

**City of Portland, Maine – Building or Use Permit application** 389 Congress Street, 04101, Tel: (207) 874-8703, FAX: 874-8716

|  |  |  |  |   |  |
|--|--|--|--|---|--|
| Location of Construction:<br>118 Johnson Rd  |  | Owner:<br>Transport Leasing Corp             |  | Phone:  | Permit No: 970882                      |
| Owner Address:   |  | Lessee/Buyer's Name:<br>Time Warner Cable    |  | Phone:  | Business Name:                         |
| Contractor Name:<br>Allied Construction  |  | Address:<br>P.O. Box 1396 Portland, ME 04104 |  | Phone:<br>772-2888  |  |
| Past Use:<br>Office  |  | Proposed Use:<br>Same                        |  | <b>COST OF WORK:</b><br>\$ 78,000.00  | <b>PERMIT FEE:</b><br>\$ 410.00        |
|  |  |  |  | <b>FIRE DEPT.</b> <input type="checkbox"/> Approved<br><input type="checkbox"/> Denied  | <b>INSPECTION:</b><br>Use Group: Type: |
|  |  | Signature:                                   |  | Signature:  |  |
| Proposed Project Description:<br>Make Exterior Renovations (Facade)<br>New Roof Member |  |  |  | <b>PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)</b>  |  |
|  |  |  |  | Action: <input type="checkbox"/> Approved<br><input type="checkbox"/> Approved with Conditions<br><input type="checkbox"/> Denied |  |
|  |  |  |  | Signature: Date:  |  |
| Permit Taken By:<br>Mary Gresik  |  | Date Applied For:<br>13 August 1997          |  |   |  |

**PERMIT ISSUED**  
Permit Issued:  
AUG 15 1997  
**CITY OF PORTLAND**

Zone: CBL: 214-A-A-007  
Zoning Approval:  
**Special Zone or Reviews:**  
 Shoreland  
 Wetland  
 Flood Zone  
 Subdivision  
 Site Plan maj  minor  mm

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal rules.
2. Building permits do not include plumbing, septic or electrical work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..

**Zoning Appeal**  
 Variance  
 Miscellaneous  
 Conditional Use  
 Interpretation  
 Approved  
 Denied

**Historic Preservation**  
 Not in District or Landmark  
 Does Not Require Review  
 Requires Review

**Action:**  
 Approved  
 Approved with Conditions  
 Denied

Date: 8/14/97  
K. J. [Signature]

**CERTIFICATION**

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provisions of the code(s) applicable to such permit

SIGNATURE OF APPLICANT: Paul Laliberry  
ADDRESS: DATE: 13 August 1997 PHONE:

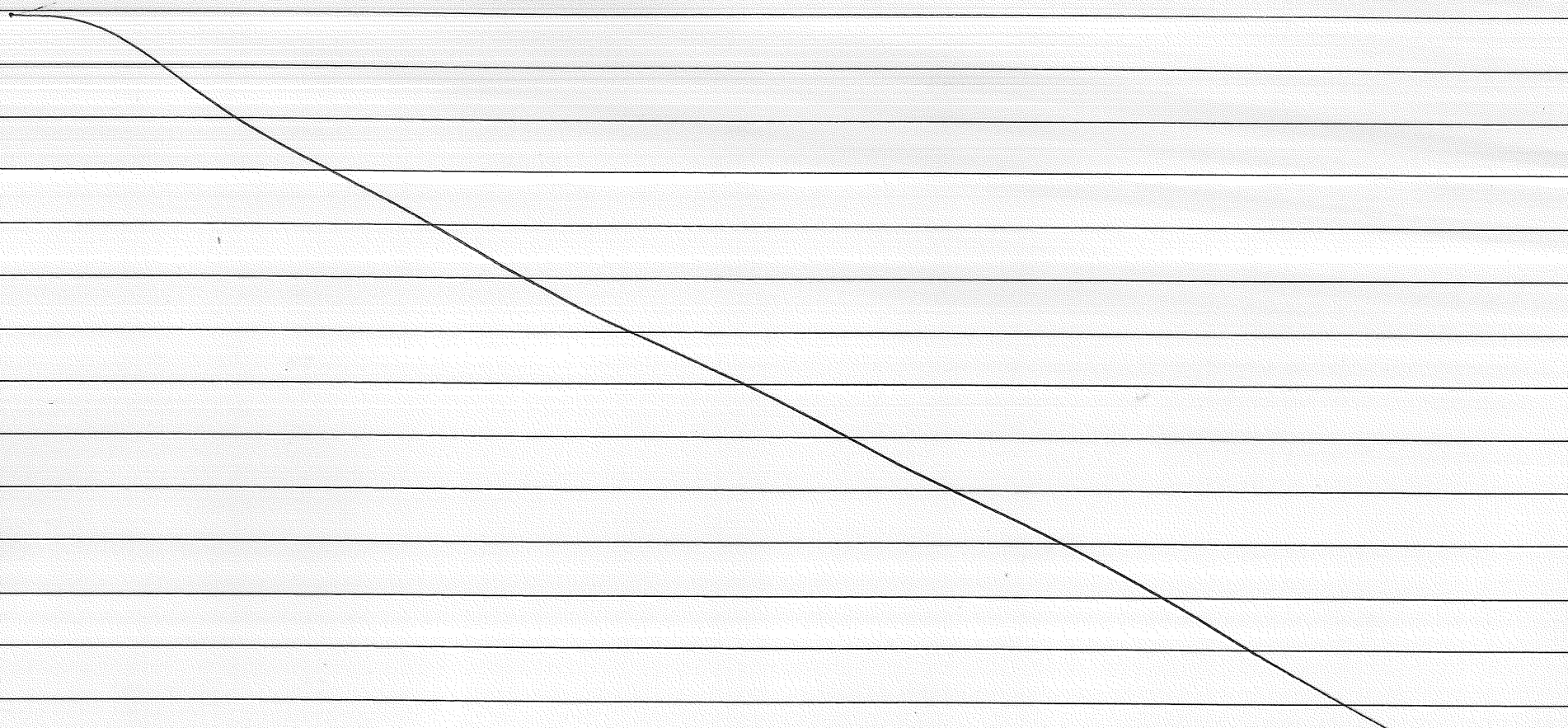
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE PHONE:

White-Permit Desk Green-Assessor's Canary-D.P.W. Pink-Public File Ivory Card-Inspector

CEO DISTRICT 4

COMMENTS

10.9.97 Have decided to put 2x4 metal studs 24" o.c. in lieu of 16" o.c. to increase the # of anchors to every 2'-0. 2 rows (sills) of PTreated lumber on top of joists. Discussed roofing membrane.



|             | Type  | Inspection Record | Date  |
|-------------|-------|-------------------|-------|
| Foundation: | _____ | _____             | _____ |
| Framing:    | _____ | _____             | _____ |
| Plumbing:   | _____ | _____             | _____ |
| Final:      | _____ | _____             | _____ |
| Other:      | _____ | _____             | _____ |

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| Location of Construction:<br>118 Johnson Rd  |  | Owner:<br>Transport Leasing Corp          |  | Phone:   | Permit No: <b>970882</b>               |
| Owner Address:   |  | Lessee/Buyer's Name:<br>Time Warner Cable |  | Phone:   | BusinessName:                          |
| Contractor Name:<br>Allied Construction  |  | Address:<br>P.O. Box 1396 Ptld, ME 04104  |  | Phone:<br>772-2888   |  |
| Past Use:<br>Office  |  | Proposed Use:<br>Same                     |  | <b>COST OF WORK:</b><br>\$ 78,000.00   | <b>PERMIT FEE:</b><br>\$ 410.00        |
|  |  |   |  | <b>FIRE DEPT.</b> <input type="checkbox"/> Approved<br><input type="checkbox"/> Denied | <b>INSPECTION:</b><br>Use Group: Type: |
| Proposed Project Description:<br>Make Exterior Renovations (Facade)<br>New Roof Member |  |   |  | <b>Signature:</b>  | <b>Signature:</b>                      |
| Permit Taken By:<br>Mary Gresik  |  | Date Applied For:<br>13 August 1997       |  |  |  |

**PERMIT ISSUED**  
AUG 15 1997  
**CITY OF PORTLAND**

**Zone:** B-4 **CBL:** 214-A-A-007  
 Zoning-Approval: *review of existing Bldg*  
**Special Zone or Reviews:**  
 Shoreland  
 Wetland  
 Flood Zone  
 Subdivision  
 Site Plan maj  minor  mm   
*PARTIALLY in So. Portland*  
**Zoning Appeal**  
 Variance  
 Miscellaneous  
 Conditional Use  
 Interpretation  
 Approved  
 Denied

- This permit application does not preclude the Applicant(s) from meeting applicable State and Federal rules.
- Building permits do not include plumbing, septic or electrical work.
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**CERTIFICATION**

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provisions of the code(s) applicable to such permit

*Paul LaLiberty*  
 SIGNATURE OF APPLICANT Paul LaLiberty ADDRESS: DATE: 13 August 1997 PHONE:

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE PHONE:

White-Permit Desk Green-Assessor's Canary-D.P.W. Pink-Public File Ivory Card-Inspector

**Historic Preservation**  
 Not in District or Landmark  
 Does Not Require Review  
 Requires Review

**Action:**  
 Approved  
 Approved with Conditions  
 Denied

Date: 8/14/97  
*K. Lalot*

**CEO DISTRICT** 4  
*A. Powers*

# REED & CO. ARCHITECTURE

30 PLEASANT STREET, PORTLAND, MAINE 04101  
207 871-5678 / FAX 207 871-5055

## TRANSMITTAL

To: Allied Const. Co.  
attn Paul LaLiberti

Date: 28 July '97

Fm: Dick Reed

Re: Time Warner

RECEIVED

JUL 29 1997

ALLIED CONSTRUCTION

### Transmitted herewith:

| Copies | Date        | Description   |
|--------|-------------|---|
| 3      | 7/1/97      | <sup>lots</sup> thru 505<br>Benchmark panel shop drawings<br>prepared by LYMO Const. Co. Inc. |
| 3      | 28 July '97 | SK-1A, SK-1B, SK-1C, SK-1D - elevator<br>tower elevations                                     |

For approval     For your use     As requested     For review and comment

### Remarks:

Color selected =  
Lilly Industries  
Formula No: 2@18M 20024  
Name: Sterling Silver  
Visulure 2

Copies to: Primer: 623L144





# LYMO

## CONSTRUCTION CO. INC.

METAL WALLS-METAL ROOFS-METAL CURTAIN WALL SYSTEMS

8 INDUSTRIAL PARK DR. UNIT #8, HOOKSETT, N.H. 03106  
PHONE (603) 626-8800 FAX (603) 626-8811

TO: ALLIED CONSTRUCTION CORP.  
8 U.S. ROUTE ONE  
SCARBOROUGH, ME. 04074  
PROJECT #97014

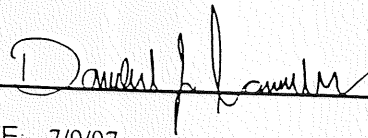
ATTN: PAUL LALIBERTY  
RE: TIME WARNER EXPANSION  
BIDDEFORD, MAINE  
PORTLAND

### SHOP DRAWING/ SAMPLE SUBMITTAL

ITEM NUMBER: 01 SUBMITTAL NUMBER: 01  
DESCRIPTION: SAMPLE PANELS - BENCHMARK \*  
MANUFACTURER: BENCHMARK  
SECTION: 07412 PARAGRAPH: 1.03A

LYMO CONSTRUCTION CO. INC. HAVING REVIEWED THIS SUBMITTAL, CERTIFIES THAT IT COMPLIES WITH THE CONTRACT DOCUMENTS FOR THIS PROJECT UNLESS OTHERWISE NOTED.

\* SENT UNDER SEPERATE COVER - DIRECT FROM BENCHMARK

BY:   
DATE: 7/9/97



TO: ALLIED CONSTRUCTION CORP.  
8 U.S. ROUTE ONE  
SCARBOROUGH, ME. 04074  
PROJECT #97014

ATTN: PAUL LALIBERTY  
RE: TIME WARNER EXPANSION  
BIDDEFORD, MAINE  
PORTLAND

**SHOP DRAWING/ SAMPLE SUBMITTAL**

ITEM NUMBER: 02 SUBMITTAL NUMBER: 01

DESCRIPTION: SHOP DRAWINGS

MANUFACTURER: LYMO

SECTION: 07412 PARAGRAPH: 1.03B

LYMO CONSTRUCTION CO. INC. HAVING REVIEWED THIS SUBMITTAL, CERTIFIES THAT IT COMPLIES WITH THE CONTRACT DOCUMENTS FOR THIS PROJECT UNLESS OTHERWISE NOTED.

