Mojave Bloom: Designing a Net-Zero Veteran's Transitional Home

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Target Market

3,275,000
LIVING POST 9/11 VETERANS

970,000
FACE DISABILITY DUE TO WAR

750,000
REPORTED CASES OF PTSD

2,216
MAJOR LIMB AMPUTATIONS

*January 2001 - October 2017; National Center for Veterans Analysis and Statistics

Architecture

- Inspired by traditional desert courtyard living
- Fostering a strong indoor/outdoor relationship

Las Vegas, Nevada

San Miguel de Allende, Mexico

Aleppo, Syria

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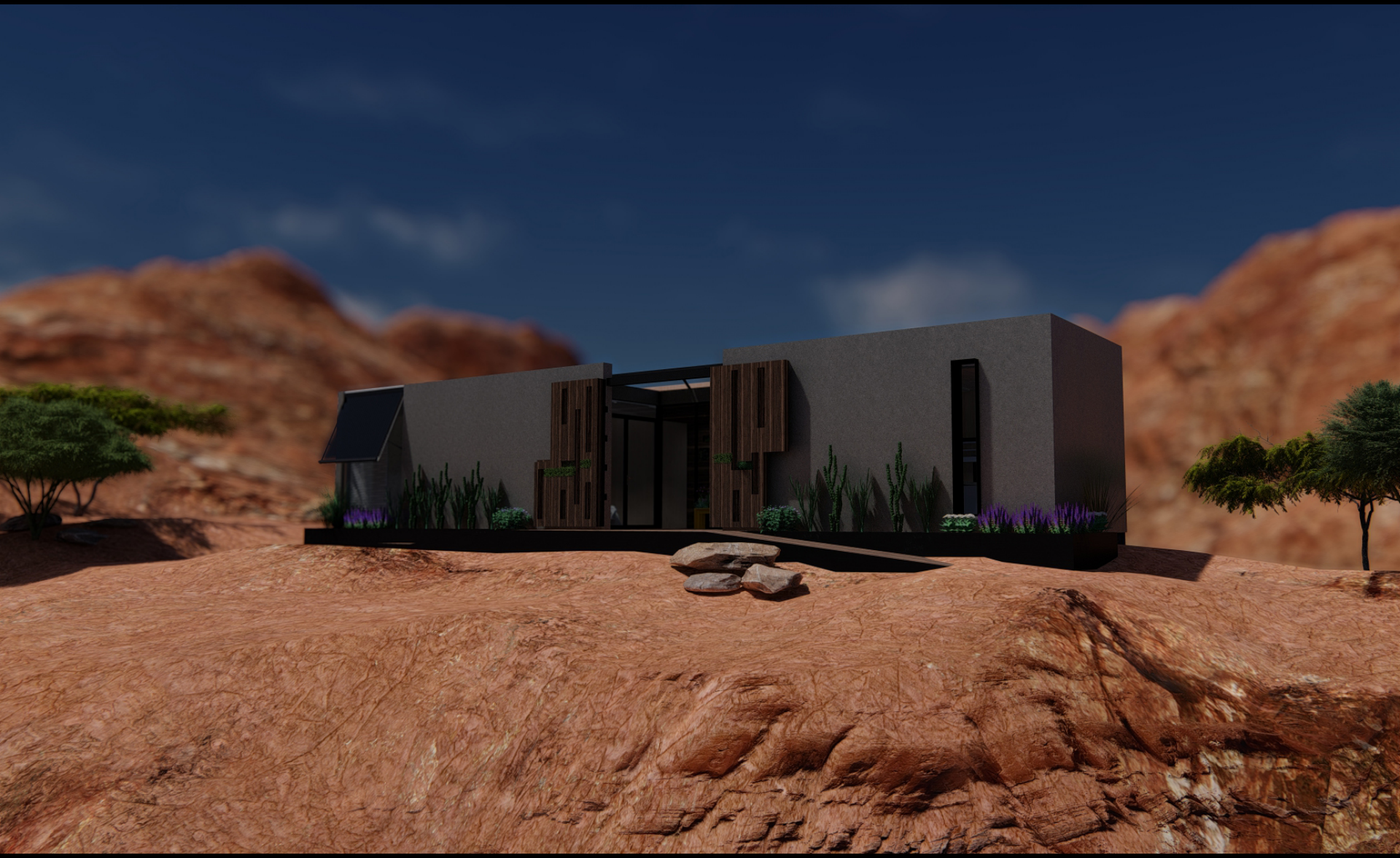

