Series 100 Introduction:
SnapNrack Series 100 PV Mounting System offers a low profile, visually appealing, photovoltaic (PV) module installation system. This innovative system simplifies the process of installing solar PV modules, shortens installation times, and lowers installation costs.

SnapNrack systems, when installed in accordance with this manual, will be structurally adequate for the specific installation site and will meet the local and International Building Code.

The SnapNrack installation system is a set of engineered components that can be assembled into a wide variety of PV mounting structures. It is designed to be installed by qualified solar installation technicians. With SnapNrack you will be able to solve virtually any PV module mounting challenge.

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How to Configure Your System

First calculate the spans and penetration count. There is a SnapNrack span calculation table on the back of this Manual. Determine site conditions: general building height, array pitch, the wind speed, and snow load or topographical condition. Find appropriate railspan from table.

Span Table Example

<table>
<thead>
<tr>
<th>Building Height</th>
<th>Less than 30 ft</th>
<th>Less than 30 Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Array Pitch</td>
<td>25°</td>
<td>15°</td>
</tr>
<tr>
<td>Wind Speed</td>
<td>90 Miles/Hr</td>
<td>120 Miles/Hr</td>
</tr>
<tr>
<td>Snow Load</td>
<td>8 lbs/ft²</td>
<td>None</td>
</tr>
<tr>
<td>Topo. Cond.</td>
<td>None</td>
<td>Top of hill</td>
</tr>
</tbody>
</table>

Max Rail Spans Between Standoffs (FT.)

Safety Guidance

- Always wear the proper OSHA approved safety equipment when working on a roof.
- Safety equipment should be checked annually for wear and quality.
- Always wear proper eye protection.
- When walking on the roof avoid walking on installed rails. If this is unavoidable check L-feet for fatigue before final installation.
- Appropriate fall protection gear should be used. Extreme caution should be used when near the edge of the roof.

*CS-Consult Structural
Surveying and Layout

**Survey the Site**
- Measure the roof surfaces and develop an accurate drawing, including any obstacles such as chimneys and roof vents.
- If plans are available, check to make sure that the plans match the final structure.
- Review the shading pattern across the roof surface from the residence itself, from adjacent structures, and from other nearby features such as trees.
- Identify any roof access areas or keep-out areas as required by the local jurisdiction.
- Confirm roof construction, type, and condition.
- Assess roof rafter size, material, and spacing to confirm that the structure is sound and can support the additional load of the array.
- Identify any construction anomalies that may complicate the process of locating rafters from the roof surface.
- If you find structural problems such as termite damage or cracked rafters that may compromise the structure’s integrity, consult a structural engineer.

**Develop a Layout**
Using the information collected in the site survey and from span tables, complete a system layout showing array location and distances from key roof features. Include any information necessary for the permitting process.

Typically, PV modules are installed in portrait mode, with the long side of the module running up the roof slope and the rails running horizontally across the roof perpendicular to the roof rafters, which commonly run down slope.
Arrays can also be installed in landscape mode, with the modules oriented so that their long edge runs horizontally across the roof and the rails run up the roof slope. Landscape mode is typically used in cases where the roof has been constructed with structural elements running horizontally across the roof, but can also be used on standard residential buildings for a variety of reasons including to facilitate a convenient layout. When laying out the array, be sure to leave space for the module clamps on the rails. Module mid clamps are installed between modules in a row and require 0.5 inch of space between the modules.

Adjustable end clamps require 1.5 inches of extra rail to extend past the end of the module frame. If using the Universal End Clamp, the rail is first cut flush to the module using the rail cutting tool.

When installing multiple rows of modules, a minimum spacing gap of 1/8” should be used between rows.

Submit array plans to local permitting jurisdiction and proceed with the roof layout only when all permits for the project have been granted by the authority having jurisdiction.

Transfer the array layout to the roof using roof marking crayon to mark the inside and outside corners of the array. Locate estimated rafter positions and mark them in the array area with a roof marking crayon.

Transfer rail and estimated attachment locations to the roof, noting that attachments will be located at intersections of rails and rafters. Layout rails such that module frame ends do not overhang mounting rails by more than 25% of total module length.

**Project Information Sections**

<table>
<thead>
<tr>
<th>Building Height</th>
<th>Roof Pitch</th>
<th>Wind Speed</th>
<th>Snow Load</th>
<th>Topo. Cond.</th>
<th>Max Rail Span</th>
</tr>
</thead>
</table>

**Notes**

SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

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**Tips and Tricks**

- Layout the entire array on the roof by drawing all of the corners of the modules on the roof with a roof marking crayon.
- Mark all of the penetrations by snapping a chalk line.
- When leveling rails attach a clamp to one end of the rail so that it will hold the rail in place while you level the rest of the rails.
**Required Tools**
- Hammer Or Stud Finder
- Roof Marking Crayon
- Drill with 1/8 inch Pilot Drill Bit
- Roof Sealant
- Torque Driver with Bit Adapter
- 1/2 inch Socket Wrench

