Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 1501-01

Issue Date: July 16, 2018

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Subject to Renewal: October 1, 2027

PlanetSaver System for Use with Sawn Lumber, Round Posts, Glulam Posts, and Nailam Posts in Ground Contact Applications

Trade Secret Report Holder:

Planet Saver Industries, LLC

Phone: 610-377-3270 Website: www.planetsaverind.com Email: barry@planetsaverind.com

CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 05 83 - Shop-Applied Wood Coating

Section: 06 11 00 - Wood Framing

1 Innovative Product Evaluated[1]

1.1 PlanetSaver System

1.1.1 The PlanetSaver System may be marketed with any of the following names:

1.1.1.1 PlanetSaver USA

1.1.1.2 SmartPost™

1.1.1.3 Green Post™

2 Product Description and Materials

2.1 The PlanetSaver System is a factory-applied polyethylene wrap and bituminous coating system for wood posts and columns that acts as a physical barrier and provides supplemental protection against decay and termites when applied to one end of preservative-treated or non-preservative-treated solid sawn lumber and engineered products made from solid-sawn lumber (i.e., glulam or built-up sawn lumber posts/columns).

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2.2 The innovative product evaluated in this report is shown in **Figure 1**.

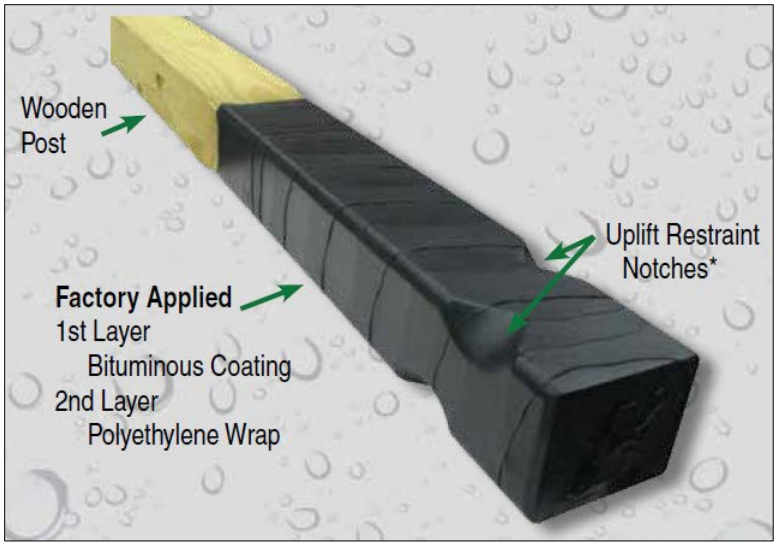


Figure 1. PlanetSaver System

2.3 *Materials*

2.3.1 *Wrap:*

2.3.1.1 Polyethylene sheathing is applied in a spiral technique, with a $1^1/_2$" overlap (minimum $1^1/_4$"), and shrink-wrapped to the bottom of the wood post. Minimum is 0.012" thick (0.30 mm) in accordance with ASTM D4801 and ASTM D4976.

2.3.2 *Adhesive:*

2.3.2.1 *Green Post Swiftbond Adhesive:*

2.3.2.1.1 Green Post Swiftbond Adhesive is an asphalt-based latex modified clay emulsion coating that complies with IBC Section 1805.3.2 and IRC Section R406.2.

2.3.2.1.1.1 Application shall be in accordance with **Section 2.3.2.1.3**. Maximum hydrostatic pressure shall be 2.5-psi (17.2 kPa) when cracks are $^1/_{16}$" maximum in width.

2.3.2.1.2 When applied to exterior surfaces, the coating provides waterproofing in areas where:

2.3.2.1.2.1 Groundwater investigation per IBC Section 1803.5.4 determines hydrostatic pressure conditions exist.

2.3.2.1.2.2 A high water table or other severe soil-water conditions are known to exist per IRC Section R406.2.

2.3.2.1.3 The coating is applied to the inside of the polyethylene boot prior to installation on post with minimum thickness of 60-mil (1.5 mm) wet film thickness or 0.040" (1.02 mm) dry. The EF-400 coating is applied at a minimum ambient temperature of 40° F and allowed to cure for 24 hours.

