

NATURAL LIGHT ENERGY SYSTEMS

ROOF MOUNTED SOLAR ATTIC FAN

INSTALLATION ANCHORAGE DETAILS

GENERAL NOTES:

1. THIS PRODUCT IS TESTED AND DESIGNED TO COMPLY WITH THE 2006 INTERNATIONAL BUILDING CODE AND THE 2006 INTERNATIONAL RESIDENTIAL CODE, BOTH WITH TEXAS REVISIONS. THE PRODUCT DETAILS CONTAINED HEREIN ARE TESTED IN ACCORDANCE WITH ASTM E330 AND DOCUMENTED IN TEST REPORT # A8071.01-301-44, DATED 03/21/11 AND ASSOCIATED LABORATORY DRAWINGS.
2. ADEQUACY OF THE EXISTING STRUCTURAL 2X FRAMING AS A MAIN WIND FORCE RESISTING SYSTEM CAPABLE OF WITHSTANDING AND TRANSFERRING APPLIED PRODUCT LOADS TO THE STRUCTURE IS THE RESPONSIBILITY OF THE ENGINEER OR ARCHITECT OF RECORD.
3. 2X WOOD BUCKING/FRAMING SHALL BE DESIGNED AND ANCHORED TO PROPERLY TRANSFER ALL LOADS TO THE STRUCTURE. FRAME/BUCK DESIGN AND INSTALLATION IS THE RESPONSIBILITY OF THE ENGINEER OR ARCHITECT OF RECORD.
4. FRAME FLASHING MATERIAL: 1100-O ALUMINUM
5. PRIOR TO AN ANTICIPATED HURRICANE OR HIGH WIND EVENT, THE SOLAR PANEL SHALL BE PLACED IN THE RETRACTED POSITION.
6. A 40 WATT MODEL OF THE SOLAR ATTIC FAN TESTED. THE SOLAR ATTIC FAN IS AVAILABLE IN 10, 20 AND 30 WATT SIZES AS WELL. ALL STRUCTURAL BRACKETS AND ANCHORING ARE IDENTICAL FOR ALL SOLAR PANEL SIZES.
7. SOLAR ATTIC FAN MAY BE INSTALLED AT ROOF SLOPES FROM ZERO DEGREES (FLAT) TO 45 DEGREES (INCLINED).

| DESIGN PRESSURE | |
|-------------------|---------------------|
| LOADING DIRECTION | DP LIMITATION (PSF) |
| POSITIVE | 115 PSF |
| NEGATIVE | 120 PSF |
| | |

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INSTALLATION NOTES:

1. ONE (1) INSTALLATION ANCHOR IS REQUIRED AT EACH ANCHOR LOCATION SHOWN.
2. THE NUMBER OF INSTALLATION ANCHORS DEPICTED (QUANTITY OF 10 ANCHORS) ARE THE MINIMUM NUMBER OF ANCHORS TO BE USED FOR PRODUCT INSTALLATION AS FOLLOWS:
 - 2.1. 2 BY WOOD FRAMING OPTION
 - 2.1.1. A MINIMUM OF TEN (10) ANCHORS SHALL BE USED.
 - 2.2. OSB AND PLYWOOD ROOF SHEATHING OPTION, THE GREATER OF
 - 2.2.1. A MINIMUM OF TEN (10) ANCHORS SHALL BE USED, OR
 - 2.2.2. AS REQUIRED BY THE INSTALLATION ANCHOR SCHEDULE ON SHEET 5.
3. ANCHOR TYPE AND SIZE;
 - 3.1. FOR INSTALLATION INTO WOOD FRAMING, USE #10 WOOD SCREWS OR #10 SELF-TAPPING/SELF-DRILLING SCREWS OF SUFFICIENT LENGTH TO ACHIEVE 1 1/2 INCH MINIMUM EMBEDMENT INTO 2X WOOD STRUCTURAL SUBSTRATE. MINIMUM EDGE DISTANCE IS 3/8 INCHES AND MINIMUM END DISTANCE IS 3/4 INCHES.
 - 3.2. FOR INSTALLATION INTO ROOF SHEATHING, USE #10 WOOD SCREWS OR #10 SELF-TAPPING/SELF-DRILLING SCREWS OF SUFFICIENT LENGTH TO ACHIEVE FULL THREAD EMBEDMENT INTO STRUCTURAL SUBSTRATE. SELF-TAPPING/SELF-DRILLING SCREWS (a.k.a., SHEET METAL SCREWS) ARE THREADED THE FULL LENGTH AND RECOMMENDED TO ENSURE FULL THREAD ENGAGEMENT INTO SHEATHING.
4. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDE ROOFING FINISHES, INCLUDING BUT NOT LIMITED TO ROOF SHEATHING, ROOF TILE, SHINGLES, UNDERLAYMENTS, ETC.
5. INSTALLATION ANCHOR CAPACITIES FOR PRODUCTS HEREIN ARE BASED ON SUBSTRATE MATERIALS WITH THE FOLLOWING PROPERTIES:
 - 5.1. 2 BY WOOD FRAMING (FOR 2X WOOD FRAMING INSTALLATION OPTION)
 - 5.1.1. MINIMUM SPECIFIC GRAVITY OF 0.42.
 - 5.2. PLYWOOD (FOR ROOF SHEATHING INSTALLATION OPTION)
 - 5.2.1. THICKNESSES REPRESENTED IN INSTALLATION ANCHOR SCHEDULE ON SHEET 5 INCLUDE:
 - 5.2.1.1. 7/16"
 - 5.2.1.2. 15/32"
 - 5.2.1.3. 1/2"
 - 5.2.1.4. 5/8"
 - 5.2.2. FOR THICKNESSES NOT SHOWN, USE THE NEXT THINNER THICKNESS.
 - 5.3. OSB (FOR ROOF SHEATHING INSTALLATION OPTION)
 - 5.2.1. THICKNESSES REPRESENTED IN INSTALLATION ANCHOR SCHEDULE ON SHEET 5 INCLUDE:
 - 5.2.1.1. 7/16"
 - 5.2.1.2. 15/32"
 - 5.2.1.3. 1/2"
 - 5.2.1.4. 5/8"
 - 5.2.2. FOR THICKNESSES NOT SHOWN, USE THE NEXT THINNER THICKNESS.

