



# The St. Louis Admirals R/C Model Boat Club

<http://stlouisadmirals.com>



## BROADSIDE

30 December 2019

Commodore – Jane Benefield	(636) 447-4016	Secretary – Bob Keeler	(314) 434-8640
Vice-Commodore – Kent Morgan	(314) 892-8669	Asst. Secretary – John Ziemer	(636) 566-8810
Asst. Vice-Commodore – John Ziemer	(636) 566-8810	Editor – Jane Benefield	(636) 447-4016
Treasurer – Lin Blaszkiewicz	(314) 843-4995		

### NOW HEAR THIS YOUR COMMODORE FROM THE BRIDGE



Thank you for your confidence in reelecting me again as your Commodore for the coming year, and also thank you to the officers who also agreed to being reelected, and I am looking very much forward to another interesting and fun-filled year.

Please keep in mind our unique weather conditions – if the weather is hazardous, please do not take chances – stay safe.

The Gateway Mid-America Toy Show is set for 7-9 February 2020, Sheraton Lakeside Chalet @ Westport Plaza, 191 Westport Plaza, St Louis, Mo. 63146

We had a nice Christmas gathering at the Olive Garden 4 December 2019 and the following members and their spouses were able to attend, Lin and Ralph Blaszkiewicz, Kent Morgan, Russ Wick, Phil Frisch, Bob Keeler, Jane and Michael Benefield and John Ziemer.



Scheduled Events	
Wednesday, 8 January 2020	Monthly Meeting
Wednesday, 5 February 2020	Monthly Meeting
Wednesday, 4 March 2020	Monthly Meeting
Wednesday, 1 April 2020	Monthly Meeting

### NOTES

#### Next Gathering: Wednesday 8 January 2020

Prior to our 5PM monthly 1<sup>st</sup> Wednesday-of-the-month dinner-meeting, sailing is from 2-4 PM at our usual St. Ferdinand Pond, Florissant, MO – weather permitting. Dinner is set for 5:00 PM at our **Handel's Restaurant**, 599 St. Denis, Florissant, MO 63033m followed by our 7:00 PM meeting at our meeting place at the **Old St. Ferdinand Shrine, the Old School House**, 1 St. Francois Street, Florissant, MO.

**3<sup>rd</sup> Sunday every month (2-4 pm)**, March thru November: Sailing at St Ferdinand Pond -- weather permitting.

Gratefully,  
Jane  
Commodore

\*\*\*\*\*

**SHIP MODEL MUSEUM QUALITY ASSESSMENT:  
Ship Model Category/Classification System**

**Quantitative Ship Model Rating Sheet Matrix and Procedure**

**and**

**Comparative Ship Model Museum Quality Criteria Tabulation Matrix**

**Compiled by: Mike Benefield, 30 December 2019**  
**St Louis Admiral's RC Model Boat Club Member.**

**GENERAL**

The concept of Museum Quality for ship models can be universally ambiguous ... where model ship craftsmen and customers of all stripes may have as many views of the concept as there are global craftsmen and owners of model ships since the 16<sup>th</sup> century. Dana Wegner, current Curator of Ship Models (and maritime historian) at the Naval Surface Warfare Center (Wegner 2019), reminds us in his article *Museum Standards and Ship Models: The Influence of Professionalism* (Wegner 2019C) that "... museum standards for ship models in the United States have been applied since 1883 and have been in written form since 1945". These standards, or criteria, have helped to establish a "benchmark" focused on ship model quality in non-subjective, quantitatively measurable ways. Standards operationalize the concept of Museum Quality for concrete use by museums who choose to adopt them, and to objectively assess the quality of ship model construction. Several prominent ship model museum curators since 1945 have established a consensus among them that superior ship models are characterized by consistent "... scale, proportion, and accuracy, and *these* are deemed the universal important elements of high quality *ship* models." (Wegner 2019C).

These prominent model ship museum curators include (among others in 1972; Wegner 2019C): Howard I. Chapelle, then curator emeritus of the Smithsonian Institution, naval architect, historian, and author of many maritime books, who championed for "a true reduction of the full-sized ship, externally, at least ... and to exact scale with all possible accuracy in all elements, from beginning the block to painting the colors"; William A. Baker, then curator of the Hart Museum at the Massachusetts Institute of Technology agreed with Chapelle's concern about scale: "The hull of a model and all its fittings must be to the same scale...the quality of work must be consistent"; and J. Revell Carr, then curator and later Chief Executive Officer of Mystic Seaport offered: "The key to really superior models is scale and proportions". In conclusion, including Dana Wegner, Curator of Ship Models, Naval Surface Warfare Center: "...scale and accuracy are the most universally important elements of high quality models. The degree of detail and virtuosity of the craftsman, when not affecting scale and proportion, are to a degree, less critical" (Wegner 2019C).

Written museum-quality standards adopted by a museum regulate "...the creation of museum quality ship models" where "... standards do provide at least one way of assessing (*and measuring*) quality" (Wegner 2019C). "The term 'museum quality' is then sometimes used" by ship model museums "to describe a model which ... is an example of superior work" (Wegner 2019B). A set of ship-model museum quality standards/criteria, then, is a more objective and standardized way of assessing the quality of a craftsman's work in producing a durable, long-life ship model destined for display within a ship model museum ... or destined for a craftsman's own long-lived appreciation of his or her measurable high-quality work in building the ship model.

