Yes | Yes | 3                                  | 3         |
| $22.5 > \theta < 30$         | 70                    | 79     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 136    | 37           | 74              | Yes | Yes | 3                                  | 3         |
| $30 > \theta < 37.5$         | 72                    | 82     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 37           | 76              | Yes | Yes | 3                                  | 3         |
| $37.5 > \theta < 45$         | 73                    | 83     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 37           | 79              | Yes | Yes | 3                                  | 3         |

| 170 mph Wind Load 0 psf Snow |                       |        |              |                 |               |               |                     |        |       |              |     |     |                                    |           |                 |
|------------------------------|-----------------------|--------|--------------|-----------------|---------------|---------------|---------------------|--------|-------|--------------|-----|-----|------------------------------------|-----------|-----------------|
| Tilt Angle $\theta$          | Standard Installation |        |              |                 |               |               | Braced Installation |        |       |              |     |     | Number of Rails Required Per Panel |           |                 |
|                              | Max (PS)              |        |              | Required Braces |               |               | Max (PS)            |        |       | 12" Dia Pier |     |     |                                    |           | Required Braces |
|                              | Sch 40                | Sch 80 | 12" Dia Pier | A               | C             | D             | Sch 40              | Sch 80 | Short | Tall         | A   | E   | F                                  | 40" x 66" | 40" x 78"       |
| $\theta = 0$                 | 96                    | 110    | 30           | No              | Every 3rd Bay | No            | 180                 | 180    | 40    | 40           | Yes | Yes | Yes                                | 2         | 2               |
| $0 > \theta < 7.5$           | 80                    | 91     | 30           | Yes             | Every 3rd Bay | No            | 180                 | 180    | 40    | 59           | Yes | Yes | Yes                                | 2         | 2               |
| $7.5 > \theta < 15$          | 75                    | 86     | 30           | Yes             | Every 3rd Bay | No            | 178                 | 180    | 40    | 70           | Yes | Yes | Yes                                | 3         | 3               |
| $15 > \theta < 22.5$         | 71                    | 81     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 136                 | 156    | 40    | 75           | Yes | Yes | Yes                                | 3         | 3               |
| $22.5 > \theta < 30$         | 67                    | 77     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 113                 | 128    | 40    | 77           | Yes | Yes | Yes                                | 3         | NG              |
| $30 > \theta < 37.5$         | 70                    | 79     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 40    | 79           | Yes | Yes | Yes                                | 3         | NG              |
| $37.5 > \theta < 45$         | 71                    | 81     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 99                  | 113    | 40    | 82           | Yes | Yes | Yes                                | 3         | NG              |

# Series 200

## Configuration Tables for Ground Mount System 1 to 10 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 1-10 psf Snow |                       |     |              |      |                 |               |                     |        |              |      |                 |     |                                    |
|---------------------------------|-----------------------|-----|--------------|------|-----------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|
| Tilt Angle θ                    | Standard Installation |     |              |      |                 |               | Braced Installation |        |              |      |                 |     |                                    |
|                                 | Max (PS)              |     | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     | Number of Rails Required Per Panel |
|                                 | Sch 40                | 121 | Short        | Tall | A               | C             | Sch 40              | Sch 80 | Short        | Tall | A               | E   |                                    |
|                                 | 106                   | 121 | 30           | 30   | No              | Every 3rd Bay | 180                 | 180    | 30           | 30   | Yes             | Yes |                                    |
| θ = 0                           | 95                    | 108 | 30           | 30   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 35   | Yes             | Yes | 2                                  |
| 0 > θ < 7.5                     | 91                    | 104 | 30           | 34   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 44   | Yes             | Yes | 2                                  |
| 7.5 > θ < 15                    | 88                    | 101 | 30           | 40   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 52   | Yes             | Yes | 2                                  |
| 15 > θ < 22.5                   | 87                    | 99  | 30           | 43   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 56   | Yes             | Yes | 2                                  |
| 22.5 > θ < 30                   | 90                    | 103 | 30           | 46   | Yes             | Every 3rd Bay | 179                 | 180    | 30           | 59   | Yes             | Yes | 2                                  |
| 30 > θ < 37.5                   | 92                    | 105 | 30           | 49   | Yes             | Every 3rd Bay | 168                 | 180    | 30           | 62   | Yes             | Yes | 2                                  |

| 110 mph Wind Load 1-10 psf Snow |                       |     |              |      |                 |               |                     |        |              |      |                 |     |                                    |
|---------------------------------|-----------------------|-----|--------------|------|-----------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|
| Tilt Angle θ                    | Standard Installation |     |              |      |                 |               | Braced Installation |        |              |      |                 |     |                                    |
|                                 | Max (PS)              |     | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     | Number of Rails Required Per Panel |
|                                 | Sch 40                | 119 | Short        | Tall | A               | C             | Sch 40              | Sch 80 | Short        | Tall | A               | E   |                                    |
|                                 | 104                   | 119 | 30           | 30   | No              | Every 3rd Bay | 180                 | 180    | 30           | 30   | Yes             | Yes |                                    |
| θ = 0                           | 92                    | 105 | 30           | 30   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 38   | Yes             | Yes | 2                                  |
| 0 > θ < 7.5                     | 88                    | 101 | 30           | 36   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 48   | Yes             | Yes | 2                                  |
| 7.5 > θ < 15                    | 85                    | 97  | 30           | 43   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 57   | Yes             | Yes | 2                                  |
| 15 > θ < 22.5                   | 83                    | 95  | 30           | 46   | Yes             | Every 3rd Bay | 174                 | 180    | 30           | 61   | Yes             | Yes | 2                                  |
| 22.5 > θ < 30                   | 87                    | 99  | 30           | 49   | Yes             | Every 3rd Bay | 163                 | 180    | 30           | 63   | Yes             | Yes | 2                                  |
| 30 > θ < 37.5                   | 88                    | 101 | 30           | 52   | Yes             | Every 3rd Bay | 153                 | 175    | 30           | 66   | Yes             | Yes | 2                                  |

| 120 mph Wind Load 1-10 psf Snow |                       |     |              |      |                 |               |                     |        |              |      |                 |     |                                    |
|---------------------------------|-----------------------|-----|--------------|------|-----------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|
| Tilt Angle θ                    | Standard Installation |     |              |      |                 |               | Braced Installation |        |              |      |                 |     |                                    |
|                                 | Max (PS)              |     | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     | Number of Rails Required Per Panel |
|                                 | Sch 40                | 117 | Short        | Tall | A               | C             | Sch 40              | Sch 80 | Short        | Tall | A               | E   |                                    |
|                                 | 102                   | 117 | 30           | 30   | No              | Every 3rd Bay | 180                 | 180    | 30           | 30   | Yes             | Yes |                                    |
| θ = 0                           | 89                    | 102 | 30           | 30   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 41   | Yes             | Yes | 2                                  |
| 0 > θ < 7.5                     | 85                    | 97  | 30           | 36   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 52   | Yes             | Yes | 2                                  |
| 7.5 > θ < 15                    | 82                    | 94  | 30           | 43   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 62   | Yes             | Yes | 2                                  |
| 15 > θ < 22.5                   | 80                    | 92  | 30           | 47   | Yes             | Every 3rd Bay | 159                 | 180    | 30           | 64   | Yes             | Yes | 2                                  |
| 22.5 > θ < 30                   | 83                    | 95  | 30           | 51   | Yes             | Every 3rd Bay | 149                 | 170    | 30           | 66   | Yes             | Yes | 2                                  |
| 30 > θ < 37.5                   | 85                    | 97  | 30           | 54   | Yes             | Every 3rd Bay | 140                 | 160    | 30           | 69   | Yes             | Yes | 2                                  |

# Series 200

## Configuration Tables for Ground Mount System 1 to 10 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 1-10 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |
|---------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|---|---|
| Tilt Angle $\theta$             | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |   |   |
|                                 | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |   |   |
|                                 | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |   |   |
| $\theta = 0$                    | 100                   | 114    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes | 2 | 2 |
| $0 > \theta < 7.5$              | 86                    | 75     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 41              | Yes | Yes                                | Yes | 2 | 2 |
| $7.5 > \theta < 15$             | 83                    | 76     | 30           | 36   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 52              | Yes | Yes                                | Yes | 2 | 2 |
| $15 > \theta < 22.5$            | 79                    | 79     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 178    | 180          | 30    | 62              | Yes | Yes                                | Yes | 2 | 2 |
| $22.5 > \theta < 30$            | 77                    | 81     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 147    | 168          | 30    | 64              | Yes | Yes                                | Yes | 2 | 2 |
| $30 > \theta < 37.5$            | 80                    | 87     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 157          | 30    | 66              | Yes | Yes                                | Yes | 2 | 2 |
| $37.5 > \theta < 45$            | 82                    | 93     | 30           | 54   | Yes             | Every 3rd Bay | Every 3rd Bay       | 129    | 148          | 30    | 69              | Yes | Yes                                | Yes | 2 | 2 |

| 140 mph Wind Load 1-10 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|---------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$             | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                 | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                 | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                 | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                    | 98                    | 111    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$              | 84                    | 96     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 44              | Yes | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$             | 80                    | 91     | 30           | 38   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 56              | Yes | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$            | 77                    | 88     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 166    | 180          | 30    | 65              | Yes | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$            | 75                    | 85     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 137    | 156          | 30    | 67              | Yes | Yes                                | Yes | 2         | 3         |
| $30 > \theta < 37.5$            | 77                    | 88     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 30    | 68              | Yes | Yes                                | Yes | 2         | 3         |
| $37.5 > \theta < 45$            | 79                    | 90     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay       | 120    | 137          | 30    | 68              | Yes | Yes                                | Yes | 2         | 3         |

| 150 mph Wind Load 1-10 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |   |           |
|---------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|---|---|-----------|
| Tilt Angle $\theta$             | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |   |   |           |
|                                 | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |   |   |           |
|                                 | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F |   |           |
|                                 | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |   |           |
| $\theta = 0$                    | 95                    | 108    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 32    | 32              | Yes | Yes                                | 2 | 2 | 40" x 78" |
| $0 > \theta < 7.5$              | 81                    | 93     | 30           | 35   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 47              | Yes | Yes                                | 2 | 2 | 2         |
| $7.5 > \theta < 15$             | 77                    | 88     | 30           | 43   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 61              | Yes | Yes                                | 2 | 2 | 2         |
| $15 > \theta < 22.5$            | 74                    | 85     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 155    | 176          | 32    | 67              | Yes | Yes                                | 2 | 2 | 3         |
| $22.5 > \theta < 30$            | 72                    | 82     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 32    | 69              | Yes | Yes                                | 2 | 2 | 3         |
| $30 > \theta < 37.5$            | 74                    | 85     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay       | 119    | 136          | 32    | 71              | Yes | Yes                                | 3 | 3 | 3         |
| $37.5 > \theta < 45$            | 76                    | 86     | 30           | 62   | Yes             | Every 3rd Bay | Every 3rd Bay       | 118    | 135          | 32    | 74              | Yes | Yes                                | 3 | 3 | 3         |

# Series 200

## Configuration Tables for Ground Mount System 1 to 10 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 1-10 psf Snow |                       |        |      |                 |               |               |                     |        |              |      |     |                 |     |
|---------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----|-----------------|-----|
| Tilt Angle θ                    | Standard Installation |        |      |                 |               |               | Braced Installation |        |              |      |     |                 |     |
|                                 | Max (psf)             |        |      | Required Braces |               |               | Max (psf)           |        | 12" Dia Pier |      |     | Required Braces |     |
|                                 | Sch 40                | Sch 80 | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A   | E               | F   |
|                                 | 93                    | 106    | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 37           | 37   | Yes | Yes             | Yes |
| θ = 0                           | 79                    | 90     | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 37           | 55   | Yes | Yes             | 2   |
| 0 > θ < 7.5                     | 75                    | 86     | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 37           | 68   | Yes | Yes             | 2   |
| 7.5 > θ < 15                    | 72                    | 82     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 145                 | 165    | 37           | 73   | Yes | Yes             | 3   |
| 15 > θ < 22.5                   | 70                    | 79     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 136    | 37           | 74   | Yes | Yes             | 3   |
| 22.5 > θ < 30                   | 72                    | 82     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 37           | 76   | Yes | Yes             | 3   |
| 30 > θ < 37.5                   | 73                    | 83     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 37           | 79   | Yes | Yes             | 3   |
| 37.5 > θ < 45                   |                       |        |      |                 |               |               |                     |        |              |      |     |                 |     |

| 170 mph Wind Load 1-10 psf Snow |                       |        |              |                 |     |               |                     |        |              |                 |    |     |                                    |           |    |
|---------------------------------|-----------------------|--------|--------------|-----------------|-----|---------------|---------------------|--------|--------------|-----------------|----|-----|------------------------------------|-----------|----|
| Tilt Angle $\theta$             | Standard Installation |        |              |                 |     |               | Braced Installation |        |              |                 |    |     | Number of Rails Required Per Panel |           |    |
|                                 | Max (PS)              |        |              | Required Braces |     |               | Max (PS)            |        |              | Required Braces |    |     |                                    |           |    |
|                                 | Sch 40                | Sch 80 | 12" Dia Pier | A               | C   | D             | Sch 40              | Sch 80 | 12" Dia Pier | A               | E  | F   | 40" x 66"                          | 40" x 78" |    |
|                                 |                       |        | Short        | Tall            | No  | Every 3rd Bay | No                  | 180    | 180          | 40              | 40 | Yes | Yes                                | Yes       | 2  |
| $\theta = 0$                    | 77                    | 88     | 30           | 40              | Yes | Every 3rd Bay | No                  | 180    | 180          | 40              | 59 | Yes | Yes                                | Yes       | 2  |
| $0 > \theta < 7.5$              | 73                    | 83     | 30           | 51              | Yes | Every 3rd Bay | No                  | 178    | 180          | 40              | 70 | Yes | Yes                                | Yes       | 3  |
| $7.5 > \theta < 15$             | 70                    | 80     | 30           | 59              | Yes | Every 3rd Bay | Every 3rd Bay       | 136    | 156          | 40              | 75 | Yes | Yes                                | Yes       | 3  |
| $15 > \theta < 22.5$            | 67                    | 77     | 30           | 64              | Yes | Every 3rd Bay | Every 3rd Bay       | 113    | 128          | 40              | 77 | Yes | Yes                                | Yes       | NG |
| $22.5 > \theta < 30$            | 70                    | 79     | 30           | 69              | Yes | Every 3rd Bay | Every 3rd Bay       | 105    | 120          | 40              | 79 | Yes | Yes                                | Yes       | NG |
| $30 > \theta < 37.5$            | 71                    | 81     | 30           | 72              | Yes | Every 3rd Bay | Every 3rd Bay       | 99     | 113          | 40              | 82 | Yes | Yes                                | Yes       | NG |
| $37.5 > \theta < 45$            |                       |        |              |                 |     |               |                     |        |              |                 |    |     |                                    |           |    |

# Series 200

## Configuration Tables for Ground Mount System 11 to 20 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 11-20 psf Snow |                       |        |              |      |                 |               |                     |        |              |      |                 |     |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|------|-----------------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |      |                 |     |
|                                  | Max (psf)             |        | 12" Dia Pier |      | Required Braces |               | Max (psf)           |        | 12" Dia Pier |      | Required Braces |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | Sch 40              | Sch 80 | Short        | Tall | A               | E   |
|                                  | 88                    | 101    | 30           | 30   | No              | Every 3rd Bay | 180                 | 180    | 30           | 30   | Yes             | Yes |
| θ = 0                            | 83                    | 95     | 30           | 30   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 35   | Yes             | Yes |
| 0 > θ < 7.5                      | 83                    | 95     | 30           | 33   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 44   | Yes             | Yes |
| 7.5 > θ < 15                     | 85                    | 97     | 30           | 39   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 52   | Yes             | Yes |
| 15 > θ < 22.5                    | 84                    | 96     | 30           | 43   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 56   | Yes             | Yes |
| 22.5 > θ < 30                    | 89                    | 101    | 30           | 46   | Yes             | Every 3rd Bay | 179                 | 180    | 30           | 59   | Yes             | Yes |
| 30 > θ < 37.5                    | 92                    | 105    | 30           | 49   | Yes             | Every 3rd Bay | 168                 | 180    | 30           | 62   | Yes             | Yes |
| 37.5 > θ < 45                    |                       |        |              |      |                 |               |                     |        |              |      |                 |     |

| 110 mph Wind Load 11-20 psf Snow |                       |        |              |      |                 |               |                     |        |              |      |                 |     |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|------|-----------------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |      |                 |     |
|                                  | Max (psf)             |        | 12" Dia Pier |      | Required Braces |               | Max (psf)           |        | 12" Dia Pier |      | Required Braces |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | Sch 40              | Sch 80 | Short        | Tall | A               | E   |
|                                  | 87                    | 100    | 30           | 30   | No              | Every 3rd Bay | 180                 | 180    | 30           | 30   | Yes             | Yes |
| θ = 0                            | 81                    | 93     | 30           | 30   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 38   | Yes             | Yes |
| 0 > θ < 7.5                      | 82                    | 93     | 30           | 36   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 48   | Yes             | Yes |
| 7.5 > θ < 15                     | 82                    | 94     | 30           | 42   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 57   | Yes             | Yes |
| 15 > θ < 22.5                    | 81                    | 92     | 30           | 46   | Yes             | Every 3rd Bay | 174                 | 180    | 30           | 61   | Yes             | Yes |
| 22.5 > θ < 30                    | 86                    | 98     | 30           | 49   | Yes             | Every 3rd Bay | 163                 | 180    | 30           | 63   | Yes             | Yes |
| 30 > θ < 37.5                    | 88                    | 101    | 30           | 52   | Yes             | Every 3rd Bay | 153                 | 175    | 30           | 66   | Yes             | Yes |
| 37.5 > θ < 45                    |                       |        |              |      |                 |               |                     |        |              |      |                 |     |

| 120 mph Wind Load 11-20 psf Snow |                       |        |              |      |                 |               |                     |               |              |       |                 |    |                                    |     |     |   |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|---------------|--------------|-------|-----------------|----|------------------------------------|-----|-----|---|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |               |              |       |                 |    | Number of Rails Required Per Panel |     |     |   |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |               | 12" Dia Pier |       | Required Braces |    |                                    |     |     |   |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40        | Sch 80       | Short | Tall            | A  |                                    |     | E   | F |   |
| $\theta = 0$                     | 86                    | 98     | 30           | 30   | No              | Every 3rd Bay | No                  | No            | 180          | 180   | 30              | 30 | Yes                                | Yes | Yes | 2 | 2 |
| $0 > \theta < 7.5$               | 80                    | 91     | 30           | 30   | Yes             | Every 3rd Bay | No                  | No            | 180          | 180   | 30              | 41 | Yes                                | Yes | Yes | 2 | 2 |
| $7.5 > \theta < 15$              | 80                    | 91     | 30           | 38   | Yes             | Every 3rd Bay | No                  | No            | 180          | 180   | 30              | 52 | Yes                                | Yes | Yes | 2 | 2 |
| $15 > \theta < 22.5$             | 79                    | 91     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 180          | 180   | 30              | 62 | Yes                                | Yes | Yes | 2 | 2 |
| $22.5 > \theta < 30$             | 78                    | 89     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 159          | 180   | 30              | 64 | Yes                                | Yes | Yes | 2 | 2 |
| $30 > \theta < 37.5$             | 83                    | 94     | 30           | 52   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 149          | 170   | 30              | 66 | Yes                                | Yes | Yes | 2 | 2 |
| $37.5 > \theta < 45$             | 85                    | 97     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 140          | 160   | 30              | 69 | Yes                                | Yes | Yes | 2 | 2 |

# Series 200

## Configuration Tables for Ground Mount System 11 to 20 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 11-20 psf Snow |                       |        |              |      |     |                 |                     |        |              |      |     |                 |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|--------|--------------|------|-----|-----------------|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |        |              |      |     |                 |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces | Max (psf)           |        | 12" Dia Pier |      |     | Required Braces |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   |                 | Sch 40              | Sch 80 | Short        | Tall | A   |                 |
|                                  | 85                    | 97     | 30           | 30   | No  |                 | 180                 | 180    | 30           | 30   | Yes |                 |
| θ = 0                            | 79                    | 90     | 30           | 32   | Yes | Every 3rd Bay   | 180                 | 180    | 30           | 44   | Yes | Yes             |
| 0 > θ < 7.5                      | 79                    | 90     | 30           | 40   | Yes | Every 3rd Bay   | 180                 | 180    | 30           | 56   | Yes | Yes             |
| 7.5 > θ < 15                     | 77                    | 88     | 30           | 48   | Yes | Every 3rd Bay   | 178                 | 180    | 30           | 65   | Yes | Yes             |
| 15 > θ < 22.5                    | 76                    | 86     | 30           | 52   | Yes | Every 3rd Bay   | 147                 | 168    | 30           | 67   | Yes | Yes             |
| 22.5 > θ < 30                    | 80                    | 91     | 30           | 55   | Yes | Every 3rd Bay   | 138                 | 157    | 30           | 68   | Yes | Yes             |
| 30 > θ < 37.5                    | 82                    | 93     | 30           | 58   | Yes | Every 3rd Bay   | 129                 | 148    | 30           | 68   | Yes | Yes             |
| 37.5 > θ < 45                    |                       |        |              |      |     |                 |                     |        |              |      |     |                 |

| 140 mph Wind Load 11-20 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F         |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |           |           |
| $\theta = 0$                     | 84                    | 95     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 32    | 32              | Yes | Yes                                | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 77                    | 88     | 30           | 34   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 47              | Yes | Yes                                | 2         | 2         |
| $7.5 > \theta < 15$              | 76                    | 87     | 30           | 43   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 61              | Yes | Yes                                | 2         | 2         |
| $15 > \theta < 22.5$             | 75                    | 85     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 166    | 180          | 32    | 67              | Yes | Yes                                | 2         | 2         |
| $22.5 > \theta < 30$             | 73                    | 83     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay       | 137    | 156          | 32    | 69              | Yes | Yes                                | 2         | 3         |
| $30 > \theta < 37.5$             | 77                    | 88     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 32    | 71              | Yes | Yes                                | 2         | 3         |
| $37.5 > \theta < 45$             | 79                    | 90     | 30           | 62   | Yes             | Every 3rd Bay | Every 3rd Bay       | 120    | 137          | 32    | 74              | Yes | Yes                                | 2         | 3         |

| 150 mph Wind Load 11-20 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F         |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |           |           |
| $\theta = 0$                     | 82                    | 94     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 35    | 35              | Yes | Yes                                | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 76                    | 86     | 30           | 36   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 35    | 51              | Yes | Yes                                | 2         | 2         |
| $7.5 > \theta < 15$              | 74                    | 85     | 30           | 45   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 35    | 65              | Yes | Yes                                | 2         | 2         |
| $15 > \theta < 22.5$             | 72                    | 82     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 155    | 176          | 35    | 70              | Yes | Yes                                | 2         | 3         |
| $22.5 > \theta < 30$             | 71                    | 81     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 35    | 72              | Yes | Yes                                | 2         | 3         |
| $30 > \theta < 37.5$             | 74                    | 85     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay       | 119    | 136          | 35    | 72              | Yes | Yes                                | 3         | 3         |
| $37.5 > \theta < 45$             | 76                    | 86     | 30           | 62   | Yes             | Every 3rd Bay | Every 3rd Bay       | 118    | 135          | 35    | 75              | Yes | Yes                                | 3         | 3         |

# Series 200

## Configuration Tables for Ground Mount System 11 to 20 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 11-20 psf Snow |                       |        |              |      |     |                 |                     |           |        |              |      |     |             |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|-----------|--------|--------------|------|-----|-------------|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |           |        |              |      |     |             |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces |                     | Max (psf) |        | 12" Dia Pier |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | Sch 40    | Sch 80 | Short        | Tall | A   |             |
|                                  | 81                    | 93     | 30           | 30   | No  | Every 3rd Bay   | No                  | 180       | 180    | 37           | 37   | Yes |             |
| θ = 0                            | 74                    | 85     | 30           | 38   | Yes | Every 3rd Bay   | No                  | 180       | 180    | 37           | 55   | Yes | 2           |
| 0 > θ < 7.5                      | 72                    | 83     | 30           | 48   | Yes | Every 3rd Bay   | No                  | 180       | 180    | 37           | 68   | Yes | 2           |
| 7.5 > θ < 15                     | 70                    | 80     | 30           | 56   | Yes | Every 3rd Bay   | Every 3rd Bay       | 145       | 165    | 37           | 73   | Yes | 3           |
| 15 > θ < 22.5                    | 69                    | 78     | 30           | 61   | Yes | Every 3rd Bay   | Every 3rd Bay       | 120       | 136    | 37           | 74   | Yes | 3           |
| 22.5 > θ < 30                    | 72                    | 82     | 30           | 65   | Yes | Every 3rd Bay   | Every 3rd Bay       | 112       | 128    | 37           | 76   | Yes | 3           |
| 30 > θ < 37.5                    | 73                    | 83     | 30           | 68   | Yes | Every 3rd Bay   | Every 3rd Bay       | 105       | 120    | 37           | 79   | Yes | 3           |
| 37.5 > θ < 45                    |                       |        |              |      |     |                 |                     |           |        |              |      |     |             |

| 170 mph Wind Load 11-20 psf Snow |                       |        |              |      |     |                 |                     |           |        |              |      |     |             |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|-----------|--------|--------------|------|-----|-------------|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |           |        |              |      |     |             |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces |                     | Max (psf) |        | 12" Dia Pier |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | Sch 40    | Sch 80 | Short        | Tall | A   |             |
|                                  | 80                    | 91     | 30           | 30   | No  | Every 3rd Bay   | No                  | 180       | 180    | 40           | 40   | Yes |             |
| θ = 0                            | 72                    | 83     | 30           | 40   | Yes | Every 3rd Bay   | No                  | 180       | 180    | 40           | 59   | Yes | 2           |
| 0 > θ < 7.5                      | 71                    | 80     | 30           | 50   | Yes | Every 3rd Bay   | No                  | 178       | 180    | 40           | 70   | Yes | 3           |
| 7.5 > θ < 15                     | 68                    | 78     | 30           | 59   | Yes | Every 3rd Bay   | Every 3rd Bay       | 136       | 156    | 40           | 75   | Yes | 3           |
| 15 > θ < 22.5                    | 66                    | 76     | 30           | 64   | Yes | Every 3rd Bay   | Every 3rd Bay       | 113       | 128    | 40           | 77   | Yes | NG          |
| 22.5 > θ < 30                    | 70                    | 79     | 30           | 69   | Yes | Every 3rd Bay   | Every 3rd Bay       | 105       | 120    | 40           | 79   | Yes | NG          |
| 30 > θ < 37.5                    | 71                    | 81     | 30           | 72   | Yes | Every 3rd Bay   | Every 3rd Bay       | 99        | 113    | 40           | 82   | Yes | NG          |
| 37.5 > θ < 45                    |                       |        |              |      |     |                 |                     |           |        |              |      |     |             |

# Series 200

## Configuration Tables for Ground Mount System 21 to 30 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 21-30 psf Snow |                       |        |                 |               |              |               |                     |        |              |      |                 |     |                                    |
|----------------------------------|-----------------------|--------|-----------------|---------------|--------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|
| Tilt Angle θ                     | Standard Installation |        |                 |               |              |               | Braced Installation |        |              |      |                 |     |                                    |
|                                  | Max (PS)              |        | Required Braces |               |              | D             | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     | Number of Rails Required Per Panel |
|                                  | Sch 40                | Sch 80 | A               | C             | 12" Dia Pier |               | Sch 40              | Sch 80 | Short        | Tall | A               | E   |                                    |
|                                  | 79                    | 90     | No              | Every 3rd Bay | 30           |               | 180                 | 180    | 35           | 35   | Yes             | Yes |                                    |
| θ = 0                            | 75                    | 85     | Yes             | Every 3rd Bay | 30           | No            | 180                 | 180    | 35           | 35   | Yes             | Yes | 2                                  |
| 0 > θ < 7.5                      | 76                    | 87     | Yes             | Every 3rd Bay | 32           | No            | 180                 | 180    | 35           | 44   | Yes             | Yes | 2                                  |
| 7.5 > θ < 15                     | 79                    | 90     | Yes             | Every 3rd Bay | 39           | Every 3rd Bay | 180                 | 180    | 30           | 52   | Yes             | Yes | 2                                  |
| 15 > θ < 22.5                    | 80                    | 92     | Yes             | Every 3rd Bay | 42           | Every 3rd Bay | 180                 | 180    | 30           | 56   | Yes             | Yes | 2                                  |
| 22.5 > θ < 30                    | 86                    | 98     | Yes             | Every 3rd Bay | 46           | Every 3rd Bay | 179                 | 180    | 30           | 59   | Yes             | Yes | 2                                  |
| 30 > θ < 37.5                    | 92                    | 105    | Yes             | Every 3rd Bay | 49           | Every 3rd Bay | 168                 | 180    | 30           | 62   | Yes             | Yes | 2                                  |

| 110 mph Wind Load 21-30 psf Snow |                       |        |                 |               |              |               |                     |        |              |      |                 |     |                                    |
|----------------------------------|-----------------------|--------|-----------------|---------------|--------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|
| Tilt Angle θ                     | Standard Installation |        |                 |               |              |               | Braced Installation |        |              |      |                 |     |                                    |
|                                  | Max (PS)              |        | Required Braces |               |              | D             | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     | Number of Rails Required Per Panel |
|                                  | Sch 40                | Sch 80 | A               | C             | 12" Dia Pier |               | Sch 40              | Sch 80 | Short        | Tall | A               | E   |                                    |
|                                  | 78                    | 89     | No              | Every 3rd Bay | 30           |               | 180                 | 180    | 38           | 38   | Yes             | Yes |                                    |
| θ = 0                            | 74                    | 84     | Yes             | Every 3rd Bay | 30           | No            | 180                 | 180    | 38           | 38   | Yes             | Yes | 2                                  |
| 0 > θ < 7.5                      | 75                    | 85     | Yes             | Every 3rd Bay | 35           | No            | 180                 | 180    | 30           | 48   | Yes             | Yes | 2                                  |
| 7.5 > θ < 15                     | 77                    | 88     | Yes             | Every 3rd Bay | 41           | Every 3rd Bay | 180                 | 180    | 30           | 57   | Yes             | Yes | 2                                  |
| 15 > θ < 22.5                    | 78                    | 89     | Yes             | Every 3rd Bay | 45           | Every 3rd Bay | 174                 | 180    | 30           | 61   | Yes             | Yes | 2                                  |
| 22.5 > θ < 30                    | 84                    | 95     | Yes             | Every 3rd Bay | 49           | Every 3rd Bay | 163                 | 180    | 30           | 63   | Yes             | Yes | 2                                  |
| 30 > θ < 37.5                    | 88                    | 101    | Yes             | Every 3rd Bay | 52           | Every 3rd Bay | 153                 | 175    | 30           | 66   | Yes             | Yes | 2                                  |

| 120 mph Wind Load 21-30 psf Snow |                       |        |                 |               |              |               |                     |        |              |      |                 |     |                                    |
|----------------------------------|-----------------------|--------|-----------------|---------------|--------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|
| Tilt Angle θ                     | Standard Installation |        |                 |               |              |               | Braced Installation |        |              |      |                 |     |                                    |
|                                  | Max (PS)              |        | Required Braces |               |              | D             | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     | Number of Rails Required Per Panel |
|                                  | Sch 40                | Sch 80 | A               | C             | 12" Dia Pier |               | Sch 40              | Sch 80 | Short        | Tall | A               | E   |                                    |
|                                  | 77                    | 88     | No              | Every 3rd Bay | 30           |               | 180                 | 180    | 30           | 30   | Yes             | Yes |                                    |
| θ = 0                            | 72                    | 83     | Yes             | Every 3rd Bay | 30           | No            | 180                 | 180    | 30           | 41   | Yes             | Yes | 2                                  |
| 0 > θ < 7.5                      | 73                    | 84     | Yes             | Every 3rd Bay | 37           | No            | 180                 | 180    | 30           | 52   | Yes             | Yes | 2                                  |
| 7.5 > θ < 15                     | 75                    | 86     | Yes             | Every 3rd Bay | 44           | Every 3rd Bay | 180                 | 180    | 30           | 62   | Yes             | Yes | 2                                  |
| 15 > θ < 22.5                    | 76                    | 87     | Yes             | Every 3rd Bay | 48           | Every 3rd Bay | 159                 | 180    | 30           | 64   | Yes             | Yes | 2                                  |
| 22.5 > θ < 30                    | 81                    | 92     | Yes             | Every 3rd Bay | 52           | Every 3rd Bay | 149                 | 170    | 30           | 66   | Yes             | Yes | 2                                  |
| 30 > θ < 37.5                    | 85                    | 97     | Yes             | Every 3rd Bay | 55           | Every 3rd Bay | 140                 | 160    | 30           | 69   | Yes             | Yes | 2                                  |

# Series 200

## Configuration Tables for Ground Mount System 21 to 30 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 21-30 psf Snow |                       |        |              |      |     |                 |               |  |                     |        |              |      |     |                 |                                    |             |           |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------|--|---------------------|--------|--------------|------|-----|-----------------|------------------------------------|-------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |     |                 |               |  | Braced Installation |        |              |      |     |                 | Number of Rails Required Per Panel |             |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |               |  | Max (PS)            |        | 12" Dia Pier |      |     | Required Braces |                                    | Module Size |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D             |  | Sch 40              | Sch 80 | Short        | Tall | A   | E               | F                                  | 40" x 66"   | 40" x 78" |
| $\theta = 0$                     | 76                    | 87     | 30           | 30   | No  | Every 3rd Bay   | No            |  | 180                 | 180    | 30           | 30   | Yes | Yes             | Yes                                | 2           | 2         |
| $0 > \theta < 7.5$               | 71                    | 81     | 30           | 31   | Yes | Every 3rd Bay   | No            |  | 180                 | 180    | 30           | 44   | Yes | Yes             | Yes                                | 2           | 2         |
| $7.5 > \theta < 15$              | 72                    | 82     | 30           | 39   | Yes | Every 3rd Bay   | No            |  | 180                 | 180    | 30           | 56   | Yes | Yes             | Yes                                | 2           | 2         |
| $15 > \theta < 22.5$             | 74                    | 84     | 30           | 47   | Yes | Every 3rd Bay   | Every 3rd Bay |  | 178                 | 180    | 30           | 65   | Yes | Yes             | Yes                                | 2           | 2         |
| $22.5 > \theta < 30$             | 74                    | 84     | 30           | 51   | Yes | Every 3rd Bay   | Every 3rd Bay |  | 147                 | 168    | 30           | 67   | Yes | Yes             | Yes                                | 2           | 2         |
| $30 > \theta < 37.5$             | 78                    | 89     | 30           | 55   | Yes | Every 3rd Bay   | Every 3rd Bay |  | 138                 | 157    | 30           | 68   | Yes | Yes             | Yes                                | 2           | 2         |
| $37.5 > \theta < 45$             | 82                    | 93     | 30           | 58   | Yes | Every 3rd Bay   | Every 3rd Bay |  | 129                 | 148    | 30           | 68   | Yes | Yes             | Yes                                | 2           | 2         |

| 140 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     | Module Size                        |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 75                    | 86     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 32    | 32              | Yes | Yes                                | Yes | 2         | 2         |
| $0 > \theta < 7.5$               | 70                    | 80     | 30           | 33   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 47              | Yes | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$              | 71                    | 81     | 30           | 42   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 61              | Yes | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$             | 72                    | 82     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 166    | 180          | 32    | 67              | Yes | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$             | 71                    | 82     | 30           | 54   | Yes             | Every 3rd Bay | Every 3rd Bay       | 137    | 156          | 32    | 69              | Yes | Yes                                | Yes | 2         | 3         |
| $30 > \theta < 37.5$             | 76                    | 86     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 32    | 71              | Yes | Yes                                | Yes | 2         | 3         |
| $37.5 > \theta < 45$             | 79                    | 90     | 30           | 62   | Yes             | Every 3rd Bay | Every 3rd Bay       | 120    | 137          | 32    | 74              | Yes | Yes                                | Yes | 2         | 3         |

| 150 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |                                    |     |             |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|------------------------------------|-----|-------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 | Number of Rails Required Per Panel |     |             |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |                                    |     | Module Size |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E                                  | F   | 40" x 66"   | 40" x 78" |
| $\theta = 0$                     | 74                    | 85     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 35           | 35   | Yes             | Yes                                | Yes | 2           | 2         |
| $0 > \theta < 7.5$               | 69                    | 79     | 30           | 35   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 35           | 51   | Yes             | Yes                                | Yes | 2           | 2         |
| $7.5 > \theta < 15$              | 70                    | 79     | 30           | 45   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 35           | 65   | Yes             | Yes                                | Yes | 2           | 2         |
| $15 > \theta < 22.5$             | 70                    | 80     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay | 155                 | 176    | 35           | 70   | Yes             | Yes                                | Yes | 2           | 3         |
| $22.5 > \theta < 30$             | 69                    | 79     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay | 128                 | 146    | 35           | 72   | Yes             | Yes                                | Yes | 2           | 3         |
| $30 > \theta < 37.5$             | 73                    | 84     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay | 119                 | 136    | 35           | 72   | Yes             | Yes                                | Yes | 3           | 3         |
| $37.5 > \theta < 45$             | 76                    | 86     | 30           | 62   | Yes             | Every 3rd Bay | Every 3rd Bay | 118                 | 135    | 35           | 75   | Yes             | Yes                                | Yes | 3           | 3         |

# Series 200

## Configuration Tables for Ground Mount System 21 to 30 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |                 |     |           |                                    |  |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----------------|-----|-----------|------------------------------------|--|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 | Required Braces |     |           | Number of Rails Required Per Panel |  |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |                 |     |           |                                    |  |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E               | F   | 40" x 66" | 40" x 78"                          |  |
| $\theta = 0$                     | 73                    | 84     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 37           | 37   | Yes             | Yes             | Yes | 2         | 2                                  |  |
| $0 > \theta < 7.5$               | 68                    | 78     | 30           | 37   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 37           | 55   | Yes             | Yes             | Yes | 2         | 2                                  |  |
| $7.5 > \theta < 15$              | 68                    | 78     | 30           | 47   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 37           | 68   | Yes             | Yes             | Yes | 2         | 3                                  |  |
| $15 > \theta < 22.5$             | 68                    | 78     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay | 145                 | 165    | 37           | 73   | Yes             | Yes             | Yes | 3         | 3                                  |  |
| $22.5 > \theta < 30$             | 67                    | 77     | 30           | 61   | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 136    | 37           | 74   | Yes             | Yes             | Yes | 3         | 3                                  |  |
| $30 > \theta < 37.5$             | 71                    | 81     | 30           | 65   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 37           | 76   | Yes             | Yes             | Yes | 3         | 3                                  |  |
| $37.5 > \theta < 45$             | 73                    | 83     | 30           | 68   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 37           | 79   | Yes             | Yes             | Yes | 3         | 3                                  |  |

| 170 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |   |    |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|---|----|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     |   |    |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |   |    |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   |   |    |
|                                  |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |   |    |
| $\theta = 0$                     | 73                    | 83     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 40           | 40   | Yes             | Yes | Yes | 2 | 2  |
| $0 > \theta < 7.5$               | 67                    | 77     | 30           | 39   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 40           | 59   | Yes             | Yes | Yes | 2 | 2  |
| $7.5 > \theta < 15$              | 67                    | 77     | 30           | 50   | Yes             | Every 3rd Bay | No            | 178                 | 180    | 40           | 70   | Yes             | Yes | Yes | 3 | 3  |
| $15 > \theta < 22.5$             | 66                    | 76     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay | 136                 | 156    | 40           | 75   | Yes             | Yes | Yes | 3 | 3  |
| $22.5 > \theta < 30$             | 65                    | 74     | 30           | 64   | Yes             | Every 3rd Bay | Every 3rd Bay | 113                 | 128    | 40           | 77   | Yes             | Yes | Yes | 3 | NG |
| $30 > \theta < 37.5$             | 69                    | 79     | 30           | 69   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 40           | 79   | Yes             | Yes | Yes | 3 | NG |
| $37.5 > \theta < 45$             | 71                    | 81     | 30           | 72   | Yes             | Every 3rd Bay | Every 3rd Bay | 99                  | 113    | 40           | 82   | Yes             | Yes | Yes | 3 | NG |

# Series 200

## Configuration Tables for Ground Mount System 31 to 40 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 31-40 psf Snow |                       |        |       |      |              |               |               |               |                     |        |       |      |          |     |     |           |                                    |  |  |  |                 |  |  |  |             |  |
|----------------------------------|-----------------------|--------|-------|------|--------------|---------------|---------------|---------------|---------------------|--------|-------|------|----------|-----|-----|-----------|------------------------------------|--|--|--|-----------------|--|--|--|-------------|--|
| Tilt Angle $\theta$              | Standard Installation |        |       |      |              |               |               |               | Braced Installation |        |       |      |          |     |     |           | Number of Rails Required Per Panel |  |  |  |                 |  |  |  |             |  |
|                                  | Max (PS)              |        |       |      | 12" Dia Pier |               |               |               | Required Braces     |        |       |      | Max (PS) |     |     |           | 12" Dia Pier                       |  |  |  | Required Braces |  |  |  | Module Size |  |
|                                  | Sch 40                | Sch 80 | Short | Tall | A            | C             | D             | No            | Sch 40              | Sch 80 | Short | Tall | A        | E   | F   | 40" x 66" | 40" x 78"                          |  |  |  |                 |  |  |  |             |  |
|                                  | 71                    | 81     | 30    | 30   | No           | Every 3rd Bay | No            | No            | 180                 | 180    | 44    | 44   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $0 > \theta < 7.5$               | 68                    | 78     | 30    | 30   | Yes          | Every 3rd Bay | No            | No            | 180                 | 180    | 35    | 35   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $7.5 > \theta < 15$              | 70                    | 80     | 30    | 31   | Yes          | Every 3rd Bay | No            | No            | 180                 | 180    | 35    | 44   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $15 > \theta < 22.5$             | 73                    | 84     | 30    | 38   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 35    | 52   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $22.5 > \theta < 30$             | 76                    | 87     | 30    | 41   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 30    | 56   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $30 > \theta < 37.5$             | 82                    | 94     | 30    | 45   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 179                 | 180    | 30    | 59   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $37.5 > \theta < 45$             | 89                    | 101    | 30    | 48   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 168                 | 180    | 30    | 62   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |

| 110 mph Wind Load 31-40 psf Snow |                       |        |       |      |              |               |               |               |                     |        |       |      |          |     |     |           |                                    |  |  |  |                 |  |  |  |             |  |
|----------------------------------|-----------------------|--------|-------|------|--------------|---------------|---------------|---------------|---------------------|--------|-------|------|----------|-----|-----|-----------|------------------------------------|--|--|--|-----------------|--|--|--|-------------|--|
| Tilt Angle $\theta$              | Standard Installation |        |       |      |              |               |               |               | Braced Installation |        |       |      |          |     |     |           | Number of Rails Required Per Panel |  |  |  |                 |  |  |  |             |  |
|                                  | Max (PS)              |        |       |      | 12" Dia Pier |               |               |               | Required Braces     |        |       |      | Max (PS) |     |     |           | 12" Dia Pier                       |  |  |  | Required Braces |  |  |  | Module Size |  |
|                                  | Sch 40                | Sch 80 | Short | Tall | A            | C             | D             | No            | Sch 40              | Sch 80 | Short | Tall | A        | E   | F   | 40" x 66" | 40" x 78"                          |  |  |  |                 |  |  |  |             |  |
|                                  | 71                    | 81     | 30    | 30   | No           | Every 3rd Bay | No            | No            | 180                 | 180    | 38    | 38   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $0 > \theta < 7.5$               | 68                    | 77     | 30    | 30   | Yes          | Every 3rd Bay | No            | No            | 180                 | 180    | 38    | 38   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $7.5 > \theta < 15$              | 69                    | 79     | 30    | 34   | Yes          | Every 3rd Bay | No            | No            | 180                 | 180    | 38    | 48   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $15 > \theta < 22.5$             | 72                    | 82     | 30    | 41   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 38    | 57   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $22.5 > \theta < 30$             | 74                    | 85     | 30    | 44   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 174                 | 180    | 30    | 61   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $30 > \theta < 37.5$             | 80                    | 92     | 30    | 49   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 163                 | 180    | 30    | 63   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $37.5 > \theta < 45$             | 86                    | 98     | 30    | 52   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 153                 | 175    | 30    | 66   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |

| 120 mph Wind Load 31-40 psf Snow |                       |        |       |      |              |               |               |               |                     |        |       |      |          |     |     |           |                                    |  |  |  |                 |  |  |  |             |  |
|----------------------------------|-----------------------|--------|-------|------|--------------|---------------|---------------|---------------|---------------------|--------|-------|------|----------|-----|-----|-----------|------------------------------------|--|--|--|-----------------|--|--|--|-------------|--|
| Tilt Angle $\theta$              | Standard Installation |        |       |      |              |               |               |               | Braced Installation |        |       |      |          |     |     |           | Number of Rails Required Per Panel |  |  |  |                 |  |  |  |             |  |
|                                  | Max (PS)              |        |       |      | 12" Dia Pier |               |               |               | Required Braces     |        |       |      | Max (PS) |     |     |           | 12" Dia Pier                       |  |  |  | Required Braces |  |  |  | Module Size |  |
|                                  | Sch 40                | Sch 80 | Short | Tall | A            | C             | D             | No            | Sch 40              | Sch 80 | Short | Tall | A        | E   | F   | 40" x 66" | 40" x 78"                          |  |  |  |                 |  |  |  |             |  |
|                                  | 70                    | 80     | 30    | 30   | No           | Every 3rd Bay | No            | No            | 180                 | 180    | 41    | 41   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $0 > \theta < 7.5$               | 67                    | 76     | 30    | 30   | Yes          | Every 3rd Bay | No            | No            | 180                 | 180    | 41    | 41   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $7.5 > \theta < 15$              | 68                    | 78     | 30    | 36   | Yes          | Every 3rd Bay | No            | No            | 180                 | 180    | 41    | 52   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $15 > \theta < 22.5$             | 71                    | 81     | 30    | 43   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 30    | 62   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $22.5 > \theta < 30$             | 73                    | 83     | 30    | 48   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 159                 | 180    | 30    | 64   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $30 > \theta < 37.5$             | 78                    | 89     | 30    | 52   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 149                 | 170    | 30    | 66   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |
| $37.5 > \theta < 45$             | 84                    | 95     | 30    | 55   | Yes          | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 140                 | 160    | 30    | 69   | Yes      | Yes | Yes | 2         | 2                                  |  |  |  |                 |  |  |  |             |  |

# Series 200

## Configuration Tables for Ground Mount System 31 to 40 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 31-40 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |                                    |             |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|-------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     | Number of Rails Required Per Panel |             |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |                                    |             |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F                                  | Module Size |           |
|                                  |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |                                    |             | 40" x 66" |
| $\theta = 0$                     | 69                    | 79     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 44           | 44   | Yes             | Yes | Yes                                | 2           | 2         |
| $0 > \theta < 7.5$               | 66                    | 75     | 30           | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 44           | 44   | Yes             | Yes | Yes                                | 2           | 2         |
| $7.5 > \theta < 15$              | 67                    | 76     | 30           | 39   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 44           | 56   | Yes             | Yes | Yes                                | 2           | 3         |
| $15 > \theta < 22.5$             | 70                    | 79     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay | 178                 | 180    | 30           | 65   | Yes             | Yes | Yes                                | 2           | 3         |
| $22.5 > \theta < 30$             | 71                    | 81     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay | 147                 | 168    | 30           | 67   | Yes             | Yes | Yes                                | 2           | 2         |
| $30 > \theta < 37.5$             | 76                    | 87     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay | 138                 | 157    | 30           | 68   | Yes             | Yes | Yes                                | 2           | 2         |
| $37.5 > \theta < 45$             | 81                    | 93     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay | 129                 | 148    | 30           | 68   | Yes             | Yes | Yes                                | 2           | 2         |

| 140 mph Wind Load 31-40 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F                                  | 40" x 66" | 40" x 78" |
|                                  |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |                                    |           |           |
| $\theta = 0$                     | 69                    | 78     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 47           | 47   | Yes             | Yes | Yes                                | 2         | 3         |
| $0 > \theta < 7.5$               | 65                    | 74     | 30           | 32   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 47           | 47   | Yes             | Yes | Yes                                | 2         | 3         |
| $7.5 > \theta < 15$              | 66                    | 75     | 30           | 41   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 32           | 61   | Yes             | Yes | Yes                                | 2         | 3         |
| $15 > \theta < 22.5$             | 68                    | 78     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay | 166                 | 180    | 32           | 67   | Yes             | Yes | Yes                                | 2         | 3         |
| $22.5 > \theta < 30$             | 69                    | 79     | 30           | 54   | Yes             | Every 3rd Bay | Every 3rd Bay | 137                 | 156    | 32           | 69   | Yes             | Yes | Yes                                | 2         | 3         |
| $30 > \theta < 37.5$             | 74                    | 85     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay | 128                 | 146    | 32           | 71   | Yes             | Yes | Yes                                | 2         | 3         |
| $37.5 > \theta < 45$             | 79                    | 90     | 30           | 62   | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 137    | 32           | 74   | Yes             | Yes | Yes                                | 2         | 3         |

| 150 mph Wind Load 31-40 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |                                    |             |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|-------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     | Number of Rails Required Per Panel |             |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |                                    |             |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F                                  | Module Size |           |
|                                  |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |                                    |             | 40" x 66" |
| $\theta = 0$                     | 68                    | 78     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 51           | 51   | Yes             | Yes | Yes                                | 2           | 3         |
| $0 > \theta < 7.5$               | 64                    | 73     | 30           | 34   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 35           | 51   | Yes             | Yes | Yes                                | 2           | 3         |
| $7.5 > \theta < 15$              | 65                    | 74     | 30           | 44   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 35           | 65   | Yes             | Yes | Yes                                | 2           | 3         |
| $15 > \theta < 22.5$             | 67                    | 76     | 30           | 52   | Yes             | Every 3rd Bay | Every 3rd Bay | 155                 | 176    | 35           | 70   | Yes             | Yes | Yes                                | 2           | 3         |
| $22.5 > \theta < 30$             | 68                    | 77     | 30           | 57   | Yes             | Every 3rd Bay | Every 3rd Bay | 128                 | 146    | 35           | 72   | Yes             | Yes | Yes                                | 2           | 3         |
| $30 > \theta < 37.5$             | 72                    | 82     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay | 119                 | 136    | 35           | 72   | Yes             | Yes | Yes                                | 3           | 3         |
| $37.5 > \theta < 45$             | 76                    | 86     | 30           | 62   | Yes             | Every 3rd Bay | Every 3rd Bay | 118                 | 135    | 35           | 75   | Yes             | Yes | Yes                                | 3           | 3         |

# Series 200

## Configuration Tables for Ground Mount System 31 to 40 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 31-40 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |                 |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----------------|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 | Required Braces |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |                 |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E               | F   | 40" x 66"                          | 40" x 78" |
| $\theta = 0$                     | 67                    | 77     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 37           | 37   | Yes             | Yes             | Yes | 2                                  | 3         |
| $0 > \theta < 7.5$               | 63                    | 72     | 30           | 36   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 37           | 55   | Yes             | Yes             | Yes | 2                                  | 3         |
| $7.5 > \theta < 15$              | 64                    | 73     | 30           | 46   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 37           | 68   | Yes             | Yes             | Yes | 3                                  | 3         |
| $15 > \theta < 22.5$             | 66                    | 75     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay | 145                 | 165    | 37           | 73   | Yes             | Yes             | Yes | 3                                  | 3         |
| $22.5 > \theta < 30$             | 66                    | 75     | 30           | 61   | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 136    | 37           | 74   | Yes             | Yes             | Yes | 3                                  | 3         |
| $30 > \theta < 37.5$             | 70                    | 80     | 30           | 65   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 37           | 76   | Yes             | Yes             | Yes | 3                                  | 3         |
| $37.5 > \theta < 45$             | 73                    | 83     | 30           | 68   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 37           | 79   | Yes             | Yes             | Yes | 3                                  | 3         |

160 mph Wind Load 31-40 psf Snow

Number of Rails Required Per Panel

Module Size

40" x 66"

40" x 78"

| 170 mph Wind Load 31-40 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |                                    |           |           |
|                                  |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   |                                    |           |           |
| $\theta = 0$                     | 67                    | 76     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 40           | 40   | Yes             | Yes | Yes | 3                                  | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 62                    | 71     | 30           | 38   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 40           | 59   | Yes             | Yes | Yes | 3                                  | 3         | 3         |
| $7.5 > \theta < 15$              | 63                    | 72     | 30           | 49   | Yes             | Every 3rd Bay | No            | 178                 | 180    | 40           | 70   | Yes             | Yes | Yes | 3                                  | 3         | 3         |
| $15 > \theta < 22.5$             | 64                    | 73     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay | 136                 | 156    | 40           | 75   | Yes             | Yes | Yes | 3                                  | 3         | 3         |
| $22.5 > \theta < 30$             | 64                    | 73     | 30           | 64   | Yes             | Every 3rd Bay | Every 3rd Bay | 113                 | 128    | 40           | 77   | Yes             | Yes | Yes | 3                                  | NG        | NG        |
| $30 > \theta < 37.5$             | 68                    | 78     | 30           | 69   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 40           | 79   | Yes             | Yes | Yes | 3                                  | NG        | NG        |
| $37.5 > \theta < 45$             | 71                    | 81     | 30           | 72   | Yes             | Every 3rd Bay | Every 3rd Bay | 99                  | 113    | 40           | 82   | Yes             | Yes | Yes | 3                                  | NG        | NG        |

170 mph Wind Load 31-40 psf Snow

Number of Rails Required Per Panel

Module Size

40" x 66"

40" x 78"

# Series 200

## Configuration Tables for Ground Mount System 41 to 50 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 41-50 psf Snow |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|---------------|-----------|--------|--------------|------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |               |           |        |              |      |     |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces |                     |               | Max (psf) |        | 12" Dia Pier |      |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | No            | Sch 40    | Sch 80 | Short        | Tall | A   |
|                                  |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |
| θ = 0                            | 66                    | 75     | 30           | 30   | No  | Every 3rd Bay   | No                  | No            | 180       | 180    | 44           | 44   | Yes |
| 0 > θ < 7.5                      | 64                    | 73     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 180       | 180    | 44           | 44   | Yes |
| 7.5 > θ < 15                     | 65                    | 74     | 30           | 31   | Yes | Every 3rd Bay   | No                  | No            | 180       | 180    | 44           | 44   | Yes |
| 15 > θ < 22.5                    | 69                    | 78     | 30           | 37   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 180       | 180    | 35           | 52   | Yes |
| 22.5 > θ < 30                    | 73                    | 83     | 30           | 41   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 180       | 180    | 35           | 56   | Yes |
| 30 > θ < 37.5                    | 79                    | 90     | 30           | 45   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 179       | 180    | 30           | 59   | Yes |
| 37.5 > θ < 45                    | 86                    | 98     | 30           | 48   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 168       | 180    | 30           | 62   | Yes |

| 110 mph Wind Load 41-50 psf Snow |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|---------------|-----------|--------|--------------|------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |               |           |        |              |      |     |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces |                     |               | Max (psf) |        | 12" Dia Pier |      |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | No            | Sch 40    | Sch 80 | Short        | Tall | A   |
|                                  |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |
| θ = 0                            | 65                    | 75     | 30           | 30   | No  | Every 3rd Bay   | No                  | No            | 180       | 180    | 48           | 48   | Yes |
| 0 > θ < 7.5                      | 63                    | 72     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 180       | 180    | 48           | 48   | Yes |
| 7.5 > θ < 15                     | 64                    | 74     | 30           | 33   | Yes | Every 3rd Bay   | No                  | No            | 180       | 180    | 48           | 48   | Yes |
| 15 > θ < 22.5                    | 68                    | 77     | 30           | 40   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 180       | 180    | 38           | 57   | Yes |
| 22.5 > θ < 30                    | 71                    | 81     | 30           | 44   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 174       | 180    | 38           | 61   | Yes |
| 30 > θ < 37.5                    | 77                    | 88     | 30           | 48   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 163       | 180    | 30           | 63   | Yes |
| 37.5 > θ < 45                    | 83                    | 95     | 30           | 51   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 153       | 175    | 30           | 66   | Yes |

| 120 mph Wind Load 41-50 psf Snow |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|---------------|-----------|--------|--------------|------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |               |           |        |              |      |     |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces |                     |               | Max (psf) |        | 12" Dia Pier |      |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | No            | Sch 40    | Sch 80 | Short        | Tall | A   |
|                                  |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |
| θ = 0                            | 65                    | 74     | 30           | 30   | No  | Every 3rd Bay   | No                  | No            | 180       | 180    | 52           | 52   | Yes |
| 0 > θ < 7.5                      | 62                    | 71     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 180       | 180    | 52           | 52   | Yes |
| 7.5 > θ < 15                     | 64                    | 73     | 30           | 35   | Yes | Every 3rd Bay   | No                  | No            | 180       | 180    | 41           | 52   | Yes |
| 15 > θ < 22.5                    | 67                    | 76     | 30           | 42   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 180       | 180    | 41           | 62   | Yes |
| 22.5 > θ < 30                    | 70                    | 79     | 30           | 47   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 159       | 180    | 30           | 64   | Yes |
| 30 > θ < 37.5                    | 75                    | 86     | 30           | 51   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 149       | 170    | 30           | 66   | Yes |
| 37.5 > θ < 45                    | 81                    | 93     | 30           | 54   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 140       | 160    | 30           | 69   | Yes |

# Series 200

## Configuration Tables for Ground Mount System 41 to 50 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 41-50 psf Snow |                       |        |              |      |     |                 |                     |        |              |      |     |                 |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|--------|--------------|------|-----|-----------------|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |        |              |      |     |                 |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces | Max (psf)           |        | 12" Dia Pier |      |     | Required Braces |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   |                 | Sch 40              | Sch 80 | Short        | Tall | A   |                 |
|                                  | 64                    | 73     | 30           | 30   | No  |                 | 180                 | 180    | 44           | 44   | Yes |                 |
| θ = 0                            | 62                    | 70     | 30           | 30   | Yes | Every 3rd Bay   | 180                 | 180    | 44           | 44   | Yes | Yes             |
| 0 > θ < 7.5                      | 63                    | 72     | 30           | 38   | Yes | Every 3rd Bay   | 180                 | 180    | 44           | 56   | Yes | Yes             |
| 7.5 > θ < 15                     | 66                    | 75     | 30           | 45   | Yes | Every 3rd Bay   | 178                 | 180    | 44           | 65   | Yes | Yes             |
| 15 > θ < 22.5                    | 68                    | 78     | 30           | 50   | Yes | Every 3rd Bay   | 147                 | 168    | 30           | 67   | Yes | Yes             |
| 22.5 > θ < 30                    | 74                    | 84     | 30           | 55   | Yes | Every 3rd Bay   | 138                 | 157    | 30           | 68   | Yes | Yes             |
| 30 > θ < 37.5                    | 79                    | 90     | 30           | 58   | Yes | Every 3rd Bay   | 129                 | 148    | 30           | 68   | Yes | Yes             |
| 37.5 > θ < 45                    |                       |        |              |      |     |                 |                     |        |              |      |     |                 |

| 140 mph Wind Load 41-50 psf Snow |                       |           |              |           |                 |               |                     |           |              |           |                 |           |                                    |           |
|----------------------------------|-----------------------|-----------|--------------|-----------|-----------------|---------------|---------------------|-----------|--------------|-----------|-----------------|-----------|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |           |              |           |                 |               | Braced Installation |           |              |           |                 |           | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |           | 12" Dia Pier |           | Required Braces |               | Max (PS)            |           | 12" Dia Pier |           | Required Braces |           |                                    |           |
|                                  | Sch 40                | Sch 80    | Short        | Tall      | A               | C             | D                   | Sch 40    | Sch 80       | Short     | Tall            | A         | E                                  | F         |
|                                  | 40" x 66"             | 40" x 66" | 40" x 66"    | 40" x 66" | 40" x 66"       | 40" x 66"     | 40" x 66"           | 40" x 66" | 40" x 66"    | 40" x 66" | 40" x 66"       | 40" x 66" | 40" x 66"                          | 40" x 66" |
| $\theta = 0$                     | 64                    | 73        | 30           | 30        | No              | Every 3rd Bay | No                  | 180       | 180          | 47        | 47              | Yes       | Yes                                | Yes       |
| $0 > \theta < 7.5$               | 61                    | 69        | 30           | 31        | Yes             | Every 3rd Bay | No                  | 180       | 180          | 47        | 47              | Yes       | Yes                                | Yes       |
| $7.5 > \theta < 15$              | 62                    | 71        | 30           | 40        | Yes             | Every 3rd Bay | No                  | 180       | 180          | 47        | 61              | Yes       | Yes                                | Yes       |
| $15 > \theta < 22.5$             | 65                    | 74        | 30           | 48        | Yes             | Every 3rd Bay | Every 3rd Bay       | 166       | 180          | 32        | 67              | Yes       | Yes                                | Yes       |
| $22.5 > \theta < 30$             | 67                    | 76        | 30           | 53        | Yes             | Every 3rd Bay | Every 3rd Bay       | 137       | 156          | 32        | 69              | Yes       | Yes                                | Yes       |
| $30 > \theta < 37.5$             | 72                    | 82        | 30           | 58        | Yes             | Every 3rd Bay | Every 3rd Bay       | 128       | 146          | 32        | 71              | Yes       | Yes                                | Yes       |
| $37.5 > \theta < 45$             | 77                    | 88        | 30           | 61        | Yes             | Every 3rd Bay | Every 3rd Bay       | 120       | 137          | 32        | 74              | Yes       | Yes                                | Yes       |

| 150 mph Wind Load 41-50 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F         |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |           |           |
| $\theta = 0$                     | 63                    | 72     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 51    | 51              | Yes | Yes                                | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 60                    | 69     | 30           | 33   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 51    | 51              | Yes | Yes                                | 3         | 3         |
| $7.5 > \theta < 15$              | 61                    | 70     | 30           | 43   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 51    | 65              | Yes | Yes                                | 3         | 3         |
| $15 > \theta < 22.5$             | 64                    | 73     | 30           | 52   | Yes             | Every 3rd Bay | Every 3rd Bay       | 155    | 176          | 35    | 70              | Yes | Yes                                | 3         | 3         |
| $22.5 > \theta < 30$             | 65                    | 74     | 30           | 57   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 35    | 72              | Yes | Yes                                | 3         | 3         |
| $30 > \theta < 37.5$             | 70                    | 80     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay       | 119    | 136          | 35    | 72              | Yes | Yes                                | 3         | 3         |
| $37.5 > \theta < 45$             | 75                    | 85     | 30           | 61   | Yes             | Every 3rd Bay | Every 3rd Bay       | 118    | 135          | 35    | 75              | Yes | Yes                                | 3         | 3         |

