

**PERFORMANCE TEST REPORT**

Rendered to:

**UNA-CLAD**  
1405 North Highway 169  
Minneapolis, Minnesota 55441-5029Report No: ATI-15336-N  
Test Dates: 03/03/95  
Through: 03/10/95  
Report Date: 05/01/95**Product:** UC 500 Flush Wall Panel System by Una-Clad**Scope:** Architectural Testing, Inc. (ATI) was contracted by Una-Clad to conduct air infiltration, water penetration and structural performance testing of a UC 500 flush wall mock-up fabricated by Una-Clad.**Test Procedure:**

ASTM E 283-91, *"Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors."*

Air infiltration testing was conducted at 25 mph (1.56 psf) and 50 mph (6.24 psf). Air flow was measured through the seam portion only of the mock-up. Perimeter conditions were eliminated from the test area through a chamber loss procedure. Air infiltration results are reported in cubic feet of air per minute (cfm) per linear foot of standing seam and per square foot of roof area.

The mock-ups were tested with the seam sealed and unsealed, as they may be in standard installation practices.

Water Penetration, ASTM E 331-86, *"Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference."*

Water penetration testing was conducted at a static positive pressure difference of 10.5 psf (64.9 mph wind velocity). Water was applied to the exterior at the rate of 5 gph/ft<sup>2</sup>, equivalent to an 8" per hour rain. The test duration in each case was 15 minutes. Mock-ups were installed in a vertical position during testing. Observations for water entry were limited to the seam areas only. The back side of all test samples was visible from the interior, so that accurate observations for water leakage could be made.

Structural Performance, ASTM E 330-90, *"Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference."*

Structural load testing was conducted in positive (high pressure on exterior) and negative (high pressure on interior) directions starting at 30 psf and progressing in 10 to 15 psf increments to a maximum of 105 psf positive and negative (aluminum) and 60 psf positive and negative (steel). Pan deflection was measured between the 12" wide panel ribs.

All structural load testing was conducted without plywood backup, therefore, all loads were applied directly to the standing seam cladding system.

**Test Procedure (Continued)**

**Mock-up Description:**

The mock-up measured 48" wide by 68-3/4" high and contained four typical maximum panel widths of 12" each.

The framing system for each mock-up contained nominal 2" by 6" 18-gauge steel studs spaced 16" on center. 18-gauge purlins were positioned perpendicular to the steel studs and were spaced approximately 24" on center. Each purlin was secured to the steel studs with two 5/8" sheetmetal screws.

Each panel was secured through the panel flange at each purlin/panel joint. Flanges were secured with one 5/8" self-tapping sheetmetal screw.

**Panel Description:**

UC 500 aluminum consisted of nominal 0.038" thick painted aluminum.

UC 500 steel consisted of 24-gauge nominal 0.027" painted steel.

Metal was roll-formed in nominal 12" widths and utilizes an interlocking connection at panel joints. Sealant consists of butyl applied during the roll-forming process.

**Test Results:**

**Product: UC 500**

**Air Infiltration:**

Test Condition: UC 500 panels installed directly over purlins.

<u>Seamed Sealed</u>	25 mph		50 mph	
	<u>cfm/ft</u>	<u>cfm/ft<sup>2</sup></u>	<u>cfm/ft</u>	<u>cfm/ft<sup>2</sup></u>
No	0.07	0.07	0.17	0.17
Yes	0.03	0.03	0.11	0.11

**Water Penetration:**

Test Condition: UC 500 panels installed directly over purlins.

Test Pressure: 10.5 psf

Test Condition: Seam Sealed

Results: No entry

Test Condition: Seam Unsealed

Results: No entry

**Test Results (Continued)****Structural Performance:**

Test Condition: UC 500 panels installed directly over purlins.

