



## Project Identification

Project Name : 2024 Hailstorm Damage Repair Project – Shingle Roof Replacement.

Project Number : CMC 1002203-8

Project Information : Reference Specifications and Documents Attached

You are hereby invited to submit a quote for the above-referenced project(s).

### Following is a summary description of the project(s).

#### Bid B: Shingle Roof Buildings

Removal, disposal and replacement of the metal standing seam roofing systems on four (4) buildings in the City of Crosslake, Minnesota. Please reference the attached documents for a more detailed description of the scope of work for each building.

It is anticipated the project shall commence within 30 days after awarding the project and shall be completed by May 15, 2025. Completing after this date will result in a \$500 per day penalty.

To bid for this contract, the contractor must be licensed and insured. Proof of licensure and proof of insurance should be submitted with the bid. The bid proposal shall include a statement that the contractor complies with all applicable local, state, and federal statutory requirements, including the Equal Employment Opportunity Act and any other applicable requirements.

A performance bond for 100% of the quoted amount shall be required at the time of contract signing.

Bids will be received from September 12, 2024 until October 3, 2024, at 12:00 pm local time. Bid opening and awarding will take place on October 14, 2024.

All bids shall be hand delivered or sent to City of Crosslake: City Hall c/o Charlene Nelson, City Clerk.

Mailing Address: City of Crosslake 13888 Daggett Bay Road, Crosslake, MN 56442

Email Address: [cityclerk@cityofcrosslake.org](mailto:cityclerk@cityofcrosslake.org)

All Bids shall be submitted on this bid proposal form and shall be submitted prior to the deadline.

Any questions regarding the bid or the project shall be addressed to Charlene Nelson, City Clerk

([cityclerk@cityofcrosslake.org](mailto:cityclerk@cityofcrosslake.org)).

| BUILDING                           | AMOUNT |
|------------------------------------|--------|
| Location #3 – Community Center     |        |
| Location #4 – Warming House        |        |
| Location #7 – Lions Picnic Shelter |        |
| Location #8 – Parks & Rec Garage   |        |
| Total Bid Amount                   |        |



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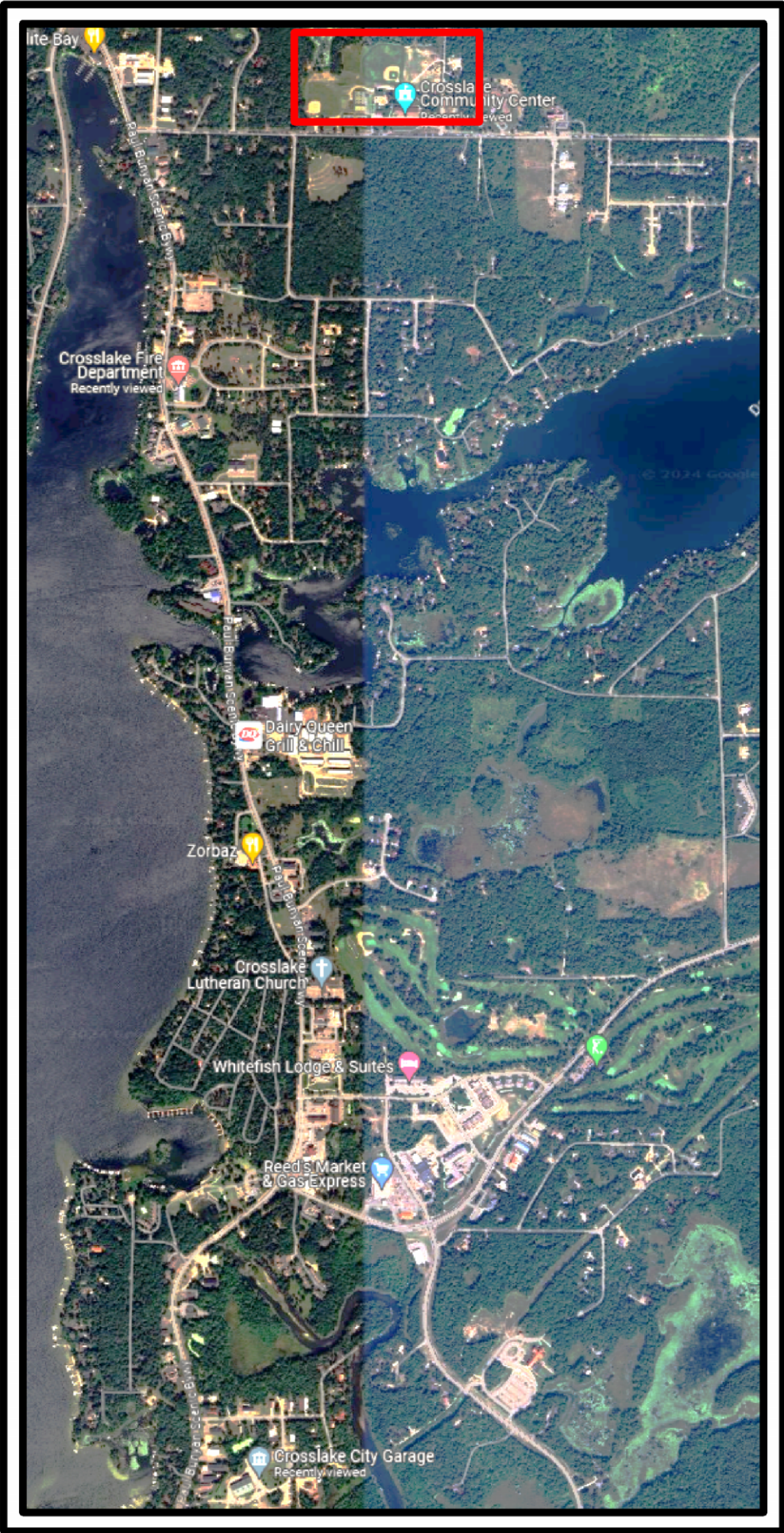
([cityclerk@cityofcrosslake.org](mailto:cityclerk@cityofcrosslake.org)).

| BUILDING                           | AMOUNT |
|------------------------------------|--------|
| Location #3 – Community Center     |        |
| Location #4 – Warming House        |        |
| Location #7 – Lions Picnic Shelter |        |
| Location #8 – Parks & Rec Garage   |        |
| Total Bid Amount                   |        |



# CITY OF CROSSLAKE ROOF HAIL DAMAGE SHINGLE ROOF LOCATIONS

| SHEET INDEX SHINGLE ROOF |                                       |     |
|--------------------------|---------------------------------------|-----|
| SHEET                    | SHEET NAME                            | REV |
| ARCHITECTURAL            |                                       |     |
| G1.0                     | COVER SHEET & SITE PLAN SHINGLE ROOFS |     |
| A3.0                     | COMMUNITY CENTER                      |     |
| A3.1                     | COMMUNITY CENTER                      |     |
| A4.0                     | WARMING HOUSE                         |     |
| A5.0                     | LIONS PICNIC SHELTER                  |     |
| A6.0                     | PARKS/REC GARAGE                      |     |
| A-1                      | APPENDIX                              |     |



ENGINEERING SYSTEMS, INC.  
4215 Campus Drive  
Aurora, Illinois 60504  
630-851-4566 Phone

PROJECT LOCATION  
CITY OF CROSSLAKE

ESI PROJECT NO.  
106486

ORIGINAL ISSUE  
10 SEPT 2024

| REV# | DATE | DESCRIPTION | BY | RVW |
|------|------|-------------|----|-----|
|      |      |             |    |     |
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COVER SHEET & SITE PLAN  
SHINGLE ROOFS  
CITY OF CROSSLAKE, MN / CLAIM REF NO. CMC 1002203-8  
13888 Daggett Bay Road Crosslake, MN 56442

LOCATIONS #3, 4, 7 & 8

G1.0



## ROOFING NOTES

- SCOPE OF WORK INCLUDES:
  - REMOVAL OF EXISTING ASPHALT SHINGLES & ALL COMPONENTS DOWN TO ROOF SHEATHING.
  - INSTALLATION OF NEW ASPHALT SHINGLES & ALL REQUIRED COMPONENTS TO MATCH EXISTING TYPE & QUALITY.
  - REMOVAL OF EXISTING GUTTERS.
  - REMOVAL FROM SITE & DISPOSAL OF ALL MATERIAL REMOVED FROM ROOF IS TO BE CONTRACTOR'S RESPONSIBILITY.
  - RESTORATION OF THE SITE/TURF AROUND BUILDING, TO INCLUDE ACCESS PATHS, IS TO BE CONTRACTOR'S RESPONSIBILITY.
- INSTALLATION OF NEW SHINGLES:
  - TO MEET 2020 MINNESOTA BUILDING CODE
  - INDUSTRY STANDARD PRACTICES
  - MANUFACTURER INSTALLATION INSTRUCTIONS.
- INSTALLATION OF NEW GUTTERS TO MATCH LOCATION & SIZE OF EXISTING. CONTRACTOR TO FIELD VERIFY SIZE & LINEAR FEET NOTED IN DRAWINGS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE & PROTECT ANY ROOF APPURTENANCES THAT ARE NOT PART OF THE ROOF SYSTEM & TO REINSTALL AFTER NEW ROOF SYSTEM HAS BEEN INSTALLED. CONTRACTOR TO COORDINATE WITH CITY PRIOR TO REMOVAL.
- CONTRACTOR TO PROVIDE ALL REQUIRED COMPONENTS TO INSTALL NEW ROOF TO MATCH EXISTING ROOF INSTALLATION.
  - FLASHING
  - RIDGE CAP
  - EDGE TRIM/FLASHING
  - KICKOUT FLASHING WHERE ROOF INTERSECTS WITH A WALL
  - VALLEY FLASHING
  - ALL RQUIRED UNDERLAYMENTS TO MATCH EXISTING INSTALLATION, TO INCLUDE ICE & WATER SHIELD MEMBRANE.
- ALL EXISTING GUTTERS & RAINLEADERS ARE TO BE REMOVED & RE-INSTALLED. CONTRACTOR'S OPTION TO INSTALL NEW GUTTERS & RAINLEADERS IN-LEU OF RE-INSTALLING EXISTING.
- ALL PVC & METAL PENETRATIONS ARE TO BE PAINTED TO MATCH ROOF SHINGLE COLOR OR EXISTING PENETRATION COLOR. PREPARE SURFACES AS REQUIRED FOR PAINT APPLICATION.
- NEW ROOF COLOR TO MATCH EXISTING COLOR. COORDINATE WITH OWNER IF EXISTING COLOR IS NOT AVAILABLE.

## BUILDING/SITE INFORMATION

1. ROOF TO BE COVERED BY A 30 YEAR WARRANTY, CLASS 3 LAMINATED, FIBER-GLASS REINFORCED ARCHITECTURAL ASPHALT COMPOSITION SHINGLE SYSTEM. PROVIDE CERTIFIED WARRANTY DOCUMENTS TO OWNER AFTER INSTALLATION.
  - A. TOTAL SQUARE FOOTAGE OF ROOF = 21,447 SF
  - B. WASTE FACTOR NOT INCLUDED. REFERENCE 'HOVER' REPORT FOR WASTE FACTOR CALCULATIONS.
2. HEIGHT OF SOFFIT ABOVE GRADE:
  - A. LOWER BEARING: 11' - 0"
  - B. HIGHER BEARING: 20' - 0"
3. ROOF APPURTENANCES: (SEE ROOF PLAN FOR LOCATIONS)
  - A. (5) FURNACE METAL EXHAUST FLUES
  - B. (4) FURNACE PVC EXHAUST FLUES
  - C. (4) VENT PIPES
  - D. (5) RECTANGULAR EXHAUST/INTAKE DUCTS (APPROXIMATE 16" x 24")
4. BUILDING IS CLEAR OF OBSTRUCTIONS THE FULL PERIMETER EXCEPT FOR A WOOD FRAMED PERGOLA @ EAST SIDE.
5. SEE APPENDIX A-1 FOR HOVER REPORT WITH DETAILED MEASUREMENTS.
6. GOOGLE MAPS LOCATION:
  - A. 13870 Whipple Dr, Crosslake, MN 56442

| Key # | Description   |
|-------|---|
| 1     | EXISTING METAL EXHAUST FLUE - 5" DIAMETER. PROVIDE NEW BOOT PER INDUSTRY STANDARDS.   |
| 2     | EXISTING PVC EXHAUST FLUE - 3" DIAMETER. PROVIDE NEW BOOT PER INDUSTRY STANDARDS.   |
| 4     | EXISTING METAL VENT PIPE - 3 1/2" OD. PROVIDE NEW BOOT PER INDUSTRY STANDARDS.  |
| 5     | EXISTING METAL EXHAUST/INTAKE DUCT. PROVIDE NEW FLASHING @ PERIMETER PER INDUSTRY STANDARDS. PAINT DUCT TO MATCH OTHER ROOF PENETRATIONS. CLEAN SURFACE PRIOR TO PAINT APPLICATION.   |
| 6     | REMOVE EXISTING PREFINISHED METAL CAP FLASHING & REPLACE WITH LIKE KIND. NEW CAP TO MATCH EXISTING SIZE & SHAPE. FLASH PER INDUSTRY STANDARDS AT ADJACENT SHINGLES.   |
| 7     | EXISTING PVC VENT PIPE - 3" DIAMETER. PROVIDE NEW BOOT PER INDUSTRY STANDARDS.  |
| 8     | CONTINUOUS RIDGE VENT TO MATCH EXISTING IN EXTENTS. RIDGE VENT TO HAVE 18 SQ.INCH./FT VENTING MINIMUM.  |
| 9     | SMALL SHINGLE ROOF @ LOWER BEARING LEVEL. INSTALL SHINGLES & FLASH PER INDUSTRY STANDARDS.  |
| 10    | REMOVE & REPLACE EXISTING GUTTERS WITH NEW GUTTERS TO MATCH EXISTING IN SIZE & LOCATION. EXISTING RAIN LEADERS TO REMAIN. APPROXIMATELY 470'-0" IN ALL LOCATIONS. NEW GUTTERS TO BE 6" DEEP PROFILE TO MATCH EXISTING. CONTRACTOR TO PROVIDE ALL REQUIRED HANGERS & ACCESSORIES FOR INSTALLATION & CONNECTION TO EXISTING RAIN LEADERS. |



## CITY OF CROSSLAKE

106486

10 SEPT 2024

[illegible]

CITY OF CROSSLAKE, MN / CLAIM REF NO. CMC 1002203-8  
13888 Daggett Bay Road Crosslake, MN 56442

LOCATION #3

## A3.0





PENETRATION GROUP @ NW CORNER



PENETRATION GROUP @ SW CORNER




LINEAR CAP FLASHING & BOX DUCT



APENETRATION GROUP @ NE CORNER



PENETRATION GROUPING EAST OF MAIN ENTRANCE



ENGINEERING SYSTEMS, INC.  
4215 Campus Drive  
Aurora, Illinois 60504  
630-851-4566 Phone

PROJECT LOCATION  
CITY OF CROSSLAKE

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|      |      |             |    |     |

COMMUNITY CENTER

CITY OF CROSSLAKE, MN / CLAIM REF NO. CMC 1002203-8  
13888 Daggett Bay Road Crosslake, MN 56442

09/06/24

A3.1

ROOFING NOTES

1.

SCOPE OF WORK INCLUDES:

A.

REMOVAL OF EXISTING ASPHALT SHINGLES & ALL COMPONENTS DOWN TO ROOF SHEATHING.

B.

INSTALLATION OF NEW ASPHALT SHINGLES & ALL REQUIRED COMPONENTS TO MATCH EXISTING TYPE & QUALITY.

C.

REMOVAL FROM SITE & DISPOSAL OF ALL MATERIAL REMOVED FROM ROOF IS TO BE CONTRACTOR'S FULL RESPONSIBILITY.

D.

RESTORATION OF THE SITE/TURF AROUND BUILDING, TO INCLUDE ACCESS PATHS, IS TO BE CONTRACTOR'S FULL RESPONSIBILITY.

2.

INSTALLATION OF NEW SHINGLES:

A.

TO MEET 2020 MINNESOTA BUILDING CODE

B.

INDUSTRY STANDARD PRACTICES

C.

MANUFACTURER INSTALLATION INSTRUCTIONS.

3.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE & PROTECT ANY ROOF APPURTENANCES THAT ARE NOT PART OF THE ROOF SYSTEM & TO REINSTALL AFTER NEW ROOF SYSTEM HAS BEEN INSTALLED. CONTRACTOR TO COORDINATE WITH CITY PRIOR TO REMOVAL.

4.

CONTRACTOR TO PROVIDE ALL REQUIRED COMPONENTS TO INSTALL NEW ROOF TO MATCH EXISTING ROOF INSTALLATION.

A.

FLASHING

B.

RIDGE VENT

C.

EDGE TRIM/FLASHING

D.

ALL RQUIRED UNDERLAYMENTS TO MATCH EXISTING INSTALLATION, TO INCLUDE ICE & WATER SHIELD MEMBRANE.

5.

ALL COLORS ARE TO MATCH EXISTING COLORS.

A.

COORDINATE WITH OWNER IF EXISTING COLOR IS NOT AVAILABLE.

BUILDING/SITE INFORMATION

1.

ROOF TO BE COVERED WITH A 30 YEAR WARRANTY, CLASS 3 LAMINATED, FIBER-GLASS REINFORCED ARCHITECTURAL ASPHALT COMPOSITION SHINGLE SYSTEM. PROVIDE CERTIFIED WARRANTY DOCUMENTS TO OWNER AFTER INSTALLATION.

A.

TOTAL SQUARE FOOTAGE OF ROOF = 2,314 SF

B.

WASTE FACTOR NOT INCLUDED. REFERENCE 'HOVER' REPORT FOR WASTE FACTOR CALCULATIONS.

2.

HEIGHT OF SOFFIT ABOVE GRADE:

A.

EAST & WEST SIDES OF BUILDING: 8' - 0"

3.

ROOF APPURTENANCES: (SEE ROOF PLAN FOR LOCATIONS)

A.

(1) FURNACE EXHAUST FLUES

4.

BUILDING IS CLEAR OF OBSTRUCTIONS THE FULL PERIMETER AT GRADE.

A.

(1) LIGHT POLE ON WEST SIDE

B.

(1) LIGHT POLE ON EAST SIDE

C.

GAS METER & ELECTRICAL TRANSFORMER ON WEST SIDE ADJACENT TO BUILDING.

5.

SEE APPENDIX A-1 FOR HOVER REPORT:

A.

DETAILED MEASUREMENTS.

B.