# Series 200

## Configuration Tables for Ground Mount System 41 to 50 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 41-50 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 63                    | 72     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 55           | 55   | Yes             | Yes                                | Yes | 3         | 3         |
| $0 > \theta < 7.5$               | 59                    | 68     | 30           | 35   | Yes             | Every 3rd Bay | No            | 178                 | 180    | 55           | 55   | Yes             | Yes                                | Yes | 3         | 3         |
| $7.5 > \theta < 15$              | 60                    | 69     | 30           | 45   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 55           | 68   | Yes             | Yes                                | Yes | 3         | 3         |
| $15 > \theta < 22.5$             | 63                    | 71     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay | 145                 | 165    | 37           | 73   | Yes             | Yes                                | Yes | 3         | 3         |
| $22.5 > \theta < 30$             | 64                    | 73     | 30           | 60   | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 136    | 37           | 74   | Yes             | Yes                                | Yes | 3         | 3         |
| $30 > \theta < 37.5$             | 68                    | 78     | 30           | 66   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 37           | 76   | Yes             | Yes                                | Yes | 3         | 3         |
| $37.5 > \theta < 45$             | 73                    | 83     | 30           | 69   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 37           | 79   | Yes             | Yes                                | Yes | 3         | 3         |

| 170 mph Wind Load 41-50 psf Snow |                       |        |              |                 |     |               |               |                     |        |              |                 |     |     |             |           |
|----------------------------------|-----------------------|--------|--------------|-----------------|-----|---------------|---------------|---------------------|--------|--------------|-----------------|-----|-----|-------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |                 |     |               |               | Braced Installation |        |              |                 |     |     |             |           |
|                                  | Max (PS)              |        |              | Required Braces |     |               |               | Max (PS)            |        |              | Required Braces |     |     |             |           |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C   | D             |               | Sch 40              | Sch 80 | 12" Dia Pier | A               | E   | F   | Module Size |           |
|                                  |                       |        | Short        | Tall            |     |               |               |                     |        | Short        | Tall            |     |     |             | 40" x 66" |
| $\theta = 0$                     | 62                    | 71     | 30           | 30              | No  | Every 3rd Bay | No            | 180                 | 180    | 59           | 59              | Yes | Yes | Yes         | 3         |
| $0 > \theta < 7.5$               | 59                    | 67     | 30           | 37              | Yes | Every 3rd Bay | No            | 176                 | 180    | 59           | 59              | Yes | Yes | Yes         | 3         |
| $7.5 > \theta < 15$              | 59                    | 68     | 30           | 48              | Yes | Every 3rd Bay | No            | 178                 | 180    | 40           | 70              | Yes | Yes | Yes         | 3         |
| $15 > \theta < 22.5$             | 62                    | 70     | 30           | 58              | Yes | Every 3rd Bay | Every 3rd Bay | 136                 | 156    | 40           | 75              | Yes | Yes | Yes         | 3         |
| $22.5 > \theta < 30$             | 62                    | 71     | 30           | 64              | Yes | Every 3rd Bay | Every 3rd Bay | 113                 | 128    | 40           | 77              | Yes | Yes | Yes         | NG        |
| $30 > \theta < 37.5$             | 67                    | 76     | 30           | 69              | Yes | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 40           | 79              | Yes | Yes | Yes         | NG        |
| $37.5 > \theta < 45$             | 71                    | 81     | 30           | 72              | Yes | Every 3rd Bay | Every 3rd Bay | 99                  | 113    | 40           | 82              | Yes | Yes | Yes         | NG        |

# Series 200

## Configuration Tables for Ground Mount System 51 to 60 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 51-60 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F                                  |           |           |
|                                  |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |                                    | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 61                    | 70     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 52           | 52   | Yes             | Yes | Yes                                | 2         | 3         |
| $0 > \theta < 7.5$               | 60                    | 68     | 30           | 30   | Yes             | Every 3rd Bay | No            | 179                 | 180    | 52           | 52   | Yes             | Yes | Yes                                | 2         | 3         |
| $7.5 > \theta < 15$              | 61                    | 70     | 30           | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 44           | 44   | Yes             | Yes | Yes                                | 2         | 3         |
| $15 > \theta < 22.5$             | 65                    | 74     | 30           | 36   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 44           | 52   | Yes             | Yes | Yes                                | 2         | 3         |
| $22.5 > \theta < 30$             | 70                    | 80     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 35           | 56   | Yes             | Yes | Yes                                | 2         | 2         |
| $30 > \theta < 37.5$             | 76                    | 87     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay | 179                 | 180    | 30           | 56   | Yes             | Yes | Yes                                | 2         | 2         |
| $37.5 > \theta < 45$             | 83                    | 95     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay | 168                 | 180    | 30           | 59   | Yes             | Yes | Yes                                | 2         | 2         |

| 110 mph Wind Load 51-60 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |
| $\theta = 0$                     | 61                    | 70     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 57    | 57              | Yes | Yes                                | Yes |
| $0 > \theta < 7.5$               | 59                    | 67     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 177    | 180          | 57    | 57              | Yes | Yes                                | Yes |
| $7.5 > \theta < 15$              | 61                    | 69     | 30           | 32   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 48    | 48              | Yes | Yes                                | Yes |
| $15 > \theta < 22.5$             | 64                    | 73     | 30           | 39   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 38    | 57              | Yes | Yes                                | Yes |
| $22.5 > \theta < 30$             | 68                    | 78     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 174    | 180          | 38    | 57              | Yes | Yes                                | Yes |
| $30 > \theta < 37.5$             | 74                    | 85     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 163    | 180          | 30    | 61              | Yes | Yes                                | Yes |
| $37.5 > \theta < 45$             | 81                    | 92     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 153    | 175          | 30    | 61              | Yes | Yes                                | Yes |

| 120 mph Wind Load 51-60 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     | Module Size                        |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
|                                  |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                     | 61                    | 69     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 52    | 52              | Yes | Yes                                | Yes | 2         | 3         |
| $0 > \theta < 7.5$               | 58                    | 67     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 175    | 180          | 52    | 52              | Yes | Yes                                | Yes | 2         | 3         |
| $7.5 > \theta < 15$              | 60                    | 69     | 30           | 34   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 52    | 52              | Yes | Yes                                | Yes | 2         | 3         |
| $15 > \theta < 22.5$             | 63                    | 72     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 41    | 62              | Yes | Yes                                | Yes | 2         | 3         |
| $22.5 > \theta < 30$             | 67                    | 76     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 159    | 180          | 30    | 62              | Yes | Yes                                | Yes | 2         | 3         |
| $30 > \theta < 37.5$             | 73                    | 83     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 149    | 170          | 30    | 62              | Yes | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$             | 79                    | 90     | 30           | 54   | Yes             | Every 3rd Bay | Every 3rd Bay       | 140    | 160          | 30    | 64              | Yes | Yes                                | Yes | 2         | 2         |

# Series 200

## Configuration Tables for Ground Mount System 51 to 60 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 51-60 psf Snow |                       |        |              |      |     |                 |                     |        |              |      |     |                 |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|--------|--------------|------|-----|-----------------|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |        |              |      |     |                 |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces | Max (psf)           |        | 12" Dia Pier |      |     | Required Braces |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   |                 | Sch 40              | Sch 80 | Short        | Tall | A   |                 |
|                                  | 60                    | 69     | 30           | 30   | No  |                 | 180                 | 180    | 56           | 56   | Yes |                 |
| θ = 0                            | 58                    | 66     | 30           | 30   | Yes | Every 3rd Bay   | 174                 | 180    | 56           | 56   | Yes | Yes             |
| 0 > θ < 7.5                      | 59                    | 68     | 30           | 37   | Yes | Every 3rd Bay   | 178                 | 180    | 56           | 56   | Yes | Yes             |
| 7.5 > θ < 15                     | 62                    | 71     | 30           | 45   | Yes | Every 3rd Bay   | 178                 | 180    | 44           | 65   | Yes | Yes             |
| 15 > θ < 22.5                    | 66                    | 75     | 30           | 49   | Yes | Every 3rd Bay   | 147                 | 168    | 30           | 67   | Yes | Yes             |
| 22.5 > θ < 30                    | 71                    | 81     | 30           | 54   | Yes | Every 3rd Bay   | 138                 | 157    | 30           | 68   | Yes | Yes             |
| 30 > θ < 37.5                    | 77                    | 88     | 30           | 57   | Yes | Every 3rd Bay   | 129                 | 148    | 30           | 68   | Yes | Yes             |
| 37.5 > θ < 45                    |                       |        |              |      |     |                 |                     |        |              |      |     |                 |

| 140 mph Wind Load 51-60 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                     | 60                    | 68     | 30           | 30   | No              | Every 3rd Bay | No                  | 179    | 180          | 61    | 61              | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 57                    | 65     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 172    | 180          | 61    | 61              | Yes | Yes                                | Yes | 3         | 3         |
| $7.5 > \theta < 15$              | 59                    | 67     | 30           | 39   | Yes             | Every 3rd Bay | No                  | 176    | 180          | 47    | 61              | Yes | Yes                                | Yes | 3         | 3         |
| $15 > \theta < 22.5$             | 61                    | 70     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 166    | 180          | 47    | 67              | Yes | Yes                                | Yes | 3         | 3         |
| $22.5 > \theta < 30$             | 64                    | 73     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 137    | 156          | 32    | 69              | Yes | Yes                                | Yes | 3         | 3         |
| $30 > \theta < 37.5$             | 70                    | 79     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 32    | 71              | Yes | Yes                                | Yes | 2         | 3         |
| $37.5 > \theta < 45$             | 75                    | 86     | 30           | 61   | Yes             | Every 3rd Bay | Every 3rd Bay       | 120    | 137          | 32    | 74              | Yes | Yes                                | Yes | 2         | 3         |

| 150 mph Wind Load 51-60 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     | Module Size                        |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
|                                  |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                     | 59                    | 68     | 30           | 30   | No              | Every 3rd Bay | No                  | 178    | 180          | 51    | 51              | Yes | Yes                                | Yes | 3         | 3         |
| $0 > \theta < 7.5$               | 57                    | 65     | 30           | 32   | Yes             | Every 3rd Bay | No                  | 170    | 180          | 51    | 51              | Yes | Yes                                | Yes | 3         | 3         |
| $7.5 > \theta < 15$              | 58                    | 66     | 30           | 42   | Yes             | Every 3rd Bay | No                  | 174    | 180          | 51    | 65              | Yes | Yes                                | Yes | 3         | 3         |
| $15 > \theta < 22.5$             | 61                    | 69     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 155    | 176          | 51    | 70              | Yes | Yes                                | Yes | 3         | 3         |
| $22.5 > \theta < 30$             | 63                    | 72     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 35    | 72              | Yes | Yes                                | Yes | 3         | 3         |
| $30 > \theta < 37.5$             | 68                    | 78     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay       | 119    | 136          | 35    | 72              | Yes | Yes                                | Yes | 3         | 3         |
| $37.5 > \theta < 45$             | 73                    | 83     | 30           | 61   | Yes             | Every 3rd Bay | Every 3rd Bay       | 118    | 135          | 35    | 75              | Yes | Yes                                | Yes | 3         | 3         |

# Series 200

## Configuration Tables for Ground Mount System 51 to 60 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 51-60 psf Snow |                       |        |      |                 |               |               |                     |               |               |                 |     |     |                                    |        |        |
|----------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|---------------|---------------|-----------------|-----|-----|------------------------------------|--------|--------|
| Tilt Angle $\theta$              | Standard Installation |        |      |                 |               |               | Braced Installation |               |               |                 |     |     | Number of Rails Required Per Panel |        |        |
|                                  | Max (PS)              |        |      | Required Braces |               |               | Max (PS)            |               |               | Required Braces |     |     |                                    |        |        |
|                                  | 12" Dia Pier          |        | Tall | A               | C             |               | D                   | 12" Dia Pier  |               | Tall            | A   | E   | F                                  |        |        |
|                                  | Sch 40                | Sch 80 |      |                 | Short         | 30            |                     | Every 3rd Bay | Every 3rd Bay |                 |     |     |                                    | Sch 40 | Sch 80 |
| $\theta = 0$                     | 59                    | 67     | 30   | No              | Every 3rd Bay | No            | 177                 | 180           | 55            | Yes             | Yes | Yes | Yes                                | 3      | 3      |
| $0 > \theta < 7.5$               | 56                    | 64     | 30   | Yes             | Every 3rd Bay | No            | 168                 | 180           | 55            | Yes             | Yes | Yes | Yes                                | 3      | 3      |
| $7.5 > \theta < 15$              | 57                    | 65     | 30   | Yes             | Every 3rd Bay | No            | 172                 | 180           | 55            | Yes             | Yes | Yes | Yes                                | 3      | 3      |
| $15 > \theta < 22.5$             | 60                    | 68     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 145                 | 165           | 37            | 73              | Yes | Yes | Yes                                | 3      | 3      |
| $22.5 > \theta < 30$             | 62                    | 70     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 136           | 37            | 74              | Yes | Yes | Yes                                | 3      | 3      |
| $30 > \theta < 37.5$             | 67                    | 76     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128           | 37            | 76              | Yes | Yes | Yes                                | 3      | 3      |
| $37.5 > \theta < 45$             | 71                    | 81     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120           | 37            | 79              | Yes | Yes | Yes                                | 3      | 3      |

| 170 mph Wind Load 51-60 psf Snow |                       |        |      |                 |               |               |                     |        |               |                 |               |     |                                    |     |     |     |               |               |               |
|----------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|---------------|-----------------|---------------|-----|------------------------------------|-----|-----|-----|---------------|---------------|---------------|
| Tilt Angle $\theta$              | Standard Installation |        |      |                 |               |               | Braced Installation |        |               |                 |               |     | Number of Rails Required Per Panel |     |     |     |               |               |               |
|                                  | Max (PS)              |        |      | Required Braces |               |               | Max (PS)            |        |               | Required Braces |               |     |                                    |     |     |     |               |               |               |
|                                  | 12" Dia Pier          |        | Tall | A               | C             |               | D                   | Sch 40 |               | Sch 80          | 12" Dia Pier  |     | Tall                               | A   | E   | F   |               |               |               |
|                                  | Sch 40                | Sch 80 |      |                 | Every 3rd Bay | Every 3rd Bay |                     | No     | Every 3rd Bay |                 | Every 3rd Bay | No  |                                    |     |     |     | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay |
| $\theta = 0$                     | 58                    | 67     | 30   | No              | No            | Every 3rd Bay | No                  | 175    | 180           | 59              | 59            | Yes | Yes                                | Yes | Yes | Yes | 3             | 40" x 66"     | 40" x 78"     |
| $0 > \theta < 7.5$               | 56                    | 63     | 30   | Yes             | Yes           | Every 3rd Bay | No                  | 167    | 180           | 59              | 59            | Yes | Yes                                | Yes | Yes | Yes | 3             | NG            | NG            |
| $7.5 > \theta < 15$              | 57                    | 64     | 30   | Yes             | Yes           | Every 3rd Bay | No                  | 170    | 180           | 59              | 70            | Yes | Yes                                | Yes | Yes | Yes | 3             | NG            | NG            |
| $15 > \theta < 22.5$             | 59                    | 67     | 30   | Yes             | Yes           | Every 3rd Bay | Every 3rd Bay       | 136    | 156           | 40              | 75            | Yes | Yes                                | Yes | Yes | Yes | 3             | NG            | NG            |
| $22.5 > \theta < 30$             | 60                    | 69     | 30   | Yes             | Yes           | Every 3rd Bay | Every 3rd Bay       | 113    | 128           | 40              | 77            | Yes | Yes                                | Yes | Yes | Yes | 3             | NG            | NG            |
| $30 > \theta < 37.5$             | 65                    | 74     | 30   | Yes             | Yes           | Every 3rd Bay | Every 3rd Bay       | 105    | 120           | 40              | 79            | Yes | Yes                                | Yes | Yes | Yes | 3             | NG            | NG            |
| $37.5 > \theta < 45$             | 70                    | 79     | 30   | Yes             | Yes           | Every 3rd Bay | Every 3rd Bay       | 99     | 113           | 40              | 82            | Yes | Yes                                | Yes | Yes | Yes | 3             | NG            | NG            |

# Series 200

## Configuration Tables for Ground Mount System 61 to 70 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 61-70 psf Snow |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|---------------|-----------|--------|--------------|------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |               |           |        |              |      |     |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces |                     |               | Max (psf) |        | 12" Dia Pier |      |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | No            | Sch 40    | Sch 80 | Short        | Tall | A   |
|                                  | 58                    | 66     | 30           | 30   | No  | Every 3rd Bay   | No                  | No            | 173       | 180    | 59           | 59   | Yes |
| θ = 0                            | 56                    | 64     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 169       | 180    | 59           | 59   | Yes |
| 0 > θ < 7.5                      | 58                    | 66     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 175       | 180    | 52           | 52   | Yes |
| 7.5 > θ < 15                     | 62                    | 70     | 30           | 36   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 180       | 180    | 44           | 52   | Yes |
| 15 > θ < 22.5                    | 67                    | 76     | 30           | 39   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 180       | 180    | 35           | 56   | Yes |
| 22.5 > θ < 30                    | 73                    | 84     | 30           | 43   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 179       | 180    | 35           | 59   | Yes |
| 30 > θ < 37.5                    | 81                    | 92     | 30           | 46   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 168       | 180    | 30           | 62   | Yes |
| 37.5 > θ < 45                    |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |

| 110 mph Wind Load 61-70 psf Snow |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|---------------|-----------|--------|--------------|------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |               |           |        |              |      |     |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces |                     |               | Max (psf) |        | 12" Dia Pier |      |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | No            | Sch 40    | Sch 80 | Short        | Tall | A   |
|                                  | 57                    | 66     | 30           | 30   | No  | Every 3rd Bay   | No                  | No            | 172       | 180    | 57           | 57   | Yes |
| θ = 0                            | 56                    | 64     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 167       | 180    | 57           | 57   | Yes |
| 0 > θ < 7.5                      | 58                    | 66     | 30           | 31   | Yes | Every 3rd Bay   | No                  | No            | 173       | 180    | 57           | 57   | Yes |
| 7.5 > θ < 15                     | 61                    | 70     | 30           | 38   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 180       | 180    | 48           | 57   | Yes |
| 15 > θ < 22.5                    | 66                    | 75     | 30           | 42   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 174       | 180    | 38           | 61   | Yes |
| 22.5 > θ < 30                    | 72                    | 82     | 30           | 47   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 163       | 180    | 38           | 63   | Yes |
| 30 > θ < 37.5                    | 79                    | 90     | 30           | 50   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 153       | 175    | 30           | 66   | Yes |
| 37.5 > θ < 45                    |                       |        |              |      |     |                 |                     |               |           |        |              |      |     |

| 120 mph Wind Load 61-70 psf Snow |                       |        |              |      |                 |               |                     |               |              |       |                 |    |                                    |             |     |   |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|---------------|--------------|-------|-----------------|----|------------------------------------|-------------|-----|---|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |               |              |       |                 |    | Number of Rails Required Per Panel |             |     |   |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |               | 12" Dia Pier |       | Required Braces |    |                                    |             |     |   |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40        | Sch 80       | Short | Tall            | A  | E                                  | F           |     |   |   |
|                                  |                       |        |              |      |                 |               |                     |               |              |       |                 |    |                                    | Module Size |     |   |   |
| $\theta = 0$                     | 57                    | 65     | 30           | 30   | No              | Every 3rd Bay | No                  | No            | 171          | 180   | 62              | 62 | Yes                                | Yes         | Yes | 3 | 3 |
| $0 > \theta < 7.5$               | 55                    | 63     | 30           | 30   | Yes             | Every 3rd Bay | No                  | No            | 166          | 180   | 62              | 62 | Yes                                | Yes         | Yes | 3 | 3 |
| $7.5 > \theta < 15$              | 57                    | 65     | 30           | 34   | Yes             | Every 3rd Bay | No                  | No            | 171          | 180   | 52              | 52 | Yes                                | Yes         | Yes | 3 | 3 |
| $15 > \theta < 22.5$             | 60                    | 69     | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 180          | 180   | 52              | 62 | Yes                                | Yes         | Yes | 3 | 3 |
| $22.5 > \theta < 30$             | 65                    | 74     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 159          | 180   | 41              | 64 | Yes                                | Yes         | Yes | 2 | 3 |
| $30 > \theta < 37.5$             | 70                    | 80     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 149          | 170   | 30              | 66 | Yes                                | Yes         | Yes | 2 | 3 |
| $37.5 > \theta < 45$             | 77                    | 88     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 140          | 160   | 30              | 69 | Yes                                | Yes         | Yes | 2 | 2 |

# Series 200

## Configuration Tables for Ground Mount System 61 to 70 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 61-70 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|---|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |   |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |   |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |   |   |
|                                  | 40" x 66"             |        | 40" x 78"    |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |
| $\theta = 0$                     | 57                    | 65     | 30           | 30   | No              | Every 3rd Bay | No                  | 170    | 180          | 65    | 65              | Yes | Yes                                | Yes | 3 | 3 |
| $0 > \theta < 7.5$               | 55                    | 63     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 165    | 180          | 56    | 56              | Yes | Yes                                | Yes | 3 | 3 |
| $7.5 > \theta < 15$              | 56                    | 64     | 30           | 36   | Yes             | Every 3rd Bay | No                  | 169    | 180          | 56    | 56              | Yes | Yes                                | Yes | 3 | 3 |
| $15 > \theta < 22.5$             | 60                    | 68     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay       | 178    | 180          | 44    | 65              | Yes | Yes                                | Yes | 3 | 3 |
| $22.5 > \theta < 30$             | 63                    | 72     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | 147    | 168          | 44    | 67              | Yes | Yes                                | Yes | 3 | 3 |
| $30 > \theta < 37.5$             | 69                    | 79     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 157          | 30    | 68              | Yes | Yes                                | Yes | 2 | 3 |
| $37.5 > \theta < 45$             | 75                    | 86     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay       | 129    | 148          | 30    | 68              | Yes | Yes                                | Yes | 2 | 2 |

| 140 mph Wind Load 61-70 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                     | 56                    | 64     | 30           | 30   | No              | Every 3rd Bay | No                  | 169    | 180          | 61    | 61              | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 54                    | 62     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 163    | 180          | 61    | 61              | Yes | Yes                                | Yes | 3         | 3         |
| $7.5 > \theta < 15$              | 56                    | 64     | 30           | 38   | Yes             | Every 3rd Bay | No                  | 167    | 180          | 61    | 61              | Yes | Yes                                | Yes | 3         | 3         |
| $15 > \theta < 22.5$             | 59                    | 67     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 166    | 180          | 47    | 67              | Yes | Yes                                | Yes | 3         | 3         |
| $22.5 > \theta < 30$             | 62                    | 71     | 30           | 52   | Yes             | Every 3rd Bay | Every 3rd Bay       | 137    | 156          | 32    | 69              | Yes | Yes                                | Yes | 3         | 3         |
| $30 > \theta < 37.5$             | 68                    | 77     | 30           | 57   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 32    | 71              | Yes | Yes                                | Yes | 3         | 3         |
| $37.5 > \theta < 45$             | 73                    | 84     | 30           | 60   | Yes             | Every 3rd Bay | Every 3rd Bay       | 120    | 137          | 32    | 74              | Yes | Yes                                | Yes | 2         | 3         |

| 150 mph Wind Load 61-70 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                     | 56                    | 64     | 30           | 30   | No              | Every 3rd Bay | No                  | 168    | 180          | 65    | 65              | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 54                    | 61     | 30           | 31   | Yes             | Every 3rd Bay | No                  | 162    | 180          | 65    | 65              | Yes | Yes                                | Yes | 3         | 3         |
| $7.5 > \theta < 15$              | 55                    | 63     | 30           | 41   | Yes             | Every 3rd Bay | No                  | 166    | 180          | 51    | 65              | Yes | Yes                                | Yes | 3         | 3         |
| $15 > \theta < 22.5$             | 58                    | 66     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 155    | 176          | 51    | 70              | Yes | Yes                                | Yes | 3         | 3         |
| $22.5 > \theta < 30$             | 61                    | 70     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay       | 128    | 146          | 35    | 72              | Yes | Yes                                | Yes | 3         | 3         |
| $30 > \theta < 37.5$             | 66                    | 75     | 30           | 57   | Yes             | Every 3rd Bay | Every 3rd Bay       | 119    | 136          | 35    | 72              | Yes | Yes                                | Yes | 3         | 3         |
| $37.5 > \theta < 45$             | 72                    | 82     | 30           | 60   | Yes             | Every 3rd Bay | Every 3rd Bay       | 118    | 135          | 35    | 75              | Yes | Yes                                | Yes | 3         | 3         |

# Series 200

## Configuration Tables for Ground Mount System 61 to 70 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 61-70 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   | 40" x 66"                          | 40" x 78" |
| $\theta = 0$                     | 56                    | 63     | 30           | 30   | No              | Every 3rd Bay | No            | 167                 | 180    | 68           | 68   | Yes             | Yes | Yes | 3                                  | NG        |
| $0 > \theta < 7.5$               | 53                    | 61     | 30           | 33   | Yes             | Every 3rd Bay | No            | 160                 | 180    | 68           | 68   | Yes             | Yes | Yes | 3                                  | NG        |
| $7.5 > \theta < 15$              | 55                    | 62     | 30           | 44   | Yes             | Every 3rd Bay | No            | 164                 | 180    | 55           | 68   | Yes             | Yes | Yes | 3                                  | NG        |
| $15 > \theta < 22.5$             | 57                    | 65     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay | 145                 | 165    | 55           | 73   | Yes             | Yes | Yes | 3                                  | NG        |
| $22.5 > \theta < 30$             | 60                    | 68     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 136    | 37           | 74   | Yes             | Yes | Yes | 3                                  | NG        |
| $30 > \theta < 37.5$             | 65                    | 74     | 30           | 64   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 37           | 76   | Yes             | Yes | Yes | 3                                  | 3         |
| $37.5 > \theta < 45$             | 70                    | 80     | 30           | 67   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 37           | 79   | Yes             | Yes | Yes | 3                                  | 3         |

| 170 mph Wind Load 61-70 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 55                    | 63     | 30           | 30   | No              | Every 3rd Bay | No            | 166                 | 180    | 69           | 69   | Yes             | Yes                                | Yes | 3         | NG        |
| $0 > \theta < 7.5$               | 53                    | 60     | 30           | 36   | Yes             | Every 3rd Bay | No            | 159                 | 180    | 69           | 69   | Yes             | Yes                                | Yes | 3         | NG        |
| $7.5 > \theta < 15$              | 54                    | 62     | 30           | 47   | Yes             | Every 3rd Bay | No            | 162                 | 180    | 59           | 70   | Yes             | Yes                                | Yes | 3         | NG        |
| $15 > \theta < 22.5$             | 56                    | 64     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay | 136                 | 156    | 40           | 75   | Yes             | Yes                                | Yes | 3         | NG        |
| $22.5 > \theta < 30$             | 59                    | 67     | 30           | 62   | Yes             | Every 3rd Bay | Every 3rd Bay | 113                 | 128    | 40           | 77   | Yes             | Yes                                | Yes | 3         | NG        |
| $30 > \theta < 37.5$             | 63                    | 72     | 30           | 68   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 40           | 79   | Yes             | Yes                                | Yes | 3         | NG        |
| $37.5 > \theta < 45$             | 68                    | 78     | 30           | 71   | Yes             | Every 3rd Bay | Every 3rd Bay | 99                  | 113    | 40           | 82   | Yes             | Yes                                | Yes | 3         | NG        |

# Series 200

## Configuration Tables for Ground Mount System 71 to 80 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 71-80 psf Snow |                       |        |              |      |     |                 |                     |               |          |        |              |      |     |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|---------------|----------|--------|--------------|------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |               |          |        |              |      |     |
|                                  | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |                     |               | Max (PS) |        | 12" Dia Pier |      |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | No            | Sch 40   | Sch 80 | Short        | Tall | A   |
|                                  |                       |        |              |      |     | Required Braces |                     |               |          |        |              |      |     |
| θ = 0                            | 54                    | 62     | 30           | 30   | No  | Every 3rd Bay   | No                  | No            | 163      | 180    | 62           | 62   | Yes |
| 0 > θ < 7.5                      | 53                    | 61     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 160      | 180    | 62           | 62   | Yes |
| 7.5 > θ < 15                     | 55                    | 63     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 166      | 180    | 59           | 59   | Yes |
| 15 > θ < 22.5                    | 59                    | 67     | 30           | 35   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 177      | 180    | 52           | 52   | Yes |
| 22.5 > θ < 30                    | 64                    | 73     | 30           | 39   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 180      | 180    | 44           | 56   | Yes |
| 30 > θ < 37.5                    | 71                    | 81     | 30           | 43   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 179      | 180    | 35           | 59   | Yes |
| 37.5 > θ < 45                    | 79                    | 90     | 30           | 46   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 168      | 180    | 30           | 62   | Yes |

| 110 mph Wind Load 71-80 psf Snow |                       |        |              |      |     |                 |                     |               |          |        |              |      |     |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|---------------|----------|--------|--------------|------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |               |          |        |              |      |     |
|                                  | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |                     |               | Max (PS) |        | 12" Dia Pier |      |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | No            | Sch 40   | Sch 80 | Short        | Tall | A   |
|                                  |                       |        |              |      |     | Required Braces |                     |               |          |        |              |      |     |
| θ = 0                            | 54                    | 62     | 30           | 30   | No  | Every 3rd Bay   | No                  | No            | 163      | 180    | 66           | 66   | Yes |
| 0 > θ < 7.5                      | 53                    | 61     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 159      | 180    | 63           | 63   | Yes |
| 7.5 > θ < 15                     | 55                    | 63     | 30           | 31   | Yes | Every 3rd Bay   | No                  | No            | 165      | 180    | 57           | 57   | Yes |
| 15 > θ < 22.5                    | 58                    | 67     | 30           | 38   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 175      | 180    | 48           | 57   | Yes |
| 22.5 > θ < 30                    | 63                    | 72     | 30           | 42   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 174      | 180    | 48           | 61   | Yes |
| 30 > θ < 37.5                    | 70                    | 80     | 30           | 46   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 163      | 180    | 38           | 63   | Yes |
| 37.5 > θ < 45                    | 77                    | 88     | 30           | 49   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 153      | 175    | 30           | 66   | Yes |

| 120 mph Wind Load 71-80 psf Snow |                       |        |              |      |     |                 |                     |               |          |        |              |      |     |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|---------------|----------|--------|--------------|------|-----|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |               |          |        |              |      |     |
|                                  | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |                     |               | Max (PS) |        | 12" Dia Pier |      |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   | No            | Sch 40   | Sch 80 | Short        | Tall | A   |
|                                  |                       |        |              |      |     | Required Braces |                     |               |          |        |              |      |     |
| θ = 0                            | 54                    | 62     | 30           | 30   | No  | Every 3rd Bay   | No                  | No            | 162      | 180    | 64           | 64   | Yes |
| 0 > θ < 7.5                      | 53                    | 60     | 30           | 30   | Yes | Every 3rd Bay   | No                  | No            | 158      | 180    | 64           | 64   | Yes |
| 7.5 > θ < 15                     | 54                    | 62     | 30           | 33   | Yes | Every 3rd Bay   | No                  | No            | 163      | 180    | 62           | 62   | Yes |
| 15 > θ < 22.5                    | 58                    | 66     | 30           | 40   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 173      | 180    | 52           | 62   | Yes |
| 22.5 > θ < 30                    | 62                    | 71     | 30           | 45   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 159      | 180    | 41           | 64   | Yes |
| 30 > θ < 37.5                    | 68                    | 78     | 30           | 49   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 149      | 170    | 30           | 66   | Yes |
| 37.5 > θ < 45                    | 75                    | 86     | 30           | 52   | Yes | Every 3rd Bay   | Every 3rd Bay       | Every 3rd Bay | 140      | 160    | 30           | 69   | Yes |

# Series 200

## Configuration Tables for Ground Mount System 71 to 80 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 71-80 psf Snow |                       |              |                 |                 |     |               |                     |              |                 |                 |      |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------------|-----------------|-----------------|-----|---------------|---------------------|--------------|-----------------|-----------------|------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |              |                 |                 |     |               | Braced Installation |              |                 |                 |      |     | Number of Rails Required Per Panel |     |           |           |
|                                  | 12" Dia Pier          |              |                 | Required Braces |     |               | 12" Dia Pier        |              |                 | Required Braces |      |     |                                    |     |           |           |
|                                  | Max (PS)              | 12" Dia Pier | Required Braces | A               | C   | D             | Max (PS)            | 12" Dia Pier | Required Braces | A               | E    | F   | Module Size                        |     |           |           |
|                                  | Sch 40                | Sch 80       | Short           | Tall            | No  | Every 3rd Bay | No                  | Sch 40       | Sch 80          | Short           | Tall | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 54                    | 61           | 30              | 30              | No  | Every 3rd Bay | No                  | 162          | 180             | 65              | 65   | Yes | Yes                                | Yes | 3         | 3         |
| $0 > \theta < 7.5$               | 52                    | 60           | 30              | 30              | Yes | Every 3rd Bay | No                  | 157          | 179             | 65              | 65   | Yes | Yes                                | Yes | 3         | 3         |
| $7.5 > \theta < 15$              | 54                    | 61           | 30              | 35              | Yes | Every 3rd Bay | No                  | 162          | 180             | 65              | 65   | Yes | Yes                                | Yes | 3         | 3         |
| $15 > \theta < 22.5$             | 57                    | 65           | 30              | 43              | Yes | Every 3rd Bay | Every 3rd Bay       | 171          | 180             | 56              | 65   | Yes | Yes                                | Yes | 3         | 3         |
| $22.5 > \theta < 30$             | 61                    | 70           | 30              | 48              | Yes | Every 3rd Bay | Every 3rd Bay       | 147          | 168             | 44              | 67   | Yes | Yes                                | Yes | 3         | 3         |
| $30 > \theta < 37.5$             | 67                    | 76           | 30              | 53              | Yes | Every 3rd Bay | Every 3rd Bay       | 138          | 157             | 30              | 68   | Yes | Yes                                | Yes | 2         | 3         |
| $37.5 > \theta < 45$             | 73                    | 84           | 30              | 56              | Yes | Every 3rd Bay | Every 3rd Bay       | 129          | 148             | 30              | 68   | Yes | Yes                                | Yes | 2         | 3         |

| 140 mph Wind Load 71-80 psf Snow |                       |              |                 |                 |               |               |                     |              |                 |                 |     |     |                                    |           |    |
|----------------------------------|-----------------------|--------------|-----------------|-----------------|---------------|---------------|---------------------|--------------|-----------------|-----------------|-----|-----|------------------------------------|-----------|----|
| Tilt Angle $\theta$              | Standard Installation |              |                 |                 |               |               | Braced Installation |              |                 |                 |     |     | Number of Rails Required Per Panel |           |    |
|                                  | 12" Dia Pier          |              |                 | Required Braces |               |               | 12" Dia Pier        |              |                 | Required Braces |     |     |                                    |           |    |
|                                  | Max (PS)              | 12" Dia Pier | Required Braces | A               | C             | D             | Max (PS)            | 12" Dia Pier | Required Braces | A               | E   | F   |                                    |           |    |
|                                  | Sch 40                | Short        | Tall            | No              | Every 3rd Bay | No            | Sch 40              | Short        | Tall            | Yes             | Yes | Yes | 40" x 66"                          | 40" x 78" |    |
| $\theta = 0$                     | 54                    | 61           | 30              | No              | Every 3rd Bay | No            | 161                 | 180          | 67              | 67              | Yes | Yes | Yes                                | 3         | NG |
| $0 > \theta < 7.5$               | 52                    | 59           | 30              | Yes             | Every 3rd Bay | No            | 155                 | 177          | 67              | 67              | Yes | Yes | Yes                                | 3         | NG |
| $7.5 > \theta < 15$              | 53                    | 61           | 30              | Yes             | Every 3rd Bay | No            | 160                 | 180          | 61              | 61              | Yes | Yes | Yes                                | 3         | NG |
| $15 > \theta < 22.5$             | 56                    | 64           | 30              | Yes             | Every 3rd Bay | Every 3rd Bay | 166                 | 180          | 61              | 67              | Yes | Yes | Yes                                | 3         | 3  |
| $22.5 > \theta < 30$             | 60                    | 69           | 30              | Yes             | Every 3rd Bay | Every 3rd Bay | 137                 | 156          | 47              | 69              | Yes | Yes | Yes                                | 3         | 3  |
| $30 > \theta < 37.5$             | 66                    | 75           | 30              | Yes             | Every 3rd Bay | Every 3rd Bay | 128                 | 146          | 32              | 71              | Yes | Yes | Yes                                | 3         | 3  |
| $37.5 > \theta < 45$             | 72                    | 82           | 30              | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 137          | 32              | 74              | Yes | Yes | Yes                                | 2         | 3  |

| 150 mph Wind Load 71-80 psf Snow |                       |        |       |                 |     |               |                     |        |        |                 |      |     |                                    |     |
|----------------------------------|-----------------------|--------|-------|-----------------|-----|---------------|---------------------|--------|--------|-----------------|------|-----|------------------------------------|-----|
| Tilt Angle $\theta$              | Standard Installation |        |       |                 |     |               | Braced Installation |        |        |                 |      |     | Number of Rails Required Per Panel |     |
|                                  | 12" Dia Pier          |        |       | Required Braces |     |               | 12" Dia Pier        |        |        | Required Braces |      |     |                                    |     |
|                                  | Max (PS)              | Sch 40 | Short | Tall            | A   | C             | D                   | Sch 40 | Sch 80 | Short           | Tall | A   | E                                  | F   |
|                                  | 40                    | 61     | 31    | 31              | No  | Every 3rd Bay | No                  | 160    | 180    | 65              | 65   | Yes | Yes                                | Yes |
| $\theta = 0$                     | 53                    | 61     | 31    | 31              | No  | Every 3rd Bay | No                  | 160    | 180    | 65              | 65   | Yes | Yes                                | Yes |
| $0 > \theta < 7.5$               | 51                    | 59     | 30    | 31              | Yes | Every 3rd Bay | No                  | 154    | 176    | 65              | 65   | Yes | Yes                                | Yes |
| $7.5 > \theta < 15$              | 53                    | 60     | 30    | 40              | Yes | Every 3rd Bay | No                  | 158    | 180    | 65              | 65   | Yes | Yes                                | Yes |
| $15 > \theta < 22.5$             | 56                    | 64     | 30    | 49              | Yes | Every 3rd Bay | Every 3rd Bay       | 155    | 176    | 51              | 70   | Yes | Yes                                | Yes |
| $22.5 > \theta < 30$             | 59                    | 67     | 30    | 55              | Yes | Every 3rd Bay | Every 3rd Bay       | 128    | 146    | 34              | 72   | Yes | Yes                                | Yes |
| $30 > \theta < 37.5$             | 64                    | 73     | 30    | 57              | Yes | Every 3rd Bay | Every 3rd Bay       | 119    | 136    | 34              | 72   | Yes | Yes                                | Yes |
| $37.5 > \theta < 45$             | 70                    | 80     | 30    | 60              | Yes | Every 3rd Bay | Every 3rd Bay       | 118    | 135    | 34              | 75   | Yes | Yes                                | Yes |

# Series 200

## Configuration Tables for Ground Mount System 71 to 80 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 71-80 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 53                    | 60     | 30           | 30   | No              | Every 3rd Bay | No            | 159                 | 180    | 68           | 68   | Yes             | Yes                                | Yes | 3         | NG        |
| $0 > \theta < 7.5$               | 51                    | 58     | 30           | 33   | Yes             | Every 3rd Bay | No            | 153                 | 174    | 68           | 68   | Yes             | Yes                                | Yes | 3         | NG        |
| $7.5 > \theta < 15$              | 52                    | 60     | 30           | 43   | Yes             | Every 3rd Bay | No            | 157                 | 179    | 68           | 68   | Yes             | Yes                                | Yes | 3         | NG        |
| $15 > \theta < 22.5$             | 55                    | 63     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay | 145                 | 165    | 55           | 73   | Yes             | Yes                                | Yes | 3         | NG        |
| $22.5 > \theta < 30$             | 58                    | 66     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 136    | 37           | 74   | Yes             | Yes                                | Yes | 3         | NG        |
| $30 > \theta < 37.5$             | 63                    | 72     | 30           | 64   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 37           | 76   | Yes             | Yes                                | Yes | 3         | NG        |
| $37.5 > \theta < 45$             | 68                    | 78     | 30           | 67   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 37           | 79   | Yes             | Yes                                | Yes | 3         | 3         |

# Series 200

## Configuration Tables for Ground Mount System 81 to 90 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 81-90 psf Snow |                       |        |      |                 |               |               |                     |        |       |              |     |     |                                    |           |                 |
|----------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|-------|--------------|-----|-----|------------------------------------|-----------|-----------------|
| Tilt Angle $\theta$              | Standard Installation |        |      |                 |               |               | Braced Installation |        |       |              |     |     | Number of Rails Required Per Panel |           |                 |
|                                  | 12" Dia Pier          |        |      | Required Braces |               |               | Max (PS)            |        |       | 12" Dia Pier |     |     |                                    |           | Required Braces |
|                                  | Sch 40                | Sch 80 | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short | Tall         | A   | E   | F                                  | 40" x 66" | 40" x 78"       |
| $\theta = 0$                     | 51                    | 59     | 30   | No              | Every 3rd Bay | No            | 154                 | 176    | 62    | 62           | Yes | Yes | Yes                                | 3         | NG              |
| $0 > \theta < 7.5$               | 51                    | 58     | 30   | Yes             | Every 3rd Bay | No            | 153                 | 175    | 62    | 62           | Yes | Yes | Yes                                | 3         | NG              |
| $7.5 > \theta < 15$              | 53                    | 60     | 30   | Yes             | Every 3rd Bay | No            | 159                 | 180    | 62    | 62           | Yes | Yes | Yes                                | 3         | NG              |
| $15 > \theta < 22.5$             | 57                    | 65     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 170                 | 180    | 56    | 56           | Yes | Yes | Yes                                | 3         | 3               |
| $22.5 > \theta < 30$             | 62                    | 70     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 44    | 56           | Yes | Yes | Yes                                | 2         | 3               |
| $30 > \theta < 37.5$             | 69                    | 79     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 179                 | 180    | 35    | 59           | Yes | Yes | Yes                                | 2         | 3               |
| $37.5 > \theta < 45$             | 77                    | 87     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 168                 | 180    | 30    | 62           | Yes | Yes | Yes                                | 2         | 2               |

| 110 mph Wind Load 81-90 psf Snow |                       |        |       |                 |     |               |                     |        |        |              |      |     |                                    |     |                 |           |           |
|----------------------------------|-----------------------|--------|-------|-----------------|-----|---------------|---------------------|--------|--------|--------------|------|-----|------------------------------------|-----|-----------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |       |                 |     |               | Braced Installation |        |        |              |      |     | Number of Rails Required Per Panel |     |                 |           |           |
|                                  | 12" Dia Pier          |        |       | Required Braces |     |               | Max (PS)            |        |        | 12" Dia Pier |      |     |                                    |     | Required Braces |           |           |
|                                  | Max (PS)              | Sch 40 | Short | Tall            | A   | C             | D                   | Sch 40 | Sch 80 | Short        | Tall | A   |                                    |     | E               | F         |           |
|                                  |                       |        |       |                 |     |               |                     |        |        |              |      |     |                                    |     |                 |           |           |
| $\theta = 0$                     |                       | 51     | 59    | 30              | No  | Every 3rd Bay | No                  | 154    | 176    | 66           | 66   | Yes | Yes                                | Yes | F               | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               |                       | 51     | 58    | 30              | Yes | Every 3rd Bay | No                  | 152    | 174    | 66           | 66   | Yes | Yes                                | Yes | Yes             | 3         | NG        |
| $7.5 > \theta < 15$              |                       | 53     | 60    | 30              | Yes | Every 3rd Bay | No                  | 158    | 180    | 63           | 63   | Yes | Yes                                | Yes | Yes             | 3         | NG        |
| $15 > \theta < 22.5$             |                       | 56     | 64    | 30              | Yes | Every 3rd Bay | Every 3rd Bay       | 168    | 180    | 57           | 57   | Yes | Yes                                | Yes | Yes             | 3         | 3         |
| $22.5 > \theta < 30$             |                       | 61     | 69    | 30              | Yes | Every 3rd Bay | Every 3rd Bay       | 174    | 180    | 48           | 61   | Yes | Yes                                | Yes | Yes             | 3         | 3         |
| $30 > \theta < 37.5$             |                       | 68     | 77    | 30              | Yes | Every 3rd Bay | Every 3rd Bay       | 163    | 180    | 38           | 63   | Yes | Yes                                | Yes | Yes             | 2         | 3         |
| $37.5 > \theta < 45$             |                       | 75     | 85    | 30              | Yes | Every 3rd Bay | Every 3rd Bay       | 153    | 175    | 30           | 66   | Yes | Yes                                | Yes | Yes             | 2         | 2         |

| 120 mph Wind Load 81-90 psf Snow |                       |              |       |                 |     |               |                     |        |        |              |      |     |                                    |     |                 |             |  |
|----------------------------------|-----------------------|--------------|-------|-----------------|-----|---------------|---------------------|--------|--------|--------------|------|-----|------------------------------------|-----|-----------------|-------------|--|
| Tilt Angle $\theta$              | Standard Installation |              |       |                 |     |               | Braced Installation |        |        |              |      |     | Number of Rails Required Per Panel |     |                 |             |  |
|                                  | 12" Dia Pier          |              |       | Required Braces |     |               | Max (PS)            |        |        | 12" Dia Pier |      |     |                                    |     | Required Braces |             |  |
|                                  | Max (PS)              | 12" Dia Pier | Tall  | A               | C   | D             | Sch 40              | Sch 80 | Short  | Tall         | A    | E   |                                    |     | F               | Module Size |  |
|                                  | Sch 40                | Sch 80       | Short | Tall            | A   | C             | D                   | Sch 40 | Sch 80 | Short        | Tall | A   | E                                  | F   | 40" x 66"       | 40" x 78"   |  |
| $\theta = 0$                     | 51                    | 59           | 30    | 30              | No  | Every 3rd Bay | No                  | 154    | 176    | 69           | 69   | Yes | Yes                                | Yes | 3               | NG          |  |
| $0 > \theta < 7.5$               | 50                    | 57           | 30    | 30              | Yes | Every 3rd Bay | No                  | 151    | 172    | 69           | 69   | Yes | Yes                                | Yes | 3               | NG          |  |
| $7.5 > \theta < 15$              | 52                    | 59           | 30    | 32              | Yes | Every 3rd Bay | No                  | 156    | 178    | 64           | 64   | Yes | Yes                                | Yes | 3               | NG          |  |
| $15 > \theta < 22.5$             | 55                    | 63           | 30    | 40              | Yes | Every 3rd Bay | Every 3rd Bay       | 166    | 180    | 62           | 62   | Yes | Yes                                | Yes | 3               | 3           |  |
| $22.5 > \theta < 30$             | 60                    | 69           | 30    | 44              | Yes | Every 3rd Bay | Every 3rd Bay       | 159    | 180    | 52           | 64   | Yes | Yes                                | Yes | 3               | 3           |  |
| $30 > \theta < 37.5$             | 66                    | 76           | 30    | 49              | Yes | Every 3rd Bay | Every 3rd Bay       | 149    | 170    | 40           | 66   | Yes | Yes                                | Yes | 2               | 3           |  |
| $37.5 > \theta < 45$             | 73                    | 84           | 30    | 52              | Yes | Every 3rd Bay | Every 3rd Bay       | 140    | 160    | 30           | 69   | Yes | Yes                                | Yes | 2               | 3           |  |

# Series 200

## Configuration Tables for Ground Mount System 81 to 90 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 81-90 psf Snow |                       |        |              |      |                 |               |               |        |                     |       |              |     |                 |     |                                    |           |  |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|--------|---------------------|-------|--------------|-----|-----------------|-----|------------------------------------|-----------|--|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               |        | Braced Installation |       |              |     |                 |     | Number of Rails Required Per Panel |           |  |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               |        | Max (PS)            |       | 12" Dia Pier |     | Required Braces |     | Module Size                        |           |  |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40 | Sch 80              | Short | Tall         | A   | E               | F   | 40" x 66"                          | 40" x 78" |  |
|                                  |                       |        |              |      |                 |               |               |        |                     |       |              |     |                 |     |                                    |           |  |
| $\theta = 0$                     | 51                    | 59     | 30           | 30   | No              | Every 3rd Bay | No            | 154    | 176                 | 71    | 71           | Yes | Yes             | Yes | 3                                  | NG        |  |
| $0 > \theta < 7.5$               | 50                    | 57     | 30           | 30   | Yes             | Every 3rd Bay | No            | 150    | 171                 | 67    | 67           | Yes | Yes             | Yes | 3                                  | NG        |  |
| $7.5 > \theta < 15$              | 52                    | 59     | 30           | 35   | Yes             | Every 3rd Bay | No            | 155    | 177                 | 65    | 65           | Yes | Yes             | Yes | 3                                  | NG        |  |
| $15 > \theta < 22.5$             | 55                    | 63     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay | 165    | 180                 | 56    | 65           | Yes | Yes             | Yes | 3                                  | 3         |  |
| $22.5 > \theta < 30$             | 59                    | 68     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay | 147    | 168                 | 44    | 67           | Yes | Yes             | Yes | 3                                  | 3         |  |
| $30 > \theta < 37.5$             | 65                    | 74     | 30           | 52   | Yes             | Every 3rd Bay | Every 3rd Bay | 138    | 157                 | 30    | 68           | Yes | Yes             | Yes | 3                                  | 3         |  |
| $37.5 > \theta < 45$             | 72                    | 82     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay | 129    | 148                 | 30    | 68           | Yes | Yes             | Yes | 2                                  | 3         |  |

| 140 mph Wind Load 81-90 psf Snow |                       |        |              |      |                 |               |               |        |                     |       |              |     |                 |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|--------|---------------------|-------|--------------|-----|-----------------|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               |        | Braced Installation |       |              |     |                 |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               |        | Max (PS)            |       | 12" Dia Pier |     | Required Braces |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40 | Sch 80              | Short | Tall         | A   | E               | F   | 40" x 66"                          | 40" x 78" |
|                                  | $\theta = 0$          | 51     | 58           | 30   | 30              | No            | Every 3rd Bay | No     | 153                 | 175   | 69           | 69  | Yes             | Yes | Yes                                | 3         |
| $0 > \theta < 7.5$               | 50                    | 57     | 30           | 30   | Yes             | Every 3rd Bay | No            | 149    | 170                 | 67    | 67           | Yes | Yes             | Yes | 3                                  | NG        |
| $7.5 > \theta < 15$              | 51                    | 58     | 30           | 37   | Yes             | Every 3rd Bay | No            | 154    | 175                 | 67    | 67           | Yes | Yes             | Yes | 3                                  | NG        |
| $15 > \theta < 22.5$             | 54                    | 62     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay | 163    | 180                 | 61    | 67           | Yes | Yes             | Yes | 3                                  | NG        |
| $22.5 > \theta < 30$             | 58                    | 67     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay | 137    | 156                 | 47    | 69           | Yes | Yes             | Yes | 3                                  | 3         |
| $30 > \theta < 37.5$             | 64                    | 73     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay | 128    | 146                 | 31    | 71           | Yes | Yes             | Yes | 3                                  | 3         |
| $37.5 > \theta < 45$             | 70                    | 80     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay | 120    | 137                 | 31    | 74           | Yes | Yes             | Yes | 3                                  | 3         |

| 150 mph Wind Load 81-90 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   | 40" x 66"                          | 40" x 78" |
|                                  | $\theta = 0$          | 51     | 58           | 30   | 30              | No            | Every 3rd Bay | No                  | 152    | 174          | 70   | 70              | Yes | Yes | Yes                                | 3         |
| $0 > \theta < 7.5$               | 49                    | 56     | 30           | 30   | Yes             | Every 3rd Bay | No            | 148                 | 168    | 70           | 70   | Yes             | Yes | Yes | 3                                  | NG        |
| $7.5 > \theta < 15$              | 51                    | 58     | 30           | 40   | Yes             | Every 3rd Bay | No            | 152                 | 174    | 65           | 65   | Yes             | Yes | Yes | 3                                  | NG        |
| $15 > \theta < 22.5$             | 54                    | 61     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay | 155                 | 176    | 65           | 70   | Yes             | Yes | Yes | 3                                  | NG        |
| $22.5 > \theta < 30$             | 57                    | 66     | 30           | 54   | Yes             | Every 3rd Bay | Every 3rd Bay | 128                 | 146    | 50           | 72   | Yes             | Yes | Yes | 3                                  | 3         |
| $30 > \theta < 37.5$             | 63                    | 72     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay | 119                 | 136    | 33           | 72   | Yes             | Yes | Yes | 3                                  | 3         |
| $37.5 > \theta < 45$             | 69                    | 78     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay | 118                 | 135    | 33           | 75   | Yes             | Yes | Yes | 3                                  | 3         |

# Series 200

## Configuration Tables for Ground Mount System 81 to 90 psf Snow Loads (4 Module Panels)



| 160 mph Wind Load 81-90 psf Snow |                       |    |              |      |                 |               |               |                     |        |              |      |                 |     |                                    |           |           |
|----------------------------------|-----------------------|----|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |    |              |      |                 |               |               | Braced Installation |        |              |      |                 |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |    | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |                                    |           |           |
|                                  | Sch 40                | NG | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F                                  | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | NG                    | NG | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG  | NG                                 | NG        | NG        |
| $0 > \theta < 7.5$               | NG                    | NG | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG  | NG                                 | NG        | NG        |
| $7.5 > \theta < 15$              | NG                    | NG | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG  | NG                                 | NG        | NG        |
| $15 > \theta < 22.5$             | NG                    | NG | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG  | NG                                 | NG        | NG        |
| $22.5 > \theta < 30$             | 56                    | 64 | 30           | 57   | Yes             | Every 3rd Bay | Every 3rd Bay | 120                 | 136    | 36           | 74   | Yes             | Yes | Yes                                | 3         | NG        |
| $30 > \theta < 37.5$             | 62                    | 70 | 30           | 63   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 36           | 76   | Yes             | Yes | Yes                                | 3         | NG        |
| $37.5 > \theta < 45$             | 67                    | 77 | 30           | 66   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 36           | 79   | Yes             | Yes | Yes                                | 3         | 3         |

| 170 mph Wind Load 81-90 psf Snow |                       |    |              |      |                 |               |               |                     |        |              |      |                 |                                    |     |           |           |
|----------------------------------|-----------------------|----|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |    |              |      |                 |               |               | Braced Installation |        |              |      |                 | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |    | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |                                    |     |           |           |
|                                  | Sch 40                | NG | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | NG                    | NG | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG                                 | NG  | NG        | NG        |
| $0 > \theta < 7.5$               | NG                    | NG | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG                                 | NG  | NG        | NG        |
| $7.5 > \theta < 15$              | NG                    | NG | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG                                 | NG  | NG        | NG        |
| $15 > \theta < 22.5$             | NG                    | NG | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG                                 | NG  | NG        | NG        |
| $22.5 > \theta < 30$             | 56                    | 63 | 30           | 61   | Yes             | Every 3rd Bay | Every 3rd Bay | 113                 | 128    | 38           | 77   | Yes             | Yes                                | Yes | 3         | NG        |
| $30 > \theta < 37.5$             | 60                    | 69 | 30           | 67   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 38           | 79   | Yes             | Yes                                | Yes | 3         | NG        |
| $37.5 > \theta < 45$             | 66                    | 75 | 30           | 70   | Yes             | Every 3rd Bay | Every 3rd Bay | 99                  | 113    | 38           | 82   | Yes             | Yes                                | Yes | 3         | NG        |

# Series 200

## Configuration Tables for Ground Mount System 91 to 100 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 91-100 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|-----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$               | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                   | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                   | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                   | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                      | 49                    | 56     | 30           | 30   | No              | Every 3rd Bay | No                  | 147    | 167          | 62    | 62              | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                | 49                    | 56     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 147    | 167          | 62    | 62              | Yes | Yes                                | Yes | 3         | NG        |
| $7.5 > \theta < 15$               | 51                    | 58     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 153    | 174          | 62    | 62              | Yes | Yes                                | Yes | 3         | NG        |
| $15 > \theta < 22.5$              | 54                    | 62     | 30           | 34   | Yes             | Every 3rd Bay | Every 3rd Bay       | 163    | 180          | 59    | 59              | Yes | Yes                                | Yes | 3         | NG        |
| $22.5 > \theta < 30$              | 59                    | 68     | 30           | 38   | Yes             | Every 3rd Bay | Every 3rd Bay       | 178    | 180          | 52    | 56              | Yes | Yes                                | Yes | 3         | 3         |
| $30 > \theta < 37.5$              | 67                    | 76     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay       | 179    | 180          | 44    | 59              | Yes | Yes                                | Yes | 2         | 3         |
| $37.5 > \theta < 45$              | 75                    | 85     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | 168    | 180          | 34    | 62              | Yes | Yes                                | Yes | 2         | 2         |

| 110 mph Wind Load 91-100 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |             |           |           |
|-----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-------------|-----------|-----------|
| Tilt Angle θ                      | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |             |           |           |
|                                   | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |             |           |           |
|                                   | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F           |           |           |
|                                   |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    | Module Size |           |           |
| θ = 0                             | 49                    | 56     | 30           | 30   | No              | Every 3rd Bay | No                  | 147    | 167          | 66    | 66              | Yes | Yes                                | Yes         | 40" x 66" | 40" x 78" |
| 0 > θ < 7.5                       | 49                    | 55     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 146    | 166          | 66    | 66              | Yes | Yes                                | Yes         | 3         | NG        |
| 7.5 > θ < 15                      | 50                    | 58     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 151    | 173          | 66    | 66              | Yes | Yes                                | Yes         | 3         | NG        |
| 15 > θ < 22.5                     | 54                    | 62     | 30           | 36   | Yes             | Every 3rd Bay | Every 3rd Bay       | 162    | 180          | 61    | 61              | Yes | Yes                                | Yes         | 3         | NG        |
| 22.5 > θ < 30                     | 59                    | 67     | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay       | 174    | 180          | 48    | 61              | Yes | Yes                                | Yes         | 3         | 3         |
| 30 > θ < 37.5                     | 66                    | 75     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | 163    | 180          | 37    | 63              | Yes | Yes                                | Yes         | 2         | 3         |
| 37.5 > θ < 45                     | 73                    | 83     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 153    | 175          | 30    | 66              | Yes | Yes                                | Yes         | 2         | 2         |

| 120 mph Wind Load 91-100 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |             |           |           |
|-----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-------------|-----------|-----------|
| Tilt Angle $\theta$               | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |             |           |           |
|                                   | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |             |           |           |
|                                   | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F           |           |           |
|                                   |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    | Module Size |           |           |
| $\theta = 0$                      | 49                    | 56     | 30           | 30   | No              | Every 3rd Bay | No                  | 147    | 167          | 69    | 69              | Yes | Yes                                | Yes         | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                | 48                    | 55     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 145    | 165          | 69    | 69              | Yes | Yes                                | Yes         | 3         | NG        |
| $7.5 > \theta < 15$               | 50                    | 57     | 30           | 32   | Yes             | Every 3rd Bay | No                  | 150    | 171          | 69    | 69              | Yes | Yes                                | Yes         | 3         | NG        |
| $15 > \theta < 22.5$              | 53                    | 61     | 30           | 39   | Yes             | Every 3rd Bay | Every 3rd Bay       | 160    | 180          | 62    | 62              | Yes | Yes                                | Yes         | 3         | NG        |
| $22.5 > \theta < 30$              | 58                    | 66     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay       | 159    | 180          | 52    | 64              | Yes | Yes                                | Yes         | 3         | 3         |
| $30 > \theta < 37.5$              | 65                    | 74     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 149    | 170          | 40    | 66              | Yes | Yes                                | Yes         | 3         | 3         |
| $37.5 > \theta < 45$              | 72                    | 82     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 140    | 160          | 30    | 69              | Yes | Yes                                | Yes         | 2         | 3         |

# Series 200

## Configuration Tables for Ground Mount System 91 to 100 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 91-100 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|-----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle $\theta$               | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                   | Max (PS)              |        | Required Braces |      |     | D             | Max (PS)            |        | Required Braces |      |     | Module Size |
|                                   | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                   |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall |     | 40" x 66"   |
| $\theta = 0$                      | 49                    | 56     | 30              | 30   | No  | No            | 147                 | 167    | 71              | 71   | Yes | 3           |
| $0 > \theta < 7.5$                | 48                    | 55     | 30              | 30   | Yes | No            | 144                 | 164    | 71              | 71   | Yes | 3           |
| $7.5 > \theta < 15$               | 50                    | 57     | 30              | 34   | Yes | No            | 149                 | 170    | 67              | 67   | Yes | 3           |
| $15 > \theta < 22.5$              | 53                    | 60     | 30              | 42   | Yes | Every 3rd Bay | 159                 | 180    | 65              | 65   | Yes | 3           |
| $22.5 > \theta < 30$              | 57                    | 65     | 30              | 47   | Yes | Every 3rd Bay | 147                 | 168    | 56              | 67   | Yes | 3           |
| $30 > \theta < 37.5$              | 63                    | 72     | 30              | 52   | Yes | Every 3rd Bay | 138                 | 157    | 43              | 68   | Yes | 3           |
| $37.5 > \theta < 45$              | 70                    | 80     | 30              | 55   | Yes | Every 3rd Bay | 129                 | 148    | 30              | 68   | Yes | 2           |
|                                   |                       |        |                 |      |     |               |                     |        |                 |      |     | 3           |

| 140 mph Wind Load 91-100 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|-----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle $\theta$               | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                   | Max (PS)              |        | Required Braces |      |     | D             | Max (PS)            |        | Required Braces |      |     | Module Size |
|                                   | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                   |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall |     | 40" x 66"   |
| $\theta = 0$                      | 49                    | 56     | 30              | 30   | No  | No            | 147                 | 167    | 74              | 74   | Yes | 3           |
| $0 > \theta < 7.5$                | 48                    | 54     | 30              | 30   | Yes | No            | 143                 | 163    | 71              | 71   | Yes | 3           |
| $7.5 > \theta < 15$               | 49                    | 56     | 30              | 36   | Yes | No            | 148                 | 169    | 67              | 67   | Yes | 3           |
| $15 > \theta < 22.5$              | 52                    | 60     | 30              | 45   | Yes | Every 3rd Bay | 157                 | 179    | 61              | 67   | Yes | 3           |
| $22.5 > \theta < 30$              | 57                    | 65     | 30              | 50   | Yes | Every 3rd Bay | 137                 | 156    | 46              | 69   | Yes | 3           |
| $30 > \theta < 37.5$              | 62                    | 71     | 30              | 55   | Yes | Every 3rd Bay | 128                 | 146    | 31              | 71   | Yes | 3           |
| $37.5 > \theta < 45$              | 69                    | 78     | 30              | 58   | Yes | Every 3rd Bay | 120                 | 137    | 31              | 74   | Yes | 3           |
|                                   |                       |        |                 |      |     |               |                     |        |                 |      |     | 3           |

| 150 mph Wind Load 91-100 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|-----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle $\theta$               | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                   | Max (PS)              |        | Required Braces |      |     | D             | Max (PS)            |        | Required Braces |      |     | Module Size |
|                                   | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                   |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall |     | 40" x 66"   |
| $\theta = 0$                      | NG                    | NG     | NG              | NG   | NG  | NG            | NG                  | NG     | NG              | NG   | NG  | 40" x 78"   |
| $0 > \theta < 7.5$                | NG                    | NG     | NG              | NG   | NG  | NG            | NG                  | NG     | NG              | NG   | NG  | NG          |
| $7.5 > \theta < 15$               | NG                    | NG     | NG              | NG   | NG  | NG            | NG                  | NG     | NG              | NG   | NG  | NG          |
| $15 > \theta < 22.5$              | NG                    | NG     | NG              | NG   | NG  | NG            | NG                  | NG     | NG              | NG   | NG  | NG          |
| $22.5 > \theta < 30$              | 56                    | 64     | 30              | 53   | Yes | Every 3rd Bay | 128                 | 146    | 49              | 72   | Yes | 3           |
| $30 > \theta < 37.5$              | 61                    | 70     | 30              | 56   | Yes | Every 3rd Bay | 119                 | 136    | 33              | 72   | Yes | 3           |
| $37.5 > \theta < 45$              | 67                    | 77     | 30              | 59   | Yes | Every 3rd Bay | 118                 | 135    | 33              | 75   | Yes | 3           |
|                                   |                       |        |                 |      |     |               |                     |        |                 |      |     | 3           |