BY: *Daniel J. Lamer*

DATE: 7/9/97



TO: ALLIED CONSTRUCTION CORP.  
8 U.S. ROUTE ONE  
SCARBOROUGH, ME. 04074  
PROJECT #97014

ATTN: PAUL LALIBERTY  
RE: TIME WARNER EXPANSION  
BIDDEFORD, MAINE  
PORTLAND,

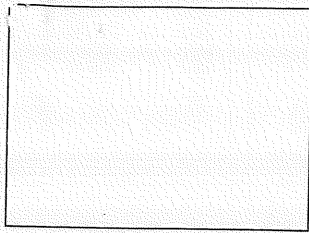
**SHOP DRAWING/ SAMPLE SUBMITTAL**

ITEM NUMBER: 03 SUBMITTAL NUMBER: 01  
DESCRIPTION: MANUFACTURERS LITERATURE  
MANUFACTURER: BENCHMARK  
SECTION: 07412 PARAGRAPH: 1.03c

LYMO CONSTRUCTION CO. INC. HAVING REVIEWED THIS SUBMITTAL, CERTIFIES THAT IT COMPLIES WITH THE CONTRACT DOCUMENTS FOR THIS PROJECT UNLESS OTHERWISE NOTED.

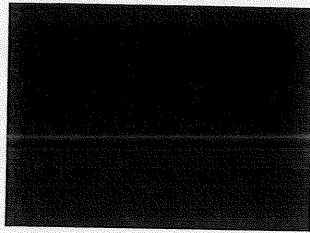
BY: *Daniel J. [Signature]*  
DATE: 7/9/97





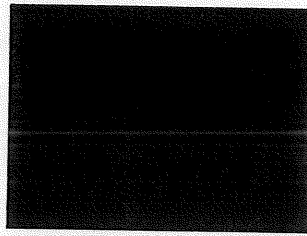
Regal White

6914



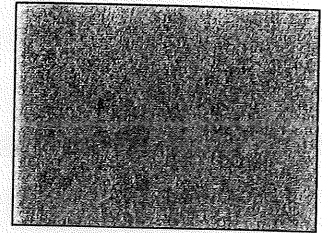
Seal Brown

6474



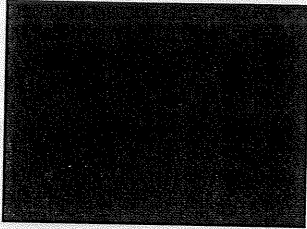
Slate Gray

6035



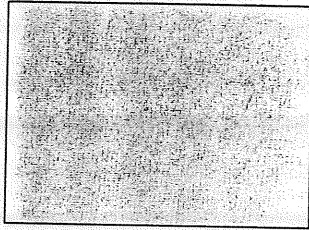
Surrey Beige

6448



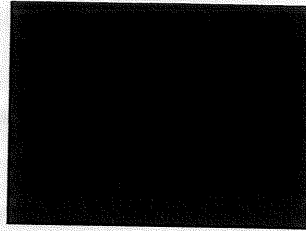
Heritage Blue

6288



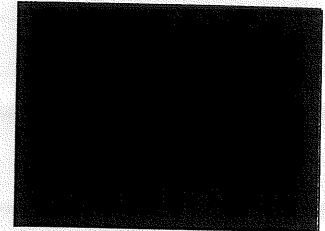
Sandstone

6115



Colonial Red

6433



Dark Bronze

6185

## EXTERIOR FINISHES

The standard finish for Benchmark wall panels is 70% KYNAR 500® resin. It is available in the eight standard colors shown, and in virtually any custom color in small or large quantities. Various other baked-on finish systems are available on request.

**Note:** Due to printing limitations, colors shown are approximate. For precise shades, contact Lamit Industries for actual color samples.

KYNAR 500® is a registered trademark of Elf Atochem North America, Inc.

## TWO-YEAR LIMITED WARRANTY

Lamit Industries, Inc. warrants its Benchmark Architectural Wall Panel Systems to be free from defects in materials and workmanship for a period of two (2) years from date of shipment to original purchaser. Lamit's liability is limited to replacement or purchase price of the original materials only. This warranty is void if panels are not installed in accordance with Lamit's currently published instructions, or are used in applications other than those referred to in manufacturer's current literature.

## TO OUR CUSTOMERS

Lamit Industries offers you all the advantages of a rapidly growing, customer-focused manufacturing company: creative flexibility, modern specialized equipment, and quick answers and decisions from experienced people who know how to serve your needs.

We believe Benchmark panels to be the finest on the market, and many buildings using these products have won design

awards. We are committed equally to both large and small projects, and in all cases work directly with architects, project managers, and owners to achieve the maximum in building design, value, and on-time service.

We want your business, and will welcome the opportunity to discuss the benefits of Benchmark wall panels for your next construction project.

# Benchmark

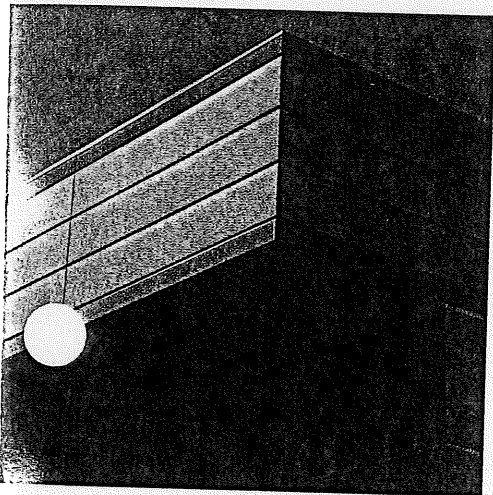
a Division of Lamit Industries, Inc.

## Architectural Wall Panel Systems

**Lamit Industries, Inc.**  
P.O. Box 07928  
720 Marion Road  
Columbus, OH 43207

(614) 444-0110  
Fax: (614) 444-7759

Citibank (Newport), N.A. >  
 The Lakes, NV  
 JMA Architects & Engineers, Inc.  
 Grove Incorporated, Contractor



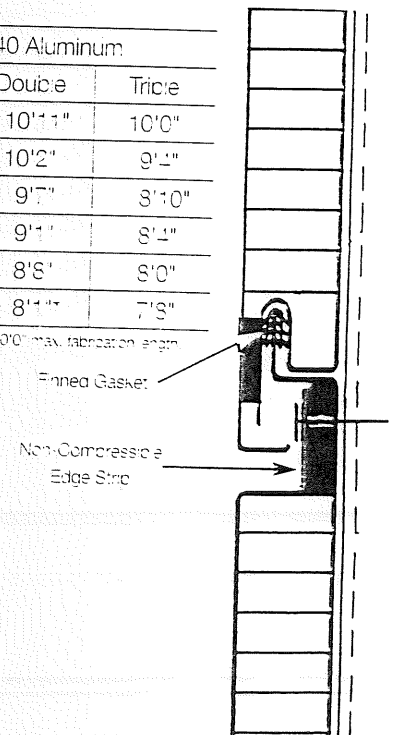
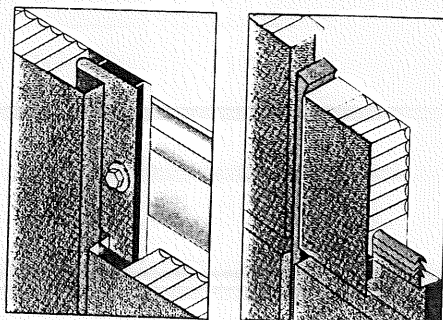
## DESIGNWALL 3000

These lightweight 1 1/2" thick panels feature a honeycomb core between smooth, non-embossed skins of steel or aluminum. The un-insulated core allows uniform thermal expansion of the face and liner sheet, resulting in exceptional panel flatness under extreme temperature variations. The 3000 series is offered with Kraft paper honeycomb core, or aluminum core for use where non-combustible wall construction is required.

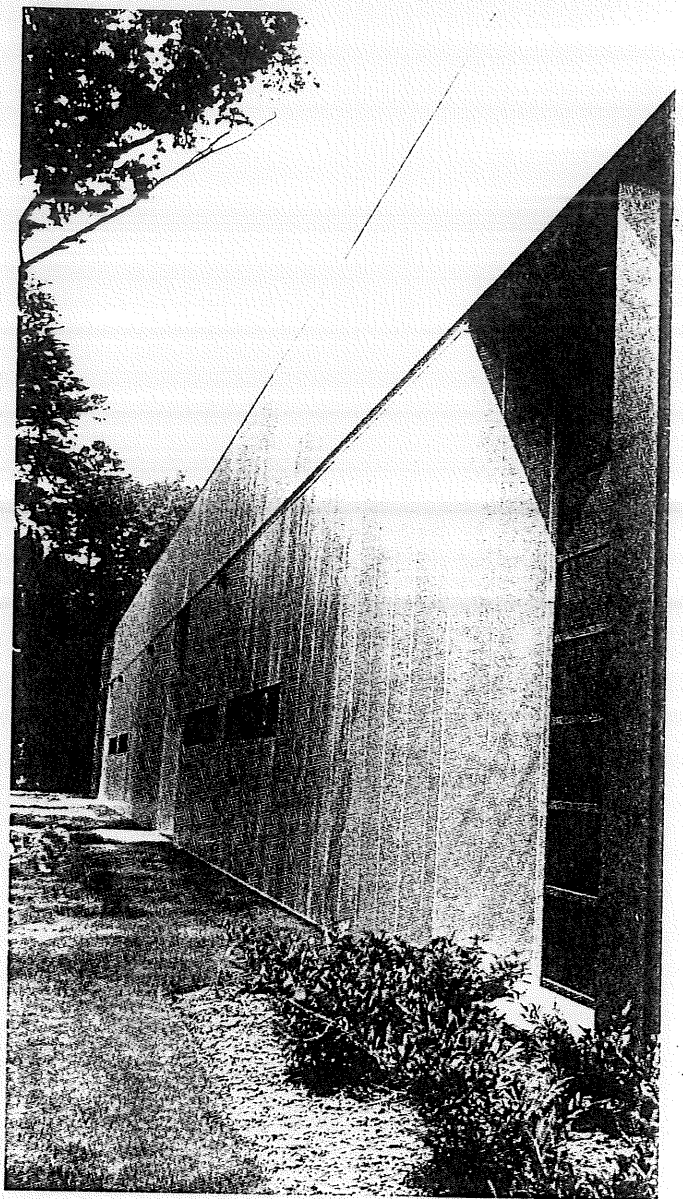
**Loadspan** Designwall 3000, 1 1/2" thick, 1" Cell 60-60-15° Kraft Core

| Windload<br>PSF | 22/22 G.A. Steel |        |        | .040/.040 Aluminum |        |        |
|-----------------|------------------|--------|--------|--------------------|--------|--------|
|                 | Single           | Double | Triple | Single             | Double | Triple |
| 20              | 10'3"            | 13'8"  | 10'0"  | 8'2"               | 10'11" | 10'0"  |
| 25              | 9'6"             | 12'8"  | 10'0"  | 7'7"               | 10'2"  | 9'4"   |
| 30              | 8'11"            | 11'11" | 10'0"  | 7'1"               | 9'7"   | 8'10"  |
| 35              | 8'5"             | 10'5"  | 10'0"  | 6'9"               | 9'1"   | 8'4"   |
| 40              | 8'1"             | 9'1"   | 9'6"   | 6'6"               | 8'8"   | 8'0"   |
| 45              | 7'9"             | 8'1"   | 8'5"   | 6'2"               | 8'1"   | 7'8"   |

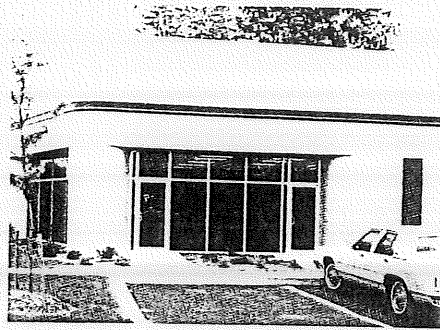
\*Spans controlled by stress. Allowable spans in deflection criteria of L/180. Triple spans limited by 30'0" max. fabrication length.



