

PoleEnforcer®

PATENT NO. 5,383,749

Pole Groundline Reinforcement System for Transmission and Distribution Poles

- *Save Thousands of Dollars by Reinforcing Poles that Others Reject*
- *Reinforce Poles with Thin Shell or No Shell at the Groundline*



Laminated Wood Systems, Inc.

800-949-3526

www.lwsinc.com



Proudly Made in

AMERICA

The patented PoleEnforcer® proves that “all steel is NOT created equal”

True Reinforcement . . . not Pole Stubbing

All other reinforcement systems are actually “pole stubs” and not true reinforcement systems. No other system can insure contact with the pole below the groundline. The PoleEnforcer’s patented design insures positive contact with the pole below the groundline - thus bridging the decayed area and transferring the load to the pole butt - that is TRUE POLE REINFORCEMENT.

No Other System can Compare with PoleEnforcer®

Others

Replace More Poles...Save LESS Money

- No Taper
- No Flange
- 82,000 psi banding w/ 15-20% elongation
- No published longitudinal strength
- Limited thin shell capabilities
- Longer driving depth (6” below pole butt)
= *more cost*

PoleEnforcer®

Reinforce More Poles...Save MORE Money!

- Full Length Taper
- Full Length Flange
- 110,000 psi banding w/ 7-9% elongation
- Published longitudinal strength
- Unlimited thin shell capability...”no shell”*
- Minimum driving depth (5ft. to 6ft. typical)
= *lower cost*



No Other Reinforcement System Offers So Many Advantages!

