

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

Location of Construction: 121 Bishop St		Owner: Bill Goodman WTC L.L.C.		Phone: 863-4600		Permit No: 980924	
Owner Address:		Lessee/Buyer's Name:		Phone:		Business Name:	
Contractor Name: Dahlgren Construction, Inc.		Address: 412 U.S. Rte 1, Yarmouth, ME		Phone: 04096		Permit Issued: AUG 19 1998 CITY OF PORTLAND	
Past Use: Vacant Building		Proposed Use: Same		COST OF WORK: \$ 25,000.00		PERMIT FEE: \$ 145.00	
				FIRE DEPT. <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied		INSPECTION: Use Group: Type:	
				Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>	
Proposed Project Description: Remove existing steel siding Install new 26 gauge steel siding				PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.) Action: Approved <input type="checkbox"/> Approved with Conditions: <input type="checkbox"/> Denied <input type="checkbox"/> Signature: _____ Date: _____			
Permit Taken By: MG		Date Applied For: 05 August 1998					

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..

PERMIT ISSUED WITH REQUIREMENTS

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	ADDRESS:	DATE: 06 August 1998	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

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: *[Signature]*

CEO DISTRICT 1

AR/DC

COMMENTS

9/2/98 Spoke w/ contractor by phone. No on site pre-con meeting deemed necessary.

11/17/99 Completed
DR

Inspection Record

Type	Date
Foundation: _____	_____
Framing: _____	_____
Plumbing: _____	_____
Final: _____	_____
Other: _____	_____

LAND USE - ZONING REPORT

ADDRESS: 121 Bishop St. DATE: 8/10/98

REASON FOR PERMIT: Remove old i. install new steel siding

BUILDING OWNER: Bill Goodman C-B-L: 291-A-2

PERMIT APPLICANT: Steven Duran - Dahlgen Const

APPROVED: with conditions DENIED: _____

9.

CONDITION(S) OF APPROVAL

1. During its existence, all aspects of the Home Occupation criteria, Section 14-410, shall be maintained.
2. The footprint of the existing _____ shall not be increased during maintenance reconstruction.
3. All the conditions placed on the original, previously approved, permit issued on _____ are still in effect for this amendment.
4. Your present structure is legally nonconforming as to rear and side setbacks. If you were to demolish the building on your own volition, you will not be able to maintain these same setbacks. Instead you would need to meet the zoning setbacks set forth in today's ordinances. In order to preserve these legally non-conforming setbacks, you may only rebuild the garage in place and in phases.
5. This property shall remain a single family dwelling. Any change of use shall require a separate permit application for review and approval.
6. Our records indicate that this property has a legal use of _____ units. Any change in this approved use shall require a separate permit application for review and approval.
7. Separate permits shall be required for any signage.
8. Separate permits shall be required for future decks and/or garage.

9. Other requirements of condition A separate permit is required when A use is proposed for this building, so that zoning & Bldg compliance is reviewed & approved

Marge Schmuckal

Marge Schmuckal, Zoning Administrator,
Asst. Chief of Code Enforcement

THIS IS NOT A PERMIT/CONSTRUCTION CANNOT COMMENCE UNTIL THE PERMIT IS ISSUED

**Building or Use Permit Pre-Application
Attached Single Family Dwellings/Two-Family Dwelling
Multi-Family or Commercial Structures and Additions Thereto**

In the interest of processing your application in the quickest possible manner, please complete the Information below for a Building or Use Permit.

NOTEIf you or the property owner owes real estate or personal property taxes or user charges on ANY PROPERTY within the City, payment arrangements must be made before permits of any kind are accepted.**

Location/Address of Construction (include Portion of Building): <i>121 Bishop Street</i>		
Total Square Footage of Proposed Structure: <i>8500^P Existing</i>	Square Footage of Lot: <i>1 1/2 Acres</i>	
Tax Assessor's Chart, Block & Lot Number Chart# <i>291</i> Block# <i>A</i> Lot# <i>2</i>	Owner: <i>(Bill Goodman)</i> <i>WTG L.L.C.</i>	Telephone#: <i>(207) 883-4600</i>
Owner's Address: <i>PO Box 1660 Portland, ME 04104</i>	Lessee/Buyer's Name (If Applicable): <i>None</i>	Cost Of Work: <i>\$ 25,000</i> Fee: <i>\$ 145-</i>
Proposed Project Description: (Please be as specific as possible) <i>Remove Existing Steel Siding. to Install New 26 gauge Steel Siding</i>		
Contractor's Name, Address & Telephone <i>Dahlgren Const. Inc. 412 US Route #1, Yarmouth, ME 04096</i>		Rec'd By: <i>[Signature]</i>
Current Use: <i>VACANT</i>	Proposed Use: <i>VACANT</i>	

Separate permits are required for Internal & External Plumbing, HVAC and Electrical installation.

- All construction must be conducted in compliance with the 1996 B.O.C.A. Building Code as amended by Section 6-Art II.
 - All plumbing must be conducted in compliance with the State of Maine Plumbing Code.
 - All Electrical Installation must comply with the 1996 National Electrical Code as amended by Section 6-Art III.
 - HVAC (Heating, Ventillation and Air Conditioning) installation must comply with the 1996 International Mechanical Code.
- You must Include the following with you application:

- 1) A Copy of Your Deed or Purchase and Sale Agreement
- 2) A Copy of your Construction Contract, if available
- 3) A Plot Plan/Site Plan

Minor or Major site plan review will be required for the above proposed projects. The attached checklist outlines the minimum standards for a site plan.