PROJECT #411-0104

NATURAL LIGHT ENERGY SYSTEMS
10821 N. 23RD AVENUE
PHOENIX, AZ 85029

TITLE:
ROOF MOUNTED SOLAR ATTIC FAN
GENERAL AND INSTALLATION NOTES

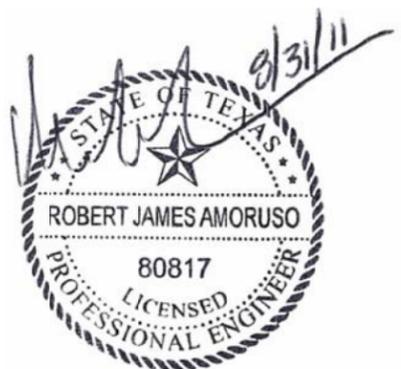
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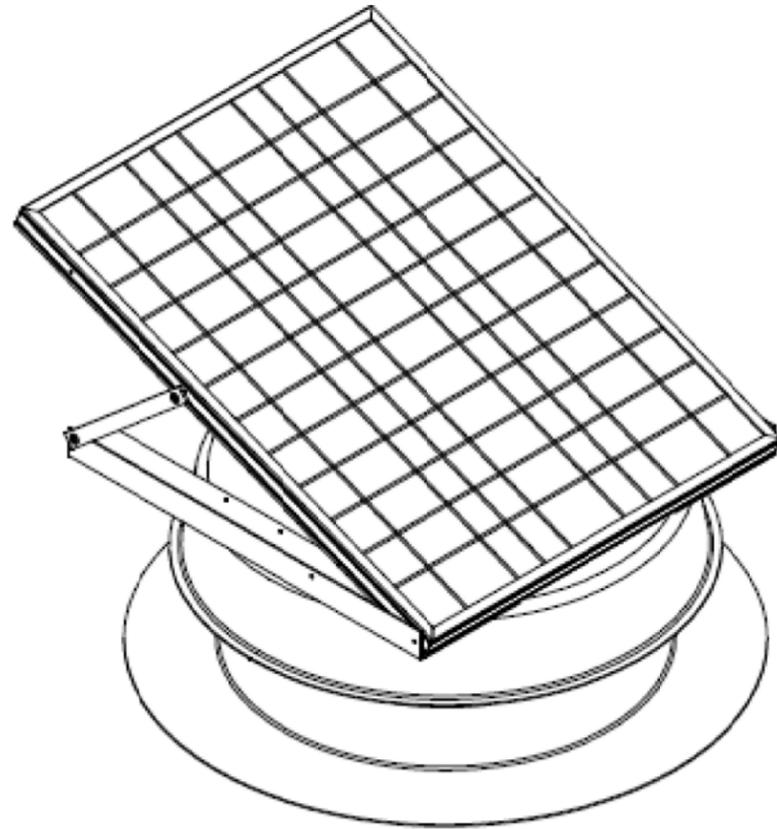
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REV: - SHEET: 1 OF 5

