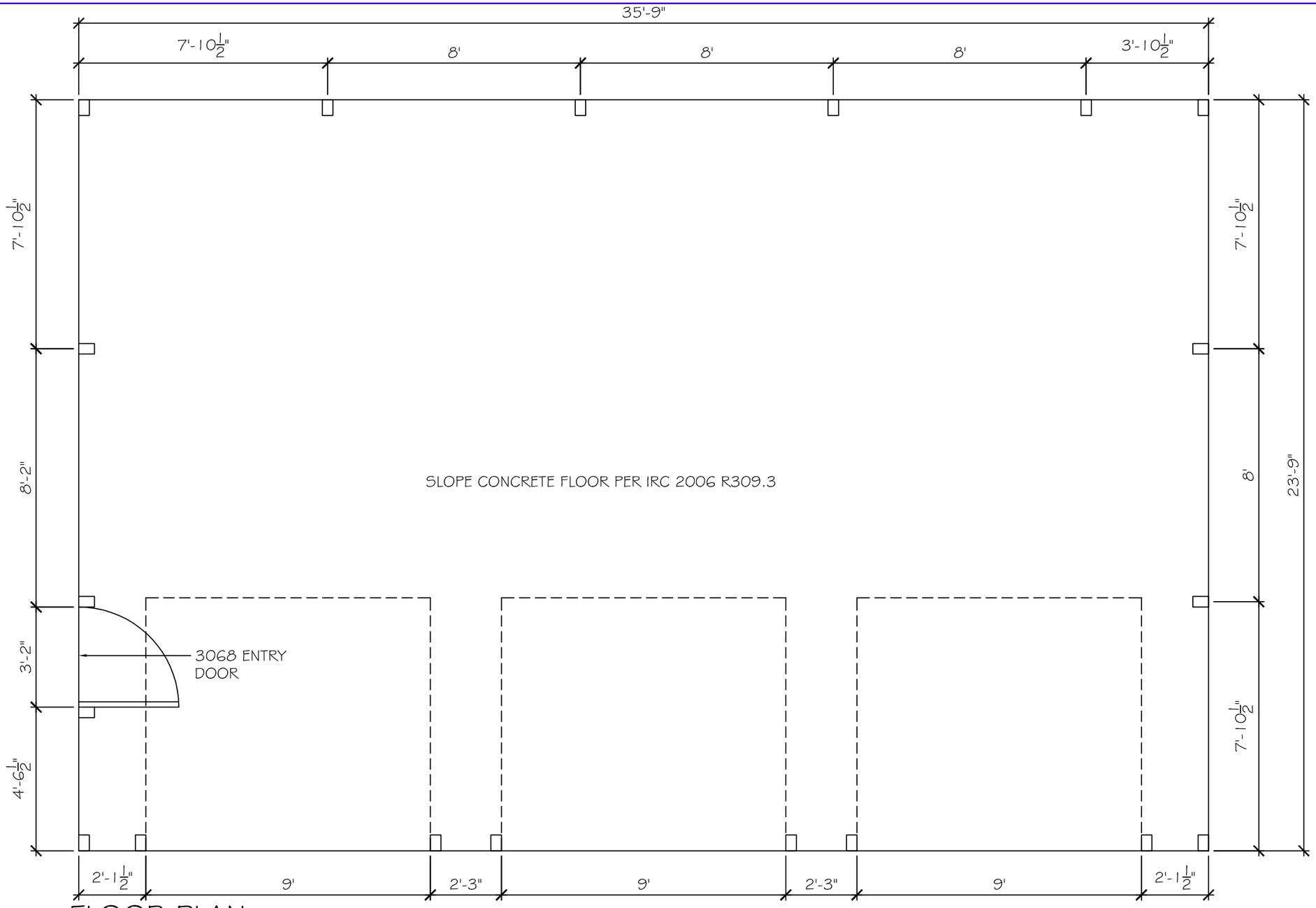


FLOOR PLAN

DELMARVA
POLE BUILDING SUPPLY INC.
317 N. LAYTON AVE
WYOMING, DE 19934
(302) 698-3636

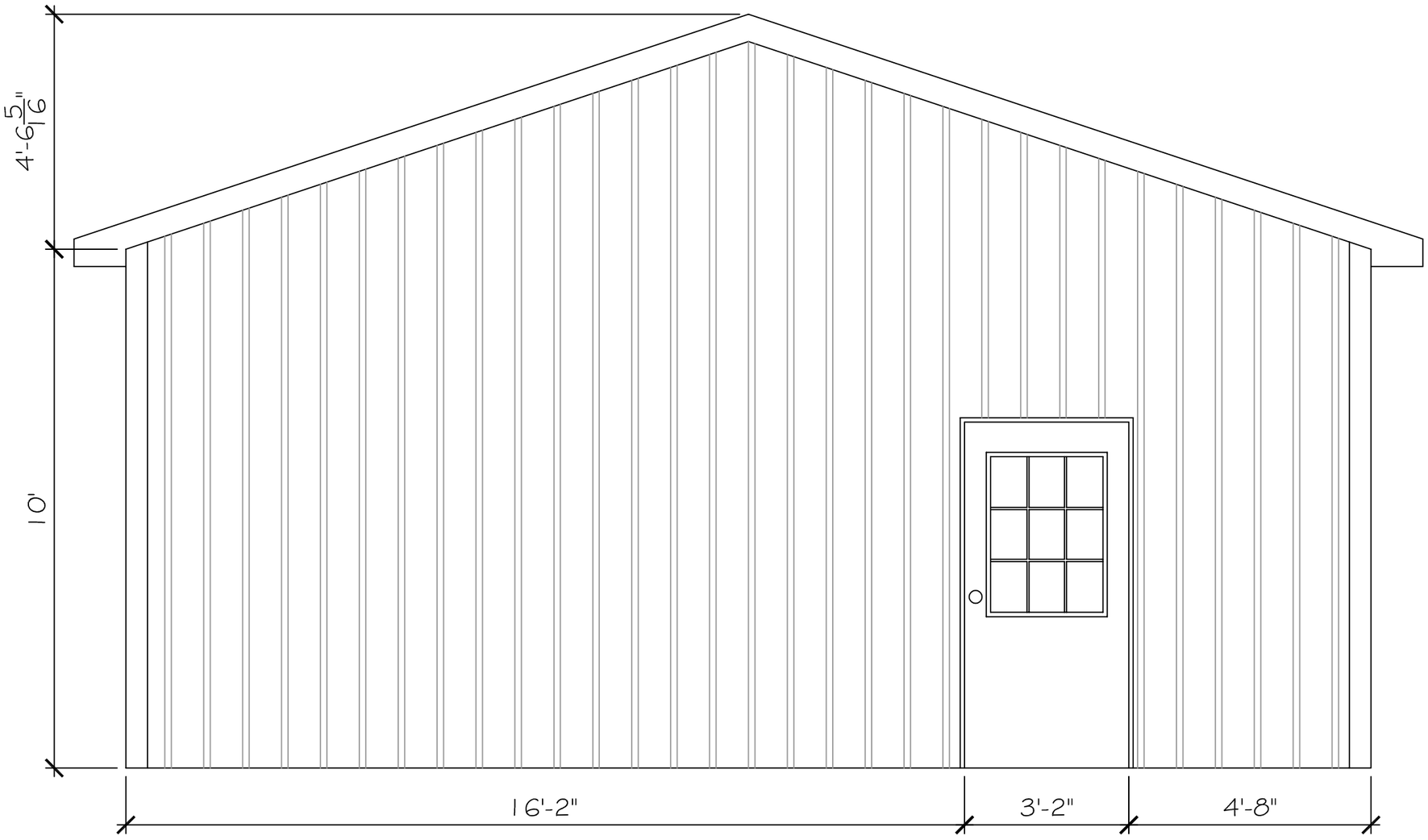
DELMARVA Pole Building Supply, Inc.