ROOF SLOPES

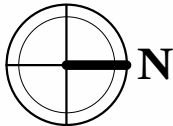
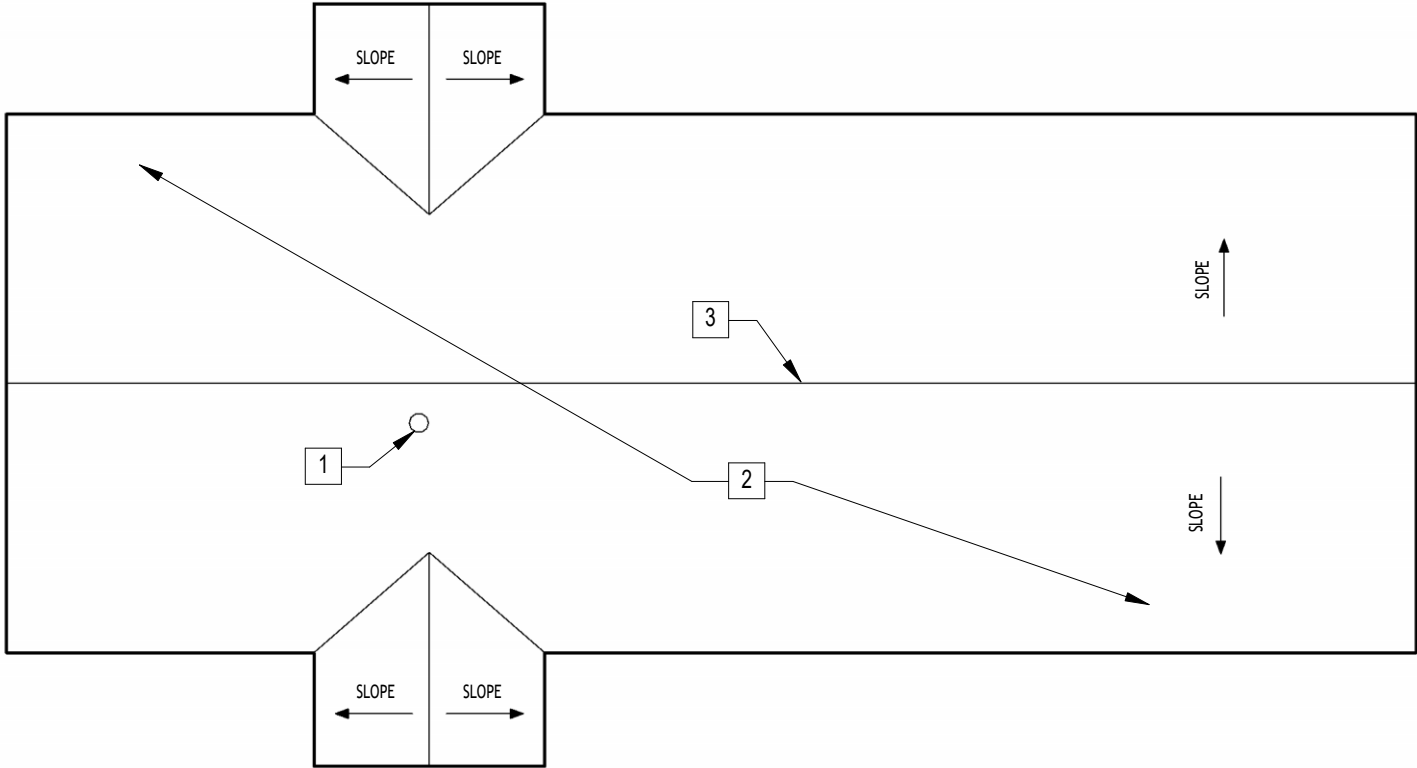
6.


GOOGLE MAPS LOCATION:

A.

14126 DAGGETT PINE ROD, CROSSLAKE, MN 56442

| WARMING HOUSE KEY LEGEND |  |
|--------------------------|--|
| Key #                    | Description  |
| 1                        | EXISTING PVC VENT PIPE - 3 1/2" OD. PROVIDE NEW BOOT PER INDUSTRY STANDARDS.                           |
| 2                        | ASPHALT SHINGLE ROOF   |
| 3                        | CONTINUOUS RIDGE VENT TO MATCH EXISTING IN EXTENTS. RIDGE VENT TO HAVE 18 SQ.INCH./FT VENTING MINIMUM. |





ENGINEERING SYSTEMS, INC.  
4215 Campus Drive  
Aurora, Illinois 60504  
630-851-4566 Phone

PROJECT LOCATION  
CITY OF CROSSLAKE

ESI PROJECT NO.  
106486

ORIGINAL ISSUE  
10 SEPT 2024

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| REV#        |  |  |  |  |  |  |
| DATE        |  |  |  |  |  |  |
| DESCRIPTION |  |  |  |  |  |  |
| BY          |  |  |  |  |  |  |
| RVW         |  |  |  |  |  |  |

WARMING HOUSE

CITY OF CROSSLAKE, MN / CLAIM REF NO. CMC 1002203-8  
13888 Daggett Bay Road Crosslake, MN 56442

LOCATION #4

A4.0



ROOFING NOTES

1. SCOPE OF WORK INCLUDES:

A. REMOVAL OF EXISTING ASPHALT SHINGLES & ALL COMPONENTS DOWN TO ROOF SHEATHING.

B. INSTALLATION OF NEW ASPHALT SHINGLES & ALL REQUIRED COMPONENTS TO MATCH EXISTING TYPE & QUALITY.

C. REMOVAL FROM SITE & DISPOSAL OF ALL MATERIAL REMOVED FROM ROOF IS TO BE CONTRACTOR'S FULL RESPONSIBILITY.

D. RESTORATION OF THE SITE/TURF AROUND BUILDING, TO INCLUDE ACCESS PATHS, IS TO BE CONTRACTOR'S FULL RESPONSIBILITY.

2. INSTALLATION OF NEW SHINGLES:

A. TO MEET 2020 MINNESOTA BUILDING CODE

B. INDUSTRY STANDARD PRACTICES

C. MANUFACTURER INSTALLATION INSTRUCTIONS.

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE & PROTECT ANY ROOF APPURTENANCES THAT ARE NOT PART OF THE ROOF SYSTEM & TO REINSTALL AFTER NEW ROOF SYSTEM HAS BEEN INSTALLED. CONTRACTOR TO COORDINATE WITH CITY PRIOR TO REMOVAL.

4. CONTRACTOR TO PROVIDE ALL REQUIRED COMPONENTS TO INSTALL NEW ROOF TO MATCH EXISTING ROOF INSTALLATION.

A. FLASHING

B. RIDGE VENT

C. EDGE TRIM/FLASHING

D. ALL RQUIRED UNDERLAYMENTS TO MATCH EXISTING INSTALLATION, TO INCLUDE ICE & WATER SHIELD MEMBRANE.

BUILDING/SITE INFORMATION

1. ROOF TO BE COVERED WITH A 30 YEAR WARRANTY, CLASS 3 LAMINATED, FIBER-GLASS REINFORCED ARCHITECTURAL ASPHALT COMPOSITION SHINGLE SYSTEM. PROVIDE CERTIFIED WARRANTY DOCUMENTS TO OWNER AFTER INSTALLATION.

A. TOTAL SQUARE FOOTAGE OF ROOF = 2,854 SF

B. WASTE FACTOR NOT INCLUDED. REFERENCE 'HOVER' REPORT FOR WASTE FACTOR CALCULATIONS.

2. HEIGHT OF SOFFIT ABOVE GRADE:

A. NORTH & SOUTH SIDES OF BUILDING: 8' - 0"

3. ROOF APPURTENANCES: (SEE ROOF PLAN FOR LOCATIONS)

A. (1) FURNACE EXHAUST FLUES

4. BUILDING IS CLEAR OF OBSTRUCTIONS THE FULL PERIMETER AT GRADE. THERE IS ONE TREE LOCATED CLOSE TO THE SE CORNER.

5. SEE APPENDIX A-1 FOR HOVER REPORT:

A. DETAILED MEASUREMENTS.

B. ROOF SLOPES

6. GOOGLE MAPS LOCATION:

A. 14126 DAGGETT PINE ROD, CROSSLAKE, MN 56442

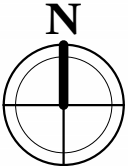
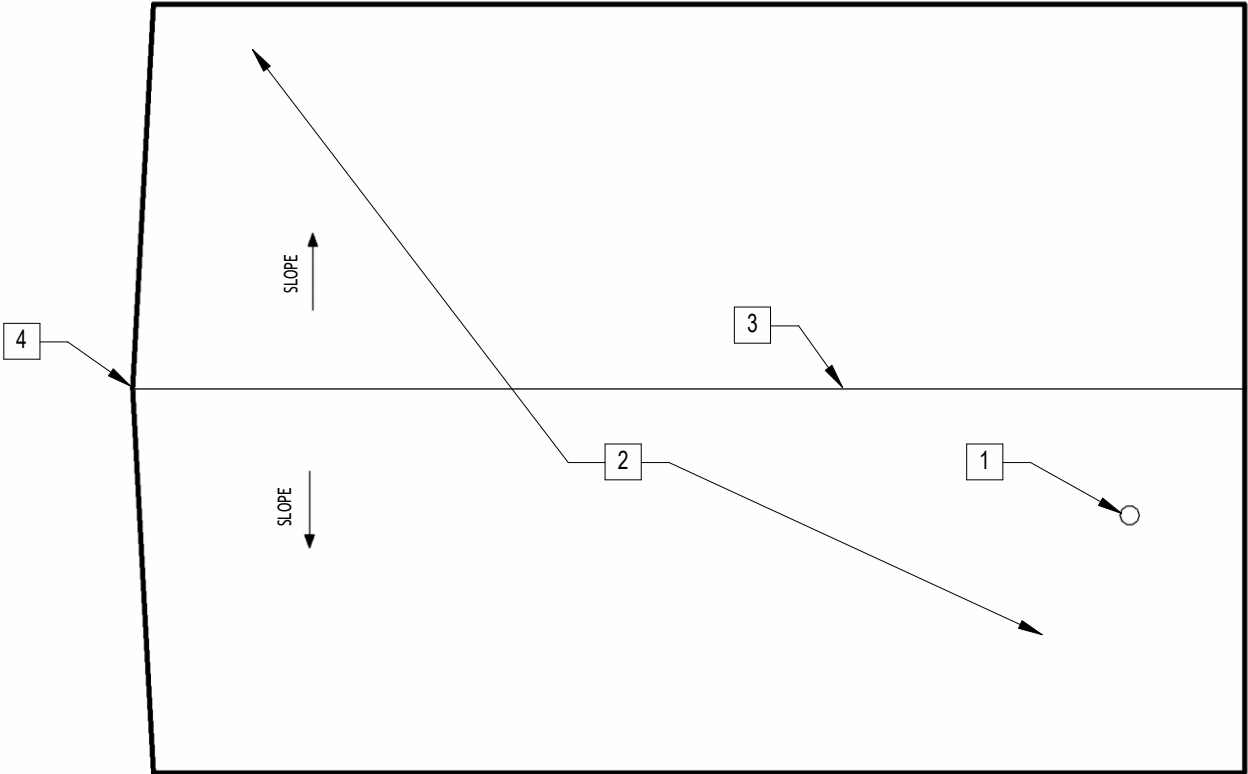
| LIONS PICNIC SHELTER KEY LEGEND |  |
|---------------------------------|--|
| Key #                           | Description  |
| 1                               | EXISTING PVC VENT PIPE - 3 1/2" OD. PROVIDE NEW BOOT PER INDUSTRY STANDARDS.                           |
| 2                               | ASPHALT SHINGLE ROOF   |
| 3                               | CONTINUOUS RIDGE VENT TO MATCH EXISTING IN EXTENTS. RIDGE VENT TO HAVE 18 SQ.INCH./FT VENTING MINIMUM. |
| 4                               | RIDGE AT WEST SIDE EXTENDS PAST LOWER SIDE EAVES. SEE HOVER REPORT FOR MEASUREMENTS.                   |




SOUTHEAST CORNER @ TREE



TYPICAL ROOF EDGE





ENGINEERING SYSTEMS, INC.  
4215 Campus Drive  
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ORIGINAL ISSUE

10 SEPT 2024

REV#

DATE

DESCRIPTION

BY

RVW

LIONS PICNIC SHELTER

CITY OF CROSSLAKE, MN / CLAIM REF NO. CMC 1002203-8  
13888 Daggett Bay Road Crosslake, MN 56442

LOCATION #7

A5.0

ROOFING NOTES

1. SCOPE OF WORK INCLUDES:

A. REMOVAL OF EXISTING ASPHALT SHINGLES & ALL COMPONENTS DOWN TO ROOF SHEATHING.

B. INSTALLATION OF NEW ASPHALT SHINGLES & ALL REQUIRED COMPONENTS TO MATCH EXISTING TYPE & QUALITY.

C. REMOVAL FROM SITE & DISPOSAL OF ALL MATERIAL REMOVED FROM ROOF IS TO BE CONTRACTOR'S FULL RESPONSIBILITY.

D. RESTORATION OF THE SITE/TURF AROUND BUILDING, TO INCLUDE ACCESS PATHS, IS TO BE CONTRACTOR'S FULL RESPONSIBILITY.

2. INSTALLATION OF NEW SHINGLES:

A. TO MEET 2020 MINNESOTA BUILDING CODE

B. INDUSTRY STANDARD PRACTICES

C. MANUFACTURER INSTALLATION INSTRUCTIONS.

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE & PROTECT ANY ROOF APPURTENANCES THAT ARE NOT PART OF THE ROOF SYSTEM & TO REINSTALL AFTER NEW ROOF SYSTEM HAS BEEN INSTALLED. CONTRACTOR TO COORDINATE WITH CITY PRIOR TO REMOVAL.

4. CONTRACTOR TO PROVIDE ALL REQUIRED COMPONENTS TO INSTALL NEW ROOF TO MATCH EXISTING ROOF INSTALLATION.

A. FLASHING

B. RIDGE VENT

C. EDGE TRIM/FLASHING

D. RAIN DIVERTER AT MAN DOOR ON NORTH ELEVATION. DIRECT WATER TO EAST SIDE OF DOOR.

E. ALL RQUIRED UNDERLAYMENTS TO MATCH EXISTING INSTALLATION, TO INCLUDE ICE & WATER SHIELD MEMBRANE.

BUILDING/SITE INFORMATION

1. ROOF TO BE COVERED WITH A 30 YEAR WARRANTY, CLASS 3 LAMINATED, FIBER-GLASS REINFORCED ARCHITECTURAL ASPHALT COMPOSITION SHINGLE SYSTEM. PROVIDE CERTIFIED WARRANTY DOCUMENTS TO OWNER AFTER INSTALLATION.

A. TOTAL SQUARE FOOTAGE OF ROOF = 2,758 SF

B. WASTE FACTOR NOT INCLUDED. REFERENCE 'HOVER' REPORT FOR WASTE FACTOR CALCULATIONS.

2. HEIGHT OF SOFFIT ABOVE GRADE:

A. NORTH & SOUTH SIDES OF BUILDING: 8' - 0"

3. ROOF APPURTENANCES: (SEE ROOF PLAN FOR LOCATIONS)

A. (1) FURNACE EXHAUST FLUES

4. BUILDING IS CLEAR OF OBSTRUCTIONS THE FULL PERIMETER AT GRADE. THERE ARE TREES LOCATED CLOSE TO THE ROOF AT THE NE CORNER.

5. SEE APPENDIX A-1 FOR HOVER REPORT:

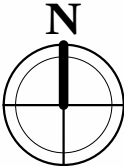
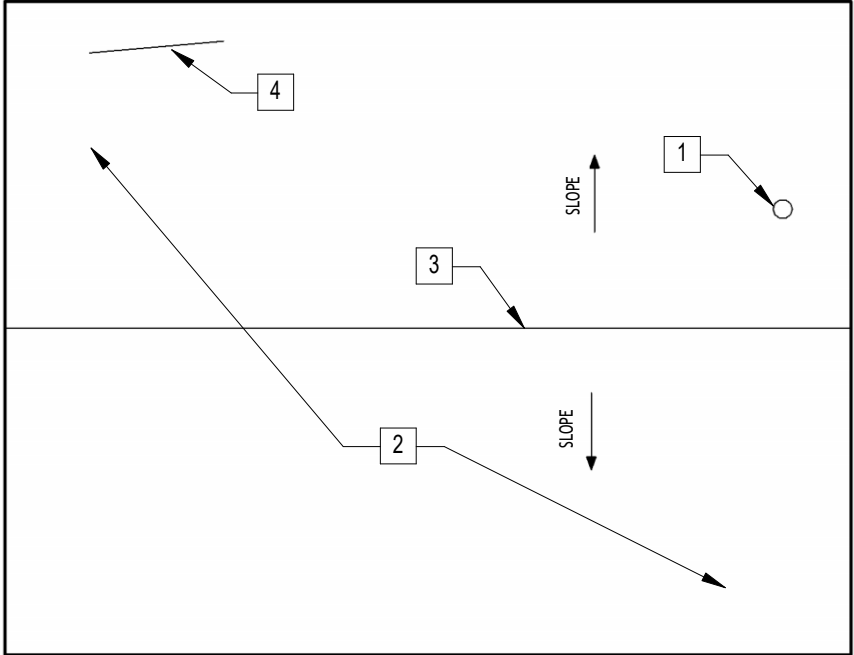
A. DETAILED MEASUREMENTS.

B. ROOF SLOPES

6. GOOGLE MAPS LOCATION:

A. 14126 DAGGETT PINE ROD, CROSSLAKE, MN 56442

| PARKS/REC GARAGE KEY LEGEND |  |
|-----------------------------|--|
| Key #                       | Description  |
| 1                           | EXISTING PVC VENT PIPE - 3 1/2" OD. PROVIDE NEW BOOT PER INDUSTRY STANDARDS.                           |
| 2                           | ASPHALT SHINGLE ROOF   |
| 3                           | CONTINUOUS RIDGE VENT TO MATCH EXISTING IN EXTENTS. RIDGE VENT TO HAVE 18 SQ.INCH./FT VENTING MINIMUM. |
| 4                           | PREFINISHED ALUMINUM RAIN DIVERTER ALIGNED WITH MAN DOOR BELOW. COLOR TO MATCH FLASHING COLOR OF ROOF. |



ESI

ENGINEERING SYSTEMS, INC.

