<table>
<thead>
<tr>
<th>UNCLASSIFIED</th>
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<tr>
<td>DATE PRINTED</td>
<td>45-80</td>
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</tbody>
</table>
DIRECTORY OF CONSTRUCTION ENGINEERING PROGRAMS

IN

ORGANIZATION AND MANAGEMENT OF CONSTRUCTION

PREPARED BY

CIB W-65 Commission

ON

Organization and Management of Construction

DEPARTMENT OF THE ARMY

Construction Engineering Research Laboratory

Champaign, Illinois USA

Approved for public release; distribution unlimited.
This first edition of a directory of education programs in engineering and management covers 20 programs in 11 countries. CIB Working Commission 65, Organization and Management of Construction, plans to update the directory periodically.
The Working Commission W-65, Organization and Management of Construction, (OMC) consists of experts who are addressing research contained in the terms of reference which reads in part: "To develop effectiveness calculations and techniques for evaluating singularly and collectively various organizational forms utilized in the planning, architecture, engineering, construction and for industrialized construction." A major aspect of the program is to effect the transfer of the research into professional practice; a vital mechanism in this transfer are the educational programs in engineering and management.

To facilitate the interchange among experts in education for OMC the Commission recommended the publication of a directory of education programs. This is the first edition of the directory. W-65 intends to update this directory on a regular basis. Information on additional educational programs is welcomed; it should be forwarded to Dr. V. Handa of the Waterloo Construction Council, University of Waterloo, Waterloo, Ontario, CANADA N2L 3GI. Additional copies of the directory are available at a modest charge from the National Technical Information Service (NTIS), Springfield, VA 22151, USA.

Information on W-65 can be obtained by contacting undersigned at the US Army Construction Engineering Research Laboratory, P. O. Box 4005, Champaign, IL 61820, USA. Information on CIB can be obtained by contacting Secretary General, CIB, Postbus 20704, Weena 704, Rotterdam, HOLLAND.

25 April 1980
Champaign, Illinois, USA

L. R. SHAFFER
Coordinator, W-65
March 19, 1980

CIB - Working Commission 65 - Organization and Management of Construction

CONSTRUCTION EDUCATION SURVEY - March 1980

There were 20 replies to the questionnaire sent out in April/May 1979. Three were from the Republic of South Africa, three from Asia - Turkey (2) and Israel, one from Australia, eight from North America - USA (5), Canada (3) and five from Europe - England, Holland, Germany, Switzerland and Denmark. On the basis of the responses it can be seen that the earliest undergraduate programme was established in 1930 at Munich with Florida (1935) closely behind. A fair number of the graduate programmes were established between the late sixties and the early seventies. Most of the research is supported either by government or other means. Industry support for scholarships (6 responses) is better than for research. Their support for administration is 100% in South Africa and in varying amounts elsewhere (3 indicated no direct industry support). Nearly all responses indicated industry liaison and the participation of industry speakers and visitors in their programme, indicating an attempt at keeping the programmes en current. It is something that should be encouraged and probably expanded. The academic curriculum appears to be somewhat similar if liberal allowance is made for interpreting course titles. A lot of the research appears to be concentrated on management and organizational control techniques, indicating that the problems are the same across the different parts of the world.

My appreciation and thanks to all the respondees for their effort in this first venture at establishing some sort of a base for interchange amongst the construction academic fraternity.

V.K. Handa, Professor
Department of Civil Engineering
University of Waterloo
Waterloo, Ontario N2L 3G1
Canada

VKH:pl
At the request of the educators attending the 2nd CIB Symposium on Construction Organization and Management held in Haifa last November, the W-65 Commission undertook to act as a clearing house to gather, collate and DISSEMINATE information on construction education and training programmes. The University of Waterloo Construction Programme has agreed to act as the co-ordinator in this effort.

This is to request your co-operation in this venture. In order to avoid any misinterpretation of information no editing will be done at Waterloo. To expedite matters and minimize effort on your report, the response is limited to one page. Your help in answering the questionnaire will be most appreciated.

Dr. L.R. Shaffer, Co-ordinator of the W-65 Commission, has kindly agreed to disseminate the information to all the respondees after its processing at Waterloo.

Please type or print your response in black ink, as the forms will be reduced and reproduced for distribution. Return the completed questionnaire to:

Prof. V.K. Honda
Department of Civil Engineering
University of Waterloo
Waterloo, Ontario N2L 3G1
Canada

Please forward the extra copies enclosed to other institutions who have construction programmes in your area. The following have already been requested directly by us.
April 5, 1979

Name of Institution: University of Waterloo

Faculty, School: Department of Civil Engineering, Construction Management Group
Address: Waterloo, Ontario Canada N2L 3G1

Name, Title of Contact: Dr. V. K. Honda, P.Eng.

Programme/s offered

<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D.</th>
<th>Diploma</th>
<th>Certificate</th>
<th>Part of Other Programme</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year Programme Established</td>
<td>1977</td>
<td>1971</td>
<td>1961</td>
<td>/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration (years) - length of Programme</td>
<td>12 months</td>
<td>8 months</td>
<td>one course</td>
<td>senior year</td>
<td>undergraduate</td>
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<tr>
<td>Available student nos:</td>
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<td></td>
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<tr>
<td>Full-time</td>
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<tr>
<td>Other (specify)</td>
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<tr>
<td>National Foreign</td>
<td>10</td>
<td>2</td>
<td></td>
<td></td>
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<td>Admission Requirements:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Undergraduate Honours</td>
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<td></td>
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</tr>
<tr>
<td>Course Requirements - list of courses needed &amp; thesis/project</td>
<td>8 + project</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scholarship, Bursary, etc. available</td>
<td>Yes - varying amounts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Language of Instruction:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Total Numbers of Students Graduated</td>
<td>National 68</td>
<td>Foreign 3</td>
<td></td>
<td></td>
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<tr>
<td>Administration</td>
<td>Scholarship</td>
<td>Research</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>(Indicate %) Government</td>
<td>100%</td>
<td>100%</td>
<td>8</td>
<td></td>
<td></td>
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<tr>
<td>Industry</td>
<td>100%</td>
<td>x</td>
<td></td>
<td></td>
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<tr>
<td>Other (specify)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Staff Numbers: Totals</td>
<td>Faculty Full Time (3)</td>
<td>Part Time (3)</td>
<td>Industry, Instructors, Speakers (29)</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>(Indicate #)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Industry Input</td>
<td>Financial Administrative (x)</td>
<td>Curriculum Development (x)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Please tick)</td>
<td>Scholarship, Bursary, etc. (x)</td>
<td>Overseeing Body Industry Liaison (x)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course, Title, Description</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicate Text Title (if any)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Labour Relations in the Construction Industry Publication # 142 below


Educational Programme Objectives:

Provide a vehicle by which the performance of the Construction Industry is improved. The objectives are to 1) transform existing management techniques through research in order that they can be applied to construction and 2) educate professionals on the application of these techniques towards resolving the unique problems of construction:

Research Organization (Applied) (x) Engineering (Hard) (x)
(Please tick)

Research Funding:

(Indicate source & amount (US $) National Research Council, Industry Contracts 8000 - 10,000 per year 3000 - 4000)

Describe Nature/objectives of Research:

Organization, Management, some operations research techniques, labour relations, safety. Attempts being made to increase direct input from industry with respect to research objectives and needs.

