



RAMPART 354/358 WELDED WIRE INSTALLATION MANUAL

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General Notices

- This installation manual edition replaces all earlier versions.
- The specifications contained in this document may be changed without prior notice.
- Follow the safety instructions contained in the manual.
- Wallace Perimeter Security reserves the right to modify this manual without prior notification.
- This manual has been written with the utmost care and attention. However, the possibility of errors cannot be excluded. Wallace Perimeter Security is not liable for damage arising as a result of errors which occur in the manual. Please inform us immediately of any errors or omissions.

IMPORTANT

To maintain the warranty of the welded wire powder coating, you must service the welded wire panels in accordance with the maintenance schedule. For more information, refer to "**Maintenance Schedule**" on page 25.

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TABLE OF CONTENTS

Safety and Information Notices	4
Installing Welded Wire	5
Required Tools	6
Required Safety Equipment	7
General Instructions	8
Additional Tips	10
General Instructions for Concrete Footings and Flanged Posts.....	11
Installing Panels – Spider Bracket System.....	14
Installing Panels – Defender Secure System	16
Installing Panels – Defender Lite System	18
Accommodating Changes in Grade.....	20
Stacking Panels.....	22
Connecting Corners	23
Installing Serrated Anti-Climb	24
Maintenance Schedule	25
Cleaning welded wire	25
Appendix.....	26
Touch-up Paint Specifications	26

Safety and Information Notices

The following notices are used where applicable within this manual. Each notice contains information specific to the situation.



DANGER

Indicates death or severe injury will occur if the hazardous situation is not avoided.



WARNING

Indicates death or severe injury could occur if the hazardous situation is not avoided.



CAUTION

Indicates mild or moderate injury could occur if the hazardous situation is not avoided.

CAUTION

Indicates damage to equipment is probable if the hazardous situation is not avoided.

IMPORTANT

Additional important information.

NOTE

Just a note.

Installing Welded Wire

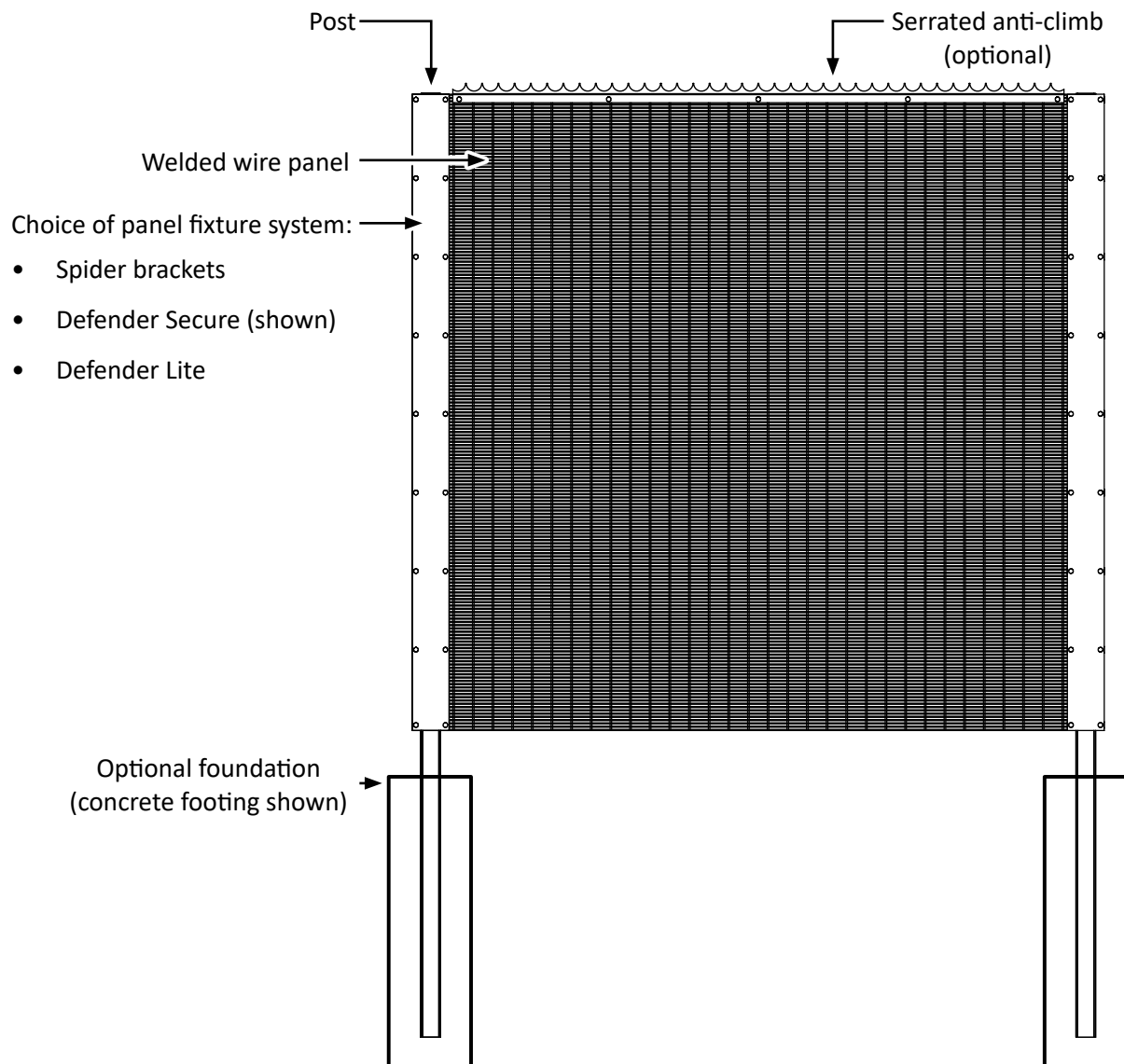
The installation instructions explain how to install Rampart 354 and 358 welded wire and its foundation. The illustration below identifies the main components of the fence.

! WARNING

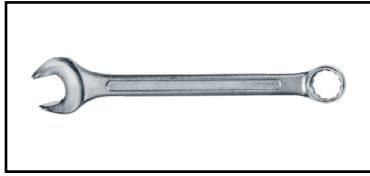
To prevent death or severe injury due to contact with construction equipment, ensure that the area around the construction site is free of bystanders.

! CAUTION

To prevent personal injury due to cuts, wear protective gloves and goggles if handling panels or serrated anti-climb.



Required Tools



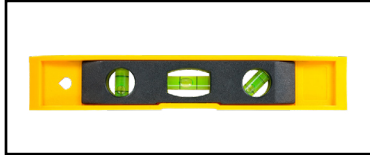
Spanner



Shovel



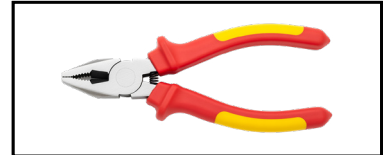
Crowbar



Line level



Rubber mallet



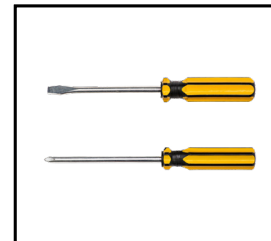
Pliers



Socket wrench



Marker



Screwdriver



Angle grinder



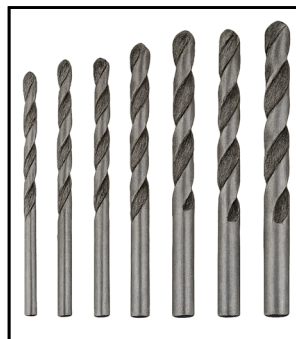
Cordless drill



Measuring tape



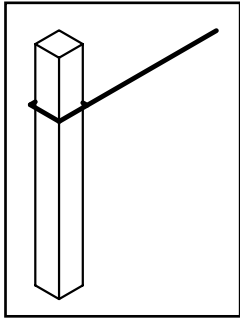
Rotating laser level



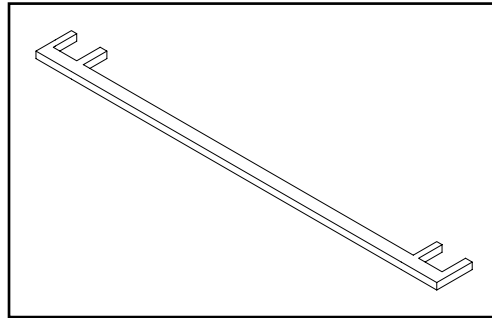
Drill bits



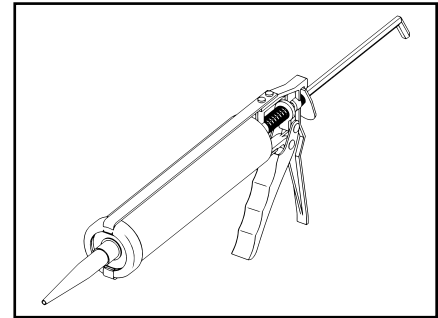
Hammer



Stakes and string



Template for spacing posts



Applicator for chemical anchors
(if installing flanged posts)

