HONEYBEE ROBOTICS
460 W 34th Street
New York NY 10001
P 212 966 0661
F 646 459 7898
www.HoneybeeRobotics.com

GSA Contract GS-10F-0284T

Corporate Overview and GSA Pricelist

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1.0 Company Information and Facilities

1.1 General Corporate Overview

Established in 1983, Honeybee Robotics Spacecraft Mechanisms Corporation is ISO9001:2000 and AS9100B certified. Honeybee is a NASA-approved flight hardware supplier with extensive experience in flexible automation technologies, custom mechanisms, spacecraft electro-mechanical components, and robotic systems and subsystems for the aerospace industry. Honeybee Robotics is the world's leading developer of planetary sample acquisition and manipulation systems in support of surface and subsurface planetary exploration missions. In addition to our NASA and DOD sponsored R&D, Honeybee also has a legacy of product development for private industry and public utility clients.

Honeybee Robotics has managed over 75 NASA-funded projects, from small research and development efforts under the SBIR program to larger efforts funded by various NASA ROSES programs to multi-million dollar efforts such as the MER RAT flight development project.

1.2 Facilities

Engineering and production takes place primarily in Honeybee Robotics' 15,000 sq. ft. facility on the far west side of Manhattan in New York City. Honeybee Robotics has a conventional machine shop, an electrical integration and testing area and several large workstations used for fabricating and testing hardware and reworking parts if necessary (Figure 1). Metalworking equipment includes: 2 mills, 1 drill press, 2 lathes, 2 grinders, a Hardinge-Bridgeport VMC480P[3] 3-axis vertical machining center, assorted hand tools, and small-scale mechanical and electrical test equipment calibrated in conformance with MIL-STD-45662.

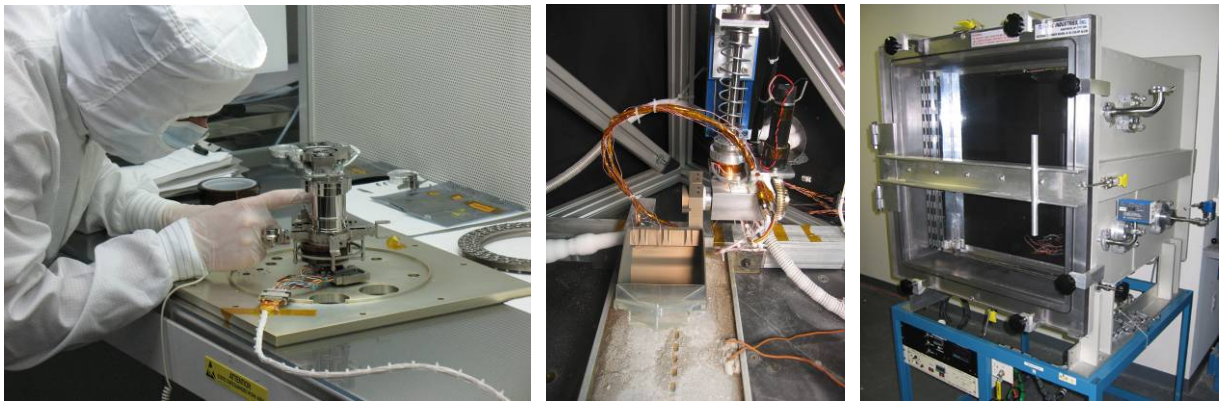

Figure 1: Honeybee Facilities: left) Hardware integration on the Class 100 clean bench in Honeybee's NASA-certified clean room; middle) Testing of the Phoenix ISAD Engineering Model under simulated Martian temperature, pressure and atmosphere in Honeybee's 27 cu. ft. thermal vacuum chamber; right) Exterior view of the 27 cu. ft. thermal vacuum chamber.

As part of the flight assembly and integration facilities, Honeybee Robotics maintains a NASA-certified, environmentally controlled room outfitted with a Class-100 laminar flow clean bench for assembly and inspection, and a Quality Assurance room with optical comparators, microscopes and solder stations. For environmental testing of components and small subsystems Honeybee Robotics utilizes a 27 cu. ft. thermal-vacuum chamber capable of 10^{-5} Torr and +65°–120°C and

a deep freezer. Honeybee also maintains a high-ceilinged drilling facility that is used for testing deep drills and houses the Planetary Exploration Analog Materials Library.

