NCCER Overview
Addressing the Skilled Workforce Shortage Crisis

CERN Meeting
April 18, 2008
Washington, DC
The National Center for Construction Education and Research, affiliated with the University of Florida, is a not-for-profit 501 (c)(3) education foundation and is a leader in providing workforce development resources for the construction, maintenance and pipeline industry.

Resources include:
- Accreditation
- Instructor Certification
- Standardized Industry-Driven Curricula
- Nationally Recognized Skill Assessments
- Industry-Recognized Credentialing & Certification
- Construction Career/Recruiting Resources
- Construction Safety and Front-line Management Education
NCCER History

- Organized and funded by leading industrial contractors
  - Contributed subject matter experts (SMEs)
- Standardized 5 key industrial crafts: electrical, pipefitting, millwright, welding, instrumentation
- Facilitated the Aspen Summit
- Developed the NCCER National Standardized Training Process
  - Standardized curricula
  - Skills portability through the National Registry

Founding Industry Leaders
- Fluor
- KBR
- Zachry Construction
- Metric Constructors
- KCI
- Austin Industrial
- TIC (The Industrial Company)
- National Industrial Contractors
- BE&K Construction
- Washington Group/Rust Constructors
- Bechtel/Becon
Focus Areas

- Craft Training
- Recruiting/Image
- Safety Training
- Management Education
- Research
American Fire Sprinkler Association
Associated Builders & Contractors, Inc.
Associated General Contractors of America
Association for Career and Technical Education
Association for Skilled and Technical Sciences
Carolinas AGC, Inc.
Carolinas Electrical Contractors Association
Center for the Improvement of Construction Management & Processes
Construction Industry Institute
Construction Users Roundtable
Design-Build Institute of America
Electronic Systems Industry Consortium
Merit Contractors Association of Canada
Metal Building Manufacturers Association
NACE International
National Association of Minority Contractors
NCCER Partners

National Association of Women in Construction
National Insulation Association
National Ready Mixed Concrete Association
National Systems Contractors Association
National Technical Honor Society
National Utility Contractors Association
NAWIC Education Foundation
North American Crane Bureau
North American Technician Excellence
Painting & Decorating Contractors of America
Portland Cement Association
SkillsUSA
Steel Erectors Association of America
Texas Gulf Coast Chapter ABC
U.S. Army Corps of Engineers
University of Florida
Women Construction Owners & Executives, USA
Our Vision
Universally recognized by industry and government as the training, assessment, certification and career development standard for the construction, maintenance and pipeline craft professional

NCCER’s Mission
Build a safe, productive and sustainable workforce of craft professionals

- Build owner demand for training
- Build support for craft training through govt. entities
- Substantially increase the number of customers served
Types of Training

- Apprenticeship
- Government Education
  - Department of Education
    - School-Based Vo-Tech
    - Secondary Vocational
      - Public
      - Charter High School
      - Adult Education
    - Public Post-secondary
      - Community College
      - Technical College
      - Career/Proprietary (For-profit)
  - Department of Labor
    - Job Corps, Youth Build,
      - Grant Programs - WIA, OJT, etc.
  - Department of Corrections
- Construction
  - Regional/Corporate Training Center
  - Site/Project-Based
- Owner
- Manufacturer
- Third-Party/Consultant
Standardized Training Process

- Accreditation
- Instructor certification
- Standardized curriculum
- Assessment & certification
- Industry-Recognized Credentials
Accreditation Growth

Over 600 Training Sponsors
5 Candidate; 75 Applicants
Nearly 350 Assessment Centers
Over 3000 public schools
Over 700 ATEFs

- Associations
- Contractors
- Owners
- Schools
- Consultants
- Corrections
- Unions
# Audits - Statistics

