VECTOR ENGINEERS
DRAPER, UTAH
(801) 990-1775
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SURVEY TYPE: INSTRUCTIONS & GENERAL INFORMATION

RESIDENTIAL SOLAR SITE SURVEY

COMPANY NAME: _____ DATE: _____

INSTRUCTIONS:

1. Fill out this first page once per project.
2. Fill out one of the following survey forms for each unique roof plane that will be supporting the solar array.
3. Completely fill out the survey forms. Incomplete forms will delay our analysis and will be sent back to be completed.
4. PHOTOS ARE REQUIRED. (See photo checklist below.) The lack of photos will delay our analysis and will be requested if missing.
5. For ideas on how to gather information when the roof framing is not accessible due to finished ceilings, contact your Vector Point of Contact (POC).

PROJECT INFORMATION:

Project Name: _____ Address: _____

City: _____ State/Zip: _____

PHOTO CHECKLIST: (All photos listed below are required.)

- ☐ Exterior elevation photos showing all (4) sides of the structure.
- ☐ Interior attic photos of each roof plane supporting the solar array. Clearly identify which roof plane each photo is associated with.
  - ☐ Photos with tape measure showing the framing depth, width, and spacing
  - ☐ Photos showing the framing from a distance
  - ☐ Photos showing any additional supports such as collar ties, knee walls, kickers, beams, etc.
  - ☐ Photos of any damaged framing
- ☐ Photos of the roofing from above for metal roofs

PANEL LAYOUT:

- ☐ Provide a roof plan showing the solar panel locations.
- ☐ Clearly identify the connection type and spacing.
- ☐ Clearly identify if the system uses (2) rails per panel, or if it is a rail-less (i.e. shared rail) system.

ROOF / FRAMING CONDITION:

Check the boxes below for any observed damage to the framing. If damage was observed, please describe below and provide photos of the damage.

- ☐ Dry Rot
- ☐ Splits, Cuts, or Breaks
- ☐ Visible Sagging
- ☐ Water Damage
- ☐ Smoke or Fire Damage
- ☐ Other

Describe Damage:

If you have questions, please call Vector Structural Engineering at (800) 558-0013.

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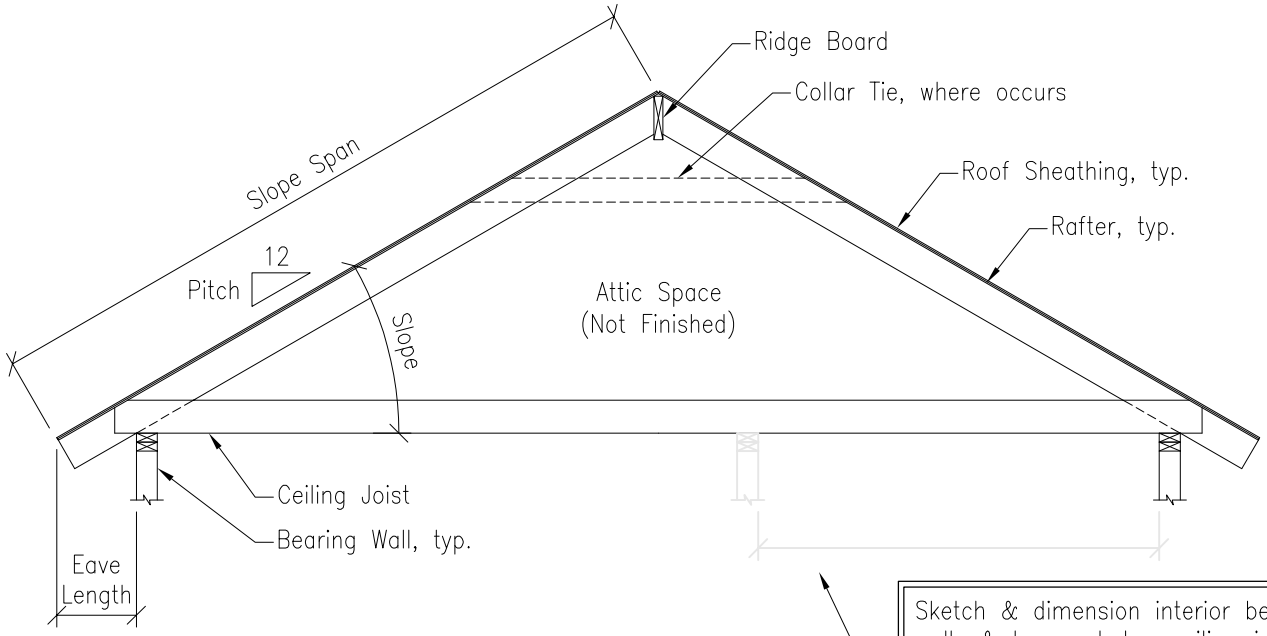
SURVEY TYPE: RAFTER & CEILING JOIST ATTIC SPACE UNFINISHED



Sketch & dimension interior bearing walls & beams below ceiling joists (*This information is necessary if a knee wall retrofit is required.)

Roof Label/Identifier: _____

Roof Finish:	Slope:
○ Asphalt/Composite Shingles (# layers =)	Pitch: /12
○ Floating Standing Metal Seam (thickness ga)	OR
○ Exposed Fastener Corrugated Metal (thickness ga)	Slope: degrees
○ Concrete/Clay Tile	
○ Membrane	
○ Other:	

Rafter:	Ceiling Joist:	Collar Tie:
Size:	Size:	Size:
○ 2x4	○ 2x4	○ No Collar Tie
○ 2x6	○ 2x6	○ 2x4
○ 2x8	○ 2x8	○ 2x6
○ 2x10	○ 2x10	○ 2x8
○ 2x12	○ 2x12	○ Other:
○ Other:	○ Other:	Spacing:
Spacing:	Spacing:	○ 16" o.c.
○ 16" o.c.	○ 16" o.c.	○ 24" o.c.
○ 24" o.c.	○ 24" o.c.	○ 32" o.c.
○ Other:	○ Other:	○ 48" o.c.
Grade: (if possible)	Grade: (if possible)	○ Other:
		Grade: (if possible)