Lucas Control Systems, Hampton, VA  
 R. V. B. Architects, Architect  
 Cladding Construction, Contractor



Cinton Square, Rochester, NY  
 Martin Rose Associates, P.C.  
 Architects  
 Jim White, Meta Products  
 Contractor



Middletown Psychiatric Clinic  
 Middletown, NY  
 E. H. Strines & Associates  
 Architect  
 Jordan Panel Systems  
 Contractor



## DESIGNWALL 2000

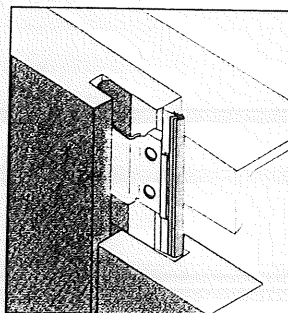
Our top-grade foam panel is performance engineered to meet or exceed most specifications established for conventional foamed-in-place panels. The modified polyisocyanurate core provides R-values up to 15 for 2" thicknesses and 22 for 3" panels.

The 2000 series features a unique double-gasket shiplap joint that sets new standards in horizontal rainscreen design. The dry seal compressible gasket eliminates dirt retention and staining caused by wet sealants, and prevents leakage due to water entrapment and puddling.

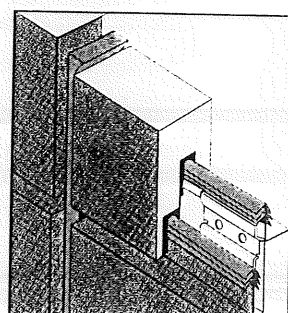
**Loadspan** Designwall 2000 2" thick, Modified Polyisocyanurate Core

| Windload | 22-24 GA. Steel |        |          | .040/.040 Aluminum |        |          |        |
|----------|-----------------|--------|----------|--------------------|--------|----------|--------|
|          | PSF             | Single | Double   | Triple             | Single | Double   | Triple |
| 15       |                 | 12' 0" | 15' 0"   | 10' 0"             | 10' 4" | 14' 7"   | 10' 0" |
| 20       |                 | 10' 3" | 15' 0"   | 10' 0"             | 9' 0"  | 12' 10"  | 10' 0" |
| 25       |                 | 9' 0"  | 12' 8" * | 10' 0"             | 8' 0"  | 11' 7"   | 10' 0" |
| 30       |                 | 8' 1"  | 10' 7" * | 10' 0"             | 7' 3"  | 10' 2" * | 9' 7"  |
| 35       |                 | 7' 4"  | 9' 1" *  | 9' 5" *            | 6' 7"  | 9' 2" *  | 8' 10" |

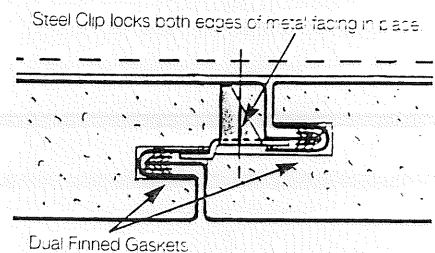
\*Spans controlled by stress. Allowable spans with deflection criteria of L/180. Multiple spans limited to 300' max. fabrication length.



Vertical Joint



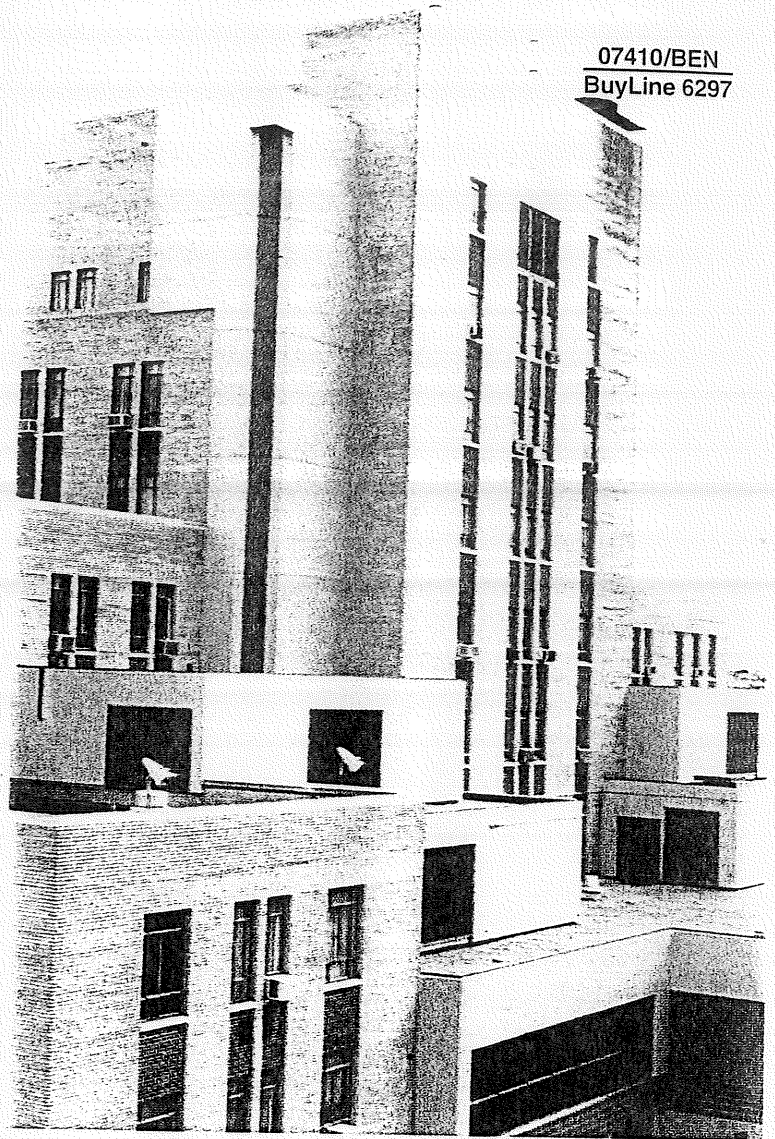
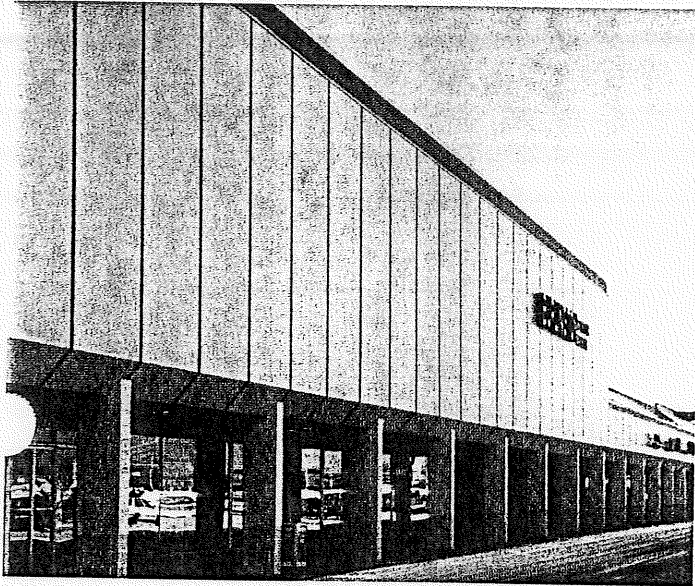
Horizontal Joint



Salk Hall, University of Pittsburgh >  
 Pittsburgh, PA  
 Deeter-Ritchey-Siddle, Architects  
 Dick Enterprises, Contractor

07410/BEN  
 BuyLine 6297

South Town Plaza, Henetta, NY  
 Al Paray, Architect  
 Jim White Metal Products, Contractor  
 7



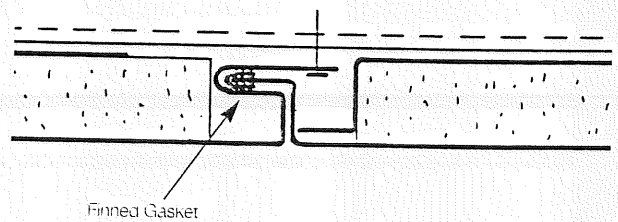
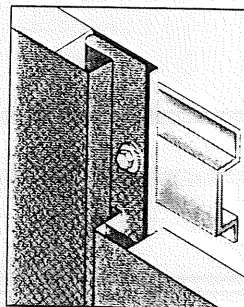
## DESIGNWALL 1000

This product is a popular choice for low-rise buildings and eye-appealing renovation projects. The 1 1/2" thick panel is identical in external appearance to our Designwall 2000 series, but is more economical, with thermal and structural properties sufficient for many applications. For certain installations, 1000 panels are available without a backer skin, permitting on-site curving and curving to fit established contours.

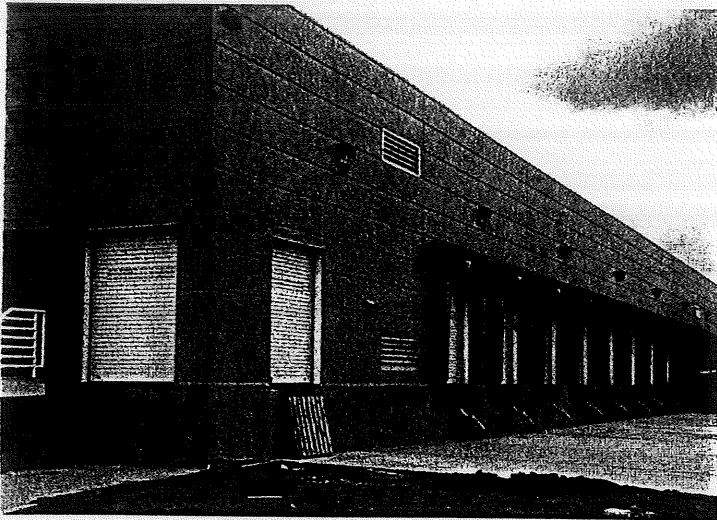
**Loadspan** Designwall 1000, 1 1/2" thick, Expanded Polystyrene Core

| Windload<br>PSF | 22 24 GA. Steel |        |        | .040/.040 Aluminum |        |        |
|-----------------|-----------------|--------|--------|--------------------|--------|--------|
|                 | Single          | Double | Triple | Single             | Double | Triple |
| 15              | 8'5"            | 11'4"* | 10'0"  | 7'2"               | 10'0"  | 9'2"   |
| 20              | 7'4"            | 8'6"*  | 8'10"* | 6'4"               | 8'6"*  | 8'1"   |
| 25              | 6'7"            | 6'10"* | 7'11"* | 5'8"               | 6'9"*  | 7'0"*  |
| 30              | 6'0"            | 5'8"*  | 5'11"* | 5'2"               | 5'8"*  | 5'10"* |
| 35              | 5'5"            | 4'10"* | 5'1"*  | 4'10"              | 4'10"* | 5'0"*  |

\*Scans controlled by stress. Allowable scans with deflection criteria of L/150.

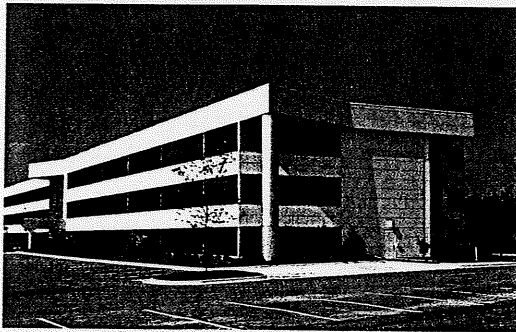


U.S. West Communications, Portland, OR  
 Gazley, Plowman, Atkinson, Architects  
 Northstar Industries, Inc., Contractor



Farmington Hills Corporate Center II  
 Northville, MI  
 Wah Yee Associates, Architects  
 Ritchie Construction, Contractor

Apple Computer, Fountain, CO  
 C.W. Fentress—J. H. Bradburn &  
 Associates, Architects  
 Riddell and Company, Contractor