Howard Chapelle also discusses other ship modelling quality considerations in his frank article about *Ship Models That Should Not Be Built* (Chapelle 1951; Used with the permission of the Nautical Research Guild, Inc.; Van Dahm 2019 -- Kurt Van Dahm, Director & Chairman, Nautical Research Guild, Chicago, IL). For instance, accurate ship plans should be available for quality ship model work: "The reason why 'reconstruction' is of such very doubtful value is that ships were not standardized in hull-form, deck arrangement or appearance. Even at best, the plans of old ships are incomplete enough and the necessary reconstruction of deck details and rig offer enough problems, but when a reconstruction of the hull-form is added the whole task becomes questionable. When you have lines, some details of deck arrangement and outboard appearance, you at least have the fundamentals authenticated and if new information throws out details in reconstruction, at least the whole model is not made valueless" (Chapelle 1951). For example, as of 1951, there were no plans in existence for the Bonhomme Richard yet some modelers "reconstructed the ship from the keel up without the slightest knowledge of the type of ship represented by the original and with only the most casual and uncritical examination of source material, yet there is usually a huge quantity of authentic plan-type material available if sought by modelers" (Chapelle 1951) in at least their national or other-country archives.

Furthermore, Howard Chapelle continues, "Of all plans, the 'take-off' represents the most accurate; after this I place the 'builder's plans'; and 3rd, the 'original design'. In the latter class I like to check with the offsets if they can be found as the latter too often show the original design was altered to some extent in laying-down: for example, the Sloop of War Jamestown was built much longer than indicated in her draught" (Chapelle 1951). Critically, "... there are many individual ships for which some authentic material exists that are still problems to (*even experienced*) model builders. If you are going to spend a lot of time and effort on a model. at least be certain

your plans are authentic and that the portions reconstructed are known to you and are understood (*and not merely 'similar'*). One ought to remember that accuracy in a model is of far more importance in giving a model value than fine workmanship alone ... the two should go together, but there are many well-made models built to poor plans or none at all which represent nothing more than a complete waste of time, materials and labor” (Chapelle 1951).

“In short - do not attempt to model any ship for which you do not have at least the hull lines and outboard appearance from reliable sources. It is better to build only a half-model to show accurately what you have rather than a completely rigged model 75% guesswork. Fit the type of your model -- decorative half-model, hull model or completely rigged model -- to your source material. Never, repeat NEVER, try to reconstruct lines of a ship out of a few measurements for it cannot be accurate enough and is misleading to all who ever see the model” (Chapelle 1951).

In addition, the craft of quality model ship building depends not only on accurate plans or other original ship information and careful ship model scaling, but also on materials used in the ship model, especially in terms of corrosion and longevity. For instance, the Naval Surface Warfare Center expects its museum ship models to endure for 100 years or more (Wegner 2019A). A major illustration of ship model deterioration or corrosion is a ship model which used material containing lead; particularly important in that lead can be highly corrosive under ordinary ship model museum conditions. Dana Wegner, Curator of Ship Models, , Naval Surface Warfare Center, in his important article *Lead Corrosion in Exhibition Models* (Wegner 2019 E), researched the debilitating corrosive effects of lead objects and artifacts used in ship model building since early eras. Dana Wegner explains, “The staff of the Curator of Ship Models at the Naval Surface Warfare Center has long experience in observing and treating the deterioration of exhibition ship models. We maintain the U.S. Department of the Navy's ship model collection containing over 1,900 models built between 1813 and today” (Wegner 2019 E).

Historically, the most pervasive form of museum display ship model deterioration or corrosion is from lead materials, easy to obtain over the centuries; its softness malleable enough to form many complex ship fittings and objects, and its melting temperature low enough to enable castings and other fabrications. Dana Wegner continues, “However, lead fittings frequently corrode. Corrosion may be so severe as to completely consume the piece, leaving behind a white or gray residue popularly, and aptly, called ‘lead disease,’ ‘lead rot,’ ‘lead cancer,’ or ‘lead bloom’. In the exhibition ship modeling community there has been considerable speculation about what causes lead to severely corrode, how to arrest the process in pieces already installed, and how to prevent corrosion in the future” (Wegner 2019 E).

Chemically, exposure of lead to acetic acid is a primary cause of lead corrosion, transforming lead into lead carbonate which appears as a white granular powder on ship model lead fittings and objects. (Wegner 2019 E). Coatings on lead fittings and objects do not help much; rather, the best way to mitigate or reduce lead corrosion is to restrict lead artifacts from exposure to all acetic acid sources; however, ironically, lead itself may be a source of acetic acid chemicals in a ship model. Other built-in ship model materials may also be sources of acetic (and formic) acid, such as hardwoods, and to a lesser extent, softwoods. Sources of acetic acid external to the ship model may be from display case materials such as wood framing (glass better than acrylic), and lack of periodic display-case air exchange. “Generally, the display case air should change inside the case about once or twice a day... a one-inch (30-mm) diameter hole in an exhibit case is enough to exchange the air in a case containing about one cubic yard (m) volume,” where the stored outbound air may have a slight acidic vinegar odor (Wegner 2019 E). Other acetic (and formic) acid sources may range from woods to some glues, paint vapors, paper and plastics, and so forth.

Today, other ship model fittings material may be more suitable than lead. Potential replacement materials for lead include: white brass, bronze, or copper; and lead-free britannia metals (which are some forms of pewter vice lead-rich pure pewter). Britannia metal is easy to form and cast and can be “... composed of 89% tin, 7.5% antimony, and 3.5% copper.” Some Britannia may also contain lead. Once again, probably the best way to prevent lead corrosion is to isolate ship models from sources of acids. And just as importantly, to be keenly aware of precautions against lead's toxic effects to humans. (Wegner 2019 E).

