

BRUCE ROBERTS BOAT PLANS



AMATEUR BUILT ROBERTS WAVERUNNER 40

Thank you for your interest in Bruce Roberts designed plans for amateur building. This brochure contains a brief resume of the available plans and building techniques which can be used by anybody even if they have no previous boatbuilding experience whatsoever.

R. BRUCE ROBERTS-GOODSON (Assoc) S.N.A.M.E.



**AMATEUR BUILT ROBERTS OFFSHORE 44
—BUILT IN NINE MONTHS BY HUSBAND
AND WIFE TEAM.**



AMATEUR BUILT ROBERTS WAVERUNNER 36



**ROBERTS TRAILER/SAILER 22.
FIBREGLASS MATERIAL COST \$1000.**

Build your boat for less.

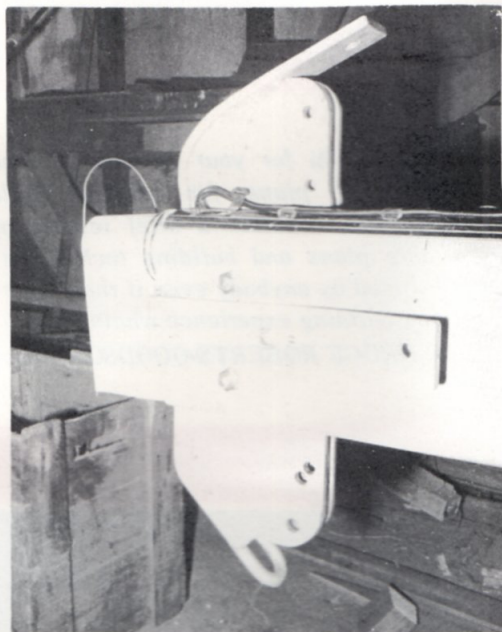
by BRUCE ROBERTS-GOODSON

Amateur Boat Building along with everything else has increased in price over the past years. It is now time we took a hard look at some of the practices and methods we have used and perhaps a look over our shoulder is in order.

In this modern world we have progressed far. New methods and materials have come along to make the amateur boat builder's job much easier. Along with the modern materials and methods has come an inclination to do things the easy way. Now we are finding that some of the easy ways are also the expensive ways. Now it is time that we had a good hard look at the building methods, the materials we use and the ways in which an amateur builder can build his boat in the most economical manner. 'Build for less' is going to be our watchword for the present and the future. I will detail the many ways in which I believe the amateur can save himself a considerable amount of money during the building of his boat. In fact he can start saving even before commencing to build as there are many phases of the preparation where expense is involved and this can be kept to a minimum as outlined later.

There are many people who can well afford to buy all the odds and ends that go with building a boat, there are others who are not so fortunate and who have to watch expenses and so it is to those people I make these suggestions in economy. Once a person has become interested in building a boat it becomes a passion, it becomes a thing that he must do and he must do now. There are many things that the prospective builder can do to make it easier for himself once the building commences. Preparation is very important and can actually save a considerable amount of money.

As many of you would know we have had many years of experience in helping amateurs achieve their ambition of building and owning their boat. We are now hoping to put some of the experience to a practical use of keeping the cost down. 'Build for less' must be our thought for now and the future. The first thing anyone will do when they decide to build a boat is to search around for a suitable design. What a job this is, there are literally thousands of boat designs available for the amateur builder, they cover every conceivable type of vessel and most building materials. Plans range from one to two sheets of basic drawings through to the elaborate plans covering 20 or 30 sheets of detailed drawings and including full size patterns. The prospective builder has to search out what each designer has to offer and what designs are available to suit his requirements.



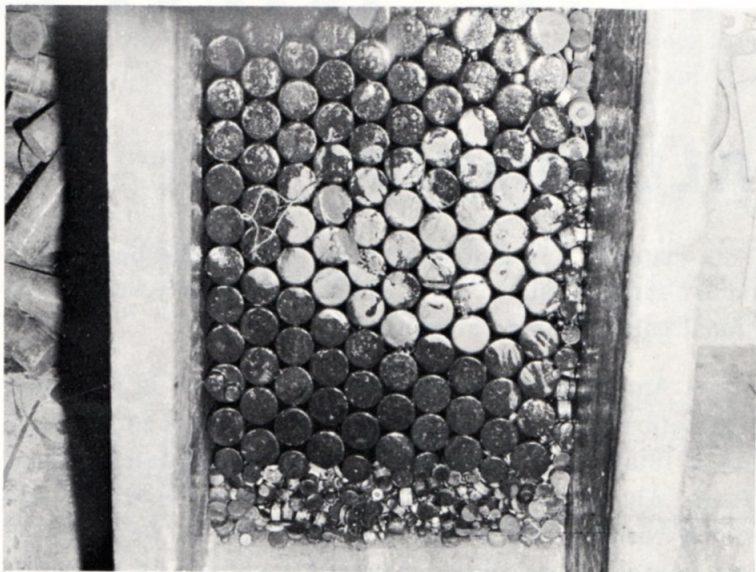
THIS SIMPLE MASTHEAD FITTING COST LESS THAN \$5 TO MAKE AND WOULD COST \$25 IF BOUGHT READY MADE

BUILD FOR LESS contd.

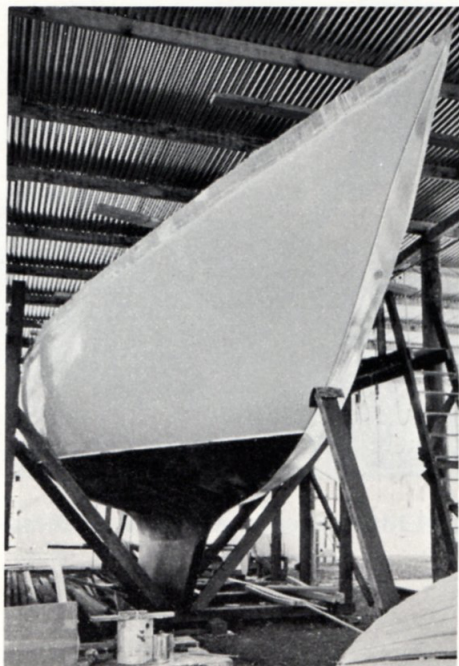
The builder will have to decide the material which suits him best the materials such as fibreglass, steel, plywood, timber, aluminium ferro-cement and in some cases a combination of all these are most confusing to our prospective builders. However, there are many things to help him to decide which he should use. First he will have his personal preference, let us hope that this is guided by, and tempered with other points such as availability of materials, cost of materials in this area and conditions under which the boat will be built. All these things will have a large bearing on the final choice as regards the material most suitable for individual builder.

As the choice of a material is tied in with a choice of a design let us now go through and give what I hope is a fair assessment of each material, its advantages and draw backs and any points which may be helpful to the amateur builder in making his final choice.

To avoid any hint of favouritism we will treat each material in alphabetical order.



This Ballast is Tractor Track pins set in Resin/Bog — cost builder only the transport of the scrap. Many Bruce Roberts designs call for scrap steel ballast.



The ROBERTS 45 can be built in moulded Plywood or Fibreglass

THE MATERIALS

ALUMINIUM

This material has gained in popularity in the past few years as a medium for building ocean racers and high speed sport fishing craft. Many vessels have been successfully built by professional builders using aluminium.

Argon Arc Welding and other new techniques in handling aluminium have made it possible for light strong but reasonably expensive yachts to be built using the material. While aluminium has a future in the yachting industry, I hesitate to recommend it for amateur builders at this stage. Aluminium is a material that could be widely used in the future, certainly by professional builders and possibly by amateurs as well. However the processes to build an aluminium vessel are relatively new and too little is known about the long term qualities for us to recommend it for amateur builders at this stage.

We are certainly interested in designing aluminium vessels, however we feel that the building of these is best left to the professionals at present.

We hesitate to write aluminium off as an amateur boat building material in so short a space of words, however, we feel that a lot more development work will need to be done before we can make aluminium as good a proposition to amateur builders as other materials.

How about having the hull shell, built by a professional and then completing the remaining work in plywood or fibreglass!!

FERRO CEMENT

Ferro-cement as we know it to-day was invented by the French who called it Ferciment, they used this material around 1855. Boats are still in existence to-day which were built in this period.

Many Ferro-cement boats were built by the Italians in the 1940's and they called the method of construction Ferro-Cemento which of course is the obvious Italianisation of the French term.

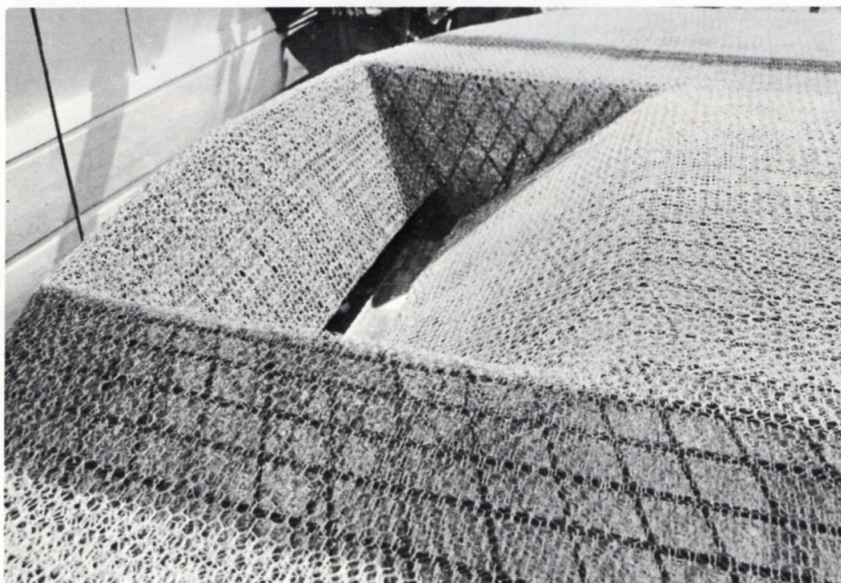
In Australia, Canada and New Zealand many Ferro-cement boats have been built over the past 10 years. The material is certainly out of its proving stage and one does not have to look back as far as 1855. Many successful Ferro-cement boats have been built and extensively cruised over the last 10 years.

In some ways Ferro-cement is akin to fibreglass. Let us look at the netting and rods as reinforcement similar to rovings and chopped strand mat, in a fibreglass boat the resin is replaced by the cement mortar. The systems have much in common.

While Ferro-cement does not have the ultimate strength of a fibreglass boat, it does have sufficient strength for ocean voyaging.

