



Inchcape Testing Services

Warnock Hersey

211 Schoolhouse Street, Coquitlam, B.C. V3K 4X9 Canada

Telephone (604) 520-3321

Fax (604) 524-9186

REPORT OF: Product Evaluation

AT: Coquitlam Laboratory

PROJECT: 484-5203

REPORTED TO: Turncraft
8399 - 14th Street
P.O. Box 2429
White City, Oregon 97503

Attention: Mr. Forrest Collins

DATE: May 30/94

REPORT NO: 1/94

ORDER NO:

Page: 1 of 5

INTRODUCTION

Warnock Hersey, at the request of Cascade Wood Products Inc. (Turncraft), has conducted testing on fluted wood columns and column bases as submitted to our Coquitlam laboratory.

PRODUCT DESCRIPTION

The following three styles of wood columns were axial load tested:

- Tuscan fluted column 6" nom. base diameter x 4' nom. height (2 tested)
- Fluted house column w/plug 8" nom. base diameter x 4' nom. height (3 tested)
- Fluted house column w/plug 10" nom. base diameter x 4' nom. height (3 tested)

The following five bases were tested in compression:

- Polyurethane 20" House Cap A (one tested)
- Polyurethane 24" House Base A (one tested)
- Fiberglass 22" House Base A (one tested)
- Fiberglass 24" Roman Doric Base B (one tested)
- Fiberglass 24" Roman Doric Base C (Marble) (one tested)

The following three column sections were tested for vacuum pressure delamination:

- Redwood Column Samples A, B, C
 - A - 8" OD nom. round x 1 3/4" nom. wall thickness 10 sections/glue lines
 - B - 8 1/2" OD octagonal x 2" nom. wall thick. 8 sections/glue lines
 - C - 12 1/4" OD octagonal x 1 3/4" nom. wall thick. 12 sections/glue lines

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PRODUCT DESCRIPTION - Continued

- Pine Column Samples Old glue
 - Old #1 Top - 7" OD nom. round x 1" nom. wall thick. 9 sections/glue lines
 - Old #1 Bottom - 7" OD nom. round x 1" nom. wall thick. 9 sections/glue lines
 - Old #2 Top - 6½" OD nom. round x 1" nom. wall thick. 12 sections/glue lines
 - Old #2 Bottom - 6½" OD nom. round x 1" nom. wall thick. 12 sections/glue lines
 - Old #3 Top - 6¾" OD nom. round x 1" nom. wall thick. 9 sections/glue lines
 - Old #3 Bottom - 6¾" OD nom. round x 1" nom. wall thick. 9 sections/glue lines

- Pine Column Samples Resorcinol glue
 - New #1 Top - 7½" OD nom. round x 1" nom. wall thick. 11 sections/glue lines
 - New #2 Top - 7½" OD nom. round x 1" nom. wall thick. 11 sections/glue lines
 - New #2 Bottom - 7½" OD nom. round x 1" nom. wall thick. 11 sections/glue lines
 - New #3 Top - 7" OD nom. round x 1" nom. wall thick. 11 sections/glue lines
 - New #3 Bottom - 7" OD nom. round x 1" nom. wall thick. 11 sections/glue lines

TEST RESULTS

Axial Load Tests on Fluted Wood Columns:

Sample Description	Ultimate Load (lbs)	Observations
Small Column - Base Dia. of 5¾"		
Tuscan 6" x 44" Sample No. 1	50,000	Samples split vertically as well as top section deformed.
Sample No. 2	44,100	
Mid-Size Fluted Column - Base Dia. of 7½"		
8" x 53" House Column Sample No. 1	10,000	Top section centre shattered.
Sample No. 2	10,900	
Sample No. 3	12,100	
Large Fluted Column - Base Dia. of 9"		
10" x 52" House Column Sample No. 1	20,600	Samples split vertically with top section crushed.
Sample No. 2	20,600	
Sample No. 3	20,700	

TEST RESULTS - Continued

Compressive Load Tests on Bases:

The five column bases were tested in compression over the top surface area of the base to a maximum capacity of 25,000 lbs.

SAMPLE DESCRIPTION	SURFACE AREA (IN ²)	LOAD (LBS)	OBSERVATIONS
Polyurethane House Cap A 20" x 20" x 6" High nom.	109	25,000	No signs of failure.
Polyurethane House Base A 24" x 24" x 6" High nom.	171	25,000	No signs of failure.
Fibreglass House Base A 22" x 22" x 6" High nom.	80	25,000	No signs of failure.
Fibreglass Roman Doric Base B 24" x 24" x 9¾" High nom.	106	25,000	No signs of failure.
Fibreglass Roman Doric Base C 24" x 24" x 9¾" High nom.	106	25,000	No signs of failure.