“Lead is a serious health hazard. Lead may enter the body by breathing or swallowing lead dusts, fumes, or mists. Once in the body, lead enters the bloodstream and may be carried to all parts of the body. If the body absorbs and stores more lead than it can eliminate, this may cause irreversible damage to cells, organs, and whole body systems. After exposure stops, it takes months or even years for all the lead to be removed from the body” (Wegner 2019 E).

### **Quantizing Quality for Ship Model Assessment**

The general museum quality assessment discussed above is an overarching view of aspects of museum-quality ship models, and also includes such issues as material hazards to the ship model itself and to the ship model craftsman and display owner. The next step is to describe a system that quantifies the quality of ship model *Building Aspects* (hull, rigging, fittings, etc.) as a means to measure the overall quality of a ship model in anticipation of potential museum display, or competition; continuing now with an examination of a Ship Model Category/Classification System and the follow-up Matrix 1: *Quantitative Model Ship Rating Sheet*, and Procedure.

## SHIP MODEL CATEGORY/CLASSIFICATION SYSTEM

A useful categorization or classification system for crafted ship models is outlined below. The classification system is provided in the *Ship Model Classification Guidelines* by The Manners' Museum Model Ship Craftsman Competition and by the Mystic Seaport Museum (prepared by Michael R. Wall, Copyright © 1980, with permissions; Wall 1980).

Each ship model classification has its own challenges. Every crafted ship model, regardless of its assigned classification and construction origin, imminently qualifies for equal assessment with museum quality criteria in Matrix 1 and in conjunction with criteria/standards listed in Matrix 2: *Comparative Ship Model Museum Quality Criteria Tabulation*. Some ship model museums may have ship model classification preferences but they will generally give attention to potential museum-quality ship models -- no matter their classification or build origins.

### Classifications/Categories

Class A: Model crafted entirely from scratch materials with no commercially fabricated parts except cordage, chain and belaying pins.

Class B: Model crafted from scratch but supplemented by the use of some commercially fabricated accessories other than for Class A..

Class C: Model crafted from materials provided in a commercial kit and supplemented by other commercially fabricated parts or by scratch-built parts.

Class D: Model crafted entirely from materials provided in commercial kits.

Special or Sub-Categories/Classes: Model crafted and/or displayed in any of the following methods: Antique ; Waterline; Cross Section; Cut-away; Exposed Interior; Sailing; Half Hull; Power; Rare Materials; Diorama; Mechanized; Builder's; Extreme Miniature; Ship in a Bottle; Shadowbox; Americana; Folk Art; Decorative; Production; Pond Model; and other.

## QUANTITATIVE SHIP MODEL RATING SHEET MATRIX AND PROCEDURE

### Rating Measures and Degree of Quality of Craftsmanship

The Quantitative Ship Model Rating Sheet system in Matrix 1 is focused on degree-of-quality-measurements of various *building aspects* of a ship model by the craftsman. (e.g., hull, rigging, fittings, etc.). The degree of quality of each building aspect of a crafted ship model is estimated based on a set of corresponding ship-model *building aspect* criteria listed in Matrix 2: *Comparative Ship Model Museum Quality Criteria Tabulation*.

Rating measures are assessed by examining officials for class/category-identified ship models and quantized assessments are documented in the Rating Sheet (Matrix 1) for each ship model being evaluated.

In Matrix 1, row element ratings of 1 through 10 for each of five Criteria Topics represent the quantitative degree of quality of craftsmanship accomplished for the applicable Rating Sheet ship model *Building Aspect*.

Again, *Building Aspects* Matrix 1, column 1, are in turn directly related, mapped, to corresponding *Building Aspects* in the first column of the follow-on Matrix 2, below. These *Building Aspects* in Matrix 2 are in turn referenced to their corresponding *detailed* museum-quality criteria/standard sets in the second, third and fourth columns of matrix 2.

### Rating Sheet

Within the Rating Sheet (Matrix 1), record each applicable column 1 *BUILDING ASPECT* (hull, rigging, etc.) quantitative assessment value (for instance, the 2 values in the Mounting *Building Aspect*) while referring to corresponding Building Aspect standards in Matrix 2. Finally, calculate the "Base Number".

### Base Number and Rated Points Calculation Procedure

- Each **applicable BUILDING ASPECT** is worth 1 thru 10 points for each of the five CRITERIA TOPICS.
- Sum the values of each of the **applicable BUILDING ASPECTS** base numbers in the TOTAL POINTS column, and that will equal one's "Total Base Number". For example, in the illustrative Matrix 1 applicable TOTAL POINTS column base numbers: = 30+30+50+50+40+20 = 220 *Building Aspect* Points "**Base Number**".
- After the applicable numerical ratings are annotated by the rating official, a total rating number sum for each building aspect is calculated and divided by the "Base Number" for a percentage. For example in the Matrix 1 MOUNTING row: 16 (total rated

points) /20 ("Base Number") = 80%. For an overall Matrix 1 total, add all the applicable total Rated points and divide that sum by the sum of all applicable Base Number points for an overall ship model rating percentage. This overall percentage score is the indication of *degree of quality* of the ship model being rated.