**Materials Included in Series 100 L-Foot Kit:**
1. (1) SnapNrack Flashed Base
2. (1) SnapNrack Composition Flashing
3. (1) SnapNrack L Foot, Composition 92°
4. (1) 5/16in- 18 SS Flange Hex Nut
5. (1) 5/16in SS Split Lock Washer
6. (1) 5/16in- 18 X 1in SS HCS Bolt
7. (1) SnapNrack Channel Nut, 5/16in - 18

**Other Materials Required:**
1. (1) 5/16 in Lag Screw
2. (1) 5/16 in Washer

**Technical L-Foot Data:**

<table>
<thead>
<tr>
<th>Material</th>
<th>6000 Series Heat Treated Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Class 2 Anodized Finish</td>
</tr>
<tr>
<td>Clear and Black Finish Available</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>0.16 LBS</td>
</tr>
<tr>
<td>Design Uplift Load</td>
<td>200 LBS Uplift</td>
</tr>
<tr>
<td>Design Ultimate Load</td>
<td>1000 LBS Uplift</td>
</tr>
</tbody>
</table>

**When To Use:** Composite Shingle Roofs
Series 100
Flashed L-Foot

Step-by-Step Instructions
1) Locate the rafter
   The rafter underneath the decking of the roof by looking underneath the eaves or in the attic.

2) Drill the pilot hole
   Drill a pilot hole through the roofing material into the rafter to ensure that the lag bolt will be located into a solid portion of the rafter. If the rafter is not found then seal the pilot hole immediately with roofing sealant.

3) Prep the base
   Apply roofing sealant to the bottom of the base and directly onto the lag bolt to ensure a water tight seal.

4) Attach base
   Attach the L-foot base with a 5/16" lag bolt and a minimum embedment of 2 1/2" lag shank into the rafter. Tighten Lag bolt to seat with a hand wrench.

5) Set the flashing
   Slide the flashing underneath the row of shingles directly above the installed standard base and then line up the hole in the flashing with the threads on the base. It may be necessary to pry up shingles with a breaker bar.

6) Attach L-Foot
   Attach the L-foot to the threaded portion of the base that is protruding from the flashing. Then tighten the flange bolt over the threads to 10 – 16 ft-lbs. The L-foot can be attached in any orientation.

Notes
-SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

Warning
-If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
-Do not over tighten hardware.
-Always wear fall protection and safety gear.

Design Tools
SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
**Required Tools**
- Hammer or Stud Finder
- Roof Marking Crayon
- Drill with 1/8 inch Pilot Drill Bit
- Roof Sealant
- Torque Driver with Bit Adapter
- Channel Locks
- 1/2 inch Socket Wrench

**Materials Included In Series 100 Standoff Kit:**
1. (1) SnapNrack Standoff Base
2. (1) SnapNrack Standoff Shaft
3. (1) SnapNrack Rubber Rain Collar
4. (1) SnapNrack Standoff Clamp
5. (1) 5/16in SS Split Lock Washer
6. (1) 5/16in - 18 X 2in SS HCS Bolt
7. (1) SnapNrack Channel Nut, 5/16in - 18

**Other Materials Required:**
1. (1) 5/16in Lag Screw
2. (1) 5/16in Washer
3. (1) Roof Cone Flashing

**Technical Standoff Shaft Data:**

<table>
<thead>
<tr>
<th>Material</th>
<th>6000 Series Heat Treated Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Class 2 Anodized Finish Clear Finish Available</td>
</tr>
</tbody>
</table>
| Weight                    | 5.5” Shaft = 0.4 LBS
|                           | 7” Shaft = 0.5 LBS
|                           | 8.5” Shaft = 0.6 LBS |
| Design Uplift Load        | 200 LBS Uplift |
| Design Ultimate Load      | 1600 LBS Uplift |

**Dimensioned Assembly**

**Dimensioned Shaft**
Step-by-Step Instructions

1) Remove tile and locate the rafter

2) Drill pilot hole

3) Prep the base and attach base

4) Set flashing

5) Attach post

6) Replace tile and attach standoff clamp

Notes

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

Warning

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

Design Tools

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
Materials Included In Series 100 Standoff Kit
(Steel Structural Member):
1 (1) SnapNrack Standoff Base
2 (1) SnapNrack Standoff Shaft
3 (1) SnapNrack Rubber Rain Collar
4 (1) SnapNrack Standoff Clamp
5 (1) 5/16in SS Split Lock Washer
6 (1) 5/16in - 18 X 2in SS HCS Bolt
7 (1) SnapNrack Channel Nut, 5/16in - 18

Other Materials Required:
1 (1) 1/4in Tek Screw Or Typ Steel Structural Member
2 (1) Roof Cone Flashing

Materials Included In Series 100
Four Hole Standoff Kit:
1 (1) SnapNrack Four Hole Standoff Base
2 (1) SnapNrack Standoff Shaft
3 (1) SnapNrack Rubber Rain Collar
4 (1) SnapNrack Standoff Clamp
5 (1) 5/16in SS Split Lock Washer
6 (1) 5/16in - 18 X 2in SS HCS Bolt
7 (1) SnapNrack Channel Nut, 5/16in - 18