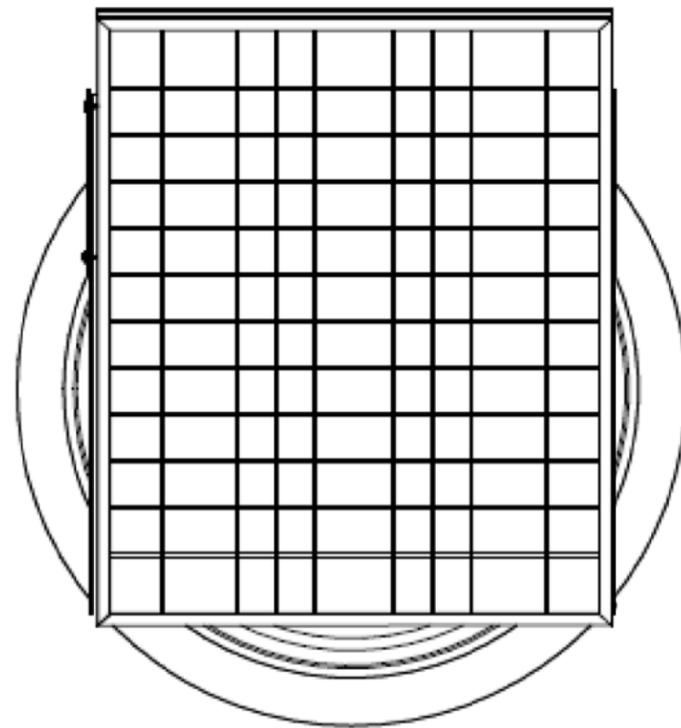
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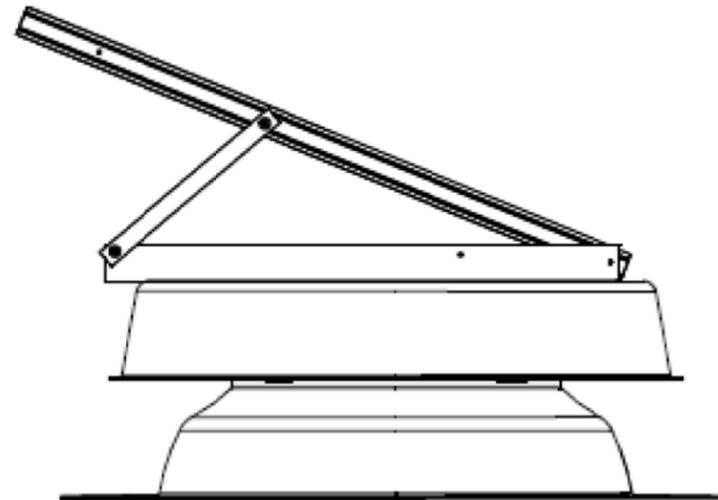




PERSPECTIVE VIEW
NOT TO SCALE



TOP VIEW
NOT TO SCALE



LEFT VIEW
NOT TO SCALE

ISOMETRIC VIEW

**40 WATT FAN
SHOWN. TYPICAL
FOR ALL MODELS.**

PROJECT #411-0104

NATURAL LIGHT ENERGY SYSTEMS
10821 N. 23RD AVENUE
PHOENIX, AZ 85029

TITLE: ROOF MOUNTED SOLAR ATTIC FAN
ISOMETRIC VIEW - 40 WATT FAN

PREPARED BY: RJA

DATE: 08/31/2011

DRAWING NO: NLS0005

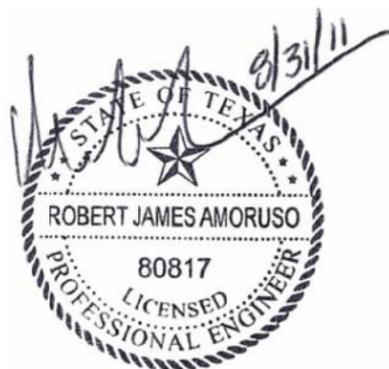
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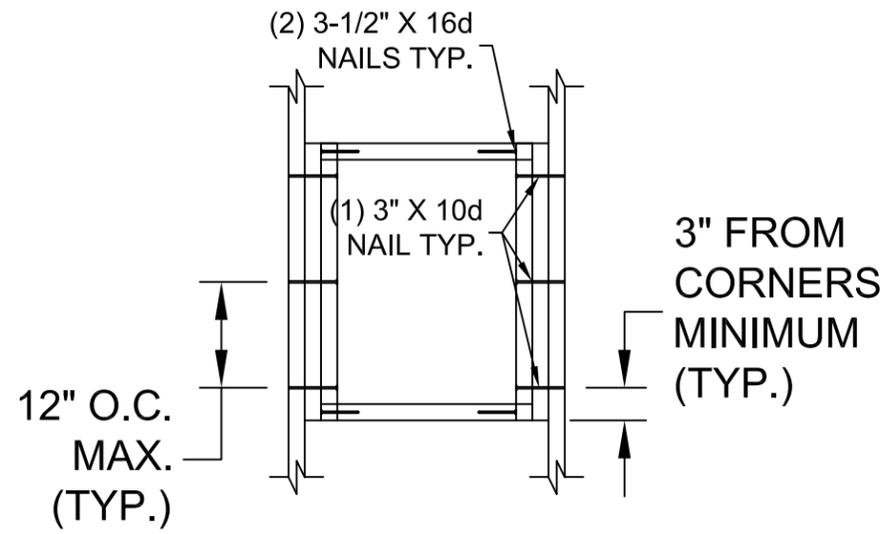