Research Facilities:

(Describe briefly if any)

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

1. Allen, P. M. and Eyers, M. H., Labour Relations for Construction Employers in Ontario 1972, ($5.00) + postage and handling
2. Allen, P. M., A Study Guide to Employee Relations 1973 ($3.00)
3. Campbell, D. H., Construction Equipment Management, 1974 ($5.00)
4. Campbell, D. H., Craning Principles, 1974 ($5.00)
5. Equity in Construction Contracts and Claims, Proceedings of Seminar May 1976 ($8.00)

(x) Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow on procedures for submission).
Name of institution: Bradley University

Programme(s) offered: Bachelor, Master, Ph.D., Diploma, Certificate

Programme Specify: Department of Construction

Year Programme Established: Ca. 1958
Duration (years) - length of Programme: 4 yrs.

Availability (indicate current student not) Part-time: 4
Full-time: 130
Other (specify) --

National: 127
Foreign: 3

Admission Requirements:
High School graduate, ACT composite 20min, SAT 975 combined (min). See University catalog for details.

Course Requirements - list of Minima: Construction 50 sem hrs., Management 14 sem hrs., courses needed & thesis/project Math/Science 24 sem hrs., Humanities/Social Science 23 sem hrs.; electives to add to 124 sem hrs. minimum

Scholarship, Fellowship, Bursaries, etc. available: Limited; administered by Financial Aides Office

Language of instruction: English

Total Numbers of Students Graduated since National: 335
          Foreign: 2
          1966

Funding:
Government (Indicate %) --
Industry (Indicate %) --
Other (specify) --

Staff Numbers: Totals
Faculty: Full Time (4)
Part time (1)
Industry, Instructors, Speakers ( )

Industry Input (Please tick)
Financial Administrative ( )
Curriculum Development (x)
Scholarship, Bursaries, etc. (x)
Overseeing Body Industry Liaison (x)

Course Titles, Descriptions
Indicate Text Title (if any)
1. See attached lists. Insufficient room provided to describe all construction course plus other course requirements for a BS degree.
2. (continued)

Educational Programme Objectives: To provide the basic (BS) professional degree for the Construction. To this end the curriculum provides the balanced cultural, technical, managerial and professional foundation necessary for a career and for further individual development.

Research: None (x)
Organizational (Applied) ( )
Engineering (Hard) ( )

Research Funding:
(Indicate source & amount (US $) None

Describe Nature/objectives of Research: None

Research Facilities:
(Describe briefly if any)

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print):
Adrian, James J., Quantitative Methods in Construction Management, Elsevier, 1973
Adrian, James J., Construction Accounting, Reston, 1979

( ) Please check if interested in having above listed in National Technical Information Service for world-wide distribution. (Separate instructions will follow on procedures for submission).
**BRADLEY UNIVERSITY**  
**College of Engineering and Technology**  
**CONSTRUCTION CURRICULUM (Typical)**

**Freshman Year**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON 100 Introduction to Construction</td>
<td>2</td>
</tr>
<tr>
<td>*EET 101 Composition and Rhetoric</td>
<td>3</td>
</tr>
<tr>
<td>MTH 121 Unified Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>PSY 103 Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Approved Humanities or Social Science Elective</td>
<td>13</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>CON 132 Construction Graphics</td>
<td>3</td>
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<tr>
<td>*SPT 103 Basic Speech</td>
<td>3</td>
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<tr>
<td>ECO 100 Economics</td>
<td>3</td>
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<tr>
<td>PHY 104 Foundations of Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>MTH 122 Unified Calculus II</td>
<td>6</td>
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</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
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</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
</tr>
<tr>
<td>CON 270 Materials and Methods of Construction I</td>
<td>3</td>
</tr>
<tr>
<td>CYE 206 Surveying</td>
<td>4</td>
</tr>
<tr>
<td>TSC 206 Statics</td>
<td>3</td>
</tr>
<tr>
<td>CNS 104 Introductory Fortran Programming</td>
<td>3</td>
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<tr>
<td>Approved Humanities or Social Science Elective</td>
<td>10</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
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<tbody>
<tr>
<td>CON 262 Mechanical and Electrical Systems for Buildings</td>
<td>3</td>
</tr>
<tr>
<td>CON 272 Materials and Methods of Construction II</td>
<td>3</td>
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<tr>
<td>TSC 207 Strength of Materials</td>
<td>4</td>
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<tr>
<td>Approved Construction, Management, Mathematics or Science Electives</td>
<td>6</td>
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</table>

*All-University requirement

10/77

**Junior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CON 342 Construction Equipment and Methods</td>
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</tr>
<tr>
<td>CON 563 Advanced Environmental Technologies in Construction</td>
<td>3</td>
</tr>
<tr>
<td>CON 372 Materials and Methods of Construction III</td>
<td>3</td>
</tr>
<tr>
<td>*EET 300 - Level Advanced Writing</td>
<td>3</td>
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<tr>
<td>Approved Management Elective</td>
<td>15</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
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<tbody>
<tr>
<td>CON 310 Construction History</td>
<td>3</td>
</tr>
<tr>
<td>CON 392 Construction Management</td>
<td>3</td>
</tr>
<tr>
<td>CYE 320 Introductory Soil Mechanics</td>
<td>2</td>
</tr>
<tr>
<td>Accounting (ATG 157 or ATG 300)</td>
<td>2-3</td>
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<tr>
<td>Approved Management Electives</td>
<td>6</td>
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</table>

**Senior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>CON 485 Structures I</td>
<td>4</td>
</tr>
<tr>
<td>CON 492 Construction Contracts</td>
<td>2</td>
</tr>
<tr>
<td>BMA 352 Business Management</td>
<td>3</td>
</tr>
<tr>
<td>Approved Construction, Management, Mathematics or Science Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>CON 400 Senior Seminar</td>
<td>2</td>
</tr>
<tr>
<td>CON 499 Structures II</td>
<td>4</td>
</tr>
<tr>
<td>CON 494 Construction Practice</td>
<td>3</td>
</tr>
<tr>
<td>CON 496 Construction Estimating</td>
<td>3</td>
</tr>
<tr>
<td>Approved Elective</td>
<td>15</td>
</tr>
</tbody>
</table>

Note: This typical program will be modified as necessary for those admitted with academic deficiencies; such students will be required to complete additional semester hours and time for completion.

Possible modifications in cooperation with other departments to meet special career needs:
1. Emphasis on Electrical Construction Management
2. Emphasis on Mechanical Construction Management
3. Emphasis on Heavy Construction

* All-University requirement

4/78
Educational Programme Objectives: To teach youngsters to think within the confines of the discipline of construction

Research
Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding
(Indicate source & amount (US $))

Describe Nature/objectives of Research
Teaching to us seems far more important

Research facilities
Describe briefly if any)

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

x) Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow on procedures for submission).

Name of Institution: University of Florida
Faculty/School: School of Building Construction
Address: Gainesville, Florida 32611 USA

Name, Title of Contact: Don A. Halperin, Director
Name, Title of Respondee: Same

Programme/s offered: Degree Degree Degree Non-deg. Non-deg. Part of Other:
Bachelor Master Ph.D. Diploma Certificate Programme Specify

Year Programme Established
Duration (years) + length of Programme

Availability (Indicate current student nos) Part-time
Full-time Equivalent = 35 25
Other (specify)

National
Foreign
Year

Admission Requirements: 2 yrs college for BACH.; "B" average + 1000 graduate record exam plus degree in Bus. Ad., Building Constr. Arch. or M.S.

