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.: 48
Subject: Section 1.2, Registered Participant
Date: 01.09.12

The Rules & Regulations state that in order to qualify for registration one must be an undergraduate involved in the project. Currently we have only one female on our team, but we do have a female professor acting as our faculty advisor that may be willing to row in the competition if necessary. Is this acceptable? If yes, must we include this faculty advisor in the Conference registration and pay the Conference fee for her?

Response: The professor may paddle the canoe with your lone female undergraduate solely for the purpose of being able to compete in the race and have fun. Your team cannot place in the events that require a 2nd female paddler (the women’s sprint and distance as well as the co-ed sprint) and the professor takes the place of the 2nd paddler. That is, regardless of place finish of the student/professor team on the water, the host school should award points to the remaining teams as if the
student/professor team was not even there. In regards to the fee, that matter needs to be brought to the attention of the conference host. We assume that the fees are applied to individuals – students, faculty, etc. that attend.

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.

RFI No.: 27  
**Subject: Section 1.2, Paddlers/Official Team Members**  
Date: 11.21.11

Our understanding is that the paddling teams for the competition will consist of 5 females and 5 males as broken down below:

- 2 females- endurance
- 2 females- sprint
- 2 males- endurance
- 2 males- sprint
Then we have 1 male and 1 female who have previously raced participate in the co-ed sprint, as well as 1 male and 1 female who do not participate in the other races. Is this accurate? This is a change from last year when everyone who participated in the co-ed sprint needed to have participated in another race.

Response: Your interpretation of the Section 1.2 Registered Participants as it relates to paddling is inaccurate. As Section 1.2 states, “A team may register up to a maximum of five (5) male and five (5) female participants. Teams may have less than ten (10) registered participants. These registered participants are the only persons eligible to present or answer questions for the oral presentation and/or compete in the races.” There is no requirement that all team members must paddle (likewise, there is no requirement that all team members must present) and the rules have been consistent for a number of years. Technically, the minimum a team could have to compete would be two male and two female (since we removed the 3-person races) – they participate in every race and one up to all four of them could present. Teams can have a number of members that do specific things – for example, a team could consist of 5 males (4 of which that just paddle, 1 that may just present) and 4 females (2 of which that just paddle, 2 of which just present). Obviously, there can be numerous combinations. Also, paddlers might only participate in just one event or they could participate in up to three events (sprint, endurance, and co-ed races).

RFI No.: 111
Subject: Section 1.2. Term Limits
Date: 02.28.12

In regards to Section 1.2.2 Term Limits, we have a question about the "Registered participation shall not exceed three (3) years (consecutive or non-consecutive)" portion. We have one member who has participated for the last three years but last year’s canoe was disqualified due to having to use a FRP product to repair a large damaged area (please note that this fact was reported by last year's canoe captain knowing that the canoe would be disqualified and was only done so that the team could participate for fun). Our question is this: Since last year's canoe was disqualified and was not scored, does it still count as this particular member’s third participation year?

Response: According to our records, your team placed 14th out of 16 teams in your conference competition. We interpret this as your team actually taking part in the competition, regardless of the fact that your canoe did not receive any Final Product points (or DQ’d as you have stated). As a result, if the individual was a registered member of the team, he/she has indeed used a year of eligibility.

Section 2 – Canoe

RFI No.: 24
Subject: Section 2.0, Rudder
Date: 11.15.11

Considering the theme this year is breaking the mold I wanted to try something different. My idea is to create some kind of concrete rudder system and could not find any rules pertaining to this issue. My question is if a rudder made out of concrete legal in this competition?

Response: The rules and regulations do not prohibit the use of a rudder. While the CNCCC opines that the use of a rudder during the middle of a race would be difficult, it would be allowed. However,
the rudder and the connection between the rudder and the canoe and another other accessory (such as a handle) will need to be made out of concrete and in conformance with the rules and regulations. In addition, the rudder would be considered part of the hull design and therefore the canoe and its rudder would be limited to the 22 feet overall length. The movement of the rudder should not allow any portion of the rudder to pass an imaginary parallel line 18” port or starboard of the longitudinal centerline of the canoe (in effect, its width is restricted).

RFI No.: 91
Subject: Section 2.1, Dimensional Constraints
Date: 02.27.12

I see that there are maximums on the width and on the length but are there also corresponding minimums?

Response: The rules and regulations are pretty clear when it comes to the maximum and minimum values that are needed in different aspects of the canoe project. You can assume that if minimum values are not provided for dimensional constraints, then there are no minimum values to be meet.

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 at 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.: 21
Subject: Section 2.1.1, Length
Date: 11.11.11

"The maximum length of the canoe is restricted to 22 feet. The maximum length is defined as the end-to-end (bow to stern), measurement of the canoe taking into account the outermost dimensions of the hull at any point on the canoe (i.e. could be at the gunwale, a given waterline, etc., and is at the discretion of the team)." It is stated that there is a maximum restricted length, but is there a minimum required length?

Response: There is no minimum length requirement. Where appropriate, the CNCCC has provided maximum limits, minimum limits, or range of limits as part of the rules and regulations be it hull design, concrete mixture proportioning, stains/sealers, etc. One can deduce that if a maximum limit is provided and no minimum is stated, then there is no minimum requirement.
We've read the rules and regulations of the National Concrete Canoe Competition. And we wanted to ask you, what are the minimum dimensions of the Canoe? We could only find the maximum dimensions.

Response: There are no minimum dimensions on the hull design. Draw a box 22 feet long and 36 inches wide (depth is not constrained at all), if your canoe fits in it, you are good to go.

For the hull design section, the rules require a table of canoe data. Are there any specific values that need to be there?

Response: Typically values would include maximum length, maximum width, depth(s), bow and stern rocker, thickness. Depending on what you want to put in, there are a number of naval coefficients (e.g. beam-to-length ratio, etc.) that you could put in.

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.

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 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.

RFI No.: 46  
**Subject: Section 2.6, Seats and Mats**  
**Date:** 01.09.12

"Seats cannot exceed a 20" x 20" x 20" maximum." Can this be interpreted as seats are required to fit within a 20" x 20" x 20" cube but can expand or fold out of the cube's dimensions?

**Response:** The only way that this can be interpreted is that the seats must not exceed the dimension of a cube that is 20 inches by 20 inches by 20 inches.

RFI No.: 50  
**Subject: Section 2.10.1, Flotation**  
**Date:** 01.10.12

Per section 2.10.1, "All flotation material that is incorporated into the canoe must be encased in concrete. Flotation can be placed at any location inside the canoe as long as it is below the gunwale line."

In previous years, the flotation tanks incorporated into our boats have had foam flotation below the gunwale line, but the encapsulating concrete has extended above the gunwale line, yet remained inside the exterior hull face. Please advise on the legality of the encapsulation material extending above gunwale height while the flotation materials remain at or below gunwale height.
Response: The original intent of keeping the flotation below the gunwale line was to prevent it from breaking the water surface during the dreaded swamp test resulting in a possible “pass.” While the concrete used in the canoe may also technically meet the definition of flotation (if the unit weight is less than that of water, it will have a buoyant force), its intent is most likely structural rather than to serve as flotation. As written, the flotation material placed should remain below the gunwale line. The encapsulating concrete (regardless of its unit weight) can extend above the gunwale line. The CNCCC will consider revising this language for future competitions.

Section 3 – Concrete

RFI No.: 62
Subject: Section 3.0, Inlays
Date: 01.26.12

We didn’t see any information about the use other materials for inlays. Last year we saw that other uses had used large pieces of linoleum on the side of their canoe hull. We are looking at using colored glass or acrylic for a nice artistic effect. Are there any rules that prohibit use from doing this? Please clarify.

Response: Concrete is the only material allowed to be used for inlays. Assuming that the linoleum was not an aggregate (mixed in the concrete itself), it should not have been used as an inlay. Therefore colored glass, plastics, or other non-concrete materials are not to be used as an inlay.

RFI No.: 87
Subject: Question Regarding 3.0 Adhesives in the Bulkheads
Date: 02.21.12

Section 3.0 states: "Bondo, epoxy or similar materials are not permitted at any time during the casting of the canoe (i.e. placement of concrete, reinforcement and flotation)" In light of this, do the rules allow the use of an adhesive to combine pieces of foam to match the bulkhead profile that will be used for flotation? (For example, gluing several profile slices together to obtain a 3D shape).

Response: The intent of the rule is to prevent the use of these materials to increase the bonding capabilities between concrete and reinforcement or concrete and flotation (i.e., gluing the flotation to the concrete after it sets). We do not see an issue of gluing pieces of foam together as long as it not used to adhere it to the concrete.

RFI No.: 38
Subject: Section 3.1, Carbon Nanofibers (CNF)
Date: 12.6.11

In this year's mix, we plan on testing the effects of carbon nanotubes (CNTs) in our concrete. The rules never explicitly state any rules regarding the use of CNTs or Carbon nanofibers in mixes; however they do mention that all fibers must meet the requirements of ASTM C1116. C1116 makes no mention of CNTs so I was hoping to know if CNTs would be acceptable as part of the concrete mix.