### **Matrix 1: Quantitative Ship Model Rating Sheet**

<b>Model Name:</b>		<b>Scale:</b>		<b>Builder:</b>		
<b>Class:</b>	<b>Hull Construction:</b>		<b>Dimension:</b>		<b>Year Built:</b>	
		<b>CRITERIA TOPIC:</b>				
<b>BUILDING ASPECTS</b>	Accuracy and Authenticity of Plans & Research	Accuracy of Scale and Proportionality	Uniformity of Detail	Neatness of Construction	Materials and Their Application	<b>TOTAL POINTS per each Base Number</b>
<b>GENERAL</b>	$X_1 = (1-10)$	$X_2 = (1-10)$			$X_3 = (1-10)$	Sum $X_{1-3}/30$
<b>RANGE</b>	$X_1 = (1-10)$	$X_2 = (1-10)$	$X_3 = (1-10)$			Sum $X_{1-3}/30$
<b>HULL</b>	$X_1 = (1-10)$	$X_2 = (1-10)$	$X_3 = (1-10)$	$X_4 = (1-10)$	$X_5 = (1-10)$	Sum $X_{1-5}/50$
<b>HALF MODELS</b>						/50
<b>SHIP FITTINGS</b>						/50
<b>DECKWARE</b>						/50
<b>RIGGING</b>	$X_1 = (1-10)$	$X_2 = (1-10)$	$X_3 = (1-10)$	$X_4 = (1-10)$	$X_5 = (1-10)$	Sum $X_{1-5}/50$
<b>MASTING</b>						/50
<b>MATERIALS</b>						/50
<b>PAINTING</b>						/50
<b>ACCOUTREMENTS</b>						/50
<b>SPECIAL FEATURES or SPECIAL CLASSES</b>	Special Royal Figurehead					
		$X_1 = (1-10)$	$X_2 = (1-10)$	$X_3 = (1-10)$	$X_4 = (1-10)$	Sum $X_{1-4}/40$
<b>SAILS</b>						/50
<b>MECHANICAL MODELS</b>						/50
<b>MOUNTING</b>				$X_1 = (1-10)$ <b>9</b>	$X_2 = (1-10)$ <b>7</b>	Sum $X_{1-2}/20$ <b>= 16/20</b>
<b>INSPECTION</b>						/50
<b>DEVIATIONS</b>						N/A

**TOTAL =  $X_{total} / \text{Sum of Base Numbers} = \text{Percentage}$**

**Score ranges (Wall 1980):**

90-100% Extraordinary; 80- 89% Excellent; 70- 79% Good; under 70% Not Rated

**COMPARATIVE SHIP MODEL MUSEUM QUALITY CRITERIA TABULATION MATRIX**

In addition to the ship model *Building Aspects* listed in column 1 of the *Comparative Ship Model Museum Quality Criteria Tabulation* (Matrix 2), there are three sets of ship model museum quality criteria represented: In Matrix 2, column 2, The ‘Preliminary Building Specification’ set of ship model criteria was prepared by the staff of the Division of Marine Transportation, Howard I. Chapelle, Curator, Smithsonian Institution (revised, 3-31-61; Chapelle 1980). In addition, in Matrix 2, column 3, the Mystic Seaport Museum provided ‘*amendments*’ to Howard Chapelle’s construction criteria in column 2 and ‘*added*’ (in italics) construction criteria of its own, all of which were provided by R. Michael Wall, Mystic Seaport Museum Stores and with judging criteria provided by The Mariners Museum, Model Ship Craftsman Competition: ©1980 Mystic Seaport Museum Stores, Inc. (Wall 1980). In Matrix 2, column 4, the Navy tabulates museum quality criteria developed and used by the US Navy Museums of Ship Models, Mr. Dana Wegner, Curator of Ship Models, Naval Surface Warfare Center, (Wegner 2019,2019A).

It is noteworthy that in Matrix 2, not every column 1 *Building Aspect* of a ship model has a quality criteria specified by a given Ship Model Museum ; other *Building Aspects* have only one Museum quality criteria entry. In some cases, a *Building Aspect* quality criteria may differ between Ship Model Museums. These matrix-element criteria underscore the comparative analysis aspect of Ship Model Museum Quality Criteria characteristics (standards) for each ship model *Building Aspect* between 3 different United States ship model museums. The next iteration of this paper of ship model museum quality criteria at a future date will include Model Ship Museum Quality Criteria developed for use by the National Maritime Museum , Greenwich, England.

For now, a ship model craftsman can therefore target a ship-model build to one Ship Model Museum Criteria Set, or more broadly, a ship model build to accommodate *Building Aspect* Criteria across all three Museum Criteria Sets in the Matrix 2 tabulation.

**Matrix 2: Comparative Ship Model Museum Quality Criteria Tabulation**

Museum Ship Model Construction Category/ Item  BUILDING ASPECTS	Howard I. Chapelle's (Smithsonian Curator) ‘Preliminary Building Specifications’ (Chapelle 1980)	Mystic Seaport Museum Criteria Amendments and Additions ( <i>Italics</i> ) to Howard I. Chapelle's ‘Preliminary Building Specifications’ (Wall 1980, Chapelle 1980)	Museum Curator of Ship Models, Naval Sea Systems Command (NSSC), Naval Surface Warfare Center (NSWC), Carderock (CD -- Maryland): Criteria/ Specifications for Construction of Exhibition Models of US Naval Vessels (Wegner 2019, 2019A)
			<b>Note:</b> Model specifications here are for general interest and are not to be referenced regarding official Navy contracts.
<b>GENERAL</b>			
	Intention: To produce an accurate scale ship model of museum-grade workmanship and finish	Same as Chapelle	New ship model expected to last 100 years before deterioration is visible. Resistance of models and parts to the actions of temperature, humidity, and light is essential. Select materials which are known to be compatible and will not, in time, interact chemically. Substances of unproven longevity should not be employed in models built under these criteria guidelines. Lead, fiberglass resins, styrene, expanding foams, casting resins, and cyanoacrylate glues

