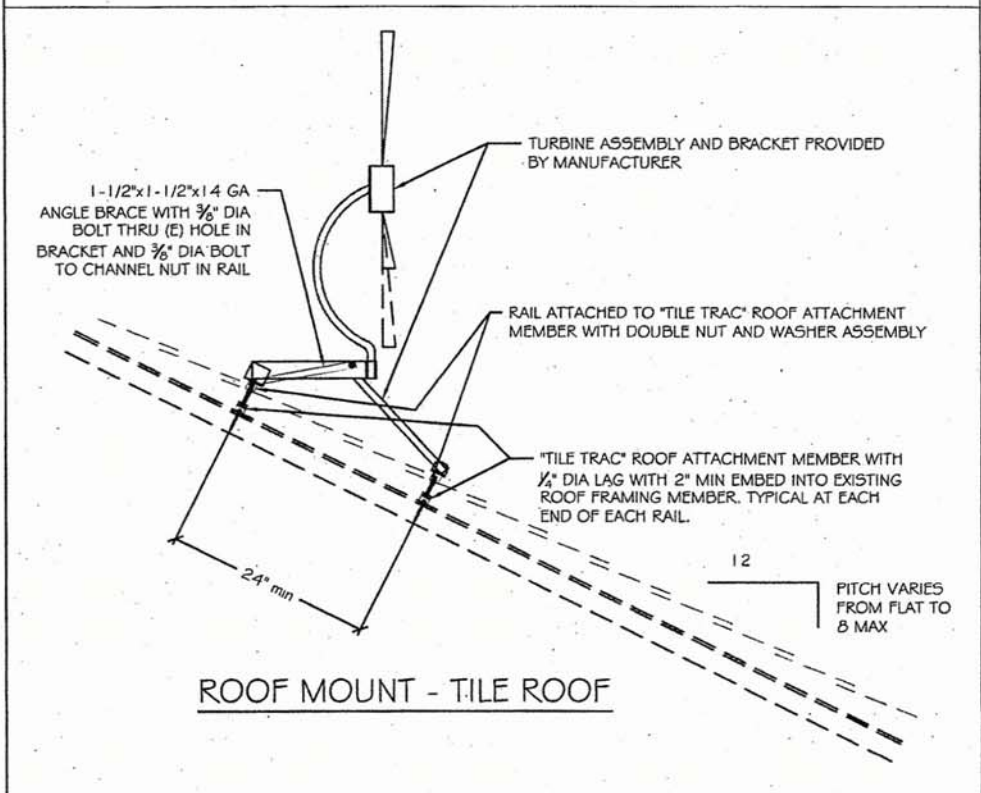
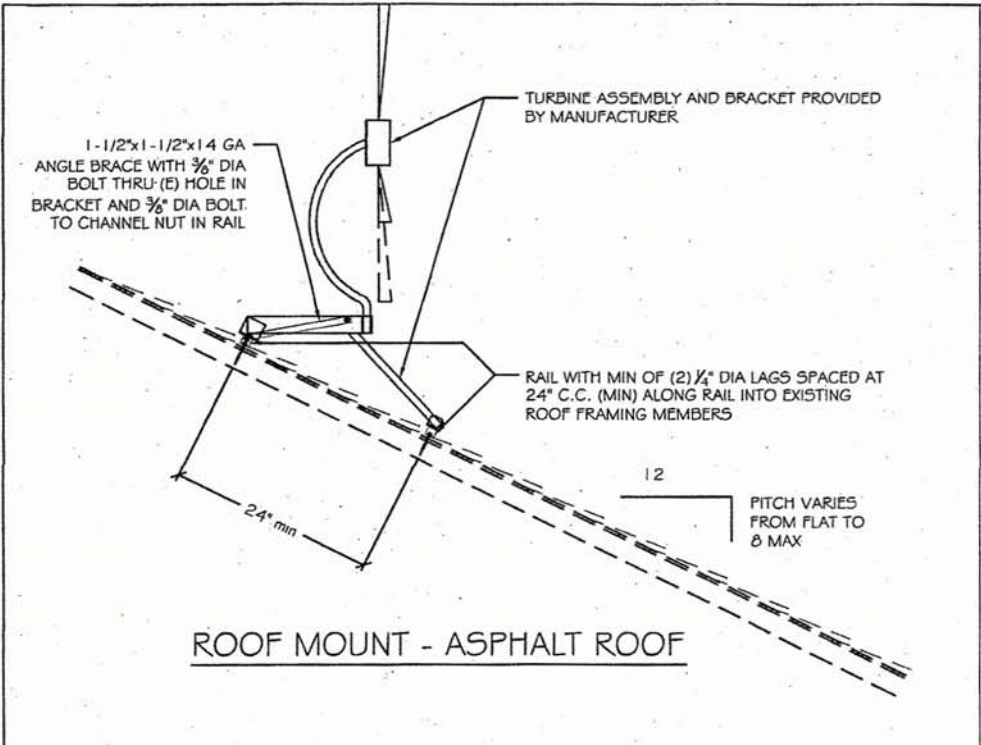