Response: Nanofibers (NF) and nanotubes (NT) are not covered in ASTM C1116 (this standard would apply to the more “conventional” fibers used as secondary reinforcement in concrete.) Carbon
nanofibers (CNF) have a diameter of 60 to 150 nm, length between 30 and 100 µm, whereas the multiwalled carbon nanotubes (MWNTs) have the outside diameter around 10-30 nm and length about 10-30 µm. In principle, these materials can be used to increase the tensile (flexural) strength and the toughness of concrete and to reduce the amount of microcracking. However, it should be also pointed out that the use of these materials creates certain handling and mixing challenges, some of which are discussed below. The CNCCC will allow the use of nanofibers and nanotubes in the concrete even though they do not meet ASTM C1116. They should be placed in the “Fibers” section of the mixture design table as that appears to be the most applicable place for it. You should clearly indicate that they are “nano” in the description of the material. These materials can be purchased either in pre-dispersed or non-pre-dispersed forms. Regardless of the form, we strongly urge caution with the use of these materials. If the non-pre-dispersed materials are used, mixing should be done under the exhaust hood to avoid getting this material into the lungs and to avoid contamination of the workspace (CNCCC recommends that you discuss the use of this material with your school’s Health & Safety department). If the material is pre-dispersed, the information about the dispersant (if available) should be included in your report. Similarly, if you purchase non-predispersed material and decide to use a dispersant in the process of making our concrete, the information about the quantities and type of the dispersant should be included in your report.

RFI No.: 42
Subject: Section 3.1, Leaves
Date: 12.14.11

We plan on putting leaves onto the mold for our canoe before we cast so that the leaves end up embedded but visible on the inside rim of the canoe. Do we need to fill out an MTDS form for the leaves, since they will be attached to the canoe?

Response: It is not permissible to embed the leaves into the concrete, however, you may make casts of the leaves and remove them afterwards (leaving the imprint).

RFI No.: 43
Subject: Section 3.1, Hydralime
Date: 12.16.11

My team is considering a product called Hydralime from LaFarge, but the product descriptions say that it is a non-hydraulic, hydrated lime. Can you please tell us if we could use this product in our mix? How about other hydrated lime products? Thank you very much.

Response: These materials can be used in your concrete.

RFI No.: 44
Subject: Section 3.1, SBR Latex
Date: 01.09.12

Our team wanted to ensure the approval of the following materials for the 2012 concrete canoe: SBR Latex manufactured by the Euclid Chemical Company. Approved under ASTM C 1095-86 Type II, not ASTM 1438 Type II as specified for Latex in the official rules.

Response: We have previously approved a similar material (Quikcrete Bonding Adhesive) which also meets ASTM C 1095 standards. As such, SBR Latex may be used if incorporated into the concrete.
mixture. It may not be used as bonding agent between hardened and fresh concrete. Please note that ASTM C1059 / C1059M - 99(2008) is the Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete and ASTM C1439 - 08a is the Standard Test Methods for Evaluating Polymer Modifiers in Mortar and Concrete. C1439 is not a specification for a product, it is a test method.

RFI No.: 28  
Subject: Section 3.1.1, VCAS  
Date: 11.21.11

We are interested in using VCAS White Pozzolans instead of Fly Ash as part of Cementitious Material for our canoe. Our adviser does not seem to think they are permitted per 2012 rules. However, I'm not sure. I believe VCAS meets ASTM C1157 requirements. Would you please clarify this for me? Specifically we are interested in using VCAS-8VCAS-micronHS

Response: VCAS™ (vitreous calcium aluminosilicate) is an acceptable supplementary cementitious material and had been used by others in the competition. While not specifically called out in the rules and regulations, it is permitted.

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.: 68  
Subject: Section 3.1.3.1, Calcium Chloride  
Date: 02.07.12

Is Calcium Chloride an acceptable admixture to cut down on curing time? ASTM C494, Type C

Response: Calcium chloride is perfectly acceptable concrete admixture which is used to accelerate concrete hydration. To be eligible for use in concrete, the calcium chloride should meet the requirements of ASTM D98. If it does, it can be used and is then classified as type C admixture under the ASTM C494. The admixture is not used to "cut down on curing time" but it is used to shorten the hydration time.

RFI No.: 45  
Subject: Section 3.1.3.4, Polymer Modifiers  
Date: 01.09.12

Section 3.1.3.4 states that a polymer modifier must be a latex or re-dispersible powder. Does the latex used need to be in powder form or can it be in liquid form?
Response: It can be in either form.

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:
- Quikcrete 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.: 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 waterproofer s 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.

RFI No.: 52  
**Subject:** Section 3.1.3.5, Specialty Admixtures  
**Date:** 01.19.12

Our team would like to use a shrinkage reducing admixture, Eclipse 4500. The rules state that the use of these admixtures aren't prohibited, but require pre-approval. Can we be approved to use Eclipse 4500 in our mix design?

**Response:** Eclipse 4500 SRA is approved (Eclipse admixtures were also addressed in RFI No.4, Request for Approval of Materials, dated 09.15.11)

RFI No.: 53  
**Subject:** Section 3.1.3.5, Specialty Admixtures  
**Date:** 01.19.12

I would like to ensure that the viscosity modifying admixture RHEOMAC 362 VMA is an acceptable material to be used for this year’s canoe.

**Response:** Rheomac 362 VMA is approved.

RFI No.: 54  
**Subject:** Section 3.1.3.5, Specialty Admixtures  
**Date:** 01.19.12

I am sending this email asking for verification of the following admixtures:

All from BASF chemical company  
- RHEOMAC VMA 362 (Viscosity-Modifying Admixture)  
- Rheomac 300D (Crystalline Capillary Waterproofing Admixture)  
- MasterLIFE SRA 20 (Shrinkage-Reducing Admixture)

I do have the rules and regulations about what materials, cement, and admixtures we should use, however I am unsure about the admixtures that I listed to conduct in making the concrete canoe. So therefore, we will continue with the testing and developing the concrete canoe I would like a clear approval of which admixtures are acceptable.

**Response:** Rheomac VMA 362, Rheomac 300D and MasterLife SRA 20 are all acceptable materials for use in the concrete canoe. Rheomac VMA 362 and MasterLife SRA 20 would fall under the category of “Admixtures” in Table 3.1 Rheomac 3000D (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 are also part of the product; consider the entire mass used as cementitious material. 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.: 60  
**Subject:** Section 3.1.3.5, Butvar 79 as Specialty Admixture  
**Date:** 01.26.12

Section 3.1.3.5 states that: "Teams wishing to incorporate a material as a specialty admixture and have questions or concerns of whether it is an acceptable material shall contact the CNCCC via e-mail for a determination of its applicability." Our team would like to use Butvar 79 in our concrete mixture. Is this acceptable? Would this material be considered a specialty admixture?

**Response:** Butvar 79 is acceptable and is to be considered a specialty admixture. It is one that comes in powder form and therefore it is to be accounted for in the solids content of admixtures.

RFI No.: 66  
**Subject:** Section 3.1.3.5, Daraweld C  
**Date:** 02.07.12

Our team has a question regarding Section 3.1.3.5, Specialty Admixtures. Our team would like to use Daraweld C as a liquid latex replacement in our mix design. This will be used in our mix on placement day. Can we be approved to use Daraweld C in our mix design?

**Response:** Daraweld C may be used in your mixture design. It shall not be used by itself in bonding new concrete to old concrete (like a glue) in patching applications.

RFI No.: 76  
**Subject:** Section 3.1.3.5, Admixture Approval  
**Date:** 02.11.12

I was wondering if the following admixtures are allowable for the canoe competition: Darapel, Eclipse 4500, Daraset 400, and Adva Flex. Their data sheets are attached. Also, are these acceptable MTDS's? (Note: the CNCCC did not include the MTDS in this e-mail)

**Response:** Darapel, Eclipse 4500, Daraset 400, and Adva Flex are all acceptable admixtures for use in the competition. The MTDS that were presented in the RFI are acceptable as well.
RFI No.: 97
**Subject: Section 3.1.3.5, Penetron**
Date: 02.27.12

Our team wanted to ensure that Penetron Admix was allowed for the competition.

**Response:** Penetron (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 are also part of the product, consider the entire mass used as cementitious material. 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.: 99
**Subject: 3.1.3.5 Specialty Admixtures Approval**
Date: 02.28.12

We would like to get approval for the use of Euclid Chemical's EUCON SRA+ as a shrinkage reducer for our mix design. We would also like to use waste latex paint as a SBR latex replacement. Our waste latex paint was used last year and we would like to confirm that is approved again this year.

**Response:** EUCON SRA is acceptable for use in the competition. Waste latex paint as a SBR latex replacement is also acceptable.

RFI No.: 100
**Subject: 3.1.3.5 Specialty Admixtures Approval**
Date: 02.28.12

Our team is considering incorporating Kel-Crete, a water-reducing admixture, into our mix design. Does this admixture comply with the rules?

**Response:** Kel-Crete is acceptable for use in the competition.

RFI No.: 101
**Subject: 3.1.3.5 Specialty Admixtures Approval**
Date: 02.28.12

Are the following admixtures approved for use in the competition: Sika Stabilizer 4R, Sikamix W-10, and Sika Latex R?

**Response:** All three Sika products listed here are acceptable for use in the competition.
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.