4215 Campus Drive  
Aurora, Illinois 60504  
630-851-4566 Phone

PROJECT LOCATION

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RVW

BY

DESCRIPTION

DATE

REV#

PARKS/REC GARAGE

CITY OF CROSSLAKE, MN / CLAIM REF NO. CMC 1002203-8  
13888 Daggett Bay Road Crosslake, MN 56442


LOCATION #8

A6.0



# HOVER REPORTS

COMMUNITY CENTER  
WARMING HOUSE  
LIONS PICNIC SHELTER  
PARKS/REC GARAGE



**ENGINEERING SYSTEMS, INC.**  
4215 Campus Drive  
Aurora, Illinois 60504  
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**PROJECT LOCATION**  
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|      |      |             |    |     |

**APPENDIX**

CITY OF CROSSLAKE, MN / CLAIM REF NO. CMC 1002203-8  
37028 COUNTY ROAD 66, CROSSLAKE MN

09/06/24

**A-1**



[VIEW 3D MODEL](#)



| Areas                | Siding               | Other                |
|----------------------|----------------------|----------------------|
| Facades              | 4232 ft <sup>2</sup> | 4299 ft <sup>2</sup> |
| Openings             | 1040 ft <sup>2</sup> | 911 ft <sup>2</sup>  |
| Trims*               | 158 ft <sup>2</sup>  | -                    |
| Unknown (no photos)* | -                    | 32 ft <sup>2</sup>   |
| Total                | 5430 ft <sup>2</sup> | 5242 ft <sup>2</sup> |

\*Any trim or unknown material that touches siding is included in the 'Siding' column. If it does not touch siding, then it's included in the 'Other' column.

| Openings        | Siding  | Other    |
|-----------------|---------|----------|
| Quantity        | 12      | 83       |
| Tops Length     | 265' 2" | 51' 5"   |
| Sills Length    | 64' 11" | 243'     |
| Sides Length    | 175' 1" | 335' 10" |
| Total Perimeter | 505' 2" | 630' 3"  |

| Corners        | Siding  | Other  |
|----------------|---------|--------|
| Inside Qty     | 3       | 4      |
| Inside Length  | 29' 11" | 42' 5" |
| Outside Qty    | 9       | 7      |
| Outside Length | 63' 9"  | 63' 9" |

| Accessories  | Siding             | Other             |
|--------------|--------------------|-------------------|
| Shutter Qty  | 0                  | 0                 |
| Shutter Area | 0 ft <sup>2</sup>  | 0 ft <sup>2</sup> |
| Vents Qty    | 4                  | 1                 |
| Vents Area   | 10 ft <sup>2</sup> | 5 ft <sup>2</sup> |

| Trim          | Siding  | Other    |
|---------------|---------|----------|
| Level Starter | 418' 4" | 588' 10" |
| Sloped Trim   | 73' 1"  | 5"       |
| Vertical Trim | 2' 1"   | 15' 4"   |

| Roofline            | Length   | Avg. Depth | Soffit Area         |
|---------------------|----------|------------|---------------------|
| Eaves Fascia        | 429' 7"  | -          | -                   |
| Level Frieze Board  | 388' 5"  | 4' 2"      | 822 ft <sup>2</sup> |
| Rakes Fascia        | 326' 8"  | -          | -                   |
| Sloped Frieze Board | 310' 10" | 1' 9"      | 565 ft <sup>2</sup> |

## SIDING WASTE TOTALS

| Siding & Trim Only* | Area                 | Squares |
|---------------------|----------------------|---------|
| Zero Waste          | 4387 ft <sup>2</sup> | 44      |
| +10%                | 4830 ft <sup>2</sup> | 48½     |
| +18%                | 5183 ft <sup>2</sup> | 52      |

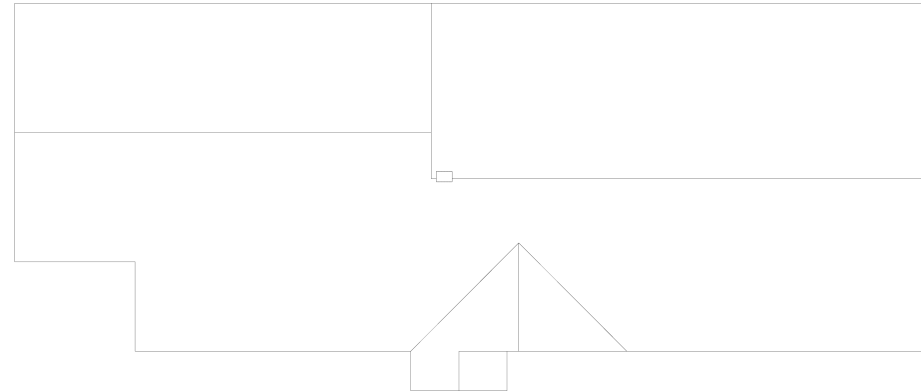
| + Openings < 20ft <sup>2</sup> | Area                 | Squares |
|--------------------------------|----------------------|---------|
| Zero Waste                     | 5359 ft <sup>2</sup> | 53¾     |
| +10%                           | 5898 ft <sup>2</sup> | 59      |
| +18%                           | 6329 ft <sup>2</sup> | 63½     |

| + Openings < 33ft <sup>2</sup> | Area                 | Squares |
|--------------------------------|----------------------|---------|
| Zero Waste                     | 5387 ft <sup>2</sup> | 54      |
| +10%                           | 5929 ft <sup>2</sup> | 59½     |
| +18%                           | 6362 ft <sup>2</sup> | 63¾     |

\*The first three rows of the Siding Waste Factor table are calculated using the total ft<sup>2</sup> of siding facades, ft<sup>2</sup> of trim touching siding, and ft<sup>2</sup> of unknowns touching siding.

| Roof                | Area                  | Total | Length  |
|---------------------|-----------------------|-------|---------|
| Roof Facets         | 21447 ft <sup>2</sup> | 8     | -       |
| Ridges / Hips       | -                     | 6     | 263' 2" |
| Valleys             | -                     | 2     | 80' 7"  |
| Rakes               | -                     | 15    | 326' 8" |
| Eaves               | -                     | 9     | 429' 7" |
| Flashing            | -                     | 8     | 8' 4"   |
| Step Flashing       | -                     | 17    | 75' 2"  |
| Drip Edge/Perimeter | -                     | -     | 756' 3" |

| Roof Pitch* | Area                  | Percentage |
|-------------|-----------------------|------------|
| 5 / 12      | 21447 ft <sup>2</sup> | 100%       |

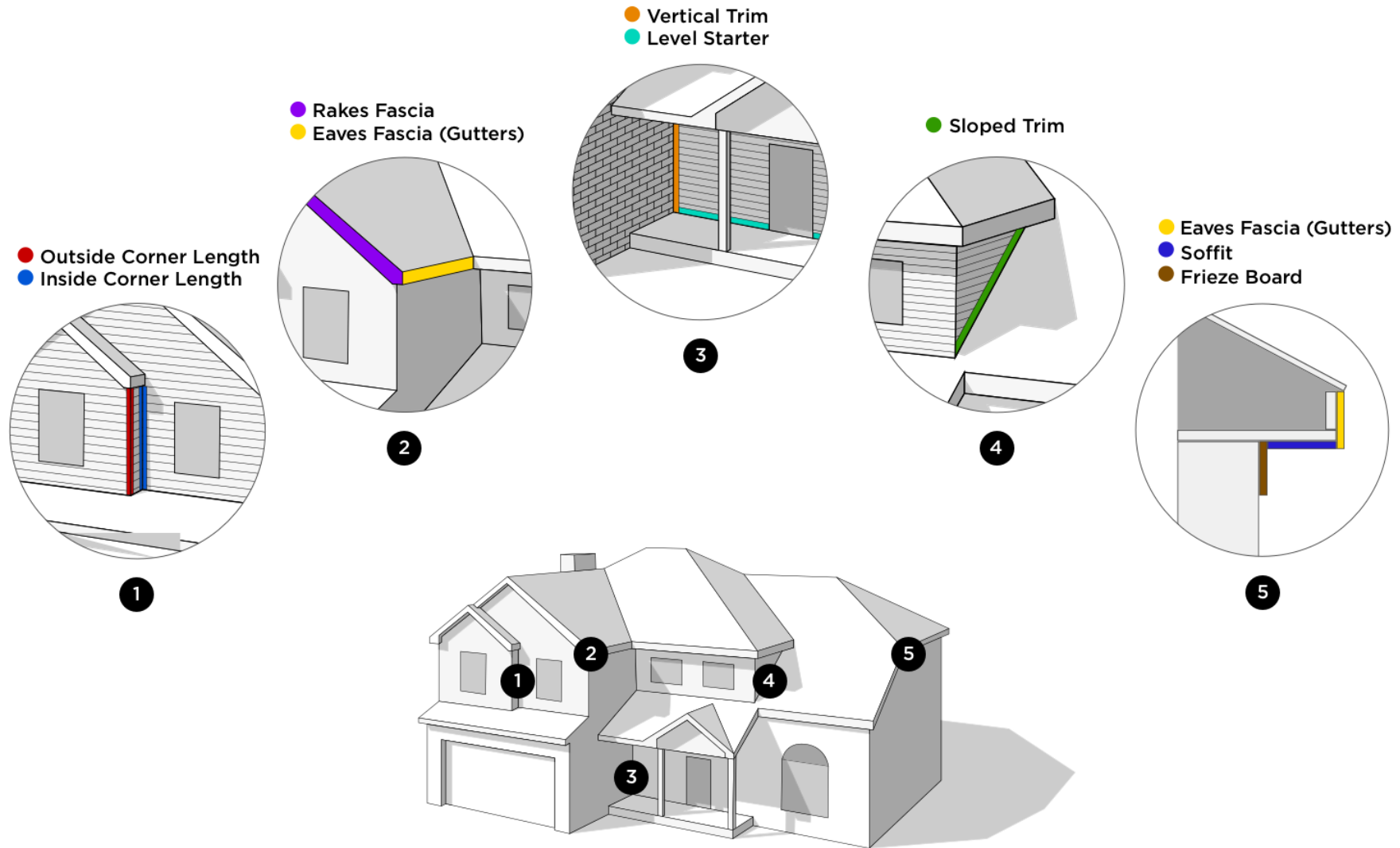


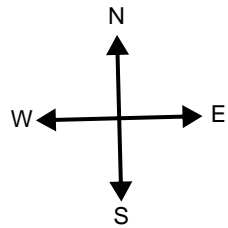
## Example Waste Factor Calculations

|         | Zero Waste                      | +5%                             | +10%                  | +15%                            | +20%                            |
|---------|---------------------------------|---------------------------------|-----------------------|---------------------------------|---------------------------------|
| Area    | 21447 ft <sup>2</sup>           | 22519 ft <sup>2</sup>           | 23592 ft <sup>2</sup> | 24664 ft <sup>2</sup>           | 25736 ft <sup>2</sup>           |
| Squares | 214 <sup>2</sup> / <sub>3</sub> | 225 <sup>1</sup> / <sub>3</sub> | 236                   | 246 <sup>2</sup> / <sub>3</sub> | 257 <sup>2</sup> / <sub>3</sub> |

The table above provides the total roof area of a given property using waste percentages as noted. Please consider that area values and specific waste factors can be influenced by the size and complexity of the property, captured image quality, specific roofing techniques, and your own level of expertise. Additional square footage for Hip, Ridge, and Starter shingles are not included in this waste factor and will require additional materials. This table is only intended to make common waste calculations easier and should not be interpreted as recommendations.



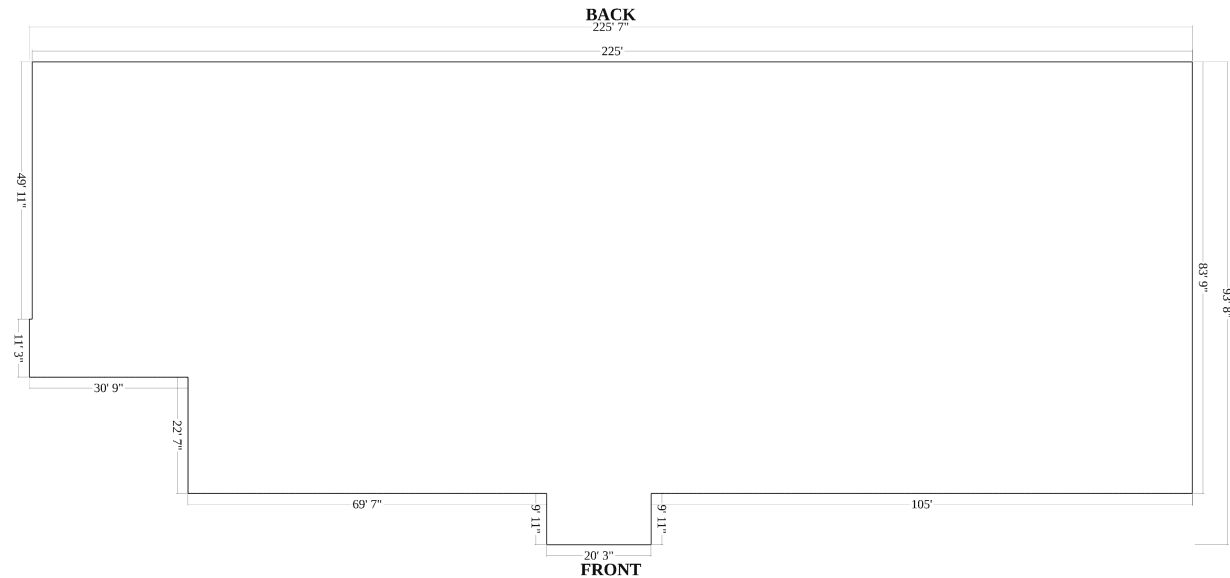




Number of Stories: 1

Footprint Perimeter: 638' 5"

Footprint Area: 18363 ft<sup>2</sup>

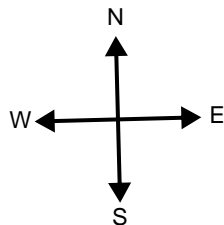


Siding Per Elevation

| FRONT |   |                     | RIGHT |   |                     | LEFT  |   |                     | BACK  |   |                     |
|-------|---|---------------------|-------|---|---------------------|-------|---|---------------------|-------|---|---------------------|
| SI-1  | - | 611 ft <sup>2</sup> | SI-11 | - | 25 ft <sup>2</sup>  | SI-45 | - | 8 ft <sup>2</sup>   | SI-35 | - | 9 ft <sup>2</sup>   |
| SI-2  | - | 20 ft <sup>2</sup>  | SI-14 | - | 49 ft <sup>2</sup>  | SI-46 | - | 22 ft <sup>2</sup>  | SI-36 | - | 9 ft <sup>2</sup>   |
| SI-3  | - | 20 ft <sup>2</sup>  | SI-15 | - | 8 ft <sup>2</sup>   | SI-47 | - | 110 ft <sup>2</sup> | SI-37 | - | 20 ft <sup>2</sup>  |
| SI-4  | - | 8 ft <sup>2</sup>   | SI-18 | - | 246 ft <sup>2</sup> | SI-48 | - | 22 ft <sup>2</sup>  | SI-38 | - | 20 ft <sup>2</sup>  |
| SI-5  | - | 8 ft <sup>2</sup>   | SI-25 | - | 9 ft <sup>2</sup>   | SI-49 | - | 181 ft <sup>2</sup> | SI-39 | - | 20 ft <sup>2</sup>  |
| SI-6  | - | 8 ft <sup>2</sup>   | SI-26 | - | 16 ft <sup>2</sup>  | SI-50 | - | 543 ft <sup>2</sup> | SI-40 | - | 20 ft <sup>2</sup>  |
| SI-7  | - | 8 ft <sup>2</sup>   | SI-27 | - | 330 ft <sup>2</sup> | SI-51 | - | 45 ft <sup>2</sup>  | SI-41 | - | 15 ft <sup>2</sup>  |
| SI-8  | - | 23 ft <sup>2</sup>  | SI-28 | - | 9 ft <sup>2</sup>   | SI-52 | - | 181 ft <sup>2</sup> | SI-42 | - | 20 ft <sup>2</sup>  |
| SI-9  | - | 7 ft <sup>2</sup>   | SI-29 | - | 14 ft <sup>2</sup>  | SI-53 | - | 60 ft <sup>2</sup>  | SI-43 | - | 727 ft <sup>2</sup> |
| SI-10 | - | 23 ft <sup>2</sup>  | SI-30 | - | 47 ft <sup>2</sup>  | SI-54 | - | 15 ft <sup>2</sup>  | SI-44 | - | 3 ft <sup>2</sup>   |
| SI-12 | - | 64 ft <sup>2</sup>  | SI-31 | - | 9 ft <sup>2</sup>   |       |   |                     |       |   |                     |
| SI-13 | - | 13 ft <sup>2</sup>  | SI-32 | - | 326 ft <sup>2</sup> |       |   |                     |       |   |                     |
| SI-16 | - | 36 ft <sup>2</sup>  | SI-33 | - | 16 ft <sup>2</sup>  |       |   |                     |       |   |                     |
| SI-17 | - | 22 ft <sup>2</sup>  | SI-34 | - | 9 ft <sup>2</sup>   |       |   |                     |       |   |                     |
| SI-19 | - | 116 ft <sup>2</sup> |       |   |                     |       |   |                     |       |   |                     |
| SI-20 | - | 22 ft <sup>2</sup>  |       |   |                     |       |   |                     |       |   |                     |
| SI-21 | - | 21 ft <sup>2</sup>  |       |   |                     |       |   |                     |       |   |                     |
| SI-22 | - | 21 ft <sup>2</sup>  |       |   |                     |       |   |                     |       |   |                     |
| SI-23 | - | 9 ft <sup>2</sup>   |       |   |                     |       |   |                     |       |   |                     |



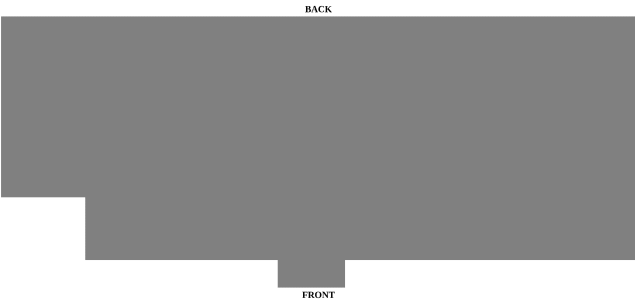
Number of Stories: 1



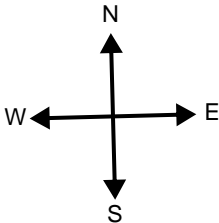


Siding Per Elevation (cont.)

| FRONT                     | RIGHT                | LEFT                 | BACK                |
|---------------------------|----------------------|----------------------|---------------------|
| SI-24 - 9 ft <sup>2</sup> |                      |                      |                     |
| 1069 ft <sup>2</sup>      | 1113 ft <sup>2</sup> | 1187 ft <sup>2</sup> | 863 ft <sup>2</sup> |

