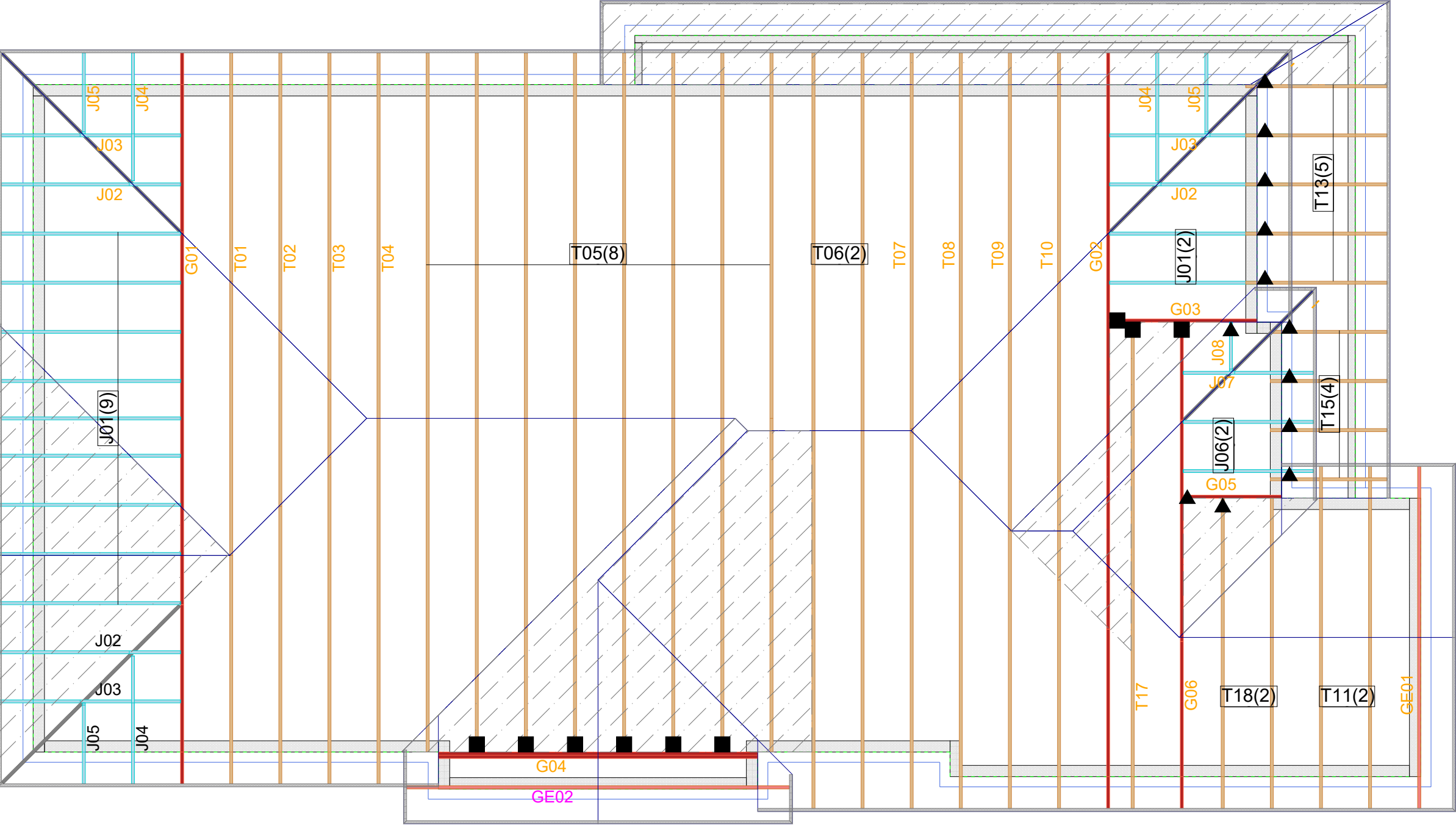




MHP 23039



Hanger Name	Symbol	QTY
LUS24	▲	12
LJS26DS	■	9

CONVENTIONAL FRAMING BY OTHERS

ALL CONVENTIONAL FRAMING TO CONFORM WITH PART 9 OF THE OBC. ROOF RAFTERS THAT CROSS OVER TRUSSES TO BE MIN. 2x4 SPF @ 24" C/C WITH A 2x4 VERTICAL POST TO THE TRUSS BELOW. VERTICAL POSTS TO BE LATERALLY BRACED SO THAT UNBRACED LENGTH DOES NOT EXCEED 6'. DESIGN OF CONVENTIONAL FRAMING IS THE RESPONSIBILITY OF THE PROJECT ENGINEER.

JOB INFORMATION

Customer	GREENPARK HOMES
Job #	23-00120R0
Address	ZADORRA ESTATES OSHAWA, ON
Model	VILLA 12 ELEV-2
Sales Rep	RALPH MIRIGELLO
Designer	RB
Date	6/13/23
Path	C:\MITEK\CA\JOBS\GREENPARK\ZADORRA ESTATES\VILLA 12\VILLA 12 ELEV 2\

DESIGN INFORMATION

Code	NBCC 2015
Bldg	Residential - HSB (NBCC Part 9)
TC LL	34.8 lb/ft ²
TC DL	6.0 lb/ft ²
BC LL	0.0 lb/ft ²
BC DL	7.3 lb/ft ²
Deflection	LL=L/360 TL=L/360
Spacing	24" O/C unless otherwise noted
Complies With	OBC 2012 (2019 Amendment) CSA O86-14 and TPIC 2014

IMPORTANT INFORMATION

Hangers and Fasteners to be installed as per manufacturer

Refer to truss drawings in the Truss Engineering Package for ply-to-ply attachment notes

For site-framed valleys: top chords of all roof trusses must be laterally supported using 2x4 continuous bracing @24 O/C - all bracing must be anchored at ends as per TPIC Installation Guidelines

Read all notes on this page in addition to those shown on the KOTT Truss Engineering package

Field erection, handling and bracing are not the responsibility of KOTT, or KOTT Engineering

Unless noted otherwise, hurricane ties are to be installed at the bearings of all trusses > 40 ft clear span, and any girder or beam supporting trusses with a clear span >40 ft. See hanger legend for type.

Unless noted otherwise, for Part 9 bldgs, all trusses are to be anchored to the top of supporting walls as follows: trusses with a clear span <40 ft use 3-1/4" nails @ each bearing; trusses with a clear span >40 ft use 3-1/4" nails @ each bearing in addition to the appropriate hurricane tie.

