

CSA A660-10

Certificate of design and manufacturing conformance

This Certificate is to affirm that all components of the steel building system described below, to be supplied by the named manufacturer certified in accordance with CSA A660, have been or will be designed and fabricated in accordance with the following Standards to carry the loads and load combinations specified.

1. DESCRIPTION

Manufacturer's Name and Address	FastCover Fabric Structures Ltd.
Manufacturer's Certificate No. Under CSA A660	HIQUA 0
Customer Order Number	7888
Building Type and Size	46' x 128' Fabric Dome
Intended Use and Occupancy	Low Hazard Commercial Storage
Importance category [NBC, Sentence 4.1.2.1.(3)]	Low
Site Location	Thompson, MB
Applicable Building Code	2011 Manitoba Building Code (NBCC 2010)
Builder's Name and address	FastCover, 399 Ravenhurst St, Winnipeg, MB
Owner's Name and address	Fisher Wavy

2. DESIGN STANDARDS

Engineer's Initials*

*

National Building Code of Canada, 2005, Part 4: Structural Design

CSA S16-09, Design of steel structures

CSA S136-07, North America specification for the design of cold-formed steel structural members

Other (specify): _____ dated _____

3. MANUFACTURING STANDARDS

*

- (a) Fabrication has been or will be in accordance with CSA S16 and CSA S136, as applicable.
- (b) Welding has been or will be performed in accordance with CSA W59 and CSA S136, as applicable.
- (c) The manufacturer has been certified in accordance with CSA W47.1, for Division 1 or 2, and/or CSA W55.3, if applicable.
- (d) Welders have been qualified in accordance with CSA W47.1.

4. PURLIN STABILITY

*

Purlin braces are provided in accordance with CSA S136, Clause D3 and Appendix B, Clause D3.2.3. In particular, for a standing seam roof supported on movable clips, braces providing lateral support to both top and bottom purlin flanges have been or will be provided.
The number of rows is determined by analysis but in no case is it less than 1 for spans up to 7 m inclusive or less than 2 for spans greater than 7 m.

5. LOADS

(a) Snow, ice, and rain		* 	
1-in-50 year ground snow load, S_s ,	2.4	(kPa)	
1-in-50 year associated rain load, S_r ,	0.2	(kPa)	
Wind exposure factor, C_w ,	0.75		
Importance factor, I_s	0.8		
Roof snow load, S ,	1.31	(kPa)	
Drift load considered (<i>NBC</i> , Sub-section 4.1.6.2.8). Refer to drawing of specific building.			
Specified Rain Load (<i>NBC</i> , Clause 4.1.6.4)	N/A	(mm)	
(b) Full and partial snow load		* 	
(i) Applied on any one and any two adjacent spans of continuous purlins (ii) Applied on any one and any two adjacent spans of modular rigid frames with continuous roof beams (iii) Applied as described for the building geometry in <i>NBC</i> , Part 4, and in the <i>User's Guide – NBC 2005: Structural Commentaries (Part 4), Commentary G: Snow Loads</i>			
(c) Wind Load		* 	
1-in-50 year reference velocity pressure	0.36	(kPa)	
Importance factor, I_w ,	0.8		
(d) Wind load application		* 	
(i) Applied in accordance with <i>NBC</i> , Part 4, Section 4.1.7 (ii) Pressure coefficients in accordance with <i>User's Guide – NBC 2005: Structural Commentaries (Part 4), Commentary I: Wind Loads</i> , Figures I3 to I12 (iii) Building internal pressure category in accordance with <i>User's Guide – NBC 2005: Structural Commentaries (Part 4), Commentary I: Wind Loads</i>			
(e) Crane Loads (where applicable)		* N/A	
Type	(top running) (under-running) (jib)		
Capacity	(tonnes)		
Wheel Base	(m)		
Maximum static, vertical wheel load	(kN)		
Vertical impact factor			
Lateral factor	%	Lateral wheel load	(kN)
Longitudinal factor	%	Maximum longitudinal load	(kN/side)
(f) Mezzanine live load		(kPa)	* N/A
(g) Seismic load			* N/A (as per MBC)
Applied in accordance with <i>NBC</i> , Part 4, Sub-section 4.1.8			

S _a (0.2)	_____	Site class	_____
S _a (0.5)	_____	F _a	_____
S _a (1.0)	_____	F _v	_____
S _a (2.0)	_____	I _E	_____

(h) Other live loads (specify) _____

* N/A

(i) Dead loads _____

* [REDACTED]

Dead load of building components is incorporated in the design

Collateral load (mechanical, electrical, ceiling, sprinklers, etc.) 0.1 (kPa)

Mezzanine N/A (kPa)

Other (specify) _____ ()

(j) Load combinations _____

* [REDACTED]

Applied in accordance with NBC, Part 4, Section 4.1

6. GENERAL REVIEW DURING CONSTRUCTION

The manufacturer does not provide general review during construction for regulatory purposes.

7. CERTIFICATION BY ENGINEER

I, Kevin MacDonald, P.Eng., an Engineer registered or licensed to practice in the Province or Territory of Manitoba, hereby certify that I have reviewed the design and manufacturing process for the steel building system described. I certify that the foregoing statements, initialled by me, are true.

Name Kevin MacDonald, P.Eng. Signature [REDACTED]

Title Sr. Engineer

Affiliation Consultant Date February 27, 2023

Professional Seal



Erection and maintenance :-

- a.) Structural must be erected and all components installed according to installation instructions.
- b.) The installer must provide a safe working environment and practices conforming to all safety regulations. All lifting devices are to be specifically designed to lift the various structural components. A spreader bar and straps may be required to eliminate the possibility of the trusses folding while lifting.
- c.) Erection must start at an end truss. Temporary support first erected truss using cable or rope before removing lifting device.
- d.) Cables and belts to be pre-stressed at all times.

Material specifications :-

Structural steel to comply with min. ASTM A500-13, Grade C.