Required Safety Equipment



Helmet



Goggles



Face shield



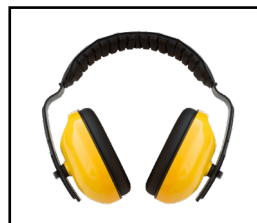
Dust protection mask



Hand gloves



Safety shoes



Hearing protection



Safety vest

General Instructions

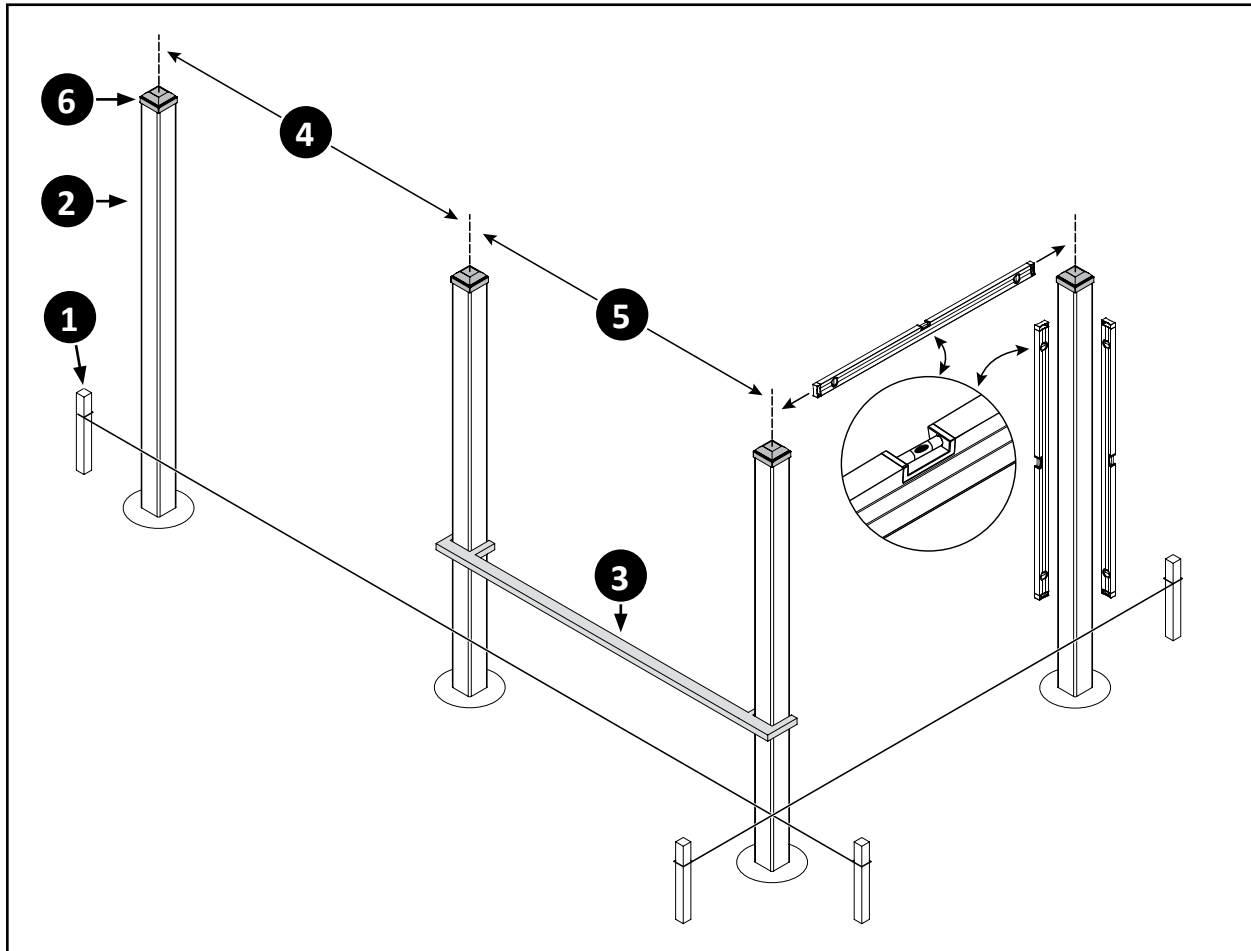


Figure 1: Post planning and installation

1. Make sure the ground is as level as possible.
 - For more information about installing fences over uneven ground, refer to **"Accommodating Changes in Grade" on page 20.**
2. Plan the fence line using stakes and string (1).
 - Align the string so that it will touch the welded wire side of the fence posts (2).
 - Tip: To save time, use a template (3) to space posts out when possible. Wallace Perimeter Security does **NOT** supply templates.
3. Plan the center-to-center distances between (4) in-line posts, and between (5) in-line and corner posts. The distances will vary according to the following:
 - The parts that attach the panels to the posts (spider brackets vs. defender systems)
 - The angle of the corner connections
 - The grade

4. If the posts are flange-mounted:
 - 4.1. Dig the holes for the concrete footings. For more information, refer to **"General Instructions for Concrete Footings and Flanged Posts" on page 11.**
 - 4.2. Fill the holes with concrete and allow them to cure.
 - 4.3. Mount the flange posts to the footings, using washers between the flange and footing as needed to level the post.
5. If the posts will be set in concrete:
 - 5.1. Dig the holes for the concrete footings. For more information, refer to **"General Instructions for Concrete Footings and Flanged Posts" on page 11**
 - 5.2. Insert the posts and confirm that they are vertically level.
 - 5.3. Fill the hole with concrete.
6. If the post will be driven into the ground, continuously check that the post is vertically level while it is being driven into the ground.
7. Install post caps (6).
 - The standard caps used with Rampart 354/358 are compatible with stepped panel configurations, however some styles of caps cannot be installed with stepped panels.
8. Attach the welded wire to the fence posts.
 - To trim panels, use an angle grinder. If the panel was trimmed, paint exposed wire using RAL-colored paint that matches the panel.

IMPORTANT

Cutting a welded wire panel voids the warranty of the welded wire powder coating, but does **NOT** change the overall strength of the panel. For more information about paint that will protect cut wire from corrosion, refer to **"Touch-up Paint Specifications" on page 26.**

- For the spider bracket system, refer to **"Installing Panels – Spider Bracket System" on page 14.**
 - For the Defender Secure system, refer to **"Installing Panels – Defender Secure System" on page 16.**
 - For the Defender Lite system, refer to **"Installing Panels – Defender Lite System" on page 18.**
9. If installing a second tier of panels (such as a 4 ft panel on top of a 4 ft panel), do so using the connection brackets. For more information, refer to **"Stacking Panels" on page 22.**
 10. Install accessories such as anti-climb edges. For more information, refer to **"Installing Serrated Anti-Climb" on page 24.**

Additional Tips

Installing posts:

- Excluding flange posts: Specific projects can vary, but in general, insert posts so that they protrude an additional 152 mm (6") above ground than what is specified on site drawings. This allows you to accommodate variation in panel placement without running out of post. Posts must be embedded at least 1067 mm (3' 6") into the ground or foundation.

Installing panels:

- Use two people to hold the panel and one to install the hardware.
- Consider temporarily mounting the panel using self-tapping screws to make sure the installation is correct before installing break-away nuts. Break-away nuts are difficult to remove.