2.3.3 *Wood Post Members:*

2.3.3.1 Any grade wood post may be used, but the grade mark shall be visible after fabrication. Preservative treated and engineered wood must feature a quality label from an accredited third-party inspection agency and the label must be visible at all times.

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2.4 Preservative-treated wood products used with the PlanetSaver System are permitted in the applicable AWPA U1 ground-contact Use Categories[2] required by code and project conditions, including:

2.4.1 *UC4A Ground Contact:* General Use/Non-Critical Component. Typical applications include fence posts, deck posts, guardrail posts, and utility poles located in regions of low natural potential for wood decay and insect attack.

2.4.2 *UC4B Ground Contact:* Heavy-Duty/Critical Components. Typical applications include building poles, horticultural posts, and utility poles located in regions of high natural potential for wood decay and insect attack.

2.4.3 The PlanetSaver System does not replace the AWPA U1 treatment classification, quality mark, preservative retention, or Use-Category designation required for the wood member.

2.5 As needed, review material properties for design in **Section 6** and the regulatory evaluation in **Section 8**.

3 Definitions[3]

3.1 New Materials[4] are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.[5] The design strength and permissible stresses shall be established by tests[6] and/or engineering analysis.[7]

3.2 Duly authenticated reports[8] and research reports[9] are test reports and related engineering evaluations that are written by an approved agency[10] and/or an approved source.[11]

3.2.1 This report utilizes intellectual property and/or trade secrets to create public domain material properties for commercial end-use.

3.2.1.1 This report protects confidential Intellectual Property and trade secrets under the regulation, 18.US.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).[12]

3.3 An approved agency is *"approved"* when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is accredited and listed in the ANAB directory.

3.4 An approved source is *"approved"* when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.[13]

3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.

3.5.1 The Center for Building Innovation (CBI) is ANAB[14] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[15] the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing[16] stating the nonconformance and the path to its cure.

3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.[17]

3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.[18] Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,[19] and can be used in any country that is an MLA signatory found at this link: https://iaf.nu/en/recognised-abs/

3.9 Approval equity is a fundamental commercial and legal principle.[20]

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4 Applicable Local, State, and Federal Approvals; Standards; Regulations[21]

4.1 *Local, State, and Federal*

4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured local jurisdictions: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, St. Louis County, Texas Department of Insurance, and Wichita.[22]

4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured states: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.[23]

4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[24] and Part 3280[25] pursuant to the use of ISO/IEC 17065 duly authenticated reports.

4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

4.2 *Regulations*

4.2.1 *IBC – 18, 21, 24: International Building Code®*

4.2.2 *IRC – 18, 21, 24: International Residential Code®*

4.3 *Standards*

4.3.1 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*

4.3.2 *ASTM D143: Standard Test Methods for Small Clear Specimens of Timber*

4.3.3 *ASTM D312: Specification for Asphalt Used in Roofing*

4.3.4 *ASTM D1204: Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature*

4.3.5 *ASTM D4801: Standard Specification for Polyethylene Sheeting in Thickness of 0.25 mm (0.01 in.) and Greater*

4.3.6 *ASTM D4976: Standard Specification for Polyethylene Plastics Molding and Extrusion Materials*

4.3.7 *AWPA P20: All Barrier Protection Systems*

4.3.8 *AWPA U1: Use Category System: User Specification for Treated Wood*

5 Listed[26]

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (e.g., CBI), an approved agency (e.g., CBI and DrJ), and/or an approved source (e.g., DrJ), or other organization(s) concerned with product evaluation (e.g., DrJ), that maintains periodic inspection (e.g., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

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6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 *General*

6.1.1 The PlanetSaver System provides protection to non-preservative-treated and preservative-treated wood posts and columns that are used in ground contact applications. Non-preservative-treated wood posts and columns protected with the PlanetSaver System shall only be used in applications where the building code does not require the above ground portion of the member to be preservative-treated (i.e., covered conditions or applications not exposed to weather).