Product: UC 500 aluminum 0.038"

<u>Test Pressure</u>	<u>Pan Deflection</u>	<u>Observations</u>
30 psf positive	0.430"	No change
30 psf negative	0.380"	No change
45 psf positive	0.900"	No change
45 psf negative	0.540"	0.07" permanent set
60 psf positive	0.970"	No change
60 psf negative	0.720"	0.14" permanent set
75 psf positive	0.989"	0.060" permanent set
75 psf negative	0.870"	0.210" permanent set
90 psf positive	1.151"	0.060" permanent set
90 psf negative	0.980"	0.180" permanent set
105 psf positive	1.225"	0.075" permanent set
105 psf negative	1.248"	0.350" permanent set

Testing was terminated at 105 psf with panel seams separating while attempting high loads.


Product: UC 500 steel 24 gauge nominal 0.027"

<u>Test Pressure</u>	<u>Pan Deflection</u>	<u>Observations</u>
30 psf positive	0.510"	No change
30 psf negative	0.500"	No change
45 psf positive	0.630"	0.040" permanent set
45 psf negative	0.690"	0.060" permanent set
60 psf positive	0.950"	0.040" permanent set
60 psf negative	0.900"	0.280" permanent set

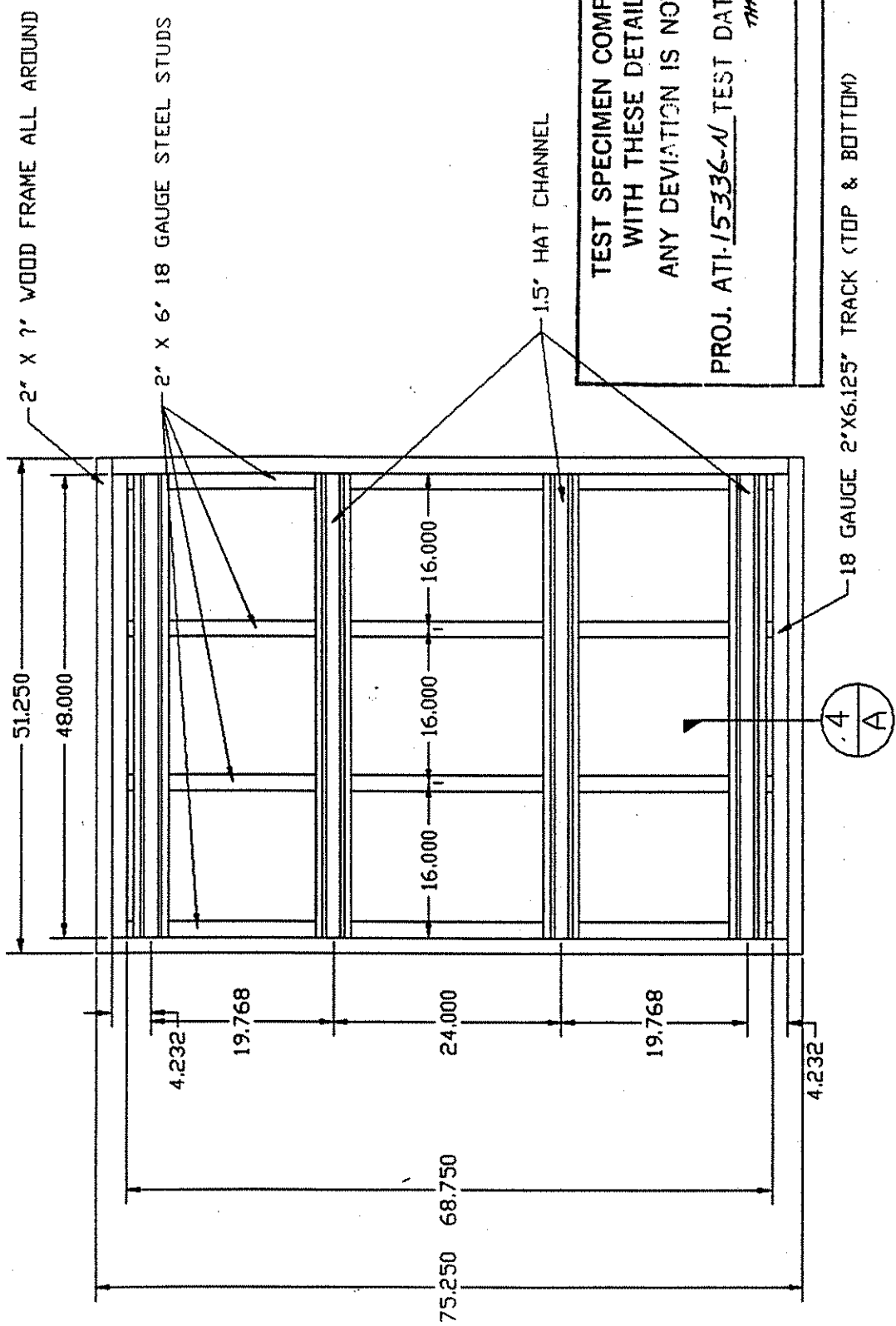
Testing was terminated at 60 psf with panel seams separating at 75 psf negative.

A copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein and is applicable to the samples tested. Results obtained are tested values and do not constitute an opinion nor endorsement by this laboratory.

ARCHITECTURAL TESTING, INC.

  
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Daniel P. Braun  
Regional Manager

DPB/jb  
15336-N



TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.

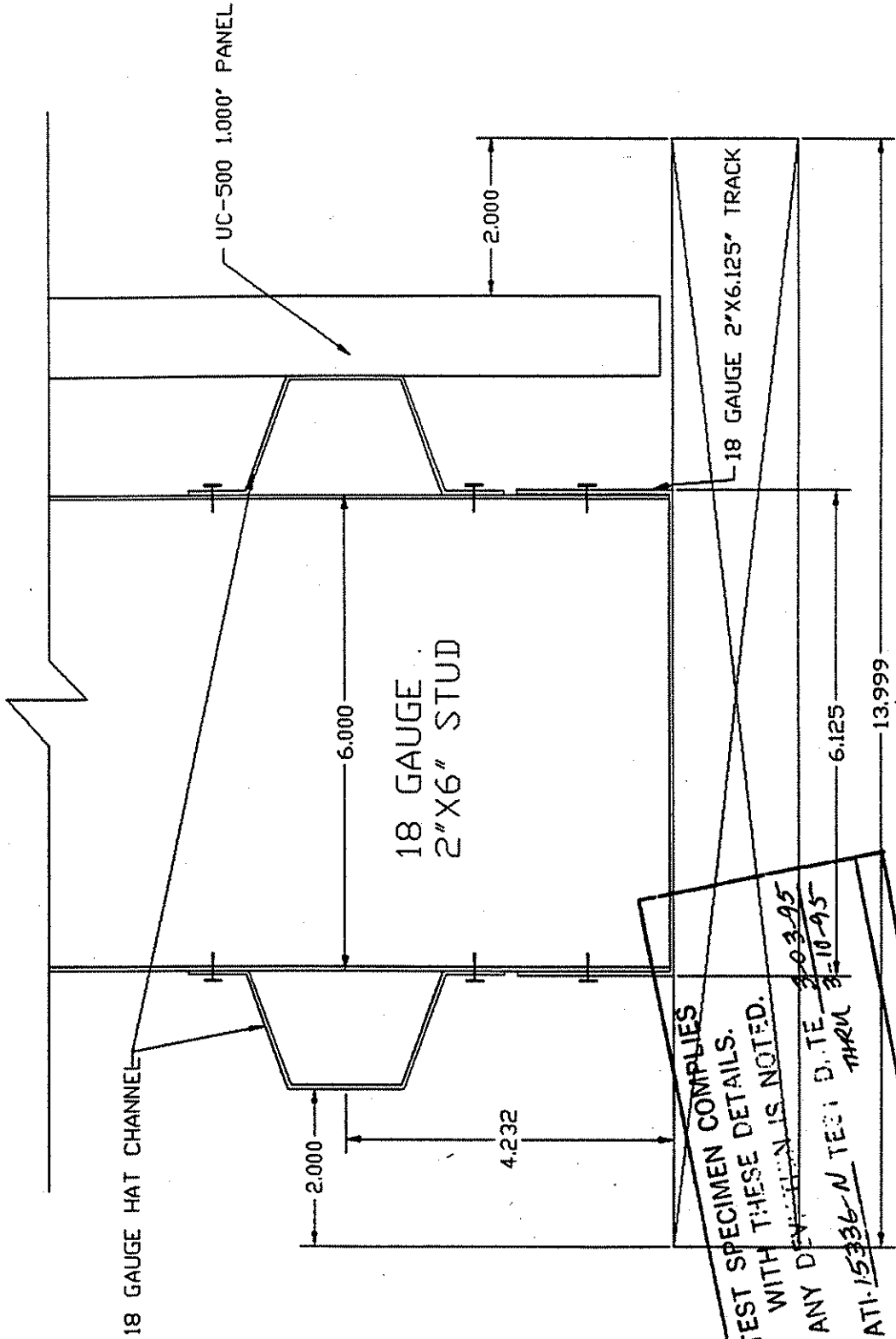
PROJ. ATI-15336-N TEST DATE 3-03-95 THRU 3-16 5

