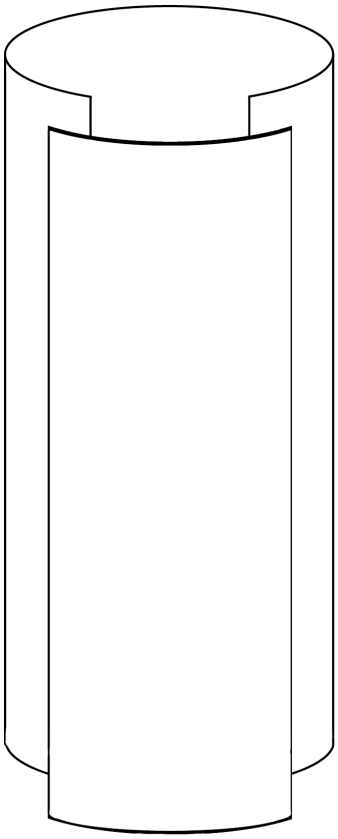
PowerON™

December 2021

RS PowerON™ FIRE SHIELD™

WORK INSTRUCTION

High Performance Protection for Utility Poles



RS

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I. PURPOSE

This document outlines the steps to field install and RS Fire Shield™ on existing poles.

II. INTRODUCTION

The RS Fire Shield™ is a lightweight and durable tubular shaped shell designed to provide fire protection to utility poles in high fire threat areas. Using the same proven composite materials as RS poles, the Fire Shield™ is also an effective solution in protecting poles from thermal, chemical, mechanical and environmental hazards.

Additional applications of the Fire Shield™ continue to be discovered. The RS Fire Shield™ provides a barrier to prevent children, pets, wild and domestic animals from climbing poles and away from all the typical dangers of wood poles like splinters, leaching wood pole preservatives (i.e. creosote, penta, CCA, etc.), down grounds and stray voltage. Even foul odors given off a treated wood pole are reduced significantly with a Fire Shield™ installed.

The smooth, self-cleaning surface prevents critters from climbing the pole and causing costly outages and damages to electrical equipment. The surface will impede vine growth such as poison ivy and poison oak, allowing safer accessibility for meter readers, data collectors, powerline and forestry maintainers.

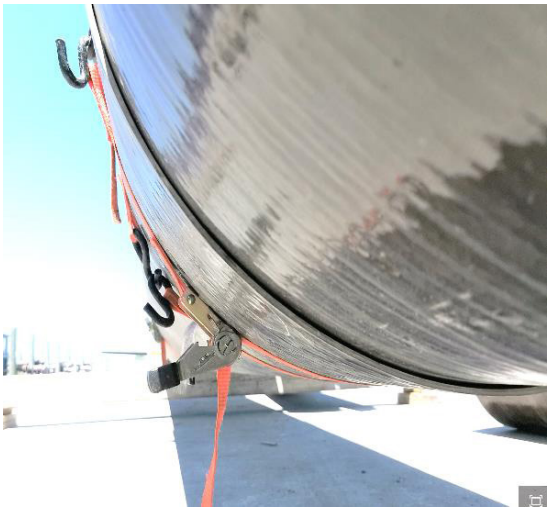


Figure 1: **The RS Fire Shield™ naturally confirms to all round cross-section poles.**

The Fire Shield™ can be installed on all existing round cross-section pole types including wood, composite, concrete and steel. *See Figure 1.*

The Fire Shield™ is produced using the same manufacturing process and materials as modular RS poles, and including UV-stable polyurethane resin and E-glass fiber. Like RS poles, the Fire Shield™ is available in grey or brown, and in a variety of lengths and sizes specific to the needs of each individual pole and application.