4) Building Plans

Unless exempted by State Law, construction documents must be designed by a registered design professional.

A complete set of construction drawings showing all of the following elements of construction:

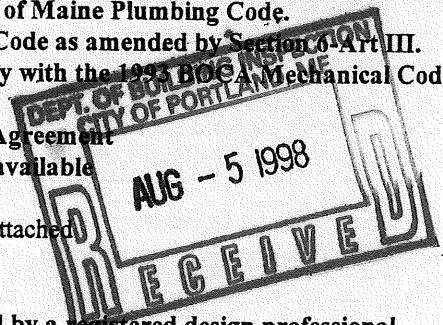
- Cross Sections w/Framing details (including porches, decks w/ railings, and accessory structures)
- Floor Plans & Elevations
- Window and door schedules
- Foundation plans with required drainage and dampproofing
- Electrical and plumbing layout. Mechanical drawings for any specialized equipment such as furnaces, chimneys, gas equipment, HVAC equipment (air handling) or other types of work that may require special review must be included.

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/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature of applicant: <i>[Signature]</i>	Date: <i>8/5/98</i>
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Building Permit Fee: \$25.00 for the 1st \$1000. cost plus \$5.00 per \$1,000.00 construction cost thereafter.
Additional Site review and related fees are attached on a separate addendum





Inspection Services
Michael J. Nugent
Manager

Department of Urban Development
Joseph E. Gray, Jr.
Director

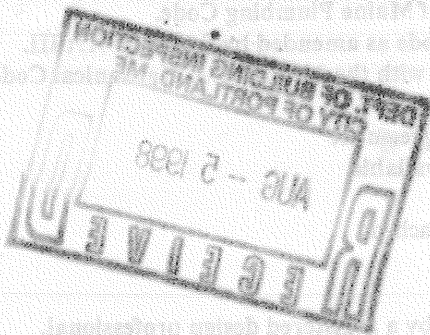
CITY OF PORTLAND

Congratulations!!!!!!

**Building or Use Permit Application
Attached Single Family Dwellings/Two-Family Dwelling
Multi-Family or Commercial Structures and Additions Thereto**

As an applicant for a building permit, you are about to enter into a relationship with our Office. We welcome any questions, comments or suggestions that will make the process more efficient. Attached you will find an application and some samples of the submissions you will provide at application time. Please read ***ALL*** of the information and if you need any further assistance please call 874-8703 or 874-8693.

Minor or Major site plan review will be required for the most of the above proposed projects.



ALEXANDER HUTCHEON ASSOCIATES
ENGINEERS

519 CONGRESS STREET
PORTLAND, MAINE 04101
TELEPHONE 207 774-0484

August 4, 1998

Mr. Steve Dunn
Dahlgren Construction Company
20 U.S. Route 1
Yarmouth, Maine 04096

Re: Alterations to former railroad storage building;
121 Bishop Street, Portland, Maine

Dear Steve:

As shown on the enclosed sketch, it is your intent to apply new steel siding and girts on the existing framing of the steel building at 121 Bishop Street, Portland, Maine.

It is my understanding that no changes will be made to the existing steel structure, other than to remove the existing siding and vertical girts, and install the new siding and new horizontal girts.

The modifications you propose will actually reduce the wind force on the eave member, but will impose a lateral load on the columns, at the location of the new horizontal girt.

As shown on the enclosed calculation sheet, the capacity of the column, under full dead and live load from the roof, and the lateral load from the wind, is about 1.33 times the required capacity.

It is my opinion, based on these calculations, that these proposed alterations will not reduce the structural capacity of the existing building.

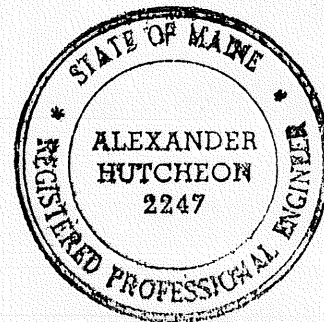
Your questions and comments regarding this report are welcome.

Very truly yours,

ALEXANDER HUTCHEON Associates,
Engineers



Alexander Hutcheon, P.E.
President



Enclosures: Sketch of sidewall of building
Calculation sheet 1 of 1

GOODMAN WAREHOUSE
121 BISHOP ST.