18 GAUGE 2'X6.125' TRACK (TOP & BOTTOM)

QTY. 2 OF UC-500 FRAME

SCALE 1=16

CUSTOMER NAME:	FINISH:	<p>COPPER SALES, INC. UNA • CLAD SETTING THE STANDARDS 1-800-426-7737</p>
JOB NUMBER:	DATE: 11-29-94	
THICKNESS:	DRAWING NUMBER: FRA4	
MATERIAL:	PAGE NUMBER: 4	




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SECTION 4A FOR UC-500 FRAME

SCALE 1=2

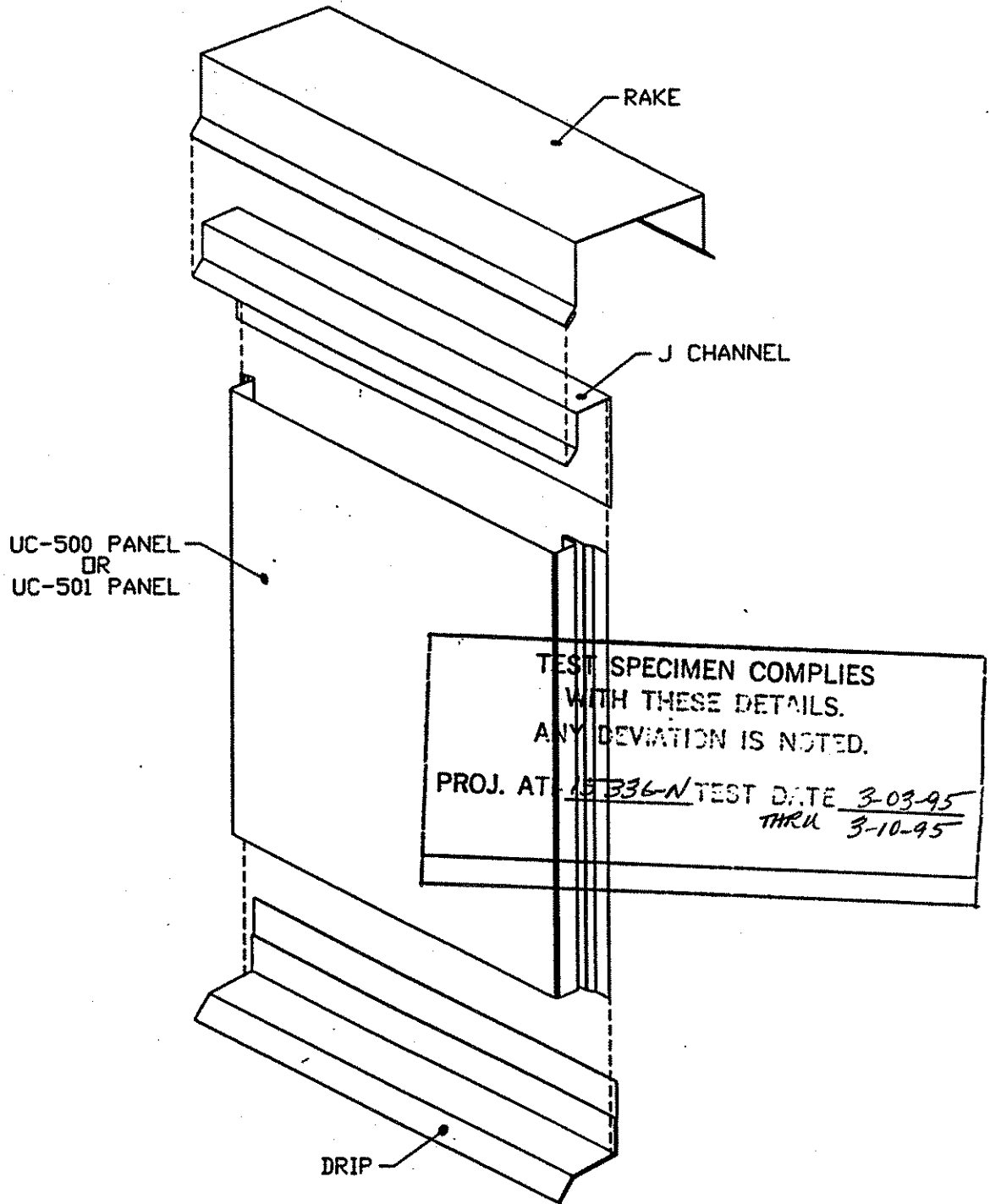
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## UC-500 & UC-501



