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## Section B - Supplies or Services and Prices

ITEM NO 0001	SUPPLIES/SERVICES	ESTIMATED COST \$1,550,153.00	FIXED FEE \$120,434.00	TOTAL EST. COST PLUS FIXED FEE \$1,670,587.00
	Structural Logic Phase I CPFF			\$1,670,587.00
	The contractor shall furnish the necessary			
	personnel, material, facilities and other			
	services as may be required to perform the			
	Phase I effort outlined in Attachment 1 and			*
	the contractor's technical proposal entitled,			
	"Intentionally Mistuned Periodic Structures			
	for High Stiffness High Damping Structural			
	Logic System" dated 16 June 2010.			
	FOB: Destination			
	AO No. C899/00			

000101

ITEM NO SUPPLIES/SERVICES

Funding for CLIN 0001

**CPFF** 

FOB: Destination AO No. C899/00

**ESTIMATED** COST

**FIXED** FEE

TOTAL EST. COST PLUS FIXED FEE

\$0.00 \$0.00 \$0.00

\$0.00

ACRN AA

\$951,675.00

Page 3 of 27

ITEM NO	SUPPLIES/SERVICES	ESTIMATED COST \$0.00	FIXED FEE \$0.00	TOTAL EST. COST PLUS FIXED FEE \$0.00
	Reports and Deliverables CPFF		·	NSP
	The contractor shall provide reports and deliverables in accordance with Sections C-			
	2 and F-2. Not Separately Priced (NSP) - Preparation costs included in CLIN 0001.			
	FOB: Destination AO No. C899/00			

#### Section C - Descriptions and Specifications

#### CLAUSES INCORPORATED BY FULL TEXT

#### C-1 Scope of Work

- (a) The Contractor shall furnish the necessary personnel, materials, facilities, and other services as may be required to perform Contract Line Items (CLINs) 0001 and 0002, in accordance with the Statement of Work, Attachment I hereto. The work and services to be performed hereunder shall be subject to the requirements and standards contained in the Contractor's proposal entitled "Intentionally Mistuned Periodic Structures For High Stiffness high Damping Structural Logic System" dated 16 June 2010, copies of which are in the possession of both parties.
- (b) In the event of an inconsistency between the provisions of this contract and the Contractor's proposal, the inconsistency shall be resolved by giving precedence in the following order: (1) the contract, (2) the attachments to the contract, and then (3) the Contractor's proposal. (end of clause)

#### C-2 Reports and Other Deliverables

(a) The Contractor shall submit the following reports and other deliverables in accordance with the delivery schedule set forth in Section F. Reports and other deliverables shall be submitted in writing, as defined in FAR 2.101, or as specified below:

#### (1) R&D STATUS REPORT

This brief narrative, not to exceed five pages in length, shall contain the following:

- (i) For first report only; the date work actually started.
- (ii) Description of progress during the reporting period, supported by reasons for any change in approach reported previously
- (iii) Planned activities and milestones for the next reporting period.
- (iv) Description of any major items of experimental or special equipment purchased or constructed during the reporting period.
- Notification of any changes in key personnel associated with the contract during the reporting period.
- (vi) Summary of substantive information derived from noteworthy trips, meetings, and special conferences held in connection with the contract during the reporting period.
- (vii) Summary of all problems or areas of concern.
- (viii) Related accomplishments since last report.
- (ix) Fiscal status, to include reporting of summary level financial data in the following format: (next page)

## R&D STATUS REPORT PROGRAM FINANCIAL STATUS

Work Breakdov	vn	Cur	Cumulative to Date At Completi		Completion	
Structure or Task Element	Planned Expend	Actual Expend	% Budget Compl	At Compl	Latest Revised Estimate	Remarks
Subtotal:						
Management Reserve:						
Or Unallocated Resources:						
TOTAL:				•		
Note: Budget a overrun)	at completion c	hanges only with	the amount of any	scope chang	es. (Not affec	ted by underrun or
Based on curre	ntly authorized	work:				
Is cur	rent funding su	fficient for the cu	rrent fiscal year (F	Y)? (Explain	in narrative i	f"NO")
	YES NO					
What	is the next FY	funding requirem	ent at current antici	ipated levels	?	•
	\$	·				
Have	you included i	n the report narrat	tive any explanation	n of the abov	e data and are	they cross-referenced?
	YES NO	5	٠			

- (2) Preliminary design of building block library
- (3) Preliminary design and demo simulation results meeting metrics
- (4) Optimized design and demo simulation results exceeding metrics
- (5) Sub-assembly and performance characterization
- (6) FINAL REPORT

This report shall document the results of the complete effort and should be delivered at the completion of the contract. If the Government chooses to exercise the options under this contract, the due date for the final report is extended accordingly. Title pages shall include a disclaimer worded substantially as follows:

"The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressly or implied, of the Defense Advanced Research Projects Agency or the U.S. Government."

The Final Technical Report summary shall include:

Task Objectives
Technical Problems
General Methodology (i.e., literature review, laboratory experiments, surveys, etc.)
Technical Results
Important Findings and Conclusions
Significant Hardware Development
Special Comments
Implications for Further Research
Standard Form 298, August 1998

- (b) Reports delivered by the Contractor in the performance of the contract shall be considered "Technical Data" as defined in Section I contract clauses entitled "Rights in Technical Data Noncommercial Items" and "Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation."
- (c) Bulky Reports shall be mailed by other than first-class mail unless the urgency of submission requires use of first-class mail. In this situation, one copy shall be mailed first-class and the remaining copies forwarded by less than first-class.
- (d) All papers and articles published as a result of DARPA sponsored research shall include a statement reflecting the sponsorship. In addition, a bibliography of the titles and authors of all such papers are to be included in the Final Technical Report
  - (1) The cover or title page of each of the above reports or publications prepared, will have the following citation:

Sponsored by
Defense Advanced Research Projects Agency
Strategic Technology Office (STO)
Program: Structural Logic
ARPA Order No. C899/00, Program Code: 0620
Issued by DARPA/CMO under Contract No. HR0011-10-C-0148

(2) The title page shall include a disclaimer worded substantially as follows:

Page 7 of 27

"The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressly or implied, of the Defense Advanced Research Projects Agency or the U.S. Government."

