

INTERIM REPORT
7 October 1976 thru 31 July 1977

1977 NSF-DCPA-ASEE SUMMER INSTITUTE
on

MULTIPROTECTION DESIGN

NSF GRANT: ENV 77-01090

Any opinions, findings, conclusions
or recommendations expressed in this
publication are those of the author(s)
and do not necessarily reflect the views
of the National Science Foundation.

1
5 August 1977

INTERIM REPORT
7 October 1976 thru 31 July 1977

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MULTIPROTECTION DESIGN

- References:
1. ASEE Unsolicited Proposal (1977 NSF-DCPA-ASEE Summer Institute on Multiprotection Design) dated 7 October 1977
 2. NSF Grant ENV77-01090 dated 18 May 1977

This report is submitted in accordance with NSF Administrative Manual 73-26, Chapter II, General Provisions, Section 260 Technical Reports, and Paragraph 8 of NSF Letter dated 18 May 1977 re: Proposal/Grant No. ENV77-01090.

1. GENERAL:

a. The institute course objectives are to present to architectural and engineering faculty and practitioners the current problems and approaches to the design of structures to both protect the occupants and to mitigate the effects of natural disasters such as ground motion earthquakes, high winds, tornadoes, hurricanes, and fire. Included are building design considerations for other important national needs such as nuclear blast and radiation fallout, environmental considerations, security and crime, and energy conservation.

b. The material is presented at a high enough level so that it will have an immediate impact on society by motivation of the professional participants to include this methodology in their work. An ultimate result is an awareness of multiprotection design techniques in the design of structures, updating of building codes, and a more informed population to shape public policy.

c. The unsolicited proposal of Reference 1, was submitted based on informal information that it was desired by the NSF and the DCPA to repeat the 1976 Summer Institute program if sufficient funds could be made available. The proposal budget was negotiated from \$80,000 to \$72,000 to come within the expected fund limitation of NSF. Concurrent with this negotiation, it was informally indicated that DCPA may be able to partially fund the institute in addition to making the DCPA Staff College available. This DCPA funding materialized, and \$8,000 was transferred from DCPA to the NSF to apply to the grant of Reference 2. A copy of the DCPA fund transfer is attached as Appendix "A."

2. ACTIONS TAKEN:

a. It is necessary to implement actions for a faculty summer institute program not later than in November to effect timely dissemination to the academic community. Faculty generally firm their commitments for summer employment or professional development not later than April, consequently, late or delayed announcements of summer programs result in not attracting many applicants for whom the program is intended.

b. All necessary advanced actions were coordinated with the NSF and DCPA, with the understanding that no commitments are made nor binding until formal approval and acceptance of the referenced proposal.

c. The 1977 NSF-DCPA-ASEE Summer Institute program announcement dated 15 November 1976 was mailed to 1,826 architectural and engineering faculty in those disciplines most concerned with the program course contents. The mailing list by category of engineering disciplines and the announcement are attached as Appendix "B."

d. Proposals to direct the institute were received from two qualified individuals (Dean Edward W. Jerger, University of Notre Dame and Professor Narendra N. Gunaji, Associate Director, College of Engineering, New Mexico State University). Both of these individuals have been active in previous institutes and are very familiar with the objectives and procedures. Dean Jerger was selected again based on his lower budget estimate.

e. A total of 202 applications were received in response to the 1,826 mailings. On 21 March 1977 the NSF-DCPA-ASEE Advisory Committee met to review and approve applications. Fifty-seven (57) were initially selected of which 46 were two-week and 11 were one-week applicants. In addition, 8 applicants were approved to attend at their own expense with the understanding that no quarters would be available at the Staff College. The applicant list as well as the institute participant list as of 31 July 1977 are attached as Appendix "C."

3. PENDING ACTIONS:

a. Continued refinement of the institute participant list to stay within the budget limitation of the Grant to accommodate fifty (50) individuals.

b. Finalize arrangements made by the Institute Director with the instructors staff and guest lecturers.

c. Prepare for timely disbursement of travel allowances and stipends of the participants and the remunerations of the instructor staff.

d. Prepare final report following completion of the institute.

4. FINANCIAL:

A Grantees Monthly Cash Request was submitted for June and for July on 24 May and 7 July respectively. These requests included administrative expenditures incurred from 18 May 1977, the budgeted participant travel and stipend allowances and a portion of the estimated contractual advances to the institute faculty staff. Copies of the cash requests to date are included as Appendix "D."