Vacuum-Pressure Cycle Test:

The submitted column specimens for the vacuum-pressure cycle were tested in accordance with CAN/CSA-O177-M89 Structural Glued-Laminated Timber as follows:

1. The specimens were immersed in water at room temperature (18°-27°C) in the autoclave.
2. A vacuum of 0.085 MPa (25" mercury) was drawn and held for 2 hours.
3. A pressure of 0.515 MPa (75 psi) was applied for 2 hours.
4. The 2 hour vacuum and 2 hour pressure cycles were repeated.
5. The specimens were dried for a period of 88 hours in air at 27° ± 3°C and 25 - 30% Rh moving at a velocity of 60-90 m/min (approx. 200-300 feet/min).
6. The above steps 1 through 5 were repeated twice constituting three complete cycles.

Following the first cycle the following observations were made:

Redwood Column Samples A, B, C:

- A - no delamination of glue joints
- B - no delamination of glue joints
- C - no delamination of glue joints



Warnock Hersey

WARNOCK HERSEY PROFESSIONAL SERVICES LTD.
211 SCHOOLHOUSE ST., COQUITLAM, BRITISH COLUMBIA
CANADA V3K 4X9 - TELEPHONE: (604) 520-3321
TELEX: ENVOY WPM 8076 - TELECOPIER: (604) 524-9186

May 10, 1991

Turncraft
A Division of Cascade Wood Products Inc.
P.O. Box 2429
White City, Oregon 97503
U.S.A.

Attention: Mr. Forrest Collins

Dear Sir,

Re: Axial Load Capacity of Turncraft 10 inch Diameter Columns

Warnock Hersey has conducted Compressive Axial Load testing on Turncraft 10 inch diameter Ponderosa Pine Wood columns. The test results are included in our report to Turncraft dated April 10, 1991, (see attachment).

Based on the test results obtained by Warnock Hersey, we have determined a load capacity for the Turncraft 8 foot high, 10 inch diameter Ponderosa Pine wood columns.


AXIAL COMPRESSIVE LOAD CAPACITY - 10,575 lbs.

The load capacity is based on the lowest test result obtained divided by a safety factor of (4). The columns tested were made of Ponderosa Pine staves laminated together using National Casien Type I waterproof adhesive.

If you have any questions or require any further information, please contact us.

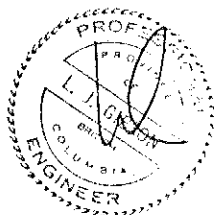
Yours truly,

WARNOCK HERSEY PROFESSIONAL SERVICES LTD.


Lawrence Gibson, P.Eng.
Laboratory Manager

LG/cr

Encl.





REPORT OF: Axial Load Testing

AT: Coquitlam Laboratory

DATE April 10/91

PROJECT: 50484-C7-766500

REPORT NO: 1/91 Rev.

REPORTED TO: Turncraft
 A Division of Cascade Wood Products Inc.
 P.O. Box 2429
 White City, Oregon 97503
 U.S.A.

ORDER NO.

Revised: April 26, 1991
 Attention: Mr. Forrest Collins

INTRODUCTION

As requested, we have conducted Axial Load tests on seven wood columns of varying diameter and length submitted to our Coquitlam Laboratory by Turncraft.

TEST RESULTS

SAMPLE	PRODUCT CODE	SIZE	FAILURE LOAD (lbs)	WOOD TYPE	ORDER OF TESTING
1	1068	6" dia. x 8' lg	26,100	Ponderosa Pine	5
2	1068	6" dia. x 8' lg	18,100	Ponderosa Pine	6
3	1088	8" dia. x 8' lg	26,100	Ponderosa Pine	3
4	1088	8" dia. x 8' lg	76,800	Red Fir	2
5	1110	10" dia. x 8' lg	52,500	Ponderosa Pine	1
6	1110	10" dia. x 8' lg	42,300	Ponderosa Pine	4
7	1112	10" dia. x 12' lg	44,400	Ponderosa Pine	7

OBSERVATIONS

Column bases were crushed when loaded to approximately 80% of the failure load. Columns failed when cracks developed between staves and wood split longitudinally.

WARNOCK HERSEY PROFESSIONAL SERVICES LTD.

Ken Zeleschuk
 Technician
 Materials Testing Division

KZ/cr

United States Testing Company, Inc.

Engineering Services Division
291 FAIRFIELD AVENUE - FAIRFIELD, NEW JERSEY 07006 - 201-575-5252

REPORT OF TEST

CLIENT: Fypon, Inc.
P.O. Box 365
22 West Pennsylvania Ave.
Stewartstown, PA 17363

Number - 94177A
September 8, 1986

SUBJECT: Physical Properties

REFERENCE:

Fypon, Inc., Purchase Order #4100, dated July 21, 1986.