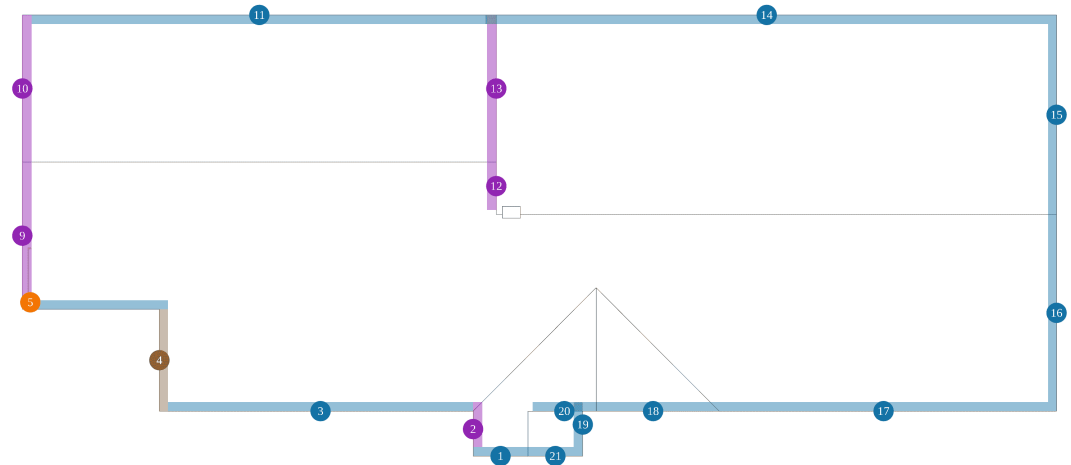


Number of Stories: 1



## Soffit Summary

| Depth     | Type  | Count | Total Length | Total Area           |
|-----------|-------|-------|--------------|----------------------|
| 1" - 6"   | rakes | 2     | 13' 2"       | 5 ft <sup>2</sup>    |
|           | eaves | 2     | 1' 1"        | 0 ft <sup>2</sup>    |
| 18" - 24" | rakes | 6     | 164' 4"      | 320 ft <sup>2</sup>  |
|           | eaves | 5     | 377' 8"      | 754 ft <sup>2</sup>  |
|           | -     | 2     | 30' 2"       | 60 ft <sup>2</sup>   |
| 24" - 48" | rakes | 4     | 117' 8"      | 240 ft <sup>2</sup>  |
|           | eaves | 1     | 9' 11"       | 20 ft <sup>2</sup>   |
| > 48"     | eaves | 1     | 1' 11"       | 47 ft <sup>2</sup>   |
| Totals    |       |       | 716'         | 1447 ft <sup>2</sup> |



Soffit Breakdown

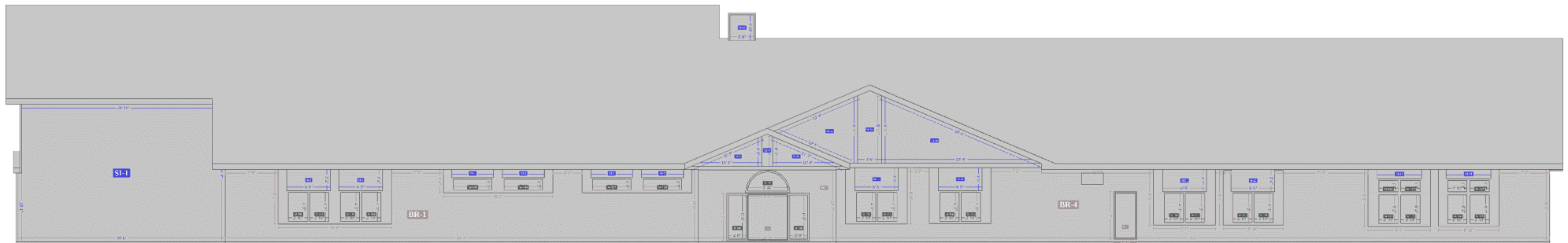
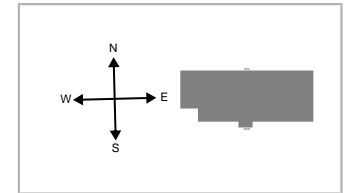
|   | num | Type | Depth | Length   | Area                | Pitch  |
|---|-----|------|-------|----------|---------------------|--------|
| ● | 1   | rake | 24"   | 13' 3"   | 26 ft <sup>2</sup>  | 5 / 12 |
| ● | 2   | eave | 24"   | 9' 11"   | 20 ft <sup>2</sup>  | 5 / 12 |
| ● | 3   | eave | 24"   | 67' 6"   | 135 ft <sup>2</sup> | 5 / 12 |
| ● | 4   | eave | 294"  | 1' 11"   | 47 ft <sup>2</sup>  | 5 / 12 |
| ● | 5   | eave | 5"    | 7"       | 0 ft <sup>2</sup>   | 5 / 12 |
| Ø | 6   | rake | 4"    | 6' 7"    | 2 ft <sup>2</sup>   | 5 / 12 |
| Ø | 7   | eave | 5"    | 7"       | 0 ft <sup>2</sup>   | 5 / 12 |
| Ø | 8   | rake | 4"    | 6' 7"    | 2 ft <sup>2</sup>   | 5 / 12 |
| ● | 9   | rake | 25"   | 35' 5"   | 72 ft <sup>2</sup>  | 5 / 12 |
| ● | 10  | rake | 25"   | 35' 5"   | 72 ft <sup>2</sup>  | 5 / 12 |
| ● | 11  | eave | 24"   | 100' 10" | 201 ft <sup>2</sup> | 5 / 12 |
| ● | 12  | rake | 25"   | 11' 6"   | 24 ft <sup>2</sup>  | 5 / 12 |
| ● | 13  | rake | 25"   | 35' 5"   | 72 ft <sup>2</sup>  | 5 / 12 |
| ● | 14  | eave | 24"   | 124' 6"  | 249 ft <sup>2</sup> | 5 / 12 |
| ● | 15  | rake | 23"   | 48'      | 91 ft <sup>2</sup>  | 5 / 12 |
| ● | 16  | rake | 23"   | 47' 3"   | 90 ft <sup>2</sup>  | 5 / 12 |
| ● | 17  | eave | 24"   | 74' 10"  | 149 ft <sup>2</sup> | 5 / 12 |
| ● | 18  | rake | 24"   | 27' 5"   | 55 ft <sup>2</sup>  | 5 / 12 |
| ● | 19  | eave | 24"   | 9' 11"   | 20 ft <sup>2</sup>  | 5 / 12 |

|   | num | Type | Depth | Length | Area               | Pitch  |
|---|-----|------|-------|--------|--------------------|--------|
| ● | 20  | rake | 24"   | 15' 3" | 31 ft <sup>2</sup> | 5 / 12 |
| ● | 21  | rake | 24"   | 13' 2" | 26 ft <sup>2</sup> | 5 / 12 |
| Ø | 22  | -    | 24"   | 1' 11" | 4 ft <sup>2</sup>  | 5 / 12 |
| Ø | 23  | -    | 24"   | 28' 4" | 57 ft <sup>2</sup> | 5 / 12 |

Ø Feature is too small to label on the plan diagram

- Feature could not be labelled with complete certainty

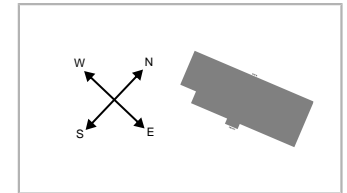


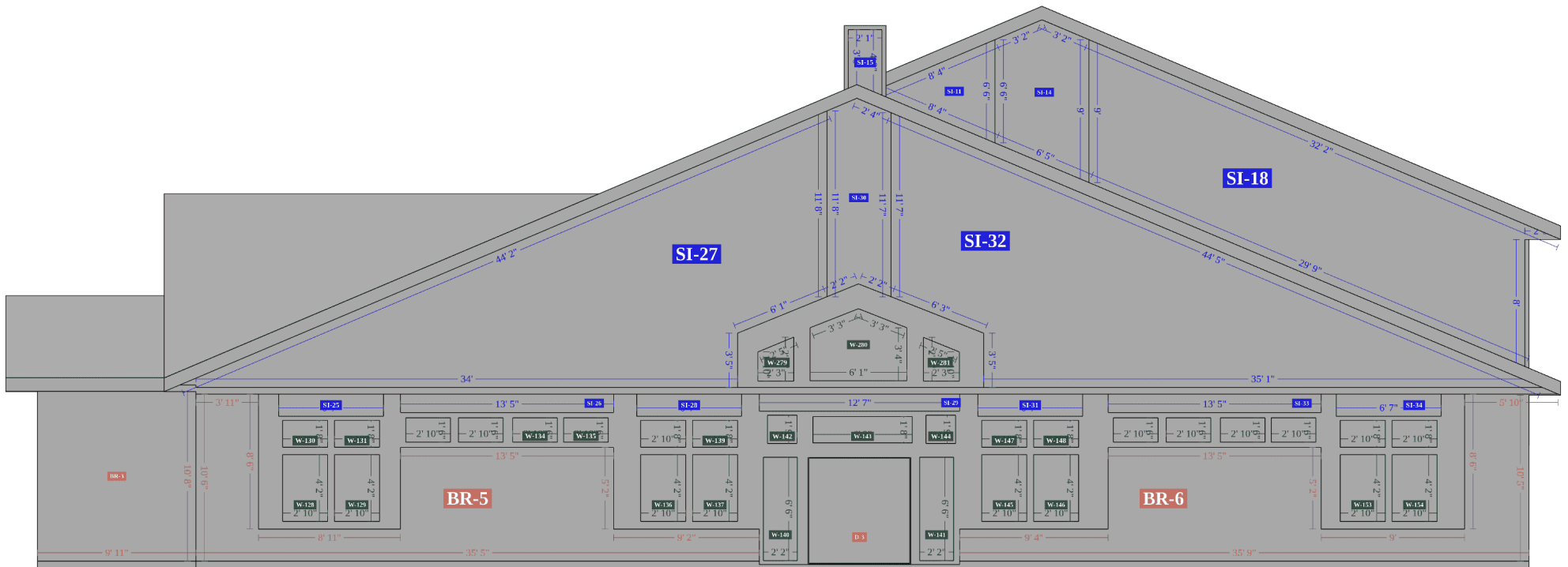
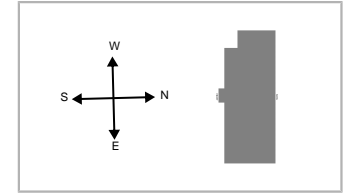




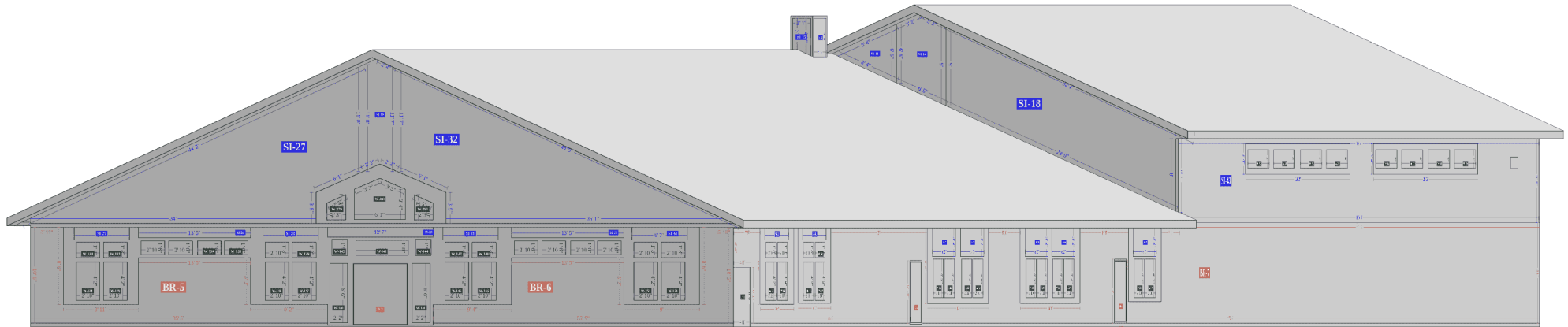
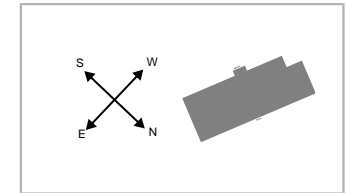
## Complete Measurements

14126 Daggett Pine Road, Crossla...  
FRONT-RIGHT







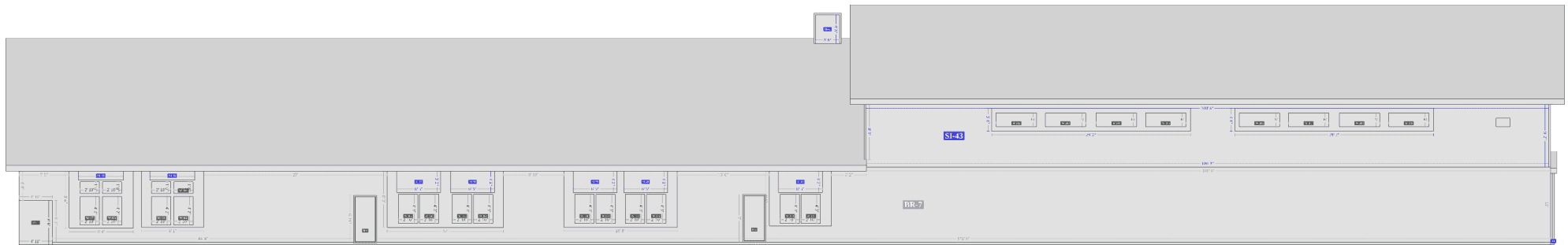
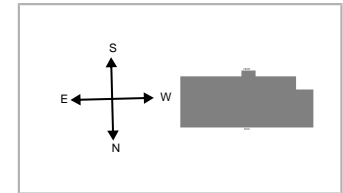


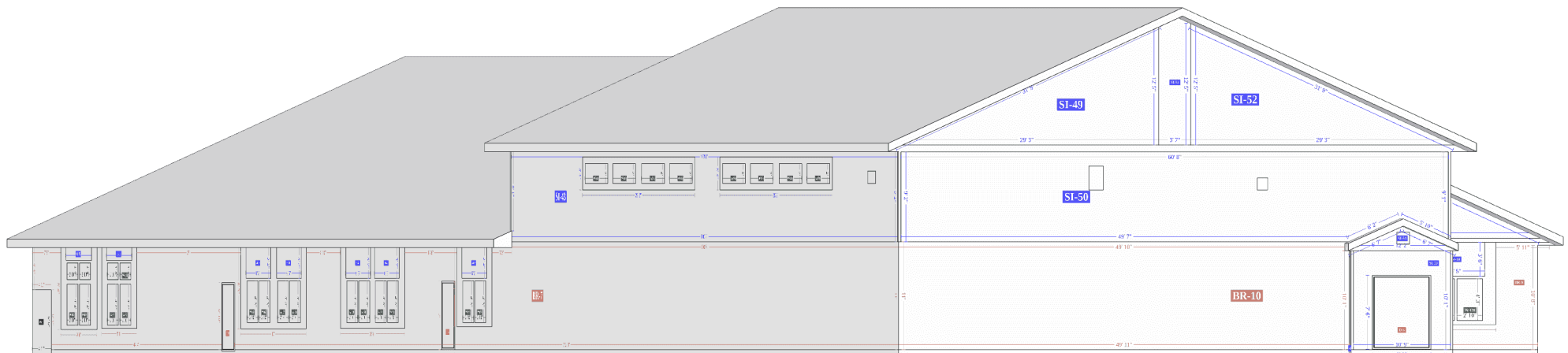
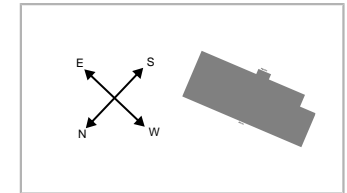


## Complete Measurements

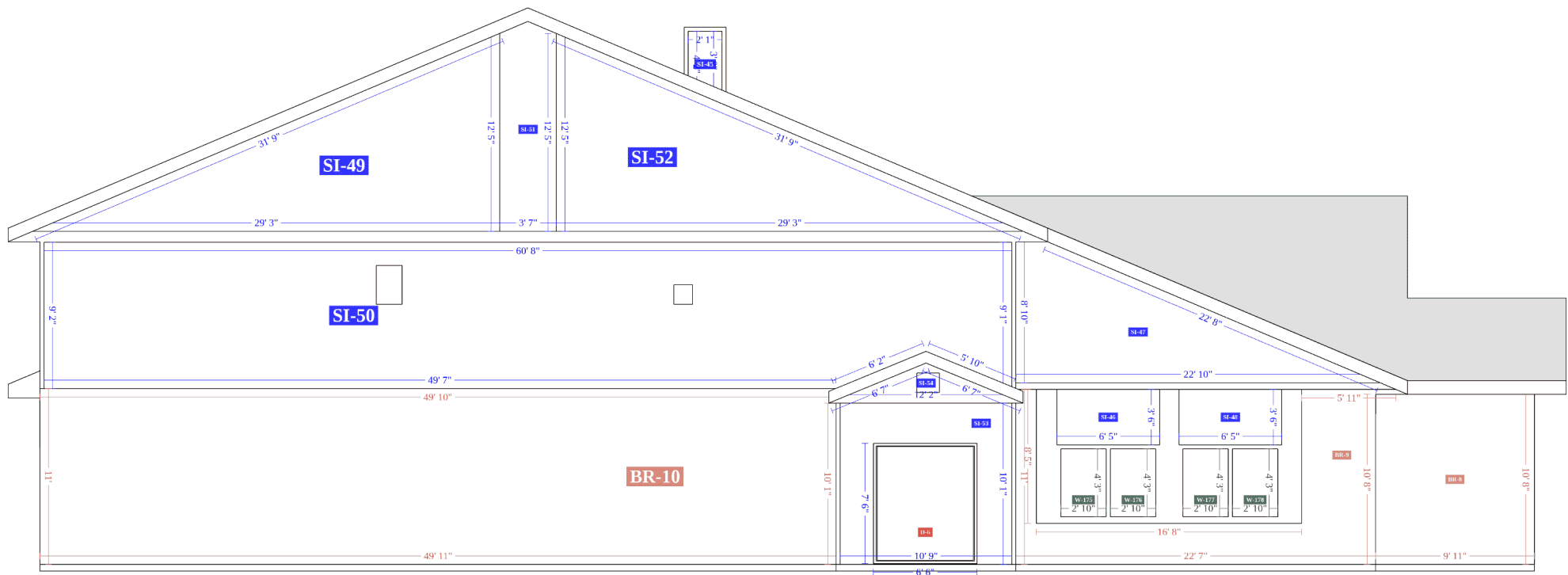
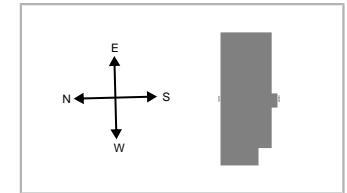
14126 Daggett Pine Road, Crossla...