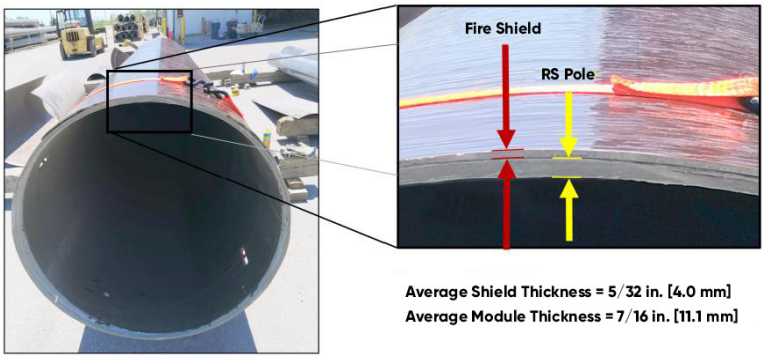


Figure 2: **Fire Shield™ and comparative RS pole wall thickness.**

III. APPLICATIONS OF THE RS FIRE SHIELD™

The RS Fire Shield™ protects new and existing poles of all material types for an ever-increasing and vast array of issues including:

- **Fire.** The RS Fire Shield™ protects utility poles from fire damage. The advanced composite material is self-extinguishing and does not support combustion.
- **Animals.** The Fire Shield™ protects poles from wildlife such as bears, beavers, hogs, rodents, woodpeckers and other pests.

Figure 3: **RS Fire Shield™ wildfire exposure.**

III. APPLICATIONS OF THE RS FIRE SHIELD™ *(continued)*

- **Physical separation.** The RS Fire Shield™ provides an excellent barrier to protect children and pets from leaching creosote and splinters found in wood poles in playgrounds, school yards and neighborhoods. The smooth shield will also limit the ability of rodents to climb up wood poles and damage the electrical equipment, preventing outages and saving children and animals from potential electrical shock. Squirrels, raccoons, rodents, chipmunks, cats, bobcats and bears have caused power outages and damage to electric equipment by climbing up wood utility poles.
- **Electrical.** The dielectric insulating properties of the Fire Shield™ acts as an additional barrier separating livestock and farm animals from down grounds and possible stray voltage where electrical utility poles exist in farmers' fields.
- **Thermal.** Caused by wildfires, grass fires, and transformer fires and failures. One utility is currently using the Fire Shield™ on wood poles adjacent to garbage bins where arson fires have caused major damage to wood poles and untimely outages.
- **Chemical.** The RS Fire Shield™ is a physical barrier and protects poles from salt and other chemical exposure.
- **Visual and mechanical.** The Fire Shield™ provides pole protection in busy locations such as parking lots, main streets, and yards where road/sidewalk plows and brush/grass cutting machinery have damaged existing poles. The Fire Shield™ protects down grounds and its smooth surface allows for easy attachment of caution signs and stickers.

Figure 4: **Squirrels and critters cannot climb the smooth surface of and RS Fire Shield™ or RS pole.**

Figure 5: **Wood pole damaged by a beaver.**

Figure 6: **Wood pole damaged by a bear.**

IV. TOOLS AND EQUIPMENT CHECKLIST

√ Personal Protective Equipment (PPE) and safe work area (cones, tape, signs, etc.);

√ Shield sections;

√ Shovel;

√ Ratchet straps (one strap for every 2 ft. [610 mm] of shield);

√ Cordless drill and battery;

√ Grinder or circular saw (if cutting is required);

√ Drill driver bits for various screws;

√ New name plates, phase markers, pole I.D. tags, clamps for conduit (as required);

√ Construction screws, self-tapping screws (for Fire Shield™, nomenclature);

√ Ladder or aerial device (as required);

√ Tape measure; and

√ Permanent Sharpie marker.

V. RS FIRE SHIELD™ SPECIFICATIONS AND ORDERING REQUIREMENTS

Destination pole is the term used for the existing pole in the field.

To ensure a proper fit on the existing field pole, the Fire Shield™ is matched with a similar taper and dimension to that of the destination pole. The Fire Shield™ sections are extremely durable and lightweight and may be stacked upon one another for convenient and efficient shipping. The Fire Shield™ is pre-cut at the factory and ready to install upon arrival.

