

True Grit

Steel & Aluminum Bill of Materials

(scroll down for Plywood BOM)

STEEL: Designed to use ordinary steel sometimes referred to as "mild" or "low-carbon" steel. Steel of other or special alloys is not necessary although not necessarily unsuitable. Thickness of members, especially hull plating, should not be increased; this will increase weight and could affect the safety and stability of the vessel.

ALUMINUM CONSTRUCTION NOTES - IN GENERAL: It is assumed that the builder is a qualified aluminum welder familiar with appropriate weld types, sizes, and sequence so as to form a strong and true vessel, with the equipment necessary to perform work of the best quality. MIG or TIG welding is required, using weld filler materials suited to marine use of alloys compatible with the aluminum being welded. Aluminum for welding must be properly prepared, and frequent testing of welds is recommended. Plans assume construction by an individual builder or small fabricating facility that may have access only to more common, readily available materials, shapes, and building processes. However, more sophisticated alternative materials and processes may be substituted when available and when comparable to what is shown or specified with regard to strength, weight, and corrosion resistance. In particular, special extrusions, if available, may be substituted (such as at the chine) to join side and bottom plating in lieu of the round bar shown backing this junction.

ALUMINUM HULL MATERIAL LISTING: The following listing is to serve as a general guide only for hull cost estimating purposes; do not use for buying materials without first checking the instructions and plans for various options (such as differences due to changes in powering methods which will vary each boat), and to local suppliers for what material sizes may be available. In other words, each builder must make decisions as to how he will build the boat and use materials, and then take off a listing to suit. Note that if the length of the boat is varied, so too will the material listing. Materials are listed for the basic hull members only and do not include options, variations, cabin, interior members, etc. Thus the listing will vary and not all members are necessarily included - check the plans. Only marine alloy of the 5000- or 6000-series should be used. Common acceptable alloy designations include 5052, 5083, 5086, 5454, 5456, and 6061. For saltwater use, the 5086 is recommended except that extruded shapes can be 6000-series. While full-length hull plating panels can be formed by welding, single long panels are preferable to performing this procedure. In any case, the builder should check for plate or sheet size availability and plan the material utilization for minimum waste. While shorter members can always be butt welded to form long members, a doubler plate is usually advisable behind or on top of all such joints, lapping a considerable distance, and being welded all around.

ALUMINUM		
MEMBERS	SIZE/TYPE	AMOUNT RQD.
Chine bars	1/2" round bar	50'
Stem	1/2" plate x 3"	10 sq.ft.
Keel	1/2"	12'
Skeg	1/2" to profile shown	6 sq.ft.
Side frames	2-1/2" x 1-1/2" x 3/16" angle	70'
Bottom frames	2-1/2" x 1-1/2" x 1/4" angle	50'
Frame floors	1/4" with 1-1/2" flanges	30 sq.ft.
Bottom longitudinals	1-1/2" x 1/4" flat bar	180'
Side longitudinals	1-1/2" x 3/16" flat bar	160'
Bottom	3/16" x 4' x 24'	2
Sides	1/8" x 4' x 27'	2
Transom	3/16"	25 sq.ft.
Bulwark	1/8"	62 sq.ft.
Decking	1/8"	60 sq.ft.

Deck beams	1-1/2" x 1/4" flat bar	18'
Carling	3" x 1/4" flat bar	50'
Pipe rails	1-1/4" Sche. 40	64'
Tanks	1/8"	60 sq.ft.
Strut (inboards)	1" x 6" plate	As rqd.
Motor stringers	1/4" with 5/16" flanges	As rqd.

STEEL CONSTRUCTION: When building from steel, construction procedures are virtually the same as with aluminum. However, because steel is considerably heavier, all superstructure members from the carlin up are made from wood and/or plywood per the Plywood Version, plans sheets for which have been included. Extend the carlin full length all around at least 1" above the deck. Bolt plywood cabin sides to the outside of the carlin using sealant between the carlin and plywood. Even still, the steel version will weigh nearly 2000 lbs. more, causing the boat to draw between 2" and 3" more. Power should be increased by 1/3 for comparable speeds. Use the following member sizes in place of those specified for the aluminum version. Amounts will be similar to the Aluminum Version.