Course Requirements - list of courses needed & thesis/project See attached sheets

Scholarship, Fellowship
Bursaries, etc. available
Scholarships, Teaching assistants

Language of Instruction: English

Total Numbers of Students Graduated
National 2300 Foreign 30

Funding: Government
(Indicate %) Industry
100 85
Other (specify)
15 (Alumni)

Staff Numbers: Totals
(Indicate %)
Faculty Full Time (1) Part Time (6) Industry, Instructors, Speakers &
Industry Input
(Indicate %)
Financial Administrative (1) Curriculum Development
(1)
Course, Titles, Descriptions
(Indicate Text Title if any)
See attached sheets

April 5, 1979

(continued)
<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Construction Techniques</td>
<td>3</td>
</tr>
<tr>
<td>Temporary Structures</td>
<td>3</td>
</tr>
<tr>
<td>Construction Methods Improvement</td>
<td>3</td>
</tr>
<tr>
<td>Survey of Construction Techniques</td>
<td>3</td>
</tr>
<tr>
<td>Construction Cost Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Labor Problems</td>
<td>3</td>
</tr>
<tr>
<td>Special Studies in Construction (Combined Structure)</td>
<td>3</td>
</tr>
<tr>
<td>Hi-Rise Construction</td>
<td>3</td>
</tr>
<tr>
<td>Construction Management</td>
<td>3</td>
</tr>
<tr>
<td>Human Factors in Construction</td>
<td>3</td>
</tr>
<tr>
<td>Advanced CPM</td>
<td>3</td>
</tr>
<tr>
<td>Construction Management Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Bidding Strategy</td>
<td>3</td>
</tr>
<tr>
<td>Earthwork</td>
<td>3</td>
</tr>
<tr>
<td>Philosophy of Structures</td>
<td>3</td>
</tr>
</tbody>
</table>

**Note:** This table likely represents a course catalog or a list of available courses at a university, specifically within the School of Building Construction at the University of Florida.
A Construction Management Programme is run annually at:
Name of Institution: UNIVERSITY OF CAPE TOWN
Faculty: School
Address: RONDBOSCH, CAPE, R.S.A.
Name, Title of Contact: MR. M.C. VORSTER
Name, Title of Respondent: CO-ORDINATOR

Programme's offered
<table>
<thead>
<tr>
<th>Degree</th>
<th>Degree</th>
<th>Degree</th>
<th>Non-deg.</th>
<th>Non-deg.</th>
<th>Part of Other</th>
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<tbody>
<tr>
<td>Bachelor</td>
<td>Master</td>
<td>Ph.D.</td>
<td>Diploma</td>
<td>Certificate</td>
<td>Programme Specify</td>
</tr>
</tbody>
</table>

Year Programme Established
Duration (years) - length of Programme
Availability (indicate current: student not Part-time Full-time Other (specify)
National Year
Foreign
Admission Requirements: GRADUATE WITH 5 YEARS PLUS MANAGEMENT EXPERIENCE.
Course Requirements - list of courses needed & thesis/project
Scholarship, fellowship
Bursaries, etc. available

Language of Instruction: ENGLISH
Total Numbers of Students Graduated
National 90 Foreign

Funding:
Government (indicate %)
Industry 100%
Other (specify)

Staff Numbers: Totals (indicate %)
Faculty Full time ( ) Part time ( ) Industry, Instructors, Speakers ( )
Industry Input (Please tick)

Financial Administrative ( ) Curriculum Development
Scholarship, Bursaries, etc. ( ) Overseeing Body Industry Liaison ( )

CONSTRUCTION MANAGEMENT COVERS:
1. OPERATIONAL ANALYSIS FOR WORK IMPROVEMENT
2. PROJECT PLANNING AND CONTROL

Educational Programme Objectives:
To provide professional management training to those with a purely technical background.
Research
Organizational (Applied) ( ) Engineering (Pure) ( )
(Please tick)
Research Funding
(Indicate source & amount (US $))
Describe Nature/objectives of Research

Research Facilities
(Describe facilities if any)

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

3. CONTRACT LAW AND INSURANCE.
4. THE HUMAN FACTOR.
5. MANAGEMENT ACCOUNTING AND FINANCE.
6. MEASUREMENT AND VALUATION.

(Continued)

4. CONTRACT LAW AND INSURANCE.
5. THE HUMAN FACTOR.
6. MEASUREMENT AND VALUATION.
<table>
<thead>
<tr>
<th>Programme/s offered</th>
<th>Degree</th>
<th>Degree</th>
<th>Degree</th>
<th>Non-deg.</th>
<th>Non-deg.</th>
<th>Port of Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bachelor</td>
<td>Master</td>
<td>Ph.D.</td>
<td>Diploma</td>
<td>Certificate</td>
<td>Programme Specify</td>
</tr>
</tbody>
</table>

**Year Programme Established**: 1976

**Duration (years) - length of Programme**: 6 WEEKS

**Availability (Indicate current student nos)**:
- Full-time: 55
- Part-time: 55
- Other (specify)

**National Year**: PRETORIA

**Foreign Year**: PRETORIA

**Admission Requirements**: Graduate with 4-5 years experience.

**Course Requirements - a list of courses needed & thesis project**:

**Scholarship, Fellowship**

**Bursaries, etc. available**

**Language of Instruction**: ENGLISH

**Total Numbers of Students Enrolled**:
- National: 66
- Foreign: 

<table>
<thead>
<tr>
<th>Funding</th>
<th>Government</th>
<th>Industry</th>
<th>Other (specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Staff Numbers**:
- Total Faculty Full Time: 1
- Total Faculty Part Time: 2
- Industry, Instructors, Speakers: 5

**Industry Input (Please tick)**:
- Financial Administration
- Administrative
- Curriculum Development
- Scholarship, Bursaries, etc.
- Overseeing Body Industry Liaison

**Course, Titles, Descriptions**:
- Construction Management Programme Covers:
  1. Financial Management
  2. Project Planning and Control

**Educational Programme Objectives**: To provide professional management training to those with a purely technical background.

**Research**
- Organizational (Applied): 0
- Engineering (Hard): 0

**Research Funding** (Indicate source & amount (US $))

**Describe Nature/objectives of Research**

**Research Facilities** (Describe briefly if any)

**Publications by Programme** - only those that can be purchased (do not list articles in publications or out of print)

- Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow on procedures for submission).
April 5, 1979

Name of Institution: CIVIL ENGINEERING INDUSTRY TRAINING BOARD

Faculty/School: PRIVATE BAG 1 GARDENVIEW 2047

Address: REPUBLIC OF SOUTH AFRICA

Name, Title of Contact: MR. R.G. SFAKIANOS

Name, Title of Respondent: DIRECTOR OF TRAINING

Programmes offered: Degree Degree Degree Non-deg. Non-deg. Part of Other: Bachelor Master Ph.D. Diploma Certificate Programme Specify

- Year Programme Established:
  1978

- Duration (years) - length of Programme:
  1 week

- Availability (Indicate current student nos):
  Part-time
  Full-time
  Other (specify) + 25 per course

- National
- Foreign Year

- Admission Requirements:
  CONSTRUCTION EXPERIENCE IN SITE MANAGEMENT LEVEL - BETWEEN 2 TO 5 YEARS.

