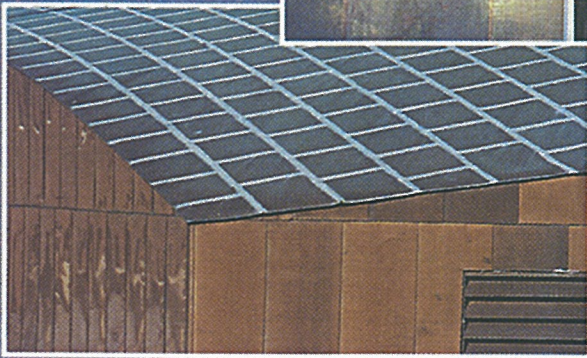
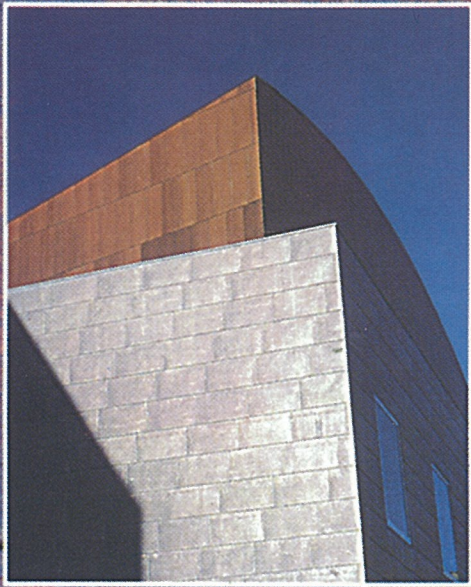








# COPPER DESIGN

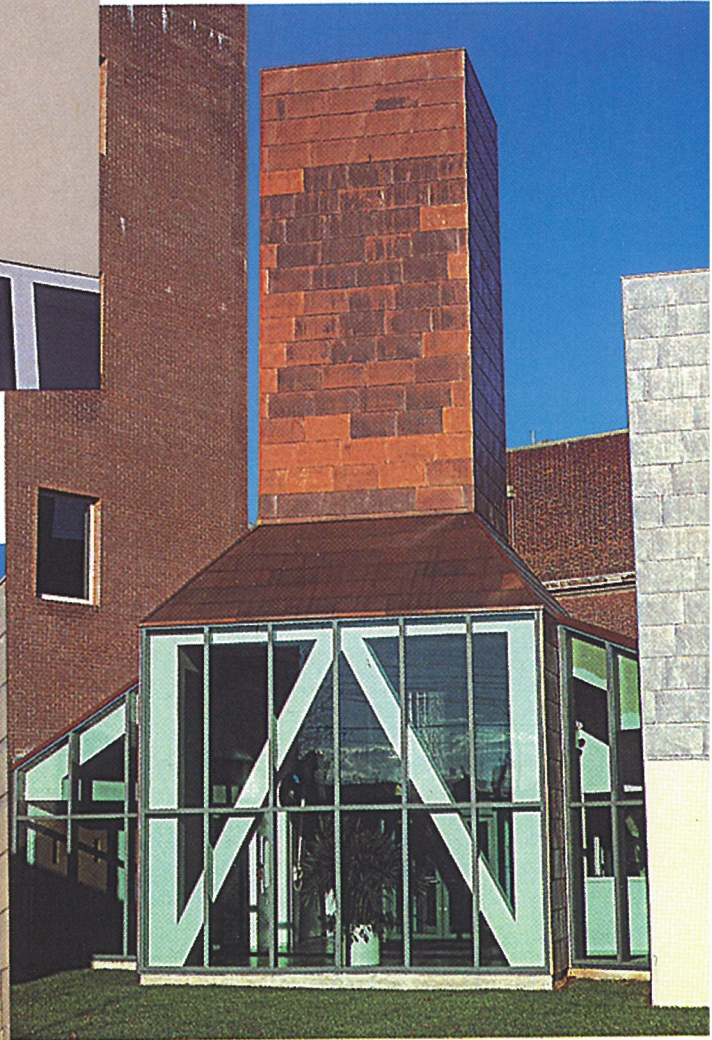
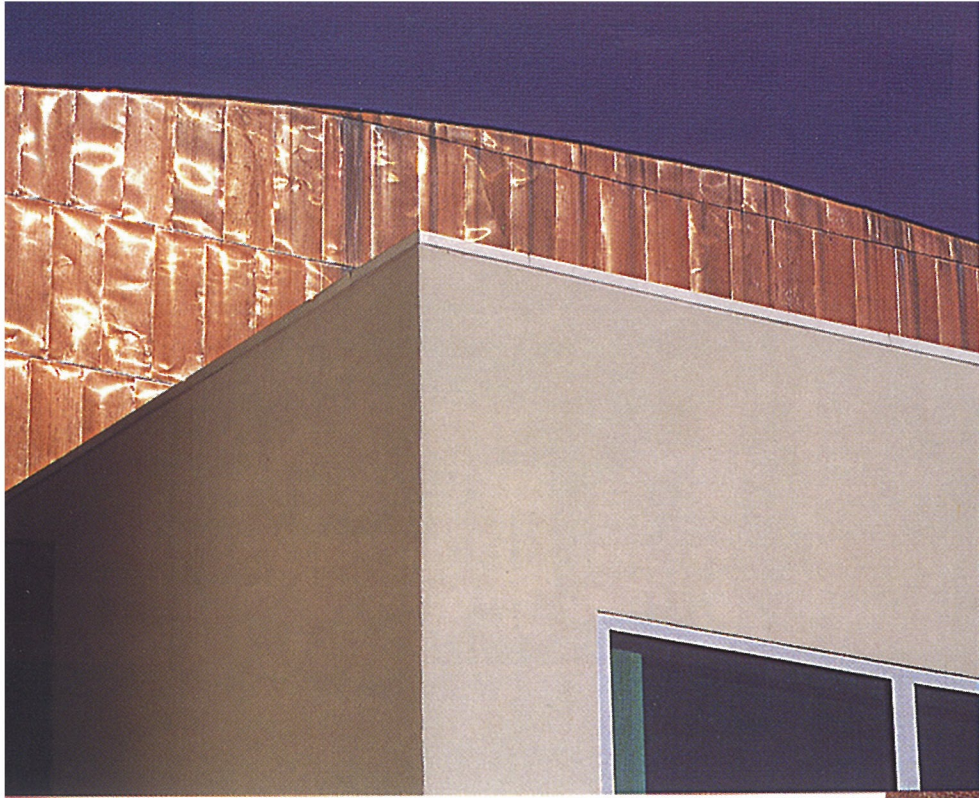