<table>
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<th>Audit Type</th>
<th>Orgs Audited</th>
<th>Number of Programs</th>
<th>Orgs Audited</th>
<th>Number of Programs</th>
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<td>Follow Up</td>
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<td>For Cause</td>
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<td>Initial</td>
<td>57</td>
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<td>Reaccredit</td>
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<td><strong>151</strong></td>
<td><strong>6</strong></td>
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<td>Programs Terminated</td>
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</table>
Instructor Certification

Master Trainers
24 hour ICTP for MTs

Craft Instructors
24 hour ICTP

Craft Professionals
Standardized Curriculum

CONTREN® LEARNING SERIES

Over 250,000 trained in 2007
STANDARDIZATION

- Common instructional system design (DACUM)
- Technical Review Committee: Subject Matter Expert (SME)
- Competency-based
- Instructor-led
- Curricula have common format
National Technical Review Committee

- Comprised of journey-level & above craftspeople
- Includes contractors, business owners, technical trainers, safety professionals, and career & technical education instructors from across the country
- Meets with NCCER Project Manager and Technical Writer to develop occupational and training needs analyses.
- Provides guidance on needed revisions to the manuscripts.
• Trainees learn skills at their own pace

• Trainees accelerate through demonstrated competencies on both written and performance tests

• NCCER-certified instructors verify successful test completions for credentialing through the National Registry
Module (Discrete task training unit)
- Must pass written & performance tests for each
- Each module stands alone (task training)
- Each module is part of an overall course of study (apprenticeship or time-based training)

Level Format
- Modules sequenced in a logical instructional order for overall course study
- Curricula meets DOL Office of Apprenticeship requirements for time-based training

Instructor and Trainee Guide for each module and/or level
CONTREN LEARNING SERIES

- Advanced Electrical Topics  [*Available in Spanish*]
- Boilermaking
- Carpentry  [**In Translation to Spanish**]
- Cabinetmaking
- Concrete Finishing  [**]
- Construction Craft Laborer
- Construction Technology
- Core Curriculum: Introductory Craft Skills  [*]
- Drywall
- Electrical
- Electronic Systems Technician
- Heavy Equipment Operations
- Highway/Heavy Construction
- HVAC
- Hydroblasting
- Industrial Maintenance: Electrical & Instrumentation
- Industrial Maintenance: Mechanical
CONTREN LEARNING SERIES

- Instrumentation
- Insulating **
- Ironworking **
- Masonry
- Millwright
- Mobile Crane Operations
- Painting **
- Pipefitting **
- Piplayer
- Plumbing
- Reinforcing Ironwork
- Rigging Fundamentals
- Rigging
- Scaffolding *
- Sheet Metal
- Site Layout
- Sprinkler Fitting *
- Welding
CONTREN LEARNING SERIES

PIPELINE
- Gas Pipeline Operations
- Liquid Pipeline Field Operations
- Liquid Pipeline Control Center Operations
- Pipeline Corrosion Control
- Pipeline Electrical & Instrumentation
- Pipeline Maintenance
- Radiographic Testing of Pipeline Welds
- Pipeline Mechanical

SAFETY/MANAGEMENT
- Safety Orientation *
- Field Safety *
- Safety Technology
- Introductory Skills for the Crew Leader (available online)
- Project Supervision
- Project Management
Implementing short- & long-term Hispanic resources strategies

Retooling curricula and assessments for Hispanic workers

**Curriculum 2007**
- Field Safety (Seguridad de Campo)
- Sprinkler Fitting 1 (Instalación de Rociadores)
- Scaffold Building (Andamios)
- Carpentry Fundamentals
- Concrete Finishing
- Insulating 1

**Assessments 2007**
- Scaffold Builder
- Core Curriculum
- Concrete Finisher
- Industrial Insulator
- Rebar
- Masonry
- Industrial Pipefitting
En este módulo conocerás la forma en que Marcelo tuvo su primer contacto con la compañía de construcción, incluyendo su preparación para la entrevista y la información que recibió en su sesión de orientación dentro de la empresa.
2.0.0 Components of a Wall

- Key components of the wall system include the plates, studs, headers, sills, and partitions. Study the descriptions of these components in the text.