KOTT Inc.
14 Anderson Blvd.
Uxbridge, ON
905.642.4400



Engineering Notes: Trusses

NE0723-138
GREENPARK - ZADORRA
ESTATES - VILLA 12-2

MHP 23039

CORPORATION OF THE CITY OF OSHAWA

TRUE COPY
 OF PERMIT PLANS

Nov 14 2023

CMorris

CHIEF BUILDING OFFICIAL

PLEASE READ PRIOR TO INSTALLATION OF THE COMPONENT

RESPONSIBILITIES

THE UNDERSIGNED ENGINEER IS ONLY RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THIS BUILDING COMPONENT FOR THE CONDITIONS AND LOADS SHOWN ON CALCULATION PAGE. THE STRUCTURAL INTEGRITY OF THE BUILDING AND THE VERIFICATION OF THE DIMENSIONS AND THE DESIGN LOADS USED ARE THE RESPONSIBILITY OF THE BUILDING DESIGNER. THE UNDERSIGNED ENGINEER DISCLAIMS ANY RESPONSIBILITY FOR DAMAGES AS A RESULT OF FAULTY OR INCORRECT INFORMATION, SPECIFICATION AND/OR DESIGNS FURNISHED TO THE ENGINEER. IT IS THE RESPONSIBILITY OF KOTT Inc. TO ENSURE THAT TRUSSES ARE MANUFACTURED IN CONFORMANCE WITH THESE DESIGNS AND WITH THE SPECIFICATIONS OUTLINED BELOW. THE UNDERSIGNED ENGINEER IS NOT RESPONSIBLE FOR QUALITY CONTROL IN THE TRUSS MANUFACTURING PLANT.

DESIGN INFORMATION

THIS DESIGN IS FOR AN INDIVIDUAL BUILDING COMPONENT AND HAS BEEN BASED ON INFORMATION PROVIDED BY KOTT DESIGN.

1. THE BUILDING USE AND OCCUPANCY TYPE IS AS INDICATED ON THE DRAWING.
2. GEOMETRY OF THE TRUSS AND DIMENSIONS INDICATED ON THE DRAWING ARE IDENTICAL TO THOSE OF THE INSTALLED TRUSS.
3. THE TRUSS LOADING INTENSITY AND DISTRIBUTION AS WELL AS LOAD TRANSFER MECHANISM IS THAT INDICATED ON THE DRAWING. NO BUILDINGS, TREES, PARAPETS OR OTHER PROJECTIONS HIGHER THAN THE ROOF FOR WHICH THE TRUSSES ARE USED ARE LOCATED WITHIN A DISTANCE LESS THAN TEN (10) TIMES THE DIFFERENCE IN HEIGHT, OR FIVE METERS (16 FT) WHICHEVER IS GREATER, UNLESS THE DRAWING INDICATES THAT THE SNOW DRIFTING HAS BEEN TAKEN INTO ACCOUNT.
4. THE TRUSSES ARE TO BE SUPPORTED AT THE BEARING POINTS INDICATED AND ANCHORED TO THE SUPPORTS WHERE CONSIDERED NECESSARY BY THE DESIGNER OF THE OVERALL STRUCTURE. BEARING SIZES SHOWN ARE THE MINIMUM REQUIRED TO PREVENT CRUSHING OF THE TRUSS MEMBERS AND DO NOT NECESSARILY TAKE INTO ACCOUNT STABILITY OF THE OVERALL BUILDING STRUCTURE. ELEVATION OF BEARINGS MUST BE CAREFULLY CHECKED AND SHIMMED TO ALIGNMENT FOR SOLID BEARINGS. ADEQUATE WOOD TRUSS BEARING IS THE RESPONSIBILITY OF THE BUILDING DESIGNER.

CODE

TRUSSES ARE DESIGNED IN CONFORMANCE WITH THE RELEVANT SECTIONS OF THE NATIONAL BUILDING CODE OF CANADA OR THE CANADIAN CODE FOR FARM BUILDINGS, WHICHEVER APPLIES TO THE BUILDING TYPE INDICATED ON THE DRAWING, THE ONTARIO BUILDING CODE, TPIC AND CANADIAN STANDARDS ASSOCIATION GUIDELINES.

HANDLING, INSTALLATION AND BRACING

1. THE TRUSSES MUST BE HANDLED AND INSTALLED BY A QUALIFIED PROFESSIONAL AS PER THE SUPPLIED DOCUMENT TITLED INFORMATION FOR TRUSS INSTALLERS AND THE BCSI-B1 AND BCSI-B3 SUMMARY SHEETS.
2. THE COMPRESSION CHORDS ARE Laterally Braced by Continuous Rigid Diaphragm Sheathing or as Specified on the Drawing.
3. TEMPORARY AND PERMANENT BRACING MUST BE INSTALLED AS INDICATED ON THE TRUSS DRAWING AND ACCORDING TO THE BCSI-B1 AND BCSI-B3 SUMMARY SHEETS. BRACING FOR THE LATERAL STABILITY OF THE TRUSS IS TO BE PROVIDED BY THE BUILDING DESIGNER.
4. IT IS RECOMMENDED THAT A PROFESSIONAL ENGINEER'S ADVICE BE OBTAINED FOR THE BRACING OF TRUSSES SPANNING MORE THAN 12.37M (40'-7").

KOTT TRUSS BEARING CAPACITY TABLE

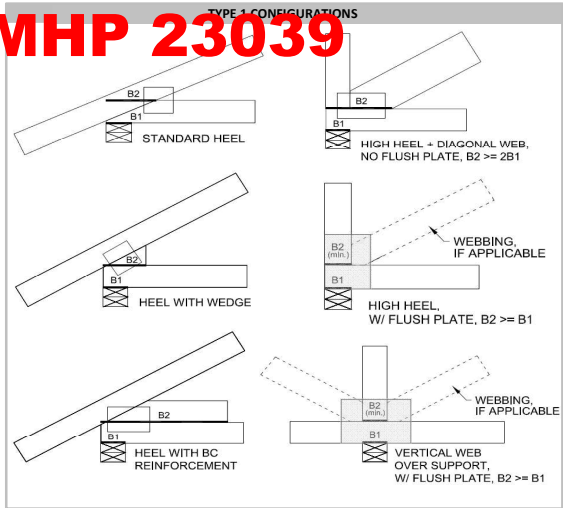
(INTERNAL USE ONLY)

TRUSS BEARING CAPACITIES (LBS.), BY TRUSS LUMBER TYPE (SUPPORTED ON SPF #2 TOP PLATE)