- a.) 3" Ø .100 wall tube
- b.) 2 $\frac{3}{8}$ " Ø .100 wall tube
- c.) 2" Ø x 14ga tube
- d.) 2" sq tube 14ga
- e.) $\frac{1}{4}$ " plate
- f.) All fabric to be RU88X-6 (4 mil)

General Design Conditions :-

Rolled structural tubing sections conform to ASTM A500-C

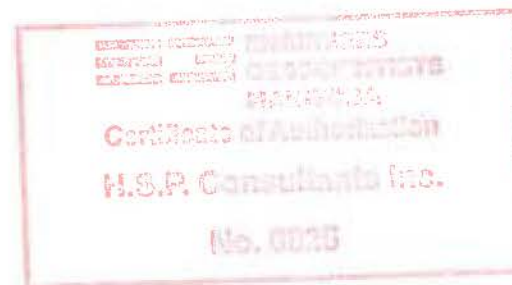
- a.) Truss Spacing - Typ 8' o/c
- b.) Building Size - 46' x 128'
- c.) Building Location - Thompson, MB
- d.) Building use - Low Importance Storage
- e.) Site Condition - Open
- f.) Ground Snow Load - $S_s = 2.4$ $S_r = 0.2$ $S_e = 0.8$
Wind Load - $q_{1/50} = 0.36$ $I_w = 0.8$
- g.) Building designed in accordance with the 2011 Manitoba building code.

h.) Factored foundation loads per each frame end at frame baseplate:

Max Uplift - 2 kN
Max Down - 24 kN
Max Lateral - 15 kN

General Notes :-

- a.) Frames to be covered with a woven polyethylene fabric.
- b.) All bolt and nuts to be minimum Grade 5.
- c.) Steel fabrication & erection to CSA A660-10.
- d.) Minimum welds may typically range depending on material size and thickness unless noted otherwise. Root thickness to match min member size.
- e.) Welding to be done by CWB certified personnel in accordance with CSA W47.1.
- f.) The engineering work presented in these drawings is limited to the structural capacity of the steel frames. Overall building design, foundation design, site development, and fire and safety requirements are by others.



399 Ravenhurst St.
Winnipeg MB. Canada
R2C 5K3

PROJECT: 7860-FISHER WAVY INC 46'V x 128'

LOCATION: THOMPSON, MB

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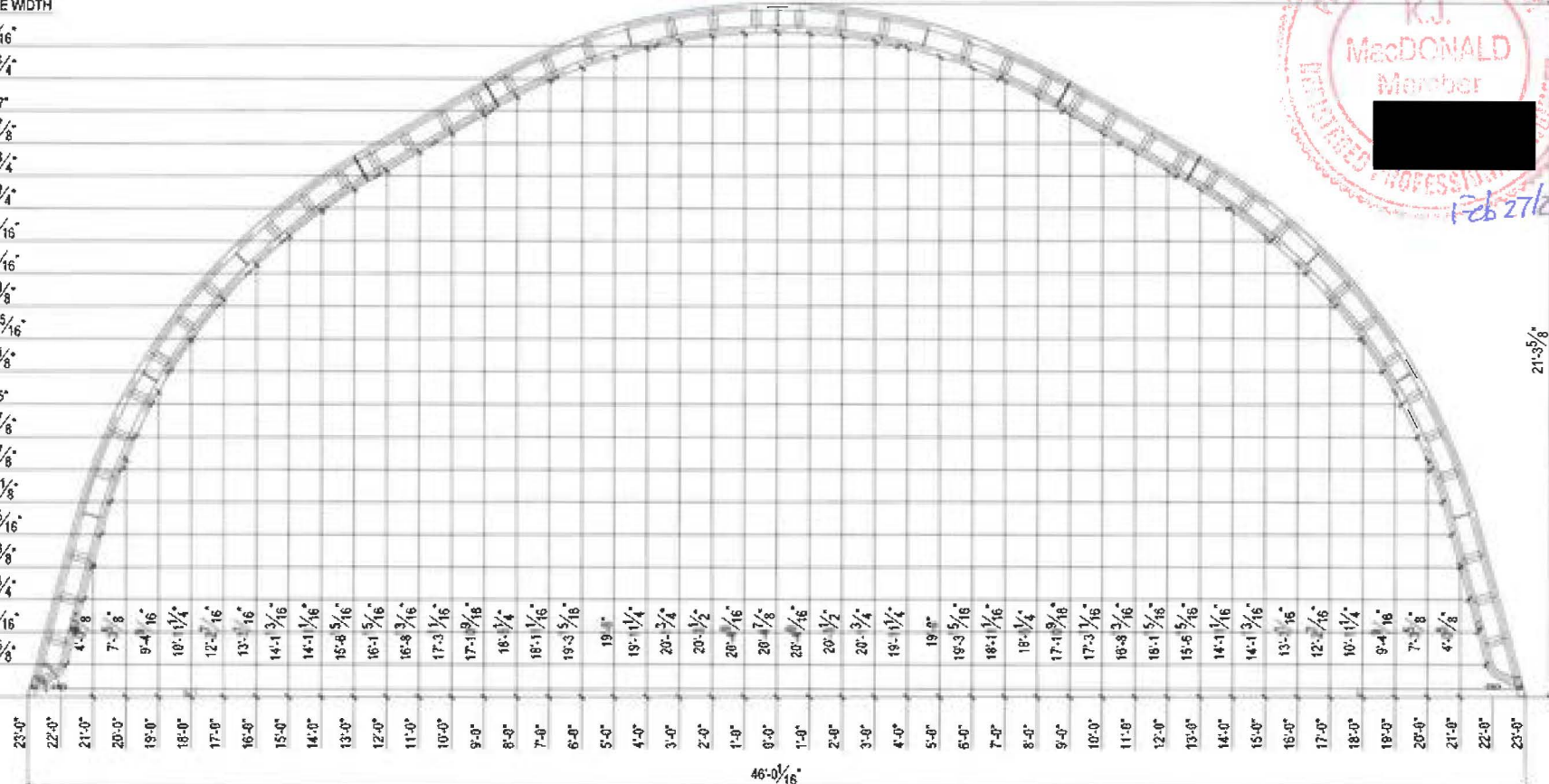
TITLE:		NOTE	
BUILDING MODEL:	46' x 128'	DATE:	27/02/2023
DRAWN BY:	SW	REVISION:	-
		DWG NO.	N1