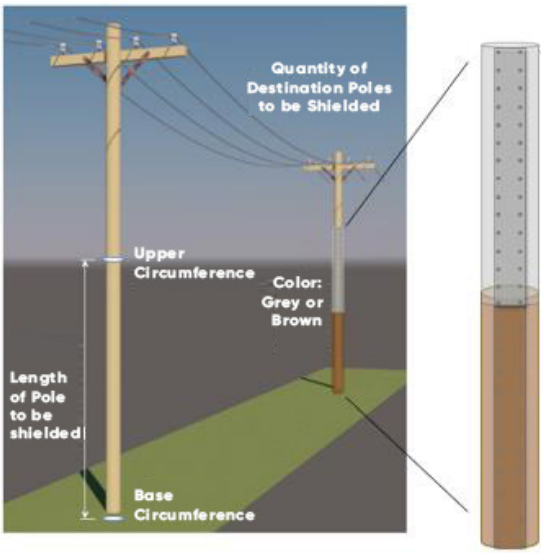
The Fire Shield™ may be ordered in various lengths depending the coverage height required and to facilitate manageable field installations. Specialized cuts and sections are available for specific requests. On average, the thickness of the shield is 5/32 in. [4 mm], allowing the shield to shape itself snugly around the contour of the destination pole. For manufactured (uncut) shield specifications, see *APPENDIX A: RS FIRE SHIELD™ SPECIFICATIONS*.

See *Table 1* below, and *APPENDIX B: FIELD FORM* for information required when ordering an RS Fire Shield™.

Required Information for Ordering an RS Fire Shield™

Measurement Technique
(any pole type)

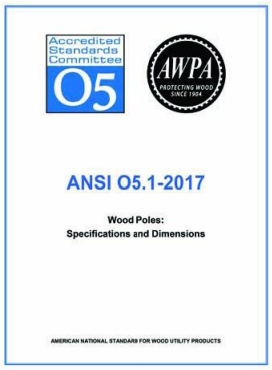
1. Lower circumference or diameter of destination pole at bottom of Fire Shield™ location (i.e. at the ground line, etc.);
2. Upper circumference or diameter of destination pole at top of Fire Shield™ location;
3. Length of Fire Shield™ required (vertical distance between lower and upper coverage points);
4. Quantity of shields required; and
5. Color preference (available in grey or brown).



OR

ANSI Class
(wood poles only)

1. Species of destination pole;
2. Height of destination pole;
3. ANSI Class of destination pole;
4. Length of Fire Shield™ required;
5. Starting distance (measurement from butt of pole to start of Fire Shield™);
6. Quantity of shields required; and
7. Color preference (available in grey or brown).



Wood Poles - Specifications and Dimensions
This standard provides minimum specifications for the quality and dimensions of wood poles that are to be used as single-pole utility structures.

Table 1: **Ordering requirements.**

VI. TWO-PIECE FIRE SHIELD™ — PREPARE FOR FIELD INSTALLATION

To facilitate easy installation on an existing pole, the Fire Shield™ is pre-cut in two pieces and ready to install upon arrival. The two sections consist of a **primary shield** and an overlapping **cover strip**. See *Figure 7*.

The cover strip can be easily removed and re-attached without disrupting the primary shield, facilitating future inspection of the existing pole base and enabling climbing of the existing wood pole.

Other cuts of shield are available. Consult your RS representative for details.

Figure 7: **Primary shield and cover strip prepared at factory.**

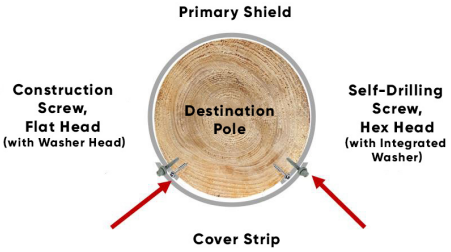


Figure 8: **The two-piece shield consists of a narrow removable cover strip overlapping a wider primary shield.**

VII. CUTTING AND DRILLING

There may be occasions in the field when the Fire Shield™ requires cutting for a slight adjustment to accommodate an object or a hole drilled for wood pole testing. A circular saw or grinder with a diamond tip blade is ideal for cutting the Fire Shield™, while carbide tip hole saws with a pilot bit are recommended for drilling the shields. For detailed cutting and drilling work instruction, please refer to *Work Instruction C610 | Drilling and Cutting RS Poles*. Contact RS at info@RSpoles.com for a copy, if required.

