



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

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May 2020

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### NOW HEAR THIS YOUR COMMODORE FROM THE BRIDGE



As everyone is aware our 3 June 2020 meeting is cancelled because of coronavirus health issues. We are going to try our best to keep the 1 July 2020 meeting and will reassess that in the latter days of June.

Our Fall Regatta 28 - 29 September looks very promising and everybody please dust off your favorite R/C boats and make ready to sail. In the meantime, for the May and June newsletters, I have 2 voluntary group-assignments to keep us tuned up – Group A: Bob Shissler, Kent Morgan, Ralph and Lin Blaszkiewicz and Russ Wick -- worked from home electronically and jointly put together a relevant group article for the May newsletter, thank you. Group B: Bob Keeler, Phil Frisch, John Ziemer and Michael and Jane Benefield – also worked from home electronically and jointly put together a relevant group article for the June newsletter ... thank you. Your Commodore is incredibly grateful to the two group articles for the May and June newsletters, and our possible member-meeting discussions together about them in July, if at all possible.

Every organization has encountered this difficult coronavirus issue ... these are trying times – so please stay safe.

Scheduled Events	
Wednesday, 3 June 2020	Cancelled Monthly Meeting
Wednesday, 1 July 2020	Monthly Meeting
Wednesday, 5 August 2020	Monthly Meeting
Wednesday, 2 September 2020	Monthly Meeting

### NOTES

#### Next Gathering: Wednesday, 1 July 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

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# USS Constellation – CC 2 (a Lexington Class battlecruiser)

## Designing and Building a 1:96 Scale, RC Model Ship

By Russ Wick,

### Part 3: Developing the Drawings for Model Building:

#### General

I started researching the drawings of the Lexington class ships many years ago and obtained USN ship plans from the National Archives, Coker Craft, The Floating Drydock, and various web sites, hardbound books in my personal library and various periodicals.

The Lexington Class Battlecruisers as originally designed had many characteristics in common with the battleships of the BB 45 Colorado and BB 49 South Dakota classes. Key among these features were:

- the “clipper” bow line above the water line and a modest bulbous bow at the forefoot;
- a hull depth of 56 ft at the centerline and 55 ft at the sheer line midships;
- a flush sided hull form with no casemate gun openings below the main deck level;
- a main battery of eight 16inch MK II guns mounted in four 2-gun, super firing turrets, two forward and two aft
- a multilevel forward superstructure, heavily armored conning tower, and cage masts;
- a secondary battery of 6inch guns in casemates at the main deck level and in open mounts on the superstructure deck level;
- a pointed stern with a semi-balanced rudder and single skeg stern form;

**Hull:** From the above resources, I traced and developed outboard and inboard profiles, hull plans, and the forty (40+) stations (cross sections of the ship’s hull shape), and faired lines depicted on the USN plans. This provided the hull form for the Battlecruiser, sleek, elegant and powerful. Looking at the hull form, one can easily discern that these ships were designed for high speed operations.

**Deck Plans:** The deck plans were developed in a similar manner. I used USN renderings of the Battlecruiser concept and photos of models of the Battlecruiser to determine the position of the Main Battery Gun Turrets, Forward and Aft Superstructures, Stacks, etc.

**Superstructure:** I found on a website [hnsa.org](http://hnsa.org), pdf copies of official USN drawings of the BB 49 South Dakota Class Battleships which were designed and under construction at the same time period as the Lexington Class Battlecruisers in the early 1920’s. When I examined the superstructure and turret designs on the BB 49 drawings and compared them to the models and available drawings of the Lexington class, there were striking similarities in design of these ships. This process was similar to the process used a generation later with the designs of the North Carolina (BB 55), South Dakota (BB 57), Iowa (BB 61), and Montana (BB 67) class battleship designs in advance of the U.S. Navy’s action in WW 2.