# Series 200

## Configuration Tables for Ground Mount System 91 to 100 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 91-100 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|-----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$               | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                   | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                   | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                      | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $0 > \theta < 7.5$                | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $7.5 > \theta < 15$               | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $15 > \theta < 22.5$              | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $22.5 > \theta < 30$              | 55                    | 63     | 30           | 57   | Yes             | Every 3rd Bay | Every 3rd Bay       | 120    | 136          | 53    | 74              | Yes | Yes                                | Yes | 3         | NG        |
| $30 > \theta < 37.5$              | 60                    | 69     | 30           | 63   | Yes             | Every 3rd Bay | Every 3rd Bay       | 112    | 128          | 35    | 76              | Yes | Yes                                | Yes | 3         | NG        |
| $37.5 > \theta < 45$              | 66                    | 75     | 30           | 66   | Yes             | Every 3rd Bay | Every 3rd Bay       | 105    | 120          | 35    | 79              | Yes | Yes                                | Yes | 3         | NG        |

| 170 mph Wind Load 91-100 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|-----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$               | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                   | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                   | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                      | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $0 > \theta < 7.5$                | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $7.5 > \theta < 15$               | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $15 > \theta < 22.5$              | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $22.5 > \theta < 30$              | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $30 > \theta < 37.5$              | 59                    | 67     | 30           | 67   | Yes             | Every 3rd Bay | 105                 | 120    | 37           | 79    | Yes             | Yes | Yes                                | Yes | 3         | NG        |
| $37.5 > \theta < 45$              | 64                    | 74     | 30           | 70   | Yes             | Every 3rd Bay | 99                  | 113    | 37           | 82    | Yes             | Yes | Yes                                | Yes | 3         | NG        |

# Series 200

## Configuration Tables for Ground Mount System 101 to 110 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 101-110 psf Snow |                       |        |      |                 |     |               |                     |        |      |                 |     |     |                                    |           |
|------------------------------------|-----------------------|--------|------|-----------------|-----|---------------|---------------------|--------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |      |                 |     |               | Braced Installation |        |      |                 |     |     | Number of Rails Required Per Panel |           |
|                                    | Max (PS)              |        |      | Required Braces |     |               | Max (PS)            |        |      | Required Braces |     |     |                                    |           |
|                                    | 12" Dia Pier          |        | Tall | A               | C   | D             | 12" Dia Pier        |        | Tall | A               | E   | F   | Module Size                        |           |
|                                    | Sch 40                | Sch 80 |      |                 |     |               | Sch 40              | Sch 80 |      |                 |     |     |                                    |           |
| $\theta = 0$                       | NG                    | NG     | NG   | NG              | NG  | NG            | NG                  | NG     | NG   | NG              | NG  | NG  | 40" x 66"                          | 40" x 78" |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG   | NG              | NG  | NG            | NG                  | NG     | NG   | NG              | NG  | NG  | NG                                 | NG        |
| $7.5 > \theta < 15$                | NG                    | NG     | NG   | NG              | NG  | NG            | NG                  | NG     | NG   | NG              | NG  | NG  | NG                                 | NG        |
| $15 > \theta < 22.5$               | 53                    | 60     | 30   | 33              | Yes | Every 3rd Bay | 158                 | 180    | 62   | 62              | Yes | Yes | 3                                  | NG        |
| $22.5 > \theta < 30$               | 57                    | 66     | 30   | 37              | Yes | Every 3rd Bay | 172                 | 180    | 52   | 56              | Yes | Yes | 3                                  | 3         |
| $30 > \theta < 37.5$               | 65                    | 74     | 30   | 42              | Yes | Every 3rd Bay | 179                 | 180    | 44   | 59              | Yes | Yes | 2                                  | 3         |
| $37.5 > \theta < 45$               | 73                    | 83     | 30   | 45              | Yes | Every 3rd Bay | 168                 | 180    | 34   | 62              | Yes | Yes | 2                                  | 2         |

| 110 mph Wind Load 101-110 psf Snow |                       |        |      |                 |     |               |                     |        |      |                 |     |     |                                    |           |           |
|------------------------------------|-----------------------|--------|------|-----------------|-----|---------------|---------------------|--------|------|-----------------|-----|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |      |                 |     |               | Braced Installation |        |      |                 |     |     | Number of Rails Required Per Panel |           |           |
|                                    | Max (PS)              |        |      | Required Braces |     |               | Max (PS)            |        |      | Required Braces |     |     |                                    |           |           |
|                                    | 12" Dia Pier          |        | Tall | A               | C   | D             | 12" Dia Pier        |        | Tall | A               | E   | F   | Module Size                        |           |           |
|                                    | Sch 40                | Sch 80 |      |                 |     |               | Sch 40              | Sch 80 |      |                 |     |     |                                    |           |           |
| $\theta = 0$                       | NG                    | NG     | NG   | NG              | NG  | NG            | NG                  | NG     | NG   | NG              | NG  | NG  | NG                                 | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG   | NG              | NG  | NG            | NG                  | NG     | NG   | NG              | NG  | NG  | NG                                 | NG        | NG        |
| $7.5 > \theta < 15$                | NG                    | NG     | NG   | NG              | NG  | NG            | NG                  | NG     | NG   | NG              | NG  | NG  | NG                                 | NG        | NG        |
| $15 > \theta < 22.5$               | 52                    | 59     | 30   | 36              | Yes | Every 3rd Bay | 156                 | 178    | 63   | 63              | Yes | Yes | Yes                                | 3         | NG        |
| $22.5 > \theta < 30$               | 57                    | 65     | 30   | 40              | Yes | Every 3rd Bay | 171                 | 180    | 57   | 61              | Yes | Yes | Yes                                | 3         | 3         |
| $30 > \theta < 37.5$               | 64                    | 73     | 30   | 45              | Yes | Every 3rd Bay | 163                 | 180    | 48   | 63              | Yes | Yes | Yes                                | 2         | 3         |
| $37.5 > \theta < 45$               | 71                    | 82     | 30   | 48              | Yes | Every 3rd Bay | 153                 | 175    | 36   | 66              | Yes | Yes | Yes                                | 2         | 2         |

| 120 mph Wind Load 101-110 psf Snow |                       |        |      |                 |     |               |                     |        |      |                 |     |     |                                    |           |
|------------------------------------|-----------------------|--------|------|-----------------|-----|---------------|---------------------|--------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |      |                 |     |               | Braced Installation |        |      |                 |     |     | Number of Rails Required Per Panel |           |
|                                    | Max (PS)              |        |      | Required Braces |     |               | Max (PS)            |        |      | Required Braces |     |     |                                    |           |
|                                    | 12" Dia Pier          |        | Tall | A               | C   | D             | 12" Dia Pier        |        | Tall | A               | E   | F   | Module Size                        |           |
|                                    | Sch 40                | Sch 80 |      |                 |     |               | Sch 40              | Sch 80 |      |                 |     |     |                                    |           |
| $\theta = 0$                       | NG                    | NG     | NG   | NG              | NG  | NG            | NG                  | NG     | NG   | NG              | NG  | NG  | 40" x 66"                          | 40" x 78" |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG   | NG              | NG  | NG            | NG                  | NG     | NG   | NG              | NG  | NG  | NG                                 | NG        |
| $7.5 > \theta < 15$                | NG                    | NG     | NG   | NG              | NG  | NG            | NG                  | NG     | NG   | NG              | NG  | NG  | NG                                 | NG        |
| $15 > \theta < 22.5$               | 52                    | 59     | 30   | 39              | Yes | Every 3rd Bay | 155                 | 177    | 64   | Yes             | Yes | Yes | 3                                  | NG        |
| $22.5 > \theta < 30$               | 56                    | 64     | 30   | 43              | Yes | Every 3rd Bay | 159                 | 180    | 51   | 64              | Yes | Yes | 3                                  | 3         |
| $30 > \theta < 37.5$               | 63                    | 72     | 30   | 48              | Yes | Every 3rd Bay | 149                 | 170    | 39   | 66              | Yes | Yes | 3                                  | 3         |
| $37.5 > \theta < 45$               | 70                    | 80     | 30   | 51              | Yes | Every 3rd Bay | 140                 | 160    | 30   | 69              | Yes | Yes | 2                                  | 3         |

# Series 200

## Configuration Tables for Ground Mount System 101 to 110 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 101-110 psf Snow |                       |              |                 |    |     |               |                     |              |                 |    |     |    |
|------------------------------------|-----------------------|--------------|-----------------|----|-----|---------------|---------------------|--------------|-----------------|----|-----|----|
| Tilt Angle θ                       | Standard Installation |              |                 |    |     |               | Braced Installation |              |                 |    |     |    |
|                                    | Max (PS)              |              | Required Braces |    |     |               | Max (PS)            |              | Required Braces |    |     |    |
|                                    | Sch 40                | 12" Dia Pier | A               |    | C   |               | Sch 40              | 12" Dia Pier | A               |    | C   |    |
|                                    | NG                    | Short        | Tall            | NG | NG  | D             | NG                  | Short        | Tall            | NG | NG  | F  |
| θ = 0                              | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 0 > θ < 7.5                        | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 7.5 > θ < 15                       | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 15 > θ < 22.5                      | 51                    | 58           | 30              | 41 | Yes | Every 3rd Bay | 153                 | 175          | 65              | 65 | Yes | 3  |
| 22.5 > θ < 30                      | 56                    | 63           | 30              | 46 | Yes | Every 3rd Bay | 147                 | 168          | 55              | 67 | Yes | 3  |
| 30 > θ < 37.5                      | 62                    | 71           | 30              | 51 | Yes | Every 3rd Bay | 138                 | 157          | 42              | 68 | Yes | 3  |
| 37.5 > θ < 45                      | 69                    | 78           | 30              | 54 | Yes | Every 3rd Bay | 129                 | 148          | 30              | 68 | Yes | 3  |

| 140 mph Wind Load 101-110 psf Snow |                       |              |                 |    |     |               |                     |              |                 |    |     |    |
|------------------------------------|-----------------------|--------------|-----------------|----|-----|---------------|---------------------|--------------|-----------------|----|-----|----|
| Tilt Angle θ                       | Standard Installation |              |                 |    |     |               | Braced Installation |              |                 |    |     |    |
|                                    | Max (PS)              |              | Required Braces |    |     |               | Max (PS)            |              | Required Braces |    |     |    |
|                                    | Sch 40                | 12" Dia Pier | A               |    | C   |               | Sch 40              | 12" Dia Pier | A               |    | C   |    |
|                                    | NG                    | Short        | Tall            | NG | NG  | D             | NG                  | Short        | Tall            | NG | NG  | F  |
| θ = 0                              | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 0 > θ < 7.5                        | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 7.5 > θ < 15                       | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 15 > θ < 22.5                      | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 22.5 > θ < 30                      | 55                    | 63           | 30              | 49 | Yes | Every 3rd Bay | 137                 | 156          | 45              | 69 | Yes | 3  |
| 30 > θ < 37.5                      | 61                    | 69           | 30              | 55 | Yes | Every 3rd Bay | 128                 | 146          | 45              | 71 | Yes | 3  |
| 37.5 > θ < 45                      | 67                    | 77           | 30              | 58 | Yes | Every 3rd Bay | 120                 | 137          | 30              | 74 | Yes | 3  |

| 150 mph Wind Load 101-110 psf Snow |                       |              |                 |    |     |               |                     |              |                 |    |     |    |
|------------------------------------|-----------------------|--------------|-----------------|----|-----|---------------|---------------------|--------------|-----------------|----|-----|----|
| Tilt Angle θ                       | Standard Installation |              |                 |    |     |               | Braced Installation |              |                 |    |     |    |
|                                    | Max (PS)              |              | Required Braces |    |     |               | Max (PS)            |              | Required Braces |    |     |    |
|                                    | Sch 40                | 12" Dia Pier | A               |    | C   |               | Sch 40              | 12" Dia Pier | A               |    | C   |    |
|                                    | NG                    | Short        | Tall            | NG | NG  | D             | NG                  | Short        | Tall            | NG | NG  | F  |
| θ = 0                              | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 0 > θ < 7.5                        | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 7.5 > θ < 15                       | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 15 > θ < 22.5                      | NG                    | NG           | NG              | NG | NG  | NG            | NG                  | NG           | NG              | NG | NG  | NG |
| 22.5 > θ < 30                      | 54                    | 62           | 30              | 53 | Yes | Every 3rd Bay | 128                 | 146          | 48              | 72 | Yes | 3  |
| 30 > θ < 37.5                      | 60                    | 68           | 30              | 55 | Yes | Every 3rd Bay | 119                 | 136          | 32              | 72 | Yes | 3  |
| 37.5 > θ < 45                      | 66                    | 75           | 30              | 58 | Yes | Every 3rd Bay | 118                 | 135          | 32              | 75 | Yes | 3  |

# Series 200

## Configuration Tables for Ground Mount System 101 to 110 psf Snow Loads (4 Module Panels)

| 160 mph Wind Load 101-110 psf Snow |                       |        |      |                 |               |               |                     |        |       |                 |     |     |                                    |
|------------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|-------|-----------------|-----|-----|------------------------------------|
| Tilt Angle $\theta$                | Standard Installation |        |      |                 |               |               | Braced Installation |        |       |                 |     |     | Number of Rails Required Per Panel |
|                                    | 12" Dia Pier          |        |      | Required Braces |               |               | 12" Dia Pier        |        |       | Required Braces |     |     | Module Size                        |
|                                    | Max (PS)              | Sch 80 | Tall | A               | C             | D             | Max (PS)            | Sch 80 | Short | Tall            | A   | E   | 40" x 66"                          |
| $\theta = 0$                       | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $7.5 > \theta < 15$                | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $15 > \theta < 22.5$               | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $22.5 > \theta < 30$               | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $30 > \theta < 37.5$               | 59                    | 67     | 62   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 34    | 76              | Yes | Yes | 3                                  |
| $37.5 > \theta < 45$               | 65                    | 74     | 65   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 34    | 79              | Yes | Yes | 3                                  |

| 170 mph Wind Load 101-110 psf Snow |                       |        |      |                 |               |               |                     |        |       |                 |     |     |                                    |
|------------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|-------|-----------------|-----|-----|------------------------------------|
| Tilt Angle $\theta$                | Standard Installation |        |      |                 |               |               | Braced Installation |        |       |                 |     |     | Number of Rails Required Per Panel |
|                                    | 12" Dia Pier          |        |      | Required Braces |               |               | 12" Dia Pier        |        |       | Required Braces |     |     | Module Size                        |
|                                    | Max (PS)              | Sch 80 | Tall | A               | C             | D             | Max (PS)            | Sch 80 | Short | Tall            | A   | E   | 40" x 66"                          |
| $\theta = 0$                       | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $7.5 > \theta < 15$                | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $15 > \theta < 22.5$               | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $22.5 > \theta < 30$               | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $30 > \theta < 37.5$               | NG                    | NG     | NG   | NG              | NG            | NG            | NG                  | NG     | NG    | NG              | NG  | NG  | NG                                 |
| $37.5 > \theta < 45$               | 63                    | 72     | 69   | Yes             | Every 3rd Bay | Every 3rd Bay | 99                  | 113    | 36    | 82              | Yes | Yes | 3                                  |

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## Configuration Tables for Ground Mount System 111 to 120 psf Snow Loads (4 Module Panels)

| 100 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                    | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | 40" x 66" | 40" x 78" |
| $\theta = 0$                       |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $0 > \theta < 7.5$                 |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $7.5 > \theta < 15$                |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $15 > \theta < 22.5$               |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $22.5 > \theta < 30$               | 56                    | 64     | 30           | 37   | Yes             | Every 3rd Bay | Every 3rd Bay       | 167    | 180          | 56    | 56              | Yes | Yes                                | Yes | 3         | 3         |
| $30 > \theta < 37.5$               | 63                    | 72     | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay       | 179    | 180          | 43    | 59              | Yes | Yes                                | Yes | 2         | 3         |
| $37.5 > \theta < 45$               | 71                    | 81     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay       | 168    | 180          | 33    | 62              | Yes | Yes                                | Yes | 2         | 2         |

| 110 mph Wind Load 111-120 psf Snow |                       |    |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|------------------------------------|-----------------------|----|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |    |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                    | Max (PS)              |    | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                    | Sch 40                |    | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                    | NG                    |    | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | 40" x 66" | 40" x 78" |
| $\theta = 0$                       | NG                    |    | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $0 > \theta < 7.5$                 | NG                    |    | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $7.5 > \theta < 15$                | NG                    |    | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $15 > \theta < 22.5$               | NG                    |    | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $22.5 > \theta < 30$               | 55                    | 63 | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay       | 165    | 180          | 57    | 61              | Yes | Yes                                | Yes | 3         | NG        |
| $30 > \theta < 37.5$               | 62                    | 71 | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay       | 163    | 180          | 47    | 63              | Yes | Yes                                | Yes | 2         | 3         |
| $37.5 > \theta < 45$               | 70                    | 80 | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 153    | 175          | 36    | 66              | Yes | Yes                                | Yes | 2         | 3         |

| 120 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                    | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | 40" x 66" | 40" x 78" |
| $\theta = 0$                       | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $7.5 > \theta < 15$                | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $15 > \theta < 22.5$               | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $22.5 > \theta < 30$               | 55                    | 62     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 159    | 180          | 62    | 64              | Yes | Yes                                | Yes | 3         | NG        |
| $30 > \theta < 37.5$               | 61                    | 70     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 149    | 170          | 51    | 66              | Yes | Yes                                | Yes | 3         | 3         |
| $37.5 > \theta < 45$               | 69                    | 78     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 140    | 160          | 38    | 69              | Yes | Yes                                | Yes | 2         | 3         |

# Series 200

## Configuration Tables for Ground Mount System 111 to 120 psf Snow Loads (4 Module Panels)

| 130 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                       | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $7.5 > \theta < 15$                | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $15 > \theta < 22.5$               | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG  | NG        | NG        |
| $22.5 > \theta < 30$               | 54                    | 62     | 30           | 46   | Yes             | Every 3rd Bay | 147                 | 168    | 54           | 67    | Yes             | Yes | Yes                                | Yes | 3         | NG        |
| $30 > \theta < 37.5$               | 60                    | 69     | 30           | 51   | Yes             | Every 3rd Bay | 138                 | 157    | 41           | 68    | Yes             | Yes | Yes                                | Yes | 3         | 3         |
| $37.5 > \theta < 45$               | 67                    | 77     | 30           | 54   | Yes             | Every 3rd Bay | 129                 | 148    | 30           | 68    | Yes             | Yes | Yes                                | Yes | 3         | 3         |

| 140 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |    |             |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|----|-------------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |    |             |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |    |             |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F  | Module Size |
| $\theta = 0$                       | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG | 40" x 78"   |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG | NG          |
| $7.5 > \theta < 15$                | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG | NG          |
| $15 > \theta < 22.5$               | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG | NG          |
| $22.5 > \theta < 30$               | 53                    | 61     | 30           | 49   | Yes             | Every 3rd Bay | 137                 | 156    | 59           | 69    | Yes             | Yes | Yes                                | 3  | NG          |
| $30 > \theta < 37.5$               | 60                    | 68     | 30           | 54   | Yes             | Every 3rd Bay | 128                 | 146    | 44           | 71    | Yes             | Yes | Yes                                | 3  | NG          |
| $37.5 > \theta < 45$               | 66                    | 75     | 30           | 57   | Yes             | Every 3rd Bay | 120                 | 137    | 30           | 74    | Yes             | Yes | Yes                                | 3  | 3           |

| 150 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |    |             |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|----|-------------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |    |             |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |    |             |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F  | Module Size |
| $\theta = 0$                       | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG | 40" x 66"   |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG | NG          |
| $7.5 > \theta < 15$                | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG | NG          |
| $15 > \theta < 22.5$               | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG | NG          |
| $22.5 > \theta < 30$               | NG                    | NG     | NG           | NG   | NG              | NG            | NG                  | NG     | NG           | NG    | NG              | NG  | NG                                 | NG | NG          |
| $30 > \theta < 37.5$               | 59                    | 67     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay       | 119    | 136          | 32    | 72              | Yes | Yes                                | 3  | NG          |
| $37.5 > \theta < 45$               | 65                    | 74     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay       | 118    | 135          | 32    | 75              | Yes | Yes                                | 3  | 3           |

# Series 200

## Configuration Tables for Ground Mount System 111 to 120 psf Snow Loads (4 Module Panels)



| 160 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |           |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     | Number of Rails Required Per Panel |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |                                    |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   | 40" x 66"                          | 40" x 78" |
| $\theta = 0$                       | NG                    | NG     | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG  | NG  | NG                                 | NG        |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG  | NG  | NG                                 | NG        |
| $7.5 > \theta < 15$                | NG                    | NG     | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG  | NG  | NG                                 | NG        |
| $15 > \theta < 22.5$               | NG                    | NG     | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG  | NG  | NG                                 | NG        |
| $22.5 > \theta < 30$               | NG                    | NG     | NG           | NG   | NG              | NG            | NG            | NG                  | NG     | NG           | NG   | NG              | NG  | NG  | NG                                 | NG        |
| $30 > \theta < 37.5$               | 58                    | 66     | 30           | 62   | Yes             | Every 3rd Bay | Every 3rd Bay | 112                 | 128    | 34           | 76   | Yes             | Yes | Yes | 3                                  | NG        |
| $37.5 > \theta < 45$               | 63                    | 72     | 30           | 65   | Yes             | Every 3rd Bay | Every 3rd Bay | 105                 | 120    | 34           | 79   | Yes             | Yes | Yes | 3                                  | NG        |

| 170 mph Wind Load 111-120 psf Snow |                       |        |              |      |     |                 |               |                     |        |              |      |     |                 |     |           |           |
|------------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------|---------------------|--------|--------------|------|-----|-----------------|-----|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |     |                 |               | Braced Installation |        |              |      |     |                 |     |           |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      |     | Required Braces |     |           |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D             | Sch 40              | Sch 80 | Short        | Tall | A   | E               | F   |           |           |
|                                    | Module Size           |        |              |      |     |                 |               |                     |        |              |      |     |                 |     |           |           |
| $\theta = 0$                       | NG                    | NG     | NG           | NG   | NG  | NG              | NG            | NG                  | NG     | NG           | NG   | NG  | NG              | NG  | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                 | NG                    | NG     | NG           | NG   | NG  | NG              | NG            | NG                  | NG     | NG           | NG   | NG  | NG              | NG  | NG        | NG        |
| $7.5 > \theta < 15$                | NG                    | NG     | NG           | NG   | NG  | NG              | NG            | NG                  | NG     | NG           | NG   | NG  | NG              | NG  | NG        | NG        |
| $15 > \theta < 22.5$               | NG                    | NG     | NG           | NG   | NG  | NG              | NG            | NG                  | NG     | NG           | NG   | NG  | NG              | NG  | NG        | NG        |
| $22.5 > \theta < 30$               | NG                    | NG     | NG           | NG   | NG  | NG              | NG            | NG                  | NG     | NG           | NG   | NG  | NG              | NG  | NG        | NG        |
| $30 > \theta < 37.5$               | NG                    | NG     | NG           | NG   | NG  | NG              | NG            | NG                  | NG     | NG           | NG   | NG  | NG              | NG  | NG        | NG        |
| $37.5 > \theta < 45$               | 62                    | 71     | 30           | 69   | Yes | Every 3rd Bay   | Every 3rd Bay | 99                  | 113    | 36           | 82   | Yes | Yes             | Yes | 3         | NG        |

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## Configuration Tables for Ground Mount System 0 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 0 psf Snow       |                       |        |              |      |                 |               |                     |        |              |      |                 |     |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|------|-----------------|-----|
| Tilt Angle θ                       | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |      |                 |     |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | Sch 40              | Sch 80 | Short        | Tall | A               | E   |
|                                    | 144                   | 164    | 30           | 30   | No              | Every 3rd Bay | 180                 | 180    | 30           | 30   | Yes             | Yes |
| θ = 0                              | 121                   | 139    | 30           | 30   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 31   | Yes             | Yes |
| 0 > θ < 7.5                        | 114                   | 130    | 30           | 33   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 39   | Yes             | Yes |
| 7.5 > θ < 15                       | 108                   | 123    | 30           | 38   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 46   | Yes             | Yes |
| 15 > θ < 22.5                      | 103                   | 117    | 30           | 41   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 49   | Yes             | Yes |
| 22.5 > θ < 30                      | 106                   | 121    | 30           | 51   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 60   | Yes             | Yes |
| 30 > θ < 37.5                      | 108                   | 124    | 30           | 51   | Yes             | Every 3rd Bay | 180                 | 180    | 30           | 60   | Yes             | Yes |
| 37.5 > θ < 45                      |                       |        |              |      |                 |               |                     |        |              |      |                 |     |
| Number of Rails Required Per Panel |                       |        |              |      |                 |               |                     |        |              |      |                 |     |
|                                    | 40" x 66"             |        |              |      |                 |               | 40" x 78"           |        |              |      |                 |     |
|                                    | 2                     |        |              |      |                 |               | 2                   |        |              |      |                 |     |

| 110 mph Wind Load 0 psf Snow       |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |   |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|---|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |   |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |   |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |   |
|                                    | 135                   | 154    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes |           |   |
| $\theta = 0$                       | 112                   | 128    | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 33              | Yes | Yes                                | Yes | 2         | 2 |
| $0 > \theta < 7.5$                 | 112                   | 128    | 30           | 34   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 42              | Yes | Yes                                | Yes | 2         | 2 |
| $7.5 > \theta < 15$                | 99                    | 113    | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 50              | Yes | Yes                                | Yes | 2         | 2 |
| $15 > \theta < 22.5$               | 95                    | 108    | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 53              | Yes | Yes                                | Yes | 2         | 2 |
| $22.5 > \theta < 30$               | 98                    | 112    | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 56              | Yes | Yes                                | Yes | 2         | 2 |
| $30 > \theta < 37.5$               | 92                    | 114    | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | 177    | 180          | 30    | 59              | Yes | Yes                                | Yes | 2         | 2 |
| $37.5 > \theta < 45$               |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |   |
| Number of Rails Required Per Panel |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |   |
|                                    |                       |        |              |      |                 |               |                     |        |              |       |                 |     | 40" x 66"                          |     | 40" x 78" |   |
|                                    |                       |        |              |      |                 |               |                     |        |              |       |                 |     | 2                                  |     | 2         |   |

| 120 mph Wind Load 0 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |   |
|------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|---|
| Tilt Angle $\theta$          | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |   |
|                              | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |   |
|                              | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |   |
|                              | 40"                   | 48"    | 30'          | 30'  | No              | Every 3rd Bay | No                  | 180    | 180          | 30'   | 30'             | Yes | Yes                                | Yes |           |   |
| $\theta = 0$                 | 105                   | 119    | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 36              | Yes | Yes                                | Yes | 2         | 2 |
| $0 > \theta < 7.5$           | 98                    | 111    | 30           | 36   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 46              | Yes | Yes                                | Yes | 2         | 2 |
| $7.5 > \theta < 15$          | 92                    | 105    | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 54              | Yes | Yes                                | Yes | 2         | 2 |
| $15 > \theta < 22.5$         | 88                    | 100    | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 58              | Yes | Yes                                | Yes | 2         | 2 |
| $22.5 > \theta < 30$         | 91                    | 103    | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 172    | 180          | 30    | 61              | Yes | Yes                                | Yes | 2         | 2 |
| $30 > \theta < 37.5$         | 92                    | 105    | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 162    | 180          | 30    | 64              | Yes | Yes                                | Yes | 2         | 2 |
| $37.5 > \theta < 45$         |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |   |
|                              |                       |        |              |      |                 |               |                     |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |   |
|                              |                       |        |              |      |                 |               |                     |        |              |       |                 |     | 40" x 66"                          |     | 40" x 78" |   |
|                              |                       |        |              |      |                 |               |                     |        |              |       |                 |     | 2                                  |     | 2         |   |

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## Configuration Tables for Ground Mount System 0 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 0 psf Snow |                       |              |      |                 |               |        |                     |              |      |                 |     |           |                                    |  |
|------------------------------|-----------------------|--------------|------|-----------------|---------------|--------|---------------------|--------------|------|-----------------|-----|-----------|------------------------------------|--|
| Tilt Angle $\theta$          | Standard Installation |              |      |                 |               |        | Braced Installation |              |      |                 |     |           | Number of Rails Required Per Panel |  |
|                              | Max (PS)              |              |      | Required Braces |               |        | Max (PS)            |              |      | Required Braces |     |           |                                    |  |
|                              | Sch 40                | 12" Dia Pier | A    | C               | D             | Sch 40 | Sch 80              | 12" Dia Pier | A    | E               | F   | 40" x 66" | 40" x 78"                          |  |
|                              |                       | Short        | Tall |                 |               |        |                     | Short        | Tall |                 |     |           |                                    |  |
| $\theta = 0$                 | 118                   | 30           | No   | Every 3rd Bay   | No            | 180    | 180                 | 30           | Yes  | Yes             | Yes | 2         | 2                                  |  |
| $0 > \theta < 7.5$           | 98                    | 30           | Yes  | Every 3rd Bay   | No            | 180    | 180                 | 30           | Yes  | Yes             | Yes | 2         | 2                                  |  |
| $7.5 > \theta < 15$          | 91                    | 30           | Yes  | Every 3rd Bay   | No            | 180    | 180                 | 30           | Yes  | Yes             | Yes | 2         | 2                                  |  |
| $15 > \theta < 22.5$         | 86                    | 30           | Yes  | Every 3rd Bay   | Every 3rd Bay | 180    | 180                 | 30           | Yes  | Yes             | Yes | 2         | 2                                  |  |
| $22.5 > \theta < 30$         | 81                    | 30           | Yes  | Every 3rd Bay   | Every 3rd Bay | 170    | 180                 | 30           | Yes  | Yes             | Yes | 2         | 2                                  |  |
| $30 > \theta < 37.5$         | 84                    | 30           | Yes  | Every 3rd Bay   | Every 3rd Bay | 159    | 180                 | 30           | Yes  | Yes             | Yes | 2         | 2                                  |  |
| $37.5 > \theta < 45$         | 86                    | 30           | Yes  | Every 3rd Bay   | Every 3rd Bay | 150    | 171                 | 30           | Yes  | Yes             | Yes | 2         | 2                                  |  |

| 140 mph Wind Load 0 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |           |           |   |
|------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----------|-----------|---|
| Tilt Angle $\theta$          | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |           |           |   |
|                              | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |           |           |   |
|                              | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F         |           |   |
|                              |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    | 40" x 66" | 40" x 78" |   |
| $\theta = 0$                 | 111                   | 127    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes       | 2         | 2 |
| $0 > \theta < 7.5$           | 92                    | 104    | 30           | 31   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 41              | Yes | Yes                                | Yes       | 2         | 2 |
| $7.5 > \theta < 15$          | 85                    | 97     | 30           | 39   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 52              | Yes | Yes                                | Yes       | 2         | 2 |
| $15 > \theta < 22.5$         | 80                    | 91     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 62              | Yes | Yes                                | Yes       | 2         | 2 |
| $22.5 > \theta < 30$         | 76                    | 87     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 158    | 180          | 30    | 64              | Yes | Yes                                | Yes       | 2         | 2 |
| $30 > \theta < 37.5$         | 79                    | 90     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 148    | 168          | 30    | 66              | Yes | Yes                                | Yes       | 2         | 2 |
| $37.5 > \theta < 45$         | 80                    | 91     | 30           | 54   | Yes             | Every 3rd Bay | Every 3rd Bay       | 139    | 158          | 30    | 69              | Yes | Yes                                | Yes       | 2         | 2 |

| 150 mph Wind Load 0 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |   |           |
|------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|---|---|-----------|
| Tilt Angle $\theta$          | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |   |   |           |
|                              | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |   |   |           |
|                              | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F |   |           |
|                              | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |   |           |
| $\theta = 0$                 | 105                   | 120    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | 2 | 2 | 40" x 78" |
| $0 > \theta < 7.5$           | 86                    | 98     | 30           | 32   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 44              | Yes | Yes                                | 2 | 2 | 2         |
| $7.5 > \theta < 15$          | 80                    | 91     | 30           | 40   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 56              | Yes | Yes                                | 2 | 2 | 2         |
| $15 > \theta < 22.5$         | 75                    | 86     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 179    | 180          | 30    | 65              | Yes | Yes                                | 2 | 2 | 2         |
| $22.5 > \theta < 30$         | 71                    | 81     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 147    | 168          | 30    | 66              | Yes | Yes                                | 2 | 2 | 2         |
| $30 > \theta < 37.5$         | 74                    | 84     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 157          | 30    | 68              | Yes | Yes                                | 2 | 2 | 2         |
| $37.5 > \theta < 45$         | 75                    | 85     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay       | 130    | 148          | 30    | 71              | Yes | Yes                                | 2 | 2 | 2         |

# Series 200

## Configuration Tables for Ground Mount System 0 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 0 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |
|------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|
| Tilt Angle $\theta$          | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |
|                              | Max (psf)             |        | 12" Dia Pier |      | Required Braces |               | Max (psf)           |        | 12" Dia Pier |       | Required Braces |     | Module Size                        |
|                              | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   |                                    |
|                              | 100                   | 114    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 32    | 32              | Yes |                                    |
| $\theta = 0$                 | 81                    | 93     | 30           | 33   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 46              | Yes | 2                                  |
| $0 > \theta < 7.5$           | 76                    | 86     | 30           | 41   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 59              | Yes | 2                                  |
| $7.5 > \theta < 15$          | 71                    | 81     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 167    | 180          | 32    | 66              | Yes | 2                                  |
| $15 > \theta < 22.5$         | 67                    | 77     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 158          | 32    | 69              | Yes | 2                                  |
| $22.5 > \theta < 30$         | 69                    | 79     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay       | 129    | 147          | 30    | 70              | Yes | 2                                  |
| $30 > \theta < 37.5$         | 70                    | 80     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay       | 121    | 139          | 30    | 73              | Yes | 2                                  |

| 170 mph Wind Load 0 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |
|------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|---|---|
| Tilt Angle $\theta$          | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |   |   |
|                              | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |   |   |
|                              | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |   |   |
|                              |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |
| $\theta = 0$                 | 94                    | 108    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 34    | 34              | Yes | Yes                                | Yes | 2 | 2 |
| $0 > \theta < 7.5$           | 77                    | 88     | 30           | 34   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 34    | 49              | Yes | Yes                                | Yes | 2 | 2 |
| $7.5 > \theta < 15$          | 71                    | 81     | 30           | 42   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 34    | 63              | Yes | Yes                                | Yes | 2 | 2 |
| $15 > \theta < 22.5$         | 67                    | 76     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | 158    | 180          | 34    | 68              | Yes | Yes                                | Yes | 2 | 2 |
| $22.5 > \theta < 30$         | 63                    | 72     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 130    | 148          | 34    | 70              | Yes | Yes                                | Yes | 2 | 2 |
| $30 > \theta < 37.5$         | 65                    | 75     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay       | 122    | 139          | 30    | 73              | Yes | Yes                                | Yes | 2 | 2 |
| $37.5 > \theta < 45$         | 66                    | 76     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay       | 114    | 130          | 30    | 76              | Yes | Yes                                | Yes | 2 | 2 |

# Series 200

## Configuration Tables for Ground Mount System 1 to 10 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 1-10 psf Snow |                       |        |              |      |     |                 |                     |  |          |        |              |      |     |
|---------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|--|----------|--------|--------------|------|-----|
| Tilt Angle θ                    | Standard Installation |        |              |      |     |                 | Braced Installation |  |          |        |              |      |     |
|                                 | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |                     |  | Max (PS) |        | 12" Dia Pier |      |     |
|                                 | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   |  | Sch 40   | Sch 80 | Short        | Tall | A   |
|                                 |                       |        |              |      |     |                 |                     |  |          |        |              |      |     |
| θ = 0                           | 127                   | 145    | 30           | 30   | No  | Every 3rd Bay   | No                  |  | 180      | 180    | 30           | 30   | Yes |
| 0 > θ < 7.5                     | 113                   | 129    | 30           | 30   | Yes | Every 3rd Bay   | No                  |  | 180      | 180    | 30           | 31   | Yes |
| 7.5 > θ < 15                    | 108                   | 124    | 30           | 32   | Yes | Every 3rd Bay   | No                  |  | 180      | 180    | 30           | 39   | Yes |
| 15 > θ < 22.5                   | 105                   | 120    | 30           | 38   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 180      | 180    | 30           | 46   | Yes |
| 22.5 > θ < 30                   | 103                   | 117    | 30           | 41   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 180      | 180    | 30           | 49   | Yes |
| 30 > θ < 37.5                   | 106                   | 121    | 30           | 51   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 180      | 180    | 30           | 60   | Yes |
| 37.5 > θ < 45                   | 108                   | 124    | 30           | 51   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 180      | 180    | 30           | 60   | Yes |

| 110 mph Wind Load 1-10 psf Snow |                       |        |              |      |     |                 |                     |  |          |        |              |      |     |
|---------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|--|----------|--------|--------------|------|-----|
| Tilt Angle θ                    | Standard Installation |        |              |      |     |                 | Braced Installation |  |          |        |              |      |     |
|                                 | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |                     |  | Max (PS) |        | 12" Dia Pier |      |     |
|                                 | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   |  | Sch 40   | Sch 80 | Short        | Tall | A   |
|                                 |                       |        |              |      |     |                 |                     |  |          |        |              |      |     |
| θ = 0                           | 122                   | 139    | 30           | 30   | No  | Every 3rd Bay   | No                  |  | 180      | 180    | 30           | 30   | Yes |
| 0 > θ < 7.5                     | 106                   | 121    | 30           | 30   | Yes | Every 3rd Bay   | No                  |  | 180      | 180    | 30           | 33   | Yes |
| 7.5 > θ < 15                    | 106                   | 121    | 30           | 34   | Yes | Every 3rd Bay   | No                  |  | 180      | 180    | 30           | 42   | Yes |
| 15 > θ < 22.5                   | 97                    | 111    | 30           | 40   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 180      | 180    | 30           | 50   | Yes |
| 22.5 > θ < 30                   | 95                    | 108    | 30           | 43   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 180      | 180    | 30           | 53   | Yes |
| 30 > θ < 37.5                   | 98                    | 112    | 30           | 46   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 180      | 180    | 30           | 56   | Yes |
| 37.5 > θ < 45                   | 100                   | 114    | 30           | 49   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 177      | 180    | 30           | 59   | Yes |

| 120 mph Wind Load 1-10 psf Snow |                       |        |              |      |     |                 |                     |  |          |        |              |      |     |
|---------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|--|----------|--------|--------------|------|-----|
| Tilt Angle θ                    | Standard Installation |        |              |      |     |                 | Braced Installation |  |          |        |              |      |     |
|                                 | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |                     |  | Max (PS) |        | 12" Dia Pier |      |     |
|                                 | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D                   |  | Sch 40   | Sch 80 | Short        | Tall | A   |
|                                 |                       |        |              |      |     |                 |                     |  |          |        |              |      |     |
| θ = 0                           | 116                   | 133    | 30           | 30   | No  | Every 3rd Bay   | No                  |  | 180      | 180    | 30           | 30   | Yes |
| 0 > θ < 7.5                     | 99                    | 113    | 30           | 30   | Yes | Every 3rd Bay   | No                  |  | 180      | 180    | 30           | 36   | Yes |
| 7.5 > θ < 15                    | 94                    | 108    | 30           | 33   | Yes | Every 3rd Bay   | No                  |  | 180      | 180    | 30           | 46   | Yes |
| 15 > θ < 22.5                   | 91                    | 103    | 30           | 40   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 180      | 180    | 30           | 54   | Yes |
| 22.5 > θ < 30                   | 88                    | 100    | 30           | 43   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 180      | 180    | 30           | 58   | Yes |
| 30 > θ < 37.5                   | 91                    | 103    | 30           | 46   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 172      | 180    | 30           | 61   | Yes |
| 37.5 > θ < 45                   | 92                    | 105    | 30           | 49   | Yes | Every 3rd Bay   | Every 3rd Bay       |  | 162      | 180    | 30           | 64   | Yes |

# Series 200

## Configuration Tables for Ground Mount System 1 to 10 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 1-10 psf Snow |                       |        |                 |               |               |  |                     |        |              |      |                 |     |                                    |
|---------------------------------|-----------------------|--------|-----------------|---------------|---------------|--|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|
| Tilt Angle θ                    | Standard Installation |        |                 |               |               |  | Braced Installation |        |              |      |                 |     |                                    |
|                                 | Max (PS)              |        | Required Braces |               |               |  | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     | Number of Rails Required Per Panel |
|                                 | Sch 40                | Sch 80 | A               | C             | D             |  | Sch 40              | Sch 80 | Short        | Tall | A               | E   |                                    |
|                                 | 110                   | 126    | No              | Every 3rd Bay | No            |  | 180                 | 180    | 30           | 30   | Yes             | Yes |                                    |
| θ = 0                           | 93                    | 85     | Yes             | Every 3rd Bay | No            |  | 180                 | 180    | 30           | 36   | Yes             | Yes | 2                                  |
| 0 > θ < 7.5                     | 89                    | 86     | Yes             | Every 3rd Bay | No            |  | 180                 | 180    | 30           | 46   | Yes             | Yes | 2                                  |
| 7.5 > θ < 15                    | 85                    | 87     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 180                 | 180    | 30           | 54   | Yes             | Yes | 2                                  |
| 15 > θ < 22.5                   | 81                    | 88     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 170                 | 180    | 30           | 58   | Yes             | Yes | 2                                  |
| 22.5 > θ < 30                   | 84                    | 94     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 159                 | 180    | 30           | 61   | Yes             | Yes | 2                                  |
| 30 > θ < 37.5                   | 86                    | 98     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 150                 | 171    | 30           | 64   | Yes             | Yes | 2                                  |

| 140 mph Wind Load 1-10 psf Snow |                       |        |                 |               |               |  |                     |        |              |      |                 |     |                                    |
|---------------------------------|-----------------------|--------|-----------------|---------------|---------------|--|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|
| Tilt Angle θ                    | Standard Installation |        |                 |               |               |  | Braced Installation |        |              |      |                 |     |                                    |
|                                 | Max (PS)              |        | Required Braces |               |               |  | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     | Number of Rails Required Per Panel |
|                                 | Sch 40                | Sch 80 | A               | C             | D             |  | Sch 40              | Sch 80 | Short        | Tall | A               | E   |                                    |
|                                 | 104                   | 119    | No              | Every 3rd Bay | No            |  | 180                 | 180    | 30           | 30   | Yes             | Yes |                                    |
| θ = 0                           | 88                    | 100    | Yes             | Every 3rd Bay | No            |  | 180                 | 180    | 30           | 39   | Yes             | Yes | 2                                  |
| 0 > θ < 7.5                     | 83                    | 95     | Yes             | Every 3rd Bay | No            |  | 180                 | 180    | 30           | 49   | Yes             | Yes | 2                                  |
| 7.5 > θ < 15                    | 80                    | 91     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 180                 | 180    | 30           | 58   | Yes             | Yes | 2                                  |
| 15 > θ < 22.5                   | 76                    | 87     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 158                 | 180    | 30           | 62   | Yes             | Yes | 2                                  |
| 22.5 > θ < 30                   | 79                    | 90     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 148                 | 168    | 30           | 64   | Yes             | Yes | 2                                  |
| 30 > θ < 37.5                   | 80                    | 91     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 139                 | 158    | 30           | 64   | Yes             | Yes | 2                                  |

| 150 mph Wind Load 1-10 psf Snow |                       |        |                 |               |               |  |                     |        |              |      |                 |     |                                    |
|---------------------------------|-----------------------|--------|-----------------|---------------|---------------|--|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|
| Tilt Angle θ                    | Standard Installation |        |                 |               |               |  | Braced Installation |        |              |      |                 |     |                                    |
|                                 | Max (PS)              |        | Required Braces |               |               |  | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     | Number of Rails Required Per Panel |
|                                 | Sch 40                | Sch 80 | A               | C             | D             |  | Sch 40              | Sch 80 | Short        | Tall | A               | E   |                                    |
|                                 | 99                    | 113    | No              | Every 3rd Bay | No            |  | 180                 | 180    | 30           | 30   | Yes             | Yes |                                    |
| θ = 0                           | 83                    | 95     | Yes             | Every 3rd Bay | No            |  | 180                 | 180    | 30           | 41   | Yes             | Yes | 2                                  |
| 0 > θ < 7.5                     | 79                    | 90     | Yes             | Every 3rd Bay | No            |  | 180                 | 180    | 30           | 52   | Yes             | Yes | 2                                  |
| 7.5 > θ < 15                    | 75                    | 86     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 180                 | 180    | 30           | 62   | Yes             | Yes | 2                                  |
| 15 > θ < 22.5                   | 71                    | 81     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 158                 | 180    | 30           | 64   | Yes             | Yes | 2                                  |
| 22.5 > θ < 30                   | 74                    | 84     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 148                 | 168    | 30           | 66   | Yes             | Yes | 2                                  |
| 30 > θ < 37.5                   | 75                    | 85     | Yes             | Every 3rd Bay | Every 3rd Bay |  | 139                 | 158    | 30           | 69   | Yes             | Yes | 2                                  |

# Series 200

## Configuration Tables for Ground Mount System 1 to 10 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 1-10 psf Snow |                       |        |      |                 |               |               |                     |        |       |              |     |     |                                    |           |                 |
|---------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|-------|--------------|-----|-----|------------------------------------|-----------|-----------------|
| Tilt Angle $\theta$             | Standard Installation |        |      |                 |               |               | Braced Installation |        |       |              |     |     | Number of Rails Required Per Panel |           |                 |
|                                 | Max (PS)              |        |      | Required Braces |               |               | Max (PS)            |        |       | 12" Dia Pier |     |     |                                    |           | Required Braces |
|                                 | Sch 40                | Sch 80 | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short | Tall         | A   | E   | F                                  | 40" x 66" | 40" x 78"       |
| $\theta = 0$                    | 95                    | 108    | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 32    | 32           | Yes | Yes | Yes                                | 2         | 2               |
| $0 > \theta < 7.5$              | 79                    | 90     | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 32    | 46           | Yes | Yes | Yes                                | 2         | 2               |
| $7.5 > \theta < 15$             | 74                    | 85     | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 32    | 59           | Yes | Yes | Yes                                | 2         | 2               |
| $15 > \theta < 22.5$            | 71                    | 81     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 167                 | 180    | 32    | 66           | Yes | Yes | Yes                                | 2         | 2               |
| $22.5 > \theta < 30$            | 67                    | 77     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 138                 | 158    | 32    | 69           | Yes | Yes | Yes                                | 2         | 2               |
| $30 > \theta < 37.5$            | 69                    | 79     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 129                 | 147    | 32    | 70           | Yes | Yes | Yes                                | 2         | 2               |
| $37.5 > \theta < 45$            | 70                    | 80     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 121                 | 139    | 32    | 73           | Yes | Yes | Yes                                | 2         | 2               |

| 170 mph Wind Load 1-10 psf Snow |                       |        |      |                 |               |               |                     |        |       |              |     |     |                                    |           |                 |
|---------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|-------|--------------|-----|-----|------------------------------------|-----------|-----------------|
| Tilt Angle $\theta$             | Standard Installation |        |      |                 |               |               | Braced Installation |        |       |              |     |     | Number of Rails Required Per Panel |           |                 |
|                                 | Max (PS)              |        |      | Required Braces |               |               | Max (PS)            |        |       | 12" Dia Pier |     |     |                                    |           | Required Braces |
|                                 | Sch 40                | Sch 80 | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short | Tall         | A   | E   | F                                  | 40" x 66" | 40" x 78"       |
|                                 |                       |        |      |                 |               |               |                     |        |       |              |     |     |                                    |           |                 |
| $\theta = 0$                    | 90                    | 103    | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 34    | 34           | Yes | Yes | Yes                                | 2         | 2               |
| $0 > \theta < 7.5$              | 75                    | 85     | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 34    | 49           | Yes | Yes | Yes                                | 2         | 2               |
| $7.5 > \theta < 15$             | 70                    | 80     | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 34    | 63           | Yes | Yes | Yes                                | 2         | 2               |
| $15 > \theta < 22.5$            | 67                    | 76     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 158                 | 180    | 34    | 68           | Yes | Yes | Yes                                | 2         | 2               |
| $22.5 > \theta < 30$            | 63                    | 72     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 34    | 70           | Yes | Yes | Yes                                | 2         | 2               |
| $30 > \theta < 37.5$            | 65                    | 75     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 122                 | 139    | 34    | 73           | Yes | Yes | Yes                                | 2         | 2               |
| $37.5 > \theta < 45$            | 66                    | 76     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 114                 | 130    | 34    | 76           | Yes | Yes | Yes                                | 2         | 2               |

# Series 200

## Configuration Tables for Ground Mount System 11 to 20 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 11-20 psf Snow |                       |        |                 |      |       |               |                     |        |                 |      |       |                                    |
|----------------------------------|-----------------------|--------|-----------------|------|-------|---------------|---------------------|--------|-----------------|------|-------|------------------------------------|
| Tilt Angle $\theta$              | Standard Installation |        |                 |      |       |               | Braced Installation |        |                 |      |       |                                    |
|                                  | Max (PS)              |        | Required Braces |      |       | D             | Max (PS)            |        | Required Braces |      |       | Number of Rails Required Per Panel |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | Tall | Short |               | Sch 40              | Sch 80 | 12" Dia Pier    | Tall | Short |                                    |
| $\theta = 0$                     | 105                   | 119    | 30              | 30   | 30    | No            | 180                 | 180    | 30              | 30   | 30    | 40" x 66"                          |
| $0 > \theta < 7.5$               | 98                    | 112    | 30              | 30   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 31   | 30    | 40" x 78"                          |
| $7.5 > \theta < 15$              | 99                    | 113    | 30              | 30   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 39   | 30    | 2                                  |
| $15 > \theta < 22.5$             | 100                   | 114    | 30              | 34   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 46   | 30    | 2                                  |
| $22.5 > \theta < 30$             | 99                    | 113    | 30              | 45   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 49   | 30    | 2                                  |
| $30 > \theta < 37.5$             | 105                   | 120    | 30              | 45   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 60   | 30    | 2                                  |
| $37.5 > \theta < 45$             | 108                   | 124    | 30              | 45   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 60   | 30    | 2                                  |

| 110 mph Wind Load 11-20 psf Snow |                       |        |                 |      |       |               |                     |        |                 |      |       |                                    |
|----------------------------------|-----------------------|--------|-----------------|------|-------|---------------|---------------------|--------|-----------------|------|-------|------------------------------------|
| Tilt Angle $\theta$              | Standard Installation |        |                 |      |       |               | Braced Installation |        |                 |      |       |                                    |
|                                  | Max (PS)              |        | Required Braces |      |       | D             | Max (PS)            |        | Required Braces |      |       | Number of Rails Required Per Panel |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | Tall | Short |               | Sch 40              | Sch 80 | 12" Dia Pier    | Tall | Short |                                    |
| $\theta = 0$                     | 102                   | 116    | 30              | 30   | 30    | No            | 180                 | 180    | 30              | 30   | 30    | 40" x 78"                          |
| $0 > \theta < 7.5$               | 95                    | 108    | 30              | 30   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 33   | 30    | 2                                  |
| $7.5 > \theta < 15$              | 95                    | 108    | 30              | 34   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 42   | 30    | 2                                  |
| $15 > \theta < 22.5$             | 94                    | 107    | 30              | 39   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 50   | 30    | 2                                  |
| $22.5 > \theta < 30$             | 92                    | 105    | 30              | 43   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 53   | 30    | 2                                  |
| $30 > \theta < 37.5$             | 98                    | 112    | 30              | 46   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 56   | 30    | 2                                  |
| $37.5 > \theta < 45$             | 100                   | 114    | 30              | 49   | 30    | Every 3rd Bay | 177                 | 180    | 30              | 59   | 30    | 2                                  |

| 120 mph Wind Load 11-20 psf Snow |                       |        |                 |      |       |               |                     |        |                 |      |       |                                    |
|----------------------------------|-----------------------|--------|-----------------|------|-------|---------------|---------------------|--------|-----------------|------|-------|------------------------------------|
| Tilt Angle $\theta$              | Standard Installation |        |                 |      |       |               | Braced Installation |        |                 |      |       |                                    |
|                                  | Max (PS)              |        | Required Braces |      |       | D             | Max (PS)            |        | Required Braces |      |       | Number of Rails Required Per Panel |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | Tall | Short |               | Sch 40              | Sch 80 | 12" Dia Pier    | Tall | Short |                                    |
| $\theta = 0$                     | 99                    | 113    | 30              | 30   | 30    | No            | 180                 | 180    | 30              | 30   | 30    | 40" x 78"                          |
| $0 > \theta < 7.5$               | 91                    | 104    | 30              | 30   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 36   | 30    | 2                                  |
| $7.5 > \theta < 15$              | 91                    | 103    | 30              | 35   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 46   | 30    | 2                                  |
| $15 > \theta < 22.5$             | 88                    | 100    | 30              | 41   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 54   | 30    | 2                                  |
| $22.5 > \theta < 30$             | 86                    | 98     | 30              | 45   | 30    | Every 3rd Bay | 180                 | 180    | 30              | 58   | 30    | 2                                  |
| $30 > \theta < 37.5$             | 91                    | 103    | 30              | 48   | 30    | Every 3rd Bay | 172                 | 180    | 30              | 61   | 30    | 2                                  |
| $37.5 > \theta < 45$             | 92                    | 105    | 30              | 51   | 30    | Every 3rd Bay | 162                 | 180    | 30              | 64   | 30    | 2                                  |

# Series 200

## Configuration Tables for Ground Mount System 11 to 20 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 11-20 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|---|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |   |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |   |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |   |   |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |
| $\theta = 0$                     | 96                    | 109    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes | 2 | 2 |
| $0 > \theta < 7.5$               | 88                    | 100    | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 39              | Yes | Yes                                | Yes | 2 | 2 |
| $7.5 > \theta < 15$              | 85                    | 97     | 30           | 37   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 49              | Yes | Yes                                | Yes | 2 | 2 |
| $15 > \theta < 22.5$             | 82                    | 94     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 58              | Yes | Yes                                | Yes | 2 | 2 |
| $22.5 > \theta < 30$             | 81                    | 92     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 170    | 180          | 30    | 62              | Yes | Yes                                | Yes | 2 | 2 |
| $30 > \theta < 37.5$             | 84                    | 96     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | 159    | 180          | 30    | 64              | Yes | Yes                                | Yes | 2 | 2 |
| $37.5 > \theta < 45$             | 86                    | 98     | 30           | 52   | Yes             | Every 3rd Bay | Every 3rd Bay       | 150    | 171          | 30    | 64              | Yes | Yes                                | Yes | 2 | 2 |

| 140 mph Wind Load 11-20 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |             |   |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-------------|---|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |             |   |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |             |   |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F           |   |   |
|                                  |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    | Module Size |   |   |
| $\theta = 0$                     | 93                    | 106    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes         | 2 | 2 |
| $0 > \theta < 7.5$               | 83                    | 95     | 30           | 31   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 41              | Yes | Yes                                | Yes         | 2 | 2 |
| $7.5 > \theta < 15$              | 81                    | 92     | 30           | 38   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 52              | Yes | Yes                                | Yes         | 2 | 2 |
| $15 > \theta < 22.5$             | 78                    | 89     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 62              | Yes | Yes                                | Yes         | 2 | 2 |
| $22.5 > \theta < 30$             | 76                    | 86     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 158    | 180          | 30    | 64              | Yes | Yes                                | Yes         | 2 | 2 |
| $30 > \theta < 37.5$             | 79                    | 90     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 148    | 168          | 30    | 66              | Yes | Yes                                | Yes         | 2 | 2 |
| $37.5 > \theta < 45$             | 80                    | 91     | 30           | 54   | Yes             | Every 3rd Bay | Every 3rd Bay       | 139    | 158          | 30    | 69              | Yes | Yes                                | Yes         | 2 | 2 |

| 150 mph Wind Load 11-20 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|---|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |   |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |   |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F |           |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |           |           |
| $\theta = 0$                     | 90                    | 103    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | 2 | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 79                    | 90     | 30           | 32   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 44              | Yes | Yes                                | 2 | 2         | 2         |
| $7.5 > \theta < 15$              | 76                    | 87     | 30           | 40   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 56              | Yes | Yes                                | 2 | 2         | 2         |
| $15 > \theta < 22.5$             | 73                    | 84     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 179    | 180          | 30    | 65              | Yes | Yes                                | 2 | 2         | 2         |
| $22.5 > \theta < 30$             | 71                    | 81     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 147    | 168          | 30    | 66              | Yes | Yes                                | 2 | 2         | 2         |
| $30 > \theta < 37.5$             | 74                    | 84     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 157          | 30    | 68              | Yes | Yes                                | 2 | 2         | 2         |
| $37.5 > \theta < 45$             | 75                    | 85     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay       | 130    | 148          | 30    | 71              | Yes | Yes                                | 2 | 2         | 2         |

# Series 200

## Configuration Tables for Ground Mount System 11 to 20 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 11-20 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E                                  | F   |           |           |
|                                  | Module Size           |        |              |      |                 |               |               |                     |        |              |      |                 |                                    |     |           |           |
| $\theta = 0$                     | 87                    | 100    | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 32           | 32   | Yes             | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 76                    | 86     | 30           | 33   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 32           | 46   | Yes             | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$              | 72                    | 83     | 30           | 41   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 32           | 59   | Yes             | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$             | 69                    | 79     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay | 167                 | 180    | 32           | 66   | Yes             | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$             | 67                    | 77     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay | 138                 | 158    | 32           | 69   | Yes             | Yes                                | Yes | 2         | 2         |
| $30 > \theta < 37.5$             | 69                    | 79     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay | 129                 | 147    | 32           | 70   | Yes             | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$             | 70                    | 80     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay | 121                 | 139    | 32           | 73   | Yes             | Yes                                | Yes | 2         | 2         |

| 170 mph Wind Load 11-20 psf Snow |                       |        |              |                 |     |               |               |                     |        |              |                 |     |     |     |             |
|----------------------------------|-----------------------|--------|--------------|-----------------|-----|---------------|---------------|---------------------|--------|--------------|-----------------|-----|-----|-----|-------------|
| Tilt Angle $\theta$              | Standard Installation |        |              |                 |     |               |               | Braced Installation |        |              |                 |     |     |     |             |
|                                  | Max (PS)              |        |              | Required Braces |     |               |               | Max (PS)            |        |              | Required Braces |     |     |     |             |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C   | D             |               | Sch 40              | Sch 80 | 12" Dia Pier | A               | E   | F   |     |             |
|                                  |                       |        | Short        | Tall            |     |               |               |                     |        | Short        | Tall            |     |     |     | Module Size |
| $\theta = 0$                     | 84                    | 96     | 30           | 30              | No  | No            |               | 180                 | 180    | 34           | 34              | Yes | Yes | Yes | 40" x 66"   |
| $0 > \theta < 7.5$               | 72                    | 82     | 30           | 34              | Yes | Every 3rd Bay | No            | 180                 | 180    | 34           | 49              | Yes | Yes | Yes | 2           |
| $7.5 > \theta < 15$              | 69                    | 79     | 30           | 42              | Yes | Every 3rd Bay | No            | 180                 | 180    | 34           | 63              | Yes | Yes | Yes | 2           |
| $15 > \theta < 22.5$             | 66                    | 75     | 30           | 49              | Yes | Every 3rd Bay | Every 3rd Bay | 158                 | 180    | 34           | 68              | Yes | Yes | Yes | 2           |
| $22.5 > \theta < 30$             | 63                    | 72     | 30           | 53              | Yes | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 34           | 70              | Yes | Yes | Yes | 2           |
| $30 > \theta < 37.5$             | 65                    | 75     | 30           | 56              | Yes | Every 3rd Bay | Every 3rd Bay | 122                 | 139    | 34           | 73              | Yes | Yes | Yes | 2           |
| $37.5 > \theta < 45$             | 66                    | 76     | 30           | 59              | Yes | Every 3rd Bay | Every 3rd Bay | 114                 | 130    | 34           | 76              | Yes | Yes | Yes | 2           |