- Course Requirements - list of courses needed & thesis/project

- Scholarship, Fellowship
  Bursaries, etc. available

- Language of Instruction
  National 170
  Foreign

- Total Numbers of Students Graduated

- Funding:
  Government
  Industry
  Other (specify)

- Staff Numbers: Totals
  Faculty Full Time ( ) Part Time ( ) Industry, Instructors, Speakers B
  (Indicate %)

- Industry Input
  Financial Administrative ( ) Curriculum Development
  Scholarship, Bursaries, etc ( ) Overseeing Body Industry Liaison ( )
  (Please tick)

- Course, Titles, Descriptions
  Indicate Text Title if any)

1. METHOD STUDY

2. PROJECT PLANNING & RESOURCE MANAGEMENT

(continued)

3. THE CONTRACT (LEGAL ASPECTS)

4. COSTING AND ACCOUNTING

5. EARTHSMOVING METHODS AND EQUIPMENT

Educational Programme Objectives:

Research
  Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding
  (Indicate source & amount (US$) -

Describe Nature/objectives of Research

Research Facilities
  (Describe briefly if any)

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

( ) Please check if interested in having above listed in National Technical Information Service for world wide distribution. (Separate instructions will follow on procedures for submitting).
Programme/s offered | Degree Bachelor | Degree Master | Degree Non-deg. | Degree Non-deg. | Part of Other: | Certificate | Programme Specify
--- | --- | --- | --- | --- | --- | --- | ---

Year Programme Established | 1945 |  |  |  |  |  |  |
Duration (years) - length of Programme |  |  |  |  |  |  |  |
Availability (Indicate current student nos) |  |  |  |  |  |  |  |
Part-time |  |  |  |  |  |  |  |
Full-time |  |  |  |  |  |  |  |
Other (specify) |  |  |  |  |  |  |  |

National Year | 75 PERCENT US |  |  |  |  |  |  |
Foreign | 25 PERCENT FOREIGN |  |  |  |  |  |  |

Admission Requirements | HIGH SCHOOL DIPLOMA OR EQUIVALENT |  |  |  |  |  |  |

Course Requirements - list of courses needed & thesis/project | 120 CREDITS INCLUDING THESIS REQUIRED |  |  |  |  |  |  |

Scholarship, Fellowship, Bursaries, etc. available | YES |  |  |  |  |  |  |

Language of Instruction | ENGLISH |  |  |  |  |  |  |

Total Numbers of Students Graduated |  |  |  |  |  |  |  |
National | 100 |  |  |  |  |  |  |
Foreign | 100 |  |  |  |  |  |  |

Funding: (Indicate %) | Government | 0% | 10% | 0% |  |  |  |
Industry | 0% | 10% | 0% |  |  |  |
Other (specify) | 100% | 0% | 0% |  |  |  |

Staff Numbers: Totals | Faculty Full Time (X) | 0% | 0% |  |  |  |  |
Industry, Instructors, Speakers (X) | 0% | 0% | 0% |  |  |  |

Industry Input | Financial Administrative (X) | Curriculum Development (X) |  |  |  |  |  |
(Please Tick) | Scholarship, Bursaries, etc. | Overseeing Body, Industry Liaison ( ) |  |  |  |  |  |

Course Titles: Descriptions | SUBJECT AREAS FOR DEGREE PROGRAM |  |  |  |  |  |  |
(Indicate Text Title if any) | 1. CONSTRUCTION MANAGEMENT |  |  |  |  |  |  |
2. CONSTRUCTION THEORY |  |  |  |  |  |  |  |

Educational Programme Objectives: To provide a liberal and professional education to students seeking a management career in construction from the concept stage through to completion of construction.

Research Organizational (Applied) (X) Engineering (Hard) ( ) (Please Tick)

Research Funding (Indicate source & amount (US $)) | 0 |

Describe Nature/objectives of Research |

Research Facilities (Describe briefly if any) |

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print) |

☑ Please check if interested in having above listed in National Technical Information Service for world wide distribution. (Separate instructions will follow on procedures for submission).
Name of Institution: Massachusetts Institute of Technology
Faculty/School: Dept. of Civil Engineering, Room 1-253
Address: Cambridge, MA 02139

Name, Title of Contact: Robert D. Loecher
Title of Respondent: Professor of Civil Engineering

Programme(s) offered:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D.</th>
<th>Diploma</th>
<th>Certificate</th>
<th>Programme Specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration (years) - length of Programme: 4 1 3-5 2-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability (Indicate current student enrollment)</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Part-time</td>
<td>Full-time</td>
<td>30</td>
<td>4</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>30</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify)</td>
<td>National</td>
<td>Year</td>
<td>1978-79</td>
<td>6</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Foreign</td>
<td>Year</td>
<td>1978-79</td>
<td>6</td>
<td>19</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Admissions Requirements</td>
<td>(See attached)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Requirements - list of courses needed &amp; thesis/project</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scholarship, Fellowship, etc. available: Rarely available, graduate assistantships support about 35% of graduate students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Language of Instruction: English

Total Numbers of Students Graduated

<table>
<thead>
<tr>
<th>Total Numbers of Students Graduated</th>
<th>National</th>
<th>Foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>Scholarship</td>
<td>Research</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>95</td>
</tr>
<tr>
<td>Industry</td>
<td>Government</td>
<td>0</td>
</tr>
<tr>
<td>Other (specify)</td>
<td>Faculty</td>
<td>Full Time</td>
</tr>
<tr>
<td>Staff Numbers: Total</td>
<td>Faculty</td>
<td>Full Time D's</td>
</tr>
<tr>
<td>Industry Input</td>
<td>Financial Administration</td>
<td>Curriculum Development</td>
</tr>
<tr>
<td>(Please tick)</td>
<td>Scholarship, Bursaries, etc.</td>
<td>Overseeing Body Industry Liaison</td>
</tr>
</tbody>
</table>

Course, Titles, Descriptions: All Graduate Courses:

- Introduction to Project Management
- Construction of Buildings
- Project Organization and Control
- Modelling of Construction Processes I & II
- Resources & Markets in Construction
- Construction Labour Economics and Labour Relations
- Analysis in Real Estate Development
- Legal Problems in Construction
- Legal Regulation of the Building Process
- Seminar in Construction Engineering and Management
- Project and Company Organizations

Educational Programme Objectives:
- Treat entire development process
- Develop and introduce new techniques and approaches to technical problems and decision processes for design & construction processes
- Train new leaders to work for owners, designers & contractors

Research Organization(s) (Applied) U.S. Dept. of Transportation $240,000
Engineering (Mond) ( )

Research Funding | U.S. Dept. of Transportation | $240,000 |
| Jewish Agency for Israel | 150,000 |
| U.S. Dept. of Labor | 21,000 |
| U.S. Dept. of N.E.D. | 261,000 |

Describe Nature/objectives of Research

Research Facilities (Describe briefly if any) Extensive materials, soils and rock mechanics laboratories Extensive computational facilities, including interactive graphics.

Publications by Programme - only those COST 77-002: A Cost Modeling System-User's Manual, R77-15 that can be purchased (do not list articles Analyse of Component Interfaces and Effect on in publications or out of print)
- Summary Report-Project for Innovation and Improvement in Housing, Jan. 1978.