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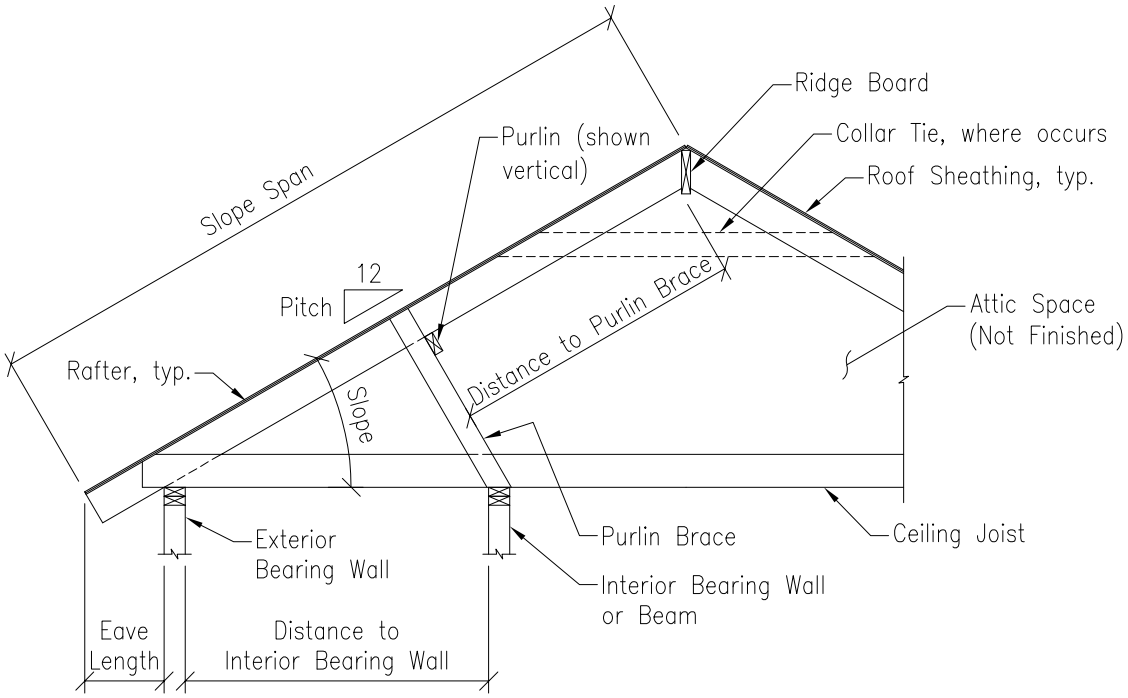
SURVEY TYPE: RAFTER & CEILING JOIST w/ PURLIN & PURLIN BRACES ATTIC SPACE UNFINISHED



Roof Label/Identifier: _____

Roof Finish:	Slope:
○ Asphalt/Composite Shingles (# layers =)	Pitch: /12
○ Floating Standing Metal Seam (thickness ga)	OR
○ Exposed Fastener Corrugated Metal (thickness ga)	Slope: degrees
○ Concrete/Clay Tile	
○ Membrane	
○ Other:	

Rafter:	Ceiling Joist:	Collar Tie:	Purlin:
Size: ○ 2x4 ○ 2x6 ○ 2x8 ○ 2x10 ○ 2x12 ○ Other:	Size: ○ 2x4 ○ 2x6 ○ 2x8 ○ 2x10 ○ 2x12 ○ Other:	Size: ○ No Collar Tie ○ 2x4 ○ 2x6 ○ 2x8 ○ Other:	Size: ○ 2x4 ○ 2x6 ○ Other: Grade: (if possible) Orientation: ○ Flat ○ Vertical
Spacing: ○ 16" o.c. ○ 24" o.c. ○ Other:	Spacing: ○ 16" o.c. ○ 24" o.c. ○ Other:	Spacing: ○ 16" o.c. ○ 24" o.c. ○ 32" o.c. ○ 48" o.c. ○ Other:	Purlin Brace: Size: ○ 2x4 ○ 2x6 ○ Other: Grade: (if possible) Spacing: ○ 16" o.c. ○ 24" o.c. ○ 32" o.c. ○ 48" o.c. ○ Other:
Grade: (if possible)	Grade: (if possible)	Grade: (if possible)	

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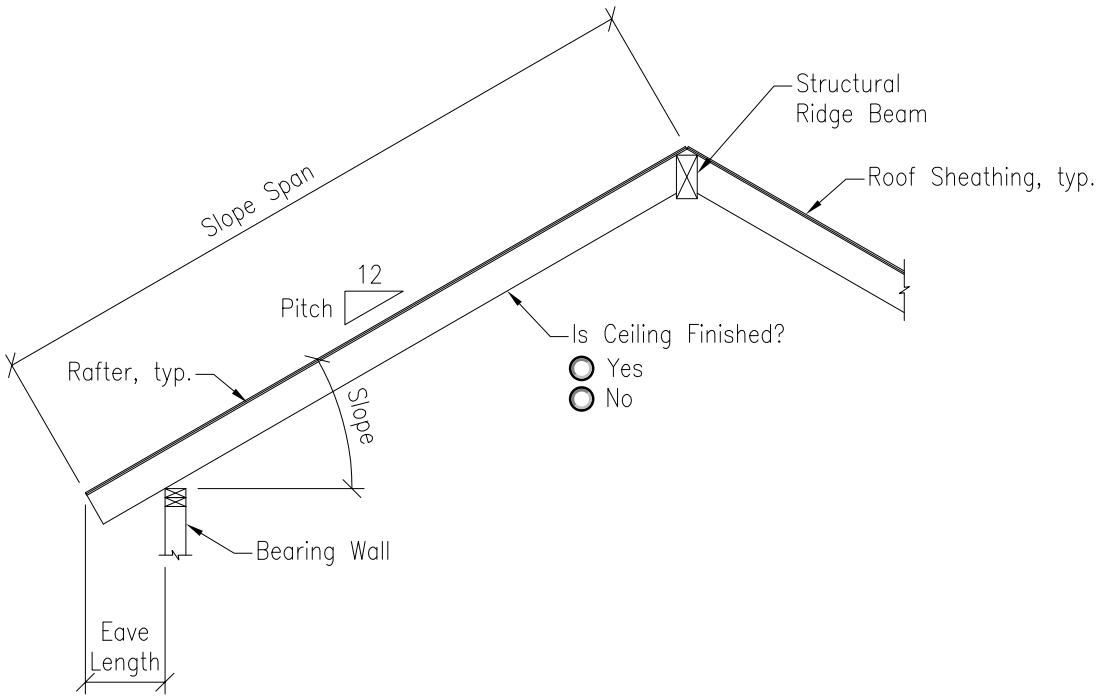
SURVEY TYPE: RAFTER FINISHED CEILING