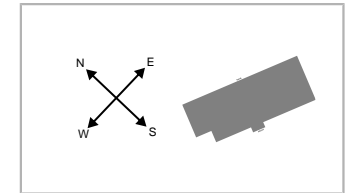
BACK











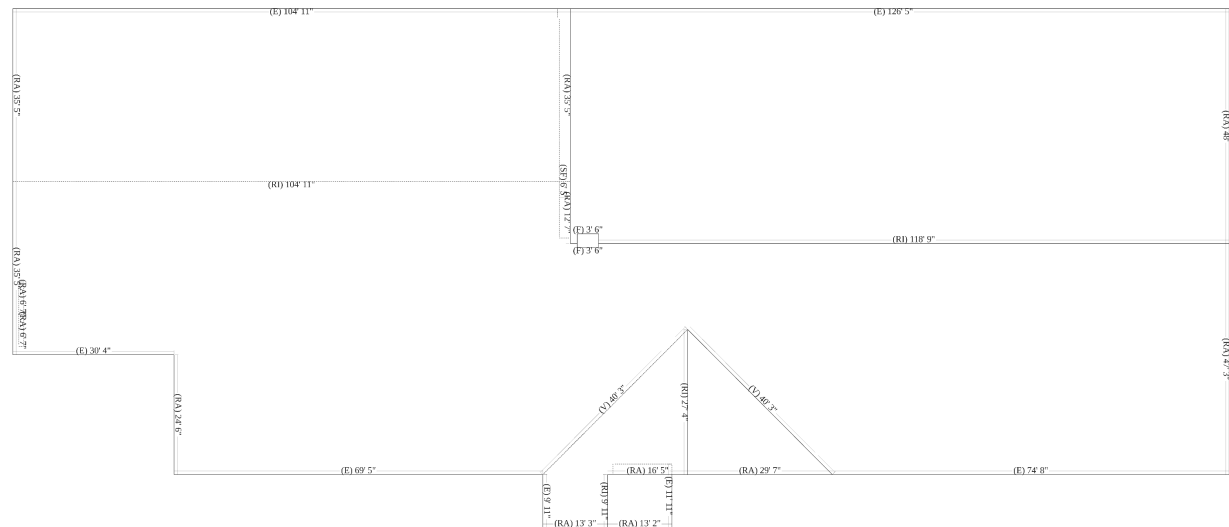


## Complete Measurements

14126 Daggett Pine Road, Crossla...  
ROOF MEASUREMENTS

| Roof                 | Length  |
|----------------------|---------|
| Ridges (RI)          | 263' 2" |
| Hips (H)             | -       |
| Valleys (V)          | 80' 7"  |
| Rakes (RA)           | 326' 8" |
| Eaves (E)            | 429' 7" |
| Flashing (F)*        | 8' 4"   |
| Step Flashing (SF)*  | 75' 2"  |
| Transition Line (TL) | -       |

\*Please view the 3D model for more detail (e.g. flashing, step flashing and some other roof lines may be difficult to see on the PDF)



### Roof Facets

| Facet | Area                  | Pitch |
|-------|-----------------------|-------|
| RF-1  | 155 ft <sup>2</sup>   | 5/12  |
| RF-2  | 536 ft <sup>2</sup>   | 5/12  |
| RF-3  | 10588 ft <sup>2</sup> | 5/12  |
| RF-4  | 404 ft <sup>2</sup>   | 5/12  |
| RF-5  | 6040 ft <sup>2</sup>  | 5/12  |
| RF-6  | 3712 ft <sup>2</sup>  | 5/12  |
| RF-7  | 6 ft <sup>2</sup>     | 5/12  |
| RF-8  | 6 ft <sup>2</sup>     | 5/12  |

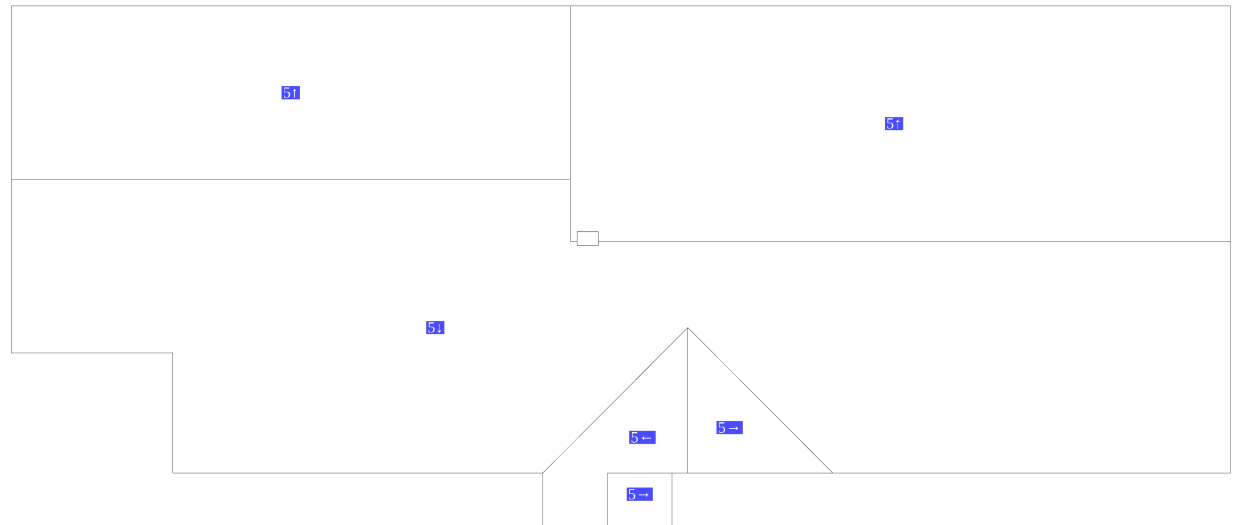




| Roof  | Facets | Total                 |
|-------|--------|-----------------------|
| Total | 8      | 21447 ft <sup>2</sup> |



| Roof Pitch | Area                  | Percentage |
|------------|-----------------------|------------|
| 5 / 12     | 21447 ft <sup>2</sup> | 100%       |









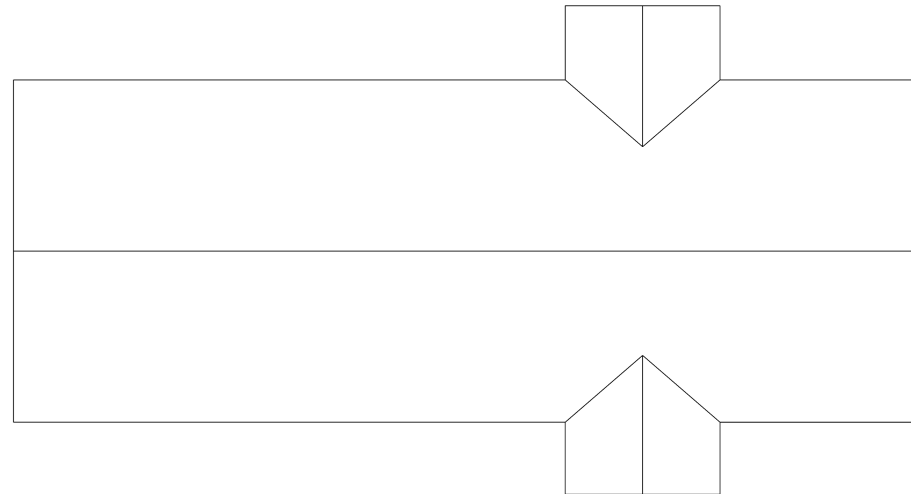




[VIEW 3D MODEL](#)

| Roof                | Area                 | Total | Length  |
|---------------------|----------------------|-------|---------|
| Roof Facets         | 2314 ft <sup>2</sup> | 6     | -       |
| Ridges / Hips       | -                    | 3     | 96' 2"  |
| Valleys             | -                    | 4     | 34' 1"  |
| Rakes               | -                    | 8     | 85' 2"  |
| Eaves               | -                    | 8     | 145' 4" |
| Flashing            | -                    | 0     | -       |
| Step Flashing       | -                    | 4     | -       |
| Drip Edge/Perimeter | -                    | -     | 230' 6" |

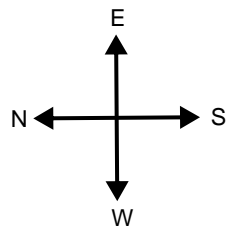
| Roof Pitch* | Area                 | Percentage |
|-------------|----------------------|------------|
| 4 / 12      | 2314 ft <sup>2</sup> | 100%       |



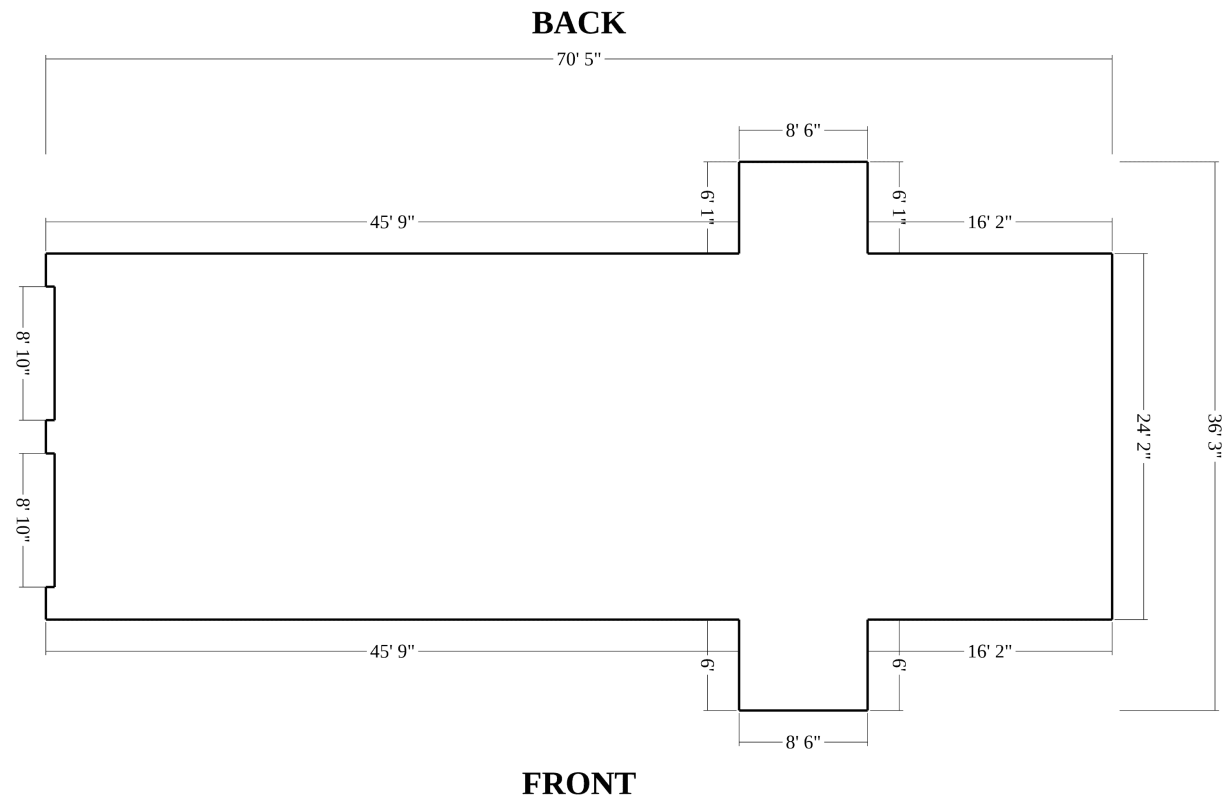
### Example Waste Factor Calculations

|         | Zero Waste           | +5%                  | +10%                 | +15%                 | +20%                 |
|---------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Area    | 2314 ft <sup>2</sup> | 2430 ft <sup>2</sup> | 2545 ft <sup>2</sup> | 2661 ft <sup>2</sup> | 2777 ft <sup>2</sup> |
| Squares | 23⅓                  | 24⅓                  | 25⅓                  | 26⅓                  | 28                   |

The table above provides the total roof area of a given property using waste percentages as noted. Please consider that area values and specific waste factors can be influenced by the size and complexity of the property, captured image quality, specific roofing techniques, and your own level of expertise. Additional square footage for Hip, Ridge, and Starter shingles are not included in this waste factor and will require additional materials. This table is only intended to make common waste calculations easier and should not be interpreted as recommendations.

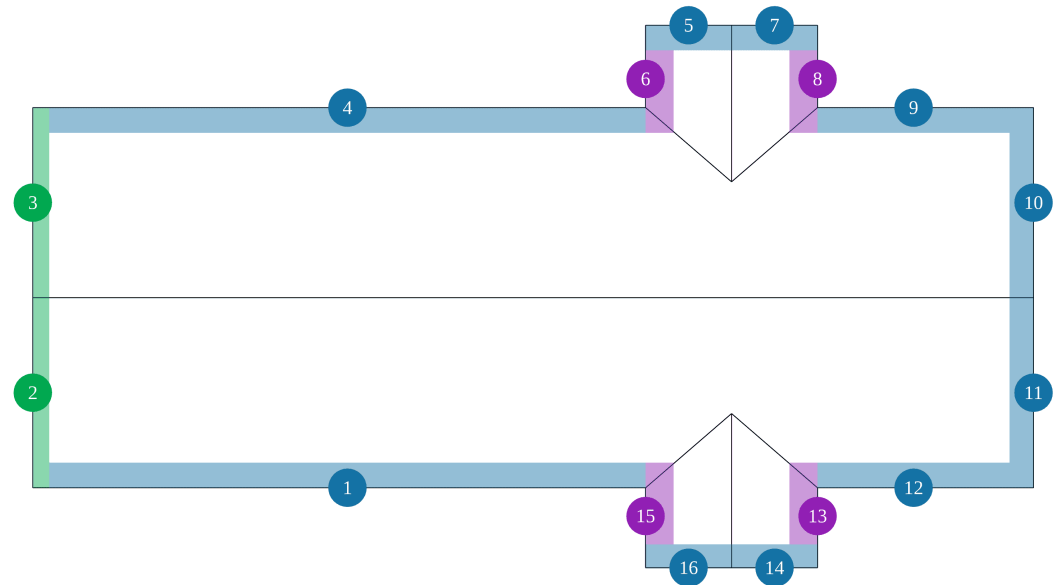


Number of Stories: 1  
Footprint Perimeter: 215' 6"  
Footprint Area: 1793 ft<sup>2</sup>



## Soffit Summary

| Depth     | Type  | Count | Total Length | Total Area          |
|-----------|-------|-------|--------------|---------------------|
| 12" - 18" | rakes | 2     | 29' 5"       | 36 ft <sup>2</sup>  |
| 18" - 24" | rakes | 6     | 55' 9"       | 98 ft <sup>2</sup>  |
|           | eaves | 4     | 115' 7"      | 214 ft <sup>2</sup> |
| 24" - 48" | eaves | 4     | 24' 1"       | 50 ft <sup>2</sup>  |
| Totals    |       |       | 224' 10"     | 397 ft <sup>2</sup> |



Soffit Breakdown

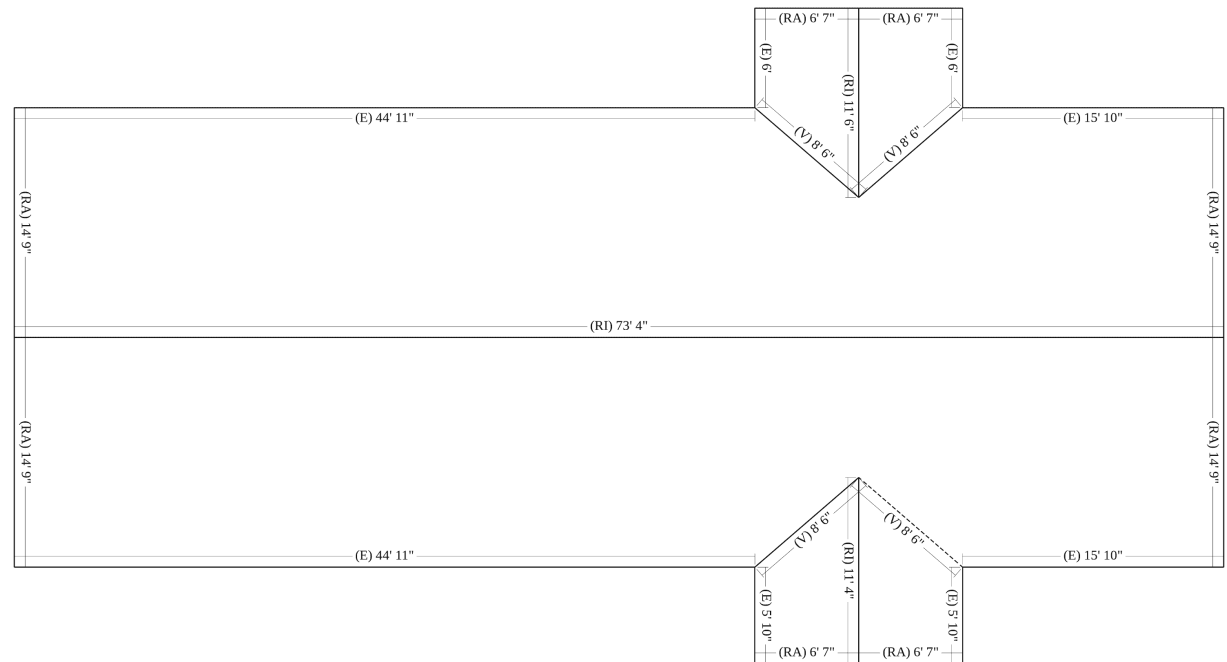
|   |     |      |       |        |                    |        |
|---|-----|------|-------|--------|--------------------|--------|
| ● | num | Type | Depth | Length | Area               | Pitch  |
| ● | 1   | eave | 22"   | 43' 8" | 81 ft <sup>2</sup> | 4 / 12 |
| ● | 2   | rake | 15"   | 14' 9" | 18 ft <sup>2</sup> | 4 / 12 |
| ● | 3   | rake | 15"   | 14' 9" | 18 ft <sup>2</sup> | 4 / 12 |
| ● | 4   | eave | 22"   | 43' 8" | 81 ft <sup>2</sup> | 4 / 12 |
| ● | 5   | rake | 22"   | 6' 7"  | 12 ft <sup>2</sup> | 4 / 12 |
| ● | 6   | eave | 25"   | 6' 1"  | 12 ft <sup>2</sup> | 4 / 12 |
| ● | 7   | rake | 22"   | 6' 7"  | 12 ft <sup>2</sup> | 4 / 12 |
| ● | 8   | eave | 25"   | 6' 1"  | 12 ft <sup>2</sup> | 4 / 12 |
| ● | 9   | eave | 22"   | 14' 1" | 26 ft <sup>2</sup> | 4 / 12 |
| ● | 10  | rake | 21"   | 14' 9" | 26 ft <sup>2</sup> | 4 / 12 |
| ● | 11  | rake | 21"   | 14' 9" | 26 ft <sup>2</sup> | 4 / 12 |
| ● | 12  | eave | 22"   | 14' 1" | 26 ft <sup>2</sup> | 4 / 12 |
| ● | 13  | eave | 25"   | 6'     | 12 ft <sup>2</sup> | 4 / 12 |
| ● | 14  | rake | 21"   | 6' 7"  | 11 ft <sup>2</sup> | 4 / 12 |
| ● | 15  | eave | 25"   | 6'     | 12 ft <sup>2</sup> | 4 / 12 |
| ● | 16  | rake | 21"   | 6' 7"  | 11 ft <sup>2</sup> | 4 / 12 |