6.1.2 Wood members shall comply with all applicable building codes for each application and the design shall be based on the requirements of each individual application.

6.1.3 In accordance with NDS Section 2.3, the load duration factor shall be in accordance with the limitations of the applicable building code, but not greater than 1.6.

6.1.4 Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment.

6.2 *Protection of Wood and Wood-Based Products Against Decay*

6.2.1 Ground-line and below-grade portions of wood posts/columns are exposed to soil, which can provide sustained moisture and a source of soil-inhabiting decay organisms. The bituminous coating and polyethylene wrap of the PlanetSaver System provide a physical separation between the protected portion of the wood member and the surrounding soil and function together as a supplemental water-barrier system to limit liquid-water intrusion into the protected portion of the post at the ground-line and below grade exposure region. As a result, the soil-contact and moisture conditions required to support fungal decay are reduced.

6.2.2 For construction under the IBC, IBC Section 2304.12.2.2 and IBC Section 2304.12.2.6 require wood posts/columns supporting permanent structures and supported by a concrete or masonry slab or footing that is in direct contact with the earth, or wood members used in direct contact with exposed earth, to be naturally durable or preservative-treated in accordance with AWPA U1 for soil or freshwater use.

6.2.2.1 IBC Section 2304.12.2.6.1 requires wood posts/columns embedded in concrete that is exposed to the weather or in direct contact with the earth shall be of preservative-treated wood.

6.2.2.1.1 Where IBC Section 2304.12 requires decay protection, regulatory compliance is established by the wood member's preservative treatment or be of a naturally durable species. The PlanetSaver System may be used as a supplemental moisture-barrier component over code-compliant wood members when installed in accordance with this report and the manufacturer installation instructions.

6.2.3 For construction under the IRC, IRC Section R304.1[27] identifies locations where wood and wood-based products are required to be protected from decay by preservative-treated wood or naturally durable wood.

6.2.3.1 Furthermore, IRC Section R304.1.2[28] also requires wood supporting structures intended for human occupancy that are in contact with the ground, embedded in concrete exposed to weather, or embedded in concrete in contact with the ground to be pressure preservative-treated wood suitable for ground-contact use.

6.2.3.1.1 Where IRC Section R304.1[29] or IRC Section R304.1.2[30] requires decay protection, regulatory compliance is established by the wood member's preservative treatment, naturally durable classification, or another approved method.

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6.2.3.2 The PlanetSaver System may be used as a supplemental moisture-barrier component over code compliant wood members when installed in accordance with this report and the manufacturer installation instructions.

6.2.3.2.1 Per IRC Section R304.1.2,[31] use of the PlanetSaver System over non-preservative-treated wood is limited to locations where the untreated wood product is entirely below groundwater level or continuously submerged in fresh water.

6.3 *Protection Against Subterranean Termites*

6.3.1 The PlanetSaver System provides a physical barrier component at the wrapped portion of the wood member by separating the protected wood surface from soil contact and limiting direct access to the protected portion of the wood member.

6.3.1.1 For construction under IBC Section 2304.12.2.7, exposed wood members shall be of naturally durable species (termite-resistant), preservative-treated in accordance with AWPA U1 for the species, product preservative and end-use, or provided with approved methods of termite protection.

6.3.1.1.1 The PlanetSaver System may be used as a supplemental physical barrier component over code compliant wood members when installed in accordance with this report and the manufacturer installation instructions.

6.3.1.2 For construction under the IRC, IRC Section R305.1[32] permits termite protection by one, or a combination of approved control methods, including pressure preservative-treated wood in accordance with IRC Section R304.1,[33] naturally durable termite-resistant wood, or physical barriers in accordance with IRC Section R305.3.[34]

6.3.1.2.1 IRC Section R305.3[35] recognizes plastic sheeting as an approved physical barrier when installed in such a manner to prevent termites from entering the structure.