MEMBERS	SIZE/TYPE	
Chine bars (opt.)	1/2" round bar	
Stem	3/8" plate x 3"	
Keel	3/8" x 2"	
Skeg	3/8" to profile shown	
Side frames	3" x 3/16" flat bar	

Bottom frames	3" x 1/4" flat bar	
Frame floors	10 ga. with 1-1/2" flanges	
Bottom longitudinals	1-1/2" x 3/16" flat bar	
Side longitudinals	1-1/2" x 1/8" flat bar	
Bottom	10 ga.	
Sides	10 ga. max.	
Transom	10 ga.	
Decking	10 ga. max.	
Deck beams	1-1/2" x 1/8" flat bar	
Carling	3" x 1/8" flat bar	
Pipe rails	1-1/4" Sche. 40	
Tanks (stainless for gasoline)	3/32" (or comparable gage)	
Strut (inboards)	3/4" x 6" plate	
Motor stringers	10 ga. with 3/16" flanges	

True Grit - Plywood

Bill of Materials

MATERIAL LISTING: The following is an approximation that can be used for hull cost estimates; it is not meant to be used for buying materials without first checking the instructions and plans for various options which will vary the listing (especially with regard to planking panel sizes, powering choices, laminated members, etc.), and to local suppliers for what material sizes may be available. In other words, each builder must make decisions as to how he will build the boat and use materials, and then take off a listing to suit. As a cost savings, materials should be grouped for resawing to the sizes required. Plywood panel lengths are given to cover the length of the vessel although stock panels of the listed size may not be available. See previous herein for options and alternatives.

PLYWOOD: All plywood should be at least AB Exterior or Marine grade; Interior plywood is not acceptable. Douglas-fir or Mahogany-type panels will suffice.

LUMBER: All lumber should be top quality, free from defects, and of types proven in use in boats. Suitable woods include vertical grain Douglas-fir, Alaskan cedar, mahogany (including Philippine, Honduras, and African types), and good quality Southern pine. Thicknesses given below are nominal except as noted "NET". Widths are net. Total lengths listed allow some overage for trimming, etc.

ITEM	SIZE	NO. PCS.
LUMBER:		
Framing	1-1/4" x 10" 1-1/4" x 6" 1-1/4" x 5"	20' 50' 80'
Keel	1" x 6"	38'
Bottom battens	1-1/4" x 3"	130'
Side battens	1" x 2"	54'

Chine logs	1" NET x 2-1/2"	50'
Raised sheer clamps	5/8" NET x 1-1/4"	130'
Sheer clamps	1/2" NET x 1-1/4"	330'
Carlings	1" x 2"	42'

PLYWOOD:

ITEM	SIZE	NO. PCS.
Transom, stem, breasthook, floor timbers	3/4" x 4' x 8'	4
Gussets, floor timbers	1 1/2" x 4' x 8'	3
Bottom planking	1/4" x 4' x 24'*	4
Side planking	3/8" x 4' x 27'*	2
Decking	3/8" x 4' x 8'	4

* Note: Standard 4' x 8' sheets can and probably will be used in all cases. Adjust quantities accordingly.

- **Screws:** Flathead wood type, bronze or hot dipped galvanized. The following list is an approximate estimate of the screws and nails required to build the basic hull based on the Fastening Schedule. Some variations may occur due to the several options and alternatives in the design which in turn may vary the quantities required.
- 1" #8 = 1200
- 1 1/4" #8 = 2000
- 1 1/2" #8 = 200
- 2" #10 = 200
- 3" #14 = 20
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Nails: Ring type boat nails, bronze or Monel

- 1" #12 = 4 lbs.
- 1-1/4" #12 = 1 lb.
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Carriage Bolts: Bronze or hot dipped galvanized complete with nuts and washers. Size per schedule; take lengths directly from work.

Adhesives: Epoxy adhesives are advised throughout the construction. These may be an epoxy adhesive or epoxy resin. Epoxy resins should be used with thickeners (silica or equal) per the instructions with the resin and/or thickening agent. Due to the noted options, the amount required is difficult to estimate. Start with a gallon container of epoxy and after use you will be better able to estimate the total amount required.