Project #:	Date:
00694	10-21-10
Technician: S.B.	Reviewed By: S.B.
Scale: NOTED	

No.	Revision/Issue	Date

PHILIP PIRAINO
1232 CHOPTANK ROAD
MIDDLETOWN, DE
19709

Sheet
A1



GABLE ELEVATION

DELMARVA
POLE BUILDING SUPPLY INC.
317 N. LAYTON AVE
WYOMING, DE 19934
(302) 698-3636

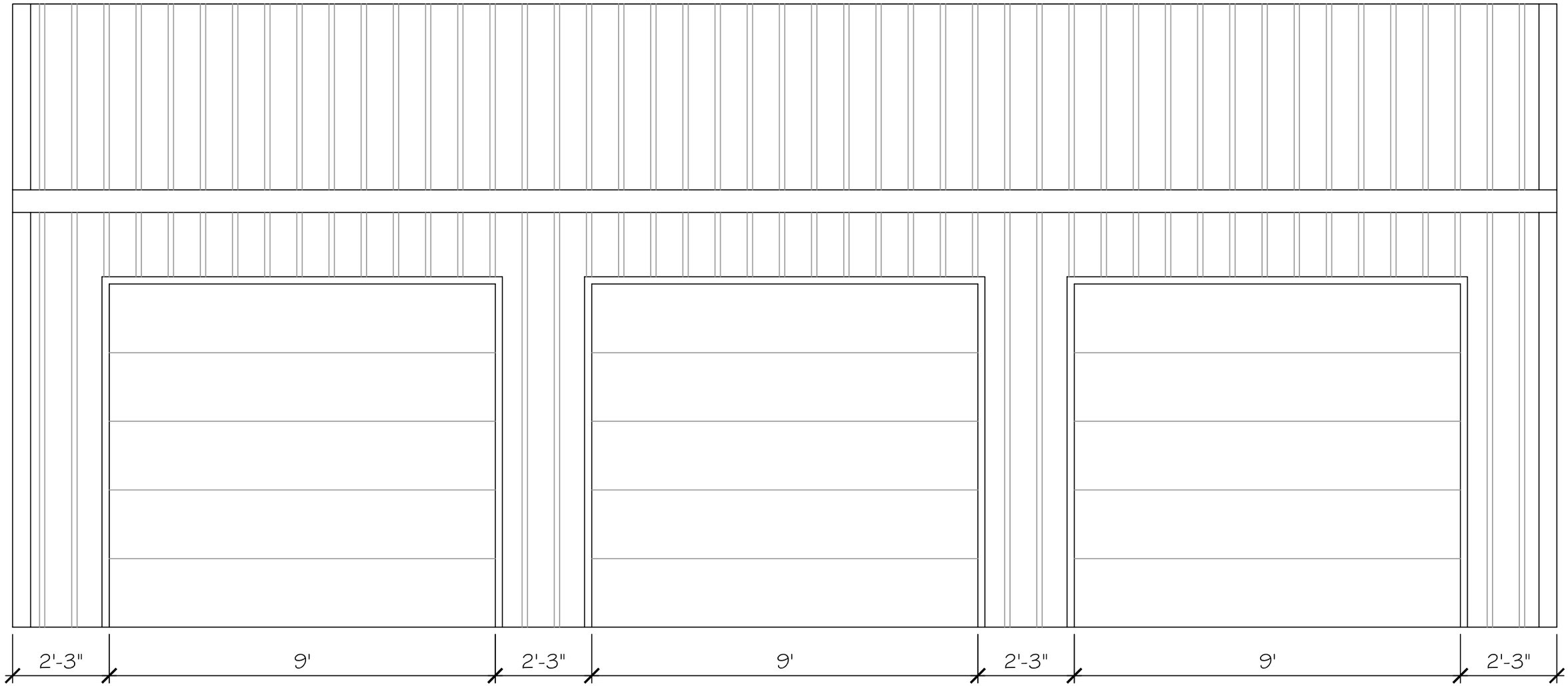
DELMARVA Pole Building Supply, Inc.

Project #:	Date:
00694	10-21-10
Technician: S.B.	Reviewed By: S.B.
Scale: NOTED	

No.	Revision/Issue	Date

PHILIP PIRAINO
1232 CHOPTANK ROAD
MIDDLETOWN, DE
19709

Sheet
A2



EAVE ELEVATION

DELMARVA
POLE BUILDING SUPPLY INC.
317 N. LAYTON AVE
WYOMING, DE 19934
(302) 698-3636

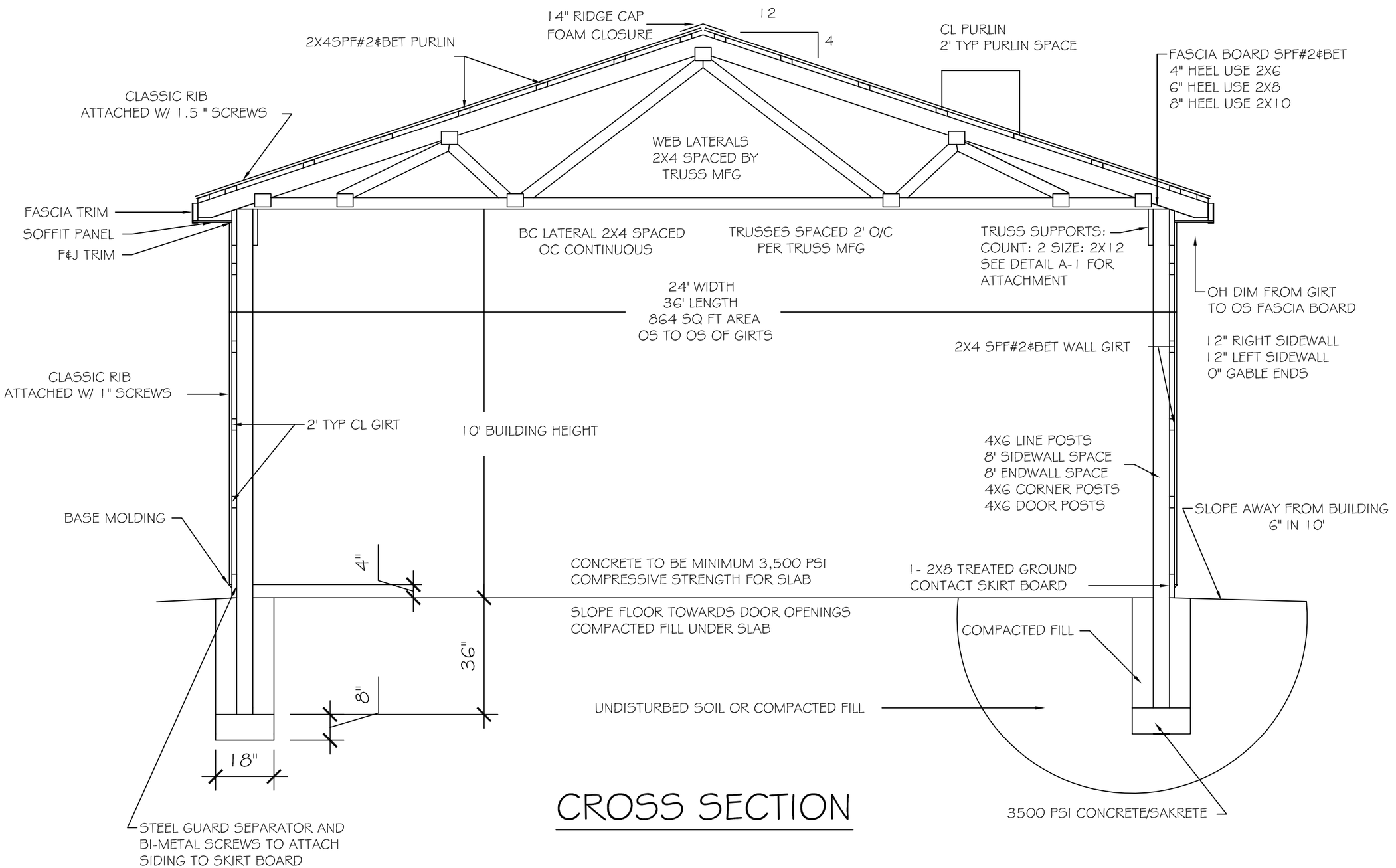
DELMARVA Pole Building Supply, Inc.

Project #:	Date:
00694	10-21-10
Technician: S.B.	Reviewed By: S.B.
Scale: NOTED	

No.	Revision/Issue	Date

PHILIP PIRAINO
1232 CHOPTANK ROAD
MIDDLETOWN, DE
19709

Sheet
A3



CROSS SECTION

DELMARVA
POLE BUILDING SUPPLY INC.
317 N. LAYTON AVE
WYOMING, DE 19934
(302) 698-3636

DELMARVA Pole Building Supply, Inc.