REGISTERED PROFESSIONAL ENGINEER
 OTOCULTIVATORS
 THOMPSON
 Certificate of Authorization
 H.S.P. Consultants Inc.
 No. 6926



HEIGHT INSIDE WIDTH

20'-0"	7'-5 ⁷ / ₁₆ "
19'-0"	13'-7 ³ / ₄ "
18'-0"	17'-7"
17'-0"	21'-0 ¹ / ₈ "
16'-0"	24'-6 ³ / ₄ "
15'-0"	27'-9 ¹ / ₄ "
14'-0"	30'-4 ⁵ / ₁₆ "
13'-0"	32'-6 ³ / ₁₆ "
12'-0"	34'-4 ¹ / ₈ "
11'-0"	35'-10 ¹⁵ / ₁₆ "
10'-0"	37'-3 ¹ / ₈ "
9'-0"	38'-5"
8'-0"	39'-4 ⁷ / ₈ "
7'-0"	40'-2 ⁷ / ₈ "
6'-0"	40'-11 ¹ / ₈ "
5'-0"	41'-5 ⁵ / ₁₆ "
4'-0"	42'-0 ³ / ₈ "
3'-0"	42'-8 ³ / ₄ "
2'-0"	43'-1 ³ / ₁₆ "
1'-0"	43'-7 ⁵ / ₈ "
0'-0"	

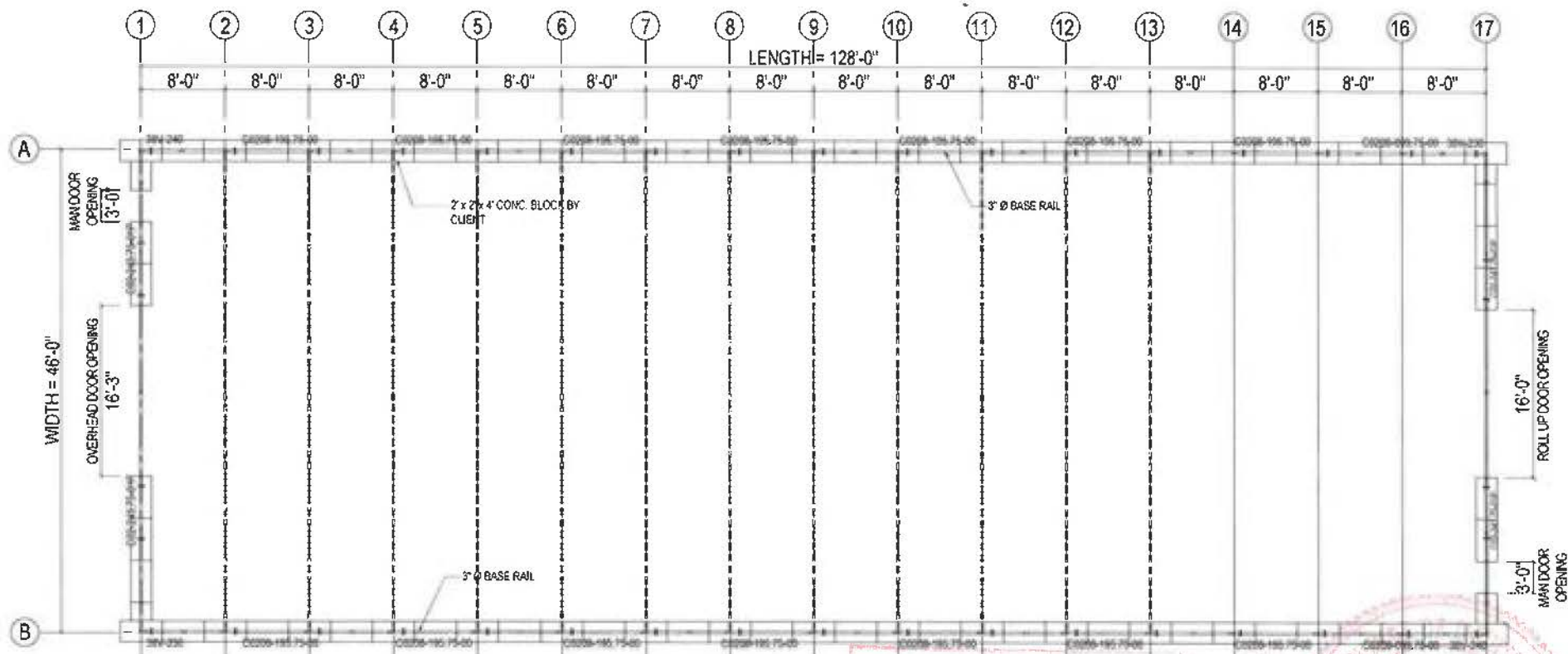


399 Ravenhurst St.
 Winnipeg MB. Canada
 R2C 5K3

PROJECT: 7888-FISHER WAVY INC 46"V x 128"
 LOCATION: THOMPSON, MB

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TITLE:	GRID LAYOUT PLAN		
BUILDING MODEL:	46"V x 128"	DATE:	13/02/2023
DRAWN BY:	SW	REVISION:	-
		DWG NO.	S1



ENGINEER
 STRUCTURALISTS
 MATHIAS
 Certificate of Authorization
 H.C.R. Consultants Inc.
 No. 9825

