NC STATE Design

College of Design
Brooks Hall | Campus Box 7701
Raleigh, NC 27695

Office of the Dean | 919.515.8302
External Relations | 919.515.8313
Student Affairs | 919.515.8306
International Programs | 919.515.8310
Fax 919.515.7330
www.design.ncsu.edu

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To: Helene Dreiling, Interim Executive Director – National Architectural Accrediting Board

From: David B. Hill, AIA, Professor and Head of the School of Architecture – NC State University, david_hill@ncsu.edu, 919.741.1743

RE: Response to NAAB Visiting Team Report 2018 for NC State University

The School of Architecture at NC State University thanks the NAAB and the Visiting Team for planning and carrying out our accreditation processes and procedures during the 2017-2018 academic year. We are grateful that the Visiting Team recognized us for "achieving our stated mission" (VTR, p.1) of educating our students for the profession of architecture. The team also noted that "students and graduates value their experience and relationships built at NC State and, upon graduation, become productive members of the architectural community" (VTR, p.1). We are honored to receive Conditions Met with Distinction in Architectural Design Skills (A4), Professional Communication Skills (A1), and Building Envelope Systems and Assemblies (B7) (VTR, p.32).

This letter offers a response to the Visiting Team Report 2018, particularly to items listed in "Conditions Not Achieved" (p.1-2). Please see the quoted VTR conditions and the school's responses below.

1.) From VTR (p.18)**:**

B.4 Technical Documentation: *Ability* to make technically clear drawings, prepare outline specifications, and construct models illustrating and identifying the assembly of materials, systems, and components appropriate for a building design.

B. Arch.

[X] Not Met

2018 Team Assessment: Evidence was found in areas of technically clear drawings and models, identifying the assembly of materials, systems, and components appropriate for a building design in ARC 501, Professional Architecture Studio I, however no evidence was found demonstrating the ability to prepare outline specifications.

M. Arch.

[X] Not Met

2018 Team Assessment: Evidence was found in making technically clear drawings and models identifying the assembly of materials, systems, and components appropriate for a building design in student work prepared ARC 500, Architectural Design: Professional Studio; however no evidence was found demonstrating the ability to prepare outline specifications.

School response:

This is a wide-ranging SPC that requires drawings, models, and outline specifications. The school submitted evidence that demonstrates students' ability to create artifacts that clearly identify the assembly of materials, systems, and components appropriate for a building design. We recognize deficiency in a small portion of this SPC, outline specifications, and we are taking measures to correct this. Please note that we received distinction for Professional Communication Skills (A1) and Building Envelope Systems and Assemblies (B7)—both vital components of this SPC.

2.) From VTR (p.19)**:**

B.6 Environmental Systems: *Ability* to demonstrate the principles of environmental systems' design, how design criteria can vary by geographic region, and the tools used for performance assessment. This demonstration must include active and passive heating and cooling, solar geometry, daylighting, natural ventilation, indoor air quality, solar systems, lighting systems, and acoustics.

B. Arch.

[X] Not Met

2018 Team Assessment: Evidence of student achievement at the prescribed level was not found in student work presented. Scant evidence of student ability was found regarding principles of environmental design.

M. Arch.

[X] Not Met

2018 Team Assessment: Evidence of student achievement at the prescribed level was not found in student work presented.

School response:

The school provided student coursework from ARC 211 Natural Systems in Architecture, ARC 414 Environmental Control Systems, ARC 500 Architectural Design: Professional Studio (M.Arch.), and ARC 501 Professional Architecture Studio 1 (B.Arch.). The school feels as if it has successfully addressed the components of this SPC, with some deficiencies in lighting systems. Components of this SPC are primary topics in ARC 211 and ARC 414. Design exercises and projects within required courses and studios address and illustrate students' ability to research and document a range of environmental

systems (both active and passive), and to apply these systems to their projects. We seek constant improvement in the areas represented in this SPC. In pursuing greater degrees of success, the school has assigned Professor Jianxin Hu, an expert in building systems (active and passive) and daylighting, to teach ARC 414. Dr. Hu has recently been assigned to teach the integrative studio. This is resulting in a greater degree of coordination between core coursework and comprehensive/integrative studio work.