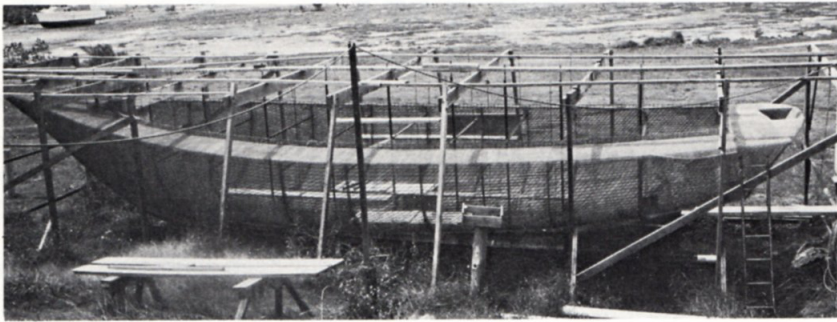
Of course most of us have seen some horrible examples of the Ferro-cement arts. It was only two days before I wrote this paragraph that I looked at a couple of Ferro-cement boats that would make one shudder. However, people who turn out this type of Ferro-cement abomination would do just as badly if they built in some other material. We will have to discount these examples when giving a fair assessment of the Ferro-cement technique. There are now many

good books on the market regarding the building of Ferro-cement boats so I will not go too deeply into the building techniques, however, I personally favour a combination of longitudinal and diagonal rods which are backed up by a series of webb frames. This definitely makes the strongest construction technique.



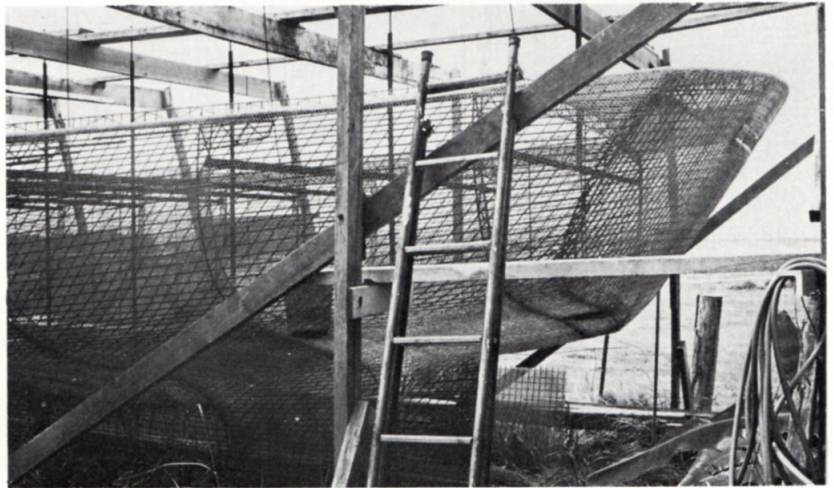
Neat Rods and Mesh layup on ROBERTS SPRAY.

FERRO CONSTRUCTION



General View of
ROBERTS "SPRAY
VARIANT"
being built using the
Ferro Cement technique.

The variation that gives
this Roberts Spray version
her name — The improved
TRANSOM STERN — allows
self steering vane to be
easily fitted.



Bow of ROBERTS SPRAY
VARIANT (Ferro Version)

Several Bruce Roberts Designs are suitable for Ferro construction, and plans are available. If you wish to build in Ferro, write for additional details.

FERRO CEMENT (contd)

Whether to use chicken wire or weld mesh is largely a choice made on the availability of materials. In some areas it will not be possible to get the weld mesh or conversely the chicken wire so one has to use the material that is easiest to secure. All of the materials are quite satisfactory and in our own designs we show chicken wire as this is most readily available in all areas.

There has been one flaw that has been built into many Ferro-cement hulls and this is interaction between certain of the metals which sets up hydrogen bubbles which will damage the bond between the cement and the steel. This phenomenon has been noted by a number of amateur and professional builders and owners in recent years. Some discovered it in an investigation of rust stains. Drilling in they found cavities around the steel. Others saw it while repairing fractures after collisions or groundings.

Fortunately, in future boats the solution to the problem of hydrogen bubbles is a simple one, all that is needed is a little Chromium Tri-oxide or Chromic Oxide added to the mortar. The amount required is approximately 100 to 300 parts per million by weight added to water. As the use of this material in the mortar is important a record should be kept of the fact and certificate signed by the foreman plasterer would help proving at a later stage that the additive was used. This is how important we consider the use of CrO₃. This material must be handled with caution because it is very toxic to the skin and especially to the eyes, the crystals which are usually packaged in plastic bags must be kept from moisture until they are actually added to the mixing water.

For a guide of how much to use it is recommended that two ounces CrO₃ for every gallon of mixed water is about right. I may add that the average 40' Ferro-cement sloop uses about 100 gallons of water. The cost of CrO₃ is about \$2 to cover this amount, it is interesting that such a small item could make such a big difference to the length of the life of a Ferro-cement boat.

Several of our designs are suitable to be built in Ferro-cement. We are now preparing additional designs to cover this medium and people interested in building in Ferro-cement and requiring custom designs may contact us for additional information.



ROBERTS 36 (Trunk Cabin Version)
Plans available for Ferro Cement.

FIBREGLASS

As our thoughts on fiberglass construction are well known there is very little need for me to elaborate here except to briefly outline the construction methods and alternatives available using these materials.

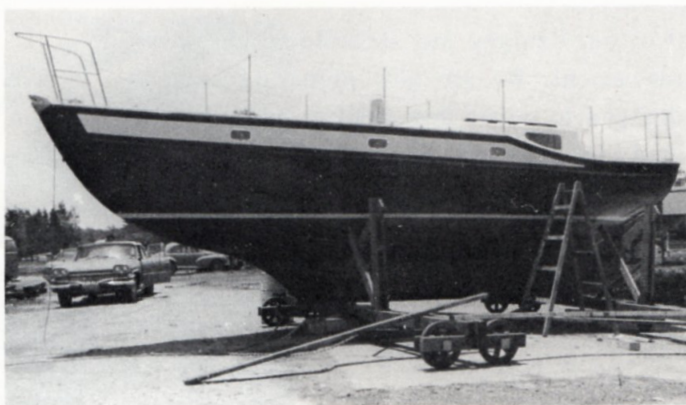
FEMALE MOULDED FIBREGLASS BOATS

In general this technique is only suitable for professional builders who have facilities and need to produce many Fibreglass vessels of the same design. In some cases it may be practical for an amateur builder to construct a hardboard or plywood lined mould to build a vessel of say 45' however, the design would need to be of the modified or deep 'V' type otherwise the building of the mould would be completely impractical. We have built this type of mould to build trawlers having taken two trawlers out of the one mould. The mould was cheap to build and quite a good solution for building a limited number of these vessels.

I think my advice to the amateur builder would be that unless he has intentions of producing more than one vessel he should stay away from the female moulding of hulls and leave this to the professional builder who has the need and facilities for same.



ROBERTS TRAWLER 45 female moulded in cheap ply mould at Marine Park.



ROBERTS 36 (Raised Deck) as female moulded at Marine Park.

SINGLE SKIN OVER FOAM

This technique entails the use of a batten mould ie., $1\frac{1}{2}$ x $\frac{5}{8}$ " battens fairly closely spaced laid up over sawn frames. To this a cheap polyurithane foam of say $\frac{3}{4}$ " thickness is sewn on sheets of 6' or 8' x 4' and the complete outer laminate of the Fibreglass is laid over this former. The hull is then turned up the right way and most of the foam is removed. In some of the smaller boats it is possible to put channels in the cheap foam and use a modified type of sandwich construction. It only applies in vessels up to 24'. In other cases it may be possible to have enough thickness in the outer skin so that stringers or reinforcements will be unnecessary. Bulkheads, furniture and the floors, will give adequate framing without the addition of ribs or stringers. This construction is generally limited to vessels up to 40' in length. With the addition of stringers and ribs a vessel of up to 100 feet may be built using this technique



Photo shows completed mould with foam attached.



Here we see C.S.M. pre-measured and fitted to hull prior to application of resin.

BALSA SANDWICH

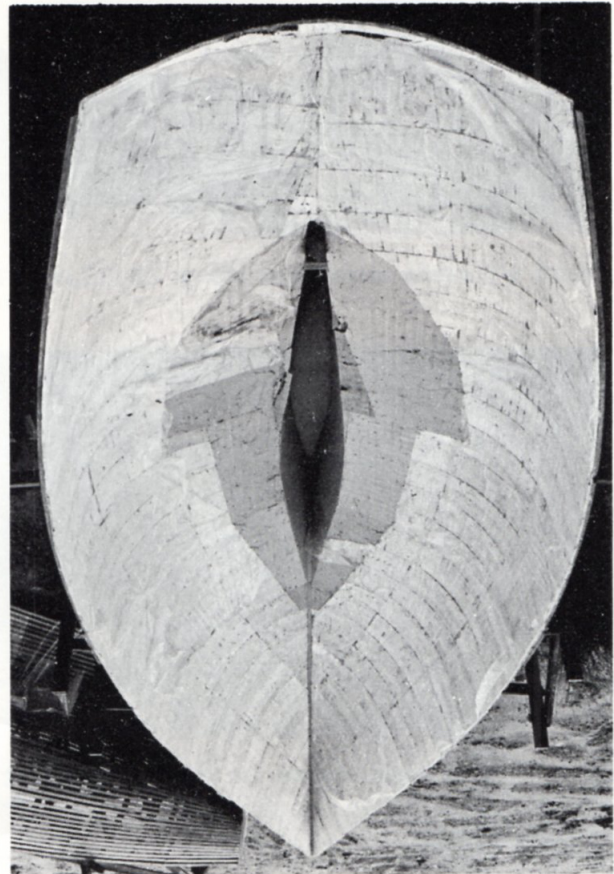
Balsa Sandwich Technique involves the use of a frame and batten mould and balsa sheets of approximately 1'6" x 3' are sewn onto the mould. The outer skin is laid up over this. The balsa comes in approximately 2" square blocks which are glued onto a scrim to make up the 1'6" x 3' panel. The balsa is quite flexible and lays around most compound curves without giving any unfair surface. In general balsa is limited to use above the water line although we do extend the balsa down to the cabin sole in line on most designs. Below the area of the cabin sole, cheap foam is used during the laying up stage and this is later removed from inside to give a single skin area below the cabin sole and down into the keel where the floor will be bonded in.

Balsa sandwich generally is made up in 3/8", 1/2" or 3/4" thickness it can also be two layers of 3/8" with a layer of chopped strand mat between the layers of balsa. This double balsa technique provides an extremely strong and stiff hull, however, the technique is a little more expensive than using the single layer of balsa. The inner skin on a balsa sandwich vessel usually is one third of the thickness of the outer skin. Balanced laminates can be used but we feel that the extra laminate on the outside is required to provide the necessary impact strength. Although a balanced laminate of 50% of the weight of the inner and outer skins would give a better structural result, one has to think of the impact strength as this is quite an important matter with a cruising vessel.

