



Request For Information (RFI) Summary November 2011

General

A. The 2012 Rules and Regulations allow for a higher degree of flexibility in design, material and reinforcement choices.

If you are unsure whether something is permissible, assume that it is permissible ONLY if:

1. It does not compromise safety.
2. The rules and regulations do not specifically state that what you would like to do is not allowed.

B. A question to the CNCCC will not receive a response if the rules and regulations related to the question are specific in what is required and obvious in what is not said.

The following examples:

- “The rules don’t mention a thing about displays. Are there displays this year?”
- “I can’t find anything restricting the use of end-caps. Are end-caps allowed?”

Apply the general guideline (1 and 2 above) and you will have the answers to these questions and other like them.

Section 1 – General Rules and Eligibility Requirements

RFI No.: 16

Subject: Section 1.2.1 Eligibility Requirements

Date: 10.21.11

Under 'Register participants at the Conference and National competitions' requirements it states that the participants must "Be an undergraduate student majoring in engineering during the 2011-2012 academic year (defined as the time between August 2011 and June 2012). Students do not need to be enrolled during the entire academic year (e.g., student graduating in December, or students who were not in school during the fall term but are in school for the spring term.) Students that graduate during the course of the academic year and have begun graduate studies during the same academic year are eligible to compete if they meet the remaining requirements." Does this mean that if we have a registered participant(s) that will graduate in the winter (Our school is still on the quarter system with 'semesters including- Fall, Winter, Spring, and Summer) those participants will be eligible to participate in the competition if they are not planning on taking graduate studies in the Spring? (i.e. go the competition and participate even though they have already graduated the program only a quarter earlier than usual students in the spring?)

Response: Section 1.2.1 is pretty clear on this matter. The major requirements are that they are (or were) an undergraduate student at some point in time during the current academic year as we have defined it AND that they meet the remaining eligibility requirements also outlined in Section 1.2.1 AND they contributed to the design and construction of the canoe while an undergraduate. A student that graduates during the Winter term (let's say December) and meets the other requirements can be a registered participant in both the Conference and National Competitions. Likewise, a student that graduates in May can still compete at the National Competition in June. They do not need to be enrolled in school at the time of the competitions. Graduate students who are enrolled as such at the beginning of the academic year can have an active role in the concrete canoe project, but cannot be registered participants (i.e., paddle and/or present). The intent of the sentence "Students that graduate during the course of the academic year and have begun graduate studies during the same academic year are eligible to compete if they meet the remaining requirements" is to cover the individuals that were at one point during the academic year an undergraduate student but by the time the competitions came around were enrolled as graduate students. Now if by some reason you have a student that graduated in August 2011, they would not be eligible to be a registered participant.

Section 2 – Canoe

RFI No.: 3

Subject: Section 2.1.1, Canoe Length

Date: 09.15.11

As stated, "The maximum length of the canoe is restricted to 22 feet." Just to confirm, hypothetically a canoe presented at the Regional and National level of the competition could be 16 feet in length and meet the general length requirements, as long as it doesn't surpass the 22 foot length restriction. Correct?

Response: The dimensional constraints of the canoe are a maximum length of 22 feet and a maximum width of 36 inches. As long as the canoe does not exceed these constraints it is in compliance with the Rules and Regulations. A 16 foot long, 34 inch wide canoe would be in compliance.

RFI No.: 5

Subject: Section 2.1.4, Standardized Hull Design

Date: 09.19.11

Where can I find the Standardized Hull Design for this year?

Response: There is no standardized hull design that all of the teams need to construct. The 2012 edition of the Rules and Regulations stipulates the maximum dimensions for the length and width (RFI No. 3). Section 2.1.4, Use of Standardized Hull Design, states that teams may use the 2009-11 hull design if they wish. This standardized hull is in conformance with the Rules as is. Teams may modify the previously issued standard hull design at their discretion. The specifications and drawings are located on the www.concretecanoe.asce.org website. Currently, ASCE is working to resolve some issues with the website. Therefore, we have attached the file (in Excel format) with this e-mail for your use.

