

ORDER FOR SUPPLIES OR SERVICES

1. CONTRACT PURCH ORDER/AGREEMENT NO. W56HZV-14-P-0315				2. DELIVERY ORDER/CALL NO.		3. DATE OF ORDER/CALL (YYYYMMDD) 2014APR29		4. REQUISITION/PURCH REQUEST NO. SEE SCHEDULE		5. PRIORITY DOA4	
6. ISSUED BY U.S. ARMY CONTRACTING COMMAND DEREK M. DYCIO WARREN, MICHIGAN 48397-5000 HTTP://CONTRACTING.TACOM.ARMY.MIL EMAIL: DEREK.M.DYCIO@US.ARMY.MIL				CODE W56HZV		7. ADMINISTERED BY (if other than 6) U.S. ARMY CONTRACTING COMMAND TACOM CONTRACTING CENTER 6501 EAST 11 MILE ROAD WARREN, MICHIGAN 48397-5000				CODE W56HZV	
9. CONTRACTOR PRATT & MILLER ENGINEERING & FABRICATION INC. 29600 WM K SMITH DR NEW HUDSON, MI 48165-9722				CODE 4GWK4		FACILITY		10. DELIVER TO FOB POINT BY (Date) (YYYYMMDD) SEE SCHEDULE		8. DELIVERY FOB <input type="checkbox"/> DESTINATION <input checked="" type="checkbox"/> OTHER (See Schedule if other)	
NAME AND ADDRESS								12. DISCOUNT TERMS		11. X IF BUSINESS IS <input type="checkbox"/> SMALL <input type="checkbox"/> SMALL DISADVANTAGED <input type="checkbox"/> WOMAN-OWNED	
								13. MAIL INVOICES TO THE ADDRESS IN BLOCK See Block 15			
14. SHIP TO SEE SCHEDULE				CODE		15. PAYMENT WILL BE MADE BY DFAS-CO/NORTH ENTITLEMENT OPERATION P.O. BOX 182266 COLUMBUS OH 43218-2266				CODE HQ0337	
										MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2	
16. TYPE OF ORDER	DELIVERY/ CALL	THIS DELIVERY ORDER IS ISSUED ON ANOTHER GOVERNMENT AGENCY OR IN ACCORDANCE WITH AND SUBJECT TO TERMS AND CONDITIONS OF ABOVE NUMBERED CONTRACT.									
PURCHASE	<input checked="" type="checkbox"/>	Reference your <input type="checkbox"/> Oral <input type="checkbox"/> Written Quotation _____, Dated _____. _____ furnish the following on terms specified herein.									
ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.											
NAME OF CONTRACTOR			SIGNATURE			TYPED NAME AND TITLE			DATE SIGNED (YYYYMMDD)		
<input checked="" type="checkbox"/> If this box is marked, supplier must sign Acceptance and return the following number of copies: 2											
17. ACCOUNTING AND APPROPRIATION DATA/LOCAL USE SEE CONTRACT ADMINISTRATION DATA											
18. ITEM NO.	19. SCHEDULE OF SUPPLIES/SERVICE					20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT		
	SEE SCHEDULE										
* If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.				24. UNITED STATES OF AMERICA JEFFREY B. YEAGER /SIGNED/ 2014APR29 JEFFREY.B.YEAGER@US.ARMY.MIL (586)282-0577				25. TOTAL		\$49,964.00	
				BY: _____				26. DIFFERENCES			
27a. QUANTITY IN COLUMN 20 HAS BEEN <input type="checkbox"/> INSPECTED <input type="checkbox"/> RECEIVED <input type="checkbox"/> ACCEPTED, AND CONFORMS TO CONTRACT EXCEPT AS NOTED _____											
b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE						c. DATE (YYYYMMDD)	d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE				
e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE						28. SHIP. NO.	29. D.O. VOUCHER NO.		30. INITIALS		
f. TELEPHONE NUMBER			g. E-MAIL ADDRESS			<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	32. PAID BY		33. AMOUNT VERIFIED CORRECT FOR		
36. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT.						31. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL			34. CHECK NUMBER		
a. DATE (YYYYMMDD)		b. SIGNATURE AND TITLE OF CERTIFYING OFFICER							35. BILL OF LADING NO.		
37. RECEIVED AT		38. RECEIVED BY (Print)		39. DATE RECEIVED (YYYYMMDD)		40. TOTAL CONTAINERS	41. S/R ACCOUNT NUMBER		42. S/R VOUCHER NO.		