Other Materials Required:
1 (4) Wood Screws 1/4"
2 (1) Roof Cone Flashing

When To Use:
Steel Structural Member Configurations

When To Use:
TJI Jolsts
Materials Included In Series 100 Heavy Duty Standoff Kit:

1. (1) SnapNrack HD Standoff Base
2. (1) SnapNrack HD Standoff Shaft
3. (1) SnapNrack Rubber Rain Collar
4. (1) SnapNrack Standoff Clamp
5. (1) 5/16in SS Split Lock Washer
6. (1) 5/16in - 18 X 2in SS HCS Bolt
7. (1) SnapNrack Channel Nut, 5/16in - 18

Other Materials Required:

1. (2) 5/16in Lag Screw
2. (1) Roof Cone Flashing

Series 100 Standoff Options

Step-by-Step Instructions For Zee Purlin Installation

1) Follow the instruction exactly as the SnapNrack Standoff penetration. Substituting the tek screw for the 5/16” lag bolt.

Step-by-Step Instructions For Four Hole Installation

1) Follow the instruction exactly as the SnapNrack regular Standoff penetration. Substituting the base for the four hole base and 1/4” wood screws for the 5/16” lag bolt.

Step-by-Step Instructions For Heavy Duty Installation

1) Remove foam roofing above the rafter to be installed on.
2) Attach the SnapNrack heavy duty standoff base directly to the exposed rafter using (2) 5/16” lag bolts.
3) Screw in the SnapNrack HD Standoff to the base snug with channel locks.
4) Replace the foam roofing that was removed.
5) Flash the standoff by sliding the cone flashing over the exposed standoff and heat weld the rubber membrane around the flashing for a water tight seat.
6) Attach remaining hardware as in the standard SnapNrack standoff.

Notes

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

Warning

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

Design Tools

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
Required Tools:
Hammer or Stud Finder
Roof Marking Crayon
Drill with 1/8 inch Pilot Drill Bit
Roof Sealant
Threaded Bit Adapter
1/2 inch Socket Wrench
Torque Wrench

Materials Included In Series 100 Hanger Bolt Kit:
1 (1) SnapNrack 3/8” Stainless Steel Hanger Bolt
2 (1) SnapNrack Hanger Bolt Clamp Front
3 (1) SnapNrack Hanger Bolt Clamp Back
4 (1) 5/16in SS Split Lock Washer
5 (1) 5/16in - 18 X 1in SS HCS Bolt
6 (1) SnapNrack Channel Nut, 5/16in - 18

Dimensioned Assembly

When To Use: Any Roof Style

Technical Hanger Bolt Clamp

<table>
<thead>
<tr>
<th>Material</th>
<th>6000 Series Heat Treated Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Class 2 Anodized Finish Clear Finish Available</td>
</tr>
<tr>
<td>Weight</td>
<td>0.7 LBS</td>
</tr>
<tr>
<td>Design Uplift Load</td>
<td>200 LBS Uplift</td>
</tr>
<tr>
<td>Design Ultimate Load</td>
<td>1600 LBS Uplift</td>
</tr>
</tbody>
</table>
1) Locate the rafter
2) Drill the pilot hole
3) Prep the bolt and hole
4) Attach hanger bolt
5) Set in rail
6) Attach hanger bolt

**Step-by-Step Instructions**

1) Locate the rafter underneath the decking of the roof.
2) Drill a pilot hole through the roofing material into the rafter to ensure that the lag bolt will be located into a solid portion of the rafter. If the rafter is not found then seal the pilot hole immediately with roofing sealant.
3) Apply roofing sealant directly onto the pilot hole and the hanger bolt lag to ensure a water tight seal.
4) Attach the hanger bolt using the threaded bit adapter with a minimum embedment of 2 ½” lag shank into the rafter. Tighten Lag bolt to seat.
5) Attach the channel nut of the hanger bolt assembly into rail.
6) Then attach the hanger bolt clamp by setting it around the threaded portion of the hanger bolt to the desired height and tighten silver hardware to 10-16 ft-lbs.

**Notes**

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

**Warning**

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

**Design Tools**

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
**Required Tools:**
- Hammer or Stud Finder
- Drill with 1/8 inch Pilot Drill Bit
- Roof Sealant
- Torque Driver with Bit Adapter
- 1/2 inch Socket Wrench

**Materials included in Series 100 Straddle Block:**
- (1) SnapNrack Corrugated Straddle Block

**Other Materials Required:**
- (1) SnapNrack L-Foot Assembly
- (1) 5/16in Lag Screw
- (1) 5/16in Washer

**Technical Corrugated Block Data:**

<table>
<thead>
<tr>
<th>Material</th>
<th>6000 Series Heat Treated Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Class 2 Anodized Finish Clear Finish Available</td>
</tr>
<tr>
<td>Weight</td>
<td>0.3 LBS</td>
</tr>
<tr>
<td>Design Uplift Load</td>
<td>200 LBS Uplift</td>
</tr>
<tr>
<td>Design Ultimate Load</td>
<td>1000 LBS Uplift</td>
</tr>
</tbody>
</table>

When To Use: Corrugated Metal Roof
1) Locate the rafter

2) Drill the pilot hole

3) Apply roofing sealant

4) Attach corrugated block with L-Foot

5) Tighten hardware

**Step-by-Step Instructions**

1) Locate the rafter underneath the decking of the roof by locating the screws. The rafter lies directly underneath the screws.