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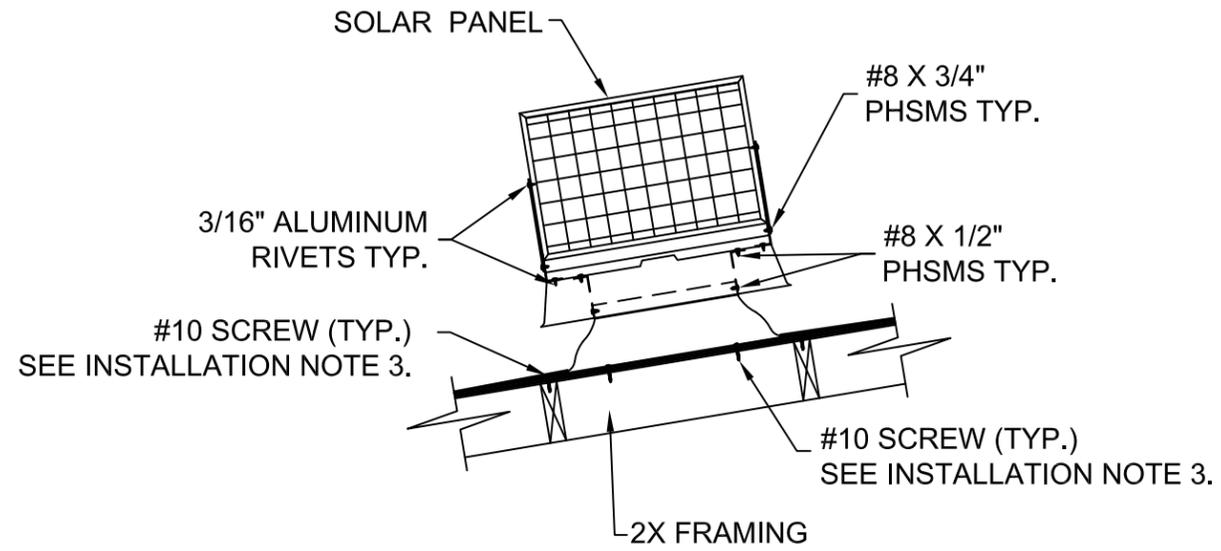
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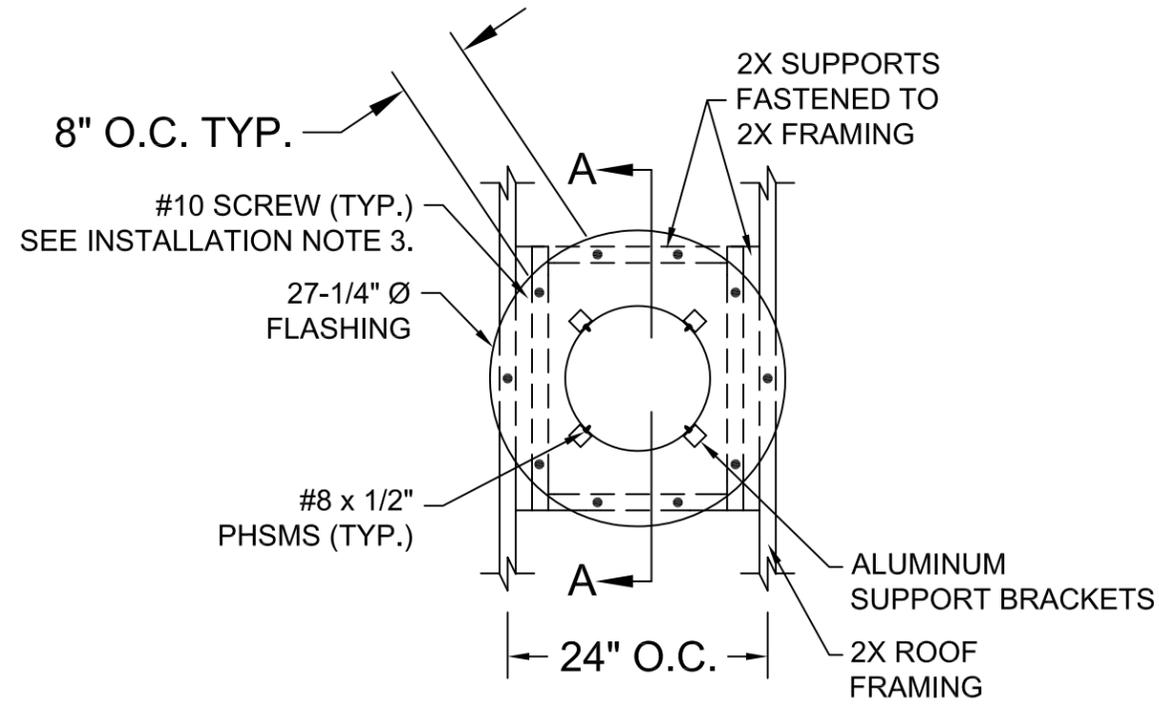
2 BY WOOD FRAMING INSTALLATION OPTION