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RFI No.: 32  
**Subject: Section 3.2.2, Stalite**  
Date: 11.22.11

Our team is currently developing the concrete mix for our canoe and discovered a promising aggregate material called Stalite. Stalite is not listed within Section 3.1 Materials for use within the concrete mixture. Through research of our own it is my understanding that Stalite is also approved under ASTM C 330. Would this aggregate material be acceptable for use within our concrete mix design? And if this material is approved for use after review, is there a way to have the approval in writing for later use in the technical report or if any questions of its legality arise?

**Response:** The rules and regulations are wide open on aggregate sources with the only specifications being the amount (volume) needed (Section 3.2.2, Aggregate Proportioning). Stalite is a lightweight aggregate and falls into the category know as “expanded slates, shales and clays” (ESSC) and there are many similar products – Norlite, Solite, Utelite, etc on the market. These materials have been used for years in this competition and are still perfectly legal. While no approval is needed, this response covers the matter.

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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)”
Subject: Section 3.2.4, Allowable Unit Weight  
Date: 02.29.12

The wet (plastic) unit weight of any concrete mixture shall be no greater than 70 pcf. The allowable unit weight is based on the reported unit weight under the Yielded Proportions of Table 3.1. Refer to ASTM C 138 for the determination of the fresh unit weight of concrete. Each concrete mixture shall meet this requirement. It is understood that the concrete placed on the canoe may be denser than the unit weight determined per ASTM C 138 due to method of placement. Report the value obtained per ASTM C 138. There are two separate unit weights that appear in the Yielded Proportions section of Table 3.1, theoretical and measured. Which unit weight must be under the 70 pcf? Would a mix that has a theoretical unit weight of 75 pcf, but when mixed (with an air entrainment admixture) actually turns out to be 68.5 pcf meet the requirements? The effects of air entrainment aren’t accounted for anywhere in the spreadsheet.

Response: The “General Guidelines for Concrete Mixture Table” goes into explicit detail in regards to the calculations. The measured density is the density that you are using and needs to be under 70 pcf. The measured density accounts for all of the components of concrete – cm, aggregates, fibers, admixtures and air (be it entrained or entrapped). The theoretical density is a zero air void density (absolute mass divided by absolute volume). Air content can be determined through a comparison of the theoretical and measured densities. (T-D)/T x 100%. Based on the numbers provided, you should have an air content of 8.67%.

Subject: section 3.2.4, Concrete Unit Weight  
Date: 02.29.12

Our team would like to use 2-3 different batch mixtures of concrete when casting the canoe. Must all wet unit weights be no greater than 70 pcf or can the average wet unit weight of the mixtures be no greater than 70 pcf?

Response: 3.0 GENERAL states that “Concrete mixtures, regardless of their use in the canoe, are defined as unique and independent mixes and shall comply with all of the requirements of this section.” Furthermore, 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.” ALL of your mixtures must be no greater than 70 pcf. You cannot have one mixture be 80 pcf and one of 60 pcf and say the average is 70 pcf.

Subject: Section 3.2.5, Curing at Elevated Temperature  
Date: 01.26.12

Our team plans to use a pre-impregnated carbon fiber in the construction of our canoe. Once the entire concrete canoe has been placed and allowed to cure for several days, we would like to bake the entire structure at elevated temperature. Is this acceptable?

Response: Based on the above scenario, “flimsy” carbon fiber is to be embedded within the concrete, the concrete allow to cure (be it with water, curing compound, etc.), then heated to cure the thermoset
pre-impregnated carbon fiber. This proposed methodology is allowed as long as no other post-
manufacturer applied material (such as resin) is applied.

RFI No.: 36
Subject: Section 3.3.1, Mixture Proportions Table
Date: 12.06.11

My question pertains to the third sentence in the paragraph stating "Table 3.1 is available for
download.". I have read all of the rules and searched ASCE's website and cannot find the table in a file
format that will allow us to enter our numbers.

Response: The table was originally sent on September 9 to the listserv and posted on the ASCE web
site on the Rules and Regulations page at www.concretecanoe.asce.org. We have attached it to this e-
mail as well in Excel format (in both .xlsx and .xls format). There are several notes provided that
explain calculations that are to be made. When inserting the table(s) into your design report, do not
include these notes as they are for your reference only. We recommend that you review Appendix C
of the Rules and Regulations which provide a step-by-step example of performing the calculations and
populating the table. The Table is similar to that used last year with the only exception being that
“Admixtures in Powder Form” is now included in the solids content. Teams may modify the table by
deleting/adding rows as needed (for example, if you have 2 aggregates, there is no need to keep the
third aggregate row), changing fonts, colors, etc.

RFI No.: 51
Subject: Section 3.3.1, Mixture Proportions Table
Date: 01.14.12

Our team has a question regarding Section 3.3.1 and Table 3.1 concerning the "% solids" content of
admixtures, and therefore the "Water in Admixture" as well. We have used the following admixtures in
our concrete mix (all of which are from Grace Construction): ADVA CAST 575, V-MAR 3 and
Eclipse Shrinkage Crack Reducer. Upon contacting the manufacturer, we were informed that the "% solids"
content was proprietary information that could not be given to us. We were wondering what we
should do regarding this setback; should we leave the "% solids" and "Water in Admixture" areas
blank, is there some test we can conduct to get this information ourselves, or is there another option?

Response: Per Section 3.2.3, Water/Cementitious Material (w/cm) Ratio and Solids Content, the
water content of the all admixtures shall be taken into account for the w/cm ratio. Furthermore, it
states that “For the competition, latex, dyes solids, and admixtures in powder form are to be accounted
for in the determination of solids content. Disregard the contribution of solids from other admixtures
such as air-entrainers, water reducers, shrinkage reducers and viscosity-modifiers.” The assumption
made is that the dosage of these types of admixtures are fairly low and the contribution to solid content
is therefore low. Since the information is propriety, you can determine solids content by placing a
sample of the admixture in an oven and evaporating the liquid leaving the solids and then determining
the solids content from that. The solids content from other admixtures such as air-entrainers, water
reducers, shrinkage reducers and viscosity-modifiers are not to be included with the latex, dyes, and
powder form admixtures. However, the water content does need to be included.
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.: 108  
**Subject:** Section 3.3.3 Material Technical Data Sheets  
**Date:** 02.28.12

The group had a question regarding Section 3.3.3 in the rules, as well as Section 7.2.1 subset e, concerning Material Technical Data Sheets. The group has used pellitized plastic in the concrete mix, which is a recycled material; the group was not provided with a MTDS sheet for the plastic, and this plastic is not used as a conventional concrete aggregate. The company was contacted, and they responded by stating that they did not have one for this particular product. Therefore, the group conducted its own testing (such as specific gravity, absorption) on the material. The group would like to know if it would be acceptable to submit the information that we collected regarding the aggregate within an MTDS format within the Engineer's Notebook.

**Response:** This very topic has been covered in RFI 26 - MTDS and Crushed Glass (11.21.11) where it was stated that MTDS should be provided for all aggregates being used and could include information such as specific gravity, bulk density, absorption, gradation. Typically for the competition, MTDS would be available for aggregates such as the microspheres. When it comes to reclaimed/recycled materials, there may not be MTDS from the manufacturer/supplier. In the case of crushed glass (or in this case, plastic), the team should be able to conduct testing to determine properties – specific gravity, absorption, gradation – in their construction material testing laboratory per ASTM or other applicable standards. In this case, the team can prepare its own MTDS for the material with test results.

RFI No.: 86  
**Subject:** Display Section 3.3.4  
**Date:** 02.21.12

On page 15 section 3.3.4, the rules state that the aggregates “shall be provided in either jars or plastic bags.” Is it possible to have the aggregate samples displayed in empty oil lanterns?

**Response:** This would be acceptable.
RFI No.: 107  
**Subject:** Section 3.3.4  
**Date:** 02.28.12

The university wanted to know if it would be permissible to place the aggregates in clay container, shaped like an egg, or if it would not be acceptable according to Section 3.3.4, which states that they should be in a jar or plastic bag.

**Response:** This would be acceptable.

RFI No.: 94  
**Subject:** Section 3.4.6, 3 x 6 cylinders  
**Date:** 02.27.12

The rules state that a 3 x 6 cylindrical sample of each concrete mixture is to be made for the display table. Is it alright to use other sizes such as 2 x 4 or 4 x 8 cylinders?

**Response:** 4 x 8 cylinders would be acceptable.

**Section 4 – Reinforcement**

RFI No.: 41  
**Subject:** Section 4, Horse Hair  
**Date:** 12.14.11

Our team would like to use a natural fiber for the tensile reinforcement for the canoe. Specifically we would like to use horse hair. We did not find anything in ASTM C 1116 that says we could not use it. Would it be possible to use this for the reinforcement?