Ø Feature is too small to label on the plan diagram



| Roof                 | Length  |
|----------------------|---------|
| Ridges (RI)          | 96' 2"  |
| Hips (H)             | -       |
| Valleys (V)          | 34' 1"  |
| Rakes (RA)           | 85' 2"  |
| Eaves (E)            | 145' 4" |
| Flashing (F)*        | -       |
| Step Flashing (SF)*  | -       |
| Transition Line (TL) | -       |

\*Please view the 3D model for more detail (e.g. flashing, step flashing and some other roof lines may be difficult to see on the PDF)

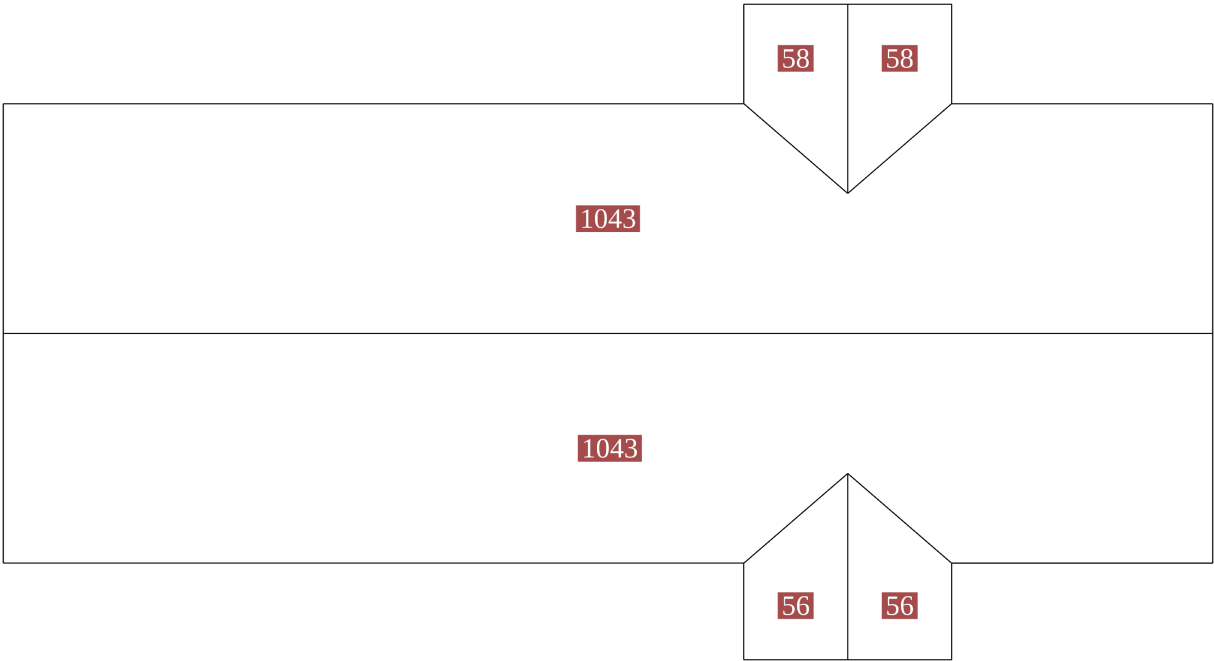


## Roof Facets

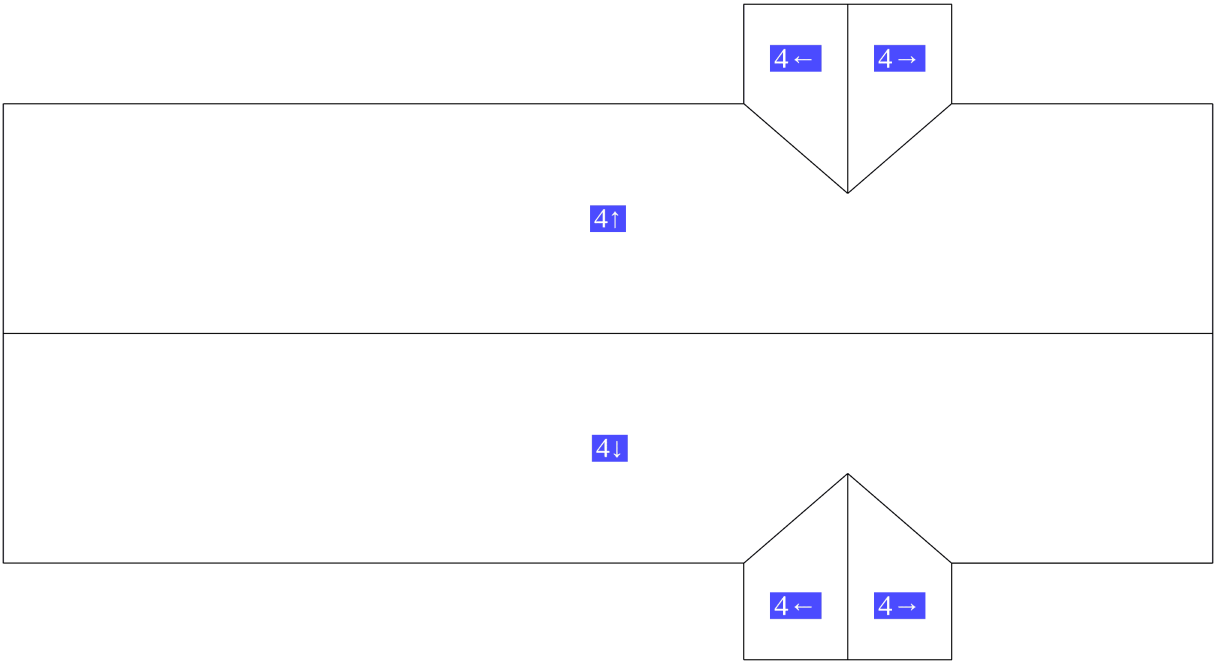
| Facet | Area                 | Pitch |
|-------|----------------------|-------|
| RF-1  | 56 ft <sup>2</sup>   | 4/12  |
| RF-2  | 1043 ft <sup>2</sup> | 4/12  |
| RF-3  | 56 ft <sup>2</sup>   | 4/12  |
| RF-4  | 58 ft <sup>2</sup>   | 4/12  |
| RF-5  | 58 ft <sup>2</sup>   | 4/12  |
| RF-6  | 1043 ft <sup>2</sup> | 4/12  |



| Roof  | Facets | Total                |
|-------|--------|----------------------|
| Total | 6      | 2314 ft <sup>2</sup> |



| Roof Pitch | Area                 | Percentage |
|------------|----------------------|------------|
| 4 / 12     | 2314 ft <sup>2</sup> | 100%       |





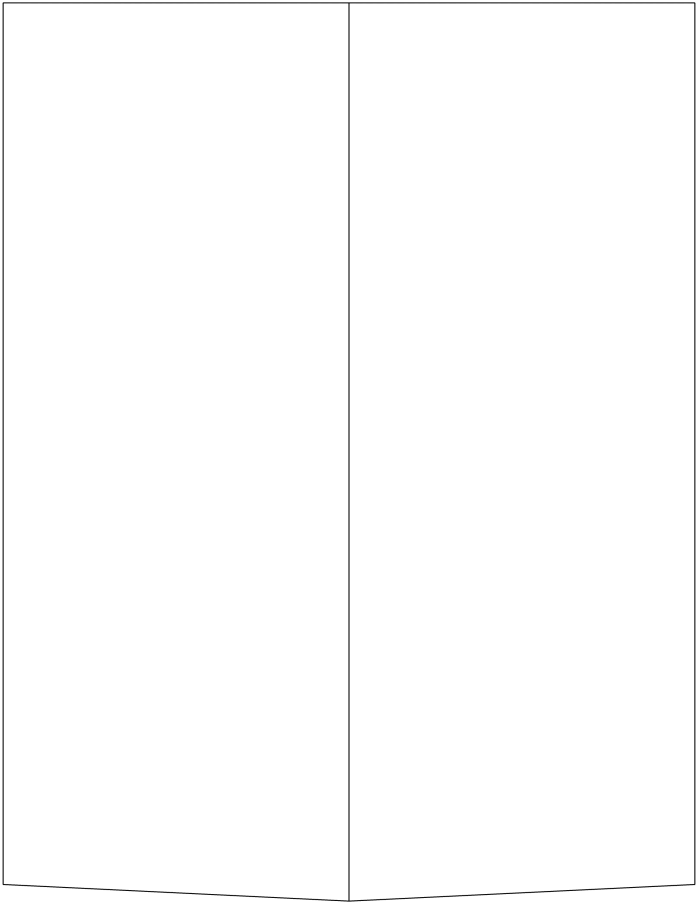




**VIEW 3D MODEL**

| Roof                | Area                 | Total | Length  |
|---------------------|----------------------|-------|---------|
| Roof Facets         | 2854 ft <sup>2</sup> | 2     | -       |
| Ridges / Hips       | -                    | 1     | 57' 10" |
| Valleys             | -                    | 0     | -       |
| Rakes               | -                    | 4     | 99' 8"  |
| Eaves               | -                    | 2     | 113' 7" |
| Flashing            | -                    | 0     | -       |
| Step Flashing       | -                    | 0     | -       |
| Drip Edge/Perimeter | -                    | -     | 213' 3" |

| Roof Pitch* | Area                 | Percentage |
|-------------|----------------------|------------|
| 6 / 12      | 2854 ft <sup>2</sup> | 100%       |

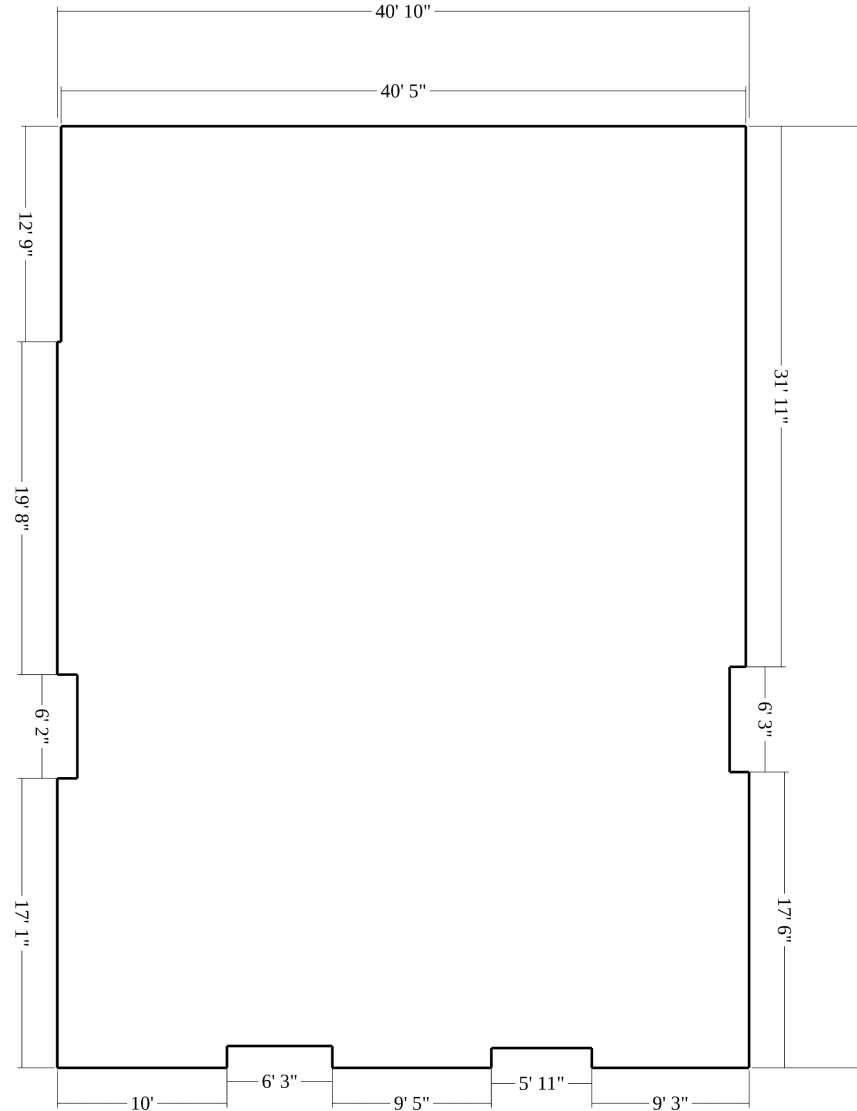


Example Waste Factor Calculations

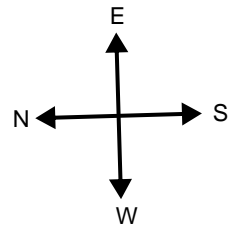
|         | Zero Waste           | +5%                  | +10%                 | +15%                 | +20%                 |
|---------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Area    | 2854 ft <sup>2</sup> | 2997 ft <sup>2</sup> | 3139 ft <sup>2</sup> | 3282 ft <sup>2</sup> | 3425 ft <sup>2</sup> |
| Squares | 28⅔                  | 30                   | 31⅔                  | 33                   | 34⅓                  |

The table above provides the total roof area of a given property using waste percentages as noted. Please consider that area values and specific waste factors can be influenced by the size and complexity of the property, captured image quality, specific roofing techniques, and your own level of expertise. Additional square footage for Hip, Ridge, and Starter shingles are not included in this waste factor and will require additional materials. This table is only intended to make common waste calculations easier and should not be interpreted as recommendations.

BACK



FRONT



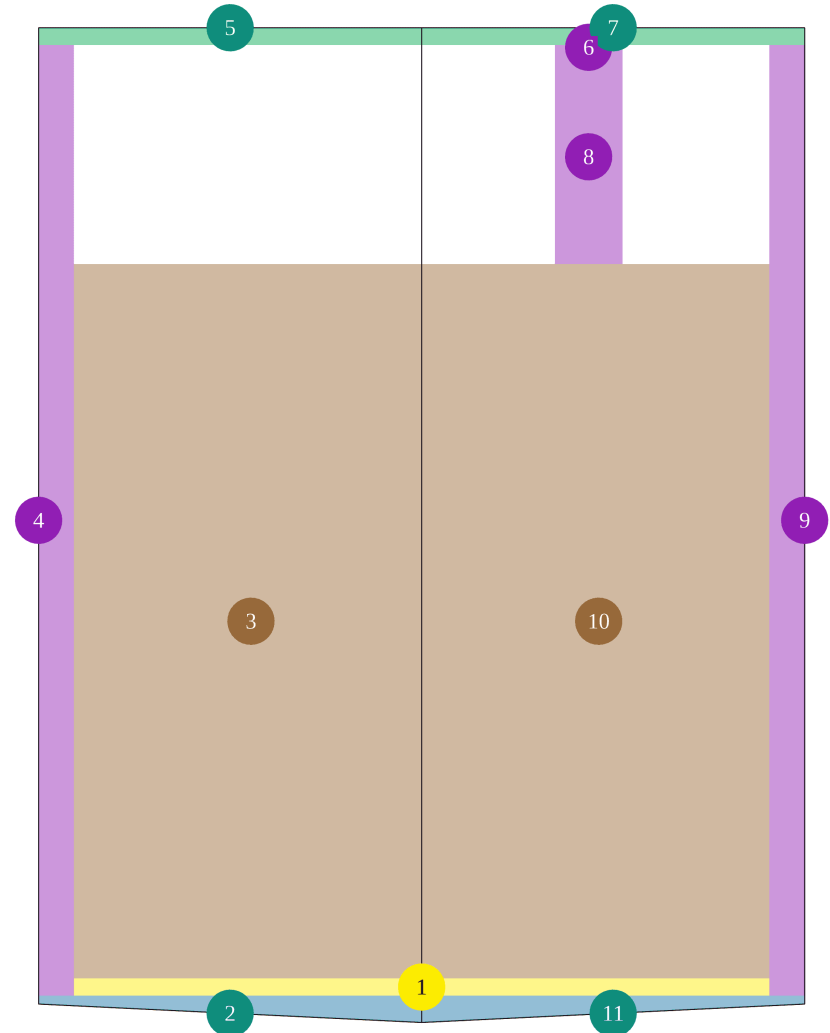
Number of Stories: 1

Footprint Perimeter: 202' 2"

Footprint Area: 2234 ft<sup>2</sup>

## Soffit Summary

| Depth     | Type  | Count | Total Length | Total Area           |
|-----------|-------|-------|--------------|----------------------|
| 6" - 12"  | eaves | 1     | 40' 5"       | 40 ft <sup>2</sup>   |
| 12" - 18" | rakes | 2     | 49' 10"      | 50 ft <sup>2</sup>   |
| 18" - 24" | rakes | 2     | 49' 10"      | 51 ft <sup>2</sup>   |
| 24" - 48" | eaves | 4     | 123' 4"      | 277 ft <sup>2</sup>  |
| > 48"     | eaves | 2     | 83' 1"       | 1715 ft <sup>2</sup> |
| Totals    |       |       | 346' 6"      | 2133 ft <sup>2</sup> |