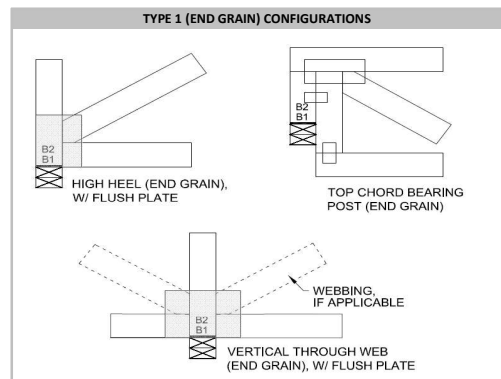
7-Jun-21

	BEARING PLATE (B1)	TYPE 1, NO FLUSH PLATE, B2 < 2B1							
		1-PLY		2-PLY		3-PLY		4-PLY	
		MSR2100	SPF No.2 MSR1950	MSR2100	SPF No.2 MSR1950	MSR2100	SPF No.2 MSR1950	MSR2100	SPF No.2 MSR1950
NO BEARING ENHANCER	1 1/2"	1383		2767	4151	4151	5534		
	2x4	3712	3228	7425		11138	12914		
	2x6	5834	5073	11668		17503	20293		
	2x8	7690	6687	15381		23072	26750		
FLUSH PLATE	1 1/2"	1383		2767	4151	4151	5534		
	2x4	3712		7425	11138	11138	14851		
	2x6	5834		11668	17503	17503	23337		
	2x8	7690		15381	23072	23072	30763		
BEARING ENHANCER	1 1/2"	1383		2767	4151	4151	5534		
	2x4	3712		7425	11138	11138	14851		
	2x6	5834		11668	17503	17503	23337		
	2x8	7690		15381	23072	23072	30763		
TYPE 1, FLUSH PLATE + BEARING ENHANCER									
CPn-4 (Simpson)	2x4	4515		9030	13545	13545	18065		
	2x6	7095		14190	21285	21285	28390		
	2x8	10677		21381	32072	32072	42763		
	2x10	13834		27672	41513	41513	55344		
CPn-6 (Simpson)	2x4	6007	4898	12014	9796	18021	14694	19801	19592
	2x6	8677	7075	17354	14150	26031	21225	31117	28300
	2x8	12886	11001	25587	21174	41714	34827	51427	47800
	2x10	16865	14714	34827	29834	58344	49851	74254	68851
SBP4 (MiTek)	2x4	7288		11001	14714	14714	18427		
	2x6	11030		16865	22699	22699	28534		
	2x8	16865		25587	34827	34827	45154		
	2x10	22699		34827	47800	47800	62117		
SBP6 (MiTek)	2x4	12886		20578	28269	28269	35960		
	2x6	19329		29834	41513	41513	53424		
	2x8	28269		44151	62117	62117	80763		
	2x10	37124		58344	82672	82672	107634		

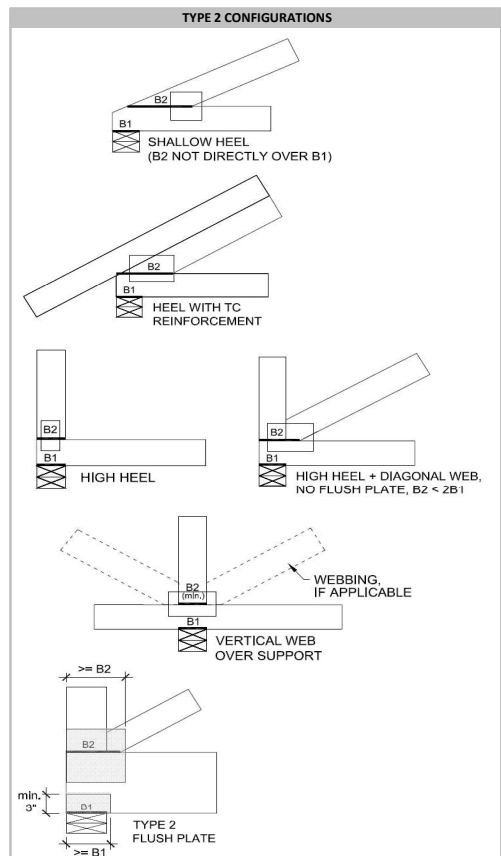
MHP 23039



	BEARING PLATE (B1)	POST (B2) ABOVE BEARING	TYPE 1 (END GRAIN)							
			1-PLY		2-PLY		3-PLY		4-PLY	
			MSR2100 (EG)	SPF No.2 (EG)	MSR2100 (EG)	SPF No.2 (EG)	MSR2100 (EG)	SPF No.2 (EG)	MSR2100 (EG)	SPF No.2 (EG)
END GRAIN	2x4	2x4	3712		7425		11138		14851	
	2x6	2x6	5834		11668		17503		23337	
	2x8	2x8	7690		15381		23072		30763	
	2x10	2x10	10677		21381		32072		42763	
END GRAIN, BEARING ENHANCER	1 1/2"	1 1/2"	1383		2767	4151	4151	5534		
	2x4	2x4	3712		7425	11138	11138	14851		
	2x6	2x6	5834		11668	17503	17503	23337		
	2x8	2x8	7690		15381	23072	23072	30763		
CPn-4 (Simpson)	2x4	2x4	4515		9030	13545	13545	18065		
	2x6	2x6	7095		14190	21285	21285	28390		
	2x8	2x8	10677		21381	32072	32072	42763		
	2x10	2x10	13834		27672	41513	41513	55344		
CPn-6 (Simpson)	2x4	2x4	6007	4898	12014	9796	18021	14694	19801	19592
	2x6	2x6	8677	7075	17354	14150	26031	21225	31117	28300
	2x8	2x8	12886	11001	25587	21174	41714	34827	51427	47800
	2x10	2x10	16865	14714	34827	29834	58344	49851	74254	68851
CP6-9 (KOTT)	2x4	2x4	4515		9030	13545	13545	18065		
	2x6	2x6	7095		14190	21285	21285	28390		
	2x8	2x8	10677		21381	32072	32072	42763		
	2x10	2x10	13834		27672	41513	41513	55344		
SBP4 (MiTek)	2x4	2x4	7288		11001	14714	14714	18427		
	2x6	2x6	11030		16865	22699	22699	28534		
	2x8	2x8	16865		25587	34827	34827	45154		
	2x10	2x10	22699		34827	47800	47800	62117		
SBP6 (MiTek)	2x4	2x4	12886		20578	28269	28269	35960		
	2x6	2x6	19329		29834	41513	41513	53424		
	2x8	2x8	28269		44151	62117	62117	80763		
	2x10	2x10	37124		58344	82672	82672	107634		