			to be avoided when other materials can possibly be used.
<b>RANGE</b>	Model is to be as complete in exterior detail based on relevant research, museum approved plans, and related documents	Same as Chapelle	Workmanship shall be in accordance, in every respect, with the best model-building practices. Models shall be museum quality and shall consist of the whole exterior of the vessel from keel and appendages to the top of the highest antenna or fitting, and shall include interiors of such enclosures, conning stations, deck house topside stations, gun and missile stations, hangars and bays as are accessible to weather without opening watertight doors or ports. Generally, all items on the prototype twelve inches or larger for 1:96 scale (six inches or larger for 1:48 scale) will be reproduced.
	Models in a certain category shall be all the same scale so that they give a sense of relative size by category as appropriate in exhibition	Same as Chapelle	
Scaling:	Small craft categories: 1-1/2, 1, 3/4 or 1/2 inch/ft; Fishing and coasting vessel categories: 1/4, 3/8 or 1/2 inch/ft scale; Large sailing vessel and steamer categories: 1/8, 3/16 or 1/4 inch/ft;	Amendment to Chapelle: Apply the same if using metric system;	Generally, all items on the prototype twelve inches or larger for 1:96 scale (six inches or larger for 1:48 scale) will be reproduced.
	Margins of tolerance: 2 inches to scale on scales between 1/8 and 1/4 inch/ft; 1 inch to scale on scales between 3/8 and 3/4 inch/ft; and 1/2 inch to scale on scales between 3/4 and 1-1/2 inch/ft.	Amendment to Chapelle: Apply the same if using metric system.	
<b>HULL</b>			
General: Hull form to be shaped, fair, and symmetrical thorough lift, planking, etc:	Using the "lift" construction method, planked, or planked over molds, or as otherwise agreed, and with great precision using accurate templates for level lines, buttocks and sections;	Amendment to Chapelle: Plank on Frame vs. Plank on Bulkhead: due to wide spacing of bulkheads on kit model, flats appear even in the best of construction, especially in areas requiring large or complicated bends; Completely framed models are much better and allow for portions of the hull to be left unplanked without undue distraction.	Hulls shall be smooth, fair, and symmetrical; without blemishes, sap pockets, or tool marks, and shall be scraped and sand-papered to smooth surface. Hulls shall be built up in lifts of clear, first-grade mahogany or basswood; doweled and glued together with water-resistant glue; The wood shall be completely free of knots, checks, and sap pockets and shall be thoroughly seasoned.
		<i>Addition to Chapelle: Kit: Solid, plank on bulkhead; Scratch Built: *Solid(must be hollowed out over 10 inches); *Lift (waterline, buttocks); *Planked over solid/lift;</i>	Models over 12 inches beam must be hollowed for reduction of weight The hull shall be composed of the least number of parts necessary to achieve the proper shape; An

		<i>*Plank on Frame: Solid frames; Built up frames.</i> <i>NOTE: *preferred methods.</i>	excessive number of glue joints shall be avoided; . On models less than 12 inches beam, hull lifts shall be cut to the full body shape: lifts shall not be cut in halves, thereby creating a glue seam along the vertical centerline of the model; The lifts shall conform accurately to lines of the vessel as shown by the plans; A stable, durable, flexible body putty may be used in moderation to fill gaps.
Deck planking/ covering:	The deck plank may be marked or the deck laid without showing butts or too wide a seam;	Amendment to Chapelle: This deck planking applies to small scales only (3/32, 1/16, etc.), all others should show butts. Over emphasis on small scale deck work should not distract from remainder of model.	Deck covering shall be represented as installed on the vessel, including safety treads and nonskid areas; Decks which are bright shall show planking, seams, scarfs, butts, and miters, and shall be rubbed to a dull finish; Paper shall not be used to represent deck coverings.
Hull fittings:		Same as Chapelle:	Generally, all items on the prototype twelve inches or larger for 1:96 scale (six inches or larger for 1:48 scale) will be reproduced.
Hull Fittings Templated and Various:	The hull fair and smooth in all respects; fully templated in building to insure accuracy; and fitted with head rails, trailboards, knees, quarter galleries, ports, scuppers, chesstrees, sheathing, stern windows, deadlights, and moldings in correct scale as shown in the plans or as agreed. Deck machinery or fittings to be as shown in plans.	Same as Chapelle:	Windlasses shall be wound with appropriate cable or line. Propeller shafts, struts, bearings, bilge keels, etc. will be made from brass, aluminum, or stainless steel; Propellers should be cast in bronze. If another material is used it shall first be copper plated and then brass plated. Plastic propellers are not permitted.
Painting, finishing:	Hull and fittings to be properly painted or finished as agreed upon.	Same as Chapelle:	
<b>HALF-MODELS</b>	<b>Note:</b> Use the following criteria and as <i>supported</i> by all other ship model criteria specified in other applicable categories/items elsewhere in these guidelines:		
General:	To be made on the lift principle with great precision to the tolerance stated earlier for hulls;	Same as Chapelle	
	Hull to be carefully templated for sections, buttocks and level lines and to be deck level.	Same as Chapelle	
Moldings, carvings, lights:	Hull outboard and deck furniture to be fitted with moldings, carvings, lights, etc. as shown in agreed plans.	Same as Chapelle	
Stub masts:	To be shown in correct position in rake, in half-section.	Same as Chapelle	