1.3 Planetary Exploration Analog Materials Library

Honeybee Robotics has an extensive in-house library of rocks and sand, including Mars, Moon (JSC-1A , JSC-1AF, and FJS-1) and comet simulant. This material has been used for testing drills and samplers throughout all phases of the design - from breadboards to flight qualification units. Other pertinent equipment includes a 10000-lbf capacity Marshall compression test machine, rock saw, sample dryers, sieves and other sample preparation tools.

2.0 GSA Pricelist

2.1 Services Offered

Honeybee is registered to provide the following services under GSA Schedule 871:

Special Item Number (SIN)	**Professional Engineering Discipline (PED)**
871-2: Concept Development and Requirements Analysis	Mechanical Engineering
	Electrical Engineering
871-3: System Design, Engineering, and Integration	Mechanical Engineering
	Electrical Engineering
871-4: Test and Evaluation	Mechanical Engineering
	Electrical Engineering
871-6: Acquisition and Life Cycle Management	Mechanical Engineering
	Electrical Engineering

2.2 Rates

SIN	Labor Category	GSA Hourly Rate Including IFF (.75%)
871-2 ***871-3*** ***871-4*** ***871-6***	***Senior Systems Engineer***	***$147.80***
871-2 ***871-3*** ***871-4*** ***871-6***	***Systems Engineer***	***$120.42***
871-2 ***871-3*** ***871-4*** ***871-6***	***Project Engineer***	***$105.68***
871-2 ***871-3*** ***871-4*** ***871-6***	***Design Engineer***	***$96.97***
871-2 ***871-3*** ***871-4*** ***871-6***	***Machinist***	***$85.76***
871-2 ***871-3*** ***871-4*** ***871-6***	***Engineering Manager***	***$162.60***
871-2 ***871-3*** ***871-4*** ***871-6***	***Senior Principal Investigator***	***$216.27***

2.3 Labor Category Descriptions

Design Engineer
(Grades E-20-22 — **Requirements: Bachelor's Degree and 0-2 years of experience**)

A supervised position in which the employee is assigned as part of a team usually with Project Engineers or Senior Engineers to support the development of new products or the enhancement of existing ones. Helps with breadboard concepts, develops prototypes, and completes designs as assigned. Trouble shoots and debugs designs.

Qualifications & Skill set (minimum): Bachelor's Degree in relevant field; understanding of fundamental engineering principles and theories. Mechanical engineers must have the ability to perform simple, first-order analysis of mechanical systems; familiarity with basic CAD software and drafting techniques. While Electrical/Control engineers must have the ability to design simple circuits, familiarity with basic analysis software and the ability to use debug simple circuits. The design engineer must have a working knowledge of various MS Office products and ability to use common hand tools.

Project Engineer
(Grades E-30-32 — **Requirements: Bachelor's Degree and 2-5 years of experience**)

Supervised position requiring the performance of technical analyses in support of project design activities. Evaluate and prepare engineering standard, scope of work, design, materials and equipment of small to medium-scale project related to mechanical, electrical or software. Monitors and may supervise some construction and installation activities.

Qualifications & Skill set (minimum): Demonstrated improvements in the areas outlined for position 1, above with emphasis on the ability to (1) use basic machine tools such as the lathe and mill (2) make 3D drawings, renderings and visualizations (3) translate 3D drawings to final machine drawings using proper and accepted drafting practices (4) perform more complex analysis and studies related to design concepts including the use of FEA to support classical analyses (5) proficiency in MS Office products specifically, MS-Word and MS-PowerPoint.

All subsequent titles/positions build on these skill sets and qualifications with demonstration of abilities and proficiencies. [At this point it should become evident in which areas a specific employee's talents are best directed and in addition to whatever promotions they may receive, it will be prudent to take advantage of whatever other skill(s) they may exhibit.]