Project #:	Date:
00694	10-21-10
Technician: S.B.	Reviewed By: S.B.
Scale: NOTED	

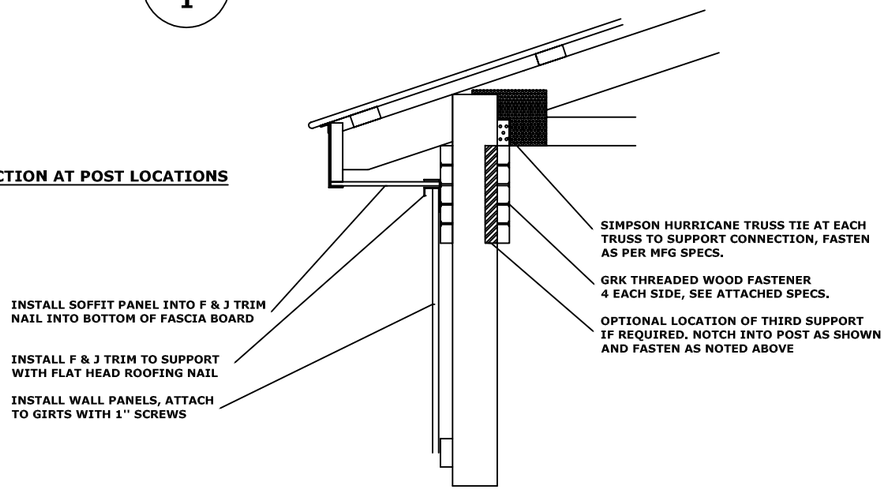
No.	Revision/Issue	Date

PHILIP PIRAINO
1232 CHOPTANK ROAD
MIDDLETOWN, DE
19709

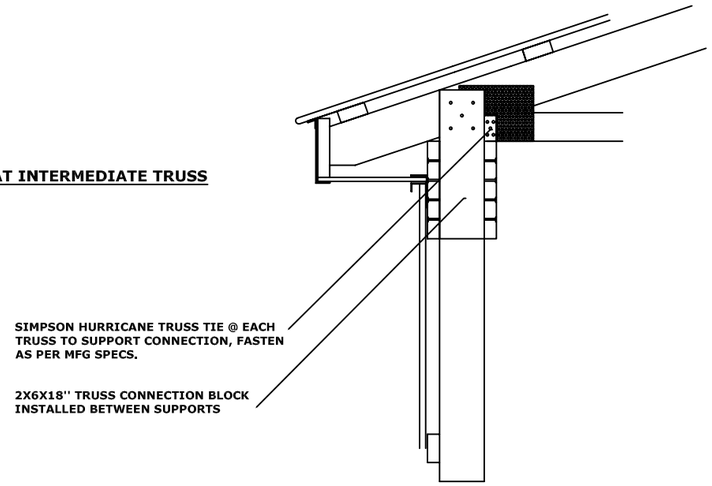
Sheet
A4

A/1 TRUSS TO SUPPORT CONNECTION DETAILS

CONNECTION AT POST LOCATIONS



CONNECTION AT INTERMEDIATE TRUSS



CONNECTION DETAILS

DELMARVA
POLE BUILDING SUPPLY INC.
317 N. LAYTON AVE
WYOMING, DE 19934
(302) 698-3636

Project #:	Date:
00694	10-21-10
Technician: S.B.	Reviewed By: S.B.
Scale: NOTED	

No.	Revision/Issue	Date

PHILIP PIRAINO
1232 CHOPTANK ROAD
MIDDLETOWN, DE
19709

Sheet
A5

NEW CASTLE COUNTY
DEPARTMENT OF LAND USE

BUILDING PERMIT

Description: **24' x 36' DETACHED GARAGE (POLE STRUCTURE)**

Location: **1232 CHOPTANK ROAD**

Issue Date: **11/30/10**

Permit Number
201012900

This placard must be conspicuously displayed on the job site during construction.

All work covered under this permit must begin within 45 days and be completed within 12 months of the issue date. A permit shall become invalid if work is abandoned for a period of 30 days or more after work has commenced.

Call 302-395-5515 to schedule inspections. Early calls shall receive priority. Failure to call may stop your job.

Per Section 6.03.019("Certificate of Occupancy") of the New Castle County Code, Chapter 6, 2002, the structure or project for which this permit is issued may not be used or occupied until it has passed all required inspections and a Certificate of Occupancy is issued.

COPIES OF THE APPROVED PLANS ASSOCIATED WITH THIS PERMIT AND THE RECORD PLAN (IF APPLICABLE) MUST BE ON SITE AT THE TIME OF INSPECTIONS.

11/30/2010 TUE 17:05 FAX 001/001

Stephen T. Smith, P. E.
7080 Landmark Place
Helena, MT 59601
Phone: (406)449-6216
Email: stephentsmith@earthlink.net

Report Evaluation of "Corrosion Effects of ACQ Treated Wood on Metal Fasteners in an Accelerated Test"

Evaluation No. STS09-08A

Evaluated Report	**Corrosion Effects of ACQ Treated Wood on Metal Fasteners in an Accelerated Test**
Report No.	**WDL-2009-06**
Author	**T. F. Shupe, Q. Wu, J. Curole, M. Voitier, and D. Ring**
Laboratory	**Wood Durability Laboratory, Louisiana State University Agricultural Center**
Date	**June 29, 2009**
Published in	**Not published. Prepared for OMG, Inc.**

1 Purpose of Evaluation

This evaluation considers the report named above in relation to the requirements of the ICC Evaluation Service, Inc. (ICC-ES) Acceptance Criteria for Test Reports (AC85), effective July 1, 2003. The International Code Council – Accreditation Service has accredited the LSU Wood Durability Laboratory for various physical and structural tests, including AWPA E12. The subject test, specified in ICC-ES AC257 (October, 2007) is similar to the E12 test. ICC-ES has not specifically approved the lab for this test. This evaluation considers the adequacy of the protocol used to support the report's conclusions and meet ICC-ES standards.

2 Overview of Report

The report describes comparative testing that evaluates the corrosion resistance under exposure to fresh water and chemically treated wood of two coated fasteners that use the proprietary OMG, Inc. coating system, LedgerLok and TimberLok to benchmark hot dip galvanized (HDG) fasteners of otherwise similar design. The fasteners were embedded in 3" x 3" x 6" blocks of southern pine treated to ground contact retention (0.40 pcf) with ACQ preservative. The assemblies were exposed in pans for 60 days to 90^{o}F and 90% relative humidity conditions. Following exposure, fasteners were evaluated for visible rust, weight loss, and loss of diameter. Performance is determined by comparison of results to the benchmark samples.

3 Evaluation Findings

3.1 Criteria

The report is evaluated according to ICC-ES AC85 and ICC-ES AC257. Deviations noted are discussed below.

3.2 ICC-ES AC85 Report Content

The requirements for reports (Section 4.0 Content of Reports) are included. No deviations are noted.

3.3 ICC-ES AC257 Corrosion Resistant Fasteners Method Compliance

The report states that the test was conducted according to the procedures stated in AC257. That document includes criteria for fasteners and wood treatment chemicals. Only the criteria for fasteners apply in this case. For this evaluation, it is assumed that specified procedures were followed unless data is present to indicate otherwise. The following deviations are noted:

3.3.1 Exposure Conditions

The specific test conditions depend on the intended exposure conditions, listed in Table 1 of AC257. As stated in the report, the recognition being sought by the applicant is exposure condition 3(General Construction), which requires testing in accordance with section 4.3.1.3 which requires testing by two ASTM methods, B 117 and G 85, in distilled water spray exposures for 60 days. Appendix A testing is offered as an alternative to ASTM B 117, but apparently only for exposure condition 6, which seems to apply only to tests applicable to preservatives rather than fasteners. The test requirements in AC257 are confusing and unclear.

The exposure described in the report meets the requirements of Exposure Condition 3, following the 1440 hours of exposure required by Exposure Condition 2 (Untreated Wood and Salt Water) and replacing untreated wood with the treated wood and salt water with distilled water as called for in 4.3.1.3. In addition, the samples were placed in shallow pans during the 60 days of exposure as called for.

Thus, although the requirements of AC257 are confusing, the exposure of all fasteners tested was robust and followed the intent of the guidelines set forth in this AC. Based on the weight and galvanizing loss experienced with the HDG samples, this testing was adequate to support comparative conclusions.

3.4 Discussion

Following 60 days exposure in a wet and elevated temperature environment, the samples were removed and inspected in accordance with AC 257. Comparative visual ratings for the coated samples were nearly identical to those for HDG, weight loss was approximately 50 times less than for HDG, and diameter loss was approximately one-tenth or less that of HDG fasteners. Additionally, coating adhesion was better for the coated fasteners than for the HDG ones.

4 Conclusion

The report titled **Corrosion Effects of ACQ Treated Wood on Metal Fasteners in an Accelerated Test** by **T. F. Shupe, Q. Wu, J. Curole, M. Voitier, and D. Ring**, dated June 29, 2009, supports conclusions about the corrosion rates of fasteners in contact with wood treated with ACQ preservative as stated in the report. The procedures and requirements of ICC-ES AC85 and the intent of the AC257 Corrosion method are met. It meets the needs for use in

consideration of the "body of evidence" by ICC-ES in considering the acceptability of the subject fastener systems.

Metal fasteners protected with either of the two proprietary coatings covered by the subject report, TimberLok fasteners with FMEC2 (CR-10), and LedgerLok fasteners with FMEC3 should be expected to perform in exterior environments, as defined in AWPA UC1, Use Category 4, as well or better than HDG fasteners of similar designs when installed in ACQ-treated wood. I recommend that the ICC-ES approve such use.

5 Certification

I have reviewed the report discussed above and the referenced criteria and standards. I am qualified to make this evaluation through education and over 25 years of experience in engineering and the field of wood preservation. The findings and conclusions stated above are my professional opinions.