K.J.
 MacDONALD
 Member
 [Redacted]
 Feb 27/23

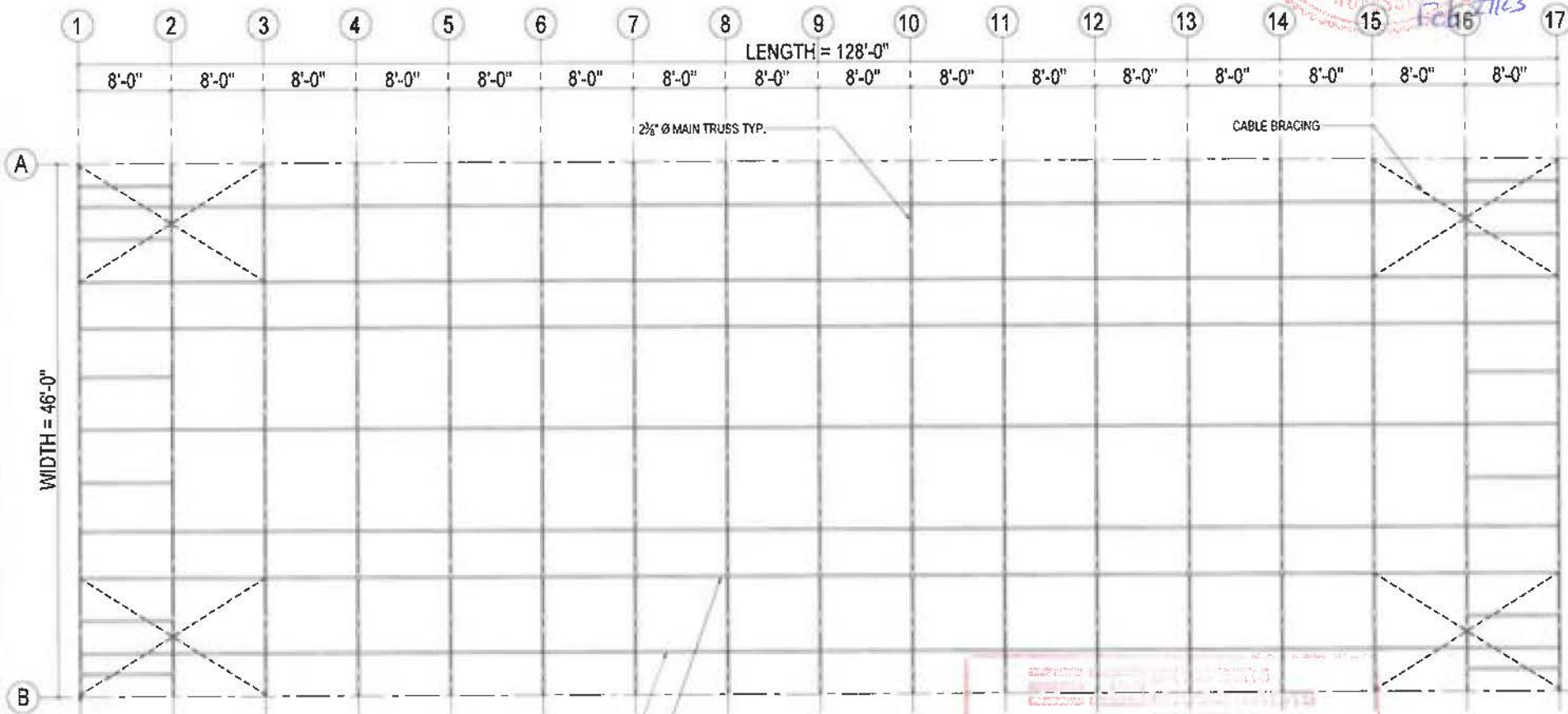


399 Ravenhurst St.
 Winnipeg MB. Canada
 R2C 5K3

PROJECT: 7888-FISHER WAVY INC 46'V x 128'
 LOCATION: THOMPSON, MB

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TITLE: BASE RAIL LAYOUT PLAN	
BUILDING MODEL: 46'V x 128'	DATE: 13/02/2023
DRAWN BY: SW	REVISION: -
	DWG NO. S2



