

# DEPARTMENT OF CONSTRUCTION SCIENCE

## TEXAS A&M UNIVERSITY



### STRATEGIC PLAN

#### 1999-2005

#### **PREAMBLE**

Construction Science is an emerging field. Today, construction accounts for 8-9 percent of the nations GDP and employs about seven million workers. Historically, construction managers were trained "on-the-job". Good engineers and architects became good project managers, good businessmen, and good leaders through trial and error. In the past, formal construction management training was available almost as an afterthought in engineering and architectural schools. Construction Science programs that have sprung up in other universities around the nation in the last ten years are an acknowledgement that formal education is essential to produce excellent construction managers and future leaders in the construction industry, one of the largest industries in the nation.

The Department of Construction Science at Texas A&M University, which celebrated its 50th anniversary in 1995, has long been known as one of the best programs of its kind in the world. It is THE LARGEST in terms of student population, the number of graduates produced, and the number of faculty. It can become, without question, THE BEST Construction Science program in the world if this Strategic Plan is implemented successfully.

The Department's Strategic Plan is to provide purpose and direction for all actions of the Department. It sets priorities and provides a common vision that every member of the Department should consider in their day-to-day activities.

This Strategic Plan is an update of a previous Strategic Plans completed in 1996 and updated in 1999. The 2001 plan was created over a period of months with every faculty member participating. Industry comment was sought and accommodated. It represents a consensus, in some cases a compromise, that the Department collectively endorses. Without this consensus the Strategic Plan is worthless.

The Plan is just a plan -- not an inviolate set of rules and procedures. It will be re-examined from time to time. Current thinking is that a formal, all-inclusive re-evaluation will occur every three years.

Many Strategic Plans fail because of poor implementation. The Department has launched aggressive, disciplined implementation plans, realizing that future success can't just happen.

## STATEMENT OF PURPOSE

The Construction Science Department's primary mission is to prepare undergraduates and graduate students for successful careers in construction and construction-related industries.

To accomplish this mission the Department must create an environment conducive to academic excellence that is responsive to the needs of the construction industry. Not only must faculty be excellent teachers, they must also be in search of new knowledge that defines the body of knowledge of construction science and advances the state-of-the-art in the industry.

The Department will function as a cohesive faculty-team to perform those service tasks essential to the operations of the Department and to enhance and promote the image of the Department, the College, the University and the global construction industry.

Building on the culture of its unique heritage, the Department will become the premier Construction Science program in the world -- foremost in teaching, in research, and in service.

## VALUES

The Department places great value on:

- o **Excellence in teaching** that insures that QUALITY CRITERIA FOR OUR GRADUATES (see page 5) is achieved.
- o **Producing graduates** whose broad educational experience will **elevate the level of professionalism** of the construction industry, commensurate to other recognized professions.
- o **Generating new knowledge** to expand the body of knowledge of construction science and to advance the profession of construction management.
- o **Working together as a team** so staff and faculty experience a collegial atmosphere, where **open and frequent communication** is the norm and where diverse opinions are encouraged and considered.
- o Maintaining the Department's reputation for fostering a **"student friendly" environment**, responsive to student's needs and concerns, where students are encouraged to interact with staff and faculty.
- o Improving the Department's **relationships with industry** on a continuing basis.
- o **Strengthening student chapters** of professional organizations. These student chapters offer leadership opportunities, foster team activities, encourage service endeavors and provide an invaluable supplement to traditional academic programs.
- o **Professional certification** as proposed by the American Institute of Constructors, for both students and professionals. Certification can provide validation of construction management as a profession and improve the image of the industry.
- o **Honors courses** that challenge students and faculty and an "Honors Track" that affords exceptional students the opportunity to earn University Honors.
- o **Interdisciplinary team activity** by students and faculty, because the success of interdisciplinary teams is increasingly important to the construction industry.
- o **Improving construction operations and processes through the application of emerging technology.** Technology offers the opportunity for expanded outreach through the medium of distance education. Visualization of construction processes by computer can enable the industry to simulate the construction of a facility before construction actually begins.

## QUALITY CRITERIA FOR OUR GRADUATES

The Department of Construction Science must produce graduates who have:

Technical and Management Skills:

- o The ability to apply the knowledge of mathematics, the physical sciences, construction science and business fundamentals to **manage the construction process.**
- o The ability to recognize, rationalize and **solve construction problems.**
- o The ability to **communicate** effectively.

- o A comprehensive knowledge of, and an appreciation of the power of **information management and communication systems**.
- o An understanding of, and appreciation for the need to function within an established hierarchy, coupled with an **inquiring mind** and a willingness to **challenge the status quo**. A disposition to **discover, investigate and push the state-of-the-art**.

People Skills:

- o An appreciation of the need for, and the power of **multi-disciplinary teams**, and the ability to function as a member of a multi-disciplinary team.
- o A recognition and understanding of the **human dimension** of the construction profession and a commitment to fair, responsible management of individuals.

A Personal Commitment:

- o A personal **work ethic** that appreciates and embodies the industry's need for hard work, irregular hours, periodic relocation, and a "can-do" attitude.
- o A recognition that **change** is inevitable; and that change brings opportunity for improvement.

