

October 13, 2013

An Important note from the Principal Investigator Abolhassan ASTANEH-ASL, on the document that follows:

Following document is the “supplemental” proposal submitted to the National Science Foundation and funded to add needed funding to the project.

Respectfully,

Abolhassan ASTANEH-ASL, Ph.D., P.E.

Professor and P.I. for the NSF Funded UC Berkeley WTC Project

Supplement

COVER SHEET FOR PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION

PROGRAM ANNOUNCEMENT/SOLICITATION NO./CLOSING DATE (if not in response to a program announcement/solicitation enter NSF 01-2)		FOR NSF USE ONLY		
FOR CONSIDERATION BY NSF ORGANIZATION UNIT(S) (Indicate the most specific unit known, i.e. program, division, etc.) CMS - STRUCT SYS & HAZ MIT OF STRUCT		NSF PROPOSAL NUMBER		
DATE RECEIVED	NUMBER OF COPIES	DIVISION ASSIGNED	FUND CODE	
			DUNS# (Data Universal Numbering System) 153881537	
EMPLOYER IDENTIFICATION NUMBER (EIN) OR TAXPAYER IDENTIFICATION NUMBER (TIN)	SHOW PREVIOUS AWARD NO. IF THIS IS <input type="checkbox"/> A RENEWAL <input type="checkbox"/> AN ACCOMPLISHMENT-BASED RENEWAL 0139542	IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? YES <input type="checkbox"/> NO <input type="checkbox"/> IF YES, LIST ACRONYM(S)		
NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE University of California-Berkeley		ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE University of California-Berkeley 336 Sproul Hall Berkeley, CA. 94720		
AWARDEE ORGANIZATION CODE (IF KNOWN) 0013128000				
NAME OF PERFORMING ORGANIZATION, IF DIFFERENT FROM ABOVE		ADDRESS OF PERFORMING ORGANIZATION, IF DIFFERENT, INCLUDING 9 DIGIT ZIP CODE		
PERFORMING ORGANIZATION CODE (IF KNOWN)				
IS AWARDEE ORGANIZATION (Check All That Apply) (See GPG II.C For Definitions) <input type="checkbox"/> FOR-PROFIT ORGANIZATION <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> MINORITY BUSINESS <input type="checkbox"/> WOMAN-OWNED BUSINESS				
TITLE OF PROPOSED PROJECT World Trade Center Post-Disaster Reconnaissance and Perishable Structural Engineering Data Collection				
REQUESTED AMOUNT \$ 5,000	PROPOSED DURATION (1-60 MONTHS) 0 months	REQUESTED STARTING DATE	SHOW RELATED PREPROPOSAL NO., IF APPLICABLE	
CHECK APPROPRIATE BOX(ES) IF THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW				
<input type="checkbox"/> BEGINNING INVESTIGATOR (GPG I.A) <input type="checkbox"/> DISCLOSURE OF LOBBYING ACTIVITIES (GPG II.C) <input type="checkbox"/> PROPRIETARY & PRIVILEGED INFORMATION (GPG I.B, II.C.6) <input type="checkbox"/> NATIONAL ENVIRONMENTAL POLICY ACT (GPG II.C.9) <input type="checkbox"/> HISTORIC PLACES (GPG II.C.9) <input type="checkbox"/> SMALL GRANT FOR EXPLOR. RESEARCH (SGER) (GPG II.C.11)				
<input type="checkbox"/> VERTEBRATE ANIMALS (GPG II.C.11) IACUC App. Date _____ <input type="checkbox"/> HUMAN SUBJECTS (GPG II.C.11) Exemption Subsection _____ or IRB App. Date _____ <input type="checkbox"/> INTERNATIONAL COOPERATIVE ACTIVITIES: COUNTRY/COUNTRIES INVOLVED <input type="checkbox"/> HIGH RESOLUTION GRAPHICS/OTHER GRAPHICS WHERE EXACT COLOR REPRESENTATION IS REQUIRED FOR PROPER INTERPRETATION (GPG I.E.1)				
PI/PD DEPARTMENT Civil & Environmental Engineering		PI/PD POSTAL ADDRESS 781 Davis Hall		
PI/PD FAX NUMBER 510-643-5258		Berkeley, CA 947204760 United States		
NAMES (TYPED)	High Degree	Yr of Degree	Telephone Number	Electronic Mail Address
Abolhassan Astaneh-Asl	PhD	1982	510-642-4528	astaneh@ce.berkeley.edu
CO-PI/PD				