Bernard Wobbeking

Bernard Wobbeking, P.E.
Program Administrator

Incls: Appendices "A" thru "D"

Distri: Dr. John D. Scalzi, NSF (5)
Mr. George T. Goforth, DCPA (3)

WORK ORDER (See Reverse Side For Instructions For Issuing Office)		1. <input type="checkbox"/> FINANCE <input checked="" type="checkbox"/> COST REIMBURSEMENT <input type="checkbox"/> ALLOCATION	2. DATE April 21, 1977
3. ORDERING COMPONENT			4. WORK ORDER NUMBER Specialist DCPA01-77-C-0169
NAME DEFENSE CIVIL PREPAREDNESS AGENCY PROCUREMENT DIVISION	ADDRESS T. Tychan, Contract ROOM 1D-525, PENTAGON WASHINGTON, D.C. 20301 (202) 697-7384		
5. PERFORMING ESTABLISHMENT			5. AMENDMENT NUMBER
NAME AND ADDRESS (Include Zip Code) National Science Foundation 1800 G Street, N.W. Washington, D.C. 20550			
			7. REQUISITION NUMBER 417-12
8. DESCRIPTION OF WORK TO BE PERFORMED AND OTHER INSTRUCTIONS (If additional space is required, use Supplemental Data Section on reverse side or attach additional sheets.)			
<p>A. <u>Scope of Work</u> - Provide for at least four hours of instruction at the American Society for Engineering Education August, 1977 Summer Institute Program to discuss design characteristics of structures to resist the hazards listed below, and to correlate:</p> <p>(a) ground motion from nuclear weapons effects to seismic design; (b) blast effects of nuclear weapons to high winds; (c) fire effects of nuclear weapons to other fire hazards; and (d) the effects of radioactive fallout to other environmental hazards.</p> <p>B. <u>Reimbursement</u> - shall be made upon submission of Standard Form 1080 to the address shown in Block 3. The SF1080 shall cite the order number and appropriation and accounting classification in Block 10a. Payment will be made by U.S. Military District of Washington, Finance and Accounting Office, ATTN: ANFINW-EG, Forrestal Building, Washington, D.C. 20314.</p> <p>C. George Goforth telephone number (202) 694-1681 is designated as the Contracting Officer's Technical Representative for the purpose of technical guidance and approving vouchers for payment.</p>			
9. DATE ORDERED	10. NAME, TITLE AND SIGNATURE OF ORDERING OFFICER (if other than Authorizing Officer)		
10a. ACCOUNTING CLASSIFICATION 4370604 17/363-27-02/25/04/2/XX/XXXXX	10b. AMOUNT \$49-206	10c. AMOUNT \$8,000.00	
11. THIS ORDER IS PLACED PURSUANT TO AUTHORITY OF THE FEDERAL CIVIL DEFENSE ACT OF 1950, AS AMENDED, AND E.O. 10952. WORK TO BE PERFORMED AND MATERIAL TO BE PROCURED PURSUANT TO THIS ORDER ARE PROPERLY CHARGEABLE TO THE APPROPRIATION OR OTHER ACCOUNTS INDICATED ABOVE UNTIL <u>30</u> September 1977, THE EXPIRATION DATE OF THIS WORK ORDER. (Day)			
FUNDS IN THE ABOVE AMOUNT HAVE BEEN COMMITTED AND ARE AVAILABLE FOR EXPENDITURE AND/OR OBLIGATION UPON ACCEPTANCE AND RETURN OF THE DUPLICATE AND TRIPPLICATE COPIES TO THE ADDRESS SHOWN IN ITEM 3.			
TYPED NAME AND TITLE OF AUTHORIZING OFFICER Eula G. Stull, Contracting Officer		SIGNATURE <i>Eula G. Stull</i>	
THE ABOVE TERMS AND CONDITIONS ARE SATISFACTORY AND ARE ACCEPTED.			
DATE ACCEPTED JUN 2-1977	TYPED NAME AND TITLE OF ACCEPTING OFFICER Michael L. Kenefick Grants and Contracts Officer	SIGNATURE <i>Michael L. Kenefick</i>	

DCPA Form 799, JAN 73, (Replaces OCD Form 799, Jun 70 which may not be used).