Design Features

P.T.S.D. (triggers)

- Confined spaces
- Lack of sight lines

- Prospect/refuge layout
- Open layout

- Disconnection/ isolation
- Sound

- Connection to nature
- Ambient auditory stimulation

- Insomnia
- Hyperawareness

- Rebalance circadian rhythm
- Distraction

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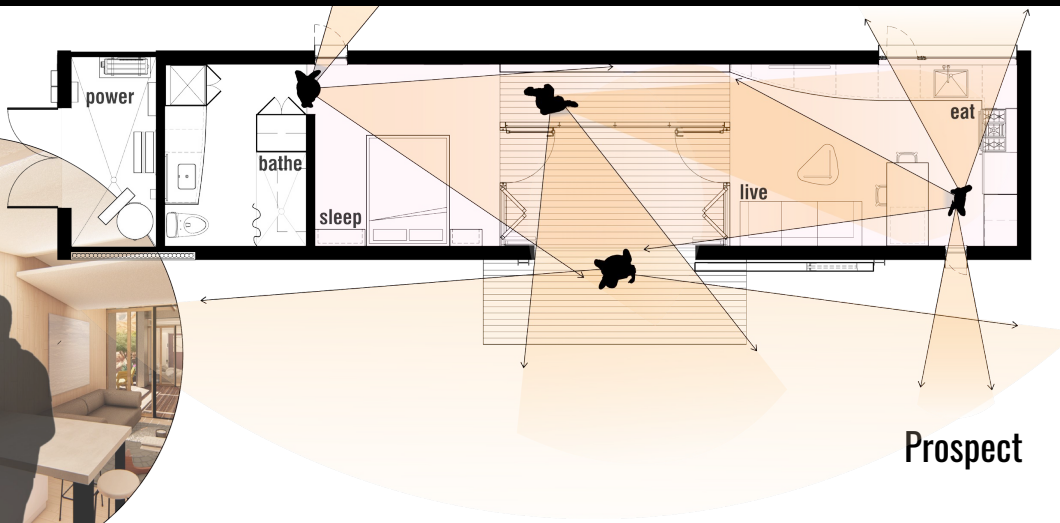
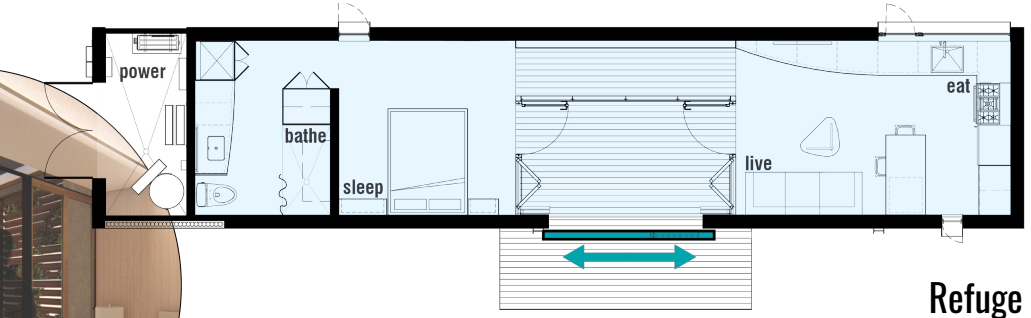
Design Summary

Prospect + Refuge:

- Clear sightlines
- Reduction of visual and physical confinement
- Afford but do not require interaction