PURLIN TYP.
Ø 2 1/2" X .108W

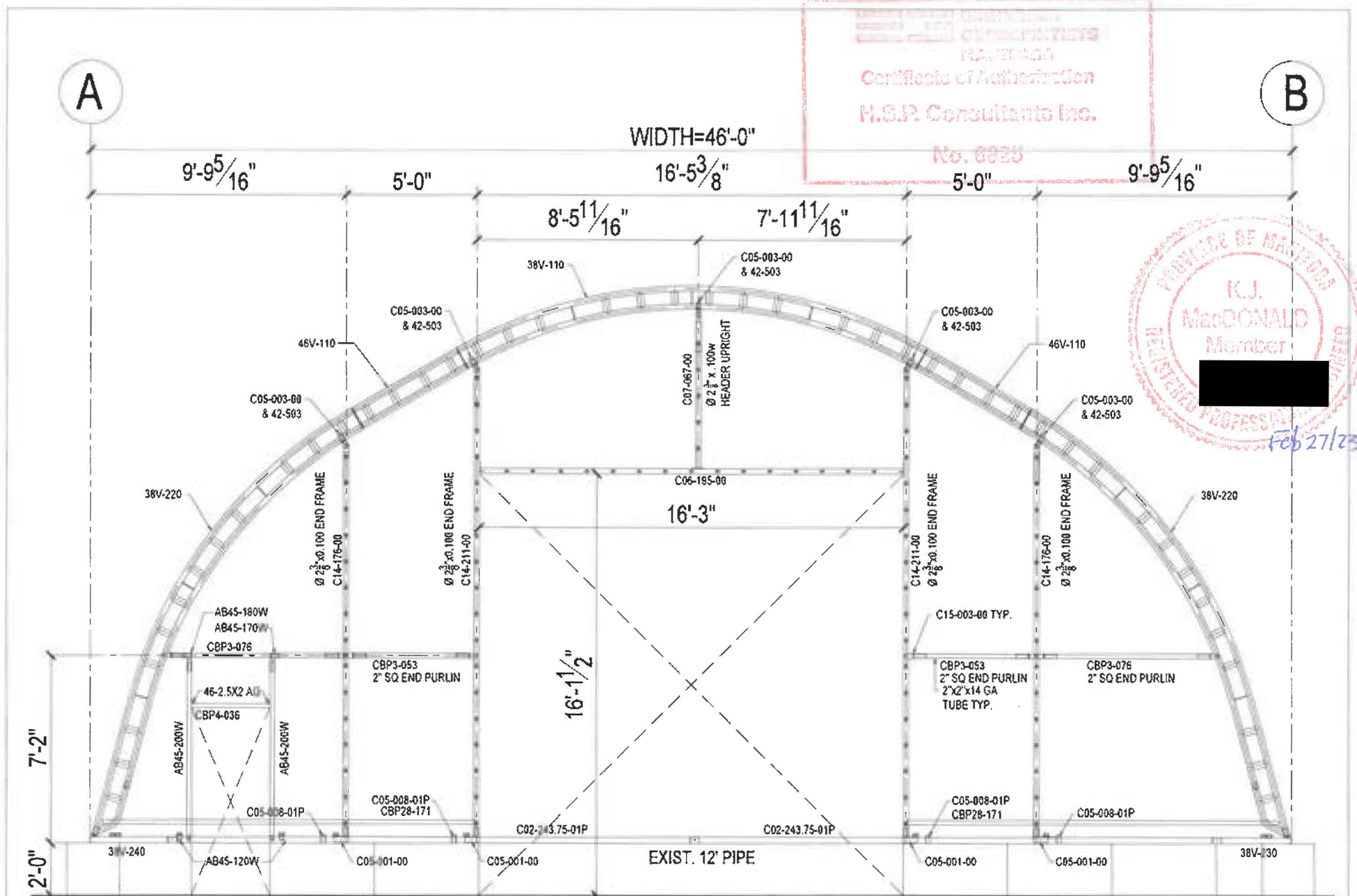


399 Ravenhurst St.
Winnipeg MB.Canada
R2C 5K3

PROJECT: 7888-FISHER WAVY INC 46'V x 128'
LOCATION: THOMPSON, MB

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TITLE:	TRUSS LAYOUT PLAN		
BUILDING MODEL:	46' x 128'	DATE:	13/02/2023
DRAWN BY:	SW	REVISION:	-
		DWG NO.	S3

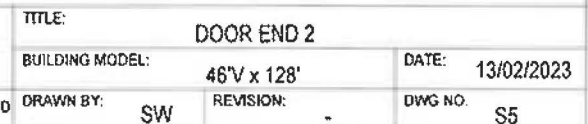
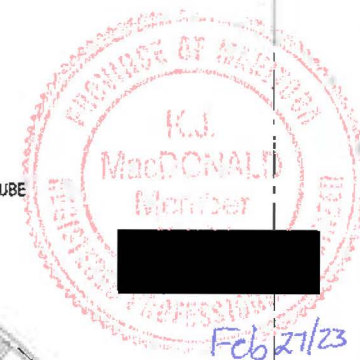


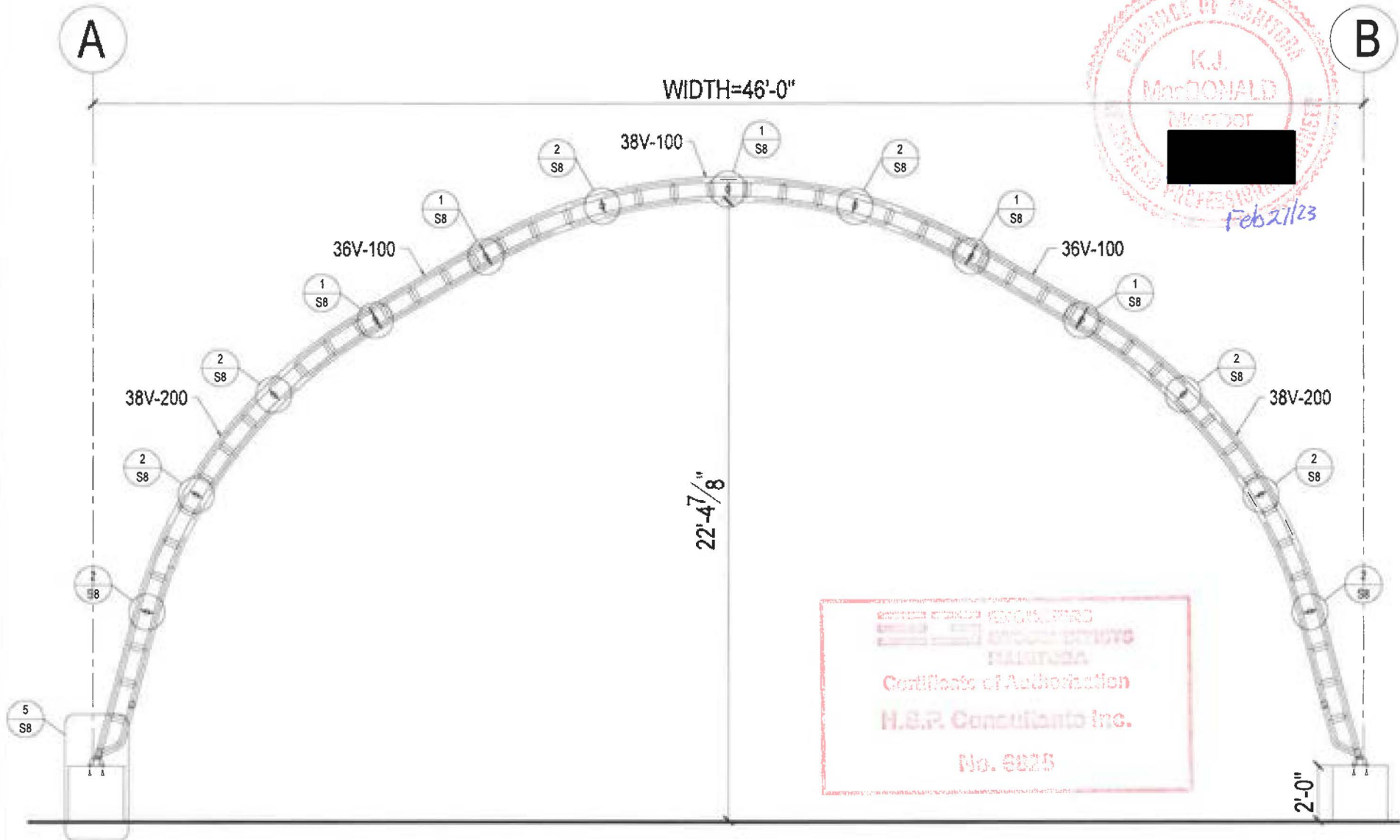
399 Ravenhurst St.
 Winnipeg MB, Canada
 R2C 5K3