FOAM SANDWICH

The true foam sandwich technique is one that I can only recommend in areas where Airex Foam is available. There are some other PVC based foams available throughout the world, however, I would say Airex foam is by far the best of these materials.

If foam sandwich is the desired method of construction then I would hold out for the Airex foam when it is obtainable. If this foam is not available it would be better to consider one of the alternative building methods.



BALSA TO CABIN SOLE LINE.

C-FLEX

C-Flex fibreglass planking has been developed to make it possible to build a fibreglass boat without a traditional mould. All that is needed is a lightweight framework. In some the bulkheads and other frames, which are usually fitted in the boat later can be used as part of the framework that you build the boat over.

C-Flex is a fibreglass sheeting material which is made up of rods of fibreglass reinforced plastic alternating with bundles of unsaturated fibreglass rovings, the whole held together by two layers of lightweight open weave fibreglass cloth.

This combination of rigid rods held together loosely, with pliable areas in between, is what makes C-Flex unique in construction materials.* In our knowledge, it is the only self-supporting material available today which will conform to compound curves without having to be stretched or deformed in some way.

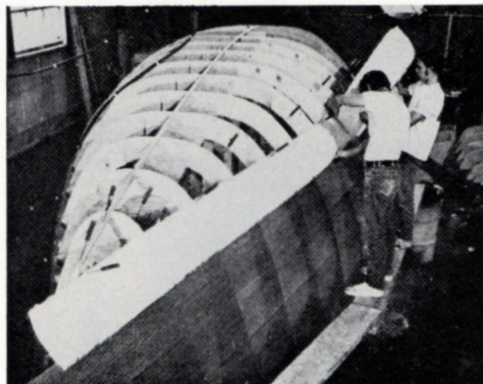
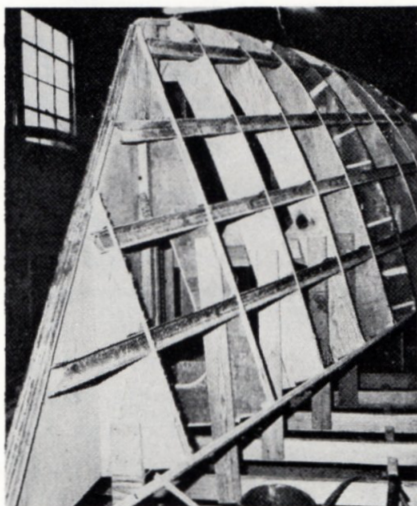
Furthermore, C-Flex will bend sideways, a property which virtually eliminates the problem of having to fit or spile the "planks". Most boats can be built by starting the first "plank" parallel to the sheer line then butting the next "plank" right alongside all the way to the keel.

Aside from the obvious advantage of being able to build an all fibreglass boat without a mould, C-Flex also affords the designer and builder the opportunity to save weight over a conventional fibreglass laminate without sacrificing strength.

This is because C-Flex is an undirectionally reinforced material and is considerably stronger in the direction of its fibre orientation (lengthwise) than an ordinary fibreglass mat or woven roving laminate.

This property is used to save weight in the hull shell by running the C-Flex along the lines of anticipated greatest stress (usually fore and aft).

The weight savings also translate into a cost savings. Industry wide averages for the a fibreglass laminate, including labor and overhead, run over a dollar a pound. Even though the C-Flex itself costs more per pound than mat or woven roving, the completed hull shell will cost about the same as a hull built with just mat and woven roving. The advantages of being able to build without a mould and the weight savings are a bonus.



C-FLEX is simple to install & provides the basis for the fastest fibreglass one off Boatbuilding techniques.

← **FRAMING READY FOR "PLANKING"**
Preformed glass stringers already installed



THE START OF A BALSA CORE DECK
After the C-Flex is in place, it is wet down with resin

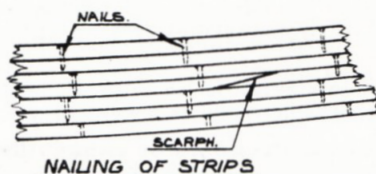


29 FT HIGH SPEED FISHING BOAT
Additional laminations of fiberglass and resin are added over the C-Flex to build up the required hull thickness.

STRIP PLANK

This method is the pick of those available to the amateur who wishes to build in wood. Strip planking is easy to execute and it is not necessary to secure the timber in single long lengths. The basis of strip planking is timber which is generally square in section, say 1" square, which is edge nailed and glued one plank on top of the other. The temporary framing which consists of sawn frames, similar to those used in other methods. The main difference being that the boat is generally built upright. In some cases tops of each plank will be dressed off with a small plane so that the planking fits snugly around the frames. Another method is

to have the timber dressed with a concave section at the top and a convex section at the bottom. The planks then lay easily one above the other and glue is run into the convex section of the preceeding plank. This arrangement makes it unnecessary for the top of each plank to be dressed off. Either method is quite satisfactory, and provides a strong hull which needs very little framing. The permanent framing generally consists of bulkheads with timber grounds and also the grounds for the various items of furniture. In large vessels some intermediate frames may be necessary and these are either bent in and laminated or can be of the sawn variety. We can recommend Strip Planking as a method suitable for amateur builders and one which should be given consideration depending on local conditions and the availability of the various materials.



NAILING OF STRIPS

STRIP PLANKING.

SQUARE EDGED STRIPS.

TOP OF STRIP IS SQUARE OFF HULL AFTER PLANING.

NAILS ARE SET BEFORE PLANING

BEVEL IS CUT FROM TOP OF STRIP

90°

BOTTOM OF STRIP IS SQUARE WHEN FITTING

THE BEVEL MAY BE CUT WITH A RABBIT PLANE AFTER STRIPS IS FITTED.

THIS TYPE OF STRIP REQUIRES NO BEVEL

HOLLOW AND ROUND EDGED STRIPS.



This yacht was built at Marine Park in strip planking and has recently been sailed from Australia to Canada.

STEEL

I must confess that it took me some time to be convinced that steel was a method suitable for amateurs. I had visions of those heavy plates being handled by inexperienced builders and it wasn't until after inspecting several amateur built steel boats that I was convinced the material had merits as far as the amateur was concerned. Of course like most people converted I am now a little biggotted on the subject and believe that steel has great merit as far as the amateur is concerned. It allows him to build his boat out in the open, a feature that is not available with any other technique other than Ferro-cement. Most building techniques require the building of some sort of shelter however, with steel it may even be an advantage to build outside as the weather does part of the work for you, it removes the mill scale from the steel. The old objection that steel yachts were heavy and require considerable maintenance has now been overcome. On the question of heaviness this is not a problem with a cruising boat and with the modern techniques of both building and maintenance, lighter weight material can be used. The maintenance problem itself is overcome by the use of the modern coating materials. Perhaps the biggest objection to steel construction is that it limits the shape of the hull except in cases where machinery is available to roll the steel plate. This is overcome in some part by the use of multi chine construction which allows the designer to produce a hull shape which is very close to the round bilge hull. The multi chine form allows the plate to be kept to a reasonable size and will assist with the ease of handling the materials. There is no temptation to use the large plates which would be used on a single chine design. Regarding the amateur's ability to build a steel boat, most amateurs who tackle this medium are enthusiastic about the merits of their chosen material. There would be a lot more steel boats built by amateurs if more designers had worked with the material earlier.

Regarding the welding techniques, these are easily learnt and most cities and towns have Technical schools where night classes are held in welding. This means that the prospective boat builder can go along to the classes and learn the techniques that are necessary for him to build his steel vessel. It is amazing how efficient one can become at welding after a very short period of time. The actual techniques are quite simple and easily learned.

The consideration of whether to build a steel boat is one the individual builder will have to consider. Availability of materials should present no problems as Steel is readily available in all parts of the world.

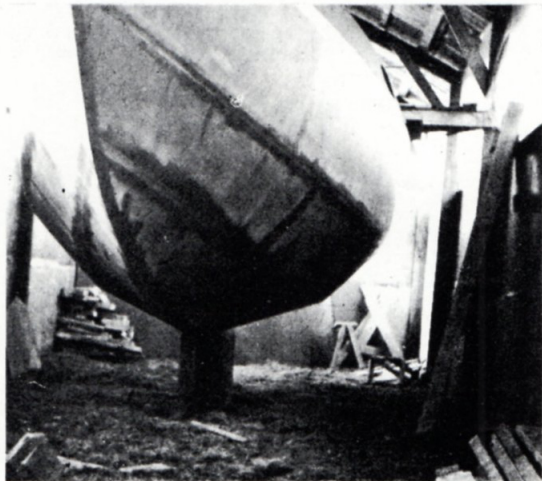


Photo shows example of Multi Chine Construction. Amateurs can turn out hulls like this. Steel is a suprisingly fast building method.

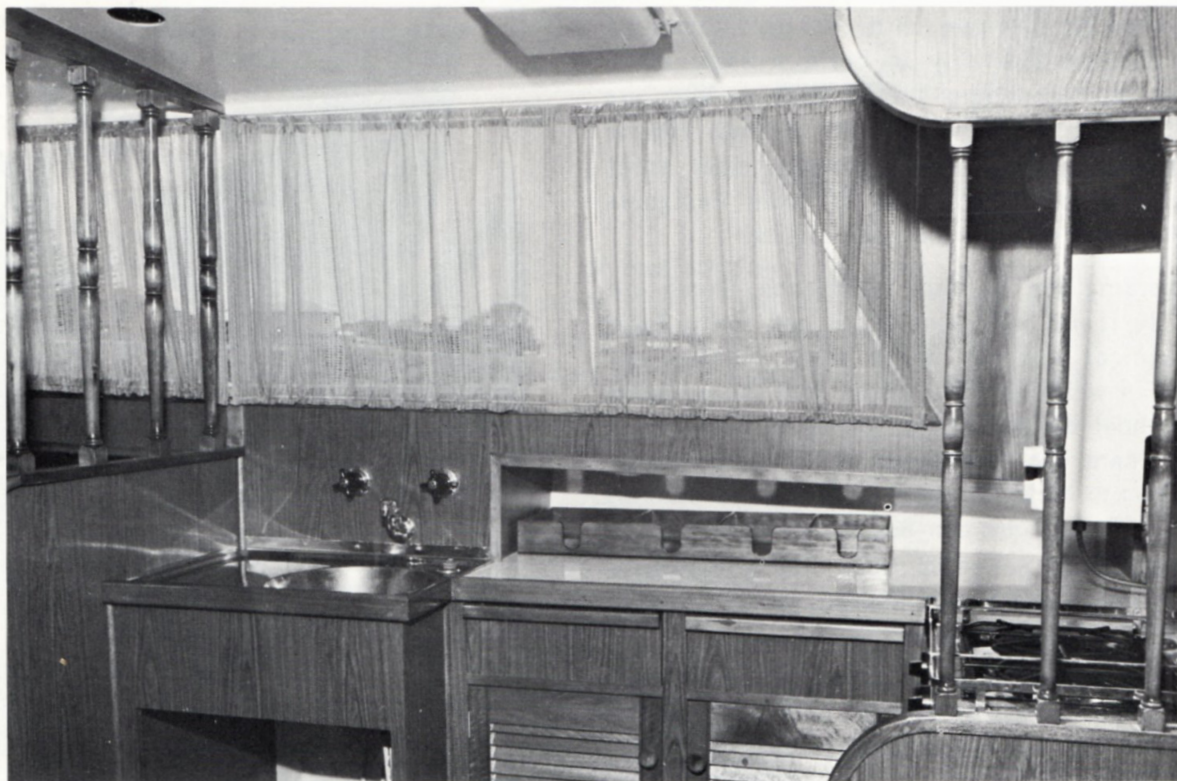
STEEL (contd)

ROBERTS W.R. 40/42

This power cruiser can be built in either fibreglass, plywood or steel and is typical of the versatility of Bruce Roberts Designs.



