ACSA
ASSOCIATION OF COLLEGIATE SCHOOLS OF ARCHITECTURE

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April 10, 2008

Douglas K. Engebretson, FAIA
President
National Council of Architectural Registration Boards
1801 K Street NW, Suite 700
Washington, DC 20002

Dear President Engebretson and Colleagues on the NCARB Board of Directors:

On behalf of the ACSA, we are writing to you in response to the 2008 NAAB Accreditation Review Conference Position Paper (January 12, 2008) and Talking Points (March 2008) as presented by Andrew Prescott at a panel discussion on March 28 at the ACSA Annual Meeting and, we are told, at NCARB's recent regional meetings.

One of the most positive aspects of the accreditation process within the NAAB structure is that this is a complete collaborative effort involving the profession, regulators in the profession, and educators, along with student input. In addition, we view preparation for licensure as a team effort involving a combination of education and internship that values the complimentary and important respective contributions that practicing architects and educators can make.

In the spirit of partner communication, we would like to respectfully respond about some points made in the venues cited above. In this letter we comment on four points, and in the attachment we track and comment on conclusions about deficiencies in education (and, by implication, the Intern Development Program) drawn from the NCARB Practice Analysis. We hope you will consider our responses as you refine your positions on revising accreditation standards.

1. Preparation of Students for Registration

From the NCARB Talking Points:

> *NCARB believes that the current NAAB Conditions for Accreditation for Professional Degree Programs in Architecture and the "Student Performance Criteria" which are part of the Conditions, do not adequately prepare architecture students for registration.*

This statement is misleading in saying that architectural education graduates are inadequately prepared for a professional career in architecture. Thus, the statement is an implicit condemnation of the schools and the existing NAAB Conditions and Student Performance Criteria. If NCARB would actually want our students prepared for registration at graduation (without internship), the profession would presumably want to move towards the European, Mexican, or South American educational models in which the diploma is also a license to practice architecture. We do not think NCARB is advocating this kind of dramatic change. Moreover, the statement implies the National Architectural Accrediting Board, which acts on behalf of all major stakeholders in the profession, is not doing its job well. We are concerned that such claims are not backed up with concrete evidence and are unnecessarily overstated.

2. Mandatory IDP Enrollment

Although ACSA does not agree that schools should require students to enroll in IDP, we are supportive of the spirit of this recommendation as a way to assist students in the transition into internship. Our position, as stated in our position paper, is that the NAAB Perspective on Architectural Education and Registration:

> should specify that schools shall coordinate—at a time prior to or upon entering the "professional years" of a program (e.g., third year of a five-year B.Arch)—a specific required event, seminar, class, or special session at which students can begin to enroll in IDP. Furthermore, this condition should include language specifying the need for an IDP Education Coordinator who is trained in the issues of IDP and active in supporting students who have questions about IDP and internship. (p. 8)

We believe that adding mandatory IDP enrollment would add little to nothing to students' knowledge and skills. Moreover, several deans and directors questioned the legality of mandatory enrollment, in light of increasingly strict laws and university policies regarding student confidentiality. We understand that some among the group who have raised this concern are consulting their university legal counsel on this issue.

We hope that NCARB will reconsider its position on this issue and support a clearer and more direct revision of NAAB's Architectural Education and Registration Perspective.

3. Deriving Deficiencies in Education
The attached document, entitled *The Argument Unpacked: Using the NCARB Practice Analysis to Deduce "Deficiencies" in Architectural Education*, analyzes specific points NCARB makes in the Practice Analysis, Position Paper, and Talking Points. Because NCARB relies so heavily on the Practice Analysis as a critique of education, we felt it important to provide a detailed critique of the Practice Analysis with regard to education and accreditation. In brief, we are concerned about the logic behind the derivation of 12 "deficiencies in education" from the Practice Analysis, which was not intended to assess education. Further, we question the implicit assumption that education is an accumulation of knowledge and skills, while internship is the application of these knowledge and skills in tasks. Both phases of preparation involve knowledge, skills, and tasks**.**

In commenting on NCARB's arguments, we hope you will not understand us to mean that education cannot or should not be improved. As we outline in our February 2008 report, ACSA supports continuous improvement in our programs as well as sharp attunement to the realities of practice today and in coming years. Instead, we would like to reiterate our call in the ACSA Accreditation Review conference Report to "strategically evolve the existing conditions with assessment models" and to address education and internship through the efforts of all collaterals.

4. Concerns, with a Final Suggestion
It is fair to state that the NCARB comments and positions have generated a high level of concern among educators. Our board voted to direct our leadership to respond to NCARB's Practice Analysis conclusions. We want to disagree without being disagreeable, and we hope we can find agreement on the minimal standards in our degree programs.

We would like to suggest that in the future the collaterals combine the accreditation review process with a similar assessment and update of the IDP requirements. This could be an opportunity to look collaboratively at the shared, and differentiated, responsibilities of educators and practicing architects in preparing emerging professionals.

In a constructive way, we invite you to partner with us in our commitment to lifelong learning. As we stated in our position paper, "Working together, the five collateral organizations provide the best means to discuss and develop resources of knowledge and best practices to share with students, interns, associates, and partners in firms globally."

With best wishes,

Kim Tanzer, AIA
2007-08 President

Marleen Kay Davis, FAIA
2008-09 President

Attachment

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THE ARGUMENT UNPACKED: USING THE NCARB PRACTICE ANALYSIS TO DEDUCE "DEFICIENCIES" IN ARCHITECTURAL EDUCATION
April 2008

In its recent Position Paper for the NAAB Accreditation Review Conference, and in ensuing talking points presented at the ACSA Annual Meeting and in NCARB regional conferences, NCARB argues that the "current NAAB Conditions for Accreditation for Professional Degree Programs in Architecture…do not adequately prepare architecture students for registration" and that 12 deficiencies should be addressed in architectural education. The following statements, assembled from three NCARB sources, document the arguments and logical fallacies used to come to these conclusions.

These statements are taken from the NCARB 2007 Practice Analysis of Architecture (Practice Analysis), the NCARB Draft Position Paper for the NAAB 2008 Accreditation Review Conference (Position Paper), and the talking points presented verbatim by Andrew W. Prescott (Prescott) during the ACSA Annual Meeting in Houston on March 28, 2008. All three sources are required to understand the logic of the NCARB position, as the full argument for the existence of 12 deficiencies in architectural education is not presented in its entirety in the NCARB Position Paper itself.

Each NCARB assertion, below, is identified by source. ACSA comments or rebuttals follow each statement.

1. The NCARB Practice Analysis was commissioned in 2007 to provide NCARB with "a validated list of tasks and knowledge/skills related to work performed by recently licensed architects." (Practice Analysis, v)

- NCARB commissioned the study from its testing consultant, Prometric, to assist in the development of a new version of the Architectural Registration Exam. The report does not indicate the survey was designed to *assess* architectural education or the Intern Develop Program (IDP), nor that respondents understood their responses would be interpreted through either of these lenses.

2. Practice Analysis respondents identified the point at which 100 knowledge/skills items were acquired. According to the Practice Analysis, "Respondents were asked to identify when the knowledge/skill *is* acquired, not when the knowledge/skill *should* be acquired."

- We wonder the extent to which the question accurately measures the point at which the knowledge/skills are actually acquired. Without having access to the entire list of 100 knowledge/skills items, as well as the 92 tasks surveyed, we venture the opinion that most knowledge/skills are all so important that they are learned, and learned again, across the course of one's career. Are the respondents reflecting on the first time they acquired these knowledge/skills and tasks, or are they blending the totality of their (on average) several decades of experience?
- Further, does the Practice Analysis survey instrument define what is meant by acquiring a knowledge/skill? Knowledge/skills may not be fully acquired until experienced in a concrete context, such as working in a firm. Thus, an architect may be exposed to various knowledge/skills in education, but not acquire them, in the sense of being able to implement them in practice, until after education.

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3. "NCARB's 2007 Practice Analysis of Architecture…found 17 deficient knowledge areas and skill sets out of 100—many of these 17 deficiencies are in the practice and management area." (Position Paper, 2)

- The Practice Analysis does not call these knowledge/skills areas "deficient."

Determining these as deficiencies involves at least two unstated inferences.

- The first inference is that if the knowledge/skill item receives a "high importance mean," as measured in the Practice Analysis, then it is important to practice and *should* be acquired before licensure.
- Second, and more difficult to justify, is the inference that the knowledge/skills deficiencies reflect the *current* preparation of licensed architects in both education and IDP. Only 18% of Practice Analysis respondents were under 36 years old; only 37% completed IDP. (Practice Analysis, 10) No demographic data on the length of time respondents have been licensed were included in the Practice Analysis.

Therefore, the use of the term "deficiency," while perhaps descriptive from a regulator's point of view, is unnecessarily pejorative, particulary when it is used to criticize the current state of education or internship, even though *the data used to justify this criticism is not logically linked to this assessment.*

4. "The NCARB Board of Directors has determined that 12 of these deficiencies must be addressed during education." (Position Paper, 2-3)

- The Practice Analysis recommends that "a task force be convened to review these knowledge/skills [deficiencies] and develop recommendations, as appropriate, for enhancing the knowledge/skill acquisition opportunities in these areas prior to licensure (e.g., education; IDP)." (p. 20)
- To our knowledge, no task force has been created. Instead, the Postion Paper states, "The NCARB Board of Directors has determined that 12 of these deficiencies must be addressed during education." (pp. 2–3)
- No apparent input from the NCARB Education Committee has been sought, as well.
- The demographics of the Practice Analysis respondents once again argues against a simple conclusion about the quality of educational prepration: 60% of respondents are age 46 or higher and so have likely not been in school for more than two decades or longer. Moreover, only 37% of respondents completed IDP.

5. According to Prescott, the NCARB Board of Directors determined that knowledge/skills are acquired in school, while tasks are acquired in practice. Based on their categorizations, they determined, for instance, that "project budget management" and "risk management" are knowledge/ skills, while "mentorship" is a task.

- It is not clear that members of the NCARB Board are aware that the current NAAB Conditions address a number of these so-called deficient areas, including Student Performance Criteria (SPC) 25, Construction Cost Control; SPC 27, Client Role in Architecture; SPC 30, Architectural Practice; SPC 31, Professional Development; SPC 32, Leadership; SPC 34, Ethics and Professional Judgment.
- A critical question for the collaterals is whether the knowledge/skills and tasks the NCARB board has identified as deficiencies are
    1. required but not taught, which would lead to "not met" in NAAB accreditations
    2. taught but not remembered, because they are not yet set in a meaningful context, or
    3. taught and remembered, but learned more deeply after licensure.

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The third possibility might explain the fact that 60% of the survey's respondents, who have been out of school for 25-45 years, remember acquiring them after licensure.

6. The Practice Analysis asked, "How well is architecture education preparing interns to become architects?" It reports that although 72% of respondents believe education is preparing interns very well, well, or adequately to become architects, 28. % believe it is preparing them poorly or very poorly. The Practice Analysis contrasts this response with the same question asked of the Intern Development Program. Here, 90% of the respondents believe interns are being very well, well, or adequately prepared to become architects.