Stephen T. Smith, P. E. 18 August 2009
Date

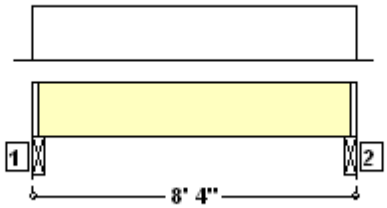
California Professional Engineer Certificate No. 27309
Expiration 31 March 2011

Philip Piraino

2 Pcs of 1 1/2" x 11 1/4" 1.4E Solid Sawn SprucePine Fir #2

THIS PRODUCT MEETS OR EXCEEDS THE SET DESIGN CONTROLS FOR THE APPLICATION AND LOADS LISTED

Member Slope: 0/12 Roof Slope4/12



All dimensions are horizontal. **Product Diagram is Conceptual.**

LOADS:

Analysis is for a Header (Flush Beam) Member. Tributary Load Width: 12'
Primary Load Group - Roof (psf): 25.0 Live at 125 % duration, 10.0 Dead

SUPPORTS:

		Input Width	Bearing Length	Vertical Reactions (lbs) Live/Dead/Uplift/Total	Detail	Other
1	Glulam or solid sawn lumber beam	3.50"	1.50"	1250 / 555 / 0 / 1805	By Others - Rim: Rim Board	1 Ply 1 3/4" x 11 1/4" 1.9E Microllam® LVL
2	Glulam or solid sawn lumber beam	3.50"	1.50"	1250 / 555 / 0 / 1805	By Others - Rim: Rim Board	1 Ply 1 3/4" x 11 1/4" 1.9E Microllam® LVL

-See iLevel® Specifier's/Builder's Guide for detail(s): By Others - Rim: Rim Board

DESIGN CONTROLS:

	Maximum	Design	Control	Result	Location
Shear (lbs)	1733	-1273	3797	Passed (34%)	Rt. end Span 1 under Roof loading
Moment (Ft-Lbs)	3467	3467	5768	Passed (60%)	MID Span 1 under Roof loading
Live Load Defl (in)		0.055	0.267	Passed (L/999+)	MID Span 1 under Roof loading
Total Load Defl (in)		0.080	0.400	Passed (L/999+)	MID Span 1 under Roof loading

-Deflection Criteria: STANDARD(LL:L/360,TL:L/240).
-Bracing(Lu): All compression edges (top and bottom) must be braced at 8' 4" o/c unless detailed otherwise. Proper attachment and positioning of lateral bracing is required to achieve member stability.
-The allowable shear stress (Fv) has not been increased due to the potential of splits, checks and shakes. See NDS for applicability of increase.
-Analysis based on vertical loads only and assumes structural supports as noted in the input. Axial loads are not considered in this analysis.
-Analysis assumes continuous member. Lap joints, splices and finger joints significantly reduce member performance and have not been considered.
-Design assumes adequate continuous lateral support of the compression edge.

ADDITIONAL NOTES:

-IMPORTANT! The analysis presented is output from software developed by iLevel®. iLevel® warrants the sizing of its products by this software will be accomplished in accordance with iLevel® product design criteria and code accepted design values. The specific product application, input design loads, and stated dimensions have been provided by the software user. This output has not been reviewed by an iLevel® Associate.
-Not all products are readily available. Check with your supplier or iLevel® technical representative for product availability.
-THIS ANALYSIS FOR iLevel® PRODUCTS ONLY! PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS. Solid sawn lumber analysis is in accordance with 2001 NDS methodology.
-Allowable Stress Design methodology was used for Building Code IBC analyzing the solid sawn lumber material listed above.
-Note: See iLevel® Specifier's/Builder's Guide for multiple ply connection.

PROJECT INFORMATION:

8' oc posts

OPERATOR INFORMATION:

Stephan Beachy
Delmarva Pole Building Supply, Inc
317 N. Layton Ave
Wyoming, DE 19934
Phone : (302) 698-3636
Fax : (302) 698-5036
stephanb@delmarvapole.com

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Philip Piraino

2 Pcs of 1 1/2" x 11 1/4" 1.4E Solid Sawn SprucePine Fir #2

THIS PRODUCT MEETS OR EXCEEDS THE SET DESIGN CONTROLS FOR THE APPLICATION AND LOADS LISTED

Load Group: Primary Load Group

	^	8' 0.00"	^
Max. Vertical Reaction Total (lbs)	1805		1805
Max. Vertical Reaction Live (lbs)	1250		1250
Required Bearing Length in	1.50(W)		1.50(W)
Max. Unbraced Length (in)		100	

Loading on all spans, LDF = 0.90 , 1.0 Dead

Shear at Support (lbs)		392	-392
Max Shear at Support (lbs)		533	-533
Member Reaction (lbs)	533		533
Support Reaction (lbs)	555		555
Moment (Ft-Lbs)		1067	

Loading on all spans, LDF = 1.25 , 1.0 Dead + 1.0 Floor + 1.0 Roof

Shear at Support (lbs)		1273	-1273
Max Shear at Support (lbs)		1733	-1733
Member Reaction (lbs)	1733		1733
Support Reaction (lbs)	1805		1805
Moment (Ft-Lbs)		3467	
Live Deflection (in)		0.055	
Total Deflection (in)		0.080	

PROJECT INFORMATION:

8' oc posts

OPERATOR INFORMATION:

Stephan Beachy
Delmarva Pole Building Supply, Inc
317 N. Layton Ave
Wyoming, DE 19934
Phone : (302) 698-3636
Fax : (302) 698-5036
stephanb@delmarvapole.com

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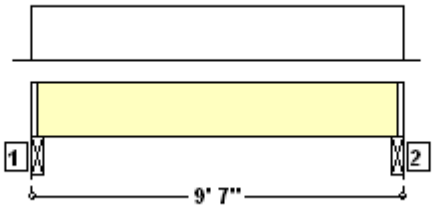
Philip Piraino

2 Pcs of 1 1/2" x 11 1/4" 1.4E Solid Sawn SprucePine Fir #2

THIS PRODUCT MEETS OR EXCEEDS THE SET DESIGN CONTROLS FOR THE APPLICATION AND LOADS LISTED

Member Slope: 0/12 Roof Slope4/12



All dimensions are horizontal. **Product Diagram is Conceptual.**

LOADS:

Analysis is for a Header (Flush Beam) Member. Tributary Load Width: 12'
Primary Load Group - Roof (psf): 25.0 Live at 125 % duration, 10.0 Dead

SUPPORTS:

		Input Width	Bearing Length	Vertical Reactions (lbs) Live/Dead/Uplift/Total	Detail	Other
1	Glulam or solid sawn lumber beam	3.50"	1.63"	1438 / 639 / 0 / 2076	By Others - Rim: Rim Board	1 Ply 1 3/4" x 11 1/4" 1.9E Microllam® LVL
2	Glulam or solid sawn lumber beam	3.50"	1.63"	1438 / 639 / 0 / 2076	By Others - Rim: Rim Board	1 Ply 1 3/4" x 11 1/4" 1.9E Microllam® LVL

-See iLevel® Specifier's/Builder's Guide for detail(s): By Others - Rim: Rim Board

DESIGN CONTROLS:

	Maximum	Design	Control	Result	Location
Shear (lbs)	2004	-1544	3797	Passed (41%)	Rt. end Span 1 under Roof loading
Moment (Ft-Lbs)	4634	4634	5768	Passed (80%)	MID Span 1 under Roof loading
Live Load Defl (in)		0.099	0.308	Passed (L/999+)	MID Span 1 under Roof loading
Total Load Defl (in)		0.143	0.463	Passed (L/775)	MID Span 1 under Roof loading

-Deflection Criteria: STANDARD(LL:L/360,TL:L/240).
-Bracing(Lu): All compression edges (top and bottom) must be braced at 9' 7" o/c unless detailed otherwise. Proper attachment and positioning of lateral bracing is required to achieve member stability.
-The allowable shear stress (Fv) has not been increased due to the potential of splits, checks and shakes. See NDS for applicability of increase.
-Analysis based on vertical loads only and assumes structural supports as noted in the input. Axial loads are not considered in this analysis.
-Analysis assumes continuous member. Lap joints, splices and finger joints significantly reduce member performance and have not been considered.
-Design assumes adequate continuous lateral support of the compression edge.

ADDITIONAL NOTES:

-IMPORTANT! The analysis presented is output from software developed by iLevel®. iLevel® warrants the sizing of its products by this software will be accomplished in accordance with iLevel® product design criteria and code accepted design values. The specific product application, input design loads, and stated dimensions have been provided by the software user. This output has not been reviewed by an iLevel® Associate.
-Not all products are readily available. Check with your supplier or iLevel® technical representative for product availability.
-THIS ANALYSIS FOR iLevel® PRODUCTS ONLY! PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS. Solid sawn lumber analysis is in accordance with 2001 NDS methodology.
-Allowable Stress Design methodology was used for Building Code IBC analyzing the solid sawn lumber material listed above.
-Note: See iLevel® Specifier's/Builder's Guide for multiple ply connection.