SAMPLE IDENTIFICATION:

Three (3) samples of caps and bases were submitted and identified by the Client as:

- 1) 16" Cap and Base
- 2) 18" Cap and Base
- 3) 20" Cap and Base

TEST PERFORMED:

The submitted samples were tested for Compression Properties in accordance with Standard Laboratory Procedure.

Testing Supervised by:

Frank De Santis
Project Engineer

SIGNED FOR THE COMPANY

Frank Pepe
Assistant Vice President

Laboratories in - New York - Chicago - Los Angeles - Richland - Tulsa - Modesto - Orlando

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United States Testing Company, Inc.

Engineering Services Division

291 FAIRFIELD AVENUE - FAIRFIELD, NEW JERSEY 07006 - 201-575-5252

REPORT OF TEST

CLIENT: **Fypon, Inc.**
P.O. Box 365
22 West Pennsylvania Ave.
Stewartstown, PA 17363

Number - 94177A
September 8, 1986

TEST RESULTS

<u>Sample</u>	<u>Ultimate Compressive Strength</u>
1) a) Base	46,050 lbs
b) Cap	47,200 lbs
2) a) Base	51,400 lbs
b) Cap	52,400 lbs
3) a) Base	66,800 lbs
b) Cap	72,200 lbs

**Warnock Hersey Professional Services Ltd.**

211 Schoolhouse St., Coquitlam, B.C. V3K 4X9 - (604) 520-3321 - Telex 04-351404

REPORT OF: Axial Load Tests
AT: Coquitlam Laboratory
PROJECT: Porch Posts
REPORTED TO: B.W. Creative Wood Ind. Ltd.
23282 River Road
Maple Ridge, B.C.
V2X 7H6

FILE NO. 50484-07-5070
DATE April 6, 1987
REPORT NO. 1/87
ORDER NO.

INTRODUCTION:

As requested, we have conducted Axial Load tests on nine samples of Wooden Porch Posts submitted to our laboratory by B.W. Creative Wood Ind. Ltd.

The maximum axial load capacities were determined for the following samples of porch posts:

1. #3049 - 3 3/8 inch square base, 9 foot post
3 samples
2. #3059 - 4 1/4 inch square base, 9 foot post
3 samples
3. #3069 - 5 1/4 inch square base, 9 foot post
2 samples
4. #3168 - 5 1/4 inch square base, 8 foot post
1 sample

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Warnock Hersey Professional Services Ltd.

B.W. Creative Wood Ind. Ltd.
Report No. 1/87
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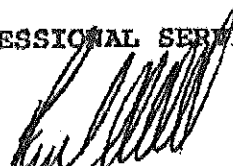
TEST RESULTS:

<u>SAMPLE</u>	<u>ULTIMATE LOAD</u>
3049-1	11,400 lbs.
3049-2	10,255 lbs.
3049-3	10,535 lbs.
3059-1	20,360 lbs.
3059-2	22,600 lbs.
3059-3	19,800 lbs.
3069-1	27,100 lbs.
3069-2	25,400 lbs.
3168-1	22,045 lbs.

Note: These results are the maximum ultimate compressive axial load, no safety factor has been applied.

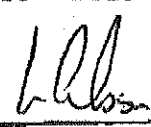
WARNOCK HERSEY PROFESSIONAL SERVICES LTD.

Reported by:



P. Arnold,
Technician

Reviewed by:



For F. Mawani, P. Eng.,
Manager
Field Inspections and Physical Testing

PA/tr/87.04.08

480.D1.PC

cc: Charlie Chow



REPORT OF: Wood Column Testing

AT: Coquitlam Laboratory

DATE April 27/92

PROJECT: 50484-C7-810000

REPORT NO: 1/92

REPORTED TO: Turncraft
 A Division of Cascade Wood Products Inc.
 P.O. Box 2429
 White City, Oregon
 U.S.A. 97503

ORDER NO.

Attention: Mr. Forrest Collins


INTRODUCTION

As requested, we have conducted Wood Column testing on twelve wood columns submitted to our Coquitlam Laboratory by Turncraft.

TEST RESULTS

SAMPLE IDENTIFICATION	LENGTH	BREAKING STRENGTH (LBS)	OBSERVATIONS
1. N148	8'	11,200	Spindle/wood joint failure
2. N148	8'	10,100	Spindle failure
3. N158	8'	22,300	Spindle failure
4. N158	8'	22,800	Spindle/wood joint failure
5. N168	8'	26,000	Stave failure
6. N168	8'	26,600	Cracking between staves
7. N149	9'	3,800	Wood joint failure
8. N149	9'	5,900	Spindle failure
9. N159	9'	16,000	Cracking between staves
10. N159	9'	12,300	Spindle failure
11. N169	9'	21,300	Spindle failure
12. N169	9'	20,200	Spindle failure

WARNOCK HERSEY PROFESSIONAL SERVICES LTD.


 Ken Zeleschuk, A.Sc.T.
 Technologist
 Materials Testing Division

KZ/gr