New Computer-Interactive Training

Educators and training specialists have long known that trainees learn faster--and remember more of what they've learned--if they're actively involved in the learning process. In computer-interactive training sessions, participants use their own judgment, think about problems presented, make decisions, and receive immediate feedback--positive or negative.

The UNH T^2 Center has two courses,developed by the American Association of State Highway and Transportation Officials (AASHTO), based on Compact Disc Interactive (CD-I). They require a CD-I player and a standard television. The UNH T^2 Center has three CD-I players it can lend to municipalities with the CD-I disks.

The CD-I player houses a microprocessor and memory to handle interactive code. Trainees interact with the system through a hand-held remote-control unit, which resembles a miniature Nintendo-style joystick.

Currently both courses are available. They are:

Snow and Ice Removal a course designed for employees who have their commercial drivers' license. It covers pre-trip inspections, plowing procedures, application of salt and abrasives, and post-storm clean-up.

Traffic Control in Construction Work Areas is a simulated inspection of three work sites. A traffic control plan is available on-screen, allowing comparisons of the planned traffic controls with actual conditions "on the ground."

To borrow the courses and a CD-I player, please contact David or Kathy at (603) 862-2826 or (800) 423-0060 (in NH).

Entrained Air in Concrete Specifications

Specifications Depend Upon Other Details

Recently we had an inquiry regarding concrete specifications. A similar question was asked in the "Problem Clinic" in the October 1995 issue of Concrete Construction.

The proper amount of entrained air to resist the effects of the freeze-thaw that should be specified for sidewalks, patios, curb and gutters, slabs and roads is dependent upon other details. Factors such as aggregate size and freeze-thaw exposure must be considered. Guidelines and recommendations for the amount of air required can be found in ACI 301, "Specifications for Structural Concrete for Buildings," and ACI 318, "Building Code Requirements for Reinforced Concrete." These guidelines can be incorporated by reference when writing specifications.

The table summarizes and compares the suggested air contents. ACI 301 requirements apply only to concrete subject to destructive exposure (see definition in box) and are stated in a range without a tolerance. If the psi is greater than 5000, then it might allow for a 1% reduction in air content (because higher-strength concretes have a greater frost resistance).

TOTAL AIR CONTENT FOR FROST-RESISTANCE CONCRETE

Nominal Maximum Aggregate Size (Inches)	Air Content (Percent) ACI 318		ACI 301
	Moderate Exposure	Severe Exposure	Destructive Exposure
3/8	6	7 1/2	6-10
1/2	5 1/2	7	5-9
3/4	5	6	4-8
1	4 1/2	6	3 1/2-6 1/2
1 1/2	4 1/2	5 1/2	3-6
2	4	5	2 1/2-5 1/2
3	3 1/2	4 1/2	1 1/2-4 1/2

Note: The requirements of ACI 318 match the recommended total air content values of ACI 202.R, ACI 211.1, ACI 345, and ASTM C 94. The required or recommended air contents depend upon aggregate size and freeze-thaw exposure conditions (described below). ACI 318 specifies a tolerate ±1 1/2% on total air content. ACI 301 states a range and doesn't indicate a future tolerance.

Moderate exposure-Conditions in a climate where freezing is expected, but where concrete will not be continually exposed to precipitation and free standing water for long periods of time before freezing and will not be exposed to deicing agents or other aggressive chemicals. Examples include slabs that are not in contact with wet soil.

Severe exposure-Conditions in which concrete is exposed to deicing chemicals or wet for long periods of time before freezing. Examples include pavements, curbs, gutters, and sidewalks.

Destructive exposure-Conditions in which concrete is exposed to freezing and thawing, severe weather conditions and deicing chemicals.(similar to severe exposure conditions).