General Instructions for Concrete Footings and Flanged Posts

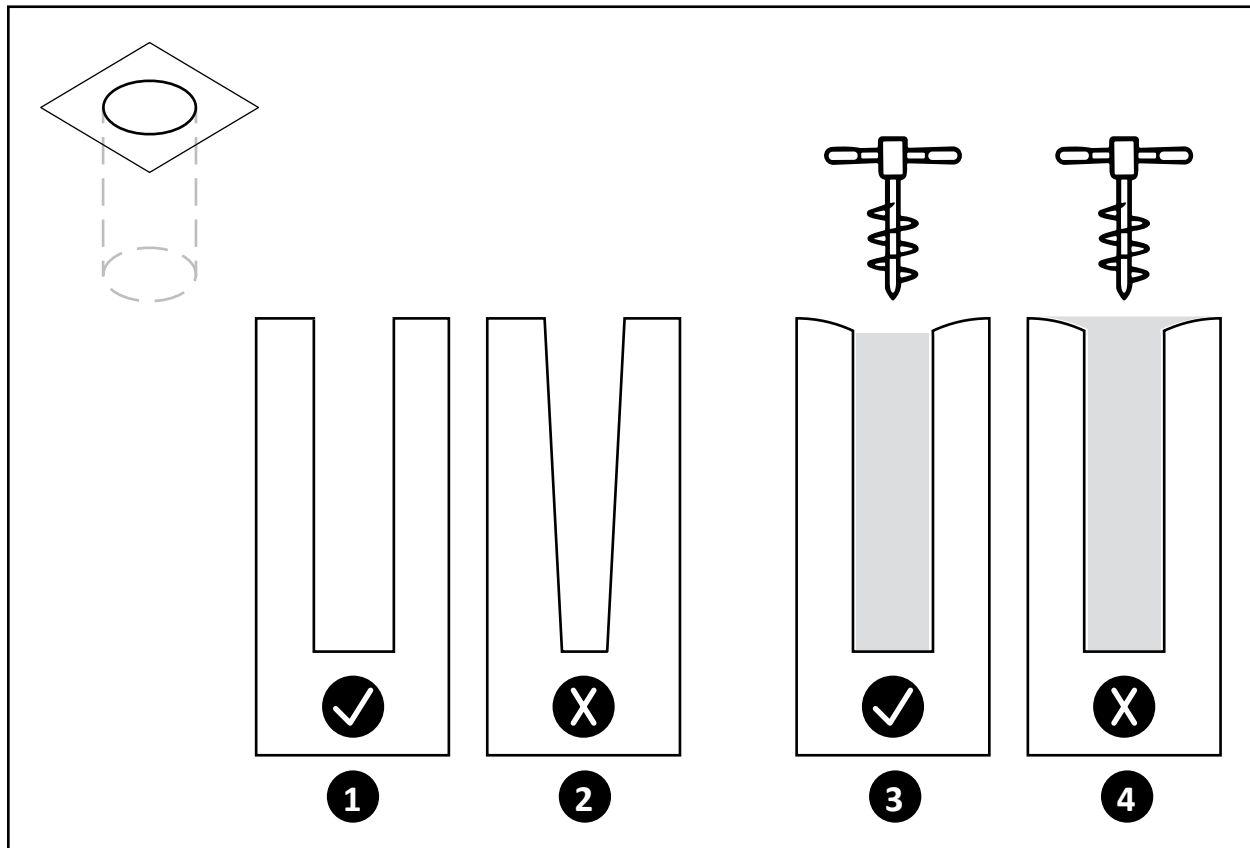


Figure 2: Concrete footing tips

When preparing concrete footings:

- Make sure the hole is dug straight (1), not tapered (2).
- If you use an auger to dig the hole and the top of the hole becomes bell-shaped, only add concrete to the length of the hole that is evenly straight up and down (3). Do **NOT** fill the tapered top end with concrete (4).

For general instructions on installing flanged posts onto concrete footings, refer to the following:

- If using chemical anchors: **Figure 3 on page 12**
- If using wedge anchors: **Figure 4 on page 13**