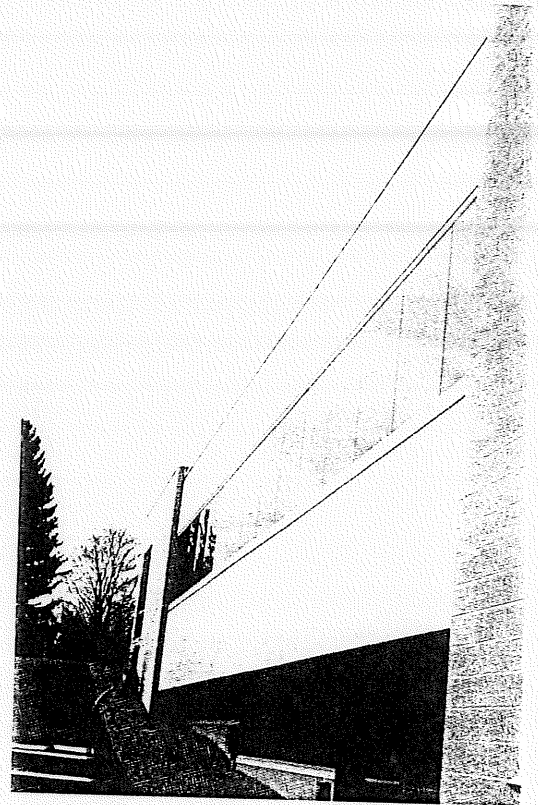
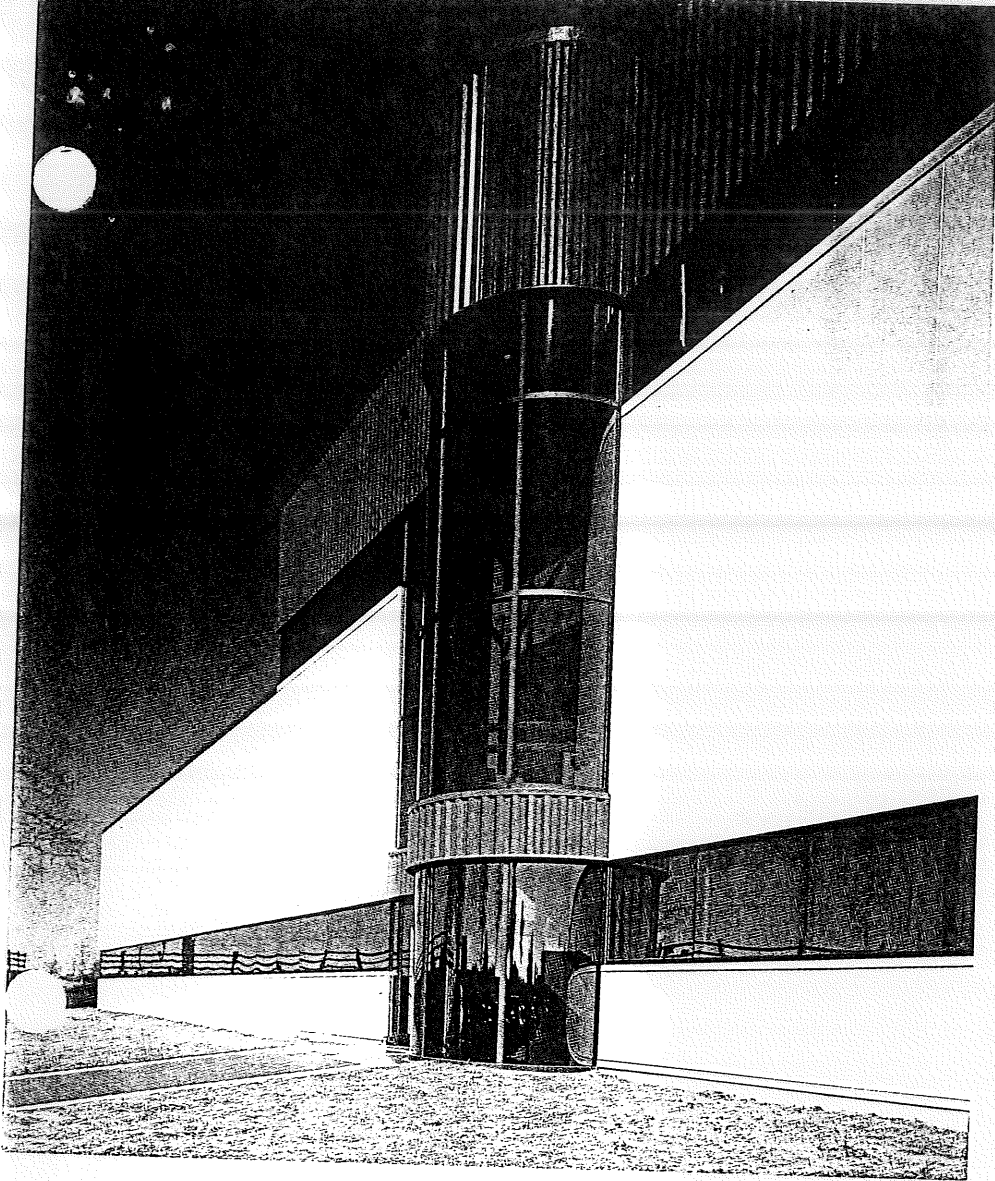
## DESIGNWALL SERIES SELECTION

| Designwall Series | Core Material  | Thickness | Exterior Surface         |                    | Standard Metal Gauges |             | R Value  |
|-------------------|--|-----------|--------------------------|--------------------|-----------------------|-------------|----------|
|                   |  |           | Steel                    | Aluminum           | Steel                 | Aluminum    |          |
| 1000              | Expanded polystyrene<br>(Modified polyisocyanurate optional)                   | 1 1/8"    | Non-directional embossed | Smooth or embossed | 22/24                 | .040"/.040" | 4 to 5   |
| 2000              | Modified polyisocyanurate  | 2" or 3"  | Non-directional embossed | Smooth or embossed | 22/24                 | .040"/.040" | 15 to 22 |
| 3000              | Phenolic-impregnated Kraft paper honeycomb (aluminum honeycomb also available) | 1 1/4"    | Smooth                   | Smooth             | 22/22                 | .040"/.040" | N/A      |

07410/BEN  
BuyLine 6297

Yacovtrum, Clinton, NC  
D.H.B. Associates, Architect  
Pre-Formed Systems, Inc., Contractor

Parkview Building, Rochester, NY  
Macon Chaintreuil Associates, Architect  
Jim White Metal Products, Contractor



## FEATURES AND SPECIFICATIONS

- Truly flat surface
- Excellent dimensional stability
- Tongue and groove joinery, with concealed fasteners and optional 1/2" snow reveal
- Steel or aluminum facing, with smooth or non-directional embossed surfaces (see selection chart on page 4)
- Standard sizes:  
Widths: 24", 30" and 36" (special widths available, 36" maximum)  
Lengths: 4 ft. through 24 ft. (custom lengths available, under 4 ft. and over 24 ft., 30 ft. maximum)
- Eight standard colors (see page 8), with unlimited custom shades available

# TRYMER\* 2000 Brand Polyisocyanurate Foam Insulation

| PHYSICAL PROPERTIES (1)                         | ASTM METHOD | ENGLISH UNITS                 | VALUES (2)   | METRIC UNITS         | VALUES (2)   |
|---|-------------|-------------------------------|--------------|----------------------|--------------|
| <b>Density (3)</b>                              | D 1622      | lb/ft <sup>3</sup>            | 2.05         | kg/m <sup>3</sup>    | 32.8         |
| <b>Compressive Strength (3)</b>                 | D 1621      | lb/in <sup>2</sup>            |              | kPa                  |              |
| Parallel to Rise (Thickness)                    |             |                               | 24           |                      | 165          |
| Perpendicular to Rise (Width)                   |             |                               | 13           |                      | 90           |
| Perpendicular to Rise (Length)                  |             |                               | 24           |                      | 165          |
| <b>Compressive Modulus</b>                      | D 1621      | lb/in <sup>2</sup>            |              | kPa                  |              |
| Parallel to Rise (Thickness)                    |             |                               | 550          |                      | 3790         |
| Perpendicular to Rise (Width)                   |             |                               | 325          |                      | 2240         |
| Perpendicular to Rise (Length)                  |             |                               | 550          |                      | 3790         |
| <b>Shear Strength</b>                           | C 273       | lb/in <sup>2</sup>            |              | kPa                  |              |
| Parallel and Perpendicular                      |             |                               | 24           |                      | 165          |
| <b>Shear Modulus</b>                            | C 273       | lb/in <sup>2</sup>            |              | kPa                  |              |
| Parallel and Perpendicular                      |             |                               | 300          |                      | 2070         |
| <b>Tensile Strength</b>                         | D 1623      | lb/in <sup>2</sup>            |              | kPa                  |              |
| Parallel to Rise (Thickness)                    |             |                               | 27           |                      | 186          |
| Perpendicular to Rise (Width)                   |             |                               | 24           |                      | 165          |
| Perpendicular to Rise (Length)                  |             |                               | 29           |                      | 200          |
| <b>Tensile Modulus</b>                          | D 1623      | lb/in <sup>2</sup>            |              | kPa                  |              |
| Parallel to Rise (Thickness)                    |             |                               | 1500         |                      | 10300        |
| Perpendicular to Rise (Width)                   |             |                               | 600          |                      | 4130         |
| Perpendicular to Rise (Length)                  |             |                               | 1500         |                      | 10300        |
| <b>Flexural Strength</b>                        | C 203       | lb/in <sup>2</sup>            |              | kPa                  |              |
| Parallel and Perpendicular                      |             |                               | 44           |                      | 303          |
| <b>Flexural Modulus</b>                         | C 203       | lb/in <sup>2</sup>            |              | kPa                  |              |
| Parallel and Perpendicular                      |             |                               | 1000         |                      | 6890         |
| <b>k-Factor (75°F (24°C) mean temp.)</b>        | C 518       | BTU•in/hr•ft <sup>2</sup> •°F |              | W/m•°C               |              |
| Initial   |             |                               | 0.141        |                      | 0.020        |
| Aged 180 days @75°F (24°C)                      |             |                               | 0.190        |                      | 0.027        |
| <b>R-Value/in. (75°F (24°C) mean temp.)</b>     | C 518       | Hr•ft <sup>2</sup> •°F/BTU    |              | m <sup>2</sup> •°C/W |              |
| Initial   |             |                               | 7.1          |                      | 1.25         |
| Aged 180 days @75°F (24°C)                      |             |                               | 5.3          |                      | 0.93         |
| <b>Closed Cell Content</b>                      | D 2856      | %                             | 92           | %                    | 92           |
| <b>Water Absorption</b>                         | D 2842      | % by Volume                   | 2            | % by Volume          | 2            |
|   |             | lb/ft <sup>2</sup>            | 0.04         | g/cm <sup>2</sup>    | 0.02         |
| <b>Water Absorption</b>                         | C 272       | % by Volume                   | 0.15         | % by Volume          | 0.15         |
| <b>Water Vapor Permeability</b>                 | E 96        | Perm-Inch                     | 4            | ng/Pa•S•m            | 6.25         |
| <b>Dimensional Stability (3) (4)</b>            | D 2126      |                               |              |                      |              |
| @ -40°F (-40°C), 7 Days                         |             |                               |              |                      |              |
| length  |             | % Change                      | -0.2         | % Change             | -0.2         |
| volume  |             | % Change                      | -0.5         | % Change             | -0.5         |
| @ 158°F (70°C)/97% Relative Humidity, 7 Days    |             |                               |              |                      |              |
| length  |             | % Change                      | 2.0          | % Change             | 2.0          |
| volume  |             | % Change                      | 3.0          | % Change             | 3.0          |
| @ -10°F (-23°C), 7 Days                         |             |                               |              |                      |              |
| length  |             | % Change                      | 0.3          | % Change             | 0.3          |
| volume  |             | % Change                      | 0.7          | % Change             | 0.7          |
| @ 300°F (149°C), 7 Days                         |             |                               |              |                      |              |
| length  |             | % Change                      | 3.0          | % Change             | 3.0          |
| volume  |             | % Change                      | 3.5          | % Change             | 3.5          |
| @ 158°F (70°C)                                  |             |                               |              |                      |              |
| length  |             | % Change                      | -0.1         | % Change             | -0.1         |
| volume  |             | % Change                      | 0.8          | % Change             | 0.8          |
| <b>Service Temperature (5)</b>                  |             | °F                            | -297 to +300 | °C                   | -183 to +149 |
| <b>Surface Burning Characteristics(6)</b>       | E 84        |                               |              |                      |              |
| Flame Spread, 1" through 6" (2.5 through 15 cm) |             |                               | 25           |                      | 25           |
| Smoke Generation, 1" (2.5 cm)                   |             |                               | 55-80        |                      | 55-80        |
| 2" through 6" (5 through 15 cm)                 |             |                               | 90           |                      | 90           |
| <b>Color</b>                                    |             |                               | Red          |                      | Red          |

- (1) All properties are measured at 74°F (23°C), unless otherwise indicated.
- (2) Unless otherwise indicated, data shown are typical values obtained from representative production samples. This data may be used as a guide for design purposes, but should not be construed as specifications. For property ranges and specifications, consult your Dow representative.
- (3) Average value through foam cross section.
- (4) Frequent and severe thermal cycling can produce dimensional changes significantly greater than those stated here. Special design considerations must be made in systems that cycle frequently.
- (5) Above 300°F, discoloration and charring will occur, resulting in an increased k-factor in the discolored area.
- (6) This numerical flame spread data is not intended to reflect hazards presented by this or any other material under actual fire conditions.