VIII. ATTACHING NOMENCLATURE AND OTHER EQUIPMENT TO FIRE SHIELD™

Stainless steel or galvanized self-drilling screws work best for securing the Fire Shield™ to the pole and for attaching identification name plates, tags, phase markers, conduit clamps, underground wiring straps, etc. A flat head construction screw is used for securing the inner seam.

See *Table 2* (below) for a list of compatible screws. **NOTE:** Longer screws may be required if the destination pole is wood and has excessive surface imperfections or damage (i.e. cracking).

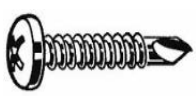
Description	Size	Application	Image Reference
Flat head construction screw with washer head	#10 x 2 in. construction screw	Attach interior seam of Fire Shield™ to pole.	
410 stainless steel or galvanized self-drilling screw with integrated washer	#12 x 1-1/2 in. 5/16 in. hex drive	Attach the external seam of the Fire Shield™ to pole.	
410 stainless steel self-drilling screw	#14 x 1-1/2 in. 3/8 in. hex drive	Attach cable and underground conduit clamps.	
410 stainless steel self-drilling screw with pan head	#8 x 1 in. Phillips drive	Attach nomenclature, I.D. tags, phase markers, etc.	

Table 2: **Screw requirements.**

IX. SITE PREPARATION

Follow applicable legislation, rules and procedures to ensure a safe installation. Below are examples of considerations:

1. **Excavation Legislation:** Safe practices and protocol for trenching around the base of pole.
2. **Electrical awareness:** Limits of approach to live apparatus, continuity of down grounds, disconnecting underground services, etc.
3. **Safe work area:** Public and personnel safety (i.e. cones, traffic control, barrier tape, etc.).
4. **Adequate signage:** Order adequate signage if information stamped on the wood pole requires transferring to the Fire Shield™ for future reference and data collection (i.e. date and species of wood pole).

If more than one vertical section of Fire Shield™ is being installed on the destination pole, the lower section should be installed first, allowing a layered run-off effect for the overlapping upper section.

Moderate deviation of installation techniques may be required depending on the application. For example, a Fire Shield™ installed to defend a wood pole from burrowing of feral hogs will require deeper underground excavation when attaching to the destination pole.

X. MAINTENANCE

If drilling is required at the base of the destination pole for future testing and maintenance, the cover strip can be easily removed by removing the cover screws in place, and then re-installed by re-installing the cover screws.

An alternative is to drill a hole through the Fire Shield™ using a carbide tipped hole saw. Once finished, the hole should be plugged to prevent insects and hornets from entering. RS offers a variety of different sized silicone hole plugs. Contact your RS representative, if required.

Like RS utility poles, the RS Fire Shield™ is a maintenance-free product that will last 80 years.

1. POLE PREPARATION

1. Remove any nomenclature, phase markers, test tags, date stamps, conduit, metering equipment, etc. that should be transferred to the Fire Shield™ once it is installed on the destination pole.

Dig an 8 in. [200 mm] wide x 4 in. [100 mm] deep trench around the base of the pole. **NOTE:** Keep the overburden back such that it does not fall into the trench during installation of the Fire Shield™. See *Figure 9*.

Figure 9: **Trenching around the base of the destination pole.**

2. SLIDE ON THE RS FIRE SHIELD™

1. Install the wider primary shield first, ensuring the taper is facing upward (i.e. the narrow end is at the top).
2. Approach the destination pole with the Fire Shield™ on an angle (with the bottom away from the pole and the top against the destination pole).
3. Spread the top of the shield far enough to enable wrapping around the destination pole. See *Figure 10*. **NOTE:** Once the top of the shield has gripped around the destination pole, it will remain in place.
4. Push the Fire Shield™ inward and upward to allow it to self-wrap and completely envelope the destination pole.
5. Once the shield has enveloped the destination pole, slide it down to rest on the ground, being careful that no overburden comes between the wall of the shield and the pole.

Figure 10: **Spreading the primary shield while pushing inward and upward onto the destination pole.**

3. POSITION THE FIRE SHIELD™ IN PLACE

1. Use ratchet straps to assist in shaping the Fire Shield™ around the contour of the pole and temporarily holding it in position, in preparation for securing with construction screws. See *Figure 11*.

