

STAINLESS STEEL FOR BUILDING EXTERIORS

A DESIGNERS' HANDBOOK SERIES
Nº 9010



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Originally, this handbook was published in 1984 by the Committee of Stainless Steel Producers, American Iron and Steel Institute.

The Nickel Institute republished the handbook in 2020. Despite the age of this publication the information herein is considered to be generally valid.

Material presented in the handbook has been prepared for the general information of the reader and should not be used or relied on for specific applications without first securing competent advice.

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Nickel Institute

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Stainless Steels for Building Exteriors

Introduction

Stainless steel is not just another material to hang on the outside of a building. It's something special.

Stainless steel is a material that will last a lifetime, whether the time span be 50, 75 or 100 years. In normal service it will not blister, peel or spall.

Stainless steel is a material that retains its appearance with minimum maintenance. Rain washes away gross accumulation of dirt and grime; but if cleaning is ever necessary, detergent and water or almost any commercial metal cleaner will do a superb job.

The appearance of stainless steel on a building exterior takes many forms. It can reflect a blue sky or golden sunset.

It blends with and compliments wood, stone, metal and masonry. It's fresh, light, strong, or delicate; it can be mirror reflective or dull matt.

Stainless steel is practical for high rise, low rise, industrial or commercial. It's readily available, fabricable, and economical.

Stainless steel is both decorative and functional. Long recognized for attractive appearance, stainless steel also can serve as a principal structural element. Consider, for example, that a flat stainless steel membrane, 1/16 of an inch thick, provides the complete roof structure covering an area 240 by 300 feet. (See page 32).

On the following pages are 15 outstanding examples of stainless steel for building exteriors.

Judge for yourself.

Buildings in Order of Appearance

Homestead Federal Savings & Loan Association Dayton, Ohio	4
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Homestead Federal Savings & Loan Association

Dayton, Ohio

Architect:
Levin Porter Associates
Dayton, Ohio

Curtain Wall:
Overly Manufacturing Company
Greensburg, Pennsylvania

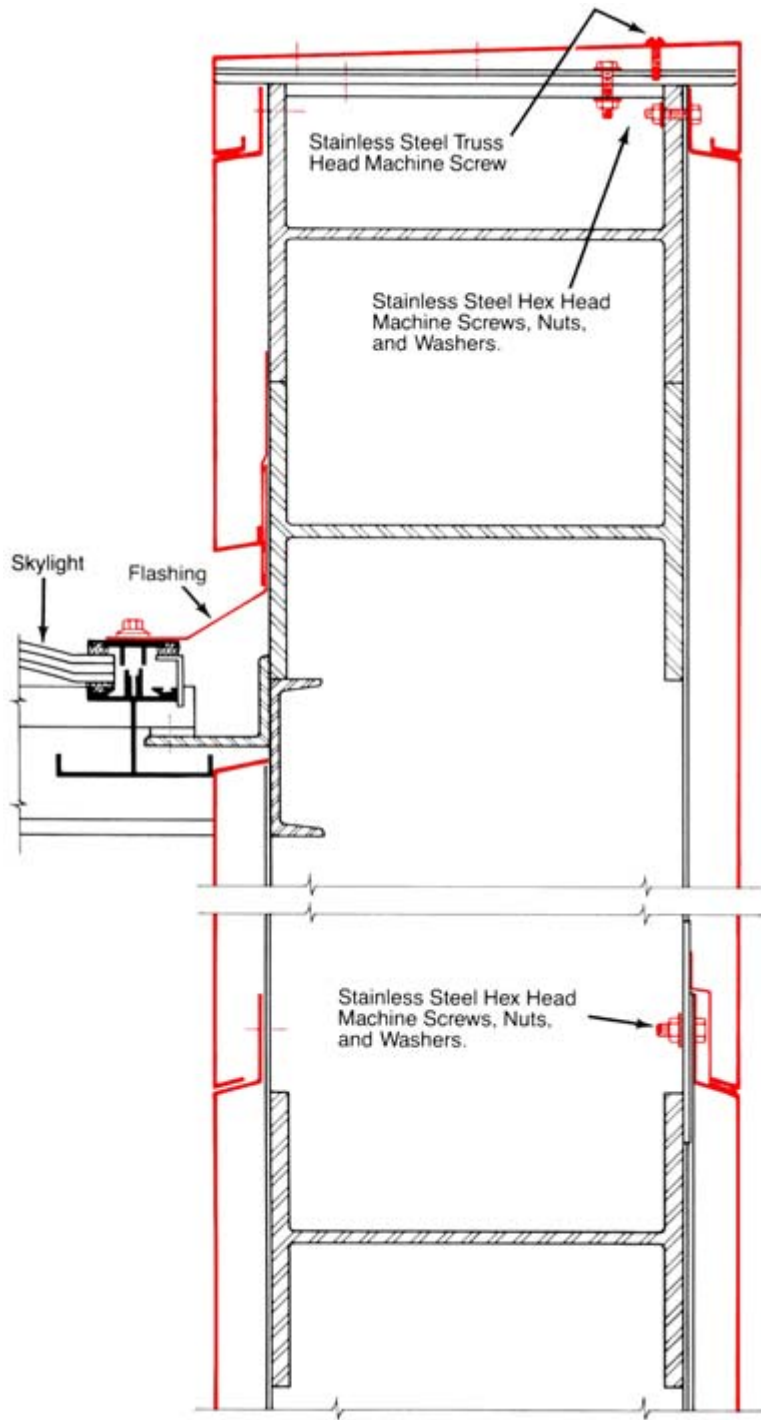
STAINLESS STEEL MATERIAL SPECIFICATION

Type:
304

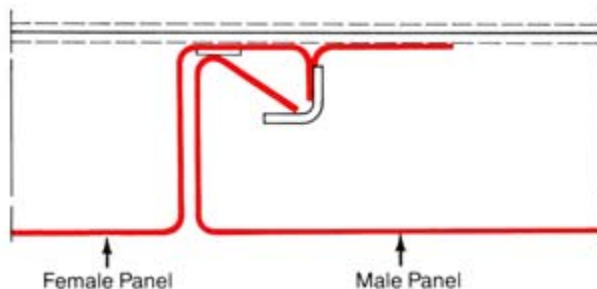
Thickness:
0.109 in. (2.76mm)

Finish:
No. 4

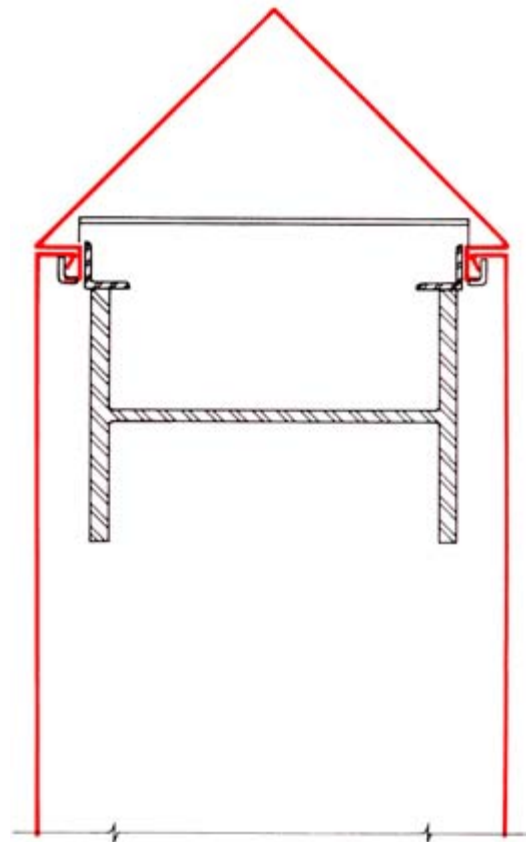
Note: Stainless steel is indicated in red.



Vertical Section



Typical Vertical Joint



Plan Section at



Greater Cleveland Regional Transit Authority Central Rail Maintenance Facility

Cleveland, Ohio

Architect:

Dalton Dalton Newport
Pittsburgh, Pennsylvania

Curtain Wall:

Steelite, Inc.
Pittsburgh, Pennsylvania

Contractor:

Industrial First, Inc.
Cleveland, Ohio

STAINLESS STEEL MATERIAL SPECIFICATION

Type:

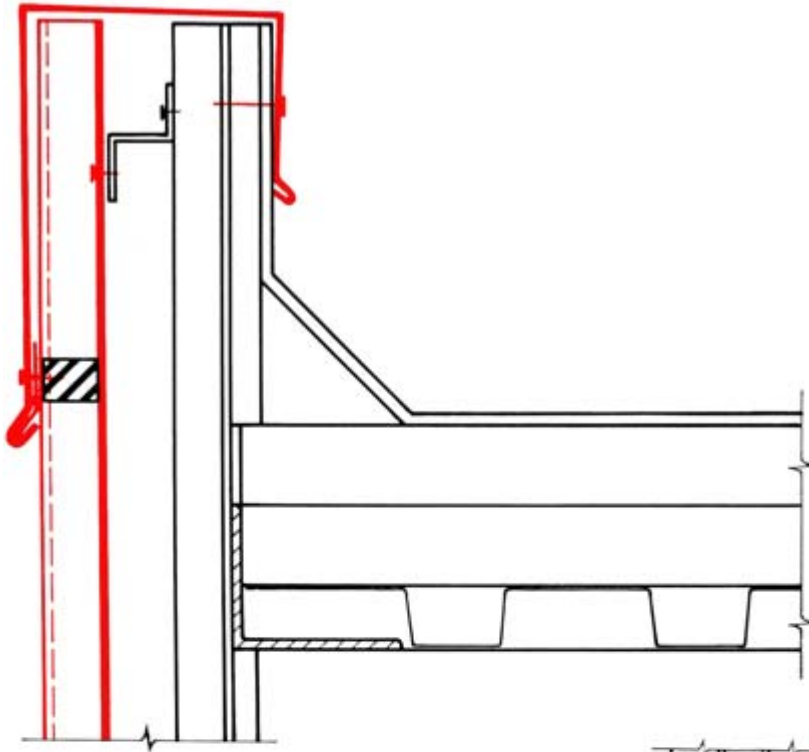
304

Thickness:

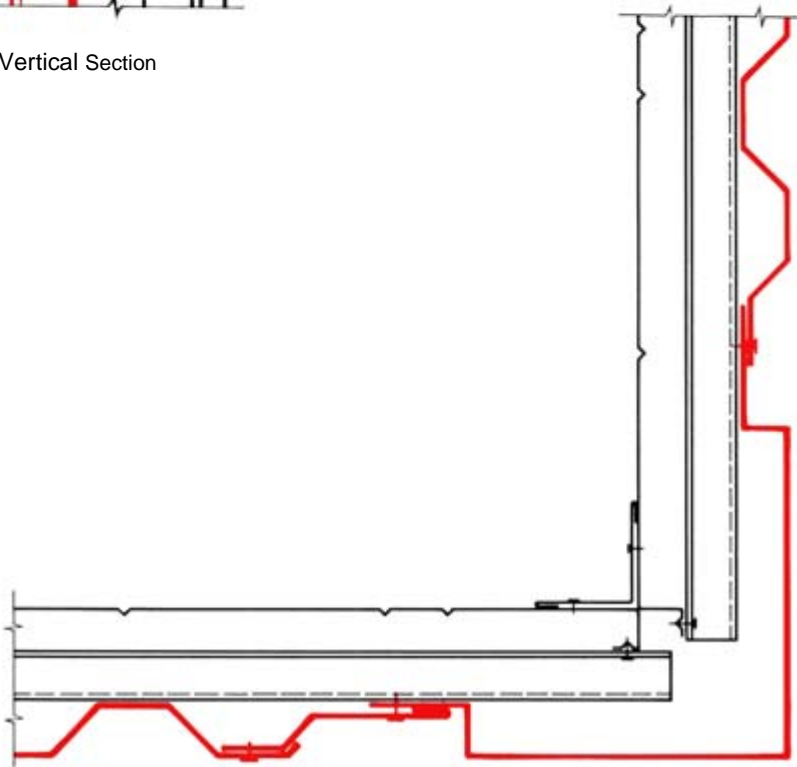
Exterior Panels-0.063 in. (1.6mm)
Copings and Other Trim-0.031 in.
(0.78mm)

Finish:

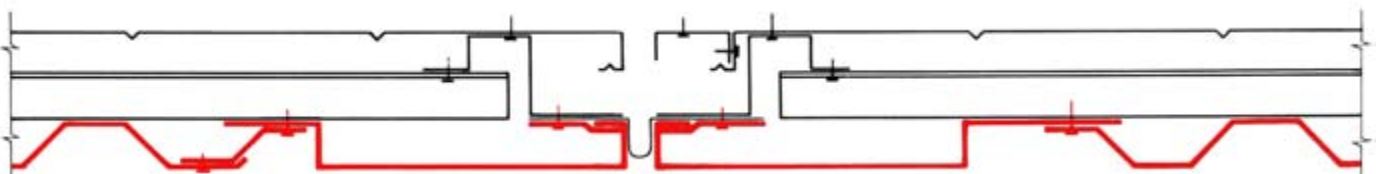
No. 2B



Vertical Section



Plan Section at Corner



Plan Section at Expansion Joint



Kuwait Chancery

Washington, D.C.

Architect:

Skidmore, Owings & Merrill New
York, New York

Wall Panels and Column Covers:

Canadian Rogers Eastern, Ltd.
Toronto, Ontario

STAINLESS STEEL MATERIAL SPECIFICATION

Type:

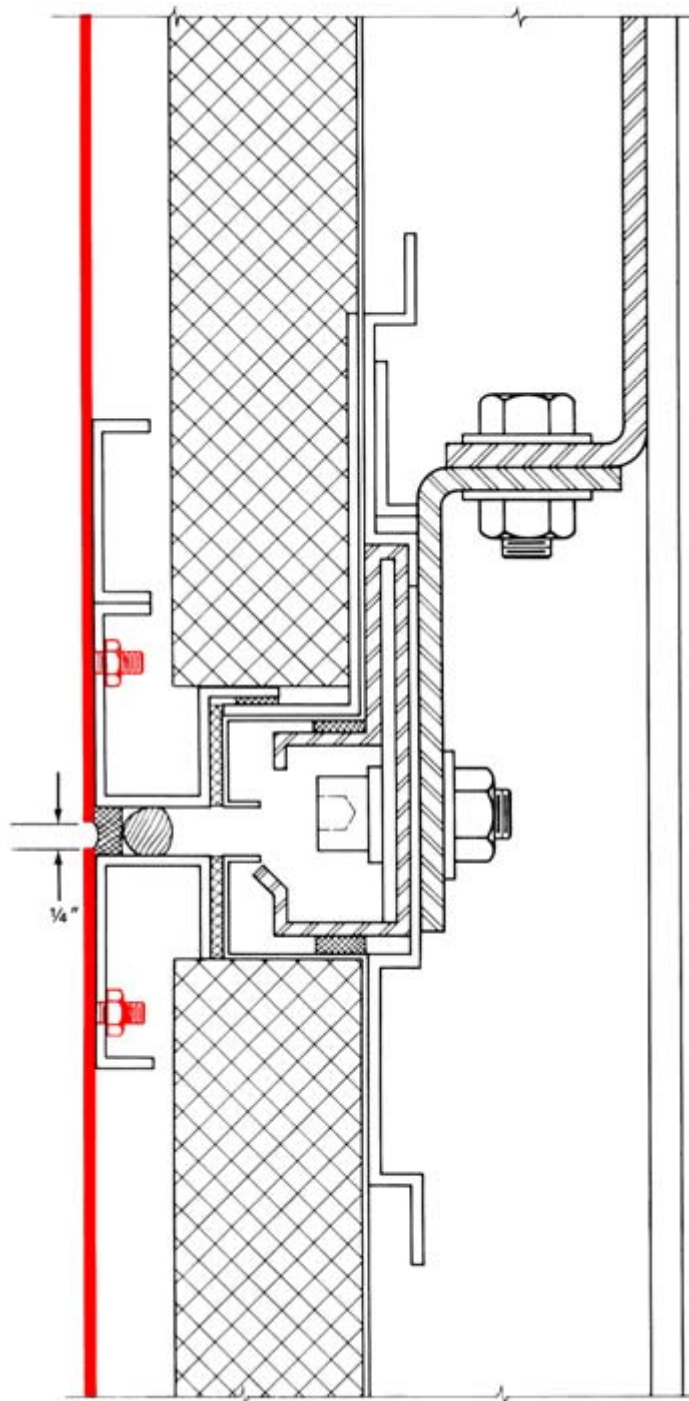
304

Thickness:

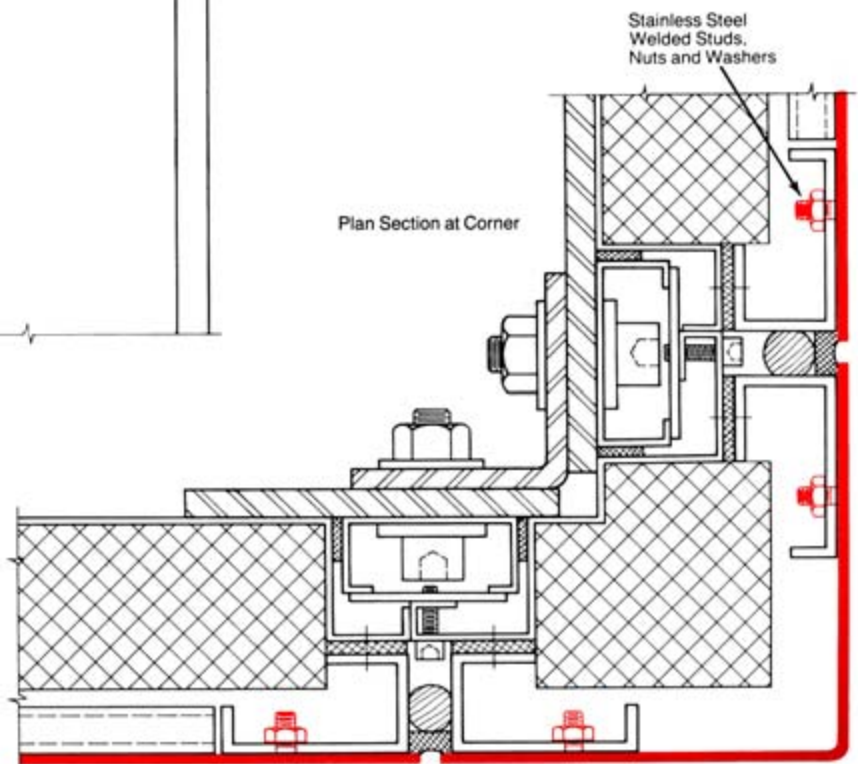
0.109 in. (2.76mm)

Finish:

Imperial



Vertical Section



Plan Section at Corner



Contemporary Arts Museum

Houston, Texas

Architect:

Gunnar Birkerts and Associates
Birmingham, Michigan

STAINLESS STEEL MATERIAL SPECIFICATION

Type:

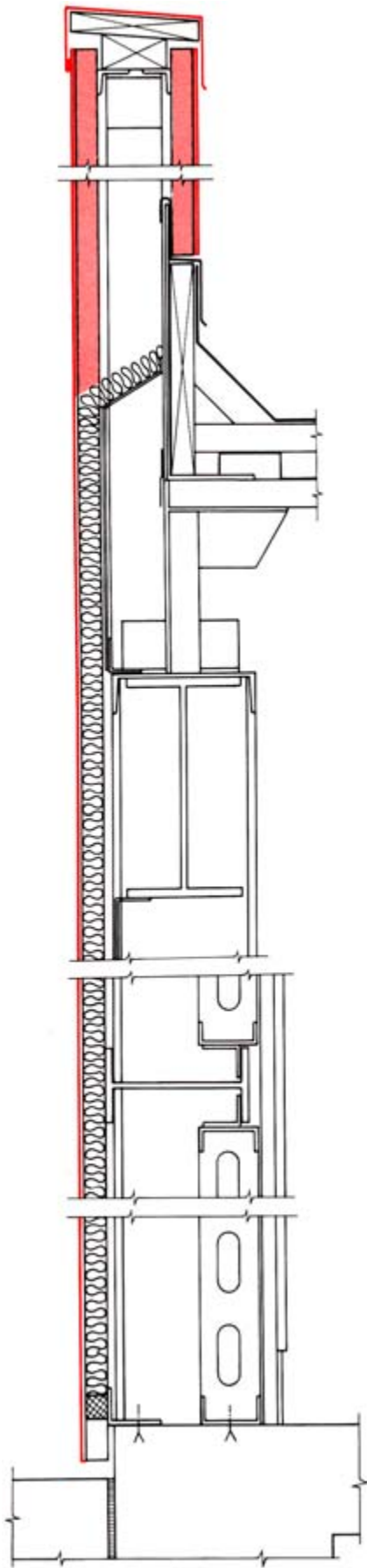
304

Thickness:

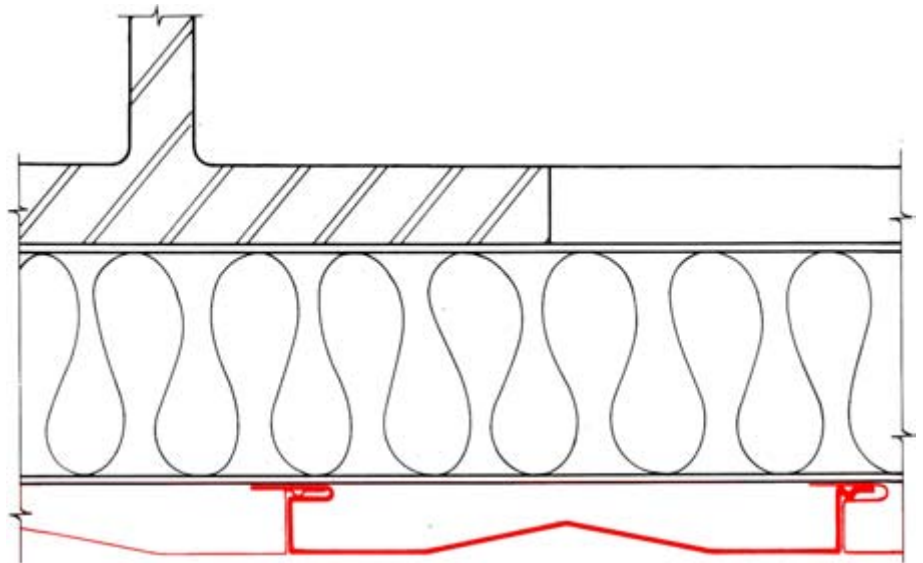
0.037 in. (0.94mm)

Finish:

Special Embossed



Vertical Section



Horizontal Cross Section



Photo: Balthazar Korab

Allegheny General Hospital

Pittsburgh, Pennsylvania

Architect:

Schmidt, Garden & Erikson
Chicago, Illinois

Curtain Wall:

Cupples Products Division
H. H. Robertson Company
St. Louis, Missouri

STAINLESS STEEL MATERIAL SPECIFICATION

Curtain wall is a laminated panel with stainless steel face and balance sheets. Core is aluminum. Curved panel is stainless steel with aluminum stiffeners.

Type:

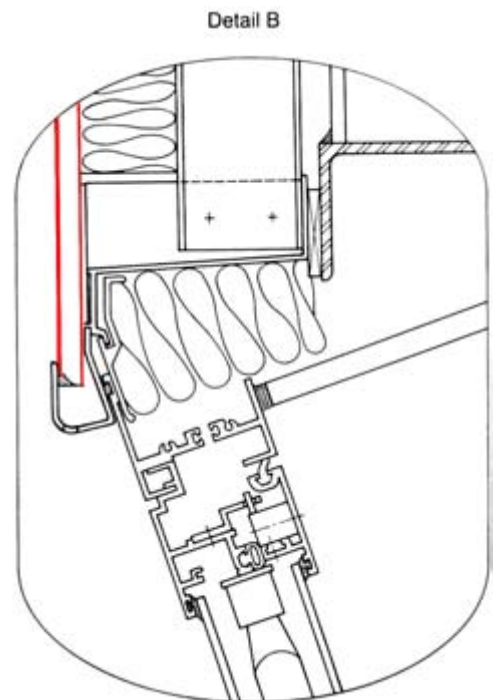
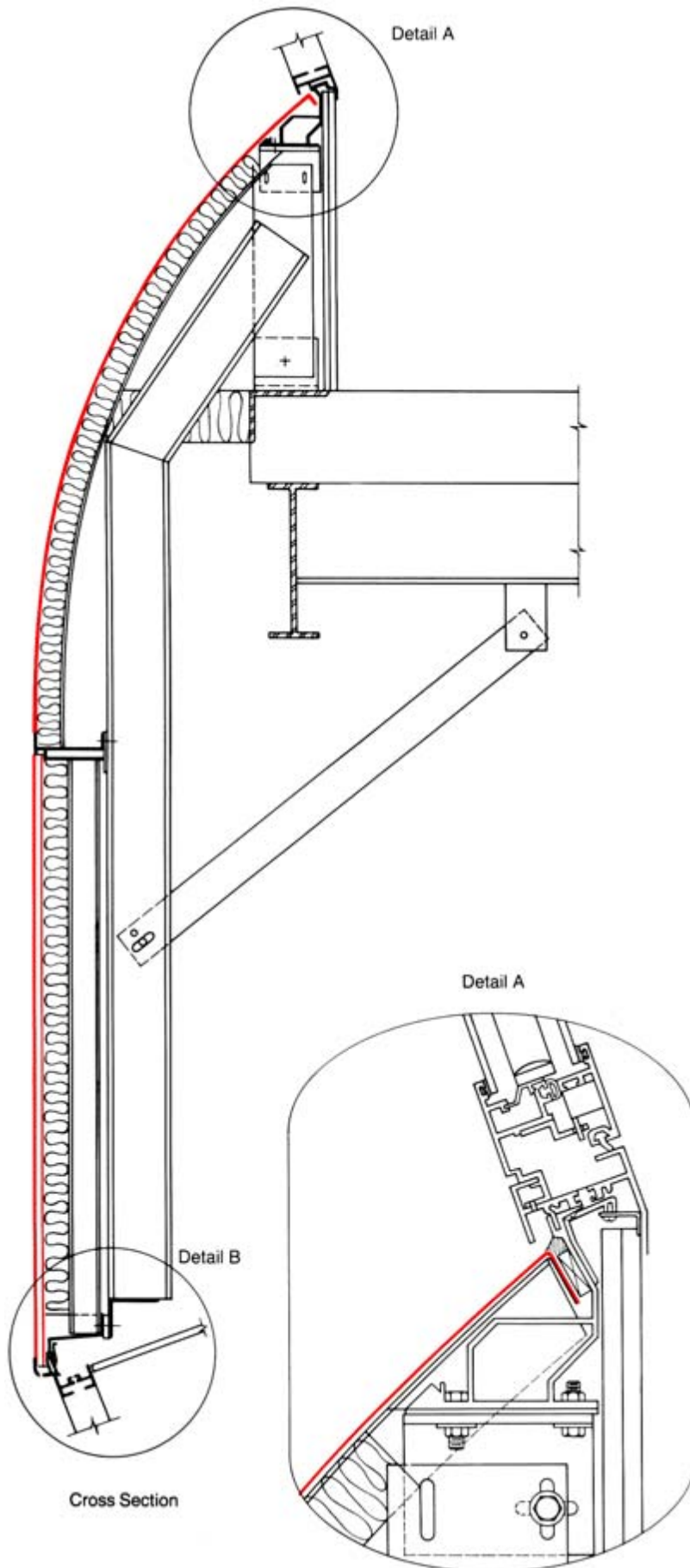
304

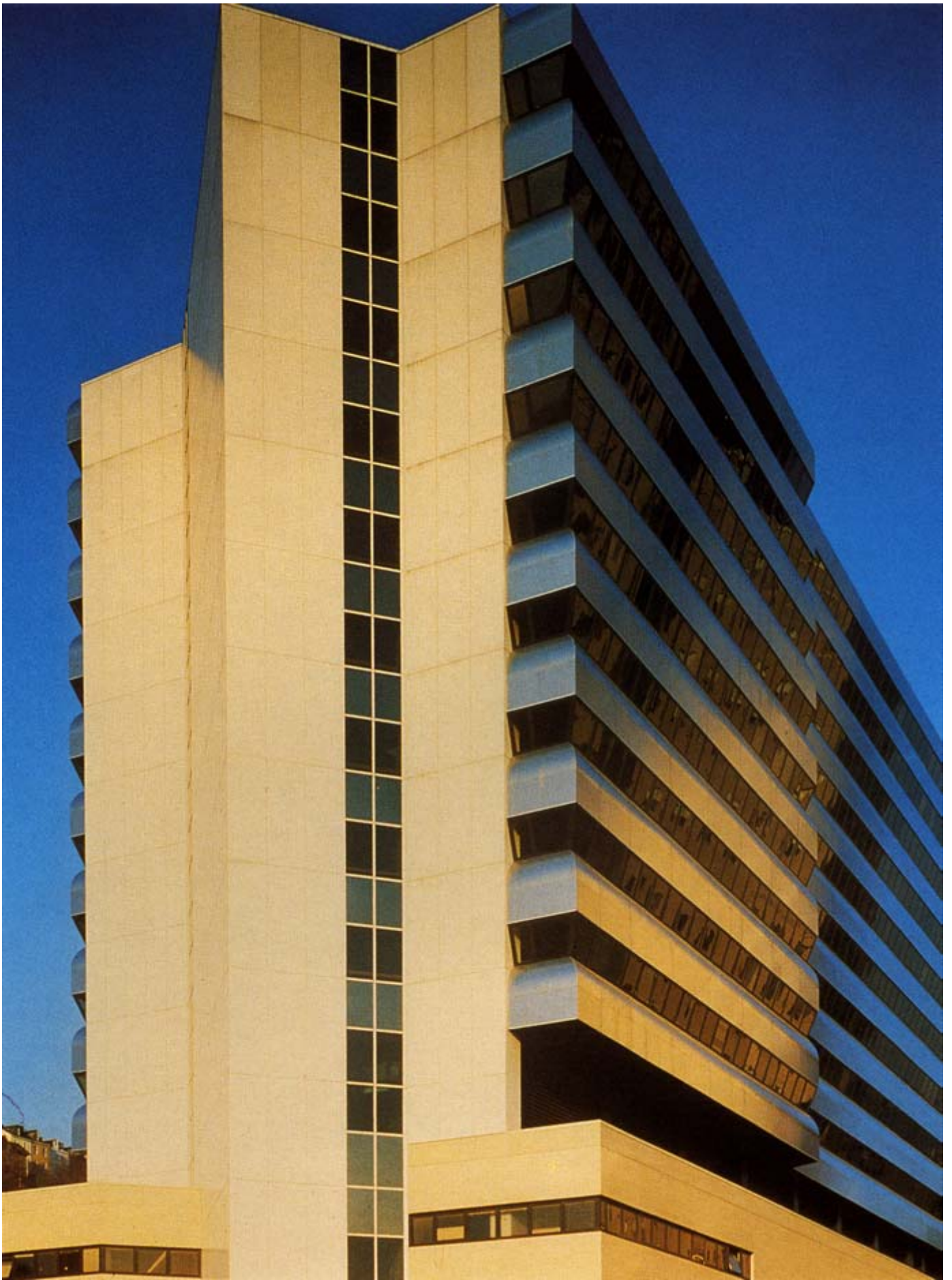
Thickness:

Face Sheet - 0.038 in. (0.96mm)
Balance Sheet - 0.019 in. (0.48mm)
Curved Panel - 0.078 in. (1.98mm)

Finish:

Face Sheet - No. 4
Balance Sheet - No. 2
Curved Panel - No. 4





Science North

Sudbury, Ontario

Architect:

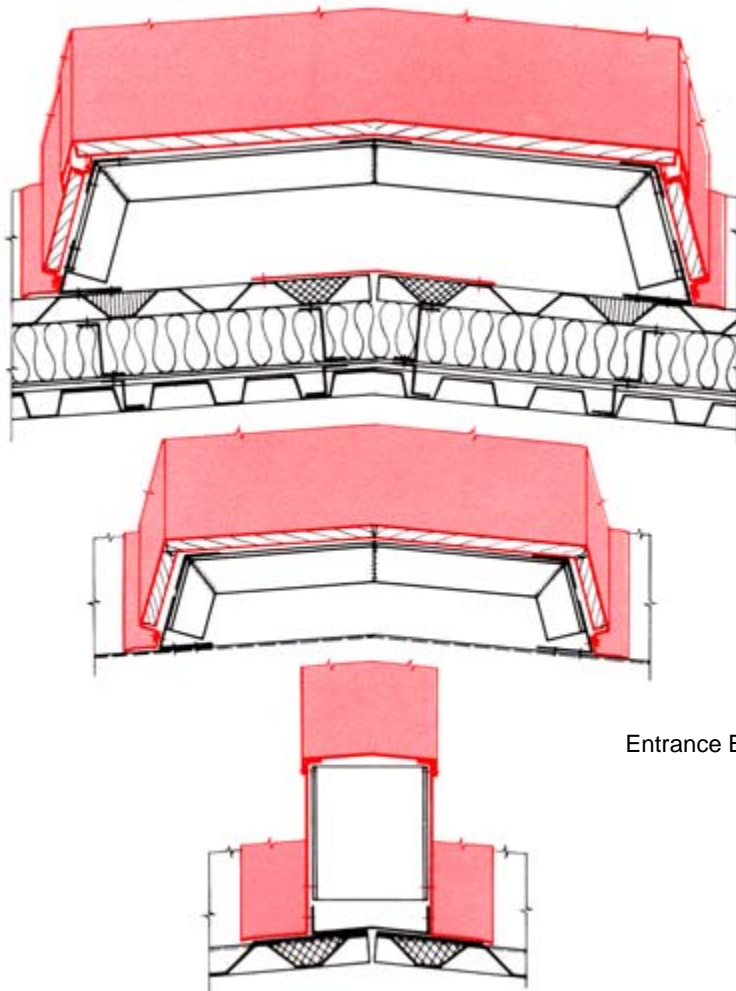
Townsend, Stefura, Baleshta
& Nicholls, Architects,
Sudbury, Ontario and
Moriyama & Teshima,
Architects, Toronto, Ontario
(Joint Venture Architects for
Science North)

Construction Managers:

Acme Building & Construction
Limited, Sudbury, Ontario and
J. S. Watson & Associates Ltd.,
Toronto, Ontario
(Joint Venture Construction
Consultants for Science North)

Curtain Wall:

Laurentian Insulations 1982
Limited, Sudbury, Ontario
(Erection), and Westeel Rosco,
Ltd., Toronto, Ontario
(Engineering & Fabrication)



Entrance Building

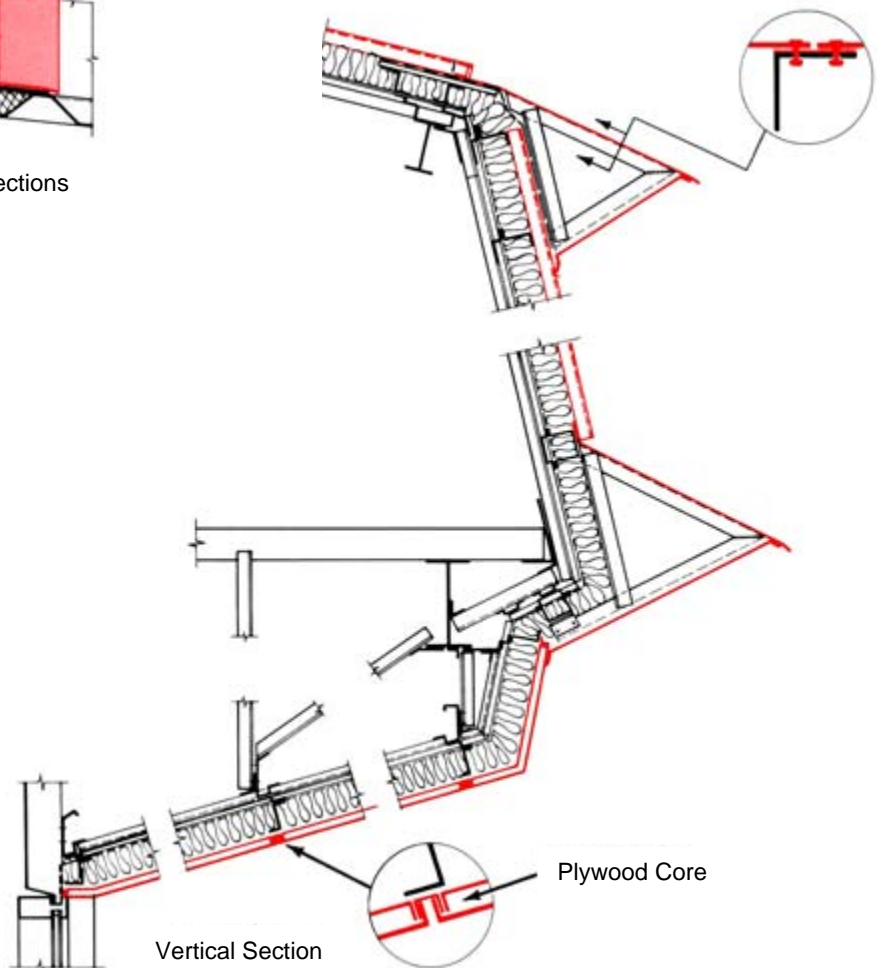
Ridge Cap Detail Sections

STAINLESS STEEL MATERIAL SPECIFICATION

Type:
304

Thickness:
Outer Panels - 0.312 in. (0.79mm)
Ridge Caps - 0.0312 in. (0.79mm)
Crows Beaks - 0.625 in. (1.58mm)
Soffits - 0.0312 in. (0.79mm)

Finish:
Outer Panels - Ezeform 35
Ridge Caps - XL Blend S
Crows Beaks - Imperial
Soffits - Imperial



Vertical Section

Plywood Core



Royal Bank Plaza

Toronto, Ontario

Architect:

The Webb Zerafa Menkes
Housden Partnership
Toronto, Ontario

Curtain Wall:

P.P.G. Industries Canada, Ltd.
Toronto, Ontario

STAINLESS STEEL MATERIAL SPECIFICATION

Type:

304

Thickness:

Mullion Covers-0.031 in. (0.78mm)
Spandrel Panels-0.062 in. (1.57mm)

Finish:

XL Blend S

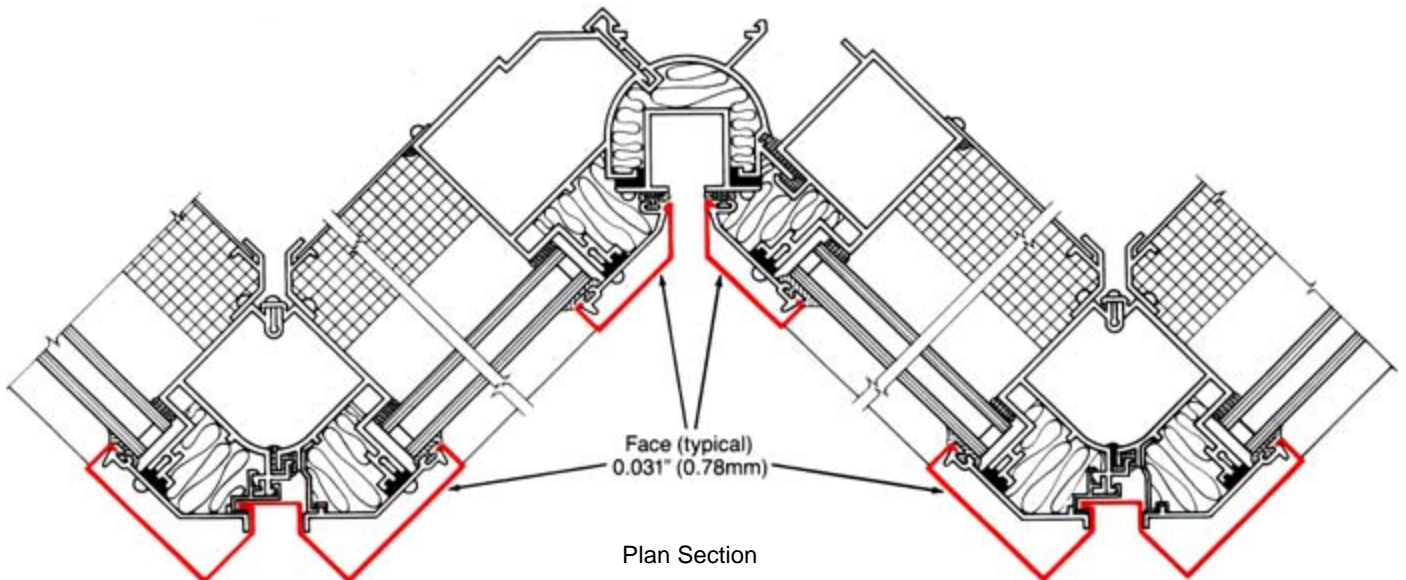
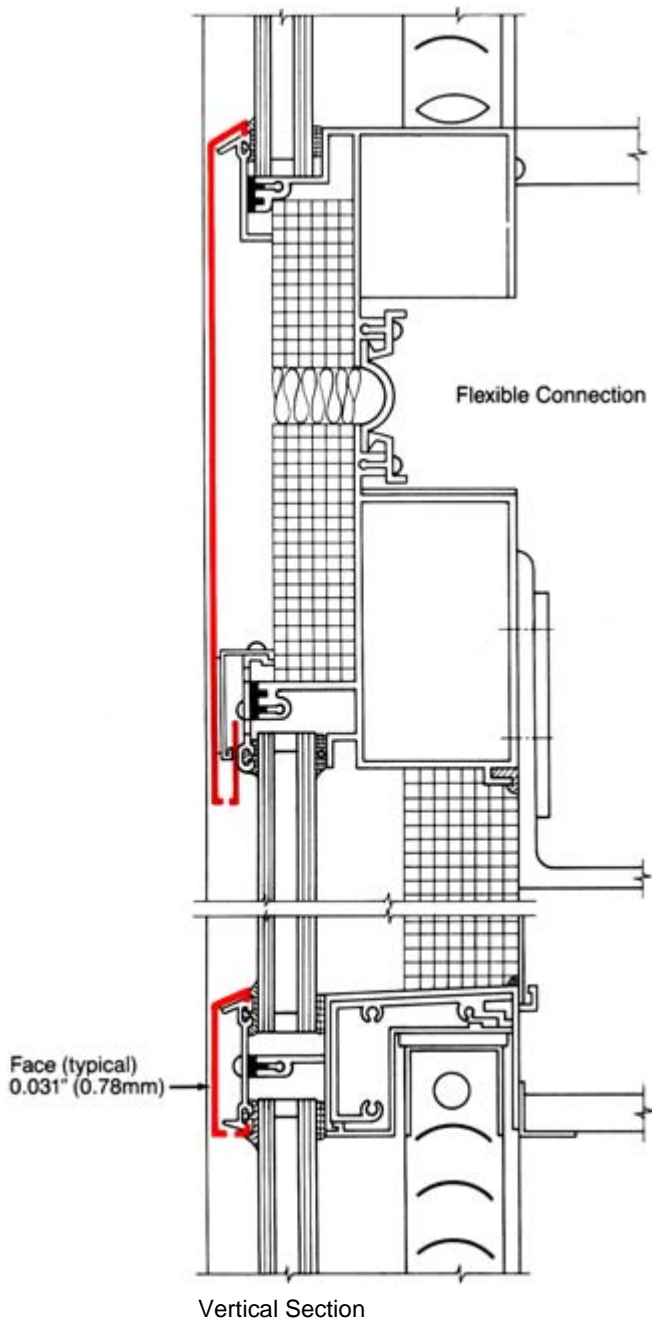
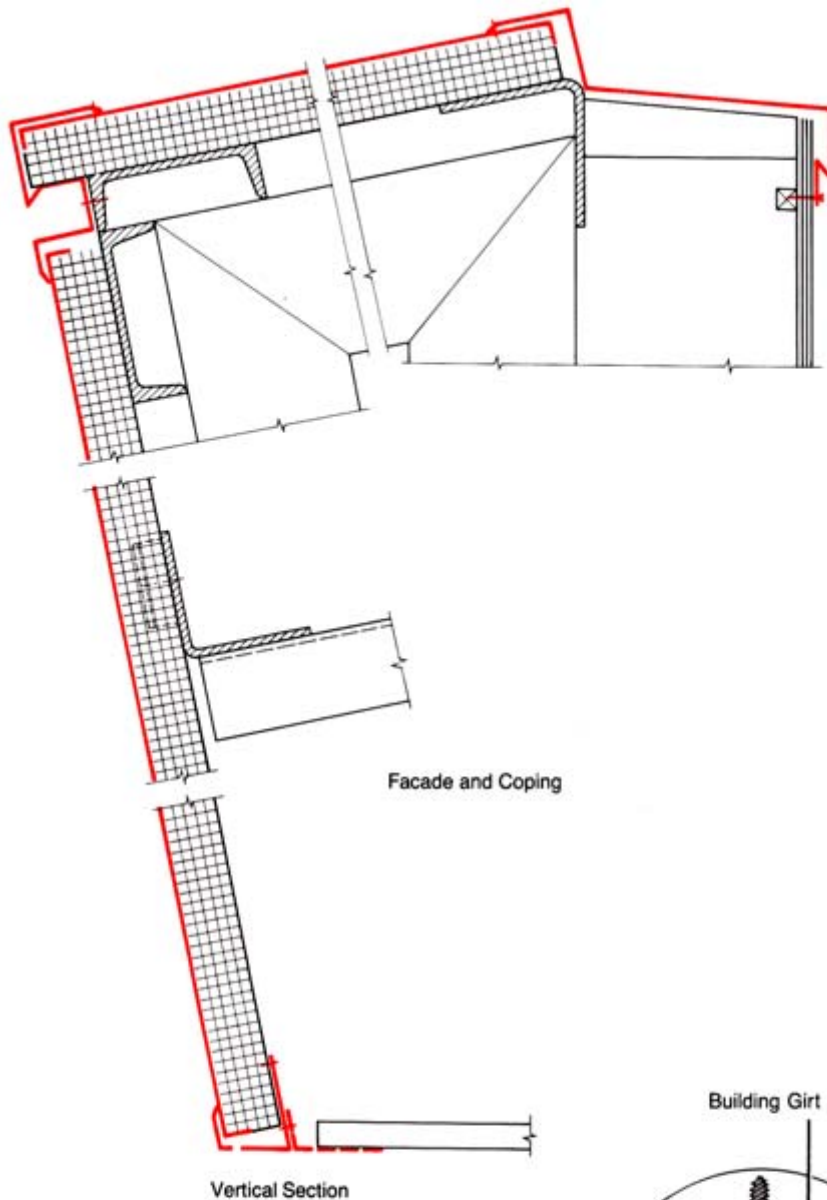




Photo: Derek N. Griffiths & Associates



Burdine's

Tampa, Florida

Architect:

Reynolds, Smith and Hills
Tampa, Florida

Curtain Wall:

H. H. Robertson Company
Pittsburgh, Pennsylvania

STAINLESS STEEL MATERIAL SPECIFICATION

Composite panel has stainless steel face sheet and galvanized steel balance sheet. Urethane core is factory foamed.

Type:

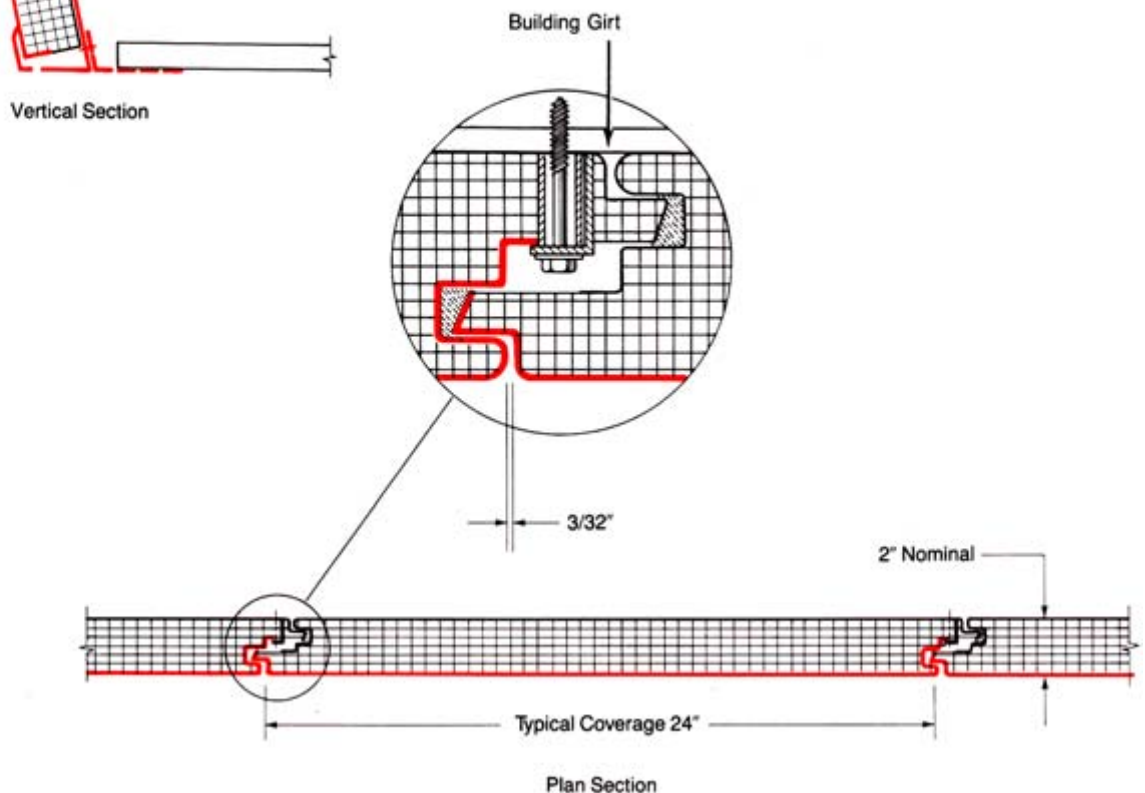
304

Thickness:

Face Sheet - 0.038 in. (0.96mm)

Finish:

No. 4





Veterans Administration Hospital

Augusta, Georgia

Architect:

Abreu and Robeson, Inc.
Atlanta, Georgia

Curtain Wall:

H. H. Robertson Company
Pittsburgh, Pennsylvania

STAINLESS STEEL MATERIAL SPECIFICATION

Curtain wall is a composite panel with stainless steel face and balance sheets. Urethane core is factory foamed.