**For Technical Information:**  
1-800-441-4369

**For Sales Information:**  
1-800-232-2436





# TRYMER 2000

## TRYMER 2000 Brand Polyisocyanurate Foam Insulation

TRYMER\* 2000 Brand Polyisocyanurate Foam Insulation is a polyurethane modified polyisocyanurate cellular plastic supplied in the form of bunstock for fabrication into sheets, pipe, tank and vessel covering, and other shapes<sup>1</sup> for a variety of thermal insulation applications. Although similar in physical form to polyurethane foams, TRYMER 2000 has improved dimensional stability over a wider range of temperatures. TRYMER 2000 has been specifically formulated to provide excellent thermal insulation properties without the use of CFC blowing agents.

TRYMER 2000 is available as bunstock 48" (122 cm) wide by 24" (61 cm) high by 36" (91 cm), 96" (244 cm) or 108" (274 cm) lengths for further fabrication into various sizes and shapes to meet various end use needs. Custom lengths are available. Contact your local Dow representative for details.

### Applications

TRYMER 2000 is used extensively in industrial and commercial applications within the service temperature range of -297°F to +300°F (-183°C to +149°C)<sup>2</sup>. Because of the critical technical design aspects of many of these applications, qualified designers or consultants should design the total system. Dow can provide general guidelines and recommendations on many typical applications for TRYMER 2000. Call 1-800-441-4369 or contact your local Dow representative for details. Some typical applications include:

- Pipe, tank, and vessel insulation
- Fabricated pipe fitting insulation
- Core material for architectural and structural panels
- Insulation for shipping containers, trucks, or rail cars
- Core material for factory built panelized constructions
- Flat or tapered boardstock for roof insulation

Like all cellular plastics, this product will degrade upon prolonged exposure to sunlight. A covering to block ultraviolet radiation must be used to prevent this degradation. Other coverings to protect the foam from the elements and to meet applicable fire regulations may also be required. Consultation with local building code officials, design engineers/specifiers, or insurance personnel is recommended before application.

### Safety Considerations

TRYMER 2000 requires some care in handling. All persons who work with these materials must know and follow the proper handling procedures. The current Material Safety Data Sheet contains additional information on the safe handling, storage and use of this material. A copy of the MSDS can be obtained by calling 1-800-441-4369 or contacting your local Dow representative.

**NOTICE:** No freedom from any patent owned by Seller or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Seller assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

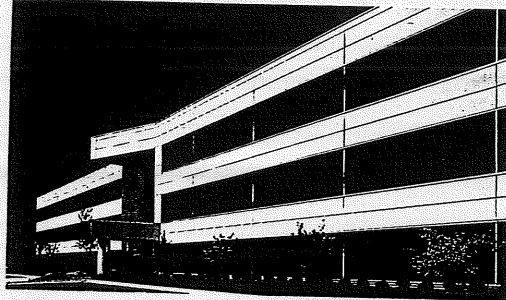
Published August 1996.



# Benchmark Designwall 2000H

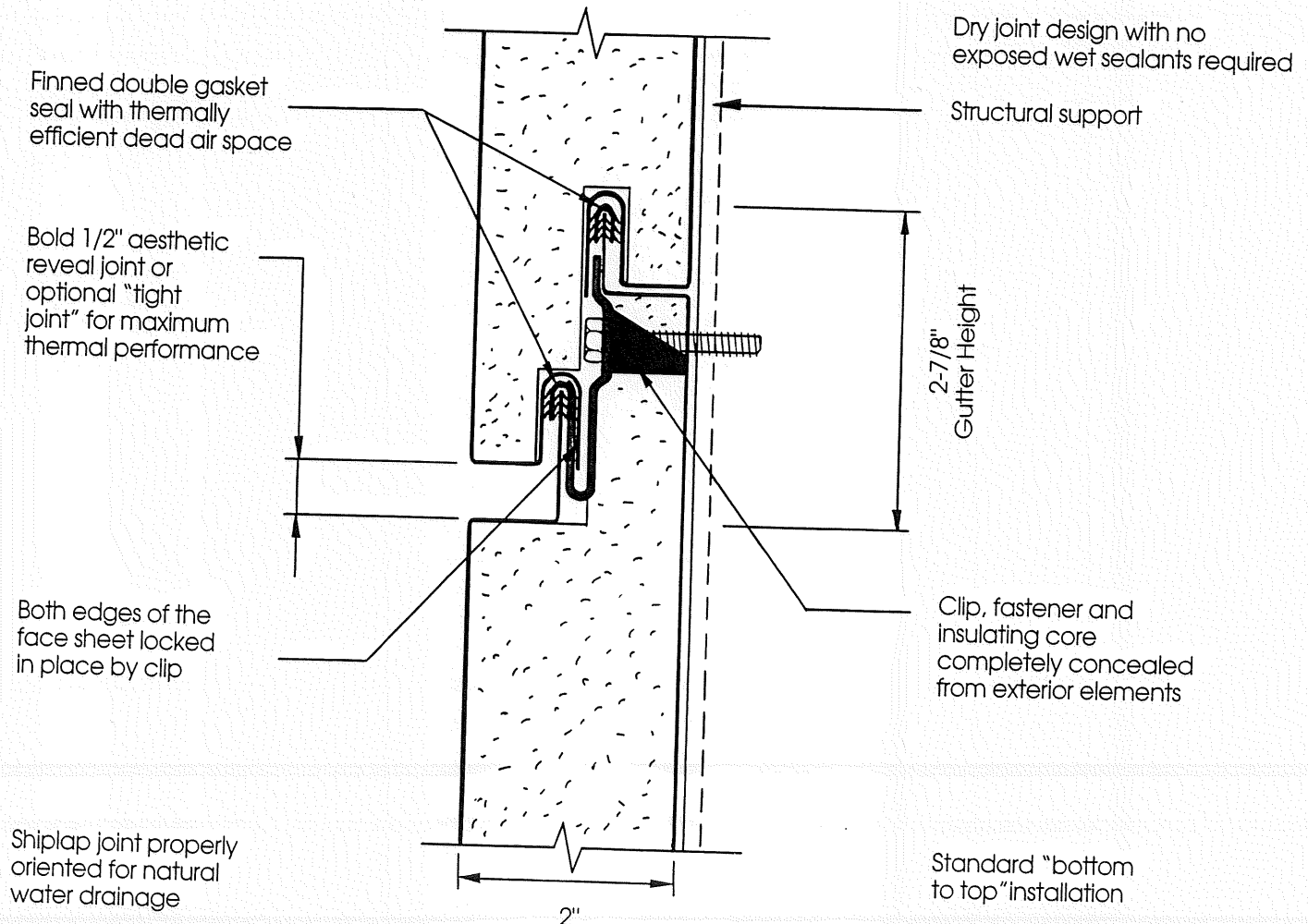
## INNOVATIVE FIELD PROVEN DESIGN IN HORIZONTAL RAINSCREEN TECHNOLOGY

Benchmark Architectural Wall Panel Systems has combined modern research and development with years of field experience to develop its unique horizontal jointery system which we believe is the ultimate in "rainscreen" design. In the past, the thermally efficient double tongue and groove shiplap joints commonly used in foam panel construction have functioned quite well in vertical applications, but when rotated to a horizontal position, the results were far from desirable. Due to the nature of their design configuration, vertical type joints when installed in a horizontal position, naturally created a "water collection trough" on the exterior face side which has directly led to many serious



leakage problems. Common solutions to this problem have included filling the horizontal joints with exposed wet sealants, attempting to collect this trapped water and divert its flow back out to the exterior or simply inverting the jointery which calls for costly "top to bottom" installation. Benchmark has chosen none of these alternatives. Using a specially designed heat-treated steel clip, we have successfully developed a horizontal

joint which maintains a thermally efficient double gasket shiplap seal, while eliminating the possibility of water entrapment and allowing for normal "bottom to top" installation. The Designwall 2000H horizontal joint features the following advantages:



- d. Impact ASTM D-2794 there shall be no effect on coating after being subjected to 80 inch-lbs. impact.
- e. Pollution Resistance ASTM D1308 -there shall be no effect on coating after being subjected to 24 hrs of 10% sulfuric acid solution and 10% hydrochloric acid solution.
- f. Chalk Resistance ASTM D659 2000 hrs - shall not chalk greater than #8.
- g. Color Change ASTM D2244 2000 hrs - color shall not change more than 2 NBS units.
- h. Formability ASTM D1737 -shall withstand 180 degree bend over a 1/8" mandrel with no loss of adhesion, cracking or peeling.
- i. Humidity Test ASTM D2247 -after 500 hrs at 100% humidity and 140°F, there shall be a few (less than 5%) #8 blisters.
- j. Abrasion Resistance ASTM D968 - (minimum 200 liters of sand) coating shall withstand 50 liters of sand per mil before appearance of base metal.

## 2.02 FABRICATION

- A.** Comply with dimensions, profile limitations, gauges, and fabrication details as shown and if not shown, provide Benchmark standard product fabrication.
- B.** Fabricate components of the system at factory, ready for field assembly.
- C.** Fabricate components and assemble units to comply with fire and performance requirements specified.
- D.** Apply specified finishes to conformance with manufacturer's standards, and according to coating manufacturer's instruction.
- E.** Changes of plane, parallel or transverse to longitudinal axis shall be accomplished as detailed on drawings.

## 2.03 SHOP APPROVED/ERECTION DRAWINGS

- A.** Furnish shop drawings complete with details of all major interfaces and periphery conditions.
- B.** Shop drawings shall specify and indicate all materials furnished as well as finishes to be applied.
- C.** These shop drawings shall also serve as field installation drawings and be complete with specific instructions for the application of the products, periphery trim, sealants, lap strips, etc., to insure a weather tight installation.

### 3.01 INSPECTION

- A.** Examine alignment of structural steel and/or wall panel support systems prior to installation and do not proceed until any defects are corrected by responsible contractor. Building tolerances shall not exceed maximums as defined in AISC or ACI specifications.
- B.** Inspect all material included in this contract prior to installation. Manufacturer to be notified of any unacceptable material prior to installation on the wall.
- C.** When necessary, contractor to provide field measurements as requested by manufacturer in order to achieve proper geometric fit of wall panel system.

### 3.02 INSTALLATION AND ERECTION

- A.** Install the metal wall panels, fasteners, trim, and related items in accordance with approved shop/erection drawings and manufacturer's basic specifications.
- B.** The installation of the girt/support and anchoring systems shall be true and plumb in order to provide the proper support for the wall panels as well as fenestration.
- C.** In any case, all materials must be installed in strict accordance with approved shop/erection drawings.

## 3.03 DAMAGED MATERIAL

- A.** Repair or replace all damaged material to the satisfaction of the architect and/or contractor if damage has been caused by manufacturer or wall panel erector. The general contractor or builder shall be responsible for the protection of completed or installed walls from damage by other trades. Installed areas or portions of the work shall be inspected by the owner or general contractor and approved immediately following the completion of such areas. Subsequent damage will then be the responsibility of others.

### 3.04 CLEANING

- A.** The panel erecting contractors shall provide a dry wipe-down cleaning of all work as it is erected and prior to moving to the next portion or area.
- B.** The general contractor and/or owner shall be responsible for the subsequent and final cleaning of the wall system.

### 3.05 GUARANTEE

Curtain wall contractor shall provide a proposal for his work including a statement to the effect that all material and workmanship under said contract shall be guaranteed for a period of one year from the date of installation. This warranty shall provide for the replacement only of any material found defective in manufacture.

### 3.06 Limited Warranty

Lamit Industries Inc. assumes full responsibility for its products and systems when installed and erected in accordance with the published recommendations at the time of the purchase. No responsibility will be assumed for other applications not referred to in the literature. Liability is limited to a refund of the purchase price or replacement of the material.

## How To Get Benchmark's Designwall 3000 Panels. Designwall 1000 Panels Designwall 2000 Panels on other Specifications

For more information and/or the name of the nearest dealer, call or write:

Benchmark Architectural Wall Panel Systems

Division of Lamit Industries, Inc.

720 Marion Road

Columbus, Ohio 43207

(614) 444-0110 (phone)

(614) 444-7759 (fax)

# Benchmark Architectural Wall Panel Systems.

## Specifications - Designwall 3000 V & H Section 07410 - Wall Panel Systems

### 1.01 DESCRIPTION OF WORK

**A.** All factory insulated, shop assembled laminated steel or aluminum faced panels for the exterior walls complete with associated trim.

#### **B.** Related Items

1. Parapet caps and/or gravel stops
2. Wall support systems
3. Sealants not specified in this section
4. Fenestration-window frames glass and glazing
5. Entrance work

### 1.02 QUALITY ASSURANCE

Products meeting these specifications establish a standard of quality required, shall be as manufactured by Benchmark Architectural Wall Panel Systems Division of Lamit Industries, Inc., Columbus, Ohio.