(3) All technical reports must (i) be prepared in accordance with American National Standards Institute (ANSI) Standard Z39.18; (ii) include a Standard Form 298, August 1998; and (iii) be marked with an appropriate Distribution Statement.

(end of clause)

## Section D - Packaging and Marking

## CLAUSES INCORPORATED BY FULL TEXT

## D-1 Packaging and Marking

(a) All items shall be preserved, packaged, packed and marked in accordance with best commercial practices to
meet the packing requirements of the carrier, and to ensure safe delivery at destination.
 (end of clause)

## Section E - Inspection and Acceptance

## INSPECTION AND ACCEPTANCE TERMS

## Supplies/services will be inspected/accepted at:

CLIN 0001	INSPECT AT Destination	INSPECT BY Government	ACCEPT AT Destination	ACCEPT BY Government
000101	N/A	N/A	N/A	N/A
0002	Destination	Government	Destination	Government

## CLAUSES INCORPORATED BY REFERENCE

52.246-8 Inspection Of Research And Development Cost Reimbursement

MAY 2001

#### Section F - Deliveries or Performance

#### **DELIVERY INFORMATION**

CLIN DELIVERY DATE QUANTITY SHIP TO ADDRESS UIC

0001 26 mths. ADC DARPA HR0011

DR. AARON LAZARUS

STRATEGIC TECHNOLOGY OFFICE 3701 NORTH FAIRFAX DRIVE ARLINGTON VA 22203-1714

703-526-4767 FOB: Destination

000101 N/A N/A N/A

0002 26 mths. ADC DARPA HR0011

DR. AARON LAZARUS

STRATEGIC TECHNOLOGY OFFICE 3701 NORTH FAIRFAX DRIVE ARLINGTON VA 22203-1714

703-526-4767 FOB: Destination

#### CLAUSES INCORPORATED BY REFERENCE

52.247-34 F.O.B. Destination NOV 1991

#### CLAUSES INCORPORATED BY FULL TEXT

#### F-1 Term of Contract

The term of the contract commences on the effective date of the contract and continues through 26 months thereafter.

(end of clause)

#### F-2 Reports and Other Deliverables

(a) Delivery of all reports and other deliverables shall be made to the addressee specified in F-3 entitled "Report Distribution" in accordance with the following:

Description	Due Date
R&D Status Reports: Program status	
on technical progress, milestones,	Monthly

schedule and financial reports	
Preliminary design of building block library	Month 12
Preliminary design and demo simulation results meeting metrics	Month 18
Optimized design and demo simulation results exceeding metrics	Month 24
Sub-Assembly and performance Characterization	Month 25
Final Report	Month 26

(end of clause)

#### F-3 Report Distribution

(a) DARPA/Strategic Technology Office DARPA Program Manager Attn: Aaron Lazarus 3701 North Fairfax Drive Arlington, VA 22203-1714 Email: (Aaron.Lazarus@darpa.mil) (one copy each report)

(b) DARPA/CMO
Attn: Robin Swatloski
3701 North Fairfax Drive
Arlington, VA 22203-1714
Email: Robin.Swatloski@darpa.mil
(one copy each report)

(c) DARPA/STO
Attn: Patrick Bailey, ADPM
3701 North Fairfax Drive
Arlington, VA 22203-1714
Email: (Patrick.Baily@darpa.mil)
(one copy each report)

(d) Dr. David M. Stepp
U.S. Army Research Office
AMSRD-ARL-RO-EM (Materials Sciences Division)
P.O. Box 12211
Research Triangle Park, NC 27709-2211
E-mail: david.m.stepp@us.army.mil
(one copy each report)

(e) DARPA/Research Services 3701 North Fairfax Drive Arlington, VA 22203-1714 Email: Research Services@darpa.mil (one copy of the Final Technical Report)

## (f) Defense Technical Information Center

(1) Email: TR@dtic.mil (one electronic copy of the Final Technical Report, if unclassified)

OR

(2) Attn: DTIC-BCS 8725 John J. Kingman Road, Suite 0944 Fort Belvoir, VA 22060-0944 (two hard copies of the Final Technical Report if unclassified)

Note 1: Hard-copy distribution to those persons in a) through d) shall be for the Final Report only. All other report distributions shall be made via E-mail.

Note: For the Final Technical Report(s), the contractor must also comply with the distribution requirements of DFARS 252-235-7011, as applicable.

(end of clause)

#### F-4 Notice Regarding Late Delivery

In the event the Contractor anticipates difficulty in complying with the contract delivery schedule, the Contractor shall immediately notify the Contracting Officer in writing, giving pertinent details, including the date by which it expects to make delivery; PROVIDED, however, that this date shall be informational only in character and the receipt thereof shall not be construed as a waiver by the Government of any contract delivery schedule, or any rights or remedies provided by law or under this contract.