2) Drill a pilot hole through the roofing material into the rafter to ensure that the lag bolt will be located into a solid portion of the rafter. If the rafter is not found then seal the pilot hole immediately with roofing sealant.

3) Apply roofing sealant if needed directly onto the pilot hole and lag to ensure a water tight seal.

4) Attach the Corrugated Block with L-foot using a 5/16” lag bolt (TYP) or appropriate lag with a minimum embedment of 2 ½” lag shank into the rafter. Tighten lag bolt to seat.

5) Tighten L-foot assembly silver hardware to 10 – 16 ft-lbs.

**Notes**

-SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

**Warning**

-If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
-Do not over tighten hardware.
-Always wear fall protection and safety gear.

**Design Tools**

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
Required Tools:
Hammer or Stud Finder
Roof Marking Crayon
Drill with 1/8 inch Pilot
Roof Sealant
Torque Driver with Bit Adapter
1/2 inch Socket Wrench

Materials Included In Series 100 5°-15° Tilt Kit:
1. (2) 5/16in - 18 X 3/4in SS HCS Bolt
2. (2) SnapNrack Standoff Base
3. (2) SnapNrack Standoff Shaft
4. (2) SnapNrack Standoff Clamp
5. (4) 5/16in SS Split Lock Washer
6. (2) 5/16in - 18 X 2in SS HCS Bolt
7. (2) 5/16in - 18 Flat Hex Nut
8. (2) 5/16in - 18 1in SS HCS Bolt
9. (2) SnapNrack L Foot

Other Materials Required:
1. (2) 5/16in Lag Screw
2. (2) 5/16 Washer
3. (2) Roof Cone Flashings

Technical Standoff Data:

<table>
<thead>
<tr>
<th>Material</th>
<th>6000 Series Heat Treated Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Class 2 Anodized Finish Clear Finish Available</td>
</tr>
</tbody>
</table>
| Weight            | 5.5” Shaft = 0.4 LBS
|                   | 7” Shaft = 0.5 LBS
|                   | 8.5” Shaft = 0.6 LBS |
| Design Uplift Load| 200 LBS Uplift                  |
| Design Ultimate Load| 1600 LBS Uplift              |

Dimensioned Assembly

Dimensioned Standoff Clamp
Step-by-Step instructions

1) Locate the rafter underneath the decking of the roof by tapping the roof surface with a hammer.

2) Drill a pilot hole through the roofing material into the rafter to ensure that the lag bolt will be located into a solid portion of the rafter. If the rafter is not found then seal the pilot hole immediately with roofing sealant.

3) Apply roofing sealant to the bottom of the base and directly onto the pilot hole to ensure a water tight seal.

4) Attach the L-foot base with a 5/16” lag bolt and a minimum embedment of 2 ½” lag shank into the rafter. Tighten Lag bolt to seat.

5) Next attach the standoff to the base and set the cone flashing by sliding it over the standoff and directly applying it to the roof surface. Use all necessary sealants and attachment methods for flashing.

6) Attach the standoff clamp by sliding it over the standoff shaft. Adjust it to the desired height and tighten silver hardware to 10-16 ft-lbs and black hardware to 7-9 ft-lbs.

Notes

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

Warning

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

Design Tools

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When To Use:
Flat Roof Applications

Required Tools:
Hammer
Roof Marking Crayon
Drill with 1/8 inch Pilot
Roof Sealant
Torque Driver with Bit Adapter
1/2 inch Socket Wrench
SnapNrack Tool

Materials Included In Series 100 10°-45° Tilt Kit:
1. (4) 5/16in-18 X 1in SS HCS Bolt
2. (2) SnapNrack Standoff Base
3. (2) SnapNrack Standoff Shaft
4. (2) SnapNrack Standoff Clamp
5. (5) 5/16in SS Split Lock Washer
6. (5) 5/16inX3/4in SS HCS Bolt
7. (1) 5/16in - 18 SS Flat Hex Nut
8. (2) 5/16in X 3/4in SS Flat Washer
9. (2) SnapNrack L Foot
10. (4) SnapNrack Channel Nut

Other Materials Required:
1. (2) Spare Standard Rail
2. (2) 5/16in Lag Screw
3. (2) 5/16 Washer
   - (2) Roof Cone Flashing

Technical Standoff Data:

<table>
<thead>
<tr>
<th>Material</th>
<th>6000 Series Heat Treated Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Class 2 Anodized Finish Clear Finish Available</td>
</tr>
<tr>
<td>Design Uplift Load</td>
<td>200 LBS Uplift</td>
</tr>
<tr>
<td>Design Ultimate Load</td>
<td>1000 LBS Uplift</td>
</tr>
</tbody>
</table>

Material 6000 Series Heat Treated Aluminum
Color Class 2 Anodized Finish Clear Finish Available
Design Uplift Load 200 LBS Uplift
Design Ultimate Load 1000 LBS Uplift

Dimensioned Assembly

Dimensioned Standoff Clamp
### Series 100

**10°-45° Tilt Mount**

#### Step-by-Step Instructions

1. **Locate the rafter underneath the decking of the roof by tapping the roof surface with a hammer.**

2. **Drill a pilot hole through the roofing material into the rafter to ensure that the lag bolt will be located into a solid portion of the rafter. If the rafter is not found then seal the pilot hole immediately with roofing sealant.**

3. **Apply roofing sealant to the bottom of the base and directly onto the pilot hole to ensure a water tight seal.**

4. **Attach the standoff base with a 5/16” lag bolt and a minimum embedment of 2 ½” lag shank into the rafter. Tighten Lag bolt to seat.**

5. **Next attach the standoff to the base and set the cone flashing by sliding it over the standoff and directly applying it to the roof surface. Use all necessary sealants and attachment methods for flashing.**

6. **Attach the standoff clamp by sliding it over the standoff shaft. Adjust it to the desired height and tighten Silver hardware to 10-16 ft-lbs and black hardware to 7-9 ft-lbs.**

7. **Attach the scrap rail and modules then tighten Silver hardware to 10-16 ft-lbs and black hardware to 7-9 ft-lbs. Remove tilt tool.**

8. **Use the SnapNrack tilt tool to support the top rail in place (see page 36 for instructions.)**

#### Notes

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

#### Warning

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

#### Design Tools

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
When To Use:
Standing Metal Seam
That The Seam Clamp
Fits Over, Not Limited To
The Table To The Right

Materials Included In Series 100 Seam Clamp Kit:
1 (1) 5/16in - 18 X 1in SS HCS Bolt
2 (1) 5/16in SS Split Lock Washer
3 (1) SnapNrack Seam Clamp Insert
4 (1) SnapNrack Seam Clamp Cam
5 (1) SnapNrack Seam Clamp

Dimensioned Assembly with L-Foot:

Materials Included In Series 100 Wide Seam Clamp Kit:
1 (1) 5/16in - 18 X 1in SS HCS Bolt
2 (1) 5/16in SS Split Lock Washer
3 (1) SnapNrack Seam Clamp Insert
4 (1) SnapNrack Seam Clamp Cam
5 (1) SnapNrack Seam Clamp Wide Base

Dimensioned Wide Seam Clamp

Technical Seam Clamp Data:

<table>
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<tr>
<th>Material</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Class 2 Anodized Finish Clear Finish Available</td>
</tr>
<tr>
<td>Design Uplift Load</td>
<td>200 LBS Uplift</td>
</tr>
<tr>
<td>Design Ultimate Load</td>
<td>Varies by Seam C-Test Results</td>
</tr>
</tbody>
</table>
Example Standing Seam

<table>
<thead>
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<th>MANUFACTURER</th>
<th>PANEL NAME</th>
<th>CLAMP</th>
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<tr>
<td>AEP</td>
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<tr>
<td>AEP</td>
<td>Span-Lok</td>
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<tr>
<td>American Buildings</td>
<td>Standing Seam II</td>
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<tr>
<td>Behlen</td>
<td>ZL-24 Triple Lock</td>
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<tr>
<td>Berridge</td>
<td>Zee-Lock</td>
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<td>Borga</td>
<td>Tioga</td>
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<tr>
<td>Butler</td>
<td>MR-24</td>
<td>Standard Base</td>
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<tr>
<td>Custom Bilt Metals</td>
<td>SL-1750</td>
<td>Standard Base</td>
</tr>
<tr>
<td>Custom Bilt Metals</td>
<td>CB-2000 Single Lock</td>
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<tr>
<td>Custom Bilt Metals</td>
<td>CB-2000 Double Lock</td>
<td>Standard Base</td>
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<tr>
<td>Everlast</td>
<td>Everseam</td>
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<td>Thin Seam</td>
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<td>Mastercraft Metals</td>
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<td>Seam-Loc 2000</td>
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<tr>
<td>Merchant &amp; Evans</td>
<td>Zip-Lok Single Lock</td>
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<td>Nucor</td>
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<tr>
<td>Whirlwind</td>
<td>Super Seam II</td>
<td>Standard Base</td>
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</table>

**Step-by-Step Instructions**

1) Assemble the seam clamp components to be ready to attach to standing metal seam.

2) Attach the seam clamp to the standing metal seam by loosening the seam clamp bolt then opening the seam clamp cam and placing the clamp over the top of the standing metal seam.

3) Tighten remaining hardware in the L-Foot assembly. Tighten both silver and black hardware to 10-16 ft-lbs.