Prospect



Refuge

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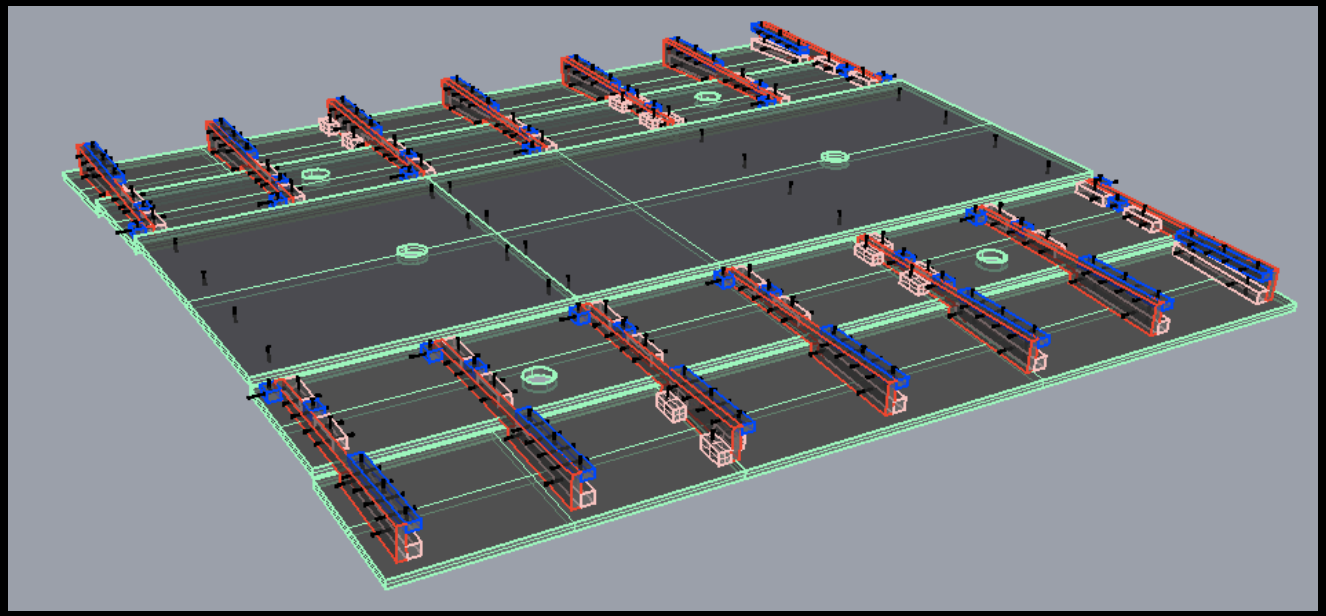
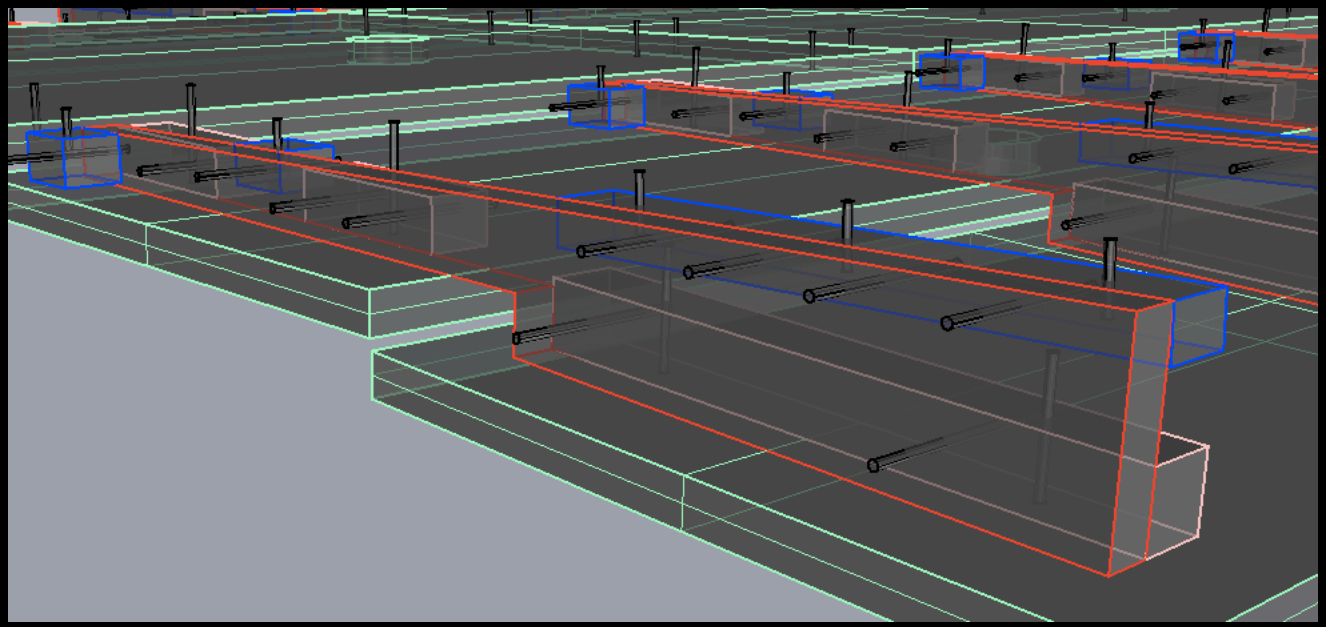