-  **Roofing**
-  **Facades**
-  **Detailing**
-  **Restoration**



COPPER DEVELOPMENT ASSOCIATION INC.







# YALE PSYCHIATRIC INSTITUTE A 3-building residential complex, New Haven, CT

## Architects:

Frank O. Gehry & Associates, Santa Monica, CA  
Allan Dehar Associates, New Haven, CT

## Construction Consultant:

H.B. Fishman & Co., South Windsor, CT

## Roofing Contractor:

Bridgeport Restoration Co., Bridgeport, CT

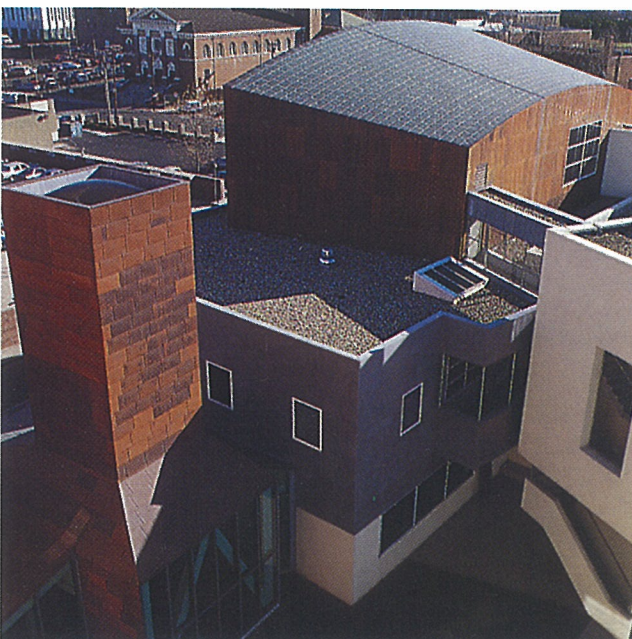
## General Contractor:

E&F Construction Co., Bridgeport, CT

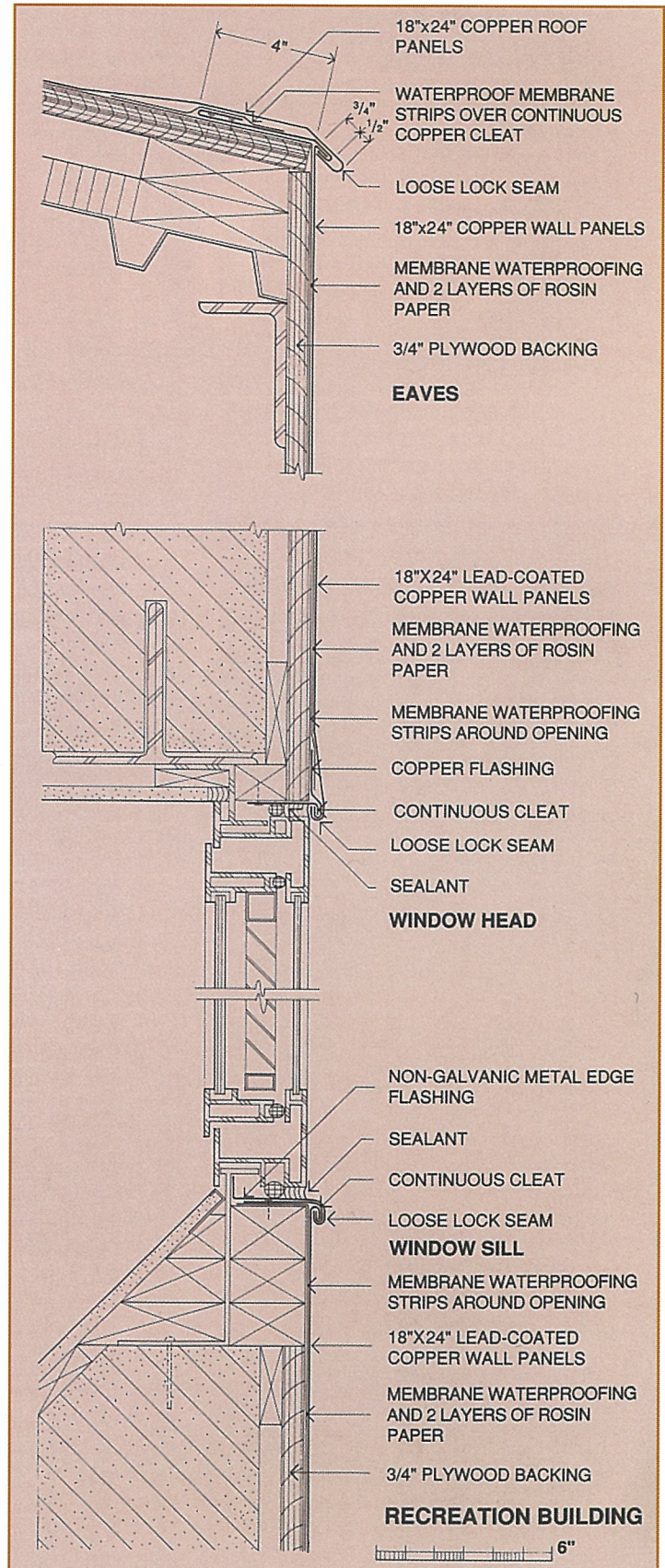
## THE SIGNIFICANT COPPER DESIGN DECISION

Yale Psychiatric Institute, housing 65 adolescent patients, groups three interconnected structures around an enclosed courtyard on 76,000 square feet. The challenge to integrate elements of the diverse downtown surroundings provided an opportunity to use many materials—brick, concrete, glass, synthetic stucco and copper sheet, both in its bright and lead-coated finishes.

Copper's unique flexibility—almost plasticity—allowed horizontal, angled and vertical surfaces to be clad in a continuous flow, while providing the long-lived weatherproofing inherent to the metal. Installed by standard methods, both copper roofing and facades capitalize on the "living" quality of the metal's characteristic patina, reflecting a major aesthetic goal of the designers. The organic quality of the structures is further enhanced by the naturally random patterning of the bright and lead-coated copper sheets.