# Series 200

## Configuration Tables for Ground Mount System 21 to 30 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 92                    | 106    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 31    | 31              | Yes | Yes                                | Yes | 2         | 2         |
| $0 > \theta < 7.5$               | 88                    | 100    | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 31    | 31              | Yes | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$              | 90                    | 102    | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 31    | 39              | Yes | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$             | 93                    | 106    | 30           | 36   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 46              | Yes | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$             | 94                    | 108    | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 49              | Yes | Yes                                | Yes | 2         | 2         |
| $30 > \theta < 37.5$             | 101                   | 116    | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 60              | Yes | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$             | 107                   | 122    | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 60              | Yes | Yes                                | Yes | 2         | 2         |

| 110 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                     | 90                    | 103    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 33    | 33              | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 85                    | 97     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 33    | 33              | Yes | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$              | 85                    | 97     | 30           | 33   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 42              | Yes | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$             | 88                    | 101    | 30           | 39   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 50              | Yes | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$             | 89                    | 102    | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 53              | Yes | Yes                                | Yes | 2         | 2         |
| $30 > \theta < 37.5$             | 96                    | 109    | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 56              | Yes | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$             | 99                    | 113    | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | 177    | 180          | 30    | 59              | Yes | Yes                                | Yes | 2         | 2         |

| 120 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|---|---|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |   |   |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |   |   |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   |                                    | E   | F |   |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |           |
| $\theta = 0$                     | 88                    | 101    | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes | 2 | 2 | 40" x 78" |
| $0 > \theta < 7.5$               | 83                    | 94     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 36              | Yes | Yes                                | Yes | 2 | 2 | 2         |
| $7.5 > \theta < 15$              | 83                    | 95     | 30           | 35   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 46              | Yes | Yes                                | Yes | 2 | 2 | 2         |
| $15 > \theta < 22.5$             | 84                    | 96     | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 54              | Yes | Yes                                | Yes | 2 | 2 | 2         |
| $22.5 > \theta < 30$             | 84                    | 96     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 58              | Yes | Yes                                | Yes | 2 | 2 | 2         |
| $30 > \theta < 37.5$             | 89                    | 102    | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 172    | 180          | 30    | 61              | Yes | Yes                                | Yes | 2 | 2 | 2         |
| $37.5 > \theta < 45$             | 92                    | 105    | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 162    | 180          | 30    | 64              | Yes | Yes                                | Yes | 2 | 2 | 2         |

# Series 200

## Configuration Tables for Ground Mount System 21 to 30 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 86                    | 98     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes | 2         | 2         |
| $0 > \theta < 7.5$               | 80                    | 91     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 39              | Yes | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$              | 81                    | 92     | 30           | 36   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 49              | Yes | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$             | 80                    | 92     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 58              | Yes | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$             | 79                    | 90     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 170    | 180          | 30    | 62              | Yes | Yes                                | Yes | 2         | 2         |
| $30 > \theta < 37.5$             | 84                    | 96     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 159    | 180          | 30    | 64              | Yes | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$             | 86                    | 98     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 150    | 171          | 30    | 64              | Yes | Yes                                | Yes | 2         | 2         |

| 140 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 84                    | 96     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes | 2         | 2         |
| $0 > \theta < 7.5$               | 78                    | 88     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 41              | Yes | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$              | 78                    | 89     | 30           | 38   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 52              | Yes | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$             | 76                    | 87     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 62              | Yes | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$             | 74                    | 85     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 158    | 180          | 30    | 64              | Yes | Yes                                | Yes | 2         | 2         |
| $30 > \theta < 37.5$             | 79                    | 90     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 148    | 168          | 30    | 66              | Yes | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$             | 80                    | 91     | 30           | 54   | Yes             | Every 3rd Bay | Every 3rd Bay       | 139    | 158          | 30    | 69              | Yes | Yes                                | Yes | 2         | 2         |

| 150 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |             |   |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-------------|---|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |             |   |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |             |   |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F           |   |   |
|                                  |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    | Module Size |   |   |
| $\theta = 0$                     | 77                    | 88     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 30    | 30              | Yes | Yes                                | Yes         | 2 | 2 |
| $0 > \theta < 7.5$               | 71                    | 81     | 30           | 31   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 44              | Yes | Yes                                | Yes         | 2 | 2 |
| $7.5 > \theta < 15$              | 70                    | 80     | 30           | 39   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 30    | 56              | Yes | Yes                                | Yes         | 2 | 2 |
| $15 > \theta < 22.5$             | 70                    | 80     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 179    | 180          | 30    | 65              | Yes | Yes                                | Yes         | 2 | 2 |
| $22.5 > \theta < 30$             | 69                    | 79     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 147    | 168          | 30    | 66              | Yes | Yes                                | Yes         | 2 | 2 |
| $30 > \theta < 37.5$             | 73                    | 84     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 157          | 30    | 68              | Yes | Yes                                | Yes         | 2 | 2 |
| $37.5 > \theta < 45$             | 76                    | 86     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 130    | 148          | 30    | 71              | Yes | Yes                                | Yes         | 2 | 2 |

# Series 200

## Configuration Tables for Ground Mount System 21 to 30 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |
|                                  | Max (psf)             |        | 12" Dia Pier |      | Required Braces |               | Max (psf)           |        | 12" Dia Pier |       | Required Braces |     | Module Size                        |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   |                                    |
|                                  | 80                    | 91     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 32    | 32              | Yes |                                    |
| $\theta = 0$                     | 73                    | 83     | 30           | 33   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 46              | Yes | 2                                  |
| $0 > \theta < 7.5$               | 71                    | 81     | 30           | 41   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 32    | 59              | Yes | 2                                  |
| $7.5 > \theta < 15$              | 68                    | 78     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 167    | 180          | 32    | 66              | Yes | 2                                  |
| $15 > \theta < 22.5$             | 66                    | 76     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 158          | 32    | 69              | Yes | 2                                  |
| $22.5 > \theta < 30$             | 69                    | 79     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay       | 129    | 147          | 32    | 70              | Yes | 2                                  |
| $30 > \theta < 37.5$             | 70                    | 80     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay       | 121    | 139          | 32    | 73              | Yes | 2                                  |

| 170 mph Wind Load 21-30 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |
|                                  | Max (psf)             |        | 12" Dia Pier |      | Required Braces |               | Max (psf)           |        | 12" Dia Pier |       | Required Braces |     | Module Size                        |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   |                                    |
|                                  | 78                    | 89     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 34    | 34              | Yes |                                    |
| $\theta = 0$                     | 70                    | 79     | 30           | 34   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 34    | 49              | Yes | 2                                  |
| $0 > \theta < 7.5$               | 67                    | 77     | 30           | 42   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 34    | 63              | Yes | 2                                  |
| $7.5 > \theta < 15$              | 65                    | 74     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | 158    | 180          | 34    | 68              | Yes | 2                                  |
| $15 > \theta < 22.5$             | 63                    | 72     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 130    | 148          | 34    | 70              | Yes | 2                                  |
| $22.5 > \theta < 30$             | 65                    | 75     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay       | 122    | 139          | 34    | 73              | Yes | 2                                  |
| $30 > \theta < 37.5$             | 66                    | 76     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay       | 114    | 130          | 34    | 76              | Yes | 2                                  |

# Series 200

## Configuration Tables for Ground Mount System 31 to 40 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 31-40 psf Snow |                       |        |              |      |     |                 |                     |        |              |      |     |                 |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------------|--------|--------------|------|-----|-----------------|
| Tilt Angle θ                     | Standard Installation |        |              |      |     |                 | Braced Installation |        |              |      |     |                 |
|                                  | Max (psf)             |        | 12" Dia Pier |      |     | Required Braces | Max (psf)           |        | 12" Dia Pier |      |     | Required Braces |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   |                 | Sch 40              | Sch 80 | Short        | Tall | A   |                 |
|                                  | 84                    | 96     | 30           | 30   | No  |                 | 180                 | 180    | 39           | 39   | Yes |                 |
| θ = 0                            | 80                    | 92     | 30           | 30   | Yes | Every 3rd Bay   | 180                 | 180    | 39           | 39   | Yes | Yes             |
| 0 > θ < 7.5                      | 82                    | 94     | 30           | 30   | Yes | Every 3rd Bay   | 180                 | 180    | 31           | 39   | Yes | Yes             |
| 7.5 > θ < 15                     | 87                    | 99     | 30           | 36   | Yes | Every 3rd Bay   | 180                 | 180    | 31           | 46   | Yes | Yes             |
| 15 > θ < 22.5                    | 90                    | 102    | 30           | 39   | Yes | Every 3rd Bay   | 180                 | 180    | 30           | 49   | Yes | Yes             |
| 22.5 > θ < 30                    | 97                    | 110    | 30           | 50   | Yes | Every 3rd Bay   | 180                 | 180    | 30           | 60   | Yes | Yes             |
| 30 > θ < 37.5                    | 104                   | 119    | 30           | 50   | Yes | Every 3rd Bay   | 180                 | 180    | 30           | 60   | Yes | Yes             |
| 37.5 > θ < 45                    |                       |        |              |      |     |                 |                     |        |              |      |     |                 |

| 110 mph Wind Load 31-40 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |     |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|-----|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     |     |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E   |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |     |
| $\theta = 0$                     | 82                    | 94     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 33    | 33              | Yes | Yes |
| $0 > \theta < 7.5$               | 78                    | 89     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 33    | 33              | Yes | Yes |
| $7.5 > \theta < 15$              | 78                    | 89     | 30           | 32   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 33    | 42              | Yes | Yes |
| $15 > \theta < 22.5$             | 83                    | 95     | 30           | 38   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 33    | 50              | Yes | Yes |
| $22.5 > \theta < 30$             | 85                    | 97     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 53              | Yes | Yes |
| $30 > \theta < 37.5$             | 92                    | 105    | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 56              | Yes | Yes |
| $37.5 > \theta < 45$             | 98                    | 112    | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 177    | 180          | 30    | 59              | Yes | Yes |

| 120 mph Wind Load 31-40 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                 |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|-----------------|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Required Braces |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                 |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E               | F   | 40" x 66"                          | 40" x 78" |
|                                  | 81                    | 92     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 36    | 36              | Yes | Yes             | Yes | 2                                  | 2         |
| $\theta = 0$                     | 76                    | 87     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 36    | 36              | Yes | Yes             | Yes | 2                                  | 2         |
| $0 > \theta < 7.5$               | 78                    | 88     | 30           | 34   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 36    | 46              | Yes | Yes             | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$              | 80                    | 91     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 54              | Yes | Yes             | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$             | 81                    | 93     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 58              | Yes | Yes             | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$             | 87                    | 99     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 172    | 180          | 30    | 61              | Yes | Yes             | Yes | 2                                  | 2         |
| $30 > \theta < 37.5$             | 91                    | 104    | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 162    | 180          | 30    | 64              | Yes | Yes             | Yes | 2                                  | 2         |
| $37.5 > \theta < 45$             |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                 |     |                                    |           |

# Series 200

## Configuration Tables for Ground Mount System 31 to 40 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 31-40 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                     | 79                    | 90     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 39    | 39              | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 74                    | 85     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 39    | 39              | Yes | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$              | 75                    | 86     | 30           | 36   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 39    | 49              | Yes | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$             | 77                    | 87     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 58              | Yes | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$             | 77                    | 88     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 170    | 180          | 30    | 62              | Yes | Yes                                | Yes | 2         | 2         |
| $30 > \theta < 37.5$             | 82                    | 94     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 159    | 180          | 30    | 64              | Yes | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$             | 86                    | 98     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | 150    | 171          | 30    | 64              | Yes | Yes                                | Yes | 2         | 2         |

| 140 mph Wind Load 31-40 psf Snow |                       |        |              |                 |               |               |                     |        |              |                 |     |                                    |             |
|----------------------------------|-----------------------|--------|--------------|-----------------|---------------|---------------|---------------------|--------|--------------|-----------------|-----|------------------------------------|-------------|
| Tilt Angle $\theta$              | Standard Installation |        |              |                 |               |               | Braced Installation |        |              |                 |     | Number of Rails Required Per Panel |             |
|                                  | Max (PS)              |        |              | Required Braces |               |               | Max (PS)            |        |              | Required Braces |     |                                    |             |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C             | D             | Sch 40              | Sch 80 | 12" Dia Pier | A               | E   | F                                  | Module Size |
| $\theta = 0$                     | 77                    | 88     | 30           | No              | Every 3rd Bay | No            | 180                 | 180    | 41           | Yes             | Yes | Yes                                | 40" x 78"   |
| $0 > \theta < 7.5$               | 72                    | 82     | 30           | Yes             | Every 3rd Bay | No            | 180                 | 180    | 41           | Yes             | Yes | Yes                                | 2           |
| $7.5 > \theta < 15$              | 73                    | 83     | 30           | Yes             | Every 3rd Bay | No            | 180                 | 180    | 30           | Yes             | Yes | Yes                                | 2           |
| $15 > \theta < 22.5$             | 74                    | 84     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 30           | Yes             | Yes | Yes                                | 2           |
| $22.5 > \theta < 30$             | 73                    | 83     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 158                 | 180    | 30           | Yes             | Yes | Yes                                | 2           |
| $30 > \theta < 37.5$             | 78                    | 89     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 148                 | 168    | 30           | Yes             | Yes | Yes                                | 2           |
| $37.5 > \theta < 45$             | 80                    | 91     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 139                 | 158    | 30           | Yes             | Yes | Yes                                | 2           |

| 150 mph Wind Load 31-40 psf Snow |                       |        |              |                 |               |               |                     |        |              |                 |     |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|-----------------|---------------|---------------|---------------------|--------|--------------|-----------------|-----|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |                 |               |               | Braced Installation |        |              |                 |     |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        |              | Required Braces |               |               | Max (PS)            |        |              | Required Braces |     |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C             | D             | Sch 40              | Sch 80 | 12" Dia Pier | A               | E   | F   | Module Size                        |           |           |
| $\theta = 0$                     | 76                    | 86     | 30           | No              | Every 3rd Bay | No            | 180                 | 180    | 44           | 44              | Yes | Yes | 2                                  | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 70                    | 80     | 30           | Yes             | Every 3rd Bay | No            | 180                 | 180    | 44           | 44              | Yes | Yes | 2                                  | 2         | 2         |
| $7.5 > \theta < 15$              | 71                    | 80     | 30           | Yes             | Every 3rd Bay | No            | 180                 | 180    | 30           | 56              | Yes | Yes | 2                                  | 2         | 2         |
| $15 > \theta < 22.5$             | 70                    | 80     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 179                 | 180    | 30           | 65              | Yes | Yes | 2                                  | 2         | 2         |
| $22.5 > \theta < 30$             | 69                    | 79     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 147                 | 168    | 30           | 66              | Yes | Yes | 2                                  | 2         | 2         |
| $30 > \theta < 37.5$             | 73                    | 84     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 138                 | 157    | 30           | 68              | Yes | Yes | 2                                  | 2         | 2         |
| $37.5 > \theta < 45$             | 75                    | 85     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 30           | 71              | Yes | Yes | 2                                  | 2         | 2         |

# Series 200

## Configuration Tables for Ground Mount System 31 to 40 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 31-40 psf Snow |                       |        |              |      |     |                 |               |                     |        |              |      |     |                 |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------|---------------------|--------|--------------|------|-----|-----------------|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |     |                 |               | Braced Installation |        |              |      |     | Required Braces |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      |     |                 |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D             | Sch 40              | Sch 80 | Short        | Tall | A   | E               | F   | 40" x 66"                          | 40" x 78" |
| $\theta = 0$                     | 74                    | 85     | 30           | 30   | No  | Every 3rd Bay   | No            | 180                 | 180    | 32           | 32   | Yes | Yes             | Yes | 2                                  | 2         |
| $0 > \theta < 7.5$               | 68                    | 78     | 30           | 32   | Yes | Every 3rd Bay   | No            | 180                 | 180    | 32           | 46   | Yes | Yes             | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$              | 68                    | 78     | 30           | 40   | Yes | Every 3rd Bay   | No            | 180                 | 180    | 32           | 59   | Yes | Yes             | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$             | 67                    | 76     | 30           | 47   | Yes | Every 3rd Bay   | Every 3rd Bay | 167                 | 180    | 32           | 66   | Yes | Yes             | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$             | 65                    | 75     | 30           | 51   | Yes | Every 3rd Bay   | Every 3rd Bay | 138                 | 158    | 32           | 69   | Yes | Yes             | Yes | 2                                  | 2         |
| $30 > \theta < 37.5$             | 69                    | 79     | 30           | 55   | Yes | Every 3rd Bay   | Every 3rd Bay | 129                 | 147    | 32           | 70   | Yes | Yes             | Yes | 2                                  | 2         |
| $37.5 > \theta < 45$             | 70                    | 80     | 30           | 58   | Yes | Every 3rd Bay   | Every 3rd Bay | 121                 | 139    | 32           | 73   | Yes | Yes             | Yes | 2                                  | 2         |

| 170 mph Wind Load 31-40 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   |                                    |           |
|                                  |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     | 40" x 66"                          | 40" x 78" |
| $\theta = 0$                     | 72                    | 83     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 34           | 34   | Yes             | Yes | Yes | 2                                  | 2         |
| $0 > \theta < 7.5$               | 66                    | 76     | 30           | 33   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 34           | 49   | Yes             | Yes | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$              | 66                    | 75     | 30           | 42   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 34           | 63   | Yes             | Yes | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$             | 64                    | 73     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay | 158                 | 180    | 34           | 68   | Yes             | Yes | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$             | 62                    | 71     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 34           | 70   | Yes             | Yes | Yes | 2                                  | 2         |
| $30 > \theta < 37.5$             | 65                    | 75     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay | 122                 | 139    | 34           | 73   | Yes             | Yes | Yes | 2                                  | 2         |
| $37.5 > \theta < 45$             | 66                    | 76     | 30           | 59   | Yes             | Every 3rd Bay | Every 3rd Bay | 114                 | 130    | 34           | 76   | Yes             | Yes | Yes | 2                                  | 2         |

# Series 200

## Configuration Tables for Ground Mount System 41 to 50 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 41-50 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle θ                     | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                  | Max (psf)             |        | Required Braces |      |     | D             | Max (psf)           |        | Required Braces |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                  |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall | F   |             |
| θ = 0                            | 77                    | 88     | 30              | 30   | No  | No            | 180                 | 180    | 39              | 39   | Yes | 2           |
| 0 > θ < 7.5                      | 74                    | 85     | 30              | 30   | Yes | No            | 180                 | 180    | 39              | 39   | Yes | 2           |
| 7.5 > θ < 15                     | 77                    | 87     | 30              | 30   | Yes | No            | 180                 | 180    | 39              | 39   | Yes | 2           |
| 15 > θ < 22.5                    | 81                    | 92     | 30              | 30   | Yes | Every 3rd Bay | 180                 | 180    | 31              | 46   | Yes | 2           |
| 22.5 > θ < 30                    | 85                    | 97     | 30              | 35   | Yes | Every 3rd Bay | 180                 | 180    | 31              | 49   | Yes | 2           |
| 30 > θ < 37.5                    | 93                    | 106    | 30              | 38   | Yes | Every 3rd Bay | 180                 | 180    | 30              | 60   | Yes | 2           |
| 37.5 > θ < 45                    | 101                   | 115    | 30              | 49   | Yes | Every 3rd Bay | 180                 | 180    | 30              | 60   | Yes | 2           |

| 110 mph Wind Load 41-50 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle θ                     | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                  | Max (psf)             |        | Required Braces |      |     | D             | Max (psf)           |        | Required Braces |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                  |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall | F   |             |
| θ = 0                            | 76                    | 87     | 30              | 30   | No  | No            | 180                 | 180    | 42              | 42   | Yes | 2           |
| 0 > θ < 7.5                      | 73                    | 83     | 30              | 30   | Yes | No            | 180                 | 180    | 42              | 42   | Yes | 2           |
| 7.5 > θ < 15                     | 73                    | 83     | 30              | 30   | Yes | No            | 180                 | 180    | 42              | 42   | Yes | 2           |
| 15 > θ < 22.5                    | 79                    | 90     | 30              | 31   | Yes | Every 3rd Bay | 180                 | 180    | 33              | 50   | Yes | 2           |
| 22.5 > θ < 30                    | 82                    | 93     | 30              | 38   | Yes | Every 3rd Bay | 180                 | 180    | 30              | 53   | Yes | 2           |
| 30 > θ < 37.5                    | 88                    | 101    | 30              | 41   | Yes | Every 3rd Bay | 180                 | 180    | 30              | 56   | Yes | 2           |
| 37.5 > θ < 45                    | 95                    | 109    | 30              | 45   | Yes | Every 3rd Bay | 177                 | 180    | 30              | 59   | Yes | 2           |

| 120 mph Wind Load 41-50 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle θ                     | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                  | Max (psf)             |        | Required Braces |      |     | D             | Max (psf)           |        | Required Braces |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                  |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall | F   |             |
| θ = 0                            | 66                    | 75     | 30              | 30   | No  | No            | 180                 | 180    | 46              | 46   | Yes | 2           |
| 0 > θ < 7.5                      | 68                    | 77     | 30              | 30   | Yes | No            | 180                 | 180    | 46              | 46   | Yes | 2           |
| 7.5 > θ < 15                     | 70                    | 79     | 30              | 30   | Yes | No            | 180                 | 180    | 36              | 46   | Yes | 2           |
| 15 > θ < 22.5                    | 75                    | 86     | 30              | 33   | Yes | Every 3rd Bay | 180                 | 180    | 36              | 54   | Yes | 2           |
| 22.5 > θ < 30                    | 81                    | 93     | 30              | 40   | Yes | Every 3rd Bay | 180                 | 180    | 30              | 58   | Yes | 2           |
| 30 > θ < 37.5                    | 84                    | 96     | 30              | 43   | Yes | Every 3rd Bay | 172                 | 180    | 30              | 61   | Yes | 2           |
| 37.5 > θ < 45                    | 90                    | 103    | 30              | 47   | Yes | Every 3rd Bay | 162                 | 180    | 30              | 64   | Yes | 2           |

# Series 200

## Configuration Tables for Ground Mount System 41 to 50 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 41-50 psf Snow |                       |        |              |                 |     |               |                     |        |              |                 |     |     |
|----------------------------------|-----------------------|--------|--------------|-----------------|-----|---------------|---------------------|--------|--------------|-----------------|-----|-----|
| Tilt Angle θ                     | Standard Installation |        |              |                 |     |               | Braced Installation |        |              |                 |     |     |
|                                  | Max (psf)             |        |              | Required Braces |     |               | Max (psf)           |        |              | Required Braces |     |     |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C   | D             | Sch 40              | Sch 80 | 12" Dia Pier | A               | E   | F   |
|                                  |                       |        | Short        | Tall            |     |               |                     |        | Short        | Tall            |     |     |
| θ = 0                            | 73                    | 84     | 30           | 30              | No  | No            | 180                 | 180    | 39           | Yes             | Yes | Yes |
| 0 > θ < 7.5                      | 70                    | 79     | 30           | 30              | Yes | Every 3rd Bay | 180                 | 180    | 39           | Yes             | Yes | Yes |
| 7.5 > θ < 15                     | 71                    | 81     | 30           | 30              | Yes | Every 3rd Bay | 180                 | 180    | 39           | Yes             | Yes | Yes |
| 15 > θ < 22.5                    | 73                    | 84     | 30           | 35              | Yes | Every 3rd Bay | 180                 | 180    | 39           | Yes             | Yes | Yes |
| 22.5 > θ < 30                    | 75                    | 85     | 30           | 42              | Yes | Every 3rd Bay | 170                 | 180    | 30           | Yes             | Yes | Yes |
| 30 > θ < 37.5                    | 80                    | 91     | 30           | 46              | Yes | Every 3rd Bay | 159                 | 180    | 30           | Yes             | Yes | Yes |
| 37.5 > θ < 45                    | 85                    | 96     | 30           | 49              | Yes | Every 3rd Bay | 150                 | 171    | 30           | Yes             | Yes | Yes |

| 140 mph Wind Load 41-50 psf Snow |                       |        |              |                 |     |               |                     |        |              |                 |     |     |
|----------------------------------|-----------------------|--------|--------------|-----------------|-----|---------------|---------------------|--------|--------------|-----------------|-----|-----|
| Tilt Angle θ                     | Standard Installation |        |              |                 |     |               | Braced Installation |        |              |                 |     |     |
|                                  | Max (psf)             |        |              | Required Braces |     |               | Max (psf)           |        |              | Required Braces |     |     |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C   | D             | Sch 40              | Sch 80 | 12" Dia Pier | A               | E   | F   |
|                                  |                       |        | Short        | Tall            |     |               |                     |        | Short        | Tall            |     |     |
| θ = 0                            | 72                    | 82     | 30           | 30              | No  | No            | 180                 | 180    | 41           | Yes             | Yes | Yes |
| 0 > θ < 7.5                      | 68                    | 77     | 30           | 30              | Yes | Every 3rd Bay | 180                 | 180    | 41           | Yes             | Yes | Yes |
| 7.5 > θ < 15                     | 69                    | 78     | 30           | 30              | Yes | Every 3rd Bay | 180                 | 180    | 41           | Yes             | Yes | Yes |
| 15 > θ < 22.5                    | 71                    | 80     | 30           | 37              | Yes | Every 3rd Bay | 180                 | 180    | 41           | Yes             | Yes | Yes |
| 22.5 > θ < 30                    | 71                    | 81     | 30           | 44              | Yes | Every 3rd Bay | 158                 | 180    | 30           | Yes             | Yes | Yes |
| 30 > θ < 37.5                    | 76                    | 87     | 30           | 48              | Yes | Every 3rd Bay | 148                 | 168    | 30           | Yes             | Yes | Yes |
| 37.5 > θ < 45                    | 80                    | 91     | 30           | 51              | Yes | Every 3rd Bay | 139                 | 158    | 30           | Yes             | Yes | Yes |

| 150 mph Wind Load 41-50 psf Snow |                       |        |              |                 |     |               |                     |        |              |                 |     |     |
|----------------------------------|-----------------------|--------|--------------|-----------------|-----|---------------|---------------------|--------|--------------|-----------------|-----|-----|
| Tilt Angle θ                     | Standard Installation |        |              |                 |     |               | Braced Installation |        |              |                 |     |     |
|                                  | Max (psf)             |        |              | Required Braces |     |               | Max (psf)           |        |              | Required Braces |     |     |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C   | D             | Sch 40              | Sch 80 | 12" Dia Pier | A               | E   | F   |
|                                  |                       |        | Short        | Tall            |     |               |                     |        | Short        | Tall            |     |     |
| θ = 0                            | 71                    | 81     | 30           | 30              | No  | No            | 180                 | 180    | 44           | Yes             | Yes | Yes |
| 0 > θ < 7.5                      | 66                    | 75     | 30           | 30              | Yes | Every 3rd Bay | 180                 | 180    | 44           | Yes             | Yes | Yes |
| 7.5 > θ < 15                     | 67                    | 76     | 30           | 30              | Yes | Every 3rd Bay | 180                 | 180    | 44           | Yes             | Yes | Yes |
| 15 > θ < 22.5                    | 68                    | 77     | 30           | 38              | Yes | Every 3rd Bay | 179                 | 180    | 30           | Yes             | Yes | Yes |
| 22.5 > θ < 30                    | 68                    | 78     | 30           | 45              | Yes | Every 3rd Bay | 147                 | 168    | 30           | Yes             | Yes | Yes |
| 30 > θ < 37.5                    | 72                    | 83     | 30           | 50              | Yes | Every 3rd Bay | 138                 | 157    | 30           | Yes             | Yes | Yes |
| 37.5 > θ < 45                    | 75                    | 85     | 30           | 53              | Yes | Every 3rd Bay | 130                 | 148    | 30           | Yes             | Yes | Yes |

# Series 200

## Configuration Tables for Ground Mount System 41 to 50 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 41-50 psf Snow |                       |        |              |                 |    |               |                     |               |              |                 |      |     |                                    |           |   |
|----------------------------------|-----------------------|--------|--------------|-----------------|----|---------------|---------------------|---------------|--------------|-----------------|------|-----|------------------------------------|-----------|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |                 |    |               | Braced Installation |               |              |                 |      |     | Number of Rails Required Per Panel |           |   |
|                                  | Max (PS)              |        |              | Required Braces |    |               | Max (PS)            |               |              | Required Braces |      |     |                                    |           |   |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C  | D             | Sch 40              | Sch 80        | 12" Dia Pier | A               | E    | F   | 40" x 66"                          | 40" x 78" |   |
|                                  |                       |        | Short        | Tall            | No | Every 3rd Bay | No                  | 180           | 180          | Short           | Tall | Yes | Yes                                | Yes       | 2 |
| $\theta = 0$                     |                       | 69     | 79           | 30              | 30 | No            | Every 3rd Bay       | No            | 180          | 180             | 46   | 46  | Yes                                | Yes       | 2 |
| $0 > \theta < 7.5$               |                       | 64     | 74           | 30              | 30 | Yes           | Every 3rd Bay       | No            | 180          | 180             | 46   | 46  | Yes                                | Yes       | 2 |
| $7.5 > \theta < 15$              |                       | 65     | 74           | 30              | 32 | Yes           | Every 3rd Bay       | No            | 180          | 180             | 46   | 59  | Yes                                | Yes       | 2 |
| $15 > \theta < 22.5$             |                       | 65     | 75           | 30              | 40 | Yes           | Every 3rd Bay       | Every 3rd Bay | 167          | 180             | 32   | 66  | Yes                                | Yes       | 2 |
| $22.5 > \theta < 30$             |                       | 65     | 74           | 30              | 47 | Yes           | Every 3rd Bay       | Every 3rd Bay | 138          | 158             | 32   | 69  | Yes                                | Yes       | 2 |
| $30 > \theta < 37.5$             |                       | 69     | 78           | 30              | 51 | Yes           | Every 3rd Bay       | Every 3rd Bay | 129          | 147             | 32   | 70  | Yes                                | Yes       | 2 |
| $37.5 > \theta < 45$             |                       | 70     | 80           | 30              | 55 | Yes           | Every 3rd Bay       | Every 3rd Bay | 121          | 139             | 32   | 73  | Yes                                | Yes       | 2 |

| 170 mph Wind Load 41-50 psf Snow |                       |        |      |                 |               |               |                     |        |    |              |      |     |             |
|----------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|----|--------------|------|-----|-------------|
| Tilt Angle $\theta$              | Standard Installation |        |      |                 |               |               | Braced Installation |        |    |              |      |     |             |
|                                  | Max (psf)             |        |      | Required Braces |               |               | Max (psf)           |        |    | 12" Dia Pier |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | Tall | A               | C             | D             | Sch 40              | Sch 80 | D  | Short        | Tall | A   |             |
|                                  | 68                    | 78     | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | No | 49           | 49   | Yes |             |
| $\theta = 0$                     | 63                    | 72     | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | No | 49           | 49   | Yes | 2           |
| $0 > \theta < 7.5$               | 63                    | 72     | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | No | 49           | 63   | Yes | 2           |
| $7.5 > \theta < 15$              | 63                    | 71     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 158                 | 180    | 34 | 68           | 68   | Yes | 2           |
| $15 > \theta < 22.5$             | 61                    | 70     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 34 | 70           | 70   | Yes | 2           |
| $22.5 > \theta < 30$             | 65                    | 74     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 122                 | 139    | 34 | 73           | 73   | Yes | 2           |
| $30 > \theta < 37.5$             | 66                    | 76     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 114                 | 130    | 34 | 76           | 76   | Yes | 2           |

# Series 200

## Configuration Tables for Ground Mount System 51 to 60 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 51-60 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                     | 72                    | 82     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 46    | 46              | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 70                    | 80     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 46    | 46              | Yes | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$              | 72                    | 82     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 46    | 46              | Yes | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$             | 76                    | 87     | 30           | 34   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 39    | 46              | Yes | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$             | 82                    | 93     | 30           | 38   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 31    | 49              | Yes | Yes                                | Yes | 2         | 2         |
| $30 > \theta < 37.5$             | 89                    | 102    | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 60              | Yes | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$             | 98                    | 111    | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 60              | Yes | Yes                                | Yes | 2         | 2         |

| 110 mph Wind Load 51-60 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 71                    | 81     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 50    | 50              | Yes | Yes                                | Yes | 2         | 2         |
| $0 > \theta < 7.5$               | 68                    | 78     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 50    | 50              | Yes | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$              | 68                    | 78     | 30           | 31   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 42    | 42              | Yes | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$             | 74                    | 85     | 30           | 37   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 42    | 50              | Yes | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$             | 78                    | 89     | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 33    | 53              | Yes | Yes                                | Yes | 2         | 2         |
| $30 > \theta < 37.5$             | 85                    | 97     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 56              | Yes | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$             | 92                    | 105    | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 177    | 180          | 30    | 59              | Yes | Yes                                | Yes | 2         | 2         |

| 120 mph Wind Load 51-60 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |             |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |             |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |             |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   |                                    | E           |           |           |
|                                  |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    | Module Size |           |           |
| $\theta = 0$                     | 70                    | 80     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 46    | 46              | Yes | Yes                                | 2           | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 67                    | 76     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 46    | 46              | Yes | Yes                                | 2           | 2         | 2         |
| $7.5 > \theta < 15$              | 69                    | 78     | 30           | 33   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 46    | 46              | Yes | Yes                                | 2           | 2         | 2         |
| $15 > \theta < 22.5$             | 72                    | 83     | 30           | 39   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 36    | 54              | Yes | Yes                                | 2           | 2         | 2         |
| $22.5 > \theta < 30$             | 75                    | 86     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 36    | 58              | Yes | Yes                                | 2           | 2         | 2         |
| $30 > \theta < 37.5$             | 81                    | 93     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 172    | 180          | 30    | 61              | Yes | Yes                                | 2           | 2         | 2         |
| $37.5 > \theta < 45$             | 88                    | 100    | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 162    | 180          | 30    | 64              | Yes | Yes                                | 2           | 2         | 2         |

# Series 200

## Configuration Tables for Ground Mount System 51 to 60 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 51-60 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle $\theta$              | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                  | Max (psf)             |        | Required Braces |      |     | D             | Max (psf)           |        | Required Braces |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                  |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall | F   |             |
| $\theta = 0$                     | 69                    | 78     | 30              | 30   | No  | No            | 180                 | 180    | 49              | 49   | Yes | 2           |
| $0 > \theta < 7.5$               | 66                    | 75     | 30              | 30   | Yes | Every 3rd Bay | 180                 | 180    | 49              | 49   | Yes | 2           |
| $7.5 > \theta < 15$              | 67                    | 76     | 30              | 35   | Yes | Every 3rd Bay | 180                 | 180    | 49              | 49   | Yes | 2           |
| $15 > \theta < 22.5$             | 70                    | 80     | 30              | 41   | Yes | Every 3rd Bay | 180                 | 180    | 39              | 58   | Yes | 2           |
| $22.5 > \theta < 30$             | 72                    | 82     | 30              | 45   | Yes | Every 3rd Bay | 170                 | 180    | 39              | 62   | Yes | 2           |
| $30 > \theta < 37.5$             | 78                    | 89     | 30              | 49   | Yes | Every 3rd Bay | 159                 | 180    | 30              | 64   | Yes | 2           |
| $37.5 > \theta < 45$             | 83                    | 95     | 30              | 52   | Yes | Every 3rd Bay | 150                 | 171    | 30              | 64   | Yes | 2           |

| 140 mph Wind Load 51-60 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle $\theta$              | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                  | Max (psf)             |        | Required Braces |      |     | D             | Max (psf)           |        | Required Braces |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                  |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall | F   |             |
| $\theta = 0$                     | 68                    | 77     | 30              | 30   | No  | No            | 180                 | 180    | 52              | 52   | Yes | 2           |
| $0 > \theta < 7.5$               | 64                    | 73     | 30              | 30   | Yes | Every 3rd Bay | 180                 | 180    | 52              | 52   | Yes | 2           |
| $7.5 > \theta < 15$              | 65                    | 75     | 30              | 36   | Yes | Every 3rd Bay | 180                 | 180    | 41              | 52   | Yes | 2           |
| $15 > \theta < 22.5$             | 68                    | 77     | 30              | 43   | Yes | Every 3rd Bay | 180                 | 180    | 41              | 62   | Yes | 2           |
| $22.5 > \theta < 30$             | 69                    | 79     | 30              | 47   | Yes | Every 3rd Bay | 158                 | 180    | 30              | 64   | Yes | 2           |
| $30 > \theta < 37.5$             | 74                    | 85     | 30              | 51   | Yes | Every 3rd Bay | 148                 | 168    | 30              | 66   | Yes | 2           |
| $37.5 > \theta < 45$             | 79                    | 90     | 30              | 54   | Yes | Every 3rd Bay | 139                 | 158    | 30              | 69   | Yes | 2           |

| 150 mph Wind Load 51-60 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle $\theta$              | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                  | Max (psf)             |        | Required Braces |      |     | D             | Max (psf)           |        | Required Braces |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                  |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall | F   |             |
| $\theta = 0$                     | 67                    | 76     | 30              | 30   | No  | No            | 180                 | 180    | 56              | 56   | Yes | 2           |
| $0 > \theta < 7.5$               | 63                    | 72     | 30              | 30   | Yes | Every 3rd Bay | 180                 | 180    | 56              | 56   | Yes | 2           |
| $7.5 > \theta < 15$              | 64                    | 73     | 30              | 38   | Yes | Every 3rd Bay | 180                 | 180    | 44              | 56   | Yes | 2           |
| $15 > \theta < 22.5$             | 66                    | 75     | 30              | 45   | Yes | Every 3rd Bay | 179                 | 180    | 44              | 65   | Yes | 2           |
| $22.5 > \theta < 30$             | 66                    | 76     | 30              | 49   | Yes | Every 3rd Bay | 147                 | 168    | 30              | 66   | Yes | 2           |
| $30 > \theta < 37.5$             | 71                    | 81     | 30              | 53   | Yes | Every 3rd Bay | 138                 | 157    | 30              | 68   | Yes | 2           |
| $37.5 > \theta < 45$             | 74                    | 85     | 30              | 56   | Yes | Every 3rd Bay | 130                 | 148    | 30              | 71   | Yes | 2           |

# Series 200

## Configuration Tables for Ground Mount System 51 to 60 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 51-60 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   |
| $\theta = 0$                     | 65                    | 75     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 46           | 46   | Yes             | Yes | Yes |
| $0 > \theta < 7.5$               | 61                    | 70     | 30           | 31   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 46           | 46   | Yes             | Yes | Yes |
| $7.5 > \theta < 15$              | 62                    | 71     | 30           | 39   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 46           | 59   | Yes             | Yes | Yes |
| $15 > \theta < 22.5$             | 63                    | 72     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay | 167                 | 180    | 46           | 66   | Yes             | Yes | Yes |
| $22.5 > \theta < 30$             | 64                    | 73     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay | 138                 | 158    | 32           | 69   | Yes             | Yes | Yes |
| $30 > \theta < 37.5$             | 68                    | 78     | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay | 129                 | 147    | 32           | 70   | Yes             | Yes | Yes |
| $37.5 > \theta < 45$             | 70                    | 80     | 30           | 58   | Yes             | Every 3rd Bay | Every 3rd Bay | 121                 | 139    | 32           | 73   | Yes             | Yes | Yes |

| 170 mph Wind Load 51-60 psf Snow |                       |        |              |                 |     |               |        |                     |              |       |                 |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|-----------------|-----|---------------|--------|---------------------|--------------|-------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |                 |     |               |        | Braced Installation |              |       |                 |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        |              | Required Braces |     |               |        | Max (PS)            |              |       | Required Braces |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C   | D             | Sch 40 | Sch 80              | 12" Dia Pier | A     | E               | F   | Module Size                        |           |           |
|                                  |                       |        | Short        | Tall            |     |               |        |                     |              | Short | Tall            |     |                                    | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 64                    | 73     | 30           | 30              | No  | No            | 180    | 180                 | 49           | 49    | Yes             | Yes | Yes                                | 2         | 2         |
| $0 > \theta < 7.5$               | 60                    | 68     | 30           | 32              | Yes | No            | 180    | 180                 | 49           | 49    | Yes             | Yes | Yes                                | 2         | 2         |
| $7.5 > \theta < 15$              | 60                    | 69     | 30           | 41              | Yes | No            | 180    | 180                 | 49           | 63    | Yes             | Yes | Yes                                | 2         | 2         |
| $15 > \theta < 22.5$             | 61                    | 70     | 30           | 48              | Yes | Every 3rd Bay | 158    | 180                 | 49           | 68    | Yes             | Yes | Yes                                | 2         | 2         |
| $22.5 > \theta < 30$             | 61                    | 69     | 30           | 53              | Yes | Every 3rd Bay | 130    | 148                 | 34           | 70    | Yes             | Yes | Yes                                | 2         | 2         |
| $30 > \theta < 37.5$             | 65                    | 74     | 30           | 56              | Yes | Every 3rd Bay | 122    | 139                 | 34           | 73    | Yes             | Yes | Yes                                | 2         | 2         |
| $37.5 > \theta < 45$             | 66                    | 76     | 30           | 59              | Yes | Every 3rd Bay | 114    | 130                 | 34           | 76    | Yes             | Yes | Yes                                | 2         | 2         |

# Series 200

## Configuration Tables for Ground Mount System 61 to 70 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 61-70 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F                                  | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 67                    | 77     | 30           | 30   | No              | Every 3rd Bay | No            | 180                 | 180    | 60           | 60   | Yes             | Yes | Yes                                | 2         | 2         |
| $0 > \theta < 7.5$               | 66                    | 75     | 30           | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 60           | 60   | Yes             | Yes | Yes                                | 2         | 2         |
| $7.5 > \theta < 15$              | 68                    | 78     | 30           | 30   | Yes             | Every 3rd Bay | No            | 180                 | 180    | 49           | 49   | Yes             | Yes | Yes                                | 2         | 2         |
| $15 > \theta < 22.5$             | 73                    | 83     | 30           | 34   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 46           | 46   | Yes             | Yes | Yes                                | 2         | 2         |
| $22.5 > \theta < 30$             | 78                    | 89     | 30           | 37   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 39           | 49   | Yes             | Yes | Yes                                | 2         | 2         |
| $30 > \theta < 37.5$             | 86                    | 98     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 31           | 60   | Yes             | Yes | Yes                                | 2         | 2         |
| $37.5 > \theta < 45$             | 95                    | 108    | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 30           | 60   | Yes             | Yes | Yes                                | 2         | 2         |

| 110 mph Wind Load 61-70 psf Snow |                       |        |              |      |                 |               |               |        |                     |       |              |     |                 |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|--------|---------------------|-------|--------------|-----|-----------------|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               |        | Braced Installation |       |              |     |                 |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               |        | Max (PS)            |       | 12" Dia Pier |     | Required Braces |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40 | Sch 80              | Short | Tall         | A   | E               | F   | 40" x 66"                          | 40" x 78" |
|                                  | $\theta = 0$          | 67     | 76           | 30   | 30              | No            | Every 3rd Bay | No     | 180                 | 180   | 53           | 53  | Yes             | Yes | Yes                                | 2         |
| $0 > \theta < 7.5$               | 65                    | 74     | 30           | 30   | Yes             | Every 3rd Bay | No            | 180    | 180                 | 53    | 53           | Yes | Yes             | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$              | 65                    | 74     | 30           | 30   | Yes             | Every 3rd Bay | No            | 180    | 180                 | 50    | 50           | Yes | Yes             | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$             | 71                    | 81     | 30           | 37   | Yes             | Every 3rd Bay | Every 3rd Bay | 180    | 180                 | 42    | 50           | Yes | Yes             | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$             | 75                    | 86     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay | 180    | 180                 | 33    | 53           | Yes | Yes             | Yes | 2                                  | 2         |
| $30 > \theta < 37.5$             | 82                    | 94     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay | 180    | 180                 | 33    | 56           | Yes | Yes             | Yes | 2                                  | 2         |
| $37.5 > \theta < 45$             | 90                    | 103    | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay | 177    | 180                 | 30    | 59           | Yes | Yes             | Yes | 2                                  | 2         |

| 120 mph Wind Load 61-70 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                 |     |           |                                    |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|-----------------|-----|-----------|------------------------------------|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Required Braces |     |           | Number of Rails Required Per Panel |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                 |     |           |                                    |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E               | F   | 40" x 66" | 40" x 78"                          |   |
|                                  | $\theta = 0$          | 66     | 75           | 30   | 30              | No            | Every 3rd Bay       | No     | 180          | 180   | 54              | 54  | Yes             | Yes | Yes       | 2                                  | 2 |
| $0 > \theta < 7.5$               | 63                    | 72     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 54    | 54              | Yes | Yes             | Yes | 2         | 2                                  |   |
| $7.5 > \theta < 15$              | 65                    | 74     | 30           | 32   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 54    | 54              | Yes | Yes             | Yes | 2         | 2                                  |   |
| $15 > \theta < 22.5$             | 69                    | 79     | 30           | 39   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 46    | 54              | Yes | Yes             | Yes | 2         | 2                                  |   |
| $22.5 > \theta < 30$             | 73                    | 83     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 36    | 58              | Yes | Yes             | Yes | 2         | 2                                  |   |
| $30 > \theta < 37.5$             | 79                    | 90     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 172    | 180          | 30    | 61              | Yes | Yes             | Yes | 2         | 2                                  |   |
| $37.5 > \theta < 45$             | 86                    | 98     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | 162    | 180          | 30    | 64              | Yes | Yes             | Yes | 2         | 2                                  |   |

# Series 200

## Configuration Tables for Ground Mount System 61 to 70 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 61-70 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle θ                     | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                  | Max (psf)             |        | Required Braces |      |     | D             | Max (psf)           |        | Required Braces |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                  |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall | F   |             |
| θ = 0                            | 65                    | 74     | 30              | 30   | No  | No            | 180                 | 180    | 58              | 58   | Yes | 2           |
| 0 > θ < 7.5                      | 62                    | 71     | 30              | 30   | Yes | Every 3rd Bay | 180                 | 180    | 58              | 58   | Yes | 2           |
| 7.5 > θ < 15                     | 64                    | 73     | 30              | 34   | Yes | Every 3rd Bay | 180                 | 180    | 49              | 49   | Yes | 2           |
| 15 > θ < 22.5                    | 67                    | 77     | 30              | 41   | Yes | Every 3rd Bay | 180                 | 180    | 49              | 58   | Yes | 2           |
| 22.5 > θ < 30                    | 70                    | 80     | 30              | 45   | Yes | Every 3rd Bay | 170                 | 180    | 39              | 62   | Yes | 2           |
| 30 > θ < 37.5                    | 76                    | 86     | 30              | 49   | Yes | Every 3rd Bay | 159                 | 180    | 30              | 64   | Yes | 2           |
| 37.5 > θ < 45                    | 82                    | 93     | 30              | 52   | Yes | Every 3rd Bay | 150                 | 171    | 30              | 64   | Yes | 2           |

| 140 mph Wind Load 61-70 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle θ                     | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                  | Max (psf)             |        | Required Braces |      |     | D             | Max (psf)           |        | Required Braces |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                  |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall | F   |             |
| θ = 0                            | 64                    | 73     | 30              | 30   | No  | No            | 180                 | 180    | 62              | 62   | Yes | 2           |
| 0 > θ < 7.5                      | 61                    | 70     | 30              | 30   | Yes | Every 3rd Bay | 180                 | 180    | 52              | 52   | Yes | 2           |
| 7.5 > θ < 15                     | 62                    | 71     | 30              | 36   | Yes | Every 3rd Bay | 180                 | 180    | 52              | 52   | Yes | 2           |
| 15 > θ < 22.5                    | 65                    | 75     | 30              | 43   | Yes | Every 3rd Bay | 180                 | 180    | 41              | 62   | Yes | 2           |
| 22.5 > θ < 30                    | 67                    | 77     | 30              | 47   | Yes | Every 3rd Bay | 158                 | 180    | 41              | 64   | Yes | 2           |
| 30 > θ < 37.5                    | 72                    | 83     | 30              | 51   | Yes | Every 3rd Bay | 148                 | 168    | 30              | 66   | Yes | 2           |
| 37.5 > θ < 45                    | 78                    | 89     | 30              | 54   | Yes | Every 3rd Bay | 139                 | 158    | 30              | 69   | Yes | 2           |

| 150 mph Wind Load 61-70 psf Snow |                       |        |                 |      |     |               |                     |        |                 |      |     |             |
|----------------------------------|-----------------------|--------|-----------------|------|-----|---------------|---------------------|--------|-----------------|------|-----|-------------|
| Tilt Angle θ                     | Standard Installation |        |                 |      |     |               | Braced Installation |        |                 |      |     |             |
|                                  | Max (psf)             |        | Required Braces |      |     | D             | Max (psf)           |        | Required Braces |      |     | Module Size |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier    | A    | C   |               | Sch 40              | Sch 80 | 12" Dia Pier    | A    | E   |             |
|                                  |                       |        | Short           | Tall |     |               |                     |        | Short           | Tall | F   |             |
| θ = 0                            | 63                    | 72     | 30              | 30   | No  | No            | 180                 | 180    | 56              | 56   | Yes | 2           |
| 0 > θ < 7.5                      | 60                    | 68     | 30              | 30   | Yes | Every 3rd Bay | 179                 | 180    | 56              | 56   | Yes | 2           |
| 7.5 > θ < 15                     | 61                    | 70     | 30              | 37   | Yes | Every 3rd Bay | 180                 | 180    | 56              | 56   | Yes | 2           |
| 15 > θ < 22.5                    | 63                    | 72     | 30              | 45   | Yes | Every 3rd Bay | 179                 | 180    | 44              | 65   | Yes | 2           |
| 22.5 > θ < 30                    | 65                    | 74     | 30              | 49   | Yes | Every 3rd Bay | 147                 | 168    | 30              | 66   | Yes | 2           |
| 30 > θ < 37.5                    | 69                    | 79     | 30              | 53   | Yes | Every 3rd Bay | 138                 | 157    | 30              | 68   | Yes | 2           |
| 37.5 > θ < 45                    | 74                    | 84     | 30              | 56   | Yes | Every 3rd Bay | 130                 | 148    | 30              | 71   | Yes | 2           |

# Series 200

## Configuration Tables for Ground Mount System 61 to 70 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 61-70 psf Snow |                       |        |              |                 |     |               |                     |        |              |              |      |     |                                    |
|----------------------------------|-----------------------|--------|--------------|-----------------|-----|---------------|---------------------|--------|--------------|--------------|------|-----|------------------------------------|
| Tilt Angle $\theta$              | Standard Installation |        |              |                 |     |               | Braced Installation |        |              |              |      |     |                                    |
|                                  | Max (psf)             |        |              | Required Braces |     |               | Max (psf)           |        |              | 12" Dia Pier |      |     | Number of Rails Required Per Panel |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C   | D             | Sch 40              | Sch 80 | 12" Dia Pier | Short        | Tall | A   |                                    |
|                                  |                       |        | Short        | Tall            |     |               |                     |        |              |              |      |     |                                    |
| $\theta = 0$                     | 62                    | 71     | 30           | 30              | No  | No            | 180                 | 180    | 59           | 59           | 59   | Yes | 40" x 66" 2                        |
| $0 > \theta < 7.5$               | 59                    | 67     | 30           | 31              | Yes | Every 3rd Bay | 176                 | 180    | 59           | 59           | 59   | Yes | 40" x 78" 2                        |
| $7.5 > \theta < 15$              | 60                    | 68     | 30           | 39              | Yes | Every 3rd Bay | 179                 | 180    | 59           | 59           | 59   | Yes | 40" x 78" 2                        |
| $15 > \theta < 22.5$             | 61                    | 70     | 30           | 46              | Yes | Every 3rd Bay | 167                 | 180    | 46           | 66           | 66   | Yes | 40" x 78" 2                        |
| $22.5 > \theta < 30$             | 62                    | 71     | 30           | 51              | Yes | Every 3rd Bay | 138                 | 158    | 32           | 69           | 69   | Yes | 40" x 78" 2                        |
| $30 > \theta < 37.5$             | 67                    | 76     | 30           | 55              | Yes | Every 3rd Bay | 129                 | 147    | 32           | 70           | 70   | Yes | 40" x 78" 2                        |
| $37.5 > \theta < 45$             | 70                    | 80     | 30           | 58              | Yes | Every 3rd Bay | 121                 | 139    | 32           | 73           | 73   | Yes | 40" x 78" 2                        |

| 170 mph Wind Load 61-70 psf Snow |                       |        |              |                 |     |               |                     |        |              |              |      |     |                                    |
|----------------------------------|-----------------------|--------|--------------|-----------------|-----|---------------|---------------------|--------|--------------|--------------|------|-----|------------------------------------|
| Tilt Angle $\theta$              | Standard Installation |        |              |                 |     |               | Braced Installation |        |              |              |      |     |                                    |
|                                  | Max (psf)             |        |              | Required Braces |     |               | Max (psf)           |        |              | 12" Dia Pier |      |     | Number of Rails Required Per Panel |
|                                  | Sch 40                | Sch 80 | 12" Dia Pier | A               | C   | D             | Sch 40              | Sch 80 | 12" Dia Pier | Short        | Tall | A   |                                    |
|                                  |                       |        | Short        | Tall            |     |               |                     |        |              |              |      |     |                                    |
| $\theta = 0$                     | 61                    | 70     | 30           | 30              | No  | No            | 180                 | 180    | 63           | 63           | 63   | Yes | 40" x 66" 2                        |
| $0 > \theta < 7.5$               | 57                    | 65     | 30           | 32              | Yes | Every 3rd Bay | 172                 | 180    | 63           | 63           | 63   | Yes | 40" x 78" 2                        |
| $7.5 > \theta < 15$              | 58                    | 66     | 30           | 40              | Yes | Every 3rd Bay | 174                 | 180    | 49           | 63           | 63   | Yes | 40" x 78" 2                        |
| $15 > \theta < 22.5$             | 59                    | 68     | 30           | 48              | Yes | Every 3rd Bay | 158                 | 180    | 49           | 68           | 68   | Yes | 40" x 78" 2                        |
| $22.5 > \theta < 30$             | 60                    | 68     | 30           | 53              | Yes | Every 3rd Bay | 130                 | 148    | 34           | 70           | 70   | Yes | 40" x 78" 2                        |
| $30 > \theta < 37.5$             | 64                    | 73     | 30           | 56              | Yes | Every 3rd Bay | 122                 | 139    | 34           | 73           | 73   | Yes | 40" x 78" 2                        |
| $37.5 > \theta < 45$             | 66                    | 76     | 30           | 59              | Yes | Every 3rd Bay | 114                 | 130    | 34           | 76           | 76   | Yes | 40" x 78" 2                        |

# Series 200

## Configuration Tables for Ground Mount System 71 to 80 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 71-80 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |   |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|---|---|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |   |   |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |   |   |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F |   |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |   |           |
| $\theta = 0$                     | 63                    | 72     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 60    | 60              | Yes | Yes                                | 2 | 2 | 40" x 78" |
| $0 > \theta < 7.5$               | 62                    | 71     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 60    | 60              | Yes | Yes                                | 2 | 2 | 2         |
| $7.5 > \theta < 15$              | 65                    | 74     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 60    | 60              | Yes | Yes                                | 2 | 2 | 2         |
| $15 > \theta < 22.5$             | 69                    | 79     | 30           | 33   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 46    | 46              | Yes | Yes                                | 2 | 2 | 2         |
| $22.5 > \theta < 30$             | 75                    | 86     | 30           | 37   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 39    | 49              | Yes | Yes                                | 2 | 2 | 2         |
| $30 > \theta < 37.5$             | 83                    | 95     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 31    | 60              | Yes | Yes                                | 2 | 2 | 2         |
| $37.5 > \theta < 45$             | 92                    | 105    | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 60              | Yes | Yes                                | 2 | 2 | 2         |

| 110 mph Wind Load 71-80 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|---|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |   |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |   |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F |   |
|                                  |                       |        |              |      |                 |               |                     |        |              |       |                 |     | Module Size                        |   |   |
| $\theta = 0$                     | 63                    | 72     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 59    | 59              | Yes | Yes                                | 2 | 2 |
| $0 > \theta < 7.5$               | 61                    | 70     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 59    | 59              | Yes | Yes                                | 2 | 2 |
| $7.5 > \theta < 15$              | 61                    | 70     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 53    | 53              | Yes | Yes                                | 2 | 2 |
| $15 > \theta < 22.5$             | 68                    | 77     | 30           | 36   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 50    | 50              | Yes | Yes                                | 2 | 2 |
| $22.5 > \theta < 30$             | 73                    | 83     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 42    | 53              | Yes | Yes                                | 2 | 2 |
| $30 > \theta < 37.5$             | 80                    | 91     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 33    | 56              | Yes | Yes                                | 2 | 2 |
| $37.5 > \theta < 45$             | 88                    | 100    | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 177    | 180          | 30    | 59              | Yes | Yes                                | 2 | 2 |

| 120 mph Wind Load 71-80 psf Snow |                       |        |              |      |                 |               |                     |               |              |       |                 |    |                                    |     |   |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|---------------|--------------|-------|-----------------|----|------------------------------------|-----|---|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |               |              |       |                 |    | Number of Rails Required Per Panel |     |   |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |               | 12" Dia Pier |       | Required Braces |    |                                    |     |   |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40        | Sch 80       | Short | Tall            | A  |                                    |     | E |   |
|                                  | 40" x 66"             |        | 40" x 66"    |      | 40" x 66"       |               | 40" x 66"           |               | 40" x 66"    |       | 40" x 66"       |    |                                    |     |   |   |
| $\theta = 0$                     | 62                    | 71     | 30           | 30   | No              | Every 3rd Bay | No                  | D             | 180          | 180   | 61              | 61 | Yes                                | Yes | 2 | 2 |
| $0 > \theta < 7.5$               | 60                    | 69     | 30           | 30   | Yes             | Every 3rd Bay | No                  | D             | 180          | 180   | 61              | 61 | Yes                                | Yes | 2 | 2 |
| $7.5 > \theta < 15$              | 62                    | 71     | 30           | 32   | Yes             | Every 3rd Bay | No                  | D             | 180          | 180   | 54              | 54 | Yes                                | Yes | 2 | 2 |
| $15 > \theta < 22.5$             | 66                    | 75     | 30           | 38   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 180          | 180   | 46              | 54 | Yes                                | Yes | 2 | 2 |
| $22.5 > \theta < 30$             | 70                    | 80     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 180          | 180   | 36              | 58 | Yes                                | Yes | 2 | 2 |
| $30 > \theta < 37.5$             | 77                    | 87     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 172          | 180   | 36              | 61 | Yes                                | Yes | 2 | 2 |
| $37.5 > \theta < 45$             | 84                    | 95     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 162          | 180   | 30              | 64 | Yes                                | Yes | 2 | 2 |

# Series 200

## Configuration Tables for Ground Mount System 71 to 80 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 71-80 psf Snow |                       |        |              |      |                 |               |               |               |                     |        |              |      |                 |     |                                    |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               |               | Braced Installation |        |              |      |                 |     | Number of Rails Required Per Panel |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |                                    |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             |               | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F                                  | 40" x 66" | 40" x 78" |
| $\theta = 0$                     | 62                    | 70     | 30           | 30   | No              | Every 3rd Bay | No            | No            | 180                 | 180    | 62           | 62   | Yes             | Yes | Yes                                | 2         | 2         |
| $0 > \theta < 7.5$               | 59                    | 68     | 30           | 30   | Yes             | Every 3rd Bay | No            | No            | 178                 | 180    | 62           | 62   | Yes             | Yes | Yes                                | 2         | 2         |
| $7.5 > \theta < 15$              | 61                    | 70     | 30           | 34   | Yes             | Every 3rd Bay | No            | No            | 180                 | 180    | 58           | 58   | Yes             | Yes | Yes                                | 2         | 2         |
| $15 > \theta < 22.5$             | 65                    | 74     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 49           | 58   | Yes             | Yes | Yes                                | 2         | 2         |
| $22.5 > \theta < 30$             | 68                    | 77     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 170                 | 180    | 39           | 62   | Yes             | Yes | Yes                                | 2         | 2         |
| $30 > \theta < 37.5$             | 74                    | 84     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 159                 | 180    | 30           | 64   | Yes             | Yes | Yes                                | 2         | 2         |
| $37.5 > \theta < 45$             | 80                    | 91     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 150                 | 171    | 30           | 64   | Yes             | Yes | Yes                                | 2         | 2         |

| 140 mph Wind Load 71-80 psf Snow |                       |        |              |      |                 |               |               |        |                     |       |              |     |                 |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|--------|---------------------|-------|--------------|-----|-----------------|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               |        | Braced Installation |       |              |     |                 |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               |        | Max (PS)            |       | 12" Dia Pier |     | Required Braces |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40 | Sch 80              | Short | Tall         | A   | E               | F   | 40" x 66"                          | 40" x 78" |
|                                  | $\theta = 0$          | 61     | 69           | 30   | 30              | No            | Every 3rd Bay | No     | 180                 | 180   | 62           | 62  | Yes             | Yes | Yes                                | 2         |
| $0 > \theta < 7.5$               | 58                    | 67     | 30           | 30   | Yes             | Every 3rd Bay | No            | 175    | 180                 | 62    | 62           | Yes | Yes             | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$              | 60                    | 68     | 30           | 35   | Yes             | Every 3rd Bay | No            | 179    | 180                 | 62    | 62           | Yes | Yes             | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$             | 63                    | 72     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay | 180    | 180                 | 52    | 62           | Yes | Yes             | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$             | 65                    | 74     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay | 158    | 180                 | 41    | 64           | Yes | Yes             | Yes | 2                                  | 2         |
| $30 > \theta < 37.5$             | 71                    | 81     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay | 148    | 168                 | 30    | 66           | Yes | Yes             | Yes | 2                                  | 2         |
| $37.5 > \theta < 45$             | 76                    | 87     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay | 139    | 158                 | 30    | 69           | Yes | Yes             | Yes | 2                                  | 2         |

| 150 mph Wind Load 71-80 psf Snow |                       |        |              |      |                 |               |                     |               |              |       |                 |    |                 |     |             |   |                                    |  |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|---------------|--------------|-------|-----------------|----|-----------------|-----|-------------|---|------------------------------------|--|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |               |              |       |                 |    | Required Braces |     |             |   | Number of Rails Required Per Panel |  |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |               | 12" Dia Pier |       | Required Braces |    |                 |     |             |   |                                    |  |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40        | Sch 80       | Short | Tall            | A  | E               | F   | Module Size |   |                                    |  |
|                                  |                       |        |              |      |                 |               |                     |               |              |       |                 |    |                 |     |             |   |                                    |  |
| $\theta = 0$                     | 60                    | 69     | 30           | 30   | No              | Every 3rd Bay | No                  | No            | 180          | 180   | 65              | 65 | Yes             | Yes | Yes         | 2 | 2                                  |  |
| $0 > \theta < 7.5$               | 57                    | 65     | 30           | 30   | Yes             | Every 3rd Bay | No                  | No            | 172          | 180   | 65              | 65 | Yes             | Yes | Yes         | 2 | 2                                  |  |
| $7.5 > \theta < 15$              | 59                    | 67     | 30           | 37   | Yes             | Every 3rd Bay | No                  | No            | 176          | 180   | 56              | 56 | Yes             | Yes | Yes         | 2 | 2                                  |  |
| $15 > \theta < 22.5$             | 61                    | 70     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 179          | 180   | 56              | 65 | Yes             | Yes | Yes         | 2 | 2                                  |  |
| $22.5 > \theta < 30$             | 63                    | 72     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 147          | 168   | 44              | 66 | Yes             | Yes | Yes         | 2 | 2                                  |  |
| $30 > \theta < 37.5$             | 68                    | 77     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 138          | 157   | 30              | 68 | Yes             | Yes | Yes         | 2 | 2                                  |  |
| $37.5 > \theta < 45$             | 73                    | 83     | 30           | 56   | Yes             | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 130          | 148   | 30              | 71 | Yes             | Yes | Yes         | 2 | 2                                  |  |