The newer materials such as Liten or Corten are usually available and should be used where possible as they provide the means of building a boat which will require the minimum of maintenance as years go by.

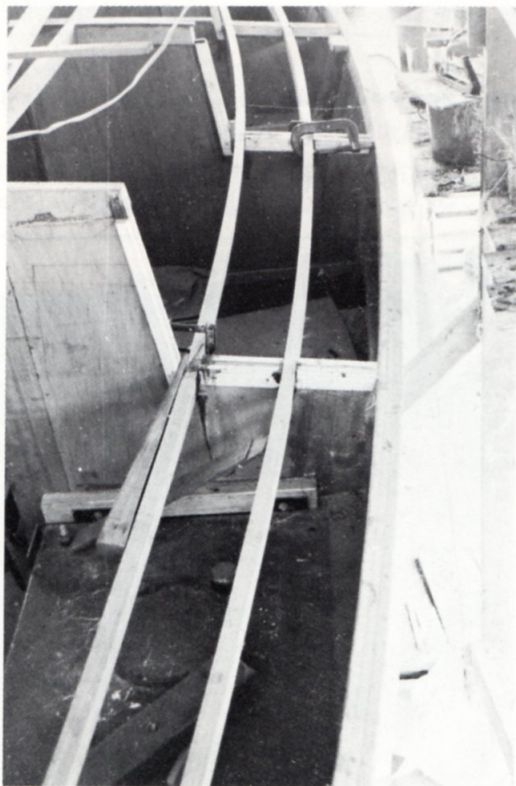


Warmth can be added to interior of any boat by the careful selection of joinery materials.

PLYWOOD

Plywood construction covers two basic methods. One is the use of sheet Plywood which entails 12 to 14 evenly spaced sawn frames erected on a strongback. Stringers, backbone and stem are added and whole structure is planked up in sheet ply. On some occasions the long sheets of ply are scarped together so that a whole side or bottom of the hull can be installed in one piece. Whether this one sheet technique is suitable of course depends on the size of the vessel and the availability of factory scarping. Although I have seen scarping by amateur builders which would have done any plywood manufacturer proud. Sheet Plywood construction is a simple method and of course the only disadvantage is that it limits the shape of the hull.

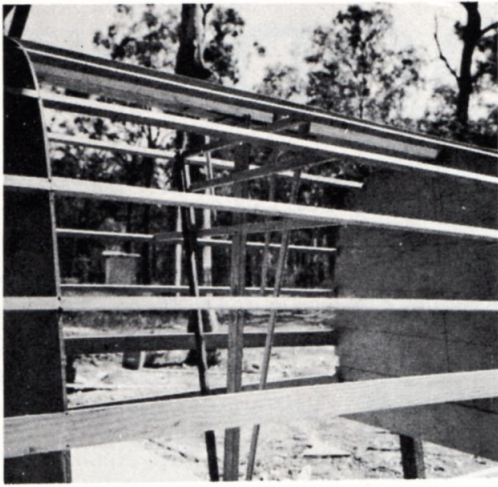
By introducing Strip or Moulded Ply construction in difficult areas of the hull, then a satisfactory combination can be achieved. An example of this is the flared bows of power boats which require the ply to be cut into strips of 6" to 9" wide so that it will lay in satisfactory against the stringers. There is no doubt that sheet ply construction supplies a quick and easy method for the amateur builder. Again one will need to consider the availability of materials and of suitable designs.



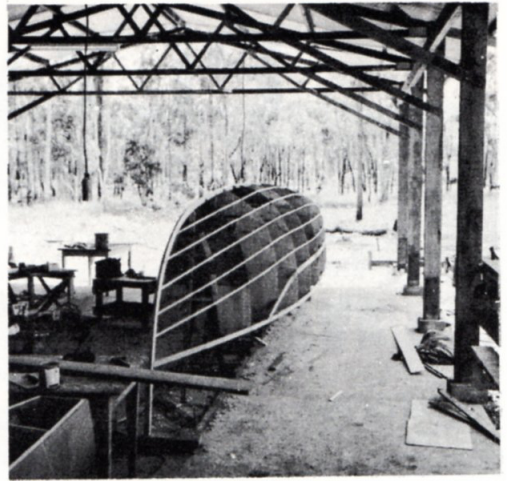
ROBERTS TRAILER SAILER 18
Build in Plywood or Fibreglass

For timber-plywood decks install
beams on edge as shown.

MOULDED PLYWOOD OR VENEER



BULKHEADS and STRINGERS



HULL SKELETON

Moulded Plywood or Veneer. This method of construction can be used to build several Bruce Roberts Designs, and plans are available based on this technique.

From full size patterns supplied with the plans, station frames and bulkheads are marked and cut out of scrap timber and plywood. Stringer positions are marked and notched. The frames and bulkheads are erected on a prepared strongback and the stringers, Keelson and stem added. Very little fairing off is necessary as the stringers go in at the correct angle and allow the plywood or veneer strips to be added glued and nailed to the stringers.

The plywood or veneer strips are applied diagonally and sometimes vertically and fore and aft as shown in the plans.

To ensure a good bond between the layers, staples are used to pressurise the glue while this hardens. If silicon bronze or stainless staples are used they may be left in the hull.

It has been proved that this form of construction for hulls is quick, easy and economical, and we have been personally involved in the building of many hulls using the moulded technique.

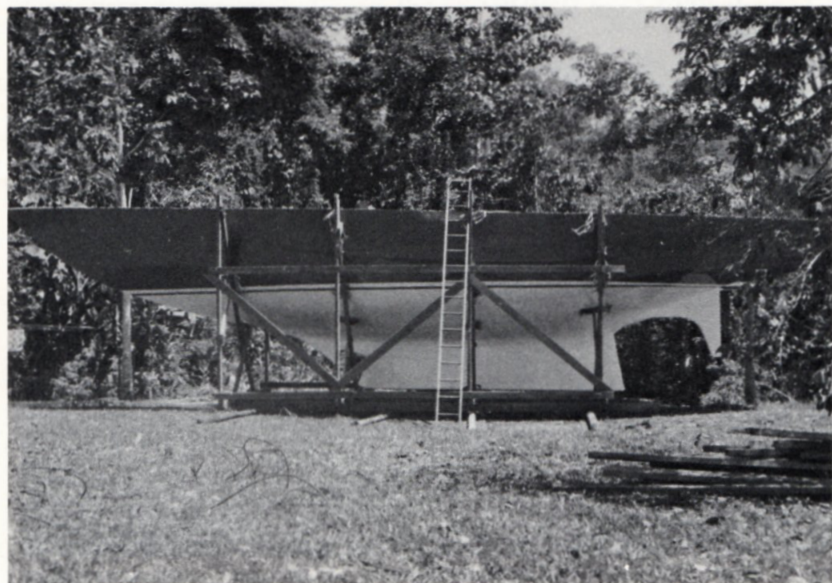


MOULDED PLYWOOD HULL BEING BUILT AT MARINE PARK.

Choose your building material

Illustrated here we have a chart which gives points for the various construction methods as applied to each material. The points awarded are on my own opinions and you should make up your own chart awarding points out of ten for the features of the materials as you see them. The way you fill out the chart will assist you in making your final decision on which material to use. I think you will find the answers interesting. You may not necessarily select the method with the most points.

MATERIAL	COST	EASE OF CONSTRUCTION	SPEED OF CONSTRUCTION	MATERIAL AVAILABILITY	SHELTER REQUIRED	CLIMATIC EFFECTS	PREV. EXP. WITH MATERIAL	PERSONAL CHOICE	TOTAL POINTS OUT OF 80
ALUMINIUM	7	7	7	7	8	10	5	7	58
FERRO-CEMENT	10	7	6	9	10	9	8	8	67
FIBREGLASS	8	10	10	8	7	7	10	10	70
PLYWOOD	9	8	9	8	8	9	10	9	70
STEEL	10	8	8	9	10	10	7	9	71
STRIP PLANK	9	7	7	9	9	9	8	9	67



ROBERTS 53 HULL

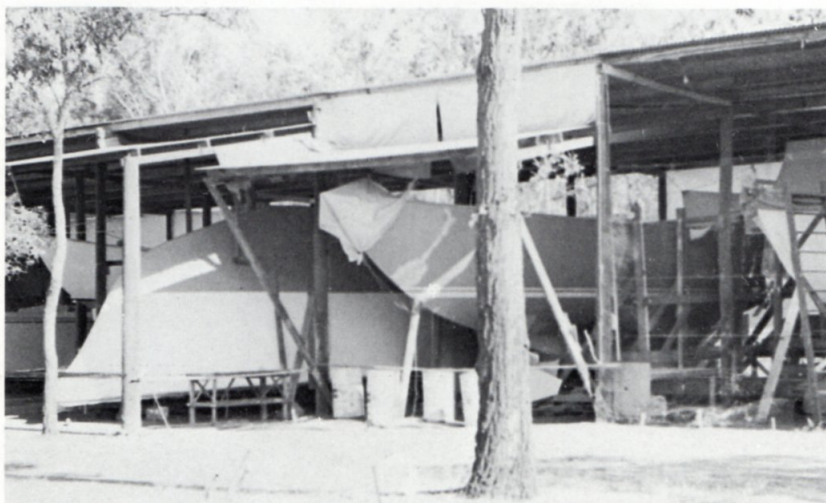
This yacht can be built in Steel-Multi Chine or Round Bilge, Fibreglass, Ferro, Moulded Plywood or Strip Plank. Not many designs are as versatile as this. In our own range of plans most designs are restricted to two or three material alternatives.