PROJECT: 7888-FISHER WAVY INC 46'V x 128'
 LOCATION: THOMPSON, MB

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TITLE: DOOR END 1		DATE: 13/02/2023
BUILDING MODEL: 46'V x 128'	REVISION: -	DWG NO. S4
DRAWN BY: SW		





399 Ravenhurst St.
Winnipeg MB. Canada
R2C 5K3

PROJECT: 7888-FISHER WAVY INC 46'V x 128'
LOCATION: THOMPSON, MB

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TITLE: TRUSS LAYOUT

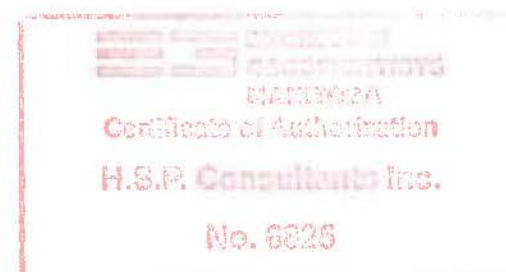
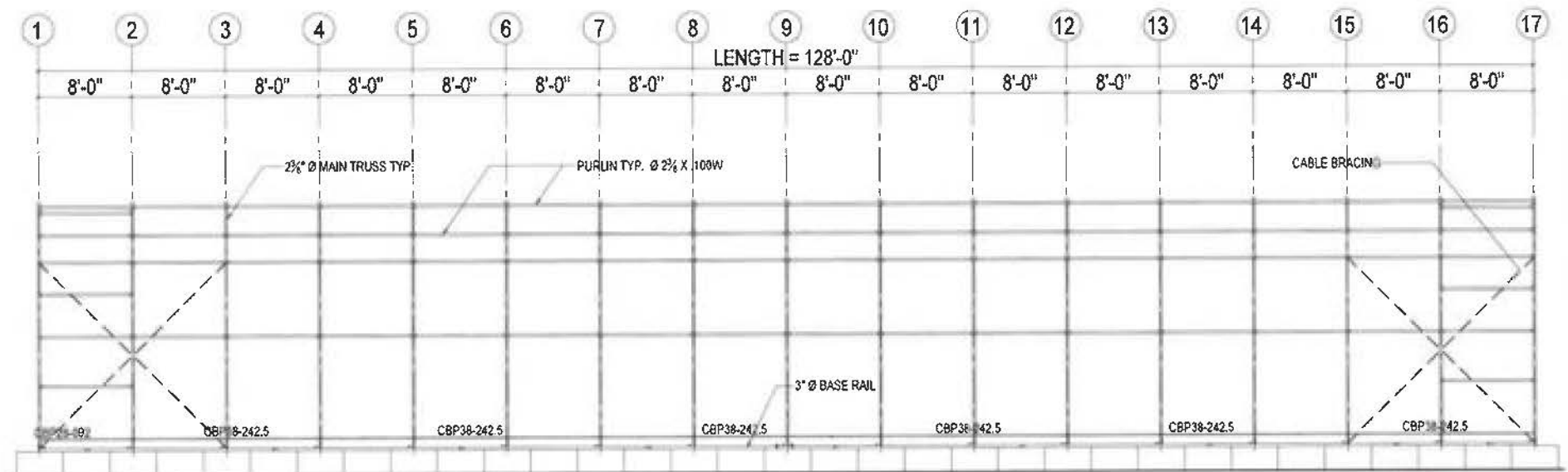
BUILDING MODEL: 46' x 128'