Type:

304

Thickness:

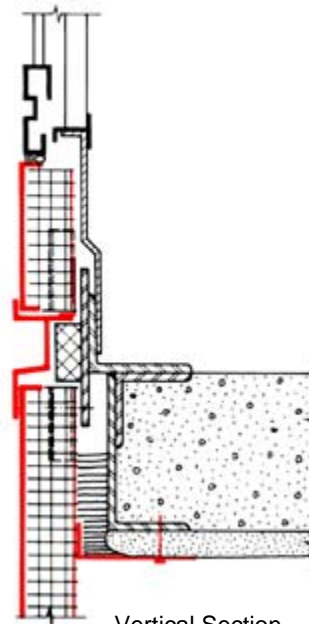
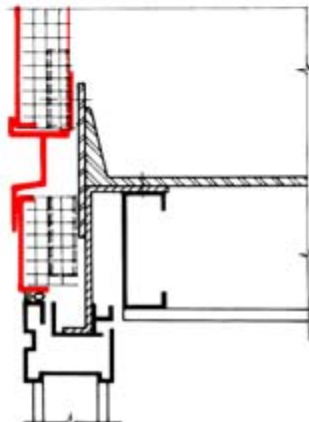
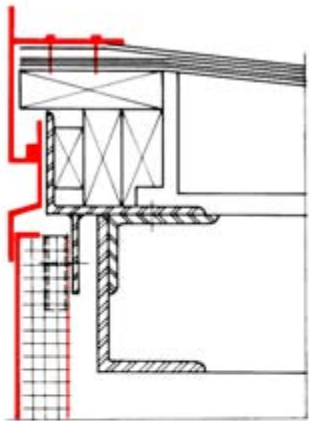
Face Sheet - 0.040 in. (1.01 mm)

Balance Sheet - 0.020 in. (0.50mm)

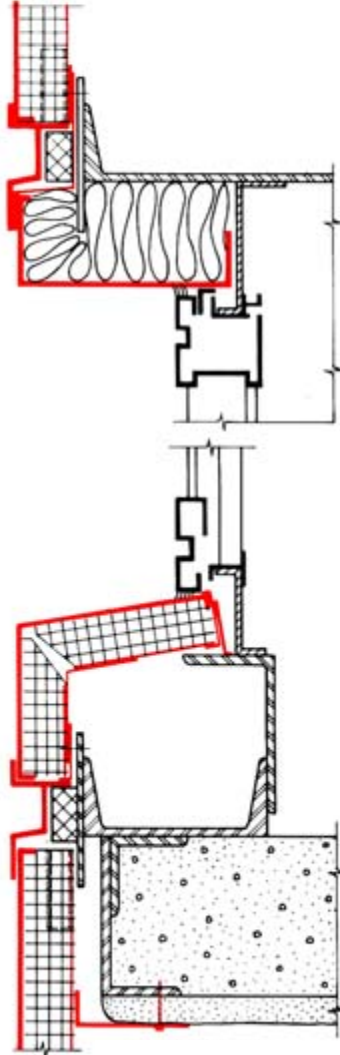
Finish:

Face Sheet - No. 4

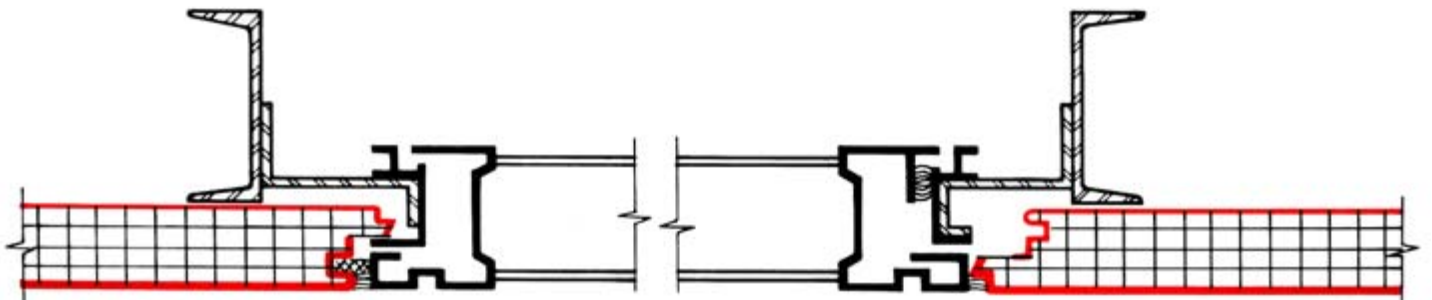
Balance Sheet - No. 2



Vertical Section



Vertical Section



Plan Section



Ironworkers Building

Pittsburgh, Pennsylvania

Architect:

Klaus Associates Architects
Pittsburgh, Pennsylvania

Curtain Wall:

H.H. Robertson Company
Pittsburgh, Pennsylvania

STAINLESS STEEL MATERIAL SPECIFICATION

Curtain wall is laminated panel with stainless steel face and liner sheets. Core is honeycomb, phenolic resin impregnated Kraft paper.

Type:

304

Thickness:

Face Sheet-0.040 in. (1.01 mm)
Balance Sheet-0.020 in (0.50mm)

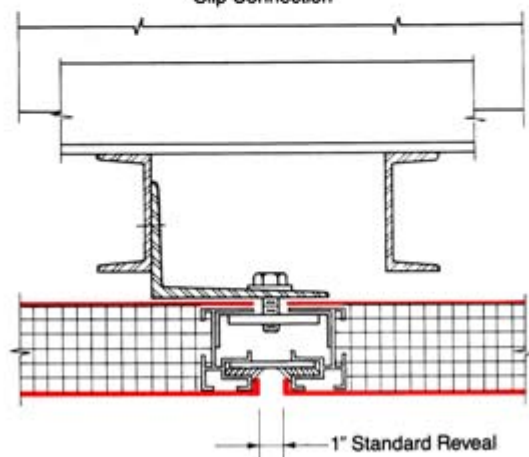
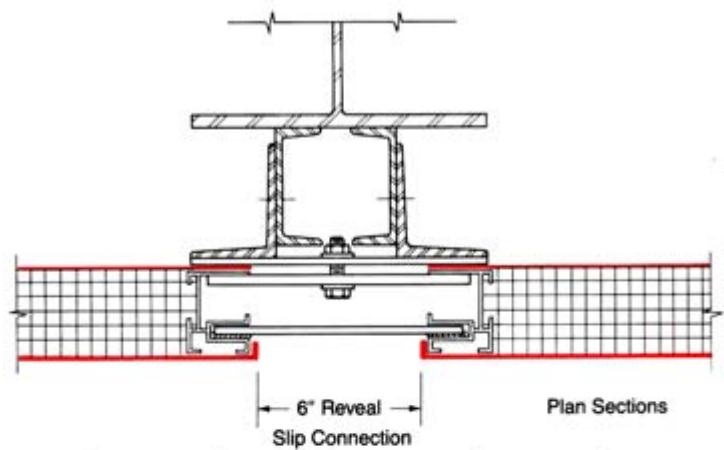
Finish:

Face Sheet - No. 4
Balance Sheet - No. 2

4' Module

4' Module

Vertical Section



Slip Connection



Nova, an Alberta Corporation Head Office Building

Calgary, Alberta

Owner:

Novalta Properties Ltd.
Calgary, Alberta

Architect:

J.H. Cook, Architects & Engineers
Calgary, Alberta

Curtain Wall:

Kawneer Company Canada, Ltd.
Scarborough, Ontario

STAINLESS STEEL MATERIAL SPECIFICATION

Type:

304

Thickness:

Exterior Panels - 0.125 in. (3.17mm)

Mullion Caps - 0.032 in. (0.81 mm)

Louvers - 0.062 in. (1.57mm)

Coping - 0.062 in. (1.57mm)

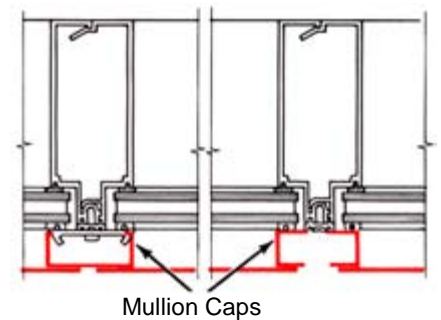
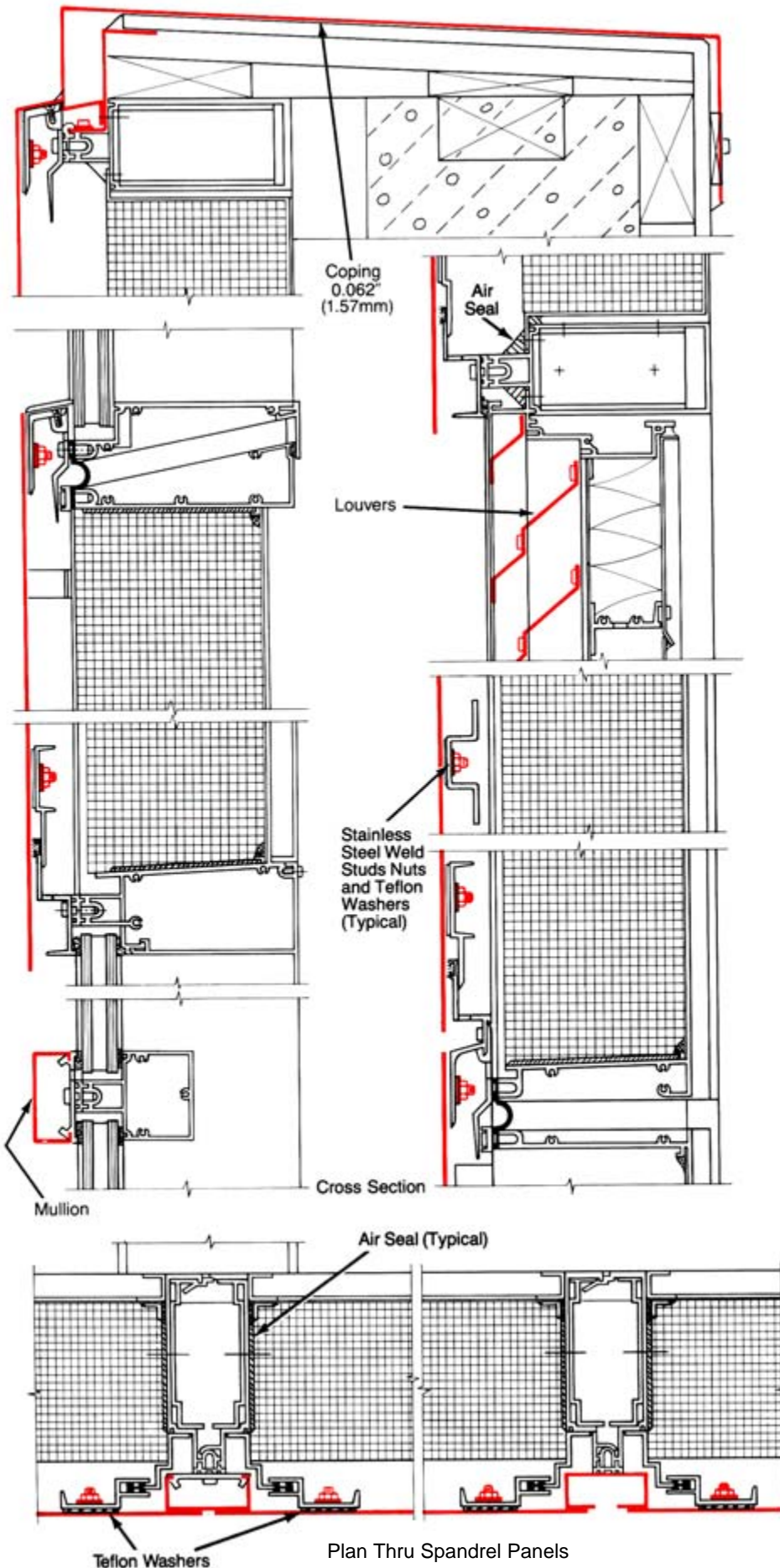
Finish:

Exterior Panels - Imperial

Mullion Caps - Imperial

Louvers - Imperial

Coping - Imperial



Plan Section Thru Windows



Photo: Fiona Spalding Smith

C.I.L. House

Toronto, Ontario

Architect:

Shore Tilbe Henschel Irwin Peters
and
Associated Architect Stanley Kwok
Toronto, Ontario

Curtain Wall:

Antamex Limited
Toronto, Ontario

STAINLESS STEEL MATERIAL SPECIFICATION

Type:

304

Thickness:

0.109 in. (2.76mm)

Finish:

Imperial

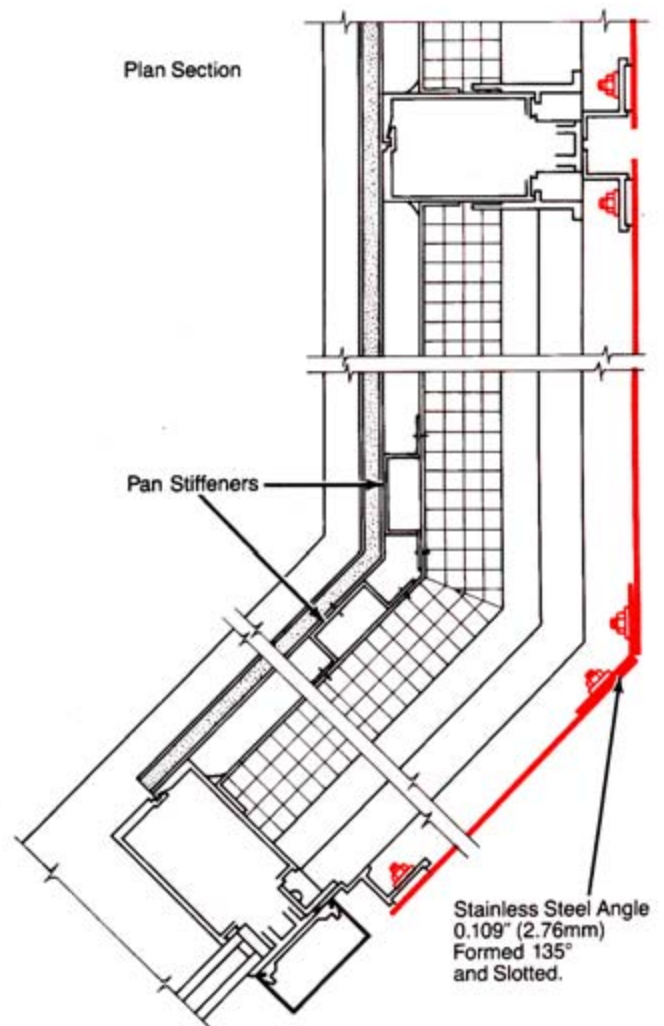
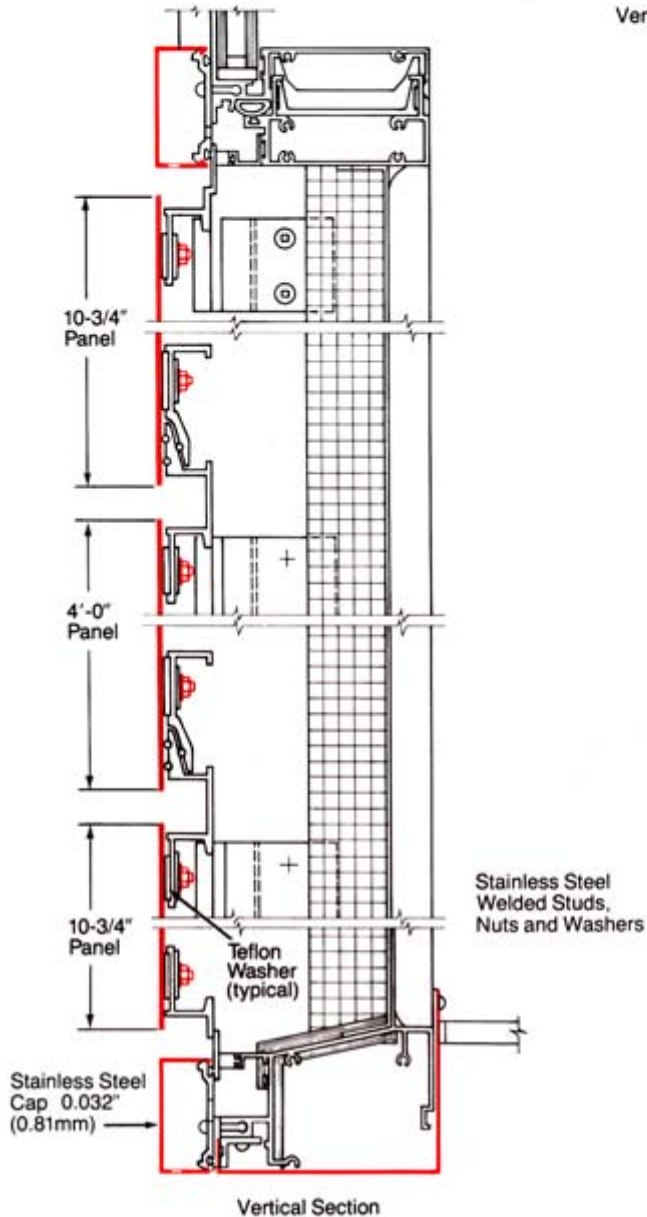
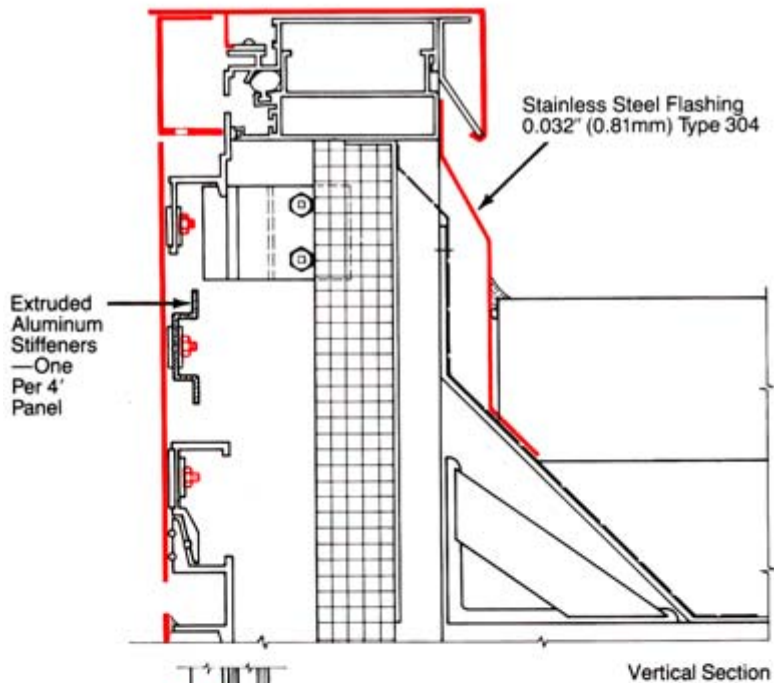




Photo: Applied Photography Ltd,

3/D International

Houston, Texas

Architect:

3/D International Houston, Texas

Curtain Wall:

Cupples Products Division
H. H. Robertson Company
Pittsburgh, Pennsylvania

STAINLESS STEEL MATERIAL SPECIFICATION

Curtain wall is a laminated panel with stainless steel face and back sheets. Core is cellular aluminum.