Bowsprit, booms, cutwater, keel, rudder, screw, stack, etc:	Full length bowsprit and main or mizzen boom, in half section, will be mounted on the backboard and with cutwater, keel, rudder, screw, stack, etc. as in agreed plans.	Same as Chapelle	
Paint and finish:	Painted and finished as in original vessel or boat, as shown in agreed plans	Same as Chapelle	
Planking:	If planked, seams laid off as in the full-size vessel or boat, complete with butts and stealers, wales, moldings and cove or stripe lines, and coppered if agreed.	Same as Chapelle	
Backboard:	Painted or polished wood.	Same as Chapelle	
<b>INTERIM HULL CHECK/INSPECTION:</b>	Model hull (or Half-Models) will be checked by the curator or his aid prior to finishing to insure hull agrees with the lines drawings of agreed plans. Also see INSPECTION below.	Same as Chapelle:	Prior to applying any sealer or primer to the hull, the hull shall, at the builder's expense, be crated and sent to the Curator of Models for inspection and testing; The Curator will inspect the hull for wood-type, grain, seasoning, putty, glue-type, checks, excessive glue joints, and conformity to plans; Samples of wood, glue, and glued pieces may also be required for destructive tests; The Curator shall return the hull, collect freight, as certification of compliance. Also see INSPECTION below.
<b>SHIP FITTINGS/DECKWARE</b>	Fittings and parts may be made of brass if strength requires;	<i>Addition to Chapelle: No lead (pot metal) or plastics/styrene.  Can use brass, nickel silver, wood, paper, tin alloys (low in lead) such as Britannia and Pewter, formica (phenol formaldehyde), aluminum (hard alloys only).</i>	Generally, all items on the prototype twelve inches or larger for 1:96 scale (six inches or larger for 1:48 scale) will be reproduced. Machined parts shall bear no tool marks. Fittings and accessories shall be of metal or other suitable material (however, all masts, antenna masts, shafts, yardarms, booms, etc. less than 3/16" diameter shall be metal) which will permanently hold its shape and will not deteriorate from temperature, humidity, light or chemical reaction with other parts, paint, or the atmosphere. Lead or lead-bearing compounds are not suitable for any component. No ferrous materials shall be used.
<b>RIGGING/MASTING</b>	To scale and of good lasting material or proper appearance and color. To	Same as Chapelle	Running and standing rigging and cable antennas shall be represented. As before,

	agree with instructions as to source reference and methods.		windlasses shall be wound with appropriate cable or line.
		Same as Chapelle	Layed rope shall be represented with first-quality, twisted, linen line; Wire cable will be used to represent wire cable; Wire will be used to represent wire; Care shall be given to insure the proper color of all rigging; Knots and seizings may be secured with thinned white glue.
Mast metal:	Mast metal work to be correct scale and properly proportioned -- "faked" only where it cannot be made to scale or where it does not show when model is rigged;	Same as Chapelle	
	workmanship to be of museum quality throughout.	Same as Chapelle	
Other mast materials:	Linen, wire, brass chain or other materials to be employed as agreed.	<i>Addition to Chapelle: NOTE: For linen -- linen only: no silk or cotton (limited life), no synthetics or blends (they stretch, haven't stood the test of time).</i>	
<b>MATERIALS</b>			
Durability		Same as Chapelle	100 years before deterioration is visible. Resistance of models and parts to the actions of temperature, humidity, and light is essential. Extreme care must be given to select materials which are known to be compatible and will not, in time, interact chemically. Substances of unproven longevity should not be employed in models. Fiberglass resins, styrene, expanding foams, casting resins, and cyanoacrylate glues be avoided
Wood:	Hulls, deck furniture and spar work of well dried lumber, preferably white pine or poplar;	Amendment to Chapelle: Deck furniture to be made from close grained hardwoods (pear, etc.); <i>Addition to Chapelle: No Balsa; All close grained hardwoods &amp; their veneers: Fruit woods, Boxwood, Bass, Holly, Poplar, Ebony, Dogwood, Sitka Spruce, Pine (high grade), Model Plywoods.</i>	
Cloth/Fabrics		<i>Addition to Chapelle: Treated Cloth/Fabrics (to scale)</i>	
Fiberglass		<i>Addition to Chapelle: Only on extremely large hulls.</i>	
Glass		<i>Addition to Chapelle: Permitted where applicable</i>	

Glue:	Damp resistant or "water proof"	<i>Addition to Chapelle: White (water resistant), Ambroid or Duco, Epoxy, Instant glues (zap, etc., on small areas only), powdered resins.</i>	In no case shall glue alone be deemed sufficient to hold deck houses, fittings, or other appurtenances in place. Mechanical fastenings such as screws and pins shall be used in addition to adhesives; Knots and seizings may be secured with thinned white glue.
Putty:		<i>Addition to Chapelle: Duratite Surfacing Putty</i>	A stable, durable, flexible body putty may be used in moderation to fill gaps.
Solder:		Same as Chapelle	All solder points shall be silver soldered wherever possible.
Metal work:	Brass, copper or other approved material as agreed;	<i>Addition to Chapelle: Brass, nickel silver, wood, paper, tin alloys (low in lead) such as Britannia and Pewter, formica (phenol formaldehyde), aluminum (hard alloys only).</i>	
	Use of white or pot metal is restricted to portions of agreed upon metal work;	<i>Addition to Chapelle: No lead (pot metal), no plastics/styrene.</i>	
	Castings are to be copper or brass;	Amendment to Chapelle: Can also be made of other agreed upon metals.	
	Rigging to be of brass chain, soft iron wire -- and linen twine or other agreed material properly coated or painted;	Amendment to Chapelle: Iron wire may rust-- should use anodized tin wire instead.	
	Lead or plastic are not acceptable for hull or spar fittings;		
	Spars under 3/16" diameter to be of brass, not wood.	Amendment to Chapelle: Brass is optional and use of close grain hardwood is good.	
<b>PAINTING</b>	Agreed upon colors and flat;		
General:	No gloss or egg-shell finish paint unless agreed upon;	Amendment to Chapelle: Paint finish should not be a high gloss: flat, egg-shell, semi-gloss, and satin or their combinations are preferred.	Select compatible paints that demonstrate the best resistance to color changes, cracking, peeling, and fluctuations in temperature and humidity. All parts of the model shall have a surface treatment representing the appearance of the actual vessel if reduced in scale.
	High grade paint material (and properly mixed for metal work).	<i>Addition to Chapelle: Shellac (for natural wood finish only), Floquil, Pactra, Humbrol, Japan, Clear Lacquers (Deft, Krylon), Polyurethanes/West System epoxy resin.</i>	. In all cases, the models shall be spray painted with opaque lacquer. Paint shall be applied thinly and evenly so that fine detail will not be obliterated. The use of metallic paints such as silver or gold is discouraged. The use of white enamel or natural varnish is not permitted.
Painted Wood:		Same and Chapelle	Wooden parts sufficiently filled, sealed, and primed so that when rubbed down, the wood grain is not visible.