3.) From VTR (p.20)**:**

B.10 Financial Considerations: *Understanding* of the fundamentals of building costs, which must include project financing methods and feasibility, construction cost estimating, construction scheduling, operational costs, and life-cycle costs.

B. Arch.

[X] Not Met

2018 Team Assessment: Evidence of exposure to concepts of construction cost estimating and lifecycle costing was found; however no corollary evidence was found demonstrating students' understanding of project financing methods and feasibility or operational costs.

M. Arch.

[X] Not Met

2018 Team Assessment: Evidence of exposure to concepts of construction cost estimating and lifecycle costing was found; however no evidence was found to demonstrate an understanding of the concepts presented, such as project financing methods and feasibility or operational costs.

School response:

This was a condition not achieved in the school's 2012 VTR. As a result, the school hired former AIA National President and award-winning practitioner Marshall Purnell, FAIA, to teach our ARC 561 Practice of Architecture course. To address this SPC more effectively after the 2012 report, Purnell created assignments and workshops that ensure students' *understanding* of financial considerations related to design and construction. Workshops include experts from the construction industry who give presentations and provide feedback to students' in-class projects. Numerous student assignments—including spreadsheets, presentations, and written reports—and a sample video of a contractor-led workshop were submitted as evidence to satisfy the required *understanding* of this SPC.

4.) From VTR (p.21-22)**:**

C.2 Integrated Evaluations and Decision-Making Design Process: *Ability* to demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation.

B. Arch.

[X] Not Met

2018 Team Assessment: Evidence was not found in the work presented. While ARC 501, ARC 502, ARC 561 and ARC 581 have produced case studies, class books, and projects addressing problem identification and set some design parameters, individual student projects generally fail to include evaluative criteria, present a systematic analysis of design solutions, or predict effectiveness of implementation(s).

In addition, plumbing, mechanical, electrical, and fire protection systems are not readily identified in many projects. Building systems identified do not logically integrate with other building service systems and the overall building design. Designs did not demonstrate an ability to integrate life safety requirements.

M. Arch.

[X] Not Met

2018 Team Assessment: Evidence was not found in work presented. While ARC 500 and ARC 561 have produced case studies, class books, and projects addressing problem identification and set some design parameters, individual projects fail to include evaluative criteria, present a systematic analysis of design solutions, or predict the effectiveness of implementation(s).

In addition, plumbing, mechanical, electrical, and fire protection systems are not readily identified in many projects. Building systems identified do not logically integrate with other building service systems and the overall building design. Designs did not demonstrate an ability to integrate life safety requirements.

School response:

This SPC is addressed in the ARC 500 studio for M.Arch. students, and the ARC 501 and ARC 502 studios for B.Arch. students. Projects in these studios are comprehensive and integrative, beginning with a significant pre-design guidebook (noted as “class books” above in VTR) in which students document code and accessibility requirements, program requirements, precedents, site analysis, and sustainable design strategies. These guidebook effectively identify problems and set criteria and goals for students. The design process in these studios is rigorous and systematic. The process has these major steps (in sequence) that approximate professional practice: 1.) Pre-design research guidebooks, 2.) iterative design speculations and schematic design, 3.) systems integration and building detailing—also an iterative process, 4.) design development with integrated systems, and 5.) final refinement and presentation.

Our students predict effectiveness of solutions through a rigorous digital and physical modeling process at several scales. Building “chunk” models (usually entire bays showing systems and assemblies) that study structure, materials, and systems integration begin at 1/8”=1’-0” and evolve into large-scale 3/8”=1’-0” models. These models are evaluated at the semester mid-term on multiple characteristics (e.g. – structural efficiency and logic, natural light, appropriateness of active/passive strategies). That we evaluate these integrative models at mid-term is strategic: it allows students to analyze their schemes relative to the goals and strategies illustrated in the pre-design guidebooks prior to beginning

their final design development. Along with professors and professionals (architects and engineers) at mid-term, students can evaluate and predict the effectiveness of their solutions. The remainder of the semester provides opportunity to investigate ways of refining their projects.