# Series 200

## Configuration Tables for Ground Mount System 71 to 80 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 71-80 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                 |     |             |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|-----------------|-----|-------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Required Braces |     | Module Size |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                 |     |             |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E               | F   | 40" x 66"   | 40" x 78" |
| $\theta = 0$                     | 59                    | 68     | 30           | 30   | No              | Every 3rd Bay | No                  | 178    | 180          | 66    | 66              | Yes | Yes             | Yes | 2           | 2         |
| $0 > \theta < 7.5$               | 56                    | 64     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 168    | 180          | 66    | 66              | Yes | Yes             | Yes | 2           | 2         |
| $7.5 > \theta < 15$              | 57                    | 65     | 30           | 39   | Yes             | Every 3rd Bay | No                  | 172    | 180          | 59    | 59              | Yes | Yes             | Yes | 2           | 2         |
| $15 > \theta < 22.5$             | 60                    | 68     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 167    | 180          | 46    | 66              | Yes | Yes             | Yes | 2           | 2         |
| $22.5 > \theta < 30$             | 61                    | 69     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 158          | 32    | 69              | Yes | Yes             | Yes | 2           | 2         |
| $30 > \theta < 37.5$             | 65                    | 74     | 30           | 54   | Yes             | Every 3rd Bay | Every 3rd Bay       | 129    | 147          | 32    | 70              | Yes | Yes             | Yes | 2           | 2         |
| $37.5 > \theta < 45$             | 69                    | 79     | 30           | 57   | Yes             | Every 3rd Bay | Every 3rd Bay       | 121    | 139          | 32    | 73              | Yes | Yes             | Yes | 2           | 2         |

| 170 mph Wind Load 71-80 psf Snow |                       |        |      |                 |               |               |                     |        |              |      |     |                 |             |   |
|----------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----|-----------------|-------------|---|
| Tilt Angle $\theta$              | Standard Installation |        |      |                 |               |               | Braced Installation |        |              |      |     |                 |             |   |
|                                  | Max (PS)              |        |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      |     | Required Braces |             |   |
|                                  | Sch 40                | Sch 80 | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A   | E               | F           |   |
|                                  | Module Size           |        |      |                 |               |               | Module Size         |        |              |      |     |                 | Module Size |   |
| $\theta = 0$                     | 58                    | 67     | 30   | No              | Every 3rd Bay | No            | 175                 | 180    | 63           | 63   | Yes | Yes             | Yes         | 2 |
| $0 > \theta < 7.5$               | 55                    | 63     | 30   | Yes             | Every 3rd Bay | No            | 165                 | 180    | 63           | 63   | Yes | Yes             | Yes         | 2 |
| $7.5 > \theta < 15$              | 56                    | 64     | 30   | Yes             | Every 3rd Bay | No            | 168                 | 180    | 63           | 63   | Yes | Yes             | Yes         | 3 |
| $15 > \theta < 22.5$             | 58                    | 66     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 158                 | 180    | 49           | 68   | Yes | Yes             | Yes         | 3 |
| $22.5 > \theta < 30$             | 59                    | 67     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 34           | 70   | Yes | Yes             | Yes         | 3 |
| $30 > \theta < 37.5$             | 63                    | 72     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 122                 | 139    | 34           | 73   | Yes | Yes             | Yes         | 2 |
| $37.5 > \theta < 45$             | 66                    | 75     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 114                 | 130    | 34           | 76   | Yes | Yes             | Yes         | 2 |

# Series 200

## Configuration Tables for Ground Mount System 81 to 90 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 81-90 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |
| $\theta = 0$                     | 60                    | 68     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 63    | 63              | Yes | Yes                                | Yes |
| $0 > \theta < 7.5$               | 60                    | 68     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 179    | 180          | 63    | 63              | Yes | Yes                                | Yes |
| $7.5 > \theta < 15$              | 62                    | 71     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 180    | 180          | 60    | 60              | Yes | Yes                                | Yes |
| $15 > \theta < 22.5$             | 66                    | 76     | 30           | 33   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 60    | 60              | Yes | Yes                                | Yes |
| $22.5 > \theta < 30$             | 72                    | 83     | 30           | 36   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 46    | 49              | Yes | Yes                                | Yes |
| $30 > \theta < 37.5$             | 81                    | 92     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 31    | 60              | Yes | Yes                                | Yes |
| $37.5 > \theta < 45$             | 90                    | 102    | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 30    | 60              | Yes | Yes                                | Yes |

| 110 mph Wind Load 81-90 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|---|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |   |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |   |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |   |   |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |   |
| $\theta = 0$                     | 60                    | 68     | 30           | 30   | No              | Every 3rd Bay | No                  | 180    | 180          | 59    | 59              | Yes | Yes                                | Yes | 2 | 2 |
| $0 > \theta < 7.5$               | 59                    | 67     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 176    | 180          | 59    | 59              | Yes | Yes                                | Yes | 2 | 2 |
| $7.5 > \theta < 15$              | 59                    | 67     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 176    | 180          | 59    | 59              | Yes | Yes                                | Yes | 2 | 2 |
| $15 > \theta < 22.5$             | 65                    | 74     | 30           | 36   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 50    | 50              | Yes | Yes                                | Yes | 2 | 2 |
| $22.5 > \theta < 30$             | 70                    | 80     | 30           | 39   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 42    | 53              | Yes | Yes                                | Yes | 2 | 2 |
| $30 > \theta < 37.5$             | 78                    | 88     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 33    | 56              | Yes | Yes                                | Yes | 2 | 2 |
| $37.5 > \theta < 45$             | 86                    | 98     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 177    | 180          | 30    | 59              | Yes | Yes                                | Yes | 2 | 2 |

| 120 mph Wind Load 81-90 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |           |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|---|-----------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |   |           |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |   |           |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F |           |           |
|                                  | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |   |           |           |
| $\theta = 0$                     | 59                    | 68     | 30           | 30   | No              | Every 3rd Bay | No                  | 178    | 180          | 64    | 64              | Yes | Yes                                | 2 | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$               | 58                    | 66     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 173    | 180          | 64    | 64              | Yes | Yes                                | 2 | 2         | 2         |
| $7.5 > \theta < 15$              | 60                    | 68     | 30           | 31   | Yes             | Every 3rd Bay | No                  | 179    | 180          | 61    | 61              | Yes | Yes                                | 2 | 2         | 2         |
| $15 > \theta < 22.5$             | 64                    | 73     | 30           | 38   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 54    | 54              | Yes | Yes                                | 2 | 2         | 2         |
| $22.5 > \theta < 30$             | 68                    | 78     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay       | 180    | 180          | 46    | 58              | Yes | Yes                                | 2 | 2         | 2         |
| $30 > \theta < 37.5$             | 75                    | 85     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 172    | 180          | 36    | 61              | Yes | Yes                                | 2 | 2         | 2         |
| $37.5 > \theta < 45$             | 82                    | 93     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | 162    | 180          | 30    | 64              | Yes | Yes                                | 2 | 2         | 2         |

# Series 200

## Configuration Tables for Ground Mount System 81 to 90 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 81-90 psf Snow |                       |        |              |      |                 |               |               |               |                     |        |              |      |                 |     |                                    |   |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|------------------------------------|---|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               |               | Braced Installation |        |              |      |                 |     | Number of Rails Required Per Panel |   |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |                                    |   |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             |               | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F                                  |   |
|                                  |                       |        |              |      |                 |               |               |               |                     |        |              |      |                 |     |                                    |   |
| $\theta = 0$                     | 59                    | 67     | 30           | 30   | No              | Every 3rd Bay | No            | No            | 177                 | 180    | 67           | 67   | Yes             | Yes | Yes                                | 2 |
| $0 > \theta < 7.5$               | 57                    | 65     | 30           | 30   | Yes             | Every 3rd Bay | No            | No            | 171                 | 180    | 67           | 67   | Yes             | Yes | Yes                                | 2 |
| $7.5 > \theta < 15$              | 59                    | 67     | 30           | 33   | Yes             | Every 3rd Bay | No            | No            | 176                 | 180    | 62           | 62   | Yes             | Yes | Yes                                | 2 |
| $15 > \theta < 22.5$             | 62                    | 71     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 58           | 58   | Yes             | Yes | Yes                                | 2 |
| $22.5 > \theta < 30$             | 66                    | 75     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 170                 | 180    | 49           | 62   | Yes             | Yes | Yes                                | 2 |
| $30 > \theta < 37.5$             | 72                    | 82     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 159                 | 180    | 39           | 64   | Yes             | Yes | Yes                                | 2 |
| $37.5 > \theta < 45$             | 78                    | 89     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay | Every 3rd Bay | 150                 | 171    | 30           | 64   | Yes             | Yes | Yes                                | 2 |

| 140 mph Wind Load 81-90 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |           |
|----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$              | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     | Number of Rails Required Per Panel |           |
|                                  | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |                                    |           |
|                                  | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   | 40" x 66"                          | 40" x 78" |
|                                  | $\theta = 0$          | 58     | 66           | 30   | 30              | No            | Every 3rd Bay | No                  | 174    | 180          | 69   | 69              | Yes | Yes | Yes                                | 2         |
| $0 > \theta < 7.5$               | 56                    | 64     | 30           | 30   | Yes             | Every 3rd Bay | No            | 168                 | 180    | 69           | 69   | Yes             | Yes | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$              | 57                    | 66     | 30           | 35   | Yes             | Every 3rd Bay | No            | 172                 | 180    | 62           | 62   | Yes             | Yes | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$             | 61                    | 69     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 52           | 62   | Yes             | Yes | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$             | 64                    | 73     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay | 158                 | 180    | 41           | 64   | Yes             | Yes | Yes | 2                                  | 2         |
| $30 > \theta < 37.5$             | 69                    | 79     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay | 148                 | 168    | 30           | 66   | Yes             | Yes | Yes | 2                                  | 2         |
| $37.5 > \theta < 45$             | 75                    | 85     | 30           | 53   | Yes             | Every 3rd Bay | Every 3rd Bay | 139                 | 158    | 30           | 69   | Yes             | Yes | Yes | 2                                  | 2         |

| 150 mph Wind Load 81-90 psf Snow |                       |           |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |   |
|----------------------------------|-----------------------|-----------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|------------------------------------|---|
| Tilt Angle $\theta$              | Standard Installation |           |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     | Number of Rails Required Per Panel |   |
|                                  | Max (PS)              |           | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |                                    |   |
|                                  | Sch 40                | Sch 80    | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   |                                    |   |
|                                  | 40" x 66"             | 40" x 78" |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |   |
| $\theta = 0$                     | 57                    | 66        | 30           | 30   | No              | Every 3rd Bay | No            | 172                 | 180    | 68           | 68   | Yes             | Yes | Yes | 2                                  | 2 |
| $0 > \theta < 7.5$               | 55                    | 63        | 30           | 30   | Yes             | Every 3rd Bay | No            | 165                 | 180    | 66           | 66   | Yes             | Yes | Yes | 2                                  | 2 |
| $7.5 > \theta < 15$              | 56                    | 64        | 30           | 37   | Yes             | Every 3rd Bay | No            | 169                 | 180    | 65           | 65   | Yes             | Yes | Yes | 2                                  | 2 |
| $15 > \theta < 22.5$             | 59                    | 68        | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay | 178                 | 180    | 56           | 65   | Yes             | Yes | Yes | 2                                  | 2 |
| $22.5 > \theta < 30$             | 61                    | 70        | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay | 147                 | 168    | 44           | 66   | Yes             | Yes | Yes | 2                                  | 2 |
| $30 > \theta < 37.5$             | 66                    | 76        | 30           | 52   | Yes             | Every 3rd Bay | Every 3rd Bay | 138                 | 157    | 30           | 68   | Yes             | Yes | Yes | 2                                  | 2 |
| $37.5 > \theta < 45$             | 72                    | 82        | 30           | 55   | Yes             | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 30           | 71   | Yes             | Yes | Yes | 2                                  | 2 |

# Series 200

## Configuration Tables for Ground Mount System 81 to 90 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 81-90 psf Snow |                       |    |        |                 |               |               |                     |     |        |              |      |     |                                    |
|----------------------------------|-----------------------|----|--------|-----------------|---------------|---------------|---------------------|-----|--------|--------------|------|-----|------------------------------------|
| Tilt Angle $\theta$              | Standard Installation |    |        |                 |               |               | Braced Installation |     |        |              |      |     |                                    |
|                                  | Max (psf)             |    |        | Required Braces |               |               | Max (psf)           |     |        | 12" Dia Pier |      |     | Number of Rails Required Per Panel |
|                                  | Sch 40                |    | Sch 80 | A               | C             | D             | Sch 40              |     | Sch 80 | Short        | Tall | A   |                                    |
|                                  | 57                    | 65 | 30     | No              | Every 3rd Bay | No            | 170                 | 180 | 69     | 69           | 69   | Yes |                                    |
| $\theta = 0$                     | 54                    | 62 | 30     | Yes             | Every 3rd Bay | No            | 162                 | 180 | 66     | 66           | 66   | Yes | 2                                  |
| $0 > \theta < 7.5$               | 55                    | 63 | 30     | Yes             | Every 3rd Bay | No            | 166                 | 180 | 66     | 66           | 66   | Yes | 2                                  |
| $7.5 > \theta < 15$              | 58                    | 66 | 30     | Yes             | Every 3rd Bay | Every 3rd Bay | 167                 | 180 | 59     | 66           | 66   | Yes | 2                                  |
| $15 > \theta < 22.5$             | 59                    | 68 | 30     | Yes             | Every 3rd Bay | Every 3rd Bay | 138                 | 158 | 46     | 69           | 69   | Yes | 2                                  |
| $22.5 > \theta < 30$             | 64                    | 73 | 30     | Yes             | Every 3rd Bay | Every 3rd Bay | 129                 | 147 | 32     | 70           | 70   | Yes | 2                                  |
| $30 > \theta < 37.5$             | 69                    | 78 | 30     | Yes             | Every 3rd Bay | Every 3rd Bay | 121                 | 139 | 32     | 73           | 73   | Yes | 2                                  |
| $37.5 > \theta < 45$             |                       |    |        |                 |               |               |                     |     |        |              |      |     |                                    |

| 170 mph Wind Load 81-90 psf Snow |                       |    |        |                 |               |               |                     |     |        |              |      |     |                                    |
|----------------------------------|-----------------------|----|--------|-----------------|---------------|---------------|---------------------|-----|--------|--------------|------|-----|------------------------------------|
| Tilt Angle $\theta$              | Standard Installation |    |        |                 |               |               | Braced Installation |     |        |              |      |     |                                    |
|                                  | Max (psf)             |    |        | Required Braces |               |               | Max (psf)           |     |        | 12" Dia Pier |      |     | Number of Rails Required Per Panel |
|                                  | Sch 40                |    | Sch 80 | A               | C             | D             | Sch 40              |     | Sch 80 | Short        | Tall | A   |                                    |
|                                  | 56                    | 64 | 30     | No              | Every 3rd Bay | No            | 168                 | 180 | 68     | 68           | 68   | Yes |                                    |
| $\theta = 0$                     | 53                    | 61 | 30     | Yes             | Every 3rd Bay | No            | 159                 | 180 | 68     | 68           | 68   | Yes | 2                                  |
| $0 > \theta < 7.5$               | 54                    | 62 | 30     | Yes             | Every 3rd Bay | No            | 162                 | 180 | 63     | 63           | 63   | Yes | 2                                  |
| $7.5 > \theta < 15$              | 56                    | 64 | 30     | Yes             | Every 3rd Bay | Every 3rd Bay | 158                 | 180 | 63     | 68           | 68   | Yes | 2                                  |
| $15 > \theta < 22.5$             | 57                    | 65 | 30     | Yes             | Every 3rd Bay | Every 3rd Bay | 130                 | 148 | 34     | 70           | 70   | Yes | 2                                  |
| $22.5 > \theta < 30$             | 62                    | 70 | 30     | Yes             | Every 3rd Bay | Every 3rd Bay | 122                 | 139 | 34     | 73           | 73   | Yes | 2                                  |
| $30 > \theta < 37.5$             | 65                    | 75 | 30     | Yes             | Every 3rd Bay | Every 3rd Bay | 114                 | 130 | 34     | 76           | 76   | Yes | 2                                  |
| $37.5 > \theta < 45$             |                       |    |        |                 |               |               |                     |     |        |              |      |     |                                    |

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## Configuration Tables for Ground Mount System 91 to 100 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 91-100 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |                                    |     |           |           |
|-----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$               | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 | Number of Rails Required Per Panel |     |           |           |
|                                   | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |                                    |     |           |           |
|                                   | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E                                  | F   | 40" x 66" | 40" x 78" |
| $\theta = 0$                      | 57                    | 65     | 30           | 30   | No              | Every 3rd Bay | No            | 171                 | 180    | 63           | 63   | Yes             | Yes                                | Yes | 2         | 2         |
| $0 > \theta < 7.5$                | 57                    | 65     | 30           | 30   | Yes             | Every 3rd Bay | No            | 171                 | 180    | 63           | 63   | Yes             | Yes                                | Yes | 2         | 2         |
| $7.5 > \theta < 15$               | 59                    | 68     | 30           | 30   | Yes             | Every 3rd Bay | No            | 178                 | 180    | 63           | 63   | Yes             | Yes                                | Yes | 2         | 2         |
| $15 > \theta < 22.5$              | 64                    | 73     | 30           | 32   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 60           | 60   | Yes             | Yes                                | Yes | 2         | 2         |
| $22.5 > \theta < 30$              | 70                    | 80     | 30           | 36   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 46           | 49   | Yes             | Yes                                | Yes | 2         | 2         |
| $30 > \theta < 37.5$              | 78                    | 89     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 39           | 60   | Yes             | Yes                                | Yes | 2         | 2         |
| $37.5 > \theta < 45$              | 87                    | 100    | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 31           | 60   | Yes             | Yes                                | Yes | 2         | 2         |

| 110 mph Wind Load 91-100 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |                                    |   |
|-----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|------------------------------------|---|
| Tilt Angle $\theta$               | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     | Number of Rails Required Per Panel |   |
|                                   | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |                                    |   |
|                                   | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   |                                    |   |
| $\theta = 0$                      | 57                    | 65     | 30           | 30   | No              | Every 3rd Bay | No            | 171                 | 180    | 59           | 59   | Yes             | Yes | Yes | 2                                  | 2 |
| $0 > \theta < 7.5$                | 56                    | 64     | 30           | 30   | Yes             | Every 3rd Bay | No            | 169                 | 180    | 59           | 59   | Yes             | Yes | Yes | 2                                  | 2 |
| $7.5 > \theta < 15$               | 56                    | 64     | 30           | 30   | Yes             | Every 3rd Bay | No            | 169                 | 180    | 59           | 59   | Yes             | Yes | Yes | 2                                  | 2 |
| $15 > \theta < 22.5$              | 63                    | 71     | 30           | 35   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 56           | 56   | Yes             | Yes | Yes | 2                                  | 2 |
| $22.5 > \theta < 30$              | 68                    | 78     | 30           | 39   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 50           | 53   | Yes             | Yes | Yes | 2                                  | 2 |
| $30 > \theta < 37.5$              | 75                    | 86     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 33           | 56   | Yes             | Yes | Yes | 2                                  | 2 |
| $37.5 > \theta < 45$              | 84                    | 95     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay | 177                 | 180    | 30           | 59   | Yes             | Yes | Yes | 2                                  | 2 |

| 120 mph Wind Load 91-100 psf Snow |                       |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |
|-----------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|---------------------|--------|--------------|------|-----------------|-----|-----|
| Tilt Angle $\theta$               | Standard Installation |        |              |      |                 |               |               | Braced Installation |        |              |      |                 |     |     |
|                                   | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |
|                                   | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   |
|                                   | Module Size           |        |              |      |                 |               |               |                     |        |              |      |                 |     |     |
| $\theta = 0$                      | 57                    | 65     | 30           | 30   | No              | Every 3rd Bay | No            | 171                 | 180    | 64           | 64   | Yes             | Yes | Yes |
| $0 > \theta < 7.5$                | 55                    | 63     | 30           | 30   | Yes             | Every 3rd Bay | No            | 166                 | 180    | 64           | 64   | Yes             | Yes | Yes |
| $7.5 > \theta < 15$               | 57                    | 66     | 30           | 31   | Yes             | Every 3rd Bay | No            | 172                 | 180    | 64           | 64   | Yes             | Yes | Yes |
| $15 > \theta < 22.5$              | 61                    | 70     | 30           | 37   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 58           | 58   | Yes             | Yes | Yes |
| $22.5 > \theta < 30$              | 66                    | 76     | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 46           | 58   | Yes             | Yes | Yes |
| $30 > \theta < 37.5$              | 73                    | 83     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay | 172                 | 180    | 36           | 61   | Yes             | Yes | Yes |
| $37.5 > \theta < 45$              | 80                    | 91     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay | 162                 | 180    | 30           | 64   | Yes             | Yes | Yes |

# Series 200

## Configuration Tables for Ground Mount System 91 to 100 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 91-100 psf Snow |                       |        |              |                 |               |               |                     |        |              |                 |     |     |                                    |           |
|-----------------------------------|-----------------------|--------|--------------|-----------------|---------------|---------------|---------------------|--------|--------------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle $\theta$               | Standard Installation |        |              |                 |               |               | Braced Installation |        |              |                 |     |     | Number of Rails Required Per Panel |           |
|                                   | Max (PS)              |        |              | Required Braces |               |               | Max (PS)            |        |              | Required Braces |     |     |                                    |           |
|                                   | Sch 40                | Sch 80 | 12" Dia Pier | A               | C             | D             | Sch 40              | Sch 80 | 12" Dia Pier | A               | E   | F   | 40" x 66"                          | 40" x 78" |
| $\theta = 0$                      | 56                    | 64     | 30           | No              | Every 3rd Bay | No            | 169                 | 180    | 67           | 67              | Yes | Yes | 2                                  | 2         |
| $0 > \theta < 7.5$                | 55                    | 62     | 30           | Yes             | Every 3rd Bay | No            | 164                 | 180    | 67           | 67              | Yes | Yes | 2                                  | 2         |
| $7.5 > \theta < 15$               | 56                    | 64     | 30           | Yes             | Every 3rd Bay | No            | 169                 | 180    | 67           | 67              | Yes | Yes | 2                                  | 2         |
| $15 > \theta < 22.5$              | 60                    | 68     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 58           | 58              | Yes | Yes | 2                                  | 2         |
| $22.5 > \theta < 30$              | 64                    | 73     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 170                 | 180    | 49           | 62              | Yes | Yes | 2                                  | 2         |
| $30 > \theta < 37.5$              | 70                    | 80     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 159                 | 180    | 39           | 64              | Yes | Yes | 2                                  | 2         |
| $37.5 > \theta < 45$              | 77                    | 88     | 30           | Yes             | Every 3rd Bay | Every 3rd Bay | 150                 | 171    | 30           | 64              | Yes | Yes | 2                                  | 2         |

| 140 mph Wind Load 91-100 psf Snow |                       |        |      |                 |               |               |                     |        |       |                 |     |     |                                    |   |           |           |
|-----------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|-------|-----------------|-----|-----|------------------------------------|---|-----------|-----------|
| Tilt Angle $\theta$               | Standard Installation |        |      |                 |               |               | Braced Installation |        |       |                 |     |     | Number of Rails Required Per Panel |   |           |           |
|                                   | Max (PS)              |        |      | Required Braces |               |               | Max (PS)            |        |       | Required Braces |     |     |                                    |   |           |           |
|                                   | Sch 40                | Sch 80 | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short | Tall            | A   | E   | F                                  |   |           |           |
|                                   | Module Size           |        |      |                 |               |               | Module Size         |        |       |                 |     |     | Module Size                        |   |           |           |
| $\theta = 0$                      | 56                    | 64     | 30   | No              | Every 3rd Bay | No            | 167                 | 180    | 69    | 69              | Yes | Yes | Yes                                | 2 | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                | 54                    | 61     | 30   | Yes             | Every 3rd Bay | No            | 162                 | 180    | 69    | 69              | Yes | Yes | Yes                                | 2 | 2         | 3         |
| $7.5 > \theta < 15$               | 55                    | 63     | 30   | Yes             | Every 3rd Bay | No            | 166                 | 180    | 66    | 66              | Yes | Yes | Yes                                | 2 | 2         | 2         |
| $15 > \theta < 22.5$              | 59                    | 67     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 176                 | 180    | 62    | 62              | Yes | Yes | Yes                                | 2 | 2         | 2         |
| $22.5 > \theta < 30$              | 62                    | 71     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 158                 | 180    | 52    | 64              | Yes | Yes | Yes                                | 2 | 2         | 2         |
| $30 > \theta < 37.5$              | 68                    | 77     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 148                 | 168    | 41    | 66              | Yes | Yes | Yes                                | 2 | 2         | 2         |
| $37.5 > \theta < 45$              | 74                    | 84     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 139                 | 158    | 30    | 69              | Yes | Yes | Yes                                | 2 | 2         | 2         |

| 150 mph Wind Load 91-100 psf Snow |                       |        |      |              |               |               |                     |        |       |          |     |     |                                    |             |              |           |  |                 |
|-----------------------------------|-----------------------|--------|------|--------------|---------------|---------------|---------------------|--------|-------|----------|-----|-----|------------------------------------|-------------|--------------|-----------|--|-----------------|
| Tilt Angle $\theta$               | Standard Installation |        |      |              |               |               | Braced Installation |        |       |          |     |     | Number of Rails Required Per Panel |             |              |           |  |                 |
|                                   | Max (PS)              |        |      | 12" Dia Pier |               |               | Required Braces     |        |       | Max (PS) |     |     |                                    |             | 12" Dia Pier |           |  | Required Braces |
|                                   | Sch 40                | Sch 80 | Tall | A            | C             | D             | Sch 40              | Sch 80 | Short | Tall     | A   | E   | F                                  | Module Size |              |           |  |                 |
|                                   |                       |        |      |              |               |               |                     |        |       |          |     |     | 40" x 66"                          |             |              | 40" x 78" |  |                 |
| $\theta = 0$                      | 55                    | 63     | 30   | No           | Every 3rd Bay | No            | 165                 | 180    | 71    | 71       | Yes | Yes | Yes                                | 2           | 3            |           |  |                 |
| $0 > \theta < 7.5$                | 53                    | 60     | 30   | Yes          | Every 3rd Bay | No            | 159                 | 180    | 71    | 71       | Yes | Yes | Yes                                | 2           | 3            |           |  |                 |
| $7.5 > \theta < 15$               | 54                    | 62     | 30   | Yes          | Every 3rd Bay | No            | 163                 | 180    | 66    | 66       | Yes | Yes | Yes                                | 2           | 3            |           |  |                 |
| $15 > \theta < 22.5$              | 57                    | 66     | 30   | Yes          | Every 3rd Bay | Every 3rd Bay | 172                 | 180    | 56    | 65       | Yes | Yes | Yes                                | 2           | 3            |           |  |                 |
| $22.5 > \theta < 30$              | 60                    | 68     | 30   | Yes          | Every 3rd Bay | Every 3rd Bay | 147                 | 168    | 44    | 66       | Yes | Yes | Yes                                | 2           | 2            |           |  |                 |
| $30 > \theta < 37.5$              | 65                    | 74     | 30   | Yes          | Every 3rd Bay | Every 3rd Bay | 138                 | 157    | 30    | 68       | Yes | Yes | Yes                                | 2           | 2            |           |  |                 |
| $37.5 > \theta < 45$              | 70                    | 80     | 30   | Yes          | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 30    | 71       | Yes | Yes | Yes                                | 2           | 2            |           |  |                 |

# Series 200

## Configuration Tables for Ground Mount System 91 to 100 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 91-100 psf Snow |                       |        |      |                 |     |               |                     |        |        |                 |      |     |                                    |     |
|-----------------------------------|-----------------------|--------|------|-----------------|-----|---------------|---------------------|--------|--------|-----------------|------|-----|------------------------------------|-----|
| Tilt Angle θ                      | Standard Installation |        |      |                 |     |               | Braced Installation |        |        |                 |      |     | Number of Rails Required Per Panel |     |
|                                   | 12" Dia Pier          |        |      | Required Braces |     |               | 12" Dia Pier        |        |        | Required Braces |      |     | Module Size                        |     |
|                                   | Max (psf)             |        | A    | C               | D   |               | Max (psf)           |        | Sch 80 | Short           | Tall | A   | E                                  | F   |
|                                   | Sch 40                | Sch 80 | Tall | Short           | 30  | 30            | Sch 40              | Sch 80 | 73     | 73              | 73   | Yes | Yes                                | Yes |
| θ = 0                             | 54                    | 62     | 30   | 30              | No  | Every 3rd Bay | 163                 | 180    | 73     | 73              | 73   | Yes | Yes                                | Yes |
| 0 > θ < 7.5                       | 52                    | 59     | 30   | 30              | Yes | Every 3rd Bay | 156                 | 178    | 73     | 73              | 73   | Yes | Yes                                | Yes |
| 7.5 > θ < 15                      | 53                    | 61     | 30   | 38              | Yes | Every 3rd Bay | 160                 | 180    | 66     | 66              | 66   | Yes | Yes                                | Yes |
| 15 > θ < 22.5                     | 56                    | 64     | 30   | 45              | Yes | Every 3rd Bay | 167                 | 180    | 59     | 66              | 66   | Yes | Yes                                | Yes |
| 22.5 > θ < 30                     | 58                    | 66     | 30   | 49              | Yes | Every 3rd Bay | 138                 | 158    | 46     | 69              | 69   | Yes | Yes                                | Yes |
| 30 > θ < 37.5                     | 63                    | 72     | 30   | 54              | Yes | Every 3rd Bay | 129                 | 147    | 32     | 70              | 70   | Yes | Yes                                | Yes |
| 37.5 > θ < 45                     | 68                    | 77     | 30   | 57              | Yes | Every 3rd Bay | 121                 | 139    | 32     | 73              | 73   | Yes | Yes                                | Yes |

| 170 mph Wind Load 91-100 psf Snow |                       |        |      |                 |     |               |                     |        |        |                 |      |     |                                    |     |
|-----------------------------------|-----------------------|--------|------|-----------------|-----|---------------|---------------------|--------|--------|-----------------|------|-----|------------------------------------|-----|
| Tilt Angle θ                      | Standard Installation |        |      |                 |     |               | Braced Installation |        |        |                 |      |     | Number of Rails Required Per Panel |     |
|                                   | 12" Dia Pier          |        |      | Required Braces |     |               | 12" Dia Pier        |        |        | Required Braces |      |     | Module Size                        |     |
|                                   | Max (psf)             |        | A    | C               | D   |               | Max (psf)           |        | Sch 80 | Short           | Tall | A   | E                                  | F   |
|                                   | Sch 40                | Sch 80 | Tall | Short           | 30  | 30            | Sch 40              | Sch 80 | 76     | 76              | 76   | Yes | Yes                                | Yes |
| θ = 0                             | 54                    | 61     | 30   | 30              | No  | Every 3rd Bay | 162                 | 180    | 76     | 76              | 76   | Yes | Yes                                | Yes |
| 0 > θ < 7.5                       | 51                    | 58     | 30   | 31              | Yes | Every 3rd Bay | 154                 | 175    | 73     | 73              | 73   | Yes | Yes                                | Yes |
| 7.5 > θ < 15                      | 52                    | 60     | 30   | 39              | Yes | Every 3rd Bay | 157                 | 179    | 68     | 68              | 68   | Yes | Yes                                | Yes |
| 15 > θ < 22.5                     | 55                    | 63     | 30   | 47              | Yes | Every 3rd Bay | 158                 | 180    | 63     | 68              | 68   | Yes | Yes                                | Yes |
| 22.5 > θ < 30                     | 56                    | 64     | 30   | 51              | Yes | Every 3rd Bay | 130                 | 148    | 49     | 70              | 70   | Yes | Yes                                | Yes |
| 30 > θ < 37.5                     | 61                    | 69     | 30   | 56              | Yes | Every 3rd Bay | 122                 | 139    | 33     | 73              | 73   | Yes | Yes                                | Yes |
| 37.5 > θ < 45                     | 65                    | 74     | 30   | 59              | Yes | Every 3rd Bay | 114                 | 130    | 33     | 76              | 76   | Yes | Yes                                | Yes |

# Series 200

## Configuration Tables for Ground Mount System 101 to 110 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 101-110 psf Snow |                       |        |      |                 |               |               |                     |        |      |                 |     |     |
|------------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|------|-----------------|-----|-----|
| Tilt Angle θ                       | Standard Installation |        |      |                 |               |               | Braced Installation |        |      |                 |     |     |
|                                    | 12" Dia Pier          |        |      | Required Braces |               |               | 12" Dia Pier        |        |      | Required Braces |     |     |
|                                    | Max (PS)              |        | Tall | A               | C             | D             | Max (PS)            |        | Tall | A               | E   | F   |
|                                    | Sch 40                | Sch 80 |      |                 |               |               | Sch 40              | Sch 80 |      |                 |     |     |
| θ = 0                              | 54                    | 62     | 30   | No              | Every 3rd Bay | No            | 163                 | 180    | 63   | Yes             | Yes | Yes |
| 0 > θ < 7.5                        | 55                    | 62     | 30   | Yes             | Every 3rd Bay | No            | 164                 | 180    | 63   | Yes             | Yes | Yes |
| 7.5 > θ < 15                       | 55                    | 63     | 30   | Yes             | Every 3rd Bay | No            | 165                 | 180    | 63   | Yes             | Yes | Yes |
| 15 > θ < 22.5                      | 56                    | 64     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 168                 | 180    | 63   | Yes             | Yes | Yes |
| 22.5 > θ < 30                      | 58                    | 66     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 173                 | 180    | 63   | Yes             | Yes | Yes |
| 30 > θ < 37.5                      | 61                    | 69     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 63   | Yes             | Yes | Yes |
| 37.5 > θ < 45                      | 64                    | 73     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 60   | Yes             | Yes | Yes |

| 110 mph Wind Load 101-110 psf Snow |                       |        |      |                 |               |               |                     |        |      |                 |     |     |
|------------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|------|-----------------|-----|-----|
| Tilt Angle θ                       | Standard Installation |        |      |                 |               |               | Braced Installation |        |      |                 |     |     |
|                                    | 12" Dia Pier          |        |      | Required Braces |               |               | 12" Dia Pier        |        |      | Required Braces |     |     |
|                                    | Max (PS)              |        | Tall | A               | C             | D             | Max (PS)            |        | Tall | A               | E   | F   |
|                                    | Sch 40                | Sch 80 |      |                 |               |               | Sch 40              | Sch 80 |      |                 |     |     |
| θ = 0                              | 54                    | 62     | 30   | No              | Every 3rd Bay | No            | 163                 | 180    | 59   | Yes             | Yes | Yes |
| 0 > θ < 7.5                        | 54                    | 62     | 30   | Yes             | Every 3rd Bay | No            | 162                 | 180    | 59   | Yes             | Yes | Yes |
| 7.5 > θ < 15                       | 54                    | 62     | 30   | Yes             | Every 3rd Bay | No            | 162                 | 180    | 59   | Yes             | Yes | Yes |
| 15 > θ < 22.5                      | 55                    | 63     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 165                 | 180    | 59   | Yes             | Yes | Yes |
| 22.5 > θ < 30                      | 57                    | 65     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 170                 | 180    | 59   | Yes             | Yes | Yes |
| 30 > θ < 37.5                      | 60                    | 69     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 180                 | 180    | 59   | Yes             | Yes | Yes |
| 37.5 > θ < 45                      | 63                    | 72     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 177                 | 180    | 59   | Yes             | Yes | Yes |

| 120 mph Wind Load 101-110 psf Snow |                       |        |      |                 |               |               |                     |        |      |                 |     |     |
|------------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|------|-----------------|-----|-----|
| Tilt Angle θ                       | Standard Installation |        |      |                 |               |               | Braced Installation |        |      |                 |     |     |
|                                    | 12" Dia Pier          |        |      | Required Braces |               |               | 12" Dia Pier        |        |      | Required Braces |     |     |
|                                    | Max (PS)              |        | Tall | A               | C             | D             | Max (PS)            |        | Tall | A               | E   | F   |
|                                    | Sch 40                | Sch 80 |      |                 |               |               | Sch 40              | Sch 80 |      |                 |     |     |
| θ = 0                              | 54                    | 62     | 30   | No              | Every 3rd Bay | No            | 163                 | 180    | 64   | Yes             | Yes | Yes |
| 0 > θ < 7.5                        | 53                    | 61     | 30   | Yes             | Every 3rd Bay | No            | 160                 | 180    | 64   | Yes             | Yes | Yes |
| 7.5 > θ < 15                       | 54                    | 61     | 30   | Yes             | Every 3rd Bay | No            | 161                 | 180    | 64   | Yes             | Yes | Yes |
| 15 > θ < 22.5                      | 54                    | 62     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 163                 | 180    | 64   | Yes             | Yes | Yes |
| 22.5 > θ < 30                      | 56                    | 64     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 167                 | 180    | 64   | Yes             | Yes | Yes |
| 30 > θ < 37.5                      | 59                    | 67     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 172                 | 180    | 64   | Yes             | Yes | Yes |
| 37.5 > θ < 45                      | 62                    | 70     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 162                 | 180    | 58   | Yes             | Yes | Yes |

# Series 200

## Configuration Tables for Ground Mount System 101 to 110 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 101-110 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |           |           |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|---|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |   |           |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |   |           |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |   |           |           |
|                                    |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |           |           |
| $\theta = 0$                       | 54                    | 62     | 30           | 30   | No              | Every 3rd Bay | No                  | 163    | 180          | 67    | 67              | Yes | Yes                                | Yes | 2 | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                 | 53                    | 60     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 158    | 180          | 67    | 67              | Yes | Yes                                | Yes | 2 | 3         | 3         |
| $7.5 > \theta < 15$                | 53                    | 60     | 30           | 32   | Yes             | Every 3rd Bay | No                  | 158    | 180          | 67    | 67              | Yes | Yes                                | Yes | 2 | 3         | 3         |
| $15 > \theta < 22.5$               | 53                    | 61     | 30           | 37   | Yes             | Every 3rd Bay | Every 3rd Bay       | 160    | 180          | 67    | 67              | Yes | Yes                                | Yes | 2 | 3         | 3         |
| $22.5 > \theta < 30$               | 55                    | 63     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay       | 164    | 180          | 67    | 67              | Yes | Yes                                | Yes | 2 | 3         | 3         |
| $30 > \theta < 37.5$               | 58                    | 66     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 159    | 180          | 67    | 67              | Yes | Yes                                | Yes | 2 | 2         | 2         |
| $37.5 > \theta < 45$               | 60                    | 69     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 150    | 171          | 58    | 64              | Yes | Yes                                | Yes | 2 | 2         | 2         |

| 140 mph Wind Load 101-110 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |           |           |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|---|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |   |           |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |   |           |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |   |           |           |
|                                    | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |   |           |           |
| $\theta = 0$                       | 54                    | 61     | 30           | 30   | No              | Every 3rd Bay | No                  | 161    | 180          | 69    | 69              | Yes | Yes                                | 2   | 2 | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                 | 52                    | 59     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 156    | 178          | 69    | 69              | Yes | Yes                                | Yes | 2 | 2         | 3         |
| $7.5 > \theta < 15$                | 52                    | 59     | 30           | 33   | Yes             | Every 3rd Bay | No                  | 156    | 178          | 69    | 69              | Yes | Yes                                | Yes | 2 | 2         | 3         |
| $15 > \theta < 22.5$               | 52                    | 60     | 30           | 39   | Yes             | Every 3rd Bay | Every 3rd Bay       | 157    | 180          | 69    | 69              | Yes | Yes                                | Yes | 2 | 2         | 3         |
| $22.5 > \theta < 30$               | 54                    | 61     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 158    | 180          | 69    | 69              | Yes | Yes                                | Yes | 2 | 2         | 3         |
| $30 > \theta < 37.5$               | 56                    | 64     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 148    | 168          | 62    | 66              | Yes | Yes                                | Yes | 2 | 2         | 3         |
| $37.5 > \theta < 45$               | 59                    | 67     | 30           | 49   | Yes             | Every 3rd Bay | Every 3rd Bay       | 139    | 158          | 52    | 69              | Yes | Yes                                | Yes | 2 | 2         | 2         |

| 150 mph Wind Load 101-110 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |     |           |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |     |           |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  | F   |           |           |
|                                    | Module Size           |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |     |           |           |
| $\theta = 0$                       | 53                    | 61     | 30           | 30   | No              | Every 3rd Bay | No                  | 159    | 180          | 71    | 71              | Yes | Yes                                | Yes | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                 | 51                    | 58     | 30           | 30   | Yes             | Every 3rd Bay | No                  | 154    | 175          | 71    | 71              | Yes | Yes                                | Yes | 2         | 3         |
| $7.5 > \theta < 15$                | 51                    | 58     | 30           | 35   | Yes             | Every 3rd Bay | No                  | 153    | 175          | 71    | 71              | Yes | Yes                                | Yes | 2         | 3         |
| $15 > \theta < 22.5$               | 52                    | 59     | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay       | 155    | 176          | 71    | 71              | Yes | Yes                                | Yes | 2         | 3         |
| $22.5 > \theta < 30$               | 53                    | 60     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | 147    | 168          | 66    | 66              | Yes | Yes                                | Yes | 2         | 3         |
| $30 > \theta < 37.5$               | 55                    | 62     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 157          | 65    | 68              | Yes | Yes                                | Yes | 2         | 3         |
| $37.5 > \theta < 45$               | 57                    | 65     | 30           | 51   | Yes             | Every 3rd Bay | Every 3rd Bay       | 130    | 148          | 55    | 71              | Yes | Yes                                | Yes | 2         | 3         |

# Series 200

## Configuration Tables for Ground Mount System 101 to 110 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 101-110 psf Snow |                       |        |        |                 |      |               |                     |               |        |                 |       |      |                                    |     |     |
|------------------------------------|-----------------------|--------|--------|-----------------|------|---------------|---------------------|---------------|--------|-----------------|-------|------|------------------------------------|-----|-----|
| Tilt Angle $\theta$                | Standard Installation |        |        |                 |      |               | Braced Installation |               |        |                 |       |      | Number of Rails Required Per Panel |     |     |
|                                    | 12" Dia Pier          |        |        | Required Braces |      |               | 12" Dia Pier        |               |        | Required Braces |       |      |                                    |     |     |
|                                    | Max (PS)              | Sch 40 | Sch 80 | Short           | Tall | A             | C                   | D             | Sch 40 | Sch 80          | Short | Tall | A                                  | E   | F   |
|                                    | Sch 40                | Sch 80 | Short  | Tall            | A    | No            | Every 3rd Bay       | No            | 158    | 180             | 73    | 73   | Yes                                | Yes | Yes |
| $\theta = 0$                       | 53                    | 60     | 30     | 30              | No   | Every 3rd Bay | No                  | No            | 151    | 173             | 73    | 73   | Yes                                | Yes | Yes |
| $0 > \theta < 7.5$                 | 50                    | 58     | 30     | 30              | Yes  | Every 3rd Bay | No                  | No            | 151    | 172             | 73    | 73   | Yes                                | Yes | Yes |
| $7.5 > \theta < 15$                | 50                    | 57     | 30     | 36              | Yes  | Every 3rd Bay | No                  | No            | 151    | 172             | 73    | 73   | Yes                                | Yes | Yes |
| $15 > \theta < 22.5$               | 51                    | 58     | 30     | 43              | Yes  | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 152    | 173             | 73    | 73   | Yes                                | Yes | Yes |
| $22.5 > \theta < 30$               | 51                    | 59     | 30     | 47              | Yes  | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 138    | 158             | 66    | 69   | Yes                                | Yes | Yes |
| $30 > \theta < 37.5$               | 53                    | 61     | 30     | 50              | Yes  | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 129    | 147             | 58    | 70   | Yes                                | Yes | Yes |
| $37.5 > \theta < 45$               | 55                    | 63     | 30     | 53              | Yes  | Every 3rd Bay | Every 3rd Bay       | Every 3rd Bay | 121    | 139             | 46    | 73   | Yes                                | Yes | Yes |

| 170 mph Wind Load 101-110 psf Snow |                       |        |      |                 |               |               |                     |        |       |                 |     |     |                                    |             |           |
|------------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|-------|-----------------|-----|-----|------------------------------------|-------------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |      |                 |               |               | Braced Installation |        |       |                 |     |     | Number of Rails Required Per Panel |             |           |
|                                    | 12" Dia Pier          |        |      | Required Braces |               |               | 12" Dia Pier        |        |       | Required Braces |     |     |                                    |             |           |
|                                    | Max (PS)              |        | Tall | A               | C             | D             | Sch 40              | Sch 80 | Short | Tall            | A   | E   | F                                  | Module Size |           |
|                                    | Sch 40                | Sch 80 |      |                 |               |               |                     |        |       |                 |     |     |                                    | 40" x 66"   | 40" x 78" |
| $\theta = 0$                       | 52                    | 59     | 30   | No              | Every 3rd Bay | No            | 156                 | 178    | 76    | 76              | Yes | Yes | Yes                                | 3           | 3         |
| $0 > \theta < 7.5$                 | 50                    | 57     | 30   | Yes             | Every 3rd Bay | No            | 149                 | 170    | 76    | 76              | Yes | Yes | Yes                                | 3           | 3         |
| $7.5 > \theta < 15$                | 49                    | 56     | 30   | Yes             | Every 3rd Bay | No            | 148                 | 169    | 76    | 76              | Yes | Yes | Yes                                | 3           | 3         |
| $15 > \theta < 22.5$               | 50                    | 57     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 149                 | 170    | 73    | 73              | Yes | Yes | Yes                                | 3           | 3         |
| $22.5 > \theta < 30$               | 50                    | 57     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 61    | 70              | Yes | Yes | Yes                                | 3           | 3         |
| $30 > \theta < 37.5$               | 52                    | 59     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 122                 | 139    | 61    | 73              | Yes | Yes | Yes                                | 3           | 3         |
| $37.5 > \theta < 45$               | 54                    | 62     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 114                 | 130    | 48    | 76              | Yes | Yes | Yes                                | 3           | 3         |

# Series 200

## Configuration Tables for Ground Mount System 111 to 120 psf Snow Loads (3 Module Panels)

| 100 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |               |  |                     |        |              |      |                 |     |     |           |                                    |  |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|--|---------------------|--------|--------------|------|-----------------|-----|-----|-----------|------------------------------------|--|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               |               |  | Braced Installation |        |              |      |                 |     |     |           | Number of Rails Required Per Panel |  |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               |  | Max (PS)            |        | 12" Dia Pier |      | Required Braces |     |     |           |                                    |  |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             |  | Sch 40              | Sch 80 | Short        | Tall | A               | E   | F   | 40" x 66" | 40" x 78"                          |  |
| $\theta = 0$                       | 52                    | 60     | 30           | 30   | No              | Every 3rd Bay | No            |  | 157                 | 179    | 63           | 63   | Yes             | Yes | Yes | 2         | 3                                  |  |
| $0 > \theta < 7.5$                 | 52                    | 60     | 32           | 32   | Yes             | Every 3rd Bay | No            |  | 157                 | 179    | 63           | 63   | Yes             | Yes | Yes | 2         | 3                                  |  |
| $7.5 > \theta < 15$                | 53                    | 61     | 30           | 30   | Yes             | Every 3rd Bay | No            |  | 159                 | 180    | 63           | 63   | Yes             | Yes | Yes | 2         | 3                                  |  |
| $15 > \theta < 22.5$               | 54                    | 62     | 30           | 30   | Yes             | Every 3rd Bay | Every 3rd Bay |  | 162                 | 180    | 63           | 63   | Yes             | Yes | Yes | 2         | 3                                  |  |
| $22.5 > \theta < 30$               | 56                    | 63     | 30           | 32   | Yes             | Every 3rd Bay | Every 3rd Bay |  | 167                 | 180    | 63           | 63   | Yes             | Yes | Yes | 2         | 2                                  |  |
| $30 > \theta < 37.5$               | 59                    | 67     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay |  | 176                 | 180    | 60           | 60   | Yes             | Yes | Yes | 2         | 2                                  |  |
| $37.5 > \theta < 45$               | 62                    | 71     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay |  | 180                 | 180    | 39           | 60   | Yes             | Yes | Yes | 2         | 2                                  |  |

| 110 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |               |        |                     |       |              |     |                 |     |                                    |           |  |  |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------|--------|---------------------|-------|--------------|-----|-----------------|-----|------------------------------------|-----------|--|--|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               |               |        | Braced Installation |       |              |     |                 |     | Number of Rails Required Per Panel |           |  |  |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               |               |        | Max (PS)            |       | 12" Dia Pier |     | Required Braces |     | Module Size                        |           |  |  |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D             | Sch 40 | Sch 80              | Short | Tall         | A   | E               | F   | 40" x 66"                          | 40" x 78" |  |  |
| $\theta = 0$                       | 52                    | 60     | 30           | 30   | No              | Every 3rd Bay | No            | 157    | 179                 | 59    | 59           | Yes | Yes             | Yes | 2                                  | 3         |  |  |
| $0 > \theta < 7.5$                 | 52                    | 60     | 33           | 33   | Yes             | Every 3rd Bay | No            | 157    | 179                 | 59    | 59           | Yes | Yes             | Yes | 2                                  | 3         |  |  |
| $7.5 > \theta < 15$                | 52                    | 60     | 30           | 30   | Yes             | Every 3rd Bay | No            | 157    | 179                 | 59    | 59           | Yes | Yes             | Yes | 2                                  | 3         |  |  |
| $15 > \theta < 22.5$               | 53                    | 61     | 30           | 33   | Yes             | Every 3rd Bay | Every 3rd Bay | 160    | 180                 | 59    | 59           | Yes | Yes             | Yes | 2                                  | 3         |  |  |
| $22.5 > \theta < 30$               | 55                    | 62     | 30           | 36   | Yes             | Every 3rd Bay | Every 3rd Bay | 164    | 180                 | 59    | 59           | Yes | Yes             | Yes | 2                                  | 3         |  |  |
| $30 > \theta < 37.5$               | 58                    | 66     | 30           | 38   | Yes             | Every 3rd Bay | Every 3rd Bay | 174    | 180                 | 53    | 56           | Yes | Yes             | Yes | 2                                  | 2         |  |  |
| $37.5 > \theta < 45$               | 61                    | 70     | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay | 177    | 180                 | 42    | 59           | Yes | Yes             | Yes | 2                                  | 2         |  |  |

| 120 mph Wind Load 111-120 psf Snow |                       |        |              |      |     |                 |               |                     |        |              |      |     |                 |     |                 |   |  |  |                                    |  |
|------------------------------------|-----------------------|--------|--------------|------|-----|-----------------|---------------|---------------------|--------|--------------|------|-----|-----------------|-----|-----------------|---|--|--|------------------------------------|--|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |     |                 |               | Braced Installation |        |              |      |     |                 |     | Required Braces |   |  |  | Number of Rails Required Per Panel |  |
|                                    | Max (PS)              |        | 12" Dia Pier |      |     | Required Braces |               | Max (PS)            |        | 12" Dia Pier |      |     | Required Braces |     |                 |   |  |  |                                    |  |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A   | C               | D             | Sch 40              | Sch 80 | Short        | Tall | A   | E               | F   | Module Size     |   |  |  |                                    |  |
| $\theta = 0$                       | 52                    | 60     | 30           | 30   | No  | Every 3rd Bay   | No            | 157                 | 179    | 64           | 64   | Yes | Yes             | Yes | 2               | 3 |  |  |                                    |  |
| $0 > \theta < 7.5$                 | 52                    | 59     | 30           | 30   | Yes | Every 3rd Bay   | No            | 155                 | 177    | 64           | 64   | Yes | Yes             | Yes | 2               | 3 |  |  |                                    |  |
| $7.5 > \theta < 15$                | 52                    | 59     | 30           | 30   | Yes | Every 3rd Bay   | No            | 155                 | 177    | 64           | 64   | Yes | Yes             | Yes | 2               | 3 |  |  |                                    |  |
| $15 > \theta < 22.5$               | 52                    | 60     | 30           | 35   | Yes | Every 3rd Bay   | Every 3rd Bay | 157                 | 180    | 64           | 64   | Yes | Yes             | Yes | 2               | 3 |  |  |                                    |  |
| $22.5 > \theta < 30$               | 54                    | 62     | 30           | 38   | Yes | Every 3rd Bay   | Every 3rd Bay | 162                 | 180    | 64           | 64   | Yes | Yes             | Yes | 2               | 3 |  |  |                                    |  |
| $30 > \theta < 37.5$               | 57                    | 65     | 30           | 41   | Yes | Every 3rd Bay   | Every 3rd Bay | 172                 | 180    | 54           | 61   | Yes | Yes             | Yes | 2               | 2 |  |  |                                    |  |
| $37.5 > \theta < 45$               | 60                    | 68     | 30           | 44   | Yes | Every 3rd Bay   | Every 3rd Bay | 162                 | 180    | 36           | 64   | Yes | Yes             | Yes | 2               | 2 |  |  |                                    |  |

# Series 200

## Configuration Tables for Ground Mount System 111 to 120 psf Snow Loads (3 Module Panels)

| 130 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |             |           |           |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|-------------|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     |             |           |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |             |           |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E           |           |           |
|                                    |                       |        |              |      |                 |               |                     |        |              |       |                 |     | Module Size |           |           |
| $\theta = 0$                       | 52                    | 60     | 30           | 30   | No              | Every 3rd Bay | No                  | 157    | 179          | 67    | 67              | Yes | Yes         | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                 | 51                    | 58     | 31           | 31   | Yes             | Every 3rd Bay | No                  | 153    | 174          | 67    | 67              | Yes | Yes         | 2         | 3         |
| $7.5 > \theta < 15$                | 51                    | 58     | 31           | 31   | Yes             | Every 3rd Bay | No                  | 153    | 175          | 67    | 67              | Yes | Yes         | 2         | 3         |
| $15 > \theta < 22.5$               | 52                    | 59     | 30           | 37   | Yes             | Every 3rd Bay | Every 3rd Bay       | 155    | 177          | 67    | 67              | Yes | Yes         | 2         | 3         |
| $22.5 > \theta < 30$               | 53                    | 61     | 30           | 40   | Yes             | Every 3rd Bay | Every 3rd Bay       | 159    | 180          | 67    | 67              | Yes | Yes         | 2         | 3         |
| $30 > \theta < 37.5$               | 56                    | 64     | 30           | 43   | Yes             | Every 3rd Bay | Every 3rd Bay       | 159    | 180          | 58    | 64              | Yes | Yes         | 2         | 3         |
| $37.5 > \theta < 45$               | 58                    | 67     | 30           | 46   | Yes             | Every 3rd Bay | Every 3rd Bay       | 150    | 171          | 38    | 64              | Yes | Yes         | 2         | 2         |

| 140 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |           |   |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----------|---|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |           |   |
|                                    | Max (PSF)             |        | 12" Dia Pier |      | Required Braces |               | Max (PSF)           |        | 12" Dia Pier |       | Required Braces |     |                                    |           |   |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  |           |   |
|                                    |                       |        |              |      |                 |               |                     |        |              |       |                 |     | 40" x 66"                          | 40" x 78" |   |
| $\theta = 0$                       | 52                    | 59     | 30           | 30   | No              | Every 3rd Bay | No                  | 155    | 177          | 69    | 69              | Yes | Yes                                | 2         | 3 |
| $0 > \theta < 7.5$                 | 50                    | 57     | 33           | 33   | Yes             | Every 3rd Bay | No                  | 151    | 172          | 69    | 69              | Yes | Yes                                | 2         | 3 |
| $7.5 > \theta < 15$                | 50                    | 57     | 30           | 33   | Yes             | Every 3rd Bay | No                  | 151    | 172          | 69    | 69              | Yes | Yes                                | 2         | 3 |
| $15 > \theta < 22.5$               | 51                    | 58     | 30           | 39   | Yes             | Every 3rd Bay | Every 3rd Bay       | 153    | 174          | 69    | 69              | Yes | Yes                                | 2         | 3 |
| $22.5 > \theta < 30$               | 52                    | 60     | 30           | 42   | Yes             | Every 3rd Bay | Every 3rd Bay       | 157    | 179          | 69    | 69              | Yes | Yes                                | 2         | 3 |
| $30 > \theta < 37.5$               | 55                    | 62     | 30           | 45   | Yes             | Every 3rd Bay | Every 3rd Bay       | 148    | 168          | 52    | 66              | Yes | Yes                                | 2         | 3 |
| $37.5 > \theta < 45$               | 57                    | 65     | 30           | 48   | Yes             | Every 3rd Bay | Every 3rd Bay       | 139    | 158          | 40    | 69              | Yes | Yes                                | 2         | 3 |

| 150 mph Wind Load 111-120 psf Snow |                       |        |              |      |                 |               |                     |        |              |       |                 |     |                                    |           |           |
|------------------------------------|-----------------------|--------|--------------|------|-----------------|---------------|---------------------|--------|--------------|-------|-----------------|-----|------------------------------------|-----------|-----------|
| Tilt Angle $\theta$                | Standard Installation |        |              |      |                 |               | Braced Installation |        |              |       |                 |     | Number of Rails Required Per Panel |           |           |
|                                    | Max (PS)              |        | 12" Dia Pier |      | Required Braces |               | Max (PS)            |        | 12" Dia Pier |       | Required Braces |     |                                    |           |           |
|                                    | Sch 40                | Sch 80 | Short        | Tall | A               | C             | D                   | Sch 40 | Sch 80       | Short | Tall            | A   | E                                  |           |           |
|                                    |                       |        |              |      |                 |               |                     |        |              |       |                 |     | Module Size                        |           |           |
| $\theta = 0$                       | 51                    | 59     | 30           | 30   | No              | Every 3rd Bay | No                  | 154    | 176          | 71    | 71              | Yes | Yes                                | 40" x 66" | 40" x 78" |
| $0 > \theta < 7.5$                 | 50                    | 57     | 34           | 34   | Yes             | Every 3rd Bay | No                  | 149    | 170          | 71    | 71              | Yes | Yes                                | 2         | 3         |
| $7.5 > \theta < 15$                | 49                    | 56     | 30           | 34   | Yes             | Every 3rd Bay | No                  | 148    | 169          | 71    | 71              | Yes | Yes                                | 3         | 3         |
| $15 > \theta < 22.5$               | 50                    | 57     | 30           | 41   | Yes             | Every 3rd Bay | Every 3rd Bay       | 150    | 171          | 71    | 71              | Yes | Yes                                | 3         | 3         |
| $22.5 > \theta < 30$               | 51                    | 59     | 30           | 44   | Yes             | Every 3rd Bay | Every 3rd Bay       | 147    | 168          | 65    | 66              | Yes | Yes                                | 3         | 3         |
| $30 > \theta < 37.5$               | 53                    | 61     | 30           | 47   | Yes             | Every 3rd Bay | Every 3rd Bay       | 138    | 157          | 55    | 68              | Yes | Yes                                | 2         | 3         |
| $37.5 > \theta < 45$               | 56                    | 63     | 30           | 50   | Yes             | Every 3rd Bay | Every 3rd Bay       | 130    | 148          | 30    | 71              | Yes | Yes                                | 2         | 3         |

# Series 200

## Configuration Tables for Ground Mount System 111 to 120 psf Snow Loads (3 Module Panels)

| 160 mph Wind Load 111-120 psf Snow |                       |        |      |                 |               |               |                     |        |      |                 |     |     |                                    |           |
|------------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle θ                       | Standard Installation |        |      |                 |               |               | Braced Installation |        |      |                 |     |     | Number of Rails Required Per Panel |           |
|                                    | 12" Dia Pier          |        |      | Required Braces |               |               | 12" Dia Pier        |        |      | Required Braces |     |     | Module Size                        |           |
|                                    | Max (psf)             |        | Tall | A               | C             | D             | Max (psf)           |        | Tall | A               | E   | F   | 40" x 66"                          |           |
|                                    | Sch 40                | Sch 80 |      |                 |               |               | Sch 40              | Sch 80 |      |                 |     |     | 40" x 66"                          | 40" x 78" |
| θ = 0                              | 51                    | 58     | 30   | No              | Every 3rd Bay | No            | 152                 | 174    | 73   | Yes             | Yes | Yes | 3                                  | 3         |
| 0 > θ < 7.5                        | 49                    | 56     | 30   | Yes             | Every 3rd Bay | No            | 147                 | 167    | 73   | Yes             | Yes | Yes | 3                                  | 3         |
| 7.5 > θ < 15                       | 49                    | 56     | 30   | Yes             | Every 3rd Bay | No            | 146                 | 167    | 73   | Yes             | Yes | Yes | 3                                  | 3         |
| 15 > θ < 22.5                      | 49                    | 56     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 147                 | 168    | 73   | Yes             | Yes | Yes | 3                                  | 3         |
| 22.5 > θ < 30                      | 50                    | 57     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 138                 | 158    | 66   | Yes             | Yes | Yes | 3                                  | 3         |
| 30 > θ < 37.5                      | 52                    | 59     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 129                 | 147    | 45   | Yes             | Yes | Yes | 3                                  | 3         |
| 37.5 > θ < 45                      | 54                    | 62     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 121                 | 139    | 31   | Yes             | Yes | Yes | 2                                  | 3         |

| 170 mph Wind Load 111-120 psf Snow |                       |        |      |                 |               |               |                     |        |      |                 |     |     |                                    |           |
|------------------------------------|-----------------------|--------|------|-----------------|---------------|---------------|---------------------|--------|------|-----------------|-----|-----|------------------------------------|-----------|
| Tilt Angle θ                       | Standard Installation |        |      |                 |               |               | Braced Installation |        |      |                 |     |     | Number of Rails Required Per Panel |           |
|                                    | 12" Dia Pier          |        |      | Required Braces |               |               | 12" Dia Pier        |        |      | Required Braces |     |     | Module Size                        |           |
|                                    | Max (psf)             |        | Tall | A               | C             | D             | Max (psf)           |        | Tall | A               | E   | F   | 40" x 66"                          |           |
|                                    | Sch 40                | Sch 80 |      |                 |               |               | Sch 40              | Sch 80 |      |                 |     |     | 40" x 66"                          | 40" x 78" |
| θ = 0                              | 50                    | 57     | 30   | No              | Every 3rd Bay | No            | 151                 | 172    | 76   | Yes             | Yes | Yes | 3                                  | 3         |
| 0 > θ < 7.5                        | 48                    | 55     | 30   | Yes             | Every 3rd Bay | No            | 144                 | 165    | 76   | Yes             | Yes | Yes | 3                                  | 3         |
| 7.5 > θ < 15                       | 48                    | 55     | 30   | Yes             | Every 3rd Bay | No            | 144                 | 164    | 76   | Yes             | Yes | Yes | 3                                  | 3         |
| 15 > θ < 22.5                      | 48                    | 55     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 145                 | 165    | 76   | Yes             | Yes | Yes | 3                                  | 3         |
| 22.5 > θ < 30                      | 49                    | 56     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 130                 | 148    | 60   | Yes             | Yes | Yes | 3                                  | 3         |
| 30 > θ < 37.5                      | 51                    | 58     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 122                 | 139    | 47   | Yes             | Yes | Yes | 3                                  | 3         |
| 37.5 > θ < 45                      | 53                    | 60     | 30   | Yes             | Every 3rd Bay | Every 3rd Bay | 114                 | 130    | 32   | Yes             | Yes | Yes | 3                                  | 3         |

# Series 200

## Structural Calculations for Ground Mount Solar Rack

Notes:

1) Design guidelines for these calculations are listed below.

|            |                           |               |   |
|------------|---------------------------|---------------|---|
| Wind Loads | 100 to 170 mph Exposure C | Risk Category | I |
| Seismic    | Seismic Design Category D |               |   |
| Snow Loads | 0 to 120 psf Ground Snow  |               |   |

2) Design calculations assume rail span and overhangs are constant as shown on following sketch.