Soffit Breakdown

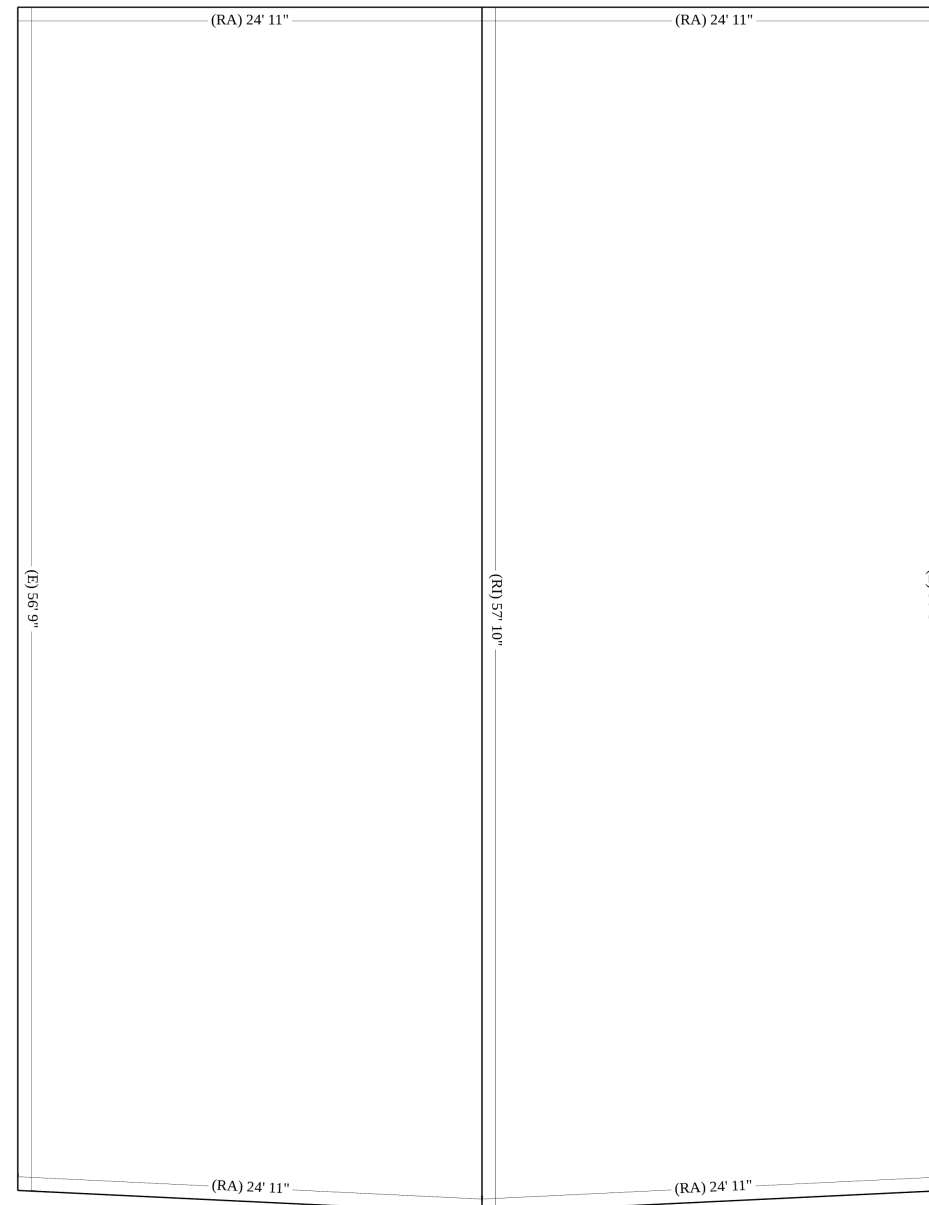
|  |     |      |       |         |                     |        |
|--|-----|------|-------|---------|---------------------|--------|
|  | num | Type | Depth | Length  | Area                | Pitch  |
|  | 1   | eave | 12"   | 40' 5"  | 40 ft <sup>2</sup>  | 6 / 12 |
|  | 2   | rake | 19"   | 24' 11" | 26 ft <sup>2</sup>  | 6 / 12 |
|  | 3   | eave | 252"  | 41' 7"  | 872 ft <sup>2</sup> | 6 / 12 |
|  | 4   | eave | 25"   | 55' 3"  | 113 ft <sup>2</sup> | 6 / 12 |
|  | 5   | rake | 12"   | 24' 11" | 25 ft <sup>2</sup>  | 6 / 12 |
|  | 6   | eave | 47"   | 3"      | 1 ft <sup>2</sup>   | 6 / 12 |
|  | 7   | rake | 12"   | 24' 11" | 25 ft <sup>2</sup>  | 6 / 12 |
|  | 8   | eave | 47"   | 12' 6"  | 49 ft <sup>2</sup>  | 6 / 12 |
|  | 9   | eave | 25"   | 55' 3"  | 113 ft <sup>2</sup> | 6 / 12 |
|  | 10  | eave | 243"  | 41' 7"  | 842 ft <sup>2</sup> | 6 / 12 |
|  | 11  | rake | 19"   | 24' 11" | 26 ft <sup>2</sup>  | 6 / 12 |

Ø Feature is too small to label on the plan diagram



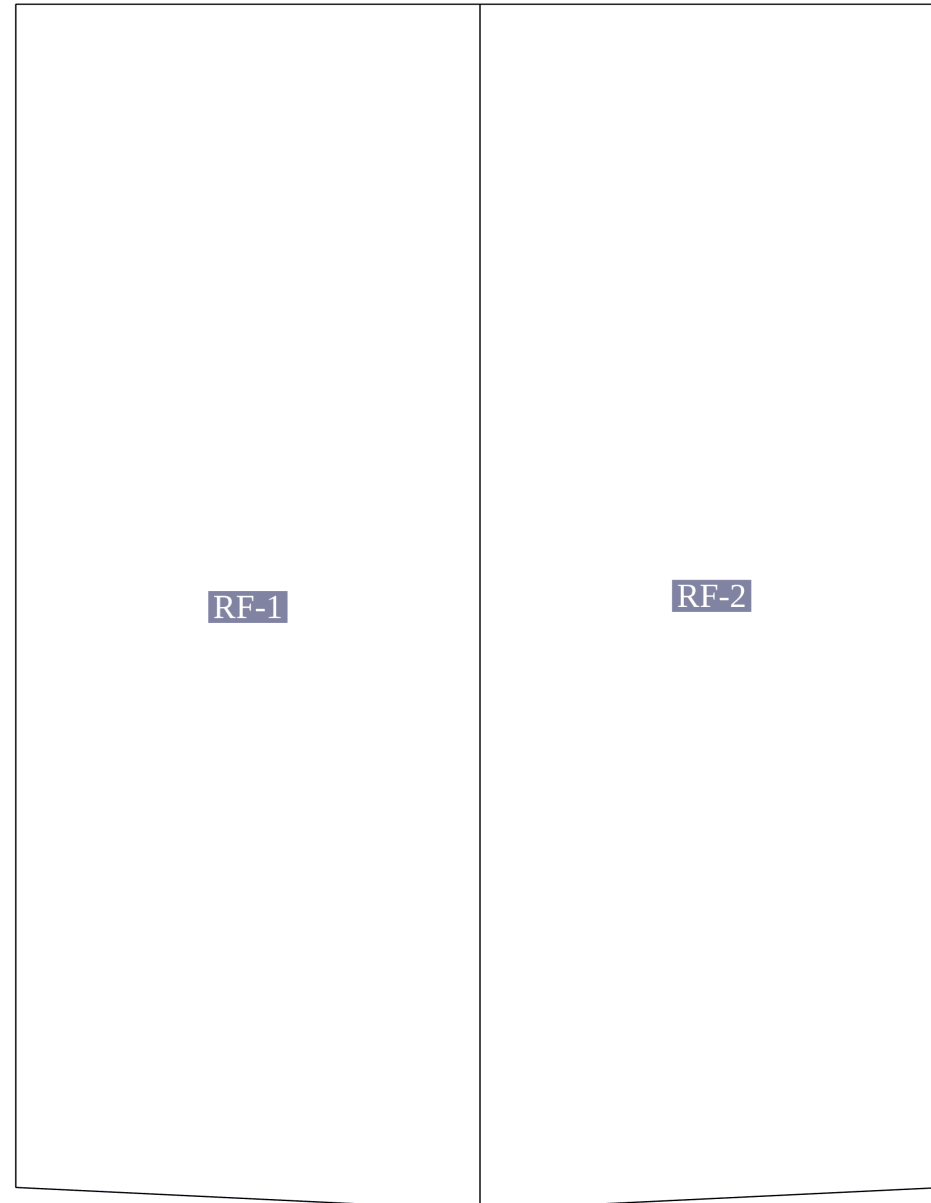
| Roof                 | Length  |
|----------------------|---------|
| Ridges (RI)          | 57' 10" |
| Hips (H)             | -       |
| Valleys (V)          | -       |
| Rakes (RA)           | 99' 8"  |
| Eaves (E)            | 113' 7" |
| Flashing (F)*        | -       |
| Step Flashing (SF)*  | -       |
| Transition Line (TL) | -       |

\*Please view the 3D model for more detail (e.g. flashing, step flashing and some other roof lines may be difficult to see on the PDF)

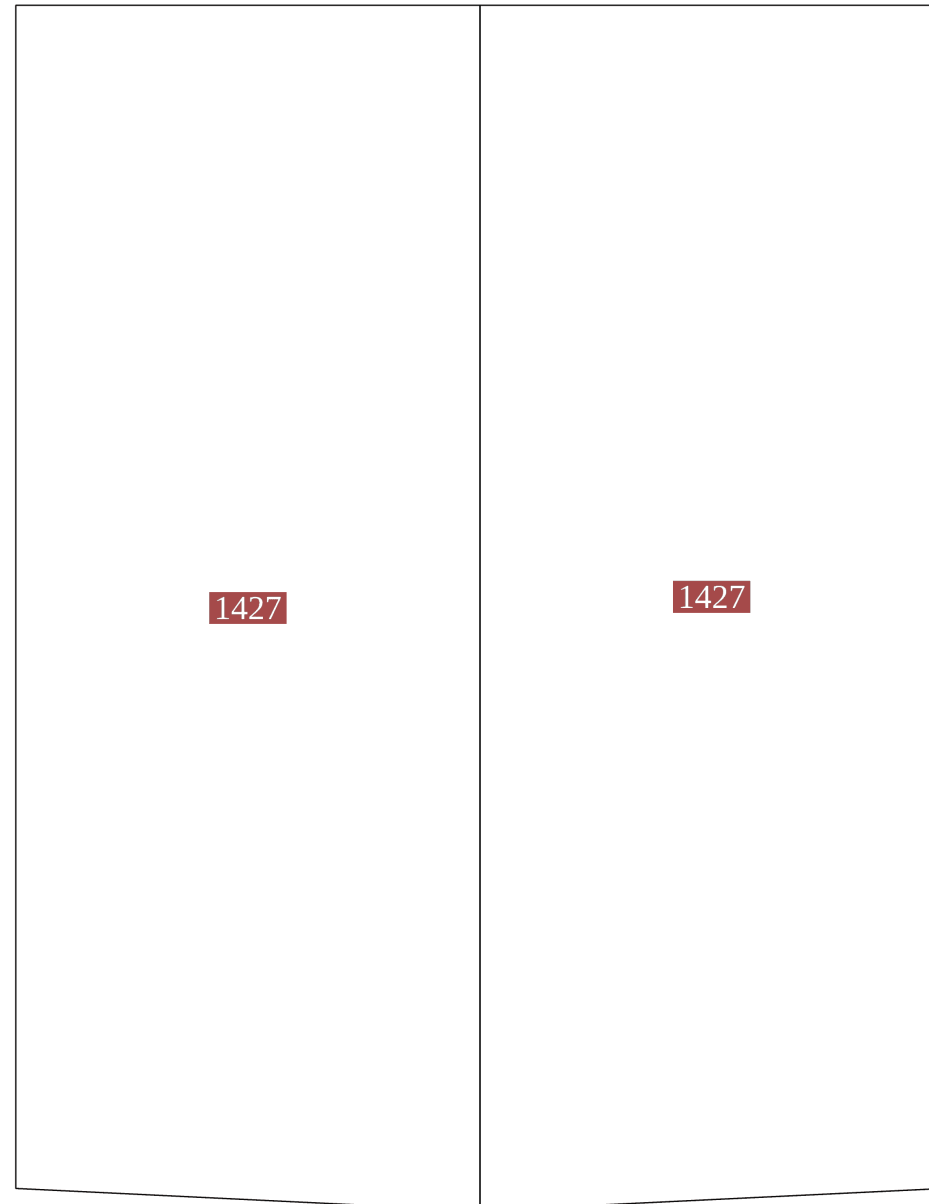


## Roof Facets

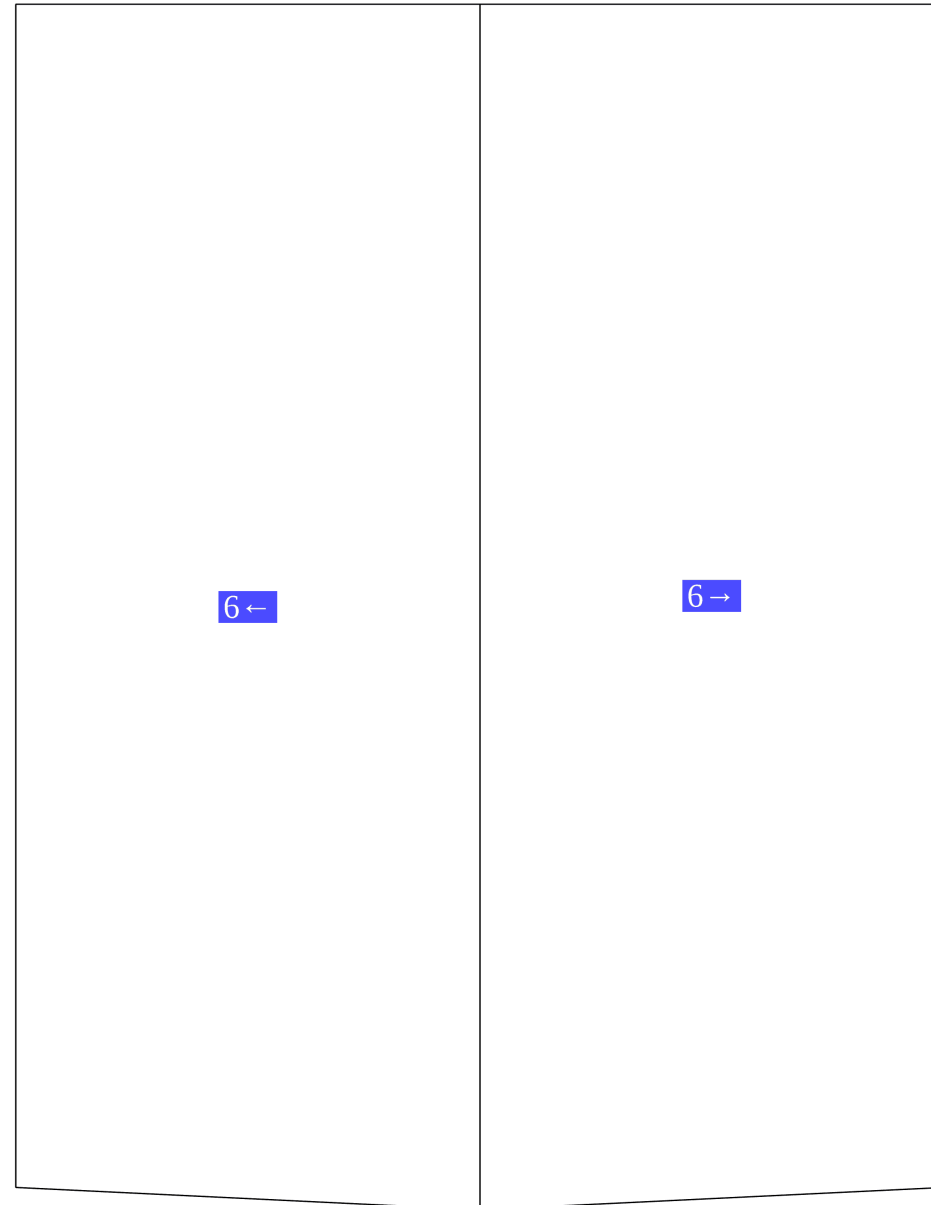
| Facet | Area                 | Pitch |
|-------|----------------------|-------|
| RF-1  | 1427 ft <sup>2</sup> | 6/12  |
| RF-2  | 1427 ft <sup>2</sup> | 6/12  |



| Roof  | Facets | Total                |
|-------|--------|----------------------|
| Total | 2      | 2854 ft <sup>2</sup> |



| Roof Pitch | Area                 | Percentage |
|------------|----------------------|------------|
| 6 / 12     | 2854 ft <sup>2</sup> | 100%       |







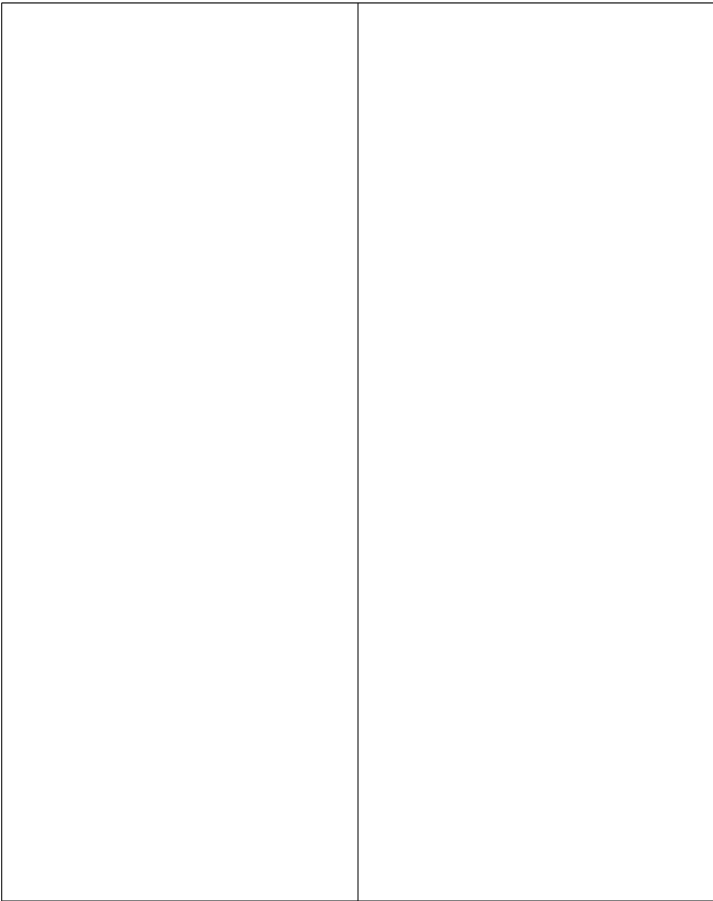




VIEW 3D MODEL

| Roof                | Area                 | Total | Length   |
|---------------------|----------------------|-------|----------|
| Roof Facets         | 2758 ft <sup>2</sup> | 2     | -        |
| Ridges / Hips       | -                    | 1     | 57' 5"   |
| Valleys             | -                    | 0     | -        |
| Rakes               | -                    | 4     | 96'      |
| Eaves               | -                    | 2     | 114' 11" |
| Flashing            | -                    | 0     | -        |
| Step Flashing       | -                    | 0     | -        |
| Drip Edge/Perimeter | -                    | -     | 210' 11" |

| Roof Pitch* | Area                 | Percentage |
|-------------|----------------------|------------|
| 4 / 12      | 2758 ft <sup>2</sup> | 100%       |



Example Waste Factor Calculations

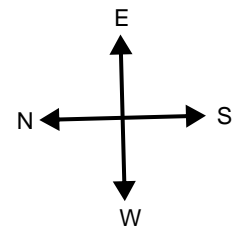
|         | Zero Waste           | +5%                  | +10%                 | +15%                 | +20%                 |
|---------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Area    | 2758 ft <sup>2</sup> | 2896 ft <sup>2</sup> | 3034 ft <sup>2</sup> | 3172 ft <sup>2</sup> | 3310 ft <sup>2</sup> |
| Squares | 27⅔                  | 29                   | 30⅔                  | 32                   | 33⅓                  |

The table above provides the total roof area of a given property using waste percentages as noted. Please consider that area values and specific waste factors can be influenced by the size and complexity of the property, captured image quality, specific roofing techniques, and your own level of expertise. Additional square footage for Hip, Ridge, and Starter shingles are not included in this waste factor and will require additional materials. This table is only intended to make common waste calculations easier and should not be interpreted as recommendations.