RFI No.: 9

Subject: Section 2.1.4, Standardized Hull Design

Date: 09.27.11

This year we are teaching a technical elective centered on the concrete canoe, therefore we are quickly getting started on the process. I have a question regarding the rules. There are no stated limitations on canoe depth, only width and length. However, the cross-sections provided in fact appear to limit the depth. Am I correct in this interpretation, or I am I missing something. I would greatly appreciate your help on this matter.

Response: Reference is made to RFI No. 5 – Standardized Hull Design, dated (09.19.11) which stated that while there is no standardized design for the teams to comply with and my design their own hull. Teams are allowed to use the design that was a requirement for the 2009, 2010 and 2011 competitions if they choose to do so. This particular design is in compliance with the current rules and regulations in regards to length and width. Teams are also allowed to modify the design if they wish. We provided the cross-sections for the 2009-11 canoe design since there were some issues with posting it to the ASCE website. Section 2.1.3, “Other Dimensions,” states that the length (Section 2.1.1) and gunwale beam width (Section 2.1.2) are the only dimensions that are regulated for the competition. The dimensions for other canoe parameters such as, but not limited to, depth, hull thickness, radii of chines, and rocker, are not regulated and their values are at the sole discretion of the team.

RFI No.: 13

Subject: Section 2.1.4, Hull Design

Date: 10.17.11

Teams have the option for either designing a hull within the specified dimensions or using the standardized hull design used the past three years. The total point value for the ‘Hull Design’ section of the design paper is only 5 out of 100. Will teams that design their own canoe receive more credit than teams that may use a hull design that is given to them?

Response: In short, the answer is no. Teams that opt to develop their own hull design or modify the standardized hull design from 2009-11 will not be given more credit than those that choose to use the standardized hull design. The CNCCC took into account the feedback provided by many to reintroduce the hull design back into the competition, but decided to limit the impact on the design paper, making the focus of the competition on the design analysis and the concrete, not the design of the hull.

Section 3 – Concrete

RFI No.: 4

Subject: Section 3.1.3.5, Request for Approval of Materials

Date: 09.15.11

Our team wanted to ensure the approval of the following materials for the 2012 concrete canoe: ·
Quikrete Concrete Bonding Adhesive (meets ASTM C 1059, would be used in concrete mix, similar to latex)

- Xypex Admix C-500
- Eclipse Shrinkage Reducing Admixture
- Grace Strux BT-50 Fibers
- Grace V-MAR 3 Rheology Modifying Admixture

Response: The Quickcrete Bonding Adhesive, Xypex Admix, Eclipse SRA, Grace fibers, and Grade RMA are all acceptable materials for use in the concrete canoe. Quickcrete, Eclipse SRA and Grace RMA would fall under the category of “Admixtures” in Table 3.1 Xypex (and other similar products) has been used by other teams in the past, however, the CNCCC has classified it as “Cementitious Material” and would fall under that category in Table 3.1. The integral waterproofer is a unique product. It is considered an admixture in industry; however, it is one that contains portland cement as one of its components. The intent of this particular product is to waterproof the concrete and it also has the added benefit of higher compressive strength. The range of portland cement in the admixture can vary, While other components, including silica sand, are also part of the product; consider the entire mass used as cementitious material. This is due to the fact that its dosage rate is relatively small and that it would be impractical to attempt to get the gradation of the silica sand and to consider it in the overall aggregate composite. While Section 3.0 prohibits the use of pre-packaged or pre-mixed concrete, mortar, or grout, an exception is made in this case since admixtures are packaged materials.

RFI No.: 6

Subject: Section 3.3.3, MTDS Forms for Experimental Materials

Date: 09.21.11

Please Reference Section 3.3.3 Materials Technical Data Sheets. Are we required to submit MTDS forms for experimental materials if those materials are not used on the final canoe?

Response: MTDS are required only for the materials used in the actual canoe. The document serves as a reference for the judges and CNCCC to determine compliance with the Rules and Regulations.

RFI No.: 8

Subject: Section 3.2.1 - Mass of Cementitious Materials

Date: 09.26.11

We are told in Section 3.2.1 that all concrete mixtures must contain hydraulic cement meeting the requirements of Section 3.2.1.1, but the section referenced does not exist. So I would greatly appreciate it if you could reply what the requirements are or direct me to where I may locate them.