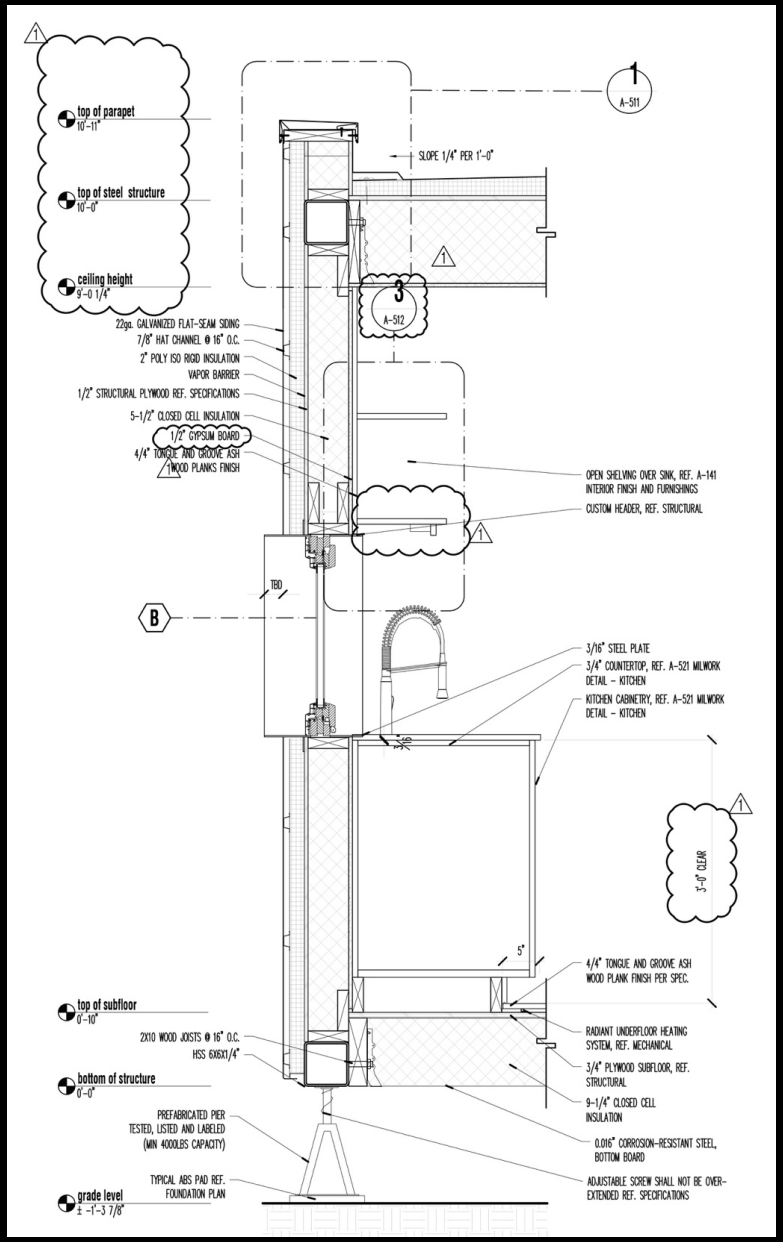
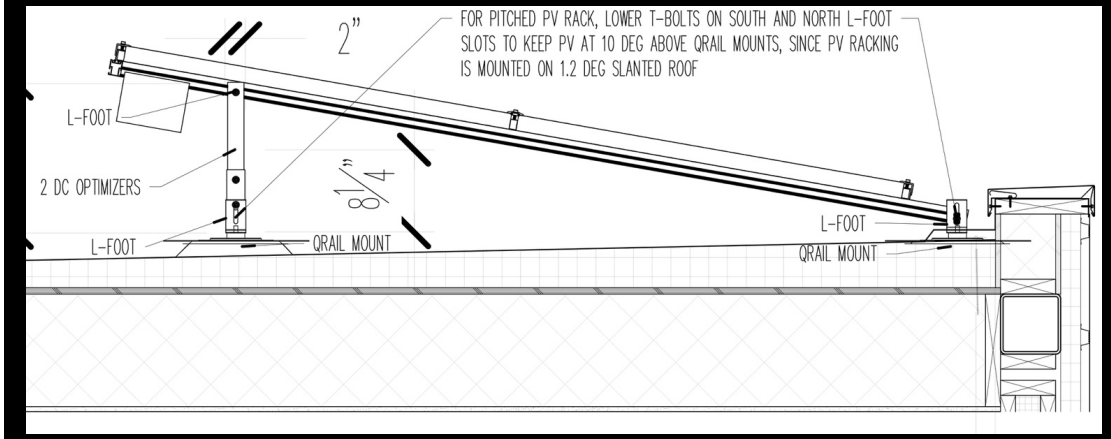
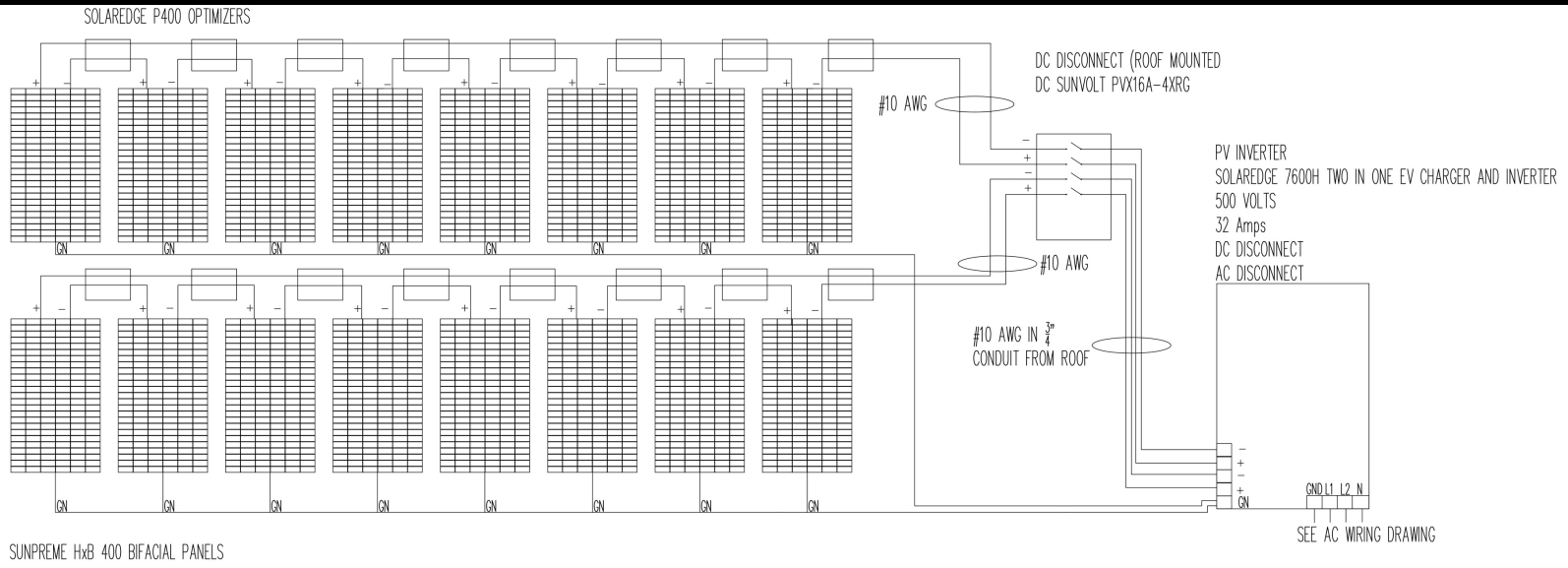
Microwave Brownor