### 1.03 BUILDING CODE MINIMUM REQUIREMENTS

**A.** Wall panel units shall be qualified by full scale and/or laboratory scale tests for acceptance by building code and insurance authorities for use where non-combustible nonloadbearing wall panel construction is permitted based upon actual test. Evidence of such fire test performance shall be submitted if so requested.

**B.** Surface Burning Characteristics Per ASTM E84 (UL 723, NFPA 255)

|                                   | Flame Spread | Smoke Developed |
|-----------------------------------|--------------|-----------------|
| Finished Panel                    | 5            | 30              |
| Core Material<br>1/2"-60F-60F-20% | 10           | 30              |

*\*This numerical flame spread value does not reflect hazards presented by this or any material under actual fire condition.*

**C.** Wall panels shall be accepted for use in New York City by the Department of Buildings (aluminum honeycomb core only). MEA 202-89-M

### 1.04 PERFORMANCE TESTING REQUIREMENTS

**A.** Structural Tests: Structural loadspan tables and design shall have been derived from and

verified by witnessed structural tests for wind loads by the "chamber method" as outlined in ASTM E72. Standard design criteria unless otherwise noted shall be  $\pm 20$  psf with a deflection limitation of L/180 under positive loading.

**B.** Fatigue Test: There shall be no evidence of metal/core interface delamination or physical deterioration of the honeycomb core when panels are subjected to 2 million alternating cycles of  $\pm 20$  psf simulated wind load, witnessed by an independent testing laboratory.

**C.** Bond Strength: There shall be no metal primer interface corrosion or delamination after 1000 hrs at 135°F and 100% R.H. No delamination or interface corrosion after 2 1/2 hrs in a 2 psig, 217°F autoclave.

**D.** Air & Water Infiltration: There shall be no water penetration and minimal air infiltration through the panel jointery of both vertical design and horizontal "rainscreen" design when tested according to ASTM E331 and ASTM E283 under a static air pressure differential of 6.24 psf (equivalent wind velocity of 49.4 mph).

**E.** Surface Burning Characteristics: When tested according to ASTM E84, (Steiner Tunnel Test), UL guide BLBT subject 723, NFPA 255, finished panels shall carry the following rating: Flame Spread 5  
Smoke Developed 30

### 2.01 MATERIALS

**A.** Laminated Wall Panel System:

1. 24" or 30" wide module per manufacturer standard.
2. Thickness 1 1/4" total.
3. Male and female side lap joint design with fasteners concealed.
4. Flat face and liner panel shall be formed with 22 ga. coated steel with smooth (non-embossed) finish or .040" smooth aluminum.
5. Panel side joints on both horizontal and vertical design shall receive a factory applied finned self-locking gasket with adhesive bead on the male leg of the panels. Wet sealants shall not be used.
6. When used in a horizontal application, Designwall 3000 panels shall form a complete functional "rainscreen" maintaining uniform pressure equilibrium across each joint and assuring positive protection against water entrapment without the use of wet sealants.

7. Standard panel side lap joint for both horizontal and vertical design shall be:
  - a. 1/2" aesthetic reveal.
  - b. nominal 1/16" tight joint.

**B.** Component Materials:

1. Face and Liner sheet material shall be:
  - a. ASTM A446, Grade A, 22 ga. steel with zinc coating conforming to ASTM A525, G90.
  - b. 3003-H14 aluminum, .040" thick.
2. Primer: Each side of the interior and exterior sheet shall receive an approved primer applied at a nominal thickness of 0.2 mils.
3. Exterior paint finish shall be:
  - a. Coil coated with 70% based Kynar® resin and ceramic inorganic pigments. Select from 8 standard colors. Custom colors (on large projects) provided on a mix-match basis.
  - b. Baked enamel or urethane finish applied after panel forming. All edges shall be painted. Custom colors provided on a mix-match basis.  
Color number \_\_\_\_\_.
4. Structural honeycomb core shall be:
  - a. Kraft paper honeycomb, corrugated type with strong direction oriented parallel to panel span. Cell size to be 1/2", 60-60-15% paper weight/phenolic impregnation level.
  - b. Aluminum honeycomb, hexagonal type. Cell size to be 3/4"; commercial grade 3003 alloy, 0.003" thick.

**C.** THE STRUCTURAL ADHESIVE

Adhesive shall be ICBO approved, Type II, Class 2 structural type meeting Acceptance Criteria for Sandwich Panel Adhesives, July 1974. Adhesive shall be bonded under 10 psi lamination pressure. Contact adhesives with pinch roll processes shall not be acceptable under any circumstances.

**D.** Finishes:

1. Primer shall after 9 years exposure exhibit full adhesion and show no blistering at 0.2 mil thickness.
2. Accelerated testing-Finish color coating shall conform to the following:
  - a. Salt Spray ASTM B117 2000 hrs-shall not have more than 1/16" edge creepage from score line. No more than #7 blister.
  - b. Weatherometer ASTM G23 2000 hrs- shall not blister, peel, crack, or lose adhesion.
  - c. Weatherometer (Xenon Arc) 8000 hrs- shall have no greater than #8 chalk with 100% gloss retention.

\*Kynar 500® is a registered trademark of Penwalt Corporation.

2. Accelerated Testing—Finished Color Coating. The exterior face panels, flashing and extrusions factory applied multi-mil finished color coating shall conform to the following:
- a. Salt Spray ASTM B-117 2,000 hours—shall not have more than 1/16" edge creepage from score line. No more than #7 blister.
  - b. Weatherometer ASTM G-23 2,000 hours—shall not blister, peel, crack or lose adhesion.
  - c. Weatherometer (Xenon Arc) 8,000 hours—shall have no greater than #8 chalk with 100% gloss retention.
  - d. Impact ASTM D-2794—there shall be no effect on coating after being subjected to 80 inch-lbs Impact.
  - e. Pollution Resistance ASTM D-1308—there shall be no effect on coating after being subjected to 24 hours of 10% sulfuric acid solution and 10% hydrochloric acid solution.
  - f. Chalk Resistance ASTM D-659 2,000 hours—shall not chalk greater than #8.
  - g. Color Change ASTM D-2244 2,000 hours—color shall not change more than 2 NBS units.
  - h. Formability ASTM D-1737—shall withstand 180 degree bend over 1/8" mandrel with no loss of adhesion, cracking, or peeling.
  - i. Humidity Test ASTM D-2247—after 500 hours at 100% humidity and 140°F, there shall be a few (less than 5%) #8 blisters.
  - j. Abrasion Resistance ASTM D-968—(minimum 200 liters of sand) coating shall withstand 50 liters of sand per mil before appearance of base metal.

## 2.02 FABRICATION

- A** Comply with dimensions, profile limitations, gages and fabrication details as shown and, if not shown, provide Benchmark's standard product fabrication.
- B** Fabricate components of the system at factory, ready for field assembly.
- C** Fabricate components and assemble units to comply with fire and performance requirements specified.

**D** Apply specified finishes to conformance with manufacturer's standards, and according to coating manufacturer's instruction.

**E** Changes of plane, parallel or transverse to longitudinal axis shall be accomplished as detailed on the drawings.

## 2.03 SHOP APPROVED/ERECTION DRAWINGS

**A** Furnish shop drawings complete with details of all major interfaces and periphery conditions.

**B** Shop drawings shall specify and indicate all materials furnished as well as finishes to be applied.

**C** These shop drawings shall also serve as field installation drawings and be complete with specific instructions for the application of the products, periphery trim and all sealants, lapstrips, etc., to insure a weather tight installation.

## 3.01 INSPECTION

**A** Examine alignment of structural steel and/or steel wall panel support systems prior to installation and do not proceed until any defects are corrected by responsible contractor. Building tolerances shall not exceed maximums as defined in AISC or ACI specifications.

**B** Inspect all material included in this contract prior to installation. Manufacturer to be notified of any unacceptable material prior to installation on the wall.

**C** When necessary, contractor is to provide field measurements as requested by the manufacturer in order to achieve proper geometric fit of the wall panel system.

## 3.02 INSTALLATION AND ERECTION

**A** Install the metal wall panels, fasteners, trim and related items in accordance with approved shop/erection drawings and manufacturer's basic specifications.

**B** The installation of the girt/support and anchoring systems shall be true and plumb in

order to provide the proper support for the wall panels as well as fenestration.

**C** In any case, all materials must be installed in strict accordance with approved shop/erection drawings.

## 3.03 DAMAGED MATERIAL

Repair or replace all damaged material to the satisfaction of the architect and/or contractor if damage has been caused by the manufacturer or wall panel erector/contractor. The General Contractor or Builder shall be responsible for the protection of completed or installed walls from damage by other trades. Installed areas or portions of the work shall be inspected by the Owner or General Contractor and approved immediately following the completion of such areas. Subsequent damage will then be the responsibility of others.

## 3.04 CLEANING

**A** The panel erecting contractors shall provide a dry wipe-down cleaning of all work as it is erected and prior to moving to the next portion or area.

**B** The General Contractor and/or Owner shall be responsible for the subsequent and final cleaning of the wall system.

## 3.05 GUARANTEE

**A** Curtain Wall Contractor shall provide a proposal for his work including a statement to the effect that all material and workmanship under said contract shall be guaranteed for a period of one year from the date of installation. This warranty shall provide for the replacement only of any material found defective in manufacture.

## 3.06 Limited Warranty

Lamit Industries Inc. assumes full responsibility for its products and systems when installed and erected in accordance with the published recommendations at the time of the purchase. No responsibility will be assumed for other applications not referred to in the literature. Liability is limited to a refund of the purchase price or replacement of the material.

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Division of Lamit Industries, Inc.

720 Marion Road

Columbus, Ohio 43207

(614) 444-0110 (phone)

(614) 444-7759 (fax)

# Benchmark Architectural Wall Panel Systems.

## Specifications - Designwall 2000 V & H Section 07410 - Wall Panel Systems

### 1.01 DESCRIPTION OF WORK

**A** All factory insulated, shop assembled, laminated, steel or aluminum faced panels for the exterior walls complete with associated trim.

#### **B** Related Items

1. Parapet caps and/or gravel stops
2. Wall support systems
3. Sealants not specified in this section
4. Fenestration—window frames, glass and glazing
5. Entrance work

### 1.02 QUALITY ASSURANCE

Products meeting these specifications establish a standard of quality required, shall be as manufactured by Benchmark Architectural Wall Panel Systems Division of Lamit Industries, Inc., Columbus, Ohio.

### 1.03 BUILDING CODE MINIMUM REQUIREMENTS

**A** Wall panel units shall be qualified by full scale and/or laboratory scale test for acceptance by building code and insurance authorities for use where noncombustible non-load bearing wall panel construction is permitted based upon actual test.

**B** Factory Mutual Laboratories classification following ASTM E-84 (Steiner Tunnel Test) rating.

### 1.04 PERFORMANCE TESTING REQUIREMENTS

**A** Structural Tests. Structural load-span tables and design shall have been derived from and verified by witnessed structural tests for wind loads by the "chamber method" as outlined in ASTM specification E72. Standard design criteria unless otherwise noted shall be  $\pm 20$  pounds per square foot with a deflection limitation of  $L/180$  under positive loading.

**B** Thermal Value, Standard 2" thick panel with modified isocyanurate core shall have a total R-value of no less than 15.1 hrs  $ft^2 \cdot ^\circ F/BTU$  when tested according to ASTM C236 and corrected to ASHRAE winter design criteria of 15 mph wind outside, still air inside.

**C** Fatigue Test. There shall be no evidence of metal/foam interface delamination or physical deterioration of the foam core when panels are subjected to 2 million alternating cycles of  $\pm 20$

pounds per square foot simulated wind load, witnessed by an independent testing laboratory.

**D** Bond Strength, There shall be no metal primer interface corrosion, delamination from the foam core, or loss of bond strength after 1000 Hrs. at 135° and 100% R.H. No delamination or loss of bond strength shall occur after 2 1/2 Hrs. in a 2 psig. 217°F autoclave.

**E** Air & Water Infiltration. There shall be no water penetration and no more than .06 cfm/sf air infiltration through the panel system when tested according to ASTM specifications E331 and E283 under a static air pressure differential of 6.24 psf (equivalent wind velocity of 49.4 mph).

**F** Large Scale Enclosed Room (Corner) Fire Test. SWRI Project No. 01-8303-409, June 1985. Standard Benchmark 2000 panels shall have passed acceptable performance criteria under the provisions outlined in Uniform Building Code (UBC) Standard No. 17-5, Section 17.504, accepted by International Conference of Building Officials (ICBO) October 1982.