*Double Unit Required in Thin Shell Applications

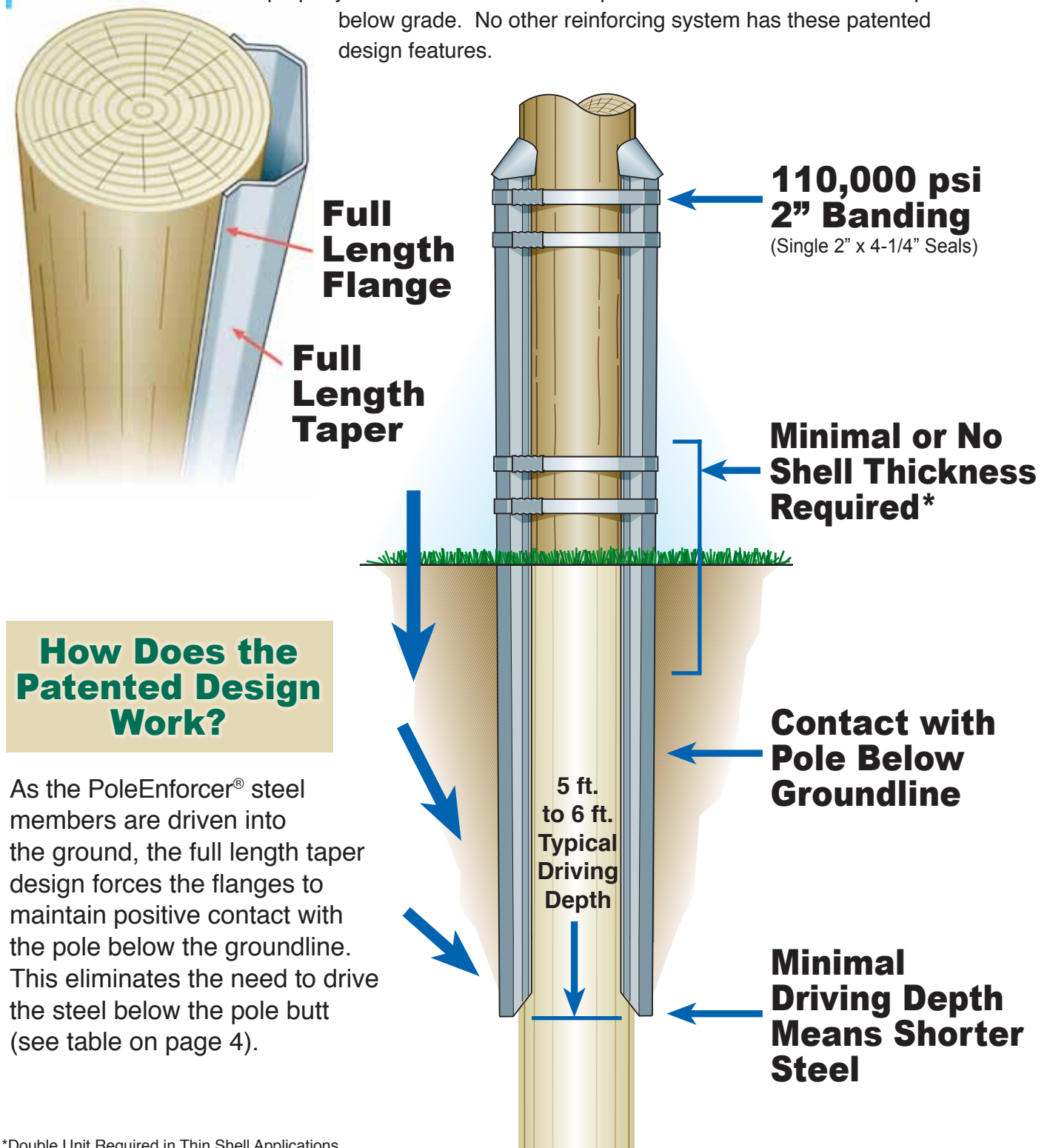
PoleEnforcer®

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PATENTED NOV. 9, 2004 6,348,248

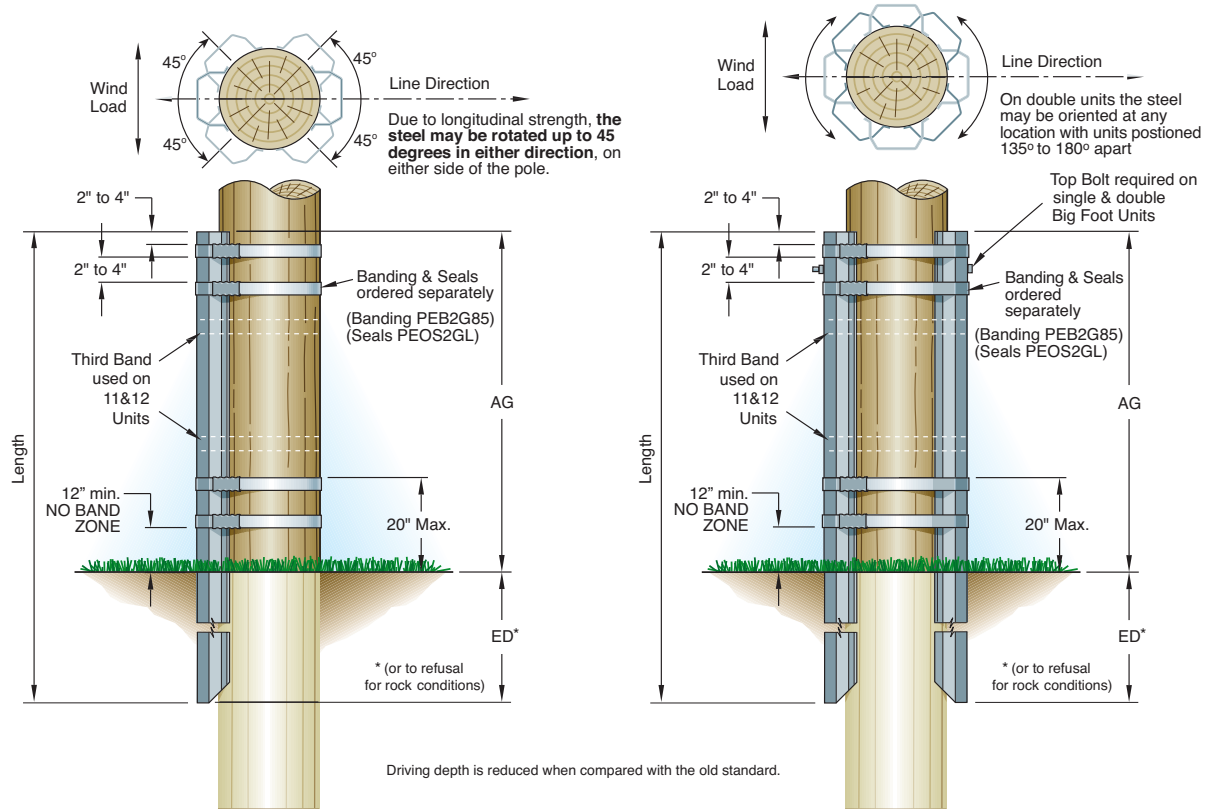
What Makes the PoleEnforcer® Different? . . . Patented Design