6.3.1.2.2 The PlanetSaver System over code-compliant wood members (preservative-treated) or untreated wood members are permitted to be used as a method of protection against termites under the IRC when installed in accordance with this report and the manufacturer installation instructions.

6.4 *Strength*

6.4.1 As an alternative to ASTM D143 testing, the PlanetSaver System was analyzed by an independent engineer for the ability of the lumber to retain strength properties after being subjected to high heat during the heat shrink process of installing the polyethylene wrap. The conclusion of the analysis letter states:

> New posts on which PlanetSaver System boots have been installed according to the manufacturer recommended procedures, will not have impaired structural strength compared to either untreated or preservative-treated posts of the same species, quality, and dimensions.

6.5 *Uplift Resistance*

6.5.1 For structural applications, embedded wood posts, either in earth or in concrete footings, shall be designed to resist axial loads as specified in IBC Section 1807.3.

6.5.1.1 See **Appendix A** for details regarding uplift resistance performance.

6.5.1.2 In accordance with IBC Section 1807.3.1, Item 2, posts embedded in earth shall not be used to provide lateral support for structural or non-structural materials such as plaster, masonry, or concrete, unless bracing is provided that develops the limited deflection required.

6.5.1.2.1 This application is outside the scope of this report.

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6.6 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, building science, and fire science.

7 Certified Performance[36]

7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.[37]

7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.[38]

8 Regulatory Evaluation and Accepted Engineering Practice

8.1 The PlanetSaver System complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 The PlanetSaver System has been evaluated to determine its suitability as a barrier system for protection of sawn lumber and round posts used in ground-contact applications where it is required by code to provide the following:

8.1.1.1 Protection against fungal decay as required by IBC Section 2304.12 and IRC Section R304.[39]

8.1.1.2 Protection against subterranean termites where required by IBC Section 2304.12 and IRC Section R305.[40]

8.1.1.3 Strength retention of lumber in barrier system in accordance with ASTM D143.

8.2 Any building code, regulation and/or accepted engineering evaluations (e.g., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified[41] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[42] respectively.

8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.

9 Installation

9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.

9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.

9.3 *General*

9.3.1 For non-structural applications such as fence posts, mailbox posts, or signposts, the top of the PlanetSaver System wrap must be a minimum of 2" above the ground level or concrete surface line (see **Figure 2**).

9.3.1.1 *Note:* Uplift restraint notches in bottom of the post are enlarged for illustration purposes in the details below.

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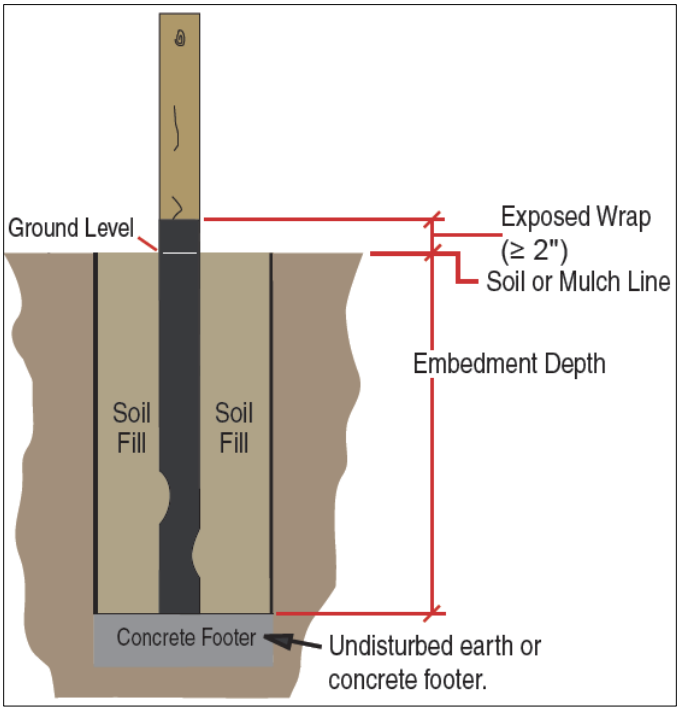