- ACSA acknowledges the need for improvements in educational preparation of interns. However, such responses do little to bolster any arguments about specific deficiencies in education, nor does it gauge or control in any way for varied expectations among architects about graduates of first professional degree programs.

N C A R B

NCARB Draft Position Paper for the NAAB 2008 Accreditation Review Conference

JANUARY 10, 2008

NCARB Draft Position Paper for the NAAB 2008 Accreditation Review Conference

NCARB MISSION STATEMENT
The National Council of Architectural Registration Boards is committed to protecting the health, safety, and welfare of the public through effective regulation and exemplary service.

The NCARB Committee on Education assumed a leadership role in the preparation and development of the NCARB Position Paper for the NAAB 2008 Accreditation Review Conference. The paper was reviewed and approved by the NCARB Board of Directors.

William C. Miller, FAIA, Committee Chair
Rossana Ngo Dolan, AIA, NCARB
H. Carleton Godsey, FAIA, NCARB
Thomas S. Laging, FAIA
Jeffrey Morgan, AIA, NCARB
Barbara A. Sestak, AIA
Chris Bowling, AIA, AIA Observer
Tony Phong Vanky, AIAS Observer
Stephen White, AIA, ACSA Observer
Andrea Rutledge, CAE, NAAB Observer
Pei Liu, Ph.D., NAAB Observer
Andrew W. Prescott, AIA, NCARB Board Liaison
Greg G. Hall, AIA, Ph.D., NCARB Staff

JANUARY 10, 2008

NCARB Draft Position Paper for the NAAB 2008 Accreditation Review Conference

This paper presents issues and topics that are critical to the mission of the National Council of Architectural Registration Boards' (NCARB) commitment to protecting the health, safety, and welfare of the public through effective regulation and exemplary service. Five primary issues inform NCARB's contribution to the National Architectural Accrediting Board's (NAAB) 2008 Accreditation Review Conference (ARC) process. These are:

- Professional Knowledge and Practice
- Integration of Education, Internship, and Practice
- Leadership
- Sustainability
- Globalization, Accreditation, and Registration

NCARB is comprised of the architectural registration boards of the 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands. Its only members are those boards. Each of these 54 jurisdictions has governmental authority to register and regulate architects and to define educational requirements for licensure in its respective jurisdiction. Without board-issued registration, no one may engage in the practice of architecture nor use the title "architect" within that jurisdiction.

NCARB has a unique position for contribution to the ARC:

> *"In the United States, the right to practice architecture and the right to use the title 'architect' are granted by state registration boards and no one else. The National Council of Architectural Registration Boards is the national organization representing those state boards and works with its Member Boards to establish registration or licensing policies."* [i]

The 2008 Accreditation Review Conference provides an opportunity for the NAAB to ensure that the education standards of professional architectural programs and professional architectural education satisfies the expectations of NCARB and its 54 member boards, the jurisdictions that are responsible for the licensure of architects. It is essential that the National Architectural Accrediting Board, as the sole agency authorized to accredit the professional degree programs in architecture in the United States, ensure that accreditation requirements are in close alignment with NCARB and the mandates of the individual architectural registration boards.

"The worlds of architecture practice and education depend on each other for their purpose and vitality. Both bear responsibility for gainful employment and for continuing the lifelong professional education of architects. In the end, the academy and the profession also share an obligation to serve the needs of communities, the built environment, and society as a whole." [ii]

Ernest Boyer and Lee Mitgang

Essential NCARB 2008 ARC topics:

- Incorporation of professional knowledge, skills, and tasks required during education.
- The increased integration of education, internship, and practice.
- Leadership in the building industry.
- Sustainability and stewardship of the natural and built environment.
- Globalization, accreditation, and registration.

[i] *Architectural Organizations and the Practice of Architecture in the United States*. National Council of Registration Boards, August 2007: 2.

[ii] Boyer, Ernest L. and Mitgang, Lee D. *Building Community: A New Future for Architectural Education*. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching, 1996: 109.

The modifications of accreditation standards and their impact on architectural education have been evolutionary and incremental. In the past, the NAAB accreditation standards, particularly the standards specified in the *NAAB Conditions for Accreditation*, have been developed and modified in response to changes in professional practice. As NCARB and the collateral organizations prepare for the 2008 ARC, the NAAB, the architecture profession, and the academy must be ready to implement important changes in order to continue to educate and prepare architects for the challenges and demands of tomorrow's architectural practice.

PROFESSIONAL KNOWLEDGE AND PRACTICE

The profession and practice of architecture have recently been subject to dramatic changes. The extent and scope of these changes have radically impacted all aspects of the architecture profession. Social, environmental, economic, industrial, and technological forces, coupled with new forms of integrated practice, have required the profession to acknowledge that traditional processes, practices, and forms of project delivery may no longer be effective.

In the same way that practice has adapted to these dynamic transformations, the academy must redefine its responsibilities within the larger social and professional framework. Such change constantly informs the Intern Development Program (IDP) and the Architect Registration Examination® (ARE®). Both continue to undergo significant developments in response to external factors. Similarly, these influences should inform changes in accreditation requirements. If architects are to adapt, it is essential that the academy develop effective ways to adjust to these critical transformations.

Better designed and more efficiently delivered building projects are demanded of professionals in the design and construction industry. This demand requires a more effectively integrated and collaborative team approach to project delivery. Much of the knowledge and many of the skills necessary for success in this new environment remain out of the purview of architectural education and internship. This shortcoming leaves emerging professionals without the knowledge and skills to assume positions of architectural leadership and authority in delivering professional services.

NCARB's *2007 Practice Analysis of Architecture* (*http://www.ncarb.org/forms/2007NCARBpracticeanalysis.pdf*) found 17 deficient knowledge areas and skill sets out of 100—many of these 17 deficiencies are in the practice and management areas. These deficiencies have been quantitatively demonstrated to be necessary skills for a recently licensed professional to practice independently. Important questions must be addressed. Where should these deficiencies be overcome: in education, in internship, or in both? The NCARB Board of Directors has determined that 12[iii] of these deficiencies must be

In response to the issues associated with PRACTICE, the development of the new *NAAB Conditions for Accreditation* and the "Student Performance Criteria" must:

- Expect measurable demonstration of significant interdisciplinary collaborative work as part of the design studio and other classes.
- Enhance student understanding of integrated design and delivery processes through design studio projects, lead by licensed practicing professionals.
- Increase understanding of the architectural profession, its processes, and the knowledge-based nature of contemporary practice.

addressed during education. In order to address these deficiencies, appropriate changes to the *NAAB Conditions for Accreditation* need to be considered. NCARB encourages the collaterals to carefully review the *Practice Analysis*, particularly with regard to these deficiencies.

The integration of practice processes goes beyond the technology, accountability, and legal considerations of working with Building Information Modeling (BIM) as a tool and delivery method for the design and construction of a building. It more broadly suggests a "…whole new integrated practice methodology, starting with changes in workflow and the creative process, and a transformation from interdisciplinary collaboration to one occurring simultaneously within a team." [iv]

Due to changes in practice, the way in which the profession and the academy interact to ensure that architects are given the knowledge and skills required to become leaders in the building delivery process is critical. The fact that the architect is the primary professional licensed to protect the public's health, safety, and welfare underscores the importance of this condition.

INTEGRATION OF EDUCATION, INTERNSHIP, AND PRACTICE

Education: Architectural design has been the core of architectural education for many years. Embodied in both art and science, architectural design is an intellectual endeavor that strives to create environments that meet client needs and address current human conditions and situations. It has been the architect's challenge to achieve this within the larger context of protecting the health, safety, and welfare of the public.

Individual decision-making skills are central to the traditional culture of architecture design studio. Maintenance of this tradition while balancing it with appropriate responses to the changing conditions and processes currently

[iii] Of the 17 knowledge/skills identified in the Practice Analysis, the 12 identified as needing to be addressed during education are: In Domain 1: Pre-Design – ***project financing and funding***. In Domain 3. Project Management – ***project budget management*** and ***construction conflict resolution***. In Domain 4: Practice Management – ***legal and ethical issues pertaining to contracts***; ***legal and ethical issues pertaining to practice*** (liens, taxation, licensure); ***business planning***; ***strategic planning***; ***financial management***; ***risk management*** (e.g., professional and general liability); ***marketing and communications***; and ***contract negotiations*** (e.g., fees, scope, schedules). In Domain 5: General Knowledge – ***entrepreneurship***. The other five of the 17 areas are: In Domain 4: Practice Management – *human resource management*; *IDP mentorship and supervising*; and *invoicing for services*. In Domain 5: General Knowledge – *mentoring – teaching others*; and *supervising*. The report notes a majority of respondents indicated that the point of acquisition of these is "after licensure."

[iv] "Building Information Modeling." The Design Professional group of the XL Insurance Companies.

In response to the issues associated with EDUCATION, the development of the new *NAAB Conditions for Accreditation* and the "Student Performance Criteria" must:

- Address knowledge and skill deficiencies noted in the *2007 Practice Analysis of Architecture*.
- Increase emphasis on knowledge-based education and design processes.
- Increase and require opportunities to learn through collaborative work in most areas of the curriculum.
- Require teaching pedagogies that provide a foundation in and understanding of integrated design and practice.

employed in integrated practice will necessitate modifications of teaching models and academic pedagogies. A broad agreement on the definition of integrated studio, consistent with the definition of integrated practice, will be necessary.

Architecture programs have started this process. The image of the "heroic" model of the individual as "starchitect" has begun to be eroded as programs embrace the model of integrated practice. However, more progress is needed. A new instructional paradigm that includes owners, engineers, construction managers and contractors, developers, system suppliers, and other members of the building delivery system would reflect a more realistic model of the professional context of practice today. Further, interdisciplinary work between programs across the university could engender rich cross-disciplinary opportunities. This would expose students to the direct experience of building design through an integrated practice and interdisciplinary approach, better preparing them for the challenges of current and future practice.

Within this new context it is essential to ensure that students receive an educational foundation that leads to successful practice. Such a foundation requires a professional knowledge-based and practice-based education. It requires a realization that innovation and responsiveness in design is based upon a sound foundation of empirical knowledge and research in all applicable content areas that influence decision-making. Such a foundation assumes that the academy embraces the realities of the profession.

Integration of Education and Practice: There are necessary tensions between the academy and practice. These are often stimulated by the academy's concept of the architect as a generalist, embodied in the liberal arts core of a university education versus the profession's desire to focus on professional education with possible areas of specialization. Despite these tensions, the primary reason for NAAB accreditation is the establishment of criteria to ensure that students are prepared as future licensed professionals.

Architecture is inherently an interdisciplinary activity. It requires processes that involve collaboration between multiple stakeholders. Architecture curricula should provide a stronger foundation for engagement with the practicing professional. Implementation of concepts such as the practice academy and the teaching firm could assist students in the transition from education to internship, and subsequently to practice.

Numerous architecture programs are working to bridge the gap between practice and the academy through the establishment of relationships with architectural firms and involvement of professional firms in the classroom. A variety of methods to achieve this interaction are demonstrated by growing

In response to the issues associated with the INTEGRATION OF EDUCATION AND PRACTICE, the development of the new *NAAB Conditions for Accreditation* and the "Student Performance Criteria" must ensure:

- Architectural programs demonstrate how practicing architects are making significant contributions to the educational process.

engagement in the NCARB Prize and Grant programs, and the AIA Education Honors Awards and Practice Academy program.

