

Design & Construction Considerations

OBSERVATORIES AT GMARS

Bit of Background

- Presenter: Ralph Megna
- Chairman, Riverside Astronomical Society
- Site Director (Station Master), GMARS
 - Goat Mountain Astronomical Research Station
 - Near Landers (near Yucca Valley), CA

Overview of Presentation

- What is GMARS?
- Site Master Plan & the Observatories
- Design Considerations
- Construction Realities
- Operational Experience

What is GMARS?

- Ten acre dark sky site near Landers owned & operated by RAS
- Initial purchase in 2002, expanded in 2008
- Site includes two houses, a large garage



GMARS from Space



On the Ground: Observatory Row



On the Ground: Observatory Row



Design Considerations

- Uniformity of appearance
- Modest – blend in with desert
- Permanency – minimum 15-year lifespan
- Tough – endure harsh conditions
 - Winds & blown sand
 - Vandals
- Adaptable for individual needs

Skyshed Chosen for Base Design



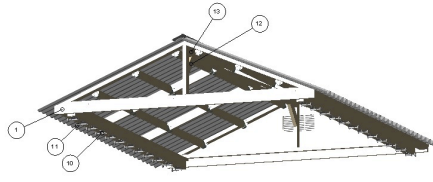
At **SkyShed** we provide quality Roll-Off Observatory Plans, Kits and Telescope Piers. We also manufacture SkySheds and can install one on your site.

SkySheds are suitable for the budding astronomer to the seasoned astro photographer.

Read **Todd Carlson's** great SkyShed review in "**Sky News**" magazine. Read it online [Here](#).



ITEM NO.	QTY.	PART NO.	VENDOR	DESCRIPTION
1	2	PINE 001 500-003 300-132 000		PINE 2" x 6" NOM x 10'
2	1	RUN10141		ROOF RUNNER NEAR SIDE 141"
3	1	RUN10140		ROOF RUNNER FAR SIDE 141"
4	2	OPF100		OSGEE PEAR 10"
5	4	PINE 001 500-003 300-094 125		PINE 2" x 4" NOM x 9'-4 1/8" MITERED
6	36	LINER	SIMPSON STRONG TIE COMPANY	ROOF TRUSS BRACKET
7	10	PINE 001 500-003 300-044 825		PINE 2" x 4" NOM x 7.5 5/8"
8	8	STEEL CL7040 000 032072 000	VICWEST	ROOF STEEL CL7040 x 210A x 6"
9	13	STEEL P41330 1150 000	VICWEST	ROOF STEEL CL7040 x 210A x 12 6"
10	24	SH7F01	IDEAL SECURITY INC.	GARAGE DOOR HINGE / ROLLER CARRIER
11	24	SH7F01	IDEAL SECURITY INC.	GARAGE DOOR STEEL ROLLER
12	2	PINE 001 500-003 300-012 000		PINE 2" x 4" NOM x 5-1/2' MITERED-45 DEG x 2
13	1	PINE 001 500-005 300-137 000		PINE 2" x 6" NOM x 11-6"



Skyshed Design Issues

- Strengths
 - Use of garage rail for roof system provided for positive hold-down of roof
 - Overall design relatively easy to construct
 - Adaptable to individual needs
- Weaknesses
 - Some elements unsuitable for desert location
 - Foundation
 - Walls

Upgrades to Original Design

Solid T-111
Exterior
Walls



Concrete
Footing &
Foundation

Laminated Outriggers
for Rails & Post Adjusters

Foundation



Foundation & Footings



Floor Module



Walls



Roof & Rails



Strong Roofs



Interior Finishes



Interior Details



Warmroom Option



Operational Experience

- Pleased with overall “toughness”
- Roll-off roofs biggest variable
 - Every roof is a bit different
 - One roof rebuilt, another likely
 - One was too “light” and the other too “heavy”
 - Some discussion of motorized upgrades
- Dust infiltration is a problem
 - Everybody has vacuum cleaners, Swiffers

More Information

- RAS Website
 - <http://www.rivastro.org>
 - Click on links to GMARS
- Megnaritaville Observatory
 - <http://www.macastronomy.com>
- Ralph Megna: ralph@macastronomy.com