(end of clause)

#### Section G - Contract Administration Data

#### ACCOUNTING AND APPROPRIATION DATA

AA: 9700400 1320 C899 P0620 2525 DPAC 0 5554 S12136 62715E AMOUNT: \$951,675.00 CIN 00000000000000000000000000000000: \$951,675.00

#### CLAUSES INCORPORATED BY FULL TEXT

#### G-1 Procuring Office Representative

The Procuring Office Representative is Robin Swatloski, DARPA/CMO, 3701 North Fairfax Drive, Arlington, VA 22203-1714, telephone: 571-218-4542, e-mail: robin.swatloski@darpa.mil. (end of clause)

- G-2 Electronic Submission of Payment Requests
- (a) Invoices for goods received or services rendered under this contract shall be submitted electronically through Wide Area Work Flow Receipt and Acceptance (WAWF):
- (1) Vendors that have never used WAWF shall follow the directions in the WAWF Vendor Getting Started Guide available at the following website; http://www.dfas.mil/contractorpay/electroniccommerce/wideareaworkflow.html. This website also contains links for Vendor training and practice. Additional support can be obtained by calling WAWF Customer Service at 866-618-5988.
- (2) Back up documentation (such as timesheets, monthly status reports, etc.) can be included and attached to the invoice in WAWF. Attachments should be in PDF format, but Attachments created in any Microsoft Office product may be attached. Total limit for the size of files per invoice is 5 megabytes.
- (b) The following information, regarding invoice routing DoDAAC's, must be entered for completion of the invoice in WAWF:

WAWF Invoice Type	Cost Voucher
Issuing Office DoDAAC	HR0011, ext.16
Admin Office DoDAAC	S0512A
Service Approver DoDAAC (Cost Voucher)	S0512A
DCAA Office DoDAAC	HAA724
Paying Office DoDAAC	HQ0339

(c) Cost Vouchers from Contractors approved by DCAA for direct billing will be directly routed to DFAS. Cost Vouchers from Contractors not approved for direct billing will be routed to DCAA for approval before the Cost Voucher is routed to DFAS. All Final Cost Voucher submissions will be routed to the Service Approver for approval. The DCAA office for this award is:

DCAA Central Coast Branch Office DoDAAC: HAA724 770 Pasea Cmarilio Suite 310 Camarillo, CA 93010-6065

Phone No: 805-383-4200 Fax No: 805-383-4299 Email: dcaa-fao4431@dcaa.mil

(d) For each invoice/cost voucher submitted for payment, the contractor shall also e-mail the WAWF automated invoice notice directly to the following points of contact:

Name	B-mail	Phone	Role
Robin Swatloski	Robin.Swatloski@darpa.mil	571-218-4542	Contracting Officer
David M. Stepp	David.m.stepp@us.army.mil	919-549-4329	COR

- G-3 Delegation of Authority for Contract Administration
- (a) DCMA Los Angeles (DoDAAC: S0512A), is hereby designated as the Contracting Officer's authorized representative for administering this contract in accordance with current directives. (end of clause)
- G-4 Contracting Officer's Representative (COR)
- (a) Performance of work under this contract shall be subject to the technical direction of:

Dr. David M. Stepp
U.S. Army Research Office
AMSRD-ARL-RO-EM (Materials Science Division)
P.O. Box 12211
Research Triangle Park, NC 27709-2211

Phone: 919-549-4329
Fax: 919-549-4399
David m stemp@us ermu m

David.m.stepp@us.army.mil

Such technical direction includes those instructions to the Contractor necessary to accomplish the Statement of Work. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The COR does not have the authority to alter the Contractor's obligations or to change the specifications of the contract.

- (b) Technical direction shall not include any direction which:
- (1) Constitutes additional work outside the scope of work;
- (2) Constitutes a change as defined in Section I contract clause entitled "Changes";
- (3) In any manner causes an increase or decrease in the total estimated cost or the time required for contract performance; or
- (4) Changes any of the stated terms, conditions, or specifications of the contract. (end of clause)

#### G-5 Payment Instructions for Multiple Accounting Classification Citations

If there is more than one ACRN within a contract line item, the payment office will make payment using the oldest fiscal year appropriations first, exhausting all funds in the previous fiscal year before disbursing from the next fiscal year. In the event there is more than one ACRN associated with the same fiscal year, the payment amount shall be disbursed from each ACRN within a fiscal year in the same proportion as the amount of funding obligated for each ACRN within the fiscal year.

(end of clause)

#### G-6 Incremental Funding

This contract shall be subject to incremental funding with \$951,675.00 presently made available for performance under this contract. It is estimated that the funds presently available are sufficient to permit the Contractor's performance through the first 12 months of a total 26 month effort. Except in accordance with the Section I clause FAR 52.232-22, "Limitation of Funds," no legal liability of the part of the Government for payment of any money in excess of \$951,675.00 shall arise unless and until additional funds are made available by the Contracting Officer through a modification to this contract. (end of clause)

#### G-7 Payment of Cost and Fee

- (a) As consideration for the proper performance of work required under this contract, the Contractor shall be paid as follows:
- (1) Costs, as provided for under Section I contract clause titled "Allowable Cost and Payment" not to exceed the amount set forth as "Total Estimated Cost" in Section B, and subject further to those Section I clauses entitled "Limitation of Cost" or "Limitation of Funds".
- (2) A fixed fee in the amount set forth as "Fixed Fee" in Section B, in accordance with the Section I contract clause entitled "Fixed Fee". The Contractor may bill on each invoice the amount of the fixed fee bearing the same percentage to the total fixed fee as the amount of cost billed bears to the total estimated cost. (end of clause)

Section H - Special Contract Requirements

#### CLAUSES INCORPORATED BY FULL TEXT

#### H-1 Contracting Officer

Notwithstanding any other provision of this contract, the Contracting Officer is the only individual authorized to redirect the effort or in any way amend or modify any of the terms of this contract. If, as a result of technical discussions, it is desirable to alter contract obligations or statement of work, a modification must be issued in writing and signed by the Contracting Officer.

(end of clause)

#### H-2 Type of Contract

This is a cost plus fixed fee completion type of contract.