PROJECT INFORMATION:

9' oh door

OPERATOR INFORMATION:

Stephan Beachy
Delmarva Pole Building Supply, Inc
317 N. Layton Ave
Wyoming, DE 19934
Phone : (302) 698-3636
Fax : (302) 698-5036
stephanb@delmarvapole.com

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Philip Piraino

2 Pcs of 1 1/2" x 11 1/4" 1.4E Solid Sawn SprucePine Fir #2

THIS PRODUCT MEETS OR EXCEEDS THE SET DESIGN CONTROLS FOR THE APPLICATION AND LOADS LISTED

Load Group: Primary Load Group

	^	9' 3.00"	^
Max. Vertical Reaction Total (lbs)	2076		2076
Max. Vertical Reaction Live (lbs)	1438		1438
Required Bearing Length in	1.63(W)		1.63(W)
Max. Unbraced Length (in)		115	

Loading on all spans, LDF = 0.90 , 1.0 Dead

Shear at Support (lbs)		475	-475
Max Shear at Support (lbs)		617	-617
Member Reaction (lbs)	617		617
Support Reaction (lbs)	639		639
Moment (Ft-Lbs)		1426	

Loading on all spans, LDF = 1.25 , 1.0 Dead + 1.0 Floor + 1.0 Roof

Shear at Support (lbs)		1544	-1544
Max Shear at Support (lbs)		2004	-2004
Member Reaction (lbs)	2004		2004
Support Reaction (lbs)	2076		2076
Moment (Ft-Lbs)		4634	
Live Deflection (in)		0.099	
Total Deflection (in)		0.143	

PROJECT INFORMATION:

9' oh door

OPERATOR INFORMATION:

Stephan Beachy
Delmarva Pole Building Supply, Inc
317 N. Layton Ave
Wyoming, DE 19934
Phone : (302) 698-3636
Fax : (302) 698-5036
stephanb@delmarvapole.com

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ICC EVALUATION SERVICE

ICC Evaluation Service, Inc.
Birmingham Regional Office
900 Montclair Road, Suite A
Birmingham, AL 35213
tel: 205.599.9800
fax: 205.599.9850
www.icc-es.org

September 3, 2009

Mark Guthrie
Technical Manager
OMG, Inc.
153 Bowles Road
Agawam, Massachusetts 01001

Dear Mr. Guthrie:

Thank you for your inquiry concerning the validity of your evaluation report, ESR-1078. As noted, your report was reissued on February 1, 2007 for a period of two years. Upon your application for re-examination, we indicated that your report would be held for further study pending the receipt of data for new products being added to the report.

The further study status enables your report to remain active on our website until the new products have been evaluated and added to your report. Thus, the note on our website, "All of the evaluation reports that may be downloaded from this web site are valid, although some have re-examination dates that have passed. In the case of the latter, the reports are currently undergoing re-examination as required by ICC-ES Rules of Procedure; or they may be legacy reports whose term has been extended without a change to the re-examination date." Until then, ESR-1078 is valid as written for the codes indicated in the report.

Please feel free to use this letter as evidence that ESR-1078 is valid for the codes indicated in the report as long as the report is listed on the ICC-ES website.

Respectfully,

J. David Musselwhite, P.E.
Senior Staff Engineer

DM/bc

ESR-1078
Reissued February 1, 2007
This report is subject to re-examination in two years.

ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office ■ 5360 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 900 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 599-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 799-2305

DIVISION: 06—WOOD AND PLASTICS
Section: 06090—Wood and Plastic Fastenings

REPORT HOLDER:

OMG, INC.
153 BOWLES ROAD
AGAWAM, MASSACHUSETTS 01001
(413) 789-0252
www.fastenmaster.com
mguthrie@olyfast.com

EVALUATION SUBJECT:

FASTENMASTER® THREADED WOOD FASTENERS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)

Properties evaluated:

Structural

2.0 USES

The FastenMaster Series fasteners described in this report are alternate dowel-type threaded fasteners used for wood-to-wood connections.

3.0 DESCRIPTION

3.1 General:

The FastenMaster Series fasteners described in this report are manufactured using a standard cold-forming process and are heat-treated. The fasteners have a proprietary coating with a lubricious clear top coat. The FasterMaster series includes three different fastener diameters that are available in lengths ranging from $2^1/_2$ to 16 inches (63.5 to 406.4 mm), inclusive of thread. (See Tables 1A through 1D of this report for fastener dimensions.) The fasteners have a hex-head design with integral washer, rolled threads and a gimlet point.

These fasteners depart from ANSI B18.2.1 and B18.6.1 in thread design, exceed the bending yield strengths documented in Table 8 of American Forest & Paper Association (AF&PA) Technical Report 12, and are not installed with lead holes in accordance with the National Design Specification for Construction (NDS).

3.2 Materials:

The fasteners are made of carbon steel grade 1022 wire, conforming to ASTM A 510, with a minimum ultimate tensile strength of 60 ksi (414 MPa), and have a proprietary finish. Minimum bending yield strengths of the fasteners are listed in Tables 1A, 1B, 1C and 1D of this report.

4.0 DESIGN AND INSTALLATION

4.1 Design:

Design values for dowel bearing strengths are specified in Table 2 of this report. Design values for withdrawal connections are specified in Table 3 of this report. Design values for pull-through shall be as specified in Table 4 of this report. Design values for lateral resistance in wood-to-wood connections loaded parallel and perpendicular to the grain, are noted in Tables 5A and 5B of this report, using the applicable fastener diameter (minor thread diameter).

4.2 Installation:

The fasteners must be installed with a $^1/_2$-inch (12.7 mm), low RPM/high torque electric drill (450 rpm) using the special hex-head driver bit included in each box. Lead holes are not required at the minimum end and edge distances listed in Table 6 of this report.

5.0 CONDITIONS OF USE

The fasteners described in this report comply with or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 When the capacity of a connection is controlled by **fastener metal strength, rather than wood strength,** allowable strength of the connection are not permitted to be multiplied by the adjustment factors specified in the NDS.

5.2 When designing a connection, the connection shall be checked against Appendix E in the NDS to ensure the capacity of the connection and fastener group.

5.3 This evaluation report does not address fastener corrosion when the fastener is installed in chemically treated wood.

5.4 The fasteners are produced by OMG, Inc. at their facility located in Agawam, Massachusetts, under a quality control program with inspections by FM Approvals (AA-653).

6.0 EVIDENCE SUBMITTED

Data and test reports in accordance with the ICC-ES Acceptance Criteria for Alternate Dowel-type Threaded Fasteners Part A: Fasteners Less Than $^1/_4$ Inch in Diameter (AC233), dated October 2006.

7.0 IDENTIFICATION

The fasteners are identified by the designation "TrussLok®," "TrussLok-Z®," "TimberLok®," "LedgerLok®," "OlyLag®" or "Log lag®" on the packaging. Head markings consist of "F" followed by the length of the fastener. Each container of fasteners must have a label noting OMG's name and address, fastener size, inspection agency name (FM Approvals) and the evaluation report number (ICC-ES ESR-1078).

ES REPORTS® are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, Inc., express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

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TABLE 1A—FASTENER SPECIFICATIONS: OLYLOG AND TIMBERLOK FASTENERS

OLYLOG® / TIMBERLOK® FASTENER DESIGNATION	HEAD MARKING	OVERALL LENGTH[1] (inches)	LENGTH OF THREAD (inches)[2,5]	UNTHREADED SHANK DIAMETER[3] (inch)	MINOR THREAD (ROOT) DIAMETER (inch)	ALLOWABLE STEEL STRENGTH		
						Bending Yield (Fyb, psi)[4,6]	Tensile (psi)	Single Shear (psi)
TLOK212 or LOG212	F2.5	2½	1¼	0.189 [0.187 - 0.189]	0.172 (design diameter)	199,700	45,000	29,900
TLOK04 or LOG004	F4.0	4	2					
TLOK06 or LOG006	F6.0	6	2					
TLOK08 or LOG008	F8.0	8	2					
LOG009	F9.0	9	2					
TLOK10 or LOG010	F10.0	10	2					
LOG012	F12.0	12	2					
LOG014	F14.0	14	2					
LOG016	F16.0	16	2					

For SI: 1 inch = 25.4 mm, 1 psi = 6.895 kPa.

NOTES:

1. For purposes of measuring overall fastener length, fasteners must be measured from the underside of head to bottom of tip.
2. Length of thread includes tip. See detailed illustration.
3. Unthreaded shank diameters are shown in table with manufacturing tolerances in brackets [ ].
4. Bending yield strength determined per methods specified in ASTM D 1575 and based on the minor thread diameter.
5. Fastener installation and design values require complete threaded portion to be embedded in the main member.
6. Fastener bending yield strength is determined by the 5% diameter (0.05D) offset method of analyzing load-displacement curves developed from bending tests.

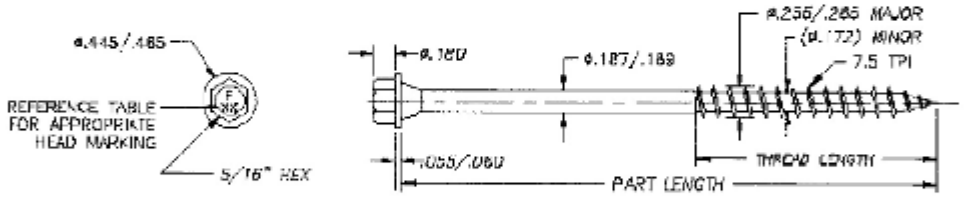

TABLE 1B—FASTENER SPECIFICATIONS: LOGHOG AND LEDGERLOK FASTENERS

LEDGERLOK® / LOGHOG® FASTENER DESIGNATION	HEAD MARKING	OVERALL LENGTH[1] (inches)	LENGTH OF THREAD (inches)[2,5]	UNTHREADED SHANK DIAMETER[3] (inch)	MINOR THREAD (ROOT) DIAMETER (inch)	ALLOWABLE STEEL STRENGTH		
						Bending Yield (F)b, psi)[4,6]	Tensile (psi)	Single Shear (psi)
LL358	F3.5	$3^{5}/_{16}$	2	0.228 [.227 - 0.229]	0.202 (design diameter	200,700	49,600	32,800
LL005	F5.0	5	3					
LHOG009	F9.0	9	3			183,200	32,700	21,600
LHOG011	F11.0	11	3					
LHOG012	F12.0	12	3					
LHOG013	F13.0	13	3					
LHOG014	F14.0	14	3					
LHOG015	F15.0	15	3					

For SI: 1 inch = 25.4 mm, 1 psi = 6.895 kPa.