The PoleEnforcer® has a patented full length taper design which insures contact with the pole below the groundline. The patented full length flanges properly transfer the load from the pole to the steel and back to the pole below grade. No other reinforcing system has these patented design features.



*Double Unit Required in Thin Shell Applications

Single & Double Installation



PoleEnforcer® Strength Chart

	PoleEnforcer® Unit Num-	Ultimate Transverse Strength (Ft.-Lbs.)		Longitudinal Strength	Unit Dimensions			E D* Embedment Depth (Feet)	A G Above Ground (Feet)	Unit Weight (Lbs.) Single Unit
		Single Unit	Double Unit		Width	Length	Thickness			
60ksi A-572 Grade 60 Steel	PE - 26 - 10	26,000	52,000	20,000	5"	10'	1/4"	5.0	5.0	101
	PE - 35 - 10	35,000	70,000	30,000	5-3/4"	10'	1/4"	5.0	5.0	119
	PE - 56 - 10	56,000	112,000	35,000	7-1/8"	10'	1/4"	5.0	5.0	154
	7 - 10 - 4	62,800	125,600	37,000	7"	10'	1/4"	5.0	5.0	145
	7 - 10 - 5	78,300	156,600	49,000	7"	10'	5/16"	5.0	5.0	180
	8 - 10 - 4	73,700	147,400	42,000	8"	10'	1/4"	5.0	5.0	154
	8 - 11 - 5	91,700	183,400	56,000	8"	11'	5/16"	5.5	5.5	210
	9 - 11 - 4	85,200	170,400	47,000	9"	11'	1/4"	5.5	5.5	179
	9 - 11 - 5	108,000	216,000	62,000	9"	11'	5/16"	5.5	5.5	222
	9 - 11 - 6	128,600	257,200	72,000	9"	11'	3/8"	6.0	5.0	266
80ksi A-656 Grade 80 Steel	10 - 11 - 5	123,700	247,400	69,000	10"	11'	5/16"	6.0	5.0	234
	10 - 11 - 6	148,100	296,200	80,000	10"	11'	3/8"	6.0	5.0	286
	11 - 11 - 6	169,500	339,000	87,000	11"	11'	3/8"	6.0	5.0	294
	12 - 12 - 6	191,500	383,000	95,000	12"	12'	3/8"	6.0	6.0	337
	13 - 12 - 6	211,500	423,000	103,000	13"	12'	3/8"	6.0	6.0	352

All PoleEnforcers are hot dip galvanized per ASTM A-123 specifications.