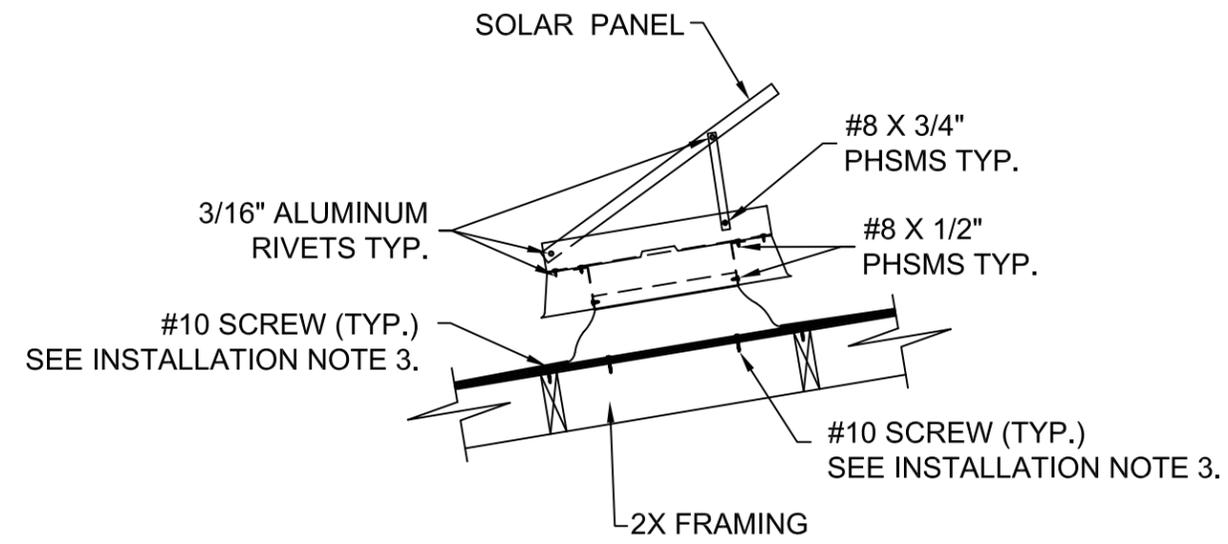
**ANCHOR LOCATION DETAIL
2X WOOD SUPPORT FRAMING - EXAMPLE**



ELEVATION



**ROOF MOUNTED SOLAR ATTIC FAN
ANCHOR LOCATION DETAIL
2X WOOD SUPPORT FRAMING - EXAMPLE**



SECTION A-A

PROJECT #411-0104

NATURAL LIGHT ENERGY SYSTEMS
10821 N. 23RD AVENUE
PHOENIX, AZ 85029

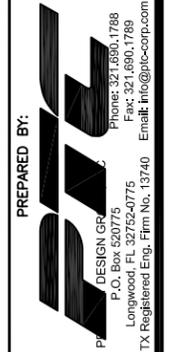
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2X WOOD FRAMING INSTALLATION OPTION