NOTES:

1. For purposes of measuring overall fastener length, fasteners must be measured from the underside of head to bottom of tip
2. Length of thread includes tip. See detailed illustration.
3. Unthreaded shank diameters are shown in table with manufacturing tolerances in brackets [ ]
4. Bending yield strength determined per methods specified in ASTM D 1575 and based on the minor thread diameter.
5. Fastener installation and design values require complete threaded portion to be embedded in the main member.
6. Fastener bending yield strength is determined by the 5% diameter (0.05D) offset method of analyzing load-displacement curves developed from bending tests.

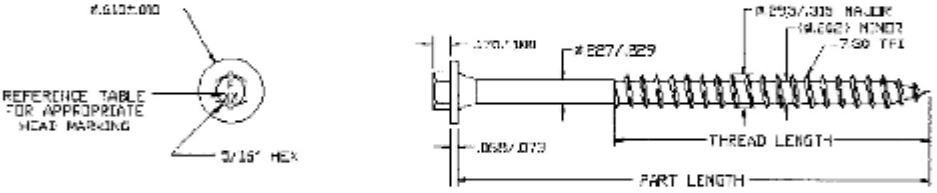

TABLE 1C—FASTENER SPECIFICATIONS: TRUSSLOK FASTENERS

TRUSSLOK® FASTENER DESIGNATION	HEAD MARKING	OVERALL LENGTH[1] (inches)	LENGTH OF THREAD (inches)[2,5]	UNTHREADED SHANK DIAMETER[3] (inch)	MINOR THREAD (ROOT) DIAMETER (inch)	ALLOWABLE STEEL STRENGTH		
						Bending Yield (Fyb, psi)[4,6]	Tensile (psi)	Single Shear (psi)
EWS333	F3.3	3 3/16	1 1/2	0.228 [0.227 - 0.229]	0.216 (design diameter)	202,200	49,600	32,800
EWS005	F5.0	5						
EWS673	F6.7	6.7						

For SI: 1 inch = 25.4 mm, 1 psi = 6.895 kPa.

NOTES:

1. For purposes of measuring overall fastener length, fasteners must be measured from the underside of head to bottom of tip
2. Length of thread includes tip. See detailed illustration.
3. Unthreaded shank diameters are shown in table with manufacturing tolerances in brackets [ ]
4. Bending yield strength determined per methods specified in ASTM D 1575 and based on the minor thread diameter.
5. Fastener installation and design values require complete threaded portion to be embedded in the main member.
6. Fastener bending yield strength is determined by the 5% diameter (0.05D) offset method of analyzing load-displacement curves developed from bending tests.

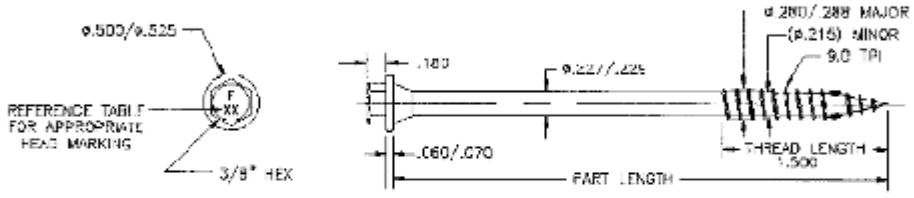

TABLE 1D—FASTENER SPECIFICATIONS: TRUSSLOK-Z FASTENERS

TRUSSLOK-Z® FASTENER DESIGNATION	HEAD MARKING	OVERALL LENGTH[1] (inches)	LENGTH OF THREAD (inches)[2,5]	UNTHREADED SHANK DIAMETER[3] (inch)	MINOR THREAD (ROOT) DIAMETER (inch)	ALLOWABLE STEEL STRENGTH		
						Bending Yield (Fyb, psi)[4,6]	Tensile (psi)	Single Shear (psi)
TSLZ278	F2.8	2 7/8	1 1/4	0.228 [0.227 - 0.229]	0.202 (design diameter)	236,300	49,600	32,800
TSLZ412	F4.5	4 1/2						
TSLZ006	F6.0	6						

For SI: 1 inch = 25.4 mm, 1 psi = 6.895 kPa.

NOTES:

1. For purposes of measuring overall fastener length, fasteners must be measured from the underside of head to bottom of tip
2. Length of thread includes tip. See detailed illustration.
3. Unthreaded shank diameters are shown in table with manufacturing tolerances in brackets [ ]
4. Bending yield strength determined per methods specified in ASTM D 1575 and based on the minor thread diameter.
5. Fastener installation and design values require complete threaded portion to be embedded in the main member.
6. Fastener bending yield strength is determined by the 5% diameter (0.05D) offset method of analyzing load-displacement curves developed from bending tests.

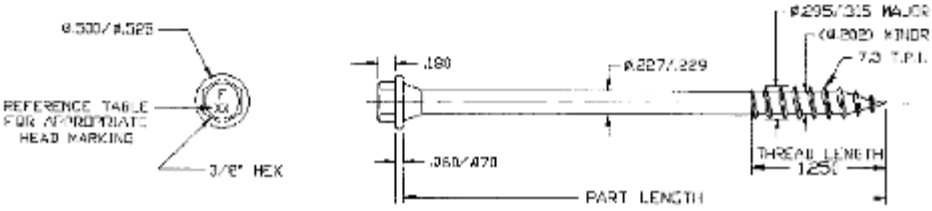

TABLE 2—DOWEL BEARING STRENGTH (psi)
(Test results are the 5% offset value)

FASTENER DESIGNATION	DIRECTION OF LOADING	CALCULATED DOWEL BEARING STRENGTH PER REGRESSION EQUATIONS								
		0.67	0.57	0.55	0.5	0.46	0.43	0.42	0.36	0.31
ClyLog® / TimberLok® fasteners	Parallel to grain	7,950	6,400	6,150	5,600	5,150	4,800	4,700	4,050	3,450
	Perpendicular to grain	7,950	6,200	5,900	5,150	4,550	4,150	4,000	3,200	2,550
LogHog® / LedgerLok® / TrussLok® / TrussLok-Z® fasteners	Parallel to grain	7,950	6,400	6,150	5,600	5,150	4,800	4,700	4,050	3,450
	Perpendicular to grain	7,950	5,900	5,550	4,700	4,150	3,750	3,650	2,900	2,350
Wet Service Factor, C_M, for lateral loads	*Parallel to grain*	*0.7*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*
	Perpendicular to grain	*0.6*	*0.6*	*0.6*	*0.6*	*0.7*	*0.7*	*0.7*	*0.6*	*0.5*

TABLE 3—DIRECT WITHDRAWAL DESIGN VALUES (*W*)
[Tabulated withdrawal design values (*W*) are in pounds per inch of thread penetration into side grain of main member]

FASTENER DESIGNATION		THREAD LENGTH, *l* (inches)	*W* (lbs./in.) FOR SPECIFIC GRAVITIES OF:								
			0.67	0.57	0.55	0.5	0.46	0.43	0.42	0.36	0.31
ClyLog® / TimberLok® fasteners	TLOK212 or LOG212	1.25	264	207	196	170	150	136	131	104	83
	All other lengths	2									
Wet Service Factor, C_M, for withdrawal loads			*0.7*	*0.7*	*0.7*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.7*
LogHog® / LedgerLok® fasteners	LL356	2	297	233	221	192	169	153	148	117	94
	All other lengths	3									
TrussLok®	All lengths	$1^1/_2$	—	—	—	153	—	—	—	—	—
TrussLok Z®	All lengths	$1^1/_4$	—	233	221	192	169	153	148	117	—
Wet Service Factor, C_M, for withdrawal loads			*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.7*	*0.7*
NDS equation used to calculate design values			11.2-1	11.2-1	11.2-1	11.2-1	11.2-1	11.2-1	11.2-1	11.2-1	11.2-1

For SI: 1 inch = 25.4 mm, 1 pound = 4.448 kPa.

NOTES:

1. Values must be multiplied by all applicable adjustment factors (see NDS).
2. Embedded thread length is that portion held by the main member (including tip).

TABLE 4—PULL-THROUGH DESIGN VALUES (*P*)

FASTENER DESIGNATION		THREAD LENGTH, *L* (inches)	*P* (lbs./in.) FOR SPECIFIC GRAVITIES OF:								
			0.67	0.57	0.55	0.5	0.46	0.43	0.42	0.36	0.31
ClyLog® / TimberLok® fasteners	TLOK212 or LOG212	1.25	334	278	260	158	130	112	107	79	62
	All other lengths	2									
LogHog® / LedgerLok® fasteners	LL356	2	471	323	299	243	206	181	173	133	108
	All other lengths	3									
TrussLok®	All lengths	$1^1/_2$	—	—	—	264	—	—	—	—	—
TrussLok-Z®	All lengths	$1^1/_4$	—	366	327	248	199	169	159	114	—

For SI: 1 inch = 25.4 mm, 1 pound = 4.448 kPa.