ALEXANDER HUTCHEON ENGINEERS

8/4/98

519 COMMERCIAL
PORTLAND, OREGON
97204
SHT. 1 OF 1

CHECK EXISTING COLUMNS FOR LATERAL LOAD

ROOF LOAD: SNOW $0.7(60)(.7) = 27.8$ PSF
SAY 40 PSF

DEAD LOAD: 1/4" PLATE : 2 PSF
ROOF

10.2
13.2 SAY 15 PSF

TOTAL LOAD $55(50)(.5)(16) = 22,000$

COLUMN: SAY W6x15 $A = 4.43$ $r_y = 1.46$ $r_x = 2.56$

$$F_y = 33,000 \quad C_c = \sqrt{\frac{2\pi^2 E I}{33,000}} = 131.71$$

$$L_x = 13.5 \quad K L_x / r_x = 13.5(12) / 2.56 = 63.28$$

$$L_y = 7.17 \quad K L_y / r_y = 7.17(12) / 1.46 = 58.93$$

$$F_a = \frac{\left[1 - \frac{(63.28)^2}{2(131.71)^2}\right](33,000)}{\frac{5}{3} + \frac{3(63.28)}{8(131.71)} - \frac{(63.28)^3}{8(131.71)^3}} = \frac{21,196.1}{1.667 + 0.18 - 0.14} = 15,926$$

$$\frac{P}{A} = \frac{22,000}{4.43} = 4966 < 15,926$$

WIND ON SIDEWALL: USE 20 PSF TOTAL WIND

$$W = 13.5(.5)(20) = 135 \text{ PLF SAY } 150 \text{ PLF}$$

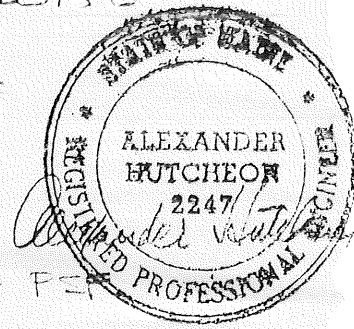
$$P \text{ TO COL.} = 16(150) = 2400 \#$$

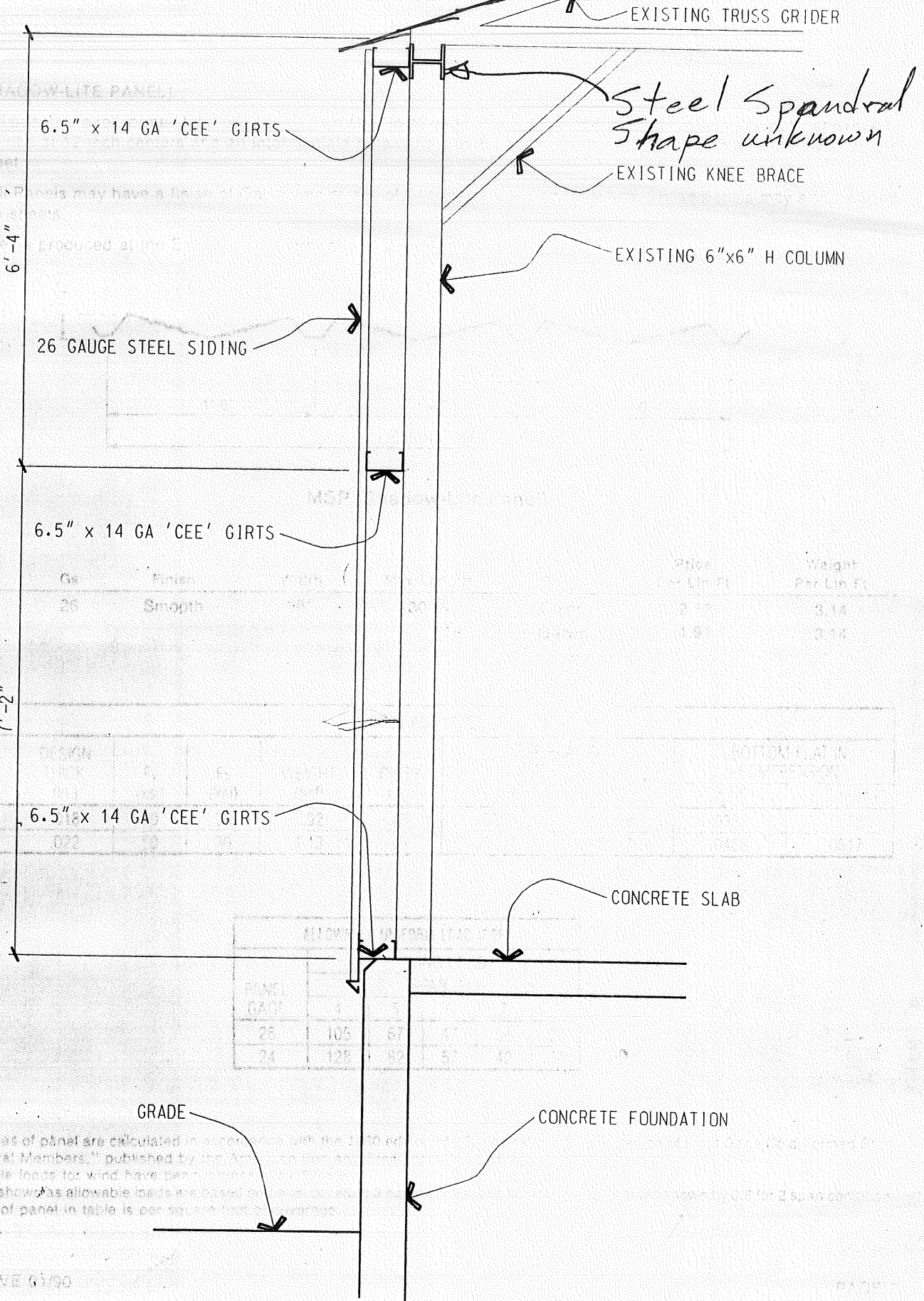
$$U = 2400(7.17)(1.233) / 13.5 = 8069 \#$$

$$f_b = 8069(12) / 1.72 = 9962 \quad F_b = .67(33,000)(.23) = 24,400$$

$$\frac{f_a}{F_a} + \frac{f_b}{F_b} \leq 1.0 \quad \frac{4966}{15926} + \frac{9962}{\frac{24,400}{1 - \frac{4966}{15926}}} = 0.312 + 0.456 = 0.768 < 1.0$$

$$\text{RATIO, CAPACITY TO REQ'D CAPX} = 1/0.768 \approx 1.33$$





MSP (SHAL... WHITE PANEL)
 MSP Wall...
 The panel... produced at the E...