## DETAIL DRAWINGS





## YALE PSYCHIATRIC INSTITUTE: THE ARCHITECTS' THINKING

*The following is taken from an interview with Allan Dehar during which he spoke about the project and his and Frank Gehry's decision to use copper.*

### OWNER REQUIREMENTS

Integrate the project harmoniously with surrounding structures.

Use materials that project:

- solidity and comfort
- agelessness and freshness
- beauty and ease of maintenance
- performance and practicality
- functionality and reasonable long-term cost.

### CHOICE OF MATERIALS

Every architect is challenged by budget restraints. In keeping with the owner's requirements, we chose a diversity of materials. And we chose to highlight

***There's a freedom for architects working with copper. It's flexible, fluid and easy to use and install.***

specific structures with copper. Though at first it appears extravagant, it took little to convince the owners of its merits...and its affordability.

### THE ROOF

The main roof is the focal point. It's a section of a cone, like a frustum. The rows of copper panels delineate the radius of each section.

The contractor first positioned the height of the structural support members to approximate the curve and slope, and then placed the decking, nailers and plywood sheathing. He used a computer to plot the cutting of the copper sheet to avoid custom sizing each panel on site. Regardless of shop drawings, models, computers, it's the field experience and professionalism of the installers that makes the job work. Always work with someone who knows the product.

We followed standard specs for metal roofing, but included a rubberized-asphalt

waterproofing membrane sandwiched between the copper panels and the plywood sheathing. The membrane tightly seals around the nails used to affix the roof panels. Each panel edge is pre-tinned, bent to form an interlock with the adjacent panel, and then soldered. The roofing consultant and CDA provided the references for specifications and installation. (*Ask for the **Sheet Copper Applications Handbook.***)

### THE WALLS

Copper for vertical surfaces? It makes sense. All the practical and aesthetic attributes of copper for roofing are true for walls as well...and then some.

Here's where the inherent flexibility of the material really plays a role. Copper bends easily around corners. No need for

### ***What other material could be used for both roofs and walls?***

corner seams that would be subject to problems. No need to worry about lining up panels, horizontally or vertically, to match window or door openings. Edges are simply cut and rolled where needed.

We consciously avoided the typical "basketweave" approach and pattern. It made for an attractive "randomized" look.

We used the same basic finish specs for the vertical walls and the roof areas. However, the wall panels were not soldered, but backed-up with a waterproofing membrane at wall bases, corners and planer intersections.

We wanted some overall textural, visual differences in portions of the structure, so major sections were done with bright copper and others with lead-coated copper sheet. The differences are dramatic, particularly as the light interacts with the surfaces throughout the day.

### THE COST

First costs are somewhat higher, but commercial buildings, and particularly institutional ones like YPI, are looking at the long term. Let's face it, if you get a leak, you have to fix far more than the leak, itself. That costs money.

Maintenance? No washing, no painting, no major repairs. You don't even have to replace a panel when it becomes dinged from stones or other hard objects. That just adds to the natural look of the panel. Some wrinkling and creasing adds to the charm of its texture...much like the changes in coloration and patina that come with age. You don't have to worry about weathering, you welcome it.

Weatherproof? When installed properly, the use of sealants is just an

### ***Copper combines elegance with longevity.***

extra measure of caution. Watertight seams and joints can be made to allow for normal expansion and contraction as well as the "breathability" necessary for proper insulation. And, unlike other "veneers," the same frame used for supporting the copper sheathing can be used for the insulation material.

With copper:

- You don't have to repoint joints every ten or twenty years;
- You don't have to apply weatherproofing every three or four years;
- You don't have to sandblast or polish or chemically clean to maintain the appearance and the integrity of the surface.

Properly installed and maintained, copper can last a lifetime.

*Copper Development Association Inc. and Canadian Copper & Brass Development Association provide information and technical assistance to architects, contractors and builders considering the use of copper and copper products in projects of any scale. This publication has been prepared for the use of such professionals and compiled from information sources CDA and CCBDA believe to be competent. However, recognizing that each installation must be designed and installed to meet the specific requirements of the application, CDA and CCBDA assume no responsibility or liability of any kind in connection with this publication or its use by any person or organization and make no representations or warranties of any kind hereby.*

*This publication is available through CDA and CCBDA along with many other publications covering a wide range of copper-related subjects.*



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