top of parapet
10'-11"
top of steel structure
10'-0"
ceiling height
9'-0 1/4"
SLOPE 1/4" PER 1'-0"
A-511
A-512
22ga. GALVANIZED FLAT-SEAM SIDING
7/8" HAT CHANNEL @ 16" O.C.
2" POLY ISO RIGID INSULATION
VAPOR BARRIER
1/2" STRUCTURAL PLYWOOD REF. SPECIFICATIONS
5-1/2" CLOSED CELL INSULATION
1/2" GYPSUM BOARD
4/4" TONGUE AND GROOVE ASH WOOD PLANKS FINISH
OPEN SHELVING OVER SINK, REF. A-141 INTERIOR FINISH AND FURNISHINGS
CUSTOM HEADER, REF. STRUCTURAL
TBD
B
3/16" STEEL PLATE
3/4" COUNTERTOP, REF. A-521 MILWORK DETAIL - KITCHEN
KITCHEN CABINETRY, REF. A-521 MILWORK DETAIL - KITCHEN
3'-0" CLEAR
5"
4/4" TONGUE AND GROOVE ASH WOOD PLANK FINISH PER SPEC.
top of subfloor
0'-10"
2X10 WOOD JOISTS @ 16" O.C.
HSS 6X6X1/4"
RADIANT UNDERFLOOR HEATING SYSTEM, REF. MECHANICAL
3/4" PLYWOOD SUBFLOOR, REF. STRUCTURAL
bottom of structure
0'-0"
9-1/4" CLOSED CELL INSULATION
PREFABRICATED PIER TESTED, LISTED AND LABELED (MIN 4000LBS CAPACITY)
0.016" CORROSION-RESISTANT STEEL, BOTTOM BOARD
TYPICAL ABS PAD REF. FOUNDATION PLAN
ADJUSTABLE SCREW SHALL NOT BE OVER-EXTENDED REF. SPECIFICATIONS
grade level
± -1'-3 7/8"