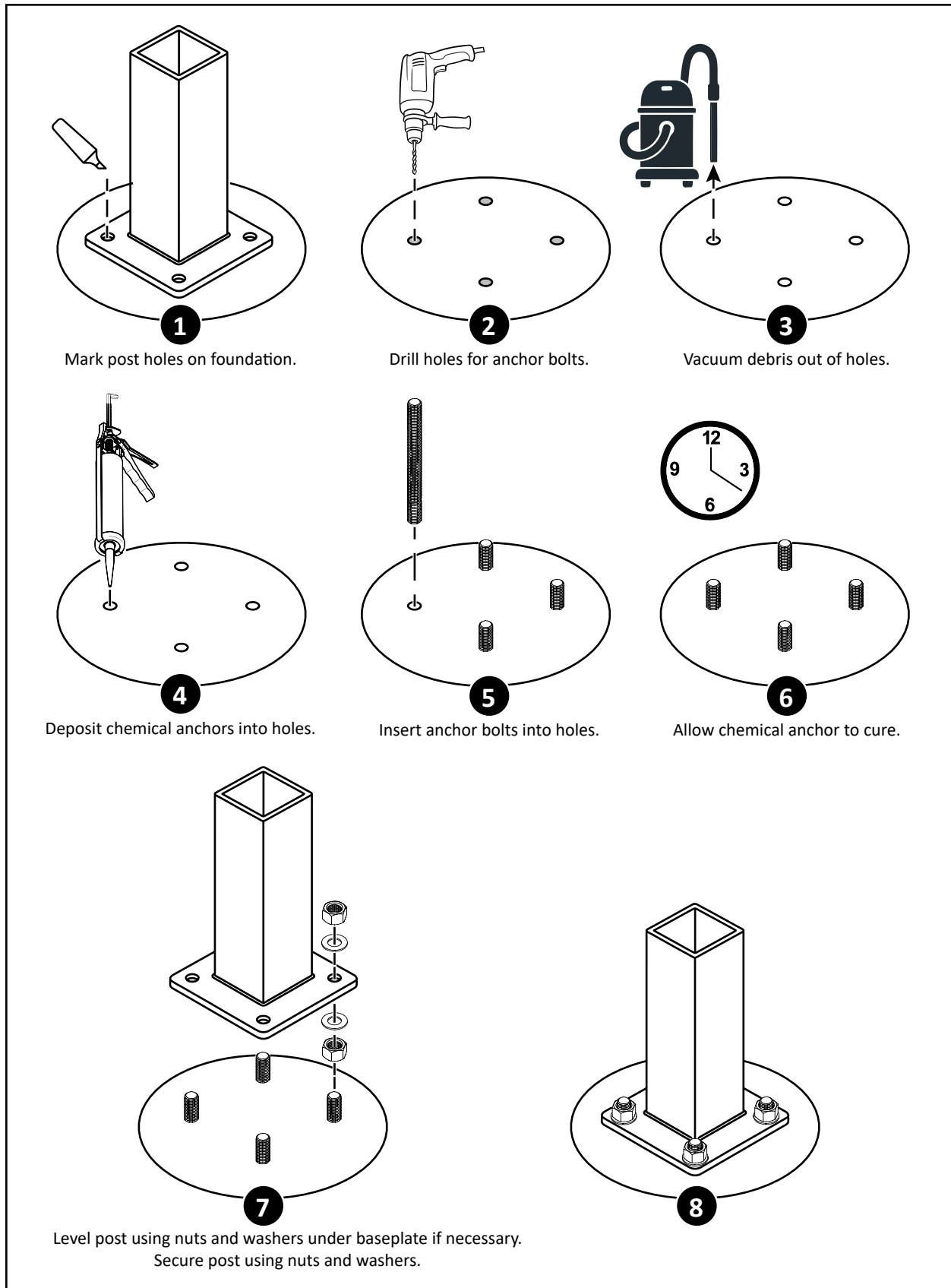


Figure 3: Flange post installation with chemical anchors

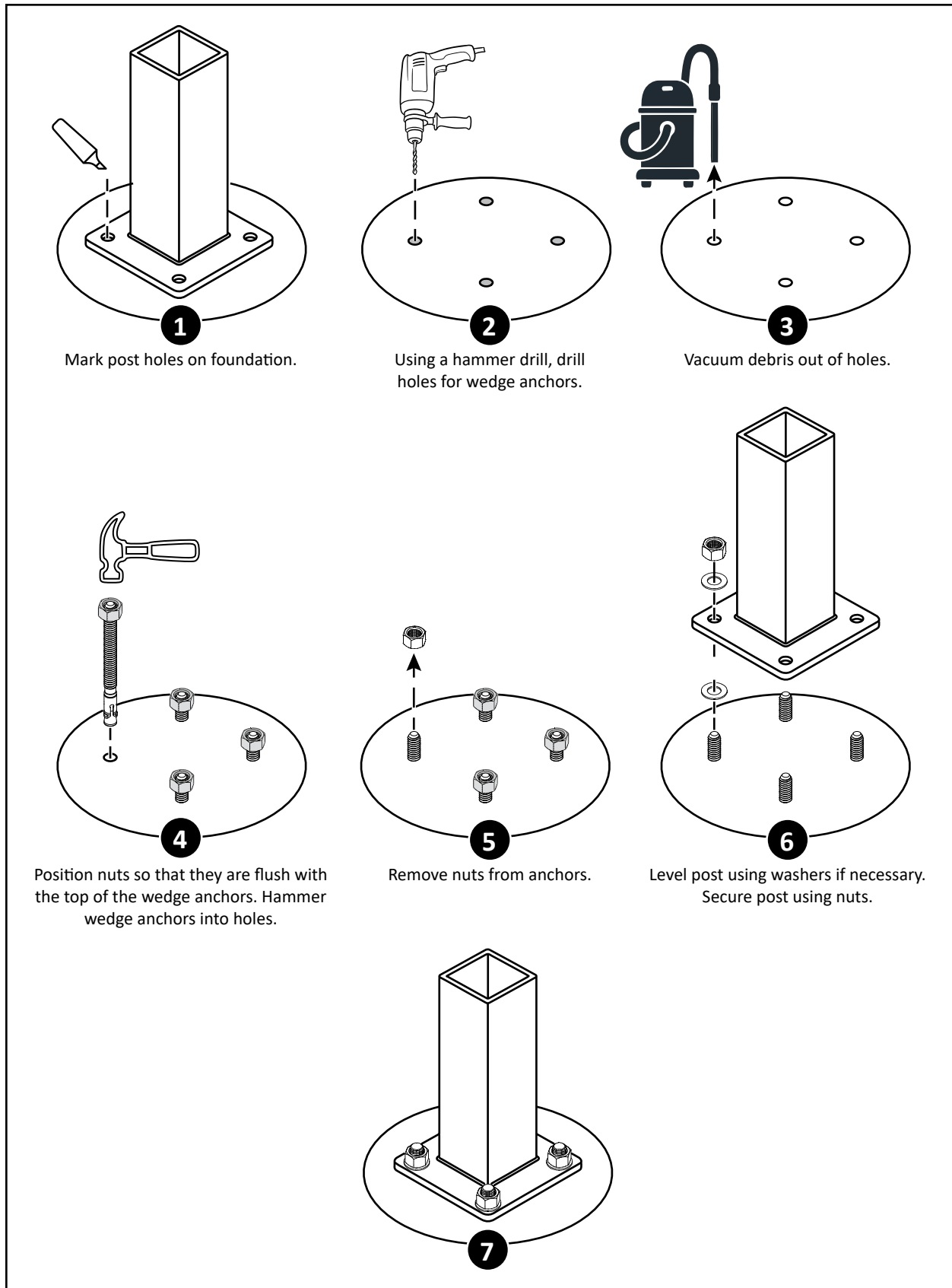


Figure 4: Flange post installation with wedge anchors

Installing Panels – Spider Bracket System

Refer to **Figure 5 on page 15**.

1. Position panels as follows:

- If attaching panels to end posts (A), assuming the panel terminates at the post, position the panel so that it overlaps approximately three-quarters of the post face. If the panel extends past the end post to join a corner, refer to the site drawing. For general corner information, refer to **"Connecting Corners" on page 23**.
- If attaching panels to line posts (B), position each panel so that they each overlap approximately one-third of the post face.
- If specified, leave a gap between the panel and ground according to site drawings.

2. Position brackets as follows:

- Horizontally-center brackets (1) on the posts.
- Install a bracket at the top and bottom edges of the panel.
- Evenly-space brackets between the top and bottom brackets.
- For information about the number of brackets required per post, refer to the table below.

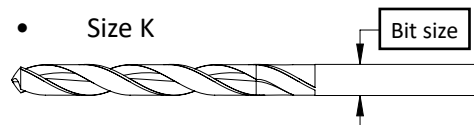
IMPORTANT

Because fastener location is precise, drill pilot holes before drilling holes that are sized for the bracket fasteners.

3. If using standard hardware, secure the brackets and panels to the posts as follows:

- #### 3.1. Using the first hole as a test, drill holes through **one face** of the post for the self-threading screws. The thicker the post material, the larger the hole needs to be, however the following sizes of drill bits are generally acceptable:

- 7.3 mm
- 9/32"
- Size K



- #### 3.2. Secure each bracket (1) using a M8 x 45 mm self-threading screw (3) and washer (2).

- #### 3.3. Tighten the screw to 25 Nm (225 in-lb).

4. If using optional hardware, secure the brackets and panels to the posts as follows:

- #### 4.1. Drill completely through the post.
- #### 4.2. Secure each bracket (1) using a 8 mm carriage bolt (4) and 8 mm security nut (5).

Table 1: Typical quantity of spider brackets per post

Panel	Nominal Height	Panel Height	Quantity of brackets per post
354	1.2 m (4')	1248 mm (49 1/8")	4
354	1.8 m (6')	1858 mm (73 1/8")	6
354	2.4 m (8')	2467 mm (97 1/8")	8
358	1.2 m (4')	1198 mm (47 3/16")	4
358	1.8 m (6')	1833 mm (72 3/16")	6
358	2.4 m (8')	2442 mm (96 1/8")	8
358	3.0 m (10')	3001 mm (118 1/8")	10