	BEARING PLATE (B1)	POST (B2) ABOVE BEARING	TYPE 2, NO FLUSH PLATE, B2 < 2B1							
			1-PLY		2-PLY		3-PLY		4-PLY	
			MSR2100	SPF No.2 MSR1950	MSR2100	SPF No.2 MSR1950	MSR2100	SPF No.2 MSR1950	MSR2100	SPF No.2 MSR1950
NO BEARING ENHANCER	2x4	2x4	2639	2152	5279	4304	7919	6457	10588	8609
		2x6	3393	2767	6787	5534	10181	8302	13575	11069
		2x8	3393	2767	6787	5534	10181	8302	13575	11069
		2x10	4147	3382	8296	6764	12444	10146	16592	13529
	2x6	2x6	4808	3920	9616	7840	14424	11761	19232	15681
		2x8	5562	4535	11124	9070	16686	13606	22248	18141
		2x10	3959	3228	7919	6457	11878	9685	15838	12914
		2x12	4808	3920	9616	7840	14424	11761	19232	15681
	2x8	2x8	5467	4458	10935	8916	16403	13375	21871	17833
		2x10	4147	3382	8296	6764	12444	10146	16592	13529
		2x12	4808	3920	9616	7840	14424	11761	19232	15681
		2x14	5562	4535	11124	9070	16686	13606	22248	18141
FLUSH PLATE	2x4	2x4	4672	3809	9344	7619	14016	11429	18689	15238
		2x6	4672	3809	9344	7619	14016	11429	18689	15238
		2x8	4672	3809	9344	7619	14016	11429	18689	15238
		2x10	4672	3809	9344	7619	14016	11429	18689	15238
	2x6	2x6	4672	3809	9344	7619	14016	11429	18689	15238
		2x8	4672	3809	9344	7619	14016	11429	18689	15238
		2x10	4672	3809	9344	7619	14016	11429	18689	15238
		2x12	4672	3809	9344	7619	14016	11429	18689	15238
	2x8	2x8	4672	3809	9344	7619	14016	11429	18689	15238
		2x10	4672	3809	9344	7619	14016	11429	18689	15238
		2x12	4672	3809	9344	7619	14016	11429	18689	15238
		2x14	4672	3809	9344	7619	14016	11429	18689	15238



NOTES:

- Factored truss reaction shall not exceed bearing capacity corresponding to: configuration type, size of bearing surfaces, truss lumber, # of plies, and applicable enhancers.
- Values in table are in conformance with CSA O86-14 Cl. 6.5.7 and TPIC 2014-Update 2, and may be used for residential or commercial designs.
- Values in table are in conformance with MiTek Canada Detail B37821Q "SPF Bearing Capacities".
- Values in table are in conformance with Simpson Catalogue C-C-CAN2020.
- Conditions for use of table values include: standard duration (K₁=1), dry lumber (K₂=1), untreated lumber (K₃=1), length of bearing factor not applied (K₄=1).
- Size factor (K₅) applied to support material calculation when acceptable. Flush plate factor (K₆) applied to truss material calculation when acceptable (ie. excludes end grain).
- Flat roof factor (K₇) must applied for trusses making up a flat roof system; to do so, multiply bearing capacity values by 0.75 for this application.
- Bearing plate is to be specified by the project engineer; values in table assume a bearing material of SPF #2 (or better).
- When required, flush plate must not be located further than 1/4" away from bearing surface, and must cover the entire bearing plate length (B1).
- When required, bearing enhancer must be installed as per manufacturer's guidelines.
- Type 2 bearing configurations can be converted to use Type 1 table values as outlined in TPIC 2014-Update 1 Cl. 7.5.9.
- This table is not valid after April 30, 2022.



CAPACITY DETAILS

LATERAL AND WITHDRAWAL RESISTANCE OF BEARING ANCHORAGE BY TOE-NAILS

NAIL TYPE	Length (in)	Diameter (in)	LATERAL Resistance per nail (Lbs.)		WITHDRAWAL Resistance per nail (Lbs.)	
			SPF	D. FIR	SPF	D. FIR
COMMON WIRE	3.00	0.144	122	139	30	42
	3.25	0.144	127	144	32	45
	3.50	0.160	152	173	38	52
COMMON SPIRAL	3.00	0.122	96	108	26	36
	3.25	0.122	97	108	28	40
	3.50	0.152	142	161	36	50
3.25" Gun nail	3.25	0.120	94	105	28	39

Note: If using truss with D. Fir lumber and SPF bearing plate, use tabulated SPF values in table.

Nail type:	Common wire	Common spiral	Common wire	Common spiral	Gun Nail
Diameter (in.)	0.160	0.152	0.144	0.122	0.120
Length (in.)	3.50	3.50	3.00	3.00	3.25
LUMBER	MAXIMUM NUMBER OF TOE-NAILS				
2x4 SPF	2	2	3	3	3
2x6 SPF	4	4	4	5	5
2x4 D. FIR	2	2	2	2	2
2x6 D. FIR	3	3	3	4	4

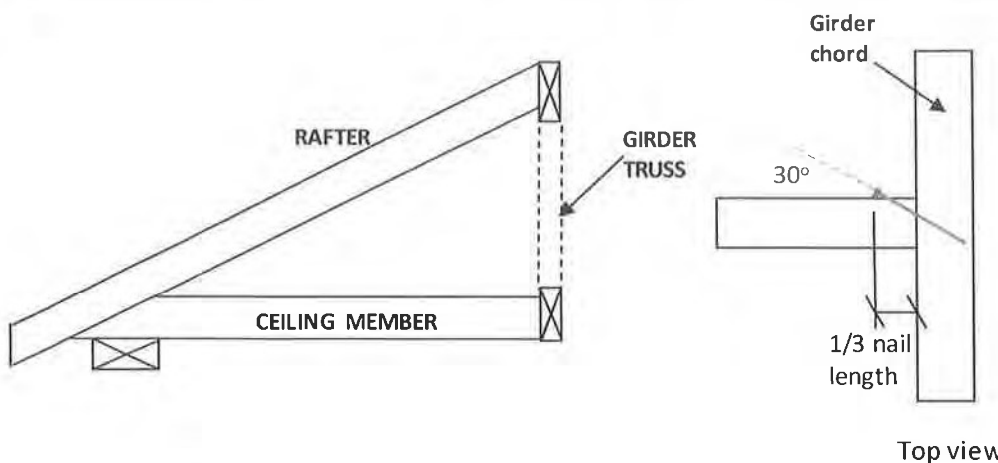


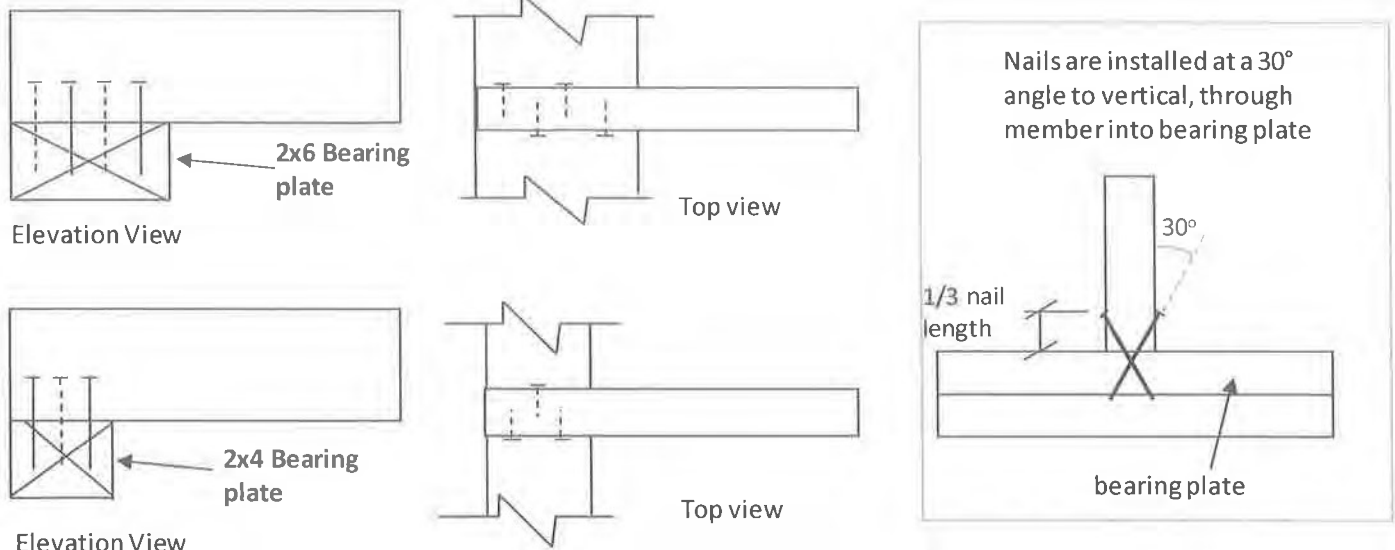
Figure 1: Toe-Nailing Rafter / Ceiling Member to Girder Truss