3) Rail design values are as follows

|    |   |                      |
|----|---|----------------------|
| A  | = | 0.68 in <sup>2</sup> |
| S  | = | 0.40 in <sup>3</sup> |
| I  | = | 0.63 in <sup>4</sup> |
| Fb | = | 15.20 ksi            |

4) Schedule 40 and Schedule 80 pipe design values are as follows

| Sch 40 Pipe |   | Sch 80 Pipe          |                          |
|-------------|---|----------------------|--------------------------|
| A           | = | 0.75 in <sup>2</sup> | A = 1.00 in <sup>2</sup> |
| S           | = | 0.31 in <sup>3</sup> | S = 0.39 in <sup>3</sup> |
| I           | = | 0.29 in <sup>4</sup> | I = 0.37 in <sup>4</sup> |
| Max M       | = | 8832 in-lb           | Max M = 11496 in-lb      |

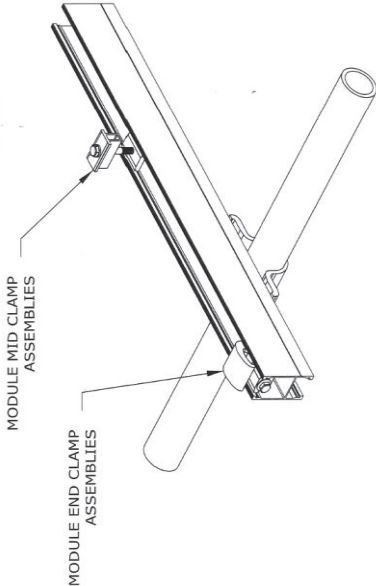
5) Load Combinations for calculations are as follows

D + S  
D + W  
D + 0.75 S + 0.75 W  
0.6D + W

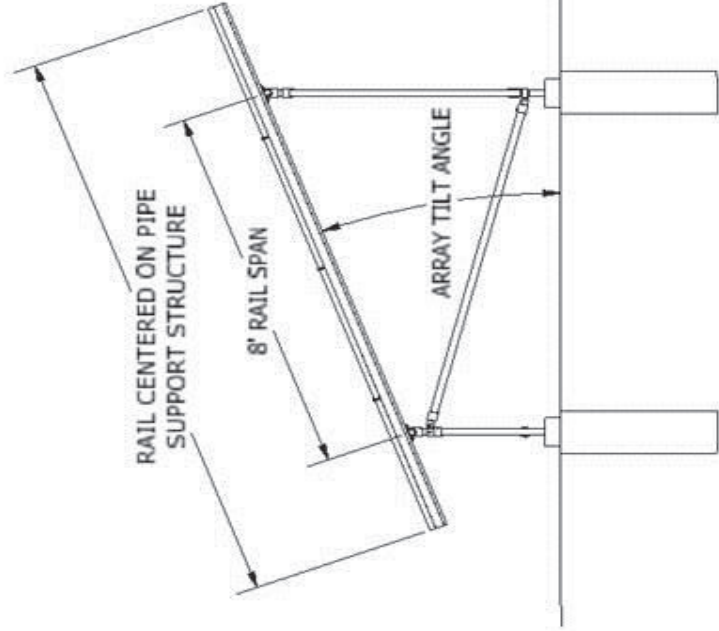
Series 200

Sketches and Details

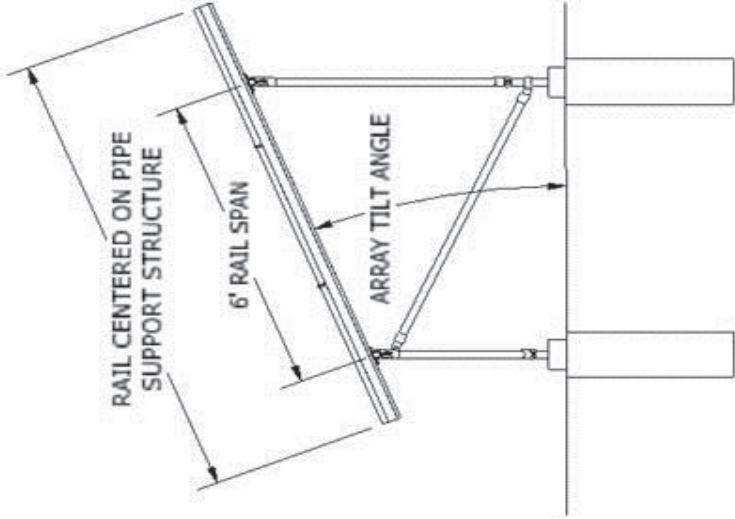
NOTE:  
TORQUE  $\frac{5}{16}$ " SS SILVER  
HEX BOLTS TO 10-16  
FT-LBS  
TORQUE  $\frac{3}{8}$ " SS BLACK  
HEX BOLTS TO 7-9  
FT-LBS



Panel Attachment to Rails



4 MODULE PANEL, TYPICAL



3 MODULE PANEL, TYPICAL

Frame Design Sketch and Dimension Parameters

# Series 200

## Wind Calculation ASCE 7-10 Chapter 27

### Velocity Pressure 27.3.2 ASCE 7-10

$$q_h = 0.00256 K_z K_{zt} K_d V^2$$

$K_z = 0.85$     Velocity Pressure Exposure Coefficients (Table 26.8-1)  
 $K_{zt} = 1.00$     Topographic Factor (Fig. 26.8-1)  
 $K_d = 0.85$     Wind Directionality Factor (Table 26.6-1)  
 $V = 100-170$     Basic Wind Speed (mph)

Notes:

- 1) Wind designed for exposure C
- 2) The calculations in this report use the ASD values

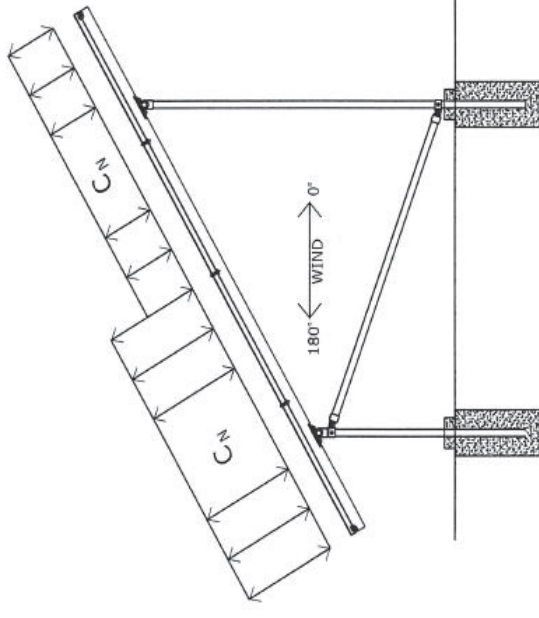
|                | Velocity Pressure (psf) |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                | V                       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| $q_h$          | 100                     | 105   | 110   | 115   | 120   | 125   | 130   | 135   | 140   | 145   | 150   | 155   | 160   | 170   |
| Strength       | 18.50                   | 20.39 | 22.38 | 24.46 | 26.63 | 28.90 | 31.26 | 33.71 | 36.25 | 38.89 | 41.62 | 44.44 | 47.35 | 53.45 |
| ASD (0.6 * St) | 11.10                   | 12.24 | 13.43 | 14.68 | 15.98 | 17.34 | 18.75 | 20.23 | 21.75 | 23.33 | 24.97 | 26.66 | 28.41 | 32.07 |

### Main Force Resisting System 27.4.3 ASCE 7-10 Monoslope Structure

$$P = q_h G C_N$$

$q_h =$     See Table    Velocity Pressure (psf)  
 $G = 0.85$     Gust Effect Factor  
 $C_n =$     See Table    Net Pressure Coefficient

| Tilt Angle | Load Case | $C_N$             |          |                     |          |
|------------|-----------|-------------------|----------|---------------------|----------|
|            |           | Wind Direction 0° |          | Wind Direction 180° |          |
| 0°         | A         | $C_{NW}$          | $C_{NL}$ | $C_{NW}$            | $C_{NL}$ |
|            | B         | 1.2               | 0.3      | 1.2                 | 0.3      |
| 7.5°       | A         | -1.1              | -0.1     | -1.1                | -0.1     |
|            | B         | -0.6              | -1.0     | 0.9                 | 1.5      |
| 15°        | A         | -1.4              | 0.0      | 1.6                 | 0.3      |
|            | B         | -0.9              | -1.3     | 1.3                 | 1.6      |
| 22.5°      | A         | -1.9              | 0.0      | 1.8                 | 0.6      |
|            | B         | -1.5              | -1.6     | 1.7                 | 1.8      |
| 30°        | A         | -2.4              | -0.3     | 2.2                 | 0.7      |
|            | B         | -1.8              | -1.8     | 2.1                 | 2.1      |
| 37.5°      | A         | -2.5              | -0.5     | 2.6                 | 1.0      |
|            | B         | -1.8              | -1.8     | 2.1                 | 2.2      |
| 45°        | A         | -2.4              | -0.6     | 2.7                 | 1.1      |
|            | B         | -1.6              | -1.8     | 2.2                 | 2.5      |
|            |           | -2.3              | -0.7     | 2.6                 | 1.4      |



Wind Loading Diagram

# Series 200

## Seismic Design ASCE 7-10 Chapter 11 and 12

### Seismic Design Section Chapter 11 and 12 ASCE 7-10

|          |   |           |          |                     |   |    |              |                                                      |
|----------|---|-----------|----------|---------------------|---|----|--------------|------------------------------------------------------|
| $S_{MS}$ | = | $F_a S_s$ | (11.4-1) | Site Classification | = | D  | Default "D"  | Notes:                                               |
| $S_{M1}$ | = | $F_v S_1$ | (11.4-2) | Seismic Use Group   | = | II | Table 11.5-1 | 1) Seismic Design based on Seismic Design Category D |

$$S_{DS} = \frac{2}{3} S_{MS}$$

$$S_{D1} = \frac{2}{3} S_{M1}$$

$$C_s = \frac{S_{DS}}{\left( \frac{R}{I} \right)}$$

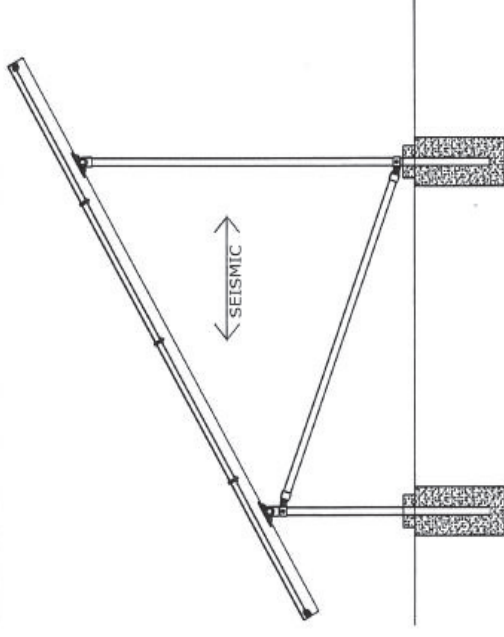
$$\begin{aligned} C_s &= 0.5128 \\ C_s &= 2.8794 \quad \text{Max} \\ C_s &= 0.1538 \quad \text{Min} \end{aligned}$$

|          |   |      |                                   |
|----------|---|------|-----------------------------------|
| R        | = | 3.25 | Input from Table 13.6-1 ASCE 7-10 |
| I        | = | 1.00 | Input from Table 11.5-1 ASCE 7-10 |
| $S_s$    | = | 2.50 | Input from USGS Program           |
| $S_1$    | = | 1.00 | Input from USGS Program           |
| $F_a$    | = | 1.00 | Site Coefficient Table 11.4-1     |
| $F_v$    | = | 1.50 | Site Coefficient Table 11.4-2     |
| $S_{ms}$ | = | 2.50 | ASCE 7-10 Section 11.4.3          |
| $S_{m1}$ | = | 1.50 | ASCE 7-10 Section 11.4.3          |
| $S_{ds}$ | = | 1.67 | ASCE 7-10 Section 11.4.3          |
| $S_{d1}$ | = | 1.00 | ASCE 7-10 Section 11.4.3          |
| W        | = | 4.00 | psf                               |

$$V = C_s W$$

$$V = 1.44 \text{ psf (ASD)}$$

### Wind Loads Govern Design



Seismic Loading Diagram

# Series 200

## Snow Load Calculations ASCE 7-10 Chapter 7

### Snow Loads Section 7.2 to 7.4 ASCE 7-10

$$P_f = 0.7 C_e C_t I P_g$$

Section 7.3 Eq. (7-1)

$$P_s = C_s P_f$$

Section 7.4 Eq. (7.2)

|                |   |           |                        |
|----------------|---|-----------|------------------------|
| Tilt Angle     | = | 0 To 45°  | Tilt Angle of PV Array |
| C <sub>e</sub> | = | 1.00      | Exposure Factor        |
| C <sub>t</sub> | = | 1.10      | Thermal Factor         |
| I              | = | 0.80      | Importance Factor      |
| C <sub>s</sub> | = | See Table | Slope Factor           |

Notes:

- 1) Snow loads based on unobstructed slippery surface factor C<sub>s</sub> for C<sub>t</sub> = 1.1.

| Tilt Angle Slope Factor |                |
|-------------------------|----------------|
| Tilt Angle              | C <sub>s</sub> |
| 0                       | 1.00           |
| 7.5                     | 1.00           |
| 15                      | 0.92           |
| 22.5                    | 0.79           |
| 30                      | 0.67           |
| 37.5                    | 0.54           |
| 45                      | 0.42           |

| Pg Ground Snow Load |      |      |      |      |      |      |      |      |      |       |       |       |       |             |
|---------------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------------|
| 0.0                 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 | 100.0 | 110.0 | 120.0 | 130.0 | 140.0 150.0 |

| Pf Flat Roof Snow Load 0 Tilt Angle |     |      |      |      |      |      |      |      |      |      |      |      |      |           |
|-------------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| 0.0                                 | 6.2 | 12.3 | 18.5 | 24.6 | 30.8 | 37.0 | 43.1 | 49.3 | 55.4 | 61.6 | 67.8 | 73.9 | 80.1 | 86.2 92.4 |

| Ps Sloped Roof Snow Load 7.5 Degree Tilt |     |      |      |      |      |      |      |      |      |      |      |      |      |           |
|------------------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| 0.0                                      | 6.2 | 12.3 | 18.5 | 24.6 | 30.8 | 37.0 | 43.1 | 49.3 | 55.4 | 61.6 | 67.8 | 73.9 | 80.1 | 86.2 92.4 |

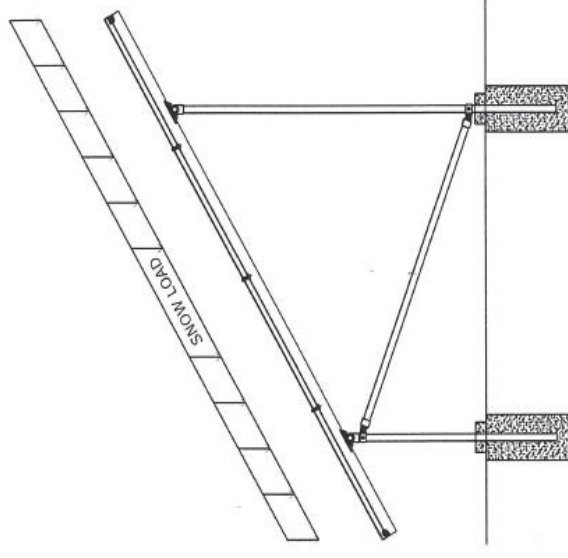
| Ps Sloped Roof Snow Load 15 Degree Tilt |     |      |      |      |      |      |      |      |      |      |      |      |      |           |
|-----------------------------------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| 0.0                                     | 5.6 | 11.3 | 16.9 | 22.6 | 28.2 | 33.9 | 39.5 | 45.2 | 50.8 | 56.5 | 62.1 | 67.7 | 73.4 | 79.0 84.7 |

| Ps Sloped Roof Snow Load 22.5 Degree Tilt |     |     |      |      |      |      |      |      |      |      |      |      |      |           |
|-------------------------------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|-----------|
| 0.0                                       | 4.9 | 9.7 | 14.6 | 19.5 | 24.4 | 29.2 | 34.1 | 39.0 | 43.9 | 48.7 | 53.6 | 58.5 | 63.4 | 68.2 73.1 |

| Ps Sloped Roof Snow Load 30 Degree Tilt |     |     |      |      |      |      |      |      |      |      |      |      |      |           |
|-----------------------------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|-----------|
| 0.0                                     | 4.1 | 8.2 | 12.3 | 16.4 | 20.5 | 24.6 | 28.7 | 32.8 | 36.9 | 41.0 | 45.1 | 49.2 | 53.3 | 57.4 61.5 |

| Ps Sloped Roof Snow Load 37.5 Degree Tilt |     |     |      |      |      |      |      |      |      |      |      |      |      |           |
|-------------------------------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|-----------|
| 0.0                                       | 3.3 | 6.7 | 10.0 | 13.3 | 16.7 | 20.0 | 23.3 | 26.6 | 30.0 | 33.3 | 36.6 | 40.0 | 43.3 | 46.6 50.0 |

| Ps Sloped Roof Snow Load 45 Degree Tilt |     |     |     |      |      |      |      |      |      |      |      |      |      |           |
|-----------------------------------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|-----------|
| 0.0                                     | 2.6 | 5.1 | 7.7 | 10.2 | 12.8 | 15.4 | 17.9 | 20.5 | 23.0 | 25.6 | 28.2 | 30.7 | 33.3 | 35.8 38.4 |

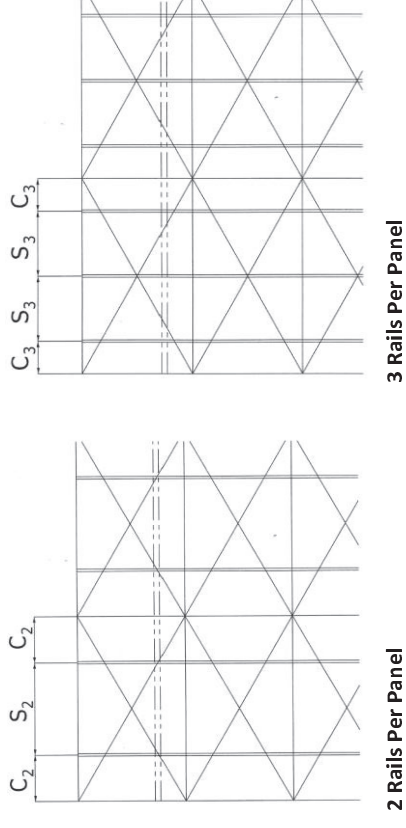


Snow Loading Diagram

# Series 200

## Number of Rails for Four 66" Panels

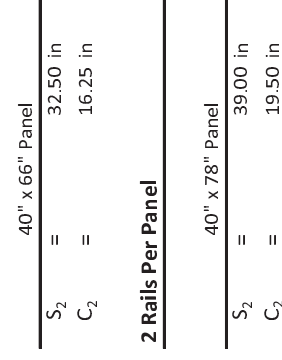
| Wind Velocity (Vult) mph |   | 0 to 7.5 Degrees                       |    |    |    |    |    |    |    |    |    |     |     |     |    |
|--------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|----|
|                          |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |    |
|                          |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |    |
|                          |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |    |
| 100                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 110                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 120                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 130                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 140                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 150                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | NG  | NG  | NG  | NG |
| 160                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  | NG |
| 170                      | 2 | 2                                      | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  | NG |



**2 Rails Per Panel**

**3 Rails Per Panel**

| Wind Velocity (Vult) mph |   | 7.5 to 15 Degrees                      |    |    |    |    |    |    |    |    |    |     |     |     |    |
|--------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|----|
|                          |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |    |
|                          |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |    |
|                          |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |    |
| 100                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 110                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 120                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 130                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 140                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 150                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | NG  | NG  | NG  | NG |
| 160                      | 2 | 2                                      | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  | NG |
| 170                      | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  | NG |

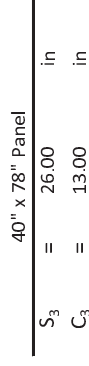


**2 Rails Per Panel**

**3 Rails Per Panel**



40" x 78" Panel



40" x 78" Panel

Maximum Moments for Two or Three Rail Configuration

Maximum Moment (2 Rails - 66" panels) = 187.1 in-lb / in

Maximum Moment (3 Rails - 66" panels) = 280.6 in-lb / in

Maximum Moment (2 Rails - 78" panels) = 155.9 in-lb / in

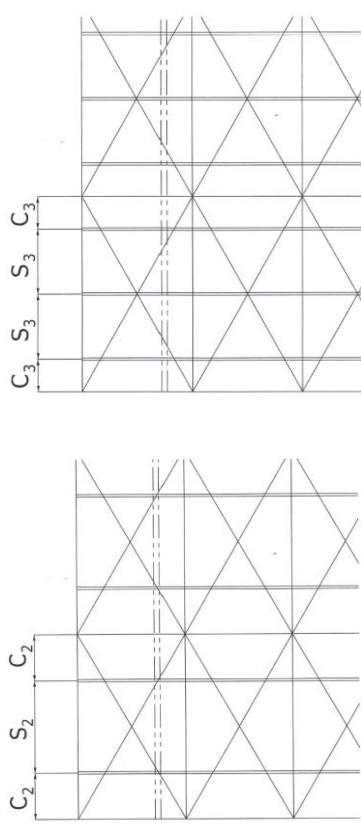
Maximum Moment (3 Rails - 78" panels) = 233.8 in-lb / in

| Wind Velocity (Vult) mph |   | 16 to 22.5 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |    |
|--------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|----|
|                          |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |    |
|                          |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |    |
|                          |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |    |
| 100                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3   | NG  | NG |
| 110                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | 3   | NG  | NG |
| 120                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | 3   | NG  | NG |
| 130                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3   | 3   | NG  | NG |
| 140                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3   | NG  | NG  | NG |
| 150                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | NG  | NG  | NG  | NG |
| 160                      | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  | NG |
| 170                      | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  | NG |

# Series 200

## Number of Rails for Four 66" Panels

| Wind Velocity (V <sub>ult</sub> ) mph |   | 22.6 to 30 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 3   | 3   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3   | 3   | 3   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3   | 3   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | NG  |
| 160                                   | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | NG  | NG  |
| 170                                   | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | NG  | NG  | NG  |



2 Rails Per Panel

3 Rails Per Panel

| Wind Velocity (V <sub>ult</sub> ) mph |   | 31 to 37.5 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 3   | 3   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3   | 3   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |
| 150                                   | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |
| 160                                   | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |
| 170                                   | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | NG  | NG  |

|                 |            |
|-----------------|------------|
| 40" x 66" Panel |            |
| S <sub>2</sub>  | = 32.50 in |
| C <sub>2</sub>  | = 16.25 in |

|                 |            |
|-----------------|------------|
| 40" x 66" Panel |            |
| S <sub>3</sub>  | = 21.50 in |
| C <sub>3</sub>  | = 11.00 in |

2 Rails Per Panel

3 Rails Per Panel

|                 |            |
|-----------------|------------|
| 40" x 78" Panel |            |
| S <sub>2</sub>  | = 39.00 in |
| C <sub>2</sub>  | = 19.50 in |

|                 |            |
|-----------------|------------|
| 40" x 78" Panel |            |
| S <sub>3</sub>  | = 26.00 in |
| C <sub>3</sub>  | = 13.00 in |

Maximum Moments for Two or Three Rail Configuration

Maximum Moment (2 Rails - 66" panels) = 187.1 in-lb / in

Maximum Moment (3 Rails - 66" panels) = 280.6 in-lb / in

Maximum Moment (2 Rails - 78" panels) = 155.9 in-lb / in

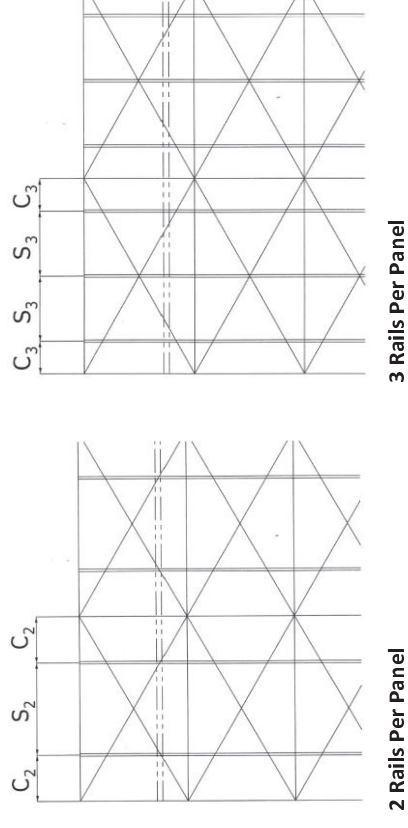
Maximum Moment (3 Rails - 78" panels) = 233.8 in-lb / in

| Wind Velocity (V <sub>ult</sub> ) mph |   | 37.6 to 45 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 3   | 3   |
| 150                                   | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |
| 160                                   | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |
| 170                                   | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |

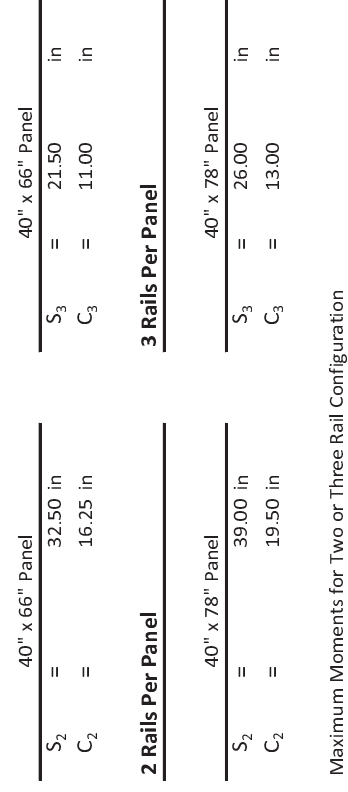
# Series 200

## Number of Rails for Four 78" Panels

| 0 to 7.5 Degrees                      |                                        |   |    |    |    |    |    |    |    |    |    |     |     |     |  |
|---------------------------------------|----------------------------------------|---|----|----|----|----|----|----|----|----|----|-----|-----|-----|--|
| Wind Velocity (V <sub>ult</sub> ) mph | Number of Rails Per 40" x 78" PV Panel |   |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                                       | Snow Load                              |   |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                                       |                                        | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |  |
|                                       | 100                                    | 2 | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | NG | NG  | NG  | NG  |  |
|                                       | 110                                    | 2 | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  |  |
|                                       | 120                                    | 2 | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  |  |
|                                       | 130                                    | 2 | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  |  |
|                                       | 140                                    | 2 | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG | NG  | NG  | NG  |  |
|                                       | 150                                    | 2 | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG | NG  | NG  | NG  |  |
|                                       | 160                                    | 2 | 2  | 2  | 2  | 3  | 3  | 3  | NG | NG | NG | NG  | NG  | NG  |  |
| 170                                   | 2                                      | 2 | 2  | 2  | 3  | 3  | NG | NG | NG | NG | NG | NG  | NG  |     |  |



| Wind Velocity (Vult) mph |   | 7.5 to 15 Degrees                      |    |    |    |    |    |    |    |    |    |     |     |     |  |
|--------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|--|
|                          |   | Number of Rails Per 40" x 78" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                          |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                          |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |  |
| 100                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | NG | NG  | NG  | NG  |  |
| 110                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  |  |
| 120                      | 2 | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  |  |
| 130                      | 2 | 2                                      | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | NG | NG  | NG  | NG  |  |
| 140                      | 2 | 2                                      | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG | NG  | NG  | NG  |  |
| 150                      | 2 | 2                                      | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG | NG  | NG  | NG  |  |
| 160                      | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | NG | NG | NG | NG  | NG  | NG  |  |
| 170                      | 3 | 3                                      | 3  | 3  | 3  | 3  | 3  | NG | NG | NG | NG | NG  | NG  | NG  |  |



| 40" x 66" Panel |   | 40" x 66" Panel |  |
|-----------------|---|-----------------|--|
| S <sub>2</sub>  | = | 32.50 in        |  |
| C <sub>2</sub>  | = | 16.25 in        |  |

| 40" x 78" Panel |   | 40" x 78" Panel |  |
|-----------------|---|-----------------|--|
| S <sub>2</sub>  | = | 39.00 in        |  |
| C <sub>2</sub>  | = | 19.50 in        |  |

Maximum Moments for Two or Three Rail Configuration

| 16 to 22.5 Degrees       |                                        |   |    |    |    |    |    |    |    |    |    |     |     |     |
|--------------------------|----------------------------------------|---|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| Wind Velocity (Vult) mph | Number of Rails Per 40" x 78" PV Panel |   |    |    |    |    |    |    |    |    |    |     |     |     |
|                          | Snow Load                              |   |    |    |    |    |    |    |    |    |    |     |     |     |
|                          |                                        | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                      | 2                                      | 2 | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG  | NG  |     |
| 110                      | 2                                      | 2 | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | NG | NG  | NG  |     |
| 120                      | 2                                      | 2 | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | NG | NG  | NG  |     |
| 130                      | 2                                      | 2 | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3  | NG | NG  | NG  |     |
| 140                      | 2                                      | 2 | 2  | 2  | 3  | 3  | 3  | 3  | 3  | NG | NG | NG  | NG  |     |
| 150                      | 3                                      | 3 | 3  | 3  | 3  | 3  | 3  | 3  | NG | NG | NG | NG  | NG  |     |
| 160                      | 3                                      | 3 | 3  | 3  | 3  | 3  | 3  | NG | NG | NG | NG | NG  | NG  |     |
| 170                      | 3                                      | 3 | 3  | 3  | 3  | 3  | NG | NG | NG | NG | NG | NG  | NG  |     |



| 40" x 66" Panel |   | 40" x 66" Panel |  |
|-----------------|---|-----------------|--|
| S <sub>3</sub>  | = | 21.50 in        |  |
| C <sub>3</sub>  | = | 11.00 in        |  |

| 40" x 78" Panel |   | 40" x 78" Panel |  |
|-----------------|---|-----------------|--|
| S <sub>3</sub>  | = | 26.00 in        |  |
| C <sub>3</sub>  | = | 13.00 in        |  |

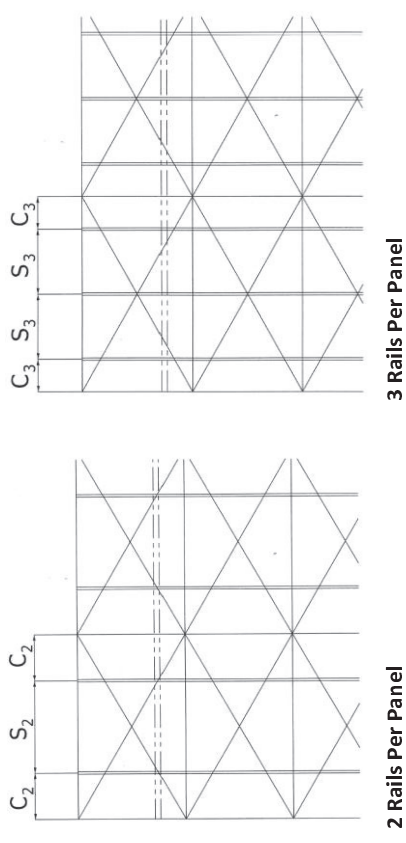
  

Maximum Moments for Two or Three Rail Configuration

# Series 200

## Number of Rails for Four 78" Panels

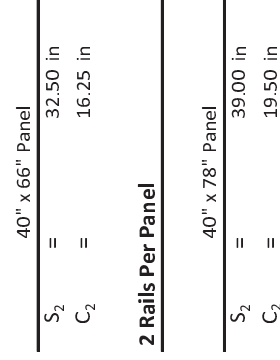
| Wind Velocity (Vult) mph | 22.6 to 30 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |  |  |
|--------------------------|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|--|--|
|                          | Number of Rails Per 40" x 78" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |  |  |
|                          | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |  |  |
|                          | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |  |  |
| 100                      | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | 3   | 3   |  |  |
| 110                      | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3   | 3   | NG  |  |  |
| 120                      | 2                                      | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3   | 3   | NG  |  |  |
| 130                      | 2                                      | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3   | NG  | NG  |  |  |
| 140                      | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | NG  | NG  | NG  |  |  |
| 150                      | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | NG  | NG  | NG  |  |  |
| 160                      | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | NG | NG | NG | NG  | NG  | NG  |  |  |
| 170                      | NG                                     | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG  | NG  | NG  |  |  |



2 Rails Per Panel

3 Rails Per Panel

| Wind Velocity (Vult) mph | 31 to 37.5 Degrees                     |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|--------------------------|----------------------------------------|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|--|
|                          | Number of Rails Per 40" x 78" PV Panel |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                          | Snow Load                              |    |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                          |                                        | 0  | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |  |
| 100                      | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3   |     |  |
| 110                      | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3   |     |  |
| 120                      | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3   | 3   |     |  |
| 130                      | 2                                      | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 3   | 3   |     |  |
| 140                      | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | NG  |     |  |
| 150                      | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | NG | NG  | NG  |     |  |
| 160                      | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | NG | NG | NG | NG  | NG  |     |  |
| 170                      | NG                                     | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG  | NG  |     |  |



2 Rails Per Panel

3 Rails Per Panel

Maximum Moments for Two or Three Rail Configuration

Maximum Moment (2 Rails - 66" panels) = 187.1 in-lb / in

Maximum Moment (3 Rails - 66" panels) = 280.6 in-lb / in

Maximum Moment (2 Rails - 78" panels) = 155.9 in-lb / in

Maximum Moment (3 Rails - 78" panels) = 233.8 in-lb / in

| 37.6 to 45 Degrees       |    |                                        |    |    |    |    |    |    |    |    |    |     |     |     |  |
|--------------------------|----|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|--|
| Wind Velocity (Vult) mph |    | Number of Rails Per 40" x 78" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                          |    | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |  |
|                          |    | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |  |
| 100                      | 2  | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |  |
| 110                      | 2  | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |  |
| 120                      | 2  | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3   | 3   | 3   |  |
| 130                      | 2  | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3   | 3   |  |
| 140                      | 3  | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |  |
| 150                      | 3  | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3   | 3   | 3   |  |
| 160                      | 3  | 3                                      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | NG  | NG  | NG  |  |
| 170                      | NG | NG                                     | NG | NG | NG | NG | NG | NG | NG | NG | NG | NG  | NG  | NG  |  |

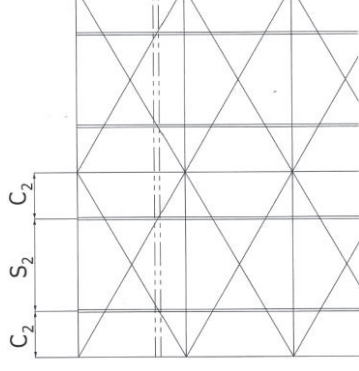
# Series 200

## Number of Rails for Three 66" Panels

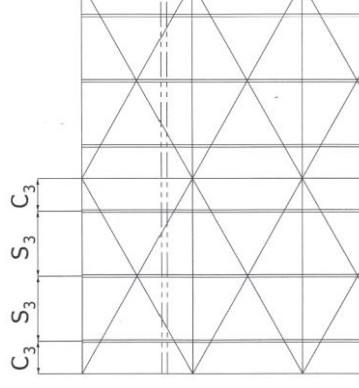
| Wind Velocity (V <sub>ult</sub> ) mph |   | 0 to 7.5 Degrees                       |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 160                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 170                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |

| Wind Velocity (V <sub>ult</sub> ) mph |   | 7.5 to 15 Degrees                      |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 160                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 170                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |

| Wind Velocity (V <sub>ult</sub> ) mph |   | 16 to 22.5 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 160                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 170                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |



2 Rails Per Panel



3 Rails Per Panel

| 40" x 66" Panel |            |
|-----------------|------------|
| S <sub>2</sub>  | = 32.50 in |
| C <sub>2</sub>  | = 16.25 in |

2 Rails Per Panel

| 40" x 78" Panel |            |
|-----------------|------------|
| S <sub>2</sub>  | = 39.00 in |
| C <sub>2</sub>  | = 19.50 in |

| 40" x 66" Panel |            |
|-----------------|------------|
| S <sub>3</sub>  | = 21.50 in |
| C <sub>3</sub>  | = 11.00 in |

3 Rails Per Panel

| 40" x 78" Panel |            |
|-----------------|------------|
| S <sub>3</sub>  | = 26.00 in |
| C <sub>3</sub>  | = 13.00 in |

### Maximum Moments for Two or Three Rail Configuration

Maximum Moment (2 Rails - 66" panels) = 187.1 in-lb / in

Maximum Moment (3 Rails - 66" panels) = 280.6 in-lb / in

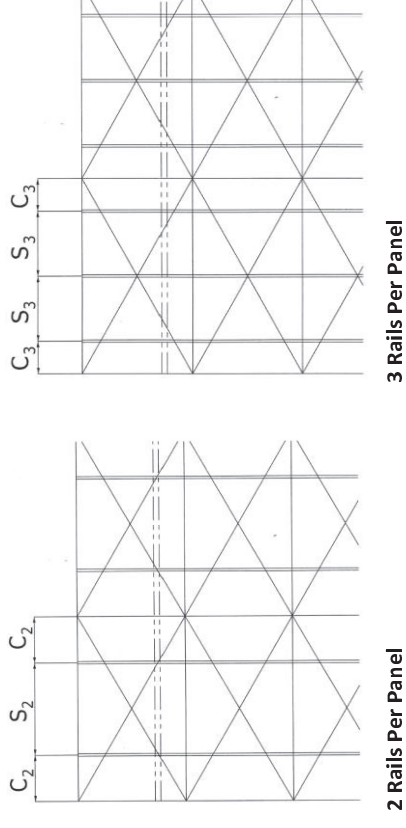
Maximum Moment (2 Rails - 78" panels) = 155.9 in-lb / in

Maximum Moment (3 Rails - 78" panels) = 233.8 in-lb / in

# Series 200

## Number of Rails for Three 66" Panels

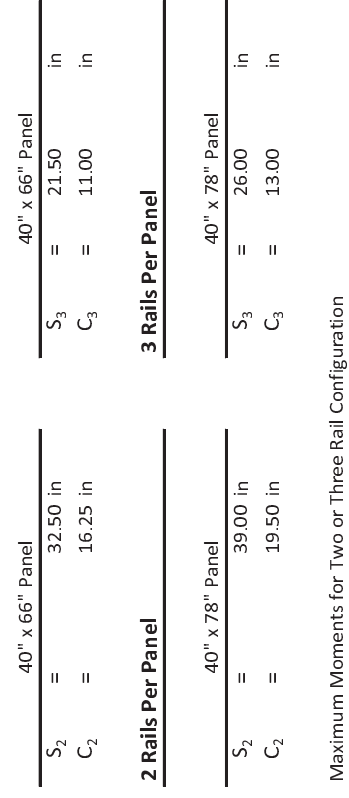
| Wind Velocity (V <sub>ult</sub> ) mph |   | 22.6 to 30 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 160                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 170                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |



**2 Rails Per Panel**

**3 Rails Per Panel**

| Wind Velocity (V <sub>ult</sub> ) mph |   | 31 to 37.5 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 160                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 170                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |



**2 Rails Per Panel**

**3 Rails Per Panel**

| Wind Velocity (V <sub>ult</sub> ) mph |   | 37.6 to 45 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 66" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 160                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 170                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |



Maximum Moments for Two or Three Rail Configuration

Maximum Moment (2 Rails - 66" panels) = 187.1 in-lb / in

Maximum Moment (3 Rails - 66" panels) = 280.6 in-lb / in

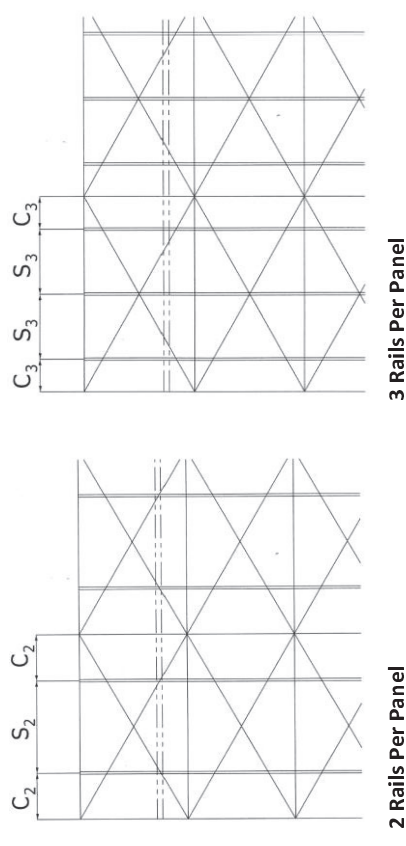
Maximum Moment (2 Rails - 78" panels) = 155.9 in-lb / in

Maximum Moment (3 Rails - 78" panels) = 233.8 in-lb / in

# Series 200

## Number of Rails for Three 78" Panels

| 0 to 7.5 Degrees                       |           |    |    |    |    |    |    |    |    |    |     |     |     |  |  |  |
|----------------------------------------|-----------|----|----|----|----|----|----|----|----|----|-----|-----|-----|--|--|--|
| Number of Rails Per 40" x 78" PV Panel |           |    |    |    |    |    |    |    |    |    |     |     |     |  |  |  |
| Wind Velocity (V <sub>ult</sub> ) mph  | Snow Load |    |    |    |    |    |    |    |    |    |     |     |     |  |  |  |
|                                        | 0         | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |  |  |  |
|                                        | 100       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 110       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 120       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 130       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 140       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 3   | 3   |  |  |  |
|                                        | 150       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 3   | 3   |  |  |  |
|                                        | 160       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3   | 3   | 3   |  |  |  |
|                                        | 170       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3   | 3   | 3   |  |  |  |



**2 Rails Per Panel**

**3 Rails Per Panel**

| 7.5 to 15 Degrees                      |           |    |    |    |    |    |    |    |    |    |     |     |     |  |  |  |
|----------------------------------------|-----------|----|----|----|----|----|----|----|----|----|-----|-----|-----|--|--|--|
| Number of Rails Per 40" x 78" PV Panel |           |    |    |    |    |    |    |    |    |    |     |     |     |  |  |  |
| Wind Velocity (V <sub>ult</sub> ) mph  | Snow Load |    |    |    |    |    |    |    |    |    |     |     |     |  |  |  |
|                                        | 0         | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |  |  |  |
|                                        | 100       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 110       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 120       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 130       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 140       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 150       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 3   | 3   |  |  |  |
|                                        | 160       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3   | 3   | 3   |  |  |  |
|                                        | 170       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3   | 3   |  |  |  |

| 40" x 66" Panel   |   |          |  |
|-------------------|---|----------|--|
| S <sub>2</sub>    | = | 32.50 in |  |
| C <sub>2</sub>    | = | 16.25 in |  |
| 2 Rails Per Panel |   |          |  |
| S <sub>2</sub>    | = | 39.00 in |  |
| C <sub>2</sub>    | = | 19.50 in |  |
| 40" x 78" Panel   |   |          |  |
| S <sub>3</sub>    | = | 21.50 in |  |
| C <sub>3</sub>    | = | 11.00 in |  |
| 3 Rails Per Panel |   |          |  |
| S <sub>3</sub>    | = | 26.00 in |  |
| C <sub>3</sub>    | = | 13.00 in |  |

Maximum Moments for Two or Three Rail Configuration

Maximum Moment (2 Rails - 66" panels) = 187.1 in-lb / in

Maximum Moment (3 Rails - 66" panels) = 280.6 in-lb / in

Maximum Moment (2 Rails - 78" panels) = 155.9 in-lb / in

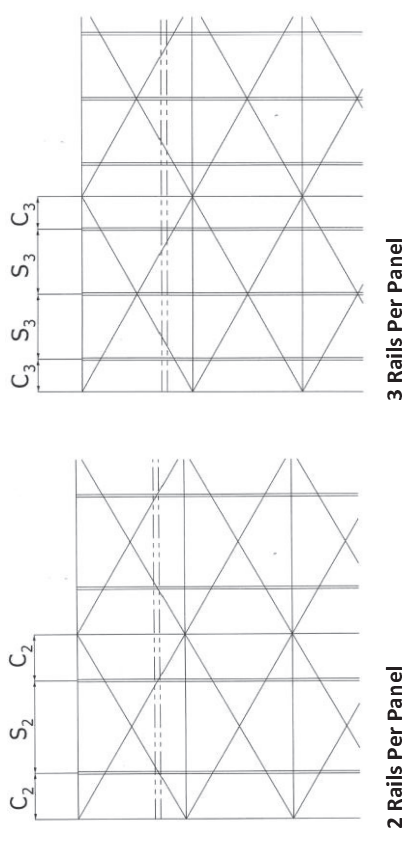
Maximum Moment (3 Rails - 78" panels) = 233.8 in-lb / in

| 16 to 22.5 Degrees                     |           |    |    |    |    |    |    |    |    |    |     |     |     |  |  |  |
|----------------------------------------|-----------|----|----|----|----|----|----|----|----|----|-----|-----|-----|--|--|--|
| Number of Rails Per 40" x 78" PV Panel |           |    |    |    |    |    |    |    |    |    |     |     |     |  |  |  |
| Wind Velocity (V <sub>ult</sub> ) mph  | Snow Load |    |    |    |    |    |    |    |    |    |     |     |     |  |  |  |
|                                        | 0         | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |  |  |  |
|                                        | 100       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 110       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 120       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 130       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 140       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |  |  |  |
|                                        | 150       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 3   | 3   |  |  |  |
|                                        | 160       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3   | 3   | 3   |  |  |  |
|                                        | 170       | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3   | 3   |  |  |  |

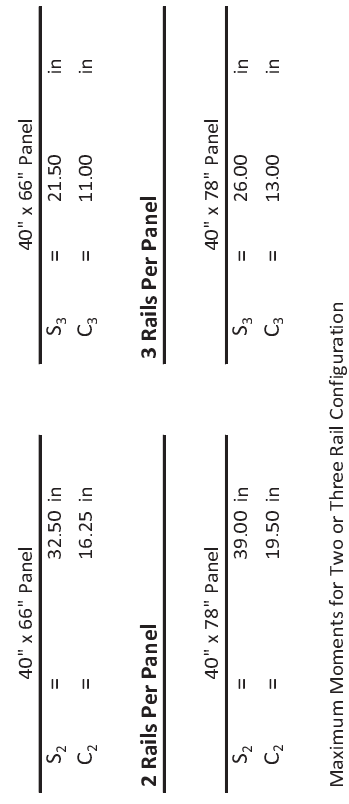
# Series 200

## Number of Rails for Three 78" Panels

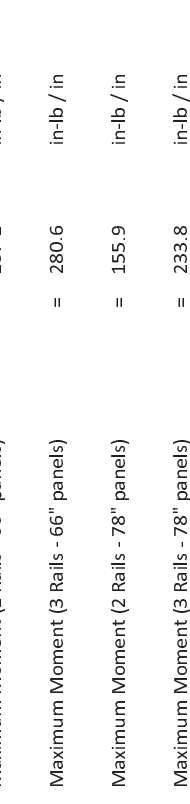
| Wind Velocity (V <sub>ult</sub> ) mph |   | 22.6 to 30 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 78" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 160                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 3   | 3   |
| 170                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 3  | 3   | 3   | 3   |



| Wind Velocity (V <sub>ult</sub> ) mph |   | 31 to 37.5 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 78" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 160                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 170                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3   | 3   | 3   |



| Wind Velocity (V <sub>ult</sub> ) mph |   | 37.6 to 45 Degrees                     |    |    |    |    |    |    |    |    |    |     |     |     |
|---------------------------------------|---|----------------------------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                       |   | Number of Rails Per 40" x 78" PV Panel |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | Snow Load                              |    |    |    |    |    |    |    |    |    |     |     |     |
|                                       |   | 0                                      | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 100                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 110                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 120                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 130                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 2   |
| 140                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 2   | 3   |
| 150                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 160                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |
| 170                                   | 2 | 2                                      | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   |



Maximum Moments for Two or Three Rail Configuration

Maximum Moment (2 Rails - 66" panels) = 187.1 in-lb / in

Maximum Moment (3 Rails - 66" panels) = 280.6 in-lb / in

Maximum Moment (2 Rails - 78" panels) = 155.9 in-lb / in

Maximum Moment (3 Rails - 78" panels) = 233.8 in-lb / in

**SnapNrack™**  
PV Mounting Systems

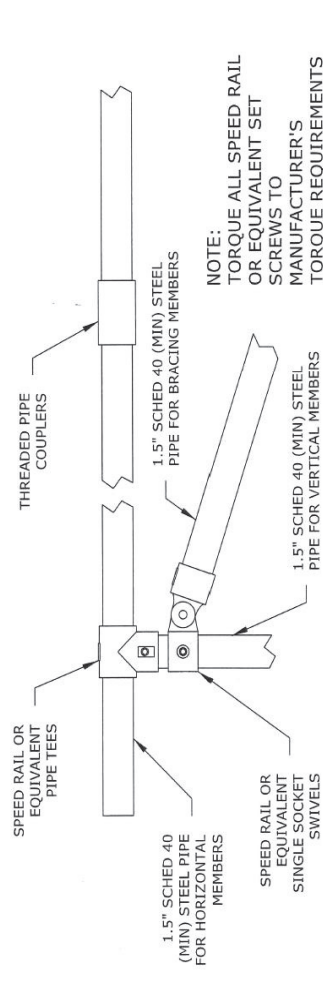
Schedule 40 and Schedule 80 pipe design values are as follows

Diagram illustrating the structural components of a solar collector assembly, including:

- GROUND RAIL
- HORIZONTAL PIPE
- POST
- BRACE F
- NOTE: BOTTOM CLAMP OF BRACE A SHOULD ALWAYS BE CLOSEST TO TOP OF FOUNDATION
- BRACE A
- BRACE E

Diaphragm of Typical Mounting System with Braces

\* For Standard Installation Braces E and F are Omitted



## Typical Connection Specifications

Series 200

Footing Calculations for Cast Inplace Piers

NON-CONSTRAINED FOOTING CALCULATION

$$d = \frac{A}{2} \left( 1 + \sqrt{1 + \frac{4.36 h}{A}} \right)$$

$$A = \frac{2.34 p}{S_1 b}$$

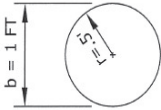
$$S_1 = 150 \left( \frac{d}{3} \right) (2)$$

$$P = R_H \text{ (lbs)}$$

$$h = 0.5 \text{ (FT)}$$

$$d = \text{FOOTING DEPTH (FT)}$$

$$b = 1.0 \text{ (FT)}$$



SKIN FRICTION

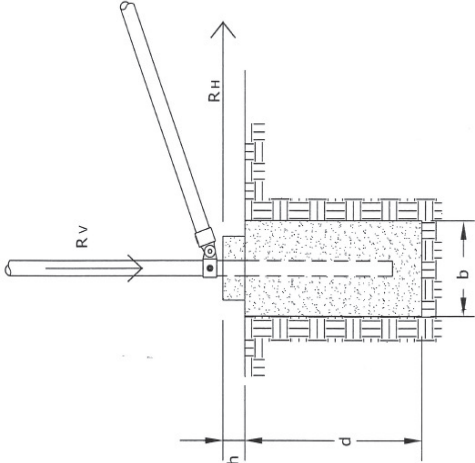
SURFACE AREA

$$S_A = 2 \pi r d$$

$$\text{ARROW SF} = 2 \pi r d \left( \frac{1500}{6} \right)$$

Notes:

- 1) Footing design assumes 1500 psf soil bearing pressures, 150 pcf lateral bearing pressure and a skin friction value of 250 psf.

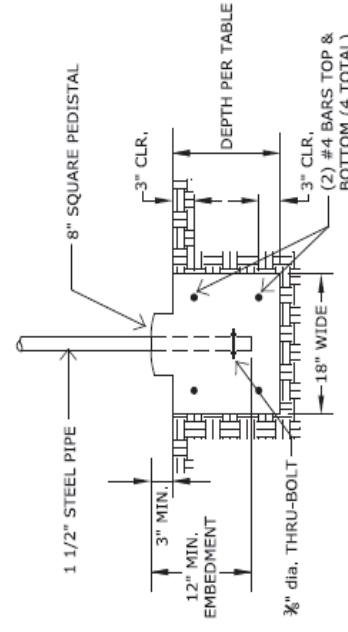


Footing Calculations

| Footing Calculations |      |     |      |      |      |   |      |
|----------------------|------|-----|------|------|------|---|------|
| d                    | S1   | b   | h    | A    | P    | D | SF   |
| 3                    | 466  | 1.0 | 0.33 | 3.16 | 629  | 3 | 2735 |
| 4                    | 599  | 1.0 | 0.33 | 4.16 | 1064 | 4 | 3529 |
| 5                    | 732  | 1.0 | 0.33 | 5.15 | 1612 | 5 | 4313 |
| 6                    | 865  | 1.0 | 0.33 | 6.15 | 2274 | 6 | 5098 |
| 7                    | 998  | 1.0 | 0.33 | 7.15 | 3051 | 7 | 5885 |
| 8                    | 1132 | 1.0 | 0.33 | 8.15 | 3941 | 8 | 6670 |

**SnapNrack™**  
PV Mounting Systems

## 18" Wide Grade Beam



1 1/2" STEEL PIPE

8" SQUARE PEDISTAL

3" MIN.

12" MIN. EMBEDMENT

3" CLR.

DEPTH PER TABLE

3" CLR.

(2) #4 BARS TOP & BOTTOM (4 TOTAL)

1/8" dia. THRU-BOLT

24" WIDE

24" Wide Grade Beam

### Conversion Chart for Pier to Grade Beam Footings

- 1) Footing design assumes 1500 psf soil bearing pressures, 150 pcf lateral bearing pressure and a skin friction value of 250 psf.

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5022 Sunrise Boulevard  
Fair Oaks, CA 95628  
(916) 536-9585

Project Title: 200 Series Ground Mount  
Engineer:  
Project Descr:

Project ID: 12065

Printed: 9 JAN 2014, 10:06AM

## Steel Column

File = G:\Jobfiles\12065\Enercalc\12065.ec6  
ENERCALC, INC. 1983-2013, Build:6.13.8.31, Ver:6.13.8.31

Lic. #: KW-06002320

Licensee: NORMAN SCHEEL SE

Description: Brace A

### Code References

Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-10  
Load Combinations Used: 2006 IBC & ASCE 7-05

### General Information

|                            |                                        |                                                          |                                |
|----------------------------|----------------------------------------|----------------------------------------------------------|--------------------------------|
| Steel Section Name:        | <b>HSS 1.900X0.145</b>                 | Overall Column Height                                    | <b>8.150 ft</b>                |
| Analysis Method:           | <b>Allowable Strength</b>              | Top & Bottom Fixity                                      | <b>Top &amp; Bottom Pinned</b> |
| Steel Stress Grade         | <b>A-36, Carbon Steel, Fy = 36 ksi</b> | Brace condition for deflection (buckling) along columns: |                                |
| Fy: Steel Yield            | <b>36.0 ksi</b>                        | X-X (width) axis:                                        |                                |
| E: Elastic Bending Modulus | <b>29,000.0 ksi</b>                    | Unbraced Length for X-X Axis buckling = 8.5 ft, K = 1.0  |                                |
| Load Combination:          | <b>2006 IBC &amp; ASCE 7-05</b>        | Y-Y (depth) axis:                                        |                                |
|                            |                                        | Unbraced Length for Y-Y Axis buckling = 8.5 ft, K = 1.0  |                                |

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included: 22.171 lbs \* Dead Load Factor  
AXIAL LOADS ...  
Axial Load at 8.150 ft, D = 4.20 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

|                                               |                    |                                      |                                    |
|-----------------------------------------------|--------------------|--------------------------------------|------------------------------------|
| <b>PASS</b> Max. Axial+Bending Stress Ratio = | <b>0.9957</b> : 1  | Maximum SERVICE Load Reactions . .   |                                    |
| Load Combination                              | <b>D Only</b>      | Top along X-X                        | <b>0.0 k</b>                       |
| Location of max.above base                    | <b>0.0 ft</b>      | Bottom along X-X                     | <b>0.0 k</b>                       |
| At maximum location values are . . .          |                    | Top along Y-Y                        | <b>0.0 k</b>                       |
| Pa: Axial                                     | <b>4.222 k</b>     | Bottom along Y-Y                     | <b>0.0 k</b>                       |
| Pn / Omega: Allowable                         | <b>4.240 k</b>     | Maximum SERVICE Load Deflections . . |                                    |
| Ma-x: Applied                                 | <b>0.0 k-ft</b>    | Along Y-Y                            | <b>0.0 in at 0.0 ft above base</b> |
| Mn-x / Omega: Allowable                       | <b>0.7563 k-ft</b> | for load combination:                |                                    |
| Ma-y: Applied                                 | <b>0.0 k-ft</b>    | Along X-X                            | <b>0.0 in at 0.0 ft above base</b> |
| Mn-y / Omega: Allowable                       | <b>0.7563 k-ft</b> | for load combination:                |                                    |
| <b>PASS</b> Maximum Shear Stress Ratio =      | <b>0.0</b> : 1     |                                      |                                    |
| Load Combination                              |                    |                                      |                                    |
| Location of max.above base                    | <b>0.0 ft</b>      |                                      |                                    |
| At maximum location values are . . .          |                    |                                      |                                    |
| Va: Applied                                   | <b>0.0 k</b>       |                                      |                                    |
| Vn / Omega: Allowable                         | <b>0.0 k</b>       |                                      |                                    |

### Load Combination Results

| Load Combination            | Maximum Axial + Bending Stress Ratios |        |          | Maximum Shear Ratios |        |          |
|-----------------------------|---------------------------------------|--------|----------|----------------------|--------|----------|
|                             | Stress Ratio                          | Status | Location | Stress Ratio         | Status | Location |
| D Only                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+L+H                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+Lr+H                     | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+S+H                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+H         | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+H          | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+W+H                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.70E+H                  | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.750W+H  | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.750W+H   | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.5250E+H | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.5250E+H  | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+W+H                  | 0.597                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+0.70E+H              | 0.597                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |

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Project Title: 200 Series Ground Mount  
Engineer:  
Project Descr:

Project ID: 12065

Printed: 9 JAN 2014, 10:06AM

## Steel Column

File = G:\Jobfiles\12065\Enercalc\12065.ec6  
ENERCALC, INC. 1983-2013, Build:6.13.8.31, Ver:6.13.8.31

Lic. #: KW-06002320

Licensee: NORMAN SCHEEL SE

Description: Brace A

Note: Only non-zero reactions are listed.

### Maximum Reactions - Unfactored

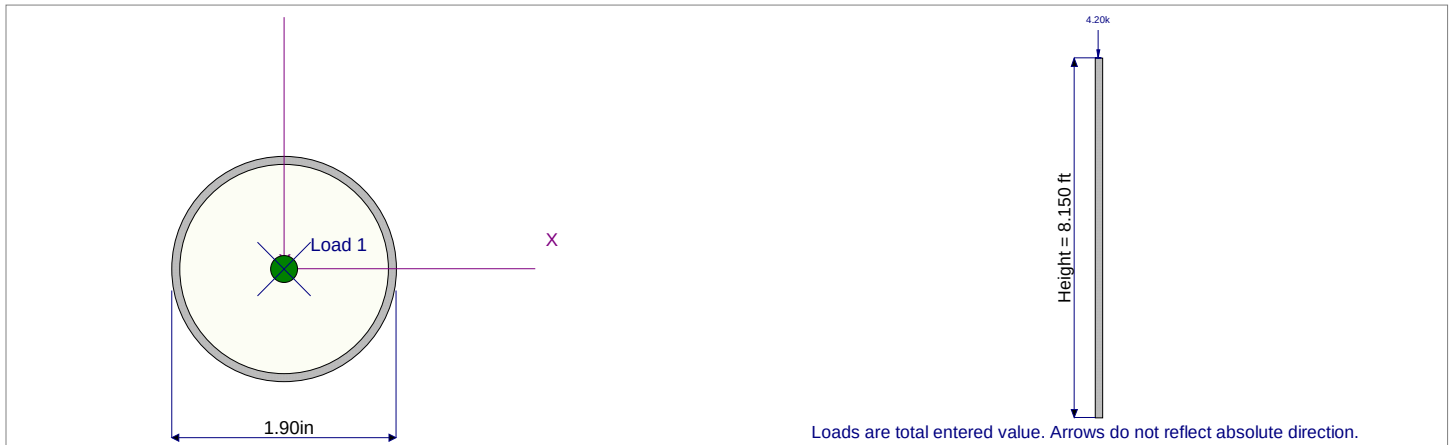
| Load Combination | X-X Axis Reaction |       | Y-Y Axis Reaction |       | Axial Reaction<br>@ Base |
|------------------|-------------------|-------|-------------------|-------|--------------------------|
|                  | @ Base            | @ Top | @ Base            | @ Top |                          |
| D Only           |                   |       |                   |       | 4.222 k                  |

### Maximum Deflections for Load Combinations - Unfactored Loads

| Load Combination | Max. X-X Deflection | Distance | Max. Y-Y Deflection | Distance |
|------------------|---------------------|----------|---------------------|----------|
| D Only           | 0.0000 in           | 0.000 ft | 0.000 in            | 0.000 ft |

### Steel Section Properties : HSS 1.900X0.145

|            |   |            |      |   |            |   |   |            |
|------------|---|------------|------|---|------------|---|---|------------|
| Depth      | = | 1.900 in   | I xx | = | 0.29 in^4  | J | = | 0.586 in^4 |
|            |   |            | S xx | = | 0.31 in^3  |   |   |            |
| Diameter   | = | 1.900 in   | R xx | = | 0.626 in   |   |   |            |
| Wall Thick | = | 0.145 in   | Zx   | = | 0.421 in^3 |   |   |            |
| Area       | = | 0.749 in^2 | I yy | = | 0.293 in^4 | C | = | 0.617 in^3 |
| Weight     | = | 2.720 plf  | S yy | = | 0.309 in^3 |   |   |            |
|            |   |            | R yy | = | 0.626 in   |   |   |            |
| Ycg        | = | 0.000 in   |      |   |            |   |   |            |



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Project ID: 12065

Printed: 9 JAN 2014, 10:06AM

## Steel Column

File = G:\Jobfiles\12065\Enercalc\12065.ec6  
ENERCALC, INC. 1983-2013, Build:6.13.8.31, Ver:6.13.8.31

Lic. # : KW-06002320

Licensee : NORMAN SCHEEL SE

Description : Brace C

### Code References

Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-10  
Load Combinations Used : 2006 IBC & ASCE 7-05

### General Information

|                             |                                        |                                                           |                                |
|-----------------------------|----------------------------------------|-----------------------------------------------------------|--------------------------------|
| Steel Section Name :        | <b>HSS 1.900X0.145</b>                 | Overall Column Height                                     | <b>11.310 ft</b>               |
| Analysis Method :           | <b>Allowable Strength</b>              | Top & Bottom Fixity                                       | <b>Top &amp; Bottom Pinned</b> |
| Steel Stress Grade          | <b>A-36, Carbon Steel, Fy = 36 ksi</b> | Brace condition for deflection (buckling) along columns : |                                |
| Fy : Steel Yield            | <b>36.0 ksi</b>                        | X-X (width) axis :                                        |                                |
| E : Elastic Bending Modulus | <b>29,000.0 ksi</b>                    | Unbraced Length for X-X Axis buckling = 8.5 ft, K = 1.0   |                                |
| Load Combination :          | <b>2006 IBC &amp; ASCE 7-05</b>        | Y-Y (depth) axis :                                        |                                |
|                             |                                        | Unbraced Length for Y-Y Axis buckling = 8.5 ft, K = 1.0   |                                |

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 30.767 lbs \* Dead Load Factor

AXIAL LOADS . . .