Roof Label/Identifier: _____

Roof Finish:	Slope:
○ Asphalt/Composite Shingles (# layers =)	Pitch: /12
○ Floating Standing Metal Seam (thickness ga)	OR
○ Exposed Fastener Corrugated Metal (thickness ga)	Slope: degrees
○ Concrete/Clay Tile	
○ Membrane	
○ Other:	

Rafter:	Ridge Beam:
Size: ○ 2x4 ○ 2x6 ○ 2x8 ○ 2x10 ○ 2x12 ○ Other: Spacing: ○ 16" o.c. ○ 24" o.c. ○ Other: Grade: (if possible)	Size: Max. Span between Supports: Grade: (if possible)

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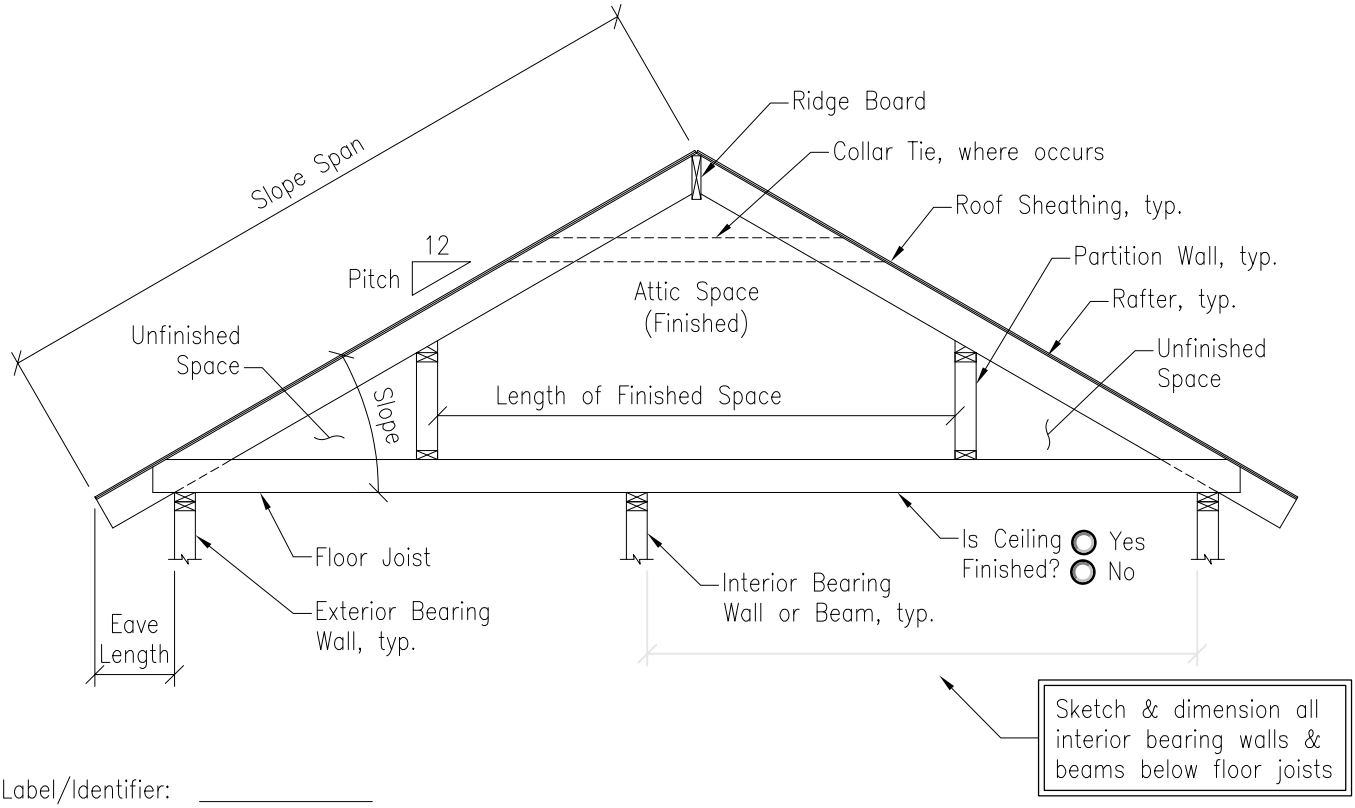
SURVEY TYPE: RAFTER & FLOOR JOIST
ATTIC SPACE FINISHED



Roof Label/Identifier: _____

Roof Finish:	Slope:
○ Asphalt/Composite Shingles (# layers =)	Pitch: /12
○ Floating Standing Metal Seam (thickness ga)	OR
○ Exposed Fastener Corrugated Metal (thickness ga)	Slope: degrees
○ Concrete/Clay Tile	
○ Membrane	
○ Other:	

Rafter:	Floor Joist:	Collar Tie:
Size:	Size:	Size:
○ 2x4	○ 2x4	○ No Collar Tie
○ 2x6	○ 2x6	○ 2x4
○ 2x8	○ 2x8	○ 2x6
○ 2x10	○ 2x10	○ 2x8
○ 2x12	○ 2x12	○ Other:
○ Other:	○ Other:	Spacing:
Spacing:	Spacing:	○ 16" o.c.
○ 16" o.c.	○ 16" o.c.	○ 24" o.c.
○ 24" o.c.	○ 24" o.c.	○ 32" o.c.
○ Other:	○ Other:	○ 48" o.c.
Grade: (if possible)	Grade: (if possible)	○ Other:
		Grade: (if possible)