The educator/practitioner plays an increasingly important role in the academic setting by providing more meaningful appreciation and respect for knowledge-based practices and processes. Architecture programs should have a balanced and diverse faculty. The education and licensure of practicing architects makes them an essential part of that balance. As knowledge-based practices begin informing architectural curricula more fully, licensed educators will become increasingly essential to professional programs.

One specific issue is central to NCARB: How can a process among the collateral organizations be developed to use the results of NCARB's *2007 Practice Analysis of Architecture* to inform the content of architecture curricula as well as the expected competencies developed in IDP versus those that should occur after completion of the ARE. While the *Practice Analysis* focuses upon competencies a newly licensed architect should possess to practice independently, the findings of NCARB's *Practice Analysis* have implications across the education, IDP, and practice spectrum. It is time the collateral organizations develop a process to systematically evaluate the results of the analysis, and to determine where in the sequence of education, IDP, and practice that knowledge acquisition is best situated.

Intern Development Program (IDP): Completion of the Intern Development Program and a professional degree from a NAAB-accredited program are requirements for licensure in the United States. Because IDP is a requisite step to licensure, it is imperative that students be enrolled in IDP at the earliest opportunity in their architectural program. Not only would enrollment in IDP strengthen the connection between education and practice, it would provide students the opportunity to utilize IDP as an important beginning in the lifelong learning process required for their professional career development.

It is important that the academy and the profession work together in educating and mentoring students and young professionals entering the field of architecture. While both practice and education have specific roles to play, they need to explore and develop new opportunities to work together. The architecture profession has an implicit responsibility to the academy to ensure that interns receive the mentoring and supervision necessary to achieve a timely and meaningful completion of IDP.

Research undertaken by NCARB and other collaterals will help inform concepts such as the practice academy and the teaching firm. The collateral organizations need to ensure a greater degree of integration between education and the profession to guarantee that recently licensed architects have acquired

In response to the issues associated with the INTERN DEVELOPMENT PROGRAM (IDP), the development of the new *NAAB Conditions for Accreditation* and the "Student Performance Criteria" must ensure:

- Students in NAAB accredited degree programs are required to be enrolled in the Intern Development Program (IDP) upon satisfactory completion of:
  - Three years in an NAAB-accredited professional degree program;
  - The third year of a four year pre-professional degree program in architecture accepted for direct entry to a two-year NAAB-accredited professional master's degree program; or
  - One year in an NAAB-accredited professional master's degree program following receipt of a non-professional degree.
- Faculty and students understand the role of the Intern Development Program (IDP) in obtaining licensure and registration, and the mutual rights and responsibilities of interns and employers.
- Programs are required to have a designated and trained IDP Education Coordinator, and that the coordinator's attendance at all appropriate training conferences and meetings is supported.

the necessary knowledge and skills at appropriate times in their education and internship.

Essential to the successful integration of IDP into architecture programs is the position of the IDP Education Coordinator. Each NAAB-accredited program should be required to have a trained and supported IDP Education Coordinator. It is the responsibility of all collaterals to define and develop a more comprehensive program to ensure that IDP Education Coordinators are appropriately trained to support the needs of today's diverse architectural student body.

LEADERSHIP

The challenges of integrated practice and sustainable design, among other forces impacting practice, call the architect to a greater level of leadership in the delivery of building projects. In order for architects to truly be leaders in the building industry and assume future responsibilities inherent in protecting the health, safety, and welfare of the public, they must develop skills and capabilities that are beyond those traditionally taught in architectural programs.

In response to the issues associated with LEADERSHIP, the development of the new *NAAB Conditions for Accreditation* and the "Student Performance Criteria" must ensure:

- Leadership training is integrated into the architectural program.
- Management instruction is integrated into the architectural program.

Providing genuine opportunities for students to acquire the appropriate knowledge and leadership skills, as well as providing opportunities for students to apply these skills, should be required in architecture programs. Students should not only be expected to think about their role as leaders within a project, they also need to understand their role as civic leaders in society. Professional education must nurture and promote a strong leadership foundation for future practitioners.

Architectural design, at its very core, is a collaborative process. Because the design and building process involves a variety of professions and trades, architects must collaborate with others to realize their projects. Education should embrace this mutual process by encouraging students to develop negotiation, mediation, and collaborative skills as well as leadership skills. This shared process, if addressed proactively in education, will help students understand that collaboration as an intrinsic part of the design process.

A vital part of being an excellent leader is the ability to understand ethical and moral situations, and to understand the implications of one's decisions. Architects have ethical obligations to be informed advocates for the health, safety, and welfare of the public. In a just and equitable society professionals are obligated to inform clients of the long-term costs and implications of decisions about their projects. Architecture programs are responsible for creating environments in which students can form the values and develop the leadership skills implicit in this obligation.

SUSTAINABILITY

"Sustainability includes the understanding, application, and impact of leadership and design to sustain vital human support systems, such as the planet's climatic system, systems of agriculture, industry, forestry and fisheries, and human communities in general, and the various systems in which they depend." [v] The architect's charge to protect the health, safety, and welfare of the public includes the responsibility to address the issues of sustainability in the design of their client's buildings as well as their community's built environment. As part of an industry that produces the largest contributions to greenhouse emissions in the world today, architects have a moral, ethical, and professional responsibility to address this issue. In order to be effective in this area, architects must assume leadership as stewards of both the natural and built environment.

There is increasing interest in the effects that building design and materials have upon building occupants. The benefits of green building design are inherently fundamental to the NCARB mission and the role of architects to protect the health, safety, and welfare of the public. As sustainable design becomes more closely tied to increased health benefits, the profession will be expected to fulfill its obligation to the public through improved practice in these areas. Sustainable design will become the standard of practice expected throughout the country, with architects providing buildings that meet those expectations. It is easy to imagine a time when the definition of building codes is expanded to include sustainable building performance standards with proven health benefits.

In response to the issues associated with SUSTAINABILITY, the development of the new *NAAB Conditions for Accreditation* and the "Student Performance Criteria" must ensure:

- Sustainability is integrated into all expectations concerning ethical behavior and leadership, as well as in all aspects of expected student's performance (programming and pre-design activities, design, building integration, and practice issues).

GLOBALIZATION, ACCREDITATION, AND REGISTRATION

As the United States participates more directly in the world market and becomes more multicultural within its own borders, architects face an increasingly broad, diverse, and at times conflicting set of cultural issues. These issues affect all aspects of practice. An individual's well-being and therefore welfare is in great part derived from their culture. Culture is inherently connected to family, community, gender, race, age, religious beliefs, customs, ethnicity, and physical ability. In order for architects to be responsible to the challenge of protecting the welfare of their clients and the public, they must be exposed to and have experienced a variety of ethos. Architecture programs must provide the initial context for the experiences that will set the framework that will allow architects to engage with, and to design within, an ever flattening world where multiple cultures exist.

In response to the issues associated with GLOBALIZATION, ACCREDITATION, and REGISTRATION, the development of the new *NAAB Conditions for Accreditation* and the "Student Performance Criteria" must ensure:

- Knowledge of global practice and its implications for the accreditation and registration processes is integrated into the architectural program.

[v] "Sustainability." Wikipedia, http://en.wikipedia.org/wiki/Sustainabilty

Increasing globalization not only brings changes to architectural education and the profession, but also transforms the territorial-bounded accrediting and registration systems. Globalization is bringing changes to architectural education and the profession, as issues of local development need to be taken into consideration against a global context. Even in a seemingly diminutive local project undertaken by a small firm, the architect could well interact with representatives from around the world, or a multiplicity of cultures within ones own locale. One of NCARB's primary charges has been to facilitate interstate reciprocity. Now it is challenged to serve as the leader for inter-country reciprocity. Well-developed, mutually recognized accrediting and registration practices and processes will greatly facilitate this process.

Click here to read the *2007 Practice Analysis of Architecture*, or go to *http://www.ncarb.org/forms/2007NCARBpracticeanalysis.pdf*

SUMMARY

NCARB works with its Member Boards to establish education, internship, registration and licensing requirements for architects. In addition to its commitment to protecting the public's health, safety, and welfare through effective regulation and exemplary service, NCARB's vision includes promoting recognition of the architect as the primary building professional qualified to protect the health, safety, and welfare of the public. The issues identified in this paper, Professional Knowledge and Practice; the Integration of Education, Internship, and Practice; Leadership; Sustainability; and Globalization are central to this vision. NCARB and its 54 Member Boards are committed to increasing, not only the responsible practice of architects, but the effectiveness of architects in all areas of practice.

As the organization responsible for ensuring the quality, consistency and content of the education received by future architects in the US, the National Architectural Accrediting Board has a responsibility to incorporate the visions, values and requirements of the individual jurisdictions that are responsible for architectural registration in the US as represented by NCARB. If the NAAB does not require the academy to respond to global changes occurring in society, the building industry, and the architecture profession, there is a great risk that other building industry professionals will take responsibility for charges that architects are unable or unwilling to assume.

The 2008 NAAB Accreditation Review Conference (ARC) 12 March 2008

ARC Talking Points

NCARB Key Issues for Strengthening Architectural Registration and Protecting the Public's Health, Safety and Welfare

Why is the outcome of the Accreditation Review Conference (ARC) important to the National Council of Architectural Registration Boards and its member architectural registration boards?

NCARB is the national organization composed solely of the governmental boards that register architects in the United States and its territories. Through NCARB, these boards establish uniform registration standards including the education standard that an architect must satisfy in order to be eligible for internship and registration. Registration is critical to protecting the health, safety, and welfare of the public; only through appropriately rigorous registration standards can the public be assured that the individuals entrusted with the design of buildings are properly educated, trained, and examined. No unregistered person may practice architecture or call himself or herself an architect.

For many years the "NCARB Education Standard" has required that an architect hold a professional degree in architecture from an architecture program accredited by the National Architectural Accrediting Board (NAAB). NCARB has been a strong proponent of this standard and, at present, nearly all member boards have enacted legislation that establishes accredited education standards for registration. A handful of jurisdictions also allow registration based on architecture degrees from programs that are not accredited and several jurisdictions do not require a formal architectural education. For NCARB and its member boards, there are three inter-related requirements for registration as an architect: successful completion of a professional degree from a NAAB-accredited architecture program, successful completion of the Intern Development Program (IDP), and successful completion of the Architect Registration Examination® (ARE®). For reasons explained below, NCARB believes that the current *NAAB Conditions for Accreditation for Professional Degree Programs in Architecture* and the "Student Performance Criteria," which are part of the Conditions, do not adequately prepare architecture students for registration.

Once every five years NAAB reviews and modifies the *NAAB Conditions for Accreditation*. NCARB and other collateral organizations are given the opportunity to provide input regarding changes to the Conditions. The ARC, the vehicle to provide input, is a multi-month process with final recommendations being approved by the NAAB Board in July 2009. Key decisions will be made in June and October 2008 to inform those recommendations. Accreditation may well serve different purposes for different stakeholders. For NCARB and its Member Boards, modifying the current *NAAB Conditions for Accreditation* and the "Student Performance Criteria" in order to better prepare graduates of NAAB-accredited degree programs for registration as architects is the most important outcome of the NAAB 2008 Accreditation Review Conference (ARC) (see "NCARB Draft Position Paper for the NAAB 2008 Accreditation Review Conference," referenced below).