NSF Form 1207 (10/00)

Page 1 of 2

This document is part of the "World Trade Center Post-Disaster Reconnaissance and Perishable Structural Engineering Data Collection", a research project funded by the U.S. National Science Foundation at the Univ. of California Berkeley with Prof. Abolhassan ASTANEH-ASL (<http://www.ce.berkeley.edu/~astaneh>) as the Principal Investigator. Duration of the project was from 10/2001 to 9/2002. Further Information and project archives are at <http://lib.berkeley.edu/ENGI/WTC>. © 2001 Abolhassan ASTANEH-ASL.

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CERTIFICATION PAGE

Certification for Principal Investigators and Co-Principal Investigators:

I certify to the best of my knowledge that:

- (1) the statements herein (excluding scientific hypotheses and scientific opinions) are true and complete, and
- (2) the text and graphics herein as well as any accompanying publications or other documents, unless otherwise indicated, are the original work of the signatories or individuals working under their supervision. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if an award is made as a result of this proposal.

I understand that the willful provision of false information or concealing a material fact in this proposal or any other communication submitted to NSF is a criminal offense (U.S.Code, Title 18, Section 1001).

Name (Typed)	Signature	Social Security No.*	Date
PI/PD Abolhassan Astaneh-Asl		SSNs are confidential and are not displayed *ON FASTLANE SUBMISSIONS*	
Co-PI/PD			
Co-PI/PD			
Co-PI/PD			

Certification for Authorized Organizational Representative or Individual Applicant:

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding debarment and suspension, drug-free workplace, and lobbying activities (see below), as set forth in Grant Proposal Guide (GPG), NSF 01-2. Willful provision of false information in this application and its supporting documents or in reports required under an ensuring award is a criminal offense (U. S. Code, Title 18, Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution has implemented a written and enforced conflict of interest policy that is consistent with the provisions of Grant Policy Manual Section 510; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will have been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the institution's conflict of interest policy. Conflict which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Debarment Certification

(If answer "yes", please provide explanation.)

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency?

Yes

No

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding \$100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE		SIGNATURE	DATE
NAME/TITLE (TYPED)		No Signature Required	
TELEPHONE NUMBER	ELECTRONIC MAIL ADDRESS	FAX NUMBER	

*SUBMISSION OF SOCIAL SECURITY NUMBERS IS VOLUNTARY AND WILL NOT AFFECT THE ORGANIZATION'S ELIGIBILITY FOR AN AWARD. HOWEVER, THEY ARE AN INTEGRAL PART OF THE INFORMATION SYSTEM AND ASSIST IN PROCESSING THE PROPOSAL. SSN SOLICITED UNDER NSF ACT OF 1950, AS AMENDED.

A Proposal to Supplement:

World Trade Center Post-Disaster Reconnaissance And Perishable Structural Engineering Data Collection

A Research Project Funded by the National Science Foundation

By Abolhassan **Astaneh-Asl**, Ph.D., P.E.,
Professor and Principal Investigator

Department of Civil and Environmental Engineering

781 Davis Hall, University of California, Berkeley, CA 94720-1710

Phone: (510) 642-4528, Fax: (510) 643-4528, Home office: (925) 946-0903
e-mail:Astaneh@ce.berkeley.edu, web:www.ce.berkeley.edu/~astaneh

With Cooperation of Dr. David B. McCallen (at no cost to NSF)
Lawrence Livermore National Laboratory

Summary of Proposed Work

Introduction- On September 11, 2001, World Trade Center towers collapsed because of a terrorist attack. The tragic collapse due to this criminal act will require comprehensive analyses of the structure subjected to initial impact of airplane as well as the intense fire that followed. Such analyses no-doubt will be conducted in the future to establish the cause(s) of the collapse and failure sequence in order to improve design of new buildings and retrofit existing structures. The studies will need *reliable* data on mechanical properties of materials used in the towers, actual as-built steel connections and members as well as floor systems.