**G** Surface Burning Characteristics. Underwriters Laboratories (UL Guide-BLBT), subject 723, NFPA255, Modified isocyanurate core of Benchmark's Designwall 2000 panels shall have been tested according to ASTM E84 (Steiner Tunnel Test) carrying the following rating:

Flame Spread—20  
Fuel Contributed—0  
Smoke Developed—105-135

*\*This numerical flame spread value does not reflect hazards presented by this or any material under actual fire condition.*

### 2.01 MATERIALS

- A** Laminated Wall Panel System
1. 24" or 30" wide module per manufacturer standard.
  2. Thickness 2" or 3"
  3. Male and female side lap joint design with fasteners concealed.
  4. Flat face and liner panel shall be formed with 22 or 24 gauge coated steel with non-directional embossed finish or smooth (non-embossed) .040" aluminum.
  5. Panel side joints shall have a finned self-locking gasket with adhesive bead shop applied on face and liner sheet.

6. Horizontal Panel Application: When used in a horizontal application, Benchmark's Designwall 2000 panels shall form a complete functional "rainscreen" maintaining uniform pressure equilibrium across each horizontal joint and assuring positive protection against water entrapment or puddling. Each horizontal joint shall be double gasketed and shall provide an aesthetic and capillary break on the exterior side of the panels. Both clip and fastener and insulation shall be completely protected from exterior weather conditions.

#### **B** Materials.

1. Face and Liner Sheet Materials
  - a. Shall be ASTM A446, Grade A, 22 or 24 gauge steel with a zinc coating conforming to ASTM A525, G90.
  - b. Shall be 3003-H14 aluminum, .040" thick.
2. Primer  
Each side of the interior and exterior sheet shall receive an approved primer applied at a nominal thickness of 0.2 mils.
3. Exterior Paint Finish
  - a. Shall be Coil coated with 70% based Kynar resin and ceramic inorganic pigments. Select from 8 standard colors. Custom colors (on large projects) provided on a mix-match basis.
  - b. Shall be baked enamel or urethane finish applied after panel forming. All edges shall be painted. Custom colors provided on a mix-match basis.  
Color number \_\_\_\_\_
4. Core Insulation  
Panel core shall be formed isocyanurate, nominal density of 2.0 pcf with minimum shear strength of 25 psi, flame spread of 20 or less per ASTM E84 and smoke developed of 105 to 135.
  - a. Tested Thermal Resistance:

| Thickness | R Value |
|-----------|---------|
| 2"        | 14.3    |
| 3"        | 21.4    |

**C** Structural Adhesive. Adhesive shall be ICBO approved, Type II, Class 2, structural type meeting Acceptance Criteria for Sandwich Panel Adhesives, July 1974. Adhesive shall be bonded under 10 psi lamination pressure. Contact adhesives with pinch roll processes shall not be acceptable under any circumstances.

#### **D** Finishes.

1. Primer shall after 9 years exposure exhibit full adhesion and show no blistering at .2 mil thickness.

**B.** Shop drawings shall specify and indicate all materials furnished as well as finishes to be applied.

**C.** These shop drawings shall also serve as field installation drawings and be complete with specific instructions for the application of the products, periphery trim, sealants, lap strips, etc., to insure a weather tight installation.

### **3.01 INSPECTION**

**A.** Examine alignment of structural steel and/or wall panel support systems prior to installation and do not proceed until any defects are corrected by responsible contractor. Building tolerances shall not exceed maximums as defined in AISC or ACI specifications.

**B.** Inspect all material included in this contract prior to installation. Manufacturer to be notified of any unacceptable material prior to installation on the wall.

**C.** When necessary, contractor to provide field measurements as requested by manufacturer in order to achieve proper geometric fit of wall panel system.

### **3.02 INSTALLATION AND ERECTION**

**A.** Install the metal wall panels, fasteners, trim, and related items in accordance with approved shop/erection drawings and manufacturer's basic specifications.

**B.** The installation of the girt/support and anchoring systems shall be true and plumb in order to provide the proper support for the wall panels as well as fenestration.

**C.** In any case, all materials must be installed in strict accordance with approved shop/erection drawings.

### **3.03 DAMAGED MATERIAL**

**A.** Repair or replace all damaged material to the satisfaction of the architect and/or contractor if damage has been caused by the manufacturer or wall panel erector. The general contractor or builder shall be responsible for the protection of completed or installed walls from damage by other trades. Installed areas or portions of the work shall be inspected by the owner or general contractor and approved immediately following the completion of such areas. Subsequent damage will then be the responsibility of others.

### **3.04 CLEANING**

**A.** The panel erecting contractors shall provide a dry wipe-down cleaning of all work as it is erected and prior to moving to the next portion or area.

**B.** The general contractor and/or owner shall be responsible for the subsequent and final cleaning of the wall system.

### **3.05 GUARANTEE**

Curtain wall contractor shall provide a proposal for his work including a statement to the effect that all material and workmanship under said contract shall be guaranteed for a period of one year from the date of installation. This warranty shall provide for the replacement only of any material found defective in manufacture.

### **3.06 Limited Warranty**

Lamit Industries Inc. assumes full responsibility for its products and systems when installed and erected in accordance with the published recommendations at the time of the purchase. No responsibility will be assumed for other applications not referred to in the literature. Liability is limited to a refund of the purchase price or replacement of the material.

## **How To Get Benchmark's Designwall 1000 Panels. Designwall 2000 Panels Designwall 3000 Panels on other Specifications**

For more information and/or the name of the nearest dealer, call or write:

Benchmark Architectural Wall Panel Systems

Division of Lamit Industries, Inc.

720 Marion Road

Columbus, Ohio 43207

(614) 444-0110 (phone)

(614) 444-7759 (fax)

# Benchmark Architectural Wall Panel Systems.

## Specifications – Designwall 1000 V & H Section 07410 – Wall Panel Systems

### 1.01 DESCRIPTION OF WORK

- A.** All factory insulated, shop assembled laminated steel or aluminum faced panels for the exterior walls complete with associated trim.
- B.** Related Items
1. Parapet caps and/or gravel stops
  2. Wall support systems
  3. Sealants not specified in this section
  4. Fenestration-window frames glass and glazing
  5. Entrance work

### 1.02 QUALITY ASSURANCE

Products meeting these specifications establish a standard of quality required, shall be as manufactured by Benchmark Architectural Wall Panel Systems Division of Lamit Industries, Inc., Columbus, Ohio

### 1.03 PERFORMANCE TESTING REQUIREMENTS

- A.** Structural Tests: Structural loadspan tables and design shall have been derived from and verified by witnessed structural tests for wind loads by the "chamber method" as outlined in ASTM E72. Standard design criteria unless otherwise noted shall be  $\pm 20$  psf with a deflection limitation of L/180 under positive loading.
- B.** Thermal Value: Standard 1 1/8" thick panel with expanded polystyrene (EPS) core shall have a total R-value of no less than 3.6 hrs-sf-F/BTU when tested according to ASTM C236 and corrected to ASHRAE winter design criteria of 15 mph wind outside, still air inside. Panel with modified isocyanurate core shall have a total R-value of no less than 5.6 hrs-sf-F/BTU when tested according to ASTM C236 and corrected to ASHRAE winter design.
- C.** Bond Strength: There shall be no metal primer interface corrosion or delamination from the foam core after 1000 hrs at 135°F and 100% R.H. No delamination or interface corrosion after 2 1/2 hrs in a 2 psig, 217°F autoclave.
- D.** Air & Water Infiltration: There shall be no water penetration and minimal air infiltration through the panel system when tested according to ASTM E331 and ASTM E283 under a static air pressure differential of 6.24 psf (equivalent wind velocity of 49.4 mph).

### 2.01 MATERIALS

- A.** Laminated Wall Panel System:
1. 24" or 30" wide module per manufacturer standard.
  2. Thickness 1 1/8" total.
  3. Male and female side lap joint design with fasteners concealed.
  4. Flat face and liner panel shall be formed with 22 or 24 gauge coated steel with non-directional embossed finish or smooth (non-embossed) .040" aluminum.
  5. Panel side joints shall have a finned self-locking gasket, factory applied to the male panel leg.
  6. Unless specified otherwise, metal backer on panels shall cover 85% min. of the actual panel face coverage. For applications with back side of panels exposed to view, specify full metal backer sheet.
- B.** Component Materials:
1. Face sheet material shall be:
    - a. ASTM A446, grade A, 22 or 24 gauge steel with a zinc coating conforming to ASTM A525, G90.
    - b. 3003-H14 aluminum, .040" thick
  2. Primer: Each side of the interior and exterior face sheet shall receive an approved primer applied at a nominal thickness of 0.2 mils.
  3. Exterior paint finish shall be:
    - a. Coil coated with 70% based Kynar<sup>®</sup> resin and ceramic, inorganic pigments. Select from 8 standard colors. Custom colors (on large projects) provided on a mix-match basis.
    - b. Baked enamel or urethane finish applied after panel forming. All edges shall be painted. Custom colors provided on a mix-match basis.  
Color number \_\_\_\_\_
  4. Core insulation material shall be:
    - a. Expanded polystyrene (EPS), minimum density 1.0 pcf with min. shear strength of 18 psi and min. compressive strength of 10 psi.
    - b. Modified isocyanurate, 92% min. closed cell, with min. density 2.0 pcf, minimum shear strength 25 psi, flame spread of 20 per ASTM E84 and smoke developed of 50.
- C.** Structural Adhesive shall be ICBO approved, Type II, Class 2 meeting Acceptance Criteria for Sandwich Panel Adhesives.

### D. Finishes:

1. Primer shall after 9 years exposure exhibit full adhesion and show no blistering at 0.2 mil thickness.

2. Accelerated testing-Finish color coating shall conform to the following:
  - a. Salt Spray ASTM B117 2000 hrs-shall not have more than 1/16" edge creepage from score line. No more than #7 blister.
  - b. Weatherometer ASTM G23 2000 hrs-shall not blister, peel, crack, or lose adhesion.
  - c. Weatherometer (Xenon Arc) 8000 hrs-shall have no greater than #8 chalk with 100% gloss retention.
  - d. Impact ASTM D2794 -there shall be no effect on coating after being subjected to 80 inch-lbs impact.
  - e. Pollution Resistance ASTM D1308 -there shall be no effect on coating after being subjected to 24 hrs of 10% sulfuric acid solution and 10% hydrochloric acid solution.
  - f. Chalk Resistance ASTM D659 2000 hrs-shall not chalk greater than #8.
  - g. Color Change ASTM D2244 2000 hrs - color shall not change more than 2 NBS units.
  - h. Formability ASTM D1737 -shall withstand 180 degree bend over a 1/8" mandrel with no loss of adhesion, cracking or peeling.
  - i. Humidity Test ASTM D2247 -after 500 hrs at 100% humidity and 140° F, there shall be a few (less than 5%) #8 blisters.
  - j. Abrasion Resistance ASTM D968 - (minimum 200 liters of sand) coating shall withstand 50 liters of sand per mil before appearance of base metal.

### 2.02 FABRICATION

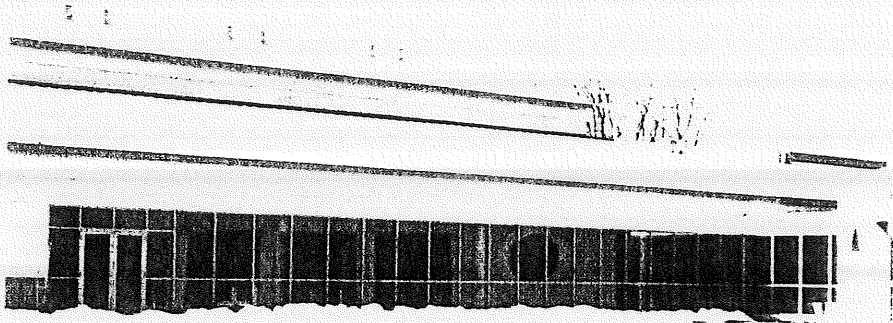
- A.** Comply with dimensions, profile limitations, gauges, and fabrication details as shown and if not shown, provide Benchmark standard product fabrication.
- B.** Fabricate components of the system at factory, ready for field assembly.
- C.** Fabricate components and assemble units to comply with fire and performance requirements specified.
- D.** Apply specified finishes to conformance with manufacturer's standards, and according to coating manufacturer's instruction.
- E.** Changes of plane, parallel or transverse to longitudinal axis shall be accomplished as detailed on drawings.