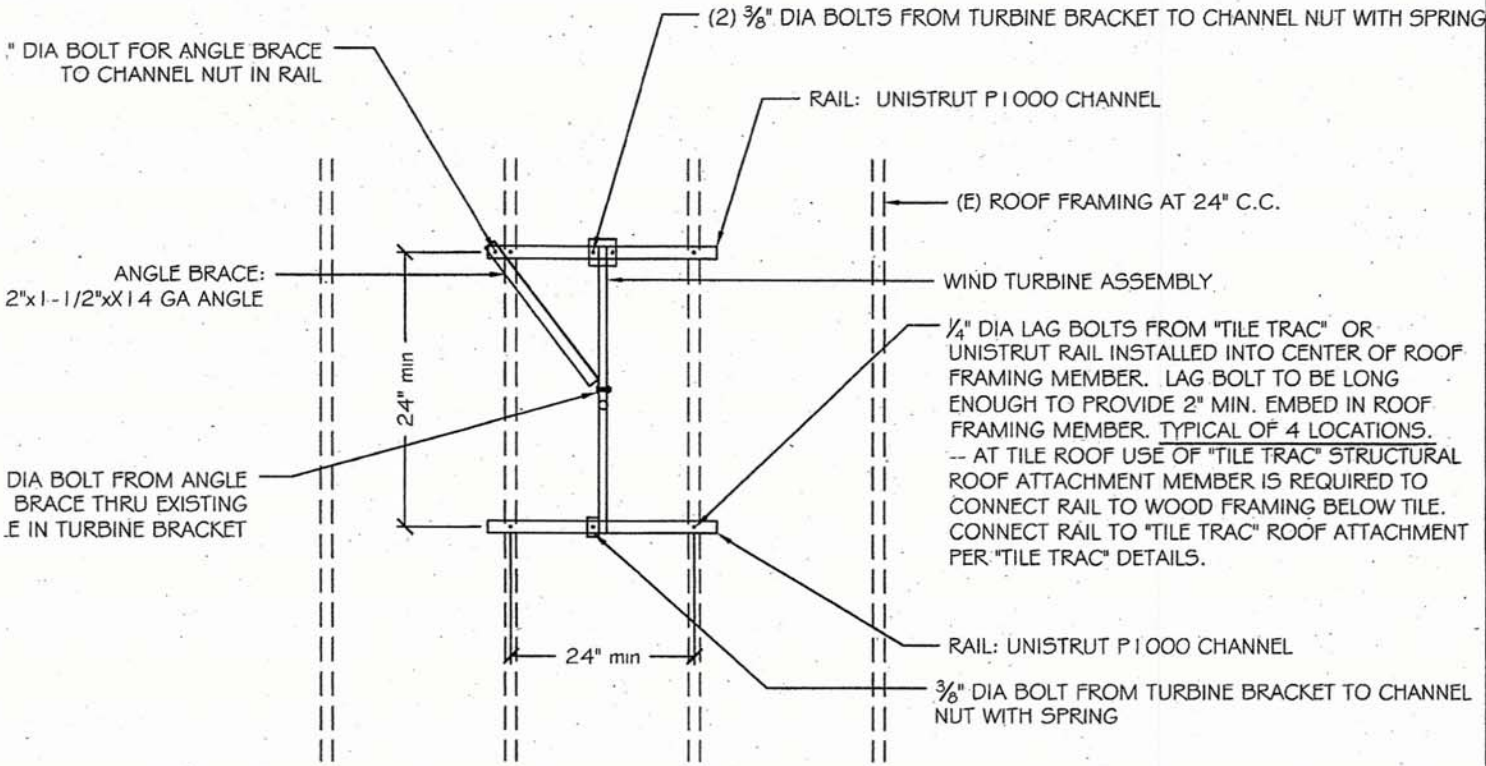