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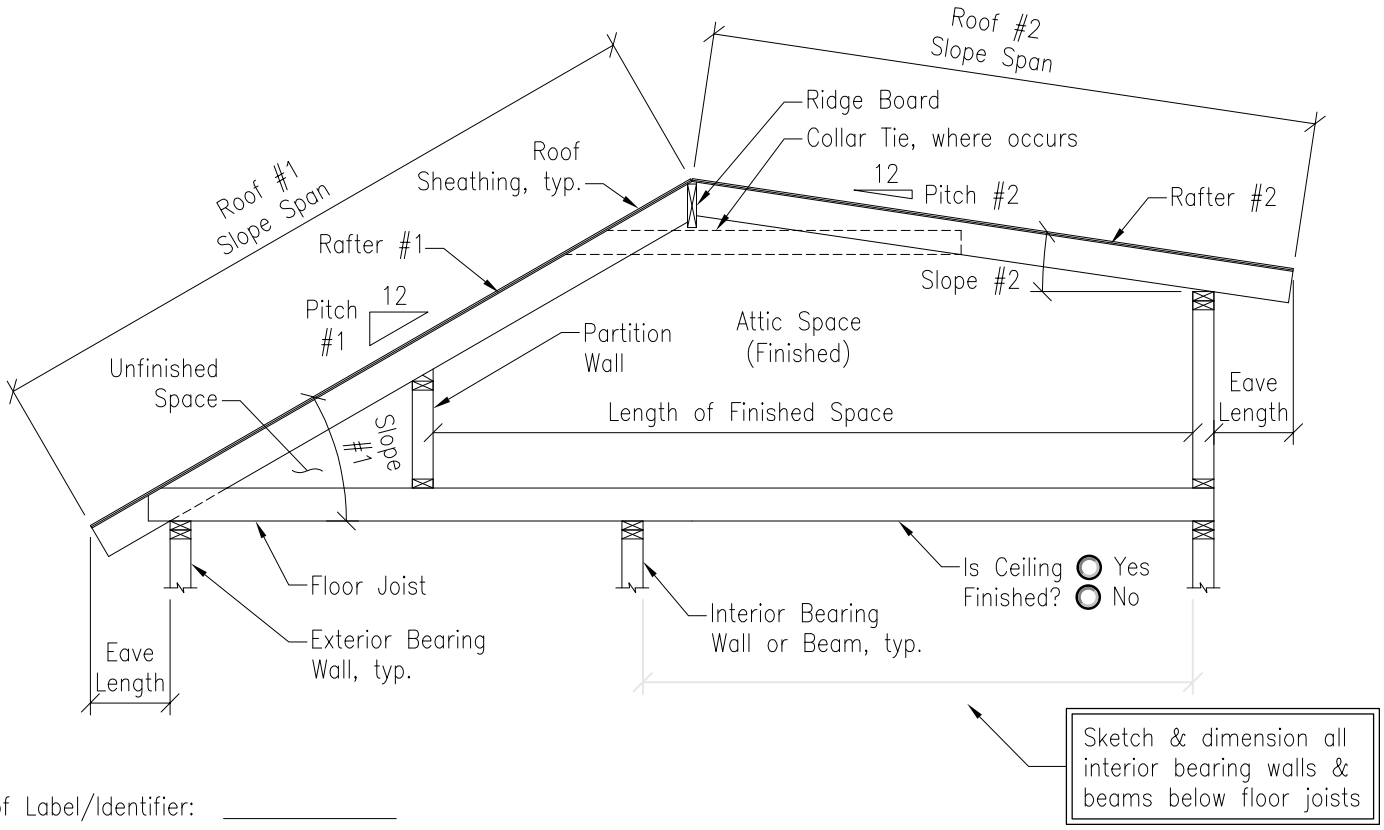
SURVEY TYPE: RAFTER & FLOOR JOIST
ATTIC SPACE FINISHED
w/ DORMER @ RIDGE



Roof Label/Identifier: _____

Roof Finish:	Slope:	
○ Asphalt/Composite Shingles (# layers =)	Pitch #1: /12	Pitch #2: /12
○ Floating Standing Metal Seam (thickness ga)	OR	OR
○ Exposed Fastener Corrugated Metal (thickness ga)	Slope #1: degrees	Slope #2: degrees
○ Concrete/Clay Tile		
○ Membrane		
○ Other:		

Rafter #1:	Rafter #2:	Floor Joist:	Collar Tie:
Size:	Size:	Size:	Size:
○ 2x4	○ 2x4	○ 2x4	○ No Collar Tie
○ 2x6	○ 2x6	○ 2x6	○ 2x4
○ 2x8	○ 2x8	○ 2x8	○ 2x6
○ 2x10	○ 2x10	○ 2x10	○ 2x8
○ 2x12	○ 2x12	○ 2x12	○ Other:
○ Other:	○ Other:	○ Other:	Spacing:
Spacing:	Spacing:	Spacing:	○ 16" o.c.
○ 16" o.c.	○ 16" o.c.	○ 16" o.c.	○ 24" o.c.
○ 24" o.c.	○ 24" o.c.	○ 24" o.c.	○ 32" o.c.
○ Other:	○ Other:	○ Other:	○ 48" o.c.
Grade: (if possible)	Grade: (if possible)	Grade: (if possible)	○ Other:
			Grade: (if possible)