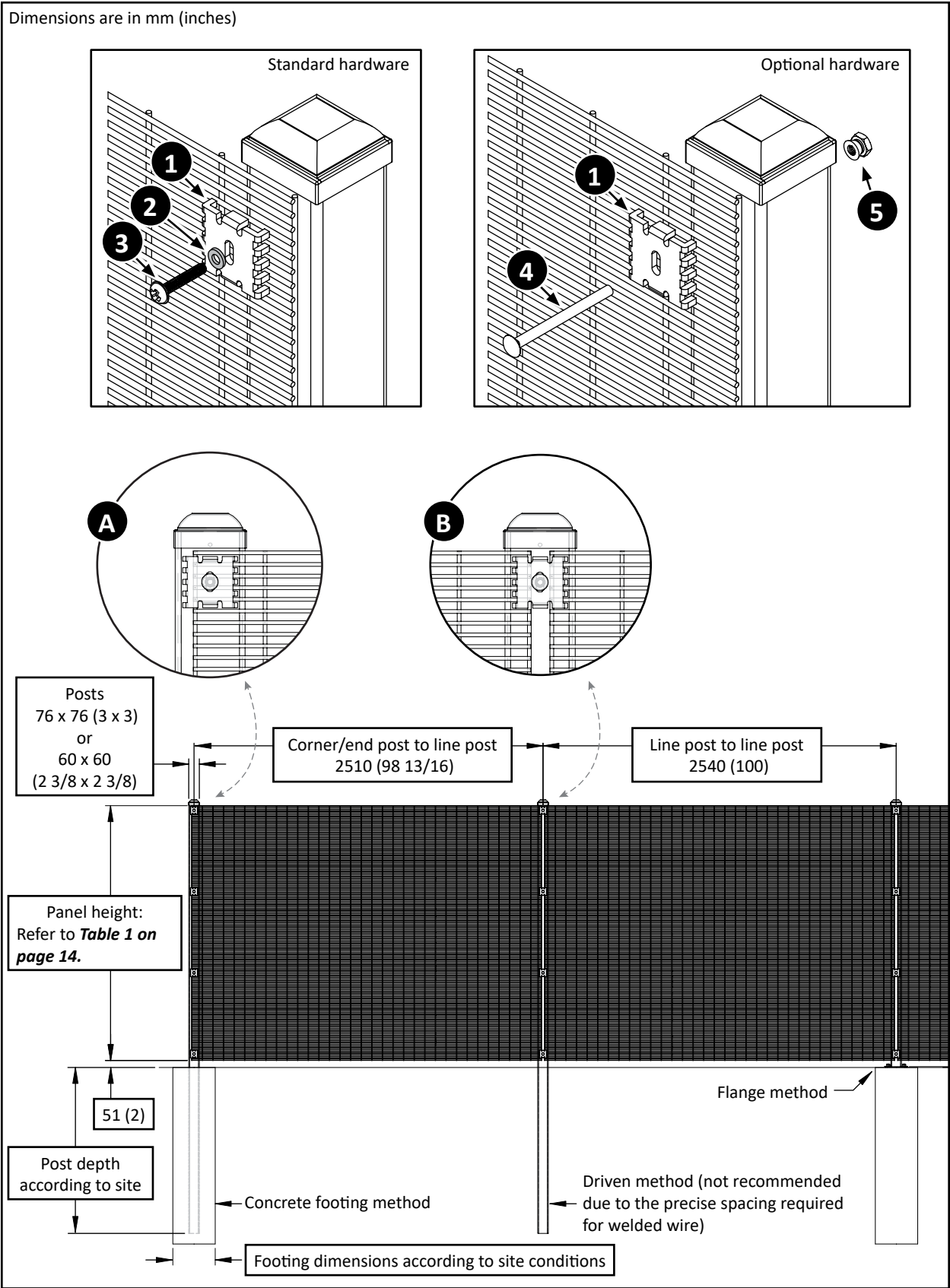


Figure 5: Panel installation – spider bracket system

Installing Panels – Defender Secure System

Refer to **Figure 6 on page 17**.

1. Position panels as follows:

- If attaching panels to line posts (A), position each panel so that they each overlap approximately one-third of the post face.
- If attaching a panel to an end post (B) that is not a corner post, position the panel so that it overlaps approximately one-third of the post face.
- If the post joins panels at a 90° corner, (C) position the panels so that they overlap the flat face of the post. If the panel extends past the end post to join a corner, refer to the site drawing. For general corner information, refer to **"Connecting Corners" on page 23**.
- If specified, leave a gap between the panel and ground according to site drawings.

2. Secure panels to posts as follows:

Line posts:

- 2.1. Horizontally-center clamp bars (1) over the posts.
- 2.2. Using U-brackets (2), M8 carriage bolts (3), and M8 break-away nuts (4), secure the clamp bars and panels to the posts.

Posts at 90° corners:

- 2.1. Align clamp angles (5) with the post corners.
 - 2.2. Using corner brackets (6), M8 carriage bolts (7), and M8 break-away nuts (8), secure the clamp bars and panels to the posts.
- Make sure the bolt heads face the public side of the fence.
 - For information about the number of brackets required per post, refer to the table below.

Table 2: Typical quantity of U-brackets per post

Panel	Nominal Height	Panel Height	Quantity of brackets per post
354	1.8 m (6')	1858 mm (73 1/8")	7
354	2.4 m (8')	2467 mm (97 1/8")	9
358	1.8 m (6')	1833 mm (72 3/16")	7
358	2.4 m (8')	2442 mm (96 1/8")	9

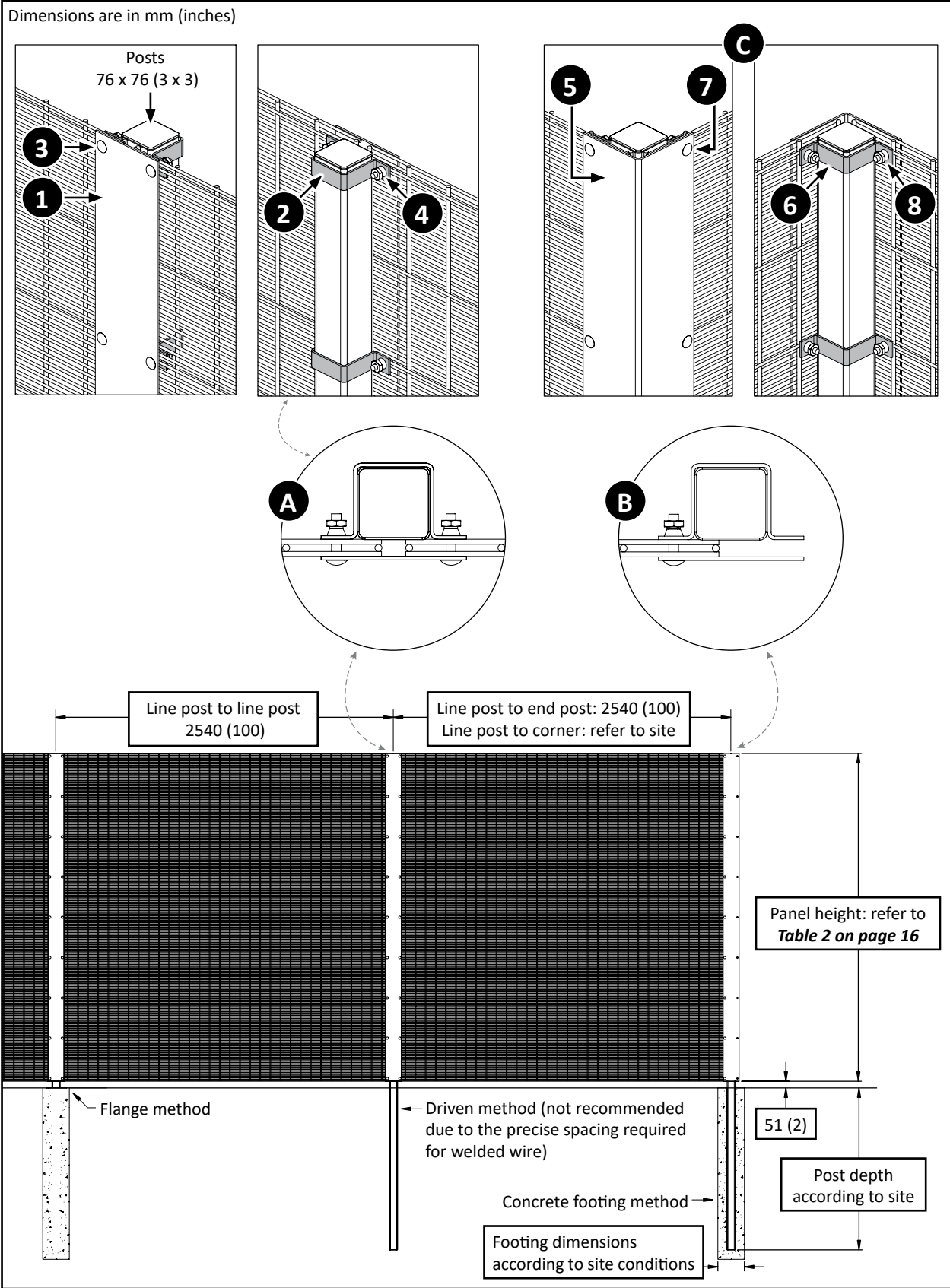


Figure 6: Panel installation – Defender Secure system

Installing Panels – Defender Lite System

Refer to **Figure 7 on page 19**.

1. Position panels as follows:

- If attaching panels to line posts (A), position each panel so that they each overlap the full width of the post. The panels will overlap each other.
- If attaching panels to end posts (B), position the panel so that it overlaps the full width of the post.
- If the post joins panels at a 90° corner (C), position the panels so that they overlap the full width of the post. If the panel extends past the end post to join a corner, refer to the site drawing. For general corner information, refer to **"Connecting Corners" on page 23**.
- If specified, leave a gap between the panel and ground according to site drawings.

2. Secure panels to posts as follows:

- 2.1. Horizontally-center the cover strip (1) over the post.
- 2.2. Align the top of the cover strip with the top of the panel.
- 2.3. Using the cover strip's slotted holes as a guide, mark where to drill holes into the post.
 - In general, space holes 191 mm (7 1/2") apart.
 - If the post joins panels at a 90° corner, mark holes at the top (2) of the slotted holes for one post face and at the bottom (3) of the slotted holes for the adjacent post face.
 - Drill completely through the post at the marked locations.
- 2.4. Secure the panel to the post using a cover strip, M8 carriage bolts (4), and M8 break-away nuts (5). Make sure the bolt heads face the public side of the fence.