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SUPPLEMENTAL INFORMATION

Buyer Name: DEREK M. DYCIO
Buyer Office Symbol/Telephone Number: CCTA-HBA-T/(586)282-7451
Type of Contract: Firm Fixed Price
Kind of Contract: Service Contracts
Type of Business: Large Business Performing in U.S.
Surveillance Criticality Designator: C
Weapon System: No Identified Army Weapons Systems

*** End of Narrative A0000 ***

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
1	52.201-4000	ARMY CONTRACTING COMMAND-WARREN (DTA) OMBUDSPERSON	APR/2011

Information regarding the Ombudsperson for this contract is located at the following website:
<http://contracting.tacom.army.mil/acqinfo/ombudsperson.htm>

[End of Provision]

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Name of Offeror or Contractor: PRATT & MILLER ENGINEERING & FABRICATION INC.

DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

Regulatory Cite	Title	Date
1 52.237-4000 (TACOM)	CONTRACTOR MANPOWER REPORTING (CMR)	FEB/2013

The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the contractor will report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract via secure data collection site. The contractor is required to completely fill in all required data fields in the format using the following web address: <https://cmra.army.mil> . The required information includes the following:

- (1) Contracting Office, Contracting Officer, Contracting Officer's Technical Representative;
- (2) Contract number, including task and delivery order number;
- (3) Beginning and ending dates covered by reporting period;
- (4) Contractor name, address, phone number, e-mail address, identity of contractor employee entering data;
- (5) Direct labor hours (including sub-contractors);
- (6) Direct labor dollars paid this reporting period (including sub-contractors);
- (7) Total payments (including sub-contractors);
- (8) Predominant Federal Service Code (FSC) reflecting services provided by contractor (and separate predominant FSC for each sub-contractor if different);
- (9) Data collection cost;
- (10) Organizational title associated with the Unit Identification Code (UIC) for the Army Requiring Activity (the Army Requiring Activity is responsible for providing the contractor with its UIC for the purposes of reporting this information);
- (11) Locations where contractor and sub-contractors perform the work (specified by zip code in the United States and nearest city, country, when in an overseas location, using standardized nomenclature provided on website);
- (12) Presence of deployment or contingency contract language; and
- (13) Number of contractor and sub-contractor employees deployed in theater this reporting period (by country).

Reporting inputs will be for the labor executed during the period of performance during each Government fiscal year (FY), which runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year, beginning with 2013. Contractors may direct questions to the help desk at : <https://cmra.army.mil>.

End of Clause]

Project Description:

Pratt & Miller Engineering will provide technical support and guidance to build a full vehicle MSC.Adams/Car model of HMMWV. The model will then be used to perform various suspension analyses, handling simulations specified by TARDEC and Co-simulations with GT-SUITE with MATLAB as an intermediate conduit. Pratt & Miller Engineering will not modify MSC proprietary ADAMS software source code. Pratt & Miller Engineering will edit source code that was previously self-generated by Pratt & Miller Engineering to accommodate TARDEC specific tasks.

Description of Work:

1. Model Building

Pratt & Miller Engineering will provide assistance to TARDEC to build the HMMWV vehicle model at curb weight (CW), cross-country gross vehicle weight (CCGVW), highway gross vehicle weight (HGVW) and half vehicle models for suspension analysis. The models will be built to represent the physical HMMWV vehicle as closely as possible in terms of vehicle dynamics. The modeling approach will be as follows.

- a. Front and Rear suspension subsystem development
 - i. Model the front/rear suspension subsystems consisting of Springs, Dampers, Bump Stops, Control Arms, Spindles, Wheels, Tires and Roll Bars.
 - ii. Populate correct data for hardpoints, parts and bushings. If data are not available estimate appropriate values based on discussions with TARDEC.
- b. Steering subsystem development
 - i. Model the Pitman arm steering system consisting of Steering wheel, Steering column, Arms, Links, Shafts and Housings.

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ii. Populate correct data for hardpoints, parts, bushings and dampers if known. If data are not available estimate appropriate values based on discussions TARDEC.

c. Driveline subsystem development

i. Model the Driveline subsystem consisting of Engine, Transmission, Driveshaft, Halfshafts, Transfercase and Gearbox.

ii. Populate correct data for hardpoints, parts and connectors if known. If data are not available estimate appropriate values based on discussions TARDEC.

d. Body subsystem development

i. Model Body subsystem consisting of Chassis and related parts.

ii. Populate correct data for hardpoints, parts and connectors if known. If data are not available estimate appropriate values based on discussions TARDEC.

e. Loading subsystem development

i. Develop a loading subsystem consisting of Cargo, Occupants and related components.

ii. Populate correct data for hardpoints, parts and connectors if known. If data are not available estimate appropriate values based on discussions TARDEC.