Objectives and Work Done To date- The objective of this small grant to conduct post-disaster reconnaissance is to collect perishable data and samples of material and structural members and connections that later can be used to establish their properties. Since September 19, and upon receiving his NSF grant, the Principal Investigator (Dr. Astaneh) has spent about 2.5 weeks in NYC near Ground Zero and at the recycling plant where the steel taken from Ground Zero is being recycled and has studied the steel structure of building at the site of WTC. The attached Progress Report provides a summary of the work done to date.

Justification for This Supplement- The work of investigating the steel from WTC is enormous. There is about 300,000 tons of steel from WTC that will be delivered to recycling plant over the next 4-5 months and that steel needs to be inspected, studied and if important pieces are found among them, to be preserved. The work requires principal Investigator to be staying in NY area and to work at the recycling plant. The original budget for this Small Grant for Exploratory Research was \$15,000 with about \$9,300 usable funds after overhead. During the first trip when PI stayed in NYC and conducted significant amount of study for about 18 days, almost all of the funding was spent on travel costs, protective gear, office supplies etc. So, to continue the study, and specifically to be able to make a second trip to NYC this week in order to continue the investigation, there is a need for additional funding for this trip. This is the main justification for this supplement.

Requested Supplemental Funds - The total funds requested are \$5,000 (please see attached budget sheet for detail of expenditures). The duration of the grant remains the same and is not changed.

**SUMMARY
PROPOSAL BUDGET**

YEAR 1

		FOR NSF USE ONLY			
		PROPOSAL NO.		DURATION (months)	
		Proposed		Granted	
		AWARD NO.			
ORGANIZATION University of California-Berkeley					
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Abolhassan Astaneh-Asl					
A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)		NSF Funded Person-mos.		Funds Requested By proposer	
		CAL	ACAD	SUMR	Funds granted by NSF (if different)
1. Abolhassan Astaneh-Asl - none		0.00	0.00	0.00	\$ 0 \$
2.					
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)		0.00	0.00	0.00	0
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)		0.00	0.00	0.00	0
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES		0.00	0.00	0.00	0
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)		0.00	0.00	0.00	0
3. (0) GRADUATE STUDENTS					0
4. (0) UNDERGRADUATE STUDENTS					0
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					0
6. (0) OTHER					0
TOTAL SALARIES AND WAGES (A + B)					0
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					0
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					0
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)					
TOTAL EQUIPMENT					0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)					2,600
2. FOREIGN					0
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS \$ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
TOTAL NUMBER OF PARTICIPANTS (0)					0
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES					724
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					0
3. CONSULTANT SERVICES					0
4. COMPUTER SERVICES					0
5. SUBAWARDS					0
6. OTHER					0
TOTAL OTHER DIRECT COSTS					724
H. TOTAL DIRECT COSTS (A THROUGH G)					3,324
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) MTDC (Rate: 50.4000, Base: 3325)					
TOTAL INDIRECT COSTS (F&A)					1,676
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					5,000
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)					0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)					\$ 5,000 \$
M. COST SHARING PROPOSED LEVEL \$ 0		AGREED LEVEL IF DIFFERENT \$			
PI / PD TYPED NAME & SIGNATURE* Abolhassan Astaneh-Asl		DATE	FOR NSF USE ONLY		
			INDIRECT COST RATE VERIFICATION		
ORG. REP. TYPED NAME & SIGNATURE*		DATE	Date Checked	Date Of Rate Sheet	Initials - ORG