*Roof Mount  
Cases*



**NOTES:**

1. Design Loads:  
Wind: 85 mph Exp C  
Seismic: Site Class D, Ss= 1.50; S1
2. THE DETAILS SHOWN ON THIS SHEET AI  
STRUCTURAL CONNECTION ONLY. THE  
INSTALLING ALL CONNECTIONS IN A MAI  
DAMAGE TO THE EXISTING STRUCTURE.
3. THE RAIL MAY BE UNISTRUT P1000 MA'  
APPROPRIATELY SIZED CHANNEL NUTS /  
THE RAIL.
4. WASHERS ARE TO BE USED BETWEEN T  
TURBINE BRACKET.
5. BOLTS TO BE ASTM A307
6. LAG BOLTS ARE TO BE STAINLESS STEE  
ENOUGH TO EMBED A MINIMUM OF 2"  
ARE TO BE INSTALLED IN PREDRILLED H  
DIAMETER. LAGS ARE TO BE LOCATED  
FRAMING MEMBER. SOAP OR LUBRICA  
THE LAGS.



PLAN VIEW  
N.T.S.

60

INTENDED TO BE USED FOR THE INSTALLING CONTRACTOR IS RESPONSIBLE FOR THE DETAIL THAT PREVENTS WATER INTRUSION OR DAMAGE TO THE ROOF.

UNISTRUT P200 CHANNEL AND UNISTRUT P1000 CHANNEL TO BE USED FOR THE CONNECTIONS TO THE RAIL.

WIND TURBINE BRACKET AND THE RAIL OR UNISTRUT CHANNEL.

ALL UNISTRUT CHANNELS ARE TO BE LONG ENOUGH TO PROVIDE 2" MIN. EMBED IN EXISTING ROOF FRAMING MEMBER AND UNISTRUT CHANNELS THAT ARE 40% TO 70% OF SHANK WIDTH TO BE USED FOR THE INSTALLATION OF THE RAIL.



SIGNED: 5-24-10

THIS SHEET IS FOR USE ONLY BY THE CUSTOMER LISTED IN TITLE BLOCK.

**INFINITY ENGINEERING, L.P.**

9198 GREENBACK LANE, #116  
ORANGEVALE, CA 95662

(916) 987-0839  
(916) 987-7669 (FAX)

SCALE: AS NOTED

BY: JEH

DATE: 4-22-10

JOB NO: 10-133

**WIND TURBINE ROOF TOP MOUNT DETAIL**

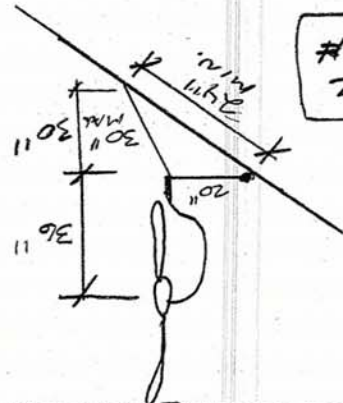
NORTHWEST EXTERIORS (916) 851-1632  
11200 SUN CENTER DR., RANCHO CORDOVA, CA

1 OF 1

CHECK RAFTS

$P = 120 \# + 288 \# \left(\frac{36}{20}\right) = 638 \#$   
 $M = 638 (24) = 3828 \text{ ft-lb}$   
 $\text{Span} = 24 \text{ ft}$

USE P100 (MIN) BRISTLE MATRANZ  
 (15/8" X 15/8" X 14 GA) MANU = 4060 #



CONNECTIONS OF RAFTS TO ROOF

$T_D$  (RAFT TO BRACKET) =  $288 \# (36) = 24 \text{ (2 COMPS)}$   
 $T_B$  (RAFT TO BRACKET) =  $288 \# (36) = 24 \text{ (2 COMPS)}$

$V = \frac{288 \#}{4} = 72 \# / \text{CONNECTION}$   
 $V_{ULT} = 100 \# > 72 \#$   
 $V_{COMBINED} = \frac{100}{72} + \frac{216}{358} = 1.32 < 1.33$

1. PROVIDE MIN OF (4) 1/4" Ø LRG BOLTS IN 24" X 36" (MIN) RECTANGLE. LRG'S TO BE LONG ENOUGH TO PROVIDE 2" EMBED INTO EXISTING RAFTER.

DESIGN: Ross Mount for Turbine

WT OF TURBINE + BRACKET = 120 #

WIND: 85 mph EXP 2'

$$F = qz G C_e A_t \text{ (ASCE 7-05 Eq. 6-28)}$$

$$G = 0.85$$

$$A_t = [C_e (40'') (3) + \pi (6'')^2] \left(\frac{1}{144}\right) = 4.35 \text{ SF}$$

$$C_t = 1.18$$

MAX H = 88' TO CURVE OF FNU. (Above Ground)