(end of clause)

#### H-3 Public Release or Dissemination of Information

(1) With the exception of the work to be performed by University subcontractor(s) as noted at subparagraph (3) below, DARPA expects the work performed under this contract will NOT be fundamental research, and it is, therefore, subject to the following publication restrictions:

There shall be no dissemination or publication, except within and between the Contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval, which will be communicated to the Contractor by email through the DARPA Public Release Center (PRC) at PRC@darpa.mil. All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the Contractor. These restrictions must be flowed down to all subcontractors, with the exception of the subcontractors listed in paragraph (3) of this clause. Any publications shall incorporate an Acknowledgement of Support and Disclaimer in accordance with DFARs 252.235-7010.

- (2) When submitting material for written approval for open publication as described in subparagraph (a) above, the Contractor must submit a request for public release request to the PRC and include the following information: 1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx 30 words), number of pages (or minutes of video) and document type (briefing, report, abstract, article, or paper); 2) Event Information: event type (conference, principle investigator meeting, article or paper), event date, desired date for DARPA's approval; 3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and 4) Contractor's Information: POC name, e-mail and phone. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests can be sent either via e-mail to PRC@darpa.mil or via hard copy to 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to www.darpa.mil/prc for information about DARPA's public release process.
- (3) At this time, DARPA expects the work performed under this contract by the below listed University subcontractor(s) to be fundamental research, and it is, therefore, not subject to publication restrictions. Papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and requirements, pursuant to DoD Instruction 5230.27 dated October 6, 1987. Should the character of the research change during performance of this subaward so that the research is no longer considered fundamental, the contract between the prime and University subcontractor listed below will be modified to impose the restrictions on public

release and dissemination of information that apply to those research efforts that are not considered fundamental research.

Subcontractor	Statement of Work Title and Date
University of Michigan	Structural Logic, BAA10-54 dated 9 June 2010

(end of clause)

#### H-4 Key Personnel

(a) The Contractor shall notify the Contracting Officer prior to making any change in key personnel. Key personnel are defined as follows:

(b) The Contractor must demonstrate that the qualifications of the prospective personnel are equal to or better than the qualifications of the personnel being replaced. Notwithstanding any of the foregoing provisions, key personnel shall be furnished unless the Contractor has demonstrated to the satisfaction of the COR that the qualifications of the proposed substitute personnel are equal to or better than the qualifications of the personnel being replaced.
(end of clause)

#### H-5 Restrictions on Printing

Unless otherwise authorized in writing by the Contracting Officer, reports, data, or other written material produced using funds provided by this contract and submitted hereunder shall be reproduced only by duplicating processes and shall not exceed 5,000 single page reports or a total of 25,000 pages of a multiple-page report. These restrictions do not preclude the writing, editing, preparation of manuscript or reproducible copy of related illustrative materials if required as part of this contract, or incidental printing such as forms or materials necessary to be used by the Contractor to respond to the terms of the contract. (end of clause)

#### H-6 Contractor Representations and Certifications

The Contractor's Representations and Certifications dated 18 August 2010 (ORCA submission), and as supplemented on 16 September 2010, are incorporated herein by reference. (end of clause)

### H-7 Insurance Schedule

The Contractor shall maintain the types of insurance listed in FAR 28.307-2 (a), (b) and (c), with the minimum amounts of liability indicated therein. The types of insurance coverage listed in paragraphs (d) and (e) shall also be maintained when applicable. (end of clause)

#### H-8 Travel

(a) University Performers: Reimbursement for travel-related expenses shall be as stipulated in OMB Circular A-21 (2 CFR 220) as prescribed by FAR Part 31.3.

- (b) Non-Profit Performers: Reimbursement for travel-related expenses shall be as stipulated in OMB Circular A-122 (2 CFR 230) as prescribed by FAR Part 31.7
- (c) Non-University/For-Profit Performers: Reimbursement for travel-related expenses shall be in accordance with the Contractor's approved travel policy. The Federal Travel Regulations, Joint Travel Regulations (JTR), and Standardized Regulations as stated in FAR 31.205-46 will be used as a guide in determining reasonableness of per diem costs. Costs for travel shall be allowable subject to the provisions of FAR 31.205-46.
- (d) In connection with direct charge to the contract of travel-related expenses, the Contractor shall hold travel to the minimum required to meet the objectives of the contract, and substantial deviations from the amount of travel agreed to during contract negotiation shall not be made without the authorization of the Contracting Officer.

When applicable, the Contractor shall notify the COR of proposed travel of an employee beyond that agreed to during negotiations.

- (e) Approval of the Contracting Officer shall be obtained in advance for attendance by personnel at training courses, seminars, and other meetings not directly related to contract performance if the costs for the courses, seminars, and other meetings are charged to the contract.
- (f) All foreign travel shall be authorized and approved in advance, in writing, by the Contracting Officer. Request for such travel must be submitted to the Contracting Officer at least 45 days in advance of traveler's anticipated departure date, and shall include traveler's itinerary of United States Flag Air Carriers. (end of clause)

#### H-9 Metric System

- (a) The Defense Advanced Research Projects Agency (DARPA) will consider the use of the metric system in all of its activities consistent with operational, economical, technical and safety requirements.
- (b) The metric system will be considered for use in all new designs. When it is deemed not to be in the best interest of the DoD to provide metric design, justification shall be provided.
- (c) Physical and operational interfaces between metric items and U.S. customary items will be designed to assure that interchangeability and interoperability will not be affected.
- (d) Existing designs dimensioned in U.S. customary units will be converted to metric units only if determined to be necessary or advantageous. Unnecessary retrofit of existing systems with new metric components will be avoided where both the new metric and existing units are interchangeable and interoperable. Normally, the system of measurement in which an item is originally designed will be retained for the life of the item.
- (e) During the metric transition phase hybrid metric and U.S. customary designs will be necessary and acceptable. Material components, parts, subassemblies, and semi-fabricated material, which are of adequate or when it is otherwise specifically determined to be in the best interest of the Department of Defense. Bulk materials will be specified and accepted in metric units when it is expedient or economical to do so.
- (f) Technical reports, studies, and position papers, (except those pertaining to items dimensioned in U.S. customary units) will include metric units of measurement in addition to or in lieu of U.S. customary units. With respect to existing contracts, this requirement applies only if such documentation can be obtained without an increase in contract costs.
- (g) Use of the dual dimensions (i.e., both metric and U.S. customary dimensions) on drawings will be avoided unless it is determined in specific instances that such usage will be beneficial. However, the use of tables on the document to translate dimensions from one system of measurement to the other is acceptable.