**SUMMARY
PROPOSAL BUDGET**

Cumulative

		FOR NSF USE ONLY			
		PROPOSAL NO.		DURATION (months)	
		Proposed		Granted	
		AWARD NO.			
ORGANIZATION University of California-Berkeley					
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Abolhassan Astaneh-Asl					
A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)		NSF Funded Person-mos.		Funds Requested By proposer	
		CAL	ACAD	SUMR	Funds granted by NSF (if different)
1. Abolhassan Astaneh-Asl - none		0.00	0.00	0.00	\$ 0 \$
2.					
3.					
4.					
5.					
6. () OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)		0.00	0.00	0.00	0
7. (1) TOTAL SENIOR PERSONNEL (1 - 6)		0.00	0.00	0.00	0
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES		0.00	0.00	0.00	0
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)		0.00	0.00	0.00	0
3. (0) GRADUATE STUDENTS					0
4. (0) UNDERGRADUATE STUDENTS					0
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					0
6. (0) OTHER					0
TOTAL SALARIES AND WAGES (A + B)					0
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					0
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					0
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)					
TOTAL EQUIPMENT					0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)					2,600
2. FOREIGN					0
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS \$ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
TOTAL NUMBER OF PARTICIPANTS (0)					0
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES					724
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					0
3. CONSULTANT SERVICES					0
4. COMPUTER SERVICES					0
5. SUBAWARDS					0
6. OTHER					0
TOTAL OTHER DIRECT COSTS					724
H. TOTAL DIRECT COSTS (A THROUGH G)					3,324
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)					1,676
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					5,000
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)					0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)					\$ 5,000 \$
M. COST SHARING PROPOSED LEVEL \$ 0		AGREED LEVEL IF DIFFERENT \$			
PI / PD TYPED NAME & SIGNATURE* Abolhassan Astaneh-Asl		DATE	FOR NSF USE ONLY		
			INDIRECT COST RATE VERIFICATION		
ORG. REP. TYPED NAME & SIGNATURE*		DATE	Date Checked	Date Of Rate Sheet	Initials - ORG

Budget Justification Page

It has been determined that a second trip to New York is necessary in order to continue the work that has begun on this project.

The original proposal provided for a seemingly adequate amount of time for the Faculty member to perform the work but it did not provide adequate funding for the second trip to New York.

This budget for additional funding requests estimated \$600 additional funding for airfare, \$1,500 for hotel costs, \$300 for per diem, \$200 for ground transportation, and an additional \$724 for supplies.

A Brief Progress Report on World Trade Center Post-Disaster Reconnaissance And Perishable Structural Engineering Data Collection

Only for NSF Use. No Parts Can be used in or incorporated into other publications

The National Science Foundation

Directorate for Engineering (ENG)

Division of Civil & Mechanical Systems (ENG/CMS)

Structural Systems and Hazard Mitigation of Structures Program (ENG/CMS)

(Program Directors: Dr. P. Nelson, Dr. R. Fragaszy, Dr. P. Chang and Dr. S. C. Liu)

By

Abolhassan Astaneh-Asl, Ph.D., P.E., Professor and Principal Investigator

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With collaboration of

David McCallen, Ph.D., Director

Engineering Center for Complex Distributed System, Lawrence Livermore National Laboratory

Description of Project and Progress to Date (October 17th, 2001)

A Objectives:

To conduct post-reconnaissance investigation and collect perishable data on World Trade Center Towers that collapsed and the buildings at the site that were damaged but not collapsed.

B. Progress To date

1. Dr. Astaneh traveled to New York City and stayed at Tribeca Grand Hotel, a few blocks from Ground Zero (GZ) from September 19 to October 7 for field investigation. During the first few weeks after the WTC tragedy, the Tribeca hotel was basically occupied by investigators from Justice Department and rescue workers. Dr. Astaneh has been able for the first 10 days to inspect and study steel that was being removed from GZ and brought to front of his hotel on flatbeds and parked there for change of drivers. The few hours of stop for the driver change have provided him with a unique opportunity to conduct his investigation of steel structure. Figure 1 shows one of the beams from

WTC Building 7 that is clearly burned extensively and collapsed due to what appears to be a classic case of lateral-torsional buckling. Figure 2 shows a column splice from WTC Building seven that has experienced fracture through net section during the final collapse stage. Building 7 was a typical 47-story steel moment frame structure.



