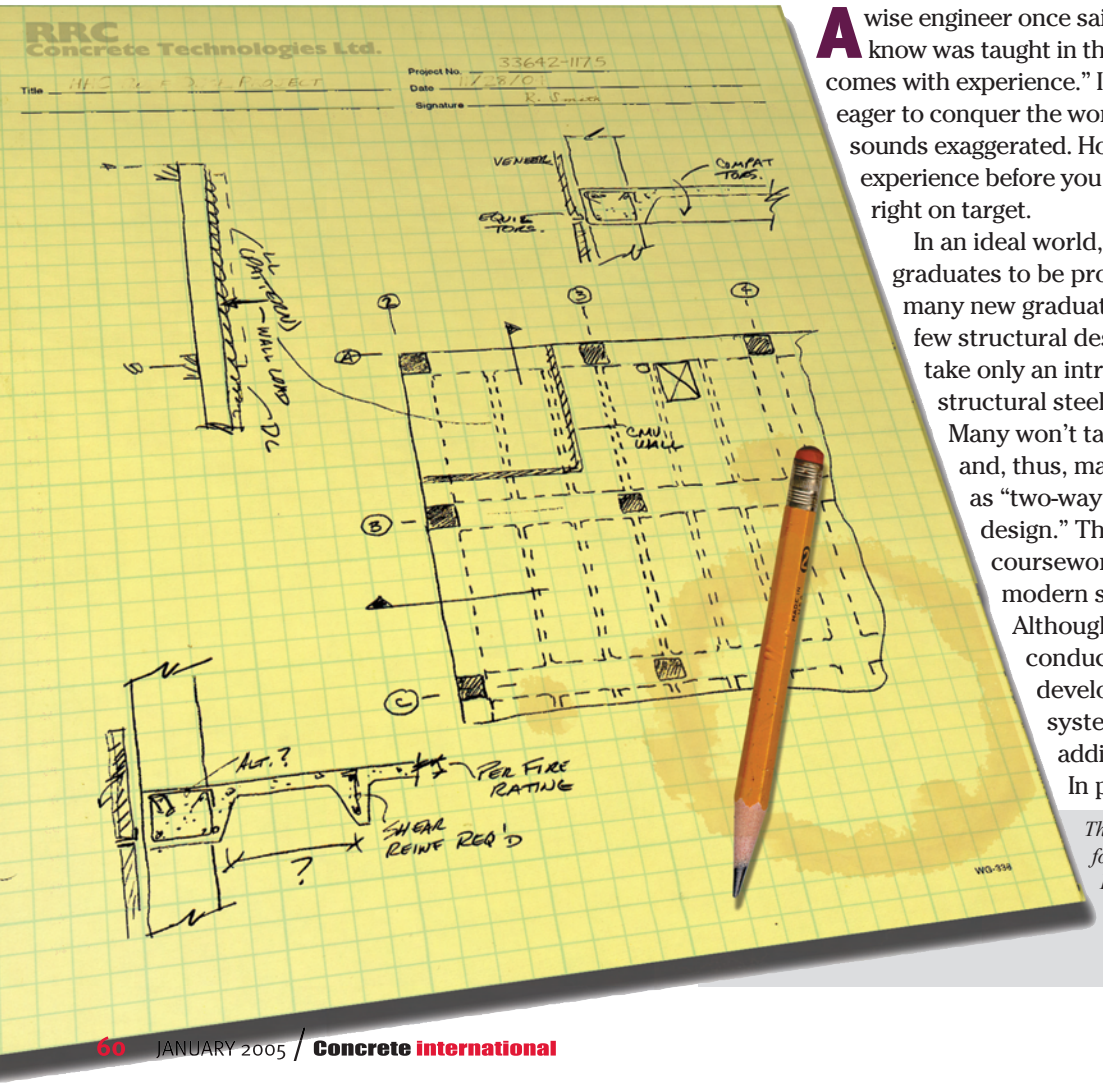
For the Novice Concrete Designer Only: A Series Introduction

BY EMILY B. LORENZ AND AMY REINEKE TRYGESTAD



A wise engineer once said, "Only 10% of what you need to know was taught in the classroom—the other 90% comes with experience." If you're fresh out of college and eager to conquer the world, the statement probably sounds exaggerated. However, it doesn't take much experience before you realize that the statement is right on target.