PREPARED BY: RJA

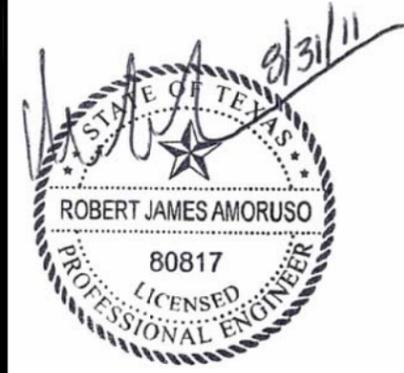
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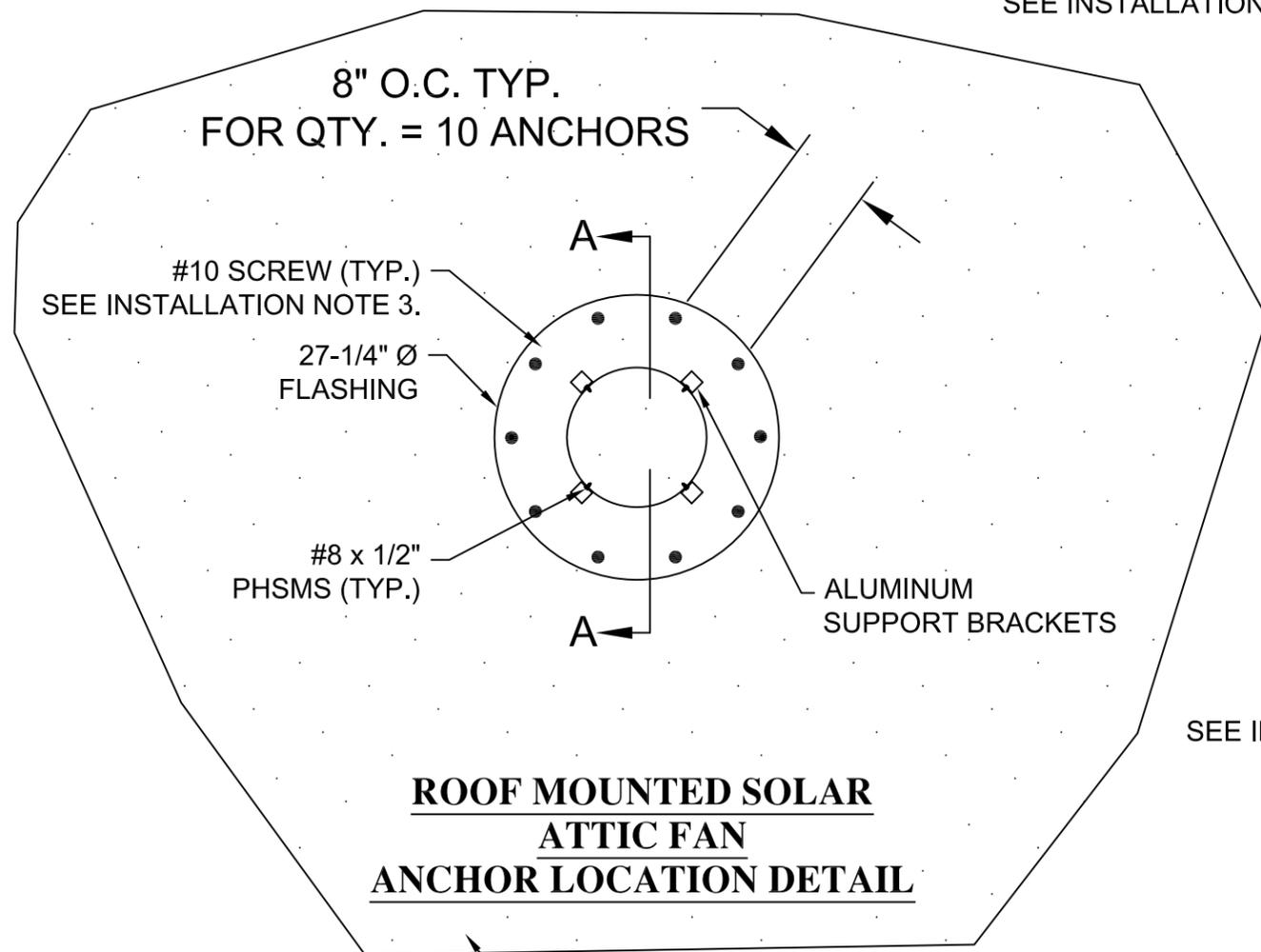
SHEET: 3 OF 5