CAPACITY DETAILS

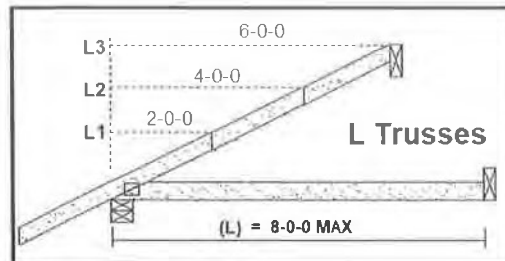
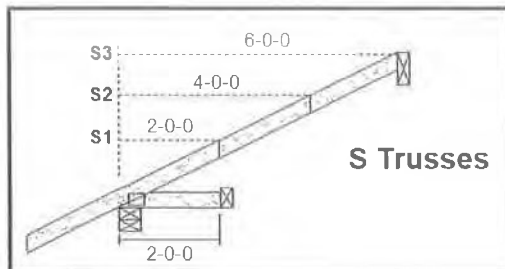
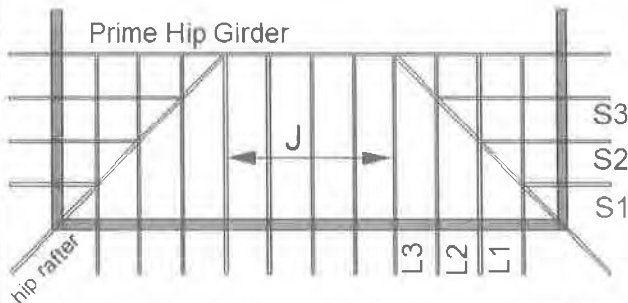
Figure 2: Toe-Nail Anchorage to Bearing Plate for Uplift



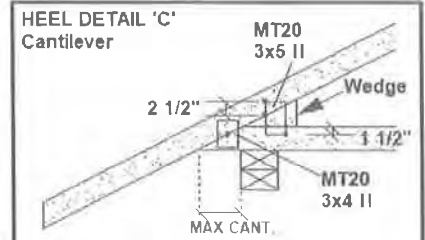
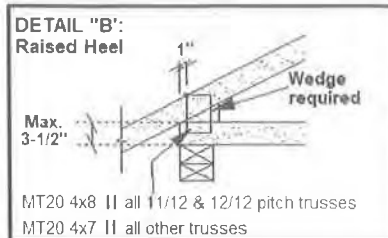
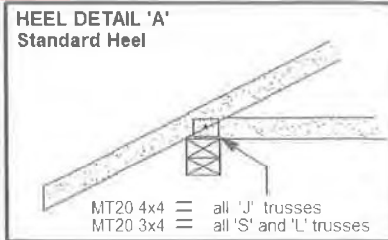
NOTES:

1. Rafter and ceiling members may be connected to top and bottom chords of girder truss by toe-nailing the members into the girder chords (see fig. 1), provided the factored vertical reactions of the supported members do not exceed the lateral resistance of the toe-nails. Mechanical connectors (hangers) are required if factored vertical reactions exceed the toe-nail capacity, or if the connection must resist horizontal loads (loads perpendicular to the face of girder or rafter).
2. Trusses, rafters or ceiling members may be anchored to the bearing plate with toe-nails (see fig. 2), provided that the factored uplift reactions due to **wind or earthquake loads** do not exceed the **withdrawal resistance of the toe-nails**. Mechanical anchors (tie-downs) are required for reactions that exceed the toe-nail withdrawal capacity. Toe-nail anchorage to bearing plates is **NOT** permitted if uplift reactions are generated from gravity loads (snow, floor live, dead).
3. Tabulated toe-nail resistances on page 1 are for **one** toe-nail. Multiply unit values by the number of nails used in the connection. Maximum number of nails in a connection shall not exceed the tabulated limits shown on page 1 for a given lumber size /species.
4. Nail values are based on specific gravity of $G = 0.42$ (SPF) and $G = 0.49$ (D. Fir).
5. Toe-nails shall be driven at approximately 1/3 the nail length from the edge of the joist/truss chord and driven at an angle of 30° to the grain of the member.
6. For wind / earthquake loads, tabulated lateral resistances may be multiplied by 1.15 (K_D factor). No increases are permitted for tabulated withdrawal resistances.
7. Lumber must be dry ($< 19\%$ moisture content) at the time of nail installation.
8. Nail values in this table comply with CSA O86-19, Clause 12.9.

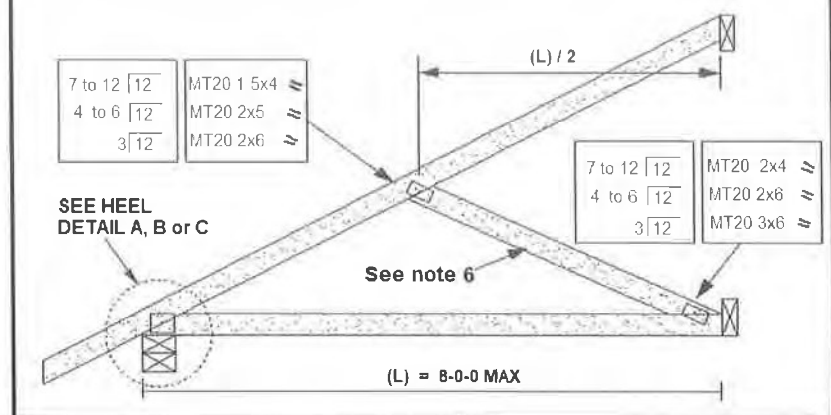
PEO
Certificate No. 10889485

**PEND FRAMING****PLAN VIEW****Specified Load Rating:**

Top chord Live:	51.0 PSF or less
Top chord Dead:	6.0 PSF or less
Bottom chord Live:	0.0 PSF
Bottom chord Dead:	7.3 PSF or less