**Response:** We will allow it and assume that the properties will be determined by the team.

RFI No.: 118  
**Subject:** Section 4, Reinforcement  
**Date:** 02.29.12

We have a reinforcement of wooden nature that causes no problem related to POA, but we want to apply a substance on it to increase the impermeability. To be more precise, the wooden mesh we use absorbs the nearby water and, therefore, decreases dramatically the strength of the concrete near the reinforcement, causing a delaminating effect. In the 2012 ASCE national concrete canoe competition rules and regulations, “reinforcing materials do not have post-manufacturer applied coating that enhance the properties of the reinforcement” (section 4 – reinforcement – CNCCC intent), we are not sure of the extent of the term “properties”. In this situation, is using, for example, a varnish or a resin would be allowed considering that it would only enhance the permeability properties and not the structural properties? Further, in the section 4 of the rules and regulations, we can read: “Solid mats or plates for reinforcing are not permitted. Solid mats and plates are described as reinforcing materials that require additional bonding agents or post-manufacturer perforations to keep the reinforcement from delaminating from the concrete composite (i.e., there is a lack of open space between the reinforcement sufficient for mechanical bonding to the concrete composite).” (2012 ASCE national...
concrete canoe competition rules and regulations: section 4 – reinforcement – 4.2 Materials) Your sentence seems to imply that it is the lack of open space between the reinforcement that causes delaminating of the reinforcement from the concrete. As explained in question 1, we have a delaminating effect which is not related to the lack of open space, but to an absorption problem. We think that the use of a waterproofing substance mentioned in question 1 could resolve this issue. But we would also want to know if it is possible to add granular material in the resin, in order to obtain a rougher surface? Obviously, all the substances applied on the reinforcement would be completely dry at the time of the concrete’s casting. In this case, they would not directly participate chemically to the adhesion of concrete to the reinforcement, but only mechanically.

Response: The term “properties” is used to cover all properties of a given material. It may seem vague, but it is all encompassing. Adding any post-manufacturer coating to enhance or change the properties or characteristics of a given material is strictly prohibited. So in this case, adding a varnish or resin to waterproof the reinforcement is not allowed since you are enhancing the permeability/absorption characteristics of the material. Adding granular material to the resin is enhancing the textural characteristics of the material and is not allowed. The rules and regulations are pretty clear on this matter.

RFI No.: 23
Subject: Section 4.2, Epoxy Coated Mesh
Date: 11.11.11

We are interested in using a reinforcement mesh that is described as an "epoxy coated mesh for concrete reinforcement". To be clear, we are not adding any epoxy or resin of our own, the product comes this way. Please let me know if this is in compliance.

Response: According to Section 4 – REINFORCEMENT, CNCCC Intent – “In general, teams are permitted to develop a reinforcement scheme that……..(c) the reinforcing materials do not have post-manufacturer applied coatings that enhance the properties of the reinforcement.” In the case described, you are not applying a “post-manufacturer” coating and therefore it is in compliance with the rules and regulations.

RFI No.: 30
Subject: Section 4.2, Reinforcement within the canoe
Date: 11.21.11

According to Section 4.2, "Solid mats and plates are described as reinforcing materials that require additional bonding agents or post-manufacturer perforations to keep the reinforcement from delaminating from the concrete composite (i.e., there is a lack of open space between the reinforcement sufficient for mechanical bonding to the concrete composite)." -Page 12. Last year our team implemented a post tensioning system into our canoe. Small steel plates were placed at each end of the canoe and the cables pulled against that steel which transferred the distributed load to the concrete. We have since become aware that this may not be up to the requirements set by the NCCC. So our questions are: Can you clarity for our team how steel sections if left in the canoe and encased in concrete may or may not be allowed in the competition? How would percent open area apply to something like this?

Response: The intent of the rule is to not allow large plates (with or without holes) to serve as reinforcement in the canoe. However, the rules and regulations do not stipulate or define “large” (i.e.,
no dimensions given). In general, the commonly accepted primary reinforcement used in the
competition includes meshes (both metallic and non-metallic) and strands such as cables (steel,
fiberglass, etc). In the case described above, the small “plates” used are not intended to serve as
reinforcement and would be allowed. In this case, the ancillary pieces would not be subject to POA
(just like how individual strands are not). With that being said, the CNCCC highly suggests that teams
provide a detail for review.

RFI No.: 63
Subject: Section 4.2, Fiberglass
Date: 02.07.12

Can we use fiberglass in our mix design for the canoe?

Response: This is a loaded question! Depending on the “stat” of the fiberglass, it could be used in a
variety of ways. Strands of fiberglass could be used as secondary reinforcement within the concrete
matrix. Pieces of fiberglass (cured epoxy resin and glass) that are scrap pieces could potentially be
used as an aggregate source. Depending on your intent and the source of the fiberglass, it is possible
that is can be used in the concrete mixture design.

RFI No.: 71
Subject: Section 4.2, Epoxy Composite Reinforcement
Date: 02.08.12

Our team would like to manufacture and shape our own composite reinforcing bars with fiber glass or
carbon fiber and epoxy. Is it acceptable? Is there any restrictions?

Response: A RFI was issued on 11.11.11 regarding a similar matter. RFI No.23, Epoxy Coated
Mesh, was a response regarding clarification on the use of an epoxy coated mesh for concrete
reinforcement. In that case, the team was not applying any resin; the reinforcement was being used “as
received.” According to Section 4 – REINFORCEMENT, CNCCC Intent – “In general, teams are
permitted to develop a reinforcement scheme that……..(c) the reinforcing materials do not have post-
manufacturer applied coatings that enhance the properties of the reinforcement.” In the case described
by you, you are applying a “post-manufacturer” coating and therefore it is NOT incompliance with the
rules and regulations.

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.
RFI No.: 37
Subject: Section 4.3.1, Reinforcement
Date: 12.06.11

My question pertains to all of section 4 in the rules. I have read this section and cannot find any information on this question. We plan on suspending our reinforcement between two forms. To do this we would like to use monofilament and attach small foam spacers to one side of the reinforcement resulting in a composite reinforcement thickness less than 50% of the wall thickness of the canoe. It is my understanding this is acceptable since there is nothing in the rules stating suspending the reinforcement in this manner is not allowed.

Response: Section 4.3.1, Thickness, states that “the sum of all such measured thickness divided by the total thickness of the canoe wall or structural element (prior to staining or sealing) at any point in the canoe shall not exceed 50%. All canoe elements, including but not limited to, walls, ribs, gunwales, thwarts, bulkheads, etc., and the connections of structural elements to the canoe wall are subject to this rule.” It does not matter what the method is to obtain the ratio of 0.50 (whether you suspend it, or put in layers while constructing, etc.). When all is said and done, the ratio of reinforcement to hull thickness must be 0.50 or less.

RFI No.: 113
Subject: Section 4.3.1, Reinforcement-hull ratio
Date: 02.29.12

Section 4.3.1 states "The thickness of a layer of reinforcing is defined as follows: a single layer of the reinforcing is to be placed on a flat surface, a piece of plate glass, 6 mm (~1/4") or thinner, is to be placed on the reinforcing, the distance from the bottom of the plate to the top of the supporting flat surface is the thickness of a single layer. When subjected to the weight of the glass alone, the sum of all such measured thickness divided by the total thickness of the canoe wall or structural element (prior to staining or sealing) at any point in the canoe shall not exceed 50%." We supported our pretension cables off of the form using small (1/2in X 1/2 in X 5/16in [length X width X height]) pieces of wood. Our hull thickness is 1/2 in. These are spaced at 2 to 3 ft intervals along the cable. Do these blocks count as "reinforcement", and thus violate the 50% rule, or is it acceptable to leave them embedded (though covered) in the canoe?

Response: The blocks of wood would appear to be small enough not to serve as reinforcement in the canoe (yes, we understand that the wood does have some finite amount of strength). Because it is wood, one could state that it serves as flotation (again understanding that its contribution would be minimal). One issue that could arise is that you are only looking at about 1/16 inch (maybe 1/8 inch) of cover over the wood piece. Could they pop out? Regardless, the spacers can remain in place and they would not count towards the reinforcement thickness.

RFI No.: 29
Subject: Section 4.3.2, Percent Open Area
Date: 11.21.11

Our question pertains to measuring the percent open area of a reinforcing material. The reinforcement material consists of several fibers loosely held together by another mesh material. This causes the fibers to easily shift and separate making accurate measurements difficult. For example if a caliper is used to measure the thickness the dimension becomes smaller because the fibers are squeezed together.
The fibers can also be spread apart creating a larger thickness. These variations result in a large range on the percent open area. Our question is what method should we use to obtain an accurate measurement of this material's percent open area?

**Response:** While in this day and age the use of overhead projectors is antiquated, one way to do this is to project the mesh onto a wall/screen and take the measurements off of that (you can’t squeeze a shadow).

**RFI No.: 64**
**Subject: Section 4.3.2, Fiberglass as Reinforcement**
**Date: 02.07.12**

Our question is in regards to the rules associated with the concrete canoe in the rules it states that no resins can be used in the construction of the canoe. We were wondering if we could use a fiber glass sheet as reinforcement in the canoe if comes in a role and can be purchased at any hardware store it just looks like a fibrous bed sheet.

**Response:** As long as the percent open area (POA) is met and no post-manufacturer coatings are applied, the fiber glass sheet can be used as reinforcement in the canoe.

**Section 5 – Final Product**

**RFI No.: 57**
**Subject: Section 5.2, Lettering**
**Date: 01.26.12**

The school name shall consist of letters 41/2” ± 1/2” high; the canoe name shall consist of letters 31/2” ± 1/2” high. Letter height includes any outlines, shadows, ascenders and descenders, etc., used and may vary as long as it is within the specified range. Both upper and lower case letters may be used. Is the letter height the height of each individual letter or the entire word? So if there were a "t" and a "g" is the height measured from the top of the t to the bottom of the g or are the measured separately?