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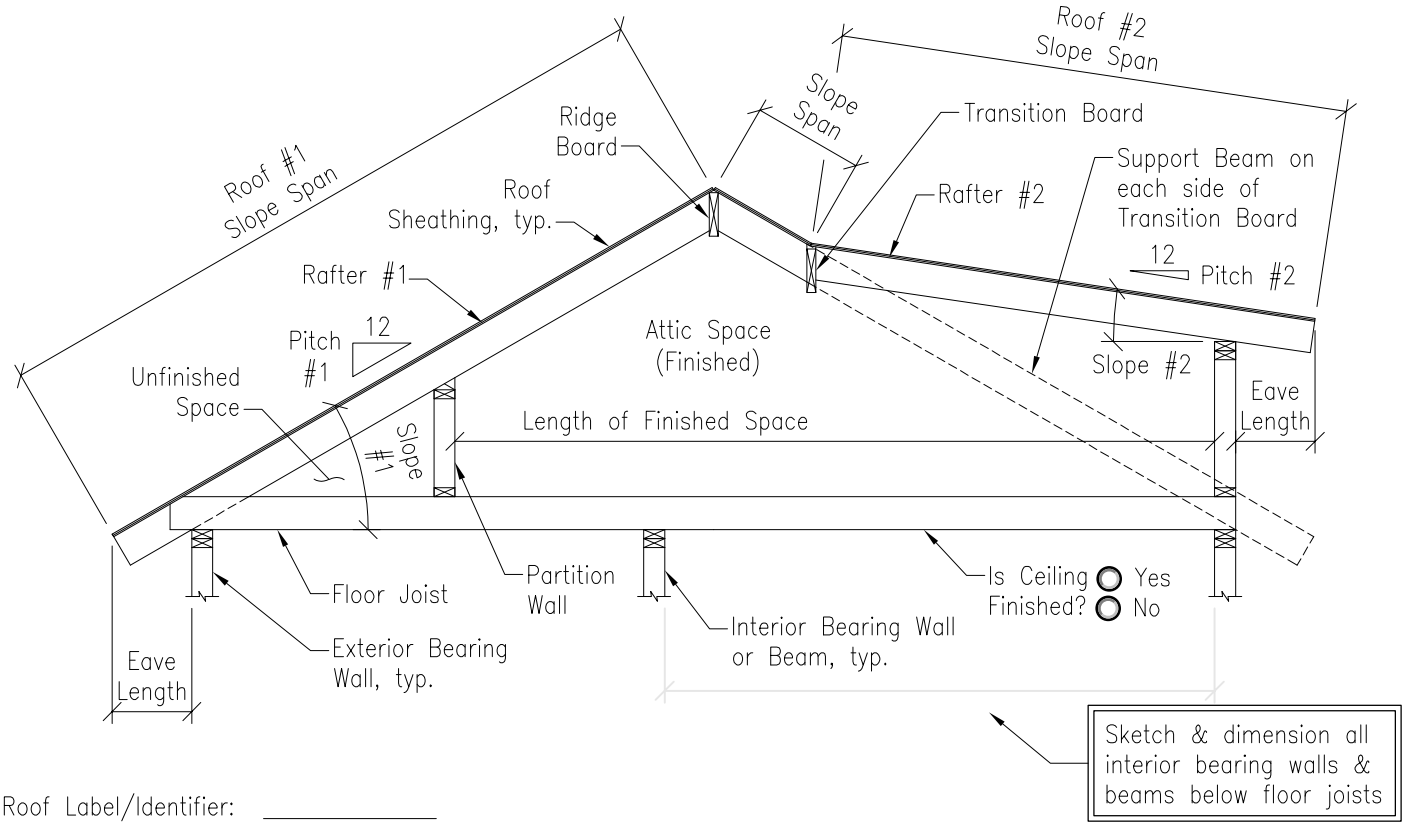
SURVEY TYPE: RAFTER & FLOOR JOIST
ATTIC SPACE FINISHED
w/ DORMER BELOW RIDGE



Roof Label/Identifier: _____

Roof Finish:	Slope:	
○ Asphalt/Composite Shingles (# layers =)	Pitch #1: /12	Pitch #2: /12
○ Floating Standing Metal Seam (thickness ga)	OR	OR
○ Exposed Fastener Corrugated Metal (thickness ga)	Slope #1: degrees	Slope #2: degrees
○ Concrete/Clay Tile		
○ Membrane		
○ Other:		

Rafter #1:	Rafter #2:	Floor Joist:	Transition Board:
Size:	Size:	Size:	Size:
○ 2x4	○ 2x4	○ 2x4	○ 2x6
○ 2x6	○ 2x6	○ 2x6	○ 2x8
○ 2x8	○ 2x8	○ 2x8	○ Other:
○ 2x10	○ 2x10	○ 2x10	Span:
○ 2x12	○ 2x12	○ 2x12	Grade: (if possible)
○ Other:	○ Other:	○ Other:	
Spacing:	Spacing:	Spacing:	
○ 16" o.c.	○ 16" o.c.	○ 16" o.c.	
○ 24" o.c.	○ 24" o.c.	○ 24" o.c.	
○ Other:	○ Other:	○ Other:	
Grade: (if possible)	Grade: (if possible)	Grade: (if possible)	
			Support Beam:
			Size:

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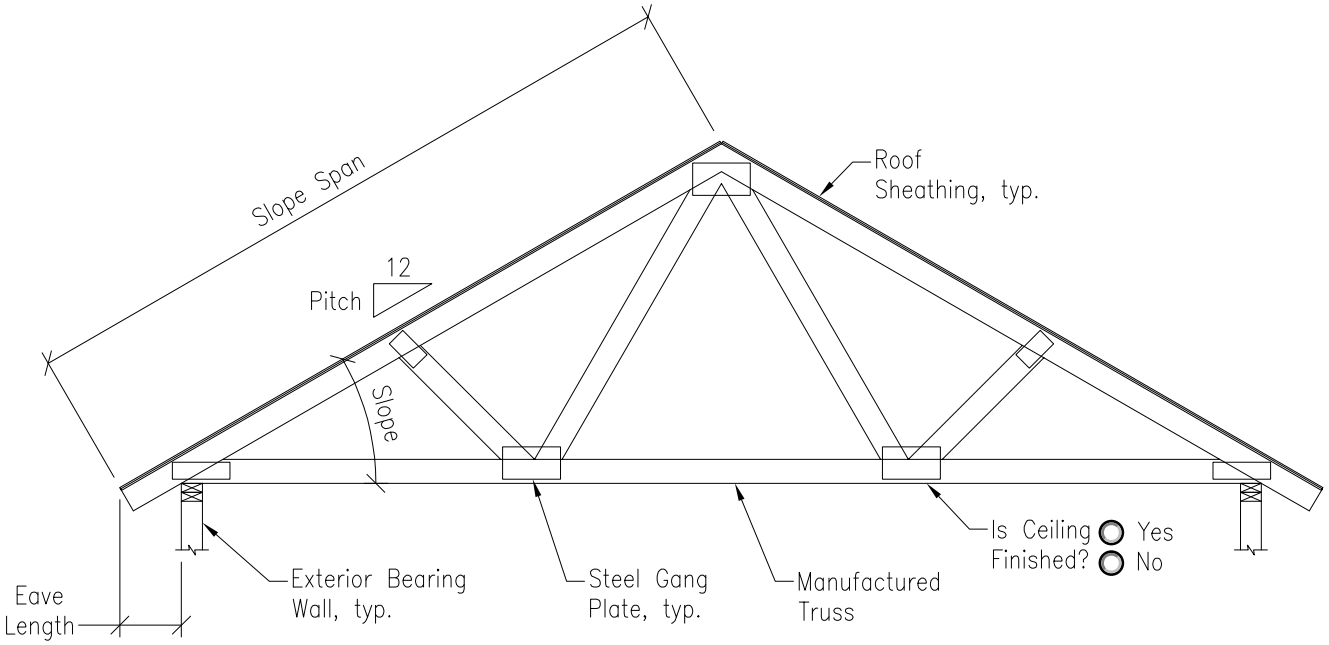
SURVEY TYPE: SLOPED MANUFACTURED TRUSS



