

Dome Sweet Dome - Part 2

In 2001 I agreed to write a short article on my adventures building an observatory on top of my garage and installing a second-hand 9-foot dome. The article ended with a delay in finding a supply of fibreglass matting, and the completion being put off till spring 2002.

Well, spring duly arrived and the matting had been supplied together with a nice green pigment to match the garage roof. A friend of the family let me have some GRP resin, so I started preparing the surface of the dome. It was now that I began to realise that the layers of flaking paint were going to take a lot of removing if there was going to be any dome left to renovate! I bought a cheap 4 ½ inch angle grinder from our local LIDL store and a supply of discs and very gently started to work on the surface. Early efforts tended to go through! After about three hours some 2 ½ square feet had been cleaned up, this was going to be a very long job!!

The dome had been made of fibreglass, with two round segments separated by a two-foot wide parallel section. There were two sliding aluminium doors at the front. After two weeks the first segment was ready for the matting to be applied, two layers where damage had occurred plus one layer all over. A two-inch flange was built up around the doorway to assure that no water could get in. A final layer of resin with the pigment included and one side looked quite smart. The other segment was dealt with in a similar manner, but during this stage the resin ran out. I eventually found a supplier at Southport, five litres for a tenner, so I could proceed. If anyone needs this kind of material, Messrs GLASS PLIES, 2, Crowland St, Southport, Lancashire are very helpful. Tel. 01704 540626

The parallel section presented more of a problem because it had originally been made much thinner and tended to flex and the disc easily went through, but two layers of matting completed the dome. This work, with delays due to poor weather and obtaining supplies, took some three months. During this time I was informed that although Planning consent was not needed, I would need to apply for Building Regulations approval, (which took four months), and needed to supply five sets of drawings plus lots of explanation.

The difficulties were as follows: -

- 1, the final assembly must be such that the telescope could not be aimed at an angle less than 10 degree above the horizontal. This so that I could not be accused of pointing it at neighbouring bathroom windows!
- 2, the green resin had sheen and the inspector wanted it to be matt. He reluctantly agreed to the finish on seeing a sample.
- 3, if the Observatory was not used for a period of 12 months it had to be dismantled and removed!

My attention was now turned to the doors. Four problems emerged:-

- 1, the original sheets were not too small to cover the opening and overlap.
- 2, the tubular steel frame was badly rusted at one corner.
- 3, the wheels top and bottom did not run freely.
- 4, it was necessary to arrange some security.

Two aluminium sheets were obtained, 3 inches bigger in both directions. The left hand sheet was folded under by a half inch at both sides to form a drip. The right hand door was treated the same at its right hand edge but the left side was folded upwards by an inch and not clenched up tight. This formed a groove to guide the water away, but it did cause a problem making the curve to fit the frames, especially at the top where three inches were gently rolled over to keep water out of the guides.

The steel frame was cleaned up with the angle grinder, then a short piece of tube was welded in as were two brackets, one on each door so that on meeting, a padlock could be passed through. Two coats of Hammerite and the sheets were pop riveted to the frames with some packing. Both doors were given 2 coats of the same green resin finishing this stage.

The wheels and axles were replaced with new ones made in the workshop.