NOTES:

1. Values must be multiplied by all applicable adjustment factors (see NDS).
2. Embedded thread length is that portion held by the main member (including tip).
3. Tabulated pull-through design values (*P*) are in pounds per inch through side member.

TABLE 5A—LATERAL DESIGN VALUES (Z) FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS WITH LOADING PARALLEL TO GRAIN

[Tabulated lateral design values (Z) are in pounds per fastener into sawn lumber or SCL[3] with both members of identical specific gravity]

FASTENER DESIGNATION		SIDE MEMBER THICKNESS, t_s (inches)	FASTENER PENETRATION, p (inches)	Z (lbs.) FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS LOADED PARALLEL TO THE GRAIN FOR SPECIFIC GRAVITIES OF:								
				0.67	0.57	0.55	0.5	0.46	0.43	0.42	0.36	0.31
OlyLog®/ TimberLok® fasteners	TLOK212 or LOG212	1½	1	285	224	217	203	191	181	179	161	143
	TLOK04 or LOG006	1½	2½	299	258	253	251	240	231	225	228	1788
	TLOK06 or LOG006	4	2						232	230	213	197
	TLOK08 or LOG008	6	2									
	LOG009	7	2									
	TLOK10 or LOG010	8	2									
	LOG012	10	2									
	LOG014	12	2									
	LOG016	14	2									
LedgerLok® fasteners	LL358	1½	2⅛	373	325	315	292	274	259	255	229	204
	LL005	1½	3½					274	259		229	204
LogHog® fasteners	LHOG009	6	3	357	320	314	299	287	277	274	255	235
	LHOG011	8	3									
	LHOG012	9	3									
	LHOG013	10	3									
	LHOG014	11	3									
	LHOG015	12	3									
Truss_Lok®	EWS338	1½	1⅛	—	—	—	316	—	—	—	—	—
	EWS005	1½	3¼				333					
	EWS670	1½	5				333					
TrussLok-Z®	TSLZ278	1½	1⅞	—	336	294	268	248	229	225	194	—
	TSLZ412	1½	3		336	326	303	285	270	266	239	
	TSL016	1½	4½		336	326	303	285	270	266	239	

For SI: 1 inch = 25.4 mm, 1 pound = 4.448 kPa.

NOTES:

1. Values must be multiplied by all applicable adjustment factors (see NDS).
2. Embedded thread length is that portion held by the main member (including tip).
3. SCL is structural composite lumber (laminated veneer lumber is LVL, and parallel strand lumber is PSL). This group also includes all OSB, structural I plywood, and marine-grade plywood panels.
4. p = depth of fastener penetration into wood member, in inches.
5. Tabulated values are results of calculations per NDS Section 11.3, where D = minor thread diameter.

TABLE 5B—LATERAL DESIGN VALUES (Z) FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS WITH LOADING PERPENDICULAR TO GRAIN

[Tabulated lateral design values (Z) are in pounds per fastener into sawn lumber or SCL[3] with both members of identical specific gravity]

FASTENER DESIGNATION		SIDE MEMBER THICKNESS, t_s (inches)	FASTENER PENETRATION, p (inches)	Z (lbs.) FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS LOADED PARALLEL TO THE GRAIN FOR SPECIFIC GRAVITIES OF:								
				0.67	0.67	0.55	0.5	0.49	0.43	0.42	0.36	0.31
OlyLog® / TimberLok® fasteners	TLOK212 or LOG212	1½	1	285	219	211	191	175	164	160	133	108
	TLOK04 or LOG006	1½	2½	299	254	257	240	222	206	200	168	142
	TLOK06 or LOG006	4	2					226	216	212	190	166
	TLOK08 or LOG008	6	2									
	LOG009	7	2									
	TLOK10 or LOG010	8	2									
	LOG012	10	2									
	LOG014	12	2									
	LOG016	14	2									
LedgerLok® fasteners	LL358	1½	2⅜	373	335	290	265	233	216	212	179	145
	LL005	1½	3½			290	265	233	216		180	157
LogHog® fasteners	LHOG009	6	3	357	337	298	274	258	245	242	215	194
	LHOG011	8	3									
	LHOG012	9	3									
	LHOG013	10	3									
	LHOG014	11	3									
	LHOG015	12	3									
Truss_Lok®	EWS338	1½	1⅜	—	—	—	267	—	—	—	—	—
	EWS005	1½	3¼				290					
	EWS670	1½	5				290					
TrussLok-Z®	TSLZ278	1½	1⅜	—	232	265	225	198	179	174	139	—
	TSLZ412	1½	3		316	301	288	243	227	222	190	
	TSL018	1½	4½		316	301	288	243	227	222	190	

For SI: 1 inch = 25.4 mm, 1 pound = 4.448 kPa.

NOTES:

1. Values must be multiplied by all applicable adjustment factors (see NDS).
2. Embedded thread length is that portion held by the main member (including tip).
3. SCL is structural composite lumber (laminated veneer lumber is LVL, and parallel strand lumber is PSL). This group also includes all OSB, structural I plywood, and marine-grade plywood panels.
4. p = depth of fastener penetration into wood member, in inches.
5. Tabulated values are results of calculations per NDS Section 11.3, where D = minor thread diameter.

TABLE 9—CONNECTION GEOMETRY

CONNECTION GEOMETRY/CRITERIA	DIAMETERS	OLYLOG® / TIMBERLOK® FASTENERS (Inches)	LOGHOG® / LEDGERLOK® / TRUSSLOK® / TRUSSLOK-Z® FASTENERS (Inches)
Minimum edge distance (2.5 diameters per NDS Commentary Table C11.4-1):	5	1 1/2	1 3/4
From edge (4 diameters per NDS Table 11.5.1A), loaded edge:	8	1 1/2	1 3/4
Minimum end distance, tension load parallel to grain (per NDS Commentary Table C11.4-1):	16	3	3 3/4
Compression load parallel to grain (NDS Commentary Table C11.4.1)	10	2	2 3/8
Spacing (pitch) between fasteners in a row, parallel to grain:	15	2 3/4	3 1/2
Perpendicular to grain:	10	2	2 3/8
Spacing (gage) between rows of fasteners, in-line:	5	1	1 1/4
Spacing (gage) between rows of fasteners, staggered:	2.5	1/2	5/8
Minimum penetration into the main member for single shear connections	6	1 1/4	1 3/8

For SI: 1 inch = 25.4 mm.

HeadLok-DP® Guarantee of Performance

FastenMaster® fully guarantees the performance of HeadLok-DP® (Drill Point) for the lifetime of the project. HeadLok's corrosion resistance is fully guaranteed to protect against corrosion in exterior applications including those in pressure-treated wood*.

The HeadLok-DP® (Drill Point) threads are designed for use in heavy gauge (16 gauge-1/4" thick) metal. Use in any other material is not recommended or guaranteed.

This guarantee does not cover its use in the following instances:

- Where the installation instructions are not followed.
- Coating removed by means of improper installation.
- Any exterior use within 1000 ft of salt water. The use of stainless steel fasteners is recommended for use in these cases.

Product found to be defective will be replaced free of charge with fair compensation provided to remove and replace the effected fasteners.

In addition, FastenMaster® offers a full money back satisfaction guarantee.

To obtain assistance with products covered by this guarantee you must contact the Technical Services Team at 1-800-518-3569 or by email at info@fastenmaster.com.

The installation instructions may be obtained by:

- Downloading them from www.fastenmaster.com
- Emailing us your request at info@fastenmaster.com
- Calling the Technical Services Team at 1-800-518-3569
- Writing to us at FastenMaster, 95 Bowles Rd., Agawam, MA 01001 USA.

*Note: This guarantee pertains to pressure treating chemicals, treatments and procedures that are currently on the market as of September 1, 2009. If the chemicals and/or the pressure treatment procedures change, then this guarantee may be subject to revision without notice.

This dated guarantee supersedes all written statements prior to September 1, 2009.

FMGYHLDP20090901

FastenMaster

TimberLok®

HEAVY DUTY WOOD SCREW

TimberLok® Guarantee of Performance

FastenMaster® fully guarantees the performance of TimberLok® for the lifetime of the project. If installed per the installation instructions it is designed, tested and guaranteed to exhibit design values outlined in ICC's ESR-1078. TimberLok's corrosion resistance is fully guaranteed to protect against corrosion in exterior applications including those in pressure-treated wood*.

This guarantee does not cover its use in the following instances:

- Where the installation instructions are not followed.
- Coating removed by means of improper installation.
- Any exterior use within 1000 ft of salt water. The use of stainless steel fasteners is recommended for use in these cases.

Product found to be defective will be replaced free of charge with fair compensation provided to remove and replace the effected fasteners.

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This dated guarantee supersedes all written statements prior to September 1, 2009.