Roof Label/Identifier: _____

Roof Finish:	Slope:
○ Asphalt/Composite Shingles (# layers =)	Pitch: /12
○ Floating Standing Metal Seam (thickness ga)	OR
○ Exposed Fastener Corrugated Metal (thickness ga)	Slope: degrees
○ Concrete/Clay Tile	
○ Membrane	
○ Other:	

Truss:

Top Chord Size:
- ○ 2x4
- ○ 2x6
- ○ Other:

Spacing:
- ○ 16" o.c.
- ○ 24" o.c.
- ○ Other:

Grade: (if possible)

Are the original truss calculations available?
- ○ Yes
- ○ No

NOTE:
Depending on the panel locations and snow load requirements, more information may be required. (See the "DETAILED SURVEY FOR SLOPED MANUFACTURED TRUSS.") Vector will let you know if more information is required.

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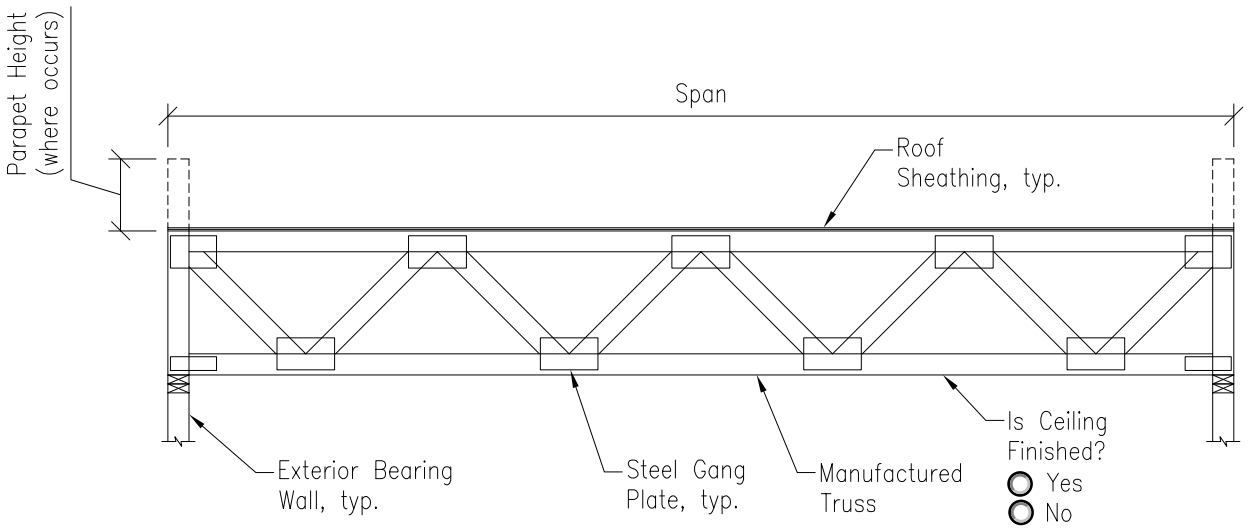
SURVEY TYPE: FLAT MANUFACTURED TRUSS



Roof Label/Identifier: _____

Roof Finish:

- Asphalt/Composite Shingles (# layers =)
- Floating Standing Metal Seam (thickness ga)
- Exposed Fastener Corrugated Metal (thickness ga)
- Concrete/Clay Tile
- Membrane
- Other:

Truss:

Top Chord Size:

- 2x4
- 2x6
- Other:

Spacing:

- 16" o.c.
- 24" o.c.
- Other:

Grade: (if possible)

Are the original truss calculations available?

- Yes
- No

NOTE:
Depending on the panel locations and snow load requirements, more information may be required. (See the "DETAILED SURVEY FOR SLOPED MANUFACTURED TRUSS.") Vector will let you know if more information is required.

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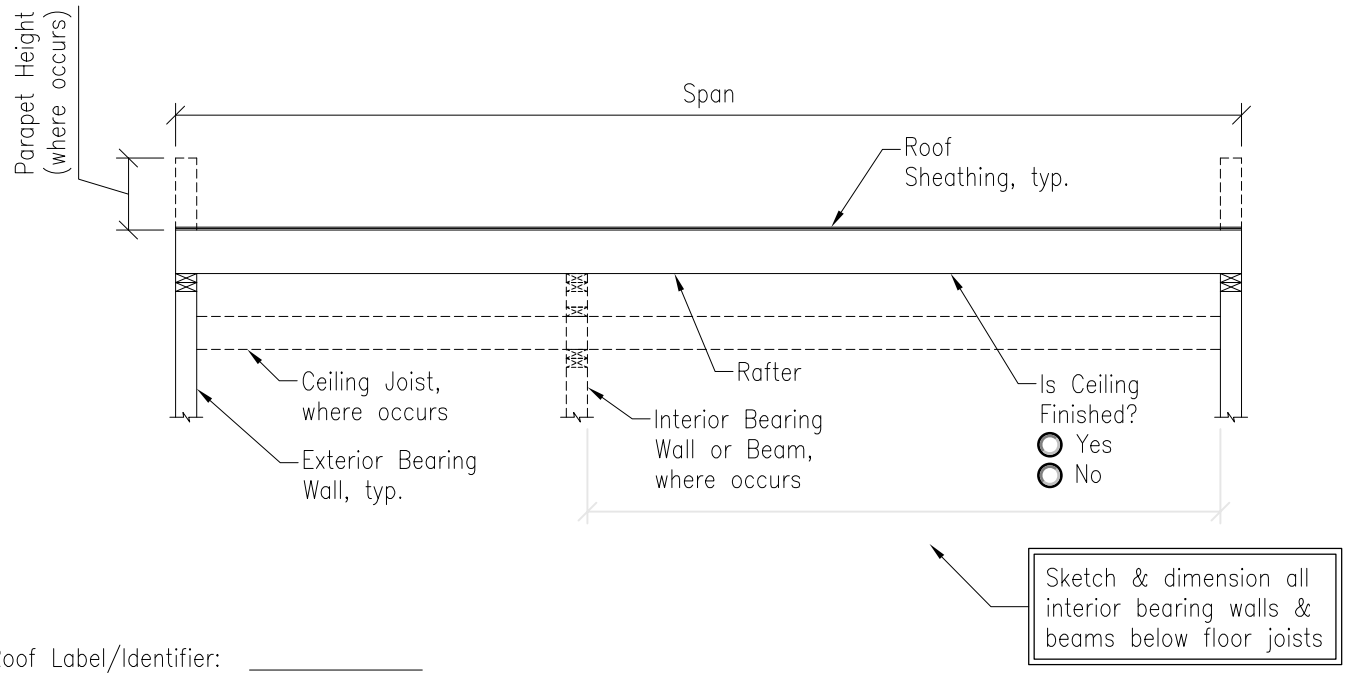
SURVEY TYPE: FLAT RAFTER