BACK

40' 4"

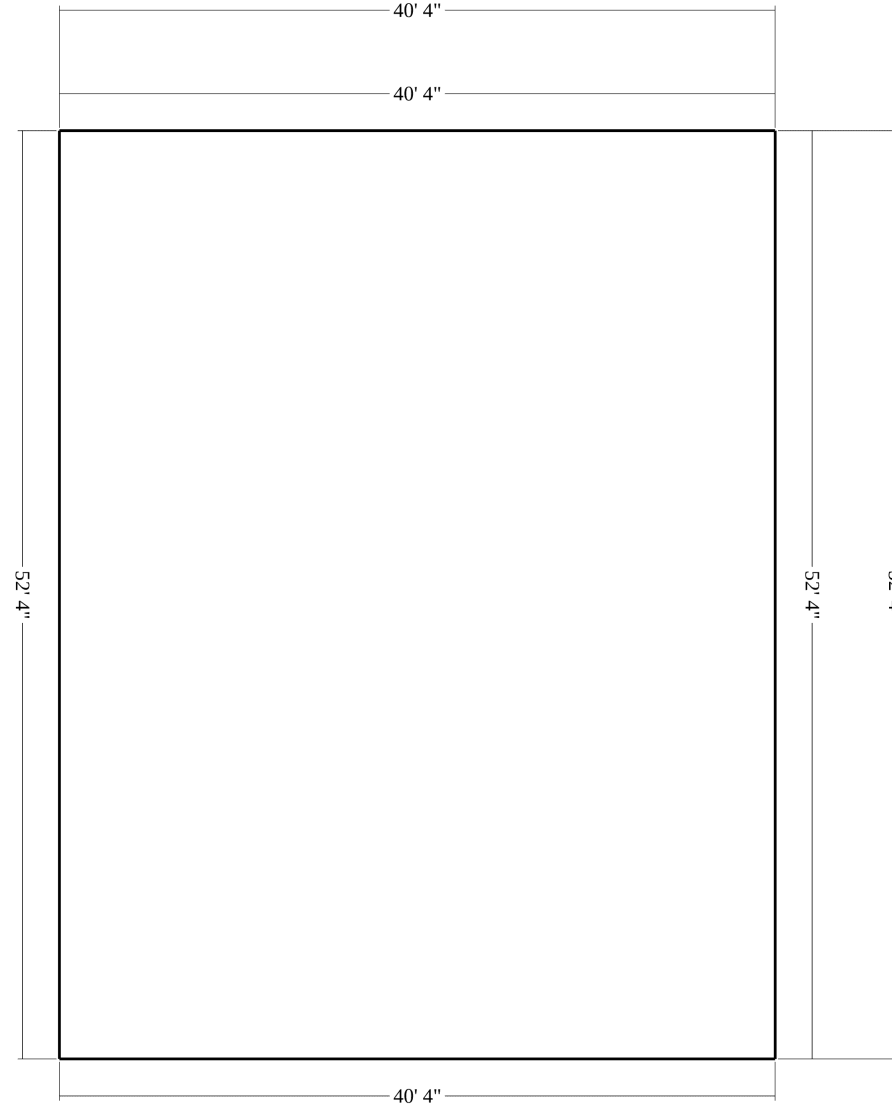
40' 4"



Number of Stories: 1

Footprint Perimeter: 185' 5"

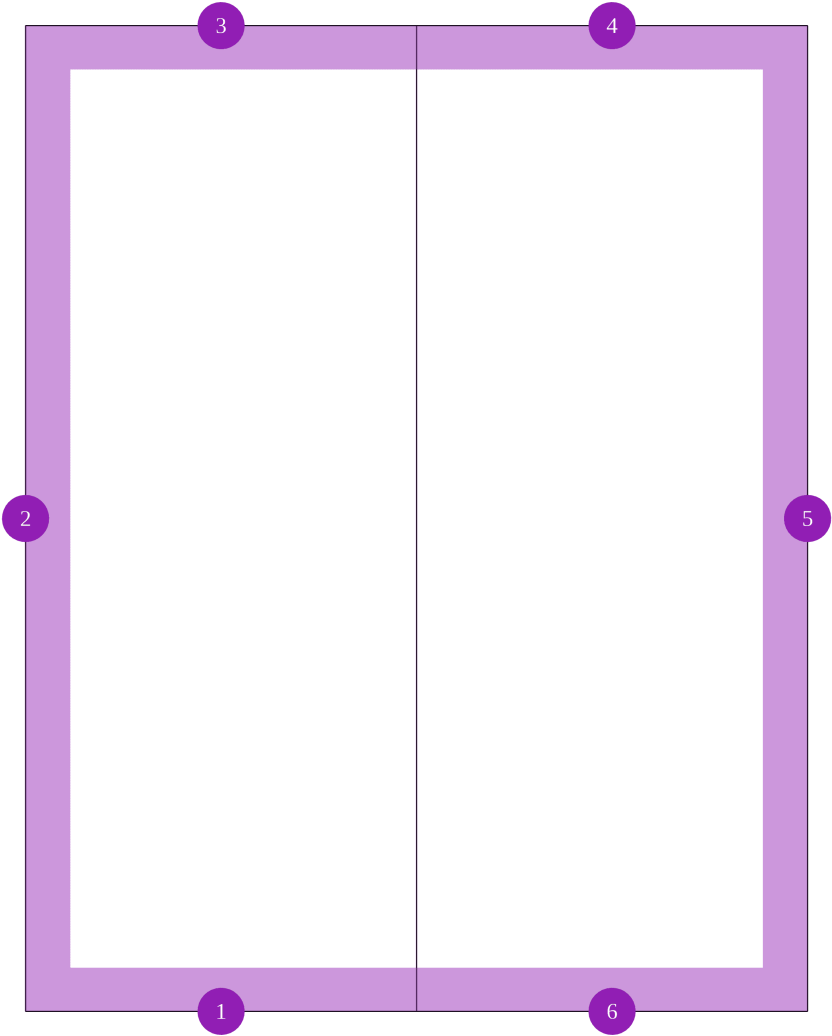
Footprint Area: 2112 ft<sup>2</sup>



FRONT

Soffit Summary

| Depth     | Type  | Count | Total Length | Total Area          |
|-----------|-------|-------|--------------|---------------------|
| 24" - 48" | rakes | 4     | 96'          | 245 ft <sup>2</sup> |
|           | eaves | 2     | 104' 8"      | 273 ft <sup>2</sup> |
| Totals    |       |       | 200' 8"      | 518 ft <sup>2</sup> |



Soffit Breakdown

- 
- 
- 
- 
- 
- 

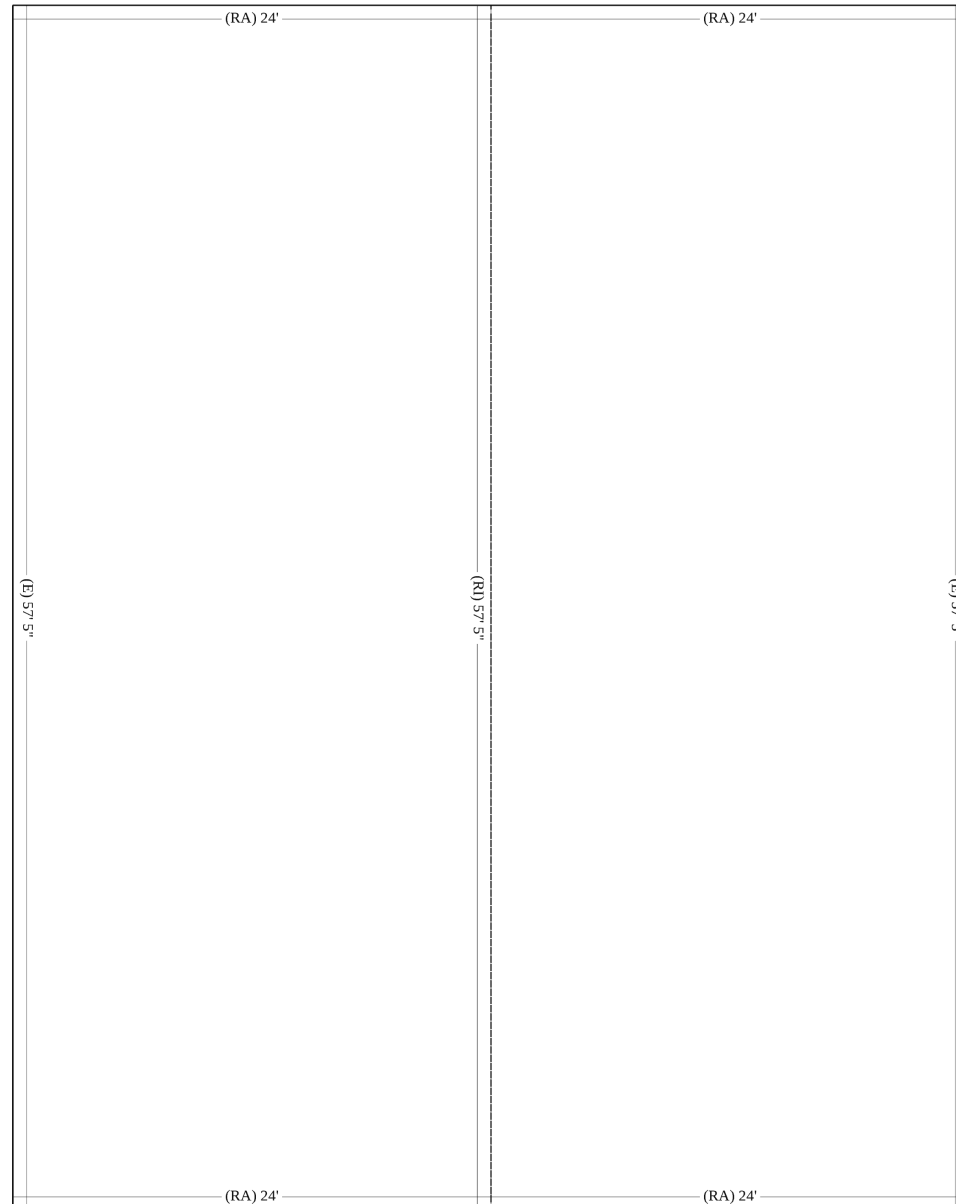
| num | Type | Depth | Length | Area                | Pitch  |
|-----|------|-------|--------|---------------------|--------|
| 1   | rake | 31"   | 24'    | 61 ft <sup>2</sup>  | 4 / 12 |
| 2   | eave | 31"   | 52' 4" | 137 ft <sup>2</sup> | 4 / 12 |
| 3   | rake | 31"   | 24'    | 61 ft <sup>2</sup>  | 4 / 12 |
| 4   | rake | 31"   | 24'    | 61 ft <sup>2</sup>  | 4 / 12 |
| 5   | eave | 31"   | 52' 4" | 137 ft <sup>2</sup> | 4 / 12 |
| 6   | rake | 31"   | 24'    | 61 ft <sup>2</sup>  | 4 / 12 |

Ø Feature is too small to label on the plan diagram



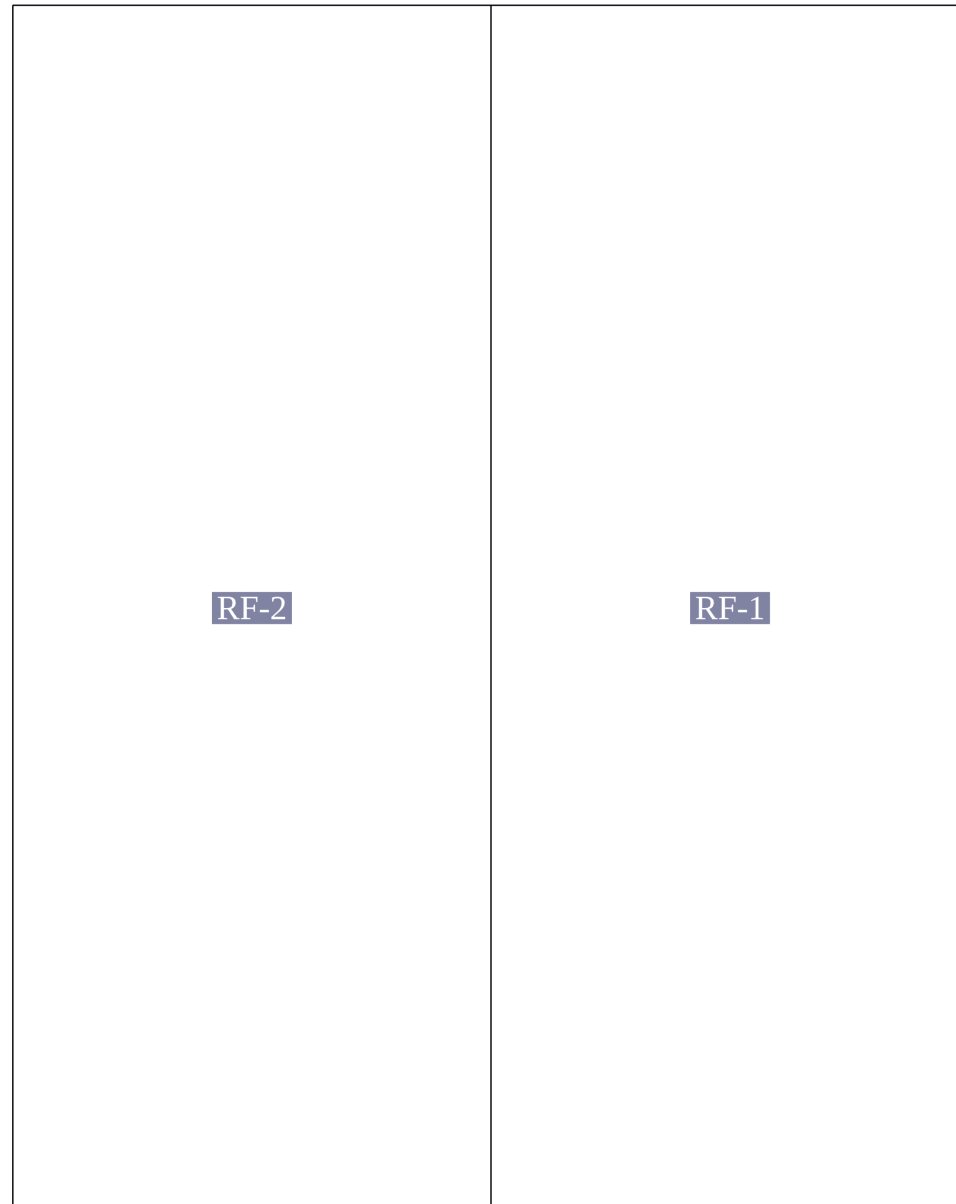
| Roof                 | Length   |
|----------------------|----------|
| Ridges (RI)          | 57' 5"   |
| Hips (H)             | -        |
| Valleys (V)          | -        |
| Rakes (RA)           | 96'      |
| Eaves (E)            | 114' 11" |
| Flashing (F)*        | -        |
| Step Flashing (SF)*  | -        |
| Transition Line (TL) | -        |

\*Please view the 3D model for more detail (e.g. flashing, step flashing and some other roof lines may be difficult to see on the PDF)



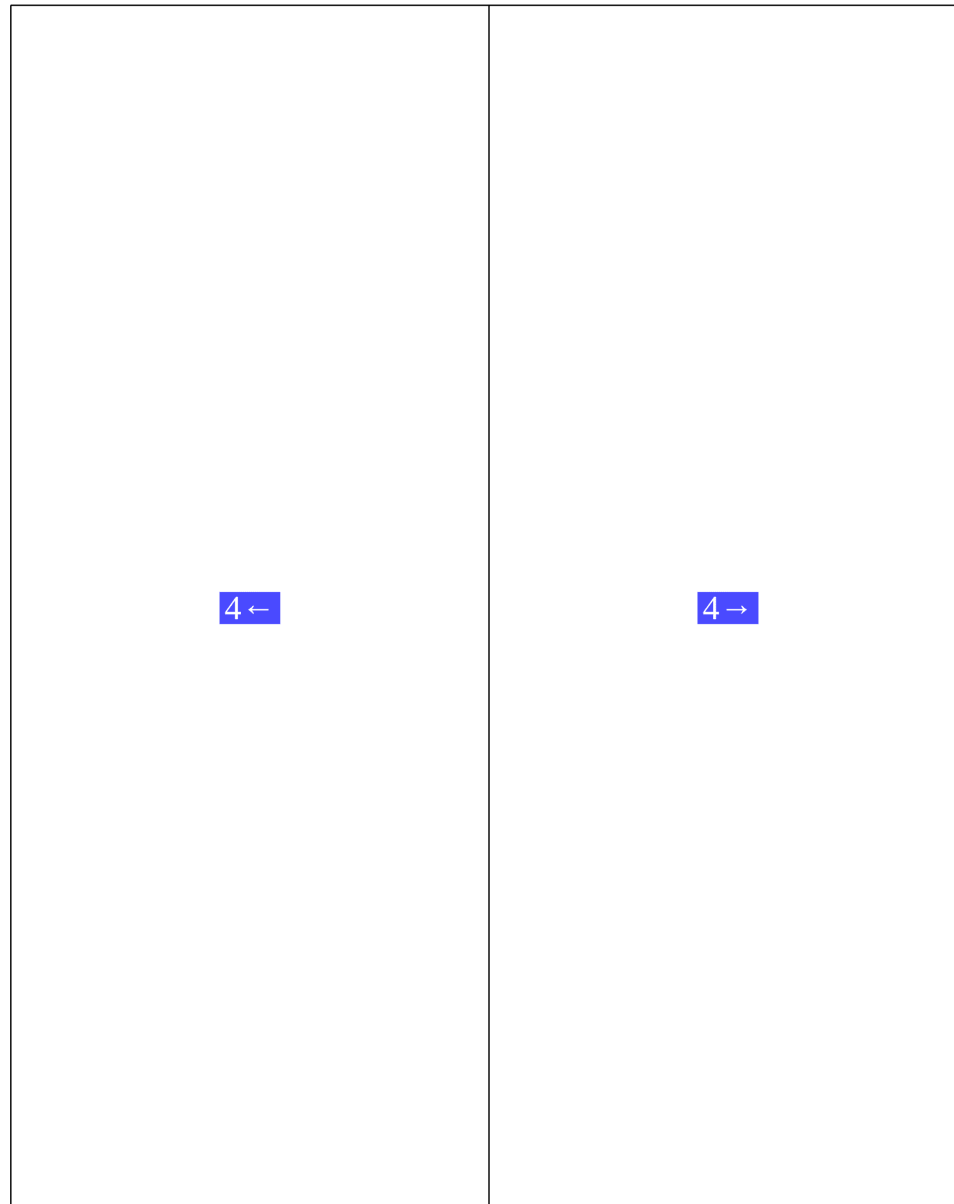
## Roof Facets

| Facet | Area                 | Pitch |
|-------|----------------------|-------|
| RF-1  | 1379 ft <sup>2</sup> | 4/12  |
| RF-2  | 1379 ft <sup>2</sup> | 4/12  |



| Roof  | Facets | Total                |
|-------|--------|----------------------|
| Total | 2      | 2758 ft <sup>2</sup> |





| Roof Pitch | Area                 | Percentage |
|------------|----------------------|------------|
| 4 / 12     | 2758 ft <sup>2</sup> | 100%       |