**Response:** The regulations references “letters.” Therefore it is the individual letters.

**RFI No.: 75**
**Subject: Section 5.2, Canoe Names**
**Date: 02.11.12**

I am asking about lettering on the exterior of the canoe, with regards to school name. In the rules, it states that no initials may be used but if the complete name of the university is more than 31 characters, the name may be abbreviated.

Our full school name: University of California, Los Angeles, is 37 characters long and may be abbreviated. However in our specific case, our acronym, UCLA, is arguably more universally recognized and prominent than our complete name. The requirement, "The abbreviated name must still clearly indicate the specific college or university competing, and as applicable include state or city" would be met, as Los Angeles is also commonly referred to as "LA." We would like to use 'UCLA' as
the school name on our canoe. May an exception be made to the prohibiting of initials for our specific case?

**Response:** U. of California, Los Angeles

RFI No.: 88  
**Subject:** Section 5.2--Finishing, Lettering  
**Date:** 02.21.12

In this year's rules and regulations, I could not find anything regarding the limits of the length of the canoe names. Can we assume that there is no limit? Please let me know. Thank you very much.

**Response:** If you are referring to the number of letters, there are no such limits and to the best of our knowledge, there have never been. So if you want to name your canoe “Pneumonoultramicroscopicsilicovolcanoconiosis” knock yourself out.

RFI No.: 56  
**Subject:** Section 5.4, Paint for Sanding  
**Date:** 01.26.12

I have a question regarding use of paint as an indicator during the sanding process. Primarily, is it legal to apply paint for the purposes of indicating progression of sanding and locations of deformities and pits? This paint will be completely removed and is not an appliqué, an admixture nor used in visual design but as stated above is an indicator to determine imperfections during the sanding process. Thank you in advance for your response.

**Response:** There are no regulations that prohibit the use of spray paint in the manner that you are suggesting given that the paint will not remain on the canoe after sanding is completely removed. We will point out that other materials such as chalk or optical techniques (lighting) can be used to accomplish the same goal.

RFI No.: 106  
**Subject:** Section 5.4 Concrete Stain - KEIM Soldalit – ME  
**Date:** 02.28.12

Section 5.4 states that "The use of paint and adhesive appliqués are limited to the lettering used for the school and canoe names." Section 5.5 states that "Any commercially available stain(s) specifically formulated for concrete may be applied to the canoe."

Our team is considering using an environmentally-friendly concrete coloring product, described in the MTDS (attached) as a specialized silicate exterior paint that neutralizes odors and reduces pollutants, by using a photocatalytic effect.

A letter (attached) from a company representative states the following about the product:

"[It] is a sol silicate coating designed for mineral substrates where the bonding chemistry is by permanent chemical bonds, not by adhesion. PRODUCT's bonds are created in a chemical reaction where atoms share electrons between the coating and the substrate."
"To help architects understand our silicate finishes for inclusion in their specifications, we interchangeably use the words “paint”, “coating”, “stain”, and “finish” to describe their purpose. This is why PRODUCT is described as a “paint” in the Technical Data Sheet and in other reference documents—to help us open the market to our products."

"I believe the spirit of the 2012 NCCC Rules in Sections 5.4 and 5.5 were to exclude finishes that make adhesive bonds to the canoe. If this is the case then there should be no exclusion for the application of PRODUCT on the canoe."

Please review the letter and MTDS. Is it permissible to use this product to stain our graphics?

**Response:** The CNCCC has reviewed the information provided to us and have determined that this product would be classified as a paint for the competition. The data sheet refers to it as paint (even though the letter provided states that other words are used interchangeably). The intent of this product is to provide a coating to eliminate odors and destroy pollutants. Although it is highly waterproof, it is not a concrete sealer that meets ASTM C 1315 or a curing compound that meets C 309. The product can be used only were paint is allowed per the Rules and Regulations. It may not be used to stain any other graphics.

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 itsy bitsy pieces of foil that you get in craft shops. While the question ask 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.
RFI No.: 49
Subject: Section 5.5, Concrete Stains
Date: 01.10.12

Under section 5.5 for concrete stains, the rules state "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 the proportioning and mixing." We are intending to use a dye concentrate that is to be reconstituted with a low VOC acetone per the manufacturer’s instructions. With this not being a stain but a surface applied dye, please provide clarification on the use of acetone in dilutions.

Response: The intent of the specification was to permit reconstitution but not dilution and it was assumed that water was typically the medium used for reconstituting a powdered dye. As long as the manufacturer’s recommendation/directions for reconstituting the powdered dye are strictly followed, then it will be allowed.

RFI No.: 67
Subject: Section 5.5, Sharpie Pens
Date: 02.07.12

Could a sharpie pen be used for accentuating lines on the canoe?

Response: No. They do not meet the standards for stains or sealers.

RFI No.: 73
Subject: Section 5.6, Acceptable Sealants
Date: 02.08.12

Can you please provide a list of acceptable sealants to be used on the canoe?

Response: The CNCCC does not provide a list of acceptable projects for the competition. We do specify what the various products must conform to and we are more than happy to review a RFI that contains product literature to assist you in determining if the material is compliant. You may use the listserv (canoe@ftl.com) and ask the concrete canoe public for recommendations or assistance as well.

RFI No.: 74
Subject: Section 5.6, Clear Cure & Seal W1000
Date: 02.11.12

Please confirm that the Clear Cure & Seal W1000 from Davis Colors is allowable for sealing the canoe.

Response: According to the Material Technical Data Sheet for this product it is in conformance with ASTM C 309 and therefore acceptable for use in the competition.
RFI No.: 103
**Subject:** Section 5.6 Sealer  
**Date:** 02.28.12

Our team has a question regarding Section 5.6. We want to verify the legality of the sealer we have chosen, Crystal Clear by ChemMasters.

**Response:** Crystal Clear is both ASTM C 1315 and C 309 compliant and therefore acceptable for use in the competition.

RFI No.: 104
**Subject:** Section 5.5 Stains and Section 5.6 Sealer  
**Date:** 02.28.12

Section 5.5 states that any commercially available stain(s) specifically formulated for concrete may be applied to the canoe and that the application of any given stain to any portion of the canoe shall be limited to a maximum of two (2) coats, following the manufacturer’s recommended procedure for application. If the manufacturer requires an acrylic polyurethane sealer out of their product line and the VOC of the stain and sealer in combination is less than 350g/L would this acrylic polyurethane be acceptable? Please confirm that Quikrete Wet Look sealer can be used to seal the canoe.

**Response:** The CNCCC will accept acrylic polyurethane concrete sealers that are compliant with ASTM C 1315. The rules stipulate that the maximum VOC limit is 350 g/l for the stain and sealer (it is not technically the combination. If you apply a stain with say 300 g/l and a sealer with say 300 g/l, you do not get 600 g/l; you still have 300 g/l of VOC.) It appears that the Quikrete Sealer is made for concrete; however, we will note that the documentation provided to the CNCCC does not indicate whether it is C1315 or C309 compliant. We request that you provide this information for our review.

RFI No.: 105
**Subject:** Section 5.6 Concrete Sealers – Polyurea  
**Date:** 02.28.12

As an equivalent product to the suggested sealers, we would like to use an aliphatic cold spray polyurea. Is this acceptable? Supporting Information: Polyurea coatings are becoming increasingly popular for sealing concrete and they are generally brushed or rolled onto the concrete surface. We plan to “cold” spray two coats of aliphatic polyurea onto the surface of our concrete canoe under field conditions according to manufacturer’s recommendations. The material that we intend to use is 100% solids, has zero VOCs, and one of the lowest monomer contents available in the polyurea-coating industry. Technical data and safety information are attached including the MTDS for the final product and the MSDSs for the ISO and Resin sides required for application by the cold spray technique.

**Response:** The CNCCC has reviewed the information provided and based on the fact that the Polyurea is a resin which according to the manufacturer’s data sheet has a tensile strength in excess of 6000 psi (much stronger than the concrete that it would be protecting) and that it is neither ASTM C 1315 or C 309 compliant, it is not allowed as a sealer for the concrete in the competition.
RFI No.: 109  
**Subject:** Section 5.6 Concrete Sealers  
**Date:** 02.28.12

We would like to use a stain that is not compatible with a penetrating sealer. Can we use a Single component solvent-based acrylic polymer or a Single component urethane/acrylic polymer instead of a silane or siloxane based penetrating sealer?

**Response:** We would accept the use of such as sealer as long as it was ASTM C 1315 compliant.

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**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.

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RFI No.: 33  
**Subject:** Section 6.2.1, Margins for Design Paper  
**Date:** 11.28.11

Our team has a question on the design paper. What are the margins for the design paper? We couldn't find anything in the rules and regulation booklet.

**Response:** There are no specified margins for the design paper this year. We removed the requirement to give teams some flexibility with layout and to remove the deduction that was associated with it.

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RFI No.: 59  
**Subject:** Section 6.2.1, Fonts for Canoe Names  
**Date:** 01.26.12

Please refer to section 6.2.1 of the rules, "Fonts other than Times New Roman or Arial may be used for canoe names so that they may stand out from the rest of the text.” We understand that we can use any
legible font for our 2012 canoe. Are we permitted to use an additional font if we refer to a previous year's canoe?