Table 3: Panel height		
Panel	Nominal Height	Panel Height
354	1.8 m (6')	1858 mm (73 1/8")
354	2.4 m (8')	2467 mm (97 1/8")
358	1.8 m (6')	1833 mm (72 3/16")
358	2.4 m (8')	2442 mm (96 1/8")

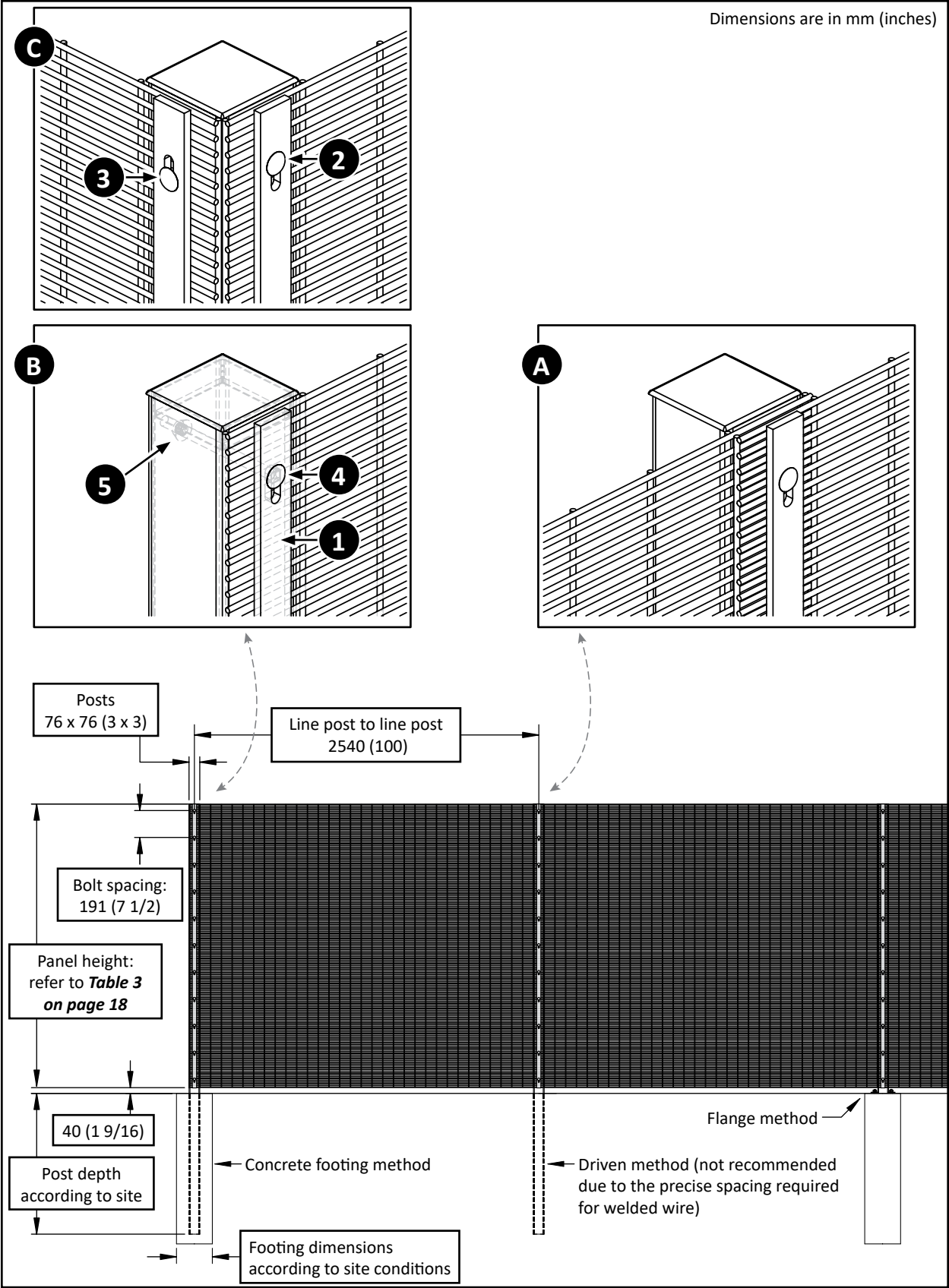


Figure 7: Panel installation – Defender Lite system

Accommodating Changes in Grade

Refer to **Figure 8 on page 21**.

Guidelines:

- Level depressions using fill.
- If possible, insert the panels into a trench to compensate for uneven ground and to avoid cutting the panels. To compensate for slightly uneven ground, it is also permissible to jam the welded wire into the ground.
- Trim panels vertically as needed to accommodate changes in grade.
- If trimming the bottom of the panels, leave a 2" gap between the panel and the ground unless specified otherwise.
- There are alternative, site-specific, solutions for the bottom of the panels, such as anti-dig foundations.

Example methods:

- (1) This method is used when it is impractical for the top of the fence line to be level, such as for continuous or terraced slopes.
- (2) This method maintains consistent panel height over uneven ground, and if it is impractical for the top of the fence to remain continuously level.
- (3) This method is intended for uneven ground, as opposed to continuous slopes, and when it is practical for the top of the fence line to remain continuously level.

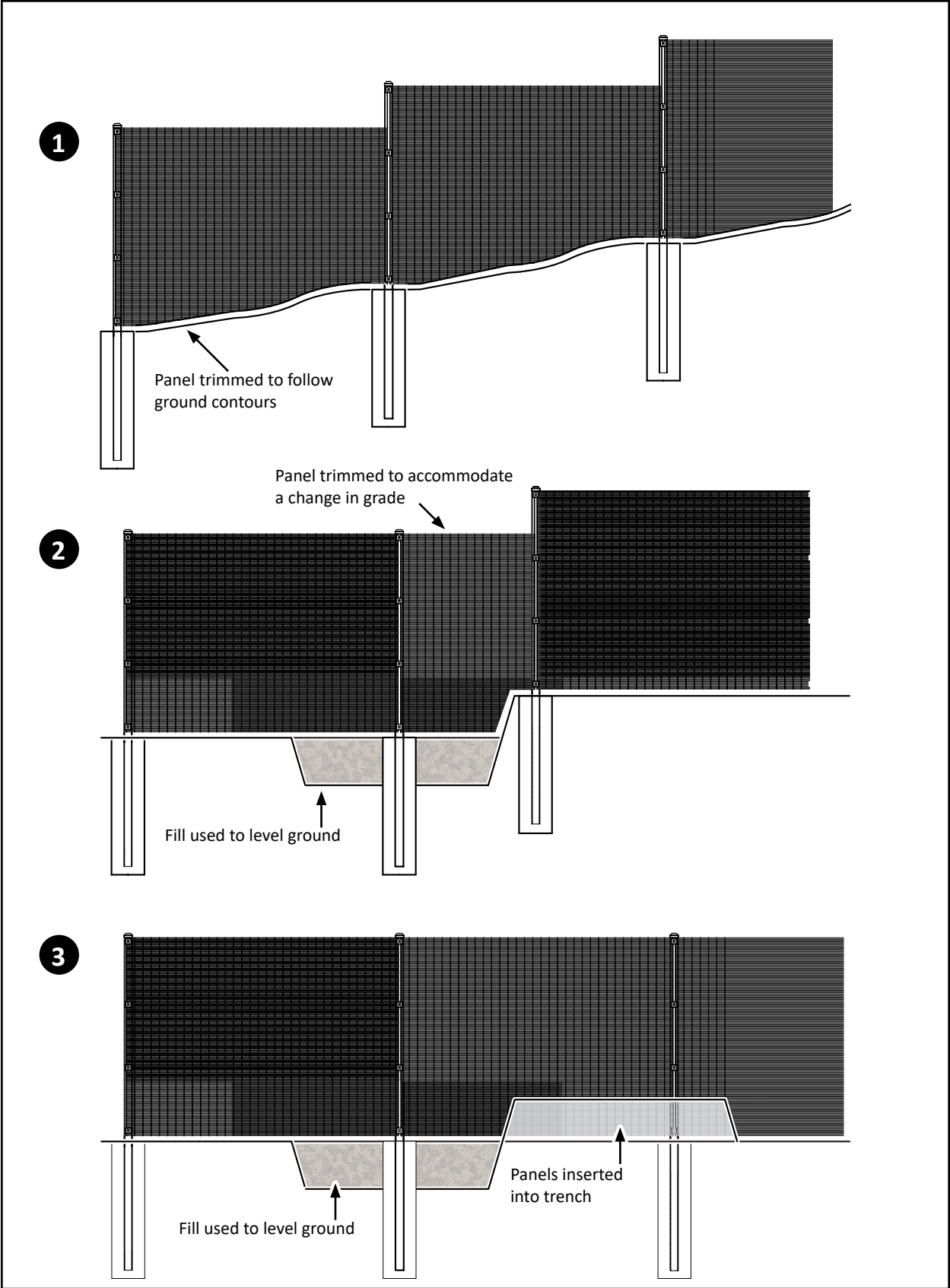


Figure 8: Panels installed on uneven ground

Stacking Panels

Brackets are available for stacking panels on top of each other. For example, a 1.2 m (4') panel stacked on top another 1.2 m (4') panel to make a 2.4 m (8') panel. To join stacked panels do the following:

1. Attach an OMT-007 bracket (1) to the secure side of top (2) and bottom (3) panels using two spider brackets (4).
 - Space (5) OMT-007 brackets according to the site drawings.
2. Using the hardware (not shown) provided with the spider brackets, secure them to the OMT-007 bracket.