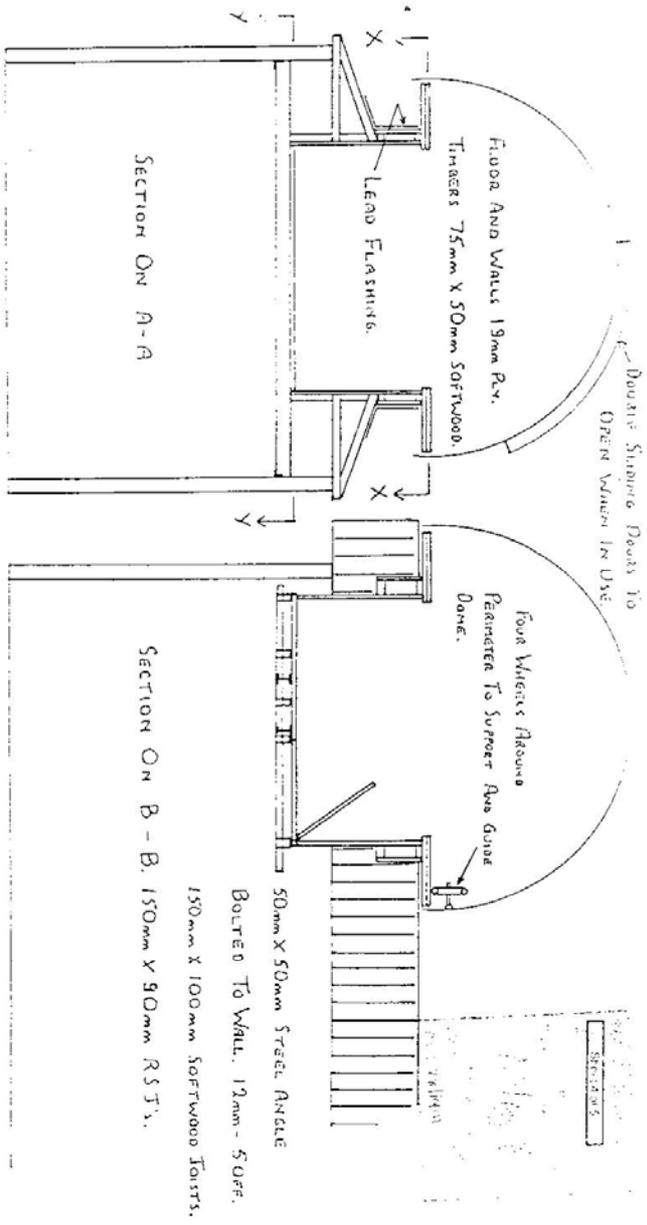
With this out of the way the dome was ready to be lifted onto its base, which had been waiting for over a year. After weeks of poor weather the forecast was fair for the last Sunday morning in November so I made an early start erecting tower scaffolding and my 2 sons arrived. When we were about half way between the flat roof of the house extension, where it had spent 18 months, and its new home it began to rain. Being beyond the point of no return we carried on and by the time we removed the covers it was pouring. One last effort and it was there and the doors closed. The 2 sons disappeared and I spent most of the afternoon with mop and hot air gun, but I'm glad to say that not a drop of rain has entered since!

Next it was decided to install 4 short lengths of chain, fitted with padlocks, to the corners of the observing area so the dome could be held securely when not in use. Whilst arranging this it was found to be very draughty due to the 1-inch gap all round the perimeter and it was felt that water could bounce in from the garage roof during squally weather. I had lots of off cuts of butyl pond liner material so 3" strips were fitted all round the bottom inside edge to guide water away. Similar strips were fitted all round the plywood perimeter to protect the edge. The effect of these was that the wind tended to close the gap reducing the draught somewhat. The final solution was to obtain nine draught excluder strips of the carbon fibre bristle type and bend these to the same radius as the base. It was found that if the back of the aluminium extrusion was ground away except for a small section around each fixing hole it was quite easy to form a suitable curve. A bit of luck here, the nine sections fitted perfectly!

A problem has occurred with condensation on the metal doors and a partial solution has been to fix, with double sided sticky tape, the polystyrene underlay as used under laminate flooring. A heavier grade would be much better. Can anyone out there suggest a supplier? The tubular frame was covered with polystyrene pipe lagging.

At long last I can begin to Observe in comfort! Phew!

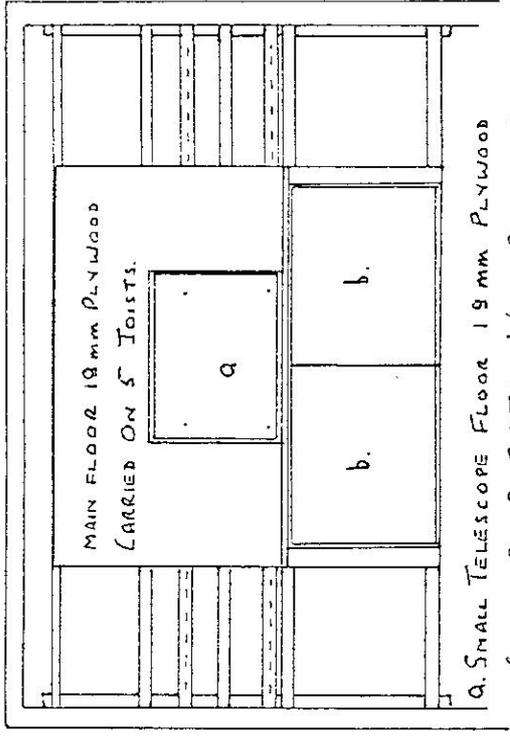
Gordon Wilkinson
Wilkinson.g@btopenworld.com