An interesting side note is that the design drawings for the BB 49 South Dakota Class Battleships were signed by Assistant Secretary of the Navy – Franklin D. Roosevelt!

Next, I further developed deck plans under the assumption that the Constellation was absent from Pearl Harbor and thus escaped damage from the Japanese attack. At some point during the war, the newer fast battleships of the North Carolina, South Dakota, and Iowa classes were available for carrier escort duty, such that the Constellation could be taken into drydock and refitted to better serve in the Pacific war.....primarily the improvement of long range gunfire control systems for the main battery.....and.....an entirely new suite of dual purpose secondary and anti-aircraft armament.

To me this interpretation meant a “re-construction” from the main deck up, with a forward and aft superstructure resembling that of the rebuilt BB 43 USS Tennessee / BB 48 West Virginia. Because the Lexington class required a very large engine plant both funnels were retained as in the Iowa Class battleships. Additionally, the original 6in / 53 cal. secondary battery guns mounted in main deck casemates and open mounts on the superstructure deck were removed and replaced with sixteen (16) 5in / 38 cal. dual purpose guns, in eight (8) twin turret mounts, four on each side as well as numerous 40mm quad mounts and 20mm single mounts for close-in AA gunfire.

Range finding and fire control systems were upgraded as well for Main, Secondary, and AA gunfire control systems, again along the lines of the rebuilt battleships Tennessee and West Virginia. Electronics and Communications were also upgraded to then current standards for the USN Pacific Fleet.

**3.2 Hull and Running Gear:** From copies of official USN drawings obtained from The Floating Drydock and The National Archives tracings were made at 1/16<sup>th</sup> inch = 1 foot to develop the plans and profiles of the ship’s hull. The USN drawings were of the USS Lexington CV 2 as in early 1941. In preparing these tracings slight modifications were made based on review of artists renderings and photos of the USN models of the Lexington as a Battlecruiser and reference books and periodicals in my personal library. The outcome was a general outboard profile and main deck plan of the ship. These were then taken to a local reproduction shop and enlarged to 1/8<sup>th</sup> inch = 1 foot or 1/96 scale.

From the USN plans, the “Stations” were also enlarged to 1/8<sup>th</sup> inch = 1 foot or 1/96 scale. I then traced each “station” (cross section) using an old method of “pin bar” overlay. This gave a very clear rendition of the compound curvature of the hull structure from stem to stern.

Working from additional USN drawings, I located the position of the propeller shafts and drive motors as well as the rudder. The propeller shafts have a slight downward pitch from fore to aft as well as a slight outboard rake from fore to aft. The centerline of each shaft was plotted on the plans, profiles and the relevant station tracings.

Near the stern, interpretation was required with respect to the sides of the ship for the Battlecruiser plans. The USN drawings were of the Lexington as an aircraft carrier. At the stern, the stations became progressively wider above the waterline up to the flight deck level. On the Battlecruiser version the side lines are much narrower and taper to a “pointed” stern typical of the second generation of US Battleships such as the USS West Virginia.

The rudder on the Lexington is a semi-balanced, streamlined rudder.

The bow below the waterline is a modest bulbous (or Taylor) bow which at the time of the ship design improved propulsion efficiency and provided buoyancy to support the “clipper” style stem profile. The frames above the waterline, immediately aft of the forward perpendicular (the point where the stem pierces the water at the designed waterline at standard displacement) are curved sharply outward to deflect a layer of water that tends to creep up the hull of ships with a bulbous bow when the ship operates at higher speeds.

**3.3 Main & Quarterdeck Plans & Profiles:** These drawings were developed for the entire length of the ship at 1/16<sup>th</sup> inch scale and then enlarged to 1/8<sup>th</sup> inch scale

#### Outboard Profile, Main Deck & Quarterdeck Plans

- **Hull Profile:** The hull depth at the Main Deck Level is 56 ft. 0 in. on the centerline midship and approximately 55 ft. 0 in. deep at the sides from Station 11 to Station 32 with a camber of 1 ft. in 104 ft. at Midship or Station 20. Depth is measured from the baseline or keel of the ship. The designed waterline (draft) was 31 feet at standard displacement.