Painted Metal:		Same and Chapelle	Metal parts shall be well-cleaned and then primed before painting.
Stripes and Markings:		Same and Chapelle	Hull numbers, ship's names, flight deck and draft markings, as well as any other prominent signage, shall be carefully applied in paint. Tape, paper, or decals are not permitted.
<b>ACCOUTREMENTS</b>			
Carvings	Artistically formed and neatly made, fitted as shown in agreed plans, and with great precision and correct scale to size.	<i>Addition to Chapelle: Materials: Plaster (carvings), Epoxy (carvings).</i>	Castings shall bear no visible mold marks.
Human Figures	To be proper scale and proportion and dressed in contemporary fashion to the boat or vessel, as of her date of construction;	Same and Chapelle	
	Material and fastening and positioning on deck/boat as agreed	Same and Chapelle	
Flags		Same and Chapelle	Flags shall be such material that a natural appearance as in a calm is achieved.
Ports And Windows		Same and Chapelle	Ports shall be transparent, and shall have a hole bored behind them to give an appearance of depth. Large windows shall be clear acrylic plastic
Gun Turrets		Same and Chapelle	Gun turrets shall have the openings in face plates required for elevation of the guns. Where required, gun shrouds shall be represented.
Aircraft And Vehicles		Same and Chapelle	Where appropriate for the mission of the actual vessel, and visible on the model, scale aircraft or vehicles will be provided. Landing pads shall be provided with at least one representative scale aircraft.
Small Boats		Same and Chapelle	Small boats shall be mounted on davits or otherwise as actually carried and shall show all details, motors, and equipment twelve inches or larger in actual size. If represented with weather covers, gripes and all fastenings visible are to be shown. Landing craft and whale boats shall be without

			covers and shall show all exposed details and equipment.
<b>SPECIAL FEATURES</b>		Same and Chapelle	Special <i>functional</i> features peculiar to the vessel (for example: stern doors, towing devices, special antennas, fire fighting gear, etc.) shall be shown.
<b>SAILS</b>	Made of lasting and suitable textile such as linen or as agreed;	Amendment to Chapelle: Preferably none, though suitable linen cloths can be employed for scales 1 /4" or greater. If employed, all details must be shown, reefs, reef bands, etc.	
	If not set, sails to be furled on the spars;	Same and Chapelle	
	If set, sails must be sewn or marked to represent cloths and patches, reef and reef bands and be complete as to appearance.	Same and Chapelle	
<b>MECHANICAL MODELS</b>	Required model machinery to be built of metal or plastic, and to be of accurate scale and proportion and properly assembled in working, or apparent working order per agreed plans.	Same and Chapelle	Windlasses shall be wound with appropriate cable or line.
<b>MOUNTING</b>	To be mounted on keel blocks and bolted to base board, or set in a proper cradle;	Same and Chapelle	
	All mounting chocks, blocks and base board to be of dry lumber: mahogany, white pine or other agreed lumber, smooth and well sanded and painted or varnished as agreed.	Same and Chapelle	
<b>SCHEDULE OF MATERIALS</b>		Same and Chapelle	Provide, at the time of delivery of the model, a schedule of materials and brand-name products employed in the construction of the model. The schedule of materials will be added to the historical file retained for each model. <b>A.</b> Type of wood used for hull. <b>B.</b> Type of wood filler used. Include brand name. <b>C.</b> Type of primer used. Include brand name. <b>D.</b> All paints used. Include brand name and color designation. <b>E.</b> All glues used. Include brand and areas where employed. <b>F.</b> Any other

			significant materials. Include clear sprays, stains, waxes, and the types and application areas of any sheet, cast, foam, or resinous plastics (if any).
<b>INSPECTION</b>	In addition to the hull inspection described above, models to be built to the scale of appropriate plans as agreed and models are subject to measurement and templating upon delivery, prior to final acceptance.	Same and Chapelle	In addition to hull inspection described above, the model may be inspected by the Curator of Models or his designate during construction and upon completion at the builder's site.
<b>DELIVERY</b>		Before delivery, model-ship builder craftsmen are encouraged to visibly sign or initial their names somewhere on the ship model; Preferably on the keel, where it will be seen, but not be obtrusive. A waterline model can be signed on the water in a corner. Don't let your model go unsigned or without a name plaque recognizing your effort.	The builder shall be responsible for delivery of the model and exhibition case in good condition to the designated location.
<b>DEVIATIONS</b>		Same and Chapelle	Desired deviations, if any, from these specifications/guidelines will be enumerated and discussed on a case-by-case basis.