(end of clause)

#### H-10 Consent to Subcontract

(a) Pursuant to the clause of the General Provisions entitled "Subcontracts (JUN 2007)," FAR 52.244-2(j), the Contracting Officer hereby consents to the placement of subcontract(s) with the following firm(s)/consultant(s) at the ceiling amounts specified:

NAME

TOTAL AMOUNT

University of Michigan, Ann Arbor

\$665,449

- (b) Approval must be obtained from the Administrative Contracting Officer to increase the use or number of subcontractors from the level established in subparagraph (a). (end of clause)
- H-11 Small Business Subcontracting Plan and Goals
- (a) The Contractor's Master Small Business Subcontracting Plan, dated 22 September 2008, and the Contractor's Individual Subcontracting Plan dated 15 June 2010, is incorporated herein and made a part of this contract by reference.

  (end of clause)
- H-12 Proprietary Technical Data and Computer Software
- (a) Any deliverable technical data or computer software developed or generated at private expense and considered to be proprietary by the Contractor or subcontractors shall be delivered in accordance with DFARS 252.227-7013 and 252.227-7014. A list of such data and/or software is incorporated into the contract as Attachment No. 2.

(end of clause)

#### H-13 Contractor Performance Information

Contractor performance information for this contract will be collected in the Contractor Performance Assessment and Reporting System (CPARS) web-enabled tool. The contractor designated representative is:

(b)(6)

1049 Camino Dos Rios
Thousand Oaks, CA 91360
Email; (b)(6)

Only this individual will be granted access to the CPARS website (http://cpars.navy.mil/) to review individual assessment reports as they are prepared by the Assessing Official, prior to their being finalized and posted.

The Contractor will be given 30 days to comment on the assessment report prior to its being finalized. Should the Contractor nonconcur with the Assessing Official's report, the report will be reviewed by the appropriate Reviewing

Official prior to being finalized. The Contractor will be informed of the Reviewing Official's comments, and the report will be finalized. There will be no further opportunity for Contractor comment. (end of clause)

## H-14 Invention Disclosure and Reports

All written communications required for invention disclosures and reports shall be submitted to the Administrative Contracting Officer (ACO). All unclassified required reporting shall be accomplished using the i-Edison.gov reporting website (<a href="http://s-edison.info.nih.gov/i-Edison/">http://s-edison.info.nih.gov/i-Edison/</a>).

## Section I - Contract Clauses

## CLAUSES INCORPORATED BY REFERENCE

	·	
52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal	JAN 1997
	or Improper Activity	
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal	SEP 2007
	Transactions	
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.204-7	Central Contractor Registration	APR 2008
52.204-10	Reporting Executive Compensation and First-Tier	JUL 2010
***	Subcontract Awards	
52.209-6	Protecting the Government's Interest When Subcontracting	SEP 2006
	With Contractors Debarred, Suspended, or Proposed for	
	Debarment	
52.215-2	Audit and RecordsNegotiation	MAR 2009
52.215-8	Order of Precedence-Uniform Contract Format	OCT 1997
52.215-10	Price Reduction for Defective Cost or Pricing Data	OCT 1997
52.215-11	Price Reduction for Defective Cost or Pricing Data	OCT 1997
#0.01# 10	Modifications	
52.215-12	Subcontractor Cost or Pricing Data	OCT 1997
52.215-13	Subcontractor Cost or Pricing DataModifications	OCT 1997
52.215-14	Integrity of Unit Prices	OCT 1997
52.215-15	Pension Adjustments and Asset Reversions	OCT 2004
52.215-16	Facilities Capital Cost of Money	JUN 2003
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits	3 JUL 2005
70 01 7 01	(PRB) Other than Pensions	
52.215-21	Requirements for Cost or Pricing Data or Information Other	OCT 1997
50.01/ 7	Than Cost or Pricing DataModifications	750 2000
52.216-7 52.216-8	Allowable Cost And Payment	DEC 2002
	Fixed Fee	MAR 1997
52.219-4	Notice of Price Evaluation Preference for HUBZone Small Business Concerns	JUL 2005
60 310 9 (DD3)		1417 0004
52.219-8 (DEV)	Utilization of Small Business Concerns (DEVIATION) Small Business Subcontracting Plan (Deviation)	MAY 2004
52.219-9 (Dev) 52.219-16		APR 2008
52.219-16 52.219-28	Liquidated Damages-Subcontracting Plan Post-Award Small Business Program Rerepresentation	JAN 1999
52.229-28 52.222-3	Convict Labor	APR 2009
52.222-3 52.222-21	Prohibition Of Segregated Facilities	JUN 2003
52.222-21 52.222-26		FEB 1999 MAR 2007
52.222-26 52.222-35	Equal Opportunity	
32.222-33	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Vetera	
·	Of The Vietnam Era, and Other Eligible Veterans	
52.222-50	Combating Trafficking in Persons	FEB 2009
52.222-54	Employment Eligibility Verification	JAN 2009
	• • •	