### 2.03 SHOP APPROVED/ERECTION DRAWINGS

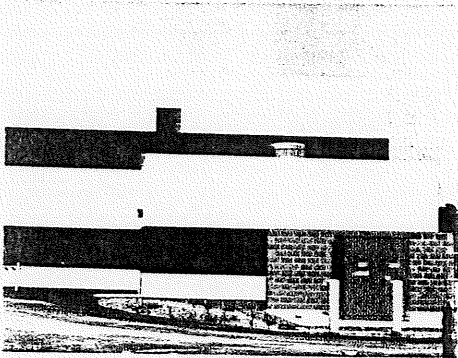
- A.** Furnish shop drawings complete with details of all major interfaces and periphery conditions.

\*Kynar 500<sup>®</sup> is a registered trademark of Penwalt Corporation.

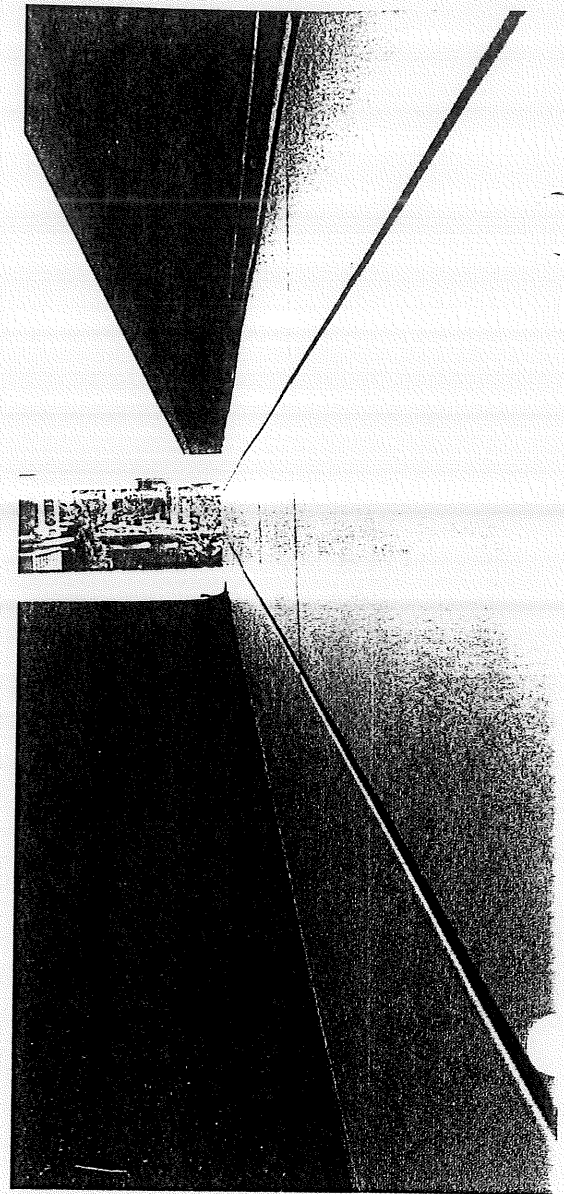
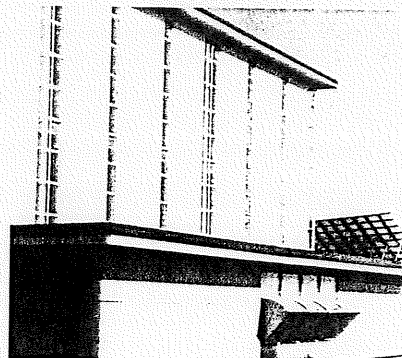
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Mitchell/Giurgola, Architects  
Jim White Metal Products, Contractor*



*Continuous Electron Beam Accelerator Facility  
Newport News, VA  
DJMM, Architects  
Cladding Construction, Contractor*



*Federal Building #56, La-Brew, CO  
Oz Architecture, Architects  
Riddell and Comcan, Contractor*



## LIGHTWEIGHT, VERSATILE BUILDING PANELS

To a growing number of architects, the Benchmark name stands for a lean, responsive supplier of top-quality wall panel systems. Across the country, Benchmark panels are providing superior performance at competitive costs in all types of low- and mid-rise construction.

These steel and aluminum faced laminated core panels are available in three series:

- 1. Designwall 1000.** Value engineered for cost-effectiveness and aesthetics in renovations and new construction.
- 2. Designwall 2000.** Performance engineered for maximum thermal efficiency and structural capability.
- 3. Designwall 3000.** Lightweight panel with Kraft paper or aluminum honeycomb core for smooth finish, metal applications, or non-combustible wall construction.

Each series can be installed vertically, horizontally, or at an angle, and can be pre-formed into curves, corners, fascia-soffit bends, and other special shapes.

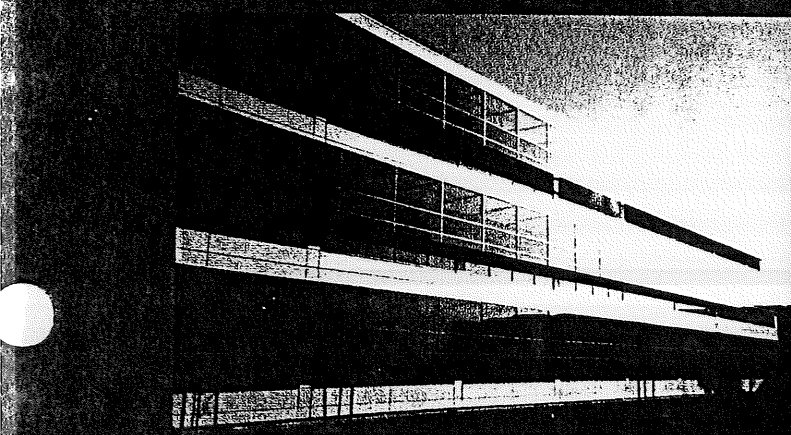
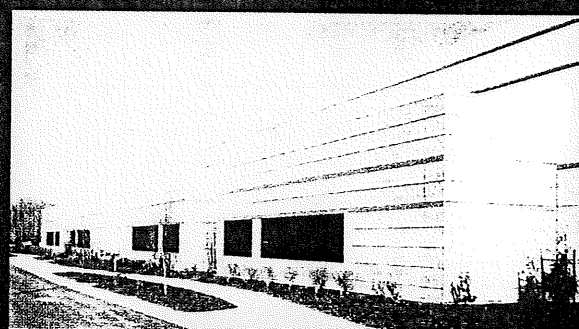
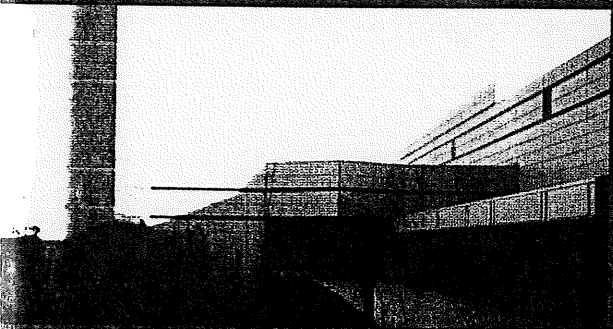
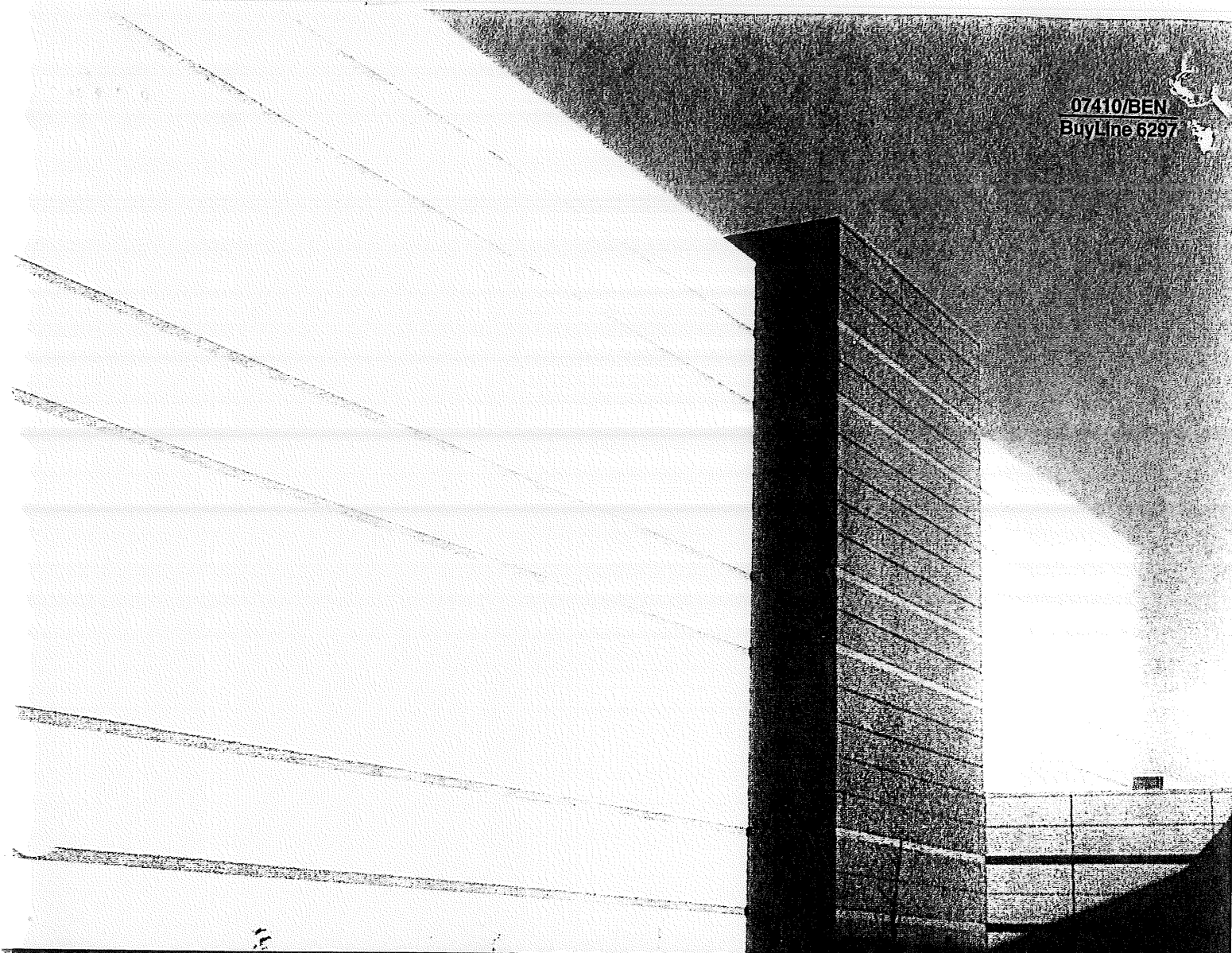
## LAMINATED FOR LASTING QUALITY

Unlike conventional foamed-in-place panels, Benchmark uses fully cured foam in bunstock form which is slab-cut to exact thickness, and individually inspected prior to lamination. The core features uniform density and thermal properties, and is not subject to skin blisters and bubbles caused by thermal expansion of trapped gas pockets. Unlike some lower quality laminated products, Benchmark uses only proven, high-grade structural adhesives and full length high-pressure laminating presses. There is no risk of delamination due to thermally unstable contact adhesives or quick pinch-roll bonding processes.

**Cover:**  
*Hewlett Packard Buildings 6 and 8  
Corvallis, OR  
Industrial Design Corporation, Architects  
McKinstry/Roberts, Contractor*



07410/BEN  
BuyLine 6297



**Benchmark**  
a Division of Lamit Industries, Inc.

ARCHITECTURAL  
WALL PANEL SYSTEMS



TO: ALLIED CONSTRUCTION CORP.  
8 U.S. ROUTE ONE  
SCARBOROUGH, ME. 04074  
PROJECT #97014

ATTN: PAUL LALIBERTY  
RE: TIME WARNER EXPANSION  
~~BIDDEFORD~~ MAINE  
PORTLAND,

**SHOP DRAWING/ SAMPLE SUBMITTAL**

ITEM NUMBER: 04 SUBMITTAL NUMBER: 01  
DESCRIPTION: PTI 707 BUTYL SEALANT  
MANUFACTURER: PROTECTIVE TREATMENTS INC.  
SECTION: 07412 PARAGRAPH: 2.03

LYMO CONSTRUCTION CO. INC. HAVING REVIEWED THIS SUBMITTAL, CERTIFIES THAT IT COMPLIES WITH THE CONTRACT DOCUMENTS FOR THIS PROJECT UNLESS OTHERWISE NOTED.

BY: *Daniel J. Hamilton*  
DATE: 7/9/97