Axial Load at 11.310 ft, D = 4.20 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

|                                               |                    |                                        |                                    |
|-----------------------------------------------|--------------------|----------------------------------------|------------------------------------|
| <b>PASS</b> Max. Axial+Bending Stress Ratio = | <b>0.9977</b> : 1  | Maximum SERVICE Load Reactions . .     |                                    |
| Load Combination                              | <b>D Only</b>      | Top along X-X                          | <b>0.0 k</b>                       |
| Location of max.above base                    | <b>0.0 ft</b>      | Bottom along X-X                       | <b>0.0 k</b>                       |
| At maximum location values are . . .          |                    | Top along Y-Y                          | <b>0.0 k</b>                       |
| Pa : Axial                                    | <b>4.231 k</b>     | Bottom along Y-Y                       | <b>0.0 k</b>                       |
| Pn / Omega : Allowable                        | <b>4.240 k</b>     | Maximum SERVICE Load Deflections . . . |                                    |
| Ma-x : Applied                                | <b>0.0 k-ft</b>    | Along Y-Y                              | <b>0.0 in at 0.0 ft above base</b> |
| Mn-x / Omega : Allowable                      | <b>0.7563 k-ft</b> | for load combination :                 |                                    |
| Ma-y : Applied                                | <b>0.0 k-ft</b>    | Along X-X                              | <b>0.0 in at 0.0 ft above base</b> |
| Mn-y / Omega : Allowable                      | <b>0.7563 k-ft</b> | for load combination :                 |                                    |
| <b>PASS</b> Maximum Shear Stress Ratio =      | <b>0.0</b> : 1     |                                        |                                    |
| Load Combination                              |                    |                                        |                                    |
| Location of max.above base                    | <b>0.0 ft</b>      |                                        |                                    |
| At maximum location values are . . .          |                    |                                        |                                    |
| Va : Applied                                  | <b>0.0 k</b>       |                                        |                                    |
| Vn / Omega : Allowable                        | <b>0.0 k</b>       |                                        |                                    |

### Load Combination Results

| Load Combination            | Maximum Axial + Bending Stress Ratios |        |          | Maximum Shear Ratios |        |          |
|-----------------------------|---------------------------------------|--------|----------|----------------------|--------|----------|
|                             | Stress Ratio                          | Status | Location | Stress Ratio         | Status | Location |
| D Only                      | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+L+H                      | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+Lr+H                     | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+S+H                      | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+H         | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+H          | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+W+H                      | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.70E+H                  | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.750W+H  | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.750W+H   | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.5250E+H | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.5250E+H  | 0.998                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+W+H                  | 0.599                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+0.70E+H              | 0.599                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |

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5022 Sunrise Boulevard  
Fair Oaks, CA 95628  
(916) 536-9585

Project Title: 200 Series Ground Mount  
Engineer:  
Project Descr:

Project ID: 12065

Printed: 9 JAN 2014, 10:06AM

## Steel Column

File = G:\Jobfiles\12065\Enercalc\12065.ec6  
ENERCALC, INC. 1983-2013, Build:6.13.8.31, Ver:6.13.8.31

Lic. # : KW-06002320

Licensee : NORMAN SCHEEL SE

Description : Brace C

Note: Only non-zero reactions are listed.

### Maximum Reactions - Unfactored

| Load Combination | X-X Axis Reaction |       | Y-Y Axis Reaction |       | Axial Reaction<br>@ Base |
|------------------|-------------------|-------|-------------------|-------|--------------------------|
|                  | @ Base            | @ Top | @ Base            | @ Top |                          |
| D Only           |                   |       |                   |       | 4.231 k                  |

### Maximum Deflections for Load Combinations - Unfactored Loads

| Load Combination | Max. X-X Deflection | Distance | Max. Y-Y Deflection | Distance |
|------------------|---------------------|----------|---------------------|----------|
| D Only           | 0.0000 in           | 0.000 ft | 0.000 in            | 0.000 ft |

### Steel Section Properties : HSS 1.900X0.145

|            |   |            |      |   |            |   |   |            |
|------------|---|------------|------|---|------------|---|---|------------|
| Depth      | = | 1.900 in   | I xx | = | 0.29 in^4  | J | = | 0.586 in^4 |
|            |   |            | S xx | = | 0.31 in^3  |   |   |            |
| Diameter   | = | 1.900 in   | R xx | = | 0.626 in   |   |   |            |
| Wall Thick | = | 0.145 in   | Zx   | = | 0.421 in^3 |   |   |            |
| Area       | = | 0.749 in^2 | I yy | = | 0.293 in^4 | C | = | 0.617 in^3 |
| Weight     | = | 2.720 plf  | S yy | = | 0.309 in^3 |   |   |            |
|            |   |            | R yy | = | 0.626 in   |   |   |            |
| Ycg        | = | 0.000 in   |      |   |            |   |   |            |



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Lic. #: KW-06002320

Licensee: NORMAN SCHEEL SE

Description: Brace D

### Code References

Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-10  
Load Combinations Used: 2006 IBC & ASCE 7-05

### General Information

|                            |                                        |                                                          |                                |
|----------------------------|----------------------------------------|----------------------------------------------------------|--------------------------------|
| Steel Section Name:        | <b>HSS 1.900X0.145</b>                 | Overall Column Height                                    | <b>8.060 ft</b>                |
| Analysis Method:           | <b>Allowable Strength</b>              | Top & Bottom Fixity                                      | <b>Top &amp; Bottom Pinned</b> |
| Steel Stress Grade         | <b>A-36, Carbon Steel, Fy = 36 ksi</b> | Brace condition for deflection (buckling) along columns: |                                |
| Fy: Steel Yield            | <b>36.0 ksi</b>                        | X-X (width) axis:                                        |                                |
| E: Elastic Bending Modulus | <b>29,000.0 ksi</b>                    | Unbraced Length for X-X Axis buckling = 8.5 ft, K = 1.0  |                                |
| Load Combination:          | <b>2006 IBC &amp; ASCE 7-05</b>        | Y-Y (depth) axis:                                        |                                |
|                            |                                        | Unbraced Length for Y-Y Axis buckling = 8.5 ft, K = 1.0  |                                |

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included: 21.926 lbs \* Dead Load Factor  
AXIAL LOADS . . .  
Axial Load at 8.060 ft, D = 4.20 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

|                                               |                    |                                        |                                    |
|-----------------------------------------------|--------------------|----------------------------------------|------------------------------------|
| <b>PASS</b> Max. Axial+Bending Stress Ratio = | <b>0.9956</b> : 1  | Maximum SERVICE Load Reactions . .     |                                    |
| Load Combination                              | <b>D Only</b>      | Top along X-X                          | <b>0.0 k</b>                       |
| Location of max.above base                    | <b>0.0 ft</b>      | Bottom along X-X                       | <b>0.0 k</b>                       |
| At maximum location values are . . .          |                    | Top along Y-Y                          | <b>0.0 k</b>                       |
| Pa: Axial                                     | <b>4.222 k</b>     | Bottom along Y-Y                       | <b>0.0 k</b>                       |
| Pn / Omega: Allowable                         | <b>4.240 k</b>     | Maximum SERVICE Load Deflections . . . |                                    |
| Ma-x: Applied                                 | <b>0.0 k-ft</b>    | Along Y-Y                              | <b>0.0 in at 0.0 ft above base</b> |
| Mn-x / Omega: Allowable                       | <b>0.7563 k-ft</b> | for load combination:                  |                                    |
| Ma-y: Applied                                 | <b>0.0 k-ft</b>    | Along X-X                              | <b>0.0 in at 0.0 ft above base</b> |
| Mn-y / Omega: Allowable                       | <b>0.7563 k-ft</b> | for load combination:                  |                                    |
| <b>PASS</b> Maximum Shear Stress Ratio =      | <b>0.0</b> : 1     |                                        |                                    |
| Load Combination                              |                    |                                        |                                    |
| Location of max.above base                    | <b>0.0 ft</b>      |                                        |                                    |
| At maximum location values are . . .          |                    |                                        |                                    |
| Va: Applied                                   | <b>0.0 k</b>       |                                        |                                    |
| Vn / Omega: Allowable                         | <b>0.0 k</b>       |                                        |                                    |

### Load Combination Results

| Load Combination            | Maximum Axial + Bending Stress Ratios |        |          | Maximum Shear Ratios |        |          |
|-----------------------------|---------------------------------------|--------|----------|----------------------|--------|----------|
|                             | Stress Ratio                          | Status | Location | Stress Ratio         | Status | Location |
| D Only                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+L+H                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+Lr+H                     | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+S+H                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+H         | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+H          | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+W+H                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.70E+H                  | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.750W+H  | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.750W+H   | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.5250E+H | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.5250E+H  | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+W+H                  | 0.597                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+0.70E+H              | 0.597                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |

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## Steel Column

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Lic. #: KW-06002320

Licensee: NORMAN SCHEEL SE

Description: Brace D

Note: Only non-zero reactions are listed.

### Maximum Reactions - Unfactored

| Load Combination | X-X Axis Reaction |       | Y-Y Axis Reaction |       | Axial Reaction<br>@ Base |
|------------------|-------------------|-------|-------------------|-------|--------------------------|
|                  | @ Base            | @ Top | @ Base            | @ Top |                          |
| D Only           |                   |       |                   |       | 4.222 k                  |

### Maximum Deflections for Load Combinations - Unfactored Loads

| Load Combination | Max. X-X Deflection | Distance | Max. Y-Y Deflection | Distance |
|------------------|---------------------|----------|---------------------|----------|
| D Only           | 0.0000 in           | 0.000 ft | 0.000 in            | 0.000 ft |

### Steel Section Properties : HSS 1.900X0.145

|            |   |            |      |   |            |   |   |            |
|------------|---|------------|------|---|------------|---|---|------------|
| Depth      | = | 1.900 in   | I xx | = | 0.29 in^4  | J | = | 0.586 in^4 |
|            |   |            | S xx | = | 0.31 in^3  |   |   |            |
| Diameter   | = | 1.900 in   | R xx | = | 0.626 in   |   |   |            |
| Wall Thick | = | 0.145 in   | Zx   | = | 0.421 in^3 |   |   |            |
| Area       | = | 0.749 in^2 | I yy | = | 0.293 in^4 | C | = | 0.617 in^3 |
| Weight     | = | 2.720 plf  | S yy | = | 0.309 in^3 |   |   |            |
|            |   |            | R yy | = | 0.626 in   |   |   |            |
| Ycg        | = | 0.000 in   |      |   |            |   |   |            |



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Lic. #: KW-06002320

Licensee: NORMAN SCHEEL SE

Description: Brace E

### Code References

Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-10  
Load Combinations Used: 2006 IBC & ASCE 7-05

### General Information

|                            |                                        |                                                          |                                |
|----------------------------|----------------------------------------|----------------------------------------------------------|--------------------------------|
| Steel Section Name:        | <b>HSS 1.900X0.145</b>                 | Overall Column Height                                    | <b>9.360 ft</b>                |
| Analysis Method:           | <b>Allowable Strength</b>              | Top & Bottom Fixity                                      | <b>Top &amp; Bottom Pinned</b> |
| Steel Stress Grade         | <b>A-36, Carbon Steel, Fy = 36 ksi</b> | Brace condition for deflection (buckling) along columns: |                                |
| Fy: Steel Yield            | <b>36.0 ksi</b>                        | X-X (width) axis:                                        |                                |
| E: Elastic Bending Modulus | <b>29,000.0 ksi</b>                    | Unbraced Length for X-X Axis buckling = 8.5 ft, K = 1.0  |                                |
| Load Combination:          | <b>2006 IBC &amp; ASCE 7-05</b>        | Y-Y (depth) axis:                                        |                                |
|                            |                                        | Unbraced Length for Y-Y Axis buckling = 8.5 ft, K = 1.0  |                                |

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included: 25.463 lbs \* Dead Load Factor  
AXIAL LOADS ...  
Axial Load at 9.360 ft, D = 4.20 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

|                                               |                    |                                        |                                    |
|-----------------------------------------------|--------------------|----------------------------------------|------------------------------------|
| <b>PASS</b> Max. Axial+Bending Stress Ratio = | <b>0.9965</b> : 1  | Maximum SERVICE Load Reactions . .     |                                    |
| Load Combination                              | <b>D Only</b>      | Top along X-X                          | <b>0.0 k</b>                       |
| Location of max.above base                    | <b>0.0 ft</b>      | Bottom along X-X                       | <b>0.0 k</b>                       |
| At maximum location values are . . .          |                    | Top along Y-Y                          | <b>0.0 k</b>                       |
| Pa: Axial                                     | <b>4.225 k</b>     | Bottom along Y-Y                       | <b>0.0 k</b>                       |
| Pn / Omega: Allowable                         | <b>4.240 k</b>     | Maximum SERVICE Load Deflections . . . |                                    |
| Ma-x: Applied                                 | <b>0.0 k-ft</b>    | Along Y-Y                              | <b>0.0 in at 0.0 ft above base</b> |
| Mn-x / Omega: Allowable                       | <b>0.7563 k-ft</b> | for load combination:                  |                                    |
| Ma-y: Applied                                 | <b>0.0 k-ft</b>    | Along X-X                              | <b>0.0 in at 0.0 ft above base</b> |
| Mn-y / Omega: Allowable                       | <b>0.7563 k-ft</b> | for load combination:                  |                                    |
| <b>PASS</b> Maximum Shear Stress Ratio =      | <b>0.0</b> : 1     |                                        |                                    |
| Load Combination                              |                    |                                        |                                    |
| Location of max.above base                    | <b>0.0 ft</b>      |                                        |                                    |
| At maximum location values are . . .          |                    |                                        |                                    |
| Va: Applied                                   | <b>0.0 k</b>       |                                        |                                    |
| Vn / Omega: Allowable                         | <b>0.0 k</b>       |                                        |                                    |

### Load Combination Results

| Load Combination            | Maximum Axial + Bending Stress Ratios |        |          | Maximum Shear Ratios |        |          |
|-----------------------------|---------------------------------------|--------|----------|----------------------|--------|----------|
|                             | Stress Ratio                          | Status | Location | Stress Ratio         | Status | Location |
| D Only                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+L+H                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+Lr+H                     | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+S+H                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+H         | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+H          | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+W+H                      | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.70E+H                  | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.750W+H  | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.750W+H   | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.5250E+H | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.5250E+H  | 0.996                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+W+H                  | 0.598                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+0.70E+H              | 0.598                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |

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Licensee : NORMAN SCHEEL SE

Lic. # : KW-06002320

Description : Brace E

Note: Only non-zero reactions are listed.

### Maximum Reactions - Unfactored

| Load Combination | X-X Axis Reaction |       | Y-Y Axis Reaction |       | Axial Reaction<br>@ Base |
|------------------|-------------------|-------|-------------------|-------|--------------------------|
|                  | @ Base            | @ Top | @ Base            | @ Top |                          |
| D Only           |                   |       |                   |       | 4.225 k                  |

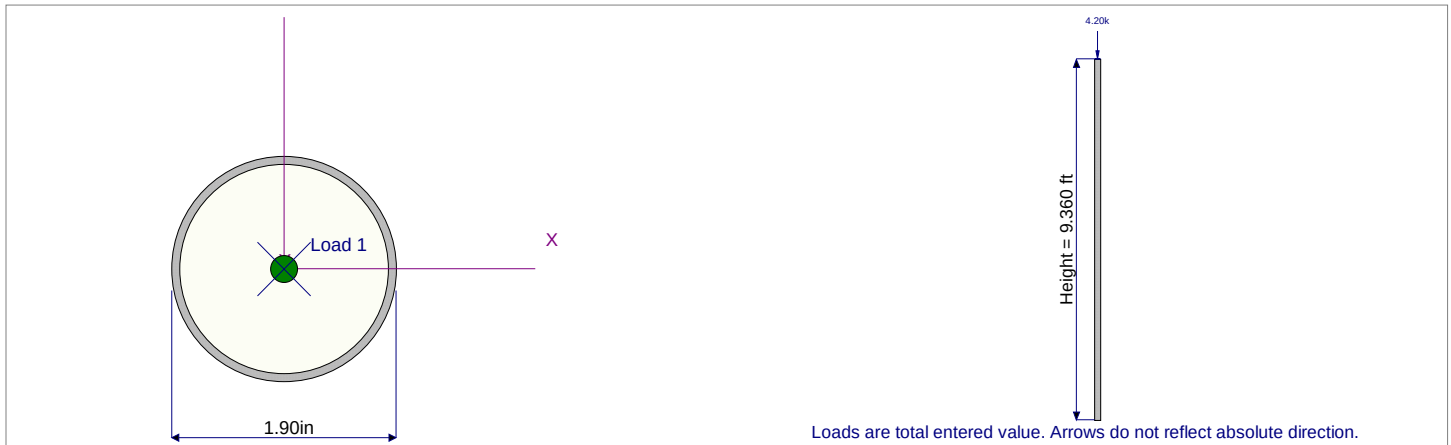
### Maximum Deflections for Load Combinations - Unfactored Loads

| Load Combination | Max. X-X Deflection | Distance | Max. Y-Y Deflection | Distance |
|------------------|---------------------|----------|---------------------|----------|
| D Only           | 0.0000 in           | 0.000 ft | 0.000 in            | 0.000 ft |

### Steel Section Properties : HSS 1.900X0.145

|            |   |            |      |   |            |   |   |            |
|------------|---|------------|------|---|------------|---|---|------------|
| Depth      | = | 1.900 in   | I xx | = | 0.29 in^4  | J | = | 0.586 in^4 |
|            |   |            | S xx | = | 0.31 in^3  |   |   |            |
| Diameter   | = | 1.900 in   | R xx | = | 0.626 in   |   |   |            |
| Wall Thick | = | 0.145 in   | Zx   | = | 0.421 in^3 |   |   |            |
| Area       | = | 0.749 in^2 | I yy | = | 0.293 in^4 | C | = | 0.617 in^3 |
| Weight     | = | 2.720 plf  | S yy | = | 0.309 in^3 |   |   |            |
|            |   |            | R yy | = | 0.626 in   |   |   |            |

Ycg = 0.000 in



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Licensee : NORMAN SCHEEL SE

Description : Brace F

### Code References

Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-10  
Load Combinations Used : 2006 IBC & ASCE 7-05

### General Information

|                             |                                        |                                                           |                                |
|-----------------------------|----------------------------------------|-----------------------------------------------------------|--------------------------------|
| Steel Section Name :        | <b>HSS 1.900X0.145</b>                 | Overall Column Height                                     | <b>5.060 ft</b>                |
| Analysis Method :           | <b>Allowable Strength</b>              | Top & Bottom Fixity                                       | <b>Top &amp; Bottom Pinned</b> |
| Steel Stress Grade          | <b>A-36, Carbon Steel, Fy = 36 ksi</b> | Brace condition for deflection (buckling) along columns : |                                |
| Fy : Steel Yield            | <b>36.0 ksi</b>                        | X-X (width) axis :                                        |                                |
| E : Elastic Bending Modulus | <b>29,000.0 ksi</b>                    | Unbraced Length for X-X Axis buckling = 8.5 ft, K = 1.0   |                                |
| Load Combination :          | <b>2006 IBC &amp; ASCE 7-05</b>        | Y-Y (depth) axis :                                        |                                |
|                             |                                        | Unbraced Length for Y-Y Axis buckling = 8.5 ft, K = 1.0   |                                |

### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 13.765 lbs \* Dead Load Factor  
AXIAL LOADS . . .  
Axial Load at 5.060 ft, D = 4.20 k

### DESIGN SUMMARY

#### Bending & Shear Check Results

|                                               |                    |                                        |                                    |
|-----------------------------------------------|--------------------|----------------------------------------|------------------------------------|
| <b>PASS</b> Max. Axial+Bending Stress Ratio = | <b>0.9937</b> : 1  | Maximum SERVICE Load Reactions . .     |                                    |
| Load Combination                              | <b>D Only</b>      | Top along X-X                          | <b>0.0 k</b>                       |
| Location of max.above base                    | <b>0.0 ft</b>      | Bottom along X-X                       | <b>0.0 k</b>                       |
| At maximum location values are . . .          |                    | Top along Y-Y                          | <b>0.0 k</b>                       |
| Pa : Axial                                    | <b>4.214 k</b>     | Bottom along Y-Y                       | <b>0.0 k</b>                       |
| Pn / Omega : Allowable                        | <b>4.240 k</b>     | Maximum SERVICE Load Deflections . . . |                                    |
| Ma-x : Applied                                | <b>0.0 k-ft</b>    | Along Y-Y                              | <b>0.0 in at 0.0 ft above base</b> |
| Mn-x / Omega : Allowable                      | <b>0.7563 k-ft</b> | for load combination :                 |                                    |
| Ma-y : Applied                                | <b>0.0 k-ft</b>    | Along X-X                              | <b>0.0 in at 0.0 ft above base</b> |
| Mn-y / Omega : Allowable                      | <b>0.7563 k-ft</b> | for load combination :                 |                                    |
| <b>PASS</b> Maximum Shear Stress Ratio =      | <b>0.0</b> : 1     |                                        |                                    |
| Load Combination                              |                    |                                        |                                    |
| Location of max.above base                    | <b>0.0 ft</b>      |                                        |                                    |
| At maximum location values are . . .          |                    |                                        |                                    |
| Va : Applied                                  | <b>0.0 k</b>       |                                        |                                    |
| Vn / Omega : Allowable                        | <b>0.0 k</b>       |                                        |                                    |

### Load Combination Results

| Load Combination            | Maximum Axial + Bending Stress Ratios |        |          | Maximum Shear Ratios |        |          |
|-----------------------------|---------------------------------------|--------|----------|----------------------|--------|----------|
|                             | Stress Ratio                          | Status | Location | Stress Ratio         | Status | Location |
| D Only                      | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+L+H                      | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+Lr+H                     | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+S+H                      | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+H         | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+H          | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+W+H                      | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.70E+H                  | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.750W+H  | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.750W+H   | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750Lr+0.750L+0.5250E+H | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +D+0.750L+0.750S+0.5250E+H  | 0.994                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+W+H                  | 0.596                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |
| +0.60D+0.70E+H              | 0.596                                 | PASS   | 0.00 ft  | 0.000                | PASS   | 0.00 ft  |

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## Steel Column

File = G:\Jobfiles\12065\Enercalc\12065.ec6  
ENERCALC, INC. 1983-2013, Build:6.13.8.31, Ver:6.13.8.31

Lic. #: KW-06002320

Licensee: NORMAN SCHEEL SE

Description: Brace F

Note: Only non-zero reactions are listed.

### Maximum Reactions - Unfactored

| Load Combination | X-X Axis Reaction |       | Y-Y Axis Reaction |       | Axial Reaction<br>@ Base |
|------------------|-------------------|-------|-------------------|-------|--------------------------|
|                  | @ Base            | @ Top | @ Base            | @ Top |                          |
| D Only           |                   |       |                   |       | 4.214 k                  |

### Maximum Deflections for Load Combinations - Unfactored Loads

| Load Combination | Max. X-X Deflection | Distance | Max. Y-Y Deflection | Distance |
|------------------|---------------------|----------|---------------------|----------|
| D Only           | 0.0000 in           | 0.000 ft | 0.000 in            | 0.000 ft |

### Steel Section Properties : HSS 1.900X0.145

|            |   |            |      |   |            |   |   |            |
|------------|---|------------|------|---|------------|---|---|------------|
| Depth      | = | 1.900 in   | I xx | = | 0.29 in^4  | J | = | 0.586 in^4 |
|            |   |            | S xx | = | 0.31 in^3  |   |   |            |
| Diameter   | = | 1.900 in   | R xx | = | 0.626 in   |   |   |            |
| Wall Thick | = | 0.145 in   | Zx   | = | 0.421 in^3 |   |   |            |
| Area       | = | 0.749 in^2 | I yy | = | 0.293 in^4 | C | = | 0.617 in^3 |
| Weight     | = | 2.720 plf  | S yy | = | 0.309 in^3 |   |   |            |
|            |   |            | R yy | = | 0.626 in   |   |   |            |
| Ycg        | = | 0.000 in   |      |   |            |   |   |            |

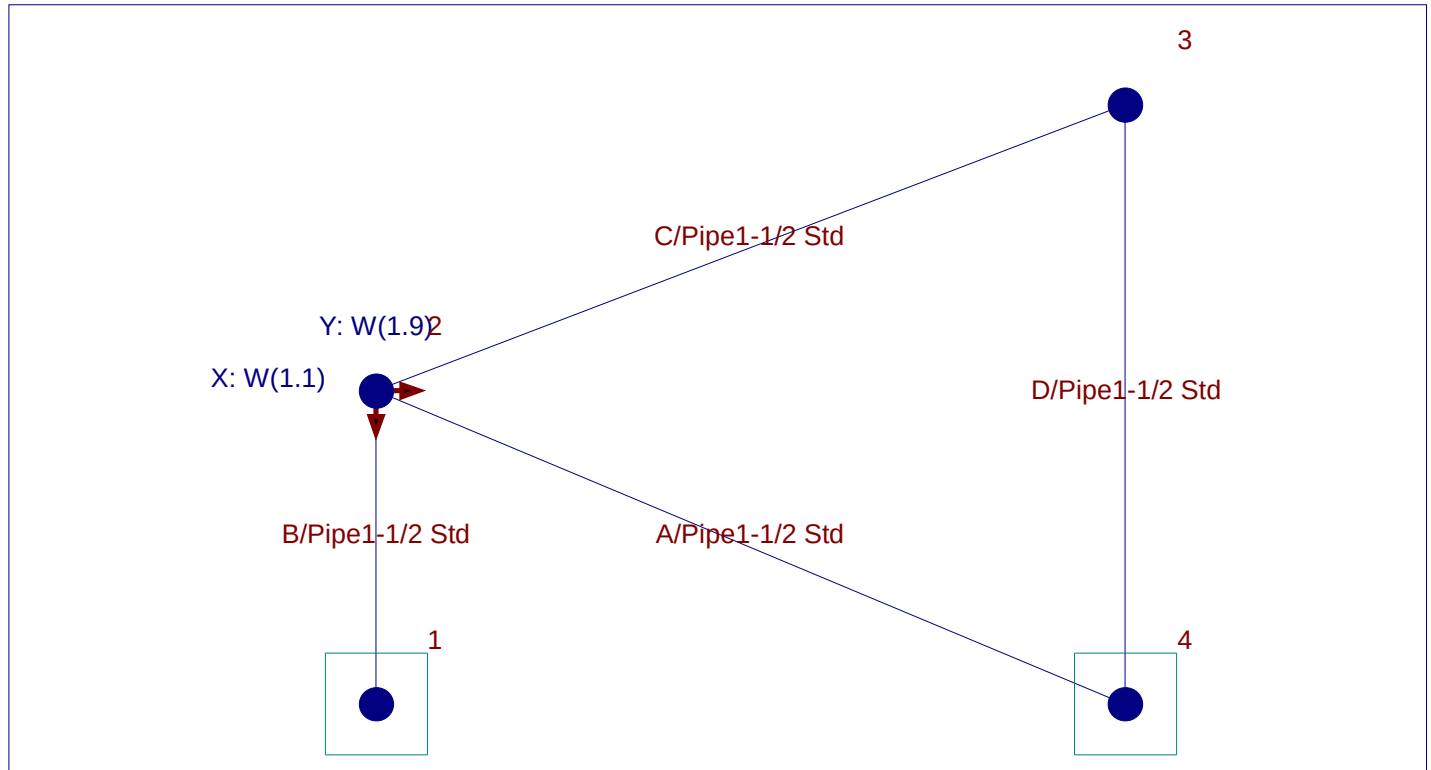


## 2-D Frame Analysis

File = G:\Jobfiles\12065\Enercalc\12065.ec6  
ENERCALC, INC. 1983-2013, Build:6.13.8.31, Ver:6.13.8.31  
Licensee : NORMAN SCHEEL SE

Lic. # : KW-06002320

Description : Frame



### Joints...

| Joint Label | Joint Coordinates<br>X<br>ft | Y<br>ft | X Restraint | Y Restraint | Z Restraint | Joint Temp<br>deg F |
|-------------|------------------------------|---------|-------------|-------------|-------------|---------------------|
| 1           | 0.0                          | 0.0     | Fixed       | Fixed       |             | 0                   |
| 2           | 0.0                          | 3.060   |             |             |             | 0                   |
| 3           | 7.310                        | 5.850   |             |             |             | 0                   |
| 4           | 7.310                        | 0.0     | Fixed       | Fixed       |             | 0                   |

### Members...

| Member Label | Property Label | Endpoint Joints<br>I Joint | J Joint | Member Length<br>ft | I End Releases<br>x | y     | z     | J End Releases<br>x | y     | z     |
|--------------|----------------|----------------------------|---------|---------------------|---------------------|-------|-------|---------------------|-------|-------|
| A            | Pipe1-1/2 Std  | 2                          | 4       | 7.925               | Fixed               | Fixed | Fixed | Fixed               | Fixed | Fixed |
| B            | Pipe1-1/2 Std  | 1                          | 2       | 3.060               | Fixed               | Fixed | Fixed | Fixed               | Fixed | Fixed |
| C            | Pipe1-1/2 Std  | 2                          | 3       | 7.824               | Fixed               | Fixed | Fixed | Fixed               | Fixed | Fixed |
| D            | Pipe1-1/2 Std  | 3                          | 4       | 5.850               | Fixed               | Fixed | Fixed | Fixed               | Fixed | Fixed |

### Member Stress Check Data...

| Member Label | Unbraced Lengths<br>Lu : z<br>ft | Lu : y<br>ft | Slenderness Factors<br>K : z | K : y | AISC Bending & Stability Factors<br>Cm | Cb    |
|--------------|----------------------------------|--------------|------------------------------|-------|----------------------------------------|-------|
| A            | 7.925                            | 7.925        | 1.00                         | 1.00  | 1.000                                  | 1.000 |
| B            | 3.060                            | 3.060        | 1.00                         | 1.00  | 1.000                                  | 1.000 |
| C            | 7.824                            | 7.824        | 1.00                         | 1.00  | 1.000                                  | 1.000 |
| D            | 5.850                            | 5.850        | 1.00                         | 1.00  | 1.000                                  | 1.000 |

### Materials...

| Member Label | Youngs<br>ksi | Density<br>kcf | Thermal<br>in/degF | Yield<br>ksi |
|--------------|---------------|----------------|--------------------|--------------|
| Default      | 1.00          | 0.000          | 0.000000           | 1.00         |
| Steel        | 29,000.00     | 0.490          | 0.000650           | 50.00        |
| Tube         | 29,000.00     | 0.490          | 0.000650           | 42.00        |

Norman Scheel  
Structural Engineer  
5022 Sunrise Boulevard  
Fair Oaks, CA 95628  
(916) 536-9585

Project Title: 200 Series Ground Mount  
Engineer:  
Project Descr:

Project ID: 12065

Printed: 9 JAN 2014, 10:05AM

## 2-D Frame Analysis

File = G:\Jobfiles\12065\Enercalc\12065.ec6  
ENERCALC, INC. 1983-2013, Build:6.13.8.31, Ver:6.13.8.31

Lic. #: KW-06002320

Licensee: NORMAN SCHEEL SE

Description: Frame

### Member Sections...

| Prop Label    | Group Tag | Material | Area                  | Depth   | Width   | Ixx                    | Iyy                    |
|---------------|-----------|----------|-----------------------|---------|---------|------------------------|------------------------|
| Default       | Group     | Tube     | 1.0 in <sup>2</sup>   | 0.0 in  | 0.0 in  | 1.0 in <sup>4</sup>    | 1.0 in <sup>4</sup>    |
| Pipe1-1/2 Std | Group     | Tube     | 0.750 in <sup>2</sup> | 1.90 in | 1.90 in | 0.2930 in <sup>4</sup> | 0.2930 in <sup>4</sup> |

### Joint Loads....

| Joint Label | Load Direction | Load Magnitude |           |      |      |         |      |
|-------------|----------------|----------------|-----------|------|------|---------|------|
|             |                | Dead           | Roof Live | Live | Snow | Seismic | Wind |
| 2           | Global X       |                |           |      |      |         | 1.10 |
| 2           | Global Y       |                |           |      |      |         | 1.90 |

### Load Combinations...

| Load Combination Description | Group Multiplier | Self Weight Factors |   | Load Combination Factors |           |       |       |         |       |       |
|------------------------------|------------------|---------------------|---|--------------------------|-----------|-------|-------|---------|-------|-------|
|                              |                  | X                   | Y | Dead                     | Roof Live | Live  | Snow  | Seismic | Wind  | Earth |
| +D+S+H                       | 1.0              | -1.0                |   | 1.0                      |           |       | 1.0   |         |       | 1.0   |
| +D+W+H                       | 1.0              | -1.0                |   | 1.0                      |           |       |       |         | 1.0   | 1.0   |
| +D+0.750L+0.750S+0.750W+H    | 1.0              | -1.0                |   | 1.0                      |           | 0.750 | 0.750 |         | 0.750 | 1.0   |
| +0.60D+W+H                   | 1.0              | -1.0                |   | 0.60                     |           |       |       |         | 1.0   | 1.0   |

### Joint Displacements & Reactions by Load Combination :

| Joint Label | LoadCombination           | Joint Displacements |            |           | Joint Reactions |         |        |
|-------------|---------------------------|---------------------|------------|-----------|-----------------|---------|--------|
|             |                           | X in                | Y in       | Z Radians | X k             | Y k     | Z k-ft |
| 1           | +D+S+H                    | 0.0                 | 0.0        | 0.000127  | 0.004783        | 0.02791 |        |
| 2           | +D+S+H                    | -0.000010           | -0.0000410 | -0.000253 |                 |         |        |
| 3           | +D+S+H                    | -0.0000230          | -0.0000530 | 0.000175  |                 |         |        |
| 4           | +D+S+H                    | 0.0                 | 0.0        | 0.000179  | -0.004783       | 0.03503 |        |
| 1           | +D+W+H                    | 0.0                 | 0.0        | -0.000040 | 0.003241        | 1.467   |        |
| 2           | +D+W+H                    | 0.004614            | -0.002471  | -0.000297 |                 |         |        |
| 3           | +D+W+H                    | 0.003672            | -0.0000550 | 0.000166  |                 |         |        |
| 4           | +D+W+H                    | 0.0                 | 0.0        | 0.000149  | -1.103          | 0.4955  |        |
| 1           | +D+0.750L+0.750S+0.750W+H | 0.0                 | 0.0        | .0000020  | 0.003627        | 1.108   |        |
| 2           | +D+0.750L+0.750S+0.750W+H | 0.003458            | -0.001863  | -0.000286 |                 |         |        |
| 3           | +D+0.750L+0.750S+0.750W+H | 0.002748            | -0.0000540 | 0.000169  |                 |         |        |
| 4           | +D+0.750L+0.750S+0.750W+H | 0.0                 | 0.0        | 0.000157  | -0.8286         | 0.3804  |        |
| 1           | +0.60D+W+H                | 0.0                 | 0.0        | -0.000040 | 0.003241        | 1.467   |        |
| 2           | +0.60D+W+H                | 0.004614            | -0.002471  | -0.000297 |                 |         |        |
| 3           | +0.60D+W+H                | 0.003672            | -0.0000550 | 0.000166  |                 |         |        |
| 4           | +0.60D+W+H                | 0.0                 | 0.0        | 0.000149  | -1.103          | 0.4955  |        |

### Extreme Member End Forces

Only Load Combinations giving maximum values are listed

| Member Label | Member "I" End Forces |           |             | Member "J" End Forces |           |             |
|--------------|-----------------------|-----------|-------------|-----------------------|-----------|-------------|
|              | Axial k               | Shear k   | Moment k-ft | Axial k               | Shear k   | Moment k-ft |
| A            | 1.188                 | 0.008910  | 0.007445    | -0.005292             | 0.01022   | -0.01076    |
| Max          | +D+W+H                | +D+S+H    | +D+S+H      | +D+S+H                | +D+W+H    | +D+S+H      |
| A            | -0.002517             | 0.008435  | 0.005459    | -1.196                | 0.009746  | -0.01254    |
| Min          | +D+S+H                | +D+W+H    | +D+W+H      | +D+W+H                | +D+S+H    | +D+W+H      |
| B            | 1.467                 | -0.003241 | 0.0         | -0.02010              | 0.004783  | -0.009918   |
| Max          | +D+W+H                | +D+W+H    | +D+W+H      | +D+S+H                | +D+S+H    | +D+W+H      |
| B            | 0.02791               | -0.004783 | 0.0         | -1.460                | 0.003241  | -0.01464    |
| Min          | +D+S+H                | +D+S+H    | +D+S+H      | +D+W+H                | +D+W+H    | +D+S+H      |
| C            | 0.00780               | 0.008882  | 0.007191    | -0.000192             | 0.01040   | -0.01068    |
| Max          | +D+W+H                | +D+S+H    | +D+S+H      | +D+S+H                | +D+W+H    | +D+S+H      |
| C            | 0.007312              | 0.008252  | 0.004459    | -0.000680             | 0.009774  | -0.01288    |
| Min          | +D+S+H                | +D+W+H    | +D+W+H      | +D+W+H                | +D+S+H    | +D+W+H      |
| D            | 0.009478              | 0.004345  | 0.01288     | -0.02399              | -0.003665 | 0.01254     |
| Max          | +D+W+H                | +D+W+H    | +D+W+H      | +D+S+H                | +D+S+H    | +D+W+H      |
| D            | 0.009063              | 0.003665  | 0.01068     | -0.02441              | -0.004345 | 0.01076     |
| Min          | +D+S+H                | +D+S+H    | +D+S+H      | +D+W+H                | +D+W+H    | +D+S+H      |

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## 2-D Frame Analysis

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ENERCALC, INC. 1983-2013, Build:6.13.8.31, Ver:6.13.8.31

Lic. # : KW-06002320

Licensee : NORMAN SCHEEL SE

Description : Frame

### Extreme Member Forces

Only Load Combinations giving maximum values are listed

| Mmbr Label | Axial      | Dist from "I" Joint | Moment         | Dist from "I" Joint | Shear       | Dist from "I" Joint |
|------------|------------|---------------------|----------------|---------------------|-------------|---------------------|
| A          | 0.002517k  | 0.0 ft              | 0.01254 k-ft   | 7.925 ft            | 0.008910 k  | 0.0 ft              |
| Max        |            | +D+S+H              |                | +D+W+H              |             | +D+S+H              |
| Min        | -1.196k    | 7.925 ft            | -0.009651 k-ft | 3.558 ft            | -0.01022 k  | 7.925 ft            |
|            |            | +D+W+H              |                | +D+W+H              |             | +D+W+H              |
| B          | -0.02010k  | 3.060 ft            | 0.01464 k-ft   | 3.060 ft            | -0.003241 k | 0.0 ft              |
| Max        |            | +D+S+H              |                | +D+S+H              |             | +D+W+H              |
| Min        | -1.467k    | 0.0 ft              | 0.0 k-ft       | 0.0 ft              | -0.004783 k | 0.0 ft              |
|            |            | +D+W+H              |                | +D+S+H              |             | +D+S+H              |
| C          | -0.000192k | 7.824 ft            | 0.01288 k-ft   | 7.824 ft            | 0.008882 k  | 0.0 ft              |
| Max        |            | +D+S+H              |                | +D+W+H              |             | +D+S+H              |
| Min        | -0.00780k  | 0.0 ft              | -0.009816 k-ft | 3.513 ft            | -0.01040 k  | 7.824 ft            |
|            |            | +D+W+H              |                | +D+W+H              |             | +D+W+H              |
| D          | -0.009063k | 0.0 ft              | 0.01288 k-ft   | 0.0 ft              | 0.004345 k  | 0.0 ft              |
| Max        |            | +D+S+H              |                | +D+W+H              |             | +D+W+H              |
| Min        | -0.02441k  | 5.850 ft            | -0.01254 k-ft  | 5.850 ft            | 0.003665 k  | 0.0 ft              |
|            |            | +D+W+H              |                | +D+W+H              |             | +D+S+H              |

### Member Stress Checks...

| Member Label | Section Label | Material | Max. Axial + Bending Stress Ratios |       |        |           | Max. Shear Stress Ratios |       |        |           |
|--------------|---------------|----------|------------------------------------|-------|--------|-----------|--------------------------|-------|--------|-----------|
|              |               |          | Load Combination                   | Ratio | Status | Dist (ft) | Load Combination         | Ratio | Status | Dist (ft) |
| A            | Group         | Steel    | +D+W+H                             | 0.245 | PASS   | 6.47      | +D+W+H                   | 0.002 | PASS   | 7.92      |
| B            | Group         | Steel    | +D+W+H                             | 0.096 | PASS   | 0.00      | +D+S+H                   | 0.001 | PASS   | 0.00      |
| C            | Group         | Steel    | +D+W+H                             | 0.015 | PASS   | 7.82      | +D+W+H                   | 0.002 | PASS   | 7.82      |
| D            | Group         | Steel    | +D+W+H                             | 0.016 | PASS   | 5.85      | +D+W+H                   | 0.001 | PASS   | 0.00      |

### Appendix A: ASCE-2010 to 2005 conversion sheet

The 200 Series report's results have been calculated according to the ASCE-2010 guidelines. If the results would rather be examined in terms of the ASCE-2005 codes, the following conversions must be applied for the two codes' results to be of equivalence.

This appendix also applies for converting to different years for IBC codes. For 2006 and 2009 IBC, use the ASCE-2005 codes, and for the 2012 and 2015 IBC, use the ASCE-2010 codes.

Factors specific to this report

- 1) The ground-mounted solar panels are in terms of Risk Category I
- 2) The importance factor for the ASCE-2005 code is  $I = .77$
- 3) The ASCE-2010 code has no importance factor for the wind loads
- 4) The snow load's importance factor remains the same for both the 2005 and 2010 codes
- 5) Thus, calculations that utilize wind loads are the ONLY ones that need conversions

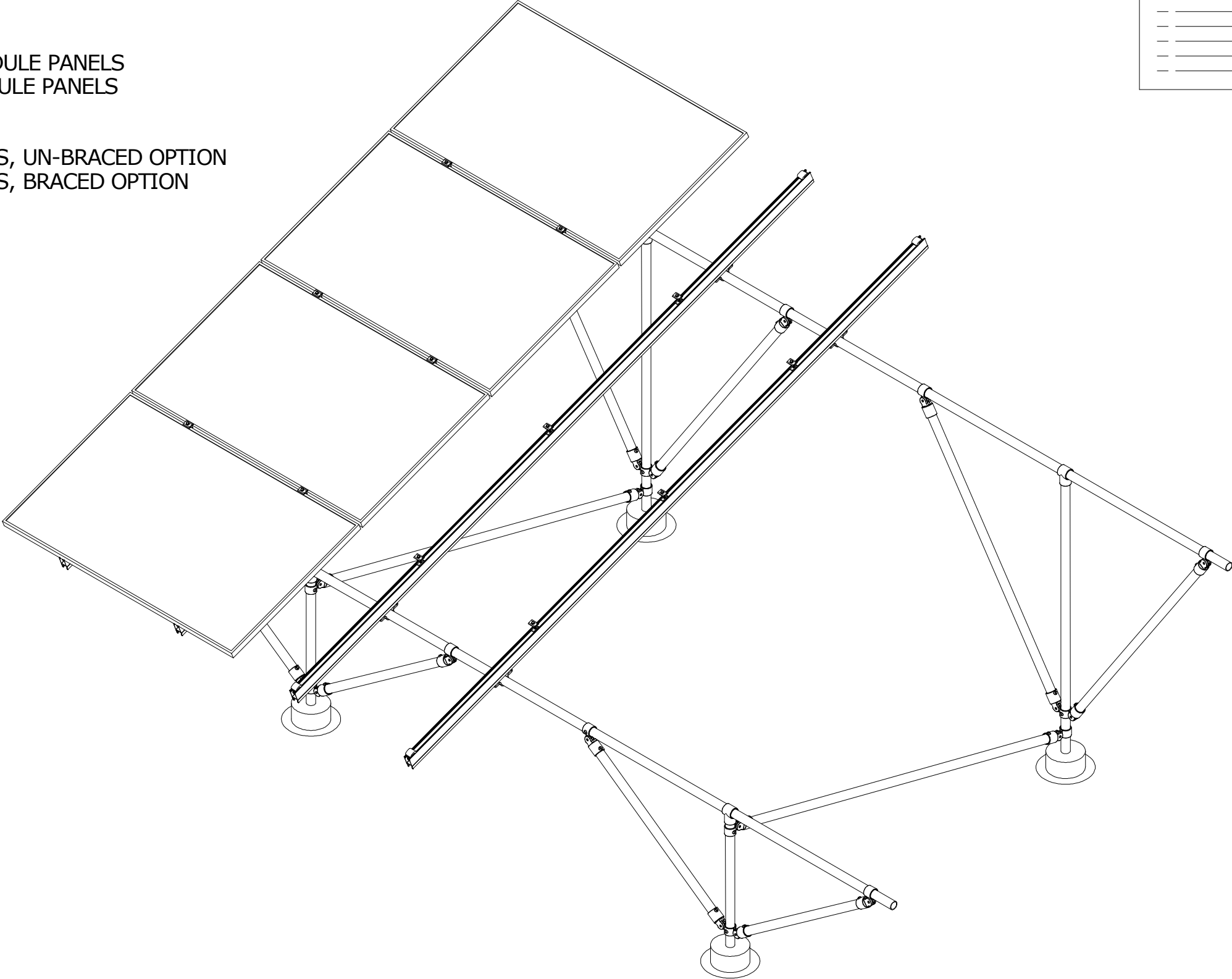
*Velocity Equivalence (mph)*

| V <sub>3-sec</sub> (ASCE7-05) | V <sub>ult.</sub> (ASCE7-10) |
|-------------------------------|------------------------------|
| 85                            | 100                          |
| 90                            | 116                          |
| 100                           | 129                          |
| 110                           | 142                          |
| 120                           | 155                          |
| 130                           | 168                          |
| 140                           | 181                          |
| 150                           | 194                          |

The following velocities listed in the graph refer to some  $V_{2005}$  being equal to some  $V_{2010}$ . In other words, use the following velocities in accordance with either ASCE-2005 or ASCE-2010.

- S200 D00: SERIES 200 DRAWING SET COVER
- S200 D01: SERIES 200 OVERVIEW
- S200 D02: SERIES 200 SYSTEM DETAILS
- S200 D03: SERIES 200 BRACED OPTION
- S200 D04: SERIES 200 SYSTEM DETAILS, 3 MODULE PANELS
- S200 D05: SERIES 200 BRACED OPTION, 3 MODULE PANELS
- S200 D06: SERIES 200 PIER DETAILS
- S200 D07: SERIES 200 GRADE BEAM OPTION
- S200 D08: SERIES 200 3-RAIL CONFIGURATIONS, UN-BRACED OPTION
- S200 D09: SERIES 200 3-RAIL CONFIGURATIONS, BRACED OPTION

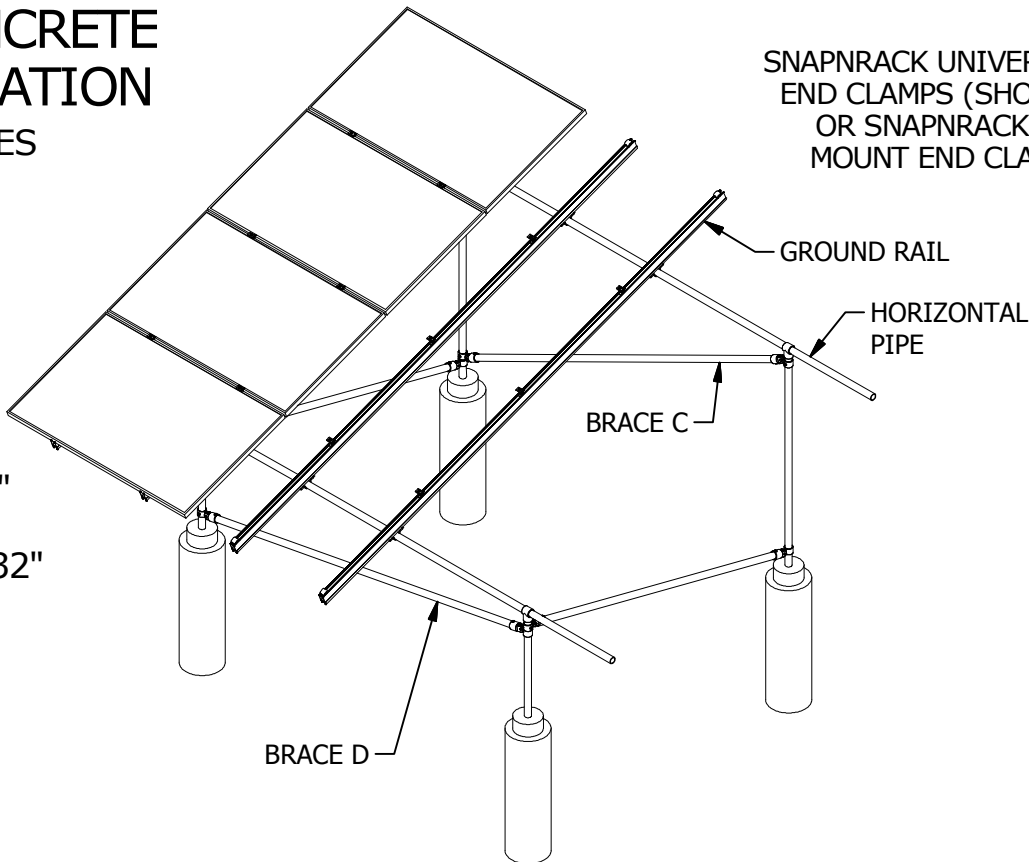
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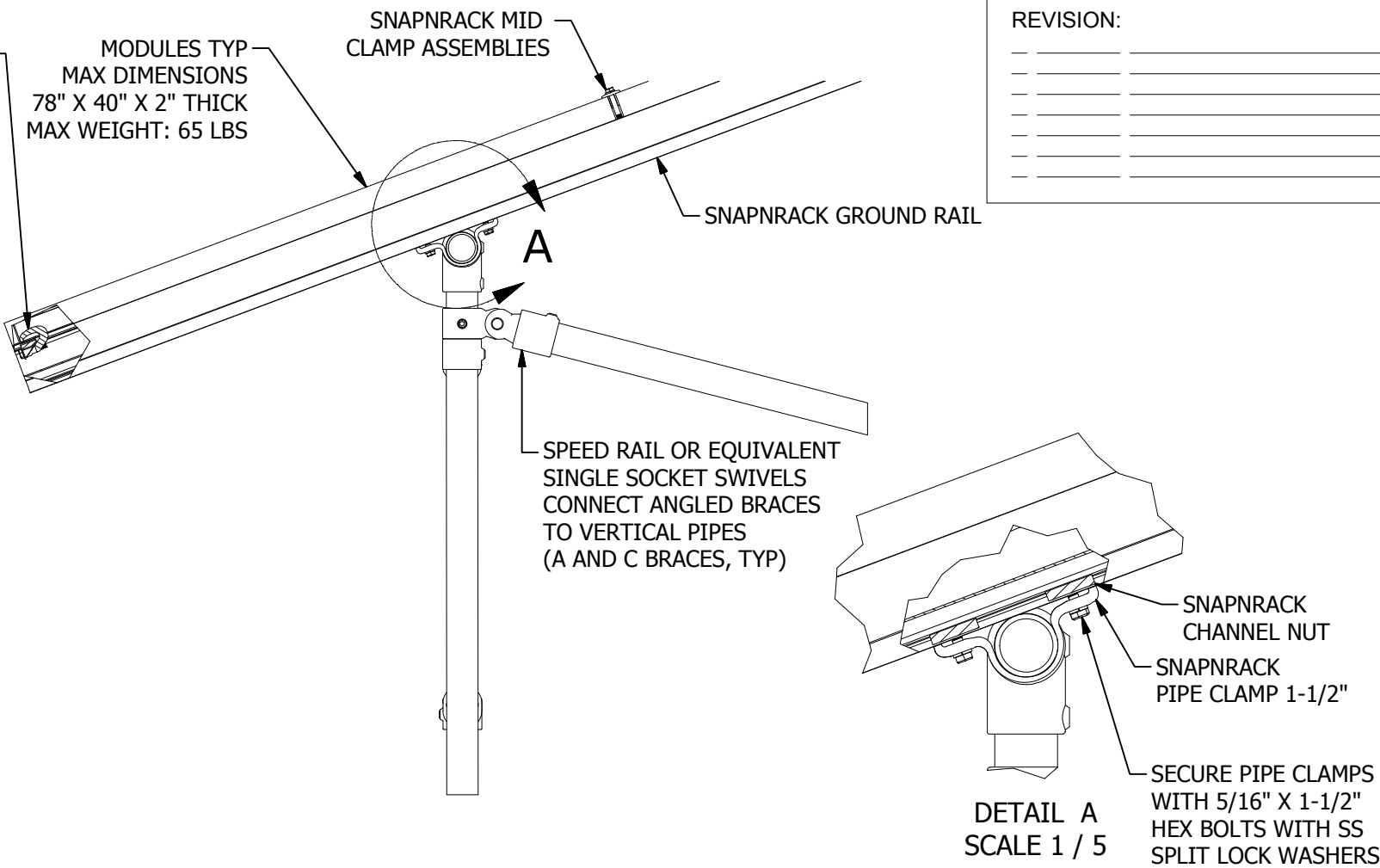
STANDARD CONCRETE  
PIER CONFIGURATION

SEE ENGINEERING TABLES  
FOR PIER DEPTHS AND  
SPAN LIMITATIONS.

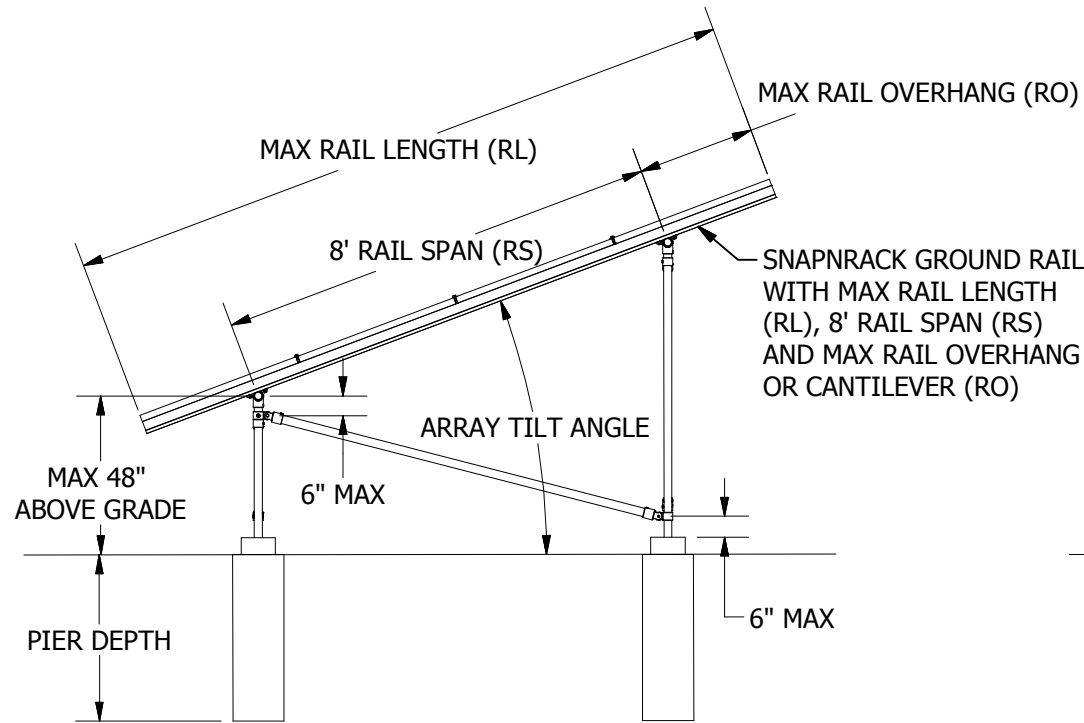
UNLESS OTHERWISE  
SPECIFIED IN  
ENGINEERING DOCS,  
THE FOLLOWING  
VALUES APPLY:  
MAX RAIL LENGTH: 162"  
RAIL SPAN: 96"  
MAX RAIL OVERHANG: 32"



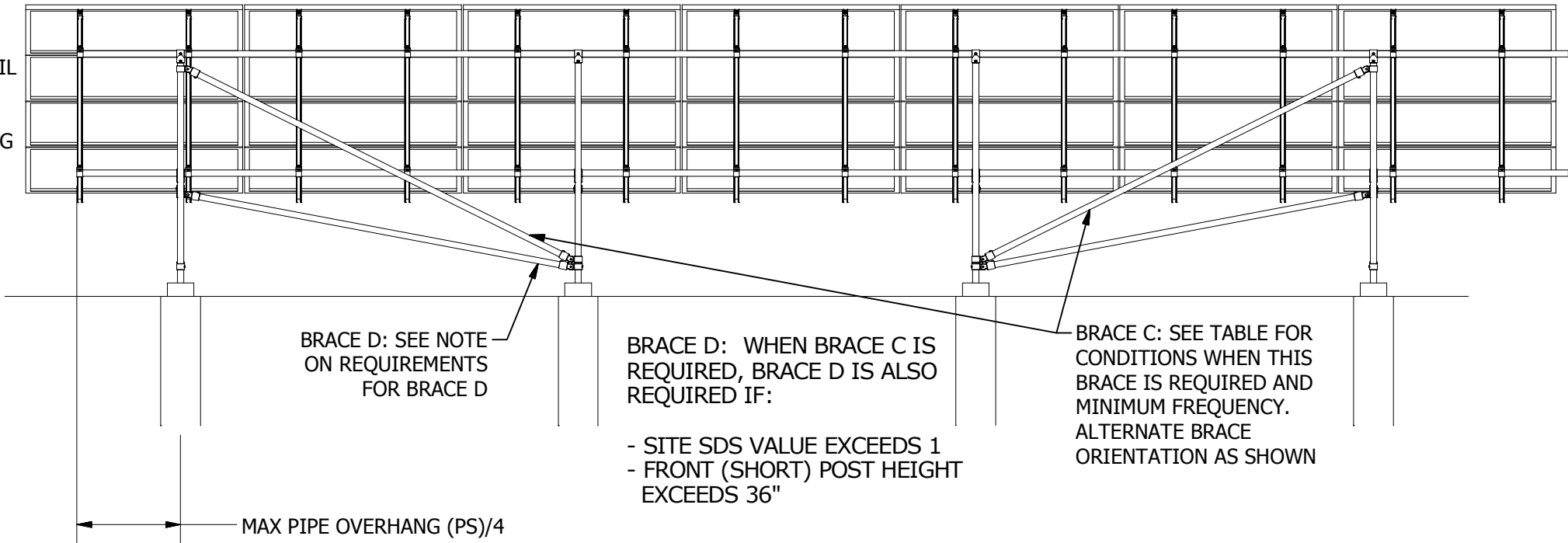
ISO VIEW OF RACKING ASSEMBLY



DETAILED VIEW OF PIPE TO RAIL AND BRACING INTERFACE



ARRAY SIDE VIEW



ARRAY BACK VIEW

|                                               |                                                                                                                                                                                                                                                                                                                                                     |                                                                               |                     |                                 |                                                |                 |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------|---------------------------------|------------------------------------------------|-----------------|
| <div>SnapNrack™<br/>PV Mounting Systems</div> | <div>MAINSTREAM ENERGY CORP.<br/>775 FIERO LANE, SUITE 200 • SAN LUIS OBISPO, CA 93401 USA<br/>PHONE (805) 528-9705 • FAX (805) 528-9701</div> <div>THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF MAINSTREAM ENERGY CORPORATION.</div> | DESIGNER: <u>G McPheeters</u><br>DRAFTER: <u>D Ryan</u><br>APPROVED BY: _____ | SCALE: <u>DNS</u>   | PART NUMBER:<br><u>S200 D01</u> | DESCRIPTION:<br><br><u>SERIES 200 OVERVIEW</u> | REV<br><u>G</u> |
|                                               |                                                                                                                                                                                                                                                                                                                                                     |                                                                               | DATE: <u>120113</u> |                                 |                                                |                 |



# BRACING OPTION FOR HIGH LOAD OR LONGER SPAN APPLICATIONS

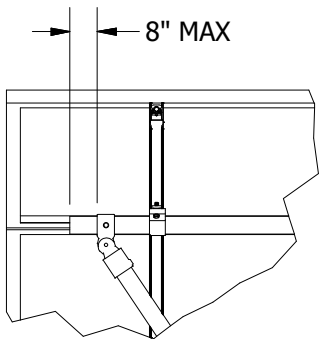
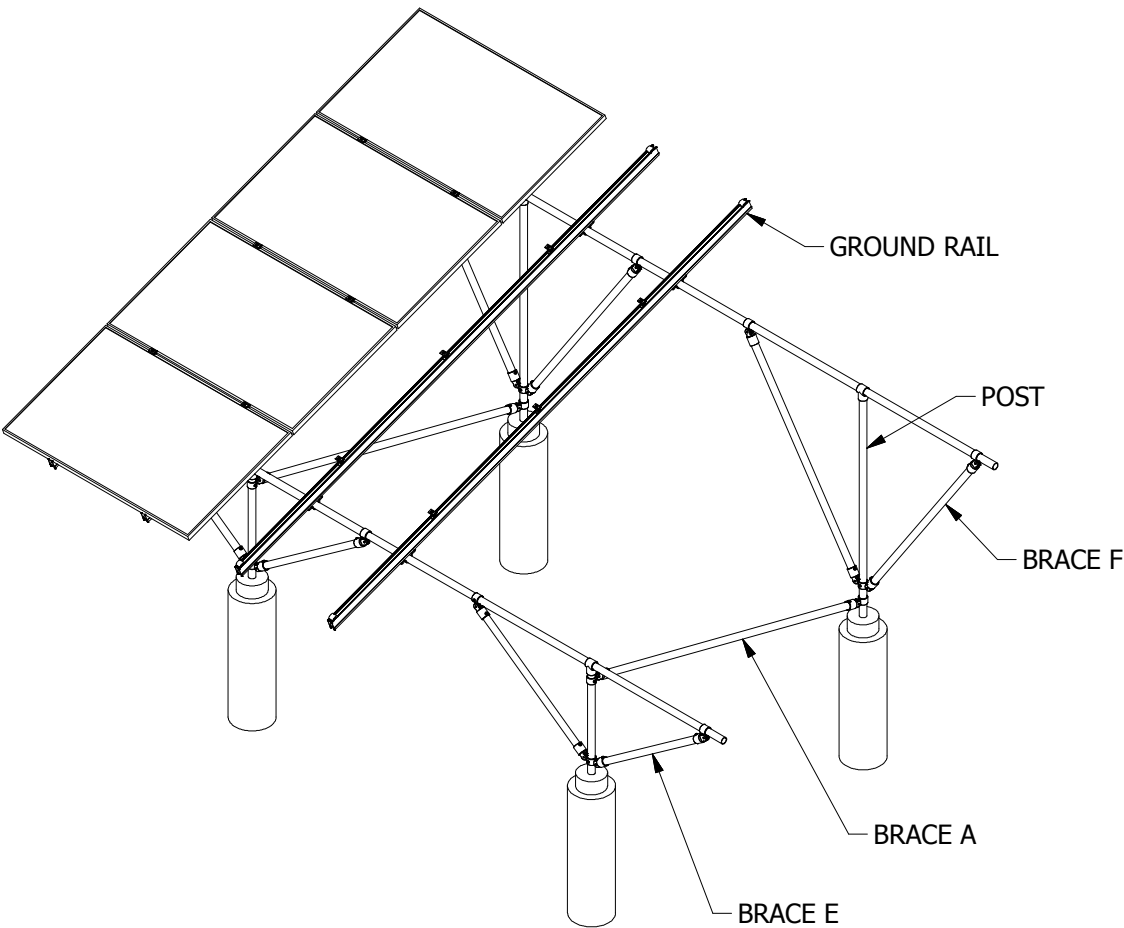
SEE ENGINEERING TABLES FOR PIER DEPTHS AND SPAN LIMITATIONS.