**Response:** Yes. Different fonts can be used for canoe name, past or present.

RFI No.: 69  
**Subject:** Section 6.2.1, Design Paper General Requirements  
**Date:** 02.07.12

Requesting Material on the Design Paper margin limits 6.2.1. It states in the 2011 rules and regulation section 6.2.1 that "All pages of the report, including the organization chart, project schedule and design drawing shall maintain a minimum of 3/4” margins on all sides." For 2012, this rule is not stated. Is it under the discretion of the team this year to decide on margins or does the 2011 rule still apply?

**Response:** This was covered under RFI No. 3, Margins for Design Paper, dated 11.28.11, which stated that “There are no specified margins for the design paper this year. We removed the requirement to give teams some flexibility with layout and to remove the deduction that was associated with it.”

RFI No.: 78  
**Subject:** Section 6.2.1 - Regarding font requirements  
**Date:** 02.11.12

Section 6.2.1 states that "Body text shall be in English and use 12-point, normal width character spacing, Times New Roman or Arial font." For text within tables, must the above rule be observed, since text in a table is not "Body text"?

**Response:** The text within the tables does not need to meet the body text requirements; however, they should be sufficient size to be legible. The CNCCC recommends that the font should still be Times New Roman or Arial and no smaller than 10-point font.

RFI No.: 79  
**Subject:** 6.2.1 Design Paper Margins  
**Date:** 02.15.12

There is no information available in these sections for the design paper margins requirement. Can you please specify the requirements for the margins?

**Response:** This was addressed in RFI No. 69, dated 02.07.12, which referenced RFI No. 3, dated 11.28.11. The response was that “There are no specified margins for the design paper this year. We removed the requirement to give teams some flexibility with layout and to remove the deduction that was associated with it.”

RFI No.: 39  
**Subject:** Section 6.2.2, TOC and Executive Summary  
**Date:** 12.14.11

Is the table of contents meant to take up an entire page by itself? Is it not permissible to combine Table of Contents and Executive Summary on one page, as done in years past?
Response: Section 6.2.2 Format, breaks the format down as follows: b. Table of Contents (Page i): Provide a Table of Contents including the various sections of the report, List of Figures, List of Tables, and List of Appendices, as appropriate. Photographs may be included on this page; however, they are not to be referenced to within the body of the report. c. Executive Summary (Page ii): Provide basic information about the school, conference, competition history, and performance level. Provide the name, applicable dimensions, weight and color(s) of the canoe, the engineering properties of the concrete and type(s) of reinforcement used. Highlight innovative or new features of the structural analysis, design, construction, project management and sustainability. We have allotted two (2) separate pages for the TOC and the Executive Summary; they should not be combined.

RFI No.: 55
Subject: Section 6.2.2, Design Paper
Date: 01.26.12

We were wondering if each section of the design paper needs to be on its own page as specified by Section 6.2.2. Or if we just need to mention the different sections with subheadings like previous years.

Response: The Rules and Regulations provide section titles and page limits. These are to be followed. There is no requirement to fill a page completely.

RFI No.: 70
Subject: Section 6.2.2, Design Paper
Date: 02.07.12

6.2.2 e. Structural Analysis (Page 2): (...) "Include the material property values for the concrete, reinforcement and composite that must be achieved."

6.2.2 f. Development & Testing (Pages 3–4): (...) "Include the final concrete, reinforcement and composite test results."

Do we have to perform a test with the reinforcement and the composite even if they were not considered in the analysis, as our analysis is based on the concrete yield strength?

Response: There is no requirement that you MUST provide values. However, you should provide information that justifies your design and that you meet your design goals. Based on your question, it appears that the concrete itself (not reinforced or only with fibers) will be sufficient to carry the compressive, tensile, shear and flexural demands.

RFI No.: 77
Subject: Question Regarding Section 6.2.2 (c)
Date: 02.11.12

Section 6.2.2 (c) states that the Executive Summary portion of the design paper should "[p]rovide the name, applicable dimensions, weight and color(s) of the canoe, the engineering properties of the concrete and type(s) of reinforcement used." If we choose to list this information in a table or tables, do we need to label this table (e.g. Table 1) and refer to it in the Table of Contents?
Response: That would be acceptable.

RFI No.: 80
Subject: Section 6.2.2.n, Mixture Proportion Tables
Date: 02.15.12

Rule 6.2.2-n states that for the Mixture Proportions tables, "one separate page for each data table shall be used". Our mixtures used a large enough number of materials so that each table will not fit within the desired margins of our paper. Is it possible to have each data table split onto 2 separate pages per table, while ensuring that each mixture table is separated (i.e., no two mixtures will be on the same page)?

Response: This is acceptable. The intent is to have separate tables. Typically, this can be accomplished on one sheet; however, to spread it out over two sheets in order to accommodate the number of materials needed is indeed acceptable.

RFI No.: 81
Subject: Section 6.2.2.l, Design Drawing
Date: 02.15.12

Rule 6.2.2-l states "Include one design drawing and bill of materials for the form." This section is an exact wording of the section from the 2011 NCCC rules. Since teams have the ability to design their own canoe this year, should the design drawing include dimensions of the canoe designed, rocker dimensions, hull thickness, and other dimensions directly related to the canoe design, or simply dimensions related to the mold?

Response: The design drawing is for the form used in the construction of the canoe. Your Executive Summary and the report itself will go over applicable dimensions of the canoe. In addition, you are allowed general notes on the drawing which can include language on what the final canoe dimensions are.

RFI No.: 82
Subject: Section 6.2.2
Date: 02.15.12

The page number for each section is given to us. Section 6.2.2 has Hull Design as page 1 and Analysis as Page 2. However, if the Hull Design only takes ½ page, can we start the Analysis on that same page and still use all of page 2 for Analysis as well as long as Development and Testing starts on Page 3? Because we describe our pre-stress system, our analysis tends to be longer than one page, so we want to know if we can use part of the hull design page as well.

Response: While there is no requirement to fill an entire page, you are to limit the sections to the page limits provided. Analysis is page 2 and is by definition limited to be one page. On a side note, you mention that you are "describing your pre-stress system". Would this description be something that could be incorporated in the Construction section of the report (and/or the Development and Testing section)?
RFI No.: 90
Subject: Section 6.2.2, Design Paper
Date: 02.27.12

In regards to the table of contents, "Provide a Table of Contents including the various sections of the report, List of Figures, List of Tables, and List of Appendices, as appropriate." Do we need to specify what the tables and figures are and what page they are on within the table of contents?

Response: The TOC is to include the appropriate lists as stated. This would include the figure or table number, the title of the figure or table, and the appropriate page that it is on.

RFI No.: 95
Subject: Section 6.2.2, Design Paper
Date: 02.27.12

Please refer to section 6.2.2. In the rules, each page is specified for a certain topic. Ex. Hull Design is page 1. Is the information in each of these sections limited to only one page? If we added more pages, to a certain section, it would offset the page numbers of the following sections. Also, does the information on these pages have to completely fill up the page?

Response: The page limits are set for the sections as specified in the rules and regulations. Additional pages are not to be added (and if done, deductions are applied). There is no requirement to fill up a page.

RFI No.: 96
Subject: Section 6.2.2, Design Paper
Date: 02.27.12

Should the front and back covers of the report be additional pieces of paper or just clear plastic sheets on the front and back? Please define what the "covers" of the report should be in the form of and if they should be blank or not.

Response: The report should have a front cover where the inside cover is left blank and the back cover should be left blank on both sides. A clear plastic protective cover can be added to the front and/or back if you desire. The covers could be paper, card stock, vinyl, etc.

RFI No.: 114
Subject: Section 6.3.1, Electronic Copies of Design Paper
Date: 02.29.12

Our University is due to participate in the North Central Regional Conference, hosted by Ohio Northern University, on March 30th. We would like some clarification on a particular rule. In your handbook for the concrete canoe competition, Section 6.3.1 states that "For the Conference Competitions, each school shall provide six (6) bound copies of the Design Paper. Electronic copies of the report are not required at the conference level and shall not be requested by the host school."

However, we received a mailer from Ohio Northern University (please see attached mailer) requesting five hard copy submissions and one pdf copy. Is this an acceptable request? We would like to know before we send out the final copies of our reports on Friday, March 2nd.
**Response**: We have attempted to address the issue of host schools requesting electronic copies of design reports. While we understand the ease of converting files to PDF we are not sure how much more clearer we can be than “Electronic copies of the report are not required at the conference level and shall not be requested by the host school.” It is our stance that teams are not to submit an electronic copy. We state 6 copies to cover the 5 judges and to have one extra on hand.