Note to Reader: You will need to refer frequently to Figure 1 during the discussion of wall systems.

- Walls require solid corners that can support the weight of the structure. The straightest, least defective studs are used for corners.
- One common method of making corners uses blocking between the corner studs.
LEVERAGING Technology with Traditional Training
Simulator Benefits

- Low risk - Safe Practice
- Evaluate operator skill & knowledge prior to employment or advancement
- Teach basic operation of systems & equipment
- Site configuration orientation
- Periodic re-training for new product, bad habit correction
- Less expensive
  - instructor hours
  - vehicle hours
  - lost production
  - Accidents
Simulator Benefits

- Can be used 24-hours a day
- Simulate any conditions, anytime:
  - Weather - Rain, Snow, Fog
  - Day/Night
  - Seasons
- Consistent presentation of material, regardless of
  - Location
  - Conditions
  - Instructor
  - Language
- Trouble Spots can be identified and trainee behavior corrected
Welding Simulation

- Increases the Number of Practice Passes
- Accelerates Learning
- Integrates with Existing Training Requirements
- Provides Objective Feedback
- Increases Safety
- Environmentally Friendly
| Secondary/vocational high schools and technical | Union Organizations |
| State DOE | State licensure |
| Post-secondary community and technical colleges | State and local workforce agencies (Gulf Coast particularly) |
| Career colleges | Gulf Coast Rebuild (I’M GREAT) |
| Corrections (Adult and Juvenile-state, federal and private) | Plant facilities |
| Industry Associations | Pipeline |
| Contractors | FFA |
| Job Corps & Youth Build | Military & Military Corrections |
| Owners | Leased Labor |
Overall Contren® Usage

53% of usage in Secondary and Post Secondary Education

- B&I
- Post-Secondary
- Secondary
- Gov't/Prisons
- Retail/Wholesale/Library/Internet

Year 2006:
- B&I: 39%
- Post-Secondary: 26%
- Secondary: 27%
- Gov't/Prisons: 6%
- Retail/Wholesale/Library/Internet: 2%

Year 2007:
- B&I: 39%
- Post-Secondary: 29%
- Secondary: 24%
- Gov't/Prisons: 6%
- Retail/Wholesale/Library/Internet: 2%
Continuously improve products and services to meet the needs of the industry and our customers.
Assessment vs. Training

**CRAFT ASSESSMENT**

- **EXPERIENCED CRAFTSPERSON**
  - Journey-level Assessment
  - Certified (Written)
    - Performance Verification
      - Certified - Plus

**CRAFT TRAINING**

- **ENTRY-LEVEL CRAFTSPERSON**
  - NCCER Core Curriculum
  - NCCER Craft Curricula
    - Certificate of Recognition

- Assessed Training: Prescribed
- Optional: Certificate of Recognition
# Assessment & Certification

**Score Report & Training Prescription**

63% Overall Score

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<th>Topic</th>
<th>Possible</th>
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<td>5</td>
<td>83</td>
<td>Pass</td>
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National Craft Assessment & Certification Program

Cumulative Program Total 292,478
Latest Craft Assessments Releases

**Industrial Pipefitting**
- 68% Cut Score
- 125-item exam
- 90-day swap out from date of release

**Industrial Carpenter**
- 75% Cut score
- 103-item exam
- 90-day swap out from date of release
## National Craft Assessments