*Steel Spandrel
 Shape unknown*

Mark	Ga	Finish	Price Per Lin Ft	Weight Per Lin Ft
MSP	26	Smooth	1.15	3.14
			1.50	3.14

PANEL GAGE	DESIGN NO.	Wt. (lb)	Wt. (lb)	Wt. (lb)	Wt. (lb)
26	D22	105	87	117	105
24	D22	128	92	137	128

PANEL GAGE	Wt. (lb)	Wt. (lb)	Wt. (lb)	Wt. (lb)
26	105	87	117	105
24	128	92	137	128

NOTES:

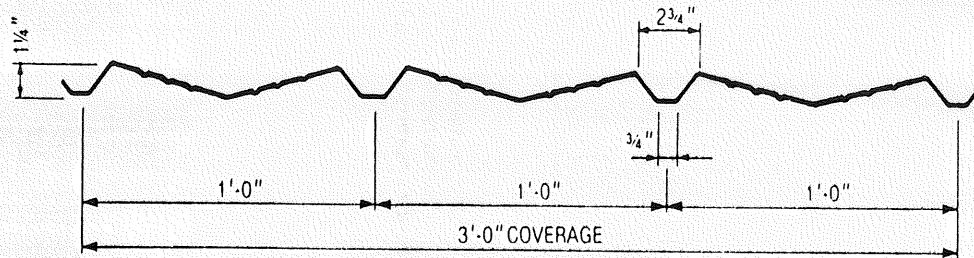
1. Properties of panel are calculated in accordance with the "Steel Structural Members," published by the American Institute of Steel Construction, Inc.
2. Allowable loads for wind have been determined in accordance with the provisions of the AISC Specification for Allowable Stress Design and Plastic Design.
3. Values shown as allowable loads are based on a design wind speed of 70 mph for 2 span panels.
4. Weight of panel in table is per square foot of panel.

MSP (SHADOW-LITE PANEL)

MSP Wall panels are roll formed from 50,000 psi yield steel in 26 gage. Panel coverage is 36 inches with 1 1/4 inch deep reversed major ribs at 12 inch centers and an intermediate break line plus 6 pencil ribs in each flat. The maximum panel length is 30.5 feet.

MSP Wall Panels may have a finish of Galvalume or any of Ceco's standard panel colors. These panels may also be used for fascia sheets.

This panel is produced at the Eastern, Southern, and Midwestern regional plants.



MSP (Shadow-Lite Panel)

Mark	Ga	Finish	Width	Max Length	Color	Price Per Lin Ft	Weight Per Lin Ft
MSP	26	Smooth	36"	30.5'	Color	2.52	3.14
					Galvm	1.91	3.14

SECTION PROPERTIES									
PANEL GAGE	DESIGN THICK. (In.)	F _y (ksi)	F _b (ksi)	WEIGHT (psf)	GIRTH (In.)	TOP FLAT IN COMPRESSION		BOTTOM FLAT IN COMPRESSION	
						I _x (In. ⁴ /Ft.)	S _x (In. ³ /Ft.)	I _y (In. ⁴ /Ft.)	S _y (In. ³ /Ft.)
26	.018	50	30	.92	43	.0336	.0508	.0333	.0508
24	.022	50	30	1.13	43	.0408	.0617	.0408	.0617

ALLOWABLE UNIFORM LOAD (PSF)					
PANEL GAGE	WIND LOAD				
	SPAN (Ft.)				
	4	5	6	7	8
26	105	67	47	34	26
24	128	82	57	42	32

NOTES:

- Properties of panel are calculated in accordance with the 1980 edition of "Specifications for the Design of Light Gage Cold Formed Steel Structural Members," published by the American Iron and Steel Institute (A.I.S.I.).
- Allowable loads for wind have been increased by 33 1/3%.
- Values shown as allowable loads are based on panel covering 3 equal continuous spans. Multiply values shown by 0.8 for 2 span condition.
- Weight of panel in table is per square foot of coverage.