Is more closely aligning the NAAB Conditions for Accreditation and the "Student Performance Criteria" with the needs of registration appropriate for NAAB?

It is squarely within NAAB's mission and, in fact, it is the essence of NAAB's mission. "While graduation from a NAAB-accredited program does not assure registration, the accrediting process is intended to verify that each accredited program substantially meets those standards that, as a whole, comprise an appropriate education for an architect" (http://www.naab.org/about/). Although not every person who attends a NAAB-accredited degree program will become a registered architect (just as not everyone who attends law school becomes a lawyer), the primary purpose of accreditation is and must be the preparation of students for registration as architects. A school need not seek accreditation if it does not wish to prepare students for registration as architects.

What specific problems must be solved in the NAAB 2008 Accreditation Review Conference?

1. Incorporating into school curricula additional matters needed to practice independently as a registered architect. With the assistance of psychometricians, NCARB periodically conducts objective and statistically valid "Practice Analyses" among a cross-section of architects to define the tasks, knowledge, and skills that are required to practice independently at the time of registration. It then reviews current implementation of its three requirements for registration as an architect against the Practice Analysis results to confirm that implementation of the standards reflects areas in which a future architect must be educated, trained, and examined. Generally speaking, knowledge and skills are learned during education and applied towards performing tasks undertaken during internship; the individual is then comprehensively examined on all matters relevant to practicing independently.

The "2007 Practice Analysis" found that 17 of 100 required knowledge and skills are not being acquired prior to licensure—a serious issue of high priority. We believe that Education and IDP have a shared responsibility to prepare emerging professionals in the 12 knowledge and skills areas listed below. While some of the learning and the application can reasonably be expected to happen in IDP, it is critically important that the foundation learning for these 12 areas occur in the Academy.

- Project financing and funding
- Project budget management
- Construction conflict resolution
- Legal & ethical issues pertaining to contracts
- Legal & ethical issues pertaining to practice
- Strategic planning
- Financial management
- Risk management
- Marketing and communications
- Contract negotiations
- Entrepreneurship
- Business planning

The architect is the primary building professional licensed to protect the public's health, safety, and welfare during the design and construction of buildings. If an individual does not have the proper education and subsequent training to address these matters with construction managers, developers, contractors, and owners—none of whom are licensed—then the architect's primacy is diminished and the public interest is commensurately jeopardized. These matters must be incorporated into education curricula to give students the needed background and general understanding of the subject matter permitting them to apply what they have learned to real life situations in internship. NCARB urges that the *NAAB Conditions for Accreditation* and the "Student Performance Criteria" be appropriately modified to ensure that needed knowledge and skills are gained in each of these deficient areas.

2. Incorporating appropriate requirements for IDP enrollment during school. A recent AIA/NCARB survey of interns found that 60% obtained their first architecture job in a professional setting before earning a B. Arch or an M. Arch degree. Better integration of education and practice greatly strengthens registration as a bulwark protecting the public. Because IDP is a requisite step to registration and because the great majority of interns now obtain internship experience prior to graduation, schools have an obligation to ensure that their students are able to have the best internship experience possible and, in fairness to the students, also receive appropriate IDP credit for such experience. NCARB urges that students be enrolled by their schools in IDP at the earliest opportunity in their architecture program. The financial issues related to IDP enrollment require consideration by NCARB and NAAB.

3. Other matters strengthening education and registration. NCARB has also identified the following areas which should be addressed in education: leadership of design studio by licensed practicing professionals; greater demonstration of ways in which practicing architects are making significant contributions to the educational process; designation of IDP education coordinators for all architecture programs; and integration of leadership and management training into the architecture program.

Resources:
"NCARB Draft Position Paper for the NAAB 2008 ARC:" http://www.ncarb.org/forms/ARCpositionpaper.pdf
"NCARB 2007 Practice Analysis of Architecture:" http://www.ncarb.org/forms/2007NCARBpracticeanalysis.pdf
"NCARB Education Standard:" http://www.ncarb.org/forms/educstand.pdf
"2007 Internship and Career Survey:" (http://www.aia.org/nac_07survey)

Questions: contact Greg G. Hall, AIA, PhD, Director, Education, NCARB 202/879-0535 or ghall@ncarb.org

N C A R B

NOVEMBER 2007

2007 PRACTICE ANALYSIS OF ARCHITECTURE

2007 Practice Analysis of Architecture

National Council of Architectural Registration Boards
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Washington, DC 20006
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www.ncarb.org

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At NCARB, Andrew W. Prescott, AIA, Practice Analysis Chair and NCARB Board of Directors Liaison; Kekku Lehtonen, AIA, Assistant Director, ARE Development; Harry M. Falconer, Jr., AIA, Director, Intern Development Program; Stephen Nutt, AIA, Vice President, Programs; and Erica J. Brown, AIA, Director, Architect Registration Examination, contributed invaluably to the overall process by providing consultation during the project to ensure its success.

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ABOUT NCARB

Mission Statement

The National Council of Architectural Registration Boards is committed to protecting the health, safety, and welfare of the public through effective regulation and exemplary service.

Vision Statement

As the facilitator for the protection of the health, safety, and welfare of the public, the National Council of Architectural Registration Boards:

- Requires a NAAB-accredited degree, successful completion of the Intern Development Program (IDP) and successful completion of the Architect Registration Examination® (ARE®).
- Protects and enhances the validity of the Intern Development Program (IDP) and the Architect Registration Examination (ARE).
- Encourages all architects to become Certificate holders.
- Advocates for the elimination of impediments to reciprocity.
- Serves as the trusted international center of registration data and regulatory information.
- Values diversity of opinion and representation.
- Promotes recognition of the architect as the primary building professional qualified to protect the health, safety, and welfare of the public, through the enhancement of the quality of the built environment and the richness of space and form.

Core Values

The National Council of Architectural Registration Boards believes in

- Integrity
- Service
- Accountability

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EXECUTIVE SUMMARY

The National Council of Architectural Registration Boards (NCARB) commissioned the 2007 Practice Analysis of Architecture conducted by their testing consultant, Prometric.

A practice analysis is designed to obtain descriptive information about the tasks performed in a job and the knowledge/skills needed to adequately perform those tasks. The purpose of the Practice Analysis was to provide NCARB with:

- a validated list of tasks and knowledge/skills related to work performed by recently licensed architects;
- an updated test specification for the Architect Registration Examination (ARE); recommendations for the development of an Intern Development Program (IDP) specification based on the Practice Analysis survey data, and;
- information about a number of issues related to the profession of architecture: architects' professional development needs; expected changes in the architect's job role; important changes in the profession of architecture; participation in the Intern Development Program (IDP); and architecture as a career.

Conduct of the Practice Analysis

The study consisted of several activities: survey development; survey dissemination; and, compilation of survey results. The successful outcome of the practice analysis was dependent on the expert information provided by thousands of architects.

Survey Development

Survey research is an efficient and effective way to identify the tasks and knowledge/skills that are important to the work performed by large numbers of architects. The task and knowledge/skills statements included on the survey covered the following domains:

1. Pre-Design: Project-related activities related to preliminary design
2. Design: Project-related activities covering schematic design through construction documents
3. Project Management: Project-related management activities and construction administration
4. Practice Management: Office-related management activities
5. General (Knowledge/Skills only)

The development of the survey was based on information from a number of sources:

- The 2001 Architecture Practice Analysis Study served as the primary resource for developing a listing of task and knowledge/skill statements.
- The Practice Analysis Task Force reviewed and refined the list of tasks and knowledge/skill statements validated in the 2001 Architecture Practice Analysis Study.
- Practicing architects reviewed a pilot version of the survey to ensure that it was clearly written and comprehensive in content.

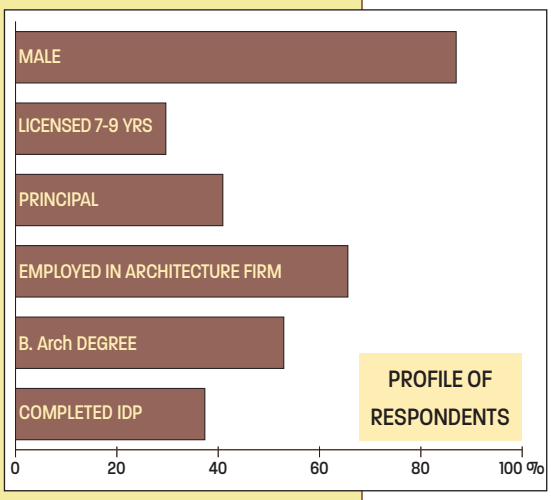
Survey Content

The survey, disseminated in April 2007, consisted of five sections: Section 1, Background and General Information; Section 2, Tasks; Section 3, Knowledge/Skills; Section 4, Comments; and, Section 5, The IDP and Architecture as a Career.

SURVEY RESULTS

Survey Response Rate

Prometric disseminated the online survey in April 2007 by e-mail based on a database of architects in the United States (including territories) and Canada provided by NCARB, the American Institute of Architects (AIA), and the Committee of Canadian Architectural Councils (CCAC).



Of the 49,624 architects to whom the survey was successfully delivered, a total of 9,835 (19.81%) submitted completed surveys that were included in the data analysis. To encourage participation, respondents were eligible to enter a drawing. Twenty respondents were randomly selected to win a $100 Amazon.com gift certificate.

Based on the analysis of survey responses, a sufficient number of each representative group of architects completed the survey to meet the minimum requirements for statistical analysis of the results.

Profile of the Survey Respondents

The following provides highlights of respondent demographics based on most frequently occurring response percentages:

- Gender: Male (86.98%)
- Years Licensed: 7 to 9 years (29.67%)
- Employment Position: Principal (Equity Position) (40.92%)
- Employment Setting: Architecture firm (65.60%)
- Highest Educational Attainment: Bachelor of Architecture degree (52.95%)
- IDP Completed: 37.37%

Survey Ratings

Participants were asked to rate the tasks and knowledge/skills in terms of their importance for competent performance by a recently licensed architect practicing independently. Importance ratings were provided along a five-point continuum ranging from "of no importance" to "very important". Survey respondents gave most of the tasks (86 of 92, 93.48%) and knowledge/skills (99 of 100, 99.00%) high importance ratings.

In addition, respondents were asked to indicate when the knowledge/skill is acquired. Response options included: "not acquired"; "by completion of first professional architectural degree"; "during internship"; or, "after licensure". A majority of the knowledge/skills were rated

as acquired prior to licensure, either by completion of the first professional architectural degree or during internship. Seventeen knowledge/skills (mostly related to practice management) were rated by a majority of survey respondents as being acquired after licensure although these same knowledge/skills also were rated as important to the work of recently licensed architects practicing independently.

Content Coverage

Evidence was provided in this practice analysis on the comprehensiveness of the content coverage within the domains. If the tasks and knowledge/skills within a domain are adequately defined, then it should be judged as being well covered. Respondents indicated that the content was adequately covered, thus supporting the comprehensiveness of the defined domains.