<table>
<thead>
<tr>
<th>CRAFT</th>
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<tbody>
<tr>
<td>Industrial Electrician</td>
<td>Industrial Ironworker</td>
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<tr>
<td>Boilermaker Tech</td>
<td>Industrial Maint. Electrician</td>
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<tr>
<td>Carpentry Level One</td>
<td>Industrial Maint. Mechanic</td>
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<tr>
<td>Commercial Carpentry</td>
<td>Industrial Millwright</td>
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<tr>
<td>Concrete Finisher</td>
<td>Industrial Painter</td>
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<td>Construction Technology</td>
<td>Industrial Pipefitter</td>
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<td>Electrical Level One</td>
<td>Instrument Fitter</td>
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<td>Electronic Systems Tech. (EST)</td>
<td>Instrumentation Tech</td>
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<td>Finish Carpentry</td>
<td>Masonry Level One</td>
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<td>Form Carpentry</td>
<td>Mobile Crane Operator</td>
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<tr>
<td>Frame Carpentry</td>
<td>Reinforcing Iron-Rebar</td>
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<tr>
<td>Commercial Electrician</td>
<td>Rigging</td>
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<td>Core: Intro Craft Skills</td>
<td>Rigging Fundamentals</td>
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<td>HVAC</td>
<td>Scaffold Builder</td>
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<td>Heavy Equip. Operator Level One</td>
<td>Industrial Insulator</td>
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<tr>
<td>Industrial Carpentry</td>
<td>Boilermaker</td>
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National Pipeline Assessments

PIPEDLINE
Abnormal Operating Conditions - General
Abnormal Operating Conditions - Control Center
Abnormal Operating Conditions - Gas
Corrosion Prevention Field Technician 1 - Installation
Corrosion Prevention Field Technician 1 - Measurement
Corrosion Prevention Field Technician 2
Corrosion Prevention Field Technician 3
Electrical & Instrumentation Pipeline Technician
Field & Control Center Operation Technician
Gas Pipeline Operations
Gas Maintenance Specialty
Mechanical Pipeline Technician
NDT - Radiographic Film Interpretation of Pipeline Welds
Pipeline Maintenance Technician
Crane Operator Certification

Written Exam Categories

1. Industrial/All Purpose Crane
2. Boom Truck (Telescopic & Articulating Boom)
3. Hydraulic (Rough Terrain/All Terrain)
4. Lattice Boom (Crawler and Truck Mount)
<table>
<thead>
<tr>
<th>No.</th>
<th>Category</th>
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<tbody>
<tr>
<td>1.</td>
<td>Industrial/All Purpose Telescopic Boom Cranes</td>
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<td>2.</td>
<td>Crawler Mount Telescopic Boom Cranes</td>
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<td>3.</td>
<td>Telescoping Boom Truck – Fixed Control Station</td>
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<td>4.</td>
<td>Telescoping Boom Truck – Rotating Control Station</td>
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<td>5.</td>
<td>Articulating Boom Truck – Fixed Control Station</td>
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<td>6.</td>
<td>Articulating Boom Truck – Rotating Control Station</td>
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<td>7.</td>
<td>Rough Terrain/All Terrain Fixed Cab Telescopic Boom Cranes –</td>
<td>Single Control Station</td>
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<td>8.</td>
<td>Rough Terrain/All Terrain Rotating Cab Telescopic Boom Cranes –</td>
<td>Single Control Station</td>
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<td>Truck Crane/All Terrain Telescopic Boom Cranes –</td>
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<td>Lattice Boom Crane – Crawler Mount (Friction Machinery)</td>
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<td>11.</td>
<td>Lattice Boom Crane – Crawler Mount (Hydraulic Machinery)</td>
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<td>12.</td>
<td>Lattice Boom Crane – Truck Mount (Friction Machinery)</td>
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<td>13.</td>
<td>Lattice Boom Crane – Truck Mount (Hydraulic Machinery)</td>
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NCCER Management Programs

- Introduction to Crew Leader Web-based Program
- Clemson University Programs:
  - Project Supervisors Academy
  - Project Managers Academy
  - Safety Managers Academy
  - NAWIC Leadership Academy
  - Masters Degree Program
- Pima Community College Craft Training for College Credit
National Registry