( ) Please check if interested in having above listed in National Technical Information Service for world wide distribution. (Separate instructions will follow on procedures for submitting).
**Name of Institution:** University of Southern California

**Faculty/School:** Civil Engineering

**Address:**

**Name, Title of Contact:** Prof. E. L. Bidwell

**Name, Title of Respondent:** Ho-Lee

**Programme/s offered:** Bachelor, Master, Ph.D., Diploma, Certificate, Programme

<table>
<thead>
<tr>
<th>Degree</th>
<th>Degree</th>
<th>Non-deg.</th>
<th>Part of Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor</td>
<td>Master</td>
<td>Ph.D.</td>
<td>Diploma</td>
</tr>
</tbody>
</table>

**Year Programme Established:** 1970

**Duration (years) - Length of Programme:** 3 years

**Programme Available:**
- Full-time
- Part-time

**National Year:**
- 5
- 10

**Admission Requirements:** Bachelor's degree and undergraduate average in any construction related administrative, design or technical science.

**Course Requirements:**
- List of courses needed & thesis/project
- 30 units of course work beyond the bachelor's degree
- Scholarship, Fellowship
- Bursaries, etc. available

**Language of Instruction:** English

**Total Numbers of Students Graduated:**
- National 30
- Foreign 30

**Funding:**
- Government
- Industry
- Other (specify)

**Staff Numbers:**
- Faculty Full Time (1)
- Part Time (12)
- Industry, Instructors, Speakers (1)

**Industry Input:**
- Financial Administrative (1)
- Curriculum Development
- Scholarship, Bursaries, etc.

**Course, Titles, Descriptions:**
- Construction Contracting
- General Construction Estimating
- Construction Methods and Equipment
- Functions of the Contractor
- Construction Accounting and Finance
- Heavy Construction Estimating
- Building Design Processes

**Educational Programme Objectives:**
- To educate engineers for responsible careers in the construction industry

**Organizational (Applied) Engineering (Hard)**

**Research Funding:**
- Industry Source & Amount (US $)
- Other (specify)

**Describe Nature/objectives of Research:**
- Use of CR and Improvement Technique in Construction

**Research Facilities:**
- No special facilities

**Publications by Programme - only those that can be purchased (do not list articles in publications or out of print):**

Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow or procedures for submission.)

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**THIS PAGE IS BEST QUALITY PRACTICABLE FROM COPY FURNISHED TO DOG (continued)**
April 5, 1970

Name of Institution: Middle East Technical University
Faculty/School: Faculty of Engineering, Department of Civil Engineering, Division of Construction Strategy, Ankara, TURKEY
Name, Title of Contact: Dr. D. Artis, Asst. Prof. of Civil Eng., Head of the Division of Construction Strategy
Name, Title of Respondent: G...

Programme offered:
Degree Degree Degree Non-deg. Non-deg. Part of Other Bachelor Master Ph.D. Diploma Certificate Programme Specify

Year Programme Established: 1967
Duration (years) - length of Programme: 2 to 3.5
Availability (Indicate current student nos.): Full-time 1

National

Year
All nationals

Foreign

Admission Requirements: 2.67 Min. cumulative grade point average
Course Requirements - list of courses needed & thesis/project: All B.Sc. courses and projects
Scholarship, Fellowship, Bursaries, etc. available: Yes

Language of Instruction: English
Total Numbers of Students Graduated:
National 10 Foreign 1

Funding:
Government: 100 %
Industry: 90 %
Other (specify): 90 %

Staff Numbers: Totals (Indicate #s): Faculty Full Time (2) Part-time (1) Industry, Instructors, Speakers (2)

Industry Input (Please tick): Financial Administrative (X) Curriculum Development (X) Scholarship, Bursaries, etc(X) Overseeing Industry Liaison (X)

Course, Titles, Descriptions:
1. CE 231, Engineering Economy (At undergraduate level)

2. CE 432, Construction Engineering and Management (At undergraduate level)

3. CE 434, Construction Planning
4. CE 436, Forms and Scaffoldings for Reinforced Concrete Structures
5. CE 437, Construction Site Techniques
7. CE 541, Introduction to Tunnel Construction

Educational Programme Objectives: To produce Civil Engineers who are aware of the problems in the industry and who are well equipped for higher managerial posts.

Research Organizational (Applied): X Engineering (Hard): X

(Indicate source & amount (US $)): None

Describe Nature/objectives of Research: Research is of the "Applied" type. Research projects generally seeks a solution to a specific problem encountered at company level or industry level. The objective is to increase efficiency by the use of modern methods or adequate measures whenever problems arise.

Research Facilities (Describe briefly if any): None

Publications by Programme: only those that can be purchased (do not list articles in publications or out of print):
- The Application of Construction Planning, D. Sorgut, METU, 1975
- Laws and Contracts in Construction, D. Sorgut, METU, 1975

(5) Please check if interested in having above listed in National Technical Information Service for world wide distribution. (Separate instructions will follow or procedures for submission).
<table>
<thead>
<tr>
<th>Name of Institution</th>
<th>TECHNION - Israel Institute of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty/School</td>
<td>Faculty of Civil Engineering</td>
</tr>
<tr>
<td>Address</td>
<td>Technion City, Haifa 32-000, Israel</td>
</tr>
<tr>
<td>Name, Title of Contact</td>
<td>Division for Construction Management</td>
</tr>
<tr>
<td>Name, Title of Respondee</td>
<td>1. Prof. S. Pe'er</td>
</tr>
<tr>
<td></td>
<td>2. Prof. D. Armon</td>
</tr>
<tr>
<td>Programme/s offered</td>
<td>Bachelor, Master, Ph.D., Diploma, Certificate Programme Specif.</td>
</tr>
<tr>
<td>Year Programme Established</td>
<td>1970  1970  --  --  B.Sc</td>
</tr>
<tr>
<td>Duration (years) - length of Programme</td>
<td>2  3  --  --  in Civil Eng.</td>
</tr>
<tr>
<td>Availability (Indicate current student nos)</td>
<td>Full-time 20  5  --  --  ---</td>
</tr>
<tr>
<td></td>
<td>Other (specify)  ---  ---  100  ---  ---</td>
</tr>
<tr>
<td>National Year</td>
<td>Nat.  Nat.</td>
</tr>
<tr>
<td>Foreign Year</td>
<td>B.Sc  M.Sc.</td>
</tr>
<tr>
<td>Admission Requirements</td>
<td>B.Sc  M.Sc.</td>
</tr>
<tr>
<td>Course Requirements - list of courses needed &amp; thesis/project</td>
<td>10 + 3 + thesis  thesis  3 - 8</td>
</tr>
<tr>
<td>Scholarship, Fellowship</td>
<td>yes  yes  yes</td>
</tr>
<tr>
<td>Bursaries, etc. available</td>
<td>yes  yes  yes</td>
</tr>
<tr>
<td>Language of Instruction</td>
<td>Hebrew</td>
</tr>
<tr>
<td>Total Numbers of Students Graduated</td>
<td>National 40  Foreign --</td>
</tr>
<tr>
<td>Funding: Government (Indicate %)</td>
<td>Administration  No separate funding</td>
</tr>
<tr>
<td></td>
<td>Industry  Other (specify)</td>
</tr>
<tr>
<td>Staff Numbers: Totals (Indicate 4s)</td>
<td>Faculty Full Time: 4</td>
</tr>
<tr>
<td>Industry Input (Please tick)</td>
<td>Financial Administrative  Curriculum Development</td>
</tr>
<tr>
<td>Course, Titles, Descriptions</td>
<td>1. Building Economy</td>
</tr>
<tr>
<td>Indicate Text Title (if any)</td>
<td>2. Cost estimating and control</td>
</tr>
</tbody>
</table>