Figure 2. Section View for Non-Structural Applications

9.3.2 For structural applications requiring building code compliance such as support columns for post-frame construction, preservative-treated wood shall be utilized and the top of the PlanetSaver System wrap must be a minimum of 8" above the ground level (see **Figure 3** and **Figure 4**).

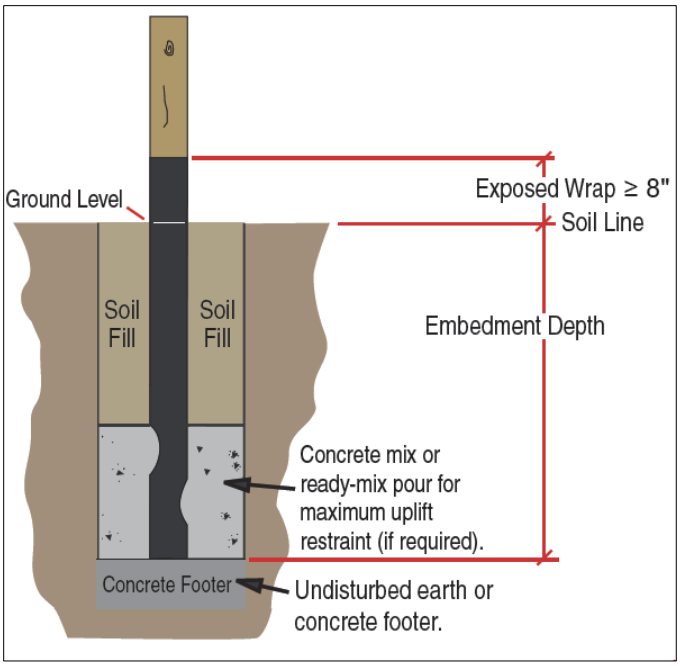


Figure 3. Section View for Structural Application with Exposed Soil

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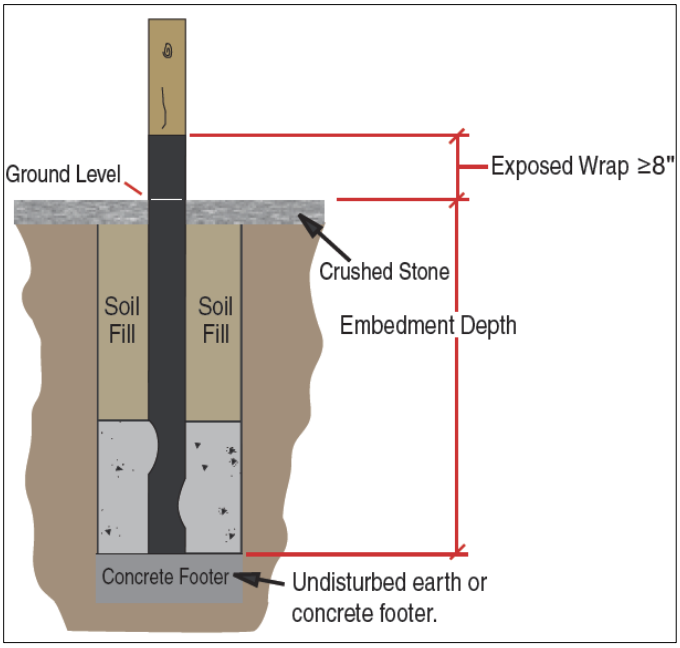


Figure 4. Section View for Structural Application with Crushed Stone

9.3.3 If a concrete slab is installed, the top of the PlanetSaver System wrap must be a minimum of 2" above the top of the concrete surface line (see **Figure 5**).