$$qz = 0.100256 K_z K_{zt} K_d V^2 (I)$$

$$K_z = 1.04, K_{zt} = 1.15, I = 1.0, V = 85$$

$$K_d = 0.85$$

$$qz = 0.00256 (1.04) (1.15) (85) (85)^2 (1) = 24.5 \text{ PSF}$$

$$F = 24.5 \text{ PSF} + (0.85) (1.18) = 37.5 \text{ PSF}$$

$$F_{LAT} (WIND) = 37.5 \text{ PSF} (7 \text{ SF}) = 262 \#$$

SEISMIC SDC = D, USE GROUP #1, I = 1.0

$$F_p = 0.4 (a_p) (SDS) (W_p) \left(1 + 2 \frac{h}{z}\right) \left(\frac{R_p}{I_p}\right)$$

$$a_p = 2.5, R_p = 2.5, z = 88, h = 38$$

$$SDS = 1.5$$

$$F_p = 0.4 (2.5) (1.5) (W_p) (1 + 2 \left(\frac{38}{88}\right)) \left(\frac{2.5}{1.0}\right) = 1.8 W_p$$

ASCE 7-05 (13.3)

(13.3-1)

(13.3-2)

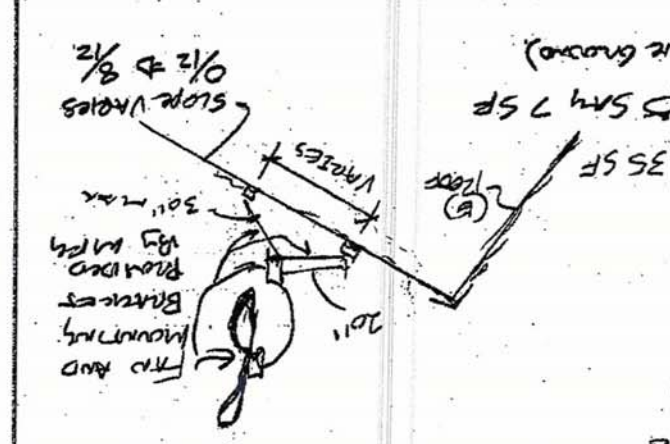
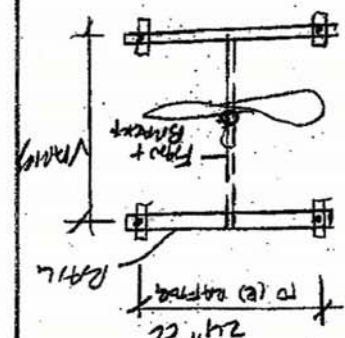
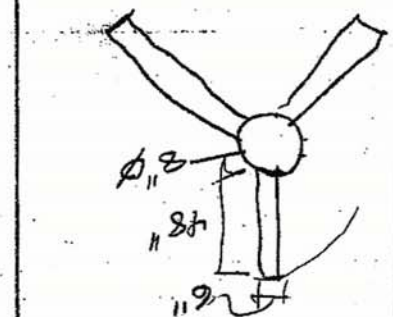
(13.3-3)

$$F_{LAT} (SEISMIC) = 2.4 (W_p) = 2.4 (120 \#) = 288 \#$$

$$F_{PMAX} = 1.6 (1.5) (1) (W_p) = 2.4 W_p > 1.8 W_p \Rightarrow 2.4$$

$$F_{PMIN} = 0.3 (1.5) (1) (W_p) = 0.45 W_p < 1.8 W_p \Rightarrow 1.8$$

DESIGN FOR WIND  
DESIGN FOR SEISMIC  
TO SDS = 2.0



CAMPAD

# ∞ Infinity Engineering, L.P. ∞

9198 Greenback Lane, #116, Orangevale, CA 95662  
916-987-0839 - Ph 916-987-7669 - Fax

**PROJECT:** Standard Attachment Calculations for Roof Top Mount of SolAir(tm) wind/solar hybrid 800 watt turbine

**CLIENT:** Northwest Exteriors

**JOB NUMBER:** 10-133

**ROOF LIVE LOAD:** N/A PSF

**ROOF DEAD LOAD:** N/A PSF

**CEILING LIVE LOAD:** N/A PSF

**CEILING DEAD LOAD:** N/A PSF

**WALL DEAD LOAD:** N/A PSF

**FLOOR LIVE LOAD:** N/A PSF

**FLOOR DEAD LOAD:** N/A PSF

**DECK LIVE LOAD:** N/A PSF

**DECK DEAD LOAD:** N/A PSF

**WIND:** 85 mph Exp 'C'

**SEISMIC:** Site Class D, Use Group II, Design Category D

**ALLOWABLE SOIL BEARING:** N/A PSF

**Code:** 2007 C.B.C., ASCE/SEI 7-05

**DATE:** 4/21/10



4-22-10  
pp 1-2