FOR PITCHED PV RACK, LOWER T-BOLTS ON SOUTH AND NORTH L-FOOT SLOTS TO KEEP PV AT 10 DEG ABOVE QRAIL MOUNTS, SINCE PV RACKING IS MOUNTED ON 1.2 DEG SLANTED ROOF
2"
L-FOOT
2 DC OPTIMIZERS
8 1/4"
L-FOOT
QRAIL MOUNT
L-FOOT
QRAIL MOUNT



1 **photovoltaic & dc wiring diagram**
NOT TO SCALE

photovoltaic components & sizing								
module specification			optimizer specification			inverter specification		
model	TSM-350DEG14.07(II)		model	SE P400		model	SE7600A-US	
pmax	350	W	pmax	400	W	nominal ac voltage	240	V
open circuit voltage (voc)	47.6	V	open circuit voltage (voc)	80	V	max dc voltage	500	V
max power point voltage (vmpp)	39.2	V	max power point voltage (vmpp)	8-80	V	max ac output current	32	A
short circuit current (isc)	9.54	A	short circuit current (isc)	NA	A			
max power point current (impp)	8.93	A	max power point current (impp)	15	A			
temp coefficient of voc	-0.29	%/DEG C	temp coefficient of voc	NA	%/DEG C			

string	module count	open circuit voltage at ashrae low temp (4 deg c las vegas)	open circuit voltage	max power voltage	short circuit current	max power current
string 1	9	9.45	9	350	NA	9
string 2	9	9.45	9	350	NA	9

Innovation

Adjustable evacuated tube collector

- Recesses vertically in wall for transport and protection
- Adjustable angle for location, seasonal performance, or hot water demand

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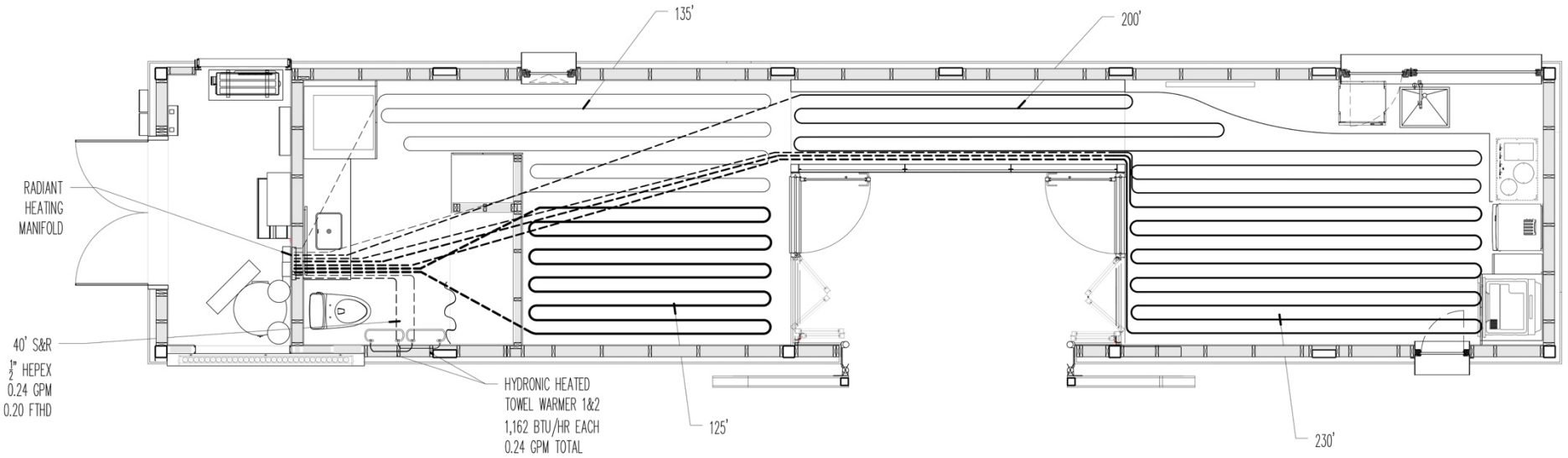