Selecting the Design

While giving consideration to the materials to be used, no doubt you have also been looking at a selection of designs. It is quite natural to consider the material and the design together. Usually each design is limited to a small range of building materials. It is rare that a boat which can be built in steel would be suitable for fibreglass construction although exceptions do occur. Generally each design has its short list of materials which may be used to build the vessel. Whilst we are on the subject let us consider the various components which go to make up a boat plan that is really suited to Amateur Construction. Some designers provide full size patterns whilst others do not. Also some issue full size patterns without making the lines plan available to the builder. This is unwise from the amateur's point of view because if he has some knowledge he is able to further assess the design once he has a copy of the lines plan in his possession. Some have of course to rely entirely on the designers ability and knowledge while others are capable of assessing the design once they have the lines plan. It would be a rare occasion that an amateur builder would decide to not go ahead and build his selected design after he had studied the lines plan if he found something not to his liking. Most designers to-day are reputable people and producing good worthwhile designs and plans.

In my opinion a plan consists of the following sheets, firstly there should be the lines plan which should be accompanied by a table of offsets.

Next would be several sheets making up the full size patterns. These full size patterns are necessary for most amateur builders drawing out of a lines plan full size is a difficult undertaking and the space requirements are often a problem, a good flat floor is an absolute requirement. Boats drawn out in other than optimum conditions tend to have bumps transferred onto the hull. I would recommend any plan you consider should be accompanied by full size patterns. Again there are exceptions these are for vessels of very simple hull shapes such as Dory's, where it is a simple matter to draw out the frames only as the shapes are so simple that the boat does not always require to be drawn out full size. This only applies to very simple hulls and other than these all boats should be drawn out before being built. If the full size patterns are supplied to the amateur he then can build with full confidence knowing the designer has prepared the patterns for his use. The next sheet we would consider would be the general arrangement drawing. This drawing shown as the title suggests general items of the boats layout, sail plan, engine positioning, etc; usually shown is the accommodation as suggested by the designer. Most general arrangement drawings or study prints often contain



At MARINE PARK there are 50 Boats being built at one time — about 40 of these are different designs!

SELECTING THE DESIGN **contd.**

quite useful information not only for the prospective plan buyer but once these plans have been purchased the general arrangement drawings will fit in with the plan.

Another sheet usually shows how to build the hull and will incorporate such things as the building jig, building the individual frames or mould formers, setting these up on the strong back and installing stringers, chine, keelson, stem, transom and sheeting the outside of the hull. Also included in this sheet will be many details necessary to successfully build the hull shell.

The next sheet we would consider would be the sheet showing the construction of the deck and superstructure. A separate sheet would show how to build the bulkheads and joinery which will be constructed along with the decks and superstructure. Often it is better to build the inside of the vessel, that is, some of the joinery and furniture prior to the installation of the deck. It is much easier to get the large panels of plywood required to build bunks and similar structures down into the hull, prior to the decks being completed.

Another sheet of the plan should show the engineering detail that is the installation of the motor, exhaust system, steering system, fuel tanks, water tanks, installation of ballast and similar parts of the construction program.

There should be a sheet that will show general details, how to make joints, construct hatches, make ports and all the general details that go into making a completed boat out of a shell.

If the boat is a sail boat there will generally be a sheet showing how to build the mast, boom, and other associated items.

The above would probably be considered by many designers to be enough information to enable the average amateur to build his own craft. However, in our opinion an amateur needs a lot more information than many designers have been prepared to make available. It has been our contention that building a boat should be a step by step operation. The builder should be taken from the very first step right through to the launching stage and nothing should be left out, the amateur should not have to make too many decisions for himself. It is in these areas that some of the mistakes are made that cause some boats to turn out less successful than they otherwise might had been if the amateur had a thorough plan which would leave nothing to doubt.

Now that we are making our theme 'BUILD for LESS' then of course it is necessary to provide



ROBERTS 29 — This Builder Sloped Transom opposite to the Design as shown in plans.

additional sheets so that the amateur may make everything possible himself rather than purchasing ready made items.

We recommend that the prospective builder purchase his plans as early in the proceedings as possible. As soon as a decision on the materials and the design has been made even if the amateur is not actually ready to start building.

SELECTING THE DESIGN (Contd)

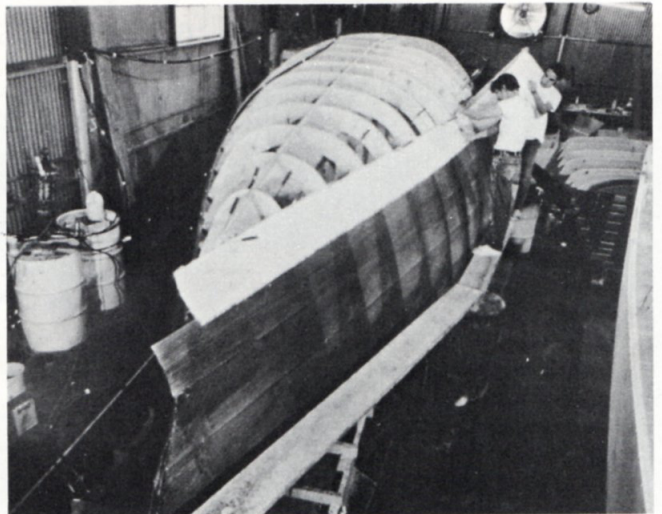
At this stage, besides making a thorough study of the plans he can be making some of the small items needed later on. This in itself is an economical way to do things. Quite often the builder will reach a stage in the construction where if there had been time he could have made something but as he is rushed for time he goes out and buys the article. Of course our suggestion is that having the plan well in advance will enable our builder to sit down and make a list of the things he can make in advance. These items generally don't cost much in the way of financial outlay but are more labour intensive items. In this of course our builder can save himself a considerable amount of money as his labour is free.

THE TOOLS

Our plans now cover the manufacture of tools and this means that many of the tools used in the construction program can actually be made by the amateur, thus saving on a capital expense for items may not be needed again. The amateur builder will know what tools are required when he has his plan and can then hunt round the auction rooms, second hand stores, and his friends garages. This way he may assemble all the other tools which will assist when the construction commences.

It is a fact that any successful amateur builder will become an expert scrounger. It is amazing the number of items that are just waiting to be picked up by our builder, things other people find no use for, but will slot quite nicely into the building program.

Back to making of tools, here are a few things that the amateur builder can make for himself, all the clamps, steel and wood. How to make these is clearly shown in our plans, they can be made by the amateur for very little cost. Many specialty tools, such as the tools required for building in Ferro-cement, Steel, Wood or Fibreglass. Each building medium has its speciality tool requirement and many of these can be made by the amateur builder. Items such as a bevel gauge, a dolly, a large square and many other tools which can be manufactured for cents, when they cost several dollars to purchase.



Your tool requirements will vary depending on the building method you select.

PLAN *and* SAVE!

When the builder has finished making and collecting all the necessary tools the next job that he may undertake before building commences is to make the following items, the steering system, made from a truck steering box and a pedestal steerer which can be made from an automobile differential. A steering wheel can be made from either wood a stainless steel or a alloy. If the vessel is a sail boat then the mast fittings and other associated items can be made in advance. All the cleats should be made from wood. All blocks are best made from wood or light alloy. Items such as anchors, Dorade vents, and a host of other items can be made in advance. By doing this the amateur will save a considerable amount of money. When the stage of construction is reached where he needs, say a vent, it is a great temptation to go out and buy a suitable item. If he has pre-manufactured all of these items then of course it will simply involve the installation. Another thing is if the amateur is building a sail boat, quite often the ballast will consist of scrap metal, why not go ahead and collect this material in advance. If collected when and where available this material will cost nothing, but if it has to be purchased even scrap metal has a price.

During the past few months we have realised that the building costs for amateurs are completely getting out of hand. The attitudes of many of the builders was towards the making of many of the fittings and associated items themselves. We have now been giving some earnest consideration to this and have come up with a host of things which the amateur can do himself. When one considers the problem it is amazing how many things can be made by the amateur without the necessity of elaborate jigs or tools. Things like rigging screws, or turnbuckles, jib furlers, and even snubbing winches are easily made from scrap materials. We now include a dinghy plan and also details of how to make the oars and rollocks and information on how to make your own anchors. The list is becoming endless and the plans have grown to 30 large sheets of drawings. Still paper is cheap and fittings are expensive so we are endeavouring to make it possible for the amateur to build for less.

No matter whose design you are going to build my advice to you is to purchase your plan as early as is practical. You will be able to gain the knowledge of what is required and then you can go around scrounging the items and searching the second hand and disposal stores so that you can collect many of the items in advance. Things are always much cheaper when you find them at your leisure rather than having to rush in at the last moment.

Before I close on this subject I would like you to consider even the making of your own sails, quite frankly up until recently the thought of making sails for a boat would have seemed unrealistic as against the ease of approaching the local sailmaker to do the job. However,



Mast fittings may be home made or at least made by local metal shop.

PLAN & SAVE contd.

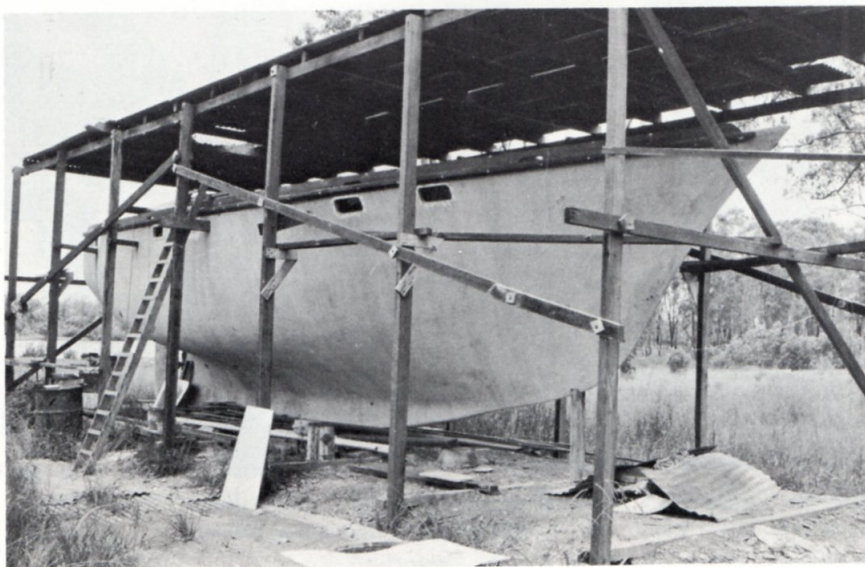
with rising costs and a closer study of the techniques of making sails I am of the firm opinion that it is well within the capabilities of the average amateur and his wife to manufacture their own sails. Most women to-day have sewing machines that will handle the reasonably light sailcloth modern materials have given us. The hand work on the sails could easily be accomplished by the average builder. There are many times and places where the seasons mean that work on the boat cannot be done, however this is the opportunity to undertake many of the small jobs that I have mentioned above. The thought of sitting in front of a fire on a winter evening sewing the sails does have some appeal and quite frankly there is nothing so enjoyable as using something that you have made entirely yourself.