**CANTILEVER DETAIL "C"**

SLOPE	MAX CANT.	WEDGE PLATE	WEDGE SIZE
3/12	17"	3 X 5	2 X 3
4/12	14"	3 X 5	2 X 3
5/12	12"	3 X 5	2 X 4
6/12	10"	3 X 5	2 X 4
7/12	9"	3 X 5	2 X 6
8/12	8 5/8"	3 X 5	2 X 6
9/12	8"	3 X 5	2 X 6
10/12	7 5/8"	3 X 5	2 X 6

J Trusses

PEO

Certificate No. 10889485

NOTES:

1. This detail is valid only for projects conforming to **PART 9 NBCC 2015** that do not require a wind analysis to be incorporated into the design of the trusses.
2. Overhang length shall not exceed 24 inches.
3. All lumber shall be 2x4 SPF (or D-Fir) DRY No. 2 grade or better.
4. All plates specified are MITEK MT20, pressed into both faces of each truss. Heel plates of all trusses shall conform to heel details 'A', 'B' or 'C'.
5. Diagonal hip rafter design shall conform to section 9.23.14.6 of NBCC 2015.
6. For 6.0 ft. or less span, diagonal web on truss 'J' is optional. Girder design must reflect choice of partial jack ('J' with diagonal web) or open jack ('J' without diagonal web)
7. All truss-to-rafter and truss-to-truss connections shall be specified as per MITEK standard detail 'MSD2015-H: Toe-Nail Capacity Details'





GABLE END DETAIL

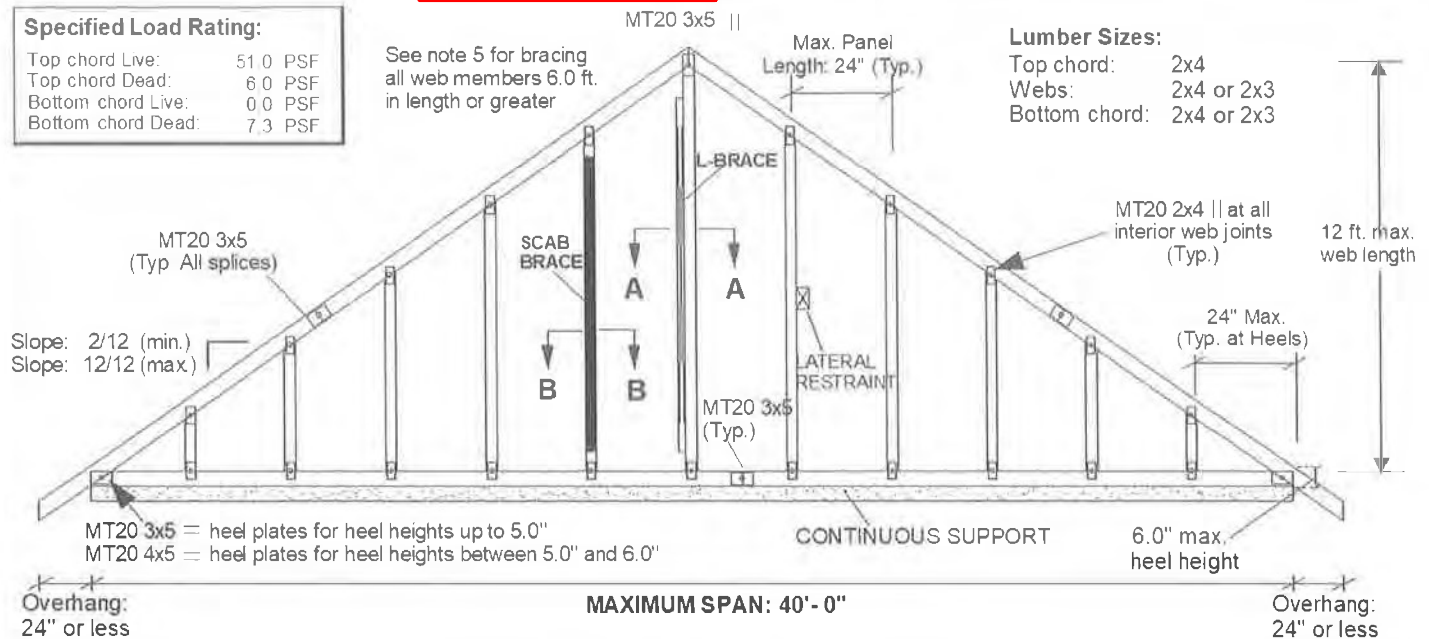
Specified Load Rating:

Top chord Live:	51.0 PSF
Top chord Dead:	6.0 PSF
Bottom chord Live:	0.0 PSF
Bottom chord Dead:	7.3 PSF

See note 5 for bracing
all web members 6.0 ft.
in length or greater

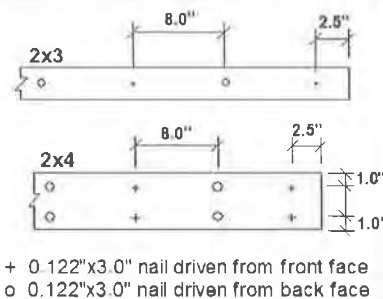
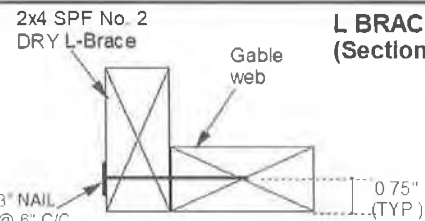
Lumber Sizes:

Top chord:	2x4
Webs:	2x4 or 2x3
Bottom chord:	2x4 or 2x3

**SCAB BRACE DETAIL
(Section B-B)**

Gable Web

SPF No. 2 DRY Scab, same size as web. Scab brace must cover 90% of web length

**L BRACE DETAIL
(Section A-A)**

Fasten L-Brace to narrow edge of web with one row of 0.122" x 3.0" nails spaced at 6.0" c/c along entire length of web. Brace must cover 90% of the web length. Respect a 2.5" minimum end distance.

Notes:

1. This detail is only valid for projects conforming to **Part 9, NBCC 2015** that do not require a wind analysis to be incorporated into the design of the truss.
2. This detail is for vertical (gravity) load rating of the truss only. Truss must be continuously supported over the entire length of bottom chord.
3. Maximum web length not to exceed 12.0 ft. Spacing of gable stud webs in the truss not to exceed 24 inches cc.
4. Splice joints shall not be located in the first panel adjacent to the heel joint or peak joint.
5. Lateral restraint required at half-length of all webs over 6.0 ft. long. Alternatively install an L-Brace or scab brace as shown above. Scab braces shall be limited to 10 ft. long webs or less.
6. All plates are MITTEK MT20 pressed into both faces of truss.
7. All lumber to be SPF (or D-Fir) DRY and of No.2 grade or better.
8. Additional building bracing is typically installed to brace the face of the end wall assembly. See BCSI Canada 'Building Designer Responsibilities for Gable End Frame Bracing' for additional information on building bracing for gable-end assemblies.