## Page 22 of 27

		JUN 2010
	Relations Act (DEVIATION 2010-00013)	
	Drug-Free Workplace	MAY 2001
	Certification of Toxic Chemical Release Reporting	AUG 2003
	Utilization Of Indian Organizations And Indian-Owned Economic Enterprises	JUN 2000
	Authorization And Consent (Dec 2007) - Alternate I	APR 1984
	Notice And Assistance Regarding Patent And Copyright	DEC 2007
	Infringement	DEC 2007
•	Insurance-Liability To Third Persons	MAR 1996
	Cost Accounting Standards	OCT 2008
52.230-6	Administration of Cost Accounting Standards	JUN 2010
	Limitation On Withholding Of Payments	
52.232-17	Interest	APR 1984
	Limitation Of Cost	OCT 2008
52.232-22	Limitation Of Cost  Limitation Of Funds	APR 1984
		APR 1984
52.232-23	Assignment Of Claims	JAN 1986
52.232-25	Prompt Payment	OCT 2008
52.232-33	Payment by Electronic Funds Transfer-Central Contractor	OCT 2003
	Registration	
52.233-1 Alt I	Disputes (Jul 2002) - Alternate I	DEC 1991
52.233-3 Alt I	Protest After Award (Aug 1996) - Alternate I	JUN 1985
52.233-4	Applicable Law for Breach of Contract Claim	OCT 2004
52,242-1	Notice of Intent to Disallow Costs	APR 1984
<b>52.242-3</b>	Penalties for Unallowable Costs	MAY 2001
52.242-4	Certification of Final Indirect Costs	JAN 1997
<b>52.242-</b> 13	Bankruptcy	JUL 1995
52.242-15 Alt I	Stop-Work Order (Aug 1989) - Alternate I	APR 1984
52.243-2 Alt V	ChangesCost-Reimbursement (Aug 1987) - Alternate V	APR 1984
52.244-2	Subcontracts	JUN 2007
52.244-5	Competition In Subcontracting	DEC 1996
52.244-6	Subcontracts for Commercial Items	JUN 2010
52.245-1 (Dev)	Government Property (Deviation)	JUN 2007
52.245-9	Use And Charges	AUG 2010
52.246-23	Limitation Of Liability	FEB 1997
52.247-1	Commercial Bill Of Lading Notations	FEB 2006
52.249-6	Termination (Cost Reimbursement)	MAY 2004
52.249-14	Excusable Delays	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000 252.203-7000	Contracting Officer's Representative	DEC 1991
232.203-7000	Requirements Relating to Compensation of Former DoD	JAN 2009
050 000 8001	Officials	DDC 2004
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense	-DEC 2008
	Contract-Related Felonies	
252.203-7002	Requirement to Inform Employees of Whistleblower Rights	
252.204-7003	Control Of Government Personnel Work Product	APR 1992
	Central Contractor Registration (52.204-7) Alternate A	SEP 2007
252.204-7006	Billing Instructions	OCT 2005
252.204-7008	Export-Controlled Items	APR 2010
252.205-7000	Provision Of Information To Cooperative Agreement Holder	
252.209-7004	Subcontracting With Firms That Are Owned or Controlled B	ByDEC 2006
	The Government of a Terrorist Country	
252.211-7003	Item Identification and Valuation	AUG 2008

252.211-7007	Reporting of Government-Furnished Equipment in the DoD Item Unique Identification (IUID) Registry	NOV 2008
252.215-7000	Pricing Adjustments	DEC 1991
252.215-7002	Cost Estimating System Requirements	DEC 2006
252.219-7003 (Dev)	Small Business Subcontracting Plan (DoD Contracts)	APR 2007
• •	(Deviation)	
252.225-7001	Buy American Act And Balance Of Payments Program	JAN 2009
252.225-7002	Qualifying Country Sources As Subcontractors	APR 2003
252.225-7004	Report of Intended Performance Outside the United States	MAY 2007
	and CanadaSubmission after Award	
252.225-7006	Quarterly Reporting of Actual Contract Performance Outside	MAY 2007
	the United States	
252.225-7012	Preference For Certain Domestic Commodities	JUN 2010
252.225-7013	Duty-Free Entry	<b>DEC 2009</b>
252.227-7000	Non-estoppel	OCT 1966
252.227-7014	Rights in Noncommercial Computer Software and	JUN 1995
	Noncommercial Computer Software Documentation	
252.227-7016	Rights in Bid or Proposal Information	JUN 1995
252.227-7019	Validation of Asserted Restrictions-Computer Software	JUN 1995
252.227-7027	Deferred Ordering Of Technical Data Or Computer Software	APR 1988
252,227-7030	Technical Data—Withholding Of Payment	MAR 2000
252.227-7037	Validation of Restrictive Markings on Technical Data	SEP 1999
252.227-7038	Patent RightsOwnership by the Contractor (Large Business)	DEC 2007
252.231-7000	Supplemental Cost Principles	DEC 1991
252.232-7003	Electronic Submission of Payment Requests and Receiving	<b>MAR 2008</b>
	Reports	
252.232-7010	Levies on Contract Payments	<b>DEC 2006</b>
252.235-7011	Final Scientific or Technical Report	NOV 2004
252.239-7001	Information Assurance Contractor Training and Certification	JAN 2008
252.242-7004	Material Management And Accounting System	JUL 2009
252.243-7002	Requests for Equitable Adjustment	<b>MAR 1998</b>
252.244-7000	Subcontracts for Commercial Items and Commercial	<b>AUG 2009</b>
	Components (DoD Contracts)	
252.247-7023	Transportation of Supplies by Sea	<b>MAY 2002</b>
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

## CLAUSES INCORPORATED BY FULL TEXT

#### 52.215-19 NOTIFICATION OF OWNERSHIP CHANGES (OCT 1997)

- (a) The Contractor shall make the following notifications in writing:
- (1) When the Contractor becomes aware that a change in its ownership has occurred, or is certain to occur, that could result in changes in the valuation of its capitalized assets in the accounting records, the Contractor shall notify the Administrative Contracting Officer (ACO) within 30 days.
- (2) The Contractor shall also notify the ACO within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership.
- (b) The Contractor shali---
- (1) Maintain current, accurate, and complete inventory records of assets and their costs;

- (2) Provide the ACO or designated representative ready access to the records upon request;
- (3) Ensure that all individual and grouped assets, their capitalized values, accumulated depreciation or amortization, and remaining useful lives are identified accurately before and after each of the Contractor's ownership changes; and
- (4) Retain and continue to maintain depreciation and amortization schedules based on the asset records maintained before each Contractor ownership change.