6 3/4" CHANNEL

8 3/4" CHANNEL

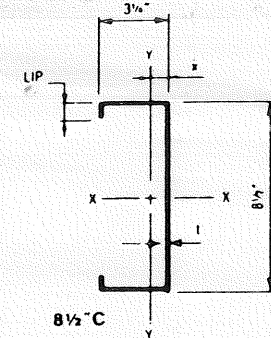
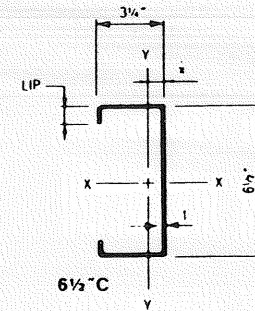
10 3/4" CHANNEL

8 3/4" Ch 12	.092	4.61	1.36	12.37	2.45	8.98	10.56
10 3/4" Ch 12	.092	5.06	1.49	18.38	3.13	11.49	8.94

6 1/2" AND 8 1/2" "CEE" SECTION PROPERTIES

MINIMUM YIELD STRESS = 55 ksi

SECTION PROPERTIES														
SECTION DESIGNATION	DESIGN THICK. In.	LIP LENGTH In.	WT. PER FT. Lb.	AREA In ²	AXIS X-X			AXIS Y-Y			F _{bw} ksi	F _b ksi	F _{b2} ksi	Q
					I _x In. ⁴	S _x In. ³	r _x In.	I _y In. ⁴	r _y In.	\bar{x} In.				
6 1/2" C14	.075	1.125	3.71	1.09	7.44	2.17	2.61	1.71	1.25	1.16	32.9	33.0	27.7	.69
6 1/2" C12	.092	1.25	4.61	1.36	9.12	2.81	2.59	2.16	1.26	1.20	33.0	33.0	29.0	.78
8 1/2" C14	.075	.750	4.03	1.18	13.18	2.97	3.34	1.60	1.16	.89	30.7	32.9	24.5	.65
8 1/2" C12	.092	1.00	5.06	1.49	16.53	3.89	3.32	2.15	1.20	.94	32.4	33.0	26.0	.73



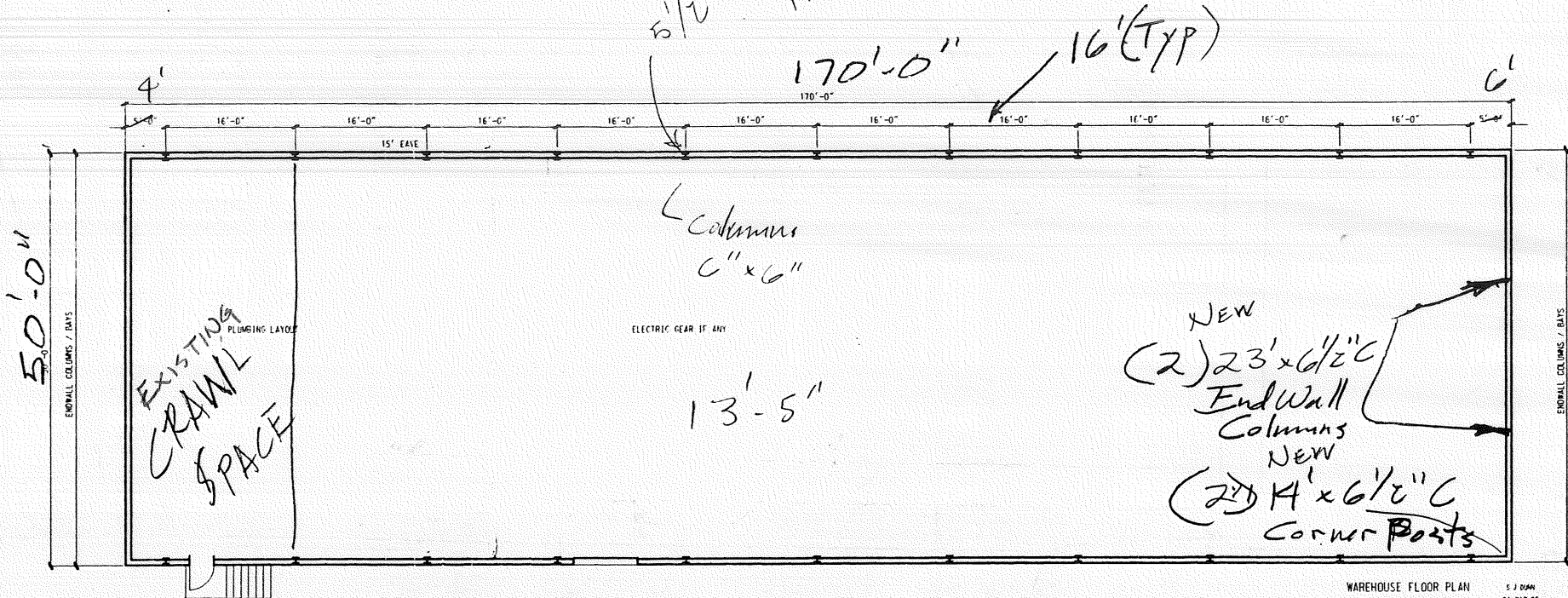
F_{bw} = Maximum allowable compressive stress in web due to bending.
 F_b = Maximum allowable compressive stress in flange due to bending (as limited by F_{bw}).
 F_{b2} = Maximum allowable stress on unbraced compression flange when tension flange is braced.