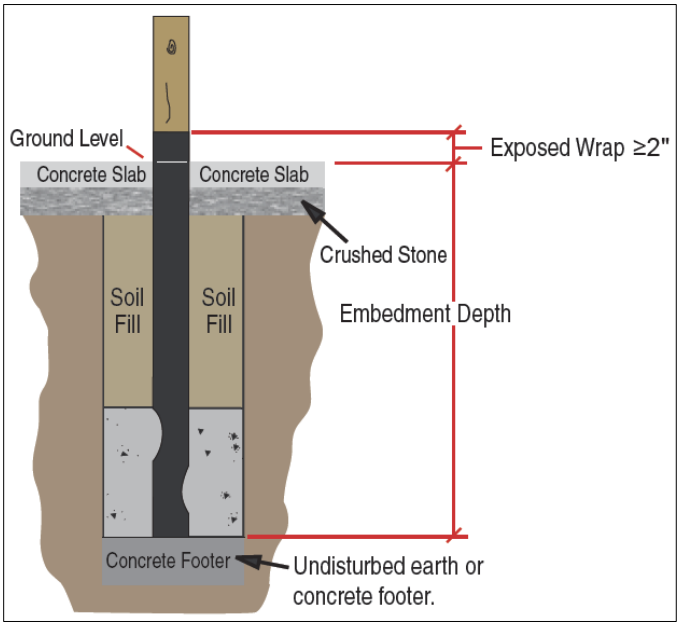


Figure 5. Section View for Structural Application with Concrete Slab

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10 Substantiating Data

10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:

10.1.1 Tensile Strength testing in accordance with ASTM D882

10.1.2 Shrinkage testing in accordance with ASTM D4801 and ASTM D1204

10.1.3 Professional engineering letter regarding AWPA E10

10.1.4 Professional engineering letter regarding the PlanetSaver System process heat effects on post strength

10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.

10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.

10.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.

10.5 *Testing and Engineering Analysis*

10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.[43]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for PlanetSaver System on the DrJ Certification website.

11 Findings

11.1 As outlined in **Section 6**, the PlanetSaver System has performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.

11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, PlanetSaver System shall be approved for the following applications:

11.2.1 Supplemental protection against fungal decay as required by IBC Section 2304.12 and IRC Section R304.[44]

11.2.2 Supplemental protection against subterranean termites for construction under the IBC, where required by IBC Section 2304.12.

11.2.3 Protection against subterranean termites for construction under the IRC, per IRC Section R305.[45]

11.2.4 Dynamic impact performance in accordance with AWPA P20.

11.2.5 Strength retention of lumber in barrier system.

11.2.6 Use in residential foundation applications when applied as supplemental protection over lumber that is pressure preservative-treated and dried after treatment in accordance with AWPA U1 as specified in IRC Section R402.1.2.

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11.3 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Planet Saver Industries, LLC.

11.4 IBC Section 104.2.3[46] (IRC Section R104.2.2[47] and IFC Section 104.2.3[48] are similar) in pertinent part state:

> 104.2.3 Alternative Materials, Design and Methods of Construction and Equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative is not specifically prohibited by this code and has been approved.

11.5 **Approved:**[49] Building regulations require that the building official shall accept duly authenticated reports.[50]

11.5.1 An approved agency is *"approved"* when it is ANAB ISO/IEC 17065 accredited.

11.5.2 An approved source is *"approved"* when an RDP is properly licensed to transact engineering commerce.

11.5.3 Federal law, Title 18 US Code Section 242, requires that, where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.

11.6 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.

11.7 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.[51]

12 Conditions of Use

12.1 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.

12.2 As listed herein, PlanetSaver System shall not be used in areas where exposure to Formosan subterranean termites is expected.[52]

12.3 Do not drop or dump PlanetSaver System products when unloading. Do not pick up the wrapped/barrier area of the post with a forklift or crane.