Industry Recognized Credentials
National Registry

In an effort to provide students and craft professionals with industry-recognized credentials and assure national portability of skills, NCCEER maintains a National Registry. The National Registry provides transcripts, certificates of completion, and wallet cards when training is delivered through an NCCEER Accredited Sponsor. These valuable industry credentials benefit students as they seek employment and build their careers.
Automated National Credentials

NCCER Automated National Registry

INDIVIDUALS
Sign in to review your training history online

SPONSORS
Sign into the ANR to view and submit training records

VIRTUAL WALLET CARD™
See what’s on someone’s Virtual Wallet Card™

Frequently Asked Questions
Build Your Future campaign

Linking industry to education

- Careers in Construction Week
  - October 15-19, 2007

38 State Proclamations in 2007
Educational Outreach & Recruiting

CAREERS in CONSTRUCTION

Build Your Future DVD inside!
Career Center Homepage
In partnership with
McGraw-Hill Construction

Job Seekers Register Today

Real People | Real Projects | Construction
Choose Construction

Initiative

A National Approach to Construction Workforce Development

Pending
Who is the competition for new workers?

Other high growth industries, including

• Nursing
• Automotive
• Manufacturing
• Hospitality
• Services and retail
Pre-Qualification Verification

Company Information

Craft Employee Training Questionnaire
Enter your company's name and contact information. Please provide all requested information.
Your responses will be evaluated and used as one of several criteria to determine your qualification to participate in the bidding process.

Date of Submission
Company Name
Company Address
Contact Information
Contact Email
Company Phone/Fax

Construction Labor: Craft Employee Training Evaluation Tool

T-404
September 2006
Craft Training in the US and Canada

Presented to: CII Annual Conference,
CURT Annual Conference, AGC Education Conference,
NPRA Workforce Conference, AGC Convention,
# 1% of Labor Cost Investment

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<th>Average Improvement</th>
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<td>Capital Project</td>
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<tr>
<td>Productivity Improvement</td>
<td>11%</td>
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<tr>
<td>Turnover Cost Decrease</td>
<td>14%</td>
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<tr>
<td>Absenteeism Decrease</td>
<td>15%</td>
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<tr>
<td>Injury Decrease</td>
<td>26%</td>
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<tr>
<td>Rework Decrease</td>
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## The Project’s Business Case

Based on a Typical Industrial Project and Industry Survey Data…

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<th>Benefit</th>
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<td>Estimated Productivity Improvement</td>
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<tr>
<td>Estimated Turnover Reduction</td>
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<td>Estimated Absenteeism Reduction</td>
<td>$74,871</td>
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<td>Estimated Injury Reduction</td>
<td>$66,940</td>
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<tr>
<td>Estimated Rework Reduction</td>
<td>$25,377</td>
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<tr>
<td><strong>Total Benefits</strong></td>
<td><strong>$521,595</strong></td>
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<tr>
<td><strong>Training Cost (1% Labor Cost)</strong></td>
<td><strong>$230,296</strong></td>
</tr>
<tr>
<td><strong>Benefit Cost (B/C) Ratio</strong></td>
<td><strong>2.3</strong></td>
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</table>
The National Center for Construction Education and Research (NCCER) is a not-for-profit education foundation created to help address the critical workforce shortage facing the construction industry and to develop industry-driven standardized craft training programs with portable credentials.

**Our Mission** is to build a safe, productive, and sustainable workforce of craft professionals.

Affiliated with the University of Florida.
THANK YOU

Questions?

For additional information on NCCER contact

1-888-NCCER20
www.nccer.org
NCCER Funding

- Royalties from Contren Product Sales
- Commission from Assessment Sales
- Academy & Master Trainer Programs
- Other Income - Donations, Manufacturer Sponsorships, etc.
- National Training Service Agreements (15 cent/effort-hour) and General 2-cent Contributions
- Interest from Restricted Endowment