DRAWN BY: SW

REVISION: -

DATE: 13/02/2023

DWG NO. S6

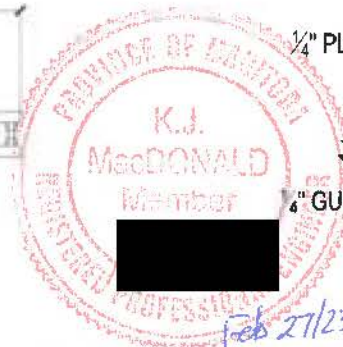
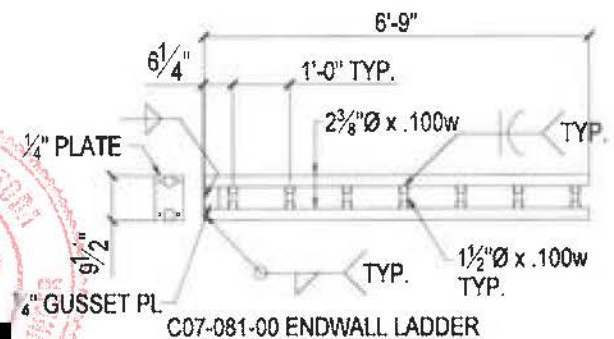
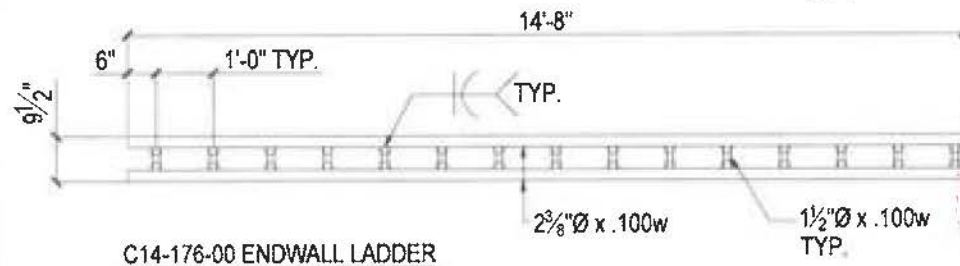
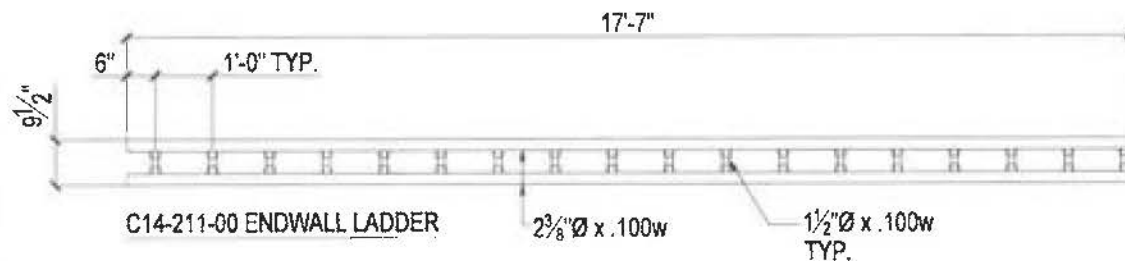
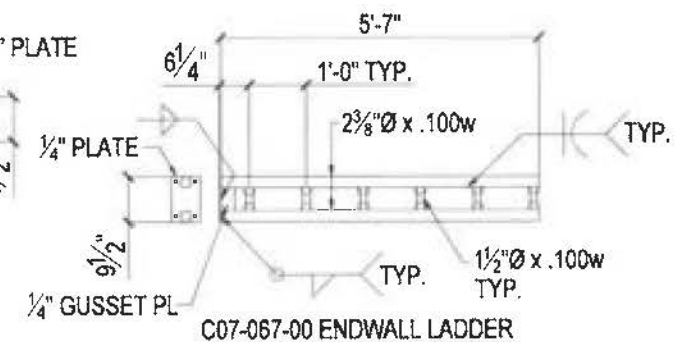
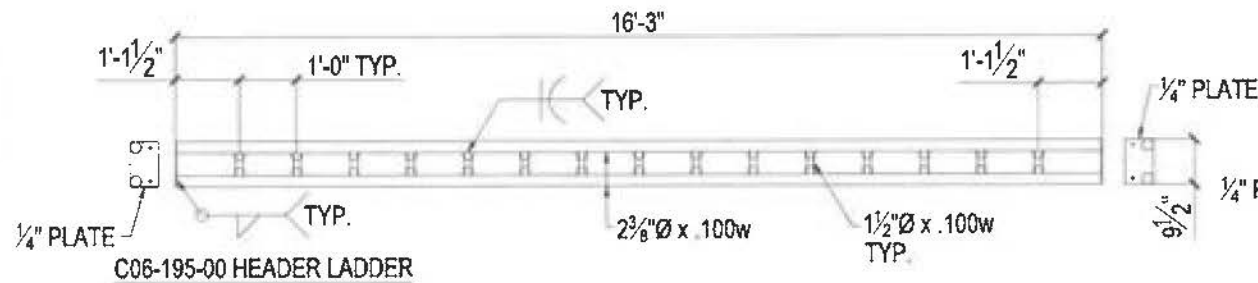
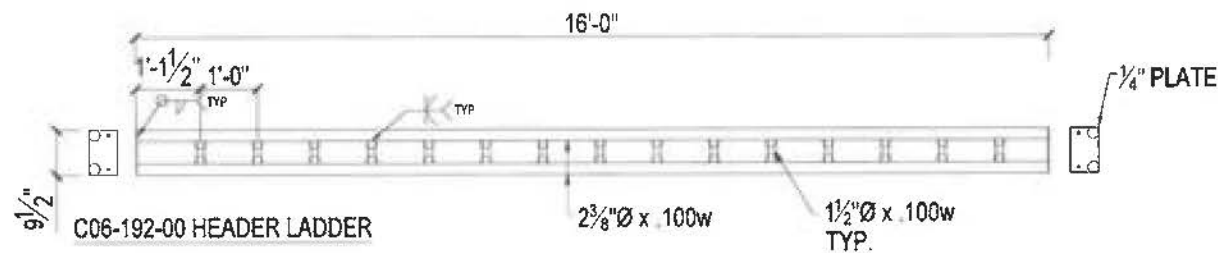
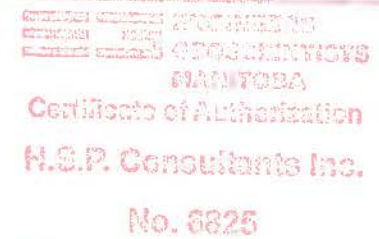


399 Ravenhurst St.
Winnipeg MB. Canada
R2C 5K3

PROJECT: 7888-FISHER WAVY INC 46'V x 128'
LOCATION: THOMPSON, MB

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TITLE: SIDE ELEVATION		DATE: 13/02/2023
BUILDING MODEL:	46' x 128'	REVISION: -
DRAWN BY: SW		DWG NO. S7