Educational Programme Objectives:
Research Organizational (Applied)  Engineering (Hard)
( Please tick)
Research Funding (Indicate source & amount (US $)) approx. 20,000/- / year
Describe Nature/objectives of Research
Research Facilities All research facilities of the Technion
(Describe briefly if any)
Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

-2-

3. System analysis
4. Industrialized Building Systems
5. Building Law and Codes
6. Human Factors and Labour Relations

( ) Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow on procedures for submission).
April 5, 1979

Name of Institution: DELFT UNIVERSITY OF TECHNOLOGY
Faculty/School: DEPARTMENT OF CIVIL ENGINEERING, SECTION OF CONSTRUCTION AND MANAGEMENT
Address: STEVINweg 1, DELFT, HOLLAND

Name, Title of Contact: ir. D. W. Creven, M.Sc.
Name, Title of Respondent: same

Programmes offered: Degree Degree Degree Master Ph.D. Diploma Certificate Programme Specific

Year Programme Established: (Univ. of Tech. 1842) CONSTRUCTION & MANAGEMENT OPTION SINCE 1964.
Duration (years) - length of Programme: 8

Availability (Indicate current student nos.): Part-time 10, Full-time 80, Other (specify)
National: 86, Foreign: 4

Admission Requirements: GYMNASIUM 8 or ATEKEN 8 or equal

Course Requirements - list of courses needed & thesis/project: Dutch Bureaux for nationals
Scholarship, Fellowship: Bursaries, etc. available

Language of Instruction: Dutch

Total Numbers of Students Graduated: 25 National, 10 Foreign, AVERAGE per YEAR

Funding: Government 1002, Indicate % Industry - Other (specify) -

Staff Numbers: Total Faculty Full Time (3) Part Time (5) Industry, Instructors, Speakers (4)

Industry Input (Please tick): Financial Administrative (x) Curriculum Development (x)
Scholarship, Bursaries, etc. (x) Overseeing Body Industry Liaison (x)
Funding Thesis Project. (x) Joint research (x)

Successful Candidates may take
1. The organisation of the building process
2. Costing of Civil Engineering Projects
   Text: "The organisation van het bouwen"
   Text: "Kosten van bouwen"

(continued)

3. PROJECT ORGANISATION
   Text: "Project Organisatie"
4. FUNCTIONAL DESIGN OR FACILITIES
   Text: "Functioneel ontwerpen"
5. ENGINEERING DESIGNING METHODS
6. SYSTEM DYNAMICS
   Text: "System Dynamics"

Educational Programme Objectives: The construction option provides knowledge and working skills for the construction, organisation and management of building- and civil engineering projects.

Research: Organizational (Applied) (x) Engineering (Hard) (x)
(Describe briefly if any)

Research Funding: (Indicate source & amount (US $)) est. government funding of $ 90,000.- p.u.

Describe Nature/objectives of Research: 1) Planning of the building process
2) Construction company-designer integration
3) Pre design of industrial facilities
4) Computer aided civil engineering design

Research Facilities: 1) offices
2) co-usage of IBM 370-158

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print): Text books of courses, three 6 (in Dutch)

(1) Please check if interested in having above listed in National Technical Information Service for world wide distribution. (Separate instructions will follow on procedures for submission).
### Educational Programme Objectives

- Organizational Applied... Engineering hand...  

Research Funding

- University and govern. funds equivalent
- To abt. four qualified persons.

Describe Nature/objectives of Research

- Basic and applied research in the field of Construction Management

Research Facilities

- (Describe briefly if any)

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

```
1) Please check if interested in having above listed in National Technical Information Service for world-wide distribution. (Separate instructions will follow on procedures for submitting).
```
**April 5, 1979**

<table>
<thead>
<tr>
<th>Name of Institution</th>
<th>Chair of Construction Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty/School</td>
<td>Technical University of Istanbul</td>
</tr>
<tr>
<td>Address</td>
<td>Faculty of Civil Engineering</td>
</tr>
<tr>
<td>I.T.U., Ingent Yalutesi, Tepi Ilemeral Kuriuvi, Teshuvi</td>
<td></td>
</tr>
</tbody>
</table>

Name of Contact: See Title of Respondent
Name of Respondent: Prof. Dr., Ing. V. Dogan Sorguc

Programme Offered: Degree Degree Degree Non-deg. Non-deg. Part of Other:
Bachelor Master Ph.D. Diploma Certificate Programme Specify

<table>
<thead>
<tr>
<th>Year Programme Established</th>
<th>1977 Planned XX 1977 Planned XX</th>
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</thead>
<tbody>
<tr>
<td>Duration (years) - length of courses</td>
<td>3 Courses 1.5 Duration 1 year</td>
</tr>
<tr>
<td>Programme in C.E. years depends on education thesis.</td>
<td></td>
</tr>
<tr>
<td>Availability (Indicate current student nos.)</td>
<td>Diploma - project</td>
</tr>
<tr>
<td>Full-time</td>
<td>50 attended courses above mentioned only</td>
</tr>
<tr>
<td>Other (Specify)</td>
<td></td>
</tr>
<tr>
<td>National Year</td>
<td>48 1979</td>
</tr>
<tr>
<td>Foreign</td>
<td>5</td>
</tr>
<tr>
<td>Admission Requirements</td>
<td>Pre requisite: &quot;Construction Management II&quot;</td>
</tr>
<tr>
<td>Course Requirements - list of courses needed &amp; thesis/project</td>
<td>Attached list</td>
</tr>
</tbody>
</table>

Scholarship, Fellowship
Bursaries, etc. available available to C.E. students

<table>
<thead>
<tr>
<th>Language of Instruction</th>
<th>Turkish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Numbers of Students Graduated</td>
<td>National 7 Foreign</td>
</tr>
<tr>
<td>(Students who have received B.S. degree in Construction Management)</td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>Scholarship</td>
</tr>
<tr>
<td>Funding: Government</td>
<td>100%</td>
</tr>
<tr>
<td>Indicate %</td>
<td>Negligible</td>
</tr>
<tr>
<td>Industry</td>
<td>Other (Specify)</td>
</tr>
<tr>
<td>Staff Numbers: Totals (Indicate %)</td>
<td>Faculty Full Time (6) Part Time (1) Industry, Instructors, Speakers (ii)</td>
</tr>
<tr>
<td>(2 Prof., 4 Assistants)</td>
<td>Financial Administrative ( ) Curriculum Development ( )</td>
</tr>
<tr>
<td>Industry Input (Please tick)</td>
<td>Scholarship, Bursaries, etc. ( ) Overseeing Body Industry Liaison ( )</td>
</tr>
<tr>
<td>Course, Titles, Descriptions Indicate Text Title (if any)</td>
<td>Planned development related with X and XX above</td>
</tr>
</tbody>
</table>

3. Construction Management II
Description: See attached list
Text: Various books in Turkish and in language of each student as his second language (mostly English)

5.