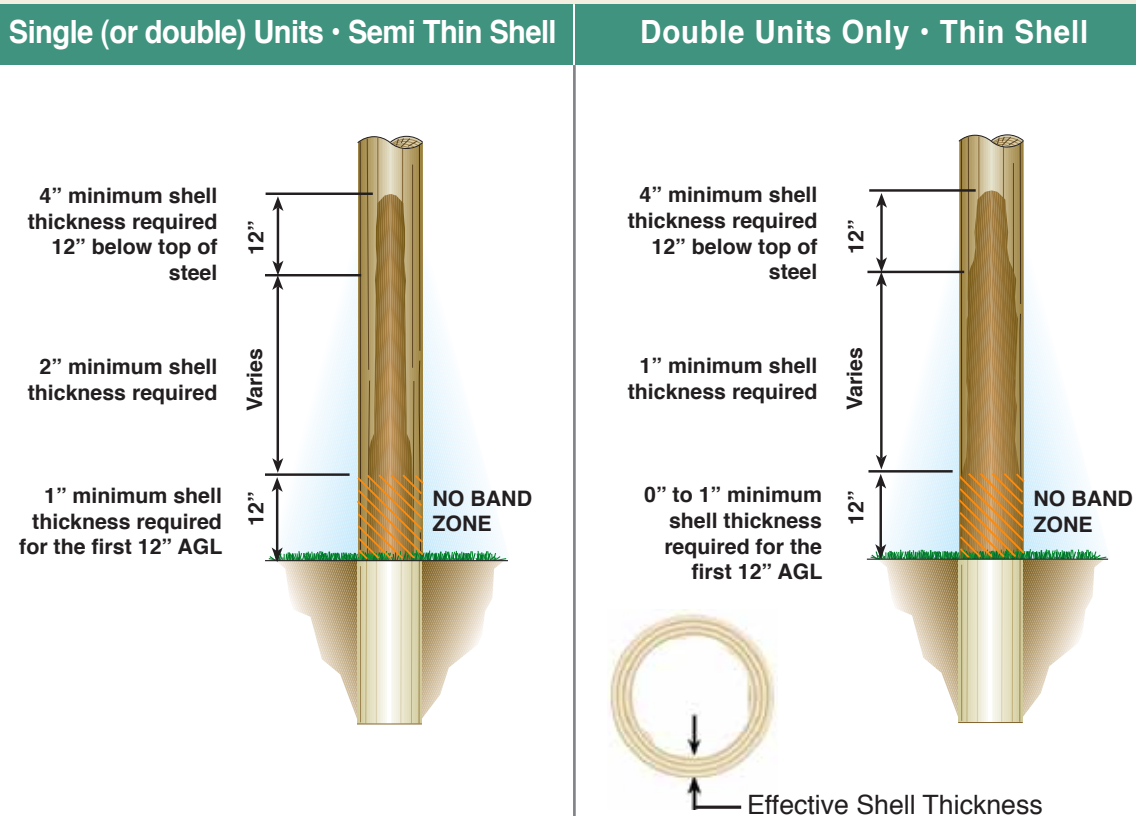
Only the PoleEnforcer® can offer Balanced Longitudinal Strength Ratings!

*Lengths up to 25 feet are available for high decay situations.

The PoleEnforcer® Thin Shell Capability is Unmatched by Any Other Reinforcement System

The PoleEnforcer® from LWS is the only pole reinforcement system on the market which allows you to safely reinforce poles whose condition of decay falls below current specifications – even poles broken at the ground line . . . *thus saving many thousands of dollars in pole change out costs.*

PoleEnforcer® Minimum Required Shell



Potential Savings - Semi Thin

40 ft. Class 3 Distribution Pole	
Pole Changeout Cost	\$1,500 - 4,500
PoleEnforcer® Installed Cost	- 350.00
Savings per Pole.....	\$1,150 - 4,150
Number of Poles.....	x 500
TOTAL SAVINGS	\$575,000 - 2,075,000

Potential Savings - Thin Shell

40 ft. Class 3 Distribution Pole	
Pole Changeout Cost	\$1,500 - 4,500
PoleEnforcer® Installed Cost	- 500.00
Savings per Pole.....	\$1,000 - 4,000
Number of Poles.....	x 500
TOTAL SAVINGS	\$500,000 - 2,000,000



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Full Scale Tests have Proven the PoleEnforcer's "Zero Shell" Strength

Tests conducted on the patented PhaseRaiser® structure lifting system (whose steel design is based on the patented PoleEnforcer® design) proved the remarkable strength of the PoleEnforcer® in thin shell applications. The test simulated the equivalent of 8'-0" of **ZERO SHELL THICKNESS**.