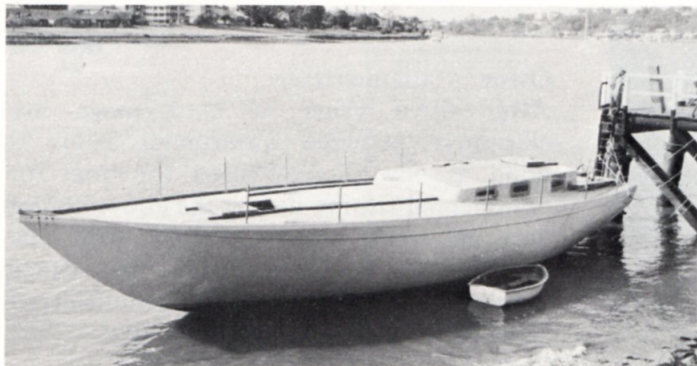
If you have been considering building a boat and put it off because of the objections of the lack of money, unsuitable location, or some other reason which you feel will be overcome in the not too distant future then consider the points I have made above. You can actually make a start without getting involved in a large financial outlay or starting any large structure in an unsuitable location. Most of the items I have mentioned can be made even under the most cramped circumstances and all will be needed when the major project of boat building gets under way.



Wooden Cheek Blocks can be easily made by builder as can all staunchions, pulpit etc.,

Ferro-Cement hull being built at BRUCE ROBERTS Marine Park.





ROBERTS 53

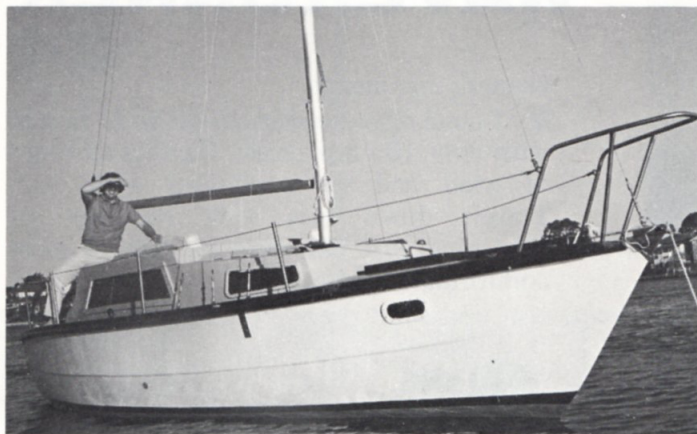
Owner's comments:

Well, we made it to South Africa in one piece, the boat sails like a dream. 'Mymil' has very little heel, is dry, we've had the rail down only once. Went through a bad storm just off Madagascar and had to strap everything down. We average 150 miles a day (3,000 miles in 3 weeks) Have had all sorts of combinations of sails on her and had two reefs in the main for a good part of the trip and still average 150.

OFFSHORE 38

Owner's comments:

After building and sailing my Bruce Roberts designed Offshore 38 I am very happy with, the building system and my yacht's performance. The O.S.38 is quite a stiff boat and cleans up the fleet in heavy weather races, does well in all conditions.



NORFOLK 43

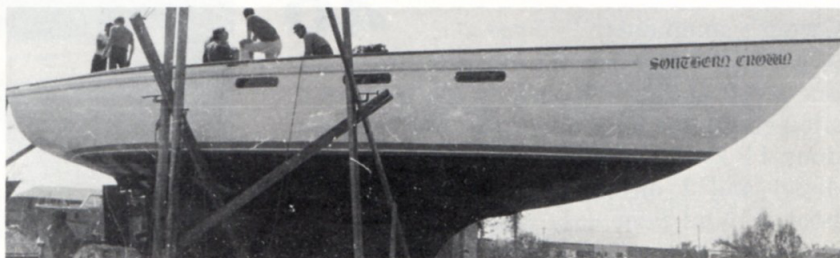
Built at Marine Park and since cruised off Queensland coast.

ROBERTS 24

Dear Bruce, 17th Dec 1972

As the first Roberts 24 owner I feel I should write and tell you how delighted I am with the sailing qualities of the boat. She is very sea kindly and dry even in a blow and, provided proper sails are set for conditions, beautifully balanced. Her accommodation is more than adequate and we have slept four in comfort. She is good on all points of sailing. Many thanks for your past advice in her constructions.

Gordon Moffatt





ROBERTS TRAWLER 45

Owner's comments:

I am really sold on my fibreglass trawler, it stands up to the rigours of hard usage without any sign of defect after constant work for over 2 years—no time lost through costly maintenance as with my former trawlers.



WAVERUNNER 40

Owner's comments:

A beautiful sea boat. Have had my W.R. 40 out in 60 knot winds and no matter how I tried could not put bow under. My W.R. 40 does 11 knots with 96 h.p. reconditioned diesel and I am most satisfied with my boat. Found boat easy and quick to build and hope to later build larger W.R. 45.

WAVERUNNER 24

Owner's comments:

After three years of hard usage my sterndrive powered waverunner 24 is as good as new. I have used the boat for commercial fishing during the above period and am more than satisfied with the handling and performance of Bruce Robert's design. No ordinary condition of wind or sea seems to worry the boat.

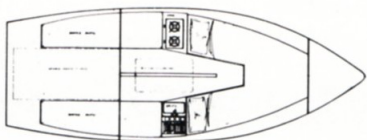
WAVERUNNER 24

Owner's comments:

My tunnel stern version cruises at 25 m.p.h. with only 100 h.p. diesel. Handles all types of wind and sea conditions with ease. Travels down seas with no sign of broaching, just like she's on rails. A most comfortable sea boat.



**ROBERTS
TRAILER
SAILER
18**



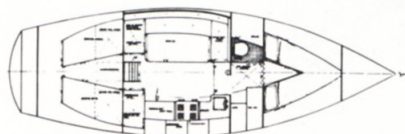
Plans & F/S Patterns \$95
Study Prints \$3

**ROBERTS
TRAILER
SAILER
22**



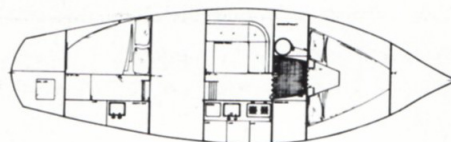
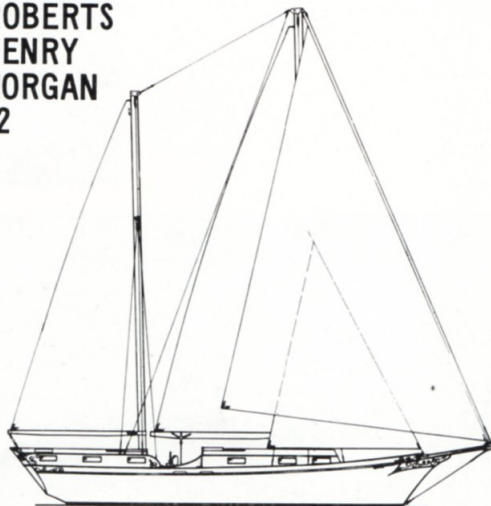
Plans & F/S Patterns \$150
Study Prints \$5

**ROBERTS
29**



Plans & F/S Patterns \$200
Study Prints \$5

**ROBERTS
HENRY
MORGAN
32**



Plans & F/S Patterns \$270
Study Print \$5

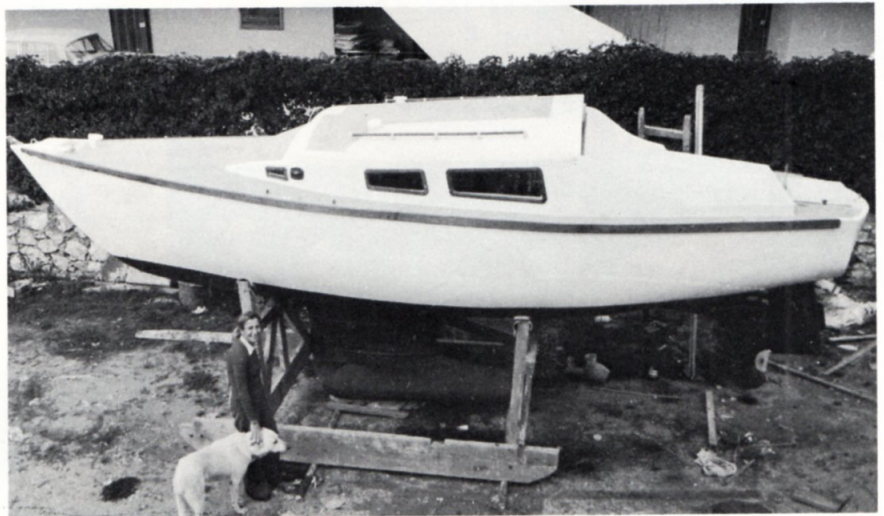


ROBERTS 50

Canoe Stern Yacht can be built in Fibreglass, Ferro, Strip Planking, or Moulded Plywood. Plans available for any of the above methods.

ROBERTS 24

Amateur built in Turkey by a man and wife team. This yacht can be built in Fibreglass or moulded plywood.



ROBERTS 24

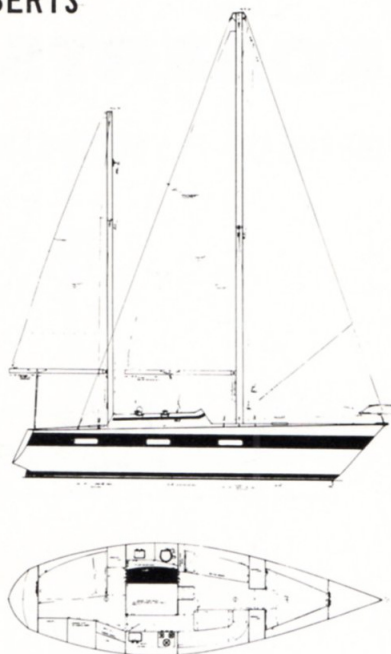
Interior as completed by Turkish builder, Mr. Karay said he, 'used local "cheap" timber' — wish we had some of this "cheap" timber in Australia.