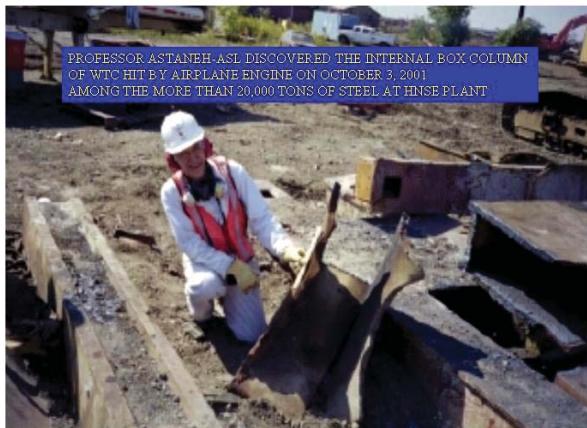
Fig. 1. A Beam from WTC-7 that is Burned and Buckled (Photos by David Morris for Astaneh/UCB/NSF Report)



Fig. 1. A Column Splice from WTC-7 being investigated by Dr. Astaneh
(Photos by David Morris for Astaneh/UCB/NSF Report)

2. During the 2nd 10 days of his stay in NYC when no longer flat-beds with steel stopped in front of his hotel, Dr. Astaneh has been able to establish contact with the Hugo Neu Schnitzer East, one of the recycling plants in New Jersey recycling the WTC steel, and to receive unprecedented support from the plant, including office space and cooperation of all the staff of the plant. He has conducted more systematic part of his investigation there. He has been able to investigate and document a large number of steel structural members. Some of his most striking achievements have been to identify and save at least 4 members (columns and beams) from the WTC Towers that clearly were directly impacted by a plane. In fact, inside two of these members he has found pieces of airplane engines and other parts that indicate direct hit by a plane. One of the pieces of

plane has identification number on it. Figure 3 shows picture of one of these critical members, which were an internal box column hit by airplane engine. Figure 4 is an important member of Building 7. Figure 5 shows a crane at HNSE lifting heavy units



of WTC Towers. Figure 6 is shows views of HNSE recycling and resource recovery plant in Jersey City where Professor Astaneh currently conducts his NSF investigation of the structures of WTC.

Fig.3. Internal Column of WTC Towers

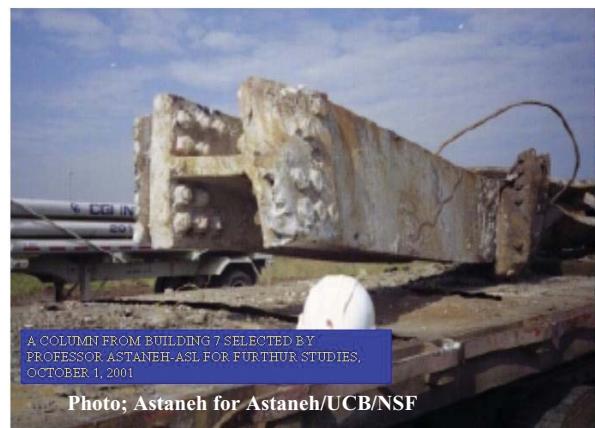


Fig. 4. Column Splice, WTC Building 7

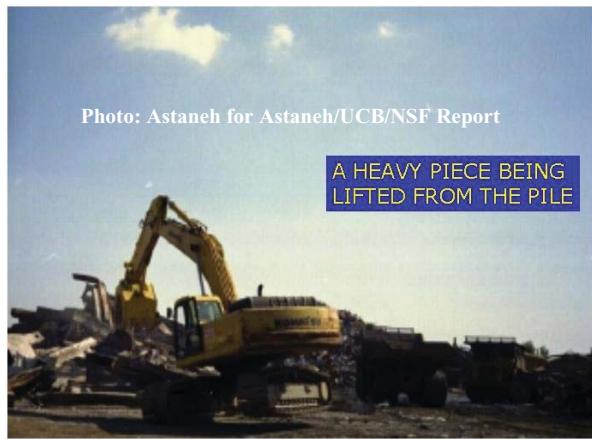


Fig. 5. Crane Lifting a Piece of WTC Towers from the Pile (Notice Uplift of Crane Chain wheels!)