**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.: 26  
**Subject**: Section 7.1.2.e, MTDS and Crushed Glass  
**Date**: 11.21.11

My team wants to use crushed glass bottles as part of our concrete mix, but we are having problems getting the data sheets from the manufacturer due to proprietary reasons. I see that Part 3 of Section 7.1.2 in the 2012 Rules and Regulation states: "The MTDS must provide information clearly verifying that the materials used in the canoe, such as stains and sealers, are in compliance with all of the specifications. In the event that the information is not provided (such as proprietary reasons), a letter from the company certifying that the materials used are in compliance with the specifications shall suffice. The letter shall be on company letterhead, state the specification being verified, and include name, title, phone number, and e-mail address of the individual(s) certifying compliance." For clarification, does that mean that if we do not have the MTDS for this material, we just need to acquire a letter from the manufacture saying the material meets the ASTM standards and other specifications for this competition? If so, what should we do in the events that the company does not want to put in the effort to verify the information? We are thinking about sending a sample of the material we wanted to use to NCCC for verification. However, we are unsure if it is necessary. If it is, what are the steps in submitting the sample and where would we need to send it to? If not, what would we need to do? Please get back to me as soon as you can. Thank you very much.
Response: According to Section 3.3.3, Material Technical Data Sheets, “Material Technical Data Sheets (MTDS) for each material used in the construction of the canoe shall be presented under Tab D of the Engineer’s Notebook (Section 7.1.2.d). This includes, but is not limited to, cementitious materials (including cement), aggregate (other than natural or manufactured sands), chemical admixtures, and pigments.” MTDS should be provided for all aggregates being used and could include information such as specific gravity, bulk density, absorption, gradation. Typically for the competition, MTDS would be available for aggregates such as the microspheres. When it comes to reclaimed/recycled materials, there may not be MTDS from the manufacturer/supplier. In the case of crushed glass, the team should be able to conduct testing to determine properties – specific gravity, absorption, gradation – in their construction material testing laboratory. Other than conducting the testing in accordance with ASTM or other applicable standards, the rules and regulations do not state that the aggregates need to meet any ASTM standard (for instance, there is no gradation). In this case, the team can prepare its own MTDS for the material with test results.

RFI No.: 72
Subject: Section 7.1.2 (C) Tab B Construction Photographs
Date: 02.08.12

Regarding Section 7.1.2 (C) Tab B Construction Photographs, it states that we need 6 pictures in total showing fabrication of cross sections, assembly of the mold and coatings prior to canoe construction. If an outside vendor made our form and we were not able to make the date in which he had done so to take pictures of the in progress cross sections, would it be acceptable for our "fabrication of cross section" photos to be us preparing and assembling the pieces which he made for us?

Response: This would be acceptable. You can also “stage” a picture of the vendor cutting a cross section (we assume that all the photograph would be a piece of foam with a CNC milling machine).

RFI No.: 102
Subject: Section 7.1.2 (E) (MTDS)
Date: 02.28.12

We plan to use multiple colors of dry pigments in our canoe, but the company that supplies our dyes only has one MTDS for all their dyes. They say that they are similar enough so that one MTDS covers them all. Will we have to supply multiple copies of the sheet labeled for different colors of dye?

Response: The MTDS for the dye regardless of the color will suffice in this case.

RFI No.: 120
Subject: Section 7.1.2 (e), Technical Data Sheets
Date: 02.29.12

One of our suppliers for acid gel remover has a Material Safety Data Sheet and a Technical Data Sheet and they did not know what the MTDS was. Is both these sheets equivalent to the MTDS?

Response: The answer you seek is in the question you asked. The “TDS” in “MTDS” is Technical Data Sheet. Your question mentions that the supplier has a Technical Data Sheet. The rules clearly state that MSDS are not Technical Data Sheets.
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 is has the required information. As for layout design, knock yourself out.

**Section 8 – Oral Presentation**

RFI No.: 98  
**Subject:** Section 8, Presentation  
**Date:** 02.27.12

The CNCCC has received two similar questions regarding submission of PowerPoint presentation before the competition: Our host school is requiring oral presentation oral submissions before conference (See mailer 3 attached to this email). Is this within rules for the school to require the presentation to be submitted before conference? The host school is requesting we send our presentations to them a week before conference. Is this really necessary? I could not find it in the rules, and thus wondered if it is even fair to cut out that extra week that could be spend editing the presentation.

**Response:** We have reviewed the Mailer 3 from Cal Poly Pomona (we have not attached the mailer to this response). The mailer indicated that the “Technical Paper Power Point Presentation” is to be submitted prior to the conference. This is not the presentation that is for the concrete canoe competition. There are two requirements for an ASCE Conference – a business meeting and a technical paper competition (all of the other competitions are generally held at the same time since it makes sense to do so). The Technical Paper referred to here is not the design paper that is part of the concrete canoe competition. They did not request submission of the concrete canoe presentations.
Section 9 – Final Product (Canoe and Cutaway Section)

RFI No.: 25
Subject: Section 9.1.1, Canoe Stands
Date: 11.15.11

Section 9.1.1, third paragraph, page 42: "Canoes shall be displayed on display stands designed to support the canoe at a clear height of 2.5 to 4 feet below the canoe." Our team would appreciate a definition of the statement "clear height." This statement is seemingly contradictory and disqualifies the use of a stand. (Plus we really need to know how large our stand is allowed to be BEFORE we start to design and build it.)

Response: The intent of the rules it to support the canoe with the use of stands so that the canoe is elevated 2.5 to 4 feet off the ground. The clear height is the measurement from the ground to the bottom of the canoe (assuming the canoe is placed in the stands right side up. Basically the CNCCC does not want the canoe resting on a table (or other type of structure) that would support most of the length of the canoe. We are not asking for a hoist system to cradle the canoe and allow it to hover over the ground.

RFI No.: 40
Subject: Section 9.1.1, Canoe Stand and Props
Date: 12.14.11

I need some clarification about the canoe stand. Can the stand have extra pieces to it other than the support pieces or would all pieces used in the stand design have to be actually holding the canoe up? For instance if the pieces holding up the canoe are going to be cacti can there be extra piece around the stand such as a coyote?

Response: Under. 9.1.1, General Requirements (Final Product), “For aesthetics judging, all canoes shall be assembled in a common area. Canoes shall be displayed on display stands designed to support the canoe at a clear height of 2.5 to 4 feet below the canoe. No lighting, sound, or canopies shall be permitted at the time of judging.” The non-supporting pieces are props and are permissible as long as the props are not presented in a way that they act as an extension of the product display (should not be informative).

RFI No.: 58
Subject: Section 9.1.1, Canoe Stand(s)
Date: 01.26.12

Section 9.1.1 General Requirements: Canoes shall be displayed on display stands designed to support the canoe at a clear height of 2.5 to 4 feet below the canoe. We will be able to use one stand directly underneath the center of the canoe?

Response: Yes.
Section 9.2.3.b states: Failure of the canoe to complete all preliminary sprint and endurance events will result in the canoe receiving zero Final Product points for the competition. Does that mean a canoe that completes all preliminary races but not the final races at the conference competition still qualifies for all of the Final Product points? Or does the statement mean that a canoe receives zero Final Product points if it doesn't complete both the preliminary and final races at the conference competition?

Response: In general, the durability of all of the canoes at the conference or national competitions is based at a given point in time – the completion of the endurance races and the preliminary sprints. At this point in time, all of the canoes have undergone the same amount of races (depending on the size of the conference and at the nationals, there are grand and petite finals for the sprints, therefore some schools will actually have more races and therefore more wear and tear on their products compared to teams that may not have qualified for the finals). This is the point in the competition where the judges do the tape check. Section 9.2.3.b is to be interpreted as this – if a canoe is not seaworthy enough to complete the preliminary sprints and endurance races (i.e. structurally damaged beyond tape repair, team does not compete, etc.), then that team receives No Final Product Points. If the damage occurs after the “tape check” the only points that can be affected are in the race category and not in Final Product. Please note that there is a difference between DNF (did not finish) and failure to complete a race. If a canoe DNF due to an event such as being swamped and the paddlers conceded the race, but the canoe once retrieved from the water is still seaworthy and can compete in another race, the team just receives 0 races points in that particular race but is eligible for all of its Final Product points.

Section 9.3, "A full scale cutaway section representative of both raw and finished canoe..." Can the cutaway section of the canoe be in any shape, just as long as it shows both the raw and finished product, or does it actually have to be in the shape of the canoe?

Response: Section 9.3, Cutaway Section, states that “A full-scale cutaway section representative of both the raw and finished canoe shall be judged as part of the Final Product and shall be presented alongside the canoe. At least three (3) feet of the cutaway section shall demonstrate the concrete casting, finishing, and reinforcement techniques used (i.e., the three-foot section should show concrete placement and finishing in various stages). The cutaway section shall also show the mold, however, it does not count towards the required length of the cutaway section. “Given that it is full-scale and shows the mold as well would imply that the cross-section is in the shape of a portion of the canoe.

Section 9.1.1 states: "Canoes shall be displayed on display stands designed to support the canoe at a clear height of 2.5 to 4 feet below the canoe.” We have two questions regarding this section of the rules regarding our display stand (see attached figure).Question 1: we would like to place the canoe
pointing up at an angle of approximately 30 degrees. Does this conform to the rules? If so, does the 2.5 feet requirement apply to the lowest point of the canoe hull? Question 2: Can our front and rear support stands be continuously connected along the bottom of the canoe?

Response: The clear height in the regulations is a range. To be honest, the CNCCC or the judges are not measuring the clear height of the canoe from the ground but have given guidelines on what is needed. We do not want the canoes sitting on the ground or being elevated too high, so we gave a practical height. If you want to have one end of the canoe 2.5 feet off the ground and the other end 4 feet off the ground that is perfectly fine. Obviously, the intent of the stand(s) is to hold the canoe up to showcase it and to allow it to be removed so that it can be flipped over for inspection by the judges. The stands themselves are relatively small and should not be large continuous pieces (i.e., acting like a table). While the stand proposed is creative, it goes against the intent of the rules and regulations and is not permitted.