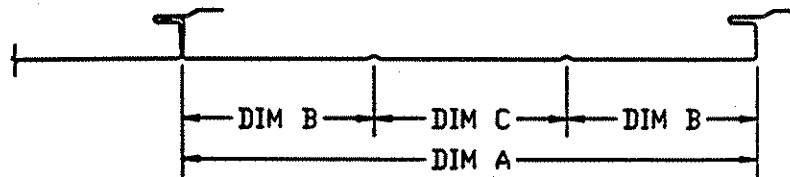
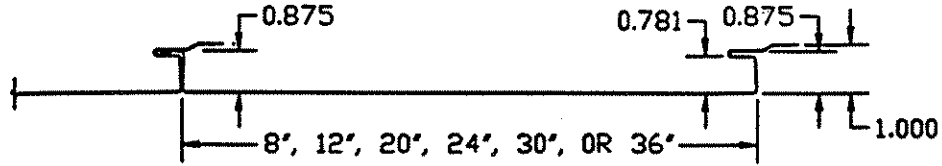
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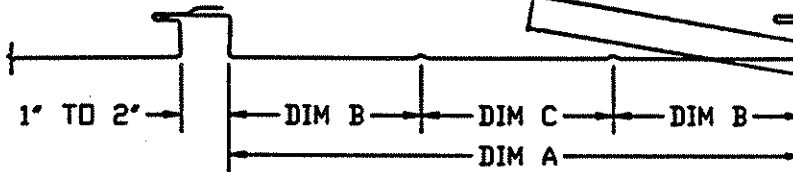
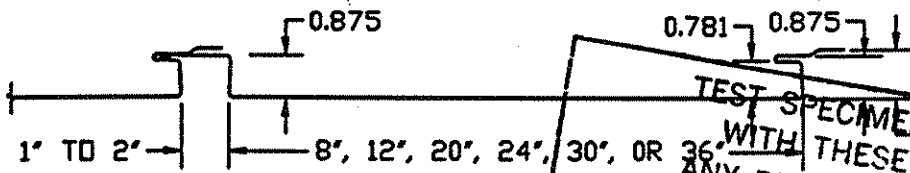
COPPER SALES, INC.

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## UC-500



## UC-501



TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.  
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DIM A	DIM B	DIM C
8	2	4
12	4	4
20	6	8
24	8	8
30	10	10
36	12	12

# HORIZONTAL SECTION