Roof Label/Identifier: _____

Roof Finish:

- ○ Asphalt/Composite Shingles (# layers =)
- ○ Floating Standing Metal Seam (thickness ga)
- ○ Exposed Fastener Corrugated Metal (thickness ga)
- ○ Concrete/Clay Tile
- ○ Membrane
- ○ Other:

Rafter:

Size:

- ○ 2x4
- ○ 2x6
- ○ 2x8
- ○ 2x10
- ○ 2x12
- ○ Other:

Spacing:

- ○ 16" o.c.
- ○ 24" o.c.
- ○ Other:

Grade: (if possible)

Ceiling Joist:

Size:

- ○ No Ceiling Joist
- ○ 2x4
- ○ 2x6
- ○ 2x8
- ○ 2x10
- ○ 2x12
- ○ Other:

Spacing:

- ○ 16" o.c.
- ○ 24" o.c.
- ○ Other:

Grade: (if possible)

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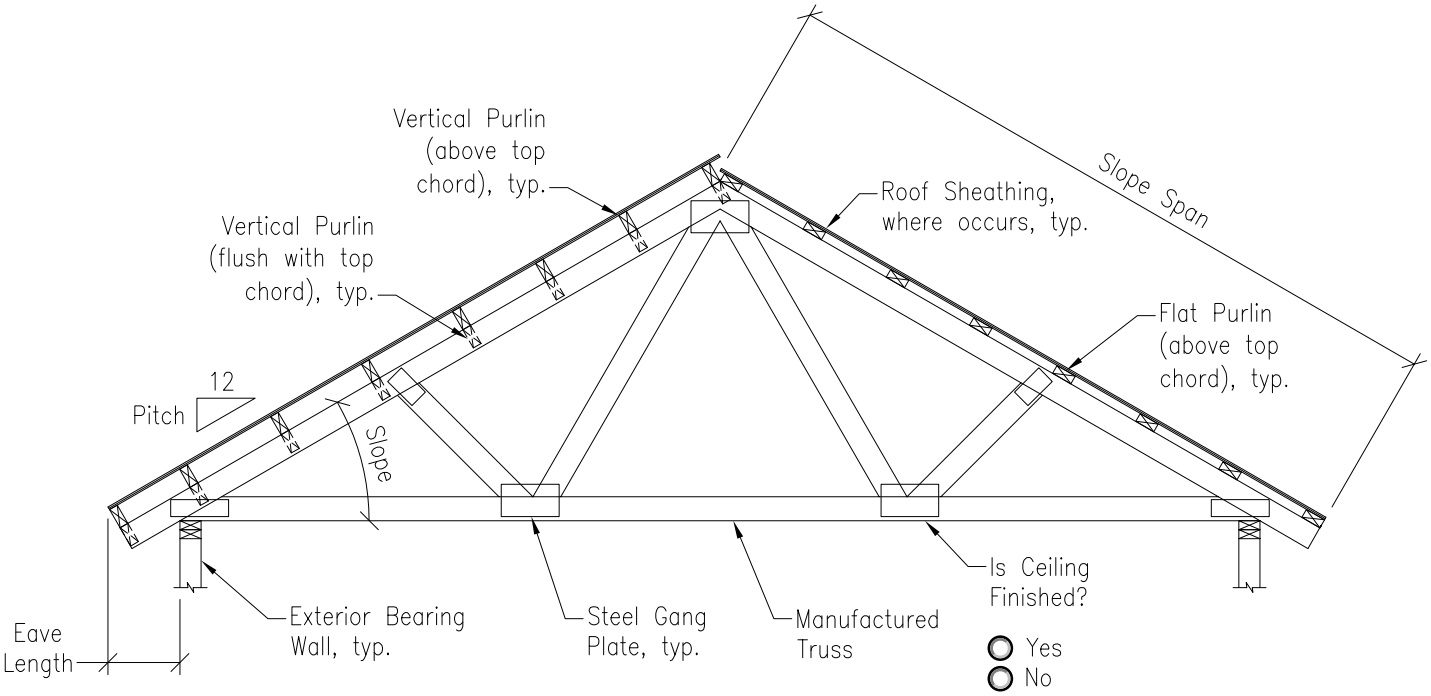
SURVEY TYPE: SLOPED MANUFACTURED TRUSS & PURLINS



Roof Label/Identifier: _____

Roof Finish:	Slope:
○ Asphalt/Composite Shingles (# layers =)	Pitch: /12
○ Floating Standing Metal Seam (thickness ga)	OR
○ Exposed Fastener Corrugated Metal (thickness ga)	Slope: degrees
○ Concrete/Clay Tile	
○ Membrane	
○ Other:	

Truss:

Top Chord Size:
- ○ 2x4
- ○ 2x6
- ○ Other:

Spacing:
- ○ 48" o.c.
- ○ 72" o.c.
- ○ Other:

Grade: (if possible)

Are the original truss calculations available?
- ○ Yes
- ○ No

Purlin:

Orientation: (see sketch above)
- ○ Vertical (above top chord)
- ○ Vertical (flush with top chord)
- ○ Flat (above top chord)

Size:
- ○ 2x4
- ○ 2x6
- ○ Other:

Spacing:
- ○ 16" o.c.
- ○ 24" o.c.
- ○ Other:

Grade: (if possible)

NOTE:
Depending on the panel locations and snow load requirements, more information may be required. (See the "DETAILED SURVEY FOR SLOPED MANUFACTURED TRUSS.") Vector will let you know if more information is required.