System Engineer
(Grades E-40-42 — **Requirements: Bachelor's Degree and 5-7 years of experience**)

Provide technical support to Technical Development team during proposal writing; configure hardware, software and design application requirements of products offered to customers to meet their requirements; resolve complex technical issues with guidance from senior engineers. Coordinates the design and development of one or more systems or product lines as well as the people working to complete them. Provides technical guidance and motivates team members.

Will perform design and analysis tasks on precision mechanisms in a team environment. Support will include mission/requirements definition, concept generation, trade studies, design sensitivity/optimization studies, configuration management, some assistant project management, preliminary and final design, and integration test support. Perform complex FEA analysis.

Senior System Engineer
(Grades E-60-62 — **Requirements: Bachelor's Degree and 9-11 years of experience**)

Lead the System Engineering department; provide technical support during major sales negotiation, offer technical solutions to resolve complex system installation requirements and application design issues; select and assign project team members for each installation; ensure timely completion within budget, deadline and customer requirements.

Typically leads one to five engineers in the design/development of a product or one or more of its components. Coordinates the talents of people in groups to complete breadboard designs and production prototypes. Provides final release of designs to production and presents reports to management on the team's progress.

Responsible for developing, defining, and designing system requirements. Analyzes systems requirements to determine feasibility of design within time and cost constraints. Assesses architecture and current hardware limitations, defines and designs complex system specifications, input/output processes and working parameters for hardware/software compatibility. Coordinates design of subsystem and integration of total system

Must have knowledge in all phases of systems integration, with emphasis on planning, analysis, modeling, simulation, testing, integration, documentation and presentation phases. Must have strong analytical and problem solving skills; ability to multi-task between 2 or more projects and adapt to changing priorities and schedules; detail-oriented, self-motivated; work as a team player; and have excellent written and verbal skills. Must be expert in developing and presenting briefings for senior level staff and management.

SENIOR PROJECT MANAGER

(Grades M-70-72 — **Requirements: Bachelor's Degree and 11-14 years of experience**)

Manages large (multi-million dollar) projects or multiple small projects, a Senior Project Manager also supervise the performance of other Project Managers and the progress of their projects. The goal of this assignment is to insure that these projects are managed properly and operating within the established goals, budget and delivery schedule imposed. This person will periodically assess the status of each project and make suggestions when necessary that will insure an efficient, sustained progress of each project under his/her supervision. Solid team player willing to travel as required and willing to work extended hours when required

ENGINEERING MANAGER

(Grades M-70-72 — **Requirements: Bachelor's Degree and 11-14 years of experience**)

- Maintain a high level of interaction between home and remote offices, including external contract development teams and vendors
- Initiate frequent and continuous communications between groups while simultaneously managing multiple projects
- Writing performance reviews and recommending training to improve performance
- Ensure all Honeybee's products fulfill functional deliverables
- Train and coach engineers, have a strong knowledge of all design processes, and ensure that all activities are performed in accordance with the highest standards of quality and safety.
- Develop Quality Assurance process and oversee the development of Quality Control procedures; direct and participate in the preparation of standard procedures manual.
- Ensure organization is adequately and effectively trained in company Quality program.

- Develop, monitor and maintain department budget.
- Evaluate and monitor work demands from operations and ensure adequate resources are available to meet needs of business.
- Oversee staffing for large projects.
- Evaluate, hire and manage outside engineering firms and other third party consultants, as needed.
- Interview, select, hire, train, evaluate and terminate subordinate personnel.
- Develop goals and objectives and work with staff throughout the year to ensure goals and performance standards are achieved.

Machinist

(Grades T-20-24 — **Requirements: Technical certificate, or equivalent coursework or training in a directly related area with 6 months to 1 year related experience**)

Set up and operate a variety of machine equipments/tools to fabricate precision parts as well as modify parts of existing systems, applying knowledge of mechanics, shop mathematics, metal properties, layout, and machining procedures. Perform preventative & predictive maintenance in addition to troubleshoot and repair of the facility machinery. Write and maintain standard operating & safety procedures. Assembles or assists in the assembly of parts according to engineering instructions and technical manuals.