50'-0" Class 3 Pole

Pole
Failure.....3,550 lbs

Loaded....48'-0" AGL

Groundline
Moment
Failure.....170,400 ft-lbs

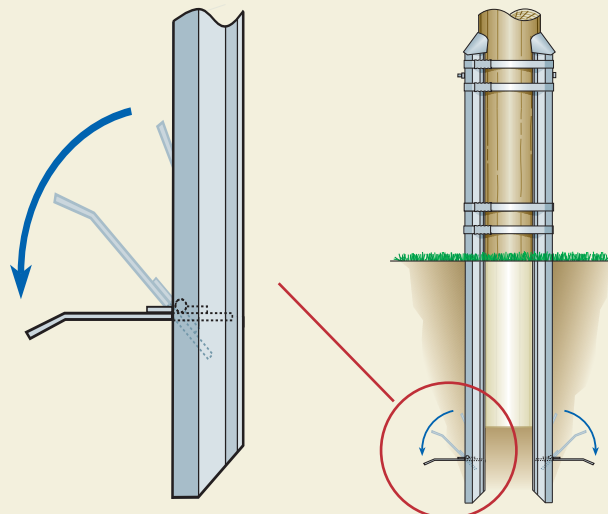
No permanent
deformation of steel.



PoleEnforcer® + Crossbolts = PhaseRaiser®

The Optional "BIG FOOT" Uplift & Thrust System

H-frame and guyed angle structures can be reinforced using the PoleEnforcer® BIG FOOT internal footed system. The installation procedure is essentially the same with the exception that the BIG FOOT unit is driven an additional 6" into the ground. A hydraulic uplift cylinder is then used to raise the unit to the standard setting depth. Raising the BIG FOOT unit causes the "foot" to rotate and engage the bottom of the pole. A 7/8" bolt is then installed in addition to the standard banding system.



Complete Material, Driving Systems and Tool Kits Available



Pneumatic and drop-weight driving systems are available as well as a full line of specialized tools. Payback on the initial tool cost is realized after only a few installations.

PoleEnforcer® steel members can be easily installed in most soil conditions by a crew of two. Typical installations take less than one hour from start to finish.

PE90PDS Complete Pneumatic Driving System Tool Package Includes:

- Air Hammer Assembly
- Winch Pole Assembly
- Pull Down Winch Assembly
- Banding Dispenser
- Air Tensioner
- Air Crimp Sealer
- Manual Banding Shear
- Filter Regulator Lubricator
- (2 ea) 3/8" Tool Hose (25 ft. ea.)
- Nylon Ratchet Securing Strap

The PE500DWS Drop Weight Driving System

may be operated using either a truck mounted or pole mounted capstan hoist. The drop weight driving system is recommended for hard driving soil conditions. The optional **CS2000 Choker Cable** and **DWB2000 Snatch Block** have a 2,000 lb. capacity and are rated for use with this system.

PoleEnforcer®

In addition to decayed poles, PoleEnforcer® can repair:

- **Broken Poles**
- **Burnt Poles**
- **Car Damaged Poles**
- **Woodpecker Damaged Poles**

Call for a Complete Nationwide List of Approved PoleEnforcer Installation Contractors



The **LWS** “Family of Steel”

Innovative, Patented Products Designed to Strengthen, Maximize and Extend the Life of the Electric Utility Infrastructure



PoleEnforcer®

U.S. PATENT NOS. 6,502,759 & 6,502,760

- **REINFORCE** existing poles with thin shell or “no shell” at the groundline
- Save thousands of dollars by reinforcing poles that others reject
- Repair & reinforce burnt and broken poles



PHASERAISER®

U.S. PATENT NOS. 6,715,396 & 6,791,885 CANADIAN PATENT NOS. 2,358,110 & 2,357,816

- **RAISE** existing structures to increase conductor clearances while the line **REMAINS IN SERVICE**
- Increase line capacity and revenues
- Increase conductor clearance an additional 3 to 20 feet
- Save many thousands of dollars by avoiding an outage
- Patented systems available for both single pole



PRS

Pole Reclassification System®

- **RECLASSIFY** existing poles up to 3 or more classes
- Eliminate the cost of expensive pole change outs
- Reinforce groundline strength
- Use in transmission or distribution applications



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