MAILING LIST

1977 NSF -DCPA-ASEE SUMMER INSTITUTE
on

MULTIPROTECTION DESIGN

Deans of Architecture	85
Deans of Engineering	397
Architectural	37
Agricultural	25
Architectural/Design/Planning	51
Behavioral and Social Sciences	55
City/Regional Planning/Landscape Architecture	31
Civil	68
Environmental	107
Fire Prevention	11
Mechanical	339
Nuclear	65
General Engineering	7
DCPA Qualified Instructors in Fallout Shelter Analysis	528
Total	<u>1,826</u>

(202) 293-7080



American Society
for
Engineering Education suite 400 .
one dupont circle, washington, d.c. 20036

15 November 1976

MEMORANDUM TO: Architectural and Engineering Faculty

ANNOUNCEMENT

1977 ASEE-NSF-DCPA SUMMER INSTITUTE
on
MULTIPROTECTION DESIGN

The National Science Foundation (NSF) will sponsor the 2-week 1977 Summer Institute Program at the DCPA Staff College, Battle Creek, Michigan during the period 15-26 August 1977. Due to the limited budget, the enrollment will be limited to a maximum of 50 participants.

Four principal courses, augmented with project information from the NSF and the DCPA, will be offered in the primary areas of natural disasters of (1) Ground Motion; (2) Wind; (3) Fire and (4) Environmental, and the correlating nuclear disaster effects. Each course will be 1 week in duration and two of these courses will be conducted concurrently during each of the 2-week periods. Thus, a participant staying 1 week may take any one of the four courses. A participant staying 2 weeks can take two of these courses. An outline listing the various subjects covered in each course is attached.

The Staff College is a facility of the Defense Civil Preparedness Agency (DCPA) and is equipped with adequate classrooms, audio-visual and other instructional support materials. Dormitory spaces will be made available to the participants at no cost. A cafeteria will be available for use by the participants for meals at modest cost. There will be no charge for registration, tuition, or textbook and reference materials. Participants will be reimbursed for travel equivalent to minimum round-trip air fare from airport nearest home institution and Battle Creek, plus \$20 terminal expenses payable upon arrival at the institute. In addition, an expense stipend of \$100 per week will be paid to each participant upon completion of the course.

An application along with a reply envelope is enclosed to expedite your response by 1 March 1977. Applications will be reviewed by the ASEE-NSF-DCPA Advisory Committee on 12 March 1977 and applicants advised of results by 30 March 1977.

Bernard Wobbeking
Bernard Wobbeking, P.E.
Program Administrator

acfs.

COURSE CONTENTS
1977 ASEE-NSF-DCCPA SUMMER INSTITUTEGROUND MOTION - 15 - 19 August

Description of Ground Motion Phenomena
 Earthquake Induced Ground Motions
 Nuclear Blast Induced Ground Motions
 Other Ground Motion Phenomena
 Structural Response to Ground Motions
 Fundamental Structural Dynamics
 Support Motions
 Response Spectrum Concepts
 Seismic Design Criteria
 Design Response Spectra
 Building Codes
 Review of Seismic Analysis Methods
 Earthquake Damage Mechanisms and Hazard Reduction
 Earthquake Damage Experience
 Earthquake Hazard Reduction

FIRE - 15 - 19 August

Introduction to the Fire Problem
 History of Fires
 Fire Phenomena
 Fire Spread in Buildings
 Thermal Effects of Nuclear Weapons
 Structural Integrity and Fire Testing
 Structural Integrity
 Fire Behavior of Materials
 Fire Testing
 Life Safety Design and Fire Prevention and Control
 Detection and Communication
 Fire Propagation
 Heat and Smoke Venting
 Prevention and Control of Fires
 The High Rise Problem

WIND ENGINEERING - 22 - 26 August

Description of Wind Related Phenomena
 Engineering Characterization of Winds
 Wind Loadings on Structures
 Damage Mechanisms Produced by Winds
 Nuclear Blast Effects on Buildings
 Wind Resistant Structural Design
 Conventional Design Practice
 Design for Protection
 Design Techniques and Guidelines

ENVIRONMENTAL - 22 - 26 August

Environmental Noise and Sound Control
 Nature and Consequences of Sound
 Methods of Noise Control
 By-Products of Sound Control Design
 Criminal Activity
 The Crime Problem
 Design Criteria for Crime Prevention
 Energy Conservation
 Thermal Design Criteria
 Energy Conserving Buildings
 Nuclear Radiation and Effects of Nuclear Weapons
 The Nuclear Industry
 Effects of Nuclear Weapons
 Principles of Fallout Radiation Protection

AMERICAN SOCIETY FOR ENGINEERING EDUCATION
ONE DUPONT CIRCLE, WASHINGTON, DC 20036

-- APPLICATION FOR
1977 ASEE-NSF-DCPA SUMMER INSTITUTE PROGRAM
on
MULTIPROTECTION DESIGN

DCPA Staff College, Battle Creek, Michigan

15 - 26 August 1977

Please type or print in black ink

Name

Home Address

Position/Title

Department

City/State/Zip

University/College

Office Phone

Home Phone

City/State/Zip

Nearest Airport

1. I desire to attend: 1 week 2 weeks

2. Check course(s) desired:

15 - 19 August

22 - 26 August

Seismic

Wind

or

or

Fire

Environmental

3. List previous related summer institutes attended: Year(s) and Institute(s).

4. Brief background on major area(s) of interest, experience and courses taught.
Use reverse side if necessary.

Mail this application for receipt by 1 March 1977.