399 Ravenhurst St.
Winnipeg MB. Canada
R2C 5K3

PROJECT: 7888-FISHER WAVY INC 46"V x 128"
LOCATION: THOMPSON, MB

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TITLE: END WALL UPRIGHTS

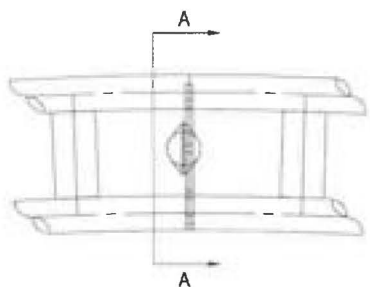
BUILDING MODEL: 46' x 128'

DATE: 13/02/2023

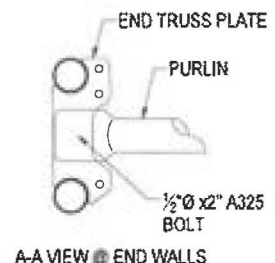
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REVISION:

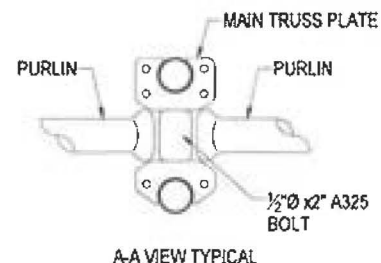
DWG NO. S8



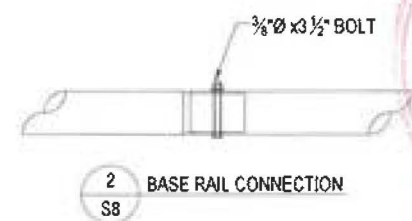
1 ARCH & PURLIN CONNECTION
S8



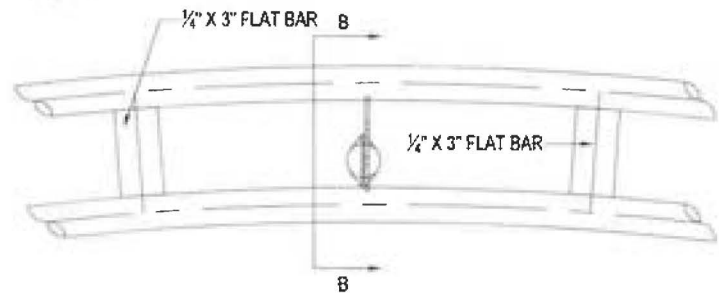
A-A VIEW END WALLS



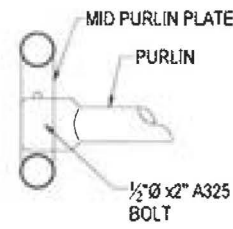
A-A VIEW TYPICAL



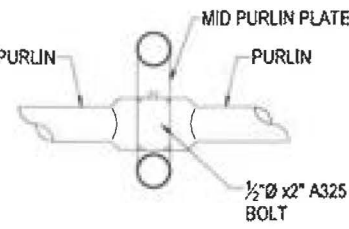
2 BASE RAIL CONNECTION
S8



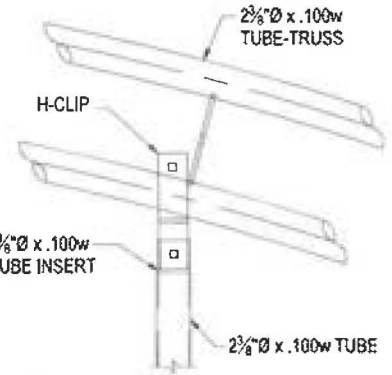
3 PURLIN PLATE CONNECTION
S8



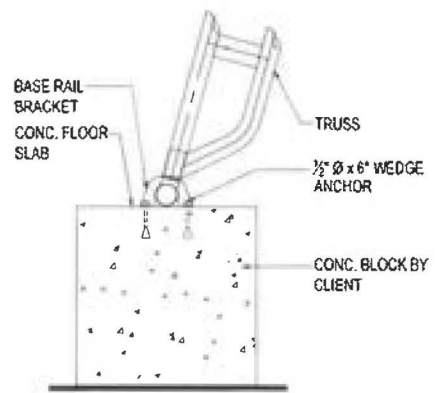
B-B VIEW END WALLS



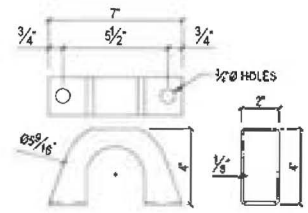
B-B VIEW TYPICAL



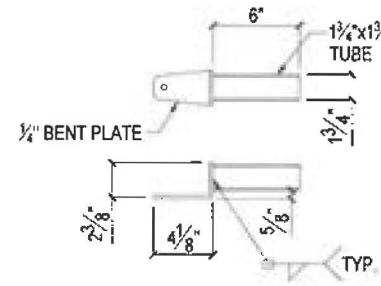
4 END WALL FRAME TRUSS CONNECTION
S8



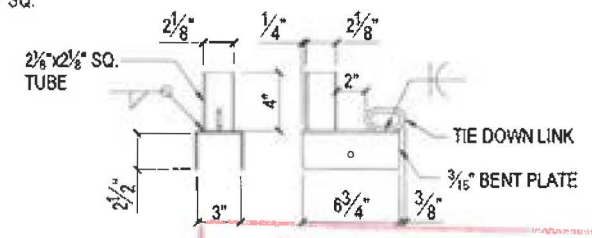
5 BASE RAIL BRACKET CONNECTION
S8



BASE RAIL BRACKET



6 PURLIN END INSERT
S8



7 END WALL FRAME BASE CONNECTOR
S8

ENGINEER
H.S.P. CONSULTANTS INC.
Certificate of Authorization
No. 6825



399 Ravenhurst St.
Winnipeg MB. Canada
R2C 5K3

PROJECT: 7888-FISHER WAVY INC 46'V x 128'
LOCATION: THOMPSON, MB

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TITLE:		SECTIONS	
BUILDING MODEL:	46' x 128'	DATE:	13/02/2023
DRAWN BY:	SW	REVISION:	DWG NO. S9