- **Main Deck:** The centerline profile of the Main Deck is at 56 ft. 0 in. from Station 11 to approximately Station 32.5. Forward of Station 11, the centerline profile rises gradually approximately 6 ft. to the point of the bow. At approximately station 32.5, the Main Deck ends and steps down to the Quarterdeck. The Main Deck extends for approximately 75 to 80% of the ship's length.
- **Quarterdeck:** The centerline profile of the Quarterdeck is @ 48 ft. 0 in. above baseline at Station 32.5 to the Aft Perpendicular.

**3.4 Superstructure Plans & Profiles:** As stated in prior narratives, I have chosen to construct the model of this ship as it would have likely been modified for service in WW2 similar to the reconstructed BB 43 USS Tennessee and BB 48 USS West Virginia. I obtained plans for the Tennessee as reconstructed from the Floating Drydock (Tom Walkowiak). The plans depicted all of the superstructure decks and profiles at 1/16<sup>th</sup> inch scale. These drawing were manually enlarged to 1/8<sup>th</sup> inch scale. Starting at the main deck level, the plans were traced in overlay fashion, deck by deck for both the fore and aft superstructures. Some “rectification” from level to level and plan to profile coordination was required when verifying that the all objects were correctly depicted in orthographic projection – plans, sections, and elevations. Plan level drawings for the superstructure include:

**Forward Superstructure Levels:**

- 01 Superstructure Deck @ 63 ft. 0 in. above baseline
- 02 Signal Bridge Deck @ 71 ft. 3 in. above baseline
- 03 Fwd. 40mm. Ready Service Level @ 80 ft. 9 in. above baseline
- 04Fwd. AA Defense Platform @ 86 ft. 3 in. above baseline
- 05 Upper Signal Bridge @ 93 ft. 6 in. above baseline
- 06 Air Support Control Platform @ 100 ft. 9 in. above baseline
- 07 Conning Station Platform @ 108 ft. 0 in. above baseline
- 08 Fwd. Main Battery Fire Control @ 115 ft. 6 in. above baseline
- 09 Fwd. Yardarm
- 10 Fwd. Main Battery Fire Control Director @ 130 ft. 0 in. above baseline

**Aft Superstructure Levels:**

- 02 Aft 40mm Ready Service Level @ 71 ft. 3 in. above baseline
- 03 Aft AA Defense Platform @ 78 ft. 0 in. above baseline
- 04 Aft 36 in. Searchlight Platform @ 83 ft. 0 in. above baseline
- 05 Aft Surface Lookout @ 88 ft. 0 in. above baseline
- 06 Aft Main Battery Fire Control Director @ 97 ft. 9 in. above baseline

**3.5 Main Battery Turrets and Guns -16 in. / 50 cal.MK II:** The development of the modeling drawings for the 16 in. / 50 caliber main battery guns required extensive research and interpretation. My research found rather detailed drawings from official USN drawings of the 14in/45cal guns and turrets for the BB 38 Pennsylvania class; 14in/50cal guns and turrets for the BB43 Tennessee Class and the 16in/45cal guns and turrets for the BB 45 Colorado Class battleships.

Because these drawings depicted the progressive development of heavy naval guns for the second generation of US Navy “dreadnought” type battleships, I used these official USN drawings as the primary reference for developing the model drawings for the guns and turrets for the Lexington Class Battlecruisers.

The 16in/45cal guns mounted on the BB 45 Colorado class were supported on a 31ft. 0in. inside diameter barbette and enclosed in a seven-sided turret enclosure. The faceplate was sloped at 45 degrees, side plates were sloped at approximately 20 degrees from vertical and the rear plates were vertical. The 16inch, 45 cal. guns were 61ft. 4in. overall length. Approximately 43ft. 11 in. were to the right (muzzle end) and 17ft. 5 in. to

the left (breach end) of the support trunnion as depicted on the USN drawings. These guns could be depressed – 4 degrees and had a maximum elevation of + 30 degrees.