SnapNrack Seam Clamps have been designed to work with a variety of standing seam metal roofs, the most common seam types are:

- **Snap Lock**
- **Single Lock**
- **Double Lock**

If a specific roof seam is not found on list, contact SnapNrack prior to installation.

**Notes**

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

**Warning**

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

**Design Tools**

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
Required Tools:

Level
String Line or Spare Rail
Pitch Meter
1/2in Socket Wrench
5/32in Allen Key
Torque Wrench

Materials Needed to Install and Level Rails:

1. SnapNrack Standard Rail
2. SnapNrack Splices
3. 1” SnapNrack Standoff Spacers
4. 5/16” - 18 X 1” Fully Threaded Set Screw
5. Pre installed SnapNrack Roof Attachments (L-Foot Or Standoff)

Technical Rail Data:

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<thead>
<tr>
<th>Material</th>
<th>6000 Series Heat Treated Aluminum</th>
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<td>Max Span</td>
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Technical Rail Splice Data

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<td>Recomm.</td>
<td>1/8” Gap Between Rails</td>
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</table>
**Step-by-Step instructions**

1) Set all of the rails into the attachments by snapping the channel nuts into the side channel of the standard rail. Connect multiple lengths of rail end to end with the SnapNrack splice.

2) Find the highest attachment point of the roof, and set that attachment point to the lowest adjustability. Level the bottom rail of the array to the roof by tightening attachment points. Torque silver hardware to 10-16 ft-lbs and black hardware to 7-9 ft-lbs.

3) Using a string line or spare rails run from the bottom rail to the top rail and raise the top rail, then set the desired pitch of the array by adjusting the top rail. Add leveling spacers if needed.

4) Level the top rail by moving the string line down the length of the rail, matching pitch over the entire length of the array.

5) Level the remaining rails to the string line, working out from the middle rail. Add leveling spacers if needed.

6) Tighten all racking hardware, torque silver hardware to 10-16 ft-lbs and all black hardware to 7-9 ft-lbs.

**Notes**

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

**Warning**

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

**Design Tools**

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
Required Tools:
1/2 inch Socket Wrench
Torque Wrench

Materials Needed to Install Mid and End Clamps:
1. Pre Installed SnapNrack Roof Attachments
2. Pre Installed SnapNrack Rails
3. SnapNrack Mid Clamp Assemblies
4. SnapNrack End Clamp Assemblies
5. PV Modules

Mid Clamp Assembly
1. (1) 5/16in - 18 X 2 1/2in SS HCS Bolt
2. (1) 5/16in SS Split Lock Washer
3. (1) SnapNrack Mid Clamp
4. (1) 5/16in - 18 SnapNrack Channel Nut

Adjustable End Clamp Assembly
1. (1) 5/16in - 18 2x3/4in SS HCS Bolt
2. (1) 5/16in SS Split Lock Washer
3. (1) SnapNrack Self Adjusting Top
4. (1) SnapNrack Self Adjusting Bottom
5. (1) 5/16in - 18 SnapNrack Channel Nut

Universal End Clamp Assembly:
1. (1) 5/16in - 18 X 1 1/2in SS HCS Bolt
2. (1) 5/16in X 3/4in SS Flat Washer
3. (1) SnapNrack Universal Wedge
4. (1) SnapNrack Universal Wave

Step 4: Attaching Modules
Pre Installed SnapNrack Roof Attachments
Pre Installed SnapNrack Rails
SnapNrack Mid Clamp Assemblies
SnapNrack End Clamp Assemblies
PV Modules
1/2 inch Socket Wrench
Torque Wrench
SnapNrack Mid Clamp

1) Snap into channel
2) Set mid clamp
3) Set modules
4) Tighten

SnapNrack Adjustable End Clamp

1) Snap into channel
2) Set on module
3) Tighten
4) Cut and install end clamp

SnapNrack Universal End Clamp

1) Set in rail
2) Place module
3) Pull tab foward
4) Set end cap

Series 100 Attaching Modules

Step-by-Step Instructions

SnapNrack Mid Clamp

1) Snap the preassembled SnapNrack mid clamp’s channel nut into the top channel of the rail.
2) Slide the mid clamp flush to the module with the top lip of the mid clamp over the top edge of the module.
3) Place the next module flush to the other side of the mid clamp.
4) Tighten hardware, torque silver hardware to 10-16 ft-lbs and black hardware to 7-9 ft-lbs.

SnapNrack Adjustable End Clamp

1) Snap the preassembled SnapNrack adjustable end clamp’s channel nut into the top channel of the rail.
2) Slide the adjustable end clamp flush to the edge of the module with the lip of the top of the end clamp over the top of the module and lip of the bottom of the end clamp under the module.
3) Tighten hardware, torque silver hardware to 10-16 ft-lbs and black hardware to 7-9 ft-lbs.
4) Install rubber end cap to finish.