The Contractor shall include the substance of this clause in all subcontracts under this contract that meet the applicability requirement of FAR 15.408(k).

(End of clause)

#### 52.222-2 PAYMENT FOR OVERTIME PREMIUMS (JUL 1990)

- (a) The use of overtime is authorized under this contract if the overtime premium cost does not exceed 0.00 or the overtime premium is paid for work --
- (1) Necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdowns of production equipment, or occasional production bottlenecks of a sporadic nature;
- (2) By indirect-labor employees such as those performing duties in connection with administration, protection, transportation, maintenance, standby plant protection, operation of utilities, or accounting;
- (3) To perform tests, industrial processes, laboratory procedures, loading or unloading of transportation conveyances, and operations in flight or afloat that are continuous in nature and cannot reasonably be interrupted or completed otherwise; or
- (4) That will result in lower overall costs to the Government.
- (b) Any request for estimated overtime premiums that exceeds the amount specified above shall include all estimated overtime for contract completion and shall—
- (1) Identify the work unit; e.g., department or section in which the requested overtime will be used, together with present workload, staffing, and other data of the affected unit sufficient to permit the Contracting Officer to evaluate the necessity for the overtime;
- (2) Demonstrate the effect that denial of the request will have on the contract delivery or performance schedule;
- (3) Identify the extent to which approval of overtime would affect the performance or payments in connection with other Government contracts, together with identification of each affected contract; and
- (4) Provide reasons why the required work cannot be performed by using multishift operations or by employing additional personnel.
- \* Insert either "zero" or the dollar amount agreed to during negotiations. The inserted figure does not apply to the exceptions in paragraph (a)(1) through (a)(4) of the clause.

(End of clause)

#### 52.247-1 COMMERCIAL BILL OF LADING NOTATIONS (FEB 2006)

When the Contracting Officer authorizes supplies to be shipped on a commercial bill of lading and the Contractor will be reimbursed these transportation costs as direct allowable costs, the Contractor shall ensure before shipment is made that the commercial shipping documents are annotated with either of the following notations, as appropriate:

(a) If the Government is shown as the consignor or the consignee, the annotation shall be:

"Transportation is for authorized supplies under Contract # HR0011-10-C-0148 and the actual total transportation charges paid to the carrier(s) by the consignor or consignee are assignable to, and shall be reimbursed by, the Government."

(b) If the Government is not shown as the consignor or the consignee, the annotation shall be:

"Transportation is for authorized supplies under Contract # HR0011-10-C-0148 and the actual total transportation charges paid to the carrier(s) by the consignor or consignee shall be reimbursed by the Government, pursuant to cost-reimbursement Contract # HR0011-10-C-0148. This may be confirmed by the Contacting Officer."

(End of clause)

#### 52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

http://www.arnet.gov/far/

(End of clause)

#### 52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)

- (a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the clause.
- (b) The use in this solicitation or contract of any Defense Federal Acquisition Regulation SUpplement (48 CFR Chapter 2) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of clause)

252.235-7010 Acknowledgment of Support and Disclaimer. (MAY 1995)

(a) The Contractor shall include an acknowledgment of the Government's support in the publication of any material

based on or developed under this contract, stated in the following terms: This material is based upon work supported by the [name of contracting agency(ies)] under Contract No. HR0011-10-C-0148.

(b) All material, except scientific articles or papers published in scientific journals, must, in addition to any notices or disclaimers by the Contractor, also contain the following disclaimer: Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Defense Advanced Research Project Agency.

## Section J - List of Documents, Exhibits and Other Attachments

## Exhibit/Attachment Table of Contents

DOCUMENT TYPE	DESCRIPTION	PAGES	DATE
Attachment I	Statement of Work for Structural Logic	3	22-SEP-2010
Attachment 2	Identification and Assertion of IP Restrictions	1	22-SEP-2010

## ATTACHMENT 1 Statement of Work (SOW)

The execution timeline of the program can be summarized as Stage I —concept development, validation, and preliminary design of building block library; followed by Stage II —prototype development, characterization, design refinement and optimization; then followed by documentation effort. The program consists of two major technical tasks — building block development and subassembly synthesis, with successive prototype demonstrations documenting the increasing maturity of the technology.

#### Task 1: Develop building blocks of structural logic

Task 1.1. Analyze and synthesize mistuned periodic structures to achieve modular elements that can provide both high stiffness and high damping

The contractor will develop tools to analyze and synthesize mistuned periodic structures for demonstrating the viability of the concept. The contractor will first develop mathematical models of the proposed designs of periodic structures via physical principle-based approach and finite element analysis. The contractor will develop an appropriate performance objective index to synthesize the mistuned design such that the optimal performance for damping can be achieved by adding/subtracting stiffness and mass elements from different sub-structures.

Task 1.2. Analyze and synthesize novel modular element concepts that utilize transient instability or negative stiffness to generate structural stiffness and damping changes

The contractor will design structural cells integrating negative stiffness devices for enhanced stiffness and damping performance. Devices will be designed and optimized for applications such as shock absorptions and low-frequency vibration induced large deformation of the constitutive cell. The contractor will expand currently available analytical models and numerical tools to simulate the nonlinear transient dynamic response integrating the instability constituent elements. The contractor will develop different models with increasing level of accuracy and details to provide information to evaluate the stress/strain distribution and fatigue loads produced by the nonlinear adaptive devices. The contractor will also evaluate the effect of different cell geometries and perform parametric studies on the geometrical sizing parameters with respect to the overall performance.