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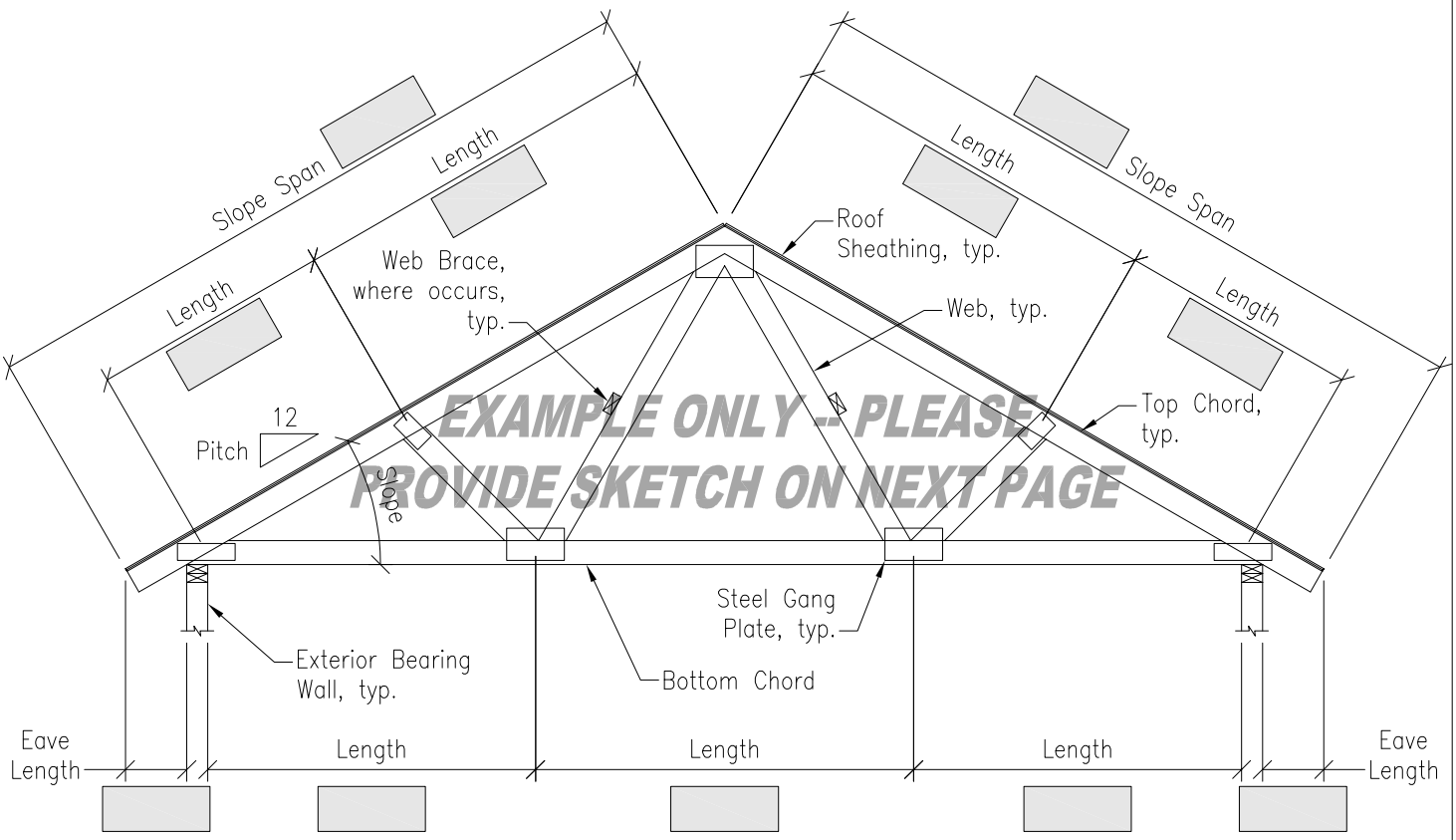
SURVEY TYPE: DETAILED SURVEY FOR SLOPED MANUFACTURED TRUSS



INSTRUCTIONS:

1. Your Vector Point of Contact will let you know when a detailed truss survey is required. A detailed truss survey is sometimes required when the original truss calculations are not available and the AHJ requires a point load analysis or the AHJ does not allow for the reduction of roof snow loads.
2. The sketch above is ONLY AN EXAMPLE of the information that is required when a detailed truss survey is required. Your truss will not look like the sketch above.
3. Sketch your truss in the space provided on the following page.

Roof Label/Identifier: _____

Roof Finish:	Slope:
○ Asphalt/Composite Shingles (# layers =)	Pitch: /12
○ Floating Standing Metal Seam (thickness ga)	OR
○ Exposed Fastener Corrugated Metal (thickness ga)	Slope: degrees
○ Concrete/Clay Tile	
○ Membrane	
○ Other:	

Truss Spacing:	
○ 16" o.c.	
○ 24" o.c.	
○ Other:	

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SURVEY TYPE: DETAILED SURVEY FOR SLOPED MANUFACTURED TRUSS

Roof Label/Identifier: _____

SKETCH YOUR TRUSS ABOVE

DETAILED TRUSS SURVEY CHECKLIST: (see example sketch on the previous page)

- ☐ Dimensions
  - ☐ Label the overall Sloped Span lengths on both sides of the truss.
  - ☐ Label the Eave Lengths.
  - ☐ Label the Lengths along the top chord where the webs connect to the top chord.
  - ☐ Label the Lengths along the bottom chord where the webs connect to the bottom chord.
- ☐ Members
  - NOTE: The lumber grade is critical to providing an accurate analysis. Each truss member may be a different grade. The grade is typically stamped on the side of the truss member. If you cannot interpret the stamp, please provide photos.
  - ☐ Label the size and grade of each Top Chord.
  - ☐ Label the size and grade of the Bottom Chord.
  - ☐ Label the size and grade of each Web.
  - ☐ Identify locations of any Web Braces (framing between truss webs, see example sketch on the previous page)

Is the ceiling finished?

- ◯ Yes
- ◯ No

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SURVEY TYPE: CUSTOM

Roof Label/Identifier: _____

SKETCH YOUR CUSTOM ROOF FRAMING SITUATION ABOVE

CUSTOM SURVEY CHECKLIST:

- ☐ Label the Roof Finish
- ☐ Label the roof Slopes or Pitches
- ☐ Label the size, spacing, and grade (if possible) of all framing members
- ☐ Label finished ceiling and wall surfaces
- ☐ Provide clear dimensions using dimension lines and leaders (see example to the right)