ROBERTS
34



Plans & F/S Patterns \$325
Study Print \$5

ROBERTS
35



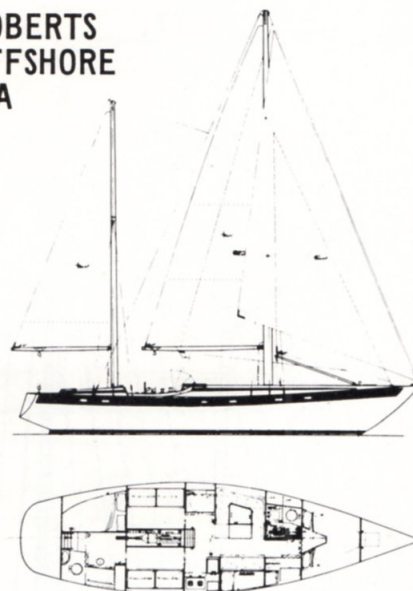
Plans & F/S Patterns \$325
Study Print (2 sheets) \$8

ROBERTS
36



Plans & F/S Patterns \$325
Study Prints (4) \$15

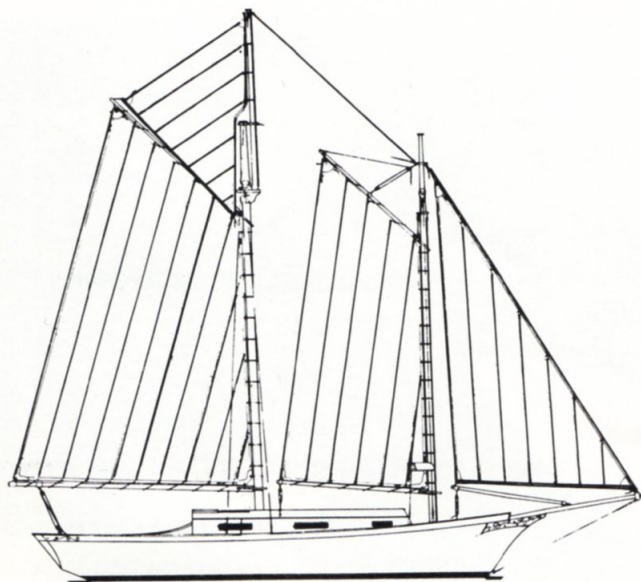
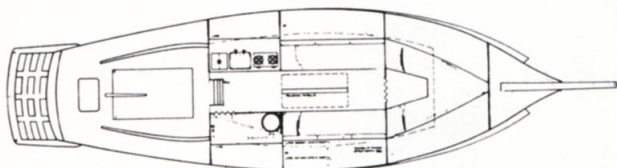
ROBERTS
OFFSHORE
44A



Plans & F/S Patterns \$370
Study Prints (3 versions) \$12

ROBERTS 31

FIBREGLASS-PLYWOOD-STRIP PLANK



L.O.A.	31' 11"
L.W.L.	24' 2"
BEAM	9' 7"
DRAFT.	4' 6"
HEADROOM	6' 2"
HULL MATERIALS COST .	\$1,690
PLANS COST INCLUDING	
FULL SIZE PATTERNS .	\$270
STUDY PLAN	\$5

Aux. power can be a small diesel and adequate provision has been made for the carrying of stores, fuel and water, enough for extended cruising.

This attractive character Yacht will appeal to many — several rigs are available and will assure sparkling performance under all conditions.

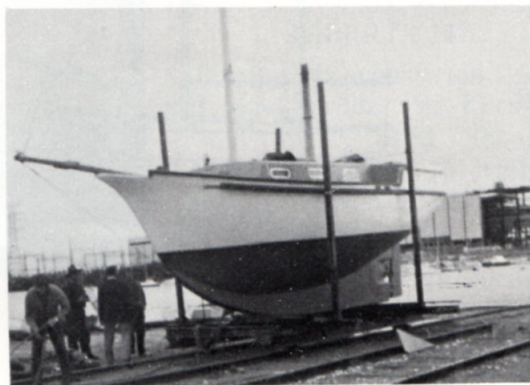
Recommended to those who desire something a little different while maintaining good performance.

For the purist, the Gaff Schooner will appeal as an easily handled configuration which is practical and has the appeal of yesteryear.

This Yacht is surprisingly roomy for its size and is capable of extended cruising. Highly recommended to those who desire a true Family cruiser and to those whose pocket is not too deep.

A yacht that anyone can afford to build would be a good description of this charming vessel.

Building practice follows BRUCE ROBERTS simple fibreglass techniques which are especially designed to allow any amateur to build a yacht of Professional standard.



ROBERTS 31 & HM 32 share the same basic hull design.

MAURITIUS
43



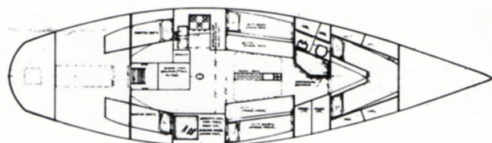
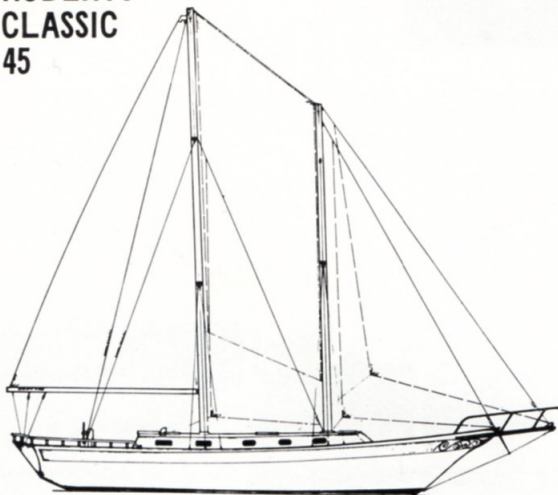
Plans & F/S Patterns \$370
Study Print \$5

ROBERTS
45



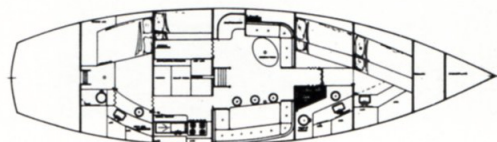
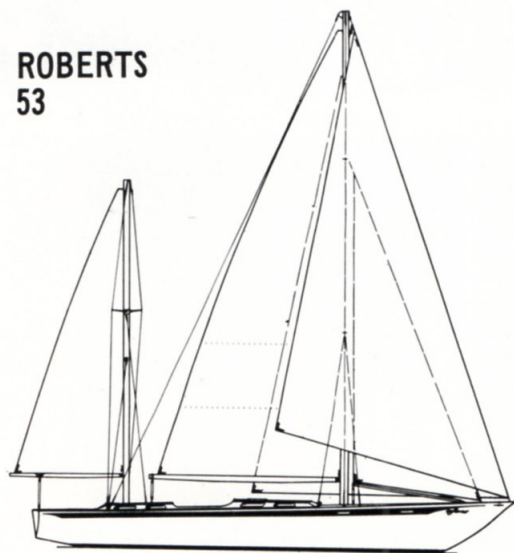
Plans & F/S Patterns \$520
Study Prints (2) \$8

ROBERTS
CLASSIC
45



Plans & F/S Patterns \$520
Study Print \$5

ROBERTS
53



Plans & F/S Patterns \$600
Study Prints (3) \$12

ROBERTS 34

As built in England by G.R.P. Engineering. This popular design is being built by amateurs throughout the world. Plans available for Plywood or Fibreglass.

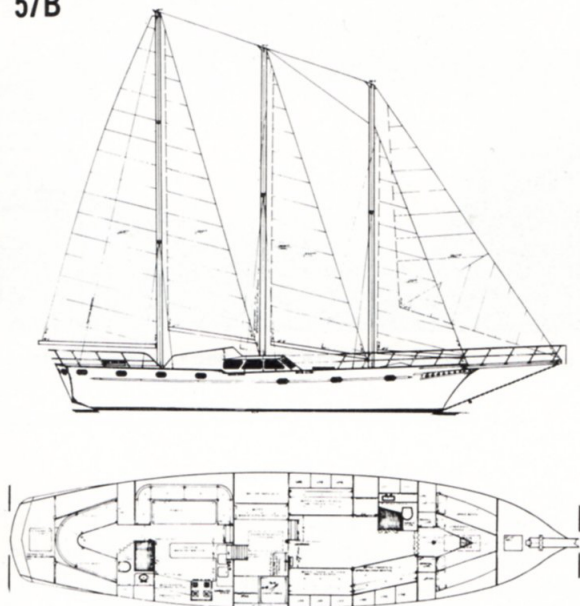


One of over 60 ROBERTS 35 Sailboats being built by amateurs — Plans available for Plywood or Fibreglass.



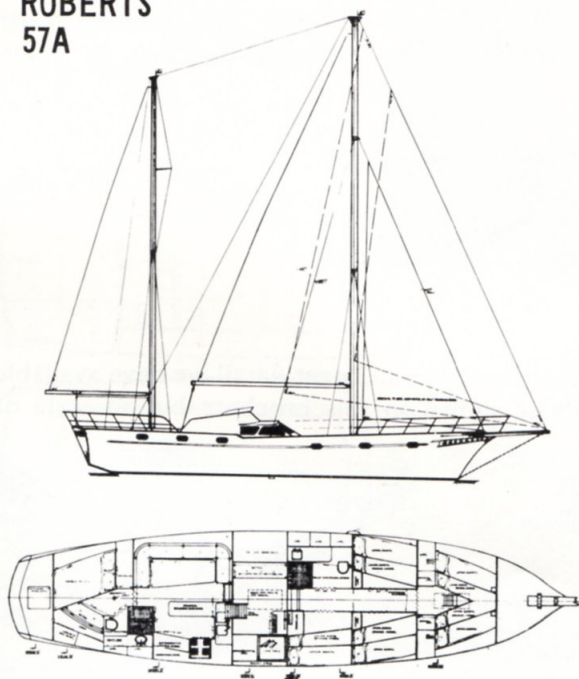
The OFFSHORE 44 makes an ideal cruising yacht for the family man who likes comfort and a smart cruising vessel. This yacht has logged many thousands of cruising miles.