CONTENT COVERAGE

1. Pre-Design
2. Design
3. Project Management
4. Practice Management
5. General: Knowledge/skills only

Write in Comments

Survey respondents answered three open-ended questions. Prometric staff produced a preliminary summary of the results.

- *What additional professional development (including training and experience) could you use to improve your performance in the field of architecture?*
  The most frequently mentioned topic was the business side of architecture/construction administration.

- *How do you expect your job in the field of architecture to change over the next few years? What tasks will be performed and what knowledge/skills will be needed to meet changing job demands?*
  The most frequently mentioned topic was the design/environment (including sustainability).

- *If you could change the field of architecture, what is the most important change you would make?*
  The most frequently mentioned topic, once again, was the business side of architecture/construction administration.

The IDP and Architecture as a Career

Approximately 40 percent of the respondents indicated that they have supervised or mentored an intern participating in the IDP in the last two years. A higher percentage of these supervisors/mentors rated the IDP as providing more adequate preparation for interns to become architects than they did architectural education (89.96 percent and 71.64 percent, respectively, for combined ratings of “adequate”, “well” or “very well”). A majority of survey respondents indicated that they are satisfied with their career in architecture.

Updating the ARE Test Specification

At the ARE Test Specification meeting held in July 2007, recommendations were made regarding the tasks and knowledge/skills to be included in future versions of the ARE based on a careful review of the survey results.

Developing an IDP Specification

The Practice Analysis provides an excellent opportunity for NCARB to ensure that the IDP structure is based on validated data. Information provided by thousands of survey participants ensures that both the ARE and IDP are based on a common set of validated tasks and knowledge/skills. Development of an IDP specification, based on survey data, is currently under consideration by NCARB.

The Practice Analysis provides an excellent opportunity for NCARB to ensure that the IDP structure is based on validated data. Information provided by thousands of survey participants ensures that both the ARE and IDP are based on a common set of validated tasks and knowledge/skills.

SUMMARY

This study took a multi-method approach to identifying the tasks and knowledge/skills that are important to the competent performance of recently licensed architects. The practice analysis process allowed for input from a representative group of thousands of architects and was conducted within the guidelines of professionally sound practice. The results of the 2007 Practice Analysis of Architecture provide a valid foundation of empirically derived data upon which to base the Architect Registration Examination and the Intern Development Program.

INTRODUCTION

The National Council of Architectural Registration Boards (NCARB) commissioned the 2007 Practice Analysis of Architecture that was conducted by their testing consultant, Prometric.

About NCARB

NCARB comprises the architectural registration boards of all 50 states as well as those of the District of Columbia, Puerto Rico, Guam, and the Virgin Islands. NCARB assists its member state registration boards in carrying out their duties and provides a certification program for individual architects.

The National Council of Architectural Registration Boards is committed to protecting the health, safety, and welfare of the public through effective regulation and exemplary service. In order to achieve these goals, the Council develops and recommends standards to be required of an applicant for architectural registration; develops and recommends standards regulating the practice of architecture; provides to Member Boards a process for certifying the qualifications of an architect for registration; and represents the interests of Member Boards before public and private agencies.

About the Practice Analysis

The major purpose of the Practice Analysis is to identify the tasks and knowledge/skills that are important for competent performance by recently licensed architects practicing independently, therefore ensuring a content-valid Architect Registration Examination (ARE) and Intern Development Program (IDP).

Another purpose of the Practice Analysis is to obtain information about a number of issues related to the profession of architecture: architects' professional development needs; expected changes in the architect's role; important changes in the profession of architecture; participation in the Intern Development Program (IDP); and architecture as a career.

Practice Analysis and Adherence to Professional Standards

Practice analysis refers to procedures designed to obtain descriptive information about the tasks performed on the job and/or the knowledge, skills, or abilities thought necessary to adequately perform those tasks. The specific type of job information collected for a practice analysis is determined by the purpose for which the information will be used.

For purposes of developing licensure and licensure examinations, a practice analysis should identify important job tasks and the knowledge/skills needed to perform them. Also, validated tasks and knowledge/skills are integral in the development of an internship program.

The use of a practice analysis (also known as job analysis, role delineation, role and function study) to define the content domain is a critical component in establishing the content validity of licensure and licensure examinations. Content validity refers to the extent to which the content covered by an examination overlaps with the important components of a job (tasks, knowledge, skills, or abilities).

The use of a practice analysis (also known as job analysis, role delineation, role and function study) to define the content domain is a critical component in establishing the content validity of licensure and licensure examinations. Content validity refers to the extent to which the content covered by an examination overlaps with the important components of a job (tasks, knowledge, skills, or abilities).

A well-designed practice analysis should include the participation of a representative group of subject-matter experts who reflect the diversity within the profession. Diversity refers to regional or job context factors and to subject-matter expert factors such as experience, gender, and race/ethnicity. Demonstration of content validity is accomplished through the judgments of subject-matter experts. The process is enhanced by the inclusion of a large number of subject-matter experts who represent the diversity of the relevant areas of expertise.

The Standards for Educational and Psychological Testing (1999) (*The Standards*) is a comprehensive technical guide that provides criteria for the evaluation of tests, testing practices, and the effects of test use. It was developed jointly by the American Psychological Association (APA), the American Educational Research Association (AERA), and the National Council on Measurement in Education (NCME). The guidelines presented in *The Standards*, by professional consensus, have come to define the necessary components of quality testing. As a consequence, a testing program that adheres to *The Standards* is more likely to be judged to be valid and defensible than one that does not.

As stated in Standard 14.14,

> "The content domain to be covered by a credentialing test should be defined clearly and justified in terms of the importance of the content for credential-worthy performance in an occupation or profession. A rationale should be provided to support a claim that the knowledge or skills being assessed are required for credential-worthy performance in an occupation and are consistent with the purpose for which the licensing or licensure program was instituted...Some form of job or practice analysis provides the primary basis for defining the content domain... (p.161)[1]

Therefore, knowledge/skills covered on a credentialing examination should be validated as relevant for performing important work tasks. The ARE is based on knowledge/skills identified through a practice analysis as important for the performance of tasks by recently licensed architects practicing independently. Further, the defensibility of a credentialing examination is enhanced by the linkage of validated knowledge/skills with important tasks. This is a key component in the structuring of the ARE. Linking provides two major benefits:

1) Linking establishes the relationship between the knowledge/skills covered on the ARE and the tasks to which the knowledge/skills are applied.

[1]American Educational Research Association, American Psychological Association, National Council on Measurement in Education. (1999). *The Standards for Educational and Psychological Testing.* Washington, DC: American Psychological Association.

2) Linking provides guidance for item-writing activities. When item writers develop questions, they have a listing of tasks that relate to the knowledge/skills. This provides context for developing examination questions, and assists the item writers in question design.

The IDP complements the ARE through its focus on the performance of important tasks during the internship experience. Tasks validated through the practice analysis provide the content structure for the IDP. Knowledge/skills serve as the foundation of understandings necessary for task performance. The defensibility of the content of an internship program is enhanced by the linkage of validated tasks with knowledge/skills.

The 2007 Practice Analysis of Architecture was designed to follow the guidelines presented in *The Standards* and to adhere to accepted professional practices.

METHOD

The Practice Analysis involved a multi-method approach that included meetings with subject-matter experts and a survey. This section of the report describes the activities conducted for the practice analysis.

First, subject-matter experts identified the tasks and knowledge/skills they believe are important to the work performed by licensed architects. Then a survey was developed and disseminated to licensed architects. The purpose of the survey was to obtain verification (or refutation) that the tasks and knowledge/skills identified by the subject-matter experts are important to the work of recently licensed architects practicing independently.

Survey research functions as a "check and balance" on the judgments of the subject-matter experts and reduces the likelihood that unimportant areas will be considered in the development of internship or examination programs. The use of a survey is also an efficient and cost-effective method of obtaining input from large numbers of subject-matter experts and makes it possible for ratings to be analyzed separately by appropriate respondent subgroups.

What matters most is that a licensure examination covers important knowledge/skills needed to perform job activities. A well-conducted practice analysis provides the foundation of information needed to achieve that goal, as well as establishes a strong framework for the content of an internship program.

The methodology used to conduct the Practice Analysis is described in detail below.

1. **Planning Meetings**

   Project-planning meetings were held in December 2006 and January 2007 at the NCARB office in Washington, DC. Meeting participants included NCARB staff and the

What matters most is that a licensure examination covers important knowledge/skills needed to perform job activities. A well-conducted practice analysis provides the foundation of information needed to achieve that goal, as well as establishes a strong framework for the content of an internship program.

Board Liaison along with the Prometric staff responsible for conducting the Practice Analysis.

During the planning meetings, several issues were discussed including the composition of the Practice Analysis Task Force, the ARE® Test Specification Task Force, and the IDP Specification Task Force; meeting dates; development of the survey sampling plan; and survey dissemination issues.

2. **Development of the Survey**

Practice Analysis Task Force Meeting

NCARB convened a Task Force comprised of a representative group of architects. The Task Force meeting was conducted February 22-24, 2007, in San Francisco, CA. The purpose of the meeting was to develop the survey content. Prometric staff facilitated the meeting.

Prometric staff sent a pre-meeting mailing that included the meeting agenda, a list of tasks and knowledge/skills validated in the previous practice analysis published in 2001, and a list of current Task Force participants.

Activities conducted during the meeting included reviewing and, as needed, refining the major domains and tasks and knowledge/skills important to work performed by architects. Survey rating scales, background, and general information questions were presented and discussed.

Survey Construction

Following the Task Force Meeting, Prometric staff constructed the draft online survey. The following domains were covered on the survey:

1. Pre-Design: Project-related activities related to preliminary design
2. Design: Project-related activities covering schematic design through construction documents
3. Project Management: Project-related management activities and construction administration
4. Practice Management: Office-related management activities
5. General: Knowledge/skills only

Survey Review by Task Force

Each Task Force member received a copy of the draft survey. The purpose of the review was to provide the group an opportunity to view their work and recommend any revisions.

Prometric compiled the comments and reviewed them by web conference with the Task Force members and NCARB staff. Recommended refinements were incorporated, as appropriate, into the survey in preparation for the conduct of a pilot test.

Prometric then conducted a survey pilot test. The purpose of the small-scale pilot test was to have architects who had no previous involvement in the development of the survey review it and offer suggestions for its improvement. A total of 22 architects were nominated by Task Force members and NCARB staff to participate in the survey pilot test. Pilot participants were asked to review the survey for clarity of wording, ease of use, and comprehensiveness of content coverage. Ten architects submitted comments that were compiled by Prometric and reviewed by web conference with the Task Force members and NCARB staff. The survey was revised and finalized based on a review of the pilot test comments.

Final Version of the Survey

The final version of the survey consisted of five sections:
Section 1: Background and General Information;
Section 2: Tasks;
Section 3: Knowledge/Skills;
Section 4: Comments; and
Section 5: The IDP and Architecture as a Career.

Section 1: Background and General Information

Survey participants were asked to provide general and background information about themselves and their professional activities.

Section 2: Tasks

Survey participants were asked to rate the statements using the Importance rating scale shown below:

How important is competent performance of the task for a recently licensed architect practicing independently?
Response choices: 0 = Of no importance; 1 = Of little importance; 2 = Of moderate importance; 3 = Important; 4=Very important.