2. Model Assembly

Generate Full vehicle and suspension assemblies by combining appropriate subsystems

3. Model Assumptions

a. All parts in the model will be rigid bodies with lumped mass and inertia. To improve the fidelity of the model, flexibility can be included by incorporating flexible parts provided these flexible components already exist.

b. No detailed aerodynamic effects will be modeled. A generic aerodynamic drag, lift side force coefficient model will be included.

c. No detailed brake system will be modeled. The standard simple brake subsystem available in MSC.Adams/Car will be used for all simulations.

d. Standard Tire models supported in MSC.Adams/Car will be used for all full vehicle simulations. It is assumed that TARDEC will provide the appropriate tire property files representing the physical tires for the full vehicle simulations.

4. Model Simulations

a. Pratt & Miller Engineering will assist TARDEC to perform the following half vehicle simulations. These half vehicle simulations are to verify the subsystems are assembled properly and the kinematic results are acceptable

i. Front and Rear Ride analysis

ii. Front and Rear Roll analysis

iii. Front Steering analysis

b. Pratt & Miller Engineering will assist TARDEC to perform the following full vehicle simulations representing various mobility scenarios at each weight condition.

i. Steady state cornering at various speeds

ii. Single half-round impact with various radii

iii. NATO double lane change

iv. Side slopes; static and sinusoidal

v. Longitudinal slope; varying grades in ascending and descending directions.

vi. Random road with varying RMS values

vii. Rough road durability

5. Co-Simulation Development

Certain vehicle components such as engine and driveline can be modeled with more details in GT-Suite software. In such cases MSC.Adams/Car can be extended to run in co-simulation mode to provide necessary inputs to GT-Suite and extract output from GT-Suite to run full vehicle simulations in MSC.Adams/Car. If there are requirement for such co-simulations Pratt & Miller Engineering will assist TARDEC in developing the necessary interface to run MSC.Adams/Car and GT-Suite in co-simulation mode with Matlab as intermediate conduit.

6. Results Review

During the results review phase Pratt & Miller Engineering will assist TARDEC to identify any modeling or simulation issues and address the cause of such issues to ensure the model accurately represents the behavior of the physical vehicle.

7. Template Development

Development of the new HMMWV vehicle model will require updates to the existing MSC.Adams/Car template and creation of new templates. Pratt & Miller Engineering will assist TARDEC in the modifications of the existing template or in the creation of new templates. Any modified templates or new templates will be owned by TARDEC.

8. Custom Solver Development

Certain vehicle components may require additional details which cant be modeling in standard MSC.Adams/Car to accurately represent the behavior of the physical vehicle. Such components can be modeled through user written functions and integrated into the vehicle model. If there is a requirement for such component development Pratt & Miller Engineering will assist TARDEC in the creation and integration

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of such user written functions.

Project Deliverables:

1. Complete and working HMMWV vehicle model in Adams format
2. Vehicle models, simulation results, simulation troubleshooting methodologies, user functions and templates developed
3. Monthly progress reports Monthly reports will be provided within the first 7 calendar days of the following month.
4. Final report. The final report will be delivered within 7 calendar days of completion of the period of performance for this contract.

*** END OF NARRATIVE C0001 ***

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Name of Offeror or Contractor: PRATT & MILLER ENGINEERING & FABRICATION INC.

INSPECTION AND ACCEPTANCE

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
1	(52.246-4009) (TACOM)	INSPECTION AND ACCEPTANCE POINTS: DESTINATION	FEB/1995

Inspection and acceptance of supplies offered under this purchase order shall take place as specified here. Inspection: DESTINATION.
Acceptance: DESTINATION.

[End of Clause]

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Name of Offeror or Contractor: PRATT & MILLER ENGINEERING & FABRICATION INC.

SPECIAL CONTRACT REQUIREMENTS

<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
1 52.204-4005	REQUIRED USE OF ELECTRONIC CONTRACTING	AUG/2012

(a) All contract awards, modifications and delivery orders issued by Army Contracting Command - Warren (DTA) will be issued electronically. The contractor has the option to receive these actions either via the Worldwide Web (WWW) or Electronic Data Interchange (EDI). Many provisions/clauses that appear "by reference," meaning only clause titles and regulation site are listed; their full texts can be found at the website <http://farsite.hill.af.mil/>

(b) In order to be eligible to receive an award under this solicitation, the successful offeror must be registered with the Department of Defense (DOD) System for Award Management (SAM). The SAM registration process may be done electronically at the World Wide Web (WWW) site: <https://www.sam.gov/portal/public/SAM>. (In order to be registered to use EDI, you must use the long form for registration. Certification information, including information on the EDI 838 TPP, must be furnished to the Contracting Officer within 60 calendar days after contract award to complete networking requirements within the Government.)