12.4 Take all normal precautions to not damage the lumber material when handling. Do not use chains to unload material.

12.5 Protect the wooden posts by keeping them off the ground when storing on a jobsite.

12.6 Always protect the wrapped/barrier area from excessive heat.

12.7 Do not apply banding on the wrapped/barrier area of the posts.

12.8 Penetration of the wrap material below ground level by fasteners, bolts, or nails is not permitted. Fastener penetration of the wrap material is permitted as long as it is at least 2" above ground level and there is no direct exposure to weather.

12.9 Use of the PlanetSaver System with non-preservative-treated wood is not permitted in applications where untreated areas of the wood are subject to direct exposure to the weather.

12.10 Use in tropical climate zones is outside the scope of this report.

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12.11 When required by adopted legislation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:

12.11.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.

12.11.2 This report and the installation instructions shall be submitted at the time of permit application.

12.11.3 At a minimum, this innovative product shall be installed per **Section 9**.

12.11.4 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.

12.11.5 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.

12.11.6 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.

12.12 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.2.3"*, all of IBC Section 104, and IBC Section 105.3.

12.13 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).

12.14 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

13 Identification

13.1 PlanetSaver System (also marketed as PlanetSaver USA, SmartPost, or Green Post), as listed in **Section 1.1**, is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.

13.2 Additional technical information can be found at www.planetsaverind.com.

14 Review Schedule

14.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.

14.2 For information on the status of this report, please contact DrJ Certification.

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Appendix A
PlanetSaver System Uplift Resistance

1 PlanetSaver System Uplift Resistance

1.1 Allowable uplift resistances are provided in **Table A-1**.

1.1.1 Values are based on the weight of the concrete footing and the weight of the backfill soil.

Table A-1. Allowable Uplift Resistance[1,2,3,4,5]

Embedment, D_e (ft)	Allowable Uplift[6] (lb)					
	Diameter of Concrete Footing (in)					
	12	16	18	20	24	30
1/2	165	330	430	545	805	1,290
1	200	395	515	650	955	1,520
1 1/2	240	465	600	750	1,105	1,755
2	275	530	685	855	1,255	1,985
2 1/2	315	595	770	960	1,405	2,070
3	350	660	850	1,065	1,550	2,070
3 1/2	390	730	935	1,165	1,700	2,070
4	425	795	1,020	1,270	1,850	2,070
4 1/2	465	860	1,105	1,375	2,000	2,070
5	500	930	1,185	1,475	2,070	2,070
5 1/2	535	995	1,270	1,580	2,070	2,070
6	575	1,060	1,355	1,685	2,070	2,070
6 1/2	610	1,125	1,440	1,790	2,070	2,070
7	650	1,195	1,525	1,890	2,070	2,070
7 1/2	685	1,260	1,605	1,995	2,070	2,070
8	725	1,325	1,690	2,070	2,070	2,070

SI: 1 in = 25.4 mm, 1 ft = 0.305 m, 1 lb = 4.45 N

1. Bulk density of the concrete assumed to be 135 lb/ft^3 as specified in ASTM C90. Compressive strength, f'_c, of concrete shall be 3,000-psi.
2. Unit weight of the backfill soil assumed to be 95 lb/ft^3.
3. Thickness of concrete footing shall be 20" minimum.
4. Allowable values based on load duration factor of 1.6
5. Post lumber Southern Pine (SP) No. 2 or better. Post can be the following: 4 x 6, 6 x 6, 3-ply 2 x 6, or 4-ply 2 x 6.
6. Allowable uplift is limited by the compression of the wood member at the notches.

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Notes

1 For more information, visit drjcertification.org or call us at 608-310-6748.

2 These are AWPA designated wood preservation systems and retentions that have been determined to be effective in protecting wood products under specified exposure conditions. The strength of the UCS and its focus is that all wood uses can be placed into one of five major Use Categories that clearly describe the exposure conditions that specific wood products can be subjected to in service. The major Use Categories are further broken down into sub-categories to define the associated degree of biodegradation hazard and product service life expectations for specific products and exposure conditions. The Use Category system is designed to help specifiers and product users locate the appropriate AWPA Standards that specifies preservatives deemed acceptable for specific products and end-use environments.