Section 3: Knowledge/Skills

Survey participants were asked to rate the statements using the Importance and Point of Acquisition rating scales shown below:

How important is competent performance of the knowledge/skill for a recently licensed architect practicing independently?
Response choices: 0 = Of no importance; 1 = Of little importance; 2 = Of moderate importance; 3 = Important; 4 = Very important.

At what point is the knowledge/skill acquired?
Response choices: 0 = Not acquired; 1 = By completion of first professional architectural degree; 2 = During internship; 3 = After licensure.

Survey participants also were asked to indicate how well the statements covered the tasks and knowledge/skills within each domain. Respondents made their judgments using a five-point rating scale.
Response choices: 1 = Very Poorly; 2 = Poorly; 3 = Adequately; 4 = Well; 5=Very Well.

A write-in area was provided for respondents to note any areas that were not covered within a specific domain.

Section 4: Comments

Survey participants were provided the opportunity to write in comments for the following three questions:

- *What additional professional development (including training and experience) could you use to improve your performance in the field of architecture?*
- *How do you expect your job in the field of architecture to change over the next few years? What tasks will be performed and what knowledge/skills will be needed to meet changing job demands?*
- *If you could change the field of architecture, what is the most important change you would make?*

Section 5: The IDP and Architecture as a Career

Survey participants were asked to provide information on the following:

- *Have you been a supervisor or mentor to an intern participating in the IDP in the last two years?*
  Response Choices: Yes; No

  If the survey participant answered Yes, the following two questions were asked:
  - *How well is architecture education preparing those interns to become architects?*
    Response Choices: Very Poorly; Poorly; Adequately; Well; Very Well.

  - *How well is the IDP preparing those interns to become architects?*
    Response Choices: Very Poorly; Poorly; Adequately; Well; Very Well

All survey participants were advanced to a question about satisfaction with their career in architecture.

- *How satisfied are you generally with your career in architecture?*
  Response choices: Very Dissatisfied; Dissatisfied; Somewhat Dissatisfied; Somewhat Satisfied; Satisfied; Very Satisfied.

3. Dissemination of the Survey

NCARB contacted Member Board Executives at each Board of Architecture by e-mail shortly before the survey was disseminated to inform them about the upcoming survey of architects. Prometric disseminated a total of 55,398 online surveys in April 2007 by e-mail based on a database of architects provided by NCARB, the American Institute of Architects (AIA), and the Committee of Canadian Architectural Councils (CCAC). To encourage survey participation, respondents were entered into a drawing. Twenty respondents were randomly selected to win $100 Amazon.com gift certificates. Follow-up reminder e-mails were sent to non-respondents, two weeks after the initial survey dissemination and one week prior to the survey closing.

4. Analysis of the Survey Data

As previously noted, the purpose of the survey was to validate the tasks and knowledge/skills that a relatively large number of architects judged to be relevant (verified as important) for competent performance by recently licensed architects practicing independently.

These objectives were accomplished through an analysis of the mean importance ratings for tasks and knowledge/skills. The derivation of the test specification from those statements verified as important by the surveyed professionals provides a substantial evidential basis for the content validity (content relevance) of credentialing examinations.

Based on information obtained from the survey, data analyses by respondent subgroups (e.g., years licensed as an architect; primary job responsibilities; employment setting; gender) are possible when sample size permits. A subgroup category is required to have at least 30 respondents to be included in the mean analyses. This is a necessary condition to ensure that the mean value based upon the sample of respondents is an accurate estimate of the corresponding population mean value.

The following quantitative data analyses were produced:

- Mean, standard deviation, and frequency (percentage) distribution for tasks and knowledge/skill importance ratings and content coverage ratings.
- Frequency (percentage) distribution for knowledge/skill point of acquisition ratings.

Write-in comments were summarized regarding task and knowledge/skill content coverage; architects' professional development needs; expected changes in the architect's job role over the next few years; and, important changes in the profession of architecture.

Criterion for Interpretation of Mean Importance Ratings

Since a major purpose of the survey is to ensure that only validated tasks and knowledge statements are included in the test specification, a criterion (cut point) for inclusion should be established.

Definition of Pass, Borderline, and Fail Categories for Task and Knowledge/Skill Means

	Mean
Pass:	At or above 2.50
Borderline:	2.40 to 2.49
Fail:	Less than 2.40

A criterion that has been used in similar studies is a mean importance rating that represents the midpoint between moderately important and important. For the importance rating scale used across many studies, the value of this criterion is 2.50.

It is believed that this criterion is consistent with the intent of content validity, which is to measure only important knowledge/skills in the credentialing examination. It is also considered appropriate for this criterion to be applied to the selection of tasks for the IDP specification. Therefore, for this practice analysis, Prometric recommended the value of this criterion should be set at 2.50.

The tasks and knowledge/skills were placed into one of three categories—Pass, Borderline, or Fail—based on their mean importance ratings:

- The Pass Category contains those statements whose means are at or above 2.50, and are considered eligible for inclusion in the ARE test specification and the IDP specification.
- The Borderline Category contains those statements whose means are between 2.40 and 2.49. The Borderline Category is included to provide a point of discussion to determine if the statement(s) warrant(s) inclusion in the ARE test specification and the IDP specification.
- The Fail Category contains those statements whose mean ratings are less than 2.40. It is recommended that statements in the Fail Category be excluded from consideration in the ARE test specification and the IDP specification.

If the ARE Test Specification Task Force and the IDP Specification Task Force believe that a statement rated below 2.50 should be included in the ARE Test Specification or IDP Specification and can provide compelling written rationales, those statements may be considered for inclusion. For example, although a task or knowledge/skill may have a mean of less than 2.50, more than 50.00% of the respondents may have rated the statement as important. In this instance, the ARE Test Specification Task Force or the IDP Specification Task Force might recommend the inclusion of the statement either in the ARE test specification or the IDP specification. The written rationale would note that a majority of the survey respondents rated the statement as important.

5. ARE Test Specification and IDP Specification

The ARE Test Specification and IDP Specification meetings were conducted concurrently on July 19-21, 2007 in Tucson, AZ. The two groups met jointly on the first day to discuss the Practice Analysis survey results. The ARE Test Specification Task Force and the IDP Specification Task Force met independently on the following two days.

At the meeting of the ARE Test Specification Task Force, recommendations were made regarding the tasks and knowledge/skills to be included in the test specification based on a careful review of the survey results. At the meeting of the IDP Specification Task Force, members exchanged ideas for consideration of the development of an IDP Specification based on the survey data.

SURVEY RESULTS

Survey Response Rate

Of the 55,398 surveys disseminated by e-mail to licensed architects, 49,624 surveys were delivered successfully. Forty-six individuals indicated that they are not licensed to practice architecture and were dismissed from participating in any part of the survey.

A total of 10,086 surveys were submitted among which 251 were mostly blank and therefore removed from the database. Thus, the calculation of the survey response rate of 19.82% is based on 9,835 respondents divided by 49,624 surveys delivered.

A representative group of architects completed the survey in sufficient numbers to satisfy the requirements for statistical analysis of the results.

TABLE 1. Survey Response Rates

NUMBER OF SURVEYS DISSEMINATED	NUMBER OF NON-DELIVERABLES	NUMBER OF SURVEYS DELIVERED	NUMBER OF SURVEYS SUBMITTED	NUMBER OF SURVEYS REMOVED FROM DATA BASE	NUMBER/ PERCENT OF SURVEYS INCLUDED IN DATA ANALYSIS
55,398	5,774	49,624	10,086	251	9,835/19.82%

Background and General Information

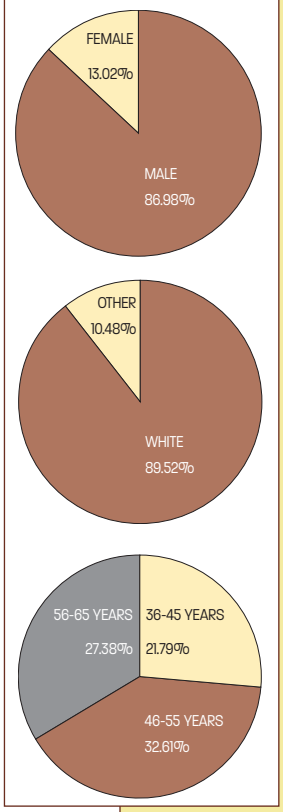
The following is a summary of the background and general questions presented to survey participants.

Demographic Overview: Male (86.98%); Female (13.02%); White (89.52%, United States respondents); Other (10.48%, United States respondents); White/English or White/French (72.02%, Canadian respondents); Other (27.98%, Canadian respondents); Age (36 to 45 years, 21.79%; 46 to 55 years, 32.61%; 56 to 65, 27.38%).

Licensure: Virtually all respondents are active licensees. A few respondents (N=33) selected the inactive/emeritus response option. The database consists of representative groups of respondents who have been licensed across a range of years—from less than one year to more than 30 years.

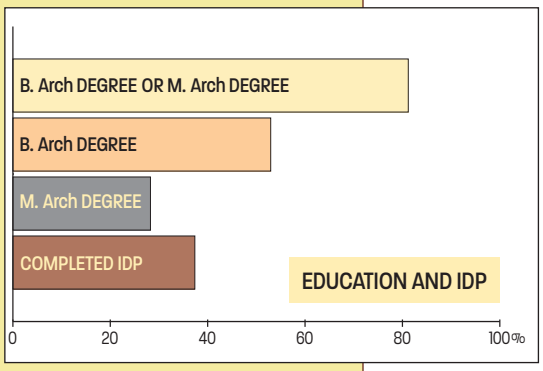
. . . the survey response rate of 19.82% is based on 9,835 respondents divided by 49,624 surveys delivered.

DEMOGRAPHICS



Current Employment: Most respondents (92.66%) reported that they work full time. By position, 40.92% of the respondents indicated that they are principals (equity position) and supervise employees (83.47%). By number of years in current position, the responses range from less than one year to more than 30 years. A majority of respondents (65.60%) reported that they work in an architecture firm. By size of firm/organization, responses ranged from "under five employees" (27.39%, the most frequently selected response) to "over 500 employees".

Geographic Region: There was a representative group of respondents across the various NCARB regions. A total of 96.64% of the respondents indicated that they are located in the United States (95.74%) or United States territories (0.90%). Another 3.29% of the respondents are located internationally: Canada (1.99%) or other countries (1.30%).



Education and the IDP: Most respondents (81.20%) reported that their highest educational attainment is either a Bachelor of Architecture degree (52.95%) or a Master of Architecture degree (28.25%). A total of 37.37% of the respondents indicated that they completed NCARB's IDP program (in Canada, IAP).

Task and Knowledge/Skill Ratings by Overall Group of Respondents

The following provides a summary of survey respondents' ratings of the tasks and knowledge/skills. Most of the 92 tasks and 100 knowledge/skills achieved high importance means. Also, a majority the knowledge/skills was identified as being acquired prior to licensure.

