

## 871 PROFESSIONAL ENGINEERING SERVICES

Category	Description
871 1	<p><b>Strategic Planning for Technology Programs/Activities</b> - Services required under this SIN involve the definition and interpretation of high-level organizational engineering performance requirements such as projects, systems, missions, etc., and the objectives and approaches to their achievement. Typical associated tasks include, but are not limited to an analysis of mission, program goals and objectives, requirements analysis, organizational performance assessment, special studies and analysis, training, privatization and consulting.</p> <p>Example: The evaluation and preliminary definition of new and/or improved performance goals for navigation satellites such as launch procedures and costs, multi-user capability, useful service life, accuracy and resistance to natural and man made electronic interference.</p> <p>Contractors are awarded one or more of the following primary engineering disciplines (PEDs) under this Special Item Number:</p> <p>Chemical Engineering (CE) Civil Engineering (CI) Electrical Engineering (EE) Mechanical Engineering (ME)</p>
871 2	<p><b>Concept Development and Requirements Analysis</b> - Services required under this SIN involve abstract or concept studies and analysis, requirements definition, preliminary planning, the evaluation of alternative technical approaches and associated costs for the development of enhancement of high level general performance specifications of a system, project, mission or activity. Typical associated tasks include, but are not limited to requirements analysis, cost/cost performance trade-off analysis, feasibility analysis, regulator compliance support, technology/system conceptual designs, training, and consulting.</p> <p>Example: The development and analysis of the total mission profile and life cycle of the improved satellite including examination of performance and cost tradeoffs.</p> <p>Contractors are awarded one or more of the following primary engineering disciplines (PEDs) under this Special Item Number:</p> <p>Chemical Engineering (CE) Civil Engineering (CI) Electrical Engineering (EE) Mechanical Engineering (ME)</p>
871 3	<p><b>System Design, Engineering and Integration</b> - Services required under this SIN involve the translation of a system (or subsystem, program, project, activity) concept into a preliminary and detailed design (engineering plans</p>

and specifications), performing risk identification/analysis, mitigation, traceability, and then integrating the various components to produce a working prototype or model of the system. Typical associated tasks include, but are not limited to computer-aided design, design studies and analysis, high level detailed specification preparation, configuration, management and document control, fabrication, assembly and simulation, modeling, training, and consulting.

Example: The navigation satellite concept produced in the preceding stage will be converted to a detailed engineering design package, performance will be computer simulated and a working model will be built for testing and design verification.

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- 871 4** **Test and Evaluation** - Services required under this SIN involve the application of various techniques demonstrating that a prototype system (subsystem, program, project or activity) performs in accordance with the objectives outlined in the original design. Typical associated tasks include, but are not limited to testing of a prototype and first article(s) testing, environmental testing, independent verification and validation, reverse engineering, simulation and modeling (to test the feasibility of a concept), system, quality assurance, physical testing of the product system, training, and consulting.

Example: The navigation satellite-working model will be subjected to a series of tests, which may simulate and ultimately duplicate its operational environment.

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- 871 5** **Integrated Logistics Support** - Services required under this SIN involves the analysis, planning and detailed design of all engineering specific logistics support including material goods, personnel, and operational maintenance and repair of systems throughout their lifecycles, excluding those systems associated with ?real property.? Typical associated tasks include, but are not limited to ergonomic/human performance analysis, feasibility analysis, logistics planning, requirements determination, policy standards/procedures development, long-term reliability and maintainability, training, and consulting.

Example: The full range of life cycle logistics support for the navigation satellite will be identified and designed in this stage including training,

operation and maintenance requirements, and replacement procedures.

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- 871 6** **Acquisition and Life Cycle Management** - Services required under this SIN involve all of the planning, budgetary, contract and systems/program management functions required to procure and or/produce, render operational and provide life cycle support (maintenance, repair, supplies, engineering specific logistics) to (technology based) systems, activities, subsystems, projects, etc. Typical associated tasks include, but are not limited to operation and maintenance, program/project management, technology transfer/insertion, training and consulting.

Example: During this stage the actual manufacturing, launch, and performance monitoring of the navigation satellite will be assisted through project management, configuration management, reliability analysis, engineering retrofit improvements and similar functions.