### **REFERENCES:**

Chapelle, Howard I. (1951): *Ship Models That Should Not Be Built*. Nautical Research Journal , Volume III, Number 3 (March 1951) , p.29. Publisher: Nautical Research Journal, Chicago, IL. (Van Dahm 2019)

Chapelle, Howard I. (1980): *Preliminary Building Specifications*. Included in *Ship Model Classification Guidelines* (Wall 1980). Coordinated with Smithsonian Institution (SI) Archives by Email on 20 December 2019 with Assistant Archivist Ellen Alers, Washinton, D.C., [alerse@si.edu](mailto:alerse@si.edu) and no documentation in SI Archives -- only in Mystic Seaport document “*Ship Model Classification Guidelines*” (Wall, 1980).

Van Dahm, Kurt (2019): *Ship Models That Should Not Be Built*, by Howard I. Chapelle, "**Used with the permission of the Nautical Research Guild, Inc.**" and included within the *Nautical Research Journal* , Volume III, Number 3 (March 1951) , p.29, and Ship Modeler's Shop Notes; Publisher: Nautical Research Guild and Model Ship World, Chicago, IL. Kurt Van Dahm, Director & Chairman, Nautical Research Guild. Chicago, IL, 585-968-8111. [nrgdirector1@gmail.com](mailto:nrgdirector1@gmail.com)

Wall, R. Michael (1980): *Ship Model Classification Guidelines*, by The Manners' Museum Model Ship Craftsman Competition the Mystic Seaport Museum: Prepared by Michael R. Wall, Copyright © 1980; Publisher: Department of Ship Model Sales & Service Mystic Seaport Museum Stores, Mystic Seaport, Mystic, Connecticut 06355 Telephone-(203)536-9688 [maureen.smith@mysticseaport.org](mailto:maureen.smith@mysticseaport.org). “Reproduced with the written permission of Mystic Seaport Museum” (Email 11 Dec 2019, Maureen Smith, Intellectual Property Coordinator). Reproducing this text by photocopying or by any other means is prohibited without written permission.by Mystic Seaport Museum Stores, Inc., R. Michael Wall.

Wegner, Dana (2019): Permissions: “Please feel free to use excerpts from any of my writings which appear on the internet” Email 17 December 2019: Mr. Dana Wegner, Curator of Ship Models, US Navy, Office of the Curator of Ship Models, Naval Surface

Warfare Center, Carderock Division, 9500 MacArthur Boulevard, West Bethesda, MD 20817-5700 USA, 202-781-0000.  
[dana.wegner@navy.mil](mailto:dana.wegner@navy.mil)

Wegner, Dana (2019A): Article: *Specifications for Construction of Exhibition Models of US Naval Vessels*; Publisher: US Navy. Carderock, MD. (See Wegner 2019B and Wegner 2019C)..

Wegner, Dana (2019B): Article: *Curator of Navy Ship Models*: at <https://www.navsea.navy.mil/Home/Warfare-Centers/NSWC-Carderock/Resources/Curator-of-Navy-Ship-Models> ; Publisher: US Naval Sea Systems Command, Carderock, MD. Includes the U.S. Department of the Navy Ship Model Program -- Collections and Locations -- and Technical Specifications for Building Exhibition Ship Models (Wegner 2019A), and Questions and Answers.

Wegner, Dana (2019C): Article: *Museum Standards and Ship Models: The Influence of Professionalism*; Publisher: Nautical Research Journal, Vol 39, No. 1, March, 1994. Chicago, IL. Includes Specifications for Construction of Exhibition Models of US Naval Vessels.


Wegner, Dana (2019D): Article: *Here Today, Maybe Gone Tomorrow: Ephemeral Materials in Ship Models*; Publisher: Nautical Research Journal, Vol 45, No. 1, March, 2000. Chicago, IL.

Wegner, Dana (2019E): Article: *Lead Corrosion in Exhibition Models*; Publisher: Naval Surface Warfare Center, United States Navy, NSWCCD-TR-97/014, November 1997. Carderock, MD.

\*\*\*\*\*

**Mark Twain  
Hobby Center**  
**2793 West Clay Street**  
**St. Charles, MO 63301**  
**636-946-2816**

*"For the  
BEST of  
ALL your  
Hobby  
needs!"*




**SCHAEFER'S  
HOBBY  
SHOP, INC.**

**11659 GRAVOIS ROAD**  
**ST. LOUIS, MISSOURI 63126**  
**(314) 729-7077**

**COMPLETE LINE OF - HOBBIES - ARTS -  
CRAFTS - JEWELRY SUPPLIES**

OVER 50 YEARS AND GROWING      FIRST IN HOBBIES AND CRAFTS

**Checkered Flag**



**Hobby Country**

SOUTH COUNTY  
3847 LeMay Ferry Rd  
ST. LOUIS, MO 63125

PHONE: (314) 714-9237

HOURS:  
MON - SAT 10:30 - 7 PM  
SUN NOON - 5 PM

**Hartman Model Boats**  
*Expertly Crafted Fiberglass Hulls*



7527 Gilbert Rd. -Bergen, NY 14416  
(585) 494-0027  
[www.hartmanmodelboats.com](http://www.hartmanmodelboats.com)

*happy  
new year*



**PLEASE SUPPORT OUR ADVERTISERS**



Jane Benefield  
25 Treebeard Circle  
Saint Charles, MO 63303