Tasks

Importance Ratings: Means, standard deviations, and percent frequency distributions for the tasks included on the survey were calculated based on the criterion for interpretation of mean importantce ratings decribed previously in the Methods section of this document. As shown in Table 2, 86 (93.48%) of the tasks achieved importance means of at least 2.50.

Six tasks were placed in the Borderline or Fail Categories (means of less than 2.50). However, it should be noted that although the means for these six tasks are less than 2.50, a majority of respondents rated them as important ("moderately important", "important", or "very important"). However, between 11.85% and 23.05% of the respondents rated these tasks as not important ("of no importance" or "of little importance").

TABLE 2. Summary of Task Importance Means by Pass, Borderline, and Fail Categories

		NUMBER/PERCENTAGE		
DOMAIN	NUMBER OF TASKS	PASS (MEAN:≥2.50)	BORDERLINE (MEAN: 2.40 TO 2.49)	FAIL (MEAN:≤2.40)
1. PRE-DESIGN	22	21	0	1
2. DESIGN	22	18	1	3
3. PROJECT MANAGEMENT	25	24	1	0
4. PRACTICE MANAGEMENT	23	23	0	0
TOTAL NUMBER	92	86	2	4
PERCENT	--	93.48%	2.17%	4.35%

Knowledge/Skills

Importance Ratings: Means, standard deviations, and percent frequency distributions for the knowledge/ skills included on the survey were calculated based on the criterion for interpretation of mean importantce ratings decribed previously in the Methods section of this document. As shown in Table 3, virtually all of knowledge/skills (99 out of 100, 99.00%) achieved importance means of at least 2.50.

TABLE 3. Summary of Knowledge/Skill Importance Means by Pass, Borderline, and Fail Categories

		NUMBER/PERCENTAGE		
DOMAIN	NUMBER OF KNOWLEDGE/ SKILLS	PASS (MEAN:≥2.50)	BORDERLINE (MEAN: 2.40 TO 2.49)	FAIL (MEAN:≤2.40)
1. PRE-DESIGN	10	10	0	0
2. DESIGN	29	29	0	0
3. PROJECT MANAGEMENT	15	15	0	0
4. PRACTICE MANAGEMENT	13	13	0	0
5. GENERAL KNOWLEDGE/SKILLS	33	32	1	0
TOTAL NUMBER	100	99	1	0
PERCENT	--	99.00%	1.00%	0.00%

Point of Acquisition Ratings: Respondents were asked to identify when the knowledge/skill *is* acquired, not when the knowledge/skill *should* be acquired. Table 4 provides a summary of the point-of-acquisition ratings across the five knowledge/skill domains. For four of the domains (Pre-Design; Design; Project Management; and General Knowledge/Skills), the majority of knowledge/skills were rated as being acquired either "by completion of first professional architectural degree" or "during internship." However, for the Practice Management domain, the majority of ratings (61.82%) were clustered in the "after licensure" response category.

TABLE 4. Summary of Point of Acquisition Ratings

		PERCENTAGE			
DOMAIN	NUMBER OF KNOWLEDGE/ SKILLS	NOT REQUIRED	BY COMPLETION OF FIRST PROFESSIONAL ARCHITECTURAL DEGREE	DURING INTERNSHIP	AFTER LICENSURE
1. PRE-DESIGN	10	1.71%	20.81%	50.05%	27.42%
2. DESIGN	29	1.88%	30.22%	47.44%	20.45%
3. PROJECT MANAGEMENT	15	0.66%	4.86%	60.78%	33.43%
4. PRACTICE MANAGEMENT	13	2.31%	7.12%	28.75%	61.82%
5. GENERAL KNOWLEDGE/SKILLS	33	2.81%	45.62%	33.88%	17.68%
TOTAL NUMBER	100				

Following are 17 knowledge/skills for which a majority of respondents indicated that the point of acquisition is "after licensure." It should be noted that the importance mean for each of these knowledge/skills is above 2.50, ranging from 2.87 to 3.41. (The percentage figure after each of the 17 knowledge/skills listed below represents the percentage of respondents who selected "after licensure" as the point of acquisition rating.)

Domain 1: Pre-Design

- project financing and funding (63.67%)

Domain 3: Project Management

- project budget management (51.20%)
- construction conflict resolution (55.74%)

Domain 4: Practice Management

- legal and ethical issues pertaining to contracts (51.59%)
- legal and ethical issues pertaining to practice (e.g., liens; taxation; licensure) (55.30%)
- business planning (70.73%)
- strategic planning (71.35%)
- financial management (69.10%)
- risk management (e.g., professional and general liability) (64.29%)
- marketing and communications (55.23%)
- human resources management (72.63%)
- IDP mentoring and supervising (69.44%)
- contract negotiation (e.g., fees; scope; schedules) (66.05%)
- invoicing for services (66.79%)

Domain 5: General Knowledge/Skills

- entrepreneurship (50.79%)
- mentoring—teaching others (62.05%)
- supervising (53.27%)

Subgroup Analysis of Tasks and Knowledge/Skill Ratings: Index of Agreement

The index of agreement is a measure of the extent to which subgroups of respondents agree on which tasks and knowledge/skills are important. In this study, indices of agreement were calculated for the following groups: years licensed as an architect; primary job responsibilities; supervisor/manager; employment setting; size of firm/organization; NCARB region (primary geographic location); gender; race/ethnicity; and age.

Using the mean importance ratings for task and knowledge/skill statements, indices of agreement were computed:

- If the subgroup means are above the critical importance value (mean ratings at or above 2.50), then they are in agreement that the content is important.
- If the subgroup means are below the critical importance value (mean ratings less than 2.50), then the subgroups are in agreement that the content is considered less important.
- By contrast, if one subgroup's (for example, female) mean ratings are above the critical importance value and another subgroup's (for example, male) means are below the critical importance value then the subgroups are in disagreement as to whether the content is important.

The index of agreement provides a method of computing the similarity in judgments between groups that is more tailored to the purpose of a practice analysis than the correlation coefficient. Although the correlation coefficient measures the tendency toward agreement along the full range of possible ratings, the agreement index focuses on whether two groups agree that the content should (or should not) be included in an examination.

One of the major purposes of this Practice Analysis is to verify appropriate test content. The agreement index provides a statistical method to address this question at the subgroup level. Furthermore, the agreement index requires only 30 respondents per subgroup for computation, whereas the correlation coefficient requires at least 100 respondents per subgroup to provide a reliable measure of agreement.

An illustrative example for two groups shows how the index is computed. If two groups passed the same 120 knowledge/skill areas and failed the same 2 knowledge/skill areas (out of the 124 total knowledge/skill areas in the survey), the consistency index would be computed as: Agreement = (120 + 2)/124 = 0.98.

There was a very high level of agreement among respondents regarding the importance of both tasks and knowledge/skills. Therefore, additional statistical subgroup comparisons were unnecessary.

Content Coverage Ratings

The survey participants were asked to indicate how well the statements within each of the task and knowledge/skill domains covered important aspects of that domain. These responses provide an indication of the adequacy (comprehensiveness) of the survey content.

The five-point rating scale included: 1=Very Poorly; 2=Poorly; 3=Adequately; 4=Well; and 5=Very Well.

The means and standard deviations for the task and knowledge/skill ratings are provided in Tables 5 and 6. For the task domains, the means ranged from 3.87 to 3.96. The means across the knowledge/skill domains ranged from 3.75 to 3.86. The results provide supportive evidence that the tasks and knowledge/skills were comprehensive and adequately covered on the survey.

TABLE 5. Summary of Task Content Coverage Ratings

			FREQUENCY PERCENTAGE				
DOMAIN	MEAN	SD	VERY POORLY	POORLY	ADEQU-ATELY	WELL	VERY WELL
1. PRE-DESIGN	3.96	0.75	0.07%	0.94%	27.50%	46.24%	25.24%
2. DESIGN	3.87	0.74	0.07%	0.99%	31.26%	47.47%	20.21%
3. PROJECT MANAGEMENT	3.95	0.75	0.05%	0.73%	28.21%	46.46%	24.55%
4. PRACTICE MANAGEMENT	3.90	0.77	0.08%	1.34%	29.96%	45.26%	23.36%

TABLE 6. Summary of Knowledge/Skill Content Coverage Ratings

DOMAIN	MEAN	SD	VERY POORLY	POORLY	ADEQU-ATELY	WELL	VERY WELL
1. PRE-DESIGN	3.75	0.76	0.06%	1.86%	38.02%	42.79%	17.27%
2. DESIGN	3.79	0.76	0.11%	1.67%	36.02%	43.87%	18.33%
3. PROJECT MANAGEMENT	3.81	0.74	0.07%	0.93%	35.45%	45.17%	18.38%
4. PRACTICE MANAGEMENT	3.81	0.75	0.08%	1.16%	35.62%	43.99%	19.15%
5. GENERAL KNOWLEDGE/SKILLS	3.86	0.75	0.11%	0.87%	33.02%	45.36%	20.63%

Write-In Comments

Many survey respondents provided responses to the following three open-ended questions:

1. *What additional professional development (including training and experience) could you use to improve your performance in the field of architecture?*

As shown in Table 7, the business side of architecture/construction administration, computer/technology and soft skills represent the topic areas most frequently mentioned.

TABLE 7. Professional Development Needs

TOPIC	ESTIMATED[2] PERCENTAGE OF COMMENTS
Business Side of Architecture/Construction Administration	29.69%
Computer/Technology (e.g., 3d Modeling; CADD; BIM)	18.99%
Soft Skills (e.g., mentorship)	18.07%
Materials and Products (including sustainability)	9.04%
Design (including environmental design)	5.58%
Standards/Code/Licensure	4.28%
Construction Experience	4.11%
Hand Drawing	3.84%
Seminars	2.13%
Project/Practice Management	2.02%
Engineering	Less than 1.00%
Exposure to "Best" in Architecture	Less than 1.00%
IDP/Academic Training	Less than 1.00%
Preservation and History	Less than 1.00%
No Change	Less than 1.00%

[2]The percentages presented in Tables 7 to 9 represent estimates. A combination of manual and computerized techniques was used by Prometric to summarize the thousands of write-in comments received for each question. Both techniques lack one hundred percent accuracy primarily due to words that contain similar word patterns (e.g., software; soft skills), multiple topics covered in one comment, and the clarity of the comments provided. The percentages, therefore, provide an estimate of the topic areas mentioned most frequently.

2. *How do you expect your job in the field of architecture to change over the next few years? What tasks will be performed and what knowledge/skills will be needed to meet changing job demands?*

As shown in Table 8, design/environment (including sustainability) and computer/technology represent the topic areas most frequently mentioned.

TABLE 8. Expected Changes in One's Job in the Field of Architecture Over the Next Few Years

TOPIC	ESTIMATED[2] PERCENTAGE OF COMMENTS
Design/Environment (including sustainability)	27.44%
Computer/Technology (e.g., 3d Modeling; CADD; BIM)	24.71%
Materials and Products (including sustainability)	13.97%
Business Side of Architecture/Construction Administration (finance, legal, marketing)	12.75%
Program/Practice Management	8.46%
Soft Skills (e.g., mentorship)	3.97%
Code/Standards/Licensure	2.75%
Education/Training	2.73%
Globalization	2.68%
No Change	Less than 1.00%

3. *If you could change the field of architecture, what is the most important change you would make?*

As shown in Table 9, the business side of architecture/construction administration and design represent the topic areas most frequently mentioned.