COMPATIBLE WITH ALL PIER OPTIONS INCLUDING STANDARD PIERS AND GRADE BEAMS

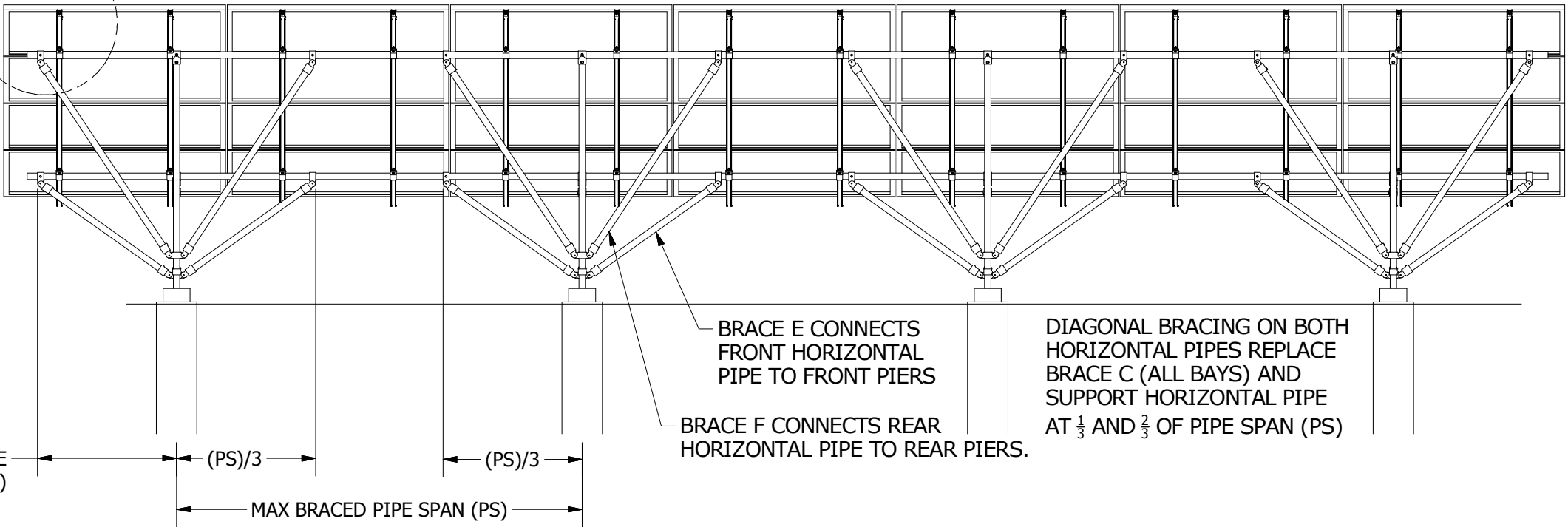
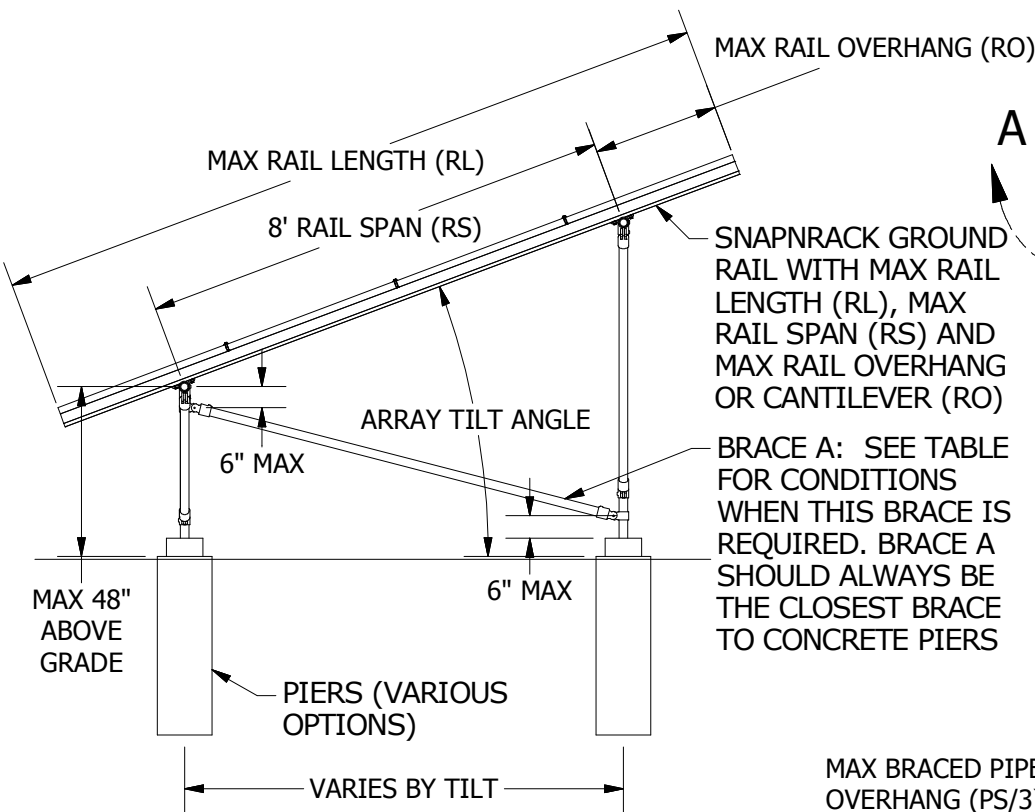
UNLESS OTHERWISE SPECIFIED IN ENGINEERING DOCS, THE FOLLOWING VALUES APPLY:

- MAX RL: 162"
- RS: 96"
- MAX RO: 32"

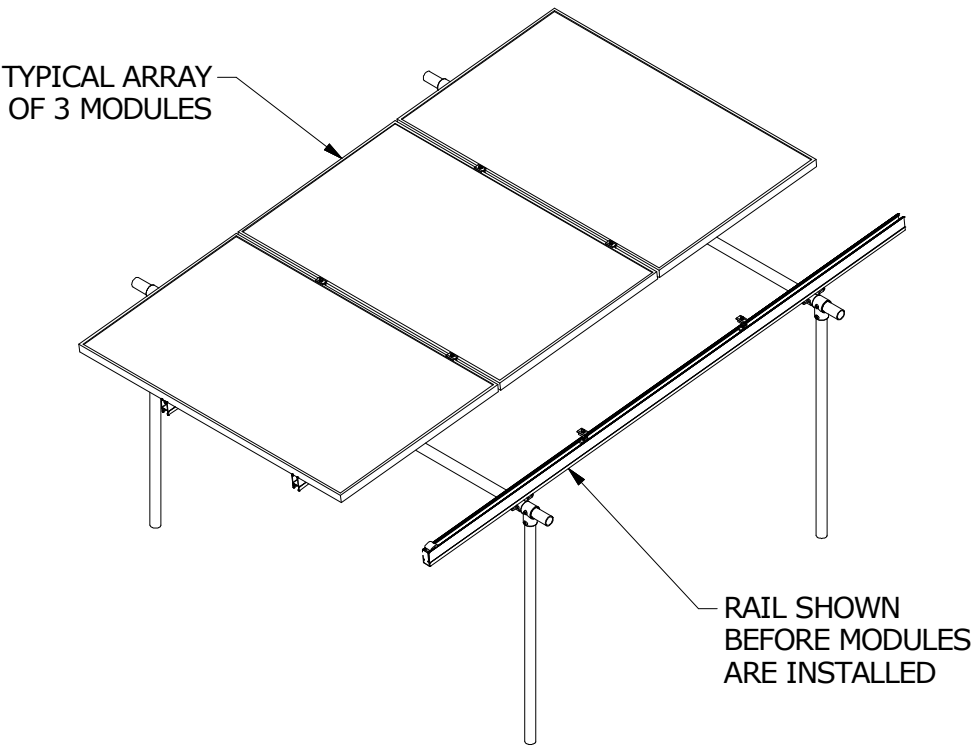
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DETAIL A

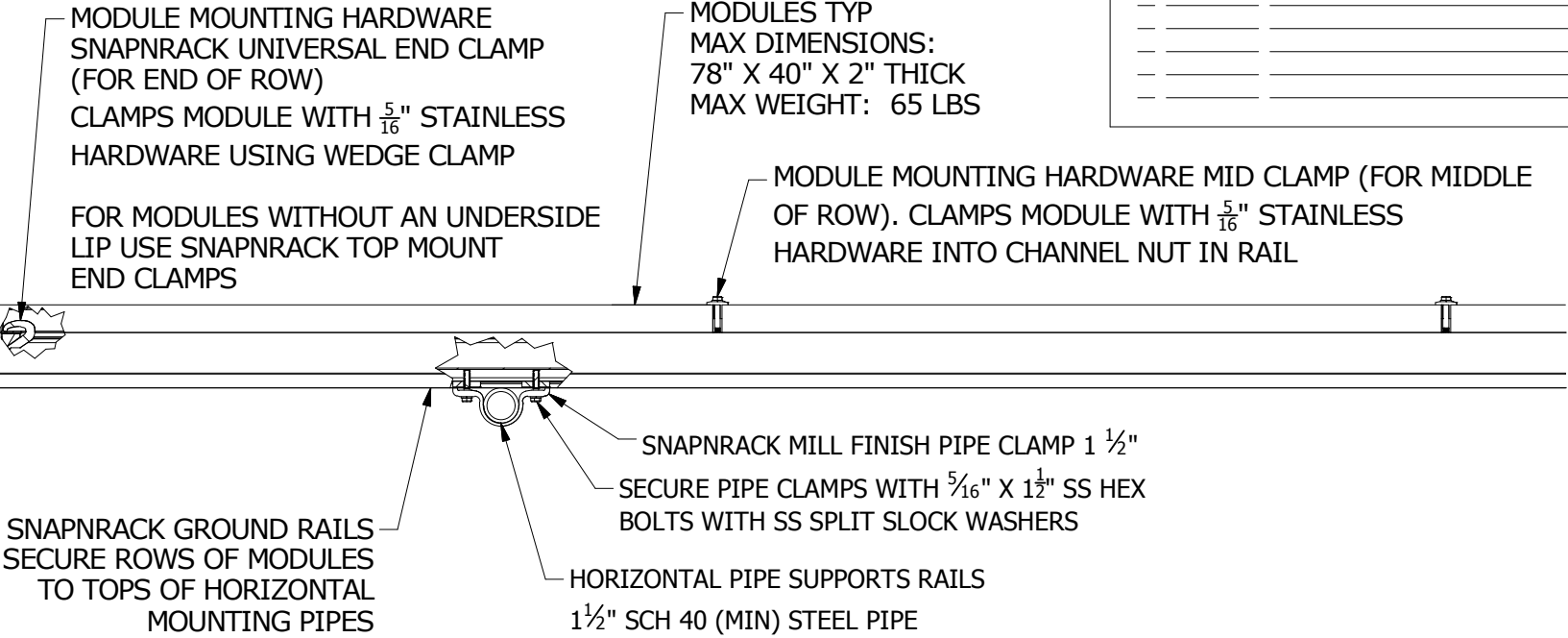
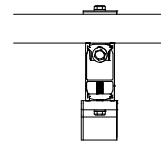


|  |                                                                                                                                                                                                                                                                                                                                                      |                                                                                 |                     |                                 |                                                 |                 |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------|---------------------------------|-------------------------------------------------|-----------------|
|  | <b>MAINSTREAM ENERGY CORP.</b><br>775 FIERO LANE, SUITE 200 • SAN LUIS OBISPO, CA 93401 USA<br>PHONE (805) 528-9705 • FAX (805) 528-9701<br><small>THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF MAINSTREAM ENERGY CORPORATION.</small> | DESIGNER: <u>G. McPheeters</u><br>DRAFTER: <u>D. Ryan</u><br>APPROVED BY: _____ | SCALE: <u>DNS</u>   | PART NUMBER:<br><b>S200 D03</b> | DESCRIPTION:<br><b>SERIES 200 BRACED OPTION</b> | REV<br><b>G</b> |
|  |                                                                                                                                                                                                                                                                                                                                                      |                                                                                 | DATE: <u>120113</u> |                                 |                                                 |                 |



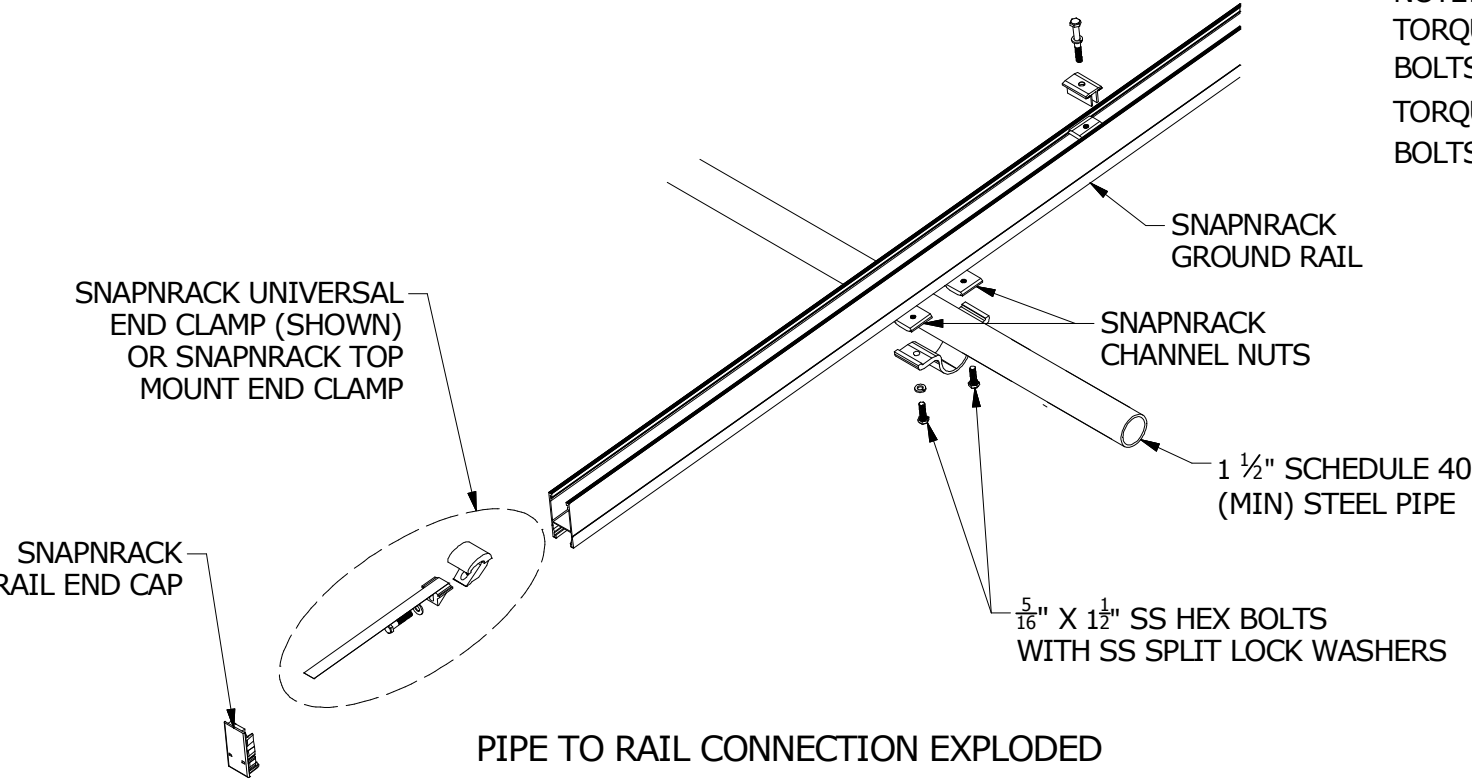
ISO VIEW OF RACKING ASSEMBLY

NOTE:  
TORQUE  $\frac{5}{16}$ " SS SILVER HEX BOLTS TO 10-16 FT-LBS  
TORQUE  $\frac{5}{16}$ " SS BLACK HEX BOLTS TO 7-9 FT-LBS



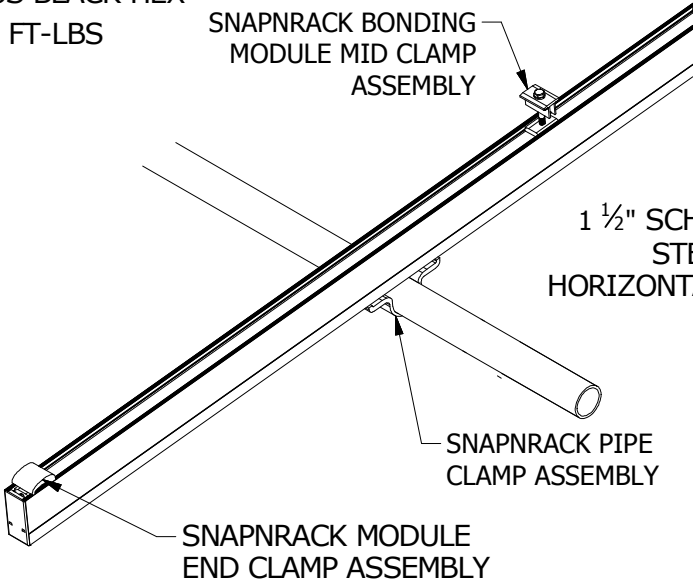
MODULE AND RAIL ATTACHMENT DETAILS

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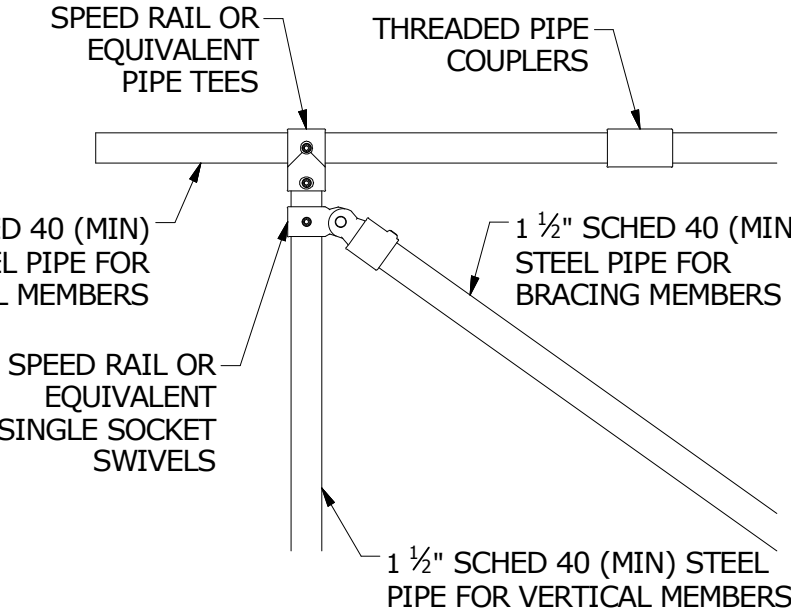


PIPE TO RAIL CONNECTION EXPLODED

NOTE:  
TORQUE  $\frac{5}{16}$ " SS SILVER HEX BOLTS TO 10-16 FT-LBS  
TORQUE  $\frac{5}{16}$ " SS BLACK HEX BOLTS TO 7-9 FT-LBS



PIPE TO RAIL CONNECTION



PIPE FITTING DETAILS

# BRACING OPTION FOR HIGH LOAD OR LONGER SPAN APPLICATIONS - 3 MODULE PANELS

SEE ENGINEERING TABLES FOR PIER DEPTHS AND SPAN LIMITATIONS.

COMPATIBLE WITH ALL PIER OPTIONS INCLUDING STANDARD PIERS AND GRADE BEAMS

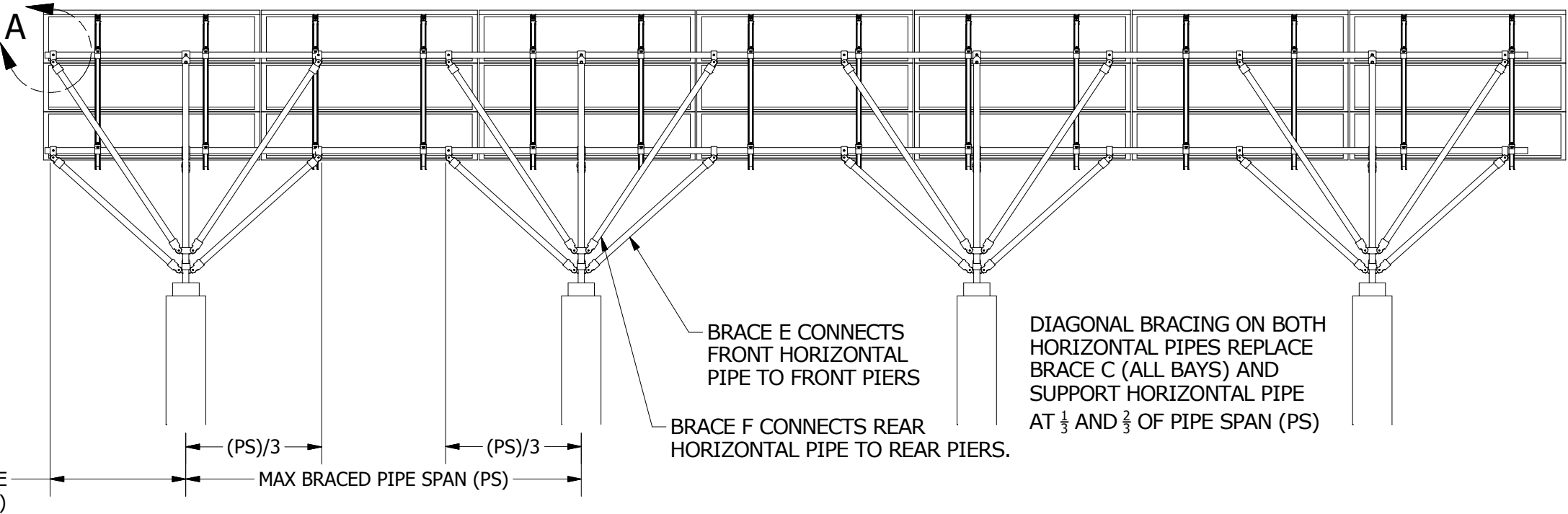
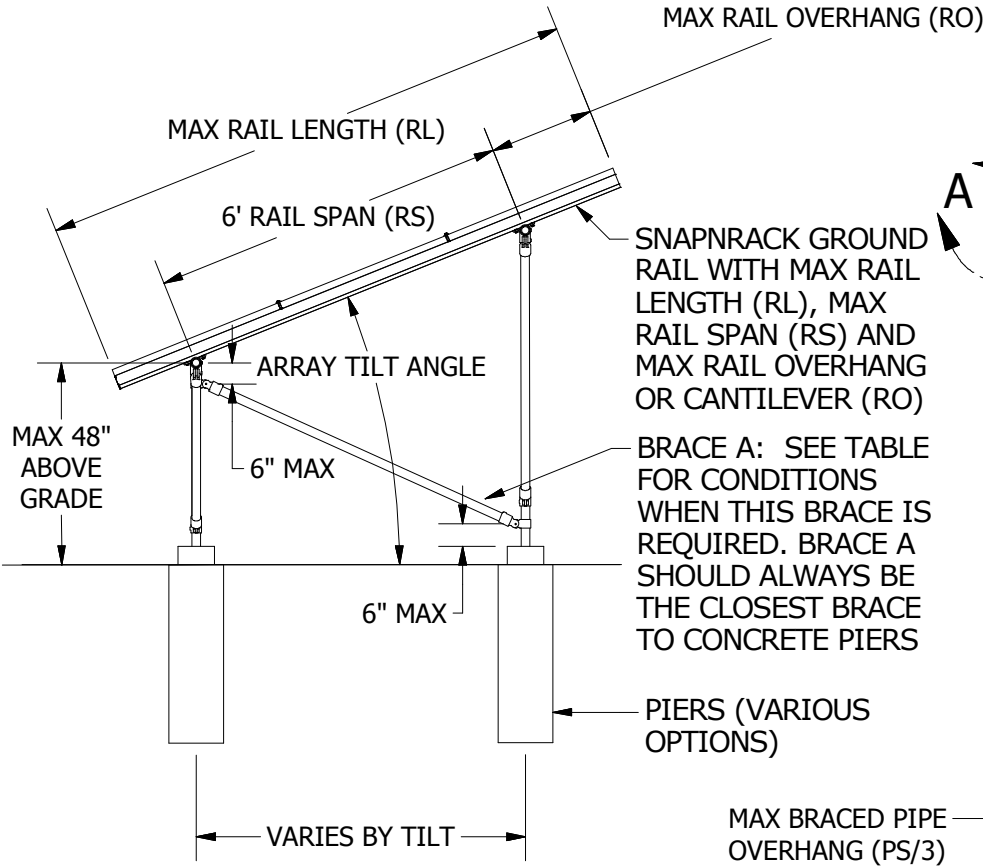
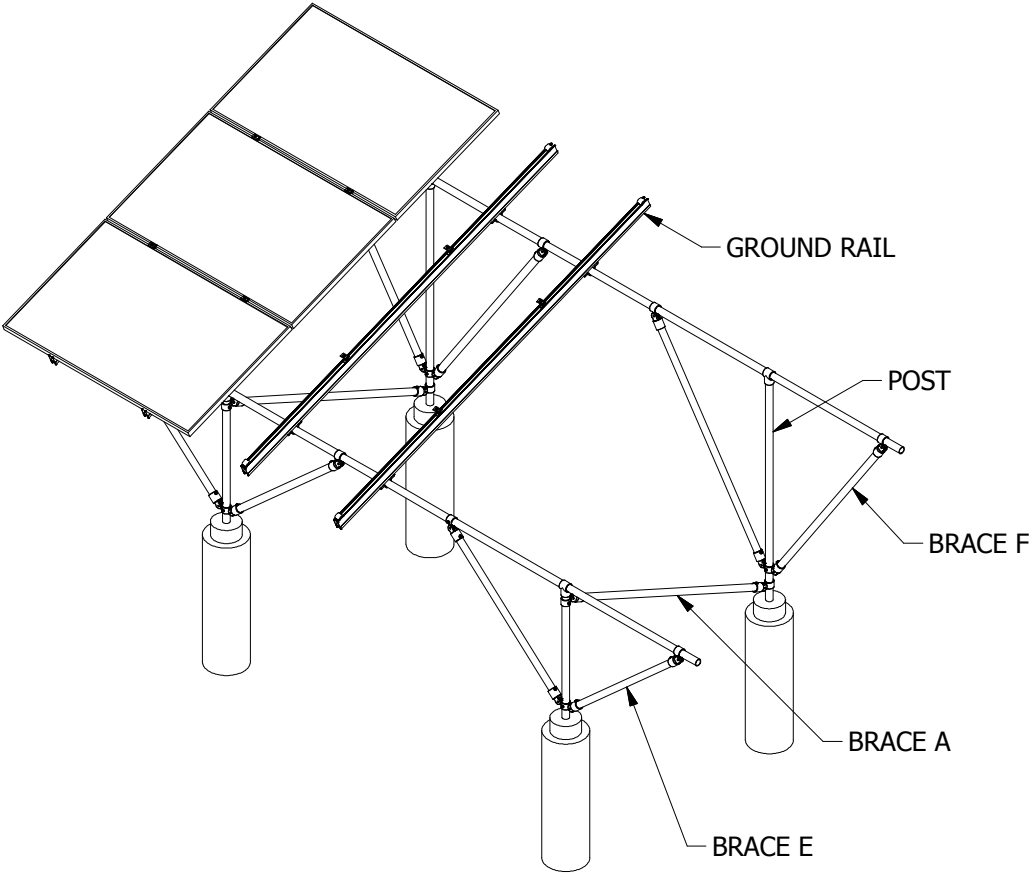
UNLESS OTHERWISE SPECIFIED IN ENGINEERING DOCS, THE FOLLOWING VALUES APPLY:

MAX RL: 122"  
RS: 72"  
MAX RO: 24"

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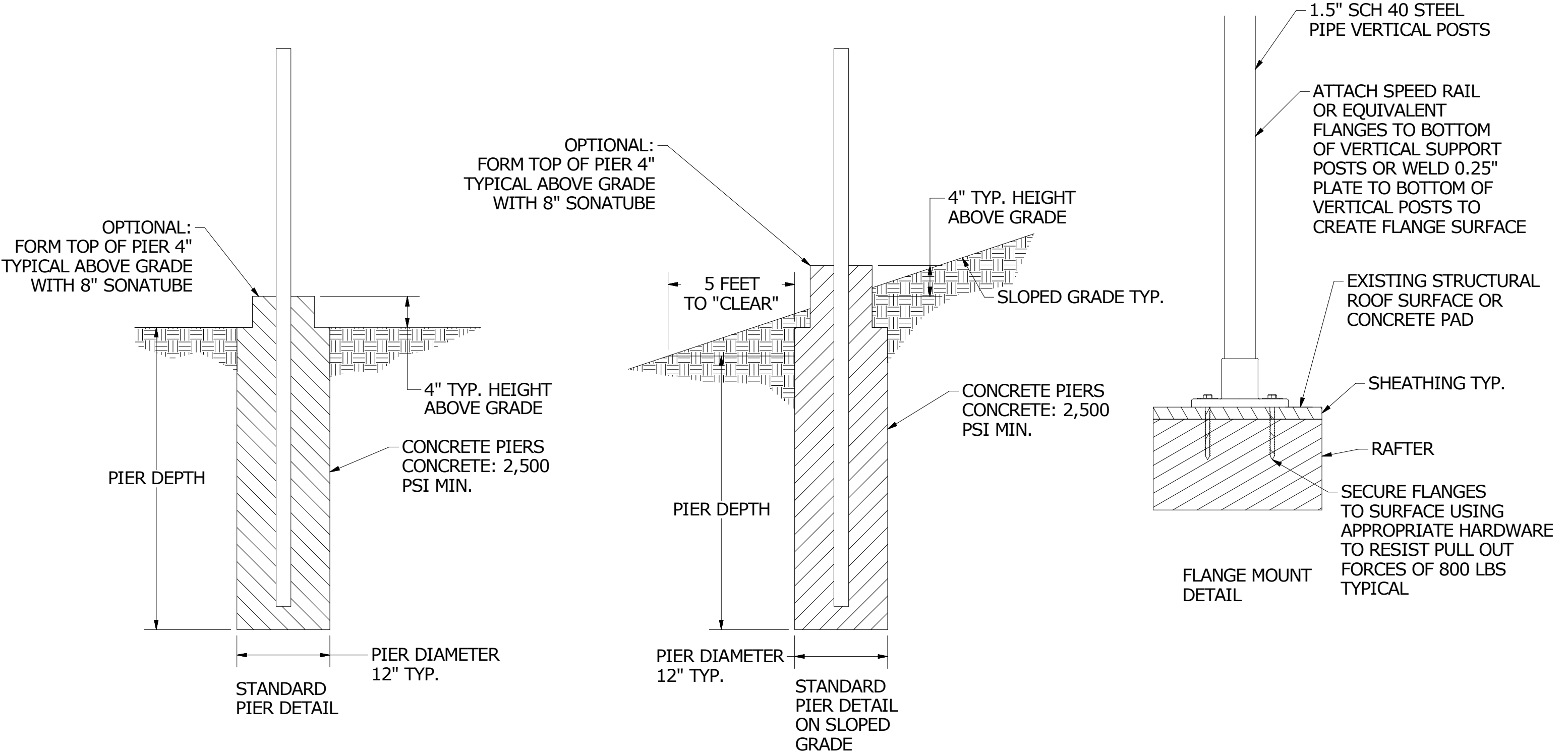


DETAIL A



NOTE:  
FLANGE MOUNTS ARE A VIABLE OPTION FOR INSTALLATION  
OF GROUND MOUNT SYSTEMS ON CONCRETE PADS OR  
VARIOUS TYPES OF ROOF TOP STRUCTURES, BUT ARE NOT  
SPECIFIED IN DETAIL IN THE STANDARD ENGINEERING  
REVIEW FOR 2013.

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|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------|--------------------------|-----------------------------------------|----------|
| SnapNrack<br>PV Mounting Systems | MAINSTREAM ENERGY CORP.<br>775 FIERO LANE, SUITE 200 • SAN LUIS OBISPO, CA 93401 USA<br>PHONE (805) 528-9705 • FAX (805) 528-9701<br><small>THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF MAINSTREAM ENERGY CORPORATION.</small> | DESIGNER: G. McPheeters<br>DRAFTER: D. Ryan<br>APPROVED BY: _____ | SCALE: DNS   | PART NUMBER:<br>S200 D06 | DESCRIPTION:<br>SERIES 200 PIER DETAILS | REV<br>G |
|                                  |                                                                                                                                                                                                                                                                                                                                               |                                                                   | DATE: 120113 |                          |                                         |          |

GRADE BEAM FOUNDATION CONFIGURATION

SEE ENGINEERING TABLES FOR SPAN LIMITATIONS.

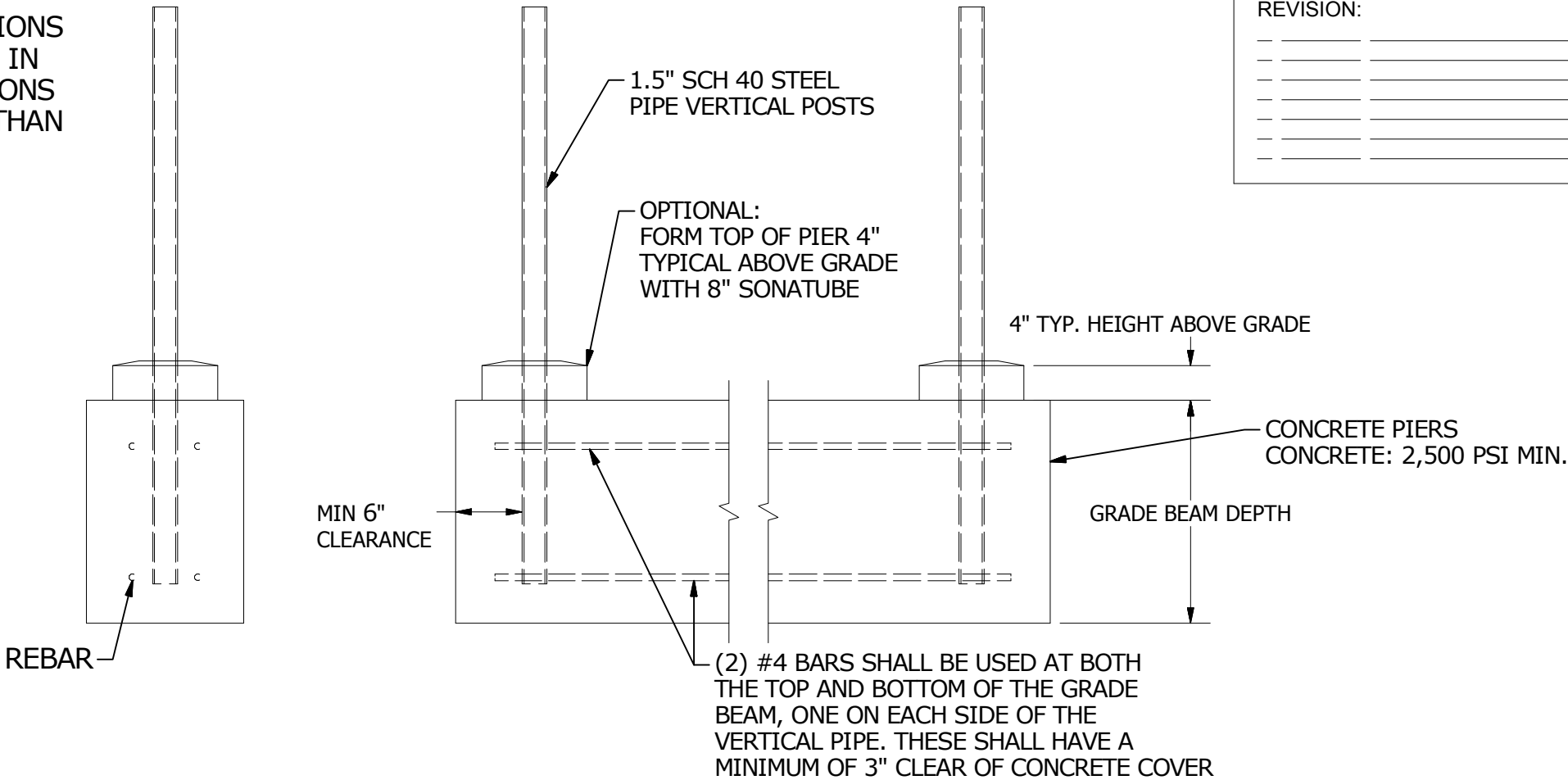
UNLESS OTHERWISE SPECIFIED IN ENGINEERING DOCS, THE FOLLOWING VALUES APPLY:  
MAX RL: 162"  
RS: 96"  
MAX RO: 32"

MIN GBW: 12"  
MIN GBD: 18"

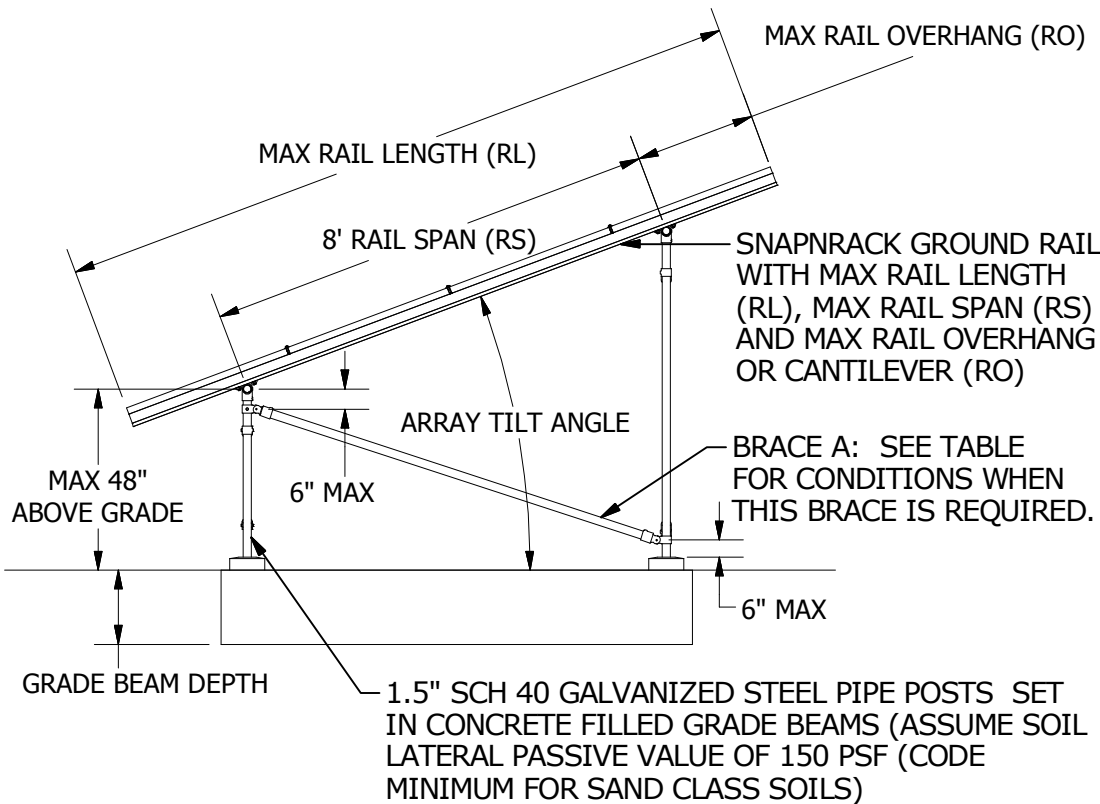
GRADE BEAM FOUNDATIONS SHOULD ONLY BE USED IN FLAT GROUND CONDITIONS (GROUND SLOPE LESS THAN 5 DEGREES TYPICAL)

COMPATIBLE WITH ALL BRACING OPTIONS

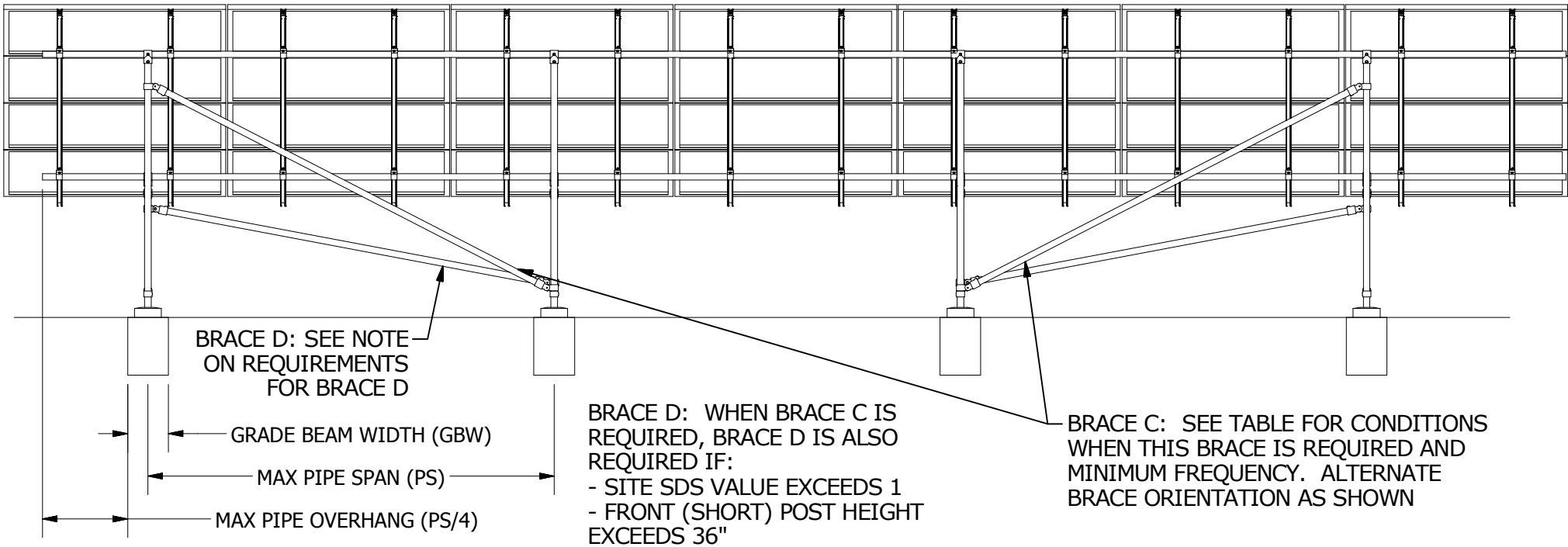
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GRADE BEAM FOUNDATION DETAIL



ARRAY SIDE VIEW

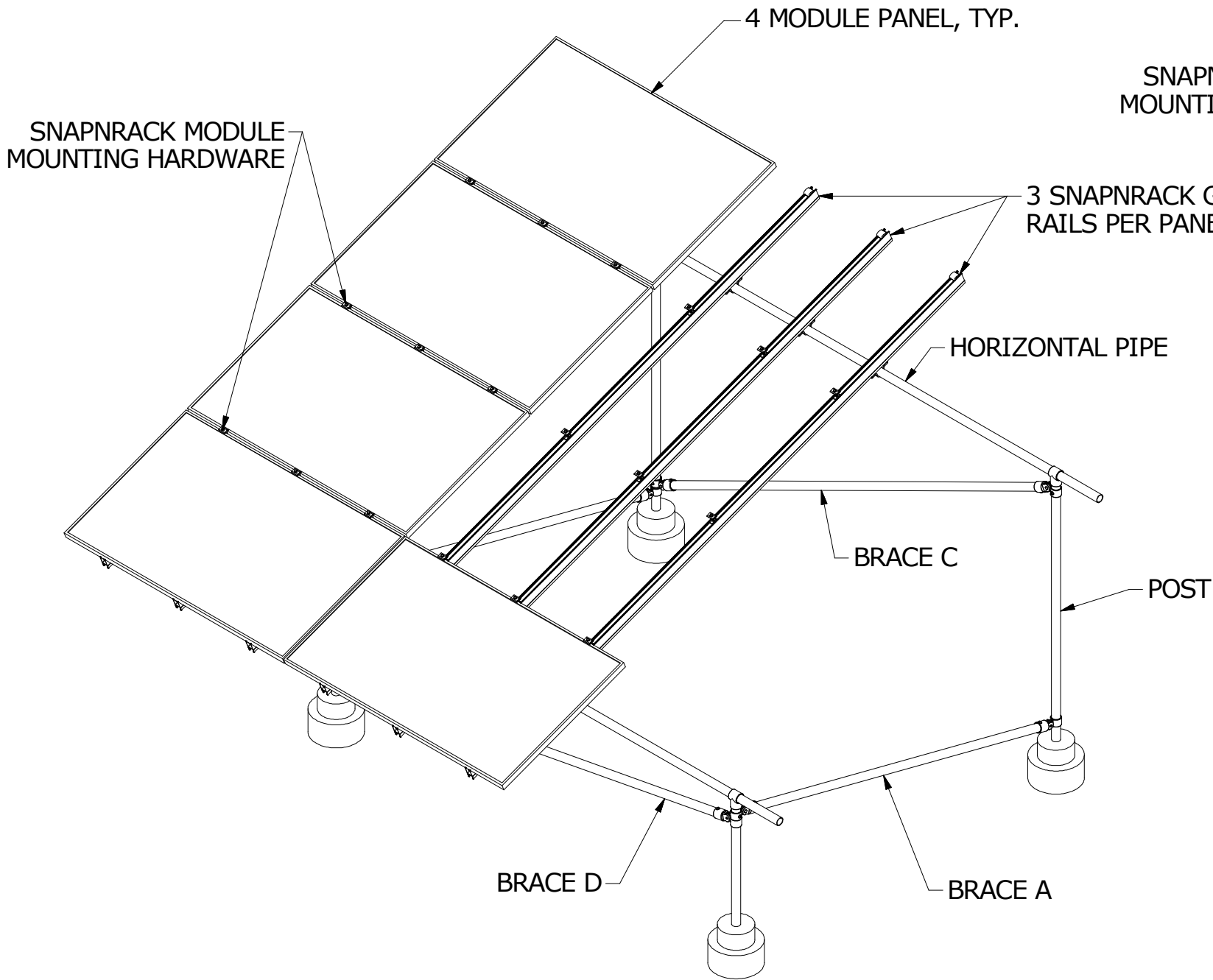


ARRAY BACK VIEW

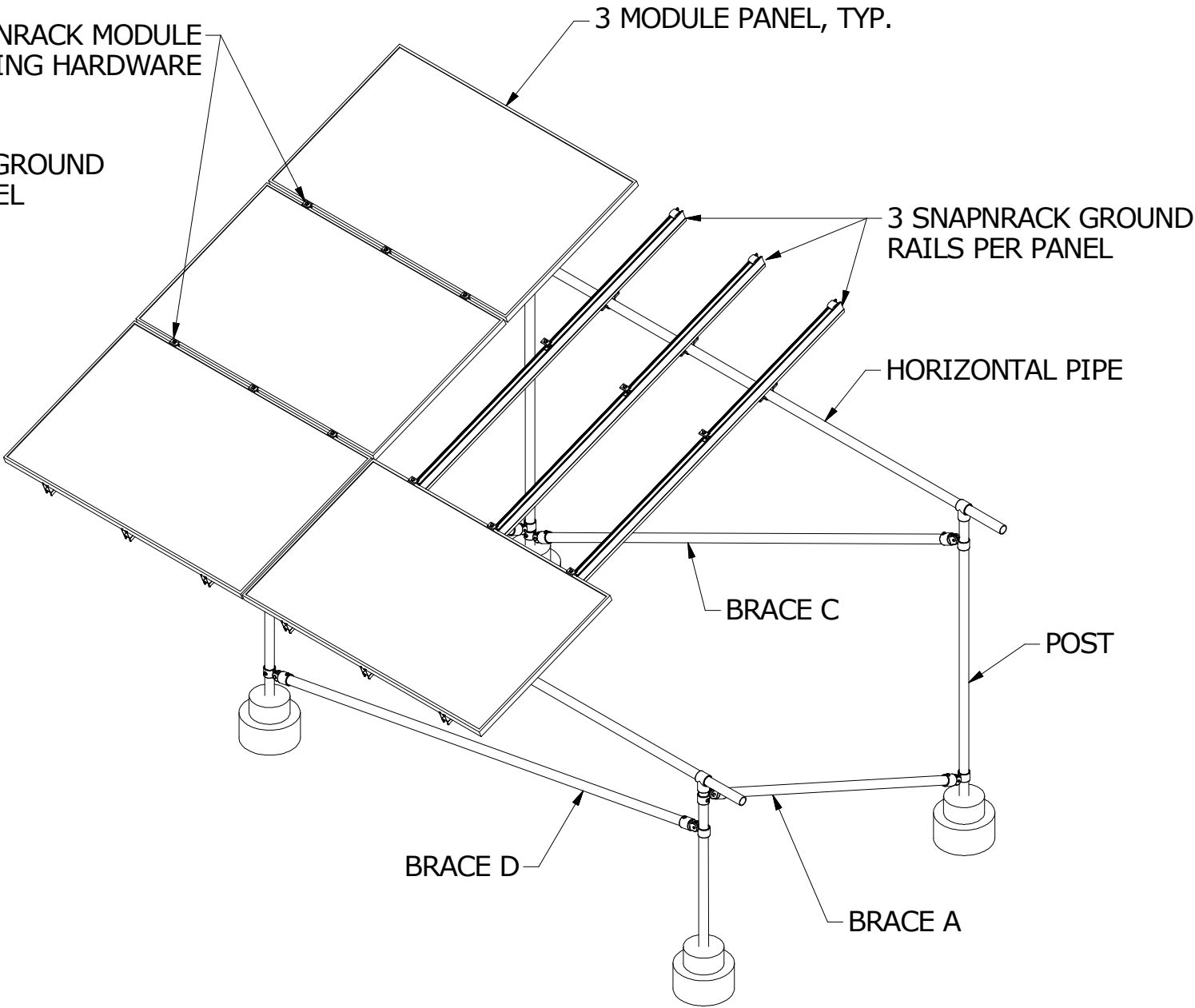
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|  | <p>MAINSTREAM ENERGY CORP.</p> <p>775 FIERO LANE, SUITE 200 • SAN LUIS OBISPO, CA 93401 USA</p> <p>PHONE (805) 528-9705 • FAX (805) 528-9701</p> <p><small>THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF MAINSTREAM ENERGY CORPORATION.</small></p> | <p>DESIGNER: G McPheeters</p> <p>DRAFTER: D Ryan</p> <p>APPROVED BY: _____</p> | SCALE: DNS   | PART NUMBER: S200 D07 | DESCRIPTION: SERIES 200 GRADE BEAM OPTION | REV G |
|  |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                | DATE: 120113 |                       |                                           |       |

SERIES 200 3-RAIL CONFIGURATIONS  
THE SERIES 200 3-RAIL OPTION CAN BE SET UP  
FOR 3 MODULE AND 4 MODULE PANELS USING 3  
RAILS PER PANEL.

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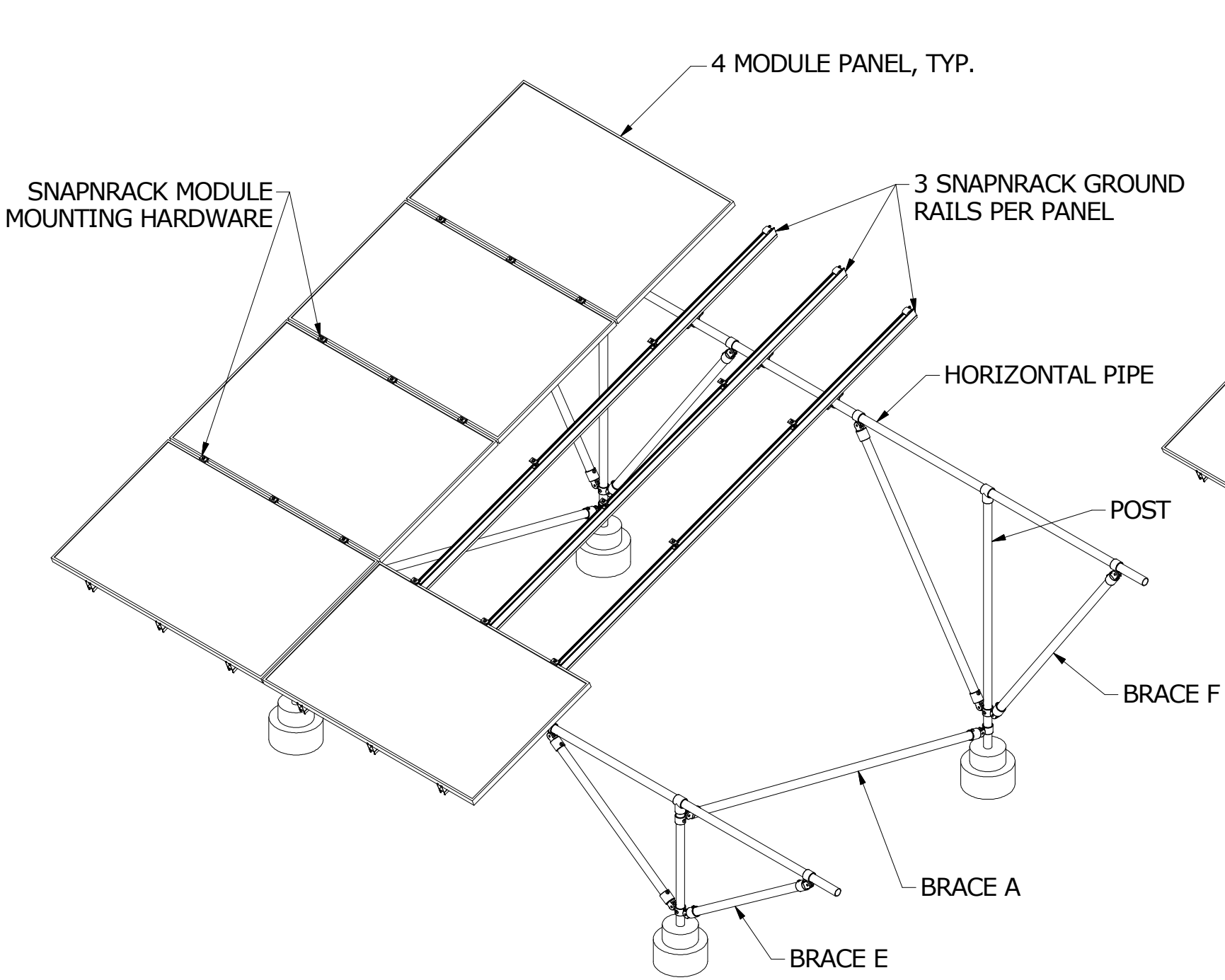
4 MODULE PANEL CONFIGURATION



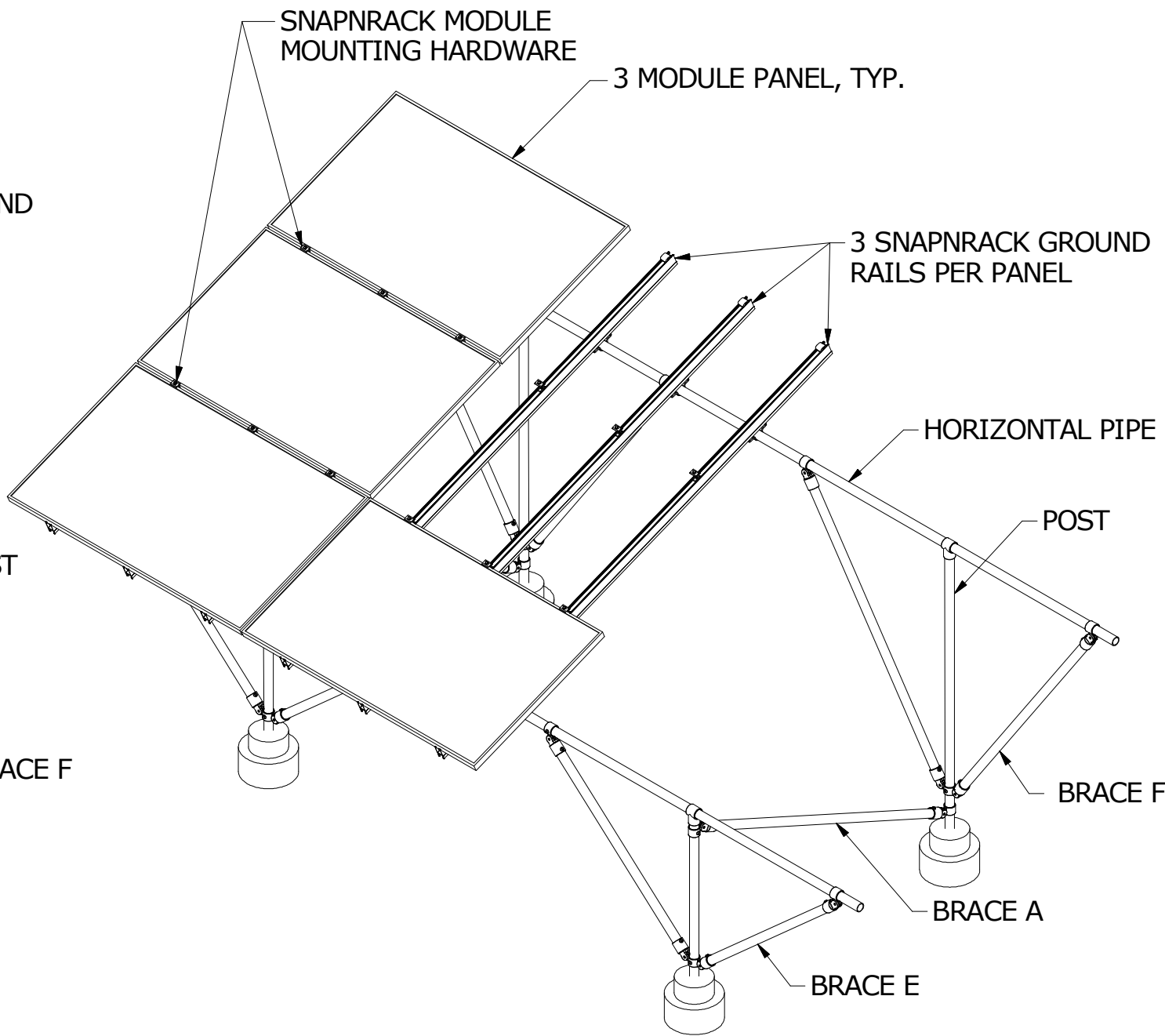
3 MODULE PANEL CONFIGURATION

SERIES 200 3-RAIL CONFIGURATIONS  
THE SERIES 200 3-RAIL OPTION CAN BE SET UP  
FOR 3 MODULE AND 4 MODULE PANELS USING 3  
RAILS PER PANEL.

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4 MODULE PANEL CONFIGURATION



3 MODULE PANEL CONFIGURATION

|                                               |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                        |                                                             |                                         |                                                                                 |                         |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------|-------------------------|
| <div>SnapNrack™<br/>PV Mounting Systems</div> | <div>MAINSTREAM ENERGY CORP.<br/>775 FIERO LANE, SUITE 200 • SAN LUIS OBISPO, CA 93401 USA<br/>PHONE (805) 528-9705 • FAX (805) 528-9701</div> <div><small>THE INFORMATION IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY. ANY REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF MAINSTREAM ENERGY CORPORATION.</small></div> | <div>DESIGNER: <u>GMcPheeters</u></div> <div>DRAFTER: <u>DRyan</u></div> <div>APPROVED BY: _____</div> | <div>SCALE: <b>DNS</b></div> <div>DATE: <b>120113</b></div> | <div>PART NUMBER: <b>S200 D09</b></div> | <div>DESCRIPTION: <b>SERIES 200, 3-RAIL CONFIGURATIONS, BRACED OPTION</b></div> | <div>REV <b>G</b></div> |
|                                               |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                        |                                                             |                                         |                                                                                 |                         |