Task 1.3 Develop prototypes and characterize performance

The contractor will fabricate prototypes of the structural building blocks designed in Tasks 1.1 and 1.2, then characterize their mechanical and dynamic performances. The contractor will perform tests on a scaled-down version of the periodic structures for stiffness and damping performance characterization with material testing system (MTS) equipment. The stiffness tests will be performed on a representative sample using an MTS machine. The specimen will also be equipped with strain gauges for accurate monitoring of the loading conditions. The damping will be estimated through the acquisition of experimental transfer functions using a shaker drive with different input

Attachment 1
Contract Number: HR0011-10-C-0148

signals. The contractor will also evaluate the damping level under static and dynamic preload conditions. The damping tests will be performed under both low-frequency highload and high-frequency (>15Hz) conditions. The experimental results will be used to validate the design concept, compare with numerical predictions, and the program metric requirements.

## Task 1.4 Analyze and synthesize integrated modular elements to achieve even more effective and multi-function modules.

The contractor shall investigate the possibility of enhancing the overall performance of the single constitutive cell by combining the techniques developed in Task 1.1 through Task 1.3. In particular, the possibility of achieving, in a single cell, high performance over an extended load and frequency range will be evaluated. Due to the complexity of the cell design, this task will be mainly conducted through finite element simulations, which will build upon the understanding of the physical mechanisms and characteristic parameters developed in the previous tasks. The contractor will evaluate different loading scenarios including shock, periodic low/high frequencies, and random excitations. The different scenarios will be representative of the experimental conditions performed in Task 1.3. The contractor will also investigate the possibility of developing a condensed finite element model approach to simulate the dynamic behavior of the constitutive element in large cell assemblies.

#### Task 2: Synthesize and assemble structural logic

### Task 2.1 Develop topological synthesis algorithm for vibration confinement

The contractor shall develop algorithms and design tools to achieve vibration confinement in generic structures with topology optimization. Topology optimization will be used to synthesize the topological layouts of both the pseudo-periodic systems and general sub-assembly structural systems by optimal distribution of stiffness and damping elements to ensure high damping characteristics. The techniques developed can be applied to optimally design the periodic structures developed in Task 1 and synthesize the best configuration to achieve program goals.

## Task 2.2 Perform power flow analysis for module and system synthesis to achieve the desired structural logic synthesis

The contractor shall develop power flow models to analyze the response of the different cells developed under the Task 2.1 and to study the dynamic response of the overall sub-assembly. The contractor shall develop power flow models to characterize the dynamic behavior, the energy dissipation levels and locations at both element cells and sub-assembly level. The effect produced by interconnecting different cell types in series or parallel will also be evaluated. The contractor will develop nonlinear structural intensity (SI) models able to capture the power flow distribution; then develop an integrated optimization technique to provide the optimal cell distribution for extreme stiffness and damping, based on the required performance for the assembled structure.

## Task 2.3. Design sub-assembly of structural logic

The contractor will design sub-assemblies based on the system requirement with the tools and models developed in Tasks 2.1 and 2.2. The contractor will first synthesize the

Attachment 1
Contract Number: HR0011-10-C-0148

structural module to achieve required performance objective index. The modular elements will then be fine-tuned for further performance enhancement. We will then add damping materials and devices in the optimal configurations to achieve high damping while maintaining high stiffness.

## Task 2.4. Refine and optimize structural logic

The contractor will optimize the sub-assemblies with optimization tools developed in Tasks 2.1 and 2.2. The models validated with the numerical simulation and experimental results will be used in the optimization process. The contactor shall demonstrate that the performance of optimized sub-assemblies can meet or exceed the overall program goals with respect to stiffness, damping, and dynamic response.

## Task 2.5. Fabricate small-scale sub-assembly

The contractor will construct small-scale sub-assembly prototypes based on the synthesized modules designed in Tasks 2.3 and 2.4. The sub-assembly prototype is designed to further enhance the structural performance of the structural logic building blocks. The contractor shall develop manufacturing and assembly methods suitable for the prototype fabrication and will simultaneously consider the extension for future scale-up fabrication. The contractor shall first perform fabrication for each basic building block of structural logic components and their associated joints then incorporate different components of structural logic library into sub-assemblies.

#### Task 2.6. Experimental evaluation and demonstration

The contractor will test the effect of different structural sub-assemblies. The test configurations include a combination of the main structural elements in series or parallel. The results from Tasks 2.3 and 2.4 will provide the necessary information to select the candidate substructure to achieve the assembled structural logic requirements. The selected structure will be tested for stiffness, damping, and dynamic response following the approach outlines for the validation of the single cell. Experimental results will be used to validate the numerical predictions and check against the program objective for sub-assemblies with damping coefficient of 1.0 and stiffness of 100 GPa.

### Task 3. Program Management

The contractor shall provide program management responsibilities, including quarterly progress reporting, technical and financial tracking, and participating in semi-annual progress reviews.

Attachment 1
Contract Number: HR0011-10-C-0148

## **ATTACHMENT NUMBER 2**

# Identification and Assertion of Restrictions on the Government's Use, Release, or Disclosure of Technical Data and Computer Software

## 16 September 2010

Teledyne Scientific & Imaging, LLC under DFARS 252.227-7017 asserts for itself that the Government's rights to use, release, or disclose the following technical data or computer software should be restricted:

Technical Data To Be Curvained With Restrictions	Bass Kor.	ele wy	Name Offered
Structured Logic Disclosure	Developed	Limited	(b)(6)
	Exclusively at	Rights	
	Private Expense		

Attachment 2 Contract Number: HR0011-10-C-0148 Page 1 of 1