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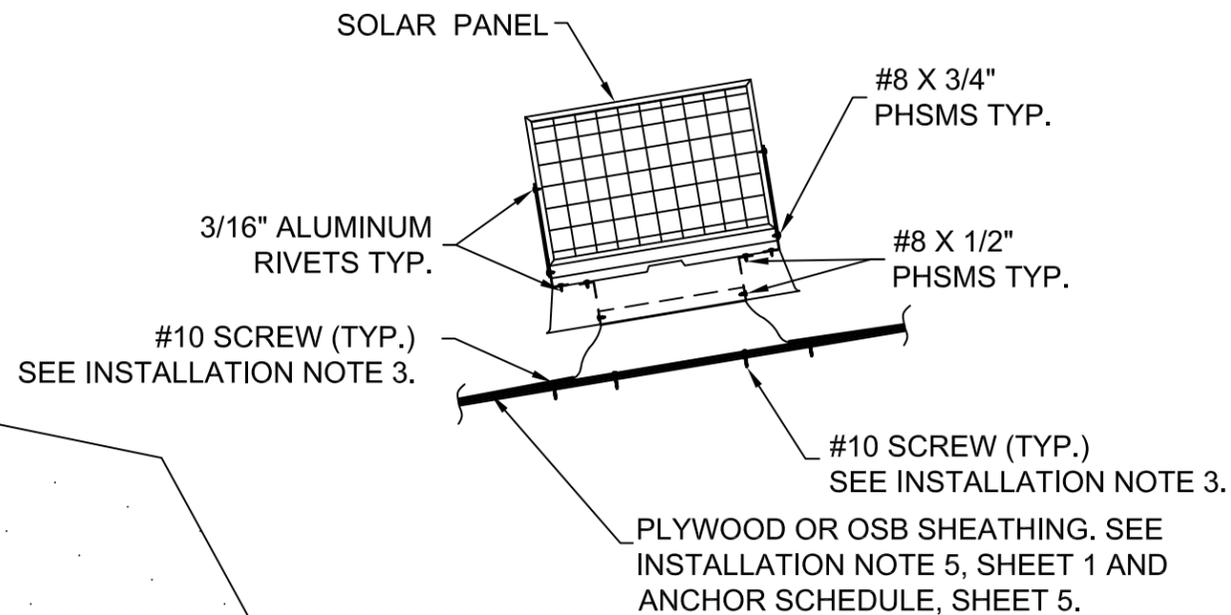


PLYWOOD OR OSB ROOF SHEATHING INSTALLATION OPTION

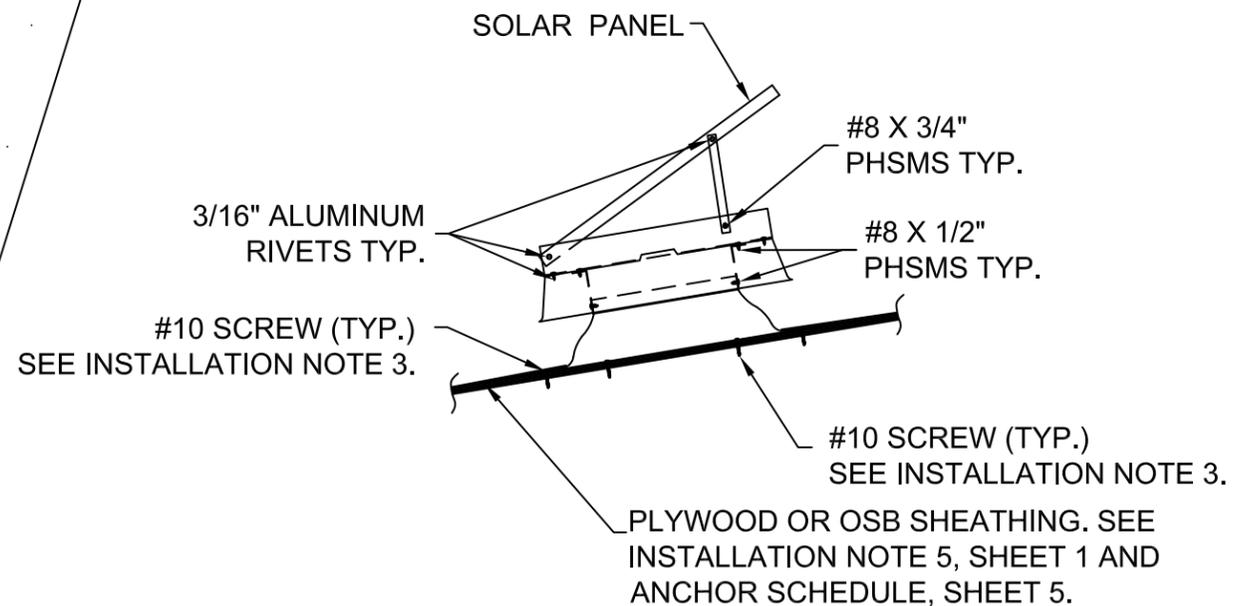


**ROOF MOUNTED SOLAR
ATTIC FAN
ANCHOR LOCATION DETAIL**

- NOTES:
1. SEE SHEET 5 FOR INSTALLATION ANCHOR SCHEDULE AND REQUIRED ANCHOR QUANTITIES.
 2. SEE INSTALLATION NOTE 5 ON SHEET 1 FOR MATERIAL REQUIREMENTS AND SHEATHING THICKNESS.
 - 2.1. FOR THICKNESSES OTHER THAN THAT SHOWN ON SHEET 5, USE THE NEXT THINNER THICKNESS.