SnapNrack Universal End Clamp

1) Slide the preassembled universal end clamp into the end of the rail.
2) Lift the module and slide the universal end clamp under the module far enough to pass the lip of the bottom edge of the module.
3) Use the pull tab to pull the universal end clamp tight to the end of the rail.
4) Hold and tighten the universal end clamp to 10 - 16 ft-lbs. Then install rubber end cap to finish.

Notes

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

Warning

- Do not over tighten hardware
- Always wear fall protection and safety gear

Design Tools

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
When To Use:
To Prevent Animals From Getting Under The Array And Causing Problems Such As Chewing On Wires

Materials Included With Series 100 Edge Screen:
1. (1) SnapNrack Edge Screen Clip
2. (1) SnapNrack Edge Screen

Technical Edge Screen Data:

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<th>Screen Material</th>
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<table>
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<tr>
<th>Material</th>
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<td>Color</td>
<td>Black Paint</td>
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<td>Weight</td>
<td>0.16 LBS</td>
</tr>
</tbody>
</table>

Dimensioned Assembly

Dimensioned Edge Screen Clip:

Step 5: Select Any Racking Accessories
Series 100 Edge Screen

Step-by-Step Instructions

1) Hold the SnapNrack edge screen clip upside down up to the edge of the array to visually see which notch the clip will need to be broken off at.

2) Using pliers break the Edge screen clip at the appropriate length.

3) Clip the edge screen clip to the lip on the underside of the modules around the area that the edge screen will be installed.

4) Attach the screen to the clips on the installed clips and repeat these steps continuing around the entire array.

Notes

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Warning

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

Design Tools

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
**When To Use:**
For Any Exposed Conductors To Sunlight That Are Not Approved

**Materials Included In Series 100 Wire Management:**
1. (1) SnapNrack Rail Cover

**Technical Rail Cover Data:**

<table>
<thead>
<tr>
<th>Material</th>
<th>6000 Series Heat Treated Aluminum</th>
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</thead>
<tbody>
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<tr>
<td>Weight</td>
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</table>

**Required Tools**
Chop Saw or Reciprocating Saw

**Dimensioned Rail Cover**
1) Measure length of cover needed

2) Cut cover to length

3) Place all conductors

4) Snap on cover

Step-by-Step Instructions
1) Measure the length of the SnapNrack rail cover that is needed. SnapNrack standard lengths of rail covers are 48 inches.

2) Cut the rail cover to length.

3) Place all electrical conductors in the bottom of the rail to clear the rail cover.

4) Snap rail cover into place enclosing all conductors inside of rail channel.

SnapNrack Rail Cover is designed to stay in place once installed. If it needs to be relocated or removed use a flat blade screw driver to remove.

Notes
-SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

Warning
-If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
-Do not over tighten hardware.
-Always wear fall protection and safety gear.

Design Tools
SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
When To Use:
Used If Micro Inverter Has An Attachment Tab

Required Tools
1/2 inch Socket Wrench

Materials Included In Series 100 Micro Inverter Attachment Kit:
1. (1) 1.50In X 0.328 in X 0.187 in SS Fender Washer
2. (1) Snaprack Channel Nut 5/16In-18
3. (1) 5/16In - 18 X 1In Ss Hcs Bolt
4. (1) 5/16In Ss Split Lock Washer
5. (1) Wiley WEEB-PMC Grounding Washer For Snaprack Rail

Body Micro Inverters May Have Separate Grounding And Will Not require a WEEB

Dimensioned Assembly
1) Snap in the channel nut

2) Place the WEEB

3) Place the bolt and washers

4) Tighten hardware

Step-by-Step Instructions

1) Snap the SnapNrack micro inverter attachment kit channel nut into the desired location on the rail where the micro inverter will be installed.

2) Place the Wiley WEEB over the channel nut so that the flanges on the WEEB are on the outside of the rail.

3) Attach the micro inverter to the bolt on the micro inverter attachment kit. Bolt and washers may need to be removed and then replaced.

4) Tighten hardware, torque silver hardware to 10-16 ft-lbs.

Notes

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

Warning

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

Design Tools

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
When To Use:
UEC For Flush Rail

Required Tools:
Reciprocating Saw

Materials Included In Series 100 Rail Cutting Tool and End Cap:
1 (1) SnapNrack Rail Cutting Tool
2 (1) SnapNrack Rubber End Cap

Dimensioned Rail Cutting Tool

1-1/2"
1/2"
3
3-1/2"
2-1/2"
1-1/2"
2-1/2"
1"

Dimensioned End Cap

1-1/2"
4-1/2"
5"
1-1/2"
1-1/2"

Series 100
Rail Cutting Tool and End Cap
Series 100
Rail Cutting Tool, and End Cap

**Rail Cutting Tool and End Clamp**

1) Slide the Cutting tool over the end of the rail and place it so that the upper lip is safely covering the edge of the module.

2) Use the reciprocating saw to cut off the end of the rail.

3) Remove the cutting tool from the rail.

4) Insert SnapNrack rubber end cap to have a flush finish to the array.