: NSF-DCPA Program Administrator, ASEE

One Dupont Circle, Suite 400, Washington, DC 20036

1977 S.I. APPLICANT LIST

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	NAME & INSTITUTION	1 Wk	2 Wk	Seis-mic	Fire	Wind	Envi-ron	Notes
1	HALL, Stephen E. - MT Col. Min/Science - Butte, MT		X		X		X	
2	VANNOY, Donald W. - University of MD	X		X				
3	CRISMAN, W. C. - LeTourneau Col. - Longview, TX		X		X	X		
4	WHITAKER, Leslie Ann - Clarkson Col. Tech/NY	X					X	
5	SCHULMAN, David - NYC Com. Col.		X		X		X	
6	YOUNG, Fred M. - Portland State U.		X	X		X		
7	RENDON-HERRERO, Oswald - MS State U	X		X				
8	WU, Chih - US Naval Academy/MD		X		X		X	
9	MAJORS, Harry - Seattle U/WA		X	X			X	
10	CRUM, Ralph G. - Youngstown St. U/OH		X	X		X		
	FRISMAN, Gary - U of Fla.	X			X			
	ASON, Robt. L. - Texas Tech. U	X			X			
	NORRIS, Gary M. - U. of Wis.	X		X				
	STERN, Sylvan P. - NYC Com. Col.		X		X		X	
	YEUNG, Jimmy - Memphis St. U		X	X		X		
	CROSSMAN, Gary R. - Old Dominion U - VA	X					X	
	CARPER, Kenneth L. - WA. State U/WA		X	X		X		
	RAGHU, Dorairaja - Tri-St. U-Ind.		X	X		X		
	KENYON, Van L. - Duke/NC	X					X	
	CHOU, James C.S. - U. of HI		X		X		X	
	BARCUS, C.H. - Miami U/Ohio	X					X	
	KENNEDY, Verne C. - Colorado Metropolitan St.		X		X		X	
	HUMMEL, Roland L. - Rensselaer Poly. Insti/NY		X	X		X		
	IL, Tuncer B. - U of Wisconsin	X		X				
	SANDFORT, John F. - SD State U.	X			X			

1977 S.I. APPLICANT LIST

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NAME & INSTITUTION	1 Wk	2 Wk	Seis-mic	Fire	Wind	Envi-ron	Notes
MEINHEIT, Donald F. -Notre Dame		X	X		X		
MILLER, Wm. M. -U/Washington		X	X		X		
WRIGHT, John G. -Wayne State U/MI	X					X	
STEPHENSON, Richard M. -U of CT	X					X	
JOHNSON, W. Reed-U of Virginia	X		X				
ELLIS, Robt W. -FL International U/FL	X			X			
LEE, Ru Lin-Techtal Power Corp, CA	X		X				
MORRISON, Clayton A. -U of Florida		X	X			X	
LINDLY, Edwin C. -Kansas St. U/KS	X		X				
HUFFERD, Wm. L. -U. of Utah	X		X				
TANG, T. Kenneth-U of Washington		X		X	X		
WIKEL, John-CA St. U/CA		X	X		X		
COWELL, Geo. J. -U of South Fla.		X	X			X	
NELSON, Roger H. -WA State U		X		X		X	
LI, Chih-Hsiang P. -Syracuse U/NY		X		X		X	
MINTER, Marshall R. -Arizona State U	X		X				
AINSO, Heino-Clarkson College of Tech. Potsdam, NY		X	X		X		
MIN, Kun-U. of Lowell/MA	X			X			
CHANG, Bin-U of Wyoming/WY		X	X		X		
ROSENCRANS, John F. -Ind Purdue		X		X		X	
RUSSO, E. P. -U of New Orleans		X	X		X		
HASSLER, Paul C. -U of Texas/El Paso		X	X		X		
SEABURG, Paul A. -U of Wisconsin		X	X		X		
MAN, Carl W. -Milwaukee School of Engr-	X			X			
DURRANT, S. Olani-Brigham Young U		X	X		X		
	10	15	16	7	10	7	