(c) Worldwide Web Distribution. The contractor will receive an electronic Notice of the Award, Modification, or Delivery Order via e-mail. If you choose the WWW option, you must download the file from the appropriate Army Contracting Command - Warren webpage:

Warren: http://contracting.tacom.army.mil/CFDATA/AWARDS/AWARD_RPT01.cfm
Rock Island - JMTC: <https://acquisition.army.mil/asfi/>
Red River Army Depot: <https://acquisition.army.mil/asfi/>
Anniston Army Depot: <https://acquisition.army.mil/asfi/>

(d) Electronic Data Interchange. If you choose to receive contract awards, modifications and delivery orders through EDI, they will be delivered electronically via the Federal Acquisition Network (FACNET). Federal Standard Version 3050 of Standard X12 from the American National Standards Institute (ANSI) will be used as the format for these electronic transactions.

(1) You must complete the EDI 838 Trading Partner Profile, and must agree (i) to subcontract with a DoD certified VAN or Value Added Service (VAS) provider, or (ii) to become DoD certified as a Value Added Network (VAN). The EDI 838 Training Partner Profile is contained in the basic SAM registration form and includes portions of the registration form which are titled "Optional".

(2) You must select a VAN from the official DoD approved list. DoD Certified VANs are listed at <http://www.acq.osd.mil/dpap/ebiz/VANs.htm>. If your VAN is later removed from the official list, or if you voluntarily drop your initially selected VAN, then you must switch to a VAN that remains on the official DoD approved list. You must maintain an active account on a DoD approved VAN for the entire duration of the contract, beginning no later than the 60th day after award.

(e) Unless otherwise specified elsewhere in the contract, all data items you are required to provide under this contract must be submitted electronically. Please go to the following webpage for detailed information about submitting your offer electronically: <http://contracting.tacom.army.mil/acqinfo/ebidnotice.htm>

(f) Additional information can be obtained by sending a message to: usarmy.detroit.acc.mbx.wrn-web-page@mail.mil or by calling (586) 282-7059.

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CONTRACT CLAUSES

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
1	252.203-7000	REQUIREMENTS RELATING TO COMPENSATION OF FORMER DOD OFFICIALS	SEP/2011
2	252.204-7006	BILLING INSTRUCTIONS	OCT/2005
3	252.232-7003	ELECTRONIC SUBMISSION OF PAYMENT REQUESTS AND RECEIVING REPORTS	JUN/2012
4	252.232-7010	LEVIES ON CONTRACT PAYMENTS	DEC/2006
5	252.237-7010	PROHIBITION ON INTERROGATION OF DETAINEES BY CONTRACTOR PERSONNEL	JUN/2013
6	252.243-7001	PRICING OF CONTRACT MODIFICATIONS	DEC/1991
7	252.246-7000	MATERIAL INSPECTION AND RECEIVING REPORT	MAR/2008
8	52.204-4009	MANDATORY USE OF CONTRACTOR TO GOVERNMENT ELECTRONIC COMMUNICATION	MAR/2005

(a) All references in the contract to the submission of written documentation shall mean electronic submission. All electronic submissions shall be in the formats and media described in the website:

<http://contracting.tacom.army.mil/acqinfo/ebidnotice.htm>

(b) This shall include all written unclassified communications between the Government and the Contractor except contract awards and contract modifications which shall be posted on the internet. Return receipt shall be used if a commercial application is available. Classified information shall be handled in full accordance with the appropriate security requirements.

(c) In order to be contractually binding, all Government communications requiring a Contracting Officer signature must be sent from the Contracting Officer's e-mail address. The Contractor shall designate the personnel with signature authority who can contractually bind the contractor. All binding contractor communication shall be sent from this contractor e-mail address(es).

(d) Upon award, the Contractor shall provide the Contracting Officer with a list of e-mail addresses for all administrative and technical personnel assigned to this contract.

(e) Unless exempted by the Procuring Contracting Officer in writing, all unclassified written communication after contract award shall be transmitted electronically.

[End of Clause]