We concede that students could do a more effective job of explicitly documenting their decisions and illustrating their decision-making process. We submitted evidence from the entire design process in the form of study models, diagrams, and final models and drawings to show that students are capable of systematically analyzing their projects and are reacting appropriately by creating increasingly more successful solutions. NAAB does not specify a particular way of integrating evaluations or decision-making within a project. While our methods may have faults, they have been highly effective in leading students to well-integrated designs.

We emphasize comprehensive and integrative design within the studios, and our students' outstanding pass rates on the Architect Registration Examination (A.R.E.) provide evidence of our program's effectiveness in teaching integrative design and decision making. Our A.R.E. pass rates exceed the national average in all categories. See: https://www.ncarb.org/pass-are/are4/pass-rates/are4-pass-rates-school

5.) From VTR (p.22)**:**

C.3 Integrative Design: *Ability* to make design decisions within a complex architectural project while demonstrating broad integration and consideration of environmental stewardship, technical documentation, accessibility, site conditions, life safety, environmental systems, structural systems, and building envelope systems and assemblies.

B. Arch.

[X] Not Met

2018 Team Assessment: Evidence was not found in student work presented. The projects presented in ARC 501 and 502 illustrated integration of environmental stewardship, site conditions, and building envelope systems and assemblies, but failed to appropriately address all other criteria covered by this SPC.

M. Arch.

[X] Not Met

2018 Team Assessment: Evidence of student achievement at the prescribed level was not found in student work presented. The projects presented in ARC 501 and 502 illustrated integration of environmental stewardship, site conditions, and building envelope systems and assemblies, but failed to appropriately address other other criteria covered by this SPC.

School response:

The VTR notes several systems that are successfully integrated in student projects. Students in these studios have multiple assignments in which they design and integrate structural and mechanical systems. Structural logic and detailing are illustrated across multiple artifacts: diagrams, column grids in

plans, columns and beams in large-scale wall section drawings, small- and large-scale (3/8"=1'-0") building "chunk" models, and renderings. Mechanical systems are illustrated through diagrams and large-scale models.

Accessibility and life safety issues are addressed thoroughly in pre-design booklets. Student work demonstrates an ability to address accessibility and life safety—at the very least to a Design Development level. Presentations do not document quantitatively or explicitly how each was met, but the work was not deficient regarding these issues.

The VTR, in the M.Arch. evaluation, refers to ARC 501 and 502. These are B.Arch. courses. Did the team review the wrong studios for this SPC?

6.) From VTR (p.28)**:**

II.4.2 Access to NAAB Conditions and Procedures:

The program must make the following documents electronically available to all students, faculty, and the public:

The 2014 NAAB Conditions for Accreditation

The Conditions for Accreditation in effect at the time of the last visit (2009 or 2004, depending on the date of the last visit)

The NAAB Procedures for Accreditation (edition currently in effect)

[X] Not Met

2018 Team Assessment: The link for the 2014 NAAB Conditions for Accreditation (https://design.ncsu.edu/wordpress/wp-content/uploads/2017/09/2014-Conditions-Final-ApprovedCompanion-v2.docx) is not correct; it downloads the Guide to the 2014 Conditions for Accreditation and Preparation of an Architecture Program Report 2ND EDITION instead of the 2014 NAAB Conditions for Accreditation; link to the 2015 Conditions for Accreditation https://design.ncsu.edu/about/accreditation/ is correct.

School response:

The link on our webpage has been fixed and now connects to the 2014 NAAB Conditions for Accreditation.

7.) From VTR (p.28-29)**:**

II.4.4 Public Access to APRs and VTRs:

In order to promote transparency in the process of accreditation in architecture education, the program is required to make the following documents electronically available to the public:

· All Interim Progress Reports (and narrative Annual Reports submitted 2009-2012).

· All NAAB Responses to Interim Progress Reports (and NAAB Responses to narrative Annual Reports submitted 2009-2012).

· The most recent decision letter from the NAAB.

· The most recent APR.[1]

· The final edition of the most recent Visiting Team Report, including attachments and addenda.

[X] Not Met 2018 Team Assessment: The NAAB decision letter was not found: https://design.ncsu.edu/about/accreditation/

School response:

Only the decision letter was missing. The link on our webpage has been fixed and now connects to the most recent decision letter from the NAAB.

Thank you for considering these responses. Please contact me if you have questions or require more information.