ELEVATION



SECTION A-A

PROJECT #411-0104

NATURAL LIGHT ENERGY SYSTEMS
10821 N. 23RD AVENUE
PHOENIX, AZ 85029

TITLE: ROOF MOUNTED SOLAR ATTIC FAN SHEATHING INSTALLATION OPTION - ANCHORAGE DETAILS

DATE: 08/31/2011

DRAWING NO: NLS0005

SHEET: 4 OF 5

DRAWN BY: RJA

SCALE: N.T.S.

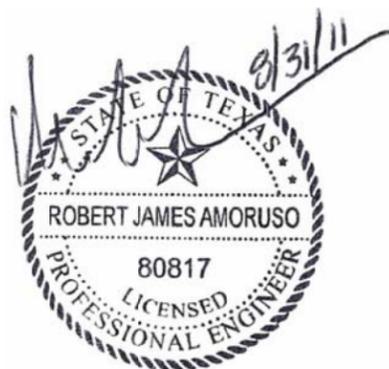
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PLYWOOD OR OSB ROOF SHEATHING INSTALLATION OPTION

INSTALLATION ANCHOR SCHEDULE

| Substrate | | Quantity of Anchors at various Design Pressures (psf) | | | | | | | | | | | | | | |
|------------------------------|---------------|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| Type | Thickness | 42 psf | 48 psf | 49 psf | 50 psf | 58 psf | 63 psf | 68 psf | 70 psf | 78 psf | 82 psf | 92 psf | 96 psf | 108 psf | 115 psf | 120 psf |
| Plywood & OSB | 7/16" | 10 | 10 | 10 | 10 | 10 | 11 | 12 | 12 | 14 | 14 | 16 | 17 | 19 | 20 | 21 |
| | 15/32" | 10 | 10 | 10 | 10 | 10 | 10 | 11 | 11 | 13 | 13 | 15 | 15 | 17 | 18 | 19 |
| | 1/2" | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 11 | 12 | 12 | 14 | 14 | 16 | 17 | 18 |
| | 5/8" | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 11 | 12 | 13 | 14 | 14 |

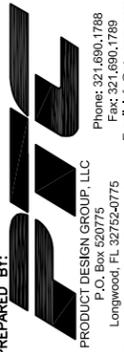
ROOF SHEATHING OPTION INSTALLATION ANCHOR SCHEDULE AND INSTALLATION NOTES:

1. SEE SHEET 1, INSTALLATION NOTES FOR ANCHOR SIZE, TYPE AND EMBEDMENT REQUIREMENTS.
2. *INSTALLATION ANCHOR SCHEDULE* TABLE ABOVE SHOWS QUANTITY OF ANCHORS REQUIRED FOR THE FOLLOWING:
 - 2.1. VARIOUS DESIGN PRESSUES (DP) IN POUNDS PER SQUARE FOOT (PSF),
 - 2.2. PLYWOOD
 - 2.3. INDUSTRY STANDARD SUPPLIED OSB, AND
 - 2.4. SHEATHING THICKNESSES OF 7/16", 15/32", 1/2" AND 5/8".
3. USE THIS TABLE AS FOLLOWS:
 - 3.1. DETERMINE THICKNESS OF ROOF SHEATHING.
 - 3.2. DETERMINE REQUIRED NEGATIVE (UPLIFT) DESIGN PRESSURE FOR PROJECT'S PHYSICAL LOCATION.
 - 3.3. ENTER TABLE TO DETERMINE QUANTITY OF ANCHORS (WOOD SCREWS OR SHEET METAL SCREWS) REQUIRED.
4. QUANTITY OF ANCHORS SHALL NEVER BE LESS THAN TEN (10).
5. SPACING SHOWN ON SHEET 4 BASED ON THE FOLLOWING.
 - 5.1. QUANTITY OF ANCHORS TEN (10).
 - 5.2. ANCHORS LOCATED IN CIRCULAR MANNER IN A PERIMETER CIRCLE OF 25-1/2" DIAMETER.
 - 5.3. TEN (10 ANCHORS) SPACED EVENLY ON 25-1/2" DIAMETER ARE SPACED 8" ON CENTER (O.C.).
 - 5.4. SPACING MAY BE LESS BUT CANNOT EXCEED 8" O.C.
 - 5.5. SPACING WILL BE LESS WHEN ANCHOR QUANTITY EXCEEDS TEN (10) ANCHORS.

PROJECT #411-0104

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10821 N. 23RD AVENUE
PHOENIX, AZ 85029

TITLE: ROOF MOUNTED SOLAR ATTIC FAN SHEATHING INST. OPTION - ANCHORAGE SCHEDULE & NOTES
PREPARED BY: RJA
DRAWN BY: RJA
DATE: 08/31/2011
SCALE: N.T.S.
DRAWING NO: NLS0005
SHEET: 5 OF 5



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