1 **radiant heating plan**
3/8" = 1'-0"

2 **radiant towel rack detail**
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3 **quik trak panels over wood sub-floor detail**
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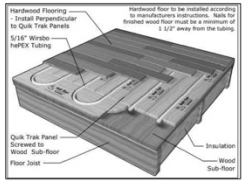

4 **radiant floor pipe chase detail**
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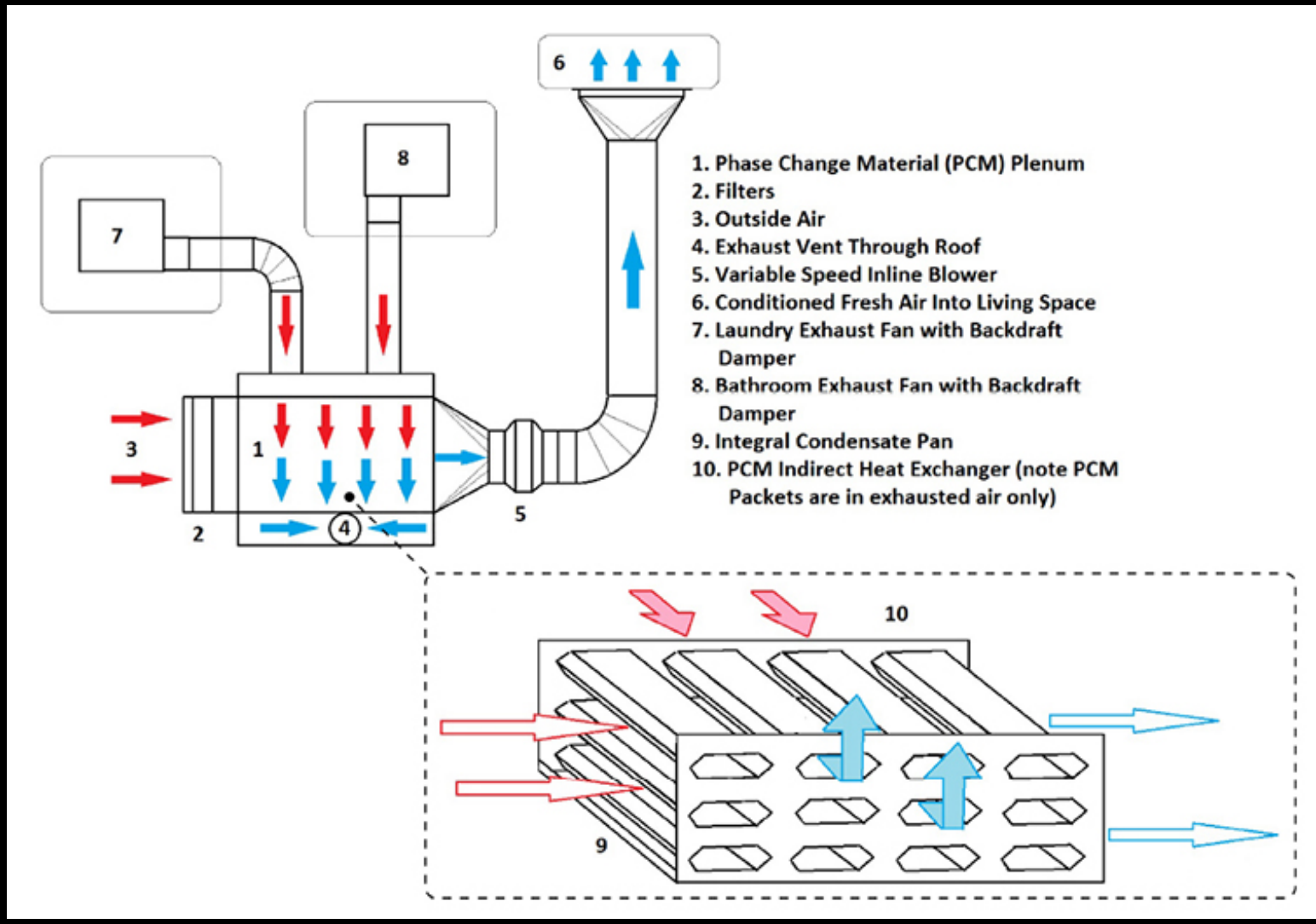
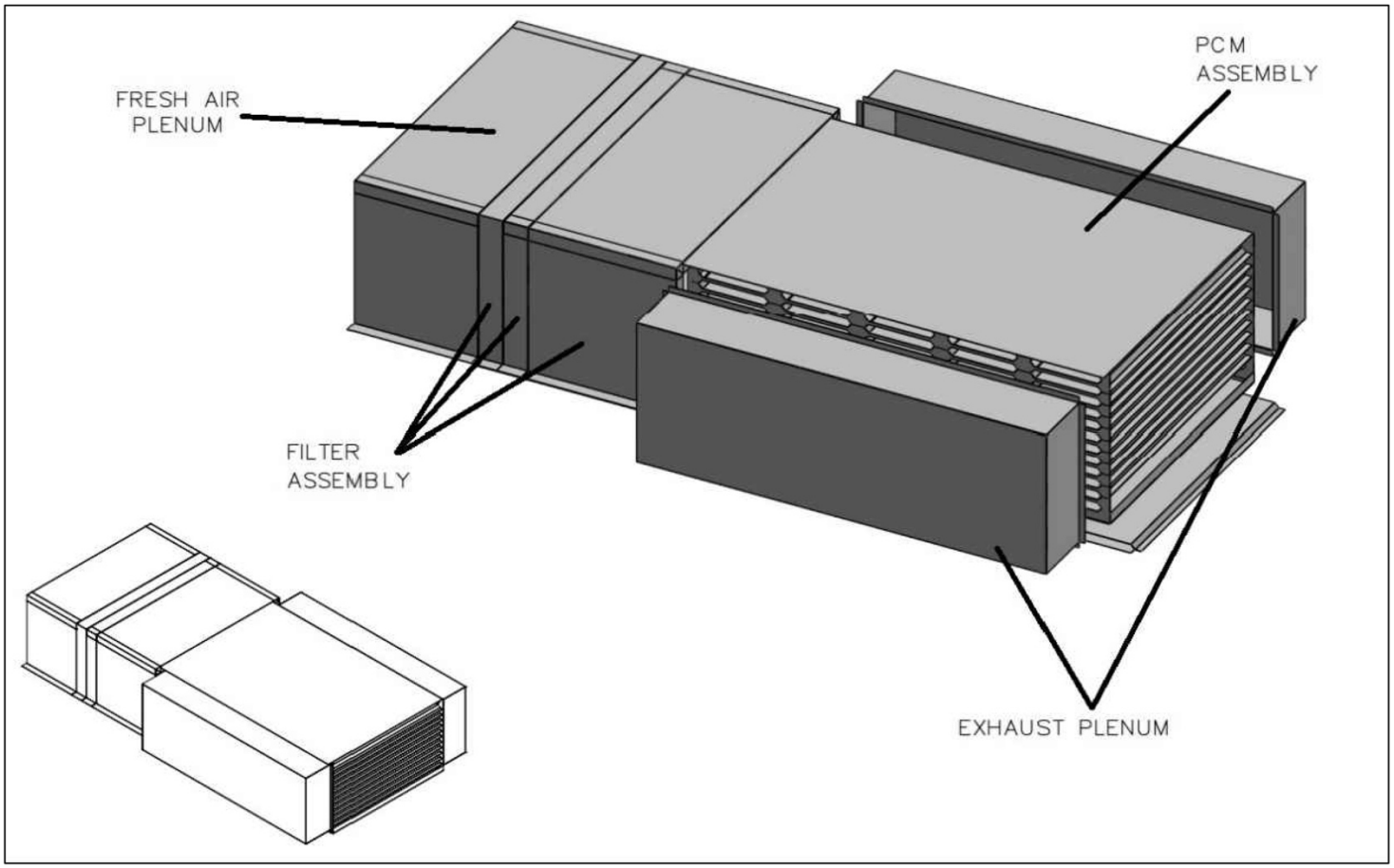
general sheet notes
1. REFER TO P-602 FOR PIPING DIAGRAM
2. INSTALL JOIST TRAK PER CONSTRUCTION SPECIFICATION
3. PULL DIRECTION IS TOWARD MANIFOLD



1. Phase Change Material (PCM) Plenum
2. Filters
3. Outside Air
4. Exhaust Vent Through Roof
5. Variable Speed Inline Blower
6. Conditioned Fresh Air Into Living Space
7. Laundry Exhaust Fan with Backdraft Damper
8. Bathroom Exhaust Fan with Backdraft Damper
9. Integral Condensate Pan
10. PCM Indirect Heat Exchanger (note PCM Packets are in exhausted air only)



2 **pcm plenum assembly**

NOT TO SCALE