1977 S.I. APPLICANT LIST

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NAME & INSTITUTION	1 Wk	2 Wk	Seis- mic	Fire	Wind	Envi- ron	Notes
LIU, Chang Keng-U of Alabama		X	X		X		
HARY, Chas. P. -Capitol Campus/PA		X	X		X		
GUTKOWSKI, Richard M. - Colo State University	X			X			
DUFFEY, Dick, - U/Maryland	X			X			
HANSEN, Thos. L. -U of Colorado	X					X	
McMILLAN, John H. -Mohawk Valley Comm. Col. /NY		X		X	X		
O'ROURKE, M. J. - Rensselaer Poly. Insti/NY	X			X			
WRIGHT, Chas. A -Fla A&M U/FL		X		X		X	
DILPARE, Armand L. -Fla Inst. Tech.		X	X			X	
FRENCH, Ken -John Brown U/AR		X		X	X		
LOWE, Herbert F. -Merritt Col. /CA		X	X		X		
ALLONE, Eugene A. - City College of NY	X				X		
FAHERTY, Keith F. -U of Wis.	X				X		
RASSAM, H. Y. - Mauck Stastny & Rassam Firm-NM		X		X		X	
HYCHKO, John T -PA State U/PA		X	X		X		
SONG, Yo Taik-NSWC/W. O. (US Navy)	X					X	
BLOCK, David L. - Fla. Technological U/FL		X	X		X		
HO, James F. -Cogswell College/CA		X		X		X	
ROSENHAN, A. K. -MS State U/MS	X			X			
SYLVESTER, WM. G-State U of NY		X	X		X		
BENDT, Richard A. - Youngstown State U/Ohio		X		X	X		
CHANG, Anthony T. - Stevens Institute of Tech/NJ		X	X		X		
SMITH, Wilma -U of South Fla/FL		X	X			X	
FERS, Richard B. -U/Missouri	X			X			
REED, John C. -U of Florida/FL		X		X		X	
	9	16	9	12	12	8	

1977 S.I. APPLICANT LIST

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	NAME & INSTITUTION	1 Wk	2 Wk	Seis- mic	Fire	Wind	Envi- ron	Notes
76	ANDERSON, James T. -U/Nevada	X			X			
77	MUMMA, Stanley A. - AZ State U	X					X	
78	MARTIN, C. Wayne - U/Nebraska		X	X		X		
79	SCHWAB, Delbert P. -Okla State U	X					X	
80	HITT, George G. -Memphis State U	X			X			
81	TOLBERT, R. Noel - Ark State U	X		X				
82	SAKSHAUG, Thomas - ND State U	X			X			
83	POPESCU, Calin - U/Okla-Norman	X					X	
84	RICHARDSON, Gregory - NC State U	X		X				
85	SCHULZE, John F.W. - NC State U	X			X			
86	QUINN, C. Jack - Purdue		X		X		X	
87	JACKSON, Harry J. -OR Inst. of Tech	X		X				
88	BAKER, David E. - U/Missouri	X			X			
89	ABU-SABA, Elias G. -NC A&T St. U		X	X		X		
90	LIVAS, Henry L. - Hampton Institute		X		X		X	
91	SCOTT, David M. - Washington St. U		X		X		X	
92	OSTER, Kenneth B. - Tech-Ft. Wayne Indiana Inst. of		X		X	X		
93	BARBERII, Nancy K. - WESTNAVFA- CENGCOM		X	X		X		
94	GEHNER, Martin D. - Yale	X				X		
95	BEVANS, Ronald D. - U/Idaho	X			X			
96	GUNAJI, Narendra N. - NM State U		X	X		X		
97	CARROLL, Hyman Spring Garden College-Phil. PA		X		X		X	
98	YEGIAN, M.K. Northeastern U	X		X				
99	COMAS, Stuart T. - Notre Dame	X			X			
100	WELLS, Herbert C. - U/Nevada		X	X			X	
		15	10	9	12	6	8	