PEO
Certificate No. 10889485



CANADA B3C BCSI-B3C SUMMARY SHEET - PERMANENT RESTRAINT/BRACING OF CHORDS & WEB MEMBERS

Truss clear spans of 60' or greater may require complex permanent restraint. Please always consult a registered design professional.

RESTRICteur permanent Disregarding permanent restraint/bracing is a major cause of truss field performance problems and has been known to lead to roof or floor system collapse.
Le fait de négliger la retenue et le contreventement permanents est une cause majeure des problèmes relatifs à la performance des fermes sur le chantier et cela est reconnu pour avoir entraîné l'effondrement des systèmes de toit et de plancher.
Trusses with clear spans of 60' (18.3 m) or greater may require complex permanent restraint. Please always consult a registered design professional.
Les fermes ayant les portées libres de 18,3m (60 pi) et plus peuvent exiger un contreventement permanent complexe. Veuillez toujours consulter un concepteur professionnel agréé.

Restraint/Bracing Materials & Fasteners Matériaux et attaches de retenue et de contreventement

Commonly used restraint/bracing materials include wood structural panels, gypspan board sheathing, stress graded lumber, proprietary metal products, and metal profiles and straps.
Les matériaux de retenue et de contreventement courants incluent les panneaux structuraux de bois, le revêtement de panneaux de gypse, le bois classé par résistance mécanique, les produits métalliques exclusifs, les panneaux et les feuillards métalliques.

Minimum Allowable Requirements for Connections for the Restraint/Bracing Les exigences minimales des attaches pour la retenue/contreventement	Minimum Nail Size Taille des Nails	Minimum Number of Nails per Connection or Nail Spacing Nombre Minimum de Clous par Connexion
2x4 stress graded 30mm x 45mm (2x4) or equivalent metric	7 common (16/122) 3" (76mm) nails or 3" (76mm) nails	2
2x6 stress graded 30mm x 60mm (2x6) or equivalent metric	7 common (16/122) 3" (76mm) nails or 3" (76mm) nails	3

Permanent Bracing for the Various Planes of a Truss Contreventement permanent pour les divers plans d'une ferme

Permanent bracing is important because it:
a) prevents out-of-plane buckling of truss members.
b) helps maintain proper truss spacing.
c) resists and transfers lateral loads from wind and seismic forces.
Le contreventement permanent est important parce qu'il:
a) prévient le flambement hors plan des membrures de la ferme.
b) aide à maintenir l'espacement approprié des fermes.
c) résiste aux charges latérales des forces de vent et des forces sismiques et les transfère.
Trusses require permanent bracing within ALL of the following planes:
1. Top chord plane
2. Bottom chord plane
3. Web member plane
Les fermes exigent un contreventement permanents DANS tous les plans suivants:
1. Le plan de la membrure supérieure
2. Le plan de la membrure inférieure
3. Le plan de la membrure d'âme

1. Permanent Bracing for the Top Chord Plane Contreventement permanent pour le plan de la membrure supérieure

Use plywood, oriented strand board (OSB), or wood or metal structural panels that are properly braced. Attach to each truss.
Utiliser du contreplaqué, des panneaux OSB ou des panneaux structuraux de bois ou de métal correctement contreventés. Fixez à chaque ferme.
The truss design drawing (TDD) provides information on the assumed support for the top chord.
Le dessin de conception de ferme (DCF) fournit des renseignements sur le support prévu pour la membrure supérieure.

Fastener size and spacing requirements and grade for the sheathing, panels and bracing are provided in the building code and/or by the building designer.
Les codes du bâtiment et (ou) le concepteur du bâtiment fournissent les exigences relatives à la taille des attaches, à l'espacement et au classement du revêtement, des panneaux et du contreventement.

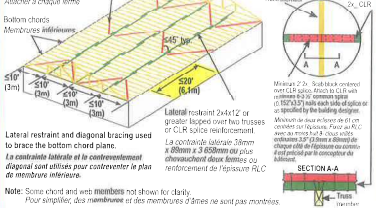
2. Permanent Bracing for the Bottom Chord Plane Contreventement permanent pour le plan de la membrure inférieure

Use rows of continuous lateral restraint with diagonal bracing. gypspan board sheathing or some other ceiling material capable of functioning as a diaphragm.
Utilisez des rangées de retenue latérale continues avec un contreventement diagonal, un revêtement de panneaux de gypse ou un autre matériau en mesure de fonctionner comme diaphragme.
The TDD provides information on the assumed support for the bottom chord.
Le DCF fournit des renseignements sur le support prévu pour la membrure inférieure.

Install bottom chord permanent lateral restraint at the spacing indicated on the TDD and/or by the building designer with a maximum of 10 (3 m) on center.
Installez la retenue latérale permanente de la membrure inférieure à l'espacement indiqué sur le DCF et (ou) par le concepteur du bâtiment avec un maximum de 3m (10 pi) entraxes.

Diagonal bracing Attach to each truss.
Contreventement et diaphragme Attache à chaque ferme.

Bottom chords Membrures inférieures



Note: Some chord and web members not shown for clarity.
Pour simplifier, des membrures et des membrures d'âme ne sont pas montrées.

3. Permanent Bracing for the Web Member Plane Contreventement permanent pour le plan de la membrure d'âme

Web member permanent bracing collects and transfers bracing restraint forces and lateral loads from wind and seismic forces. The same bracing can often be used for both functions.
Le contreventement permanent de la membrure d'âme rassemble et transfère les forces de retenue de flambement et (ou) les charges latérales des forces de vent et des forces sismiques. Le même contreventement peut souvent être utilisé pour les deux fonctions.
Individual Web Member Permanent Restraint & Bracing
Retenue et contreventement permanents des membrures d'âme individuelles

Check the TDD to determine which web members (if any) require restraint to resist buckling.
Vérifiez le DCF pour déterminer quelles membrures (s'il y a lieu) nécessitent une retenue pour résister au flambement.

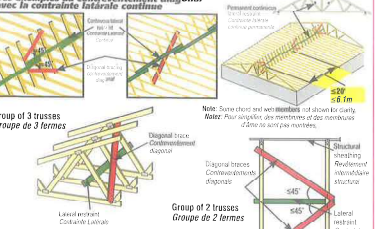
Bracing and bracing with:
A. Continuous lateral restraint & diagonal bracing.
B. Individual member web reinforcement.
C. Release and counterbracing a side.
D. d'une retenue latérale continue et d'un contreventement diagonal.
E. d'un renforcement des membrures d'âme individuelles.