RFI No.: 84  
**Subject: Section 9.3 Cutaway Section**  
Date: 02.21.12

Please reference Section 9.3 Cutaway Section. We have attached a drawing of what our mold will look like. We will have leaves coming off of a vine which will serve as "windows" to the various layers of the mold. 1. Does the mold physically show a large enough area of the process? 2. Is showing only the vine acceptable as long as everything is labeled?

Response: The cross section is to be representative of the canoe making process. The CNCCC would make the suggestion of trying not to be too creative/artistic with the cross section. There have been past competitions where teams have lost points at the conference level because the judges felt the artistic rendition of the cross section was not adequate enough. A judge may say that the leaves are large enough or representative enough. We do not want to make this an issue and would suggest to all teams to use adequate coverage of area to represent your canoe.

RFI No.: 110  
**Subject: Section 9.3: Cutaway Section**  
Date: 02.28.12

We would like to request a clarification on Section 9.3: Cutaway Section. This year, our team built two canoes. An expanded polystyrene (EPS) form was used to cast the first canoe, but was damaged during form removal. A second fiberglass form was made by draping epoxy-dampened fiberglass over the hull of the first canoe, and this new form was used to cast the second canoe. Which of these things (EPS form, first canoe, fiberglass form, and second canoe) should be represented in our cutaway section? Both foam and fiberglass forms were female molds, so it may not be practical to represent both of them in the cutaway section.

Response: Based on the scenario, the CNCCC would accept the fiberglass form used to cast the second canoe. You can elaborate in your design report the actual scenario that took place as outlined in your RFI.
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.

RFI No.: 93  
**Subject: Question Regarding Section 10.1(b)**  
Date: 02.27.12

In Section 10.1(b) it states "Display sample(s) of concrete aggregate (composite and individual), concrete cylinder(s), and raw reinforcement sample(s) and Engineer’s Notebook (Section 7)." For the samples of aggregate and raw reinforcement is there a minimum size or maximum size for the samples either by weight or by volume.

**Response:** Section 3.3.4, Aggregate Sample(s), states that “A 500 milliliter (min) representative samples of the individual aggregates and composite aggregate blends used in each concrete mixture shall be made available as part of the product display (Section 10.1.b). Samples shall be provided in either jars or plastic bags, and labeled accordingly.” Section 4.4.2, Reinforcement Samples, states that "A 12 in. x 12 in. square sample of each reinforcement material used in the canoe shall be made available for compliance checking as part of the product display (Section 10.1.b). If bars, tendons or strands are utilized, a sample of 12 in. in length shall be provided.”

RFI No.: 65  
**Subject: Section 10.2, Glowsticks**  
Date: 02.07.12

Under Section 10.2, Restrictions for Product Display, it states, 'Displays shall not include electronic devices of any kind (such as, but not limited to, laptops, lighting, sound equipment, video equipment, radios, loudspeakers or any other noise-creating devices).’ Please advise if non-electronic sources of lighting (such as glowsticks or similar) acceptable to include in the display.

**Response:** Glowsticks would be acceptable (it is not an electronic device).
## Miscellaneous

**RFI No.: 31**  
**Subject: Themes and Copyright/Trademark Infringement**  
**Date: 11.22.11**

Please refer to Section 1.5 (sponsorship) in the rules. Last year, several schools used notable icons such as Transformers, James Bond 007, etc. and they did not have any sponsorship from the companies that own the rights. Are teams allowed to use widely recognized copyrighted characters as part of the aesthetics of the canoe, stands, binders, etc.? Furthermore, if we are allowed to use these characters, do we need written permission from the companies that own the rights?

**Response:** The sponsorship referred to in Section 1.5 is for the companies, individuals, etc. that provide teams with materials and/or financial support. The incorporation of characters, movies, famous quotes, etc. (copyrighted, trademarked or not) into the themes that teams use is not considered “sponsorship” as we have defined it. However, you have raised a question for which an answer is somewhat complicated as it now deals with copyright/trademark infringement and “fair use” of such materials. Generally, the use of another party’s copyrighted or trademarked materials requires permission of the owner; however, exceptions to that rule may exist. If you have questions concerning this matter, please contact ASCE’s legal department.

**RFI No.: 34**  
**Subject: Conference Competitions**  
**Date: 11.28.11**

I was asked if there is a co-ed race for the 2012 Concrete Canoe Competition. I have talked to my adviser and he suggested that we go with the past year events which includes swamp test, slalom race (men's and women's), sprint & co-ed races. When I look through the 2012 NCCC Rules and Regulation, 1st, 2nd, and 3rd place winner will be awarded with scholarship and trophy. Plaques will be awarded to 4th, and 5th place, best design paper, best oral presentation, best final product, spirit of the competition, women endurance race, men endurance race, women sprint race, men sprint race. (the co-ed award is not listed).

1. Are scholarships given to Metropolitan Section winner?  
2. Since the co-ed award is not listed on the 2012 NCCC Rules manual, should we still do the co-ed race for Metro Section?  
3. Do we (host school) gets to decide what kind of race for the competition or there is a guideline on the race event that we should follow?

**Response:** The rules and regulations are written in respect to the National Competition in regards to the awards and scholarships presented. The conference competitions are to be conducted in accordance with the national competition. That is, the same events (academic and racing) to the same standards. Not all conferences give trophies or plaques out (some give ribbons, for example).

1. The scholarships are only applicable to the National Competition. Conferences do not give out scholarships.  
2. The co-ed award is indeed listed in the 2012 Rules and Regulations – under “Awards and Recognition,” the paragraph under which all of those events are listed, there is a paragraph that states “A special plaque in honor of R. John Craig, a former ASCE Committee on Student Services member who was a driving force behind the National Concrete Canoe Competition, shall be awarded to the
team that has the best time in the coed race.” Again, this plaque is presented at the national level, but there are co-ed races at the conference level. This year, it is a 4-person, 400 meter race.

3. Section 11 of the Rules and Regulations cover the layout, heats, penalties, etc. for all races.

RFI No.: 35  
Subject: Paddling  
Date: 11.28.11

Are we allowed to have a paddler sit on the capped floatation on the stern end of the boat? For example, we usually encase foam with concrete at the bow and stern for floatation, creating a concrete “ledge” that could potentially be used as a seat for a paddler.

Response: The Rules and Regulations do not stipulate paddler positioning other than it must be done in a safe manner (in terms of design). Team have created flotation encased in concrete in the center of the canoe and used them as seats. We do not see a reason why you technically could not sit on stern flotation (other than you may be distributing too much weight to the back of the canoe). Sitting on bow flotation would mean that the front paddler is actually sitting outside of the canoe and would not be permissible (sitting on stern flotation would still allow you to have feet inside the canoe).

RFI No.: 89  
Subject: Appendix A-1 Design Paper Scorecard  
Date: 02.21.12

In regards to the design paper scorecard we noticed that five points are allocated to an Innovation section. This topic is no longer its own section according to section 6.2.2. Our team was wondering how these points will be distributed and will there be points for the executive summary?

Response: There have been no points assigned to the Executive Summary (however, deductions can be applied based on missing information). The CNCCC felt that the standalone Innovation section was basically a summary of information already contained within the body of the report. Therefore the innovative measures applied to the project whether it be in the analysis, materials selected, construction techniques, etc. should be highlighted within the body of the report. The judges will then score accordingly.

RFI No.: 92  
Subject: Flag Pole  
Date: 02.27.12

Are wooden flag poles allowed to be mounted on the back of the canoe?

Response: No.

RFI No.: 112  
Subject: Competition Results  
Date: 02.28.12

I'm the Engineering Student Council President at Southern Illinois University of Carbondale and we were looking at doing some benchmarking. I was wondering if it would be possible for you to pass on
the competition results of the Concrete Canoe for the past 4 years. I truly appreciate your cooperation in this endeavor that we are trying to succeed at.

Response: We can refer you to websites that maintain information regarding results of past national competition. We do not maintain any records for conference competitions. ASCE maintains http://www.asce.org/concretecanoe. There are a number of other websites hosted by student organizations that may be useful to you. One is www.concretecanoe.org hosted by the University of Alabama-Huntsville (the information contained here is not maintained or checked by the CNCCC).

RFI No.: 115
Subject: Fiber Optics
Date: 02.29.12

We are planning to run fiber optics along the length of the canoe to a central point that will be lit up. The fiber optics will be in an outlay that offers no structural integrity to the canoe and are for aesthetic purposes only. The fiber optics are .02 inches in diameter. Our question is whether or not the fiber optics will be considered as reinforcement.

Response: Each year we receive questions about the use of fiber optics being embedded in the concrete for aesthetic reasons. As stated here the fiber optic is to be an outlay. There have been similar requests for the use of non-concrete materials such as glass, plastic to be embedded in the concrete to create mosaics. These are not allowed. In the case of fiber optics, we will consider them as part of the reinforcement scheme. 4.0 GENERAL states that “All reinforcement shall be covered in concrete. All material not part of a concrete mixture shall be classified as reinforcing material and shall comply with all of the specifications outlined below. This does not apply to materials that are used for flotation purposes.” The fiber optics are not flotation and are not concrete, therefore they fall into the reinforcement material category.

Questions regarding rule interpretations should be directed via e-mail to cnccc@ermmail.asce.org. Official responses will come from CNCCC@asee.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.