EFFECTIVE 01/90

PAGE 22

Goodman Warehouse
 121 Bishop St
 Portland, ME

DAHLGREN CONST
 412 US Route #1
 Yarmouth, ME 04096



NEW
 (2) 23' x 6 1/2" C
 End Wall
 Columns
 NEW
 (2) 14' x 6 1/2" C
 Corner Posts

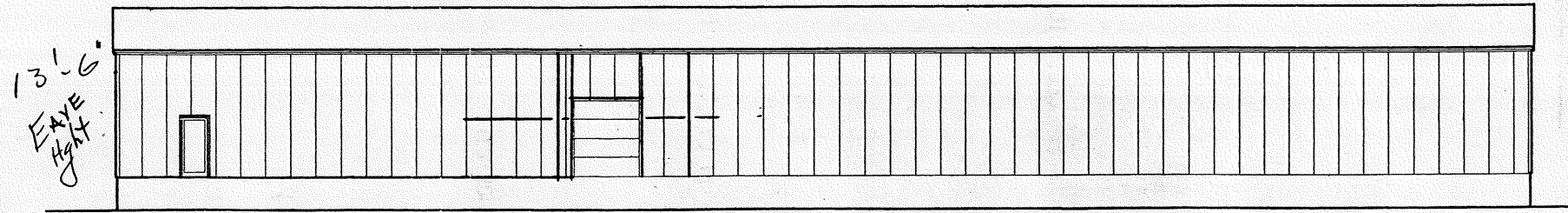
Columns
 6" x 6"

13'-5"

ELECTRIC GEAR IF ANY

EXISTING
 CRAWL
 SPACE

WAREHOUSE FLOOR PLAN
 THE GOODMAN COMPANY
 121 BISHOP STREET
 PORTLAND, MAINE



13'-6"
 EAVE
 HEIGHT

What is the...
 What is the...

ALEXANDER HUTCHEON ASSOCIATES
ENGINEERS

519 CONGRESS STREET
PORTLAND, MAINE 04101
TELEPHONE 207 774-0484

August 4, 1998

Mr. Steve Dunn
Dahlgren Construction Company
20 U.S. Route 1
Yarmouth, Maine 04096

Re: Alterations to former railroad storage building;
121 Bishop Street, Portland, Maine

Dear Steve:

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The modifications you propose will actually reduce the wind force on the eave member, but will impose a lateral load on the columns, at the location of the new horizontal girt.

As shown on the enclosed calculation sheet, the capacity of the column, under full dead and live load from the roof, and the lateral load from the wind, is about 1.33 times the required capacity.

It is my opinion, based on these calculations, that these proposed alterations will not reduce the structural capacity of the existing building.

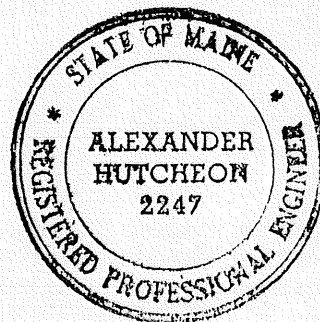
Your questions and comments regarding this report are welcome.

Very truly yours,

ALEXANDER HUTCHEON Associates,
Engineers



Alexander Hutcheon, P.E.
President



Enclosures: Sketch of sidewall of building
Calculation sheet 1 of 1

GOODMAN WAREHOUSE
121 BISHOP ST.

ALEXANDER HUTCHEON ASSOCIATES
ENGINEERS

8/4/98

619 COMMERCIAL
PORTLAND, OREGON
TEL: 503-325-1111

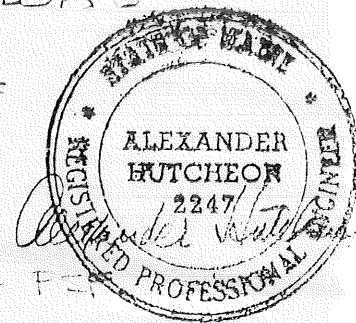
SAT. 1 OF 1

CHECK EXISTING COLUMNS FOR LATERAL LOAD

ROOF LOAD: SNOW $0.7(60)(.7) = 27.8$ PSF

DEAD LOAD: $\frac{1}{4}$ " PLATE: 3 PSF
ROOF SAY 40 PSF
10.2

TOTAL LOAD $55(50)(.5)(16) = 22,000$
13.2 SAY 15 PSF



COLUMN: SAY W6x15 $A = 4.43$ $r_y = 1.46$ $r_x = 2.56$

$$F_y = 33,000 \quad C_c = \sqrt{\frac{2\pi^2 \cdot 29,000,000}{33,000}} = 131.71$$

$$L_x = 13.5 \quad K L / r_x = 13.5(12) / 2.56 = 63.28$$

$$L_y = 7.17 \quad K L / r_y = 7.17(12) / 1.46 = 58.53$$

$$F_a = \frac{\left[1 - \frac{(63.28)^2}{2(131.71)^2}\right](33,000)}{\frac{5}{3} + \frac{3(63.28)}{3(131.71)} - \frac{(63.28)^3}{8(131.71)^3}} = \frac{24,191.1}{1.667 + 0.13 - 0.14} = 15,926$$