A. Continuous Lateral Restraint (CLR) & Diagonal Bracing Retenue latérale continue (CLR) et contreventement diagonal

Attach each row of CLR at the locations shown on the TDD.
Fixez la CLR aux emplacements indiqués sur le DCF.

Install the diagonal bracing at an angle of less than or equal to 45° to the CLR and post on so that it crosses the web in close proximity to the CLR. Attach the diagonal bracing as close to the top and bottom chords as possible and to each web it crosses. Repeat every 20' (6.1 m) or less.
Installez le contreventement diagonal à un angle de 45° ou moins par rapport à la CLR et le positionner de sorte qu'il traverse l'âme à proximité de la CLR. Fixez le contreventement diagonal aussi près que possible des membrures supérieures et inférieures et de chaque âme qu'il croise. Répétez à tous les 6,1 m (20 pi) ou moins.

Examples of Diagonal Bracing with Continuous Restraint Des exemples du contreventement diagonal avec la retenue latérale continue



Lateral restraint and diagonal bracing can also be used with small groups of trusses (i.e., three or less). Attach the lateral restraint and diagonal bracing to each web member they cross.
La retenue latérale et le contreventement diagonal peuvent également être utilisés avec de petits groupes de fermes (i.e., trois ou moins). Fixez la retenue latérale et le contreventement diagonal à chaque membrure d'âme qu'ils traversent.

ALWAYS DIAGONALLY BRACE THE CONTINUOUS LATERAL RESTRAINT!
CONTREVENTEZ TOUJOURS EN DIAGONAL LA RETENUE LATÉRALE CONTINUE!

Reinforcement des membrures d'âme individuelles

The TDD, B3C, and the Building Code provide information on the reinforcement of the web members of a truss. The reinforcement of the web members of a truss is required to resist buckling due to axial forces caused by the truss loads applied to the truss. Additional restraint and bracing within the web member plane may also be required to transfer lateral forces due to wind and/or seismic loads applied perpendicular to the plane of the truss. This restraint and bracing is typically specified by the building designer.

The constraints on the reinforcement of the web members of a truss are as follows:
1. The reinforcement of the web members of a truss is required to resist buckling due to axial forces caused by the truss loads applied to the truss.
2. The reinforcement of the web members of a truss is required to resist buckling due to lateral forces caused by the truss loads applied to the truss.
3. The reinforcement of the web members of a truss is required to resist buckling due to lateral forces caused by the truss loads applied to the truss.

Web Member Plane Permanent Building Stability Bracing to Transfer Wind & Seismic Forces Contreventement permanent pour assurer la stabilité du bâtiment des plans des membrures d'âme pour transférer les forces de vent et les forces sismiques

The web member restraint or reinforcement specified on a TDD is required to resist buckling due to axial forces caused by the truss loads applied to the truss. Additional restraint and bracing within the web member plane may also be required to transfer lateral forces due to wind and/or seismic loads applied perpendicular to the plane of the truss. This restraint and bracing is typically specified by the building designer.

The constraints on the reinforcement of the web members of a truss are as follows:
1. The reinforcement of the web members of a truss is required to resist buckling due to axial forces caused by the truss loads applied to the truss.
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3. The reinforcement of the web members of a truss is required to resist buckling due to lateral forces caused by the truss loads applied to the truss.

Diagonal bracing to transfer lateral forces
Contreventement diagonal au transfert des forces latérales

Note: Top chord bracing is not shown for clarity.
Note: Pour simplifier, le contreventement diagonal pour la membrure supérieure n'est pas montré.

Some truss designers provide general design tables and details to assist the building designer in determining the bracing required to transfer lateral forces due to wind and/or seismic forces from the gable and frame into the roof and/or ceiling diaphragms.

Certains concepteurs de fermes fournissent des tableaux de conception généraux et des détails pour aider le concepteur du bâtiment à déterminer le contreventement requis pour transférer les charges latérales causées par les forces de vent et (ou) les forces sismiques provenant de la ferme du pignon jusqu'au diaphragme du toit et (ou) du plancher.

Gable End Frames and Sloped Bottom Chords Le pignon et les membrures inférieures en pente

The gable end frame should always match the profile of the adjacent trusses to permit installation of proper bottom chord plane restraint & bracing unless special bracing is designed to support the end wall.
La ferme du pignon devrait toujours correspondre au profil des fermes adjacentes pour permettre l'installation de la retenue et du contreventement appropriés des plans de la membrure inférieure, à moins qu'un contreventement spécial soit conçu pour supporter le mur d'extrémité.

Using a full bottom chord gable end frame with adjacent trusses that have sloped bottom chords is prohibited by some building codes as adequate bracing of this condition is difficult and sometimes impossible. Special end wall bracing design conditions are required by the building designer if the gable end frame profile does not match the adjacent trusses.
Utiliser une ferme à pignon complète avec des fermes adjointes qui ont des membrures inférieures en pente est interdit par certains codes de bâtiment car une bracing adéquate de cette condition est difficile et parfois impossible. Des conditions de conception spéciales de bracing sont exigées par le concepteur du bâtiment si le profil de la ferme du pignon ne correspond pas aux fermes adjointes.

Permanent Bracing for Special Conditions Contreventement permanent pour des conditions spéciales

Sway Bracing - Entrelaço de contreventement

Sway bracing is installed at the discretion of the building designer to help stabilize the truss system and minimize the lateral movement due to wind and seismic loads.
L'entrelaço de contreventement est installé à la discrétion du concepteur du bâtiment pour aider à stabiliser le système de fermes et à minimiser le mouvement latéral causé par les charges de vent et des charges sismiques.

Sway bracing installed continuously across the building also serves to distribute gravity loads between trusses of varying stiffness.
L'entrelaço de contreventement installé de façon continue le long d'un bâtiment sert également à distribuer les charges de gravité entre les fermes de rigidité variables.

Permanent Restraint/Bracing for the Top Chord in a Piggyback Assembly Retenue et contreventement permanents pour la membrure supérieure dans un assemblage de fermes cheapeux

Provide restraint and bracing by using rows of minimum 4x4 stress graded lumber CLR and diagonal bracing.
Fournir la retenue et le contreventement en utilisant des rangées de CLR et un contreventement diagonal de bois classé par résistance mécanique de 4x4 (114 mm x 114 mm).

Refer to the TDD for the minimum assumed spacing between rows of lateral restraint (e.g. purlins) attached to the top chord of the supporting truss.
Se référer au DCF pour l'espacement prévu de la retenue et des exigences minimales de contreventement selon la ferme cheapeuse de la ferme de support.

Diagonal bracing is used to restrain the CLR rows at 10 (3 m) intervals, or as specified in the construction documents.
Le contreventement diagonal est utilisé pour retenir les CLR à des intervalles de 3m (10 pi) ou comme le précisent les documents de construction.

Supporting truss Ferme supportrice

Bracing frame Ferme de contreventement

Bracing frame Ferme de contreventement

Bracing frame Ferme de contreventement

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