Type:

304

Thickness:

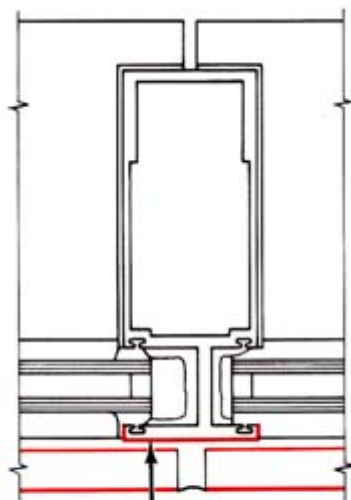
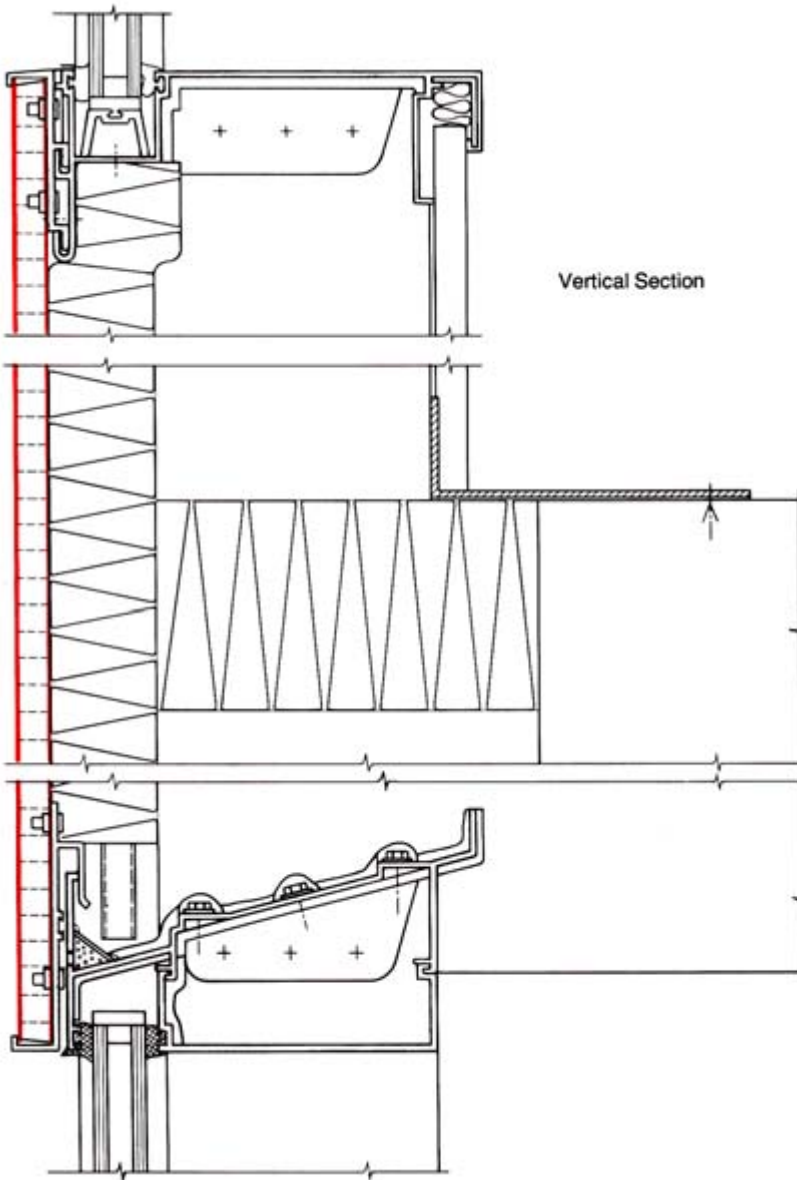
Face Sheet - 0.038 in. (0.96mm)

Back Sheet - 0.019 in. (0.55mm)

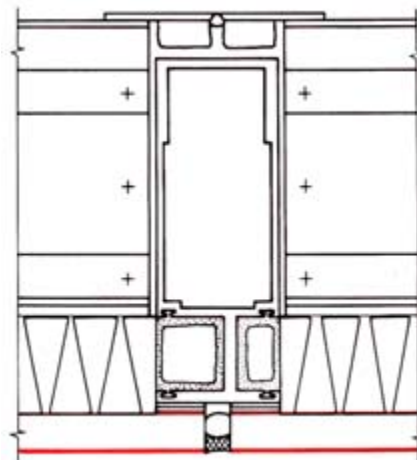
Finish:

Face Sheet - No. 4

Back Sheet - No. 2



Stainless Steel Cover
0.038" (0.96mm)
with No. 4 Finish





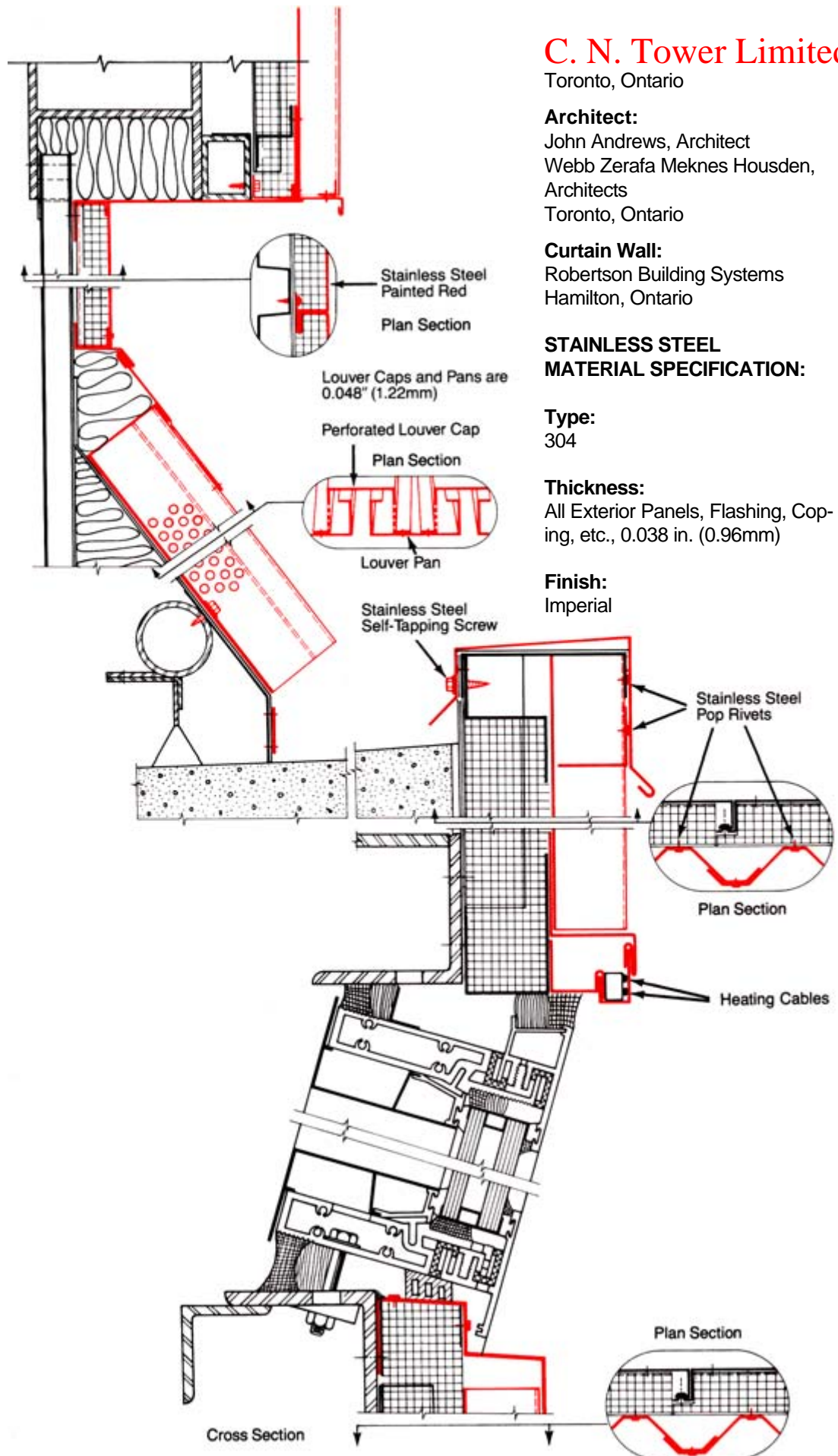
AG = Above Ground
SL = Above Sea Level

Mechanical Level
1) 1191' 2" AG
2) 1427' 1427' 2" SL

FM Transmission Level
1) 1176' 8" AG
2) 1414' 1414' 8" SL

TV Transmission Level
1) 1163' AG
2) 1399' SL

Restaurant Level
1) 1150' AG
2) 1386' SL





Dalhousie University Sports Centre

Halifax, Nova Scotia Air-supported membrane roof

Architect:
Leslie R. Fair & Associates,
Halifax, Nova Scotia

Designer:
D. A. Sinoski Toronto, Ontario

Engineering:
Carruthers & Wallace Limited
Rexdale, Ontario

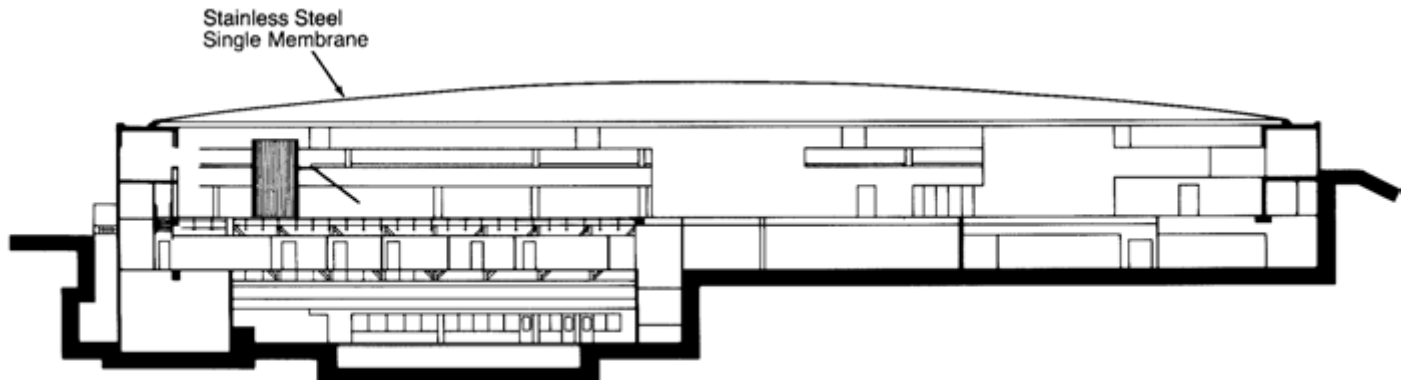
Roof Fabricator:
Blenkhorn & Sawle Ltd.
St. Catharines, Ontario

STAINLESS STEEL MATERIAL SPECIFICATION

Type:
304

Thickness:
1/16 in. (1.58mm)

Finish:
No. 2B



Ultradome II

(Proposed)
Double membrane air-inflated roof

Designer:
D. A. Sinoski Toronto,
Ontario
**Engineering, Fabrication
and Erection:**
Ultradome Consortium

Members:
Sinoski Engineering Ltd.
Willowdale, Ontario
Stephen Parazader
Structural Design, Inc.
Dundas, Ontario
Blenkhorn & Sawle Ltd.
St. Catharines, Ontario
Atlas Steels
Welland, Ontario

STAINLESS STEEL MATERIAL SPECIFICATION

Type:
304

Thickness:
1/16 in. (1.58mm)

Finish:
No. 2B