$$\frac{P}{A} = \frac{22,000}{4.43} = 4966 < 15,926$$

WIND ON SIDEWALL: USE 20 PSF TOTAL WIND

$$W = 13.5(.5)(20) = 135 \text{ PLF SAY } 150 \text{ PLF}$$

$$P \text{ TO COL.} = 16(150) = 2400 \#$$

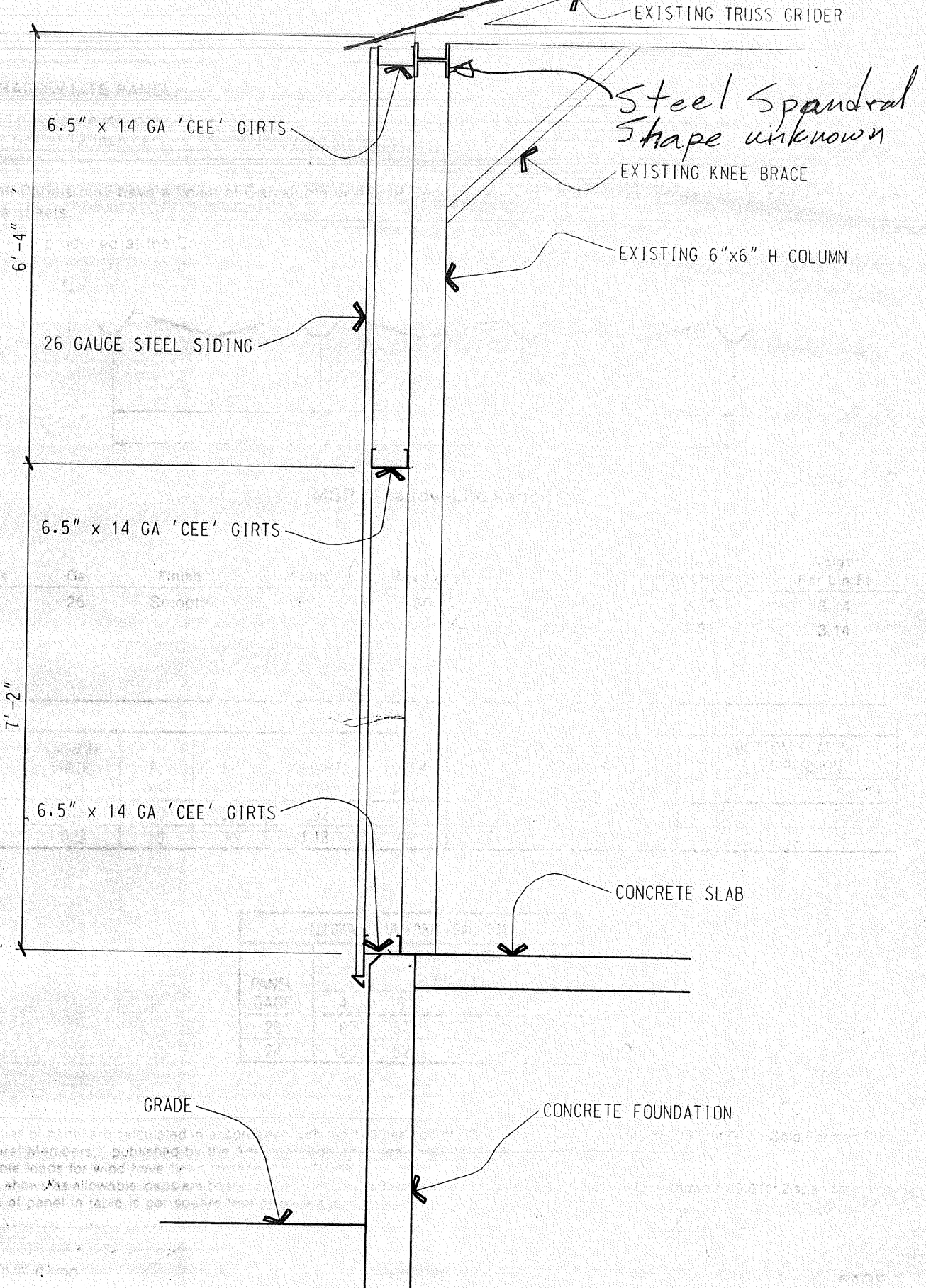
$$M = 2400(7.17)(6.33) / 13.5 = 8069 \#$$

$$f_b = 8069(12) / 9.72 = 9962 \quad F_b = .67(33,000)(1.33) = 29,406$$

$$\frac{f_a}{F_a} + \frac{f_b}{F_b} \leq 1.0 \quad \frac{4966}{15926} + \frac{9962}{\frac{24,406}{1 - \frac{4966}{15926}}} = 0.312 + 0.456 = 0.768 < 1.0$$

21832

$$\text{RATIO, CAPACITY TO REQ'D CAPX} = 1/0.768 \approx 1.33$$



MSP (SHA... WHITE PANEL)

MSP Wall Panels may have a finish of Galvalume or...
 or fascia panels.

MSP Wall Panels produced at the Gal...