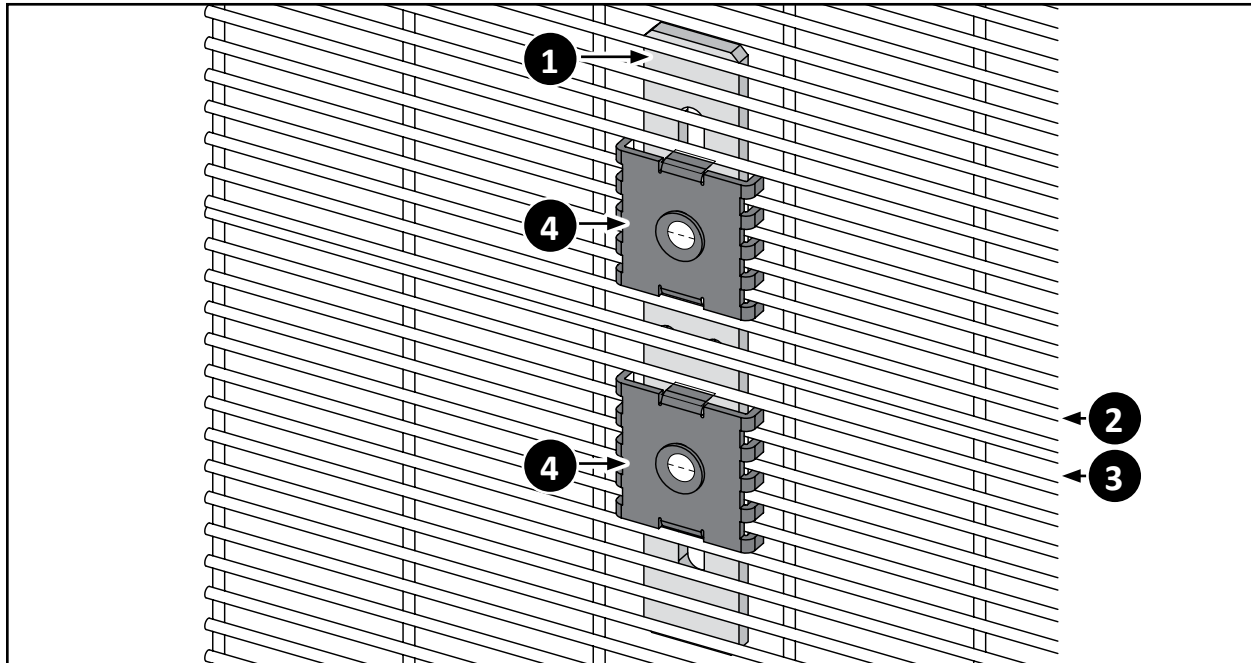


Figure 9: Stacked panel brackets

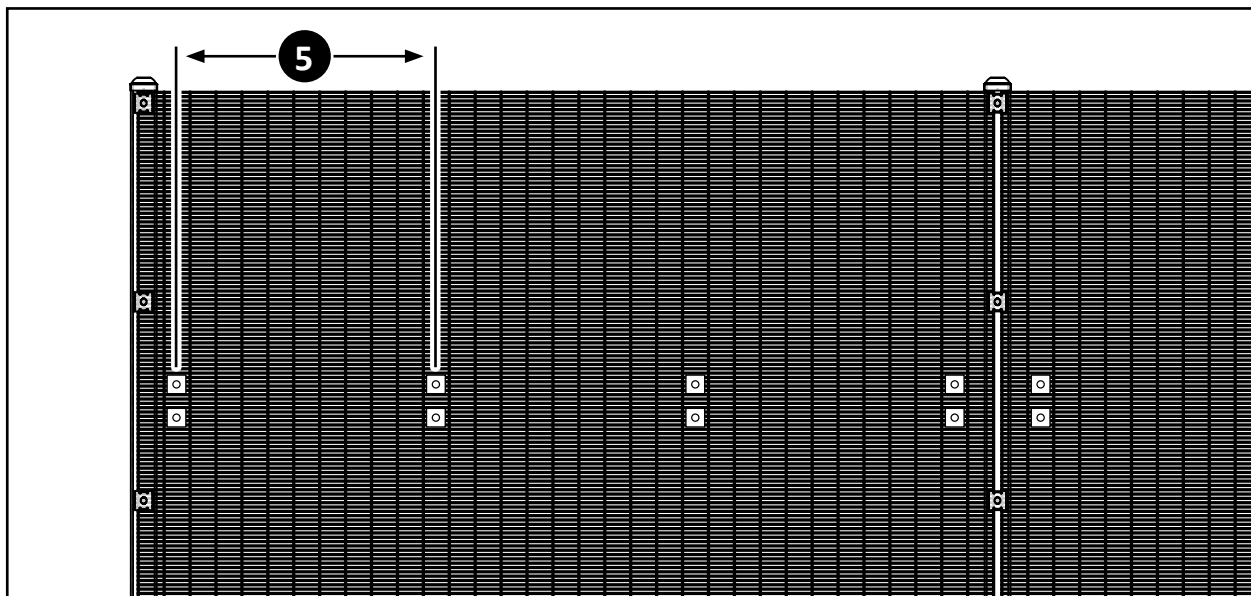


Figure 10: Stacked panel brackets

Connecting Corners

- For security, join panels at a corner using a post if possible.
- For corners less or greater than 90°, position the corner posts as close together as the site conditions allow them to be.
- All illustrations show the spider bracket system, however the same information applies to the "Defender Lite" and "Defender Secure" systems.
- All dimensions are in mm (inches). The size of concrete footings and posts are examples.