The 16in/50cal guns developed for the BB49 South Dakota and CC1 Lexington Class were 5 calibers longer (80 inches) resulting in an overall length of 68ft. 0in. I used the proportions of the 14in/50cal guns used on the Tennessee to “scale up” the requirements for the barbette diameter to support the longer 16in/50 cal. gun. This resulted in a barbette diameter for the two-gun turret of 34ft. 0in. inside diameter and a working circle of 33ft. 0in. The gun barrels were proportioned approximately 48ft. 9in. to the right (muzzle) and 19ft. 3in. to the left (breach) of the support trunnion.

From a comparison of the official USN drawings and the few available photos, I interpreted that the diameter of the gun at the breech end was 48 inches and 26 inches at the muzzle. The gun included tapered and stepped sections along the entire length. I developed detailed drawings of the guns to exact size dimensioned to three decimal places such that a local machine shop could mill the guns using CNC controlled milling equipment. The result is a very accurate appearing representation of the 16in/50cal MK II gun, especially the portion that extends outward from the face of the turret.

The overall length of the two-gun turret and guns on the model is 11 inches or 88ft. 0in in scale from muzzle to rear face of the turret. The overall width of the turret is 40ft. 0in. in scale at the turret mounted range finders. The turret longitudinal profile is based on the BB45 USS Colorado class. The turret plan is based on the BB49 USS South Dakota class and photos of the USN models of the Lexington Class.

The bore separation of the two-gun turret on this model is 8ft. 0in. This was based on an interpretation of the preliminary 3gun turret intended for the BB49 South Dakota class. I also compared my proposed turret design and bore separation to the USS Nevada / Oklahoma class which 14in main battery guns were mounted in both triple and twin turrets.

I used my education in “descriptive geometry” to develop detail drawings of the turret (gun-house) which included circular, rectangular, trapezoidal, and curved segments to “build up” the model of the turret. This is all by interpretation as I could not find any drawings of the turrets for the Lexington class battlecruisers.

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**3.6 Secondary Battery Dual Purpose Guns – 5in / 38 cal.:** No drawings were developed for these guns as these parts were ordered from the Floating Drydock and John Haynes Ship Modelling components

**3.7 Anti-Aircraft Battery Guns – 40mm and 20mm:** No drawings were developed for these guns as these parts were ordered from the Floating Drydock and John Haynes Ship Modelling components

**3.8 Gunfire Control System & Range Finders:** No drawings were developed for these guns as these parts were ordered from the Floating Drydock and John Haynes Ship Modelling components

**3.9 Radar & Communications:** No drawings were developed for these guns as these parts were ordered from the Floating Drydock and John Haynes Ship Modelling components

**3.10 Search & Spotting Aircraft, Catapult, & Crane:** No drawings were developed for these guns as these parts were ordered from the Floating Drydock and John Haynes Ship Modelling components



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This article was in "The Hill" March 2020 and I was able to contact Capt. James Tobin and he gave me permission to use his following article in our newsletter. Thank you very much, Capt. Tobin.

America Honors Merchant Mariners, Without Whom We Could Not Win Wars  
by Capt. James Tobin

In 2020, the nation will commemorate the 75th anniversary of the end of World War II and the many harrowing battles that made it possible. Regrettably, this will be the last major tribute to the greatest generation of aging American soldiers, sailors, Marines and airmen who saved the nation — and the world — from a bleak totalitarian future. There is one group who served — and also sacrificed — who often are left out of the commemorations: the more than 200,000 American merchant mariners who commanded and crewed the U.S. Merchant Marine fleet of cargo ships that literally made victory possible.

President Trump and a bipartisan Congress recently rectified this historic oversight.