Figure 11: **Temporarily holding the primary shield in place on the destination pole with ratchet straps.**

4. SECURE THE PRIMARY SHIELD

1. Fasten the inner vertical seam of the primary shield using flat head #10 x 1-1/2 in. construction screws with a full thread and integrated washer. See *Table 2*.
2. Start at the bottom of the shield seam and work toward the top in 6 in. [150 mm] increments.
3. Complete one vertical seam and then repeat on the other seam. **NOTE:** The shield is constructed of extremely tough composite material, and may break or damage some construction screws. If this happens, pre-drill a small 1/8 in. [3 mm] pilot hole into the shield prior to installing the screws.

Figure 12: **Secure the primary shield with flat head construction screws.**

5. SECURE THE COVER STRIP

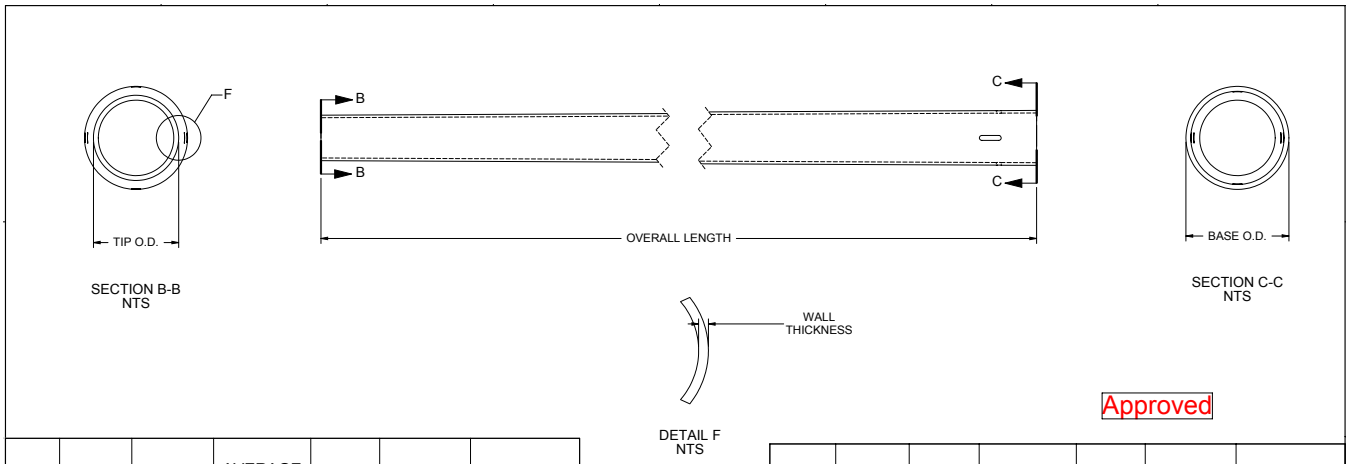
1. Center the cover strip over the primary shield, ensuring similar overlap on both sides. **NOTE:** Larger strip sections may once again require ratchet straps to hold in place, while smaller cover strips can usually be held by hand or with the assistance of a co-worker.
2. Starting from the bottom and working systematically toward the top, use a cordless drill and 5/16 in. hex drive bit to install the self-tapping screws (#12 x 1-1/2 in.) 6 to 8 in. [150 mm to 203 mm] apart. See *Table 2*. **NOTE:** Monitor the shield for any puckering and/or gaps. See *Figure 13*.

Figure 13: **Securing the cover strip.**

6. INSTALL NOMENCLATURE

1. Remove ratchet straps.
2. Backfill the trenching around the pole.
3. Re-install any nomenclature, markers, pole I.D. tags, etc. that were removed from the destination pole onto the Fire Shield™.