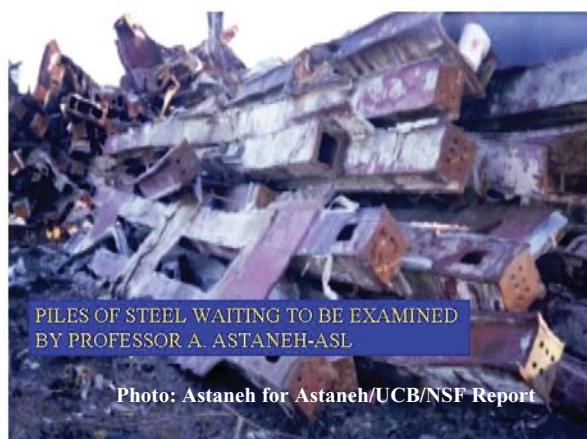


Fig. 6. Piles of Steel Being Investigated by Professor Astaneh at Hugo Neu Schnitzer East Plant

3. In recent days, Dr. Astaneh has been contacted by the Smithsonian and has agreed to fully cooperate with the Smithsonian to eventually and after completing scientific studies of them, to provide these historical pieces to the institute its historical archives.
4. During his stay in NYC (Sept 19-Oct 7) Dr. Astaneh, has had several visits WTC Towers. He has collected very important information on original design and construction as well as Dr. Robertson s opinion on the 1993 WTC bombing and the September 11 collapse. He has established strong relationship with LERA for future interaction and data collection.
5. He has been interviewed by numerous newspapers and TV/Radio stations such as NY Times, Washington Post, CNN, ABC, NBC, CBS, HNK (Tokyo), PBS Lehrer News Hour, NPR-Fresh Air and TV stations in Singapore, Germany, UK and Netherland. He had a special segment on Discovery Channel on his NSF funded research on WTC. Through these interviews he has been able to relay to scientists and more importantly at these times of distress, to general public the facts about how well these structures performed and what might have caused their collapsed almost _ hour after the collapse of 2nd tower.
6. He has collected some small amount of samples of various materials and plans to collect more as he continues his field studies.
7. While in NYC, he has been able to identify and contact a professional photographer who has taken very valuable photos during the collapse as well as for three days after the collapse. He has purchased about 15 photos and has selected another 85 for future purchase upon receiving further funding.
8. The most important achievement of Dr. Astaneh so far, in his opinion, was to save the steel from WTC for study before it is recycled. While being in NYC and after learning about the fact that steel is being recycled he led a fierce and timely campaign to make sure that the steel is inspected and studied before it is recycled.
9. He has been able to train the staff and ironworkers at the Hugo Neu Schnitzer East so that they can identify important members that have structural significance. His efforts bore fruit when an ironworker on October 5th found a member that was hit by a plane (with piece of plane inside!)

10. He plans to return to NYC on October 24th for at least a week of stay and investigation contingent upon receiving further funding from NSF (the Small Grant Funds for the amount of about \$9,000 usable funds has already been depleted.)

F. Personnel

This project is conducted to address structural, mechanical and material aspects of the reconnaissance and perishable data collection. The Principal Investigator for this investigation is Abolhassan Astaneh-Asl, professor of structural engineering at the Department of Civil and Environmental Engineering, University of California Berkeley. Professor Astaneh has been conducting research, teaching courses and developing design guidelines for steel structures subjected to extreme event loads such as seismic and blast loads for more than 30 years. He is currently a member of Committee on Blast-Resistant Design of Steel Structures of American Institute of Steel Construction. This NSF research project is administered by the Institute of Transportation Studies, an Organized research Unit (ORU) of the University of California Berkeley.

Dr. David McCallen of Lawrence Livermore National Laboratory, who is a highly qualified researcher in computational mechanics, modeling and analysis of large structural systems collaborates with the P.I. on all aspects of the project particularly in the areas of modeling, analysis and computational mechanics. The participation of Dr. McCallen is at no-cost basis to NSF.

Mr. Robert Kelman, Senior Vice President and Plant Manager for Hugo Neu Schnitzer East and numerous staff engineers and ironworkers at HNSE plant have become very valuable partners to Professor Astaneh's field investigations. Their participation is at no-cost basis to NSF.