The president's signature establishing the World War II Congressional Gold Medal Act will recognize the contributions of courageous merchant mariners who braved the globe's most dangerous waters and suffered the highest casualty rate of any branch of service: More than 8,600 died — 1 in 26 — and 733 merchant vessels were lost at sea.

Although generations of Americans largely are unaware of the merchant mariners' contribution, war-time leaders were keenly aware of their value. Gen. Dwight D. Eisenhower said, "When final victory is ours there is no organization that will share its credit more deservedly than the Merchant Marine."

In the Pacific, Gen. Douglas MacArthur said, "They have brought us our lifeblood and they have paid for it with some of their own. I saw them bombed off the Philippines and in New Guinea ports. When it was humanly possible, when their ships were not blown out from under them by bombs or torpedoes, they have delivered their cargoes to us who need them so badly. In war it is performance that counts."

Most Americans, especially today, are understandably unfamiliar with the work of the Merchant Marine, which is made up of commercial vessels crewed by merchant mariners. In times of war, however, America's merchant fleet and its mariners become what President Franklin D. Roosevelt called "the Fourth Arm of Defense," delivering troops, supplies and equipment.

While participating in every landing operation by the U.S. Marine Corps, from Guadalcanal to Okinawa, merchant mariners died in great numbers. Their quiet heroism provided the bulk tonnage of material necessary for the invasion of Normandy, an invasion which, according to a 1944 New York Times article, would not have been possible without the Merchant Marine.

Even before the U.S. entered WWII, U.S. flagged merchant ships were carrying vital supplies to the British to help them survive the Nazi onslaught.

After Pearl Harbor, German submarines patrolled U.S. and international waters pursuing and destroying U.S. merchant vessels carrying troops as well as vital supplies and equipment.

On Sept. 30, 1943, President Roosevelt dedicated the U.S. Merchant Marine Academy (USMMA) at Kings Point, N.Y., to "serve the Merchant Marine as West Point serves the Army and Annapolis the Navy."

While it may seem shocking today, midshipmen (students) from the new academy did much of their training on vessels in the very waters patrolled by German U-boats. They moved precious cargo to combat zones around the world; they navigated enemy-controlled, near-freezing waters to get back to the U.S. mainland so they could load up and do it all over again.

One-hundred-forty-two USMMA midshipmen were killed in battle. Of the five federal service academies, the USMMA is the only one to lose students in combat. Today a battle standard bearing the number "142" remains on display at Kings Point, a stark reminder of the price these young men paid in service to the nation.

The tide of the war eventually turned as the U.S. Navy began to anticipate and counter U-boat attacks, and merchant vessels were escorted by Navy convoys. A replenished merchant fleet carried men and materiel to free Europe and the Pacific theater — and between May 1945 and September 1946, they kept crossing the oceans until all 8 million troops were brought back home safely.

The Merchant Marine has been a critical player in every war since the American Revolution, and it is common knowledge among today's military planners that the U.S. cannot win a major war without a vibrant Merchant Marine.

For the dwindling ranks of today's WWII merchant mariners, the honor bestowed by the president and Congress this month is a fitting recognition to their remarkable, quiet bravery performed so long ago. Capt. James Tobin is president of the U.S. Merchant Marine Academy Alumni Association and Foundation; He is a 1977 graduate of the academy



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## **SS Stephen Hopkins**

Liberty Ship

SS Stephen Hopkins was a United States Merchant Marine Liberty ship that served in World War II. She was the only US merchant vessel to sink a German surface combatant during the war. She was built at the Permanente Metals Corporation shipyards in Richmond, California.

**Launched:** May 1942

**Draught:** 27 feet 9 inches

**Date:** Sep 27, 1942

**Beam:** 57 feet 0 inches

**Length:** 441 feet

**Class:** Liberty ship

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Jane Benefield  
25 Treebeard Circle  
Saint Charles, MO 63303