**Notes**

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

**Warning**

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

**Design Tools**

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
Grounding Methods Include:
1. Wiley WEEB
2. Lay-in Lug
3. Wiley Bonding Jumper

When To Use:
When WEEBs Are Approved
By The Local Jurisdiction

Wiley WEEB Notes:
- Use only Wiley WEEBs made for SnapNrack rail with SnapNrack products
- Use general purpose anti-sieze compound on all fastener threads when using WEEBs
- WEEBs are intended for single use only. Functionality will not be guaranteed if reused
- Torque all WEEB hardware to 10 ft-lbs
- Two WEEBs per module is the minimum amount

Dimensioned WEEB

Dimensioned Lay in Lug

Dimensioned Bonding Jumper
Installing the Wiley WEEB Washer

1) include in assembly
2) Place tabs over rail
3) insert module
4) Tighten hardware

Installing the Wiley WEEB Lug

1) Drill hole
2) Include in assembly
3) Tighten hardware
4) Attach grounding

Installing the Wiley WEEB Jumper

1) Drill hole
2) Attach and tighten

Step-by-Step Instructions

PMC

1) Include the Wiley WEEB in the assembly of the mid clamps that are needed to be grounded.
2) When installing the clamp, place the WEEB tabs over the edge of the rail.
3) When setting the clamp flush to module, place the WEEB under the bottom edge of module to have a clear place to ground.
4) Tighten all hardware to a min of 10 ft-lbs.

Lug

1) Using a 3/8” drill bit, drill a hole in the back side of the rail for the Wiley Lay-in lug to attach to.
2) Place bolt through hole and attach the Lay-in lug assembly.
3) Tighten all hardware to a min of 10 ft-lbs.
4) Attach grounding conductor into slot and tighten bolt to 7 ft-lbs.

Jumper

1) Using a 3/8” drill bit, drill a hole on each end of the rails to be bonded close enough for the Wiley bonding jumper to reach each of them.
2) Place bolt through the drilled holes and attach the bonding jumper.

Notes

- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

Warning

- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.

Design Tools

SnapNrack has a suite of design tools to help configure your PV installation for accurate and fast install. Please visit us at: www.SnapNrack.com
When To Use:
When Installing The High Tilt Configuration

Required Tools:
- Drill
- Measuring Tape
- Reciprocating Saw
- 1/2 inch Socket Wrench

Materials included in Series 100 10°-45° Tilt Tool Kit
1. (1) 48in Scrap Piece Of Rail
2. (2) 5/16in Split Lock Washer
3. (2) 4in Rail Covers With 3/8" Holes Drilled In Center
4. (2) 5/16in X 3/4in Flange Bolts
5. (2) SnapNrack Channel Nut 5/16in

Series 100 Tilt Install Tool

Dimensioned Tilt Tool

Assembled Tilt Tool

When To Use:
When Installing The High Tilt Configuration
Installing the Tilt Tool

1) Construct pieces
2) Assemble hardware
3) Set rail to proper length
4) Tighten hardware

Step-by-Step Instructions

1) Construct either a standard, shallow, or ground scrap piece of rail to the dimensions of the panels being installed. Drill 3/8" holes in each rail cover. Cut two 5/16" channel nuts to length. Drill holes into channel nuts. Obtain all of the parts: rail, two rail covers, two channel nuts, two bolts, and two split lock washers.

2) Once 3/8" holes are drilled in each rail, cover the channel nuts so they can be bolted to the rail covers and slid in to the rail.

3) The rail covers can then be slid to the correct positions and tightened down.

4) Tighten hardware.

Notes
- SnapNrack engineered systems should only be used with SnapNrack components and hardware. Any alternate application may void the warranty and structural calculations could become invalid.

Warning
- If a pilot hole is drilled and a rafter is not found immediately seal pilot hole with roofing sealant to avoid water damage.
- Do not over tighten hardware.
- Always wear fall protection and safety gear.
### Max Rail Spans Between Standoffs (FT.) 39"X66" Modules

#### Ground Snow Load (PSF)

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<th>Wind Speed (Nominal 3-sec, Gust in mph)</th>
<th>Wind Speed (Nominal 3-sec, Gust in mph)</th>
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<th>Wind Speed (Nominal 3-sec, Gust in mph)</th>
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#### U' to 1'5

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<th>Wind Speed (Nominal 3-sec, Gust in mph)</th>
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#### 1b to 3u

<table>
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<th>Wind Speed (Nominal 3-sec, Gust in mph)</th>
<th>Wind Speed (Nominal 3-sec, Gust in mph)</th>
<th>Wind Speed (Nominal 3-sec, Gust in mph)</th>
</tr>
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<tbody>
<tr>
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#### 31 to 45

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#### 4b to 60

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</tr>
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<tr>
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</tbody>
</table>

*Indicate a required 2 ft. reduction in rail span for panels within roof edge sones. See S19 for roof edge sone description

*CS - Consultant Structural Engineer (Typical to add a third rail)

Note: For solar installations 50 ft. and above ground level or less. If location of solar installation is higher than 50 ft. above ground level, please contact Taylor and Slaton.