1977 S.I. APPLICANT LIST

	NAME & INSTITUTION	1 Wk	2 Wk	Seis- mic	Fire	Wind	Envi- ron	Notes
101	KUZMANOVIC, Bogdan O. - U/Kansas	X		X				
102	HATLEN, Vincen W. - ND State U	X					X	
103	CHONG, Ken P. - U/Wyoming		X	X		X		
104	BRACH, Raymond M. - Notre Dame	X		X				
105	WILSON, Eric B. - WA State U	X		X				
106	TSUI, Yuet - Duke	X		X				
107	CARROLL, Wayne E. -FL Tech U		X	X		X		
108	CHU, Kuang Han - IL Inst. of Tech.		X	X		X		
109	SEABLOOM, Robert W. - U/WA	X					X	
110	HOWALD, J. Carter - Del Mar Coll.		X		X		X	
111	STIFEL, John M. - Waterbury State Tech. College		X	X			X	
112	BOSTON, Charles R. - U/Liberia		X		X		X	
113	STUERMER, Roy - Notre Dame		X	X			X	
114	PHILLIPS, J.H. - SUNY at Canton, NY	X			X			
115	ARMENAKAS, Anthony E. - Polytechnic Inst./NY		X	X		X		
116	YANOVIK, Andrew E. - Arch. Tech/NY		X		X		X	
117	STEVENS, Alexander M. - DoD Shelter Officer		X	X		X		
118	BRUCE, Robert N. - Tulane		X	X		X		
119	MILLER, E. H. - Del Mar College		X	X		X		
120	GILSTRAP, Wm. A. - U/Nevada	X				X		
121	KALLSEN, Henry A. - U/Alabama	X			X			
122	PAYNE, Elmer H. - U/Dayton		X	X		X		
123	MAIER, Leo R. - Ohio Northern U		X	X		X		
124	LI, Wei Wen- Lawrence Inst. of Tech.	X		X				
125	CUSUMANO, Joseph V. Clayton Brokerage Co		X		X		X	
		10	15	16	6	10	8	

1977 S.I. APPLICANT LIST

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	NAME & INSTITUTION	1 Wk	2 Wk	Seis- mic	Fire	Wind	Envi- ron	Notes
26	SAMUCHIN, Michael G. - Arizona State U		X	X		X		
27	KING, David W. - Dela. Tech & Commu. College. Instructor Mfg. Eng.		X	X		X		
28	KIMBALL, Stanley J. - Penn State U	X					X	
29	SMITH, Hall M. - Milwaukee Area Technical College		X		X		X	
30	STAUDTER, Don - University of Dayton		X		X		X	
31	WHEAT, Dan L. - U/Okla	X		X				
32	YANG, David D. - U/Tenn at Martin	X					X	
33	PAGAY, Shrinivas N. - Vilanova U Lecturer	X		X				
34	HALE, Paul N. - LA Tech U	X			X			
35	STINSON, Samuel T. - Marshall U	X				X		
36	DAR, Sidiq M. - Gonzaga U		X	X		X		
37	ANGLER, Byron D. - U/Florida		X	X		X		
38	MARKGRAF, Wm. - Columbia College	X			X			
39	PAOLETTI, Dennis A. - Consultants Paoletti/Lewis	X		X				
40	ARNAS, Ozer A. - Louisiana State U		X		X		X	
41	BREM, Eugene S. - Cogswell College Fire Department		X		X		X	
42	SHEYDAYI, E. Yury - Arizona State U		X	X		X		
43	EVANS, Thomas C. Jr. - The Citadel NC Carolina		X	X		X		
44	ROZENBERG, Juda E. - TN State U		X		X	X		
45	TANG, David T. - State U of NY at Buffalo		X	X		X		
46	ALESSO, Philip F. - State U/NY/Alfred		X		X		X	
47	STRONG, Walter I. - College/NY Suny, Agri & Tech		X		X		X	
48	CHIANG, Robert N.S. - V.P.I. & State U/VA	X				X		
49	HH, Jason C. - LA State U		X	X		X		
50	JRNI, Andre - Queensborough Com. College, NY	X				X		
		10	15	11	9	12	8	

1977 PARTICIPANT LIST

(9)