Proposed Installation of Fibre
 Mr. G. W. Johnson
 14 Hazledene Rd
 Nelson, Boro 981
 Day Tel 612201, Home 613553

SECTION ON X - X

SECTION ON Y - Y



a. SMALL TELESCOPE FLOOR 19 MM PLYWOOD CARRIED ON 2 RST'S WITH PACKING TO REDUCE VIBRATION.

b. TRAP DOORS TO GAIN ACCESS FROM GARAGE VIA ALUMINIUM LADDER.

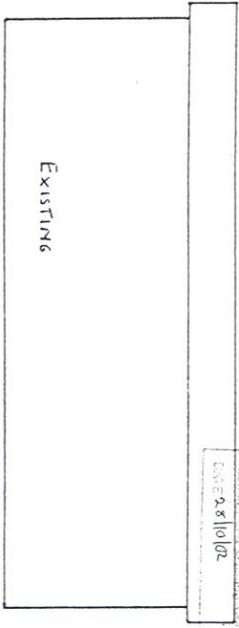
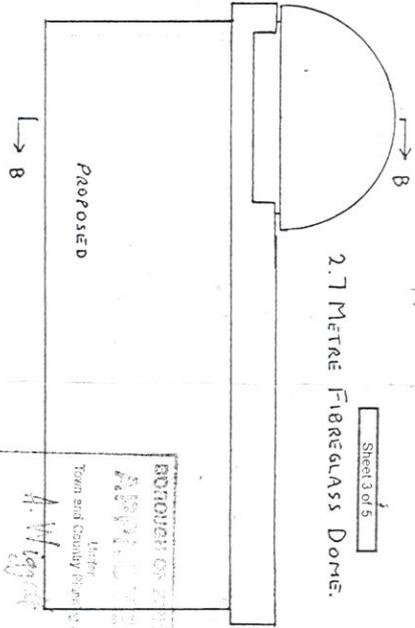
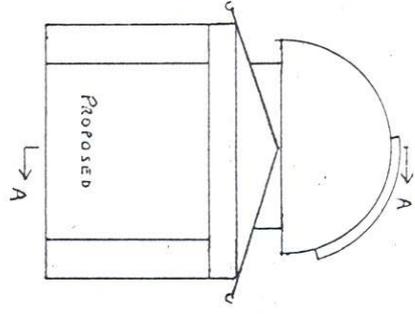
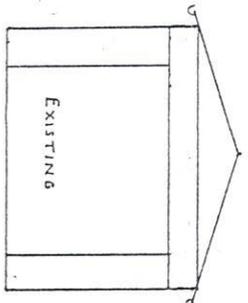
SCALE 1 : 25



Proposed Installation of Dome,
Mr G Wilkinson
14 Hazelwood Rd
Nelson, BB9 9NF
Day Tel 612901, Home 613699

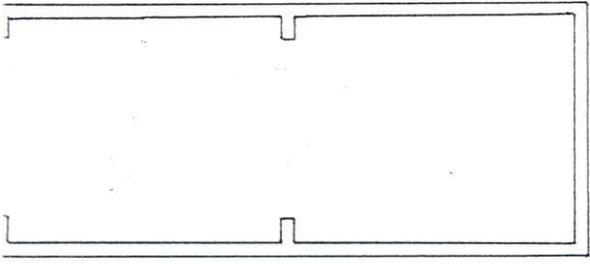
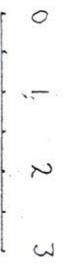
Sheet 3 of 5

2.7 METRE FIBREGLASS DOME.



REGISTER OF PLANNING
 Planning Department
 District Council
 Nelson and Marlborough District Council
 4. W. 19/04
 Planning and Resource Control
 Case 2011/02

EXISTING AND PROPOSED
 ELEVATIONS AND PLAN.
 GARAGE WALLS 150mm
 THICK HOLLOW CONCRETE
 BLOCKS.
 ROOF OF 19mm PLYWOOD
 WITH PLASTIC COATED
 STEEL OVER.
 SCALE 1:50.



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