APPENDIX A: RS FIRE SHIELD™ SPECIFICATIONS



Approved

IMPERIAL UNITS

MODULE LABEL	LENGTH (FT-IN.) ±0.60"	AVERAGE WALL THICKNESS (IN.)	WEIGHT (LB)	TIP OUTER DIAMETER (IN.)	BASE OUTER DIAMETER (IN.)
1L	20' 0"	0.169	59	7.0	9.2
1	15' 2"	0.169	46	7.5	9.2
2	17' 8"	0.130	53	7.8	12.0
3	17' 5"	0.122	70	10.6	14.8
4	18' 11"	0.134	108	13.2	17.8
5	19' 0"	0.134	117	16.0	20.7
5/6	34' 11"	0.157	251	16.0	24.2
6/7	34' 11"	0.157	315	18.8	27.4
8/9	35' 9"	0.157	418	25.2	33.9
10/11	36' 11"	0.173	572	31.4	40.2

METRIC UNITS

MODULE LABEL	LENGTH (m) ±15mm	AVERAGE WALL THICKNESS (mm)	WEIGHT (kg)	TIP OUTER DIAMETER (mm)	BASE OUTER DIAMETER (mm)
1L	6.15	4.3	27	177	233
1	4.62	4.3	21	190	233
2	5.39	3.3	24	197	306
3	5.30	3.1	32	269	376
4	5.77	3.4	49	335	451
5	5.79	3.4	53	406	526
5/6	10.63	4.0	114	406	615
6/7	10.63	4.0	143	477	695
8/9	10.90	4.0	190	641	861
10/11	11.24	4.4	260	797	1020

REV	DESCRIPTION	DATE	MADE BY	APPROVAL
B	UPDATED DATA TABLES W/2019 VALUES	21OCT2020	RS	MF
A	INITIAL RELEASE	05NOV2013	LG	SVHP

REVISION HISTORY

APEGA
Permit to Practice
No. 8619

STANDARD DIMENSIONS ARE IN MILLIMETERS
DIMENSIONS IN [ ] ARE IN INCHES
DEFAULT TOLERANCES
LINEAR DIMS: X ± 5 mm; ± .020"
XX ± .05 mm; ± .002"
XXX ± .005 mm; ± .0002"
SAW: +2.0 mm; + .080"
HOLES: + 5 mm; +.002" -0
ANGULAR: ± 1/2°
CONCENTRICITY: ± .010 TIR
MACHINE FINISH: 32 RMS
MACHINE INTERNAL RADII: .05 mm; .002"
BREAK SHARP CORNERS

DATE DRAWN: 05NOV2013
WEIGHT [lbs]:
DRAWN BY: L.GEORGE
MATERIAL SPECIFICATION
STOCK
MATERIAL

APPROVED BY: SVHP
APPROVAL DATE: 05NOV2013
DESCRIPTION: MECHANICAL PROPERTIES SUMMARY RS (RSS) POLE SHIELD

22 Industrial Park Road
Tilbury, ON, Canada N0P 2L0
Tel: +1 519 682 1110
www.RSpoles.com
Email: info@RSpoles.com

SIZE	DWG NO	VER	REV
A	RSS-GMD		B
	RS PART NO: RSS-GMD		

SCALE 1:15 | DO NOT SCALE FROM DRAWING | SHEET 1 OF 1

APPENDIX B: FIELD FORM SAMPLE

rev. July 2021

RS Fire Shield™ - Destination Pole Information Form

RS Technologies will determine the appropriate shield size for the destination pole based on the data collected with this form.
Complete the location, shield length, color and either the destination pole dimension data OR the destination pole ANSI standard.

Location		Length	Color	Destination Pole - Dimensional Data		OR	Destination Pole - ANSI Wood Pole Standard				
Local Reference ID	Field Pole	Shield Length - Distance between Upper and Base measurements (feet or meters)	Colour (Brown/Grey)	Base Circumference (inches or cm)	Upper Circumference (inches or cm)		Wood Species	Class	Destination Pole Length (feet)	Starting Point - measurement from butt of pole to bottom of shield (feet)	Notes
	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										
	11										
	12										
	13										
	14										
	15										

Customer: _____ Date: _____

Circuit/Location: _____

email form to your RS Contact or info@rspoles.com 1 519 682 1110

NOTE: This page is for sample purposes only. Please email info@RSpoles.com to request a copy of the form.

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