6.

Educational Programme Objectives: Today's objective: Basic education of C.E. students in Construction Management and practical training in the construction industry through diploma-project considering the subjects of the basic education.
Future objective: Training of managers and businessmen in the construction sector.

Research:
Organizational (Applied) (x) Engineering (Hard) ( )
(Please tick)

Research Funding:
Technical and scientific research Council of Turkey (1 project)
Indicate source & amount (US $) 4,000 US $ 8

Describe Nature/objectives of Research:
Research works are being carried out for the acquisition of academic degrees (Ph.D.) and oriented to solve the practical problems of the construction sector and industry like developing cost control systems in Turkish conditions, revising safety regulations analyzing accidents in sites, developing a uniform model of project analysis, cost and finance examination etc.

Research Facilities:
Computer System Burroughs 3700
(Describe briefly, if any)

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)
- Laws and Contracts in (Turkish) Construction
  Assoc. Prof. Dr., Ing. V. Dogan Sorguc
  Honorary of the Middle East Technical University
  Ankara, Turkey (in English)
- Construction Equipment (3 Volumes - in Turkish)
  Prof. Dr., Ing. Sedat Hray
  Honorary of the Technical University of Istanbul
- Project Management Techniques in Construction
  Prof. Dr., Ing. V. Dogan Sorguc
  Technical University of Istanbul (in Turkish)

Name of Institution: THE UNIVERSITY OF NEW SOUTH WALES
Faculty/School: FACULTY OF ENGINEERING, SCHOOL OF CIVIL ENGINEERING,
Address: DEPARTMENT OF ENGINEERING CONSTRUCTION AND MANAGEMENT,
Box 1 P.O. KENSINGTON, N.S.W. 2035. AUSTRALIA
Name, Title of Contact: Professor Ronald W. Woodhead, Professor of Civil Engineering,
Name, Title of Respondent: Head, Department of Engineering Construction and Management

<table>
<thead>
<tr>
<th>Year Programme Established</th>
<th>1973</th>
<th>1964</th>
<th>1951</th>
</tr>
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<tbody>
<tr>
<td>Duration (years) - length of Programme - Construction Studies as %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 yrs</td>
<td>1 yr</td>
<td>3 yrs</td>
<td></td>
</tr>
<tr>
<td>21%</td>
<td>(50%)</td>
<td>(100%)</td>
<td></td>
</tr>
<tr>
<td>Availability (Indicate current student not) Part-time Full-time Other (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>46</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>420</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>National Year Foreign</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Admission Requirements University Matriculation First Hons Degree First Degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Course Requirements - list of courses needed &amp; thesis/project</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Scholarship, Fellowship</td>
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<td></td>
</tr>
<tr>
<td>see Faculty Handbooks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bursaries, etc. available</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Language of Instruction: ENGLISH
Total Numbers of Students Graduated |
| National | Foreign |
| Administration | Scholarship | Research |
| 100% | 100% | 100% |
| Funding: Government |
| (Indicate %) Industry | Other (specify) |
| 100% | - |
| Staff Numbers: Total Full Time (F) Part Time (P) Industry, Footnote, Speaker (S) |
| (Indicate #) Earning Construction & Management |
| - | - | - |
| Industry Input Financial Administrative (F) Curriculum Development |
| (Please Tick) Scholarship, Bursaries, etc. | Overseeing Body Industry Liaison (X) |
| - | - | - |
| Course, Titles, Descriptions - Not applicable - see Faculty Handbooks (enclosed) |
| Indicate Text Title (if any) |
| 1. |
| 2. |

Educational Programme Objectives: An integrated continuous training programme over four years at the undergraduate level followed by one year of specialisation in various aspects of construction and management at the Masters Degree level
Research Organizational (Applied) (✓) Engineering (Hard) (✗) (Please Tick)
Research Funding Australian Research Grants Committee
(Indicate source & amount (US $) Two Projects (see below) $72,000 U.S.
Describes Nature/objectives of Research Project No. 1: ($48,000) The influence of layout and management of policies on the productivity of material flow processes on construction sites. (Professor R.W. Woodhead)
Project No. 2: ($24,000) Factors affecting performance of production and production of modern heavy duty blast furnaces on construction sites. (Professor J.M. Antill and Mr. U. Summersby)
Research Facilities
(Describe briefly if any)
(a) Construction Assembly Laboratory with access to heavy structural testing bay.
(b) Construction Project Laboratory equipped as a planning and estimating library.
(c) Simulated Field Exercises - various
Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

(*) Please check if interested in having above listed in National Technical Information Service for wide distribution. (Separate instructions will follow on procedures for submission).
Name of Institution: University of Liverpool
Faculty/School: Department of Building Engineering
Address: P.O. Box 147, Liverpool L69 3BX

Name, Title of Contact: Mr. S. Whitehead, Senior Lecturer
Name, Title of Respondent:

Programme/s offered

<table>
<thead>
<tr>
<th>Degree Level</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D.</th>
<th>Diploma</th>
<th>Certificate</th>
<th>Postgraduate Programme Specified</th>
</tr>
</thead>
</table>

Year Programme Established: 1983
Duration (years) - length of Programme: 3 2 3

Availability (Indicate current student nos): Full-time 73 4 2

National Year: Yr.1=10, 2=18, 3=16, Yr.3 1
Foreign Year: Yr.1=12, 2=7 3=9, Yr.3 1

Admission Requirements:
- 3 GCE A Level - English Language
- Master + Good Honours Degree
- Course Requirements - list of courses needed & thesis/project - As per syllabus
- Scholarship, Fellowship, etc., available - A few undergraduate scholarships and postgraduate studentships are available.

Language of Instruction: English

Total Numbers of Students Graduated:

<table>
<thead>
<tr>
<th>National 20%</th>
<th>Foreign 8%</th>
<th>Average each year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>Scholarship</td>
<td>Research</td>
</tr>
<tr>
<td>10%</td>
<td>5%</td>
<td>25%</td>
</tr>
<tr>
<td>Self 15%</td>
<td>Self 75%</td>
<td></td>
</tr>
</tbody>
</table>

Staff Numbers: Total (Indicate F's):
- Industry: Financial Administrative ( ), Curriculum Development ( ), Scholarship, Bursaries, etc. ( ), Overseeing Body: Industry Liaison ( )

- Employment: Full Time (g), Part Time (a), Industry, Instructors, Speakers ( ) - Occasional

Course, Titles, Descriptions:
- 1. Building Construction Engineering
- 2. Building Services Engineering

(continued)

Educational Programme Objectives: To produce graduates capable of improving standards in and acceptable to, the building construction and services engineering industries.

Research
- Organizational (Applied) (✓) Engineering (Hard) (✓)

(Please tick)

Research Funding: Science Research Council - approx. $50,000 p.a.

(Indicate source & amount (US $) for acoustics.

Describe Nature/objectives of Research:
- Acoustics - problems of structure-borne sound transmission in buildings
- Materials - curing of cement pastes
- Management - layout planning of building spaces

Research Facilities:
- Controlled environment room
- Acoustic suite
- Materials Laboratory

Publications by Programme: only those that can be purchased (do not list articles in publications or out of print)

(all publications in journals.)