In an ideal world, design firms could expect new graduates to be productive from day one. In reality, many new graduates have had exposure to only a few structural design courses. In fact, some may take only an introductory course that combines structural steel and reinforced concrete design. Many won't take advanced design courses and, thus, may be unfamiliar with terms such as "two-way slab," "pan-and-joist," or "lateral design." Those who do take advanced coursework may have been introduced to modern structural design software. Although software can be a great tool for conducting case studies in order to develop a better understanding of system behavior, it also can create additional challenges for instructors. In particular, software has limited

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value if the student learns only to be proficient using it, without necessarily gaining a basic understanding of the theory behind the computer code. Without that understanding, "Garbage In, Garbage Out" (GIGO) applies all too well.

The new engineer requires mentoring. Unfortunately, in the fast-paced world of design and construction, with the conflicting demands of tight fees and ever-evolving, complex code requirements, it's difficult for seasoned engineers to find the time for mentoring. In a humble (and probably humbling) attempt to help, we'll be presenting the Structural Novice Series in future editions of *Concrete International*.

Our primary goal is to provide a bit of guidance to young engineers. However, as we readily acknowledge that the mentor-apprentice relationship has no substitute, we also hope to stimulate our more experienced readers to become stronger mentors by using the series as a conversation starter or even by submitting their own discussions or articles for publication in *CI*. Along the way, perhaps this series of articles will bridge a few gaps and help to make the transition from academic life to professional life a little smoother (it won't hurt our feelings if it brings a few laughs and groans as well).

Some of the topics for articles include:

- Loads (sources, resources, and calculations);
- Sizing of members (schematic design);
- Lateral systems;
- Detailing (standard as well as case specific);
- Scheduling (of beams and columns, not your time);
- Bond and development (how it's really communicated in the drawings);
- Specifications (it's not just 4000 psi concrete);
- Plans and coordination (call it, Communication 101);
- Who is the design team? (You are part of a team, so let's get to know the other members);
- Constructibility (someone has to build your project);
- Software (what's available, what you can expect it to do, and what you shouldn't expect it to do); and
- Serviceability (it's more than cracking and deflection, but that's a good start)

Do you have another topic that might be worthy of an article? As a young engineer, is there something that you find confusing? Seasoned engineers—do you remember the problems you had when you were an inexperienced designer? Please send your ideas—we're looking for additional topics.

Acknowledgments

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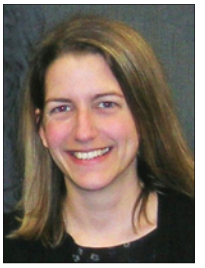

Emily B. Lorenz is the Engineering Editor for *Concrete International*. Lorenz completed her BS in structural engineering at Michigan Technological University, Houghton, MI, and after receiving the Civil Engineering Department Fellowship at Michigan Tech, she earned an MS in structural engineering. Her primary research interest was materials-related distress in concrete. Lorenz was previously employed as a structural engineer and is a licensed engineer in the state of Michigan.

Amy Reineke Trygestad is the Central United States Regional Structural Engineer for the Portland Cement Association (PCA). Trygestad provides technical assistance in all areas of building design to engineers, architects, contractors, owners, and universities throughout the U.S. Prior to joining PCA, she practiced structural engineering for 7 years. Trygestad has an MS in civil engineering from the University of Minnesota. She is an active member of ACI and ASCE, and is on the Board of Directors for the Minnesota Concrete Council. Trygestad is a licensed engineer in the state of Minnesota.