**ROBERTS
57B**



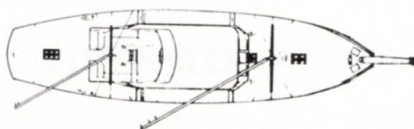
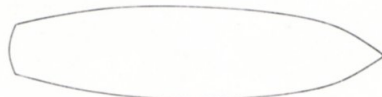
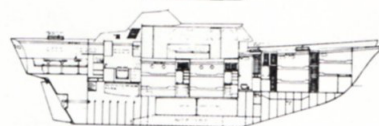
Plans & F/S Patterns \$750
Set of 3 Study Prints \$12

**ROBERTS
57A**



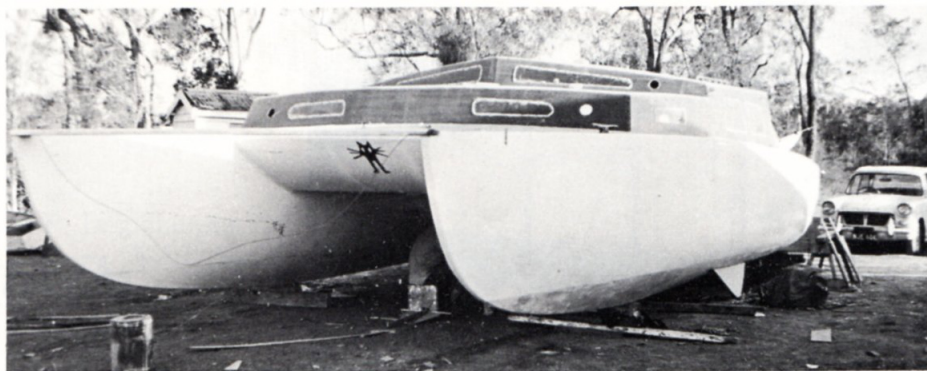
Plans & F/S Patterns \$750
Set of 3 Study Prints \$12

**ROBERTS
70**



Plans & F/S Patterns \$2000
Study Print \$5

TOM CORKILL the New Zealand adventurer built his 35' Cat at Marine Park using the moulded ply technique. Tom has sailed this boat



from Brisbane to South Africa, then to South America, U.S.A., across to Spain, back to U.S.A. and now on his way back to Australia. This is Tom's second Marine Park built sailboat.

MARINE PARKS:

If you would like to build in the company of other Amateurs you may be interested in our Marine Park system where building space, materials at discount prices, on the spot advice, and other facilities are available to help you quickly and economically build your Bruce Roberts Designed fibreglass boat. Marine Parks are situated at Brisbane, Australia, New Zealand, Colonial Beach, U.S.A., and in the near future South Africa and elsewhere.

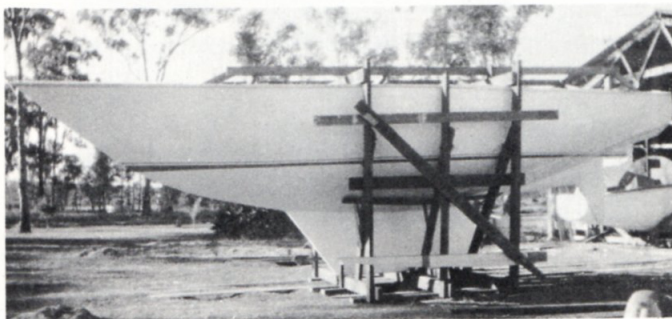


**Skipper and Friends aboard
Cruising Sailboat in Tahiti.**

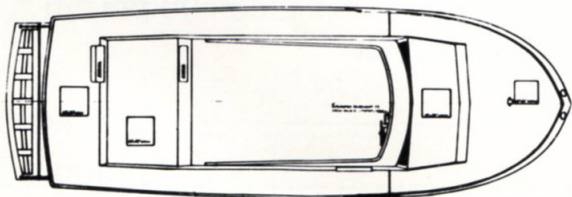
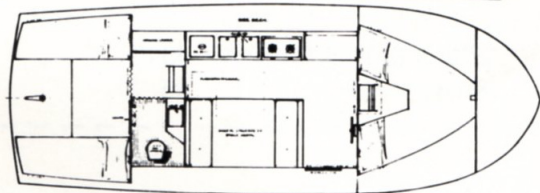
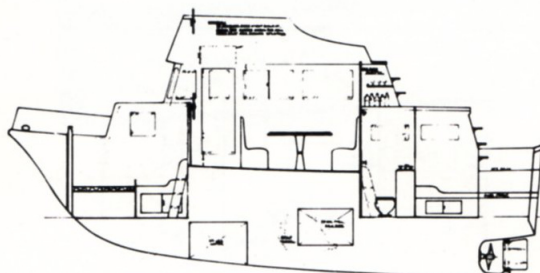
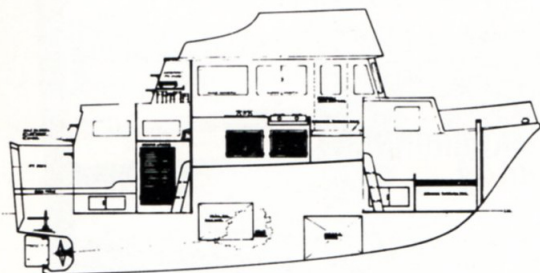
STUDY DRAWINGS:

For those who would like to see the design of their choice in larger detail we have available Study Plans which show similar details of those shown in this brochure but in scale of $\frac{1}{2}$ or $\frac{3}{4}$ " to the foot.

ROBERTS 34 hull built at Marine Park Brisbane. Hull took only 3 weeks to build by man and wife team, material cost \$1,000.

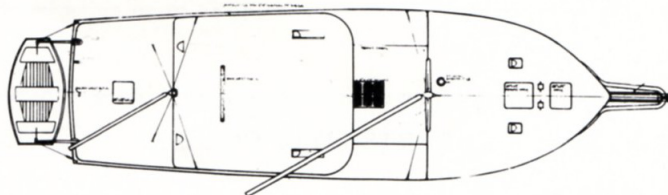
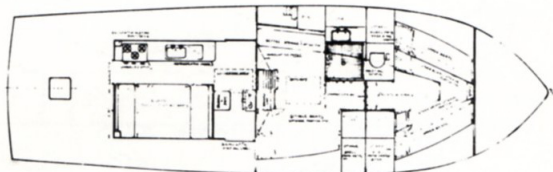
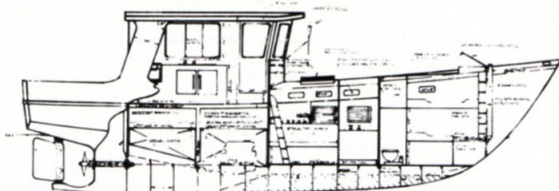
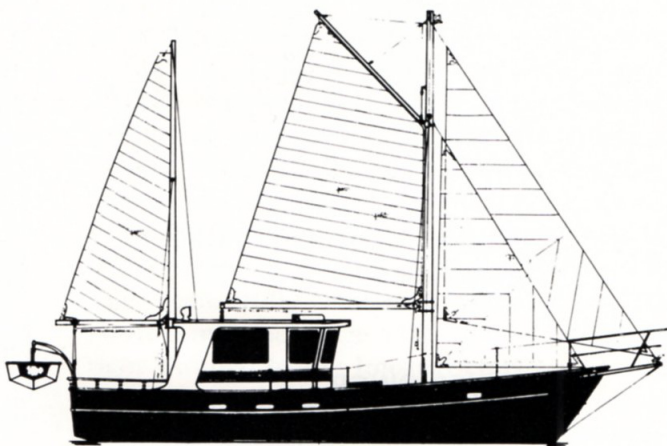


TRAWLER YACHT 29



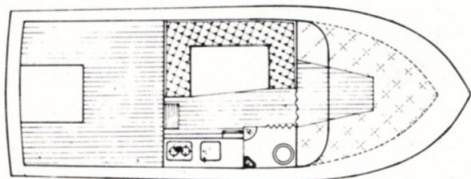
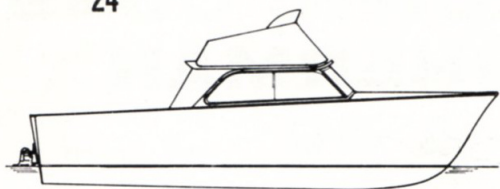
Plans & F/S Patterns \$195
Study Print \$5

PACIFIC COAST FISHERMAN 36 & 40



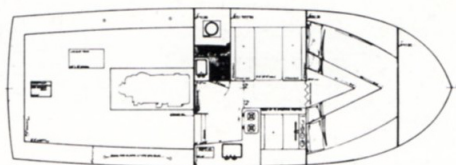
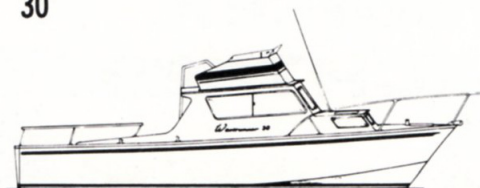
P.C.F. 36 Plans & Patterns \$250
P.C.F. 40 Plans & Patterns \$295
Study Prints \$5 each

WAVERUNNER 24



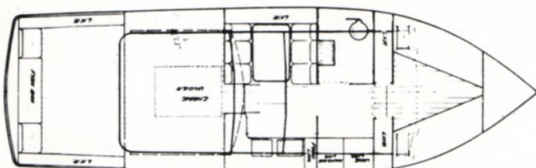
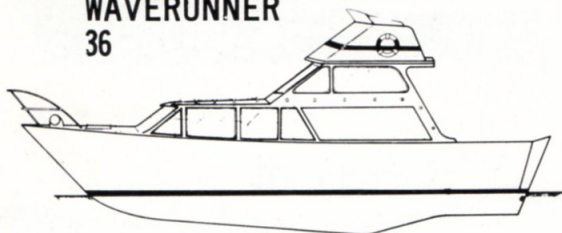
Plans & F/S Patterns \$100
Study Prints (2) \$6

WAVERUNNER 30



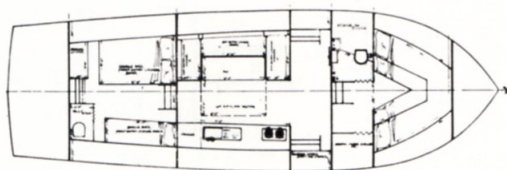
Plans & F/S Patterns \$150
Study Prints (2) \$8

WAVERUNNER 36



Plans & F/S Patterns \$225
Study Prints (3) \$12

WAVERUNNER 40/42



Plans & F/S Patterns \$310
Study Print \$5

TO: BRUCE ROBERTS BOAT PLANS:

Address on Front Cover

NAME.....ADDRESS.....

Please supply me with one set ofPlans and Patterns.

To be Built inMATERIAL.

I enclose \$.....being price of Plan

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