Response: There is a typographical error in this section. It should have referred to Section 3.1.1.1. “Hydraulic Cement” which states that it shall meet the requirements of ASTM C 150, ASTM C 595 and/or ASTM C 1157, and shall react with water to form a binder.

RFI No.: 11

Subject: Section 3.1.1, Rice Husk Ash (RHA)

Date: 10.12.11

Is Rice Husk Ash (RHA) OK to use as a cementitious material? Michigan Tech used RHA in 2005. It has properties similar to silica fume, but it isn't directly spoken about in the rules. Please let me know if there's any more information you need regarding RHA. Thank you so much for your help and I look forward to hearing from you.

Response: Rice Husk/Hull Ash (RHA) is an acceptable cementitious material for use in the competition.

RFI No.: 15

Subject: Section 3.2.4, Concrete Unit Weight and Flotation Placement

Date: 10.20.11

According to Section 3, it says that the canoe cannot have a unit weight greater than 70 pcf. Does that mean only the batch has to be less than 70 pcf or does that include the reinforcement and aggregates? Also, are we allowed to use foam in the canoe other than in the bow and stern? Thank you for your time and I look forward to hearing back from you.

Response: Section 3.2.4, "Allowable Unit Weight" states that the wet (plastic) unit weight of any concrete mixture shall be no greater than 70 pcf. The allowable unit weight is based on yielded proportions of Table 3.1 and determined by testing done in accordance with ASTM C 138. It is the unit weight of concrete; therefore it will include the aggregates and fiber reinforcement if you have it. It is not the unit weight of a reinforced composite (i.e., concrete with welded wire mesh for example). Section 2.10.1, "Requirements" states that "Flotation can be placed at any location inside the canoe as long as it is below the gunwale line. The only exception to this requirement is flotation material that is added to a canoe that does not pass the flotation test (Section 2.10.2)"

RFI No.: 17

Subject: Section 3.1.3.5, Sika Watertight Concrete Powder

Date: 10.24.11

Referring to Section 3.1.3.5 Specialty Admixtures: It states that admixtures for integral capillary waterprooferers must get pre-approval by the CNCCC. What steps are needed to get Watertight Concrete Powder from Sika approved?

Response: You have actually completed the step in which you provided the technical information on the product for the CNCCC to review and render its decision. Please note that we have not included the link here in the RFI. Based on our review of the information provided, the Sika® Watertight Concrete Powder is to be treated as an admixture and is approved for use in the concrete canoe.

RFI No.: 18

Subject: Section 3.1.3.5, Request for Approval of Materials

Date: 10.24.11

Our team wanted to ensure the approval of the following materials for the 2012 concrete canoe:

- KSC Komponent
- Rhoplex MC 1834P
- V-Mar F100 (meets ASTM C494 but as Type S)

Response: All three (3) materials listed above are approved for use in the concrete canoe. KSC Komponent is considered a cementitious material. Rhoplex is an acrylic polymer emulsion (i.e. latex) and V-Mar is a concrete rheology-modifying admixture.

Section 4 – Reinforcement

RFI No.: 10

Subject: Section 4.3.1, Reinforcement Thickness

Date: 09.27.11

Please refer to Section 4 regarding reinforcement. Would a cable that is used in pre/post tensioning be subjected to the % open area rule?

Response: Percent open area requirements are not feasible on cables, reinforcing rods, and similar products. If the cables are placed in a grid pattern of some sort, then POA can be computed for the entire layout. However, their thickness needs to be accounted for in the determination of the reinforcement-hull thickness ratio.

Section 5 – Final Product

RFI No.: 14

Subject: Section 5.5, Glitter

Date: 10.20.11

What, exactly, is meant by "glitter"? What substances fall under the category "glitter"?

Response: Sections 5.5 and 5.6 which cover stains and sealers state that “Post manufacturer additives such as glitter or other particulate material are not permitted.” Glitter would be the sparkly little bitsy pieces of foil that you get in craft shops. While the question asked is what falls under the category of glitter, the true question is “what falls under the category of ‘particulate material’?” Glitter is an example of particulate material. The intent of the language is to tell the teams not to add anything to the commercially available stains and sealers.