(✓) Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow on procedures for submitting.)
<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D.</th>
<th>Diploma</th>
<th>Non-deg. Certificate</th>
<th>Specialization</th>
<th>Other Programme Specific</th>
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<tbody>
<tr>
<td>Year Programme Established</td>
<td>Since 1930</td>
<td>2 years</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Duration (years) - length of Programme</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Availability (Indicate current student enrolment)</td>
<td>Part-time</td>
<td>Full-time</td>
<td>Other (specify)</td>
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<td>50</td>
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<tr>
<td>National Foreign Year</td>
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<td>1</td>
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<td>Admission Requirements</td>
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<td>11 Courses</td>
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<td></td>
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<tr>
<td>Total Numbers of Students Graduated in Specialization</td>
<td>National 700</td>
<td>Foreign 50</td>
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<tr>
<td>Funding: Government (Indicate %)</td>
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<td>Industry (specify)</td>
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<td>70%</td>
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<td>Other (specify)</td>
<td>German Research Foundation (DFG)</td>
<td>20%</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>10%</td>
<td></td>
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</tr>
<tr>
<td>Staff Numbers: Totals (Indicate 4+)</td>
<td>Faculty Full Time (g)</td>
<td>Part time (-)</td>
<td>Industry, Instructors, Speakers (-)</td>
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<tr>
<td>Industry Input (Please tick)</td>
<td>Financial Administrative ( )</td>
<td>Curriculum Development</td>
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<tr>
<td>Scholarship, Bursaries, etc.</td>
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<td>Overseeing Business Liaison ( )</td>
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<td></td>
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<td>Course, Titles, Descriptions</td>
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<td></td>
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</tr>
<tr>
<td>Indicate Text Title (if any)</td>
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<td></td>
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</tr>
</tbody>
</table>

```

3. Legal Aspects

4. Project Management

5. Economics

6. Operations Research

Educational Programme Objectives:

Research Organizational (Applied) (x) Engineering (Hard) (x)

(please tick)

Research Funding (Indicate source & amount (US $) $50,000, - Government, Industry and DFG)

Describe Nature/objectives of Research

Stochastic Influences of Time and Cost by Uncertain Activities in Construction.

Research Facilities (Describe briefly if any)

Four Research Assistants, Terminal with CDC-Computer

Publications by Programme - only those that can be purchased (do not list articles in publications or out-of-print)

( ) Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow on procedures for submission).

(continued)
```
Name of Institution: Memorial University of Newfoundland
Faculty/School: Faculty of Engineering and Applied Science
Programme's offered: Bachelor, Master, Ph.D., Diploma

Year Programme Established: 1969
Duration (years) - length of Programme: 4

Programme's other Degree Degree Non-deg. Non-deg. Part of Other:
Education: Bachelor, Master, Ph.D., Diploma, Certificate

Admission Requirements:
- Junior Division
- Engineering Project Planning
- Construction Equipment and Methods
- Civil Engineering Project
- Specifications and Estimating
- Contract Law and Labour Relations
- Construction Management

Language of Instruction: English

Total Numbers of Students Graduated:
- Civil Engineering: 160 National, 10 Foreign

Funding:
- Government
  - Administration: 100%
  - Scholarship: -
  - Research: 100%

Staff Numbers:
- Full Time: 45
- Part Time: 5
- Industry, Instructors, Speakers: -

Course Titles, Descriptions:
1. Engineering Project Planning
2. Construction Planning, Equipment and Methods

Publications by Programme:
- Construction Performance Control by Networks, H.N. Ahuja. Published by John Wiley and Sons.

Research: Organizational (Applied) (Y) Engineering (Hard) (Y)

Research Funding:
- N.R.C. $20,000 yearly

Describe Nature/objectives of Research:
To develop new techniques of scheduling and cost control on construction projects

Research Facilities:
- Computers and various testing laboratories

Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow on procedures for submission.)
### DEPARTMENT OF CIVIL ENGINEERING

**UNIVERSITY OF TORONTO**

**GEORGE S. BIRRELL**

**ASSOCIATE PROFESSOR**

---

**Programme's offered**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Name</th>
<th>Non-degree</th>
<th>Part-time</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S.C.</td>
<td>M.E.C.</td>
<td>M.S.C.</td>
<td>Class 1</td>
<td>Project Thesis</td>
</tr>
</tbody>
</table>

**Year Programme Established**

1975

**Duration (years)**

5 years max.

**Admission Requirements**

- Applicants must have completed a Bachelor of Engineering or equivalent at the University of Toronto with a minimum GPA of 3.0.

**Course Requirements**

- Total no. courses: 4
- Min. 2.0 course offer
- Min. 1.5 special study hours

**Scholarship, Fellowship, Bursaries, etc. available**

- Very few

**Language of Instruction**

- English

**Publications by Programme**

- Only those that can be purchased (do not list articles in publications or out of print)

---

**Research Funding**

- Indicate source & amount (US $)
- Some operating grants from Canadian government research agency

**Research Facilities**

- (Describe briefly if any)

- Toronto has a large, comprehensive geological laboratory as a laboratory

---

**Educational Programme Objectives**

- To familiarize students with the fundamental principles of civil engineering and their application in the design, construction, and management of infrastructure projects.

---

**Research**

- Organizational (Applied) (X) Engineering (Hard) (X)

---

**3. CIV 1076 Project Management**

An overview of managing a whole project

**4. CIV 1075 Construction Estimating**

Processes of cost estimating for construction work

**5. CIV 1075 Planning & Controlling Construction**

Techniques and considerations in managing the construction process

**6. CIV 1075 Construction Contract Management**

Incentives of the construction process and legal aspects in construction

---

**Notes**

- Please check if interested in having above listed in National Technical Information Service for world wide distribution. (Separate instructions will follow on procedures for submission).
April 5, 1979

Name of Institution: Swiss Federal Institute of Technology (Zurich) - Institute for Construction Planning and Management (Kostruktionswissenschaften)

Faculty/School: Civil Engineering

Address: Zurich, Switzerland

Name, Title of Contact: Prof. Dr. K. Bogli (Chairman) Prof. Dr. O. Hirth

Programme offered: Bachelor, Master, Ph.D., Diploma, Certificate

Degree/Programme: Non-deg, Non-deg, Part of Other

Year Programme Established: 1965

Duration (years) - length of Programme: 4

Availability: Part-time

National/Foreign: National

Admission Requirements: High school

Course Requirements - list of courses needed & thesis/project

Scholarship, Fellowship, Bursaries, etc. available: No

Language of Instruction: German

Total Numbers of Students Graduated: National 70%, Foreign 10%

Funding: Government 70%, Industry 10%

Staff Numbers: Total Faculty: Full Time (8), Part Time (2), Industry, Instructors, Speakers (12)

Industry Input: Financial, Administrative (2), Curriculum Development (1), Scholarship, Bursaries, etc. (2)

Staff Numbers: Total Faculty: Full Time (8), Part Time (2), Industry, Instructors, Speakers (12)

Course, Titles, Descriptions: Indicate Text Title (if any)

1. Heavy Construction
2. Civil planning, equipment management

Research: Organizational (Applied) (1), Engineering (Hard) (1)

Research Funding: Government & Industry, Varying

Describe Nature/objectives of Research:

1. Planning and management of building projects
2. Financial model for investment policy of communities

Research Facilities: Project management of by projects

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print): Computer programmes available

Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow for submission.)

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