MSP Wall Panels

Panel	Ga	Finish	Weight Per Lin Ft
MSP	26	Smooth	3.14
			3.14

Panel	Ga	Finish	Weight Per Lin Ft
MSP	26	Smooth	3.14
			3.14

ALLOW	ALLOW	ALLOW
PANEL	GAGE	4
26		3.14
24		3.14

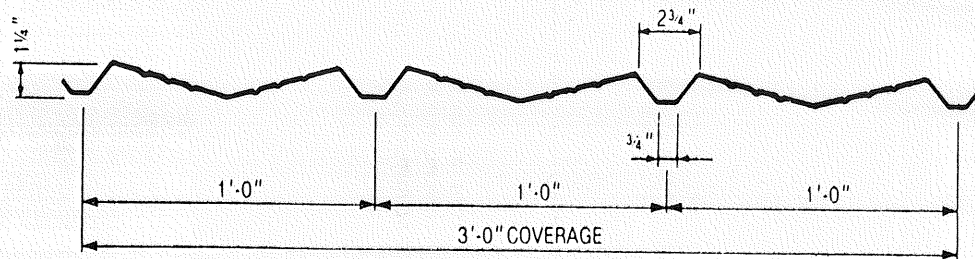
- NOTES:
1. Properties of panel are calculated in accordance with the American Institute of Steel Construction, Inc. "Structural Members," published by the American Institute of Steel Construction, Inc.
 2. Allowable loads for wind have been determined in accordance with the American Institute of Steel Construction, Inc. "Structural Members," published by the American Institute of Steel Construction, Inc.
 3. Values shown as allowable loads are based on a safety factor of 1.5.
 4. Weight of panel in table is per square foot.

MSP (SHADOW-LITE PANEL)

MSP Wall panels are roll formed from 50,000 psi yield steel in 26 gage. Panel coverage is 36 inches with 1 1/4 inch deep reversed major ribs at 12 inch centers and an intermediate break line plus 6 pencil ribs in each flat. The maximum panel length is 30.5 feet.

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This panel is produced at the Eastern, Southern, and Midwestern regional plants.



MSP (Shadow-Lite Panel)

Mark	Ga	Finish	Width	Max Length	Color	Price Per Lin Ft	Weight Per Lin Ft
MSP	26	Smooth	36"	30.5'	Color	2.52	3.14
					Galvm	1.91	3.14

SECTION PROPERTIES									
PANEL GAGE	DESIGN THICK. (In.)	F _y (ksi)	F _b (ksi)	WEIGHT (psf)	GIRTH (In.)	TOP FLAT IN COMPRESSION		BOTTOM FLAT IN COMPRESSION	
						I _x (In. ⁴ /Ft.)	S _x (In. ³ /Ft.)	I _y (In. ⁴ /Ft.)	S _y (In. ³ /Ft.)
26	.018	50	30	.92	43	.0336	.0508	.0333	.0508
24	.022	50	30	1.13	43	.0408	.0617	.0408	.0617

ALLOWABLE UNIFORM LOAD (PSF)					
PANEL GAGE	WIND LOAD				
	SPAN (Ft.)				
	4	5	6	7	8
26	105	67	47	34	26
24	128	82	57	42	32

NOTES:

- Properties of panel are calculated in accordance with the 1980 edition of "Specifications for the Design of Light Gage Cold Formed Steel Structural Members," published by the American Iron and Steel Institute (A.I.S.I.).
- Allowable loads for wind have been increased by 33 1/3%.
- Values shown as allowable loads are based on panel covering 3 equal continuous spans. Multiply values shown by 0.8 for 2 span condition.
- Weight of panel in table is per square foot of coverage.

6 1/2" CHANNEL

8 1/2" CHANNEL

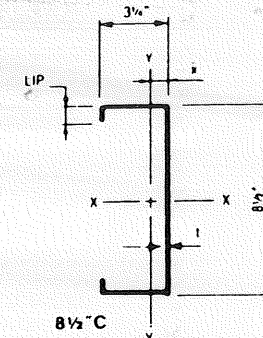
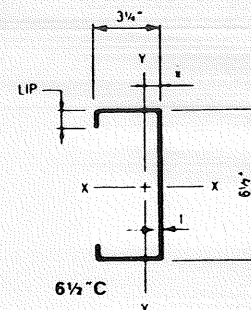
10 1/2" CHANNEL

8 1/4 Ch 12	.092	4.61	1.36	12.37	2.45	8.98	10.56
10 1/4 Ch 12	.092	5.06	1.49	18.38	3.13	11.49	8.94

6 1/2" AND 8 1/2" "CEE" SECTION PROPERTIES

MINIMUM YIELD STRESS = 55 ksi

SECTION PROPERTIES														
SECTION DESIGNATION	DESIGN THICK. In.	LIP LENGTH In.	WT. PER FT. Lb.	AREA In ²	AXIS X-X			AXIS Y-Y			F _{bw} ksi	F _b ksi	F _{b2} ksi	Q
					I _x In. ⁴	S _x In. ³	r _x In.	I _y In. ⁴	r _y In.	\bar{x} In.				
6 1/2 C 14	.075	1.125	3.71	1.09	7.44	2.17	2.61	1.71	1.25	1.16	32.9	33.0	27.7	69
6 1/2 C 12	.092	1.25	4.61	1.36	9.12	2.81	2.59	2.16	1.26	1.20	33.0	33.0	29.0	78
8 1/2 C 14	.075	.750	4.03	1.18	13.18	2.97	3.34	1.60	1.16	.89	30.7	32.9	24.5	65
8 1/2 C 12	.092	1.00	5.06	1.49	16.53	3.89	3.32	2.15	1.20	.94	32.4	33.0	26.0	73



F_{bw} = Maximum allowable compressive stress in web due to bending.
 F_b = Maximum allowable compressive stress in flange due to bending (as limited by F_{bw}).
 F_{b2} = Maximum allowable stress on unbraced compression flange when tension flange is braced.

EFFECTIVE 01/90

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