RFI No.: 19 (reissued with correct RFI number)

Subject: Section 5.5, Dilution of Liquid-Concentrated Stain

Date: 10.26.11

Section 5.5: "The dilution of stains with any other medium (e.g., water, acetone, etc.) is not permitted. Stains which come in the form of powdered dyes that are to be reconstituted with water are permitted and teams must follow the manufacturer's directions for their proportioning and mixing."

The stain that our team wants to use is a liquid concentrated water-base stain, not a powdered dye. According to the manufacturer's direction, we have to dilute this concentrated base with water to obtain the desired results. Can we do so even if it is not a powdered dyes stain?

Response: The intent of the language in Section 5.5 (as well as Section 5.6 in regards to sealers) was to disallow the dilution of stains in order to meet VOC limits that are specified. Given that a liquid concentrated stain needs to be reconstituted with water (similar to that with a powdered dye stain), we have determined that it is allowed, as long at the amount of water added is in strict compliance with the manufacturer's direction.

Section 6 – Design Paper

RFI No.: 12

Subject: FEA for Structural Analysis

Date: 10.17.11

Reviewing previous national papers, it appears that many teams use advanced finite element analysis (FEA) methods in the structural analysis of their canoe. We are undergraduate students some of which are just learning mechanics of materials and have not taken courses in the more sophisticated structural analysis methods. Is FEA the preferred method of analysis by the judges? Are we at a distinct disadvantage if we do not do FEA?

Response: Over the past several years, FEA methods have been used by many teams in the competition. Our review of papers for the past three years for which the standardized hull design indicated that even with similar loads, weights of canoe, and material properties, anticipated design stresses varied significantly. There is no requirement to conduct an FEA for the canoe. Simpler 2-D models have been shown to yield similar results. Also, there have been teams that have conducted sophisticated analysis and still developed non-accident related structural damage (namely cracks) in their canoe. The outcome of the FEA is a subject of the information that is inputted; if you do not input the proper information, it will yield in an incorrect result.

Section 7 – Engineer's Notebook

RFI No.: 1

Subject: Section 7.1.2, Double Sided Pages in Engineers Notebook

Date: 09.15.11

Please Reference section 7.1.2 Format. With the exception of the construction photographs and compliance certificate, can the Engineer's Notebook be printed on double-sided paper?

Response: There is no requirement that the remaining pages of the Notebook must be single-sided.

RFI No.: 2

Subject: Section 7.1.2, Construction Photographs in Engineer's Notebook

Date: 09.15.11

Please Reference section 7.1.2 Format. It is stated that we must have sixteen (16) construction photographs. If we have the required amount of each type of photograph, are we allowed to have more?

Response: The limit is 16 for the Engineer's Notebook.

RFI No.: 7

Subject: Section 7.2, Page Numbers and Designs for Engineer's Notebook

Date: 09.21.11

Please Reference section 7 Engineer's Notebook. Are page numbers and format designs allowed in the Engineer's Notebook?

Response: Other than the Tabs and required information provided in Section 7.1.2, Format, page numbers are not required. You will need to elaborate on what "format design" is.

RFI No.: 7a

Subject: Section 7.2, Page Numbers and Designs for Engineer's Notebook

Date: 09.27.11

Please Reference section 7 Engineer's Notebook. In previous years, teams have applied artistic designs and themes to the design report. Teams use graphics, colors, and other design elements throughout the document. We would like to do this in the Engineer's Notebook as well. As long as everything is legible and organized, is this allowed?

Response: There is no rule against it. It is not judged other than for checking to make sure that it has the required information. As for layout design, knock yourself out.

Section 9 – Final Product (Canoe and Cutaway Section)

Section 10 – Product Display

RFI No.: 20 (reissued with correct Subject Title)

Subject: Table Top Display

Date: 10.26.11

In Section 10.0 a.: "Each team shall provide their own table (may include a table cloth)." Is the use of another material than a table cloth permitted? Would a team be allowed to attach some sort of panel on the sides of the table that would be part of the tabletop display?

Response: A table cloth, skirt, or some other type of fabric material can be used. No paneling is allowed.

Questions regarding rule interpretations should be directed via e-mail to cnccc@email.asce.org.

Official responses will come from CNCCC@asce.org. This e-mail account will be BLOCKED from receiving e-mail and is only intended to be used to send out responses and other announcements.