A Commitment to the Profession:

- o A broad education necessary to understand the **social impacts** of the construction process and a commitment to pursue responsible mitigation of potentially negative impacts.
- o An understanding of the **ethical standards** of the construction profession and a commitment to practice and promote those standards.
- o A recognition of the need for, and the commitment to pursue **professional recognition**, participation in **professional organizations**, and **life-long learning**.

A Commitment to Society:

- o A commitment to **service to humanity** as a moral imperative.
- o An appreciation of, and a willingness to promote **diversity** as a social imperative-diversity of ideas, opinions, and backgrounds.

## AREAS OF EMPHASIS

While the Department will be required to maintain a broad knowledge of construction industry issues in order to keep its academic programs current, there is recognition that the Department cannot acquire and maintain academic leadership in all issue areas. Therefore, the Department has elected to become a leading academic authority in the following areas:

- o Labor:
 

The industry predicts a severe shortage in skilled construction labor for the foreseeable future. The shortage is caused by a combination of factors - increasing demand, marginally competitive salaries, frequent dislocation, and image. Working with the professional societies and the industry, the Department will emphasize research and service to address this issue.
- o Construction Delivery Strategies:
 

Strategies for delivering construction projects are changing from traditional "design-bid-build" scenarios to more complex design-build, design-build-finance-operate, and public private partnership delivery strategies. These evolving strategies transfer risk to the contractor. The Department will track these evolving strategies and develop "expert knowledge" in the area.
- o Accommodating the global trends of the industry:
 

The construction industry is becoming a global industry. Many large international firms are acquiring U.S. construction firms or are otherwise creating a presence in the U.S. Conversely, some large U.S. construction firms are multinational and are seeking to expand their business outside the U.S. The Department needs to exploit this trend and to prepare its students for service in tomorrow's global industry.
- o Continuing Education:

The Department has a modest program of Continuing Education offerings. The Department will seek to expand these offerings to assist the industry with its most crucial needs.

- o Distance Education:

Student-centered distance education is rapidly emerging as a supplement, and in some cases, a viable alternative to the traditional university classroom. There is a perceived need to offer courses either partially [web-assisted] or completely [web-based] utilizing distance learning technologies. The Department will play a leadership role in this area.

- o Technology:

The application of technology to enhance construction education, construction management and construction visualization.

## VISION

- o The Department will be the premier academic program of Construction Science in the world.
- o The Department will be recognized both nationally and internationally for its excellence in its chosen Area of Emphasis -

## GOALS

### By the year 2003 :

The undergraduate program will:

- o Be stabilized at 600 students, graduating 150 students each year;
- o Have an "HonorsTrack";
- o Graduate at least 50% of its students with a Business Minor;
- o Require the Certified Professional Constructor Level I examination of all graduates with a pass rate of at least 80%;
- o Have a required internship of at least 750 hours duration.

The graduate program will:

- o Have 60 MSCM students, graduating 30 students annually;
- o Have an approved PhD in Construction Science, with 12 PhD candidates enrolled;
- o Have all "leveling courses" offered only on-line

The Department will have achieved fundraising goals as follows:

- o Identified potential donors for a program endowment [target \$5 million, a naming opportunity for the "School of Construction Science"];
- o Identified potential donors for a new building to house the Department of Construction Science [target \$5 million, a naming opportunity];
- o Acquired funding for a second endowed chair;
- o Acquired funding for additional endowed professorships to reach a combined corpus of \$1,000,000;
- o Acquired funding for additional endowed scholarships and fellowships to reach a combined corpus of \$2,000,000

The Department will accomplish research goals as follows:

- o The Department faculty will be awarded research grants totaling \$300,000 annually;
- o The Department tenured and tenure-track faculty will average two scholarly publications and two scholarly presentations annually

The Department will accomplish the following in the area of Continuing Education:

- o The Center for Construction Education [CCE] will be a strong component of the Department's industry outreach, generating \$500,000 in annual gross income;

- o The CCE will be providing required CEUs for Level I and Level II certification through the American Institute of Constructors.
- o The Department will have at least three international faculty, at least three courses in international construction issues, and international student and faculty exchange programs. Construction Science students will participate in Study Abroad programs and international internship and cooperative education opportunities will be established.

The Department will have achieved the following diversity goals:

- o Female students will constitute 20% of the student population;
- o Participation by minority students will be at least equal to corresponding percentages for the University;
- o Faculty diversity will be improved by 50%.

The Department will have enhanced its commitment to the State and the construction profession by:

- o Enjoying the participation of 100 PARTNER CORPORATIONS as members of the Construction Industry Advisory Council[CIAC],
- o Having 500 individual members of the CIAC,
- o Being a leading provider of continuing education courses as provided above,
- o Producing more Associate Constructors [i.e., pass the Level I certification exam] than any program of construction higher education in the nation

By the year 2005:

- o The Department will have enhanced its reputation as the premier academic program of Construction Science in the world.
- o The Department will have enhanced its national and international reputation in its selected Areas of Emphasis.
- o The Department will reside in its own facility, will enjoy a significant program endowment, and may be known as School of Construction Science, named for a significant donor.
- o The Center for Construction Education Research will be well established. Annual outreach funding will have reached \$1 million.
- o The Department will have 75 graduate students, including 15 Ph.D. candidates with an emphasis in construction.
- o The Department will have 600 undergraduate students.
- o The Department will have enhanced its reputation for excellence in global issues.