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- 871 7** **Construction Management** - Customer agencies shall utilize construction managers as its principal agent to advise on or manage the process over the project regardless of the project delivery method used. The Construction Manager assumes the position of professional adviser or extension of staff to the customer agency. The Construction Manager frequently helps the customer agency identify which delivery method is the best for the project. The construction management approach utilizes a firm (or team of firms) with construction, design and management expertise to temporarily expand the customer agency's capabilities, so that they can successfully accomplish their program or project. The Construction Manager also provides expert advice in support of the customer agency's decisions in the implementation of the project. The following are some of the tasks to be covered under Construction Management:

*Project Design Phase Services:* These services may include: design technical reviews; code compliance reviews; constructability reviews; analysis of Value Engineering proposals; preparation of cost estimates (including independent check estimates); cost analysis; cost control/monitoring; energy studies; utility studies; site investigations; site surveys; scheduling (including preparation of schedules and schedule reviews); review of design scope changes (including analysis of schedule impact); scheduling/conducting/documenting design related meetings; and performing market studies (material availability, contractor interest, etc.).

*Project Procurement Phase Services:* These services may include: providing assistance to the Contracting Officer in contract procurement; answering bid/RFP questions; attending/participating in site visits; attending/participating in pre-bid conferences; preparing and issuing solicitation amendments for review and approval by the Government Contracting Officer; and performing cost/bid/proposal analysis.

*Project Construction Phase Services.* These services may include: establishing temporary field offices; setting up job files, working folders, and record keeping systems; maintaining organized construction files; scheduling and conducting preconstruction meetings; documenting actions taken and decisions made, etc.; monitoring the submittal review process; review and monitoring of project schedules for construction progress with emphasis on milestone completion dates, phasing requirements, work flow, material deliveries, test dates, etc.; assisting in problem resolution and handling of disputed issues (including development of Government position); maintaining marked up sets of project plans and specifications for future as-built drawings; performing routine inspections of construction as work proceeds, taking action to identify work that does not conform to the contract requirements, and notifying the contractors when work requires correction; compiling, through site inspections, lists of defects and omissions related to the work performed and providing these lists to the contractor for correction; review of construction contractor payment requests (including preparation of necessary forms for payment processing); monitoring project financial data and budgetary cost accounting; administration of construction contract change orders (issuing proposal requests, preparing cost estimates, reviewing cost proposals, assisting agency in negotiations, preparing change order packages for processing); scheduling, conducting, and documenting regular progress meetings with all interested parties to review project status, discuss problems, and resolve issues; scheduling, conducting, and documenting (prepare minutes, etc. for distribution) construction related project meetings; monitoring construction contractor compliance with established safety standards (note and report unsafe working conditions, failures to adhere to safety plan required by construction contract); monitoring construction contractor's compliance with contract labor standards; coordination of construction activities with customer Managers and occupying agency personnel; monitoring the design and construction clarification process and, when appropriate, reminding the A/E and other parties involved of the need for timely actions; participating in all "Partnering" activities during construction (workshops, meetings, etc.); preparing special reports and regular project status reports; providing for progress and/or final photographs of project work; perform site surveys; provide assistance in obtaining permits; perform hazardous material assessments and monitoring of hazardous material abatement work; and provide cost estimating assistance.

*Commissioning Services.* These services shall include, but are not limited to, providing professional and technical expertise for start-up, calibration, and/or certification of a facility or operating systems within a facility. The CM must be able to provide any level of commissioning need from total

support to specialty services. Commissioning services may require start-up planning, forecasting start-up duration, estimating start-up costs, determining start-up objectives, organizing start-up teams and team assignments, testing building system components, conducting performance tests.

*Testing Services:* The CM may be tasked to provide the services of an independent testing agency/laboratory to perform project specific quality control testing and inspection services. The services may include, but are not limited to, testing/inspection of soils, concrete, precast concrete connections, steel, steel decking, applied fireproofing, roofing, curtain walls/glazing, and elevator installations.

*Claims Services.* The CM may be tasked to provide Claims Services when and as required by the Government for specific projects. The CM will review disputes and claims from the A&E and/or construction contractor(s) and render all assistance that the Government may require, including, but not limited to, the following: Furnishing reports with supporting information necessary to resolve disputes or defend against the claims; preparation and assembly of appeal files; participation in meetings or negotiations with claimants; appearance in legal proceedings; preparation of cost estimates for use in claims negotiations; preparation of risk assessments/analyses relative to claim exposures; preparation of findings of fact and any other documentation required by the Government.

*Post Construction Services.* At or near substantial completion of project construction, the CM may be tasked to provide services such as: Performing Post Occupancy Evaluations (POEs); assisting Agency in the formulation of lessons learned; providing occupancy planning including development of move schedules, cost estimates, inventory lists, etc.; providing move coordination, relocation assistance, and/or furniture coordination; providing telecommunication and computer coordination.

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