3 Capitalized terms and responsibilities are defined pursuant to the applicable building code, applicable reference standards, the latest edition of TPI 1, the NDS, AISI S202, US professional engineering law, Canadian building code, Canada professional engineering law, Qualtim External Appendix A: Definitions/Commentary, Qualtim External Appendix B: Project/Deliverables, Qualtim External Appendix C: Intellectual Property and Trade Secrets, definitions created within Design Drawings and/or definitions within Reference Sheets. Beyond this, terms not defined shall have ordinarily accepted meanings as the context implies. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

4 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1702

5 Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review https://www.justice.gov/atr/mission and https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3

6 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.2:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests

7 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice. https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.1:~:text=Conformance%20to%20Standards-,The%20design%20strengths%20and%20permissible%20stresses,-of%20any%20structural

8 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20make%2C%20or%20cause%20to%20be%20made%2C%20the%20necessary%20tests%20and%20investigations%3B%20or%20the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.2.3.

9 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4.2

10 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_agency

11 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_source

12 https://www.law.cornell.edu/uscode/text/18/1832 (b) Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of $5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a public records act. To follow DTSA and comply state public records and trade secret legislation requires approval through ANAB ISO/IEC 17065 accredited certification bodies or approved sources. For more information, please review this website: Intellectual Property and Trade Secrets.

13 https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional AND https://apassociation.org/list-of-engineering-boards-in-each-state-archive/

14 https://www.cbitest.com/accreditation/

15 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.1:~:text=directed%20to%20enforce%20the%20provisions%20of%20this%20code

16 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3 AND https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#105.3.1

17 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1

18 https://iaf.nu/en/about-iaf-mla/#:~:text=Once%20an%20accreditation%20body%20is%20a%20signatory%20of%20the%20IAF%20MLA%2C%20it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope

19 True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

20 https://www.justice.gov/crt/deprivation-rights-under-color-law AND https://www.justice.gov/atr/mission

21 Unless otherwise noted, the links referenced herein use un-amended versions of the 2024 International Code Council (ICC) 2024 International Code Council (ICC) model codes as foundation references. Mississippi versions of the IBC 2024 and the IRC 2024 are un-amended. This material, product, design, service and/or method of construction also complies with the 2000-2012 versions of the referenced codes and the standards referenced therein. As pertinent to this technical and code compliance evaluation, CBI and/or DrJ staff have reviewed any state or local regulatory amendments to assure this report is in compliance.

22 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by the local jurisdiction. https://up.codes/codes/general

23 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by state. https://up.codes/codes/general

24 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14

25 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280

26 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#listed AND https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#labeled

27 2021 IRC Section R317.1

28 2021 IRC Section R317.1.2

29 2021 IRC Section R317.1

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30 2021 IRC Section R317.1.2

31 2021 IRC Section R317.1.2

32 2021 IRC Section R318.1

33 2021 IRC Section R317.1

34 2021 IRC Section R318.3

35 2021 IRC Section R318.3

36 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4

37 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades

38 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur

39 2021 IRC Section R317

40 2021 IRC Section R318

41 Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. DrJ is an ANAB accredited product certification body.

42 https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prgID=1&orgID=2125&statusID=4#:~:text=Bill%20Payment%20Date-,Accredited%20Scopes,-13%20ENVIRONMENT.%20HEALTH

43 See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition: https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280

44 2021 IRC Section R317

45 2021 IRC Section R318

46 2021 IBC Section 104.11

47 2021 IRC Section R104.11

48 2018: https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9 AND 2021: https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11

49 Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 (https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#201.4) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

50 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1

51 Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.

52 The Formosan subterranean termite (Coptotermes Formosanus) has now become established in Florida and other southern states. At least one colony has been found in California (1995). See www.termite.com/termites/formosan-subterranean-termite.html.

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