As of 31 July 1977

	NAME & INSTITUTION	1 Wk	2 Wk	Seis- mic	Fire	Wind	Envi- ron	Note
1	HALL, Stephen E. - MT Coll. Mineral/ -Sciences, Butte		X		X		X	*
6	YOUNG, Fred M. - Portland State U		X	X		X		*
9	MAJORS, Harry - Seattle U		X	X			X	*
14	STERN, Sylvan P. - NYC Comm. Coll.		X		X		X	*
17	CARPER, Kenneth L. - Wash. State U		X	X		X		*
20	CHOU, James C. S. - U of Hawaii		X		X		X	*
21	BARCUS, C. H. - Miami U/Ohio	X					X	*
22	KENNEDY, Verne C. - Colorado Metro- -politan State		X		X		X	*
23	HUMMEL, Roland L. - Rensselaer Poly -Institute-NY		X	X		X		*
25	SANDFORT, John F. - SD State U	X			X			*
40	LI, Chih-Hsiang P. - Syracuse U/NY		X		X		X	*
	CHANG, Bin - U of Wyoming		X	X		X		*
50	DURRANT, S. Olani-Brigham Young U		X	X		X		*
51	LIU, Chang Keng - U of Alabama		X	X		X		*
59	DILPARE, Armand L. - Fla. Institute of Technology		X	X			X	*
72	CHANG, Anthony T. - Stevens Institute of Tech/NJ		X	X		X		*
73	SMITH, Wilma - U of South Florida		X	X			X	*
78	MARTIN, C. Wayne - U/Nebraska	X				X		*
85	SCHULZE, John F. W. - NC State U	X			X			*
86	QUINN, C. Jack - Purdue		X		X		X	*
88	BAKER, David E. - U/Missouri	X			X			*
89	ABU-SABA, Elias G. - NC A&T State - U/Greensboro		X	X		X		*
91	SCOTT, David M. - Washington State U		X		X		X	*
		5	18	11	10	9	11	

1977 PARTICIPANT LIST

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	NAME & INSTITUTION	1 Wk	2 Wk	Seis- mic	Fire	Wind	Envi- ron	Notes
102	HATLEN, Vincen W. - ND State/Fargo	X					X	*
110	HOWALD, J. Carter - Del Mar/LA		X		X		X	*
113	STUERMER, Roy - Notre Dame		X	X			X	*
122	PAYNE, Elmer H. - U of Dayton		X	X		X		*
126	SAMUCHIN, Michael G. - U/Tempe Arizona State		X	X		X		*
136	DAR, Sidiq M. - Gonzaga U/Spokane		X	X		X		*
137	SPANGLER, Byron D. - U/Florida		X	X		X		*
145	TANG, David T. - Buffalo State U of NY at		X	X		X		*
146	ALESSO, Philip F. - Alfred State U/NY at		X		X		X	*
149	SHIH, Jason C. - LA State U/B. Rouge		X	X		X		*
152	HSU, Thomas T. C. - U/Miami		X	X		X		*
	DUNCAN, Robert I. - U/Nebraska Lincoln	X					X	*
157	CARLSON, Axel R. - Fairbanks U/Alaska		X		X		X	*
159	CALDWELL-JOHNSON, Wm. H. St. U Wayne		X	X		X		*
160	BURGESS, Hugh - Arizona State U/ Tempe		X		X		X	*
161	KARK, Warren R. - U/Blacksburg VA Poly. Inst & St		X		X		X	*
162	KUMMER, Richard E. - Penn State U		X		X	X		*
163	KUMMER, Mary J. - Penn State U		X		X	X		*
170	ALBERT, Kenneth - NJ Inst. Technology Newark	X					X	*
180	JENKINS, David R. - Fla. Tech. U- Orlando		X	X		X		*
183	GRAHAM, Frederick M. - Iowa State U/Ames		X	X		X		*
184	LaPALM, George E. - ND State/ Fargo		X	X			X	*
		3	19	12	7	12	10	

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GRANTEES
MONTHLY CASH REQUEST

Date 24 May 1977

TO: National Science Foundation
ATTN: Financial Management Office
Washington, D.C. 20550

FROM: American Society for Engineering
Education
One Dupont Circle, Suite 400
Washington, DC 20036

Institution Code No. 4000949000

We hereby submit our cash requirements to cover anticipated expenditures relative to all NSF grants awarded and currently outstanding for the above institution for the month of June 1977

	ANTICIPATED CASH EXPENDITURES \$	<u>20,000</u>
LESS:	ESTIMATED CASH BALANCE ON HAND AT END OF CURRENT MONTH \$	<u>0</u>
	CURRENT CASH ADVANCE REQUESTED	<u>\$ 20,000</u>

SIGNED Bernard Wobbeking

TITLE Program Administrator

FOR NSF USE ONLY	
AUDITED & APPROVED BY	DATE
DULE NO.	DATE

*Amounts anticipated for expenditure shall not include requests under matching fund grants until the matching requirements have been met. See page seven of "Grantee Accounting Instructions Manual for Grantee Institutions," for special instructions.