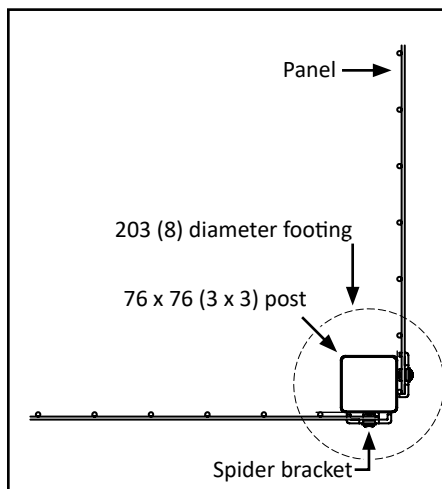


Figure 11: 90° corners

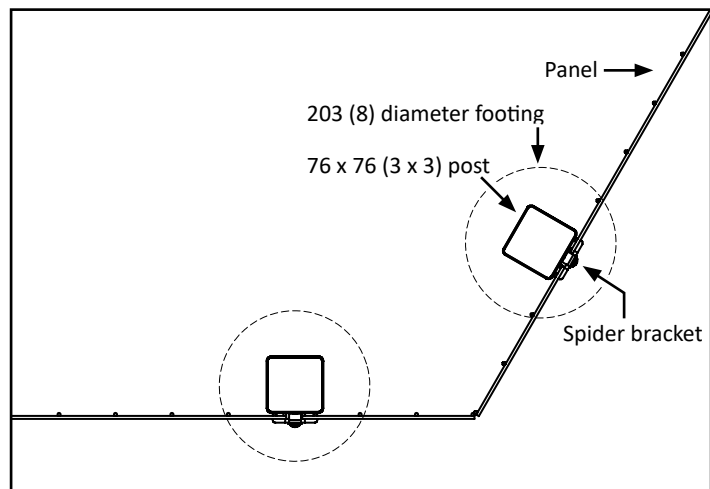


Figure 12: Corners exceeding 90°

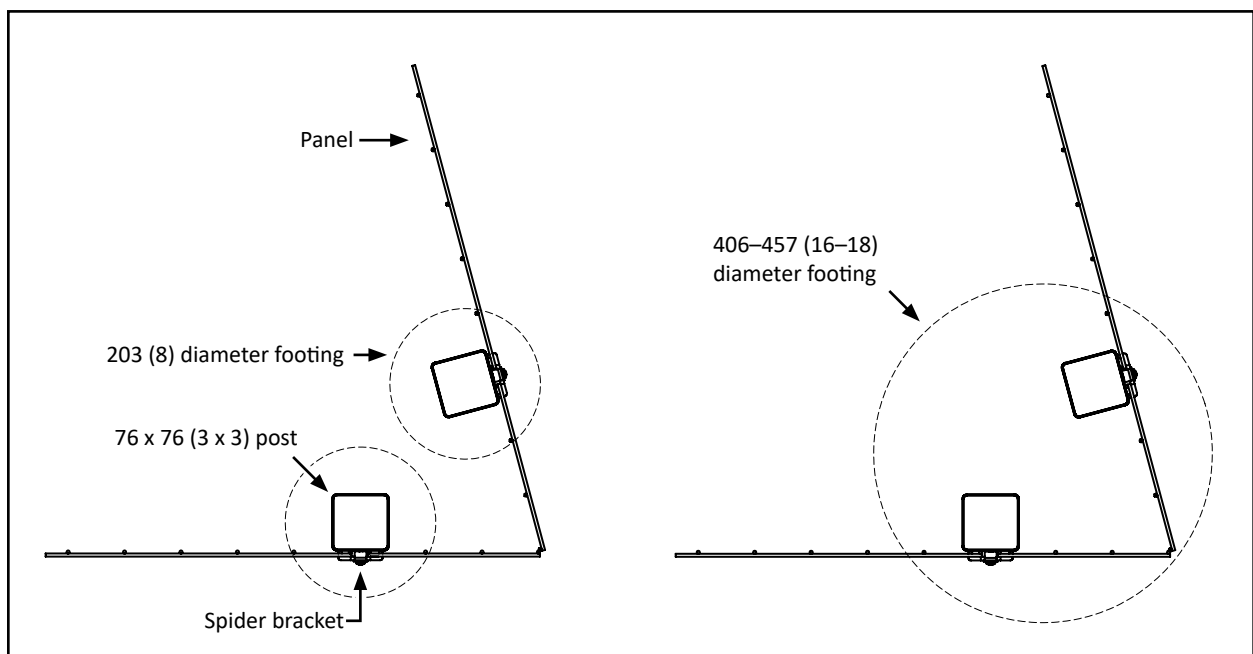


Figure 13: Corners less than 90°

Installing Serrated Anti-Climb

1. Place the anti-climb (1) on top of the welded wire panel (2).
2. Center the anti-climb across the length of the panel.
3. Insert 5/16" carriage bolts (3) through the slotted holes of the anti-climb and through the welded wire.
4. Using 5/16" break-away nuts (4), secure the bolts.

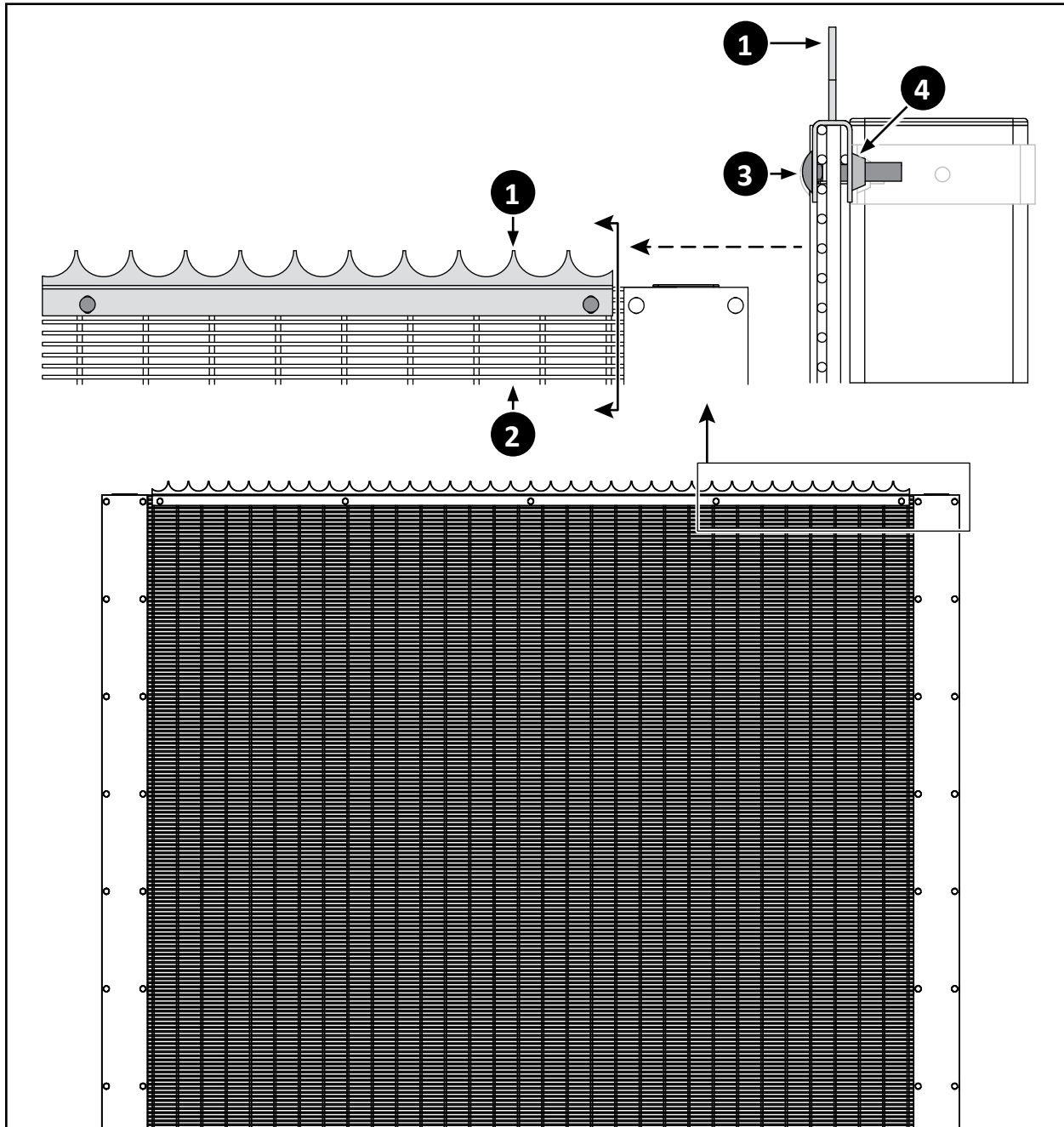


Figure 14: Serrated anti-climb

Maintenance Schedule

IMPORTANT

To maintain the warranty of the welded wire powder coating, you must complete the tasks included in this section as often as the tasks specify.

Cleaning welded wire

Minimum frequency:

- Annually if the environment is gentle.
- Semi-annually or more frequently if the environment is harsh. Examples of harsh environments include coastal or industrial areas.

Clean welded wire as follows:

1. Spray the wire with clean tap water. Do **NOT** use a high-pressure washer.
 - If using cleaning products, only use ones that are pH-neutral. Avoid solvents, bleach, or detergents.
2. Once the wire is clean, wipe it gently using a soft sponge or a white cloth.

Appendix

Touch-up Paint Specifications

The following paints can be used to touch-up cuts, drill holes, scratches, and handling damage on galvanized gate panels, posts, brackets, and cover plates, regardless if the part is colored:

- Sparvar Farb-Spray
- Krylon® Rust Protector™ (this paint has been replaced by Rust Tough®)
- Krylon® Rust Tough®

For instructions on spray-painting welded wire to protect it from corrosion, request the Technical Data Sheet (TDS 2) from Wallace Perimeter Security.

RAL 9005 (black) is the standard power-coat color of Rampart welded wire panels.



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