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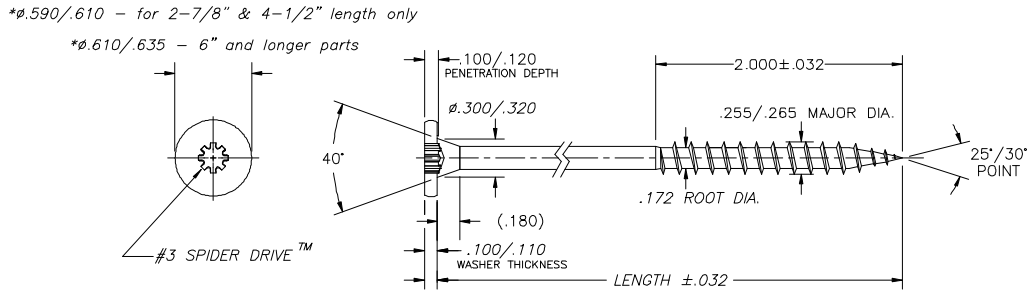
PRELIMINARY -- Based on 2001 NDS equations without test support

FastenMaster® Series Threaded Wood Fasteners

Table 1: Fastener Specifications

HeadLok® Fasteners



HeadLok® Fastener Designation	Head Marking	Overall Length (inches)	Length of Thread (inches)	Unthreaded Shank Diameter (inches)	Minor Thread (Root) Diameter (inches)	Allowable Steel Strength Bending Yield Strength, F_{yb} (psi)	Tension (psi)	Shear (psi)
HL GM278		2- 7/8 "						
HL GM334		3-37/50"						
HL GM412		4- 1/2 "						
HL GM005		4-35/38"						
HL GM006		6 "						
HL GM612		6- 1/2 "						
HL GM007		7 "						
HL GM712		7- 1/2 "			**0.172" (Design Diameter)**			
HL GM008		8 "						
HL GM812		8- 1/2 "	2"	0.189" [0.187-0.189]		189,300	45,600	29,900
HL GM009		9 "						
HL GM912		9- 1/2 "						
HL GM010		10 "						
HL GM011		11 "						
HL GM012		12 "						
HL GM013		13 "						
HL GM014		14 "						
HL GM015		15 "						
HL GM016		16 "						
HL GM018		18 "						

For **SI**: 1 inch = 25.4 mm.

1 For purposes of measuring overall fastener length, countersinking type shall be measured from top of head to bottom of tip. Washer type shall be measured from underside of head to bottom of tip.

2 Length of thread includes tip. See detailed illustration.

3 Unthreaded shank diameters are shown in table with manufacturing tolerances in brackets [].

4 Bending yield strength determined per methods specified in ASTM D1575.

5 Fastener installation and design values require complete threaded portion to be embedded in the holding member.

6 Fastener bending yield strength is determined by the 5% diameter (0.05D) offset method of analyzing load-displacement curves developed from bending tests.

7 Analyze as a reduced body diameter fastener (thread root diameter<unthreaded shank diameter<thread major diameter).

8 The allowable tensile or shear design load, per AC233, is the average maximum test load divided by a safety factor of 3.

** Asterisked fastener lengths have not been tested. Listed values are based on NDS calculation.*

Note: The values presented in this table are supported by tests performed on the TimberLok fastener.

THIS PRELIMINARY DATA IS PREPARED PER ICC-ES AC233. At time of printing, testing is incomplete.

FastenMaster® Series Threaded Wood Fasteners

Table 2: Dowel Bearing Strength (psi)

Test results are the 5% offset value.

Fastener Designation	Direction of Loading	Calculated Dowel Bearing Strength per Regression Equations 0.67	0.55	0.5	0.46	0.43	0.36	0.31
HeadLok® Fasteners	Parallel to Grain	7945	6160	5600	5152	4816	4032	3472
	Perpendicular. to Grain	7945	5897	5136	4551	4127	3190	2568
Wet Service Factor, Cm, for lateral loads	*Parallel to Grain*	*0.7*	*0.7*	*0.7*	*0.6*	*0.6*	*0.6*	*0.6*
	Perpendicular. to Grain	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.8*

Fe for OSB (G=0.50) = 4650 psi per Table 11.3.2B of the NDS.

Note: The values presented in this table are calculated according to AC233 and supported by tests performed on the TimberLok fastener in solid wood and may not apply to panel products such as OSB or plywood.

Table 3: Direct Withdrawal Design Values (W)

(Tabulated withdrawal design values (W) are in pounds per inch of thread penetration into side grain of main member.)

Fastener Designation	W (lbs./in.) for Specific Gravities of 0.67	0.55	0.5	0.46	0.43	0.36	0.31
HeadLok® Fasteners all lengths	264	196	170	150	136	104	83
Wet Service Factor, Cm, for withdrawal loads	*0.7*	*0.7*	*0.6*	*0.6*	*0.6*	*0.6*	*0.7*
NDS Equation used to calculate design values	11.2-1	11.2-1	11.2-1	11.2-1	11.2-1	11.2-1	11.2-1

For **SI**: 1 inch = 25.4 mm.

1. Values shall be multiplied by all applicable adjustment factors (see NDS).
2. Embedded thread length is that portion held by the main member (including tip).

Note: The values presented in this table are calculated according to AC233 and supported by tests performed on the TimberLok fastener.

Table 4: Pull-Through Design Values (P) *{based on LedgerLok head design}***

(Tabulated pull-through design values (P) are in pounds per inch through side member.)

Fastener Designation	Thread Length, L	W (lbs./in.) for Specific Gravities of 0.67	0.55	0.5	0.46	0.43	0.36	0.31
HeadLok® Fasteners all lengths	all lengths	471	299	243	206	181	133	108

For **SI**: 1 inch = 25.4 mm.

1. Values shall be multiplied by all applicable adjustment factors (see NDS).
2. Embedded thread length is that portion held by the main member (including tip).

*** The values presented in this table are from pull-through tests performed on the LedgerLok fastener.*

Table 5A: Lateral Design Values (Z) for Single Shear (two member) Connections with Loading Parallel to Grain

(Tabulated lateral design values (Z) are in pounds per fastener into main member of sawn lumber or SCL and side member of 7/16" OSB)

Fastener Designation	Side Member Thickness, t_s	Fastener Penetration, p	Z (lbs.) for Single Shear (Two Member) Connections Loaded Parallel to the Grain for Specific Gravities of 0.67	0.55	0.5	0.46	0.43	0.36	0.31
HeadLok® Fasteners All lengths	7/16"	2 "	158	158	158	158	158	156	140

For **SI**: 1 inch = 25.4 mm.

1 Values shall be multiplied by all applicable adjustment factors (see NDS).

2 Embedded thread length is that portion held by the main member (including tip).

3 For Sawn Lumber or SCL with both members of identical specific gravity. SCL is Structural Composite Lumber (Laminated Veneer Lumber - LVL and Parallel Strand Lumber - PSL). This group also includes all OSB, Structural I plywood, and marine grade plywood panels.

4 p = depth of fastener penetration into wood member, in.

Note: These values are calculated according to AC233 and supported by tests performed on the TimberLok fastener.

FastenMaster® Series Threaded Wood Fasteners

Table 5B: Lateral Design Values (Z) for Single Shear (two member) Connections with Loading Perpendicular to Grain

(Tabulated lateral design values (Z) are in pounds per fastener into main member of sawn lumber or SCL and side member of 7/16" OSB)

Fastener Designation		Side Member Thickness, t_s	Fastener Penetration, p	Z (lbs.) for Single Shear (Two Member) Connections Loaded Perpendicular to the Grain for Specific Gravities of						
				0.67	0.55	0.5	0.46	0.43	0.36	0.31
HeadLok® Fasteners	All lengths	7/16"	2 "	158	158	158	158	158	120	80

For **SI**: 1 inch = 25.4 mm.

1 Values shall be multiplied by all applicable adjustment factors (see NDS).

2 Embedded thread length is that portion held by the main member (including tip).

3 For Sawn Lumber or SCL with both members of identical specific gravity. SCL is Structural Composite Lumber (Laminated Veneer Lumber - LVL and Parallel Strand Lumber - PSL). This group also includes all OSB, Structural I plywood, and marine grade plywood panels.

4 p = depth of fastener penetration into wood member, in.

Note: These values are calculated according to AC233 and supported by tests performed on the TimberLok fastener.

Table 6: Connection Geometry

Connection Geometry / Criteria	Diameters	Requirement
Minimum Edge Distance (2.5 diameters per NDS Commentary Table C11.	8	1 9/16"
From Edge (4 diameters per NDS Table 11.5.1A), loaded ec	8	1 9/16"
Minimum End Distance, tension load parallel to grain (per NDS Comment	15	2 7/8 "
compression load parallel to grain (NDS Comm. Table C11.	10	1 15/16"
Spacing (pitch) between fasteners in a row, parallel to grain:	15	2 7/8 "
perpendicular to grain:	10	1 15/16"
Spacing (gage) between rows of fasteners, in-line	5	1 "
staggered	2.5	1/2 "
Minimum penetration into the main member for single shear connections	6	1 3/16"

Note: For panels, use recommended edge distance of panel manufacturer.