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GRANTEES MONTHLY CASH REQUEST

Date 7 July 1977

TO: National Science Foundation
ATTN: Financial Management Office
Washington, D.C. 20550

FROM: American Society For Engineering
Education
One Dupont Circle, Suite 400
Washington, DC 20036

Institution Code No. 4000949000

We hereby submit our cash requirements to cover anticipated expenditures relative to all NSF grants awarded and currently outstanding for the above institution for the month of July

	ANTICIPATED CASH EXPENDITURES \$	<u>22,750</u>
LESS:	ESTIMATED CASH BALANCE ON HAND AT END OF CURRENT MONTH \$	<u>2,300</u>
	CURRENT CASH ADVANCE REQUESTED	<u>\$ 20,450</u>

SIGNED S Bernard Webberking
TITLE Program Administrator

*Amounts anticipated for expenditure shall not include requests under matching fund grants until the matching requirements have been met. See page seven of "Grant Accounting Instructions Manual for Grantee Institutions," for special instructions.

FOR NSF USE ONLY	
AUDITED & APPROVED BY	DATE
\$	DATE

WORK ORDER (See Reverse Side For Instructions For Issuing Office)		1. <input type="checkbox"/> FINANCE <input checked="" type="checkbox"/> COST REIMBURSEMENT <input type="checkbox"/> ALLOCATION	2. DATE April 21, 1977
3. ORDERING COMPONENT			4. WORK ORDER NUMBER Specialist DCPA01-77-C-0169
ME DEFENSE CIVIL PREPAREDNESS AGENCY PROCUREMENT DIVISION	ADDRESS T. Tychan, Contract ROOM 1D-525, PENTAGON WASHINGTON, D.C. 20301 (202) 697-7384		
5. PERFORMING ESTABLISHMENT			5. AMENDMENT NUMBER
NAME AND ADDRESS (Include Zip Code) National Science Foundation 1800 G Street, N.W. Washington, D.C. 20550			
6. DESCRIPTION OF WORK TO BE PERFORMED AND OTHER INSTRUCTIONS (If additional space is required, use Supplemental Data Section on reverse side or attach additional sheets.)			7. REQUISITION NUMBER 417-12
<p>A. <u>Scope of Work</u> - Provide for at least four hours of instruction at the American Society for Engineering Education August, 1977 Summer Institute Program to discuss design characteristics of structures to resist the hazards listed below, and to correlate:</p> <p>(a) ground motion from nuclear weapons effects to seismic design; (b) blast effects of nuclear weapons to high winds; (c) fire effects of nuclear weapons to other fire hazards; and (d) the effects of radioactive fallout to other environmental hazards.</p> <p>B. <u>Reimbursement</u> - shall be made upon submission of Standard Form 1080 to the address shown in Block 3. The SF1080 shall cite the order number and appropriation and accounting classification in Block 10a. Payment will be made by U.S. Military District of Washington, Finance and Accounting Office, ATTN: ANFINW-EG, Forrestal Building, Washington, D.C. 20314.</p> <p>C. George Goforth telephone number (202) 694-1681 is designated as the Contracting Officer's Technical Representative for the purpose of technical guidance and approving vouchers for payment.</p>			
9. DATE ORDERED	10. NAME, TITLE AND SIGNATURE OF ORDERING OFFICER (if other than Authorizing Officer)		
10a. ACCOUNTING CLASSIFICATION 4370604 17/363-27-02/25/04/2/XX/XXXXX	10b. AMOUNT \$49,206	10c. AMOUNT \$8,000.00	
11. THIS ORDER IS PLACED PURSUANT TO AUTHORITY OF THE FEDERAL CIVIL DEFENSE ACT OF 1950, AS AMENDED, AND E.O. 10952. WORK TO BE PERFORMED AND MATERIAL TO BE PROCURED PURSUANT TO THIS ORDER ARE PROPERLY CHARGEABLE TO THE APPROPRIATION OR OTHER ACCOUNTS INDICATED ABOVE UNTIL 30 September 1977, THE EXPIRATION DATE OF THIS WORK ORDER. (Day) <p>(Month) (Year)</p> <p>FUNDS IN THE ABOVE AMOUNT HAVE BEEN COMMITTED AND ARE AVAILABLE FOR EXPENDITURE AND/OR OBLIGATION UPON ACCEPTANCE AND RETURN OF THE DUPLICATE AND TRIPPLICATE COPIES TO THE ADDRESS SHOWN IN ITEM 3.</p>			
TYPED NAME AND TITLE OF AUTHORIZING OFFICER Eula G. Stall, Contracting Officer		SIGNATURE <i>Eula G. Stall</i>	
THE ABOVE TERMS AND CONDITIONS ARE SATISFACTORY AND ARE ACCEPTED.			
DATE ACCEPTED JUN 2 - 1977	TYPED NAME AND TITLE OF ACCEPTING OFFICER Michael L. Kenefick Grants and Contracts Officer	SIGNATURE <i>Michael L. Kenefick</i>	