TABLE 9. Most Important Change Wanted in the Field of Architecture

TOPIC	ESTIMATED[2] PERCENTAGE OF COMMENTS
Business Side of Architecture/Construction Administration	15.47%
Design	14.15%
Appreciation of/for the Field (within the field/outside the field)	9.92%
Promotion of the Profession (including parity with other professions)	8.97%
Improved Practical Experiences in Educational Curriculum (e.g., intern; mentorship)	8.37%
Construction Experience	6.34%
Collaboration/Cooperation	4.97%
Project/Practice Management	4.83%
Value	4.56%
Increased Salary/Pay	4.48%
Educational Preparation	3.84%
Code/Standards/Licensure	3.78%
Fees and Reimbursement	3.13%
Computer/Technology (e.g., 3d Modeling; CADD; BIM)	2.59%
Materials and Products (including sustainability)	1.78%
General Comments	1.04%
Communication	Less than 1.00%
Diversity (in terms of minority representation)	Less than 1.00%
No Change	Less than 1.00%

[2]The percentages presented in Tables 7 to 9 represent estimates. A combination of manual and computerized techniques was used by Prometric to summarize the thousands of write-in comments received for each question. Both techniques lack one hundred percent accuracy primarily due to words that contain similar word patterns (e.g., software; soft skills), multiple topics covered in one comment, and the clarity of the comments provided. The percentages, therefore, provide an estimate of the topic areas mentioned most frequently.

The IDP and Architecture as a Career

Tables 10, 10a, and 10b present the results of three questions about the IDP. As shown in Table 10, 40.96% of the respondents reported that they had supervised or mentored IDP interns in the last two years. Tables 10a and 10b show the responses to two follow-up questions presented only to those supervisors/mentors. Although 71.64% of the respondents indicated that architecture education is "adequately" to "very well" preparing interns to become architects, 28.36% rated the educational preparation as "very poor" or "poor" (Table 10a). However, a different response pattern emerges for the question about how well the IDP is preparing interns to become architects. A total of 89.96% of the respondents indicated that the IDP is "adequately" to "very well" preparing interns to become architects, whereas only 10.05% rated IDP preparation as "very poor" or "poor" (Table 10b).

TABLE 10. Number/Percentage of Respondents Who Supervised or Mentored IDP Interns in the Last Two Years

RESPONSE	COUNT	PERCENT
Yes	4021	40.96%
No	5795	59.04%
Total	9816	100.00%
Missing	19	
Grand Total	9835	

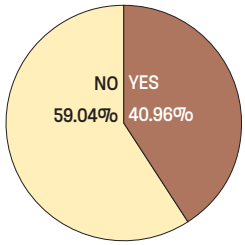
Table 10a. How Well Architecture Education Is Preparing Those Interns to Become Architects

RESPONSE	COUNT	PERCENT
Very Poorly	136	3.39%
Poorly	1001	24.97%
Adequately	1939	48.37%
Well	829	20.68%
Very Well	104	2.59%
Total	4009	100%
Missing	11	
Grand Total	4021	

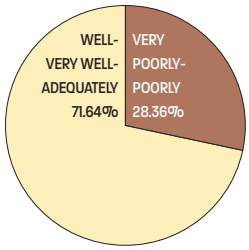
Table 10b. How Well the IDP Is Preparing Those Interns to Become Architects

RESPONSE	COUNT	PERCENT
Very Poorly	50	1.25%
Poorly	352	8.80%
Adequately	1789	44.73%
Well	1558	38.95%
Very Well	251	6.28%
Total	4000	100%
Missing	21	
Grand Total	4021	

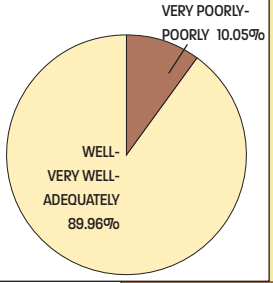
SUPERVISED OR MENTORED AN IDP INTERN IN THE PAST TWO YEARS



HOW WELL ARCHITECTURE EDUCATION IS PREPARING INTERNS



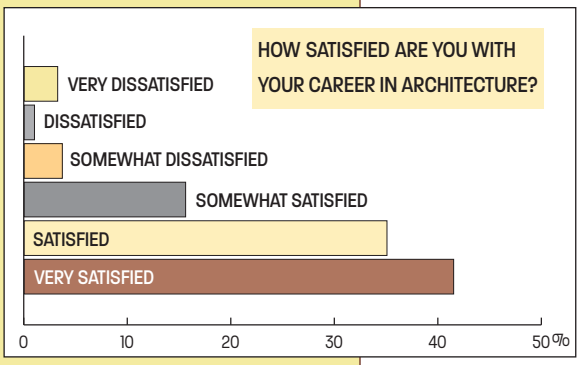
HOW WELL IDP IS PREPARING INTERNS



As shown in Table 11, a majority of survey respondents (92.11%) indicated that they are "somewhat satisfied" to "very satisfied" with their career in architecture. In contrast, only 7.90% of the respondents are "somewhat dissatisfied" to "very dissatisfied" with their career in architecture.

Table 11. Satisfaction with a Career in Architecture

RESPONSE	COUNT	PERCENT
Very Dissatisfied	317	3.23%
Dissatisfied	97	0.99%
Somewhat Dissatisfied	361	3.68%
Somewhat Satisfied	1529	15.59%
Satisfied	3437	35.04%
Very Satisfied	4069	41.48%
Total	9810	100.00%
Missing	25	
Grand Total	9835	



SUMMARY, RECOMMENDATIONS, AND CONCLUSION

The purpose of the Practice Analysis was to provide NCARB with:

- a validated list of tasks and knowledge/skills related to work performed by recently licensed architects;
- an updated test specification for the Architect Registration Examination (ARE); recommendations for the development of an IDP specification based on the practice analysis survey data; and
- information about a number of issues related to the profession of architecture: architects' professional development needs; expected changes in the architect's job role; important changes in the profession of architecture; participation in the Intern Development Program (IDP); and architecture as a career.

The tasks and knowledge/skills were developed through an iterative process involving the combined efforts of NCARB, subject-matter experts, and Prometric staff. The inventory was then put into survey format and subjected to verification/refutation through the dissemination of a survey to thousands of architects.

Survey participants were asked to rate 92 tasks and 100 knowledge/skills in relation to their importance for competent performance by a recently licensed architect practicing independently and the point of acquisition of the knowledge/skills. A large, representative sample of close to 10,000 architects participated in the Practice Analysis.

Highlights of Survey Results

- Over 90% of tasks and knowledge/skills were verified as important. Evidence was provided in this practice analysis that the comprehensiveness of the content within the task and knowledge/skill domains was adequately covered. Therefore, they should be used for preparation of the ARE and IDP specifications.
- A majority of the knowledge/skills were rated as being acquired prior to licensure, either by completion of the first professional architectural degree or during internship. However, 17 knowledge/skills (primarily related to practice management) were rated by a majority of survey respondents as being acquired after licensure. However, these same knowledge/skills were rated as important to recently licensed architects practicing independently.
- Areas for professional development were identified as well as expected changes in the respondents' job activities over the next few years and the changes most wanted in the profession of architecture. The business side of architecture/construction administration was the most frequently mentioned topic area for professional development and the change most desired in the profession of architecture. For expected changes in the respondents' job activities, design/environment (including sustainability) was the most frequently mentioned topic area.

Over 90% of tasks and knowledge/skills were verified as important. Evidence was provided in this practice analysis that the comprehensiveness of the content within the task and knowledge/skill domains was adequately covered. Therefore, they should be used for preparation of the ARE and IDP specifications.

- About 40% of the respondents indicated that they have supervised or mentored an intern participating in the IDP in the last two years. Among this group, there is a difference of opinion about how well architecture education is preparing interns to become architects. Although a majority of respondents (71.64%) indicated that architecture education is "adequately" to "very well" preparing interns to become architects, 28.36% rated the educational preparation as "poor" or "very poor". In contrast, a total of 89.96% of the respondents indicated that the IDP is "adequately" to "very well" preparing interns to become architects, whereas only 10.04% rated IDP preparation as "poor" or "very poor".
- For most survey respondents (92.11%), the profession of architecture is viewed as "somewhat satisfactory" to "very satisfactory". Only 7.90% of the respondents are "somewhat dissatisfied" to "very dissatisfied" with their career in architecture.

RECOMMENDATIONS

Updating the ARE Test Specification

At the ARE Test Specification meeting held in July 2007, decisions were made regarding the tasks and knowledge/skills to be included in or excluded from the test specification based on a careful review of the survey results. The group reviewed the tasks and knowledge/skills for each ARE division and recommended changes in accordance with the results of the Practice Analysis survey. These recommendations should be incorporated into the ARE in a timely fashion.

Developing an IDP Specification

The Practice Analysis provides an excellent opportunity for NCARB to ensure that the IDP structure is based on up-to-date empirically derived data. Information provided by thousands of survey participants ensures that both the ARE® and IDP are based on a common set of validated tasks and knowledge/skills. Development of an IDP Specification, based on survey data, is currently under consideration by NCARB. Recommendations developed by the IDP Specification Task Force should be acted upon in a timely fashion.

Point of Acquisition of Knowledge/Skills

The results of the Practice Analysis revealed a gap between 17 knowledge/skills validated as important for a recently licensed architect practicing independently and the point at which the knowledge/skill is acquired. A majority of respondents indicated that these knowledge/skills are acquired after licensure. It is advised that a task force be convened to review these knowledge/skills and develop recommendations, as appropriate, for enhancing the knowledge/skill acquisition opportunities in these areas prior to licensure (e.g., education; IDP).

Satisfaction with Architecture Education

Among respondents who indicated that they have supervised or mentored individuals participating in the IDP in the last two years, the results of the Practice Analysis revealed a difference in ratings regarding the adequacy of architecture education compared to the IDP in preparing individuals to become architects. As previously noted, 28.36% of the respondents rated educational preparation as poor in comparison to 10.05% of the respondents who rated the IDP as poor. The convening of a Task Force is advised to determine if: the education data are in alignment with other valid studies of the architecture profession; further research into the adequacy of educational preparation should be conducted as a benefit to the architecture profession; and any action items should be recommended based on the survey findings.

Analysis of Write-In Comments (Professional Development Needs; Expected Changes in One's Job in the Field of Architecture Over the Next Few Years; Most Important Change Wanted in the Field of Architecture)

The summarization of thousands of write-in comments was produced by Prometric staff without the participation and guidance of subject-matter experts. The convening of a Task Force would be beneficial to ensure that the write-in comments are categorized and tallied as accurately as possible and that action-item recommendations are developed by subject-matter experts.

CONCLUSION

The Practice Analysis took a multi-method approach to identify the tasks and knowledge/skills important to the work performed by recently licensed architects practicing independently. These findings provide the foundation of empirically derived data from which to inform and, as needed, refine the content of the ARE and the IDP. A plan should be developed to ensure that modifications are integrated into the ARE and IDP based upon the findings of the 2007 Practice Analysis of Architecture. Additionally, a plan should be developed to implement the other recommendations presented in this report.